



**Tuesday, June 22, 2021
5:00 PM**

**City Council
Tuesday Meeting Agenda**

**Council Chambers
200 Forrest Street**

Call to Order

Call to Prayer and Pledge of Allegiance

Presentation Agenda

POLICY AGENDA

1. **2021-824** Approve the minutes for the June 7 and 8, 2021 meetings of the City Council.
2. **2021-398** Take from the table to Approve or Deny a petition filed by Alexandria Flowers and April Warnsley, Applicants, and Kenneth Cooley, Owner, to request a Conditional Use as “Club and Bar” in B-2 (Neighborhood Business) District as defined by the LDC for a certain property located at 340 N 25th Avenue (Ward 4). The Planning Commission recommended to Approve as a “Hookah Bar” on May 10, 2021.
3. **2021-808** Adopt an Ordinance for the petition filed by The City of Hattiesburg to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management. The Planning Commission recommended to Approve on June 2, 2021.
4. **2021-809** Adopt an Ordinance for the petition filed by The City of Hattiesburg to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendment adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area. The Planning Commission recommended to Approve on June 2, 2021.
5. **2021-810** Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for a certain property located at 4219 Lincoln Rd. (Ward 3). The Planning Commission recommended to Approve on June 2, 2021.

- 6. 2021-811** Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Ward 3). Request is contingent upon approval of text amendment to Land Development Code Sec.7.12.10.4.iii. The Planning Commission recommended to Approve on June 2, 2021.
- 7. 2021-812** Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a variance from Section 7.12.10.4 “A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot” and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). The Board of Adjustment recommended to Approve on June 2, 2021.
- 8. 2021-813** Approve or Deny a petition filed by Robert St. John, Owner, to request a variance from Section 6, Table 6.1 “Minimum Front Setback” for B-3, “30 feet”, and instead allow a setback of nine (9) feet and eight (8) inches for a variance of twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.0l, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3). The Board of Adjustment recommended to Approve on June 2, 2021.
- 9. 2021-814** Adopt a Resolution setting Public Hearing on Monday, July 19, 2021 at 4:00 p.m. in the City Council Chambers at City Hall to determine if certain properties are in such a state of uncleanness so as to be a menace to the health and safety of the community, according to the provision of MS Code 1972, Section 21-19-11.
- 10. 2021-825** Adopt the June 22, 2021 amendments to the budget for the City of Hattiesburg for fiscal year ending September 30, 2021 and adopt Resolution authorizing publication of amendments for funds in excess of 10% of the originally appropriated fund balance.
- 11. 2021-822** Approve Engineering Contract with Neel-Schaffer, Inc. for the Hall Avenue West Build Project for an amount not to exceed \$920,315.02 and authorize the Mayor to execute in triplicate.
- 12. 2021-841** Approve contract with Neel-Schaffer, Inc. for construction engineering and inspection services related to the Hardy Street Roundabout Project at 2nd Avenue, Green Street and Adeline Street STP-0210-00(037) LPA/108081-701000 and authorize the Mayor to execute in triplicate.
- 13. 2021-819** Approve agreement with Powell Construction Services, Inc. for repair and maintenance of traffic signals for the period June 30, 2021 through June 30, 2022 and authorize the Mayor to execute in duplicate.
- 14. 2021-835** Approve Exclusive Use Agreement between the City, Lamar Park Water and Sewage

Association, Inc. and Garner Nichols Properties, LLC for the acceptance and treatment of sewage from the Garner Nichols dental office located at 4127 Lincoln Road; Authorize Mayor to execute in triplicate.

15. **2021-826** Approve Change Order No. 1 with Rowell Roofing, Inc. for the Hattiesburg American ReRoof Phase II project and authorize Mayor to execute in triplicate.
16. **2021-815** Approve advertising sponsorship for the 2021 Star Spangled Celebration on the River, July 2, 2021, in accordance with Mississippi 17-3-1, in the amount of \$6000.00 and authorize issuance of manual check for the same.
17. **2021-839** Approve revised Interlocal Agreement between City of Hattiesburg and Arnold Line Water Association, Inc., for certain utility services and authorize the Mayor to execute the same contingent upon the Attorney General's approval.
18. **2021-837** Approve Memorandum of Understanding between City of Hattiesburg and Forrest County Sheriff's Department for participation in the Joint State County Work Program.
19. **2021-829** Approve Memorandum of Understanding with the Mississippi State Fire Academy (MSFA) and the Hattiesburg Fire Department to administer the NFPA 1072 F: Hazardous Materials Awareness and Operations field course and authorize the Fire Chief to execute the same.
20. **2021-832** Ratify and confirm the Mayor's re-appointment of Ronnie Perkins to the Pine Belt Regional Solid Waste Authority for a term beginning June 30, 2021 and ending on June 29, 2025.
21. **2021-821** Authorize the acceptance of the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) Youth Participation Initiative Grant Program award, to fund an educational pollinator garden and outdoor classroom at the Hattiesburg Community Arts Center, for a total estimated project cost of \$14,500.00(\$6,660 grant share and \$7,840.00 local share) ; authorize the Mayor to execute the same.
22. **2021-827** Acknowledge receipt of a Corrected Water Easement and a Corrected Permanent Access Easement from Garner Property & Development, LLC for a certain property located in Lamar County described as a part of the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, and more particularly described in the attached documents.
23. **2021-823** Acknowledge receipt of closing documents for the Fire Station No. 9 Construction project; Authorize advertisement of Notice of Final Settlement; Approve final acceptance of the project and approve payment of final pay application to the contractor.
24. **2021-833** Acknowledge receipt of closing documents for the C. E. Roy Pathway project, approve final acceptance of the project and approve payment of final pay application to the contractor.

ROUTINE AGENDA

1. **2021-407** Acknowledge the public comment period and two (2) publications providing notification of the same for the City of Hattiesburg's 2021-2023 Disadvantaged Business Enterprise (DBE) Program Goals and the new DBE Program Plan.
2. **2021-830** Acknowledge bids received May 13, 2021 for the Water Plant #1 Rehabilitation project and reject all bids due to bids being priced outside of funding amounts.
3. **2021-820** Authorize submission of a grant application to the U.S. Department of Justice, Bureau of Justice Assistance for the 2021 Bulletproof Vest Partnership Grant in the amount of \$31,200.00 to purchase bulletproof vests for the Hattiesburg Police Department. The grant reimbursement to the city will provide \$15,600.00 (50%) of the cost of the vests.
4. **2021-838** Approve and authorize issuance of manual checks for CDBG-CV Program Claims per attached Memorandum. {Entitlement CDBG-CV}
5. **2021-840** Approve and authorize issuance of manual checks for CDBG Program Claims per attached Memorandum. {Entitlement CDBG}
6. **2021-818** Approve Plans and Specifications for the Hall Avenue Infrastructure Improvements Project and authorize advertisement for bids.
7. **2021-807** Approve the sale of grave spaces, per attached Memo's, Receipts and Deeds.
8. **2021-834** Approve claims docket for the period ending June 18, 2021.

In Memoriam:

- **Mr. Robert Fagan**

Meeting Adjourn



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ronda Cole, Clerk of Council

cc:

Date: Tuesday, June 22, 2021

Re: Approve the minutes for the June 7 and 8, 2021 meetings of the City Council.
File Number: 2021-824
Minute Book #

Summary

According to Miss. Code Ann. § 21-15-33, "the minutes of every municipality must be adopted and approved by a majority of all the members of the governing body of the municipality at the next regular meeting or within thirty (30) days of the meeting thereof, whichever occurs first....."

Recommendation Statement

I recommend approval of the minutes.

Please place this on the June 22, 2021 City Council meeting for consideration.

Published Agenda



Monday, June 7, 2021	City Council	Jackie Dole Community Center
4:00 PM	Monday Meeting Agenda	220 W. Front Street

Call to Order

Public Hearing

1. **2021-786** Hold public hearing for appeal filed by Carol Short, Owner, to appeal the Hattiesburg Historic Conservation Commission’s Denial of the petition filed by Carol Short change the roof material to metal at 309 S. 19th Ave. The HHCC Denied on April 14, 2021.

Attachments: Hold Public Hearing-Hattiesburg Historic Consery
 309 S. 19th Ave – Metal roof – Appeal form

Agenda Review

Citizens' Forum

Work Session

1. **2021-803** Update on American Rescue Plan Act of 2021, presented by Administration.
2. **2021-801** Registry for rental and vacant properties, requested by Council Vice President Mary Dryden.
3. **2021-802** Status of Cares Act Funding, requested by Councilmember Deborah Delgado.

Meeting Recess

Call to Order

BE IT REMEMBERED that the Hattiesburg City Council held a **public hearing at 4:00 p.m. Monday, June 8, 2021**, in the Jackie Dole Community Center Auditorium, same being a recessed meeting of the City Council held on May 28, 2021. The Council met for the purpose of the appeal filed by Carol Short change the roof material to metal at 309 S. 19th Ave. The HHCC Denied on April 14, 2021.

Those present included Mayor Toby Barker (out at 5:29 p.m.) and members of the City Council Jeffrey George, Ward 1(out at 5:40 p.m.); Deborah Delgado, Ward 2 (in at 4:08 p.m.); Carter Carroll, Ward 3; Mary Dryden, Ward 4; and Nicholas Brown, Ward 5. Others in attendance included Director of Administration/City Clerk, Kermas Eaton (in at 4:56 p.m.); City Attorney, Randy Pope; Clerk of Council, Ronda S. Cole; Deputy Clerk of Council, Lisa Luu Jolly; City staff members; media; and the public.

Mayor Barker presented a proclamation to the Hattiesburg High School Boys and Girls Track + Field Teams in honor of their 5A State Championships.

Council President Carroll called the meeting to order and explained the procedures.

Public Hearing

1. **2021-786** Hold public hearing for appeal filed by Carol Short, Owner, to appeal the Hattiesburg Historic Conservation Commission’s Denial of the petition filed by Carol Short change the roof material to metal at 309 S. 19th Ave. The HHCC Denied on April 14, 2021.

Attachments: 309 S 19th Ave - Metal roof - Appeal form
 CC HPC BOA PPT 6-7-21

Russell Archer, Historic Preservation Planner, provided a presentation overview on the petition for 309 S. 19th Avenue (see attached presentation).

Attachments: CC HPC BOA PPT 6-7-21

Council President Carroll called upon the appellant, Carol Short, to present her case. Ms. Short addressed the Council regarding her request to change the roof material to metal.

Council President Carroll asked the public if there were any citizens to speak for or against the petition.

- Ursula Jones, 808 Duane St., spoke in favor of the applicant's appeal.

There were no other citizens who wished to speak for or against the petition.

By unanimous consent, Council President Carroll **closed the public hearing at 4:42 p.m. and proceeded with the Agenda Review.**

Agenda Review

Council President Carroll proceeded with the Agenda Review.

Following discussion of agenda items, Council President Carroll closed the Agenda Review.

Citizens' Forum

Council Vice President Dryden proceeded with the Citizens' Forum.

She stated the procedures and invited members of the public to speak.

The following citizens addressed the Council:

- Donald Bethley, 612 N. 31st Ave., Apt. A3
- Charlie Holle, 7712 Hwy 49

There were no other citizens present who wished to address the Council.

Council Vice President Dryden closed the Citizen Forum.

Work Session

Council President Carroll proceeded with the Work Session, which included:

1. **2021-803** Update on American Rescue Plan Act of 2021, requested by Administration.
- Attachments: arpa_2021
2. **2021-801** Registry for rental and vacant properties, requested by Council Vice President Mary Dryden.
3. **2021-802** Status of Cares Act Funding, requested by Councilmember Deborah Delgado.

Meeting Recess

Council President Carroll declared the **meeting recessed at 5:41 p.m., this 7th day of June, 2021**, by unanimous consent, until the 8th day of June, 2021.

ATTEST:

APPROVE:

Clerk of Council

Council President

ATTEST AND CERTIFY:

APPROVE:

City Clerk

Mayor

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Published Agenda

**Tuesday, June 8, 2021
10:00 AM**

**City Council
Tuesday Meeting Agenda**

**Jackie Dole Community Center
220 W. Front Street**

Call to Order**Call to Prayer and Pledge of Allegiance****Presentation Agenda****POLICY AGENDA**

1. **2021-769** Approve the minutes for the May 17, 18 and 28, 2021 meetings of the City Council.
2. **2021-785** Approve or Deny the petition filed by Carol Short, Owner, to appeal the Hattiesburg Historic Conservation Commission's Denial of the petition filed by Carol Short change the roof material to metal at 309 S. 19th Ave. The HHCC Denied on April 14, 2021.
3. **2021-399** Approve or Deny a petition filed by Munn Enterprises, Inc., Representative, and NSD Holding, LLC, Owner, to request a variance from Section 10, Table 10.6-2 "Sign Message Area" for Pole Signs, "For B-5- 2 square feet sign message area/1' street frontage up to 400 square feet" and instead allow for a maximum message area square footage of four hundred sixty-eight (468) square feet, for a variance of sixty-eight (68) square feet for proposed signage located 4700 Hardy Street (Parcel 051Q-12-029.000, PPIN 18266, Ward 3). The Board of Adjustment recommended to Deny on May 5, 2021 - tabled at the May 18, 2021 council meeting.
4. **2021-773** Adopt Resolutions adjudicating and directing the placement as an assessment for the cleanup costs and applicable penalties, not to exceed the values prescribed by State law, against the following properties.
5. **2021-793** Adopt a Resolution authorizing Requisition No. 83 from the Project Fund Construction Account in connection with a certain loan agreement dated August 18, 2016, by and between the Mississippi Development Bank and the City of Hattiesburg.
6. **2021-798** Approve Supplemental Agreement No. 1 & Final with DNA Underground, LLC to adjust quantities to actual and record overruns/underruns on the Sewer Improvements Phase XII project for a contract decrease of \$69,925.41; approve final acceptance of project and payment of final pay application; acknowledge receipt of closing documents and authorize Mayor to execute in triplicate.
7. **2021-797** Approve Change Order No. 1 with Webster Electric Co., Inc. in the additive amount of \$30,071.75 for the 38th Avenue Roadway Project and authorize the Mayor to execute in duplicate.
8. **2021-770** Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 209 Rebecca Avenue Alley with a monthly increase of \$18.23, and authorize the Mayor to execute the same.
9. **2021-771** Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 416 S 15th Avenue Alley with a monthly increase of \$33.23, and authorize the Mayor to execute the same.
10. **2021-777** Approve Lighting Agreement with Mississippi Power Company for additional lighting at 23 Annie Christie Drive with a monthly increase of \$22.59, and authorize the Mayor to execute the same.
11. **2021-787** Approve Lighting Agreement with Mississippi Power Company for additional lighting across the street from 216 E. 4th Street for a monthly increase of \$10.73, and authorize the Mayor to execute the same.
12. **2021-404** Acknowledge bids received April 22, 2021 for the Hardy Street Roundabout Project (STP 0210-00(037) LPA/108081-701000) and accept the bid from Warren Paving, Inc. in the amount of \$1,614,679.00 for the base bid and \$243,525.00 for Add Alternate #1, for a total contract of \$1,858,204.00; authorize Mayor to execute MDOT concurrence letter and contracts upon preparation.
13. **2021-784** Approve and accept the U.S. Department of the Treasury, Coronavirus Local Fiscal Recovery Fund award in the amount of \$12,875,821.00, established by the American Rescue Plan Act of 2021 to support pandemic response and economic recovery and authorize the Mayor to execute the same.
14. **2021-790** Approve Memorandum of Understanding between Hattiesburg Public School District and Delta Area Association for Improvement of Schools (DAAIS) and the City of Hattiesburg Police Department to participate in the program provided by DAAIS to HPSD for providing technology for reporting of school violence threats.

15. **- Deleted -**
16. **2021-778** Approve Contractor and Owner Agreement and a Housing Repair Grant Award to Denise Smith of 400 S. Tipton Street in an amount not to exceed \$10,000 according to the Housing Rehabilitation and Housing Programs Manual Section VIII (E). {Entitlement} and authorize the Mayor to execute in triplicate.
17. **2021-779** Approve Cancellation of Deed of Trust for Rose Toler, Grantor, for property at 722 Monroe Street, to City of Hattiesburg, Beneficiary, recorded in the Deed of Trust Book 1501 at Page 0643-0646 in the office of the Chancery Clerk of Forrest County, Mississippi, and authorize the Mayor to execute the same.
18. **2021-402** Approve and acknowledge receipt of Memorandum of Agreement between the City of Hattiesburg and Mississippi Department of Transportation (MDOT) for the Gordon's Creek Commons Pathway Project (STP-0210-00(040)LPA/108833-70100) for a grant in the amount of \$1,400,000.00 with a 80/20 match and authorize Mayor to execute in duplicate.
19. **2021-799** Authorize acquisition of a portion of a parcel of property identified as Forrest County Parcel No. 2-038A-15-020.00 (PPIN 012836) for the Hall Avenue Overpass Project: Acknowledge receipt of Appraisal Report; Determine the appraisal valuation of \$11,300 to be Just Compensation for the aforementioned portion of the parcel, however, Owner has requested the amount of property taken be reduced, thereby reducing the value of the parcel to \$10,000; Authorize Mayor to make a Fair Market Value Offer for the reduced amount of property of \$10,000; Authorize Mayor to execute any and all documents required to complete the transaction and issuance of manual check upon closing.
20. **2021-783** Acknowledge receipt of the award for the Substance Abuse and Mental Health Services Administration (SAMSHA) Treatment Drug Courts Grant in the amount of \$385,230 for the continuation of the Hattiesburg Behavioral Health Court Treatment Expansion project, covering the period May 31, 2021 through May 30, 2022.
21. **2021-804** Adopt a Resolution authorizing application for the Mississippi State Department of Health FY2022 Violence Against Women Act (VAWA) S.T.O.P. Grant Program, approving Memorandum of Agreement between the Hattiesburg Municipal Court and the Domestic Abuse Family Shelter, Inc., to establish the obligation of both entities with respect to the provision of services to eligible victims and authorize the Mayor to execute the same.
22. **2021-805** Approval of revised Interlocal Agreement between City of Hattiesburg and Dixie Community Utility Association, Inc., for certain utility services and authorize the Mayor to execute the same contingent upon the Attorney General's approval.

ROUTINE AGENDA

1. **2021-774** Ratification of Corrected Deeds documents filed in relation to Code Enforcement clean-up assessments.
2. **2021-788** Acknowledge receipt of request filed by Liz Cotten, Owner, to appeal the Hattiesburg Historic Conservation Commission's Denial of the petition filed by Liz and Miles Cotten to paint exterior brick at 1101 Corinne Street. The HHCC Denied on May 12, 2021. Set a public hearing before City Council on July 6, 2021 at 4:00 p.m. and authorize publication of Public Notice setting an Appeal Public Hearing.
3. **2021-794** Acknowledge receipt of three executed warranty deeds for property acquired for the Hall Avenue Overpass East Project (PPIN 039336, 012839 & 019194) from Stone Properties, LLC.
4. **2021-795** Acknowledge receipt of executed warranty deed for property acquired for the Hall Avenue Overpass East Project (PPIN 022050) from Curtis Gates.
5. **2021-796** Acknowledge receipt of executed warranty deed for property acquired for the Hall Avenue Overpass East Project (PPIN 022097) from Gladys Williams.
6. **2021-776** Acknowledge public notice announcing the pre-application process opening for home-owner housing assistance through the Community Development Division.
7. **2021-782** Acknowledge receipt of the two-quote docket for the period of April 26, 2021 through May 28, 2021 as provided for in 31-7-13(b) of the Mississippi Code of 1972.
8. **2021-791** Acknowledge receipt of Privilege Tax License monthly report May 2021.
9. **2021-789** Authorize submission of the FY2022 Mississippi State Department of Health, Office Against Interpersonal Violence, STOP Violence Against Women Act (VAWA) grant application. The grant budget is for a total of \$56,138.04 (\$42,103.52 federal/state funds and \$14,034.52 local match).
10. **2021-767** Approve and authorize issuance of manual checks for CDBG Program Claims per attached Memorandum. {Entitlement CDBG}
11. **2021-767** Approve and authorize issuance of manual checks for HOME Program Claims per attached Memorandum. {Entitlement HOME}
12. **2021-781** Approve and authorize issuance of manual checks for CDBG-CV Program Claims per attached Memorandum. {Entitlement CDBG-CV}
13. **2021-772** Approve the sale of grave spaces, per attached Memo's, Receipts, and Deeds.
14. **2021-800** Approve claims docket for the period ending May 31, 2021.

In Memoriam:

- Mr. Woodrow Hinton

- Ms. Samantha Zinn
- Mrs. Anntrunett Gardner Gaddis
- Mr. James Terrell
- Miss Rosa Pantaleon “Panta” Martinez
- Mrs. Legirtha Jasper

Meeting Adjourn

Call to Order

BE IT REMEMBERED that the **regular meeting of the Hattiesburg City Council was held at 10:00 a.m. Tuesday, June 8, 2021**, in the Jackie Dole Community Center Auditorium; same being a recessed meeting from June 7, 2021.

Those present included Mayor Toby Barker and members of the City Council Jeffrey George, Ward 1; Carter Carroll, Ward 3; Mary Dryden, Ward 4; and Nicholas Brown, Ward 5. Others in attendance included City Attorney, Randy Pope; Clerk of Council, Ronda S. Cole; Deputy Clerk of Council, Lisa Luu; City staff members; media; and the public. Absent: Council Member Deborah Delgado, Ward 2; Director of Administration/City Clerk, Kermas Eaton.

Council President Carroll Called the meeting to order.

Call to Prayer and Pledge of Allegiance

The prayer was given by Attorney Randy Pope.

The Pledge of Allegiance was led by Council President Carroll.

Presentation Agenda

The PRESENTATION AGENDA came before the Council.

There were no presentations at this time.

POLICY AGENDA

The POLICY AGENDA came before the Council.

1. **2021-769** Approve the minutes for the May 17, 18 and 28, 2021 meetings of the City Council.
 Attachments: 5-17-2021 PH, AR Mins.
 5-18-2021 Mins.
 5-28-2021 SC Mins.

A MOTION was made by Council Member George and seconded by Council Member Brown to Approve the minutes for the May 17, 18 and 28, 2021 meetings of the City Council.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

2. **2021-785** Approve or Deny the petition filed by filed by Carol Short, Owner, to appeal the Hattiesburg

Historic Conservation Commission’s Denial of the petition filed by Carol Short change the roof material to metal at 309 S. 19th Ave. The HHCC Denied on April 14, 2021.

Attachments: [309 S 19th Ave April HHCC minutes](#)
[309 S 19th Ave data sheets](#)
[309 S 19th Ave - Metal roof - Appeal form](#)

A MOTION was made by Council Vice President Dryden and seconded by Council Member George to Approve the petition filed by Carol Short, Owner, to appeal the Hattiesburg Historic Conservation Commission’s Denial of the petition with the following conditions: that the homeowner applies for a permit, have the City inspect and oversight by a licensed contractor.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

3. **2021-399** Approve or Deny a petition filed by Munn Enterprises, Inc., Representative, and NSD Holding, LLC, Owner, to request a variance from Section 10, Table 10.6-2 “Sign Message Area” for Pole Signs, “For B-5- 2 square feet sign message area/1’ street frontage up to 400 square feet” and instead allow for a maximum message area square footage of four hundred sixty-eight (468) square feet, for a variance of sixty-eight (68) square feet for proposed signage located 4700 Hardy Street (Parcel 051Q-12-029.000, PPIN 18266, Ward 3). The Board of Adjustment recommended to Deny on May 5, 2021 - tabled at the May 18, 2021 council meeting.

Attachments: [BOA Item A](#)
[MAY BOA Minutes](#)

A MOTION was made by Council President Carroll and seconded by Council Member George to Take petition filed by Munn Enterprises, Inc., Representative, and NSD Holding, LLC, Owner, to request a variance from Section 10, Table 10.6-2 “Sign Message Area” for Pole Signs, “For B-5- 2 square feet sign message area/1’ street frontage up to 400 square feet” and instead allow for a maximum message area square footage of four hundred sixty-eight (468) square feet, for a variance of sixty-eight (68) square feet for proposed signage located 4700 Hardy Street (Parcel 051Q-12-029.000, PPIN 18266, Ward 3) from the table.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 – Delgado

A MOTION was made by Council President Carroll and seconded by Council Member George to Approve a petition filed by Munn Enterprises, Inc., Representative, and NSD Holding, LLC, Owner, to request a variance from Section 10, Table 10.6-2 “Sign Message Area” for Pole Signs, “For B-5- 2 square feet sign message area/1’ street frontage up to 400 square feet” and instead allow for a maximum message area square footage of four hundred sixty-eight (468) square feet, for a variance of sixty-eight (68) square feet for proposed signage located 4700 Hardy Street (Parcel 051Q-12-029.000, PPIN 18266, Ward 3).

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

4. **2021-773** Adopt Resolutions adjudicating and directing the placement as an assessment for the cleanup costs and applicable penalties, not to exceed the values prescribed by State law, against the following properties.

Attachments: Adopt Resolutions of Adjudication 6 8 2021
1. 307 Conti Street Adjudication Resolution
2. 416 S. 15th Avenue Adjudication Resolution
3. 707 E. 9th Street Adjudication Resolution

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Adopt Resolutions (#2021-47-49) adjudicating and directing the placement as an assessment for the cleanup costs and applicable penalties, not to exceed the values prescribed by State law, against the following properties.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

5. **2021-793** Adopt a Resolution authorizing Requisition No. 83 from the Project Fund Construction Account in connection with a certain loan agreement dated August 18, 2016, by and between the Mississippi Development Bank and the City of Hattiesburg.

Attachments: 2016 Bond Resolution No. 83
Project Resolution Requisition 2016 Bonds No. 83

A MOTION was made by Council Vice President Dryden and seconded by Council Member George to Adopt a Resolution (#2021-50) authorizing Requisition No. 83 from the Project Fund Construction Account in connection with a certain loan agreement dated August 18, 2016, by and between the Mississippi Development Bank and the City of Hattiesburg.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 – Delgado

6. **2021-798** Approve Supplemental Agreement No. 1 & Final with DNA Underground, LLC to adjust quantities to actual and record overruns/underruns on the Sewer Improvements Phase XII project for a contract decrease of \$69,925.41; approve final acceptance of project and payment of final pay application; acknowledge receipt of closing documents and authorize Mayor to execute in triplicate.

Attachments: Sewer XII Sup Agr No. 1
Sewer XII Closing Docs

A MOTION was made by Council Member George and seconded by Council Member Brown to Approve Supplemental Agreement No. 1 & Final with DNA Underground, LLC to adjust quantities to actual and record overruns/underruns on the Sewer Improvements Phase XII project for a contract decrease of \$69,925.41; approve final acceptance of project and payment of final pay application; acknowledge receipt of closing documents and authorize Mayor to execute in triplicate.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

7.

2021-797

Approve Change Order No. 1 with Webster Electric Co., Inc. in the additive amount of \$30,071.75 for the 38th Avenue Roadway Project and authorize the Mayor to execute in duplicate.
- Attachments: 38th Avenue Roadway Imps-CO

A MOTION was made by Council Member George and seconded by Council Member Brown to Approve Change Order No. 1 with Webster Electric Co., Inc. in the additive amount of \$30,071.75 for the 38th Avenue Roadway Project and authorize the Mayor to execute in duplicate.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

8.

2021-770

Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 209 Rebecca Avenue Alley with a monthly increase of \$18.23, and authorize the Mayor to execute the same.
- Attachments: MS Power-209 Rebecca Ave Alley

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 209 Rebecca Avenue Alley with a monthly increase of \$18.23, and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

9.

2021-771

Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 416 S 15th Avenue Alley with a monthly increase of \$33.23, and authorize the Mayor to execute the same.
- Attachments: MS Power-416 S 15th Ave Alley

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Approve Lighting Agreement with Mississippi Power Company for additional lighting at the 416 S 15th Avenue Alley with a monthly increase of \$33.23, and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

10.

2021-777

Approve Lighting Agreement with Mississippi Power Company for additional lighting at 23 Annie Christie Drive with a monthly increase of \$22.59, and authorize the Mayor to execute the same.

Attachments: MS Power-23 Annie Christie Drive Authorization

A MOTION was made by Council Member Brown and seconded by Council Vice President Dryden to Approve Lighting Agreement with Mississippi Power Company for additional lighting at 23 Annie Christie Drive with a monthly increase of \$22.59, and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 11. 2021-787** Approve Lighting Agreement with Mississippi Power Company for additional lighting across the street from 216 E 4th Street for a monthly increase of \$10.73, and authorize the Mayor to execute the same.

Attachments: MS Power-216 E 4th Street Light Authorization

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Approve Lighting Agreement with Mississippi Power Company for additional lighting across the street from 216 E 4th Street for a monthly increase of \$10.73, and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 12. 2021-404** Acknowledge bids received April 22, 2021 for the Hardy Street Roundabout Project (STP 0210-00(037)LPA/108081-701000) and accept the bid from Warren Paving, Inc. in the amount of \$1,614,679.00 for the base bid and \$243,525.00 for Add Alternate #1, for a total contract of \$1,858,204.00; authorize Mayor to execute MDOT concurrence letter and contracts upon preparation.

Attachments: 108081-701000 Hardy Roundabout Cert Bid Tab
Completed SEC OCR-481-LPA (Roundabout)
Award Checklist
Evaluation of Bids
MDOT Concurr Request Ltr

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Acknowledge bids received April 22, 2021 for the Hardy Street Roundabout Project (STP 0210-00(037)LPA/108081-701000) and accept the bid from Warren Paving, Inc. in the amount of \$1,614,679.00 for the base bid and \$243,525.00 for Add Alternate #1, for a total contract of \$1,858,204.00; authorize Mayor to execute MDOT concurrence letter and contracts upon preparation.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 13. 2021-784** Approve and accept the U.S. Department of the Treasury, Coronavirus Local Fiscal Recovery

Fund award in the amount of \$12,875,821.00, established by the American Rescue Plan Act of 2021 to support pandemic response and economic recovery and authorize the Mayor to execute the same.

Attachments: AcceptanceOfAwardTerms

A MOTION was made by Council Vice President Dryden and seconded by Council Member George to Approve and accept the U.S. Department of the Treasury, Coronavirus Local Fiscal Recovery Fund award in the amount of \$12,875,821.00, established by the American Rescue Plan Act of 2021 to support pandemic response and economic recovery and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

14.

2021-790

Approve Memorandum of Understanding between Hattiesburg Public School District and Delta Area Association for Improvement of Schools (DAAIS) and the City of Hattiesburg Police Department to participate in the program provided by DAAIS to HPSD for providing technology for reporting of school violence threats.

Attachments: Hattiesburg Public School DAAIS MOU

A MOTION was made by Council Member Brown and seconded by Council Vice President Dryden to Approve Memorandum of Understanding between Hattiesburg Public School District and Delta Area Association for Improvement of Schools (DAAIS) and the City of Hattiesburg Police Department to participate in the program provided by DAAIS to HPSD for providing technology for reporting of school violence threats.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 – Delgado

15.

- Deleted -

16.

2021-778

Approve Contractor and Owner Agreement and a Housing Repair Grant Award to Denise Smith of 400 S. Tipton Street in an amount not to exceed \$10,000 according to the Housing Rehabilitation and Housing Programs Manual Section VIII (E). {Entitlement} and authorize the Mayor to execute in triplicate.

Attachments: COHCD Contractor Owner Agreement_D Smith
Grant Agreement -D. Smith (\$10-) 06.8.21

A MOTION was made by Council Member Brown and seconded by Council Vice President Dryden to Approve Contractor and Owner Agreement and a Housing Repair Grant Award to Denise Smith of 400 S. Tipton Street in an amount not to exceed \$10,000 according to the Housing Rehabilitation and Housing Programs Manual Section VIII (E). {Entitlement} and authorize the Mayor to execute in triplicate.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 17. 2021-779** Approve Cancellation of Deed of Trust for Rose Toler, Grantor, for property at 722 Monroe Street, to City of Hattiesburg, Beneficiary, recorded in the Deed of Trust Book 1501 at Page 0643-0646 in the office of the Chancery Clerk of Forrest County, Mississippi, and authorize the Mayor to execute the same.

Attachments: Release of Deed of Trust R. Toler - Monroe Street 5.26.21

A MOTION was made by Council Member Brown and seconded by Council Member George to Approve Cancellation of Deed of Trust for Rose Toler, Grantor, for property at 722 Monroe Street, to City of Hattiesburg, Beneficiary, recorded in the Deed of Trust Book 1501 at Page 0643-0646 in the office of the Chancery Clerk of Forrest County, Mississippi, and authorize the Mayor to execute the same.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 18. 2021-402** Approve and acknowledge receipt of Memorandum of Agreement between the City of Hattiesburg and Mississippi Department of Transportation (MDOT) for the Gordon's Creek Commons Pathway Project (STP-0210-00(040)LPA/108833-70100) for a grant in the amount of \$1,400,000.00 with a 80/20 match and authorize Mayor to execute in duplicate.

Attachments: 108833 - MOA - Gordon's Creek Hattiesburg

A MOTION was made by Council Vice President Dryden and seconded by Council Member George to Approve and acknowledge receipt of Memorandum of Agreement between the City of Hattiesburg and Mississippi Department of Transportation (MDOT) for the Gordon's Creek Commons Pathway Project (STP-0210-00(040)LPA/108833-70100) for a grant in the amount of \$1,400,000.00 with a 80/20 match and authorize Mayor to execute in duplicate.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 – Delgado

- 19. 2021-799** Authorize acquisition of a portion of a parcel of property identified as Forrest County Parcel No. 2-038A-15-020.00 (PPIN 012836) for the Hall Avenue Overpass Project: Acknowledge receipt of Appraisal Report; Determine the appraisal valuation of \$11,300 to be Just Compensation for the aforementioned portion of the parcel, however, Owner has requested the amount of property taken be reduced, thereby reducing the value of the parcel to \$10,000; Authorize Mayor to make a Fair Market Value Offer for the reduced amount of property of \$10,000; Authorize Mayor to execute any and all documents required to complete the transaction and issuance of manual check upon closing.

Attachments: Stone Properties PPIN 012836
Stone3 ppin 012836

A MOTION was made by Council Member George and seconded by Council Vice President Dryden to Authorize acquisition of a portion of a parcel of property identified as Forrest County Parcel No. 2-038A-15-020.00 (PPIN 012836) for the Hall Avenue Overpass Project: Acknowledge receipt of Appraisal Report; Determine the appraisal valuation of \$11,300 to be Just Compensation for the aforementioned portion of the

parcel, however, Owner has requested the amount of property taken be reduced, thereby reducing the value of the parcel to \$10,000; Authorize Mayor to make a Fair Market Value Offer for the reduced amount of property of \$10,000; Authorize Mayor to execute any and all documents required to complete the transaction and issuance of manual check upon closing.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 20. 2021-783** Acknowledge receipt of the award for the Substance Abuse and Mental Health Services Administration (SAMSHA) Treatment Drug Courts Grant in the amount of \$385,230 for the continuation of the Hattiesburg Behavioral Health Court Treatment Expansion project, covering the period May 31, 2021 through May 30, 2022.

Attachments: SAMHSA_NOA_5H79TI081923-03

A MOTION was made by Council Vice President Dryden and seconded by Council Member Brown to Acknowledge receipt of the award for the Substance Abuse and Mental Health Services Administration (SAMSHA) Treatment Drug Courts Grant in the amount of \$385,230 for the continuation of the Hattiesburg Behavioral Health Court Treatment Expansion project, covering the period May 31, 2021 through May 30, 2022.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

ROUTINE AGENDA

THE ROUTINE AGENDA came before the Council.

A MOTION was made by Council Member George and seconded by Council Vice President Dryden to approve the Routine Agenda.

There being no discussion, the Motion received the affirmative vote of the Council as follows:

Yeas: 4 - George, Carroll, Dryden and Brown

Nays: 0

Absent: 1 - Delgado

- 1. 2021-774** Ratification of Corrected Deeds documents filed in relation to Code Enforcement clean-up assessments.

Attachments: Ratification of Corrected Deeds 6 8 2021
DIVERSIFIED REAL ESTATE HOLDING 3407 TILTREE RD. CORRECTED
AND RECORDED RELEASE OF LIEN
PAUL SILL 3407 TILTREE RD. CORRECTED AND RECORDED RELEASE
OF LIEN

- 2. 2021-788** Acknowledge receipt of request filed by Liz Cotten, Owner, to appeal the Hattiesburg Historic Conservation Commission’s Denial of the petition filed by Liz and Miles Cotten to paint exterior

brick at 1101 Corinne Street. The HHCC Denied on May 12, 2021. Set a public hearing before City Council on July 6, 2021 at 4:00 p.m. and authorize publication of Public Notice setting an Appeal Public Hearing.

Attachments: [Cotten Appeal 2021 1101 Corinne St](#)
[Public Notice - Public Hearing - 1101 Corinne St](#)

3. **2021-794** Acknowledge receipt of three executed warranty deeds for property acquired for the Hall Avenue Overpass East Project (PPIN 039336, 012839 & 019194) from Stone Properties, LLC.

Attachments: [Stone Properties PPIN 012839](#)
[Stone Properties PPIN 039336](#)
[Stone Properties PPIN 019194](#)
4. **2021-795** Acknowledge receipt of executed warranty deed for property acquired for the Hall Avenue Overpass East Project (PPIN 022050) from Curtis Gates.

Attachments: [Warranty Deed - Curtis Gates PPIN 022050](#)
5. **2021-796** Acknowledge receipt of executed warranty deed for property acquired for the Hall Avenue Overpass East Project (PPIN 022097) from Gladys Williams.

Attachments: [Warranty Deed - Gladys Williams-Signed](#)
6. **2021-776** Acknowledge public notice announcing the pre-application process opening for home-owner housing assistance through the Community Development Division.

Attachments: [Pre-App Notice_052021](#)
7. **2021-782** Acknowledge receipt of the two-quote docket for the period of April 26, 2021 through May 28, 2021 as provided for in 31-7-13(b) of the Mississippi Code of 1972.

Attachments: [20210528084513](#)
8. **2021-791** Acknowledge receipt of Privilege Tax License monthly report May 2021.

Attachments: [Privilege Tax License Mthly report May 2021](#)
9. **2021-789** Authorize submission of the FY2022 Mississippi State Department of Health, Office Against Interpersonal Violence, STOP Violence Against Women Act (VAWA) grant application. The grant budget is for a total of \$56,138.04 (\$42,103.52 federal/state funds and \$14,034.52 local match).

Attachments: [City of Hattiesburg - Cover Sheet](#)
[City of Hattiesburg - Project Narrative](#)
[City of Hattiesburg - Budget & Narrative](#)
[City of Hattiesburg - Work Plan](#)
10. **2021-767** Approve and authorize issuance of manual checks for CDBG Program Claims per attached Memorandum. {Entitlement CDBG}

Attachments: [Manual Check Memo 06082021_CDBG](#)
[Residential Designs_303 JC Killingsworth](#)
11. **2021-767** Approve and authorize issuance of manual checks for HOME Program Claims per attached Memorandum. {Entitlement HOME}

Attachments: [BCS_104 Donald_01](#)
[Manual Check Memo 06082021_HOME](#)
12. **2021-781** Approve and authorize issuance of manual checks for CDBG-CV Program Claims per attached Memorandum. {Entitlement CDBG-CV}

Attachments: [Hburg Clinic_022021](#)
13. **2021-772** Approve the sale of grave spaces, per attached Memo's, Receipts, and Deeds.

Attachments: Memo's (06-08-2021)
 Receipts (06-08-2021)
 Deeds (06-08-2021)

14. 2021-800 Approve claims docket for the period ending May 31, 2021.

Attachments: Docket 21.05.31
 DT 21.05.31
 053121 Docket payment fund

In Memoriam:

A MOTION was made by Council President Carroll to Adjourn the meeting in memory of:

- Mr. Woodrow Hinton
- Ms. Samantha Zinn
- Mrs. Anntrunett Gardner Gaddis
- Mr. James Terrell
- Miss Rosa Pantaleon “Panta” Martinez
- Mrs. Legirtha Jasper

Meeting Recessed

Council President Carroll declared the **meeting recessed at 10:18 a.m., this 8th day of June, 2021**, by unanimous consent, until the 21st day of June, 2021.

ATTEST:

APPROVE:

Clerk of Council

Council President

ATTEST AND CERTIFY:

APPROVE:

City Clerk

Mayor



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Take from the table to Approve or Deny a petition filed by Alexandria Flowers and April Warnsley, Applicants, and Kenneth Cooley, Owner, to request a Conditional Use as "Club and Bar" in B-2 (Neighborhood Business) District as defined by the LDC for a certain property located at 340 N 25th Avenue (Ward 4). The Planning Commission recommended to Approve as a "Hookah Bar" on May 10, 2021.
File Number: 2021-398
Minute Book #MB 2021-124 / Tabled

Summary

340 N 25th Avenue – Conditional Use - "Club and Bar"

Recommendation Statement

340 N 25th Avenue – Conditional Use - "Club and Bar"

Please place this on the June 22, 2021 City Council meeting for consideration.

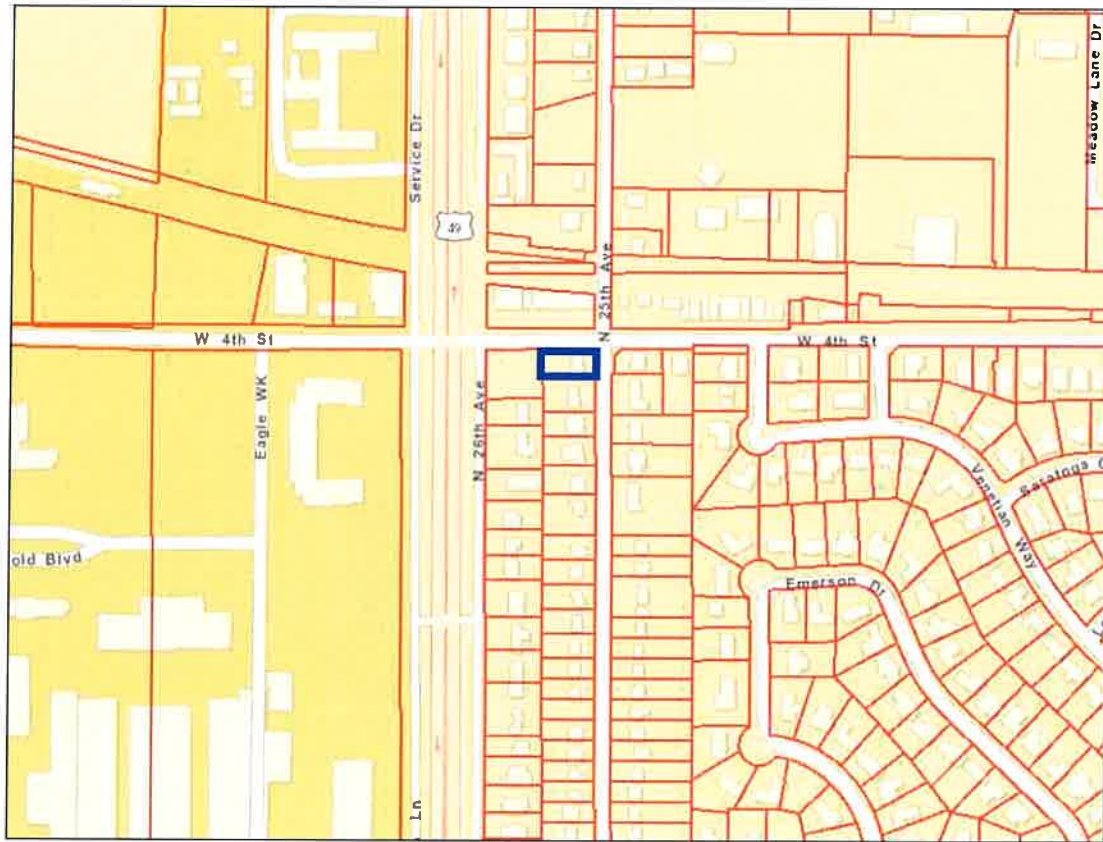
SUBJECT PARCEL: 340 N 25th Ave

Alexandria Flowers and April Warnsley, Applicants and Kenneth Cooley, Owner

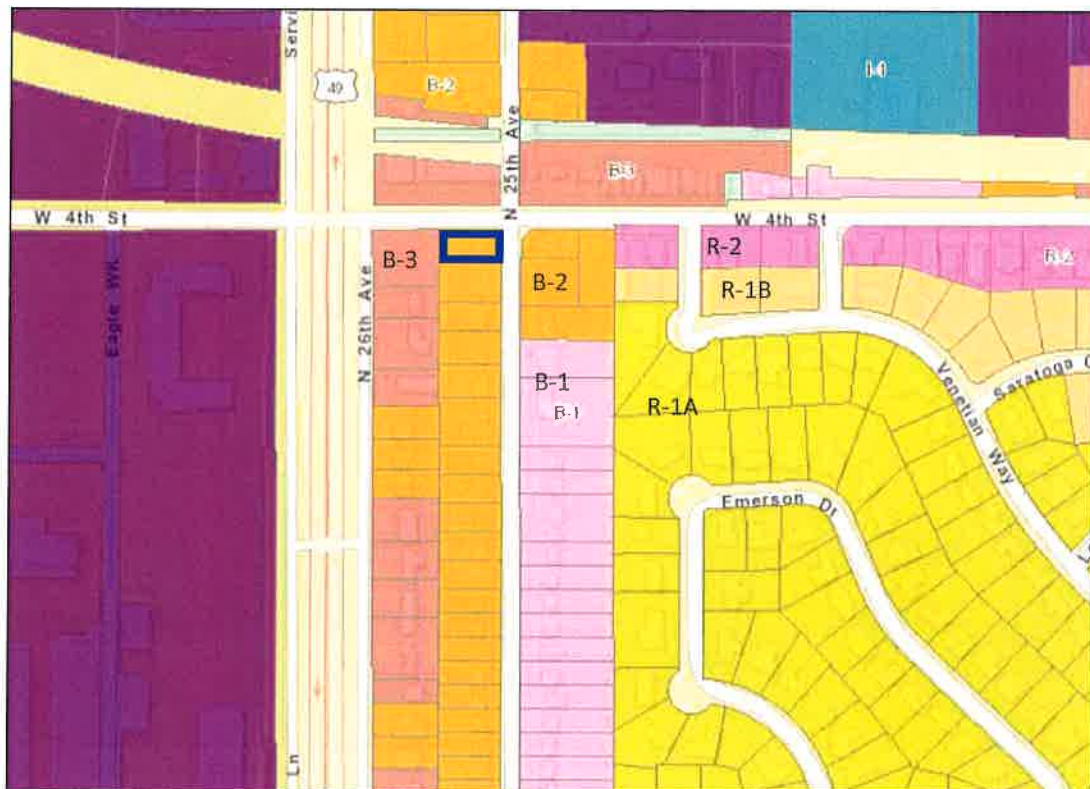
The petitioners request a Conditional Use as "Club and Bar" in B-2 (Neighborhood Business) District as defined by the LDC for a certain property located at 340 N 25th Avenue (Parcel 2-028J-08-168.00, PPIN 26584; Ward 4).



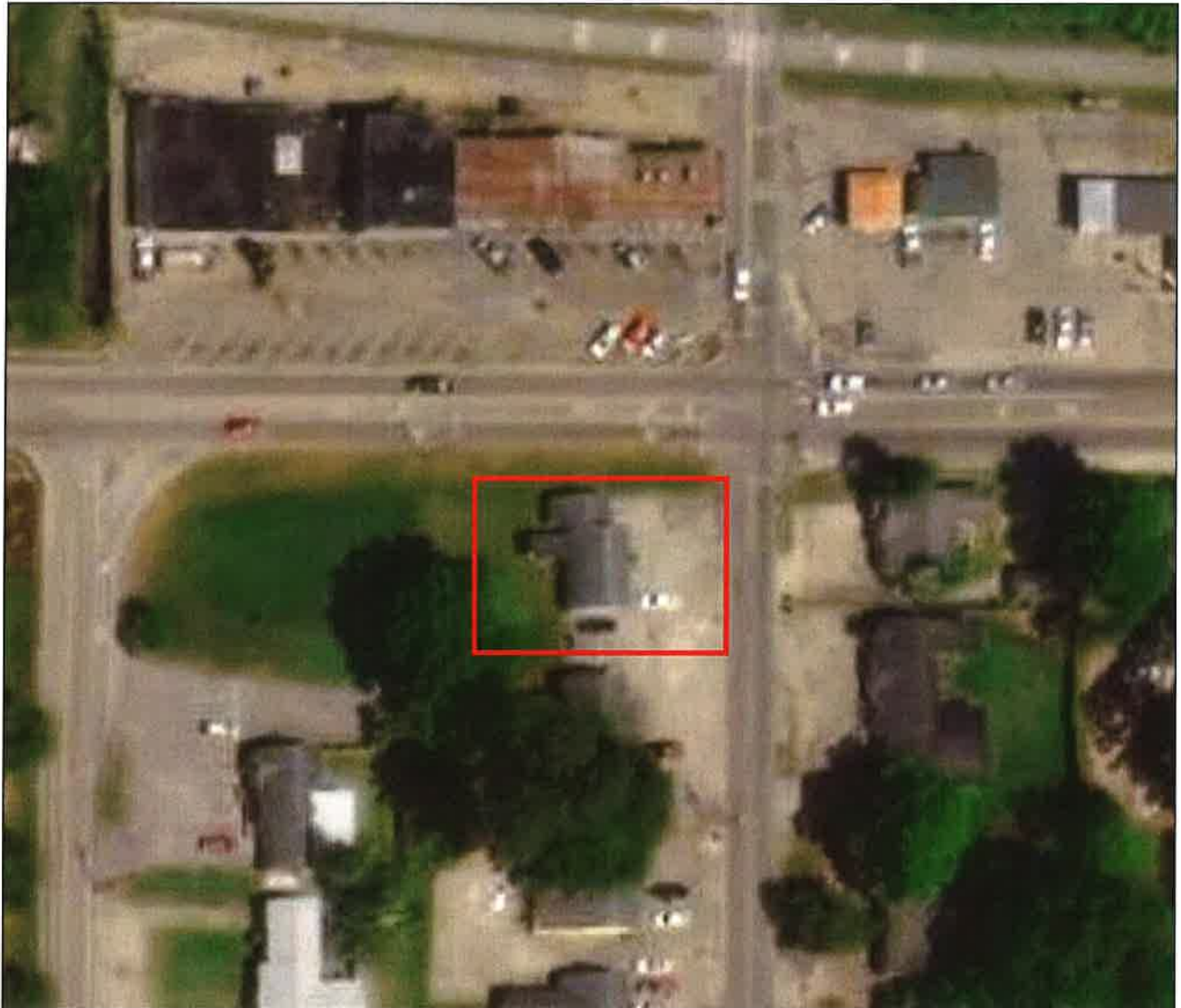
Vicinity Map—Ward 4



Zoning—B-2



Site Aerial



SURROUNDING AREA

Northern Direction: B-3 (Community Business) District/ Restaurant and Bar



**Southern Direction: B-2
(Neighborhood Business) District/
Residence**

**Eastern Direction: B-2
(Neighborhood Business) District/
Law Office**



**Western Direction: B-3
(Community Business) District/
Commercial**





**Planning Commission
Case Fact Sheet**

Name of Petitioner: Alexandria Flowers and April Warnsley, Applicants; Kenneth Cooley, Owner

Address of Property:	Tax Parcel	PPIN:	Ward:
340 N 25 th Avenue	2-028J-08-168.00	21836	4

Request: **Conditional Use (Multi-Family Residential)**

Purpose of Request: To consider an application to request a Conditional Use as "Club and Bar" in B-2 (Neighborhood Business) District as defined by the LDC for a certain property located at 340 N 25th Avenue (Parcel 2-028J-08-168.00, PPIN 26584; Ward 4).

Applicant Summary: See Attached

Applicable Regulations:

SECTION 4

Zoning Districts Established

4.5.9 B-2 Neighborhood Business District: The purpose of the B-2 District is to provide for retail and personal service uses in locations convenient to residential neighborhoods consistent with comprehensive planning policies. This district is consistent with the Neighborhood Business District in the Comprehensive Plan.

5.4.15 Additional Conditions for Use:

5.4.15.1 Amplified music, loud speakers, and similar noise devices shall not be permitted outdoors. Noise emanating from the club shall not exceed ambient noise levels in the surrounding area at a distance of more than 100 feet from any point of the property containing the club.

5.4.15.2 Off-premises parking for bars in B3 is not permitted.

Present Zoning: This parcel is currently zoned B-2 (Neighborhood Business) District

Present Use: Vacant; most recent use was a barbershop (2020).

Future Land Use: Community Business District

Surrounding Zoning and Land Use:
North: B-3 (Community Business) District/ Restaurant and Bar
South: B-2 (Neighborhood Business) District/ Residence
East: B-2 (Neighborhood Business) District/ Law Office
West: B-3 (Community Business) District/ Commercial

Most Nearly Bounded By (streets): The parcel is most nearly bounded to the north by W 4th Street, to the east by N 25th Avenue, to the south by Quinn Street, and to the west by the US 49 N frontage road. The parcel is accessible by N 25th Ave.

Letters or Concerns stated: The Planning Division Office has not received any letters or other written communications relative to this case, as of April 21, 2021.

History / Background: The petitioners met with Staff in Pre-Application to discuss a hookah bar and lounge use on the subject property. The proposed business would allow for hookah smoking and on-premises beer/light wine sales. Hookahs must be smoked outdoors, per the City of Hattiesburg Smoking Ordinance.

A zoning change to B-3 has also been requested for the subject property.

Option: **Basis for approval:**

Applicable conditions listed in 5.4.15 Club and Bars.

12.3.3.2 Additional Approval Criteria. In addition to the standards [5.4.15], the applicant for a request for the Planning Commission to approve a use shall be required to demonstrate that his/her proposal addresses the following additional requirements, except that the Planning Commission may waive any one or more criteria that it determines are not applicable based upon the expected impact of the proposal.

- i. Determination that adequate public facilities and services will be available concurrent with the impacts of the development as evidenced by letters of sufficiency from utilities and schools and a determination by the city engineer that the available capacity of existing streets can safely provide access to the site.
- ii. The proposed development will be compatible with surrounding uses and will protect adjacent properties through the following measures:
 - Protection of privacy. The proposed plan shall provide reasonable visual and auditory privacy for all dwelling units located within and adjacent to

the site. Fences, walls, barriers and / or vegetation shall be arranged to protect and enhance the property and to enhance the privacy of on-site and neighboring occupants.

- Protection of use and enjoyment. The proposed plan shall be designed and arranged to have minimal negative impact on the use and enjoyment of adjoining property.
- Compatible design and integration. The use meets all design criteria required by this Code that apply and is designed to integrate well both on and off site.

Conditional Use (2 pages)

12.3.3.1 Compliance Required. Uses requiring Planning Commission approval, as noted in the Tables of Uses in Section 5 of this Code, shall be approved subject to this Section. Any application for such use must comply with all applicable standards that apply to similar uses and properties in the zoning district in general, the specific conditions listed for that use in Section 5, and the following criteria. Where conflicts exist, the Planning Commission shall determine which criteria apply on a case by case basis.

1. Does this application meet the conditions set forth in Section 5 for the requested use? If yes, please explain.

Yes. The conditions for parking suggestions are met by providing an authorization letter from the adjacent property owners permitting the use of their parking spaces.

2. Describe the affects the proposed use of utilities and facilities will have on the community.

There will not be any adverse impact on the use of utilities at this time.

3. Describe how the size of the site is appropriate for the proposed use.

The size of the site accommodates the use for small lounge designation. The parcel is 128' x 71' which provides additional space for development.

4. Will there be any additional pedestrian or vehicular traffic generated by the proposed use? _____

If yes, please explain:

Yes, there will be a maximum 25 people per occupancy which will require additional parking. A total of 8 spaces are required and the remaining spaces will be accommodated by the adjacent site.

5. Will there be any elevation in the noise level resulting from this proposed use? No

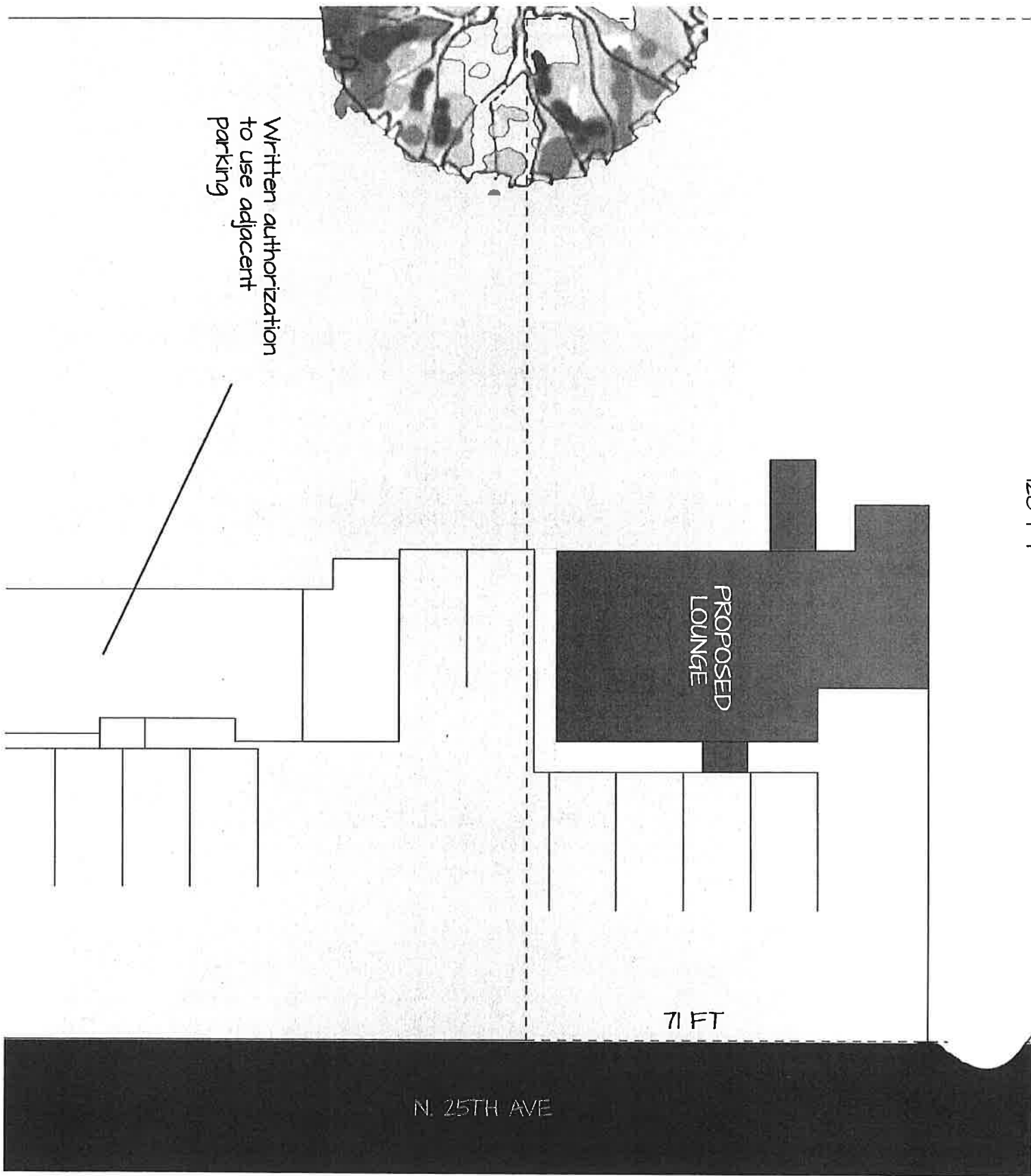
If yes, please explain:

6. What is the expected number of customers/employees per day? 25

7. Parking Requirements:

Commercial/Industrial: Paved parking will be provided for 8 vehicles, and
1 ADA vehicle(s); with 1 loading spaces.

For more information please reference the Land Development Code Section 12.3.3.2.



**MINUTES OF THE
SPECIAL CALLED MEETING OF THE
HATTIESBURG PLANNING COMMISSION
May 10, 2021**

The Hattiesburg Planning Commission did meet in a special called session on May 10, 2021 at 1:00 p.m. at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Mark Miller, Chair, presided over the meeting. Due to ongoing COVID-19 pandemic, CDC recommended social distancing guidelines were observed. Staff utilized GoToMeeting, an online meeting, desktop sharing, and telephone/video conferencing platform to allow Commissioners and petitioners to participate remotely. A quorum was indicated and the attendance was as follows:

Commissioners Present: Dick Conville (via GoToMeeting)
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Mark Miller, Chair
Rhoda A. Pickett (via GoToMeeting)
Kenneth Waites
Ricardo Bryant

Commissioners Absent: Elayne Lockett
Rebekah Ray

Also Present: Andrew Ellard, Director Urban Development
Ginger Maddox Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner
Nathan Satcher, Planning Office Manager (via GoToMeeting)

Chair Miller declared the meeting of the Hattiesburg Planning Commission open and in session at 1:05 PM.

AGENDA REVIEW

There came the matter of the May 2021 Special Called Agenda. A request was made by Chair Miller for a motion to approve the May 2021 Special Called Agenda. A motion was made to approve the May 2021 Special Called Agenda by Commissioner Pickett and seconded by Commissioner Bryant.

Commissioners voting aye: Dick Conville (via GoToMeeting)
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Mark Miller, Chair
Rhoda A. Pickett (via GoToMeeting)
Kenneth Waites
Ricardo Bryant

Commissioners voting nay: None

INTRODUCTIONS

Commissioners introduced themselves.

PUBLIC HEARING – PLANNING COMMISSION

There came the matter of Item A (Conditional Use), to consider a request that has been filed by Alexandria Flowers and April Warnsley, Applicants, and Kenneth Cooley, Owner, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use as “Club and Bar” in B-2 (Neighborhood Business) District as defined by the LDC for a certain property located at 340 N 25th Avenue (Parcel 2-028J-08-168.00, PPIN 26584; Ward 4).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	April Warnsley	10 Guilford Place	Hattiesburg, MS
	Michael Brouton	10 Guilford Place	Hattiesburg, MS
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

April Warnsley and Michael Brouton presented the application. Ms. Warnsley stated that she and her partner, Alexandria Flowers, proposed opening a hookah lounge to create a small, intimate setting as an alternative to the large club atmospheres. She stated that they had added a patio on to the back of the building for outdoor space and would set up tents in the grassy area in the back yard for outdoor smoking of the hookah pipes. Mr. Brouton provided a brief history of hookah pipes and stated that they are increasingly very popular with young people.

Commissioners Hinton and Pickett inquired to the hours of operation. Ms. Warnsley stated that they were likely only to open on weekends. They would probably be open 7pm-12am Friday and Saturday, and late afternoons on Sundays. Commissioner Conville stated that recently Kenneth Cooley, the property owner, brought a rezoning request for the property through and had mentioned a problem with crime in the area. He asked Ms. Warnsley what her plans were for security on the site. Ms. Warnsley stated that she spoke to a security company and considered parking lot security or hiring off-duty police officers if needed. She stated she has also considered limiting age entry to 25 and up. She stated there is a police camera at the corner of 4th St. and N 25th Ave. Mrs. Lowrey clarified to the Commission that there is no requirement in the LDC that bars provide security. Commissioner Hinton requested that Ms. Warnsley clarify her parking. Ms. Warnsley stated she has a parking agreement that allows for additional customer parking at 338 N 25th Ave. (next door) to her business.

Chair Miller declared the Public Hearing closed and the Business Meeting open to vote on the request (Item A). Commissioner Dickerson made a motion to approve the request for a conditional use specifically for a hookah bar. Commissioner Conville seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well. Commissioner Dawe abstained due to his professional relationship with the property owner.

Commissioners voting aye: Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Mark Miller, Chair
Rhoda A. Pickett (via GoToMeeting)
Ricardo Bryant

Commissioners voting nay: None

Commissioners abstaining: Charles Dawe (via GoToMeeting)
Dick Conville (via GoToMeeting)

Kenneth Waites

BUSINESS MEETING

Having no further business, Commissioner Hinton made a motion to adjourn the meeting. The motion was seconded by Commissioner Pickett. The meeting was adjourned at 1:28 PM.

Mark Miller, Chair

Ginger Maddox Lowrey, AICP, CFM, Planning Division Manager



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Adopt an Ordinance for the petition filed by The City of Hattiesburg to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management. The Planning Commission recommended to Approve on June 2, 2021.
File Number: 2021-808
Minute Book #

Summary

Adopt an Ordinance amending the Land Development Code – Section 5, 7, 9, & 13

Recommendation Statement

Adopt an Ordinance to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. .

Please place this on the June 22, 2021 City Council meeting for consideration.

Prepared by: City of Hattiesburg
City Clerk's Office
P.O. Box 1898
Hattiesburg, MS 39403-1898
(601)545-4550

Return to: City of Hattiesburg
City Clerk's Office
P.O. Box 1898
Hattiesburg, MS 39403
(601)545-4550

INDEXING INSTRUCTIONS:

**ORDINANCE NUMBER _____
OF THE
CITY OF HATTIESBURG, MISSISSIPPI**

**AN ORDINANCE AMENDING THE LAND DEVELOPMENT CODE,
ORDINANCE NUMBER 3209, AS AMENDED, SECTION 5 USE REGULATIONS AND
CONDCTIONS, SECTION 7 STANDARDS OF DESIGN, SECTION 9 ENVIRONMENTAL
REGULATIONS, AND 13 DEFINITIONS
FOR THE CITY OF HATTIESBURG, MISSISSIPPI.**

**BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF
HATTIESBURG, MISSISSIPPI:**

SECTION 1. That the Land Development Code, Ordinance Number 3209, as amended, of the City of Hattiesburg, Mississippi, be further amended as follows:

That Section 5.1 Table of Uses be added to read "Food Truck Park" as a "Conditional Use" in B-2, B-3, B-4, I-1, and I-2. And as "Permitted with conditions" in B-5.

That Section 5.4.22 be added to read: "Food Truck Park" and adjust numbering for all subsections following 5.4.22 as necessary

That Section 5.4.22.1 be added to read: "No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 200 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones."

That Section 5.4.22.2 be added to read: "Vehicular drive-through service of food and/or beverages shall not be permitted in Food truck parks."

That Section 5.4.22.3 be added to read: "No mobile food vendor or structures associated with the mobile food park use shall be located in a required zoning setback, driveway, utility easement, fire lane, or other site element not designed for the place of a mobile food vendor."

That Section 5.4.22.4 be added to read: “No less than 2 and no more than 10 individual mobile food vendors are permitted per site. Vendors should be placed no closer than 10 ft to another vendor or structure.”.

That Section 5.4.22.5 be added to read: “Permanent restroom facilities shall be provided to accommodate the maximum occupancy.”.

That Section 5.4.22.6 be added to read: “Mobile food vendors must operate from designated mobile vendor sites as denoted on the approved site plan. Mobile food vendors shall not operate from the parking lot of food truck parks.”.

That Section 5.4.22.7 be added to read: “Each food truck park must provide wastewater disposal site that meets all applicable and relevant plumbing codes for food disposal including grease interceptor and dumpster requirements per 7.9.10. for the maximum number of vendors the site is designed for.”.

That Section 5.4.22.8 be added to read: “Mobile Food parks may provide temporary water and electrical connections. Permanent connections are not permitted.”.

That Section 5.4.22.9 be added to read: “A minimum 10% of the lot will be interior landscaping exclusive of required perimeter landscape and landscape islands. One large tree per 500 sq ft of interior landscaping. Above ground landscaping or alternative amenities may be permitted by SDRC. Food Truck Parks in B-4 are excluded from this condition.”.

That Section 7 Table 7.12 Table of Parking Requirements; Food Truck be amended to read: “Food Truck Park” and amend “Minimum Spaces Required” to read “2 per vendor space”

That Section 9.1.3. be amended to read: “Post Development Discharge. Post development discharge rates shall not exceed pre-development discharge rates from any development site excluding single-family residential as deemed appropriate with impervious coverage exceeding 0.49 acres. Engineering detail and documentation including a stormwater plan for the site shall be required at the time of application as specified herein.”.

That Section 9.1.7.1.3. third bullet be amended to read: “Design Storm Frequency: Projects shall be designed for the twenty-five (25) year, twenty-four 24 hour frequency storm event. Peak discharge rates for fifty (50) and one hundred (100) year frequency storm events shall be calculated and the effect of these storms on the stormwater system shown. This shall be submitted as part of the Land Disturbance Permit application. Refer to 9.1.3. for development discharge requirements.”.

That Table 9.2 Land Disturbance Permit Requirements. be amended to insert as the third row the following text: “0.5 (½) acre to 0.999 acre resulting in impervious coverage per 9.2.1.1”; “Yes”; “SWPPP & Stormwater calculations”; “City”; and amend “Construction Permits (including Notice of Intent & SWPPP) Required” column for “1 acre to 4.999 acres” to read “Small Construction General Permit including SWPPP & Stormwater calculations”.

That Section 13.2 Definitions – “Food Truck Park” be added to read “A parcel or group of parcels used or developed to accommodate two (2) to ten (10) mobile food vendors to offer food or beverages for sale to the public with seating for customers while possibly accommodating areas on the property for entertainment or recreational opportunities. Also See “Mobile Food Vendor”.”.

That Section 13.2 Definitions – “Mobile Food Vendor” be added to read “Any person or persons who sell food and/or beverages from a permitted vehicle or mobile push cart/stand (also called “food truck” and “mobile push cart”) on a consistent basis for a period of more than 15 consecutive or non-consecutive days each calendar year.”.

SECTION 2. Except as hereby expressly changed and amended, the aforesaid Land Development Code, Ordinance Number 3209, adopted February 21, 2017, as amended, of said City of Hattiesburg, Mississippi, shall be and remain in full force and form as adopted.

SECTION 3. That this Ordinance take effect and be in force thirty (30) days from and after passage as provided by law.

The foregoing Ordinance having been reduced to writing, the same was introduced by Councilmember _____, seconded by Councilmember _____, and was adopted by the following vote to-wit:

YEAS: NAYS:

THE President thereby declared the motion carried and the foregoing Ordinance adopted and approved, this the _____ day of _____ A.D., 2021.

(S E A L)

ATTEST: ADOPTED:

CLERK OF COUNCIL PRESIDENT

THE above foregoing Ordinance having been submitted to and approved by the Mayor, this the _____ day of _____ A.D., 2021.

ATTEST: APPROVED:

CITY CLERK MAYOR

**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG PLANNING COMMISSION
June 2, 2021**

The Hattiesburg Planning Commission did meet in a regular session on June 2, 2021, at 1:00 p.m. at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Amy Hinton, Vice-Chair, presided over the meeting. Due to the ongoing COVID-19 pandemic, CDC recommended social distancing guidelines were observed. Staff utilized GoToMeeting, an online meeting, desktop sharing, and telephone/video conferencing platform to allow Commissioners and petitioners to participate remotely. A quorum was indicated and the attendance was as follows:

Commissioners Present: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners Absent: Mark Miller, Chair

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger M. Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner
Steve Mitchell, Building Official
Nathan Satcher, Planning Office Manager

AGENDA REVIEW

There came the matter of the June Agenda. A request was made by Vice-Chair Hinton for a motion to approve the June 2021 Agenda. A motion to approve was made by Commissioner Ray and seconded by Commissioner Bryant.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

MINUTES REVIEW

There came the matter of the May 5, 2021 Regular Session minutes and May 10, 2021 Special Called Session minutes. Commissioner Pickett requested a correction to the May 10 minutes. A motion was made by Commissioner Dawe made a motion to approve the May 5 and

May 10 minutes, with the correction. Commissioner Waites seconded the motion.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

REPORTS

BUILDING REPORT

Steve Mitchell, Building Official, provided the Building Permit Report for May 2021. Staff emailed copies to the Commissioners prior to the meeting, and physical copies were provided to Commissioners who attended in person.

PLANNING REPORT

There came the matter of the Planning Report by Ginger Maddox Lowrey, AICP. On May 18, 2021, City Council denied the zoning change from B-2 to B-3 at various properties along N 25th Ave (HPC Denial Upheld) and Tabled the Conditional Use for a Hookah Bar at 340 N 25th Ave. Mrs. Lowrey also discussed the RFP the City received for an overlay district along E Hardy St. and Hall Ave.

CHAIR’S REPORT

No report.

INTRODUCTIONS

The Commissioners introduced themselves.

PUBLIC HEARING – PLANNING COMMISSION

There came the matter of Item A (Old Business, Land Code Text Amendment), take from the table and consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

As requested at the previous meeting when Item A was tabled, Staff provided buffer data between commercial zoned and residential properties.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item A). Commissioner Conville stated he could understand the limitations of a 300 ft. distance requirements between residential use and commercial zoning based on the provided maps. Commissioner Conville made a motion to approve the item as

proposed by Staff with the proposed language for Section 5.4.22.1 adjusted to read, “No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 200 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones.” Commissioner Dawe seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item B (New Business, Land Code Text Amendment), to consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendments adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item B). Commissioner Dawe made a motion to approve the item. Commissioner Bryant seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item C (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		

Opponents: None

Nick Connelly presented the application. He stated the intention of the expansion was to allow outdoor storage of yard equipment and more durable items. Commissioner Waites asked Mr. Connelly if there would be fencing/screening and if so, what kind. Mr. Connelly stated that the proposal included a 6’ chain link fence with plastic slats. Commissioner stated that he would like to see something more aesthetically pleasing than the proposed chain link given the adjacent clinic. Commissioner Waites noted that the proposed storage lot is fairly shielded from view at this time due to the lack of development on the wooded property to the north; however, given the pattern of development along Lincoln over recent years, he pointed that it was likely the property would be developed within the next 10 years, which would make the make the lot more visible.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to vote on the request (Item C). Commissioner Conville and Vice-Chair Hinton agreed that there needed to be a vegetative barrier between street/adjacent developments and the proposed area of expansion. Commissioner Dawe made a motion to approve the request for with the added condition that a ten foot (10’) vegetated buffer that is opaque at maturity was to be planted along the northern and eastern sides of the expansion. Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item D (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Nick Connelly presented the application. He stated the he discussed paving the storage yard with hard surface rather than gravel with the owner, and the owner decided he preferred gravel because gravel is cheaper.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to

vote on the request (Item D). Commissioner Conville made a motion to approve the request “because it meets the approval criteria.” Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

BUSINESS MEETING

Having no further business, Commissioner Lockett made a motion to adjourn the meeting. The motion was seconded by Commissioner Ray. The meeting was adjourned at 2:50 PM.

Amy Hinton, Vice-Chair

Ginger M. Lowrey, AICP, CFM, Planning Division Manager



**Planning Commission
Case Fact Sheet**

Applicant: City of Hattiesburg

Request: To consider an application to amend the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions.

Applicable Regulations: Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions

Letters/Concerns stated: The Planning Division Office has not received any letters or other written communications relative to this case as of May 20, 2021. Copies of the proposed amendments were provided to stakeholders, who provided no additional comments. Mailings regarding the tabled item were sent to the neighborhood association contacts by the Planning Division.

Additional Information: See attached memo outlining the proposed amendments. These amendments serve to create the new use of "Food Truck Park" and establish standards for this use. The amendments also propose to update environmental regulations for the purpose of improvements to the City's Community Rating System (CRS) program.

At the May 5, 2021 Planning Commission meeting, the Commission tabled the item after public comment. They requested that Staff provide mapping data on buffers between food truck parks and residential uses.

The requested maps are being generated by the GIS Department and will be presented at the Public Hearing. Staff has provided examples of site plans and photos of food truck parks in the report.

Basis for Approval: Recommend **APPROVAL** or **DENIAL** of the request to amend the Land Development Code Section 5 Use Regulations and

Item: A (Old Business)
City of Hattiesburg
Request for **LDC Text Amendment**

Conditions, Section 7 Standards of Design, Section 9
Environmental Regulations, and Section 13 Definitions.

The Planning Commission may approve, deny, and table at will.
Minor, non-substantial changes may be made within a motion to
the items presented in these amendments.



Department of Urban Development

Andrew Ellard, Director

601.545.4609 or aellard@hattiesburgms.com

MEMORANDUM

TO: TO ALL IT MAY CONCERN
FROM: ANDREW ELLARD, DIRECTOR OF URBAN DEVELOPMENT;
GINGER M. LOWREY, AICP, PLANNING DIVISION MANAGER
DATE: MARCH 15, 2021
SUBJECT: LAND DEVELOPMENT CODE AMENDMENT PROPOSAL FOR FOOD TRUCK PARKS

Planning Commissioners and all others it may concern, the April 7, 2021 Planning Commission agenda includes a proposal for amendments specifically related to the new use of "Food Truck Park" including Section 5, 7, & 13 of the Land Development Code. Amend Section 9 for the purpose of improvements to the City's Community Rating System (CRS) program. These changes are proposed by City staff due to the demand for the new use and the need for established standards for such developments. This document serves as an explanation of the amendments change-by-change.

Code Section	Change proposed	Reasoning
Section 5.1 Table of Uses	Add "Food Truck Park". "Conditional Use" in B-2, B-3, B-4, I-1, and I-2. "Permitted with conditions" in B-5	Adds new use with appropriate zoning and use type
Add new section to 5.4 for "Food Truck Park" conditions. 5.4.22	Add section for "Food Truck Park" conditions. As 5.4.22 and adjust numbering for all subsections following 5.4 as necessary	Adds section for conditions for "Food Truck Park"
Section 5.4.22.1	Add to read "No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 300 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones"	Adds conditions for "Food Truck Park".

Section 5.4.22.2	Add to read "Vehicular drive-through service of food and/or beverages shall not be permitted in Food truck parks."	Adds conditions for "Food Truck Park".
Section 5.4.22.3	Add to read "No mobile food vendor or structures associated with the mobile food park use shall be located in a required zoning setback, driveway, utility easement, fire lane, or other site element not designed for the place of a mobile food vendor."	"Adds conditions for "Food Truck Park".
Section 5.4.22.4	Add to read "No less than 2 and no more than 10 individual mobile food vendors are permitted per site. Vendors should be placed no closer than 10 ft to another vendor or structure."	Adds conditions for "Food Truck Park".
Section 5.4.22.5	Add to read "Permanent restroom facilities shall be provided to accommodate the maximum occupancy."	Adds conditions for "Food Truck Park".
Section 5.4.22.6	Add to read "Mobile food vendors must operate from designated mobile vendor sites as denoted on the approved site plan. Mobile food vendors shall not operate from the parking lot of food truck parks."	Adds conditions for "Food Truck Park".
Section 5.4.22.7	Add to read "Each food truck park must provide wastewater disposal site that meets all applicable and relevant plumbing codes for food disposal including grease interceptor and dumpster requirements per 7.9.10. for the maximum number of vendors the site is designed for."	Adds conditions for "Food Truck Park".
Section 5.4.22.8	Add to read "Mobile Food parks may provide temporary water and electrical connections. Permanent connections are not permitted."	Adds conditions for "Food Truck Park".
Section 5.4.22.9	Add to read "A minimum 10% of the lot will be interior landscaping exclusive of required perimeter landscape and landscape islands. One large tree per 500 sq ft of interior landscaping. Above ground landscaping or alternative amenities may be permitted by SDRC. Food Truck Parks in B-4 are excluded from this condition."	Adds conditions for "Food Truck Park".
Section 7 Table 7.12 – Table of Parking...	Amend Use from "food Truck" to "Food Truck Park" and add "Minimum Spaces Required" to read "2 per vendor space"	Adds parking requirement for "Food Truck Parks"

Requirements; Food Trucks		
Section 9.1.3	Amend to read: "Post Development Discharge. Post development discharge rates shall not exceed pre-development discharge rates from any development site excluding single-family residential as deemed appropriate with impervious coverage exceeding 0.49 acres. Engineering detail and documentation including a stormwater plan for the site shall be required at the time of application as specified herein."	Clarify and make consistent with requirements already administered in other Departments and for CRS purposes
Section 9.1.7.1.3	Amend to add to the end of the third bullet "Refer to 9.1.3. for development discharge requirements."	Clarify and for CRS purposes
Table 9.2 Land Disturbance Permit Requirements	Amend (as presented below) to insert as the third row the following text: "0.5 (½) acre to 0.999 acre resulting in impervious coverage per 9.2.1.1"; "Yes"; "SWPPP & Stormwater calculations"; "City"; and amend "Construction Permits (including Notice of Intent & SWPPP) Required" column for "1 acre to 4.999 acres" to read "Small Construction General Permit including SWPPP & Stormwater calculations".	Clarify and make consistent with requirements already administered and for CRS purposes
13.2 Definition – Add "Food Truck Park"	Amend to add "Food Truck Park" to read "A parcel or group of parcels used or developed to accommodate two (2) to ten (10) mobile food vendors to offer food or beverages for sale to the public with seating for customers while possibly accommodating areas on the property for entertainment or recreational opportunities. Also See "Mobile Food Vendor"	Add definition of "Food Truck Park"
13.2 Definition – Add "Mobile Food Vendor"	Amend to add "Mobile Food Vendor" to read "any person or persons who sell food and/or beverages from a permitted vehicle or mobile push cart/stand (also called "food truck" and "mobile push cart") on a consistent basis for a period of more than 15 consecutive or non-consecutive days each calendar year"	Add definition of "Mobile Food Vendor" to LDC consistent with Ord 3286

Table 9.2 Land Disturbance Permit Requirements

Acre(s) Disturbed	Land Disturbance Permit Required from the City	Construction Permits (including Notice of Intent & SWPPP) Required	Submittal and Approval Required by:
Less than ½ acre (21,780 sq. ft.)	Yes	No	City
0.5 (½) acre to 0.999 acre	Yes	No	City
0.5 (½) acre to 0.999 acre resulting in impervious coverage per 9.2.1.1	Yes	SWPPP & Stormwater calculations	City
1 acre to 4.999 acres	Yes	Small Construction General Permit including SWPPP & Stormwater calculations	City
5 acres or greater	Yes	MDEQ Large Construction General Permit	MDEQ

Food Truck Court Examples



Memphis Food Truck Park—Street View



Memphis Food Truck Park—Interior

Food Truck Court Examples



San Marcos, Texas—Red Bus Food Park / Co-kitchen

Street View



San Marcos, Texas—Red Bus Food Park / Co-kitchen

Courtyard

Food Truck Court Examples



Barton Springs PICNIC—Austin, TX Food Truck Park

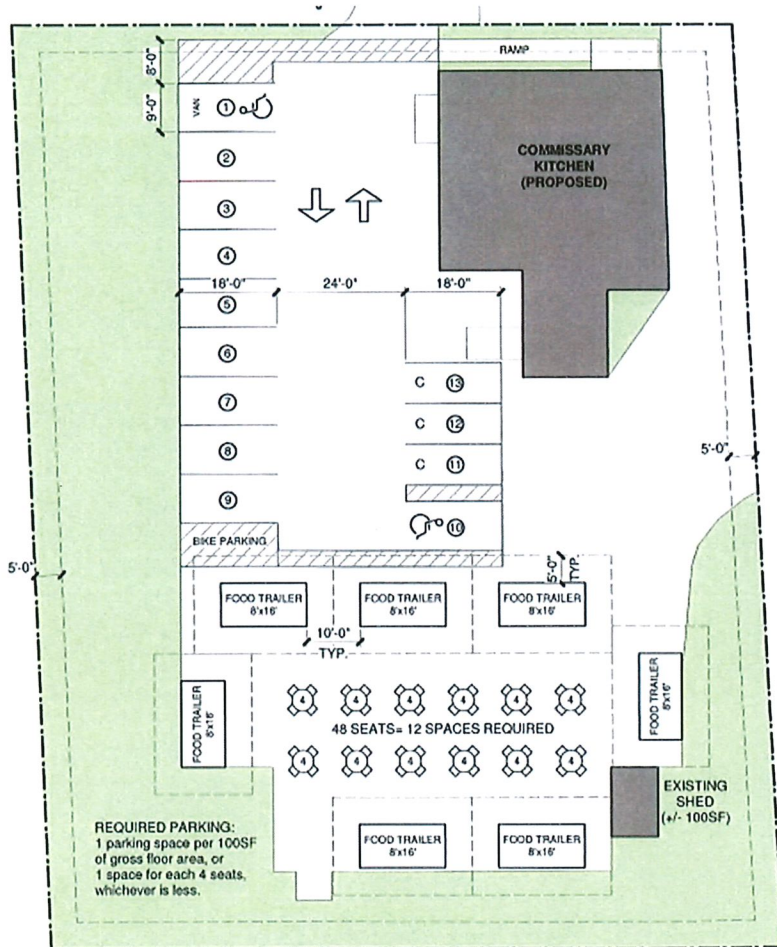
Street View



Barton Springs PICNIC—Austin, TX Food Truck Park

Interior Courtyard

Food Truck Court—Site Plan Examples

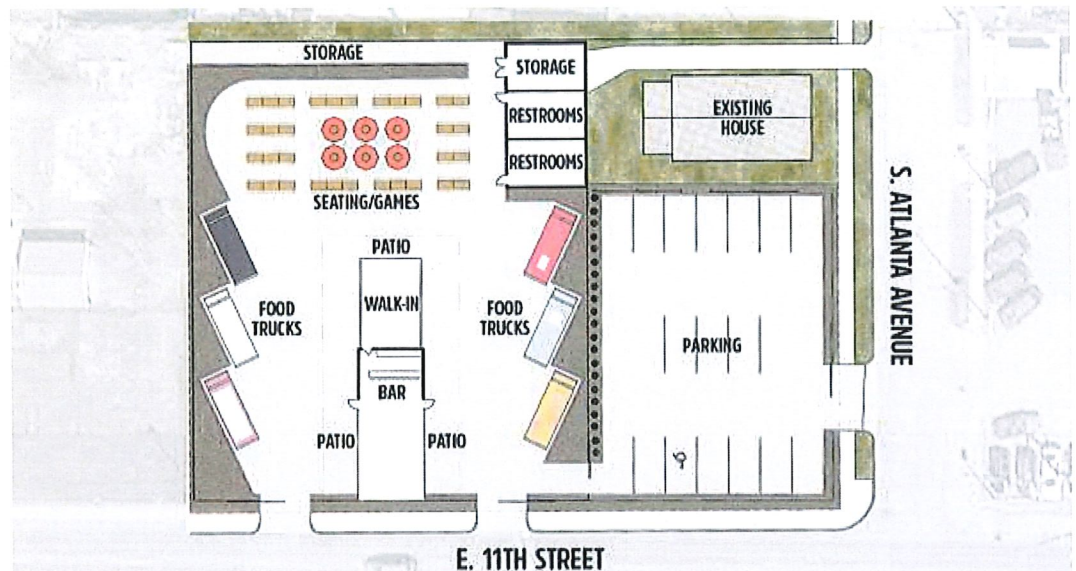


San Marcos, Texas—Red Bus Food Park / Co-kitchen

Site Plan

(Site plan for park in second example)

Tulsa, Oklahoma
Food Truck Court
Site Plan





Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Adopt an Ordinance for the petition filed by The City of Hattiesburg to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendment adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area. The Planning Commission recommended to Approve on June 2, 2021.
File Number: 2021-809
Minute Book #

Summary

Adopt an Ordinance amending the Land Development Code – Section 7

Recommendation Statement

Adopt an Ordinance to amend the Land Development Code Section 7 Standards of Design.

Please place this on the June 22, 2021 City Council meeting for consideration.



**Planning Commission
Case Fact Sheet**

Applicant: City of Hattiesburg

Request: To consider an application to amend the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 7 Standards of Design.

Applicable Regulations: Section 7 Standards of Design

Letters or Concerns stated: The Planning Division Office has not received any letters or other written communications relative to this case as of May 21, 2021.

Additional Information: See attached memo outlining the proposed amendment. The proposed amendment would add the option to request a Conditional Use for a gravel storage lot in B-3 zoning. In September 2020, City Council approved a text amendment to the LDC that specifically addressed and expanded the design options for parking, driveways, outdoor storage, and hard surface/gravel surface. At that time, Planning Staff proposed allowing non-public outdoor gravel storage areas by right in A-1 and I-zones and as a conditional use in A-2 and B-5 zones. B-3 was not proposed as an option for gravel storage lots. Gravel storage lots were limited to industrial and heavy commercial to limit the use of gravel within the City while still allowing the option for gravel storage lots in appropriate settings. Before the Sept. 2020 amendment, new gravel storage lots were not permitted by code.

LDC 4.5.10 B-3 Community Business District

The purpose of the B-3 District is to provide for retail, personal service, and offices in locations with convenient access to the community consistent with comprehensive planning policies. This district is consistent with the Community Business District in the Comprehensive Plan.

4.5.12 B-5 Regional Business District.

The purpose of the B-5 District is to provide for retail, personal and business services, offices, and financial services in locations with convenient access to the region's population consistent with comprehensive planning policies. This district is consistent with the Regional Business District in the Comprehensive Plan.

12.3.3.2 Additional Approval Criteria.

In addition to the standards [set in Section 5], the applicant for a request for the Planning Commission to approve a use shall be required to demonstrate that his/her proposal addresses the following additional requirements, except that the Planning Commission may waive any one or more criteria that it determines are not applicable based upon the expected impact of the proposal.

i. Determination that adequate public facilities and services will be available concurrent with the impacts of the development as evidenced by letters of sufficiency from utilities and schools and a determination by the city engineer that the available capacity of existing streets can safely provide access to the site.

ii. The proposed development will be compatible with surrounding uses and will protect adjacent properties through the following measures:

- Protection of privacy. The proposed plan shall provide reasonable visual and auditory privacy for all dwelling units located within and adjacent to the site. Fences, walls, barriers and / or vegetation shall be arranged to protect and enhance the property and to enhance the privacy of on-site and neighboring occupants.

- Protection of use and enjoyment. The proposed plan shall be designed and arranged to have minimal negative impact on the use and enjoyment of adjoining property.

- Compatible design and integration. The use meets all design criteria required by this Code that apply and is designed to integrate well both on and off site.

Community Business District (Comprehensive Plan 2008-2028)

The Community Business District is primarily a non-residential district located along the city's major roadways. In this district, certain residential and non-residential land uses may be found that exhibit suburban development patterns.

› District Characteristics

The characteristics of this district include the following: moderate-density single-family residences and certain two-family and multi-family uses; mixed-use buildings and developments; suburban-style, higher-intensity business developments that provide services to the entire community; and less-intensive commercial uses than are found in the Regional Business District.

› District Land Uses

The following land uses should be found in this district: residential uses; public and quasi-public uses, such as churches and schools; and general indoor retail, service and office land uses that do not require the outdoor storage of goods or equipment.

Basis for Approval:

Recommend **APPROVAL** or **DENIAL** of the request to amend the Land Development Code Section 7 Standards of Design.

The Planning Commission may approve, deny, and table at will. Minor, non-substantial changes may be made within a motion to the items presented in these amendments.



Department of Urban Development

Andrew Ellard, Director

601.545.4609 or aellard@hattiesburgms.com

MEMORANDUM

TO: To All It May Concern
FROM: Ginger M. Lowrey, AICP, Planning Division Manager
DATE: May 20, 2021
SUBJECT: Land Development Code amendment – Section 7 Standards of Design

Planning Commissioners and all others it may concern, the August 5, 2020 Planning Commission agenda includes a proposal for changes to Section 7 Standards of Design. The intent of these amendments is to add language to allow gravel storage as a conditional use in B-3 zoning. The table below lists the proposed change.

Code Section	Change proposed	Reasoning
7.12.10.4.iii	Amend to read: "Dustless gravel maintained so as to be free of overgrowth may be allowed for only non-public outdoor storage space of heavy equipment and non-hazardous materials by right in A-1, I zones and as a Conditional Use in A-2, B-3 and B-5 zones. Any approved gravel storage lot shall be subject to driveway requirements per 7.12.8.3."	Add language to allow gravel as a conditional use in B-3 zoning.

**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG PLANNING COMMISSION
June 2, 2021**

The Hattiesburg Planning Commission did meet in a regular session on June 2, 2021, at 1:00 p.m. at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Amy Hinton, Vice-Chair, presided over the meeting. Due to the ongoing COVID-19 pandemic, CDC recommended social distancing guidelines were observed. Staff utilized GoToMeeting, an online meeting, desktop sharing, and telephone/video conferencing platform to allow Commissioners and petitioners to participate remotely. A quorum was indicated and the attendance was as follows:

Commissioners Present: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners Absent: Mark Miller, Chair

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger M. Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner
Steve Mitchell, Building Official
Nathan Satcher, Planning Office Manager

AGENDA REVIEW

There came the matter of the June Agenda. A request was made by Vice-Chair Hinton for a motion to approve the June 2021 Agenda. A motion to approve was made by Commissioner Ray and seconded by Commissioner Bryant.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

MINUTES REVIEW

There came the matter of the May 5, 2021 Regular Session minutes and May 10, 2021 Special Called Session minutes. Commissioner Pickett requested a correction to the May 10 minutes. A motion was made by Commissioner Dawe made a motion to approve the May 5 and

May 10 minutes, with the correction. Commissioner Waites seconded the motion.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

REPORTS

BUILDING REPORT

Steve Mitchell, Building Official, provided the Building Permit Report for May 2021. Staff emailed copies to the Commissioners prior to the meeting, and physical copies were provided to Commissioners who attended in person.

PLANNING REPORT

There came the matter of the Planning Report by Ginger Maddox Lowrey, AICP. On May 18, 2021, City Council denied the zoning change from B-2 to B-3 at various properties along N 25th Ave (HPC Denial Upheld) and Tabled the Conditional Use for a Hookah Bar at 340 N 25th Ave. Mrs. Lowrey also discussed the RFP the City received for an overlay district along E Hardy St. and Hall Ave.

CHAIR’S REPORT

No report.

INTRODUCTIONS

The Commissioners introduced themselves.

PUBLIC HEARING – PLANNING COMMISSION

There came the matter of Item A (Old Business, Land Code Text Amendment), take from the table and consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

As requested at the previous meeting when Item A was tabled, Staff provided buffer data between commercial zoned and residential properties.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item A). Commissioner Conville stated he could understand the limitations of a 300 ft. distance requirements between residential use and commercial zoning based on the provided maps. Commissioner Conville made a motion to approve the item as

proposed by Staff with the proposed language for Section 5.4.22.1 adjusted to read, “No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 200 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones.” Commissioner Dawe seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item B (New Business, Land Code Text Amendment), to consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendments adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item B). Commissioner Dawe made a motion to approve the item. Commissioner Bryant seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item C (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		

Opponents: None

Nick Connelly presented the application. He stated the intention of the expansion was to allow outdoor storage of yard equipment and more durable items. Commissioner Waites asked Mr. Connelly if there would be fencing/screening and if so, what kind. Mr. Connelly stated that the proposal included a 6’ chain link fence with plastic slats. Commissioner stated that he would like to see something more aesthetically pleasing than the proposed chain link given the adjacent clinic. Commissioner Waites noted that the proposed storage lot is fairly shielded from view at this time due to the lack of development on the wooded property to the north; however, given the pattern of development along Lincoln over recent years, he pointed that it was likely the property would be developed within the next 10 years, which would make the make the lot more visible.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to vote on the request (Item C). Commissioner Conville and Vice-Chair Hinton agreed that there needed to be a vegetative barrier between street/adjacent developments and the proposed area of expansion. Commissioner Dawe made a motion to approve the request for with the added condition that a ten foot (10’) vegetated buffer that is opaque at maturity was to be planted along the northern and eastern sides of the expansion. Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item D (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Nick Connelly presented the application. He stated the he discussed paving the storage yard with hard surface rather than gravel with the owner, and the owner decided he preferred gravel because gravel is cheaper.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to

vote on the request (Item D). Commissioner Conville made a motion to approve the request “because it meets the approval criteria.” Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

BUSINESS MEETING

Having no further business, Commissioner Lockett made a motion to adjourn the meeting. The motion was seconded by Commissioner Ray. The meeting was adjourned at 2:50 PM.

Amy Hinton, Vice-Chair

Ginger M. Lowrey, AICP, CFM, Planning Division Manager

Prepared by: City of Hattiesburg
City Clerk's Office
P.O. Box 1898
Hattiesburg, MS 39403-1898
(601)545-4550

Return to: City of Hattiesburg
City Clerk's Office
P.O. Box 1898
Hattiesburg, MS 39403
(601)545-4550

INDEXING INSTRUCTIONS:

**ORDINANCE NUMBER _____
OF THE
CITY OF HATTIESBURG, MISSISSIPPI**

**AN ORDINANCE AMENDING THE LAND DEVELOPMENT CODE,
ORDINANCE NUMBER 3209, AS AMENDED, SECTION 7 STANDARDS OF DESIGN
FOR THE CITY OF HATTIESBURG, MISSISSIPPI.**

**BE IT ORDAINED BY THE MAYOR AND COUNCIL OF THE CITY OF
HATTIESBURG, MISSISSIPPI:**

SECTION 1. That the Land Development Code, Ordinance Number 3209, as amended, of the City of Hattiesburg, Mississippi, be further amended as follows:

That Section 7.12.10.4.iii be added to read: "Dustless gravel maintained so as to be free of overgrowth may be allowed for only non-public outdoor storage space of heavy equipment and non-hazardous materials by right in A-1, I zones and as a Conditional Use in A-2, B-3, and B-5 zones. Any approved gravel storage lot shall be subject to driveway requirements per 7.12.8.3.".

SECTION 2. Except as hereby expressly changed and amended, the aforesaid Land Development Code, Ordinance Number 3209, adopted February 21, 2017, as amended, of said City of Hattiesburg, Mississippi, shall be and remain in full force and form as adopted.

SECTION 3. That this Ordinance take effect and be in force thirty (30) days from and after passage as provided by law.

The foregoing Ordinance having been reduced to writing, the same was introduced by Councilmember _____, seconded by Councilmember _____, and was

adopted by the following vote to-wit:

YEAS:

NAYS:

THE President thereby declared the motion carried and the foregoing Ordinance adopted and approved, this the _____ day of _____ A.D., 2021.

(S E A L)

ATTEST:

ADOPTED:

CLERK OF COUNCIL

PRESIDENT

THE above foregoing Ordinance having been submitted to and approved by the Mayor, this the _____ day of _____ A.D., 2021.

ATTEST:

APPROVED:

CITY CLERK

MAYOR



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for a certain property located at 4219 Lincoln Rd. (Ward 3). The Planning Commission recommended to Approve on June 2, 2021.
File Number: 2021-810
Minute Book #

Summary

4219 Lincoln Rd. – Conditional Use - “Machinery, tools/construction equipment, limited sales and service”

Recommendation Statement

Approve or Deny a petition to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District for a certain property located at 4219 Lincoln Rd.

Please place this on the June 22, 2021 City Council meeting for consideration.

**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG PLANNING COMMISSION
June 2, 2021**

The Hattiesburg Planning Commission did meet in a regular session on June 2, 2021, at 1:00 p.m. at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Amy Hinton, Vice-Chair, presided over the meeting. Due to the ongoing COVID-19 pandemic, CDC recommended social distancing guidelines were observed. Staff utilized GoToMeeting, an online meeting, desktop sharing, and telephone/video conferencing platform to allow Commissioners and petitioners to participate remotely. A quorum was indicated and the attendance was as follows:

Commissioners Present: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners Absent: Mark Miller, Chair

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger M. Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner
Steve Mitchell, Building Official
Nathan Satcher, Planning Office Manager

AGENDA REVIEW

There came the matter of the June Agenda. A request was made by Vice-Chair Hinton for a motion to approve the June 2021 Agenda. A motion to approve was made by Commissioner Ray and seconded by Commissioner Bryant.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

MINUTES REVIEW

There came the matter of the May 5, 2021 Regular Session minutes and May 10, 2021 Special Called Session minutes. Commissioner Pickett requested a correction to the May 10 minutes. A motion was made by Commissioner Dawe made a motion to approve the May 5 and

May 10 minutes, with the correction. Commissioner Waites seconded the motion.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

REPORTS

BUILDING REPORT

Steve Mitchell, Building Official, provided the Building Permit Report for May 2021. Staff emailed copies to the Commissioners prior to the meeting, and physical copies were provided to Commissioners who attended in person.

PLANNING REPORT

There came the matter of the Planning Report by Ginger Maddox Lowrey, AICP. On May 18, 2021, City Council denied the zoning change from B-2 to B-3 at various properties along N 25th Ave (HPC Denial Upheld) and Tabled the Conditional Use for a Hookah Bar at 340 N 25th Ave. Mrs. Lowrey also discussed the RFP the City received for an overlay district along E Hardy St. and Hall Ave.

CHAIR’S REPORT

No report.

INTRODUCTIONS

The Commissioners introduced themselves.

PUBLIC HEARING – PLANNING COMMISSION

There came the matter of Item A (Old Business, Land Code Text Amendment), take from the table and consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

As requested at the previous meeting when Item A was tabled, Staff provided buffer data between commercial zoned and residential properties.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item A). Commissioner Conville stated he could understand the limitations of a 300 ft. distance requirements between residential use and commercial zoning based on the provided maps. Commissioner Conville made a motion to approve the item as

proposed by Staff with the proposed language for Section 5.4.22.1 adjusted to read, “No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 200 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones.” Commissioner Dawe seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item B (New Business, Land Code Text Amendment), to consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendments adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item B). Commissioner Dawe made a motion to approve the item. Commissioner Bryant seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item C (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		

Opponents: None

Nick Connelly presented the application. He stated the intention of the expansion was to allow outdoor storage of yard equipment and more durable items. Commissioner Waites asked Mr. Connelly if there would be fencing/screening and if so, what kind. Mr. Connelly stated that the proposal included a 6’ chain link fence with plastic slats. Commissioner stated that he would like to see something more aesthetically pleasing than the proposed chain link given the adjacent clinic. Commissioner Waites noted that the proposed storage lot is fairly shielded from view at this time due to the lack of development on the wooded property to the north; however, given the pattern of development along Lincoln over recent years, he pointed that it was likely the property would be developed within the next 10 years, which would make the make the lot more visible.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to vote on the request (Item C). Commissioner Conville and Vice-Chair Hinton agreed that there needed to be a vegetative barrier between street/adjacent developments and the proposed area of expansion. Commissioner Dawe made a motion to approve the request for with the added condition that a ten foot (10’) vegetated buffer that is opaque at maturity was to be planted along the northern and eastern sides of the expansion. Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item D (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Nick Connelly presented the application. He stated the he discussed paving the storage yard with hard surface rather than gravel with the owner, and the owner decided he preferred gravel because gravel is cheaper.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to

vote on the request (Item D). Commissioner Conville made a motion to approve the request “because it meets the approval criteria.” Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

BUSINESS MEETING

Having no further business, Commissioner Lockett made a motion to adjourn the meeting. The motion was seconded by Commissioner Ray. The meeting was adjourned at 2:50 PM.

Amy Hinton, Vice-Chair

Ginger M. Lowrey, AICP, CFM, Planning Division Manager

SUBJECT PARCEL: 4219 Lincoln Rd

Kim Bradley, Owner and Nicholas Connelly, Engineer

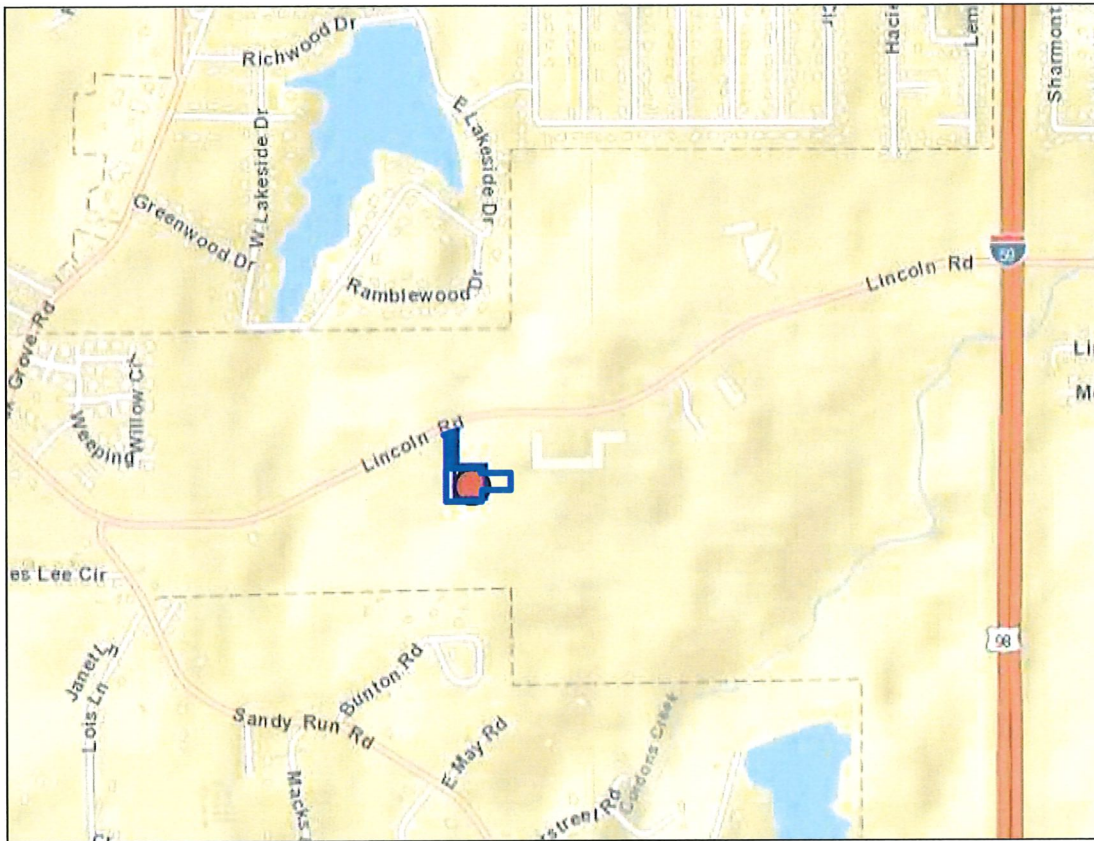
The petitioners request:

Item C: a Conditional Use as "Machinery, tools/construction equipment, limited sales and service" in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3)

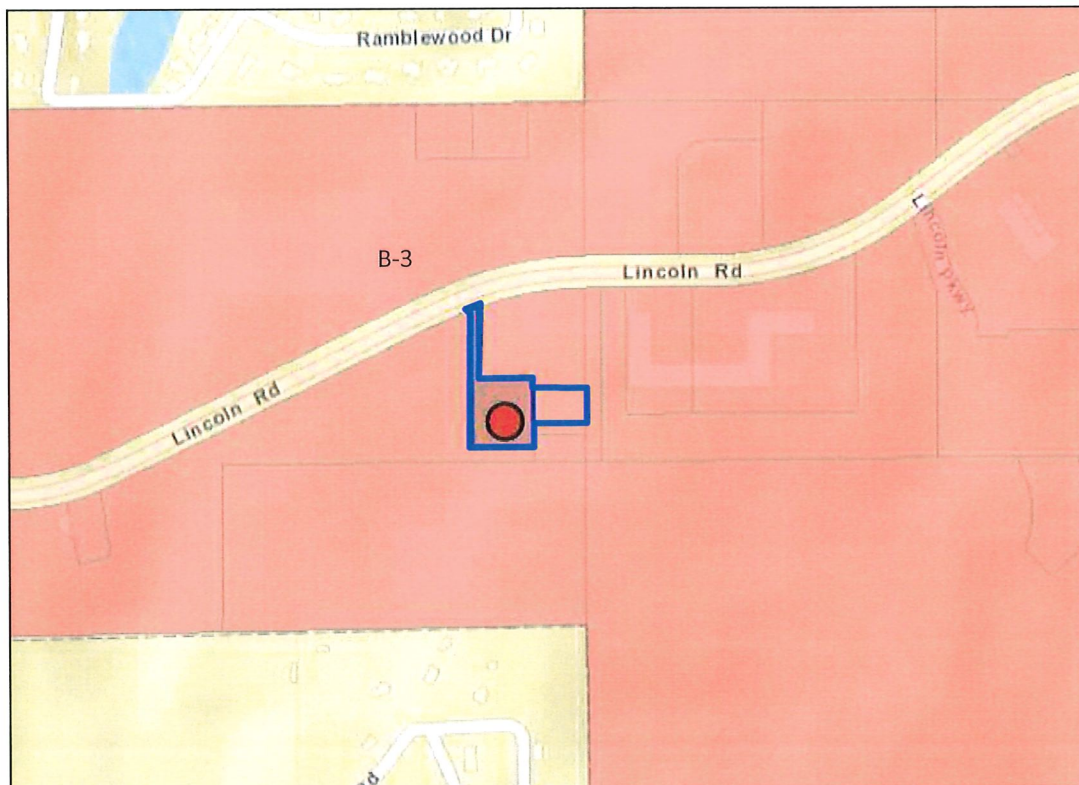
Item D: Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).



Vicinity Map—Ward 3



Zoning—B-3



Site Aerial



Proposed Location of Storage Area



SURROUNDING AREA

Northern Direction: B-3 (Community Business) District/ Undeveloped



Southern Direction: B-3 (Community Business) District/ Utility



Eastern Direction: B-3 (Community Business) District/ Medical Clinic



Western Direction: B-3 (Community Business) District/ Undeveloped





**Planning Commission
Case Fact Sheet**

Name of Petitioners: Kim Bradley, Owner, and Nick Connelly, Engineer

Address of Property:	Tax Parcel	PPIN:	Ward:
4219 Lincoln Rd	056L-23-004.001	31922	3
	056L-23-004.002	31923	3
	(Portion only)		

Requests: **Conditional Use- Machinery, tools/construction equipment, limited sales and service**
Conditional Use- Gravel Storage Lot

Purpose of Request: To consider an application to request a Conditional Use as "Machinery, tools/construction equipment, limited sales and service" in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). *For the purpose of expansion*

To consider an application to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). *Request is contingent upon approval of a text amendment to Land Development Code (See Agenda Item A).*

Applicant Summary: See Attached

Applicable Regulations:

SECTION 4

Zoning Districts Established

4.5.10 B-3 Community Business District

The purpose of the B-3 District is to provide for retail, personal service, and offices in locations with convenient access to the

community consistent with comprehensive planning policies. This district is consistent with the Community Business District in the Comprehensive Plan.

2.4.4 Nonconforming Uses

2.4.4.1 Expansion Prohibited. A one-time expansion of 25 percent may be permitted by the Director. Expansion greater than 25 percent shall require a public hearing and Planning Commission approval. Expansion shall include an intensification of use, a physical expansion that results in increased capacity or activity associated with the use, an extension of the hours of operation or number of days of activity and any similar change in activity or location.

7.12 Parking Requirements.

7.12.10.4 A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot.

i. Unless otherwise permitted, commercial outdoor storage areas shall be hard surface only.

ii. All outdoor storage associated with automotive and tow yard uses shall be hard surface, regardless of zone.

iii. Dustless gravel maintained so as to be free of overgrowth may be allowed for only non-public outdoor storage space of heavy equipment and non-hazardous materials by right in A-1, I zones and as a Conditional Use in A-2 and B-5 [*contingent text amendment would change "B-5" to "B-3"*] zones. Any approved gravel storage lot shall be subject to driveway requirements per 7.12.8.3.

Present Zoning:	This parcel is currently zoned B-3 (Community Business) District
Present Use:	Tool/equipment rental
Future Land Use:	Community Business Corridor and Planned Mixed Use District
Surrounding Zoning and Land Use:	North: B-3 (Community Business) District/ Undeveloped South: B-3 (Community Business) District/ Utility East: B-3 (Community Business) District/ Medical Clinic West: B-3 (Community Business) District/ Undeveloped
Most Nearly Bounded By (streets):	The parcel is most nearly bounded to the north by Lincoln Rd., to the west and south by Sandy Run Rd., and to the east by the unnamed publicly owned water tower access road.
Letters or Concerns stated:	The Planning Division Office has not received any letters or other written communications relative to this case, as of May 20, 2021

History / Background: **Machinery, tools/construction equipment, limited sales and service Conditional Use:**

The petitioners met with Staff in Pre-Application to discuss the addition of an equipment storage yard to the site of a legal nonconforming small equipment and tool rental business.

Under LDC 2.4.4.1, legal nonconforming uses are allowed one-time expansion, up to 25%. Because the proposed expansion is over 25% based on the increase of square footage, Staff is unable to approve a site plan without the use coming into compliance with the Land Development Code. A Conditional Use must be granted to establish this is as legal conforming use and thus remove expansion limitations.

The applicant is concurrently requesting a Conditional Use for a gravel storage yard (7.12.10.4) and a Variance of 35% for an outdoor storage space of 85% of the side lot area (only 50% yard coverage is permitted per Sec 7.12.10.4.).

Gravel Storage Yard in B-3 [pending] Conditional Use:

Petitioner met with Staff in Pre-Application to discuss gravel equipment storage addition. Staff was unable to approve gravel storage yard do to the zoning and the need for a Conditional Use. 7.12.10.4 permits the use of a gravel storage yard by right in A-1, I zones and as a Conditional Use in A-2 and B-5 zones. The request is contingent on approval of the text amendment to a change to the LDC to allow for a Conditional Use for a non-public gravel storage lot use in B-3.

Sec. 7. Standards of Design was recently amended and adopted on September 8, 2020. This amendment added Sec. 7.12.10.4 to allow more options within the City for gravel storage yards. It was limited to industrial and heavy commercial to limit the amount of gravel storage within the City while still allowing the option for gravel storage lots in appropriate settings. A-2 and B-5, as currently written, are approved only with a Conditional Use review to allow the City an opportunity to consider the appropriateness of such a development on surrounding properties.

Staff recommends an optional condition if the Planning Commission considers approval of the request: An increase in vegetated or other visual buffer long the right-of-way and the developable property to the north to limit impact on existing and future B-3 developments.

Option: **Basis for approval:**

12.3.3.2 Additional Approval Criteria. In addition to the standards [n/a], the applicant for a request for the Planning Commission to approve a use shall be required to demonstrate that his/her proposal addresses the following additional requirements, except that the Planning Commission may waive any one or more criteria that it determines are not applicable based upon the expected impact of the proposal.

- i. Determination that adequate public facilities and services will be available concurrent with the impacts of the development as evidenced by letters of sufficiency from utilities and schools and a determination by the city engineer that the available capacity of existing streets can safely provide access to the site.
- ii. The proposed development will be compatible with surrounding uses and will protect adjacent properties through the following measures:
 - Protection of privacy. The proposed plan shall provide reasonable visual and auditory privacy for all dwelling units located within and adjacent to the site. Fences, walls, barriers and / or vegetation shall be arranged to protect and enhance the property and to enhance the privacy of on-site and neighboring occupants.
 - Protection of use and enjoyment. The proposed plan shall be designed and arranged to have minimal negative impact on the use and enjoyment of adjoining property.
 - Compatible design and integration. The use meets all design criteria required by this Code that apply and is designed to integrate well both on and off site.

Conditional Use (2 pages)

12.3.3.1 Compliance Required. Uses requiring Planning Commission approval, as noted in the Tables of Uses in Section 5 of this Code, shall be approved subject to this Section. Any application for such use must comply with all applicable standards that apply to similar uses and properties in the zoning district in general, the specific conditions listed for that use in Section 5, and the following criteria. Where conflicts exist, the Planning Commission shall determine which criteria apply on a case by case basis.

1. Does this application meet the conditions set forth in Section 5 for the requested use? If yes, please explain.
The existing business is the leasing of small rental equipment. This would be considered as "Machinery, tools/ construction equipment, limited sales and service" which is a Conditional Use in B-3 per Section 5.3 of the LDC.
Dustless gravel storage space is allowable as a conditional use under Section 7.12.10.4 of the LDC.
2. Describe the effects the proposed use of utilities and facilities will have on the community.
The proposed use of the property is storage of small rental equipment. This will not expand the use of utilities on the site so there should be no effect to the community. The facilities will be fenced, gated, and well off of Lincoln Road so should not adversely affect the community.
3. Describe how the size of the site is appropriate for the proposed use.
The site is an expansion of the existing facilities at Taylor Rental. The amount of rental equipment at Taylor Rental is increasing. Some of this equipment such as lifts, heaters, and pumps has outgrown the existing facility and the +/-0.7 acres is required to store the equipment.
4. Will there be any additional pedestrian or vehicular traffic generated by the proposed use? Yes
If yes, please explain:
Some additional vehicular traffic will be generated by the increased size of the business. The existing traffic to the business is not high and we would not expect a large increase in traffic. The plan also calls for an additional entrance/exit on a side street to reduce the traffic turning movements on Lincoln Road.

5. Will there be any elevation in the noise level resulting from this proposed use? No

If yes, please explain:

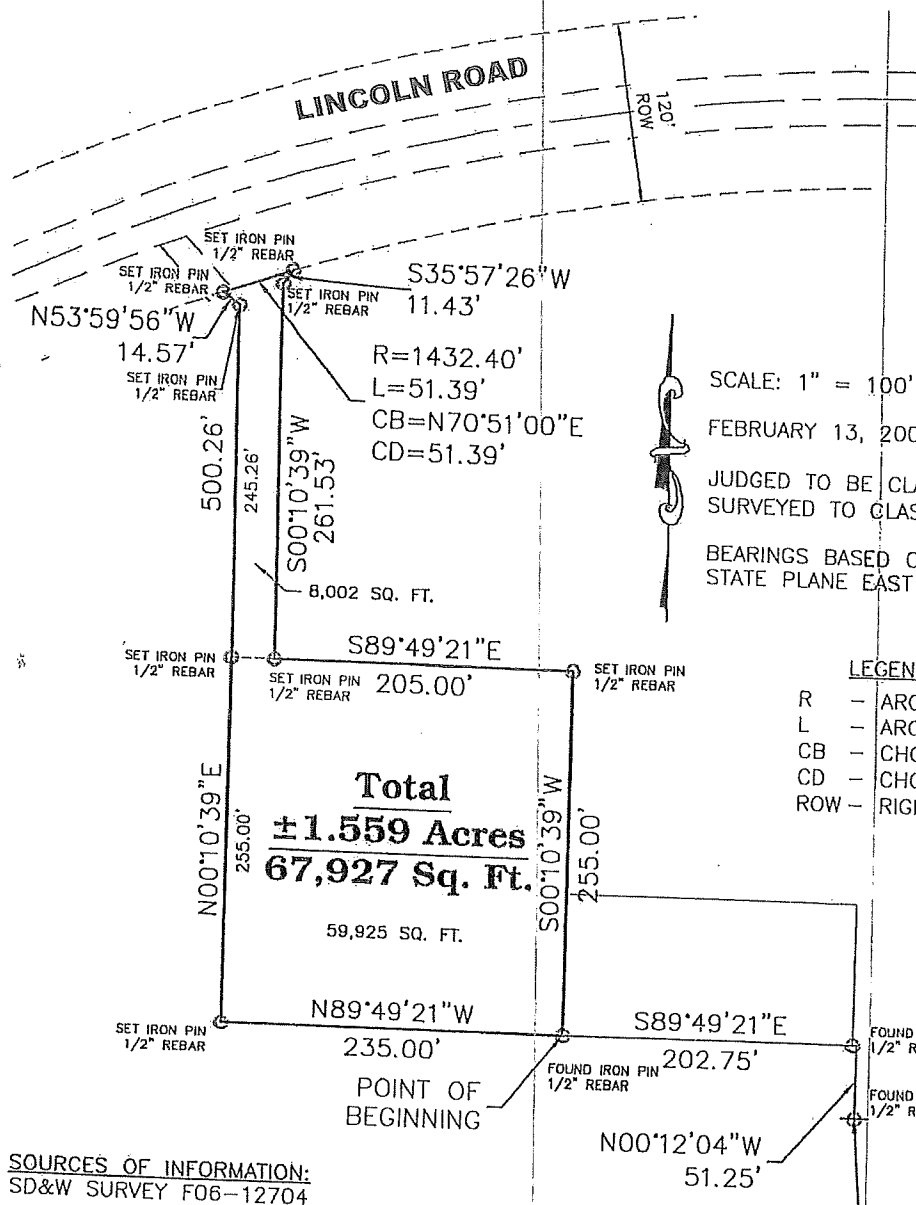
6. What is the expected number of customers/employees per day? +/-50 customers per day.

2-3 employees.

7. Parking Requirements:

Commercial/Industrial: Paved parking will be provided for 21 vehicles, and
1 ADA vehicle(s); with 1 loading spaces.

For more information please reference the Land Development Code Section 12.3.3.2.



SCALE: 1" = 100'
FEBRUARY 13, 2007

JUDGED TO BE CLASS "B" SURVEY
SURVEYED TO CLASS "B"
BEARINGS BASED ON MISSISSIPPI
STATE PLANE EAST ZONE, NAD83.

LEGEND

- R - ARC RADIUS
- L - ARC LENGTH
- CB - CHORD BEARING
- CD - CHORD DISTANCE
- ROW - RIGHT-OF-WAY

SOURCES OF INFORMATION:
SD&W SURVEY F06-12704

STATE OF MISSISSIPPI
COUNTY OF LAMAR
CITY OF HATTIESBURG

POINT OF COMMENCEMENT:
THE SOUTHWEST CORNER
OF THE NORTHEAST 1/4 OF
THE NORTHEAST 1/4 OF
SECTION 23, TOWNSHIP 4
NORTH, RANGE 14 WEST,
LAMAR COUNTY, MISSISSIPPI
N 654,803.7562
E 818,268.3990

THIS IS TO CERTIFY THAT I HAVE MADE A SURVEY OF THE FOLLOWING DESCRIBED PROPERTY:

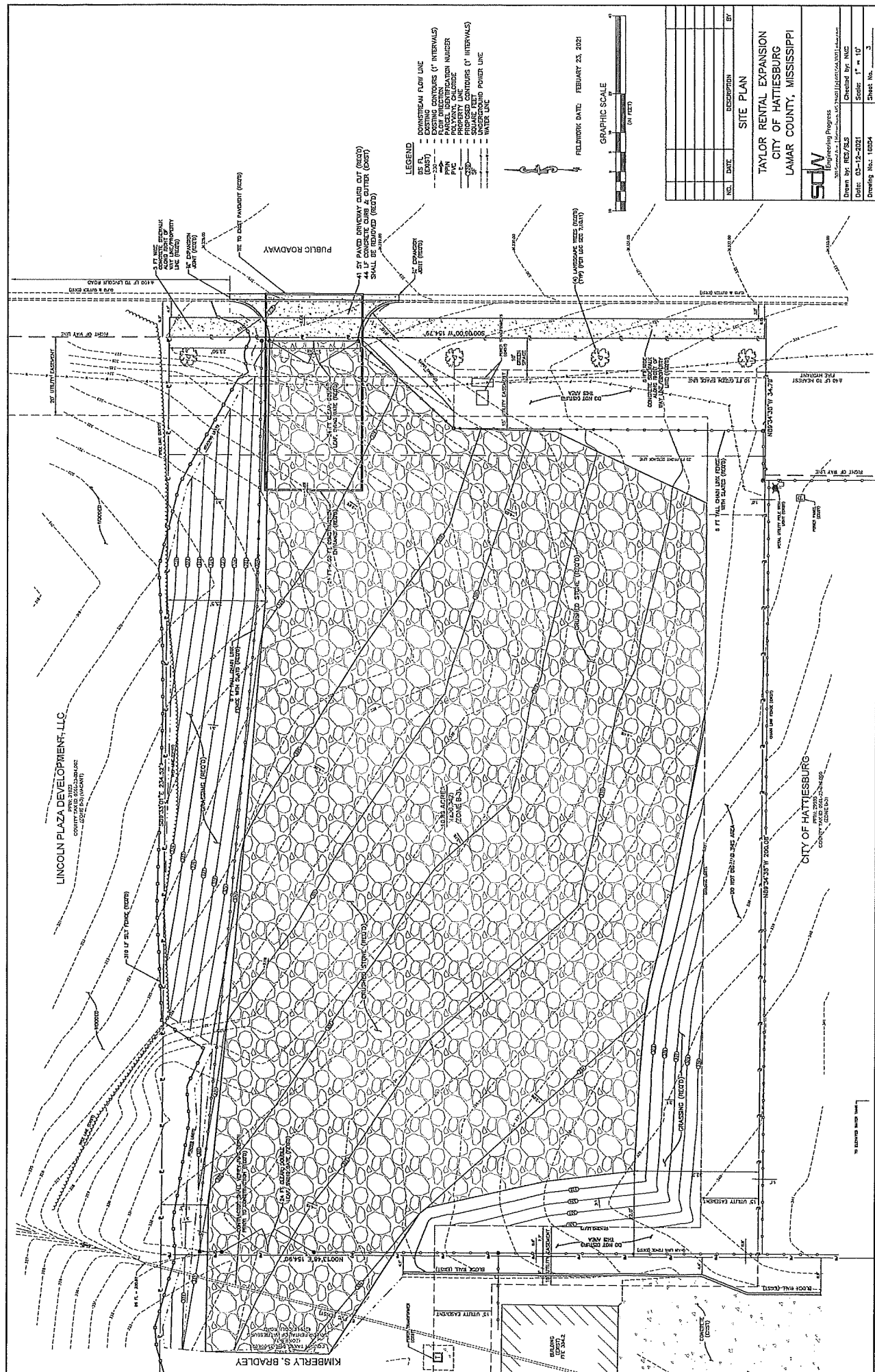
A part of the Northeast 1/4 of the Northeast 1/4 of Section 23, Township 4 North, Range 14 West in the City of Hattiesburg, County of Lamar, State of Mississippi, and being more particularly described as Commencing at the Southwest Corner of said Northeast 1/4 of the Northeast 1/4, thence run N00°12'04"W for 51.25 feet, thence run N89°49'21"W for 202.75 feet to the Point of Beginning; thence continue N89°49'21"W for 235.00 feet, thence run N00°10'39"E for 500.26 feet, thence run N53°59'56"W for 14.57 feet to the Southern Right-of-Way Line of Lincoln Road, said Point being a Point on an Arc to the Right having a Radius of 1,432.40 feet, a Chord Bearing of N70°51'00"E, and a Chord Distance of 51.39 feet, thence run along said Arc and said Right-of-Way Line for 51.39 feet, thence run S35°57'26"W for 11.43 feet, thence run S00°10'39"W for 261.53 feet, thence run S89°49'21"E for 205.00 feet, thence run S00°10'39"W for 255.00 feet to the Point of Beginning, comprising 1.559 Acres (67,927 Square Feet), more or less.

SD & W
SHOWS, DEARMAN & WAITS, INC.
CONSULTING ENGINEERS

P.O. BOX 1711
HATTIESBURG, MS 39403-3711
411 SECOND AVENUE
HATTIESBURG, MS 39403-3101
HTTP://WWW.SDW.COM
P: (601) 544-1821
F: (601) 544-0201

ENGINEER
AND
P.E. 12791
L.S. 2973

Nicholas M. Connolly
Nicholas M. Connolly, P.E., P.L.S.
Civil Engineer No. 12791
Land Surveyor No. 2973





Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Ward 3). Request is contingent upon approval of text amendment to Land Development Code Sec.7.12.10.4.iii. The Planning Commission recommended to Approve on June 2, 2021.
File Number: 2021-811
Minute Book #

Summary

4219 Lincoln Rd. – Conditional Use - gravel storage yard in B-3

Recommendation Statement

Approve or Deny a petition to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd.

Please place this on the June 22, 2021 City Council meeting for consideration.

**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG PLANNING COMMISSION
June 2, 2021**

The Hattiesburg Planning Commission did meet in a regular session on June 2, 2021, at 1:00 p.m. at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Amy Hinton, Vice-Chair, presided over the meeting. Due to the ongoing COVID-19 pandemic, CDC recommended social distancing guidelines were observed. Staff utilized GoToMeeting, an online meeting, desktop sharing, and telephone/video conferencing platform to allow Commissioners and petitioners to participate remotely. A quorum was indicated and the attendance was as follows:

Commissioners Present: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners Absent: Mark Miller, Chair

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger M. Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner
Steve Mitchell, Building Official
Nathan Satcher, Planning Office Manager

AGENDA REVIEW

There came the matter of the June Agenda. A request was made by Vice-Chair Hinton for a motion to approve the June 2021 Agenda. A motion to approve was made by Commissioner Ray and seconded by Commissioner Bryant.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keysear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

MINUTES REVIEW

There came the matter of the May 5, 2021 Regular Session minutes and May 10, 2021 Special Called Session minutes. Commissioner Pickett requested a correction to the May 10 minutes. A motion was made by Commissioner Dawe made a motion to approve the May 5 and

May 10 minutes, with the correction. Commissioner Waites seconded the motion.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

Commissioners absent for vote: Elayne Lockett

REPORTS

BUILDING REPORT

Steve Mitchell, Building Official, provided the Building Permit Report for May 2021. Staff emailed copies to the Commissioners prior to the meeting, and physical copies were provided to Commissioners who attended in person.

PLANNING REPORT

There came the matter of the Planning Report by Ginger Maddox Lowrey, AICP. On May 18, 2021, City Council denied the zoning change from B-2 to B-3 at various properties along N 25th Ave (HPC Denial Upheld) and Tabled the Conditional Use for a Hookah Bar at 340 N 25th Ave. Mrs. Lowrey also discussed the RFP the City received for an overlay district along E Hardy St. and Hall Ave.

CHAIR’S REPORT

No report.

INTRODUCTIONS

The Commissioners introduced themselves.

PUBLIC HEARING – PLANNING COMMISSION

There came the matter of Item A (Old Business, Land Code Text Amendment), take from the table and consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 5 Use Regulations and Conditions, Section 7 Standards of Design, Section 9 Environmental Regulations, and Section 13 Definitions. More specifically, amendments are proposed as they relate to food truck park uses and stormwater management.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

As requested at the previous meeting when Item A was tabled, Staff provided buffer data between commercial zoned and residential properties.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item A). Commissioner Conville stated he could understand the limitations of a 300 ft. distance requirements between residential use and commercial zoning based on the provided maps. Commissioner Conville made a motion to approve the item as

proposed by Staff with the proposed language for Section 5.4.22.1 adjusted to read, “No part of the active use area of a food truck park, including vendor locations and seating, may be located closer than 200 feet to a lot containing a legal, conforming residential use. This condition does not apply to B-4 or legal, conforming mixed use zones.” Commissioner Dawe seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item B (New Business, Land Code Text Amendment), to consider a request that has been filed by City of Hattiesburg, Applicant, as required in the Land Development Code, Ord. No. 3209, to amend the Land Development Code Section 7 Standards of Design. More specifically, the amendments adds B-3 (Community Business) District as a Conditional Use to Sec. 7.12.10.4.iii. for the use of gravel in a storage area.

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Staff		
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open for voting on the request (Item B). Commissioner Dawe made a motion to approve the item. Commissioner Bryant seconded the motion. Commissioners attending in person submitted physical voting sheets.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item C (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use as “Machinery, tools/construction equipment, limited sales and service” in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		

Opponents: None

Nick Connelly presented the application. He stated the intention of the expansion was to allow outdoor storage of yard equipment and more durable items. Commissioner Waites asked Mr. Connelly if there would be fencing/screening and if so, what kind. Mr. Connelly stated that the proposal included a 6’ chain link fence with plastic slats. Commissioner stated that he would like to see something more aesthetically pleasing than the proposed chain link given the adjacent clinic. Commissioner Waites noted that the proposed storage lot is fairly shielded from view at this time due to the lack of development on the wooded property to the north; however, given the pattern of development along Lincoln over recent years, he pointed that it was likely the property would be developed within the next 10 years, which would make the make the lot more visible.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to vote on the request (Item C). Commissioner Conville and Vice-Chair Hinton agreed that there needed to be a vegetative barrier between street/adjacent developments and the proposed area of expansion. Commissioner Dawe made a motion to approve the request for with the added condition that a ten foot (10’) vegetated buffer that is opaque at maturity was to be planted along the northern and eastern sides of the expansion. Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

There came the matter of Item D (Conditional Use), to consider a request that has been filed by Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	301 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>	None		
<u>Opponents:</u>	None		

Nick Connelly presented the application. He stated the he discussed paving the storage yard with hard surface rather than gravel with the owner, and the owner decided he preferred gravel because gravel is cheaper.

Vice-Chair Hinton declared the Public Hearing closed and the Business Meeting open to

vote on the request (Item D). Commissioner Conville made a motion to approve the request “because it meets the approval criteria.” Commissioner Waites seconded the motion. Mrs. Lowrey conducted a roll-call vote. Commissioners attending in person submitted physical voting sheets as well.

Commissioners voting aye: Richardo Bryant
Dick Conville
Charles Dawe (via GoToMeeting)
Michael Dickerson (via GoToMeeting)
Amy Hinton, Vice-Chair
Jeff Keyseear (via GoToMeeting)
Elayne Lockett
Rhoda A. Pickett
Rebekah Ray
Kenneth Waites

Commissioners voting nay: None

BUSINESS MEETING

Having no further business, Commissioner Lockett made a motion to adjourn the meeting. The motion was seconded by Commissioner Ray. The meeting was adjourned at 2:50 PM.

Amy Hinton, Vice-Chair

Ginger M. Lowrey, AICP, CFM, Planning Division Manager

SUBJECT PARCEL: 4219 Lincoln Rd

Kim Bradley, Owner and Nicholas Connelly, Engineer

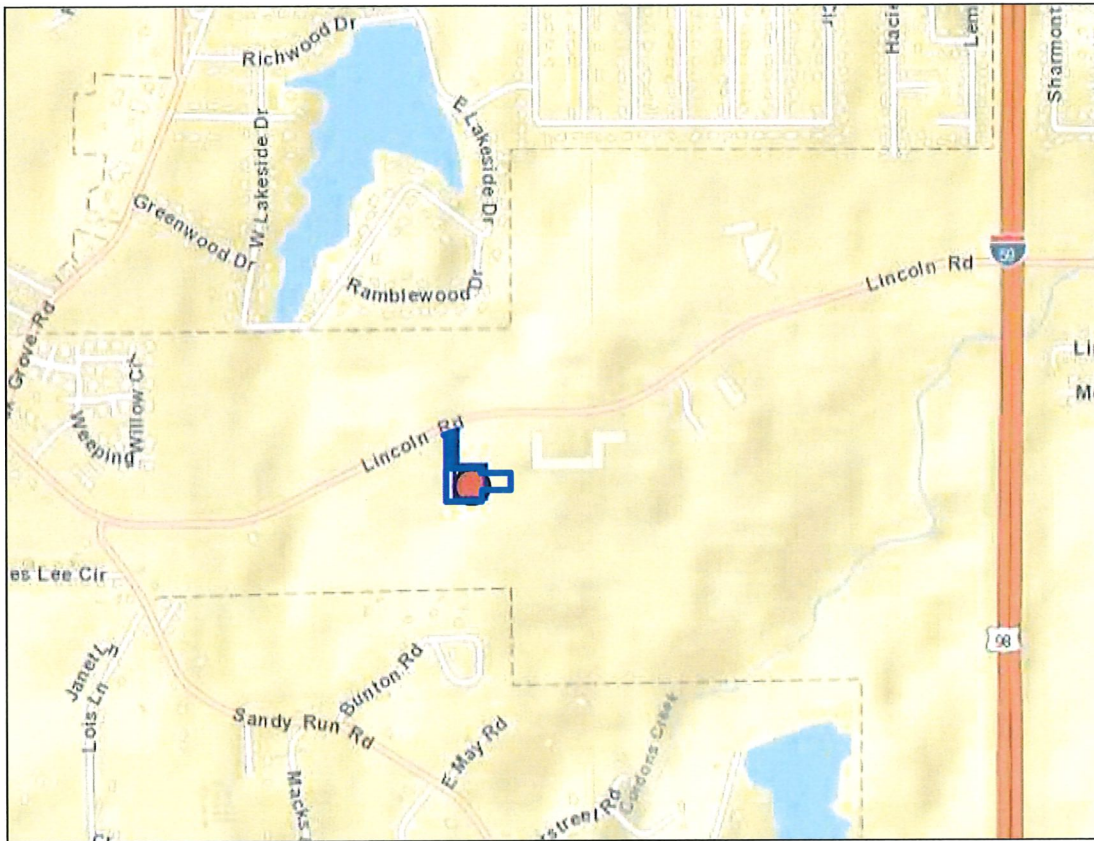
The petitioners request:

Item C: a Conditional Use as "Machinery, tools/construction equipment, limited sales and service" in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3)

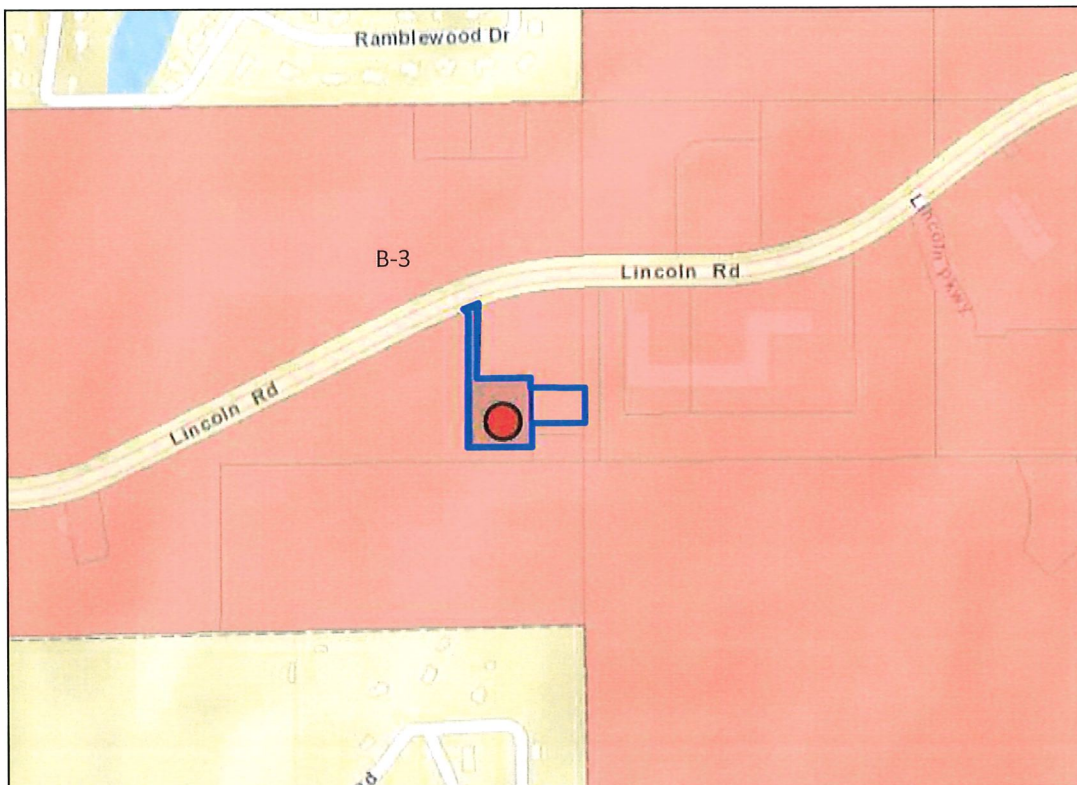
Item D: Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). Request is contingent upon approval of amendment to Land Development Code (See Agenda Item A).



Vicinity Map—Ward 3



Zoning—B-3



Site Aerial



Proposed Location of Storage Area



SURROUNDING AREA

Northern Direction: B-3 (Community Business) District/ Undeveloped



Southern Direction: B-3 (Community Business) District/ Utility



Eastern Direction: B-3 (Community Business) District/ Medical Clinic



Western Direction: B-3 (Community Business) District/ Undeveloped





**Planning Commission
Case Fact Sheet**

Name of Petitioners: Kim Bradley, Owner, and Nick Connelly, Engineer

Address of Property:	Tax Parcel	PPIN:	Ward:
4219 Lincoln Rd	056L-23-004.001	31922	3
	056L-23-004.002	31923	3
	(Portion only)		

Requests: **Conditional Use- Machinery, tools/construction equipment, limited sales and service**
Conditional Use- Gravel Storage Lot

Purpose of Request: To consider an application to request a Conditional Use as "Machinery, tools/construction equipment, limited sales and service" in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). *For the purpose of expansion*

To consider an application to request a Conditional Use per Sec. 7.12.10.4.iii for gravel storage yard in B-3 (Community Business) District as defined by the LDC for properties located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). *Request is contingent upon approval of a text amendment to Land Development Code (See Agenda Item A).*

Applicant Summary: See Attached

Applicable Regulations:

SECTION 4

Zoning Districts Established

4.5.10 B-3 Community Business District

The purpose of the B-3 District is to provide for retail, personal service, and offices in locations with convenient access to the

community consistent with comprehensive planning policies. This district is consistent with the Community Business District in the Comprehensive Plan.

2.4.4 Nonconforming Uses

2.4.4.1 Expansion Prohibited. A one-time expansion of 25 percent may be permitted by the Director. Expansion greater than 25 percent shall require a public hearing and Planning Commission approval. Expansion shall include an intensification of use, a physical expansion that results in increased capacity or activity associated with the use, an extension of the hours of operation or number of days of activity and any similar change in activity or location.

7.12 Parking Requirements.

7.12.10.4 A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot.

i. Unless otherwise permitted, commercial outdoor storage areas shall be hard surface only.

ii. All outdoor storage associated with automotive and tow yard uses shall be hard surface, regardless of zone.

iii. Dustless gravel maintained so as to be free of overgrowth may be allowed for only non-public outdoor storage space of heavy equipment and non-hazardous materials by right in A-1, I zones and as a Conditional Use in A-2 and B-5 [*contingent text amendment would change "B-5" to "B-3"*] zones. Any approved gravel storage lot shall be subject to driveway requirements per 7.12.8.3.

Present Zoning:	This parcel is currently zoned B-3 (Community Business) District
Present Use:	Tool/equipment rental
Future Land Use:	Community Business Corridor and Planned Mixed Use District
Surrounding Zoning and Land Use:	North: B-3 (Community Business) District/ Undeveloped South: B-3 (Community Business) District/ Utility East: B-3 (Community Business) District/ Medical Clinic West: B-3 (Community Business) District/ Undeveloped
Most Nearly Bounded By (streets):	The parcel is most nearly bounded to the north by Lincoln Rd., to the west and south by Sandy Run Rd., and to the east by the unnamed publicly owned water tower access road.
Letters or Concerns stated:	The Planning Division Office has not received any letters or other written communications relative to this case, as of May 20, 2021

History / Background: **Machinery, tools/construction equipment, limited sales and service Conditional Use:**

The petitioners met with Staff in Pre-Application to discuss the addition of an equipment storage yard to the site of a legal nonconforming small equipment and tool rental business.

Under LDC 2.4.4.1, legal nonconforming uses are allowed one-time expansion, up to 25%. Because the proposed expansion is over 25% based on the increase of square footage, Staff is unable to approve a site plan without the use coming into compliance with the Land Development Code. A Conditional Use must be granted to establish this is as legal conforming use and thus remove expansion limitations.

The applicant is concurrently requesting a Conditional Use for a gravel storage yard (7.12.10.4) and a Variance of 35% for an outdoor storage space of 85% of the side lot area (only 50% yard coverage is permitted per Sec 7.12.10.4.).

Gravel Storage Yard in B-3 [pending] Conditional Use:

Petitioner met with Staff in Pre-Application to discuss gravel equipment storage addition. Staff was unable to approve gravel storage yard do to the zoning and the need for a Conditional Use. 7.12.10.4 permits the use of a gravel storage yard by right in A-1, I zones and as a Conditional Use in A-2 and B-5 zones. The request is contingent on approval of the text amendment to a change to the LDC to allow for a Conditional Use for a non-public gravel storage lot use in B-3.

Sec. 7. Standards of Design was recently amended and adopted on September 8, 2020. This amendment added Sec. 7.12.10.4 to allow more options within the City for gravel storage yards. It was limited to industrial and heavy commercial to limit the amount of gravel storage within the City while still allowing the option for gravel storage lots in appropriate settings. A-2 and B-5, as currently written, are approved only with a Conditional Use review to allow the City an opportunity to consider the appropriateness of such a development on surrounding properties.

Staff recommends an optional condition if the Planning Commission considers approval of the request: An increase in vegetated or other visual buffer long the right-of-way and the developable property to the north to limit impact on existing and future B-3 developments.

Option: **Basis for approval:**

12.3.3.2 Additional Approval Criteria. In addition to the standards [n/a], the applicant for a request for the Planning Commission to approve a use shall be required to demonstrate that his/her proposal addresses the following additional requirements, except that the Planning Commission may waive any one or more criteria that it determines are not applicable based upon the expected impact of the proposal.

- i. Determination that adequate public facilities and services will be available concurrent with the impacts of the development as evidenced by letters of sufficiency from utilities and schools and a determination by the city engineer that the available capacity of existing streets can safely provide access to the site.
- ii. The proposed development will be compatible with surrounding uses and will protect adjacent properties through the following measures:
 - Protection of privacy. The proposed plan shall provide reasonable visual and auditory privacy for all dwelling units located within and adjacent to the site. Fences, walls, barriers and / or vegetation shall be arranged to protect and enhance the property and to enhance the privacy of on-site and neighboring occupants.
 - Protection of use and enjoyment. The proposed plan shall be designed and arranged to have minimal negative impact on the use and enjoyment of adjoining property.
 - Compatible design and integration. The use meets all design criteria required by this Code that apply and is designed to integrate well both on and off site.

Conditional Use (2 pages)

12.3.3.1 Compliance Required. Uses requiring Planning Commission approval, as noted in the Tables of Uses in Section 5 of this Code, shall be approved subject to this Section. Any application for such use must comply with all applicable standards that apply to similar uses and properties in the zoning district in general, the specific conditions listed for that use in Section 5, and the following criteria. Where conflicts exist, the Planning Commission shall determine which criteria apply on a case by case basis.

1. Does this application meet the conditions set forth in Section 5 for the requested use? If yes, please explain.
The existing business is the leasing of small rental equipment. This would be considered as "Machinery, tools/ construction equipment, limited sales and service" which is a Conditional Use in B-3 per Section 5.3 of the LDC.
Dustless gravel storage space is allowable as a conditional use under Section 7.12.10.4 of the LDC.
2. Describe the effects the proposed use of utilities and facilities will have on the community.
The proposed use of the property is storage of small rental equipment. This will not expand the use of utilities on the site so there should be no effect to the community. The facilities will be fenced, gated, and well off of Lincoln Road so should not adversely affect the community.
3. Describe how the size of the site is appropriate for the proposed use.
The site is an expansion of the existing facilities at Taylor Rental. The amount of rental equipment at Taylor Rental is increasing. Some of this equipment such as lifts, heaters, and pumps has outgrown the existing facility and the +/-0.7 acres is required to store the equipment.
4. Will there be any additional pedestrian or vehicular traffic generated by the proposed use? Yes
If yes, please explain:
Some additional vehicular traffic will be generated by the increased size of the business. The existing traffic to the business is not high and we would not expect a large increase in traffic. The plan also calls for an additional entrance/exit on a side street to reduce the traffic turning movements on Lincoln Road.

5. Will there be any elevation in the noise level resulting from this proposed use? No

If yes, please explain:

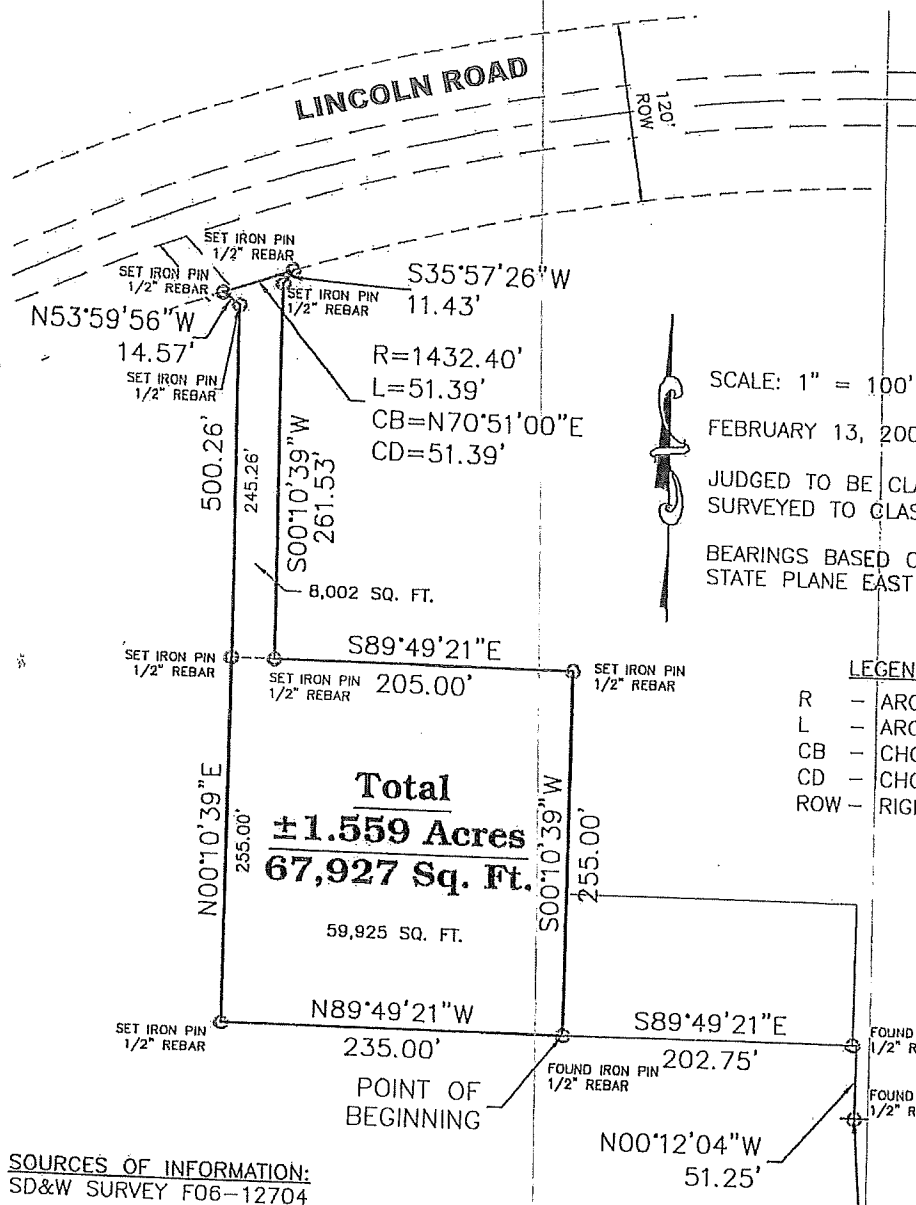
6. What is the expected number of customers/employees per day? +/-50 customers per day.

2-3 employees.

7. Parking Requirements:

Commercial/Industrial: Paved parking will be provided for 21 vehicles, and
1 ADA vehicle(s); with 1 loading spaces.

For more information please reference the Land Development Code Section 12.3.3.2.



SCALE: 1" = 100'

FEBRUARY 13, 2007

JUDGED TO BE CLASS "B" SURVEY
SURVEYED TO CLASS "B"

BEARINGS BASED ON MISSISSIPPI
STATE PLANE EAST ZONE, NAD83.

LEGEND

- R - ARC RADIUS
- L - ARC LENGTH
- CB - CHORD BEARING
- CD - CHORD DISTANCE
- ROW - RIGHT-OF-WAY

Total
±1.559 Acres
67,927 Sq. Ft.

SOURCES OF INFORMATION:
SD&W SURVEY F06-12704

POINT OF COMMENCEMENT:
THE SOUTHWEST CORNER
OF THE NORTHEAST 1/4 OF
THE NORTHEAST 1/4 OF
SECTION 23, TOWNSHIP 4
NORTH, RANGE 14 WEST,
LAMAR COUNTY, MISSISSIPPI
N 654,803.7562
E 818,268.3990

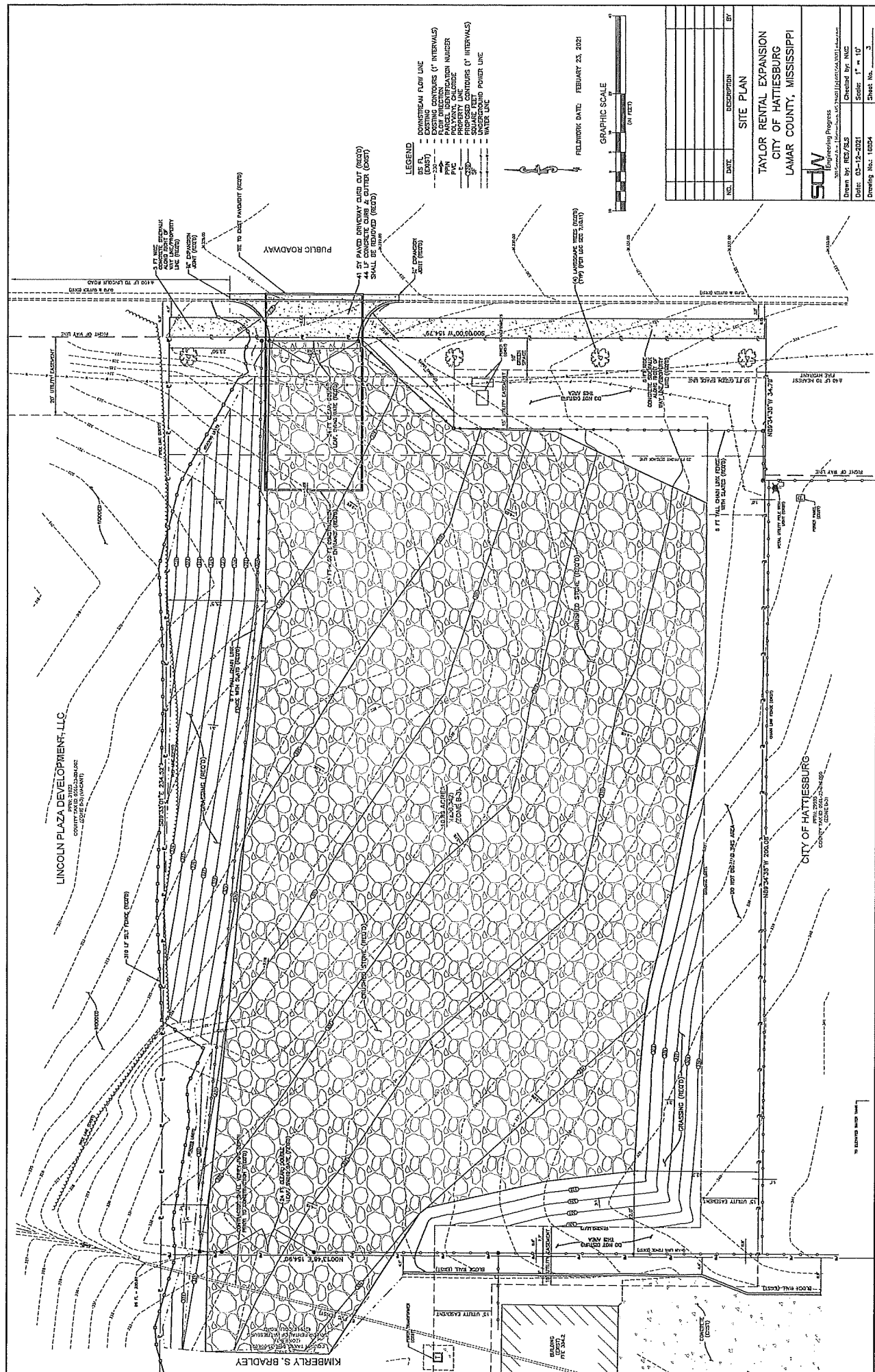
STATE OF MISSISSIPPI
COUNTY OF LAMAR
CITY OF HATTIESBURG

THIS IS TO CERTIFY THAT I HAVE MADE A SURVEY OF THE FOLLOWING DESCRIBED PROPERTY:

A part of the Northeast 1/4 of the Northeast 1/4 of Section 23, Township 4 North, Range 14 West in the City of Hattiesburg, County of Lamar, State of Mississippi, and being more particularly described as Commencing at the Southwest Corner of said Northeast 1/4 of the Northeast 1/4, thence run N00°12'04"W for 51.25 feet, thence run N89°49'21"W for 202.75 feet to the Point of Beginning; thence continue N89°49'21"W for 235.00 feet, thence run N00°10'39"E for 500.26 feet, thence run N53°59'56"W for 14.57 feet to the Southern Right-of-Way Line of Lincoln Road, said Point being a Point on an Arc to the Right having a Radius of 1,432.40 feet, a Chord Bearing of N70°51'00"E, and a Chord Distance of 51.39 feet, thence run along said Arc and said Right-of-Way Line for 51.39 feet, thence run S35°57'26"W for 11.43 feet, thence run S00°10'39"W for 261.53 feet, thence run S89°49'21"E for 205.00 feet, thence run S00°10'39"W for 255.00 feet to the Point of Beginning, comprising 1.559 Acres (67,927 Square Feet), more or less.

P.O. BOX 1711
HATTIESBURG, MS 39403-3711
411 SECOND AVENUE
HATTIESBURG, MS 39403-3101
HTTP://WWW.SD&W.COM
P: (601) 544-1821
F: (601) 544-0201

Nicholas M. Connolly, P.E., P.L.S.
 Civil Engineer No. 12791
 Land Surveyor No. 2973





Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a variance from Section 7.12.10.4 "A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot" and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). The Board of Adjustment recommended to Approve on June 2, 2021.
File Number: 2021-812
Minute Book #

Summary

Approve or Deny a petition filed by Kim Bradley, Owner, and Nick Connelly, Engineer, to request a variance from Section 7.12.10.4 "A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot" and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3). The Board of Adjustment recommended to Deny on June 2, 2021.

Recommendation Statement

Approve or Deny a petition to request a variance from Section 7.12.10.4 to instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd.

Please place this on the June 22, 2021 City Council meeting for consideration.

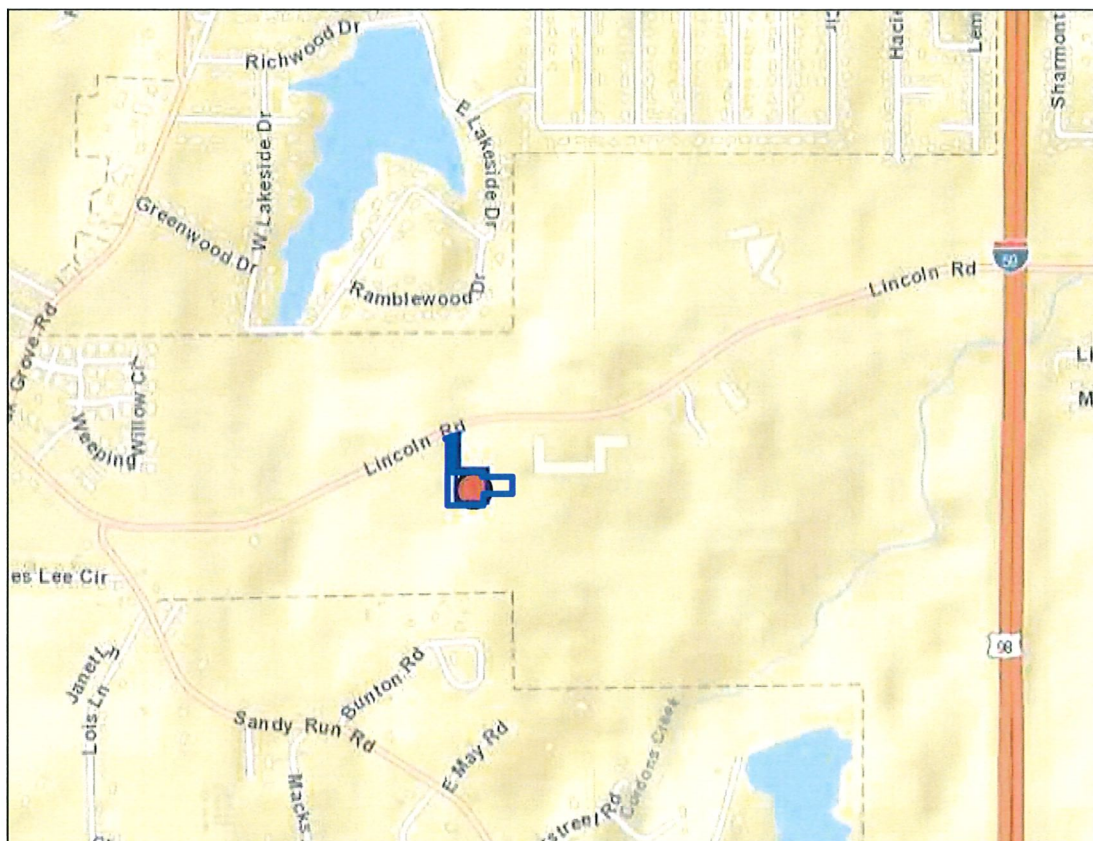
SUBJECT PARCEL:
4219 Lincoln Rd

Kim Bradley, Owner and Nicholas Connelly, Engineer

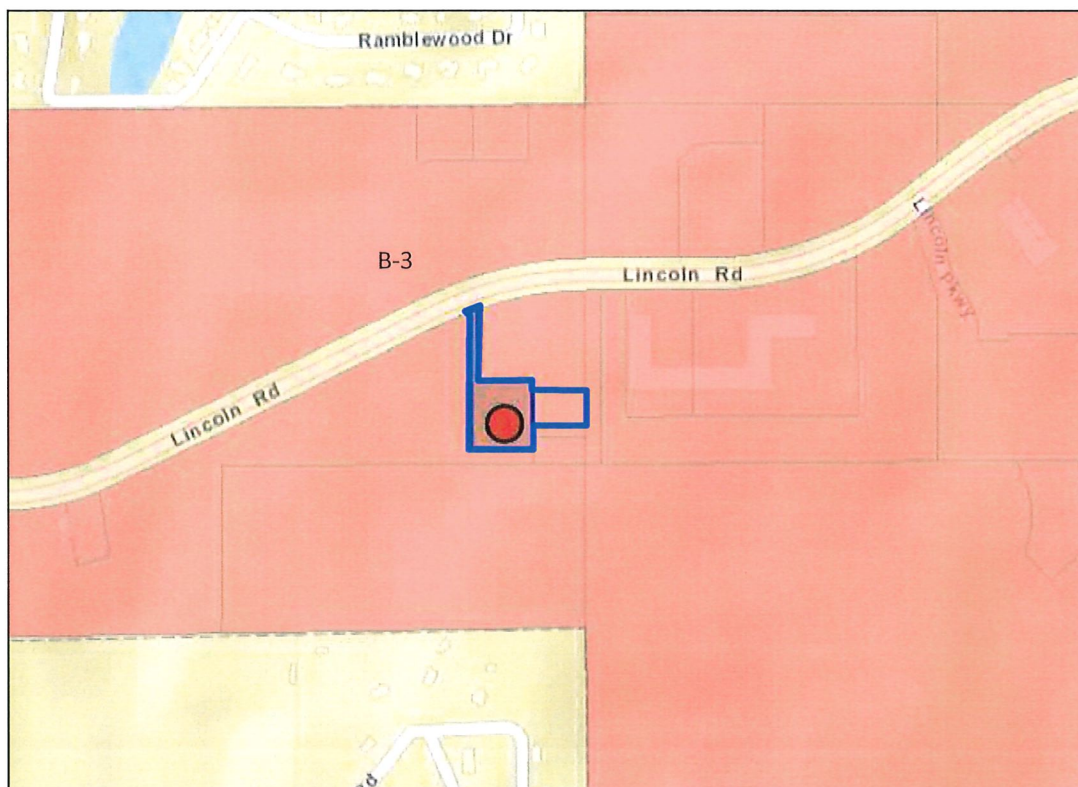
The petitioners requests to vary from Section 7.12.10.4 "A maximum outdoor equipment storage space of 50% of the side and rear lot area is allow for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot" and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).



Vicinity Map—Ward 3



Zoning—B-3



Site Aerial



SURROUNDING AREA

Northern Direction: B-3 (Community Business) District/ Undeveloped



Southern Direction: B-3 (Community Business) District/ Utility



Eastern Direction: B-3 (Community Business) District/ Medical Clinic



Western Direction: B-3 (Community Business) District/ Undeveloped





**Board of Adjustment
Case Fact Sheet**

Name of Petitioners: Kim Bradley, Owner, and Nick Connelly, Engineer

Address of Property:	Tax Parcel	PPIN:	Ward:
4219 Lincoln Rd	056L-23-004.001	31922	3
	056L-23-004.002	31923	3
	(Portion only)		

Request: **Outdoor equipment storage yard area variance**

Purpose of Request: To vary from Section 7.12.10.4 "A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot" and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

Applicant Summary: See Attached

Applicable Regulations: **7.12.10.4** A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot.

Present Zoning: This parcel is currently zoned B-3 (Community Business) District

Present Use: Tool/equipment rental

Future Land Use: Community Business Corridor and Planned Mixed Use District

Surrounding Zoning and Land Use: North: B-3 (Community Business) District/ Undeveloped
South: B-3 (Community Business) District/ Utility

East: B-3 (Community Business) District/ Medical Clinic
West: B-3 (Community Business) District/ Undeveloped

**Letters or
Concerns stated:**

The Planning Division Office has not received any letters relative to this case as of May 21, 2021.

History / Background:

The applicant met with Staff in Pre-Application to discuss an expansion of a legal nonconforming tool/equipment rental business. The applicant proposes to increase outdoor storage through the addition of an equipment storage yard on the eastern portion of the site. The storage yard exceeds the allotted area permitted for outdoor equipment storage. Staff could not approve the expansion as proposed.

The applicants are also concurrently requesting a conditional use as a "Machinery, tools/construction equipment, limited sales and service" and for gravel storage in B-3. Gravel storage in B-3 is contingent upon approval of an amendment to the LDC.

Basis for Approval (12.4.1.1):

I. Hardship.

- The hardship is unique to the property and is not or will not be caused by the actions or inactions of the applicant.
- There are exceptional conditions creating an undue hardship applicable only to the property involved or the intended use which do not apply generally to the other land areas or uses within the same zoning district.

II. Special Privilege. A variance shall not confer any special privilege that is denied to other lands or structures in the same zoning district.

III. Literal Interpretation. The literal interpretation of the provisions of the regulations would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district and would cause unnecessary and undue hardship on the applicant.

IV. Reasonable Use. The applicant cannot make reasonable use of the property without the requested variance.

V. Minimum Required. The granting of a variance is the minimum variance that will make possible the reasonable use of the land or structure.

VI. Conformance with the Purposes of this Code. The granting of a variance will not conflict with the purposes and intent expressed or implied in the Land Development Code.

Variance Information

The Board of Adjustment has the responsibility to hear and make recommendation on requests for variances to the requirements of this Code (per Section 11.4.). Section 12.4.1 Variances are departures from the standards of the Land Development Code, except land use, which will not be contrary to the public interest and where, owing to conditions peculiar to the property and not as a result of the action of the applicant, a literal enforcement of this Code would result in unnecessary and undue hardship.

The following conditions must be met before a variance can be recommended. Not all criteria must be met. However, a strong application will meet multiple criteria.

Approval Criteria.

A variance is not a right, but a privilege that property owners meeting the following criteria may request. These criteria are to be used to consider all variance requests. It shall be the burden of the applicant to prove that the request meets these criteria. Use this worksheet or format your own to demonstrate the following criteria.

1. **Hardship.** (a) The hardship is unique to the property and is not or will not be caused by the actions or inactions of the applicant. (b) There are exceptional conditions creating an undue hardship applicable only to the property involved or the intended use which do not apply generally to the other land areas or uses within the same zoning district.
Taylor Rental opened in the area when there was little other development. The development pattern of the area may have changed to more office and medical uses than the rental business that the owner has been running in this location for the last 14 years, but requiring Taylor Rental to move to a more conforming district in order to continue his business would be a hardship that is not the responsibility of the owner.

2. **Special Privilege.** A variance shall not confer any special privilege that is denied to other lands or structures in the same zoning district.
The owner is not seeking a special privilege. He merely wishes to continue in business at his current location with an increase to his property footprint in order to store additional equipment.

3. **Literal Interpretation.** The literal interpretation of the provisions of the regulations would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district and would cause unnecessary and undue hardship on the applicant.
LDC 7.12.10.4 says "maximum outdoor equipment storage space of 50% of the side and rear lot area". The literal interpretation is that the side lot area is over 50% storage yard. This interpretation takes what is generally a separate storage area and considers it as part of the side yard.

Variance Information

4. **Reasonable Use.** The applicant cannot make reasonable use of the property without the requested variance.

The expansion of the business will not be possible without using additional area on the site for storage. Any increase in storage area will put the business over the allowable storage space.

5. **Minimum Required.** The granting of a variance is the minimum variance that will make possible the reasonable use of the land or structure.

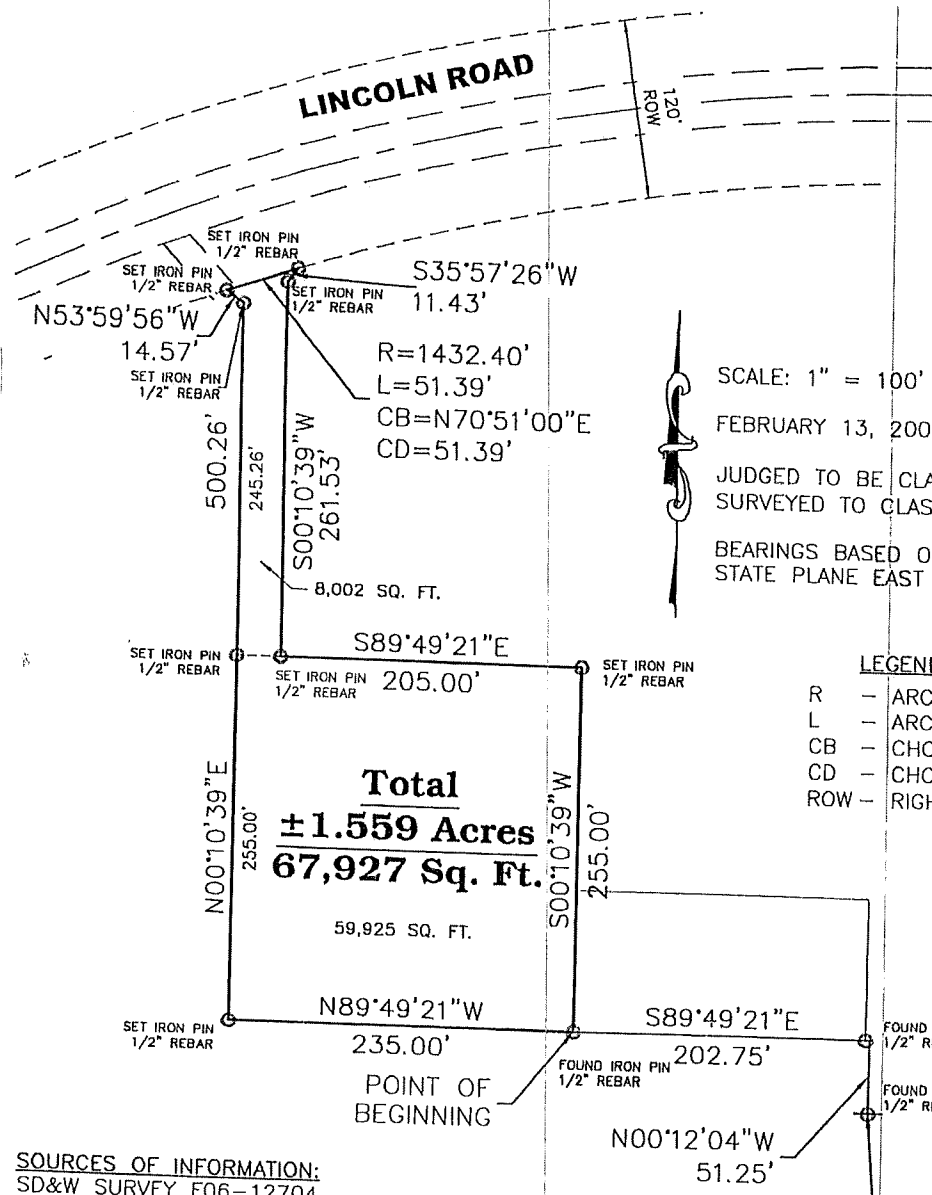
The property that the owner has acquired is adequate for use as a storage yard, and is the least objectionable property that could reasonably be used with the current facilities.

6. **Conformance with the Purpose of this Code.** The granting of a variance will not conflict with the purposes and intent expressed or implied in the Land Development Code.

The purpose of the land code includes promoting economic development in the City. This project is an investment in the economic development of the City by a private entity. The objection here is that the land codes requirement to ensure the coordination of land uses is upset by this rental business in an area developing for medical office use. It could not be foreseen by the owner at the time the business was started that this might not be in conformance with the character of the neighborhood in 15 years.

12.4.1.2 Conditions of Approval. In recommending the granting of a variance, the Board of Adjustment may require appropriate conditions and safeguards in conformity with this Code. Violation of such conditions and safeguards, when made a part of the terms under which a variance is granted, shall be deemed a violation of this Code. The recommendation of the Board of Adjustment shall be presented to the City Council for final action.

399



SCALE: 1" = 100'

FEBRUARY 13, 2007

JUDGED TO BE CLASS "B" SURVEY
SURVEYED TO CLASS "B"

BEARINGS BASED ON MISSISSIPPI
STATE PLANE EAST ZONE, NAD83.

LEGEND

- R - ARC RADIUS
- L - ARC LENGTH
- CB - CHORD BEARING
- CD - CHORD DISTANCE
- ROW - RIGHT-OF-WAY

SOURCES OF INFORMATION:
SD&W SURVEY F06-12704

STATE OF MISSISSIPPI
COUNTY OF LAMAR
CITY OF HATTIESBURG

POINT OF COMMENCEMENT:
THE SOUTHWEST CORNER
OF THE NORTHEAST 1/4 OF
THE NORTHEAST 1/4 OF
SECTION 23, TOWNSHIP 4
NORTH, RANGE 14 WEST,
LAMAR COUNTY, MISSISSIPPI
N 654,803.7562
E 818,268.3990

THIS IS TO CERTIFY THAT I HAVE MADE A SURVEY OF THE FOLLOWING DESCRIBED PROPERTY:

A part of the Northeast 1/4 of the Northeast 1/4 of Section 23, Township 4 North, Range 14 West in the City of Hattiesburg, County of Lamar, State of Mississippi, and being more particularly described as Commencing at the Southwest Corner of said Northeast 1/4 of the Northeast 1/4, thence run N00°12'04"W for 51.25 feet, thence run N89°49'21"W for 202.75 feet to the Point of Beginning; thence continue N89°49'21"W for 235.00 feet, thence run N00°10'39"E for 500.26 feet, thence run N53°59'56"W for 14.57 feet to the Southern Right-of-Way Line of Lincoln Road, said Point being a Point on an Arc to the Right having a Radius of 1,432.40 feet, a Chord Bearing of N70°51'00"E, and a Chord Distance of 51.39 feet, thence run along said Arc and said Right-of-Way Line for 51.39 feet, thence run S35°57'26"W for 11.43 feet, thence run S00°10'39"W for 261.53 feet, thence run S89°49'21"E for 205.00 feet, thence run S00°10'39"W for 255.00 feet to the Point of Beginning, comprising 1.559 Acres (67,927 Square Feet), more or less.

SD & W
SHOWS, DEARMAN & WAITS, INC.
CONSULTING ENGINEERS

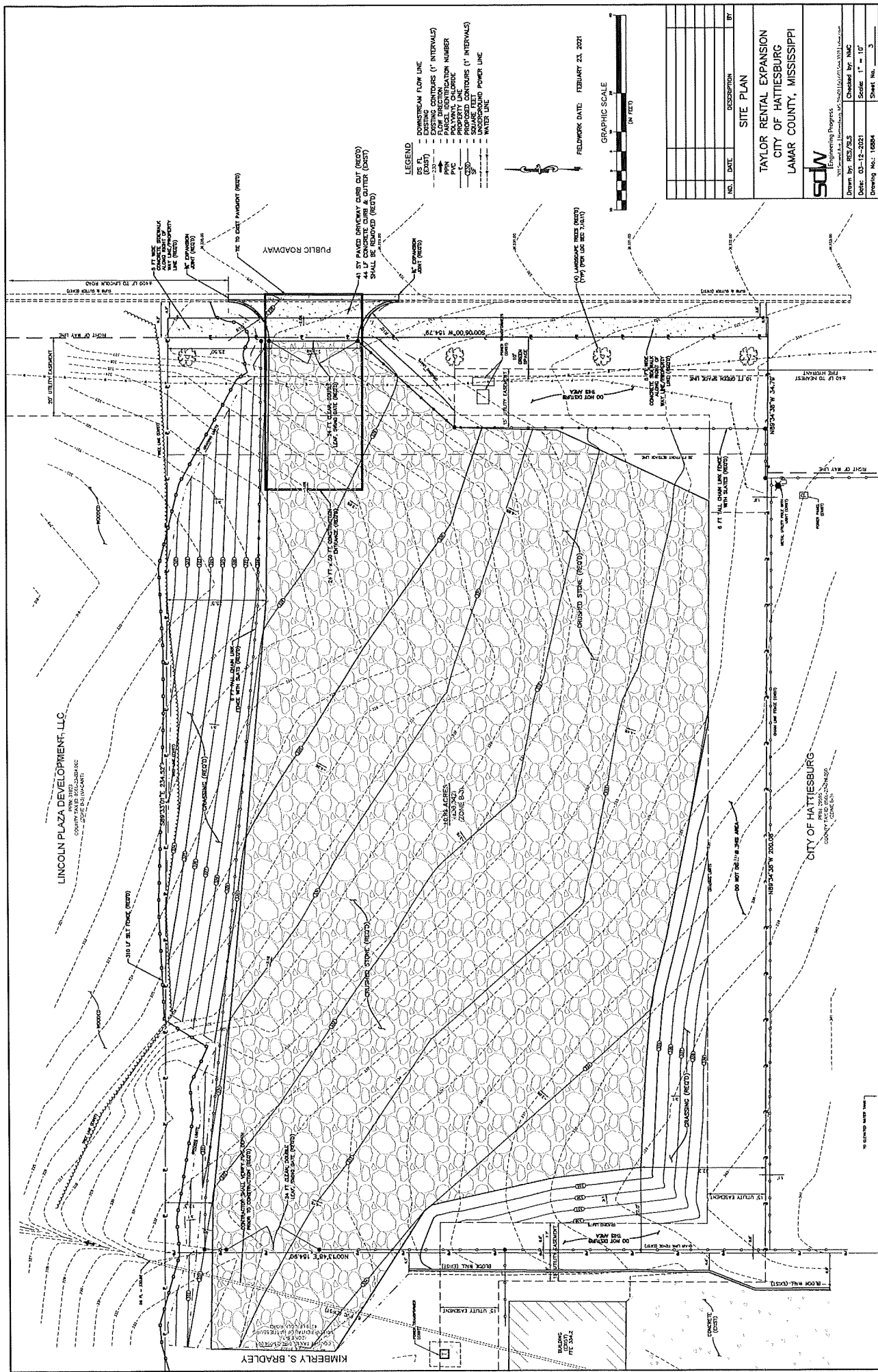
P.O. BOX 1711
HATTIESBURG, MISSISSIPPI 39403-1711
211 SECOND AVENUE
HATTIESBURG, MISSISSIPPI 39401
HTTP://WWW.SD&W.COM
P: (601) 344-1821
F: (601) 344-0281

ENGINEER
AND
LAND SURVEYOR

P.E. 12791
L.S. 2973

Nicholas M. Connolly
Nicholas M. Connolly, P.E., P.L.S.
Civil Engineer No. 12791
Land Surveyor No. 2973

15



**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG BOARD OF ADJUSTMENT**

June 2, 2021

The Hattiesburg Board of Adjustment did meet in regular session on June 2, 2021 at 3:30 PM at the Jackie Dole Community Center, 220 West Front Street, Hattiesburg, Mississippi. Shawn Harris, Chair, presided over the meeting. A quorum was indicated and the attendance was as follows:

Board Members Present: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
Lucy Parkman
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members Absent: James Hughes
Stacy Ready

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger Maddox Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner

Shawn Harris, Chair, declared the meeting of the Hattiesburg Board of Adjustment open and in session at 3:35 PM.

AGENDA REVIEW

There came the matter of the June 2021 Agenda. A motion was made to approve the January 2021 Agenda by Bernard Green and seconded by Dick Conville.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
Lucy Parkman
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None

Board Members absent for vote: Lucy Parkman

MINUTES REVIEW

There came the matter of the May 5, 2021 minutes. A motion was made to approve the minutes by Bruce Betts and seconded by Bernard Green.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None

Board Members absent for vote: Lucy Parkman

REPORTS

PLANNING REPORT

Ginger Maddox Lowrey, AICP, Planning Division Manager, provided the Planning Report. On May 18, 2021, City Council tabled the pole sign variance 4700 Hardy Street.

CHAIR’S REPORT

Shawn Harris gave the Chair’s Report. He thanked Staff for emailing the May 2021 Building Permit Report. He stated he had requested that the information be provided so that the BOA would be able to see sign permit information to get an idea of how many signs are being permitted each month since the BOA is only gets a snapshot of signage through the variance process. Staff stated that while the Building Official would not always be available, he would sometimes be able to come and present the monthly permit report.

INTRODUCTIONS

Board members introduced themselves.

PUBLIC HEARING – BOARD OF ADJUSTMENT

Shawn Harris, Chair, declared the Public Hearing for the Board of Adjustment open at 3:43 PM.

There came the matter of Item A (Storage Yard Size Variance), Kim Bradley, Owner, and Nick Connelly, Engineer, as required in the Land Development Code, Ord. No. 3209, to request a variance from Section 7.12.10.4 “A maximum outdoor equipment storage space of 50% of the side and rear lot area is allowed for business and industrial equipment and materials if outdoor storage is an accessory to another use on the same lot” and instead allow for maximum outdoor storage space of 85%, for a variance of 35% for a proposed storage yard located at 4219 Lincoln Rd. (Parcel 056L-23-004.001, PPIN 31922; portion of 056L-23-004.002, PPIN 31923, Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	302 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>			
<u>Opponents:</u>			

Nick Connelly presented the application.

Shawn Harris declared the Public Hearing closed and the Business Meeting open to vote on Item A. Bruce Betts stated that he recently visited the Taylor Rentals and it was quite busy, and that the need/demand dictates growth. Victoria Bolls stated that the expansion would not add to the clutter of the surrounding area. Bernard Green made a motion to approve the petition on the following bases: Reasonable Use, the applicant cannot make reasonable use of the property without the requested variance; Conformance with the Purposes of this Code, the granting of a variance with not conflict with the purposes and intent expressed or implied in the Land Development Code. Bruce Betts seconded the motion.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None
Board Members abstaining: Lucy Parkman

Lucy Parkman abstained as she arrived late and missed a portion of the discussion.

There came the matter of Item B (Front Setback Variance), Robert St. John, Owner, as required in the Land Development Code, Ord. No. 3209, to request a variance from Section 6, Table 6.1 “Minimum Front Setback” for B-3, “30 feet”, and instead allow a setback of nine (9) feet and eight (8) inches for a variance twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.0l, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3).Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Robert St. John	116 Heatherwood	Hattiesburg, MS
<u>Proponents:</u>			
<u>Opponents:</u>			

Robert St. John presented the application. Mr. St. John stated that he was requesting the front setback variance to permanently install/anchor an airstream trailer at the front of the outdoor patio to function as outdoor kitchen. Due to the anchored foundation, Administration decided to regulate the airstream as a permanent structure. He stated there would be no food truly cooked in the trailer but rather prepped/assembled. He stated that there was a need for additional kitchen space on the site, which would be filled by the trailer.

Shawn Harris declared the Public Hearing closed and the Business Meeting open to vote on Item B. Dick Conville made a motion to approve the petition on the following bases: Reasonable Use, the applicant cannot make reasonable use of the property without the requested variance; Conformance with the Purposes of this Code, the granting of a variance with not conflict with the purposes and intent expressed or implied in the Land Development Code. Bernard Green seconded the motion.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
Lucy Parkman
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None

BUSINESS MEETING

There being no further business, Bernard Green made a motion to adjourn the meeting. The motion was seconded by Bruce Betts. The meeting was adjourned at 4:38 PM.

Shawn Harris, Chair

Ginger Maddox Lowrey, AICP, CFM, Planning Division Manager



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ginger Lowrey, Planning Administrator

cc: Andrew Ellard, Director

Date: Tuesday, June 22, 2021

Re: Approve or Deny a petition filed by Robert St. John, Owner, to request a variance from Section 6, Table 6.1 "Minimum Front Setback" for B-3, "30 feet", and instead allow a setback of nine (9) feet and eight (8) inches for a variance of twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.01, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3). The Board of Adjustment recommended to Approve on June 2, 2021.
File Number: 2021-813
Minute Book #

Summary

3810 Hardy Street - Variance - Front setback

Recommendation Statement

Approve or Deny a petition to request a variance from Section 6, Table 6.1 for a variance of twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street

Please place this on the June 22, 2021 City Council meeting for consideration.

**MINUTES OF THE
REGULAR MEETING OF THE
HATTIESBURG BOARD OF ADJUSTMENT
June 2, 2021**

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Dick Conville
Bernard Green
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James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members Absent: James Hughes
Stacy Ready

Also Present: Andrew Ellard, Director, Urban Development
Jim Gladden, Esq.
Ginger Maddox Lowrey, AICP, Planning Division Manager
Caroline Miles, Planner

Shawn Harris, Chair, declared the meeting of the Hattiesburg Board of Adjustment open and in session at 3:35 PM.

AGENDA REVIEW

There came the matter of the June 2021 Agenda. A motion was made to approve the January 2021 Agenda by Bernard Green and seconded by Dick Conville.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
Lucy Parkman
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None
Board Members absent for vote: Lucy Parkman

MINUTES REVIEW

There came the matter of the May 5, 2021 minutes. A motion was made to approve the minutes by Bruce Betts and seconded by Bernard Green.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None
Board Members absent for vote: Lucy Parkman

REPORTS

PLANNING REPORT

Ginger Maddox Lowrey, AICP, Planning Division Manager, provided the Planning Report. On May 18, 2021, City Council tabled the pole sign variance 4700 Hardy Street.

CHAIR’S REPORT

Shawn Harris gave the Chair’s Report. He thanked Staff for emailing the May 2021 Building Permit Report. He stated he had requested that the information be provided so that the BOA would be able to see sign permit information to get an idea of how many signs are being permitted each month since the BOA is only gets a snapshot of signage through the variance process. Staff stated that while the Building Official would not always be available, he would sometimes be able to come and present the monthly permit report.

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	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Nick Connelly	302 2 nd Ave	Hattiesburg, MS
<u>Proponents:</u>			
<u>Opponents:</u>			

Nick Connelly presented the application.

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Board Members voting aye: Bruce Betts, Vice-Chair
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Dick Conville
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James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None
Board Members abstaining: Lucy Parkman

Lucy Parkman abstained as she arrived late and missed a portion of the discussion.

There came the matter of Item B (Front Setback Variance), Robert St. John, Owner, as required in the Land Development Code, Ord. No. 3209, to request a variance from Section 6, Table 6.1 “Minimum Front Setback” for B-3, “30 feet”, and instead allow a setback of nine (9) feet and eight (8) inches for a variance twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.0l, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3).Ward 3).

	<u>Name</u>	<u>Address</u>	<u>City/State</u>
<u>Presented by:</u>	Robert St. John	116 Heatherwood	Hattiesburg, MS
<u>Proponents:</u>			
<u>Opponents:</u>			

Robert St. John presented the application. Mr. St. John stated that he was requesting the front setback variance to permanently install/anchor an airstream trailer at the front of the outdoor patio to function as outdoor kitchen. Due to the anchored foundation, Administration decided to regulate the airstream as a permanent structure. He stated there would be no food truly cooked in the trailer but rather prepped/assembled. He stated that there was a need for additional kitchen space on the site, which would be filled by the trailer.

Shawn Harris declared the Public Hearing closed and the Business Meeting open to vote on Item B. Dick Conville made a motion to approve the petition on the following bases: Reasonable Use, the applicant cannot make reasonable use of the property without the requested variance; Conformance with the Purposes of this Code, the granting of a variance with not conflict with the purposes and intent expressed or implied in the Land Development Code. Bernard Green seconded the motion.

Board Members voting aye: Bruce Betts, Vice-Chair
Victoria Bolls
Dick Conville
Bernard Green
Shawn Harris, Chair
Lucy Parkman
James Trussell (via GoToMeeting)
Brandon Williams (via GoToMeeting)

Board Members voting nay: None

BUSINESS MEETING

There being no further business, Bernard Green made a motion to adjourn the meeting. The motion was seconded by Bruce Betts. The meeting was adjourned at 4:38 PM.

Shawn Harris, Chair

Ginger Maddox Lowrey, AICP, CFM, Planning Division Manager

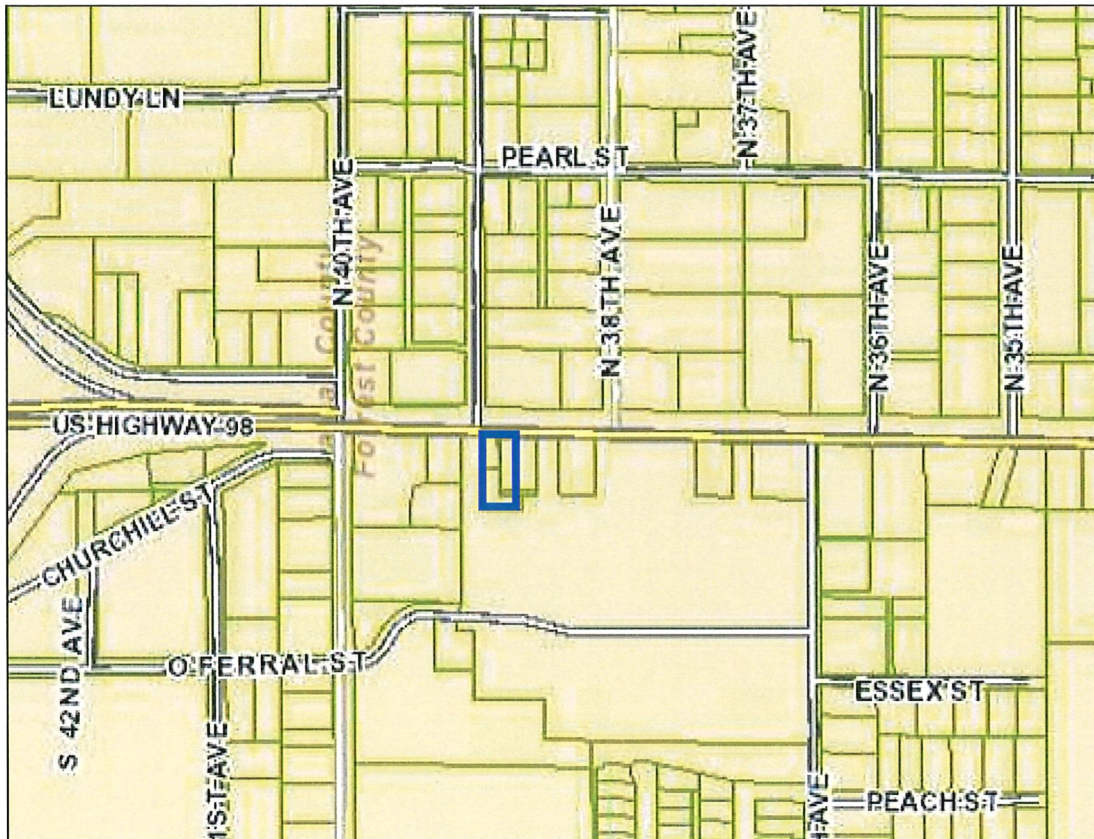
SUBJECT PARCEL: 3810 Hardy Street

Robert St. John, Owner

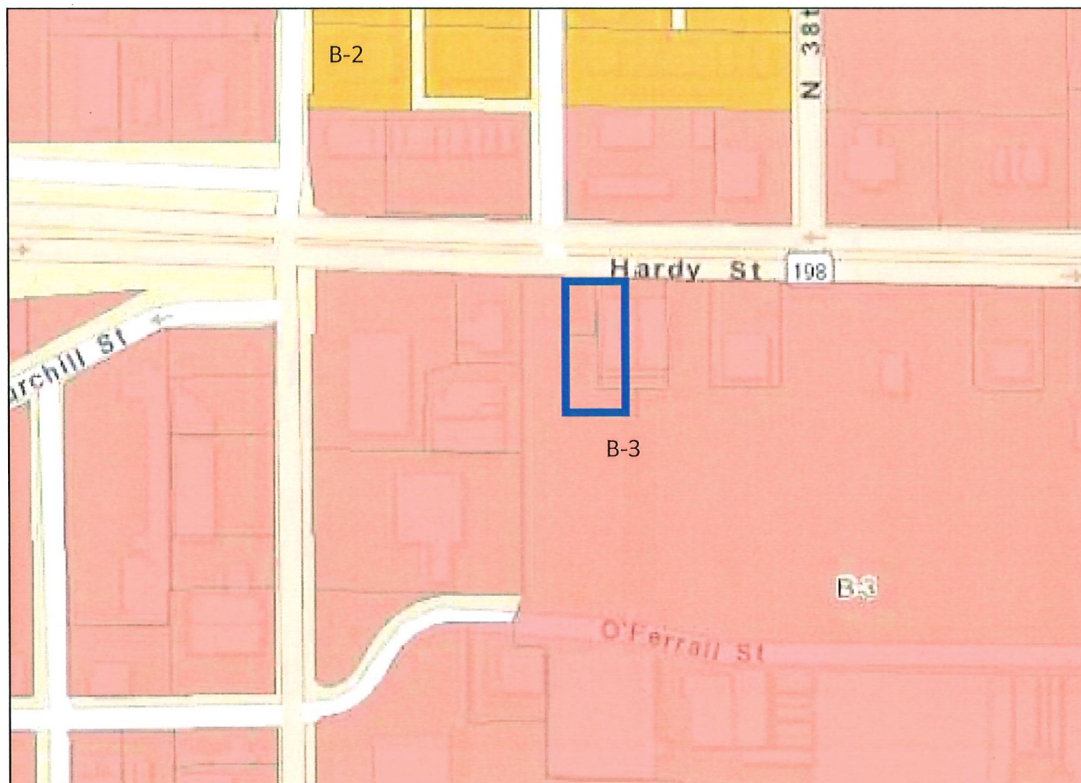
The petitioner requests a variance from Section 6, Table 6.1 "Minimum Front Setback" for B-3, "30 feet", and instead allow a setback of nine (9) feet and eight (8) inches for a variance twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.01, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3).



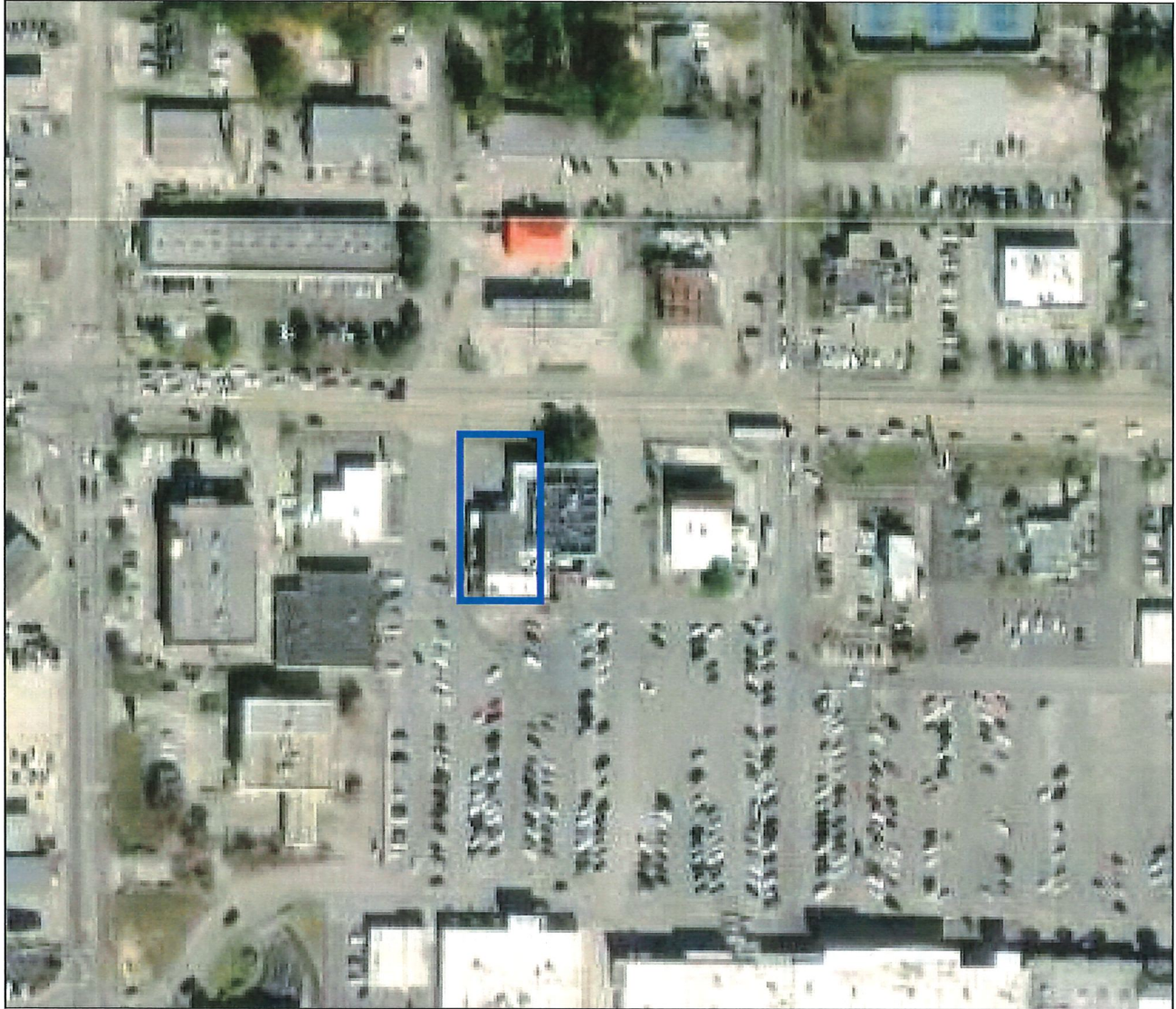
Vicinity Map—Ward 3



Zoning—B-3



Site Aerial



SURROUNDING AREA

Northern Direction: B-3 (Community Business) District/ Gas Station



Southern Direction: B-3 (Community Business) District/ Shopping Center



Eastern Direction: B-3 (Community Business) District/ Restaurant



Western Direction: B-3 (Community Business) District/ Pharmacy





**Board of Adjustment
Case Fact Sheet**

Petitioners: Robert St. John, Owner

Address of Property:	Tax Parcel	PPIN:	Ward:
3810 Hardy Street	2-028M-07-076.01	26450	3
	2-028M-07-074.00	26449	
	2-028M-07-020.00	44632	

Request: **Front setback variance**

Purpose of Request: To vary from Section 6, Table 6.1 "Minimum Front Setback" for B-3, "30 feet", and instead allow a setback of nine (9) feet and eight (8) inches for a variance twenty (20) feet and four (4) inches along Hardy Street for a proposed structure located at 3810 Hardy Street (Parcel 2-028M-07-076.01, PPIN 26450; Parcel 2-028M-07-074.00, PPIN 26449; Parcel 2-028M-07-020.00, PPIN 44632, Ward 3).

Applicant Summary: See Attached

Applicable Regulations:

Table 6.1 Dimensional Standards										
District	Minimum Lot Size in SF/ Width at Setback	Max. Dwelling Units	Max. Floor Area Ratio	Setbacks in feet				Max. Height*	Max. Impervious Surface Lot Coverage	Buffer in Feet
				Min. Front	Max. Front	Min. Side	Min. Rear			
B-3	No minimum/ 100	-	1.00	30	-	0 or 10	0	40 feet or 3 stories	80%	30

Present Zoning: B-3 (Community Business)

Present Use: Restaurant

Future Land Use: Community Business

**Surrounding Zoning
and Land Use:**

North: B-3 (Community Business) District/ Gas station
South: B-3 (Community Business) District/ Shopping center
East: B-3 (Community Business) District/ Restaurant
West: B-3 (Community Business) District/ Pharmacy

**Most Nearly
Bounded By (streets):**

The parcel is bounded by Hardy Street to the north, S 37th Avenue to the east and S 40th Avenue to the west. It is accessible by Hardy Street.

**Letters or
Concerns stated:**

The Planning Division Office has not received any letters relative to this case as of May 21, 2021.

History / Background:

The applicant is proposing adding an airstream trailer to utilize as a food prep kitchen. The trailer will be a permanent structure installed on the site and is subject to setback requirements. Administration is reviewing the airstream trailer as a permanent structure due to its foundation and permanent infrastructure.

This site previously received a 6 foot wall/fence height variance to allow for a 10 foot wall in the front setback in July 2020.

Basis for Approval (12.4.1.1):

I. Hardship.

- The hardship is unique to the property and is not or will not be caused by the actions or inactions of the applicant.
- There are exceptional conditions creating an undue hardship applicable only to the property involved or the intended use which do not apply generally to the other land areas or uses within the same zoning district.

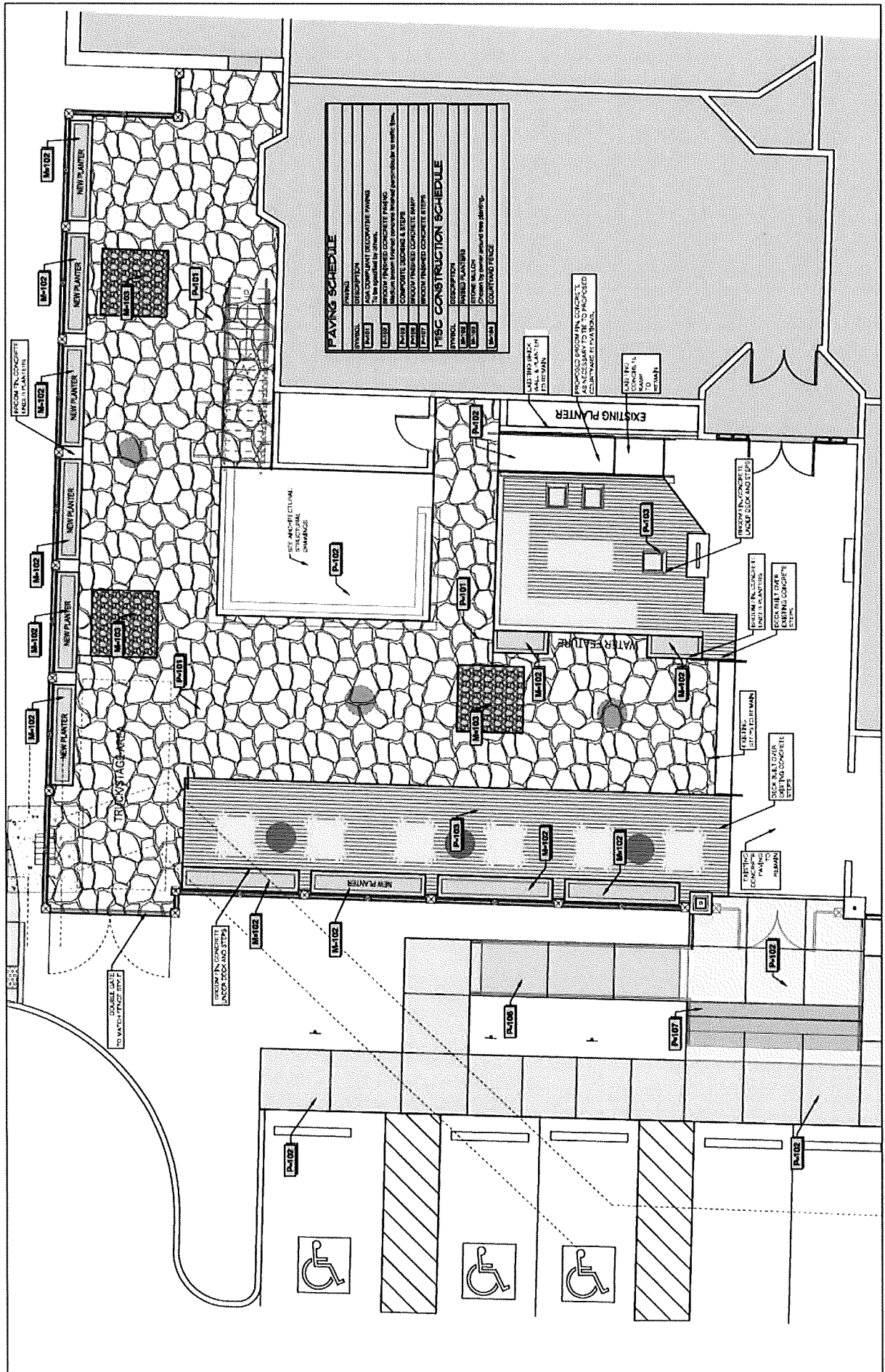
II. Special Privilege. A variance shall not confer any special privilege that is denied to other lands or structures in the same zoning district.

III. Literal Interpretation. The literal interpretation of the provisions of the regulations would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district and would cause unnecessary and undue hardship on the applicant.

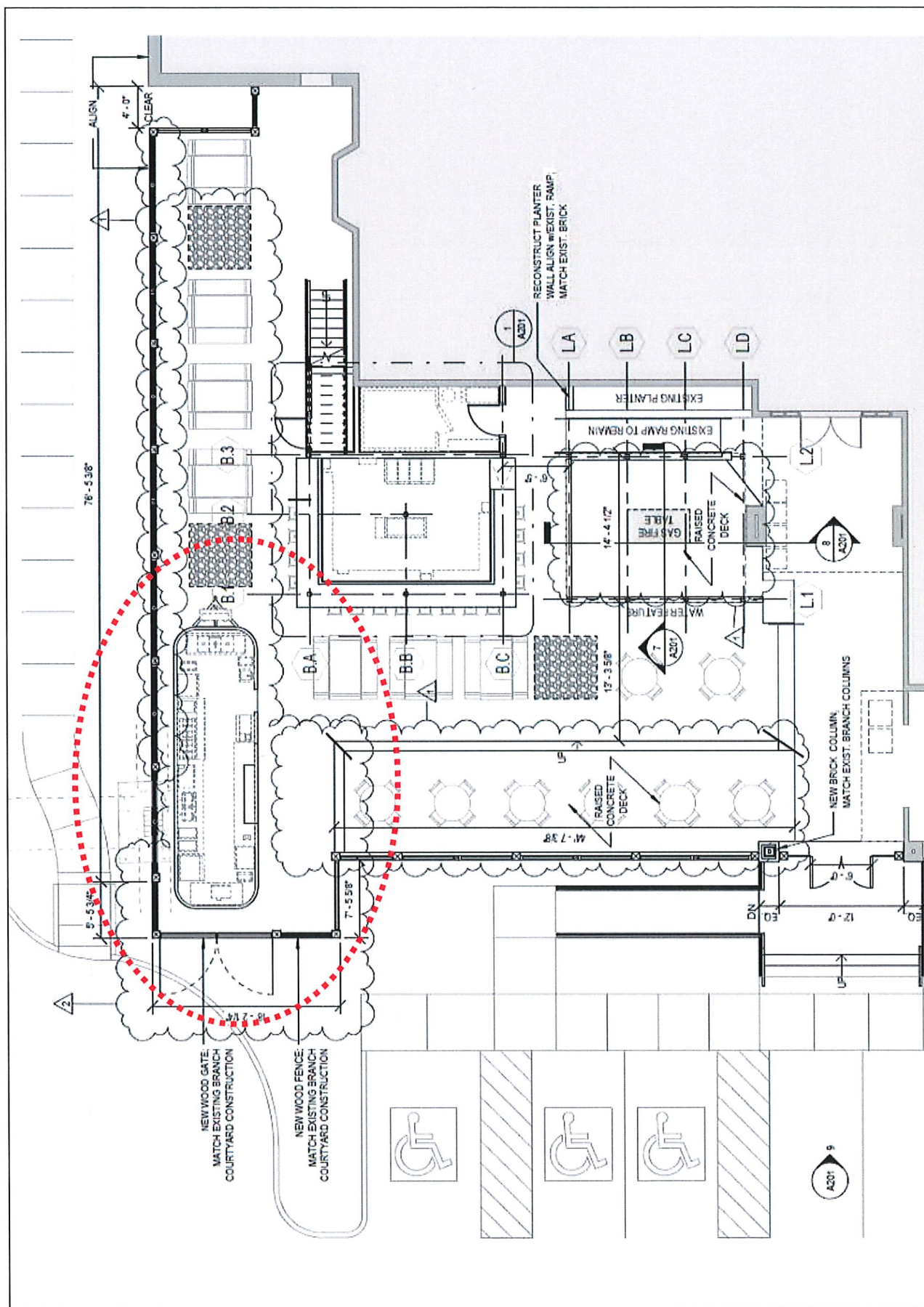
IV. Reasonable Use. The applicant cannot make reasonable use of the property without the requested variance.

V. Minimum Required. The granting of a variance is the minimum variance that will make possible the reasonable use of the land or structure.

VI. Conformance with the Purposes of this Code. The granting of a variance will not conflict with the purposes and intent expressed or implied in the Land Development Code.



Proposed Site Plan



Variance Information

The Board of Adjustment has the responsibility to hear and make recommendation on requests for variances to the requirements of this Code (per Section 11.4.). Section 12.4.1 Variances are departures from the standards of the Land Development Code, except land use, which will not be contrary to the public interest and where, owing to conditions peculiar to the property and not as a result of the action of the applicant, a literal enforcement of this Code would result in unnecessary and undue hardship.

The following conditions must be met before a variance can be recommended. Not all criteria must be met. However, a strong application will meet multiple criteria.

Approval Criteria.

A variance is not a right, but a privilege that property owners meeting the following criteria may request. These criteria are to be used to consider all variance requests. It shall be the burden of the applicant to prove that the request meets these criteria. Use this worksheet or format your own to demonstrate the following criteria.

1. **Hardship.** (a) The hardship is unique to the property and is not or will not be caused by the actions or inactions of the applicant. (b) There are exceptional conditions creating an undue hardship applicable only to the property involved or the intended use which do not apply generally to the other land areas or uses within the same zoning district.

please see attached

2. **Special Privilege.** A variance shall not confer any special privilege that is denied to other lands or structures in the same zoning district.

3. **Literal Interpretation.** The literal interpretation of the provisions of the regulations would deprive the applicant of rights commonly enjoyed by other properties in the same zoning district and would cause unnecessary and undue hardship on the applicant.

Variance Information

To the Variance Committee:

We applied for, and received, a variance last year when the El Rayo patio project was being planned. The committee graciously approved our fence variance. At the time, the plan was to have a flatbed truck in the northwest corner of the patio to provide live entertainment. The renderings that were shown to the committee during our presentation showed the location of the truck with a musician on it. The plan was to have a versatile and mobile option for entertainment. This would allow El Rayo to remove the truck on occasion to bring in a crawfish rig or a barbeque trailer.

What we have learned since we last met is that the El Rayo kitchen is maxed out and cannot feed any additional customers on the patio. We had to shift midstream, scratch the flatbed truck/rig option, and find a solution for this problem.

Using the outdoor food options at Seaside Florida as an inspiration, we purchased an Airstream trailer and are currently in the process of spending \$85,000.00 to outfit it to service the outdoor patio. Aesthetically, we are excited that this will fit into our design inside the fence. We have already begun to bring in 27-foot-tall live oaks (with many more trees to come) and are spending over \$120,000.00 in landscaping (inside and outside the fence) to enhance this project.

The Airstream trailer will go in the exact location where the flatbed truck was set to go, and the design has already been approved by the health department as we have followed all health and building codes.

To be honest, I am not sure if I am asking for a hardship variance or a special privilege variance. I do know that we need to feed our guests in this beautiful new space we are creating, and this is the most efficient and most attractive way we can do it, so maybe it falls under "reasonable use" as we have no other option and we are making a change in our original plans which exhibit the "minimum required" change as the Airstream is replacing a flatbed truck.

As far as special privilege goes, I know that the fence setback that was approved in 2020 is the same as the Mahogany Bar, Ed's Burger Joint, and Keg & Barrel.

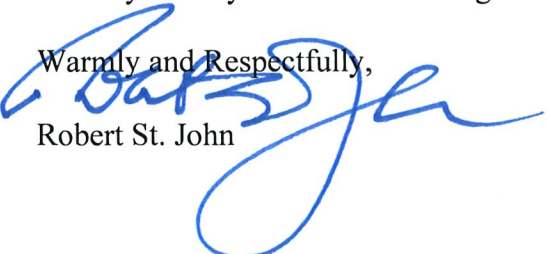
We have spared no expense in the design-build process of this \$1 million+ project and have secured architecture firms, mechanical engineers, electrical engineers, landscape architects, and several other consultants as we always want to build and operate first-rate concepts that, not only service and delight our guests, but add to the quality of life and aesthetics in our Midtown neighborhood.

We have also attached a letter from our architect to this packet.

Thank you for your service to our great city and thank you for your consideration.

Warmly and Respectfully,

Robert St. John





29 April 2021

Department of Urban Planning
200 Forrest Street
Hattiesburg, MS 39401

To Whomever It May Concern,

I am writing to apply for a Setback Variance on behalf of Robert St. John for the El Rayo restaurant project. At the beginning of the design phase for this project, a variance was approved for the construction of a fence along Hardy Street that aligned to the Mahogany Bar courtyard wall. The design intent was to create conformity along Hardy Street and connectivity with sidewalks along this urban edge. The reconceptualization of Purple Parrot as a Tex-Mex restaurant relies heavily on outdoor seating and a large volume of food. Due to this higher demand on the kitchen staff and equipment, we intend to fit out a vintage Airstream trailer as a food prep and service area. This trailer will mostly hold food in warmers and allow assembly of food items closer to the patrons, offering quicker service and a better overall experience for all dinners.

This variance will allow us to locate the Airstream against the fence, leaving more open space for seating under the shade of the newly placed trees and away from the street noise of Hardy Street. The Airstream will be permanently tie-down to a structural slab with code compliant utilities, designed by licensed professionals, servicing the trailer. The function of this courtyard is similar to adjacent properties such as Mahogany Bar, Ed's Burger Joint, and Keg & Barrel in it's relation to Hardy Street.

Sincerely:

Lucas Posey
Project Coordinator

Encl: El Rayo Courtyard – Variance Request

NEW SOUTH
— RESTAURANT GROUP —



PURPLE PARROT CAFE







LITTLE TOKYO









tabella



tabella
take-away

5/22/21

Open 11:30am
Mon-Fri 6pm



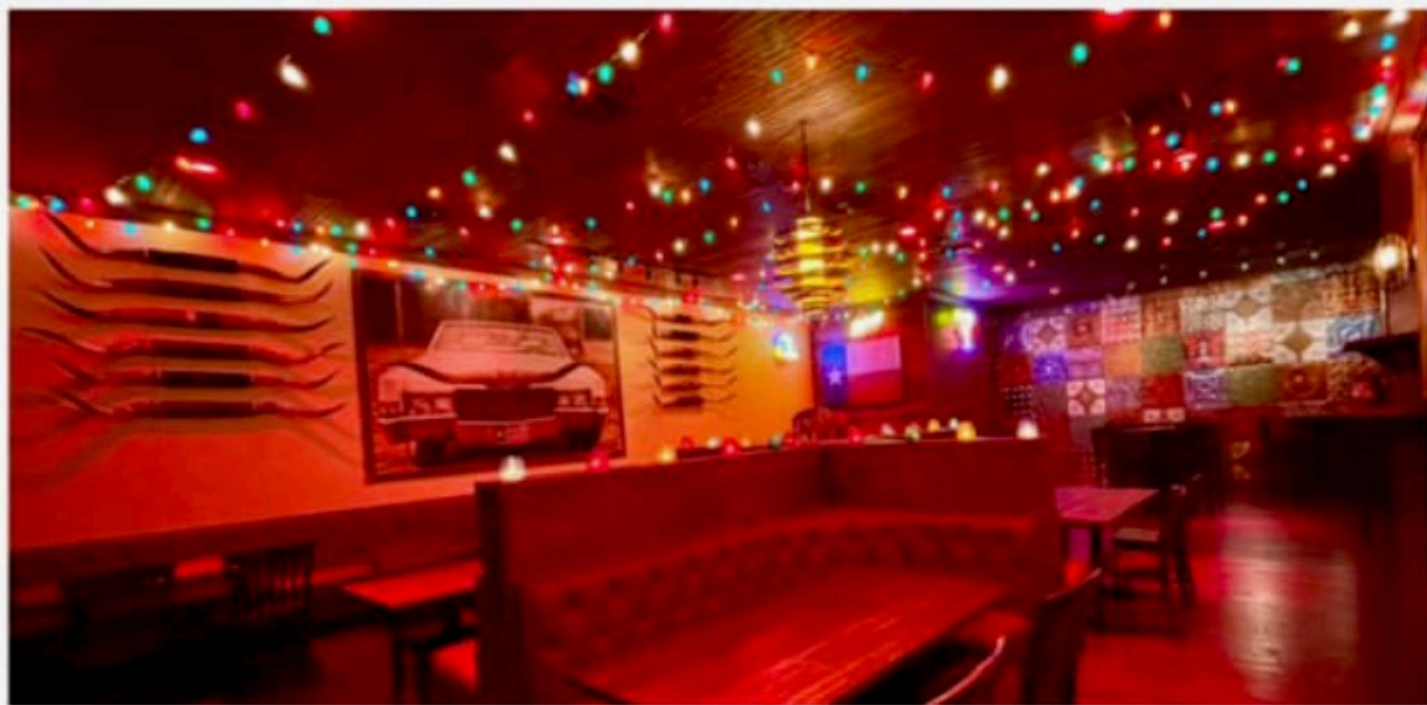
3000 Hardy St.





EL RAYO

TEX MEX















El Rayo























SOLD

TOEL Rayo Tex Mex

Q# 1026802-009-4473NP-12

BY 1 EA

DELFIELD
A Walhilt Brand





Hatco
CORPORATION

SOLD
To EL RAYO
BY IF 461

WORLDWIDE FOODSERVICE
MADE IN USA

WORLDWIDE FOODSERVICE
MADE IN USA

THIS SIDE UP

SOLD
To EL RAYO
BY IF 461

Chip warmer
HIS
Beverage
DELTA
ALTO SHAM

Commercial Oven

Commercial Quality
Professional Performance

BY 12/21

BEVERAGE-AIR

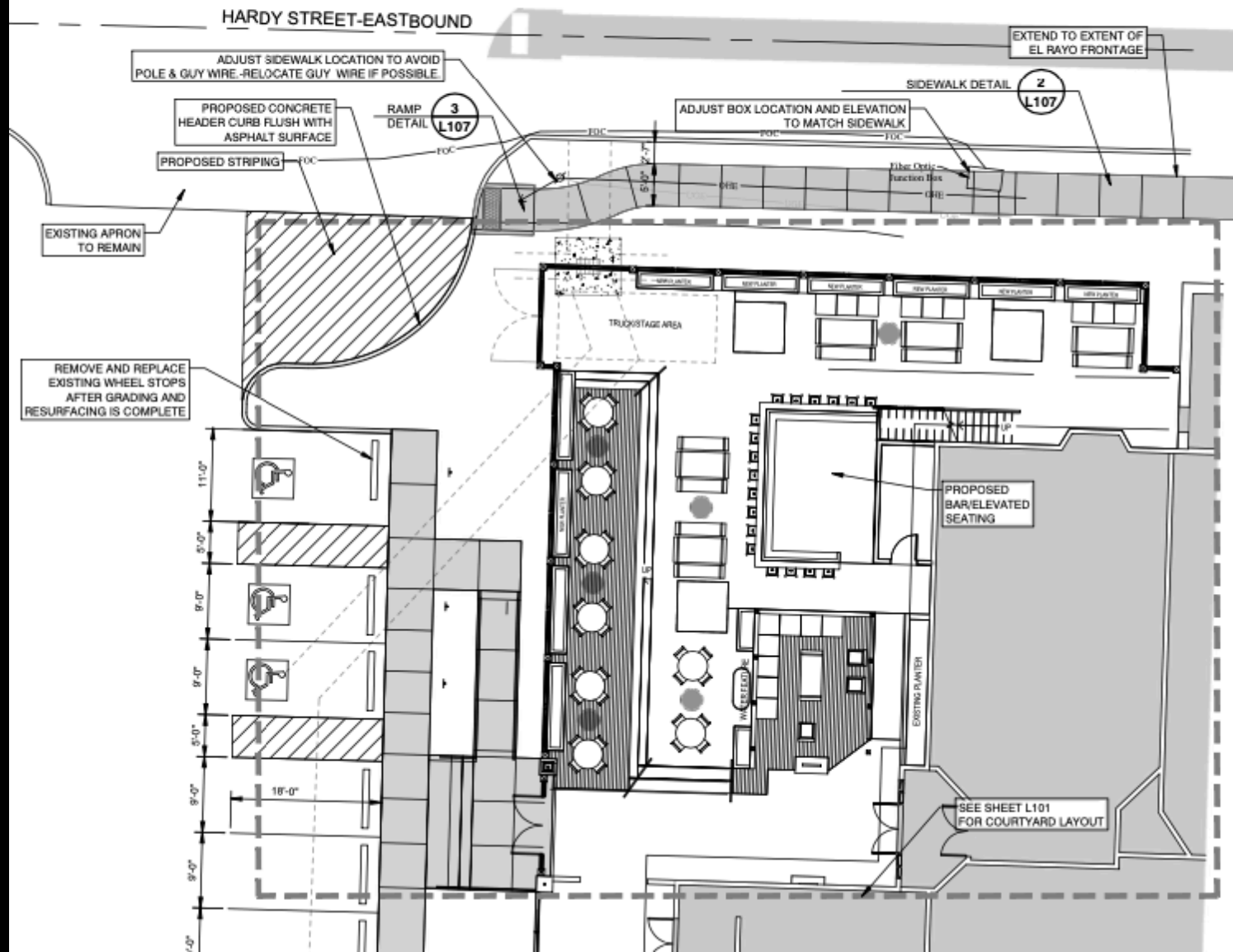
di

UNCRATING INSTRUCTIONS
PLASTIC WRAPPED UNITS

FRAGILE - GLASS

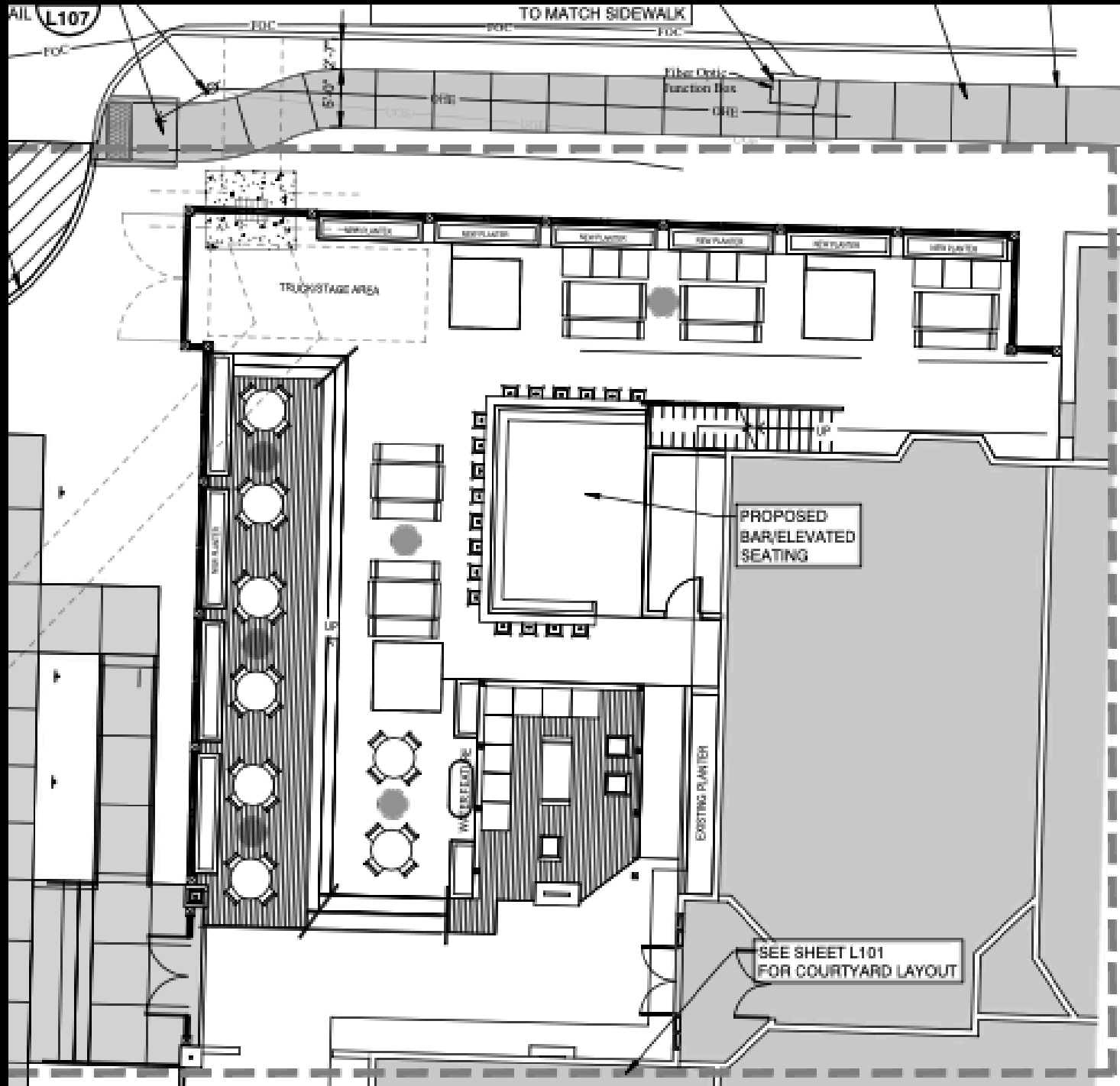


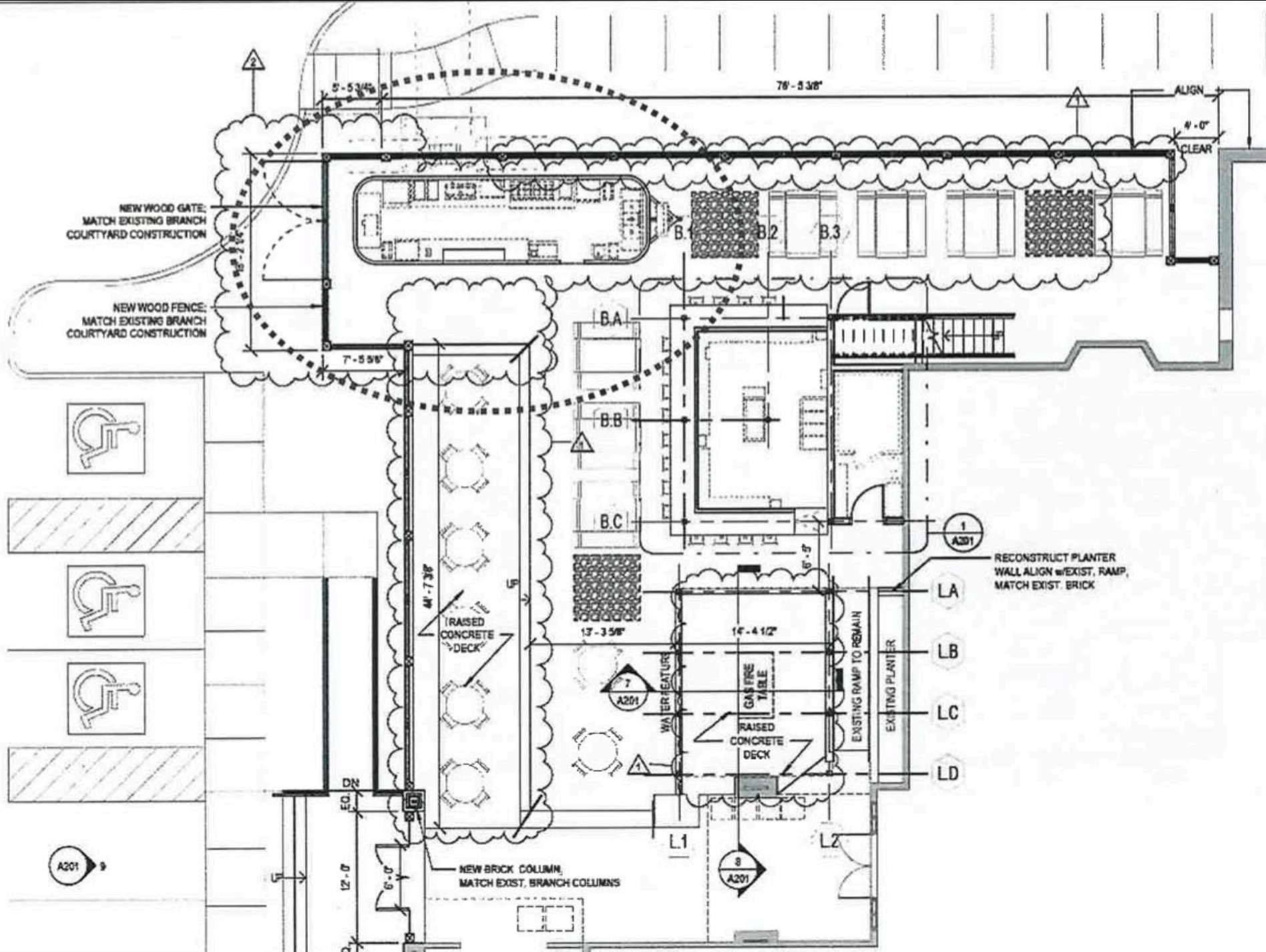


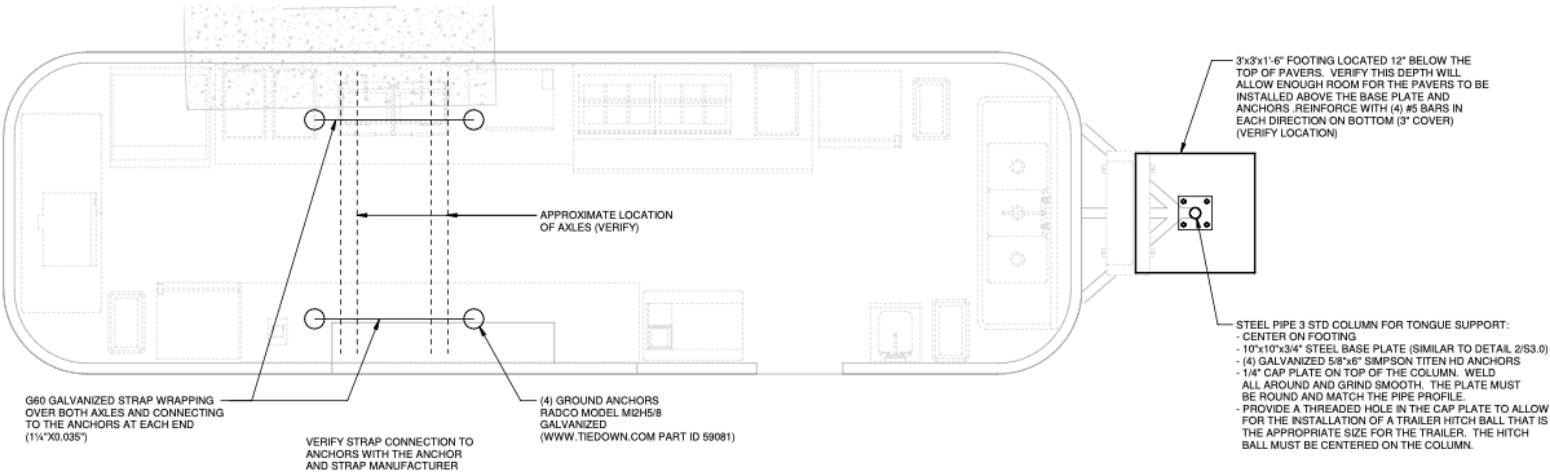


**EL RAYO
RESTAURANT**

PROGRESS PRINT ONLY
NOT FOR CONSTRUCTION
8/13/20







1
S3.1 TRAILER ANCHORAGE PLAN
1/2" = 1'-0"







EL RAYO

TEX MEX



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Andrew Ellard, Director

cc: Wiley Quinn, Code Enforcement Division Manager

Date: Tuesday, June 22, 2021

Re: Adopt a Resolution setting Public Hearing on Monday, July 19, 2021 at 4:00 p.m. in the City Council Chambers at City Hall to determine if certain properties are in such a state of uncleanness so as to be a menace to the health and safety of the community, according to the provision of MS Code 1972, Section 21-19-11.
File Number: 2021-814
Minute Book #

Summary

Set Public Hearing July 19, 2021, Unsafe Properties

Recommendation Statement

I recommend the Setting of a Public Hearing to determine if certain properties are a menace to the health and safety of the community.

Please place this on the June 22, 2021 City Council meeting for consideration.



MAYOR
Toby Barker

COUNCIL - WARD ONE
Jeffrey George

COUNCIL - WARD TWO
Deborah Denard Delgado

COUNCIL - WARD THREE
Carter Carroll

COUNCIL - WARD FOUR
Mary Dryden

COUNCIL - WARD FIVE
Nicholas Brown

MEMORANDUM

TO: Mayor and City Council

FROM: Wiley Quinn, Code Enforcement Manager

DATE: June 21, 2021

RE: Set Public Hearing

The Code Enforcement Division requests that the City Council hold a Public Hearing on Monday, July 19, 2021 to determine if the following properties are in such a state of uncleanliness so as to be a menace to the health and safety of the community, according to the provisions of MS Code 1972, Section 21-19-11.

	Address	PPIN	Ward	Violations	Proposed Actions	Estimated Cost	Estimated Penalty
1.	114 Brookwood Lane	13364	1	OGL, VS	Clean, Close, Secure	\$2500	\$1500
2.	1234 Beverly Hills Road	00612	1	OGL, AS	Clean, Close, Secure	\$2500	\$1500
3.	922 W. 6 th Street	14429	2	VS, US, OGL	Clean, Close, Secure	\$1800	\$1500
4.	202 Lewis Street	20565	2	VS, ES, OGL	Cut/Clean, Demo	\$2000	\$1500
5.	620 E. 8 th Street	17549	2	VS, ES, OGL	Cut/Clean, Demo	\$3500	\$1750

6.	407 S 14 th Avenue	14975	4	DS, GAR/RUB, Pool Maintenance	Clean, Close, Secure	\$3000	\$1500
7.	1708 Eva Street	16313	4	Hazardous Tree	Cut	\$3000	\$1500
8.	315 J.C. Killingsworth Dr.	21415	5	AB, DB, OGL	Clean, Close, Secure	\$3000	\$1500
9.	0 S. Pine Drive	24047	5	AB, DB, OGL	Cut/Clean, Demo	\$5000	\$2500
10.	706 Martin Luther King Drive	21589	5	AB, DB, OGL	Clean, Close, Secure	\$4000	\$2000
11.	86 Canal Drive	27700	3	GAR/RUB, VS, AS(2), OS	Cut/Clean, Demo	\$2000	\$1500

Garbage & Rubbish=GAR/RUB
 Dilapidated Building=DB
 Dangerous Structure=DS
 Imminent Danger=ID
 Overgrown Lot=OGL
 Open Storage=OS
 Unsafe Structure=US
 Abandoned Vehicle=AV
 Abandoned Structure=AS
 Vacant Structure=VS
 Owner Responsibility=OR

Prepared by:
City of Hattiesburg
Code Enforcement
P.O. Box 1898
Hattiesburg, Mississippi 39403-1898

Return to:
City of Hattiesburg
City Clerk’s Office
P.O. Box 1898
Hattiesburg, Mississippi 39403-1898

RESOLUTION

WHEREAS, complaint has been made to the City of Hattiesburg, Mississippi, that the following properties to wit:

	Address	PPIN	Ward	Violations
1.	114 Brookwood Lane	13364	1	OGL, VS
2.	1234 Beverly Hills Road	00612	1	OGL, AS
3.	922 W. 6 th Street	14429	2	VS, US, OGL
4.	202 Lewis Street	20565	2	VS, ES, OGL
5.	620 E. 8 th Street	17549	2	VS, ES, OGL
6.	407 S. 14 th Avenue	14975	4	DS, GAR/RUB, Pool Maintenance
7.	1708 Eva Street	16313	4	Hazardous Tree
8.	315 J.C. Killingsworth Dr.	21415	5	AB, DB, OGL
9.	0 S. Pine Drive	24047	5	AB, DB, OGL
10.	706 Martin Luther King Drive	21589	5	AB, DB, OGL
11.	86 Canal Drive	27700	3	GAR/RUB, VS, AS(2), OS

WHEREAS, it is in the public interest that the City Council, on its own motion, hold hearings as provided by Section 21-19-11 of the Mississippi Code of 1972, as annotated and amended, to determine whether or not the above properties are in such a state of uncleanness so as to be a menace to the health and safety of the community.

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Hattiesburg, Mississippi, that the owners of the above-described properties be notified, as provided by law, of a hearing to be

held by the City Council in the City Council Chambers at City Hall in Hattiesburg, Mississippi, at 4:00 p.m. on Monday, July 19, 2021, to determine whether or not the above- described properties are in such a state of uncleanness so as to be a menace to the health and safety of the community.

The above and foregoing Resolution, having been first reduced to writing, was introduced by Council member _____, seconded by Council member _____, and was adopted by the following vote, to-wit:

YEAS:

NAYS:

ABSENT:

The President thereby declared the motion carried and the resolution adopted, this the 19th day of July, 2021.

(SEAL)

ATTEST:

ADOPTED:

CLERK OF COUNCIL

PRESIDENT

The above and foregoing Resolution, having been submitted to and approved by the Mayor, this the 19th day of July, 2021.

ATTEST:

APPROVED:

CITY CLERK

MAYOR



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Connie Everett, Interim CFO

cc:

Date: Tuesday, June 22, 2021

Re: Adopt the June 22, 2021 amendments to the budget for the City of Hattiesburg for fiscal year ending September 30, 2021 and adopt Resolution authorizing publication of amendments for funds in excess of 10% of the originally appropriated fund balance.
File Number: 2021-825
Minute Book #

Summary

Adopt June 22, 2021 amendments to the budget and adopt Resolution authorizing publication of amendments in excess of 10% of the originally appropriated fund balance.

Recommendation Statement

I recommend adoption of the June 22, 2021 amendments and Resolution authorizing publication of amendments in excess of 10% of the originally appropriated fund balance.

Please place this on the June 22, 2021 City Council meeting for consideration.

MEMORANDUM

TO : **Mayor Barker, Members of City Council**
FROM : **Connie Everett, Interim CFO**
DATE : **June 22, 2021**
SUBJECT : **Proposed Amendments, FY 2021**

Below is a list of the most significant proposed amendments to the FY 2021 budget. Attached is a more detailed list of proposed changes to the General Fund, detailing the impact to the Fund's budgeted ending cash. Descriptions are also included for proposed changes to the budgets of other funds.

Significant items specifically for the **General Fund** include:

- Sales tax – Revenue is approximately 9% over budget as of the end of May.
- We have received invoices for the City's share of NRCS projects from prior years.
- Trash, garbage, and recycling fees are exceeding budget projections.
- The City will be contracting with the County for prisoners needed on certain work crews.

If you have questions concerning the information presented, please give me a call.

RECAP OF PROPOSED AMENDMENTS**June 22, 2021****FY 2021****GENERAL FUND:****Budgeted Ending Cash as adopted** **4,619,339**

Amendments to Revenues:

Adjust budget for Property Clean-up Cost	10,000
Adjust grant revenue budget	(9,803)
Adjust sales tax budget	464,000
Adjust budget for court fees	100,000
Adjust budget for tax sale fees	100,000

Total Amendments to Revenues **664,197**

Amendments to Expenditures:

Elections - amend for election costs	(28,000)
Human Resources - amend for retiring employees	(29,958)
Urban Dev. - amend for E. Hardy Corridor plan	(50,000)
Info.Sys. - amend for software & training costs	(64,000)
Police - vehicle repair; utilities; grant adj; training	(56,465)
Fire - utilities	(6,000)
Code Enf. - vehicle repairs	(2,000)
Contractual Svc - inmate costs	(44,000)
Street Lights - increase budget	(10,000)
Shop - utilities	(3,500)
Drainage - NRCS projects	(230,140)
Sanitation - tipping fees	(140,000)

Total Amendments to General Fund Expenditures **(664,063)****Budgeted Ending Cash, as Amended** **\$ 4,619,473****PARKS & RECREATION FUND** **\$ 10,000**

Utilities costs

WATER & SEWER BOND & INTEREST FUND: **\$ 9,762,610**Budget for proceeds from bond refunding and early payoff of
certain bonds**POLICE FORFEITURES FUND:** **\$ 4,967**

Budget court awarded revenue from seizures

SERIES 2011 TIF BOND & INTEREST FUND: **\$ 2,125**

Budget for final interest payment

AIRPORT IMPROVEMENT FUND:	\$	13,000
Budget for grant		
MASS TRANSIT FUND:	\$	401,250
Budget for grant and consultant services		
COMMUNITY CENTERS FUND:		9,000
Budget for COVID costs		
CDBG FUND:		667,095
Budget CARES Act funds		
COVID RECOVERY ACT FUND:	\$	12,875,000
Budget Treasury funds awarded		
PUBLIC SAFETY/RECREATION ADMIN. FUND:		300,000
Budget state grant funds		

CITY OF HATTIESBURG, MS. - GENERAL FUND
Analysis of Revenue and Expenditure Budgets
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
<u>Revenues & Beg. Cash Balance:</u>							
Taxes -Other	\$40,000		\$40,000		\$40,000		\$40,000
Licenses & Permits	4,346,000		4,346,000		4,346,000	10,000	\$4,356,000
Intergovernmental Revenues:							\$0
Federal	1,316,738	1,071,332	2,388,070		\$2,388,070	-9,803	\$2,378,267
State	267,434	317	267,751	75,000	\$342,751		\$342,751
State-Shared	23,010,200		23,010,200	71,077	\$23,081,277	464,000	\$23,545,277
County/City Shared			0		\$0		\$0
Charges for Services:					\$0		\$0
Public Safety	435,000		435,000		\$435,000		\$435,000
Streets	0		0		\$0		\$0
Sanitation	2,290,000		2,290,000		\$2,290,000		\$2,290,000
Misc.	0		0		\$0		\$0
Fines & Forf.	1,042,600		1,042,600		\$1,042,600	100,000	\$1,142,600
Misc. Revenues	328,250		328,250		\$328,250		\$328,250
Transfers-In	1,024,000	814	1,024,814		\$1,024,814	100,000	\$1,124,814
Non-Revenue Receipts	117,000		117,000	24,853	\$141,853		\$141,853
TOTAL REVENUES EXCLUSIVE OF PROPERTY TAXES	\$34,217,222	\$1,072,463	\$35,289,685	\$170,930	\$35,460,615	\$664,197	\$36,124,812
Beg. Fund Balance	7,000,000	2,707,134	9,707,134	244,452	\$9,951,586		9,951,586
Less Reserve for Court Technology	-914,503		-914,503		-\$914,503		-914,503
Less Reserve for Future Debt Service			0		\$0		0
Property Tax Levy	18,745,000		18,745,000		\$18,745,000		18,745,000
TOTAL AVAIL. REVENUES	\$59,047,719	\$3,779,597	\$62,827,316	\$415,382	\$63,242,698	\$664,197	\$63,906,895

THE GENERAL FUND EXPENDITURE BUDGETS:

City Council							
Personnel	\$366,920		\$366,920		\$366,920		366,920
Supplies & Expenses	2,400		2,400		\$2,400		2,400
Other Services & Charges	240,500		240,500	853	\$241,353		241,353
Capital Outlays	6,000		6,000		\$6,000		6,000
Total - City Council	\$615,820	\$0	\$615,820	\$853	\$616,673	\$0	\$616,673
City Court							
Personnel	\$1,011,401	\$4,410	\$1,015,811		\$1,015,811		1,015,811
Supplies & Expenses	30,324		30,324		\$30,324		30,324
Other Services & Charges	722,262		722,262	12,500	\$734,762		734,762
Capital Outlays	0		0		\$0		0
Total - City Court	\$1,763,987	\$4,410	\$1,768,397	\$12,500	\$1,780,897	\$0	\$1,780,897
Mayor/Admin.							
Personnel	\$650,580		\$650,580		\$650,580		650,580
Supplies & Expenses	15,250		15,250	5,000	\$20,250		20,250
Other Services & Charges	187,701		187,701		\$187,701		187,701
Capital Outlays	5,000		5,000		\$5,000		5,000
Total - Mayor/Admin.	\$858,531	\$0	\$858,531	\$5,000	\$863,531	\$0	\$863,531
Elections							
Personnel	\$0		\$0	\$31,115	\$31,115		\$31,115
Supplies & Expenses	3,200		3,200		\$3,200		3,200
Other Services & Charges	65,550		65,550		\$65,550	28,000	93,550
Capital Outlays	0		0		\$0		0
Total - Elections	\$68,750	\$0	\$68,750	\$31,115	\$99,865	\$28,000	\$127,865
Muni. Clerk							
Personnel	\$210,660		\$210,660	\$13,910	\$224,570		\$224,570
Supplies & Expenses	4,150		4,150		\$4,150		4,150
Other Services & Charges	49,800	3,675	53,475		\$53,475		53,475
Capital Outlays	0		0		\$0		0
Total - Muni Clerk	\$264,610	\$3,675	\$268,285	\$13,910	\$282,195	\$0	\$282,195
Accounting							
Personnel	\$298,700		\$298,700	\$27,821	\$326,521		\$326,521
Supplies & Expenses	5,230		5,230		\$5,230		5,230
Other Services & Charges	1,800		1,800		\$1,800		1,800

CITY OF HATTIESBURG, MS. - GENERAL FUND
Analysis of Revenue and Expenditure Budgets
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Capital Outlays	0		0		\$0		0
Total - Accounting	\$305,730	\$0	\$305,730	\$27,821	\$333,551	\$0	\$333,551
Purchasing							
Personnel	\$127,555		\$127,555		\$127,555		\$127,555
Supplies & Expenses	2,750		2,750		\$2,750		2,750
Other Services & Charges	2,734		2,734		\$2,734		2,734
Capital Outlays	0		0		\$0		0
Total - Purchasing	\$133,039	\$0	\$133,039	\$0	\$133,039	\$0	\$133,039
City Attorney							
Personnel	\$96,255		\$96,255		\$96,255		\$96,255
Supplies & Expenses	100		100		\$100		100
Other Services & Charges	11,100		11,100		\$11,100		11,100
Capital Outlays	0		0		\$0		0
Total - City Attorney	\$107,455	\$0	\$107,455	\$0	\$107,455	\$0	\$107,455
Human Resources							
Personnel	\$190,612		\$190,612		\$190,612	\$29,958	\$220,570
Supplies & Expenses	8,900		8,900		\$8,900		8,900
Other Services & Charges	6,100		6,100		\$6,100		6,100
Capital Outlays	0		0		\$0		0
Total - Human Resources	\$205,612	\$0	\$205,612	\$0	\$205,612	\$29,958	\$235,570
Loss Control							
Personnel	\$70,565	\$1,050	\$71,615		\$71,615		\$71,615
Supplies & Expenses	6,350		6,350		\$6,350		6,350
Other Services & Charges	3,700		3,700		\$3,700		3,700
Capital Outlays	0		0		\$0		0
Total - Loss Control	\$80,615	\$1,050	\$81,665	\$0	\$81,665	\$0	\$81,665
Urban Development							
Personnel	\$568,905		\$568,905		\$568,905		\$568,905
Supplies & Expenses	26,360		26,360		\$26,360		26,360
Other Services & Charges	124,165	21,010	145,175		\$145,175	50,000	195,175
Capital Outlays	0		0		\$0		0
Total - Urban Dev.	\$719,430	\$21,010	\$740,440	\$0	\$740,440	\$50,000	\$790,440
Information Systems							
Personnel	\$308,682		\$308,682		\$308,682		\$308,682
Supplies & Expenses	39,100	15,000	54,100		\$54,100		54,100
Other Services & Charges	941,000		941,000		\$941,000	64,000	1,005,000
Capital Outlays	20,000		20,000		\$20,000		20,000
Total - Inf. Systems	\$1,308,782	\$15,000	\$1,323,782	\$0	\$1,323,782	\$64,000	\$1,387,782
Gen. Gov't Building							
Personnel			\$0		\$0		\$0
Supplies & Expenses	19,500		19,500		\$19,500		19,500
Other Services & Charges	171,900	4,200	176,100		\$176,100		176,100
Capital Outlays	0		0		\$0		0
Total - Gen. Gov't Building	\$191,400	\$4,200	\$195,600	\$0	\$195,600	\$0	\$195,600
Intermodal Facility (Depot) O & M:							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	12,500		12,500		\$12,500		12,500
Other Services & Charges	100,200		100,200		\$100,200		100,200
Capital Outlays	0		0		\$0		0
Total - Depot O & M	\$112,700	\$0	\$112,700	\$0	\$112,700	\$0	\$112,700
Metro Planning							
Personnel	\$107,440		\$107,440	\$27,914	\$135,354		\$135,354
Supplies & Expenses	19,000		19,000		\$19,000		19,000
Other Services & Charges	147,200	27,790	174,990		\$174,990		174,990
Capital Outlays	0		0		\$0		0
Total - Metro Planning	\$273,640	\$27,790	\$301,430	\$27,914	\$329,344	\$0	\$329,344

CITY OF HATTIESBURG, MS. - GENERAL FUND
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	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Gen. Gov't Insurance/Other serv.							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	1,000		1,000		\$1,000		1,000
Other Services & Charges	2,362,900		2,362,900		\$2,362,900		2,362,900
Capital Outlays			0		\$0		0
Total - Gen. Gov't Insur/other Serv.	\$2,363,900	\$0	\$2,363,900	\$0	\$2,363,900	\$0	\$2,363,900
Federal Programs Administration							
Personnel	\$0		0		\$0		0
Supplies	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlay	0		0		\$0		0
Total - Federal Programs Admin.	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recap - General Government Cost Centers							
Personnel	\$4,008,275	\$5,460	\$4,013,735	\$100,760	\$4,114,495	\$29,958	\$4,144,453
Supplies & Expenses	\$196,114	\$15,000	\$211,114	\$5,000	\$216,114	\$0	\$216,114
Other Services & Charges	\$5,138,612	\$56,675	\$5,195,287	\$13,353	\$5,208,640	\$142,000	\$5,350,640
Capital Outlays	\$31,000	\$0	\$31,000	\$0	\$31,000	\$0	\$31,000
Total - Gen. Government	\$9,374,001	\$77,135	\$9,451,136	\$119,113	\$9,570,249	\$171,958	\$9,742,207
Police							
Personnel	\$11,263,640		\$11,263,640		\$11,263,640	\$3,145	\$11,266,785
Supplies & Expenses	778,947	3,616	782,563	7,500	\$790,063	18,000	808,063
Other Services & Charges	561,398	36,735	598,133	63,000	\$661,133	24,000	685,133
Capital Outlays	0	500,000	500,000	73,000	\$573,000	11,320	584,320
Total - Police	\$12,603,985	\$540,351	\$13,144,336	\$143,500	\$13,287,836	\$56,465	\$13,344,301
Police & Fire Training							
Personnel	\$41,702		\$41,702		\$41,702	\$2,000	\$43,702
Supplies & Expenses	106,084		106,084		\$106,084	-1,000	105,084
Other Services & Charges	63,645	11,500	75,145		\$75,145	-1,000	74,145
Capital Outlays	0		0		\$0		0
Total - Police & Fire Training	\$211,431	\$11,500	\$222,931	\$0	\$222,931	\$0	\$222,931
Fire							
Personnel	\$8,710,568		\$8,710,568		\$8,710,568		\$8,710,568
Supplies & Expenses	313,343		313,343		\$313,343		313,343
Other Services & Charges	282,109	60,000	342,109		\$342,109	6,000	348,109
Capital Outlays	0		0		\$0		0
Total - Fire Dept.	\$9,306,020	\$60,000	\$9,366,020	\$0	\$9,366,020	\$6,000	\$9,372,020
Code Enforcement							
Personnel	\$629,322		\$629,322		\$629,322		\$629,322
Supplies & Expenses	24,855		24,855	4,000	\$28,855		28,855
Other Services & Charges	229,150		229,150		\$229,150	2,000	231,150
Capital Outlays	0		0		\$0		0
Total - Code Enforcement	\$883,327	\$0	\$883,327	\$4,000	\$887,327	\$2,000	\$889,327
Contractual Services - Public Safety							
Personnel	\$380,300		\$380,300		\$380,300		\$380,300
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	997,000		997,000		\$997,000	44,000	1,041,000
Capital Outlays	0		0		\$0		0
Total - Cont. Serv. - Public Safety	\$1,377,300	\$0	\$1,377,300	\$0	\$1,377,300	\$44,000	\$1,421,300
Public Services Cost Centers:							
Traffic Maint.							
Personnel	\$269,889		\$269,889		\$269,889		\$269,889
Supplies & Expenses	160,700		160,700		\$160,700		160,700
Other Services & Charges	47,300		47,300		\$47,300		47,300
Capital Outlays	0		0		\$0		0
Total - Traffic Maint.	\$477,889	\$0	\$477,889	\$0	\$477,889	\$0	\$477,889
Streets							
Personnel	\$996,467	\$7,740	\$1,004,207		\$1,004,207		\$1,004,207

CITY OF HATTIESBURG, MS. - GENERAL FUND
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	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Supplies & Expenses	409,300		409,300		\$409,300		409,300
Other Services & Charges	1,420,330	540,212	1,960,542	200,000	\$2,160,542		2,160,542
Capital Outlays	0	120,000	120,000		\$120,000		120,000
Total - Streets	\$2,826,097	\$667,952	\$3,494,049	\$200,000	\$3,694,049	\$0	\$3,694,049
Street Lights							
Personnel			\$0		\$0		\$0
Supplies & Expenses			0		\$0		0
Other Services & Charges	1,320,000		1,320,000		\$1,320,000	10,000	1,330,000
Capital Outlays	0		0		\$0		0
Total - Street Lights	\$1,320,000	\$0	\$1,320,000	\$0	\$1,320,000	\$10,000	\$1,330,000
Engineering							
Personnel	\$541,348		\$541,348		\$541,348		\$541,348
Supplies & Expenses	11,075		11,075	2,100	\$13,175		13,175
Other Services & Charges	319,887		319,887	-2,100	\$317,787		317,787
Capital Outlays	0		0		\$0		0
Total - Engineering	\$872,310	\$0	\$872,310	\$0	\$872,310	\$0	\$872,310
Shop							
Personnel	\$464,648		\$464,648	-\$5,566	\$459,082		\$459,082
Supplies & Expenses	40,935		40,935		\$40,935		40,935
Other Services & Charges	44,700		44,700		\$44,700	3,500	48,200
Capital Outlays	0		0		\$0		0
Total - Shop	\$550,283	\$0	\$550,283	-\$5,566	\$544,717	\$3,500	\$548,217
GOFS							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	5,120		5,120		\$5,120		5,120
Other Services & Charges	19,000		19,000	5,000	\$24,000		24,000
Capital Outlays	0		0		\$0		0
Total - GOFS	\$24,120	\$0	\$24,120	\$5,000	\$29,120	\$0	\$29,120
Drainage							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	31,800		31,800		\$31,800		31,800
Other Services & Charges	107,800	29,150	136,950		\$136,950	2,500	139,450
Capital Outlays	803,850	147,000	950,850		\$950,850	227,640	1,178,490
Total - Drainage	\$943,450	\$176,150	\$1,119,600	\$0	\$1,119,600	\$230,140	\$1,349,740
Construction							
Personnel	\$583,936		\$583,936		\$583,936		\$583,936
Supplies & Expenses	104,275	13,625	117,900		\$117,900		117,900
Other Services & Charges	108,032		108,032		\$108,032		108,032
Capital Outlays	0		0		\$0		0
Total - Construction	\$796,243	\$13,625	\$809,868	\$0	\$809,868	\$0	\$809,868
Sanitation							
Personnel	\$1,677,285		1,677,285	\$28,680	\$1,705,965		\$1,705,965
Supplies & Expenses	373,100		373,100	30,000	\$403,100		403,100
Other Services & Charges	1,488,050	28,162	1,516,212	201,000	\$1,717,212	140,000	1,857,212
Capital Outlays	0	488,000	488,000		\$488,000		488,000
Total - Sanitation	\$3,538,435	\$516,162	\$4,054,597	\$259,680	\$4,314,277	\$140,000	\$4,454,277
Street Cleaning							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	0		0		\$0		0
Total - Street Cleaning	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Health							
Personnel	\$1,444,052	\$2,730	\$1,446,782		\$1,446,782		\$1,446,782
Supplies & Expenses	170,700		170,700		\$170,700		170,700
Other Services & Charges	6,600		6,600		\$6,600		6,600
Capital Outlays	0	310,000	310,000		\$310,000		310,000

CITY OF HATTIESBURG, MS. - GENERAL FUND
Analysis of Revenue and Expenditure Budgets
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Total - Health	\$1,621,352	\$312,730	\$1,934,082	\$0	\$1,934,082	\$0	\$1,934,082
Recap - Public Services:							
Personnel	\$5,977,625	\$10,470	\$5,988,095	\$23,114	\$6,011,209	\$0	\$6,011,209
Supplies & Expenses	\$1,307,005	13,625	1,320,630	32,100	\$1,352,730	0	1,352,730
Other Services & Charges	\$4,881,699	597,524	5,479,223	403,900	\$5,883,123	156,000	6,039,123
Capital Outlays	\$803,850	1,065,000	1,868,850	0	\$1,868,850	227,640	2,096,490
Total - Public Services	\$12,970,179	\$1,686,619	\$14,656,798	\$459,114	\$15,115,912	\$383,640	\$15,499,552
Animal Control							
Personnel	\$134,019		\$134,019		\$134,019		\$134,019
Supplies & Expenses	13,050		13,050		\$13,050		13,050
Other Services & Charges	185,550		185,550		\$185,550		185,550
Capital Outlays	0		0		\$0		0
Total - Animal Control	\$332,619	\$0	\$332,619	\$0	\$332,619	\$0	\$332,619
Human/Social Assist.							
Personnel			\$0		\$0		\$0
Supplies & Expenses			0		\$0		0
Other Services & Charges	383,400		383,400		\$383,400		383,400
Capital Outlays			0		\$0		0
Total - Human/Social Assist.	\$383,400	\$0	\$383,400	\$0	\$383,400	\$0	\$383,400
Economic Dev.							
Personnel			\$0		\$0		\$0
Supplies & Expenses			0		\$0		0
Other Services & Charges	305,000	910,791	1,215,791	-157,435	\$1,058,356	-563,800	494,556
Capital Outlays	1,725,000	8,481	1,733,481		\$1,733,481	563,800	2,297,281
Total - Economic Dev.	\$2,030,000	\$919,272	\$2,949,272	-\$157,435	\$2,791,837		\$2,791,837
Debt Service							
Principal	\$717,520		\$717,520		\$717,520		\$717,520
Interest	379,720		\$379,720		\$379,720		\$379,720
Paying Agent Fee	3,000		\$3,000		\$3,000		\$3,000
Total Debt Service	\$1,100,240	\$0	\$1,100,240	\$0	\$1,100,240	\$0	\$1,100,240
Airport							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	24,650		24,650		\$24,650		24,650
Other Services & Charges	48,550		48,550		\$48,550		48,550
Capital Outlays	0		0		\$0		0
Total - Airport	\$73,200	\$0	\$73,200	\$0	\$73,200	\$0	\$73,200
Cemetery							
Personnel	\$831,831	\$2,000	\$833,831		\$833,831		\$833,831
Supplies & Expenses	88,650		88,650		\$88,650		88,650
Other Services & Charges	63,001		63,001		\$63,001		63,001
Capital Outlays	76,200	30,000	106,200		\$106,200		106,200
Total - Cemetery	\$1,059,682	\$32,000	\$1,091,682	\$0	\$1,091,682	\$0	\$1,091,682
Parking Garages							
Personnel	\$76,178		\$76,178	-\$7,093	\$69,085		\$69,085
Supplies & Expenses	2,050		2,050		\$2,050		2,050
Other Services & Charges	54,350		54,350		\$54,350		54,350
Capital Outlays	0		0		\$0		0
Total - Parking Garages	\$132,578	\$0	\$132,578	-\$7,093	\$125,485	\$0	\$125,485
Transfers to Other Funds	\$2,912,054	-14,733	\$2,897,321		\$2,897,321		\$2,897,321
EXPENDITURES & TRANSFERS	\$54,750,016	\$3,312,144	\$58,062,160	\$561,199	\$58,623,359	\$664,063	\$59,287,422
Recap - General Fund							
Personnel	\$32,053,460	\$17,930	\$32,071,390	\$116,781	\$32,188,171	\$35,103	\$32,223,274
Supplies & Expenses	2,854,748	32,241	2,886,989	48,600	2,935,589	17,000	2,952,589
Other Services & Charges	13,196,464	1,673,225	14,869,689	322,818	15,192,507	-190,800	15,001,707
Capital Outlays	2,636,050	1,603,481	4,239,531	73,000	4,312,531	802,760	5,115,291
Principal Payments	717,520	0	717,520	0	717,520	0	717,520
Interest Payments	379,720	0	379,720	0	379,720	0	379,720
Total - Gen. Fund Cost Centers	\$51,837,962	\$3,326,877	\$55,164,839	\$561,199	\$55,726,038	\$664,063	\$56,390,101

CITY OF HATTIESBURG, MS. - GENERAL FUND
Analysis of Revenue and Expenditure Budgets
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
<i>Transfers to Other Funds</i>	2,912,054	-14,733	2,897,321	0	2,897,321	0	2,897,321
<i>Total - Expenditures & Transfers</i>	\$54,750,016	\$3,312,144	\$58,062,160	\$561,199	\$58,623,359	\$664,063	\$59,287,422
Ending Cash Budget	\$4,297,703	\$467,453	\$4,765,156	-\$145,817	\$4,619,339	\$134	\$4,619,473

CITY OF HATTIESBURG, MS
Analysis of Expenditure Budgets - Funds Other Than General
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Parks & Recreation (Fund #2):							
Recreation Maint. Cost Center							
Personnel	\$1,456,427	\$2,352	\$1,458,779		\$1,458,779		\$1,458,779
Supplies & Expenses	333,800		333,800	10,000	\$343,800		343,800
Other Services & Charges	480,079	76,578	556,657		\$556,657		556,657
Capital Outlays	180,000	102,654	282,654		\$282,654		282,654
Total - Recreation Maint.	\$2,450,306	\$181,584	\$2,631,890	\$10,000	\$2,641,890	\$0	\$2,641,890
Recreation Admin.							
Personnel	\$547,870		\$547,870		\$547,870		\$547,870
Supplies & Expenses	71,800		71,800	20,000	\$91,800		91,800
Other Services & Charges	454,292	1,000	455,292	-20,000	\$435,292	10,000	445,292
Capital Outlays	10,000		10,000		\$10,000		10,000
Total - Recreation Admin.	\$1,083,962	\$1,000	\$1,084,962	\$0	\$1,084,962	\$10,000	\$1,094,962
Kamper Park Zoo							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	0		0		\$0		0
Total - Kamper Park	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Recap - Parks & Recreation Fund:							
Personnel	\$2,004,297	\$2,352	\$2,006,649	\$0	\$2,006,649	\$0	\$2,006,649
Supplies & Expenses	405,600	0	405,600	30,000	\$435,600	0	\$435,600
Other Services & Charges	934,371	77,578	1,011,949	-20,000	\$991,949	10,000	\$1,001,949
Capital Outlays	190,000	102,654	292,654	0	\$292,654	0	\$292,654
Total - Recreation Maint.	\$3,534,268	\$182,584	\$3,716,852	\$10,000	\$3,726,852	\$10,000	\$3,736,852
Municipal Fire Protection (Fund #5):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	69,500		69,500		\$69,500		69,500
Other Services & Charges	61,000		61,000		\$61,000		61,000
Capital Outlays	185,000		185,000		\$185,000		185,000
Principal Payments	62,335		62,335		\$62,335		62,335
Interest Payments	7,710		7,710		\$7,710		7,710
Total - Municipal Fire Prot. Fund	\$385,545	\$0	\$385,545	\$0	\$385,545	\$0	\$385,545
Special Streets (Fund #8):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		\$0
Other Services & Charges	184,000		184,000		\$184,000		184,000
Capital Outlays	0		0		\$0		0
Total - Special Streets	\$184,000	\$0	\$184,000	\$0	\$184,000	\$0	\$184,000
Water & Sewer Operation & Maint. (Fund #9):							
Customer Accounts Cost Center							
Personnel	\$758,484		\$758,484		\$758,484		\$758,484
Supplies & Expenses	51,300		51,300		\$51,300		51,300
Other Services & Charges	266,500	-5,000	261,500		\$261,500		261,500
Capital Outlays	20,000	5,000	25,000		\$25,000		25,000
Total - Customer Accounts	\$1,096,284	\$0	\$1,096,284	\$0	\$1,096,284	\$0	\$1,096,284
Water Transmission Cost Center							
Personnel	\$985,540	\$2,000	\$987,540		\$987,540		\$987,540
Supplies & Expenses	304,753		304,753		\$304,753		304,753
Other Services & Charges	1,412,000		1,412,000		\$1,412,000	446,565	1,858,565
Capital Outlays	120,000		120,000	-49,900	\$70,100		70,100
Total - Water Trans.	\$2,822,293	\$2,000	\$2,824,293	-\$49,900	\$2,774,393	\$446,565	\$3,220,958
Plant Cost Center							
Personnel	\$571,840		\$571,840		\$571,840		\$571,840
Supplies & Expenses	137,000		137,000		\$137,000	-25,000	112,000
Other Services & Charges	1,276,098	-5,435	1,270,663		\$1,270,663	-92,075	1,178,588
Capital Outlays	149,000	5,435	154,435	49,900	\$204,335	12,510	216,845
Total - Plant	\$2,133,938	\$0	\$2,133,938	\$49,900	\$2,183,838	-\$104,565	\$2,079,273

CITY OF HATTIESBURG, MS
Analysis of Expenditure Budgets - Funds Other Than General
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Sewer Cost Center							
Personnel	\$430,995	\$1,000	\$431,995		\$431,995	-\$12,000	\$419,995
Supplies & Expenses	330,100		330,100		\$330,100	-43,500	286,600
Other Services & Charges	2,559,500		2,559,500		\$2,559,500	-11,500	2,548,000
Capital Outlays	160,000		160,000		\$160,000	-90,000	70,000
Total - Sewer	\$3,480,595	\$1,000	\$3,481,595	\$0	\$3,481,595	-\$157,000	\$3,324,595
Lagoon Cost Center							
Personnel	\$308,819		\$308,819		\$308,819	\$12,000	\$320,819
Supplies & Expenses	377,220		377,220		\$377,220	-108,000	269,220
Other Services & Charges	2,269,400		2,269,400		\$2,269,400	-89,000	2,180,400
Capital Outlays	0		0		\$0		0
Principal Payments	0		0		\$0		0
Interest Payments	0		0		\$0		0
Total - Lagoon Cost Center	\$2,955,439	\$0	\$2,955,439	\$0	\$2,955,439	-\$185,000	\$2,770,439
Recap: Water & Sewer O & M Fund:							
Personnel	\$3,055,678	\$3,000	\$3,058,678	\$0	\$3,058,678	\$0	\$3,058,678
Supplies & Expenses	1,200,373	0	1,200,373	0	\$1,200,373	-176,500	\$1,023,873
Other Services & Charges	7,783,498	-10,435	7,773,063	0	\$7,773,063	253,990	\$8,027,053
Capital Outlays	449,000	10,435	459,435	0	\$459,435	-77,490	\$381,945
Principal Payments	0	0	0	0	\$0	0	\$0
Interest Payments	0	0	0	0	\$0	0	\$0
Total - Water & Sewer O & M Fund	\$12,488,549	\$3,000	\$12,491,549	\$0	\$12,491,549	\$0	\$12,491,549
Water & Sewer Bond & Int. (Fund #10):							
Other Services & Charges			\$0		\$0	1,295,777	\$1,295,777
Principal Payments	\$5,500,000		\$5,500,000		\$5,500,000	\$8,300,000	\$13,800,000
Interest Payments	\$2,082,071		\$2,082,071		\$2,082,071	\$166,833	\$2,248,904
Paying Agent Fees	\$15,000		\$15,000		\$15,000		\$15,000
Total - W & S Bond & Int. Fund	\$7,597,071	\$0	\$7,597,071	\$0	\$7,597,071	\$9,762,610	\$17,359,681
Water & Sewer Revenue (Fund #11):							
Principal Payments	\$0		\$0		\$0		\$0
Interest Payments	0		0		\$0		0
Other services & charges	86,300		86,300		\$86,300		86,300
Transfers to other funds	22,730,000		22,730,000		\$22,730,000		22,730,000
Total - W & S Revenue Fund	\$22,816,300	\$0	\$22,816,300	\$0	\$22,816,300	\$0	\$22,816,300
2020 Tax Increment (Planet Fitness) Bond & Int (Fund #12):							
Principal Payments	\$28,333		\$28,333		\$28,333		\$28,333
Interest Payments	34,629		34,629		\$34,629		\$34,629
Other Services & Charges				100	\$100		\$100
Transfers	0		0		\$0		\$0
Paying Agent Fees	0		0		\$0		\$0
Total - 1999 TIF Bond & Int Fund	\$62,962	\$0	\$62,962	\$100	\$63,062	\$0	\$63,062
City Bond & Interest (Fund #13):							
Principal Payments	\$1,737,254		\$1,737,254		\$1,737,254		\$1,737,254
Interest Payments	2,048,728		2,048,728		\$2,048,728		\$2,048,728
Other Services & Charges	32,000		32,000		\$32,000		\$32,000
Transfers	0		0		\$0		\$0
Paying Agent Fees	20,000		20,000		\$20,000		\$20,000
Total - 1999 TIF Bond & Int Fund	\$3,837,982	\$0	\$3,837,982	\$0	\$3,837,982	\$0	\$3,837,982
SUPPLEMENTAL ENVIRONMENTAL PROJECT (FUND #17):							
Supplies	\$0		\$0		\$0		\$0
Other Services & Charges	0		0	50,000	\$50,000		50,000
Capital Outlay	0		0		\$0		0
Transfers	0		0		\$0		0
Total - Supp. Env. Project Fund	\$0	\$0	\$0	\$50,000	\$50,000	\$0	\$50,000
Police Fines & Forfeitures (Fund #19):							
Personnel	\$0		\$0		\$0		0
Supplies & Expenses	0	50,757	50,757	538	\$51,295		51,295

CITY OF HATTIESBURG, MS
Analysis of Expenditure Budgets - Funds Other Than General
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Other Services & Charges	0	17,000	17,000		\$17,000	1,867	18,867
Capital Outlays	0	163,041	163,041	12,460	\$175,501	3,100	178,601
Transfers	0		0		\$0		0
Total - Fines & Forf. Fund	\$0	\$230,798	\$230,798	\$12,998	\$243,796	\$4,967	\$248,763

Series 2002 TIF Bond & Int (Southern Pointe, Fund #20):

Principal Payments	\$160,000		\$160,000		\$160,000		160,000
Interest Payments	81,967		81,967		\$81,967		81,967
other services & charges	2,000		2,000		\$2,000		2,000
Total - 1999 TIF Bond & Int Fund	\$243,967	\$0	\$243,967	\$0	\$243,967	\$0	\$243,967

Series 2004 TIF Bond & Int (Home Depot, Fund #21):

Principal Payments	\$0		\$0		\$0		\$0
Interest Payments	0		0		\$0		0
Transfers	0		0		\$0		0
other services & charges	0		0		\$0		0
Total - 2004 TIF Bond & Int Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Series 2003 TIF Bond & Int (Chauvet Sq., Fund #22):

Principal Payments	\$140,000		\$140,000		\$140,000		140,000
Interest Payments	52,935		52,935		\$52,935		52,935
other services & charges	2,500		2,500		\$2,500		2,500
Transfers to other Funds	0		0		\$0		0
Total - 2003 TIF Bond & Int Fund	\$195,435	\$0	\$195,435	\$0	\$195,435	\$0	\$195,435

Series 2007 TIFBond & Int (Turtle Creek Fund 23):

Principal Payments	490,000		490,000		\$490,000		490,000
Interest Payments	61,750		61,750		\$61,750		61,750
Other Services & Charges	5,000		5,000		\$5,000		5,000
Total - 2007 TIF Bond & Int Fund	\$556,750	\$0	\$556,750	\$0	\$556,750	\$0	\$556,750

Series 2008 TIF Bond & Int (Lincoln Center Fund 24):

Principal Payments	\$50,000		50,000		\$50,000		50,000
Interest Payments	\$6,000		6,000		\$6,000		6,000
Other Services & Charges	\$1,000		1,000		\$1,000		1,000
Total - 2008 TIF Bond & Int Fund	\$57,000	\$0	\$57,000	\$0	\$57,000	\$0	\$57,000

Series 2011 TIF Bond & Int (Turtle Creek Commons/Kohl's Fund 25):

Principal Payments	\$85,000		85,000		\$85,000		85,000
Interest Payments	\$2,125		2,125		\$2,125	\$2,125	4,250
Other Services & Charges	\$2,000		2,000		\$2,000		2,000
Total - 2008 TIF Bond & Int Fund	\$89,125	\$0	\$89,125	\$0	\$89,125	\$2,125	\$91,250

Series 22016 TIF Bond & Int (Whispering Pines Fund 26):

Principal Payments	\$175,000		175,000		\$175,000		175,000
Interest Payments	\$104,383		104,383		\$104,383		104,383
Other Services & Charges	\$2,000		2,000		\$2,000		2,000
Total - 2008 TIF Bond & Int Fund	\$281,383	\$0	\$281,383	\$0	\$281,383	\$0	\$281,383

Series 2016 TIF Bond & Int (Hburg Clinic Midtown Fund 28):

Principal Payments	\$49,000		49,000		\$49,000		49,000
Interest Payments	\$26,605		26,605		\$26,605		26,605
Other Services & Charges			0		\$0		0
Total - 2008 TIF Bond & Int Fund	\$75,605	\$0	\$75,605	\$0	\$75,605	\$0	\$75,605

Airport Imp. (Fund #39):

Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	92,000	-43,174	48,826		\$48,826		48,826
Capital Outlays	842,510		842,510		\$842,510	13,000	855,510
Total - Airport Imp. Fund	\$934,510	-\$43,174	\$891,336	\$0	\$891,336	\$13,000	\$904,336

Series 2015A TIF Bond & Int (The Ridge at Turtle Creek)

(Fund #50)							
Principal Payments	67000		67,000		67,000		67,000
Interest Payments	52223		52,223		52,223		52,223

CITY OF HATTIESBURG, MS
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Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Paying Agent Fees	2000		2,000		2,000		2,000
Other Services & Charges	0		0		0		0
Total - Series 2015A TIF Bond & Int	\$ 121,223	\$ -	\$ 121,223	\$ -	\$ 121,223	\$ -	\$ 121,223

Series 2015B TIF Bond & Int (Midtown Market)
(Fund #51)

Principal Payments	11000		11,000		11,000		11,000
Interest Payments	8993		8,993		8,993		8,993
Paying Agent Fees	2000		2,000		2,000		2,000
Other Services & Charges	20		20		20		20
Total - Series 2015B TIF Bond & Int	\$ 22,013	\$ -	\$ 22,013	\$ -	\$ 22,013	\$ -	\$ 22,013

Series 2019 TIF Bond & Int (Elam Arms)
(Fund #52)

Principal Payments	159000		159,000		159,000		159,000
Interest Payments	124157		124,157		124,157		124,157
Paying Agent Fees	2500		2,500		2,500		2,500
Other Services & Charges			0		0		0
Total - Series 2019 TIF Bond & Int	\$ 285,657	\$ -	\$ 285,657	\$ -	\$ 285,657	\$ -	\$ 285,657

Municipal Road & Bridge (Fund #72):

Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		0		0
Other Services & Charges	1,775,432		1,775,432		\$1,775,432	222,000	\$1,997,432
Capital Outlays	6,074,857	-123,802	5,951,055		\$5,951,055	-222,000	\$5,729,055
Principal	0		0		0		0
Interest	0		0		0		0
Total - Municipal Road & Bridge	\$7,850,289	-\$123,802	\$7,726,487	\$0	\$7,726,487	\$0	\$7,726,487

Mass Transit (Fund #73):

Personnel	\$1,264,994	\$5,260	\$1,270,254	\$11,060	\$1,281,314		\$1,281,314
Supplies & Expenses	236,410		236,410		\$236,410		\$236,410
Other Services & Charges	391,194	169,206	560,400		\$560,400	51,250	\$611,650
Capital Outlays	2,059,364		2,059,364		\$2,059,364	350,000	\$2,409,364
Total - Mass Transit Fund	\$3,951,962	\$174,466	\$4,126,428	\$11,060	\$4,137,488	\$401,250	\$4,538,738

Water & Sewer Construction (Fund #75):

Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		0		0
Other Services & Charges	540,110		540,110	200,000	\$740,110		740,110
Transfers							0
Capital Outlays	6,585,577		6,585,577	-200,000	\$6,385,577		6,385,577
Total - W & S Construction Fund	\$7,125,687	\$0	\$7,125,687	\$0	\$7,125,687	\$0	\$7,125,687

Community Centers (Fund #77):

Personnel	\$612,905		\$612,905		\$612,905		612,905
Supplies & Expenses	38,750		38,750		\$38,750		38,750
Other Services & Charges	173,910	3,000	176,910		\$176,910	9,000	185,910
Capital Outlays	51,000	13,756	64,756		\$64,756		64,756
Total - Community Centers Fund	\$876,565	\$16,756	\$893,321	\$0	\$893,321	\$9,000	\$902,321

Community Dev. Block Grant (Fund #82):

Personnel	\$239,430		\$239,430	\$26,020	\$265,450		265,450
Supplies & Expenses	8,200		8,200		\$8,200		8,200
Other Services & Charges	240,580		240,580		\$240,580	652,095	892,675
Capital Outlays	1,895,457		1,895,457	-26,020	\$1,869,437	15,000	1,884,437
Transfers	0		0		0		0
Total - CDBG Fund	\$2,383,667	\$0	\$2,383,667	\$0	\$2,383,667	\$667,095	\$3,050,762

Covid Fiscal Recovery Fund (Fund #79):

Supplies	\$0		0		\$0		0
Other Services & Charges	\$0		0		\$0		0
Transfers Out	\$0		0		\$0	\$1,000,000	1,000,000
Capital Outlay	0		0		\$0	\$11,875,000	11,875,000
Total - Series 2009 G.O. Bonds	\$0	\$0	\$0	\$0	\$0	\$12,875,000	\$12,875,000

CITY OF HATTIESBURG, MS
Analysis of Expenditure Budgets - Funds Other Than General
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Special Sales Tax-Parks/Rec/USM Improvements (Fund 86):							
Personal Services	\$40,020		40,020		\$40,020		40,020
Supplies	\$0		0		\$0		0
Other Services & Charges	\$1,399,000		1,399,000	\$200	\$1,399,200		1,399,200
Transfers Out	\$0		0		\$0		0
Capital Outlay	2,178,980	\$378,415	2,557,395	-\$200	\$2,557,195		2,557,195
Total - Parks/Rec/USM Impr.	\$3,618,000	\$378,415	\$3,996,415	\$0	\$3,996,415	\$0	\$3,996,415
Public Safety/Recreation Construction (Fund #88):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	33,610,346	-1,797,956	31,812,390	-23,525	\$31,788,865	300,000	32,088,865
Transfers to other Funds	0		0	23,525	\$23,525		23,525
Total - Series 2002 Const. Fund	\$33,610,346	-\$1,797,956	\$31,812,390	\$0	\$31,812,390	\$300,000	\$32,112,390
MDA Energy Efficiency Capital Projects (Fund 89):							
Personnel	\$0		\$0		\$0		0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	0		0		\$0		0
Transfers	0		0		\$0		0
Total - Series 2004 Const. Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Series 2008 G.O. Note (Downtown Lighting)(Fund # 90):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	0		0		\$0		0
Transfers	0		0		\$0		0
Total - Series 2004 Const. Fund	\$0	\$0	\$0	\$0	\$0	\$0	\$0
TIF Construction (Fund # 91):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	0		0		\$0		0
Transfers	0	814	814		\$814		814
Total - Series 2004 Const. Fund	\$0	\$814	\$814	\$0	\$814	\$0	\$814
2019 Fire Station Construction Fund (Fund 95):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	3,175,000	-252,097	2,922,903		\$2,922,903		2,922,903
Transfers	0		0		\$0		0
Total - Series 2001 Const. Fund	\$3,175,000	-\$252,097	\$2,922,903	\$0	\$2,922,903	\$0	\$2,922,903
Infrastructure Impr-Internet Sales Tax (Fund #97):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Transfers	0		0		\$0		0
Capital Outlays	970,000	156,091	1,126,091	3,237,289	\$4,363,380		4,363,380
Total - Internet Sales Tax Fund	\$970,000	\$156,091	\$1,126,091	\$3,237,289	\$4,363,380	\$0	\$4,363,380
Kamper Park Imp. (Fund #98):							
Personnel	\$0		\$0		\$0		\$0
Supplies & Expenses	0		0		\$0		0
Other Services & Charges	0		0		\$0		0
Capital Outlays	2,302	15	2,317		\$2,317		2,317
Total - Kamper Park Imp. Fund	\$2,302	\$15	\$2,317	\$0	\$2,317	\$0	\$2,317
Series 2010 Water & Sewer G.O. Constr. (Fund #99):							

CITY OF HATTIESBURG, MS
Analysis of Expenditure Budgets - Funds Other Than General
Fiscal Year Ending September 30, 2021

	Original FY 2021 Budgets	November Amend'ts	Amended Budgets	January - March Amend'ts	Amended Budgets	Proposed June Amend'ts	Proposed Amended Budgets
Personnel						\$0	
Supplies & Expenses						\$0	
Other Services & Charges			0			\$0	0
Capital Outlay	\$0		0			\$0	0
Transfers out	\$0		0			\$0	\$0
Total - Series 2010 Constr.	\$0	\$0	\$0	\$0	\$0	\$0	\$0

Series 2013 Water & Sewer Revenue Constr. (Fund #105):

Personnel			0			\$0	0
Supplies & Expenses			0			\$0	0
Other Services & Charges	\$0		0			\$0	0
Capital Outlay	\$0		0			\$0	0
Transfers		\$571	571			\$571	571
Total - Series 2013 Constr.	\$0	\$571	\$571	\$0	\$571	\$0	\$571

Series 2016 Water & Sewer Taxable Bonds Constr. (Fund #93):

Personnel			0			\$0	0
Supplies & Expenses			0			\$0	0
Other Services & Charges	\$0	\$184,610	184,610			\$184,610	184,610
Capital Outlay	\$4,500,000	-\$589,748	3,910,252			\$3,910,252	3,910,252
Transfers			0			\$0	0
Total - Series 2016 Constr.	\$4,500,000	-\$405,138	\$4,094,862	\$0	\$4,094,862	\$0	\$4,094,862

Series 2012 Water & Sewer Const. (Fund #94):

Personnel	\$0		\$0			\$0	\$0
Supplies & Expenses	0		0			\$0	0
Other Services & Charges	0		0			\$0	0
Capital Outlays	0		0			\$0	0
Transfers Out	0	64	64			\$64	64
Total - Series 2012 Const.	\$0	\$64	\$64	\$0	\$64	\$0	\$64

**GRAND TOTAL - FUNDS OTHER
THAN THE GENERAL FUND**

	\$121,833,163	-\$1,478,593	\$120,068,913	\$3,321,447	\$123,390,360	\$24,045,047	\$147,435,407
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General Fund	\$54,750,016	\$3,312,144	\$58,062,160	\$561,199	\$58,623,359	\$664,063	\$59,287,422
TOTAL EXPENDITURES & TRANSFERS	\$176,583,179	\$1,833,551	\$178,131,073	\$3,882,646	\$182,013,719	\$24,709,110	\$206,722,829

Less: Interfund Transfers	-25,642,054	13,284	-25,628,770	-23,525	-25,652,295	-1,000,000	-26,652,295
TOTAL EXPENDITURES	\$150,941,125	\$1,846,835	\$152,502,303	\$3,859,121	\$156,361,424	\$23,709,110	\$180,070,534

Recap of City-Wide Expenditure Budgets:

Personnel	\$39,270,784	\$28,542	\$39,299,326	\$153,861	\$39,453,187	\$35,103	\$39,488,290
Supplies & Expenses	\$4,813,581	\$82,998	\$4,896,579	\$79,138	\$4,975,717	-\$159,500	\$4,816,217
Other Services & Charges	\$26,945,879	\$2,071,010	\$29,016,889	\$553,118	\$29,570,007	\$2,305,179	\$31,875,186
Capital Outlays	\$65,405,443	-\$335,715	\$65,069,728	\$3,073,004	\$68,142,732	\$13,059,370	\$81,202,102
Principal Payments	9,431,442	0	9,431,442	0	9,431,442	8,300,000	17,731,442
Interest Payments	5,073,996	0	5,073,996	0	5,073,996	168,958	5,242,954
Total Expenditure Budgets	\$150,941,125	\$1,846,835	\$152,787,960	\$3,859,121	\$156,647,081	\$23,709,110	\$180,356,191

RESOLUTION

WHEREAS, the Mayor and City Council of the City of Hattiesburg, Mississippi, have determined that expenditures within the City will exceed the original budget appropriation; and

WHEREAS, the additional appropriation needed is in excess of ten percent (10%) of the original appropriation, and in accordance with Section 21-35-25 of the Mississippi Code of 1972, as amended, shall be published;

NOW, THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF HATTIESBURG:

Section 1. That the following budget amendments are hereby authorized to be made in the City's General Fund Police Other Services & Charges Unappropriated Fund

Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$561,398	\$123,735	\$685,133	Adjust budget for NOLA camera recording fees; grant adjustments; training; utilities

Section 2. That the following budget amendments are hereby authorized to be made in

the City's General Fund Police Capital Outlay Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$584,320	\$584,320	Adjust budget for vehicle purchases and grant revenue

Section 3. That the following budget amendments are hereby authorized to be made in

the City's General Fund Fire Other Services & Charges Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$282,109	\$66,000	\$3478,109	Adjust budget for fire halls' roof repairs; utilities

Section 4. That the following budget amendments are hereby authorized to be made in

the City's General Fund Public Services Other Services & Charges Unappropriated Fund

Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$4,881,699	\$1,157,424	\$6,039,123	Adjust budget for street repaving; vehicle repairs; refuse disposal cost; utilities

Section 5. That the following budget amendments are hereby authorized to be made in the City's General Fund Economic Development Capital Outlay Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$1,725,000	\$572,281	\$2,297,281	Budget CARES Act funds for street improvements

Section 6. That the following budget amendments are hereby authorized to be made in the City's Water & Sewer Bond & Interest Fund Other Services & Charges Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$1,295,777	\$1,295,777	Budget bond refunding proceeds for issuance costs

Section 7. That the following budget amendments are hereby authorized to be made in the City's Water & Sewer Bond & Interest Fund Principal Payments Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$5,500,000	\$8,300,000	\$13,800,000	Budget bond refunding proceeds for early retirement of bond principal

Section 8. That the following budget amendments are hereby authorized to be made in the City's Police Forfeitures Fund Other Services & Charges Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$18,867	\$18,867	Adjust budget for court awarded fines

Section 9. That the following budget amendments are hereby authorized to be made in the City's Police Forfeitures Fund Capital Outlay Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$178,601	\$178,601	Adjust budget for court awarded fines

Section 10. That the following budget amendments are hereby authorized to be made in the City's Series 2011 TIF Bond & Interest Fund Interest Payments Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ 2,125	\$2,125	\$4,250	Adjust budget for final interest payment

Section 11. That the following budget amendments are hereby authorized to be made in
the City's Municipal Road & Bridge Fund Other Services & Charges Unappropriated

Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ 1,775,432	\$222,000	\$1,997,432	Adjust budget for design engineering fees on various projects

Section 12. That the following budget amendments are hereby authorized to be made in
the City's Mass Transit Fund Other Services & Charges Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ 391,194	\$220,456	\$611,650	Adjust budget for professional services

Section 13. That the following budget amendments are hereby authorized to be made in
the City's Mass Transit Fund Capital Outlay Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ 2,059,364	\$350,000	\$2,409,364	Budget grant for bus stop & sidewalk project

Section 14. That the following budget amendments are hereby authorized to be made in
the City's Community Development Block Grant Fund Other Services & Charges

Unappropriated Fund Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ 240,580	\$652,095	\$892,675	Budget CARES Act funds

Section 15. That the following budget amendments are hereby authorized to be made in
the City's COVID Fiscal Recovery Act Fund Transfers Unappropriated Fund

Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$1,000,000	\$1,000,000	Budget COVID funds to cover eligible expenses

Section 16. That the following budget amendments are hereby authorized to be made in
the City's COVID Fiscal Recovery Act Fund Capital Outlay Unappropriated Fund

Balance:

ORIGINAL BALANCE	CUMULATIVE AMENDMENTS	AMENDED BUDGET	DESCRIPTION OF ITEMS NOT PREVIOUSLY LISTED
\$ -0-	\$11,875,000	\$11,875,000	Budget COVID funds for eligible projects

Section 17. That public interest and necessity requiring same, this resolution shall become effective immediately from and after passage, but nevertheless to be published according to law.

The above and foregoing Resolution, after having been first reduced to writing, was introduced by Councilperson _____, seconded by Councilperson _____, and was adopted by the following, to wit;

YEAS:

NAYS:

The President thereby declared the motion carried and the Resolution adopted, this the 22nd day of June, 2021.

(S E A L)

ATTEST:

ADOPTED:

CLERK OF COUNCIL

PRESIDENT

The above and foregoing Resolution having been submitted to and approved by the Mayor, this the 22nd day of June, 2021.

ATTEST:

APPROVED:

CITY CLERK

MAYOR

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

GENERAL FUND:

REVENUES & BEG. CASH:

Taxes - Other	\$40,000
Licenses & Permits	4,356,000
Inter-governmental Revenues:	
Federal Grants	2,378,267
State Grants	342,751
State-Shared Revenues	23,545,277
County Shared Revenues	0
Charges for Services:	
Public safety	435,000
Streets	0
Sanitation	2,290,000
Misc.	0
Fines & Forfeits	1,142,600
Miscellaneous	328,250
Transfers-In	1,124,814
Non-Revenue Receipts	141,853
Total From All Sources	
Other Than taxation	36,124,812
Beginning Cash and	
Investment Balance	9,951,586
Reserve for Court Technology	(914,503)
Amount to be Raised by Tax Levy	18,745,000
TOTAL FROM ALL SOURCES	\$63,906,895

EXPENDITURES & ENDING CASH:

General Government:	
Personnel	4,144,453
Supplies & Expenses	216,114
Other services & Charges	5,350,640
Capital Outlays	31,000
Total - General Government	9,742,207
Police Dept.:	
Personnel	11,266,785
Supplies & Expenses	808,063
Other services & Charges	685,133
Capital Outlays	584,320
Total - Police Dept.	13,344,301
Police & Fire Training:	
Personnel	43,702
Supplies & Expenses	105,084
Other services & Charges	74,145
Capital Outlays	0
Total - Police & Fire Training	222,931
Fire Dept.:	
Personnel	8,710,568
Supplies & Expenses	313,343
Other services & Charges	348,109
Capital Outlays	0
Total - Fire Dept.	9,372,020
Land Development Administration:	
Personnel	629,322
Supplies & Expenses	28,855
Other services & Charges	231,150
Capital Outlays	0
Total - Land Dev. Admin.	889,327

Public Safety Contractual Services:	
Personnel	380,300
Other services & Charges	1,041,000
Total - Pub. Safety Cont. Serv.	<u>1,421,300</u>
Public Services:	
Personnel	6,011,209
Supplies & Expenses	1,352,730
Other services & Charges	6,039,123
Capital Outlays	2,096,490
Total - Public Services	<u>15,499,552</u>
Animal Control	
Personnel	134,019
Supplies & Expenses	13,050
Other services & Charges	185,550
Capital Outlays	0
Total - Animal Control	<u>332,619</u>
Human/Social	
Other services & Charges	383,400
Total - Human/Social	<u>383,400</u>
Economic Development	
Personnel	
Supplies & Expenses	
Other services & Charges	494,556
Capital Outlays	2,297,281
Total - Eco. Dev.	<u>2,791,837</u>
Debt Service:	
Principal Payments	717,520
Interest Payments	379,720
Paying Agent Fee	3,000
Total - Debt service	<u>1,100,240</u>
Airport	
Personnel	0
Supplies & Expenses	24,650
Other services & Charges	48,550
Capital Outlays	0
Total - Airport	<u>73,200</u>
Cemetery	
Personnel	833,831
Supplies & Expenses	88,650
Other services & Charges	63,001
Capital Outlays	106,200
Total - Cemetery	<u>1,091,682</u>
Parking Garages	
Personnel	69,085
Supplies & Expenses	2,050
Other services & Charges	54,350
Capital Outlays	0
Total - Parking Garages	<u>125,485</u>
Operating Transfers Out	<u>2,897,321</u>
Total Expenditures & Transfers	<u>59,287,422</u>
Ending Cash Balance	<u>\$4,619,473</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u>\$63,906,895</u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

PARKS & RECREATION FUND:

REVENUES & BEG. CASH:

Inter-governmental Revenues:	
Federal Grants	\$0
State Grants	0
County Shared Revenues	0
Misc. grants	0
Charges for Services:	
Culture & Recreation	33,800
Miscellaneous	4,000
Transfers-In	1,595,000
Non-Revenue Receipts	0
Total From All Sources	<u>1,632,800</u>
Other Than taxation	<u>1,632,800</u>
Beginning Cash and	
Investment Balance	1,283,028
Amount to be Raised by Tax Levy	940,000
TOTAL FROM ALL SOURCES	<u>\$3,855,828</u>

EXPENDITURES & ENDING CASH:

Culture & Recreation:	
Personnel	2,006,649
Supplies & Expenses	435,600
Other services & Charges	1,001,949
Capital Outlays	292,654
Total Expenditures	<u>\$3,736,852</u>
Cash balance at End of Year	<u>118,976</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u>\$3,855,828</u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

MUNICIPAL FIRE PROTECTION FUND:

REVENUES & BEG. CASH:

Inter-governmental Revenues:	
State-Shared Revenues	\$271,500
Charges for Services	95,652
Fines & Forfeits	0
Miscellaneous	2,400
Transfers In	0
Non-Revenue Receipts	
Total From All Sources	
Other Than taxation	369,552
Beginning Cash and	
Investment Balance	372,333
TOTAL FROM ALL SOURCES	\$741,885

EXPENDITURES & ENDING CASH:

Public Safety:	
Personnel	\$0
Supplies & Expenses	69,500
Other services & Charges	61,000
Capital Outlays	185,000
Lease Debt Service - Principal	62,335
Lease Debt Service - Interest	7,710
Total Expenditures	\$385,545
Cash balance at End of Year	356,340
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$741,885

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SPECIAL STREET
SPECIAL REVENUE FUND:

REVENUES & BEG. CASH:

Inter-governmental Revenues:

Federal Grants	\$0
State Shared Revenues	60,000
Misc. grants	0
Miscellaneous	0
Non-Revenue Receipts	0
Total From All Sources	0
Other Than taxation	60,000
Beginning Cash and	
Investment Balance	124,790
TOTAL FROM ALL SOURCES	\$184,790

EXPENDITURES & ENDING CASH:

Public Services:

Supplies & Expenses	0
Other services & Charges	184,000
Capital Outlays	0
Total Expenditures	\$184,000
Cash balance at End of Year	790
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$184,790

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

**WATER & SEWER OPERATION
AND MAINTENANCE FUND:**

REVENUES & BEG. CASH:

Charges for Services	\$25,000
Transfers-In	12,300,000
Miscellaneous	0
Non-Revenue Receipts	0
Total From All Sources	<u>12,325,000</u>
Other Than taxation	<u>12,325,000</u>
Beginning Cash and Investment Balance	1,239,349
TOTAL FROM ALL SOURCES	<u><u>\$13,564,349</u></u>

EXPENDITURES & ENDING CASH:

Personnel	3,058,678
Supplies & Expenses	1,023,873
Other services & Charges	8,027,053
Capital Outlays	381,945
Lease Debt Service - Principal	0
Lease Debt Service - Interest	0
Total Expenditures	<u>\$12,491,549</u>
Cash balance at End of Year	<u>1,072,800</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$13,564,349</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

**WATER & SEWER BOND
AND INTEREST FUND:**

REVENUES & BEG. CASH:

Transfers-In	\$5,616,635
Miscellaneous	60,000
Non-Revenue Receipts	38,402,000
Total Revenues	<u>44,078,635</u>
Beginning Cash Balance	<u>9,442,233</u>
TOTAL FROM ALL SOURCES	<u><u>\$53,520,868</u></u>

EXPENDITURES & ENDING CASH:

Bonds Redeemed	13,800,000
Interest on Bonds	2,248,904
Other Services & Charges	1,295,777
Paying Agent Fees	15,000
Total Expenditures	<u>17,359,681</u>
Cash balance at End of Year	<u>36,161,187</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$53,520,868</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

WATER & SEWER ENTERPRISE FUND:

REVENUES & BEG. CASH:

Charges for Services:	
Licenses, Permits & Fees	\$2,500
Miscellaneous	40,000
Metered Water Sales	11,595,000
Taps	150,000
Water Turn-On Fees	60,000
Sewer Connections	50,000
Sewer Charges	10,918,800
Total Revenues	<u>22,816,300</u>
Beginning Fund Balance	<u>0</u>
TOTAL FROM ALL SOURCES	<u><u>\$22,816,300</u></u>

EXPENDITURES & ENDING CASH:

Other Services & Charges	86,300
Principal Redeemed - Notes	0
Interest on Notes	0
Operating Transfers Out	22,730,000
Total Expenditures	<u>\$22,816,300</u>
Cash balance at End of Year	<u>\$0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$22,816,300</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

**2020 TAX INCREMENT FINANCING (PLANET FITNESS) BOND & INT
FUND (DEBT SERVICE FUND):**

REVENUES & BEG. CASH:

Interest	\$0
County-Shared Revenues	107,659
Total From All Sources	<u>107,659</u>
Other Than taxation	<u>107,659</u>
Beginning Cash and	
Investment Balance	192
Amount to be Raised by Tax Levy	87,768
TOTAL FROM ALL SOURCES	<u><u>\$195,619</u></u>

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	28,333
Interest on Bonds	34,629
Paying Agent Fees	0
Transfers Out	0
Other Services & Charges	100
Total Expenditures	<u>\$63,062</u>
Cash balance at End of Year	<u>132,557</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$195,619</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

CITY BOND & INTEREST
FUND (DEBT SERVICE FUND):

REVENUES & BEG. CASH:

County-Shared Revenues	\$0
Interest	67,000
Non-Revenue receipts	0
Transfers-In	<u>23,525</u>
Total From All Sources	
Other Than taxation	<u>90,525</u>
Beginning Cash and	
Investment Balance	7,747,397
Amount to be Raised by Tax Levy	<u>2,115,000</u>
TOTAL FROM ALL SOURCES	<u><u>\$9,952,922</u></u>

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	1,737,254
Interest on Bonds	2,048,728
Other Services & Charges	32,000
Transfers	0
Paying Agent Fees	<u>20,000</u>
Total Expenditures	<u>\$3,837,982</u>
Cash balance at End of Year	<u>6,114,940</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$9,952,922</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SUPPLEMENTAL ENVIRONMENTAL PROJECT FUND

REVENUES & BEG. CASH:

Transfers In	<u>\$50,000</u>
Total From All Sources	
Other Than taxation	<u>50,000</u>
Beginning Cash and	
Investment Balance	<u>0</u>
TOTAL FROM ALL SOURCES	<u><u>\$50,000</u></u>

EXPENDITURES & ENDING CASH:

Other Services & Charges	50,000
Operating transfers out	<u>0</u>
Total Expenditures	<u>\$50,000</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$50,000</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

FINES & FORFEITURES FUND:

REVENUES & BEG. CASH:

State grants	
Charges for Services	0
Fines & Forfeits	18,079
Miscellaneous	100
Non-Revenue Receipts	0
Total From All Sources	
Other Than taxation	18,179
Beginning Cash and	
Investment Balance	230,798
TOTAL FROM ALL SOURCES	\$248,977

EXPENDITURES & ENDING CASH:

Public Safety:	
Personnel	0
Supplies & Expenses	51,295
Other services & Charges	18,867
Capital Outlays	178,601
Transfers Out	0
Total Expenditures	\$248,763
Cash balance at End of Year	214
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$248,977

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2002 TIF BOND & INTEREST
FUND (Southern Pointe Project):

REVENUES & BEG. CASH:

Interest	\$0
Transfers In	\$0
County-Shared Revenues	144,695
Total From All Sources	
Other Than taxation	144,695
Beginning Cash and	
Investment Balance	291,061
Amount to be Raised by Tax Levy	133,565
TOTAL FROM ALL SOURCES	\$569,321

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	160,000
Interest on Bonds	81,967
Other Services & Charges	2,000
Total Expenditures	\$243,967
Cash balance at End of Year	325,354
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$569,321

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2003 TIF BOND & INTEREST
FUND (Chauvet Square Project):

REVENUES & BEG. CASH:

Interest	\$0
Transfer From Other Funds	0
Total From All Sources	0
Other Than taxation	0
Beginning Cash and	
Investment Balance	202,188
Amount to be Raised by Tax Levy	200,000
TOTAL FROM ALL SOURCES	\$402,188

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	140,000
Interest on Bonds	52,935
Other Services & Charges	2,500
Transfers to Other Funds	0
Total Expenditures	\$195,435
Cash balance at End of Year	206,753
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$402,188

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2007 TIF BOND & INTEREST
FUND (Turtle Creek):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$168,866
Transfer From Other Funds	
Total From All Sources	
Other Than taxation	168,866
Beginning Cash and	
Investment Balance	195,825
Amount to be Raised by Tax Levy	400,000
TOTAL FROM ALL SOURCES	\$764,691

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	490,000
Interest on Bonds	61,750
Other Services & Charges	5,000
Total Expenditures	\$556,750
Cash balance at End of Year	207,941
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$764,691

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 202

2008 TIF BOND AND INTEREST FUND
FUND (Lincoln Center):

REVENUES & BEG. CASH:

Interest	\$600
County Shared Revenue	\$0
Transfer From Other Funds	0
Total From All Sources	
Other Than taxation	600
Beginning Cash and	
Investment Balance	73,373
Amount to be Raised by Tax Levy	58,000
TOTAL FROM ALL SOURCES	\$131,973

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	50,000
Interest on Bonds	6,000
Other Services & Charges	1,000
Total Expenditures	\$57,000
Cash balance at End of Year	74,973
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$131,973

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2011 TIF BOND AND INTEREST FUND
FUND (Turtle Creek Crossing/Kohl's):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$31,238
Transfer From Other Funds	
Total From All Sources	
Other Than taxation	31,238
Beginning Cash and	
Investment Balance	32,992
Amount to be Raised by Tax Levy	27,213
TOTAL FROM ALL SOURCES	\$91,443

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	85,000
Interest on Bonds	4,250
Other Services & Charges	2,000
Total Expenditures	\$91,250
Cash balance at End of Year	193
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$91,443

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2016 TIF BOND AND INTEREST
FUND (Whispering Pines):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$234,249
Transfer From Other Funds	<u>0</u>
Total From All Sources	
Other Than taxation	<u>234,249</u>
Beginning Cash and	
Investment Balance	386,610
Amount to be Raised by Tax Levy	<u>167,383</u>
TOTAL FROM ALL SOURCES	<u><u>\$788,242</u></u>

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	175,000
Interest on Bonds	104,383
Other Services & Charges	<u>2,000</u>
Total Expenditures	<u>\$281,383</u>
Cash balance at End of Year	<u>506,859</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$788,242</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2016 TIF BOND AND INTEREST FUND
FUND (Hattiesburg Clinic Midtown):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$41,583
Transfer From Other Funds	0
Total From All Sources	
Other Than taxation	41,583
Beginning Cash and	
Investment Balance	53,740
Amount to be Raised by Tax Levy	34,022
TOTAL FROM ALL SOURCES	\$129,345

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	49,000
Interest on Bonds	26,605
Other Services & Charges	0
Total Expenditures	\$75,605
Cash balance at End of Year	53,740
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$129,345

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

AIRPORT IMPROVEMENT
SPECIAL REVENUE FUND:

REVENUES & BEG. CASH:

Federal Grants	\$774,259
State Shared Revenues	99,671
Miscellaneous	42,000
Transfers In	250,000
Non-Revenue Receipts	0
Total From All Sources	
Other Than taxation	1,165,930
Beginning Cash and	
Investment Balance	(261,594)
TOTAL FROM ALL SOURCES	\$904,336

EXPENDITURES & ENDING CASH:

Public Services:	
Other services & Charges	48,826
Capital Outlays	855,510
Total Expenditures	\$904,336
Cash balance at End of Year	0
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$904,336

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2015A TIF BOND AND INTEREST FUND
FUND (The Ridge at Turtle Creek):

REVENUES & BEG. CASH:

Interest	
County Shared Revenue	\$29,806
Transfer From Other Funds	0
Total From All Sources	
Other Than taxation	29,806
Beginning Cash and	
Investment Balance	123,954
Amount to be Raised by Tax Levy	90,457
TOTAL FROM ALL SOURCES	\$244,217

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	67,000
Interest on Bonds	52,223
Other Services & Charges	2,000
Total Expenditures	\$121,223
Cash balance at End of Year	122,994
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$244,217

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2015B TIF BOND AND INTEREST FUND
FUND (Midtown Market):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$12,837
Transfer From Other Funds	<u>0</u>
Total From All Sources	
Other Than taxation	<u>12,837</u>
Beginning Cash and	
Investment Balance	11,087
Amount to be Raised by Tax Levy	<u>10,503</u>
TOTAL FROM ALL SOURCES	<u><u>\$34,427</u></u>

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	11,000
Interest on Bonds	8,993
Paying Agent Fees	2,000
Other Services & Charges	<u>20</u>
Total Expenditures	<u>\$22,013</u>
Cash balance at End of Year	<u>12,414</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$34,427</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2019 TIF BOND & INT
FUND (ELAM ARMS):

REVENUES & BEG. CASH:

Interest	\$0
County Shared Revenue	\$166,026
Transfer From Other Funds	66,526
Total From All Sources	
Other Than taxation	232,552
Beginning Cash and	
Investment Balance	631,938
Amount to be Raised by Tax Levy	136,001
TOTAL FROM ALL SOURCES	\$1,000,491

EXPENDITURES & ENDING CASH:

General Issues:	
Bonds Redeemed	159,000
Interest on Bonds	124,157
Other Services & Charges	2,500
Total Expenditures	\$285,657
Cash balance at End of Year	714,834
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$1,000,491

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

MUNICIPAL ROAD & BRIDGE
SPECIAL REVENUE FUND:

REVENUES & BEG. CASH:

Inter-governmental Revenues:	
Federal Grants	\$2,062,275
State Grants	2,672,116
County Shared Revenues	1,816,670
Miscellaneous	4,000
Transfers In	0
Non-Revenue Receipts	0
Total From All Sources	
Other Than taxation	6,555,061
Beginning Cash and	
Investment Balance	1,376,198
TOTAL FROM ALL SOURCES	\$7,931,259

EXPENDITURES & ENDING CASH:

Public Services:	
Supplies & Expenses	0
Other services & Charges	1,997,432
Capital Outlays	5,729,055
Principal Payments	0
Interest Payments	0
Total Expenditures	\$7,726,487
Cash balance at End of Year	204,772
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$7,931,259

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal year Ending September 30, 2021

**MASS TRANSIT OPERATING
SPECIAL REVENUE FUND:**

REVENUES & BEG. CASH:

Inter-governmental Revenues:	
Federal Grants	\$3,569,610
State Grants	\$0
Miscellaneous	150,500
Transfers-In	300,000
Non-Revenue Reciepts	0
Total From All Sources	
Other Than taxation	4,020,110
Beginning Cash and	
Investment Balance	358,637
Amount to be Raised by Tax Levy	227,000
TOTAL FROM ALL SOURCES	\$4,605,747

EXPENDITURES & ENDING CASH:

Personnel	1,281,314
Supplies & Expenses	236,410
Other services & Charges	611,650
Capital Outlays	2,409,364
Total Expenditures	\$4,538,738
Cash balance at End of Year	67,009
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$4,605,747

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal year Ending September 30, 2021

WATER & SEWER CONSTRUCTION FUND:

REVENUES & BEG. CASH:

Inter-governmental Revenues:	
Federal Grants	\$0
Miscellaneous	85,000
Transfers-In	3,940,000
Non-Revenue Receipts	0
Total From All Sources	
Other Than taxation	4,025,000
Beginning Cash and	
Investment Balance	3,685,499
TOTAL FROM ALL SOURCES	\$7,710,499

EXPENDITURES & ENDING CASH:

Other services & Charges	\$740,110
Capital Outlays	6,385,577
Transfers	0
Total Expenditures	7,125,687
Cash balance at End of Year	584,812
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$7,710,499

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

COMMUNITY CENTERS
SPECIAL REVENUE FUND:

REVENUES & BEG. CASH:

Charges for services:	
Culture & Recreation	\$30,000
Miscellaneous	3,000
Transfers-In	650,000
Non-Revenue Receipts	0
Total From All Sources	
Other Than taxation	683,000
Beginning Cash and	
Investment Balance	234,498
TOTAL FROM ALL SOURCES	\$917,498

EXPENDITURES & ENDING CASH:

Personnel	612,905
Supplies & Expenses	38,750
Other services & Charges	185,910
Capital Outlays	64,756
Total Expenditures	\$902,321
Cash balance at End of Year	15,177
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$917,498

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

COVID FISCAL RECOVERY FUND:

REVENUES & BEG. CASH:

Federal Grants	12,875,000
Interest Earnings	0
Total Revenues	<u>12,875,000</u>
Beginning Cash and	
Investment Balance	0
TOTAL FROM ALL SOURCES	<u><u>\$12,875,000</u></u>

EXPENDITURES & ENDING CASH:

Supplies	
Other services & Charges	0
Capital Outlays	11,875,000
Transfers Out	<u>1,000,000</u>
Total Expenditures	<u>\$12,875,000</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$12,875,000</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

COMMUNITY DEVELOPMENT BLOCK GRANT
SPECIAL REVENUE FUND:

REVENUES & BEG. CASH:

Federal Grants	\$3,153,866
Miscellaneous	\$0
Transfers In	35,795
Total From All Sources	
Other Than taxation	3,189,661
Beginning Cash and	
Investment Balance	(138,899)
TOTAL FROM ALL SOURCES	\$3,050,762

EXPENDITURES & ENDING CASH:

Personnel	265,450
Supplies & Expenses	8,200
Other services & Charges	892,675
Capital Outlays	1,884,437
Transfers	0
Total Expenditures	\$3,050,762
Cash balance at End of Year	0
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	\$3,050,762

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

***SPECIAL SALES TAX-PARKS/RECREATION/USM IMPROVEMENTS
FUND***

REVENUES & BEG. CASH:

Intergovernmental Revenues:

Federal Grants	120,000
State Grants	
State Shared Revenues	2,798,000
Miscellaneous	8,500
Total Revenues	<u>2,926,500</u>
Beginning Cash and	
Investment Balance	<u>1,078,415</u>
TOTAL FROM ALL SOURCES	<u><u>\$4,004,915</u></u>

EXPENDITURES & ENDING CASH:

Personal Services	40,020
Other services & Charges	1,399,200
Capital Outlays	2,557,195
Transfers to Other Funds	0
Total Expenditures	<u>\$3,996,415</u>
Cash balance at End of Year	<u>8,500</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$4,004,915</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

***Public Safety Complex/Recreation
Construction Fund:***

REVENUES & BEG. CASH:

Proceeds from Bond Issue	0
Bond Premium	0
State Grants	300,000
Transfers	0
Interest Earnings	
Total Revenues	<u>300,000</u>
Beginning Cash and Investment Balance	<u>31,812,390</u>
TOTAL FROM ALL SOURCES	<u><u>\$32,112,390</u></u>

EXPENDITURES & ENDING CASH:

Other services & Charges	0
Capital Outlays	32,088,865
Transfers to Other Funds	<u>23,525</u>
Total Expenditures	<u>\$32,112,390</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$32,112,390</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

TIF Construction Fund:

REVENUES & BEG. CASH:

Proceeds from Bond Issue	\$0
Interest Earnings	0
Total Revenues	<u>0</u>
Beginning Cash and Investment Balance	<u>814</u>
TOTAL FROM ALL SOURCES	<u><u>\$814</u></u>

EXPENDITURES & ENDING CASH:

Other services & Charges	0
Capital Outlays	0
Transfers to Other Funds	<u>814</u>
Total Expenditures	<u>\$814</u>
Cash Balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$814</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2016 WATER & SEWER REVENUE BOND
CONSTRUCTION FUND:

REVENUES & BEG. CASH:

Interest Earnings	0
Proceeds from Revenue Bond Issue	\$0
Total Revenues	<u>0</u>
Beginning Cash and Investment Balance	<u>4,094,862</u>
TOTAL FROM ALL SOURCES	<u><u>\$4,094,862</u></u>

EXPENDITURES & ENDING CASH:

Other services & Charges	184,610
Capital Outlays	3,910,252
Transfers Out	
Total Expenditures	<u>\$4,094,862</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$4,094,862</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2012 WATER & SEWER REVENUE BOND
CONSTRUCTION FUND:

REVENUES & BEG. CASH:

Interest Earnings	0
Proceeds from Revenue Bond Issue	
Total Revenues	<u>0</u>
Beginning Cash and	
Investment Balance	<u>64</u>
TOTAL FROM ALL SOURCES	<u>\$64</u>

EXPENDITURES & ENDING CASH:

Other services & Charges	
Capital Outlays	0
Transfers Out	<u>64</u>
Total Expenditures	<u>\$64</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u>\$64</u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

2019 FIRE STATION
CONSTRUCTION FUND:

REVENUES & BEG. CASH:

Interest Earnings	\$0
Grant Revenues - State of MS	0
Transfers In	0
Note Proceeds	
Proceeds from General Obligation Bond Issue	0
Total Revenues	<u>0</u>
Beginning Cash and	
Investment Balance	2,922,903
TOTAL FROM ALL SOURCES	<u><u>\$2,922,903</u></u>

EXPENDITURES & ENDING CASH:

Other services & Charges	0
Capital Outlays	2,922,903
Transfers Out	0
Total Expenditures	<u>\$2,922,903</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u><u>\$2,922,903</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

INFRASTRUCTURE IMPROVEMENTS - INTERNET SALES TAX FUND:

REVENUES & BEG. CASH:

Intergovernmental Revenue	\$1,926,060
Transfers In	0
Miscellaneous	2,281,229
Non-Revenue Receipts	
Total Revenues	<u>4,207,289</u>
Beginning Cash and	
Investment Balance	<u>156,091</u>
TOTAL FROM ALL SOURCES	<u>\$4,363,380</u>

EXPENDITURES & ENDING CASH:

Other services & Charges	0
Transfers Out	0
Capital Outlays	<u>4,363,380</u>
Total Expenditures	<u>\$4,363,380</u>
Cash Balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND	
ENDING CASH BALANCE	<u>\$4,363,380</u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

KAMPER PARK ZOO CAPITAL
IMPROVEMENTS FUND:

REVENUES & BEG. CASH:

State Grants	\$0
Miscellaneous	0
Charges for Services	0
Transfers-In from Other Funds	0
Non-Revenue Receipts	0
Total Revenues	<u>0</u>
Beginning Cash and Investment Balance	<u>2,317</u>
TOTAL FROM ALL SOURCES	<u><u>\$2,317</u></u>

EXPENDITURES & ENDING CASH:

Supplies	0
Other services & Charges	0
Capital Outlays	<u>2,317</u>
Total Expenditures	<u>\$2,317</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$2,317</u></u>

CITY OF HATTIESBURG, MISSISSIPPI
A MUNICIPALITY
BUDGET OF ESTIMATED REVENUES AND EXPENDITURES
For the Fiscal Year Ending September 30, 2021

SERIES 2013 WATER & SEWER REVENUE BOND
CONSTRUCTION FUND:

REVENUES & BEG. CASH:

Interest Earnings	0
Proceeds from Revenue Bond Issue	\$0
Total Revenues	<u>0</u>
Beginning Cash and Investment Balance	<u>571</u>
TOTAL FROM ALL SOURCES	<u><u>\$571</u></u>

EXPENDITURES & ENDING CASH:

Other services & Charges	0
Capital Outlays	0
Transfers Out	<u>571</u>
Total Expenditures	<u>\$571</u>
Cash balance at End of Year	<u>0</u>
TOTAL EXPENDITURES AND ENDING CASH BALANCE	<u><u>\$571</u></u>



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve Engineering Contract with Neel-Schaffer, Inc. for the Hall Avenue West Build Project for an amount not to exceed \$920,315.02 and authorize the Mayor to execute in triplicate.
File Number: 2021-822
Minute Book #

Summary

Approve Preliminary Engineering Contract with Neel-Schaffer, Inc. for the Hall Avenue West Build Project for an amount not to exceed \$920,315.02 and authorize the Mayor to execute in triplicate.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

Melinda L. McGrath
Executive Director

P. O. Box 1850
Jackson, MS 39215-1850
Telephone (601) 359-7249
FAX (601) 359-7050
GoMDOT.com



Brian D. Ratliff
Deputy Executive Director/Chief Engineer
Lisa M. Hancock
Deputy Executive Director/Administration
Willie Huff
Director, Office of Enforcement
Charles R. Carr
Director, Office of Intermodal Planning

16499-B Highway 49, N. MS 39574
June 2, 2021

Lamar Rutland, PE
City of Hattiesburg
212 W. Front Street
Hattiesburg, MS 39401

Re: FBLD-8769-00(001) 108639-811000

Dear Mr. Rutland:

Attached you will find three (3) original Preliminary Engineering Service Contracts on the above referenced project for your signature. Please retain the two originals for your distribution and forward two (2) executed copies of the contract and Notice to Proceed (NTP) back to my office. If you have any questions concerning this matter, please contact me at 228-832-0682

Sincerely,

A handwritten signature in blue ink, appearing to read "David H. Seyfarth", is written over the word "Sincerely,".

David H. Seyfarth, PE, PS
Special Projects Engineer

Cc: 16-10
DHS/mi

Jeffrey C. Altman
Acting Executive Director

P. O. Box 1850
Jackson, MS 39215-1850
Telephone (601) 359-7249
FAX (601) 359-7050
GoMDOT.com



Brian D. Ratliff
Deputy Executive Director/Chief Engineer
Lisa M. Hancock
Deputy Executive Director/Administration
Willie Huff
Director, Office of Enforcement
Charles R. Carr
Director, Office of Intermodal Planning

May 25, 2021

City of Hattiesburg
Toby Barker, Mayor
200 Forrest Street
Hattiesburg, MS 39401

RE: Preliminary Engineering Contract Review
FBLD-8769-00(001)/108639-811000
City of Hattiesburg – Hall Avenue BUILD Project
Forrest County

Dear Mayor Toby Barker,

MDOT has reviewed the attached contract and fee proposal for the above referenced project. The contract information appears to follow any applicable federal/state guidelines and/or standards. While Federal BUILD funds are not currently available, please be advised that should they become available, you may be eligible for Federal Reimbursement for these services.

Please keep this letter for your records and at the appropriate time (should BUILD funds become eligible), you will need to provide a formal copy of this signed agreement in the form as attached, Notice to Proceed, a copy of all invoices with supporting documentation, and proof of payment.

As a side note, please make sure you attach the cost fee breakdown to the back of the contract.

Regards,

Stephen Rone
MDOT Director of Consultant Services

SR/sh
Attachments

Cc: 77-01 LPA Division
16-10 District 6

{L.Frederick/P.Morgan/Baker}
{Seyfarth/Starita}

LETTER OF TRANSMITTAL

 TO David Seyfarth, Special Projects Engineer

 Date April 15, 2021
MDOT Gulf Coast Regional Office
16499 Highway 49

 Project Name Hall Avenue Hattiesburg BUILD Grant
FBLD-8769-00(001)/108639-811000
Saucier, MS 39574
(228) 832-0682

Client Contract # _____

WE ARE SENDING YOU THE FOLLOWING:

Submittal No.		Attached		Separately via:
☐ Shop Drawings	☐	☐ Plans	☐	☐ Specifications
☐ Copy of Letter	☐	☐ Change Order	☒ X	Other: <u>Contracts</u>

O= Original
 PC= Photocopy
 PR= Print
 R= Reproducible

These are transmitted as checked below:

☒ As Requested
☐ For Review & Comment

☐ For Approval
☐ For Use/Information

No.	Type	Date	Description
3	O	4/15/2021	Please find attached, three contracts for the City of Hattiesburg for the Hall Avenue Hattiesburg BUILD Grant.

RECEIVED

APR 15 2021

Mr. Seyfarth,
PLEASE FIND ATTACHED THE CONTRACTS FOR THE CITY OF HATTIESBURG.

GULF COAST REGIONAL OFFICE
GULFPORT

PLEASE LET ME KNOW IF YOU NEED ANY ADDITIONAL INFORMATION.

 Copy: File _____

NEEL-SCHAFFER, INC.

 By: Steve Twedt

PRELIMINARY ENGINEERING SERVICES CONTRACT

Hall Avenue Hattiesburg BUILD Grant

FBLD-8769-00(001)/108639-811000

Forrest County

This CONTRACT, is made and entered into by and between the ***City of Hattiesburg***, a body Politic of the State of Mississippi (the "LPA"), and, Neel-Schaffer, Inc. (the "CONSULTANT"), a Corporation, duly licensed and registered to do business in the State of Mississippi, whose address for mailing is ***125 South Congress Street Suite 1100, Jackson, MS 39201***. This CONTRACT shall be effective as of the latest date of execution below.

WITNESSETH:

WHEREAS, the LPA requires the services of a professional engineering firm for the purposes of environmental documentation and design of the Hall Avenue West Hattiesburg BUILD Grant roadway project beginning at the BOP of the Hall Avenue CRISI Grant Project with a roundabout at the intersection of Hall, Bay and Edward's Streets and continuing west along the existing alignment of Hall Avenue with an overpass over the Norfolk Southern Rail Line and terminating with a connection to West Pine Street as provided for in ***FBLD-8769-00(001)/108639-811000***, hereinafter called the "PROJECT"; and

WHEREAS, the LPA desires to engage a qualified and experienced CONSULTANT to perform engineering services as stated above, hereinafter called the "SERVICES"; and

WHEREAS, the CONSULTANT has represented to the LPA that it is experienced and qualified to provide those SERVICES, and the LPA has relied upon such representation; and

WHEREAS, the CONSULTANT herein was selected through a Consultant Selection Process pursuant to the Mississippi Department of Transportation (hereinafter "MDOT") LPA Project Development Manual and pursuant to Federal Highway Administration ("FHWA") regulations, Engineering and Design Related Service Contracts, 23 C.F.R. Part 172 (as amended) and found satisfactory by the LPA; which is now desirous of entering into a CONTRACT;

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein and for other good and valuable consideration flowing unto the parties, the receipt and sufficiency of which is hereby acknowledged, the LPA and the CONSULTANT do hereby CONTRACT and agree as follows:

ARTICLE I. GENERAL RECITALS

The CONSULTANT shall, for the agreed fees, furnish all engineering services and materials required to perform the tasks described in the Scope of Work for the proposed transportation project. SERVICES provided by the CONSULTANT under this CONTRACT shall be performed in a manner consistent with that degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. In so doing, the CONSULTANT shall comply with all terms of this CONTRACT, including the Scope of Work and other exhibits, to the satisfaction of the LPA, which shall include any special requirements of the LPA. The CONSULTANT shall perform all SERVICES according to the terms of the CONTRACT, including all technical specifications and according to the prevailing industry standards, including standards of conduct and care, format and content.

The LPA, in support of the CONSULTANT, will provide the CONSULTANT a Scope of Work shown in "Exhibit 2" hereto and any other data which may be of assistance to the CONSULTANT and within the possession and control of the LPA.

Manuals, guides, standards, and specifications applicable to this CONTRACT shall be those approved and/or adopted by MDOT and the FHWA and in effect on the effective date of this CONTRACT, unless otherwise specified in this CONTRACT or subsequently directed by MDOT during the course of the CONTRACT.

ARTICLE II. SCOPE OF WORK

The CONSULTANT shall perform the SERVICES in accordance with the Scope of Work attached to this CONTRACT as "Exhibit 2" and made a part hereof as if fully set forth herein. The performance of the SERVICES referred to in "Exhibit 2" shall be the primary basis for measurement of performance under this CONTRACT. The LPA specifically reserves the right and privilege to enlarge or reduce the scope or to cancel this CONTRACT at any time.

ARTICLE III. CONTRACT TERM, TERMINATION

This CONTRACT shall commence upon the latest date of execution below and continue until such time as the above named project is successfully completed to the satisfaction of the LPA (as demonstrated by the issuance of final payment) or until **December 30, 2022**, at 11:59 p.m., whichever comes first, at which time this CONTRACT shall absolutely and finally terminate.

During the term of this CONTRACT, the LPA reserves the right to terminate this CONTRACT in whole or in part, at any time, with or without cause, upon seven (7) days written notice to the CONSULTANT, notwithstanding any just claims by the CONSULTANT for payment for SERVICES rendered prior to the date of termination. In addition to payment for SERVICES rendered prior to the date of termination, the LPA shall be liable only for the reasonable costs, fees and expenses for demobilization and close out of this CONTRACT, based on actual time and expenses incurred by the CONSULTANT in the packaging and shipment of all documents covered by this CONTRACT to the LPA. In no event shall the LPA be liable for lost profits or other consequential damages.

ARTICLE IV. TIME OF PERFORMANCE

Time is of the essence in this CONTRACT. The CONSULTANT shall be prepared to perform its responsibilities for providing SERVICES by the date of execution of this CONTRACT.

The CONSULTANT has submitted a proposed project schedule to the LPA which has been incorporated herein as a part of "Exhibit 2" which, when approved by final execution of this CONTRACT, shall control the evaluation of the CONSULTANT'S progress on this PROJECT.

The CONSULTANT may not begin work on any feature of this PROJECT prior to receiving a Notice to Proceed.

ARTICLE V. RELATIONSHIP OF THE PARTIES

The relationship of the CONSULTANT to the LPA is that of an independent contractor and, said CONSULTANT, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of the LPA by reason hereof. The CONSULTANT shall not make any claim, demand or application for any right or privilege applicable to an officer or employee of the LPA, including but not limited to workers' compensation coverage, unemployment insurance benefits, social security coverage, retirement membership or credit, or any form of tax withholding whatsoever.

All notices, communications, and correspondence between the LPA and the CONSULTANT shall be directed to the key personnel and designated agents designated in this CONTRACT.

ARTICLE VI. COMPENSATION, BILLING & AUDIT

A. Cost and Fees

The CONSULTANT shall be paid on the basis set forth in "Exhibit 3" to this CONTRACT. Under no circumstances shall the LPA be liable for any amounts, including any costs, which exceed the maximum dollar amount of compensation that is specified in Exhibit 3.

B. Monthly Billing

The CONSULTANT must submit monthly billing to the LPA. (A sample of a required invoice is attached as "Exhibit 4"). All billing must be submitted in accordance with the Local Public Agency Consultant Operating Procedures. Each billing shall include all time and allowable expenses through the end of the billing period. Direct expenses, as used herein, include the costs of travel, subsistence, shipping charges, long distance telephone calls and printing if it is not company accounting policy to include these costs in overhead rates. Monthly payments will be made on the basis of a certified time record. The LPA retains the right to verify time and expense records by audit of any or all the CONSULTANT'S time and accounting records at any time during the life of this CONTRACT and up to three years thereafter.

If SERVICES are rendered within a given State fiscal year, an invoice requesting payment from the CONSULTANT shall be presented to the LPA within 60 days of the end of the State fiscal year. **Should the CONSULTANT fail to present the invoice within the allotted time, legislative approval may be required before payment can be rendered.**

The CONSULTANT further agrees that FHWA or any other federal agency may audit the same records at any time during the life of this CONTRACT and up to three years thereafter, should the funding source for all or any part of this CONTRACT be funds of the United States of America.

C. Progress Reports

The CONSULTANT shall provide the LPA monthly progress reports on two documents. The first document shall be a narrative outline of work performed during the billing period for which the CONSULTANT has submitted an invoice. The second document shall be a spreadsheet that indicates the amount of progress for each designated "Part" of the Scope of Work of the CONTRACT. If a contract is for a duration of 30 days or less, the provisions of this paragraph are waived. Otherwise, waiver of the provisions of this paragraph shall only be by written consent of the LPA.

D. Record Retention

The CONSULTANT shall maintain all time and expense records related to the PROJECT and used in support of its proposal and shall make such material available at all reasonable times during the period of this CONTRACT and for three years from the date of final payment under this CONTRACT for inspection by the LPA, and copies thereof shall be furnished upon request, at the LPA'S expense. The CONSULTANT agrees that the provisions of this Article shall be included in any CONTRACT it may make with any subconsultants, assignees or transferees.

E. Retainage

The LPA shall retain the final 25% of the CONSULTANT'S Fixed Fees until all the deliverables have been received and found acceptable, the final payment request has been received, and an audit of the total PROJECT cost to date has been completed by the LPA or its designee.

ARTICLE VII. FINAL PAYMENT

The CONSULTANT shall clearly indicate on its last Invoice for the CONTRACT that the Invoice is "FINAL". The LPA will confirm that the CONTRACT is ready to be closed and the "FINAL" Invoice may be paid. All "FINAL" invoices shall pay any retainage withheld on the CONTRACT. However, under no circumstances will the total amount paid exceed the maximum not to exceed amount established for the CONTRACT. The CONSULTANT agrees that acceptance of the final payment shall be in full and final settlement of all claims arising against the LPA for payment for work done, materials furnished, cost incurred,

or otherwise arising out of this CONTRACT and shall release the LPA from any and all further claims for payment, whether known or unknown, for and on account of said CONTRACT, including payment for all work done, and labor and material furnished in connection with the same. Failure to perform, to the satisfaction of the LPA, all terms of this CONTRACT, which include the Scope of Work and other exhibits, any technical specifications, and special requirements of the LPA, or the CONSULTANT'S failure to perform according to the prevailing industry standards, including standards of conduct and care, format and content, shall be corrected by the CONSULTANT without additional compensation. Neither the LPA's review, approval or acceptance of, nor payment for, the SERVICES required under this CONTRACT shall be construed to operate as a waiver of any rights under this CONTRACT, or of any cause of action arising out of the performance of this CONTRACT. The CONSULTANT shall be and remain liable to the LPA for all damages to the LPA caused by the CONSULTANT's negligent acts, errors and/or omissions in the performance of any of the SERVICES furnished under this CONTRACT. Errors and/or omissions discovered subsequent to the acceptance by the LPA of the final contract documents shall be corrected by the CONSULTANT without additional compensation. Notwithstanding inspection and acceptance by the LPA or any provision concerning the conclusiveness thereof, the CONSULTANT represents that SERVICES performed and work product(s) provided under this CONTRACT conform (or exceed) the requirements of this CONTRACT.

The CONSULTANT shall submit their "FINAL" invoice no later than 45 days following termination of the CONTRACT.

ARTICLE VIII. REVIEW OF WORK

Authorized representatives of the LPA may at all reasonable times review and inspect the SERVICES being provided under this CONTRACT and any addenda or amendments thereto. Authorized representatives of the FHWA may also review and inspect the SERVICES under this CONTRACT should funds of the United States of America be in any way utilized in payment for said SERVICES. Such inspection shall not make the United States of America a party to this CONTRACT, nor will FHWA interfere with the rights of either party hereunder.

All reports, drawings, designs, studies, maps, or other work product(s) prepared by and for the CONSULTANT, shall be made available to authorized representatives of the LPA for inspection and review at all reasonable times in the General Offices of the LPA. Authorized representatives of the FHWA may also review and inspect said reports, drawings, designs, studies, maps, and other work product(s) prepared under the CONTRACT should funds of the United States of America be in any way utilized in payment for the same. Acceptance by the LPA shall not relieve the CONSULTANT of its contractual and professional obligations. CONSULTANT shall correct, at its expense, any of its breaches, negligent acts, errors and/or omissions, in the final version of the work.

The CONSULTANT shall be responsible for performance of and compliance with all terms of this CONTRACT, including the Scope of Work and other exhibits, and including any technical specifications and special requirements of the LPA, to the satisfaction of the LPA, and shall be responsible for any negligent acts, errors and/or omissions, including those as to conduct and care, format and content, for all aspects of the CONTRACT, and including professional quality and technical accuracy of all designs, drawings, specifications, and other services furnished by the CONSULTANT.

Failure to comply with any terms of this CONTRACT shall be corrected by the CONSULTANT without additional compensation.

If any breach of CONTRACT, is discovered by LPA personnel after final acceptance of the work by the LPA, then the CONSULTANT shall, without additional compensation, cure any deficiency or breach including any negligent acts, errors and/or omissions in designs, plans, drawings, specifications, or other services.

In the event that the project schedule requires that a breach of this CONTRACT be corrected by someone other than the CONSULTANT then the actual costs incurred by the LPA for such corrections shall be the responsibility of the CONSULTANT. The LPA shall give the CONSULTANT an opportunity to correct said breach unless (1) the LPA determines, in its sole discretion, that the CONSULTANT cannot cure the breach within the schedule established by the LPA, or (2) the LPA determines, in its sole discretion, that the CONSULTANT cannot cure the breach to the satisfaction of the LPA.

In the event that the CONSULTANT breaches this CONTRACT, and the breaches of the CONSULTANT are discovered during the construction or any phase of work, then an accounting of all costs incurred by the LPA resulting from such breach, including any negligent acts, errors and/or omissions, will be made and such amount will be recovered from the CONSULTANT.

During construction or any phase of work performed by others based on the services provide by the CONSULTANT for this CONTRACT, the CONSULTANT shall confer with the LPA when requested for the purpose of interpreting the information, clarification of any ambiguities, and/or to correct any negligent acts, error or omission without additional compensation. The CONSULTANT shall prepare any plans or data needed to correct the negligent acts, error or omission without additional compensation, even though acceptance and/or final payment may have been received by the CONSULTANT. The CONSULTANT shall give immediate attention to these changes once notified by the LPA so there will be a minimum of delay to the contractor.

When notified by the LPA of potential negligent acts, errors and/or omissions, during the development, construction, or any phase of the project, the CONSULTANT shall establish and maintain cost accounting records to segregate all costs associated with the evaluation and correction of any negligent acts, errors and/or omissions. All costs associated with any negligent acts, errors and/or omissions, including direct or indirect, must be borne by the CONSULTANT. If after written notice from the LPA, the CONSULTANT fails or refuses to correct any negligent acts, errors and/or omissions, the LPA may, by contract or otherwise, correct or replace with similar services and charge to the CONSULTANT the cost occasioned to the LPA thereby, or offset and withhold a sum equal to said cost to the LPA from payments on any existing contract(s) with the CONSULTANT or against any sums due the CONSULTANT under the terms of this CONTRACT or any other active contract(s).

ARTICLE IX. RESPONSIBILITIES FOR CLAIMS AND LIABILITY

The CONSULTANT shall indemnify and hold harmless the LPA and all its officers, agents and employees from any claim, loss, damage, cost, charge or expense, including reasonable attorney fees, to the extent caused by any negligent act, actions, neglect, error or omission by the CONSULTANT, its agents, employees, or subconsultants during the performance of this CONTRACT, whether direct or indirect, and whether to any person or property for which the LPA or said parties may be subject, except that neither the CONSULTANT nor any of his agents or subconsultants will be liable under this provision for damages arising out of the injury or damage to persons or property to the extent caused by or resulting from the negligence of the LPA or any of its officers, agents or employees.

The CONSULTANT'S obligations under this Article, including the obligations to indemnify, defend, hold harmless, pay reasonable attorney fees or, at the LPA'S option, participate and associate with the LPA in the defense and trial or arbitration of any damage claim, lien or suit and any related settlement negotiations, shall be initiated by the LPA'S notice of claim for indemnification to the CONSULTANT. Only an adjudication or judgment after the highest appeal is exhausted specifically finding the LPA entirely responsible shall excuse performance of this provision by the CONSULTANT. In such case, the LPA shall pay all costs and fees related to this obligation and its enforcement. Should there be a finding of dual or multiple liability, costs and fees shall be apportioned accordingly.

In conjunction herewith, the LPA agrees to notify the CONSULTANT in writing as soon as practicable after receipt or notice of any claim involving the CONSULTANT. These indemnities shall not be limited by reason of the listing of any insurance coverage below.

ARTICLE X. INSURANCE

Prior to beginning any work under this CONTRACT, the CONSULTANT shall obtain and furnish proof of insurance through Certificates of Insurance and, at MDOT's request, copies of insurance policies of the following:

- A. Workers' Compensation Insurance in accordance with the laws of the State of Mississippi.
- B. Commercial General Liability Insurance with a minimum combined limit of not less than One Million Dollars (\$1,000,000.00) for each occurrence.
- C. Errors and Omissions (Professional Liability) Insurance in an amount not less than One Million Dollars (\$1,000,000.00) per claim; One Million Dollars (\$1,000,000.00) annual aggregate.
- D. Comprehensive Automobile Liability Insurance, in an amount not less than One Million Dollars (\$1,000,000.00) per occurrence.

The LPA shall be listed as a certificate holder of insurance on any of the insurance required under this CONTRACT.

In the event that the CONSULTANT retains any subconsultant or other personnel to perform SERVICES or carry out any activities under or incident to work on any project or phase of this CONTRACT, the CONSULTANT agrees to obtain from said subconsultant or other personnel, certificates of insurance demonstrating that said subconsultant or other personnel shall have sufficient coverage, or CONSULTANT agrees to include said subconsultant or other personnel within the CONSULTANT'S coverage for the duration of this PROJECT or phase for which said subconsultant or other personnel is employed.

The Insurance coverage recited above shall be maintained in full force and effect by the CONSULTANT during the entire term of the CONTRACT. The LPA shall be notified of cancellation of any of the required insurance by the CONSULTANT and by the insurance company issuing any such cancellation of the required policies. Should CONSULTANT cease to carry the errors and/or omissions coverage listed above for any reason, it shall obtain "tail" or extended reporting period coverage at the same limits for a period of not less than three (3) years subsequent to policy termination or contract termination, whichever is longer.

All insurance carriers shall be licensed and in good standing with the Office of the Insurance Commissioner of the State of Mississippi.

A certificate of insurance acceptable to the LPA shall be issued to the LPA by the CONSULTANT prior to beginning any work under this CONTRACT and thereafter on an annual basis for the duration of this CONTRACT as evidence that policies providing the required insurance are in full force and effect. All policies of required insurance shall give thirty days written notice to the LPA before the effective date of cancellation or reduction in limits of any required insurance.

The CONSULTANT will furnish certified copies, upon request, of any or all of the policies and/or endorsements to the LPA prior to the execution of this CONTRACT and thereafter on an annual basis for the duration of this CONTRACT.

The CONSULTANT shall provide the LPA any and all documentation necessary to prove compliance with the insurance requirements of this CONTRACT as such documentation is requested, from time to time, by the LPA.

If the CONSULTANT fails to procure or maintain required insurance, the LPA may immediately elect to terminate this CONTRACT or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, and all monies so paid by the LPA shall be repaid by the CONSULTANT to the LPA upon demand, or the LPA may offset the cost of the premiums against any monies due to the CONSULTANT from the LPA.

ARTICLE XI. COVENANT AGAINST CONTINGENT FEES AND LOBBYING

The CONSULTANT shall comply with the relevant requirements of all federal, state or local laws. The CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the CONSULTANT, to solicit or secure this CONTRACT, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the CONSULTANT, any fee, commission, percentage, brokerage fee, gifts or any other consideration contingent upon or resulting from the award or making of this CONTRACT. The CONSULTANT warrants that it shall not contribute any money, gift or gratuity of any kind, either directly or indirectly to any employee of the LPA, or to any employee of the MDOT. For breach or violation of this warranty, the LPA shall have the right to annul this CONTRACT without liability, and the CONSULTANT shall forfeit any sums due hereunder at the time of such breach and may be barred from performing any future services for the LPA or participating in any future contracts with the LPA.

ARTICLE XII. EMPLOYMENT OF LPA'S PERSONNEL

The CONSULTANT shall not employ any person or persons in the employ of the LPA for any work required by the terms of this CONTRACT, without the written permission of the LPA, except as may otherwise be provided for herein.

ARTICLE XIII. MODIFICATION

If, prior to the satisfactory completion of the SERVICES under this CONTRACT, the LPA materially alters the scope, character, complexity or duration of the SERVICES from those required under this CONTRACT, a supplemental agreement may be executed between the parties. Also, a supplemental agreement may be negotiated and executed between the parties in the event that both parties agree the CONSULTANT'S compensation should be increased due to an increase in the nature, scope or amount of work necessary to properly provide the SERVICES required on any particular phase or project begun hereunder.

Oral agreements or conversations with the LPA, any individual member of the LPA, officer, agent, or employee of MDOT, either before or after execution of this CONTRACT, shall not affect or modify any of the terms or obligations contained in this CONTRACT. All modifications to this CONTRACT, amendments or addenda thereto must be submitted in writing and signed by the parties thereto before the modifications, amendments, or addenda become effective.

The CONSULTANT may not begin work on any modifications, amendments, or addenda prior to receiving a Notice to Proceed.

Minor changes in the proposal which do not involve changes in the contract maximum not to exceed amount, extensions of time or changes in the goals and objectives of this CONTRACT may be made by written notification of such change by either the MDOT or the CONSULTANT to the other party, and shall become effective upon written acceptance thereof (i.e. letter agreement).

ARTICLE XIV. SUBLETTING, ASSIGNMENT OR TRANSFER

It is understood by the parties to this CONTRACT that the work of the CONSULTANT is considered personal by the LPA. The CONSULTANT shall not assign, subcontract, sublet or transfer any or all of its interest in this CONTRACT without prior written approval of the LPA. Under no condition will the CONSULTANT be allowed to sublet or subcontract more than 60% of the work required under this CONTRACT. It is clearly understood and agreed that specific projects or phases of the work may be sublet or subcontracted in their entirety provided that the CONSULTANT performs at least 40% of the overall

CONTRACT with its own forces. Consent by the LPA to any subcontract shall not relieve the CONSULTANT from any of its obligations hereunder, and the CONSULTANT is required to maintain final management responsibility with regard to any such subcontract.

The LPA reserves the right to review all subcontracts documents prepared in connection with this CONTRACT, and the CONSULTANT agrees that it shall submit to the LPA any proposed subcontract document together with subconsultant cost estimates for review and written concurrence of the LPA in advance of their execution.

The CONSULTANT shall make prompt payment to all subconsultants no later than 15 days from receipt of each payment the LPA makes to the CONSULTANT. Each month, the CONSULTANT shall submit OCR-484-C found on MDOT's website to the LPA along with the Invoice. This form certifies payments to all Subconsultants and shows all firms even if the CONSULTANT has paid no monies to the firm during that estimate period (negative report). The CONSULTANT shall pay all retainage owed to the subconsultant for satisfactory completion of the accepted work within 15 days after receipt of payment.

ARTICLE XV. OWNERSHIP OF PRODUCTS AND DOCUMENTS AND WORK MADE FOR HIRE

The CONSULTANT agrees that all reports, documents, computer information and access, software, drawings, studies, notes, maps and other data and products, prepared by and for the LPA under the terms of this CONTRACT shall become and remain the property of the LPA upon creation and shall be delivered to the LPA upon termination or completion of work, or upon request of the LPA, regardless of any claim or dispute between the parties. All such data and products shall be delivered within thirty (30) days of receipt of a written request by the LPA.

The CONSULTANT and the LPA intend and agree that this CONTRACT to be a contract for SERVICES and each party considers the products and results of the SERVICES to be rendered by the CONSULTANT hereunder, including any and all material produced and/or delivered under this CONTRACT (the "Work"), to be a "work made for hire" under U.S. copyright and all applicable laws. The CONSULTANT acknowledges and agrees that the LPA owns all right, title, and interest in and to the Work including, without limitation, the copyright thereto and all trademark, patent, and all intellectual property rights thereto.

If for any reason the Work would not be considered a work made for hire under applicable law, or in the event this CONTRACT is determined to be other than a contract or agreement for a work made for hire, the CONSULTANT does hereby transfer and assign to the LPA, and its successors and assigns, the entire right, title, and interest in and to any Work prepared hereunder including, without limitation, the following: the copyright and all trademark, patent, and all intellectual property rights in the Work and any registrations and copyright, and/or all other intellectual property, applications relating thereto and any renewals and extensions thereof; all works based upon, derived from, or incorporating the Work; all income, royalties, damages, claims, and payments now or hereafter due or payable with respect thereto; all causes of action, either in law or in equity, for past, present, or future infringement based on the copyrights and/or all other intellectual property; all rights, including all rights to claim priority, corresponding to the foregoing in the United States and its territorial possessions and in all foreign countries. The CONSULTANT agrees to execute all papers and perform such other proper acts as the LPA may deem necessary to secure for the LPA or its designee the rights herein assigned.

The LPA may, without any notice or obligation of further compensation to the CONSULTANT, publish, re-publish, anthologize, use, disseminate, license, or sell the Work in any format or medium now known or hereafter invented or devised. The LPA'S rights shall include, without limitation, the rights to publish, re-publish, or license a third party to publish, re-publish, or sell the Work in print, on the World Wide Web, or in any other electronic or digital format or database now known or hereafter invented or devised, as a separate isolated work or as part of a compilation or other collective work, including a work different in form from the

first publication, and to include or license a third party to include the Work in an electronic or digital database or any other medium or format now known or hereafter invented or devised.

The CONSULTANT shall obtain any and all right, title, and interest to all input and/or material from any third party subconsultant, or any other party, who may provide such input and/or material to any portion of the Work so that said right, title, and interest, and all such interest in and to the Work including, without limitation, the copyright thereto and all trademark, patent, and all intellectual property rights thereto, shall belong to the LPA.

For any intellectual property rights currently owned by third parties or by the CONSULTANT and not subject to the terms of this CONTRACT, the CONSULTANT agrees that it will obtain or grant royalty-free, nonexclusive, irrevocable license(s) for or to the LPA at no cost to the LPA to use all copyrighted or copyrightable work(s) and all other intellectual property which is incorporated in the material furnished under this CONTRACT. Further, the CONSULTANT warrants and represents to the LPA that it has obtained or granted any and all such licensing prior to presentation of any Work to the LPA under this CONTRACT. This obligation of the CONSULTANT does not apply to a situation involving a third party who enters a license agreement directly with the LPA.

The CONSULTANT warrants and represents that it has not previously licensed the Work in whole or in part to any third party and that use of the Work in whole or in part will not violate any rights of any kind or nature whatsoever of any third party. The CONSULTANT agrees to indemnify and hold harmless the LPA, its successors, assigns and assignees, and its respective officers, directors, agents and employees, from and against any and all claims, damages, liabilities, costs and expenses (including reasonable attorneys' fees), arising out of or in any way connected with any breach of any representation or warranty made by CONSULTANT herein.

ARTICLE XVI. PUBLICATION AND PUBLICITY

The CONSULTANT agrees that it shall not for any reason whatsoever communicate to any third party, with the exception of the MDOT and the FHWA, in any manner whatsoever concerning any of its CONTRACT work product, its conduct under the CONTRACT, the results or data gathered or processed under this CONTRACT, which includes, but is not limited to, reports, computer information and access, drawings, studies, notes, maps and other data prepared by and for the CONSULTANT under the terms of this CONTRACT, without prior written approval from the LPA, unless such release or disclosure is required by judicial proceeding. The CONSULTANT agrees that it shall immediately refer any third party who requests such information to the LPA and shall also report to the LPA any such third party inquiry, with the exception of the MDOT and/or the FHWA. This Article shall not apply to information in whatever form that comes into the public domain, nor shall it restrict the CONSULTANT from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency or other authority with proper jurisdiction, or if it is reasonably necessary for the CONSULTANT to defend itself from any suit or claim.

All approved releases of information, findings, and recommendations shall include a disclaimer provision and all published reports shall include that disclaimer on the cover and title page in the following form:

The opinions, findings, and conclusions in this publication are those of the author(s) and not necessarily those of the Local Public Agency, Mississippi Department of Transportation, Mississippi Transportation Commission, the State of Mississippi or the Federal Highway Administration.

ARTICLE XVII. CONTRACT DISPUTES

This CONTRACT shall be deemed to have been executed in **Forrest** County, Mississippi, and all questions including but not limited to questions of interpretation, construction and performance shall be governed by the laws of the State of Mississippi, excluding its conflicts of laws provisions, and any litigation with respect to this CONTRACT shall be brought in a court of competent jurisdiction in **Forrest** County, State

of Mississippi. The CONSULTANT expressly agrees that under no circumstances shall the LPA be obligated to or responsible for payment of an attorney's fee for the cost of legal action to or on behalf of the CONSULTANT.

ARTICLE XVIII. COMPLIANCE WITH APPLICABLE LAW

- A. The undersigned certify that to the best of their knowledge and belief, the foregoing is in compliance with all applicable laws.
- B. The CONSULTANT shall observe and comply with all applicable federal, state, and local laws, rules and regulations, policies and procedures, ordinances, and orders and decrees of bodies or tribunals of the United States of America or any agency thereof, the State of Mississippi or any agency thereof, and any local governments or political subdivisions, that are in effect at the time of the execution of this CONTRACT or that may later become effective.
- C. The CONSULTANT shall not discriminate against any employee nor shall any party be subject to discrimination in the performance of this CONTRACT because of race, creed, color, sex, national origin, age or disability.
- D. The CONSULTANT shall comply and shall require its subconsultants to comply with the regulations for compliance with TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, as amended, and all other applicable federal regulations as stated in "Exhibit 5" which is incorporated herein by reference.
- E. The CONSULTANT shall comply with the provisions set forth in Department of Transportation regulations, Uniform Administrative Requirements for Grants and Cooperative Agreements, 49 CFR, Part 18, Et Seq., regarding Uniform Administrative Requirements for Grants and Cooperative agreements (as amended) in its administration of this CONTRACT or any subcontract resulting herefrom.
- F. The CONSULTANT agrees that it will abide by the provisions of 49 CFR Section 26 regarding disadvantaged business enterprises and include the certification made in "Exhibit 5" to this CONTRACT in any and all subcontracts which may result from this CONTRACTS.
- G. The CONSULTANT shall comply and shall require its subconsultants to comply with Code of Federal Regulations CFR 23 Part 634 - Worker Visibility – as stated in "Exhibit 5".
- H. IMMIGRANT STATUS CERTIFICATION. The CONSULTANT represents that it is in compliance with the Immigration Reform and Control Act of 1986 (Public Law 99-603), as amended, in relation to all employees performing work in the State of Mississippi and does not knowingly employ persons in violation of the United States immigration laws. The CONSULTANT further represents that it is registered and participating in the Department of Homeland Security's E-Verify™ employment eligibility verification program, or successor thereto, and will maintain records of compliance with the Mississippi Employment Protection Act including, but not limited to, requiring compliance certification from all subcontractors and vendors who will participate in the performance of this Agreement and maintaining such certifications for inspection if requested. The CONSULTANT acknowledges that violation may result in the following: (a) cancellation of any public contract and ineligibility for any public contract for up to three (3) years, or (b) the loss of any license, permit, certification or other document granted by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year, or (c) both. The CONSULTANT also acknowledges liability for any additional costs incurred by the LPA due to such contract cancellation or loss of license or permit. The CONSULTANT is required to provide the certification on Exhibit 9 in this CONTRACT to the LPA verifying that the CONSULTANT and subconsultant(s) are registered and participating in E-Verify prior to execution of this CONTRACT

- I. The covenants herein shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

ARTICLE XIX. WAIVER

Failure of either party hereto to insist upon strict compliance with any of the terms, covenants, and conditions hereof shall not be deemed a waiver or relinquishment of any similar right or power hereunder at any subsequent time, or of any other provision hereof, nor shall it be construed to be a modification of the terms of this CONTRACT.

ARTICLE XX. SEVERABILITY

If any terms or provisions of this CONTRACT are prohibited by the laws of the State of Mississippi or declared invalid or void by a court of competent jurisdiction, the remainder of this CONTRACT shall not be affected thereby and each term and provision of this CONTRACT shall be valid and enforceable to the fullest extent permitted by law.

ARTICLE XXI. ENTIRE AGREEMENT

This CONTRACT constitutes the entire agreement of the parties with respect to the subject matter contained herein and supersedes and replaces any and all prior negotiations, understandings, and agreements, written or oral, between the parties relating thereto.

ARTICLE XXII. CONFLICT OF INTEREST

The CONSULTANT covenants that no public or private interests exist and none shall be acquired directly or indirectly which would conflict in any manner with the performance of the CONSULTANT'S CONTRACT. The CONSULTANT further covenants that no employee of the CONSULTANT or of any subconsultant(s), regardless of his/her position, is to personally benefit directly or indirectly from the performance of the SERVICES or from any knowledge obtained during the CONSULTANT'S execution of this CONTRACT.

ARTICLE XXIII. AVAILABILITY OF FUNDS

It is expressly understood and agreed that the obligation of the LPA to proceed under this CONTRACT is conditioned upon the availability of funds, the appropriation of funds by the Mississippi Legislature, and the receipt of state and/or federal funds. If, at any time, the funds anticipated for the fulfillment of this CONTRACT are not forthcoming or are insufficient, either through the failure of the federal government to provide funds or of the State of Mississippi to appropriate funds or the discontinuance or material alteration of the program under which funds were provided, or if funds are not otherwise available to the LPA for the performance of this CONTRACT, the LPA shall have the right, upon written notice to the CONSULTANT, to immediately terminate or stop work on this CONTRACT without damage, penalty, cost, or expense to the LPA of any kind whatsoever. The effective date of termination shall be as specified in the notice of termination.

ARTICLE XXIV. STOP WORK ORDER

- A. **Order to Stop Work.** The LPA may, by written order to the CONSULTANT at any time, and without notice to any surety, require the CONSULTANT to stop all or any part of the work called for by this CONTRACT. This order shall be for a specified period not exceeding twenty-four (24) months after the order is delivered to the CONSULTANT unless the parties agree to any further period. Any such order shall be identified specifically as a stop work order issued pursuant to this clause. Upon receipt of such an order, the CONSULTANT shall forthwith comply with its terms and take all steps to minimize the occurrence of costs allocable to the work covered by the order during the period of work stoppage. Before the stop work order expires, or within any further period to which the parties shall have agreed, the LPA shall either:

- (1) Cancel the stop work order; or

- (2) Terminate the work covered by such order according to and as provided in Article III of this CONTRACT.

Prior to the LPA'S taking official action to stop work under this CONTRACT, the Executive Director of MDOT and/or the LPA may notify the CONSULTANT, in writing, of MDOT'S or the LPA's intentions to ask the LPA or CONSULTANT to stop work under this CONTRACT. Upon notice from the Executive Director of MDOT or the LPA, the CONSULTANT shall suspend all activities under this CONTRACT, pending final action by the LPA.

- B. **Cancellation or Expiration of the Order.** If a stop work order issued under this clause is canceled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONSULTANT shall have the right to resume work. If the LPA decides that it is justified, an appropriate adjustment may be made in the delivery schedule. If the stop work order results in an increase in the time required for or in the CONSULTANT'S cost properly allocable to the performance of any part of this CONTRACT and the CONSULTANT asserts a claim for such an adjustment within 30 days after the end of the period of work stoppage, an equitable adjustment in this CONTRACT may be made by written modification of this CONTRACT as provided by the terms of this CONTRACT.
- C. **Termination of Stopped Work.** If a stop work order is not canceled and the work covered by such order is terminated, the CONSULTANT may be paid for SERVICES rendered prior to the Termination. In addition to payment for SERVICES rendered prior to the date of termination, the LPA shall be liable only for the costs, fees, and expenses for demobilization and close out of this CONTRACT, based on actual time and expenses incurred by the CONSULTANT in the packaging and shipment of all documents covered by this CONTRACT to the LPA. In no event shall the LPA be liable for lost profits or other consequential damages.

ARTICLE XXV. KEY PERSONNEL & DESIGNATED AGENTS

The CONSULTANT agrees that Key Personnel identified as assigned to phases hereunder as set forth in this CONTRACT or as established in the organizational chart of the CONSULTANT's proposal, shall not be changed or reassigned without prior approval of the LPA or, if prior approval is impossible, and then notice to the LPA and subsequent review by the LPA which may approve or disapprove the action. For purposes of implementing this section and all other sections of this CONTRACT with regard to notice, the following individuals are herewith designated as agents for the respective parties:

LPA:

For Contractual Matters:

Mayor Toby Barker
City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401
Phone: 601.545.4501
mayor@hattiesburgms.com

For Technical Matters:

Lamar Rutland, PE
City of Hattiesburg
212 W. Front Street
Hattiesburg, MS 39401
Phone: 601.545.4540
lrutland@hattiesburgms.com

CONSULTANT:

For Contractual Matters:

Steve Twedt, PE
Neel-Schaffer, Inc.
772 Howard Avenue
Biloxi, MS 39530
Phone: 228.374.1211
steve.twedt@neel-schaffer.com

For Technical Matters:

Doug Wimberly, PE
Neel-Schaffer, Inc
704 Hardy Street
Hattiesburg, MS 39402
Phone: 601.545.1565
doug.wimberly@neel-schaffer.com

Licensure Number
from the Mississippi
Board of Licensure
for Professional
Engineers and Surveyors:

P.E. # 11221
Surveyor #

Licensure Number
from the Mississippi
Board of Licensure
for Professional
Engineers and Surveyors:

P.E. # 11733
Surveyor # 3044

ARTICLE XXVI. AUTHORIZATION

Both parties hereto represent that they have authority to enter into this CONTRACT and that the individuals executing this CONTRACT are authorized to execute it and bind their respective parties and certified copies of the applicable Resolution of the Corporate Board of Directors of the CONSULTANT are attached hereto as "Exhibit 1" and incorporated herein by reference and made a part hereof as if fully copied herein in words and figures.

WITNESS this my signature in execution hereof, this the ____ day of _____, 20____.

City of Hattiesburg

Toby Barker, Mayor

WITNESS this my signature in execution hereof, this the 15 day of April, 2021.

Neel-Schaffer, Inc.

Steve Twedt, P.E.
Steve Twedt, PE
Senior Vice President

ATTEST

Samuel Jancilli

Exhibits attached hereto and incorporated by reference into this contract include those identified on the attached page entitled "List of Exhibits".

LIST OF EXHIBITS

1. Evidence of Authority
2. General Scope of Work and Common Specifications
3. Fees and Expenses
4. Sample Invoice
5. Notice to the CONSULTANT
6. The CONSULTANT'S Certificate Regarding Debarment, Suspension and Other Responsibility Matters
7. Certification of the LPA
8. This Exhibit was intentionally left blank
9. Prime Consultant / Contractor EEV Certification and Agreement

EXHIBIT 1

{{{Attach a copy of authority to execute contracts on behalf of the LPA}}}

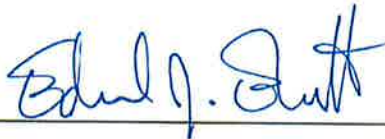
NEEL-SCHAFFER, INC.

**OPINION AND CERTIFICATE OF THE CORPORATE SECRETARY
OF NEEL-SCHAFFER, INC.
REGARDING CONTRACTING AUTHORITY**

I, **Edward J. Everitt** do hereby declare and certify that I am duly elected, qualified and acting Corporate Secretary of Neel-Schaffer, Inc., (the "Company"), a corporation duly organized and validly existing under the laws of the State of Mississippi, and that in such capacity, I do hereby declare and certify the following:

In accordance with the authority granted by the Company's Board of Directors and governing documents (and associated approved delegations thereof), **Steve Twedt** has the authority to and is empowered to act for and on behalf of the Company in executing in the name of the Company, any and all types of proposals, bids, contracts, agreements, documents and instruments of whatever nature or kind necessary up to the value of **\$1,000,000.00** to complete the contracting process relating to the **Hall Avenue West Hattiesburg BUILD Grant Roadway Project** with the **City of Hattiesburg, Mississippi**.

IN WITNESS WHEREOF, I have herewith signed my name and affixed the seal of Neel-Schaffer, Inc., on this 24th day of February, 2021.



By: Edward J. Everitt
Corporate Secretary

Corporate Seal:



EXHIBIT 2

SCOPE OF WORK

GENERAL REQUIREMENTS

The following engineering services shall be performed by the CONSULTANT on behalf of the LPA in accordance with this CONTRACT at the direction of the LPA.

The following engineering services shall be performed by the CONSULTANT in accordance with this CONTRACT and the latest Project Development Manual (PDM) for the LPA at the time of the execution of this CONTRACT.

A Project Schedule is required. Work progression is to proceed in accordance with the attached agreed Project Schedule. A status report along with an updated Project Schedule is required monthly. This report is to be submitted by the 7th of each month to the LPA for their signature and then submitted to the MDOT District LPA Coordinator. This monthly report is to be submitted by the CONSULTANT and will update the LPA on the status of the project. Recent milestones in plan development, such as the submittal of plans for review, shall be documented. Also, the target dates for the future milestones should be included.

The CONSULTANT shall, if requested by MDOT or LPA, attend any meetings concerning this Project.

Unless otherwise instructed by the LPA, the CONSULTANT shall comply with the current version of the following publications:

Roadway Design

1. MDOT *Roadway Design Manual*, and supplemented with updated design policies as described in Design Memos located on Roadway Design Divisions website;
2. MDOT Roadway Design Standard Drawings;
3. MDOT Roadway Design Special Design Sheets;
4. MDOT *Roadway Design CADD Manual*;
5. MDOT *Survey Manual*;
6. MDOT *Access Management Manual*;
7. MDOT *Traffic Engineering Typical Signing Details*;
8. MDOT *Intelligent Transportation Systems Design Manual*;
9. *Mississippi Standard Specifications for Road and Bridge Construction*;
10. AASHTO *A Policy on Geometric Design of Highways and Streets*;
11. AASHTO *Roadside Design Guide*;
12. AASHTO *Highway Safety Manual (HSM)*;
13. AASHTO *Guide for the Development of Bicycle Facilities*;
14. AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*;
15. NACTO *Urban Street Design Guide*;
16. *Manual on Uniform Traffic Control Devices (MUTCD)*; and
17. Any other publications listed in Exhibit 8, or as instructed by MDOT.

Bridge Design, Rating and Inspection

- A. MDOT *Bridge Design Manual*;
- B. MDOT *Bridge Division CADD Manual*;
- C. MDOT Bridge Standard Drawings;
- D. MDOT Bridge Design Memos;
- E. *Mississippi Standard Specifications for Road and Bridge Construction*;
- F. MDOT *Bridge Safety Inspection Policy and Procedure Manual*;
- G. The FHWA *Recording and Coding Guide for the Structure Inventory and Appraisal of the Nations Bridges*, the FHWA *Bridge Inspectors Reference Manual*; and
- H. National Bridge Inspection Standards (NBIS);
- I. American Association of State Highway and Transportation Officials (AASHTO) *LRFD Bridge Design Specifications*;
- J. AASHTO Guide Specifications for LRFD Seismic Bridge Design;
- K. AASHTO *LRFD Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals*;
- L. AASHTO *LRFD Guide Specifications for the Design of Pedestrian Bridges*;
- M. AASHTO *LRFD Movable Highway Bridge Design Specifications*;
- N. AASHTO/AWS D1.5M/D1.5 *Bridge Welding Code*;
- O. AASHTO *Guide Specification and Commentary for Vessel Collision Design of Highway Bridges*;
- P. AASHTO *Guide Specifications for Bridges Vulnerable to Coastal Storms*;
- Q. AASHTO *LRFD Bridge Construction Specifications*;
- R. AASHTO *Standard Specifications for Highway Bridges*;
- S. AASHTO *Manual for Bridge Evaluation*;
- T. AASHTO *Manual on Subsurface Investigations*; and
- U. Any other publications listed in Exhibit 8, or as instructed by MDOT.

Hydraulic Design

- A. *Mississippi Standard Specifications for Road and Bridge Construction*;
- B. 23 CFR Parts 625, 630, and 650;
- C. 44 CFR Part 59-78;
- D. AASHTO *Drainage Manual*;
- E. AASHTO *LRFD Bridge Design Specifications*;
- F. *Bridge Scour and Stream Instability Countermeasures*;
- G. Federal Emergency Management Agency (FEMA) regulations;
- H. FHWA Hydraulic Engineering Circulars and other publications;
- I. FHWA publication *Design of Riprap Revetment*;
- J. FHWA publication *Design of Roadside Channels with Flexible Linings, Hydraulic Engineering Circular No. 15 (HEC-15)*;
- K. FHWA publication *Evaluating Scour at Bridges*;
- L. FHWA publication *Hydraulic Design of Energy Dissipators for Culverts and Channels, Hydraulic Engineering Circular No. 14 (HEC-14)*;
- M. FHWA publication *Hydraulic Design of Highway Culverts, Hydraulic Design Series Number 5 (HDS-5)*;
- N. FHWA publication *Hydraulic Design of Safe Bridges, Hydraulic Design Series Number 7 (HDS-7)*;
- O. FHWA Publication No. FHWA-HRT-05-072, *Assessing Stream Channel Stability at Bridges in Physiographic Regions*, July 2006;
- P. FHWA publication *River Engineering for Highway Encroachments, Highways in the River Environment, Hydraulic Design Series Number 6 (HDS-6)*;
- Q. FHWA publication *Stream Stability at Highway Structures*;
- R. FHWA publication *Urban Drainage Design Manual, Hydraulic Engineering Circular No. 22 (HEC-22)*;
- S. Floodplain Management Regulations for the State of Mississippi;
- T. Hydraulic Engineering Circular No. 11 (HEC-11);
- U. Hydraulic Engineering Circular No. 18 (HEC-18);
- V. Hydraulic Engineering Circular No. 20 (HEC-20);
- W. Hydraulic Engineering Circular No. 23 (HEC-23);
- X. National Flood Insurance Program regulations (NFIP);
- Y. Local, state, or federal regulations as appropriate; and
- Z. Any other publications listed in Exhibit 8, or as instructed by MDOT.

Traffic Signal Design

- A. MDOT Traffic Engineering's Traffic Signal Standard Drawings.

TYPICAL ITEMS/MATERIALS PROVIDED BY THE LPA AND/OR MDOT

Based on availability, the LPA may provide information to the CONSULTANT including but not limited to plans and information from previous studies and projects including but not limited to environmental studies, USGS reports, traffic studies, roadway and bridge plans, bridge inspection reports, underwater inspection reports, pile records, CADD files, survey control points.

The LPA will provide a single point-of-contact for day-to-day coordination.

PRE-DESIGN MEETING

The purpose of the Pre-Design Meeting is to discuss the specific design criteria, and other matters as the MDOT, LPA and CONSULTANT deem necessary.

The CONSULTANT shall submit minutes of the Pre-Design Meeting to the LPA and MDOT within two (2) weeks after the meeting, unless instructed otherwise. The minutes shall include, but are not limited to, a list of attendees and a detailed list of all design requirements discussed in the meeting.

ENVIRONMENTAL STUDIES (CATEGORICAL EXCLUSION) WITH NEW ROW*

*New ROW includes donated ROW and permanent easements. New ROW does not include temporary easements.

The CONSULTANT will perform various Engineering and Environmental studies necessary to prepare a Categorical Exclusion, in accordance with the US Department of Transportation, Federal Highway Administration Technical Advisory T 6640.8A, Guidance for Preparing and Processing Environmental Documents and Section 4 (F) Documents; Federal-Aid Policy Guide 23 CFR 770, 771, 772, and 777 at the time this CONTRACT is executed; and MDOT Project Development/Environmental Documentation, S.O.P. No. ENV-02-01-00-000 and other related Federal and State regulations, laws and/or procedures that may be in effect at the time this CONTRACT is executed.

The CONSULTANT will perform various engineering and environmental studies in accordance with the general requirements as indicated below.

Cultural Resource Survey

Cultural resource investigations shall comply with federal and state laws. Failure to obtain Section 106 of the National Historic Preservation Act (NRHP) clearance will jeopardize federal funding and result in stoppage of the project by the MDOT/FHWA. The following resources shall be

assessed via a Cultural Resource Survey, which includes, but may not necessarily be limited to the following:

1. archaeological and architectural resources located within the project Area of Potential Effect in accordance with *MDOT Guidelines for Contractors on Archaeological Investigations and Reports* and *Mississippi Department of Archives and History Guidelines for Archaeological Investigations and Reports in Mississippi*;
2. systematic pedestrian survey examining for cultural material; and
3. standing structures over 50 years of age or for National Register of Historic Places eligibility.

The CONSULTANT shall prepare a summary report to include determinations of eligibility for the NRHP for all cultural resources located during the survey. All reports (including draft, preliminary and final) shall be prepared in accordance with MDOT and Mississippi Department of Archives and History (MDAH) guidelines and in accordance with all Federal codes and regulations related to cultural resources management that may be in effect at the time of the work assignment.

Environmental Site Assessments (Hazardous Materials Assessment)

The CONSULTANT shall inspect the entire project for potential sources of contamination. For those sites identified as potentially contaminated, the CONSULTANT shall conduct an Environmental Site Assessment to identify any potential risk associated with the property. All assessments shall be conducted in accordance with the Mississippi Department of Environmental Quality, United States Environmental Protection Agency, Local, State, and Federal regulations. Upon completion of field activities and receipt of laboratory results, the CONSULTANT shall provide a summary report of the assessment activities. This report shall include, but is not limited to, the following:

1. **Introduction**
 - a. Name of the property owner and contact information
 - b. Operator information, if different from owner
 - c. Deviations from the approved scope of work
 - d. Authorization
 - e. MDOT project information
 - f. Date of field activities
2. **Background**
 - a. Site Location and Setting
 - i. Describe location and setting
 - ii. Discuss any visual signs of environmental impacts
 - iii. Describe any potential off-site sources of potential environmental impacts
 - b. Site Description and History
 - i. Discuss the past, current and proposed use of the site.
 - ii. Discuss any underground storage tanks that may be present, include size, location, age, product stored, location of lines and dispenser
 - iii. Discuss any previous assessment that may have been performed for the site
 - iv. Discuss any past releases at the site.
3. **Site Characteristics**
 - a. Site Typography
 - i. Section, Township, Range, latitude-longitude and elevation (relative to the National Geodetic Vertical Datum (NGVD))
 - ii. Describe proximity of site to sensitive receptors (lakes, creeks, water wells, etc) located within a one-mile radius of the site.
 - iii. Describe the topography of the site
 - b. Hydrogeologic Setting

- i. Discuss the general geology of the site including all formations between the base of fresh water and the surface.
 - ii. Discuss the hydrologic regime
 - iii. Discuss the potential for contamination to impact an aquifer, or nearby sensitive receptors
- c. Area Water Wells
 - i. Provide an area water well survey for all wells located within a one-mile radius of the site (wells should also be plotted on a scaled area map)
 - ii. Discuss wells located within 1/4 mile radius of the site. Provide the type of well (public, private, industrial, etc), the year of installation, the total depth, the screened interval, the aquifer in which it is screened and verify if the well is in use, or not
 - iii. List the possible wells that could be affected by contamination, if present
- d. Field Screening of any Utility Openings
 - i. Discuss the vapor readings of any utility manhole uncovered or storm drain openings
 - ii. State the type of meter used and the latest calibration date
 - iii. State the depth meter was lowered into the opening along with any other pertinent information

4. Soil Investigation

- a. Soil Exploration, Sampling, and Field Testing
 - i. Discuss the number of boring installed, depths of each boring and if groundwater was encountered
 - ii. Discuss whether hydrocarbon odors or a sheen was encountered during drilling
 - iii. Discuss any unusual conditions or complications encountered during drilling
 - iv. Present the field data collected from the borings in tabular form shown below:

Sampling Date	Borehole/MW	Sampling Interval	PID/FID Readings (ppm)
01/01/2014	SB-1	4'-6'	125
		6'-8'	978*
		8'-10'	004

- v. *Submitted for laboratory analysis
- b. Extent of Soil Contamination
 - i. Discuss the lithological characteristics of the soils encountered during drilling
 - ii. Discuss the horizontal and vertical extent of soil contamination and whether the soil contamination has been defined. If additional soil borings are necessary, provide justification and locate proposed soil borings on map (refer to Figure 8)
 - iii. Discuss potential impacts to surrounding properties
 - iv. Estimate the volume (cubic yards) of contaminated soil above regulatory limits
 - v. Present the results of any Quality Assurance/Quality Control (QA/QC) measures and discuss whether they meet allowable QA/QC standards
 - vi. Provide laboratory analytical results in a data table to be inserted behind the recommendations of the report

5. Groundwater Investigation

- a. Monitoring Well Installation
 - i. Discuss which borings were converted to monitoring wells and why
 - ii. Discuss whether pre-existing wells (leak detection wells, water supply wells, wells from previous assessments, etc.) are located at the facility and if so how many
 - iii. If certain monitoring wells were not sampled, discuss why (i.e., free product, no water, etc)
 - iv. State whether groundwater and/or free product intersect the screened interval of the monitoring well. If not, discuss why
- b. Extent of Groundwater Contamination
 - i. Discuss the potentiometric surface, flow direction and gradient
 - ii. Discuss any anomalies in the flow regime
 - iii. Discuss if free product is present on the water table. If so, discuss the areal extent and product thickness, and indicate on map
 - iv. Discuss the potential of contamination impacting sensitive receptors and/or adjacent properties

- v. Discuss whether groundwater contamination has been defined. If additional monitoring wells are necessary, provide justification and locate proposed monitoring wells on map.
 - vi. Present and discuss the results of the quality control blanks and duplicates and state whether or not they meet quality control criteria
 - vii. Provide in tabular form the analytical results of the groundwater samples
- 6. **Findings and Recommendations**
 - a. Summarize any contamination discovered during this assessment
 - b. Discuss in detail your recommendations for any future site activities, if they are recommended.
- 7. **Tables** : The Reports shall contain the following, at a minimum
 - a. Table I - Summary of Soil Sampling Analysis
 - b. Table II - Summary of Groundwater Sampling Analysis
 - c. All tables should note if the concentrations exceed the regulatory limits for the constituent of concern
- 8. **Figures** : The Report shall contain these applicable figures:
 - a. Area/Vicinity Map - Indicate the subject property in relation to the surrounding area and plot all wells and sensitive receptors located within a one mile radius.
 - b. Surrounding Area Map (Approximate 500-foot radius surrounding the site) - Indicate potential source of contamination, environmental receptors, names of roads, utility openings, and adjacent properties and their use.
 - c. Site Map - Map shall indicate the location of any fences, retaining walls, above ground and underground utilities, property lines, above ground tanks, underground tanks, dispensers, buildings, borings locations, and monitoring wells.
 - d. Contaminated Soil Contour Map (one per constituent above regulatory limits) - Maps shall include soil boring locations, building locations, any source of contamination. Sampling location shall indicate laboratory results, PID/FID readings, and sample depth.
 - e. A Fence Diagram or Cross-Sectional Map - Map shall include lithology and hydrologic data, water levels and screened intervals of monitoring wells.
 - f. Groundwater Elevation Contour Map - Map shall include all monitoring well locations, groundwater contours, groundwater elevations plotted at each well and arrows indicating groundwater flow direction.
 - g. Groundwater Constituent Contour Map (one per constituent above regulatory limits) - Maps shall include monitoring well locations, building locations, any source of contamination. Laboratory analytical results shall be plotted adjacent to the sampling location.
 - h. Further Action Map - Map shall indicate recommendations for proposed future borings and monitoring wells, or areas of excavation.
- 9. **Appendices shall include the following:**
 - a. Boring Logs - Boring Logs should not the presence of odors or staining, location of water bearing zones, PID/FID readings, soil descriptors and soil saturations;
 - b. Well Construction Diagrams;
 - c. Laboratory Analytical Report, including Chain of Custody;
 - d. Photo Documentation

Threatened And Endangered Species Assessment

The CONSULTANT shall perform the following Threatened and Endangered Species assessments:

All Threatened and Endangered Species (TES) assessments or surveys will be performed with appropriate coordination with the United States Fish & Wildlife Service (USFWS) and the Mississippi Department of Wildlife Fisheries and Parks (MDWFP). This includes Federally-Listed Species and Species of Concern.

- A. **General Assessment** - The CONSULTANT shall complete a General Assessment in accordance with the following requirements:
 - 1. Identify any designated critical habitat through coordination with USFWS and MDWFP.

2. Identify "suitable habitat" through coordination with USFWS and MDWFP.
 3. Review engineering design plans, US Geological Survey Topographical maps, Geographic Information System data, aerial and satellite photography, US Department of Agriculture Soil Survey data, National Wetland Inventory data, and other resources to analyze and evaluate impacts to listed species.
 4. Conduct presence/absence surveys for threatened and endangered species and habitats when required.
 5. Conduct field work and delineate and document the preliminary assessment for actual impacts by evaluating habitats, soil morphology and characteristics, landscape features, wildlife, and any other characteristics contributing to the presence of TES.
 6. Use GPS and CADD to document field findings.
 7. Prepare Biological Assessments or other documents as required under Section 7 of the Endangered Species Act.
 8. Perform biological monitoring as required by regulatory agencies when requested by the MDOT Project Manager or his designee.
 9. Attend project meetings as required.
 10. Perform other related activities as requested by the MDOT Manager or his designee.
- B. **Biological Assessment** - The CONSULTANT shall complete a Biological Assessment adhering to the following requirements and format:
1. Introduction
 - a. State the purpose of the document to assess the effect of the proposed action on federally protected resources.
 - b. Briefly specify the proposed action.
 2. Project Description
 - a. Describe the where, when and how for the project.
 - b. Include a map delineating the location of the project.
 - c. Identify any conservation measures that will be incorporated into the project design.
 3. Action Area
 - a. Delineate the geographic area that will be affected, i.e., the area where the physical, chemical, and biotic effects will occur.
 - b. Delineate the specific areas that will be affected by each of the project elements.
 - c. Identify any ongoing activities that may be affecting the species or habitat.
 4. Species/Critical Habitat Considered
 - a. Identify the species or critical habitat that *may be present*.
 - b. Document how you identify these listed resources
 - c. Describe the current population and habitat conditions (status and trend, if known) in the action area for each protected resource that *may be present*.
 5. Effective Analysis
 - a. For each species or habitat parcel, explain how it will or will not be exposed to the project elements. All life stages shall be considered.
 - b. Cumulative Effects Analysis (for actions that are likely to adversely affect listed resources). Identify any future state or private activities, not involving federal activities, which are reasonably certain to occur within the action area. Describe how such activities will affect listed resources within the action area.
 6. Conclusion and Determination of Effects for each protect resource
 - a. For each protected resource, make a Section 7 determination and include the rationale.
 - b. For a "may affect, but not likely to adversely affect" finding, request a USFWS concurrence. For a "may affect, likely to adversely affect" finding, request a USFWS concurrence.
 7. Literature Cited
 8. List of Contacts Made and Preparers

Noise Studies

The CONSULTANT may be required to conduct a Highway Traffic Noise Study for incorporation into Environmental Studies conducted by the MDOT or as a stand-alone analysis.

Highway Traffic Noise Studies are prepared for proposed highway construction projects in order to:

1. Predict the effects that the proposed project will have on the noise environment.
2. Point out sites where noise impact is likely to occur
3. Determine if there are any feasible and reasonable noise abatement measures which will eliminate or reduce expected noise impact.
4. Satisfy the requirements of Title 23 of the Code of Federal Regulations Part 772 (23 CFR 772) and MDOT's Highway Noise Policy or changes thereto as they may occur.

Highway Traffic Noise Study Requirements:

The CONSULTANT shall prepare Highway Traffic Noise Studies which shall fulfill all requirements contained in 23 CFR 772, and MDOT's Highway Noise Policy, or changes thereto as they may occur, and shall be prepared in the following phases:

1. Identify all existing and planned activities or land uses that may be affected by traffic noise for all alternates of the proposed project. All noise sensitive receptors listed in Activity Categories A, B, C, D and E of Table 1 of 23 CFR 772 within approximately 500 feet of the outside pavement edge of interstate highways and within approximately 400 feet of the outside pavement edge of all other highways shall be inventories for all alternates of the proposed project. Land uses in activity Category F of Table 1 of 23 CFR 772 may be included in the inventory if it will contribute to the completeness of the study; however, land uses in Category F are not required to be included in the inventory. The inventory will normally list each house, place of worship, school, apartment building, park or other noise sensitive receptor; however, several trailer houses in a trailer park or other closely spaced noise sensitive receptors having the same noise environment may be grouped if the number of receptors in each group is given. In some cases, the inventory of noise sensitive receptors will be done by the MDOT.
2. Measure the existing noise levels for existing activities and developed land uses. At least 1 noise level measurement shall be made for every 15 to 20 noise sensitive receptors identified and for every substantial change in highway traffic.
3. Determine the existing, design year no build, and design year build noise levels at each noise sensitive receptor identified along all alternates of the proposed project using a method meeting the requirements of 23 CFR 772. The noise levels shall be determined at every house, school, park, business, etc. that was identified.
4. Compare the design year predicted noise levels for the no build alternative and the build alternative at each noise sensitive receptor with the existing noise levels and with the noise abatement criteria levels given in Table 1 of 23 CFR 772 and make a subjective description of the noise impact at each noise sensitive receptor.
5. Examine and evaluate alternative noise abatement measures for reducing or eliminating the noise impact on existing activities, developed lands and undeveloped lands for which development is planned, designed and programmed.
6. Identify those lengths of highway (separately for each side of the highway) and those individual land uses where noise abatement measures are not feasible and reasonable.
7. Prepare Noise Report Documents with a map showing the locations of all identified noise sensitive receptors with tables showing the measure and predicted noise levels at each house, school, park, and other noise sensitive receptor that was identified. The number of copies and medium of the documents will be prescribed by the Assignment instrument.

Relocation Assessments Should a proposed project result in displacements, the following information regarding households and businesses shall be discussed for each alternative under consideration commensurate with the level of impacts and to the extent they are likely to occur:

- An estimate of the number of households to be displaced, including the family characteristics (e.g., minority, ethnic, handicapped, elderly, large family, income level, and owner/tenant status)
- A discussion comparing available (decent, safe, and sanitary) housing in the area within the housing needs of the displaced. The comparison should include (1) price ranges, (2) sizes (number of bedrooms), and (3) occupancy status (owner/tenant).
- A discussion of any affected neighborhoods, public facilities, non-profit organizations, and families having special composition (e.g., ethnic, minority, elderly, handicapped, or other factors) which may require special relocation considerations and the measures proposed to resolve these relocation concerns.
- A discussion of the measures to be taken where the existing housing inventory is insufficient, does not meet relocation standards, or is not within the financial capability of the displaced. A commitment to last resort housing shall be included when sufficient comparable replacement housing may not be available.
- An estimate of the numbers, descriptions, types of occupancy (owner/tenant), and sizes (number of employees) of businesses and farms to be displaced. Additionally, the discussion shall identify:
 - sites available in the area to which the affected businesses may relocate;
 - potential impacts on individual businesses and farms caused by displacement or proximity; and
 - adverse effects to farm operations (i.e. continuity, access, pastures, irrigation, etc.)
- Specific financial and incentive programs or opportunities (beyond those provided by the Uniform Relocation Act) to residential and business relocates to minimize impacts. Identify assistance available through other agencies or organizations.

If households or businesses are displaced, a Preliminary Relocation Assistance Plan should be completed and included as an appendix to the project's environmental document. The environmental document shall also include the following statements in the relocation section:

- The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended; and
- MDOT has relocation information and resources available for all residential and business relocations without discrimination.

Farmland Assessment

Evaluate impacts to farmlands in accordance with provisions of the Farmland Protection Policy Act. Prepare a Farmland Conversion Impact Rating. The Farmland Conversion Impact Rating form shall be coordinated with NRCS.

WETLANDS/WATERS DELINEATION AND REPORTING REQUIREMENTS

The CONSULTANT shall successfully complete and submit a field delineation report (Assessment Report) directly and completely following the MDOT Wetlands and Other Waters Assessment Report template and following regulatory protocol. Wetlands and Other Waters potentially falling under the jurisdiction of the US Army Corps of Engineers (USACE) and falling partially or wholly within the project boundaries identified in the Work Assignment or which may be affected by the project shall be identified and reported.

Documentation of Wetlands shall adhere to the following requirements:

- A. Wetlands shall be identified using the routine method set forth in the Corps of Engineers' 1987 manual, as revised;
- B. The 2012 Interim Regional Supplemental Guidance to the USACE 1987 Wetland Delineation Manual and corresponding Supplemental Wetland Delineation Forms shall be used, as revised;
- C. Wetlands shall be classified utilizing U.S. Fish and Wildlife Service's Classification of Wetlands and Deepwater Habitats of the United States, 1979, as revised;
- D. Wetlands shall be mapped on aerial photos and United States Geological Survey quadrangle maps and the extent and type of each shall be reported.

Documentation of Other Waters shall adhere to the following requirements:

- A. Other Waters shall be identified with an assessment of their current physical and functional characteristics and all geospatial coordinates of each shall be provided;
- B. All conveyance systems displaying bed and bank characteristics and/or Ordinary High Water Marks shall be documented and classified using the Channel Assessment Field Datasheet provided by MDOT;
- C. Any other water bodies present shall be documented (e.g. ponds, lakes, etc.)

In addition the Assessment Report, using the project plan files provided by MDOT, digital files depicting all wetland perimeters, channel reaches, and/or other water body perimeters within the project area shall be submitted in the following formats:

- A. Properly geo-projected shape (SHP) and/or design (DGN) files using Mississippi State Plane (East or West);
- B. KMZ or KML

Note: If submitting shape files, the project area and each feature must be submitted in separate files.(i.e. There must be separate project area, wetland, channel, and other body files if the project are contained each of these features) SHP file polygons shall not contain fill.

The CONSULTANT shall provide the MDOT Project Manager or his designee with a preliminary draft of the Assessment Report, the shape/design files, and the KMZ or KML file for review and comment. The CONSULTANT shall then address all comments and electronically submit the final Assessment Report in PDF and editable Word formats, the final shape/design files, and the final KMZ or KML file. If requested by the MDOT Project Manager or his designee, hard copies and/or CDs of the final report and associated files shall be submitted.

Files must meet the following naming schemes:

- A. Assessment Report: Name must contain "Draft-W-OW-Rpt_XXXXX-XXX" or "Final-W-OW-RPT_XXXXX-XXX" in this exact scheme where X indicates the Construction FMS number. e.g., "Final-W-OW-RPT_123456-301". If the project covers multiple FMS number details, the first three digits of each additional detail shall be listed (e.g., "Final-W-OW-RPT_123456-301-302-303");
- B. SHP and/or DGN files: Names must clearly indicate contents of file (e.g., "scrub-shrub_wetlands.shp", "emergent_wetlands.shp", "wetlands.dgn");
- C. KMZ or KML files: Name must contain "W-OW_XXXXX-XXX" where X indicates the Construction FMS number. For example, "W-OW_123456-301". If the project covers multiple FMS number details, the first three digits of each additional detail shall be listed (e.g., "W-OW_123456-301-302-303")

If requested by the MDOT Project Manager or his designee, the CONSULTANT shall complete any coordination functions associated with Wetlands and Other Waters.

FIELD SURVEY

The CONSULTANT shall survey the project utilizing standard surveying practices as required for plan development, in accordance with the current MDOT Design Manual. The work shall be performed in accordance with the current MDOT Survey Manual, unless specifically accepted, and with any additional instructions or requests by the LPA, including the following:

Centerline Survey and Control

- A. Document "good faith" efforts to notify the property owners prior to entering upon the property for survey purposes;
- B. Establish horizontal and vertical control, intermediate control and centerline in accordance with the MDOT Survey Manual;
- C. Perform hydraulic survey for existing and proposed structures, according to the MDOT Survey Manual;
- D. Perform complete topographic survey along proposed centerline in accordance with the MDOT Survey Manual;
- E. The CONSULTANT will be required to establish the existing right-of-way lines of roadways within the project limits. Property lines shall be determined using, in the CONSULTANTS opinion, they current vesting deed(s) for any one particular parcel or tract of land researched from courthouse records. A PRELIMINARY PROPERTY MAP shall be developed as a result of the CONSULTANT'S field and courthouse research. The preliminary property map shall be utilized as a reference only to the status of property lines and ownership. Furthermore, the preliminary property map should not be used to prepare documents for the conveyance of real property for any purpose.:
 - 1. A detailed and diligent search and collection of property corners, ROW markers, and property line evidence shall be conducted on all parcels in or connecting to the limits of the project;
 - 2. Existing highway ROW, local road ROW, railroad ROW, and utility ROW that fall within the topographic limits of the project shall be collected;
 - 3. Each land parcel boundary in or connecting to the limits of the projects shall be drawn and the boundary lines delineated as; from evidence or deed. Each individual parcel to be labeled with the following: owner name and tax parcel number. All General Land Office (GLO) lines intersecting the project labeled with appropriate Section, Township, and Range information. Lot and block or tract numbers of property and adjoining lots of Subdivisions;
 - 4. All corners and evidence found shall be shown. No ROW markers or property corners symbology shall be shown unless they are collected in the field;
 - 5. Any distances or bearings shown on this drawing shall be grid;
 - 6. North arrow.
- F. Any local road to be relocated on the project will be submitted to the LPA for approval. A site visit by the appropriate representatives of the LPA and/or MDOT will be made with the CONSULTANT to review the proposed relocations. The approved relocations will then be staked and cross-sections developed by one of the methods outlined in the MDOT Survey Manual;
- G. In the case of any discrepancy or ambiguity between the MDOT Survey Manual, the Mississippi Board's "Standards of Practice" or specifications listed with this CONTRACT the CONSULTANT shall adhere to the most stringent requirement for the specific task in question, unless otherwise directed in writing by a representative of the MDOT authorized to make alterations to this CONTRACT;
- H. Mississippi One Call (and other agencies that do not participate in Mississippi One-Call shall be contacted to mark all underground utilities within the project limits. The markings shall be field surveyed and depicted on the final mapping.

Survey Data Submittal

The CONSULTANT shall submit electronic copies of the following information (This is in addition to the CADD files required to be submitted):

- A. An ASCII file containing the horizontal and vertical control point information established by the CONSULTANT;
- B. An ASCII file containing the field collected property point information. Naming of the file shall be firm's name_project number_property.txt. File format shall be printed by the CONSULTANT and the professional surveyor in charge of the project shall certify by signing and placing his or her seal on each page that the coordinate values of this file meets or exceeds requirements for land class "B", as required by Mississippi Board of Licensure for Professional Engineers and Land Surveyor's "Standards of Practice" for Land Surveying in the State of Mississippi. This file shall be scanned and submitted in a PDF format. Naming of the file shall be firm's name_project name_property certification.pdf;
- C. An ASCII file containing the preliminary ROW marker coordinates. Naming of the file shall be firm's name_project number_preliminary_row.txt. File format shall be point number, northing, easting, RWM and station-offset;
- D. A PDF file containing the completed MDOT survey notification forms for each landowner along the project that have been returned to the CONSULTANT. Naming of the file shall be firm's name_project number_survey_notification.pdf;
- E. An ASCII file containing all topographic points collected for the project. Naming of the file shall be firm's name_project number_topo.pdf. File format shall be point number, northing, easting, elevation, pointcode, line code: point description.

At the end of the office review plans, the CONSULTANT shall submit an electronic copy of the following information:

An ASCII file containing the final ROW marker coordinates used for field staking. Naming of the file shall be firm's name-project number_final_row.txt. File format shall be point number, northing, easting, RWM, and station-offset. A certification bearing the seal, date, and signature of the Professional Surveyor shall accompany this file stating accuracy requirements listed below were achieved. The accuracy standards for placement of monuments shall be 0.05 feet relative to the project control established by the LPA or in accordance with Mississippi Board's "Standards of Practice, Class "A", for surveying in the State of Mississippi as set forth and published by the State Board of Registration for Professional Engineers and Land Surveyors". The more stringent of these two accuracy standards will apply and shall be used. The top of the pins shall be two six inches below the ground surface.

FIELD STAKING

Other field staking services may include, but not limited to, the following:

- A. The CONSULTANT shall stake and flag the centerline, and stake all additional alignments (ramps, loops, detours, collector-distributor (C-D) roads, local roads, or other facilities) within two (2) weeks of notifications by the LPA for the purpose of the LPA preparing a Centerline Soil Profile. The alignments shall be recovered, reestablished and re-flagged again prior to the Field Inspection. All staking shall be in accordance within the current version of the MDOT Survey Manual.
- B. The bridge abutments and intermediate bents shall be established and staked in the field prior to the Field Review, and again prior to the Field Inspection;
- C. Once Final Right-Of-Way Plans have been issued and before the completion of plats and deeds, rebar (5/8" x 24" rebar) with a 2" aluminum cap shall be set at each proposed Right-of-Way corner points. Accuracy standards for placement of monuments shall be in accordance with the Standards of Practice for Class "B" surveys in the State of Mississippi as defined by the State of Mississippi Board of Licensure for Professional Engineers and Surveyors. The top of the pins shall be two (2) to six (6) inches below the ground surface. It shall be the CONSULTANT'S responsibility to update Right-of-Way

- monument pin locations due to revisions from the time Plats and Deeds are complete to the end of the office review plans;
- D. Once Final Right-of-Way Plans have been issued, all Right-of-Way lines shall be cleared and staked at 100-foot intervals, as required for appraisal and acquisition. For estimating purposes, a maximum of 10 parcels per trip are to be included.

PHASE A (FIELD REVIEW) ROADWAY AND BRIDGE DESIGN

Phase A (Field Review) Roadway Plans

The CONSULTANT will submit the LPA-100 and LPA-700 forms to MDOT.

MDOT approval of the LPA-100 & LPA-700 forms are required prior to the scheduling of a field review.

The Field Review Plans shall contain, at a minimum:

- A. Title Sheet;
- B. Typical Sections;
- C. Plan-Profile Sheets showing all geometrics, profile grades, special ditches, construction limits, existing and proposed Right-of-Way limits, size and location of all drainage structures, existing and proposed driveways, and all public and private utility locations;
- D. Cross Section Sheets showing accurate templates at each cross section, all ditches, proposed driveways, and proposed and existing side drain and cross drain structures. The drainage structure cross sections shall not be in a separate cross section file. Phase construction details shall be shown on the cross sections.

The CONSULTANT shall include the following: preliminary earthwork quantities, preliminary pavement marking sheets, as well as any traffic control that will be required during construction.

Phase A (Field Review) Bridge Plans

Unless instructed otherwise by the LPA, Field Review Bridge Plans shall include the following:

- Span arrangements;
- Pier/foundation schematics;
- Shoring requirements adjacent to existing streets and railroads;
- Typical Sections;
- Finish grade profiles;
- Vertical and horizontal clearances;
- Retaining walls;
- Design data, drainage data;
- Any other information as instructed by the MDOT Bridge Division Project Engineer or designee.

When applicable, Field Review Bridge Plans for railroad grade separations, including preliminary studies for shoring requirements, shall be submitted to the MDOT Bridge Division Project Engineer or designee to submit to the railroad company for review at this time. Studies (including cost analyses) of other concepts, shoring requirements at existing streets and railroads, and conceptual changes required during this review are covered by this Scope of Work.

Following the Field Inspection, the CONSULTANT shall make all approved plan changes as instructed.

ROADWAY HYDRAULIC DESIGN (DRAINAGE AREA < 1,000 ACRES)

Hydraulic Analysis and Design Requirements

The CONSULTANT shall base the design on the most effective and economical methods that allow runoff waters to be passed through and removed from the roadway. Drainage installations should not create hazardous conditions for traffic operations, nor should they adversely affect conditions of adjoining properties.

Roadway hydraulic design, including hydrology, channels, culverts, energy dissipators, storm drainage systems, and storage facilities, shall be in conformance with the publications listed in I. GENERAL REQUIREMENTS of this Scope of Work and those listed below.

The hydraulic design shall be performed using a nationally recognized and readily available computer program specifically developed for aiding in the design of roadway drainage structures, culverts, and/or storm water conveyance systems and containments. Acceptable software for drainage design applications may include HY-8 Culvert Hydraulic Analysis Program, FHWAY Hydraulic Toolbox, HEC-RAS, PondPack, StormCAD, StreamStats, HEC-HMS, WMS, and SMS.

For storm drainage systems that collect, convey and discharge stormwater flowing within and along the highway Right-of-Way, the storm sewer system design shall be completed in accordance with the requirements and format set forth herein. The storm drainage system shall be designed so that the post-construction peak flow rate at any point where runoff leaves the project Right-of-Way shall be less than or equal to the preconstruction conditions, when applicable.

For temporary drainage structures and/or culverts that may be necessary for detour roads or other non-permanent locations, the temporary hydraulic design shall be completed in accordance with current MDOT policies and requirements, the MDOT Design Memos, and any other guidance as applicable.

The sediment basin design shall be completed in accordance with current MDOT policies and requirements, the MDOT Design Memos, and any other guidance as applicable.

Hydraulic Plans Requirements

Pursuant to the Hydraulic Structure Recommendations, drainage details for all culverts and cross drains, including any that are necessary for detour roads and any other non-permanent locations, storm drainage systems, and sediment basins, shall be provided and placed accordingly in the drainage design file and referenced into the Plan-Profile Sheets.

For urban projects, the storm sewer design shall be depicted on separate Left and Right 1" = 20' Plan-Profile Sheets.

The following Plan-Profile Sheet information shall be provided at a minimum:

- A. The plan view shall show all existing and proposed structures in the proper location, and include corresponding labels as to length, size, and type. Any existing drainage structures that conflict with proposed work shall be labeled to be removed. For storm drainage systems, an identifying structure tag (with corresponding tag in profile view) and a directional flow arrow on all pipes shall be included. For sediment basins, the location and type shall be shown.
- B. The profile view shall show the structures in the proper location and shall be drawn to proper flow lines and dimensions. Pipe slopes and any special ditch slopes shall be labeled.
- C. A detailed description of each structure shall be provided in the profile view, including, but not limited to:
 - o Station;
 - o Type;
 - o Size;
 - o Length;
 - o Drainage Area;
 - o Flowlines;
 - o Skews;
 - o Inverts;
 - o Dimensions when applicable, openings with pipe sizes

For silt basins, the following shall be included:

- o Station;
- o Basin type;
- o Drainage area;
- o Dam length and height.

For flat-bottom ditches, the following shall be included:

- o Location;
- o Station range of special ditch;
- o Bottom widths;
- o Side Slopes
- o Armoring when applicable

Cross sections shall include all existing, proposed, and temporary structures, labeled and drawn to proper flowlines and dimensions, in the cross-section file. A cross section shall be included at all drainage structure locations. The drainage structure cross sections shall not be in a separate cross section file.

Submittal Requirements

The CONSULTANT shall submit field inspection plans and hydraulic calculations concurrently no later than four (4) weeks prior to the Field Inspection, unless otherwise instructed by the LPA.

Any other incidental drawings needed to show pertinent topographical features or special treatments shall be included with the Field Inspection Plans.

The CONSULTANT shall allow four (4) weeks for review the LPA and MDOT.

Representatives of the LPA, the appropriate divisions of MDOT and the CONSULTANT shall attend the Field Inspection at a date mutually agreed upon by both parties.

The CONSULTANT shall submit minutes of the Field Inspection to the MDOT and/or LPA within two (2) weeks after the conclusion of the Field Inspection, unless instructed otherwise by the Project Engineer or designee. The minutes shall include, but are not limited to, a list of attendees, a list of all significant changes to the plans, and a list of all action items by both the CONSULTANT and MDOT.

FINAL RIGHT-OF-WAY MAPS AND DEEDS

The following shall be included:

- Location or property lines;
- Preparation of acquisition (appraisal) maps;
- Legal descriptors prepared in accordance with the Standards of Practice for Surveying in the State of Mississippi; and
- Refurbishing of staking of proposed Right-of-Way limits and easements.

Not included are a title search, property acquisition and closing.

Right-Of-Way Acquisition Map

The CONSULTANT shall prepare a plat of survey, signed and sealed by a Professional Surveyor, and description for each parcel being acquired under the project limits. The individual right-of-way plats and descriptions shall comply with the Standards of Practice for Class B surveys as defined by the State of Mississippi Board of Licensure for Professional Engineers and Surveyors. The minimum sheet size shall be no smaller than 8" x 14". The remaining area (acreage/square footage) is shown for the parent parcel of each take area. Also, each instrument needed to acquire the properties is identified on the maps. The description(s) required for each parcel shall be placed in the newest template from MDOT and include the following instrument templates: Warranty Deeds (W-deeds), Quitclaim Deeds (Q-deeds), Temporary Easements (T-deeds), Permanent Easements (E-deeds), Partial Release (R-deeds), and Access Rights Deeds (G-deeds).

Revisions

After the Maps and Deeds are completed, the CONSULTANT shall make any revisions requested by the MDOT and/or LPA as a result of any revisions made to the Final Right-of-Way Plans. The CONSULTANT acknowledges that revisions to Final Right-of-Way Plans and to Maps and Deeds shall be given high priority treatment, especially after the release of a complete set of Maps and Deeds. The CONSULTANT shall complete revisions to Maps and Deeds in a timely manner that will not impede the progress of the appraisal and acquisition phases of the Right-of-Way process.

GEOTECHNICAL INVESTIGATION FOR ROADWAYS

The CONSULTANT shall investigate subsurface soil and geological conditions along the project route as required to provide the necessary design criteria for structure foundations, pavement support criteria, and embankment stability as required by the LPA.

Design Criteria for pavement support shall be determined from a Centerline Soil Profile. The specific objective of this study is to determine the quality and type of soils located along the project. The Centerline Soil Profile shall be completed prior to the submittal of the field review plans so that the plans reflect slope requirements in areas that contain high-volume-change soils, as well as fill and cut areas that will require benching fore-slopes and/or backslopes.

The CONSULTANT shall perform necessary field and laboratory work to develop and provide the complete soil profile along the centerline of survey. The soil survey shall be performed by the CONSULTANT in such a manner as necessary to produce a report similar in content and format commonly developed by the MDOT's District Materials laboratories, and in accordance with the MDOT SOP TMD020-14-00-000, "Centerline Soil Profiles And Standard Design Procedures for Construction of Roadways Through High Volumn Change Soils".

The CONSULTANT shall identify the types of soils along the proposed alignment, evaluate their potential use as fill materials, and locate any undesirable low strength surface soils that may require undercutting or other remedial measures for construction. From the Centerline Soil Profile, a tentative base design will be formed by the CONSULTANT and any undesirable strata shall be noted for special consideration by the CONSULTANTS Project Engineer in charge of the actual construction.

Prior to the beginning of the field exploration, the CONSULTANT shall submit the proposed plan of work to the LPA for review and approval. As a general rule, soil borings should be spaced a maximum of two hundred (200) feet apart along the centerline and drilled to a depth of three (3) feet below the proposed subgrade line in cut sections or natural ground in fill sections. The spacing and depth of soil borings should vary if unusual conditions are encountered such as rock layers, water strata, or weak deposits (much or unstable material). The auger method of drilling for disturbed samples is generally suitable for identification of the materials obtained.

Additional laboratory tests and analyses, which are not specified in TMD-20-14-00-000, shall be performed by the CONSULTANT. These tests and analyses include:

- Estimated California Bearing Ration (CBR), from charts supplied by MDOT;
- Volume Change, AASHTO 92 or Mississippi Test Method MT-92;
- pH, Mississippi Test Method MT-30 or AASHTO 289; and
- Soil Resistivity, Mississippi Test Method MT-47 or AASHTO 228.

The CONSULTANT shall prepare a report of the findings of the soil survey. This report shall include recommendations for handling unsuitable or undesirable soils, copies of the laboratory test results on the MDOT form TMD-683 or equivalent, and the Centerline Soil Profile. The Centerline Soil Profile shall show the limits of each soil type identified, with each type labeled as follows:

- An identification number to reference it to the laboratory test results;
- AASHTO classifications;
- Unified Soils classification;
- Estimated CBR; and
- % Volume Change (if applicable).

CADD Drawings

The CONSULTANT shall use the requirements listed under I. GENERAL REQUIREMENTS of this Scope of Work for all CADD drawings. The generalized soil profiles shall be submitted with the Final Report.

Unless otherwise indicated, drawings submitted for Final Plans shall be in the following scales: 1 inch = 20 feet, or 1 inch = 40 feet.

Generalized soil profiles and boring logs shall contain standard notes and disclaimers. These notes will be furnished by the LPA. In addition, the generalized soil profiles shall contain a table of soil strengths and unit weights used for design calculations as well as geologic description of the individual soil zones and USCS classification.

Final Centerline Soil Profile Report

For work involving a subsurface field investigation, and engineering analyses, the CONSULTANT shall prepare a draft report of all findings pertinent to the assigned Scope of Work. At that point, a meeting shall be held between the CONSULTANT and LPA to discuss the findings of the investigation and to review the draft report. After this meeting, the Final Centerline Soil Profile Report shall be prepared and signed by an engineer licensed in the State of Mississippi, and shall also contain the following at a minimum:

- A cover letter containing Project Number, County and a general description of the project;
- A project layout sheet containing the project termini and a map of the project area
- Laboratory test results;
- Generalized soil profiles;

The report shall contain the following, organized as follows:

- Cover Letter
- Layout Sheet
- General Information
- Geology
- Conclusions and Recommendations
- Generalized Soil Profile(s)
- Laboratory Test Results
- Final Boring Logs

GEOTECHNICAL INVESTIGATION FOR RETAINING WALLS

Geotechnical design criteria for structures shall be determined from subsurface investigation and laboratory testing. Geotechnical borings and testing shall be completed, and the results contained in a Final Geotechnical Design Report. The Geotechnical Design Report shall contain finalized boring logs and test results associated with the samples presented on the boring logs and contain foundation type recommendations so that the recommended foundation type may be included in the Field Inspection Plans.

The necessary field investigation, laboratory testing, and engineering services shall be conducted by the CONSULTANT at the direction of the LPA. The Geotechnical Investigation shall consist of the following:

- Subsurface investigations, consisting of borings on land or from a barge;
- Cone Penetrometer (CPT) Sampling/Soundings;
- Laboratory testing of disturbed and undisturbed samples;
- Engineering analyses of subsurface conditions;
- Geotechnical design including geotechnical seismic design for retaining wall foundations, embankments, and/or slopes;
- Preparation of necessary plan sheets and Special Provisions for inclusion in plans with only minor modifications;
- Final Geotechnical Investigation Report containing conclusions and recommendations as well as all supporting data.

The CONSULTANT shall be responsible for obtaining permits, licenses, and/or authority from public agencies required for conducting operations, including payment of any charges for the same, and shall not work or use public property without such authority, licenses, or permits. The CONSULTANT shall also obtain any necessary permits to transport equipment over or access public thoroughfares. When applicable, the CONSULTANT shall also notify private landowners and obtain access and permission to enter or work on their property. The LPA shall be notified in writing within five (5) working days of any landowner's refusal to grant access to his or her property.

All foundation investigation work - drilling, soils classification, and laboratory testing - and all other work in connection therewith shall follow procedures outlined in AASHTO publication Manual on Subsurface Investigation, 1988.

Subsurface Investigation

For a surface investigation, the CONSULTANT shall prepare a layout of his proposed boring program. Borehole spacing along the alignment(s) shall not exceed two hundred (200) feet.

Piezometers (open standpipe or vibrating wire) shall be set in the field along the alignments for monitoring of the groundwater table. Piezometer locations shall be noted on the boring program layout submitted for approval. Generally, piezometers shall be necessary only at locations in which footings (pile-supported or spread) or drilled shafts will be utilized or for the determination of liquefaction potential.

Soil samples shall be obtained in each boring. These samples shall be taken at intervals necessary to produce a continuous log. The sampling interval shall not exceed five (5) feet to a depth of sixty (60) feet, and ten (10) foot intervals beyond that depth. At a minimum, one boring shall be completed at each retaining wall site where sampling for the top twenty (20) feet below final ground line is performed on two (2)-foot sample intervals. One boring completed at a minimum depth of twice the wall height below existing ground shall be required for determination of site classification and seismic design.

Undisturbed soil samples shall be obtained in cohesive soil zones in accordance with AASHTO T207. Standard Penetration Tests (SPT) shall be conducted in cohesionless soil zones in

accordance with AASHTO T206. Hammer calibrations shall have been performed in accordance with ASTM D4633 within three (3) years of the date of starting drilling operations. Field recorded SPT N-values shall be corrected to N60 and reported as N60 along with hammer efficiency or energy ratio (ER, kinetic energy/potential energy) on the final soil boring logs. Corrections for rod length, borehole diameter, and use of a linear may also be made as appropriate. The N60 values corrected for rod length, borehole diameter, and linear shall be reported as N(1)60. The corrections are significant for evaluation of liquefaction potential.

Continuous rock cores shall be obtained in any rock strata greater than six (6) inches thick. Any rock strata less than six (6) inches thick shall be identified by collecting and analyzing cuttings. Drilling in rock shall comply with AASHTO T255. All rock cores shall be retained until the construction is complete.

CPT shall be performed in accordance with ASTM D5578 - Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils. Soil samples are not obtained with the CPT. For this reason, CPT soundings will be augmented with conventional borings in close proximity for correlation purposes.

A detailed log of each boring shall be prepared in the field in general accordance with ASTM D5434. A generalized soil profile for each structure site shall be developed and drawn, showing at a minimum the ground line profile, soil zone stratification, locations of the borings, and results of the standard penetration tests (N60). If laboratory testing is not involved, this profile along with the boring logs and soil or rock samples should be retained until the construction is complete. A digital copy of the final soil boring log(s) shall be provided in gINT format at the time the Final Geotechnical Report is submitted.

Laboratory Testing

The CONSULTANT shall perform the following:

Laboratory testing of the soil or rock samples obtained during a field exploration shall be performed to adequately determine necessary classification and design parameters. The following soil/rock characteristics shall be determined from laboratory testing:

- Plasticity;
- In situ moisture content;
- Unit weight;
- Grain size;
- Shear strength;
- Angle of internal friction;
- Rock quality designation (RQD); and
- Compressibility;

A sufficient number of tests shall be performed on representative samples from each stratum designated in the field exploration to adequately determine shear strength, settlement potential, grain size distribution, seismic design properties, and bearing capacity. All testing and sampling are to be performed in accordance with AASHTO, ASTM, or the MDOT procedures and industry standards.

Unconfined Compression (UC, AASHTO T208) and Unconsolidated-Undrained (UU, AASHTO T296) triaxial compression tests shall be used to determine the shear strength characteristics of cohesive soils. A wide range of confining pressures shall be used with representative samples from each zone to develop a Mohr's failure envelope.

Consolidation tests shall be performed on representative samples of all potentially compressible soil strata. The in-situ void ratio, saturation percentage, specific gravity, over-consolidation ratio, and coefficients of compression and vertical drainage shall be determined for these tests.

The angle of internal friction for each sand zone shall be determined by performing triaxial tests at three (3) relative densities. The relative densities shall be 15, 50, and 85 percent. Three (3) confining pressures shall be utilized at each relative density. The pressures are 20, 40 and 60 psi. A total of nine (9) sand triaxial tests (points) will be run per set in order to define the failure envelope at 15, 50, and 85 percent relative densities.

Engineering Analyses

Foundation conditions shall be analyzed together with typical bent loads and elevations furnished by the designer to develop feasible foundation support systems and general foundation designs that follow current AASHTO requirements.

Following completion of the laboratory testing, all soils and rock encountered shall be described and presented on a final boring log, and each stratum shall be classified both geologically and in accordance with the Unified Soil Classification System (USCS), ASTM D2487. Geologic classification of the generalized soil profile shall delineate the differing geologic formations encountered. Substrata within each geologic formation shall be grouped by the physical properties of the soil or rock samples obtained from the borings as determined by the laboratory testing.

If deep foundations are recommended to support the retaining wall, the ultimate pile or drilled shaft bearing capacity curves that present capacity as a function of depth shall be developed for various sizes and types of driven piles or drilled shafts. The curves are to be developed for all retaining wall alignment locations. The sizes and types of piles and wall locations are to be provided by the designer. Construction considerations pertaining to driving piles shall be provided in regard to achieving minimum tip elevations provided by the LPA.

The feasibility of drilled shaft foundations and spread footing foundations shall be examined. General construction considerations and capacity curves for acceptable sizes of shafts and footings shall be provided for those locations that the CONSULTANT determines are suited for these types of foundations. If a complete design is requested, loads to be used in the analysis will be provided by the LPA.

Each approach embankment shall be evaluated as to slope stability (static and seismic) and anticipated settlement.

Seismic considerations regarding foundations will address recommended seismic site classification, liquefaction potential, and pseudo-static seismic slope stability where required.

Findings shall be provided to the LPA.

Geotechnical Design

The following may be required:

- A. Retaining Walls - The LPA shall provide the alignment and grade of any proposed retaining walls. The CONSULTANT should calculate Mechanically Stabilized Earth (MSE) and similar gravity walls for external, and global stability at various locations along the length of the wall. Conventional cantilever walls should be evaluated against sliding, overturning, and bearing capacity failure. The CONSULTANT will be required to provide structural details in addition to any geometric details necessary for the development of construction plans.

Walls in cut slopes shall first be evaluated as to recommend type (MSE, soldier pile, conventional cantilever, tieback or soil nailed). The CONSULTANT shall furnish a generic wall design along with recommendations and considerations for construction.

- B. Foundations - Driven piles (and/or drilled shafts) shall be evaluated for axial compression and uplift capacity. A lateral pile capacity analysis may be required. When a lateral capacity analysis is not required, the CONSULTANT shall provide recommended soil parameters necessary to complete a lateral capacity analysis. If drilled shafts are chosen as the foundation type, the CONSULTANT will be required to complete the axial capacity and lateral load analysis based on current FHWA and/or AASHTO guidelines. In addition, for sites requiring a load test, the CONSULTANT should evaluate an out-of-position test shaft to be load-tested for the purpose of determining the ultimate capacity of the test shaft.
- C. Embankments - Embankments shall be designed such that a minimum factor of safety of 1.3 exists against slope failure (1.4 in critical applications). The use of berms, geosynthetics, buttresses, stabilizing piles, or other methods for increasing the margin of safety against instability shall be considered by the CONSULTANT in the embankment design.

Bridge approach embankments that are determined to settle more than two (2) inches due to the existence of compressible materials below the ground surface shall be designed by the CONSULTANT with regard to mitigation of the settlement. Specified waiting periods, surcharging, wick drain designs, and/or special abutment pile designs shall be considered by the CONSULTANT.

- D. Cuto slopes - The CONSULTANT should evaluate any cut slopes identified by LPA for a minimum long-term factor of safety of 1.40. Temporary backslopes for construction shall be designed for a minimum factor of safety of 1.20.

Geotechnical Seismic Design

- A. Foundation Stiffness matrices (where required), including individual pile stiffness, pile group stiffness, footing stiffness, and abutment stiffness, will be developed using the procedures outlined in FHWA NHI-11-032 Geotechnical Engineering Circular No. 3, dated March 2011, LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations, and the current AASHTO LRFD Bridge Design Specifications.
- B. Seismic site classification and corresponding recommended response spectra for both period and displacement will be determined per the current AASHTO LRFD Bridge Design Specifications.
- C. Liquefaction potential (where required) will be assessed per the current AASHTO LRFD Bridge Design Specifications.
- D. Geotechnical parameters will be presented in tabular format to prepare the LPile results. This information will be included in the Geotechnical Report.
- E. A preliminary lateral pile analysis using LPile developed by Ensoft, Inc. is to be performed at each retaining wall site, and the corresponding output curves are to be included in the Geotechnical Report.
- F. Pseudo-static seismic slope stability analyses (where required) shall follow the current AASHTO LRFD Bridge Design Specifications.

Pile Testing

The CONSULTANT shall use the FHWA Modified Gates Formula, referred to as FHWA-Gates, to determine the length of pile. The FHWA-Gates is presented in the FHWA pile manual (2006).

CADD Drawings

The CONSULTANT shall use the requirements listed under I. GENERAL REQUIREMENTS of this Scope of Work for all CADD drawings. The generalized soil profiles shall be submitted with the Final Report.

Unless otherwise indicated, drawings submitted for Final Plans shall be in the following scales: 1 inch = 20 feet, or 1 inch = 40 feet.

The retaining wall plan and profile drawings and boring logs shall contain standard notes and disclaimers. In addition, drawings should contain a table of soil strengths and unit weights used for design calculations as well as a geologic description of the individual soil zones and USCS classification.

Geotechnical Investigation Report

For work involving a subsurface field investigation, engineering analyses, and/or geotechnical designs, the CONSULTANT shall prepare a draft report of all findings and designs pertinent to the assigned Scope of Work. The Final Geotechnical Investigation Report shall be prepared and signed by an engineer license in the State of Mississippi, and shall also contain the following at a minimum:

- A cover letter containing Project Number, County and a general description of the project;
- A project layout sheet containing the project termini and a map of the project area;
- Final boring logs;
- Laboratory test results;
- Generalized soil profiles;
- Seismic site classification;
- Liquefaction potential assessment;
- Recommended seismic response spectra;
- Foundation recommendations for retaining walls;
- Draft design sheets and/or draft Special Provisions required for the preparation of Final Plans.

The report shall contain the following, organized as follows:

- Cover Letter
- Layout Sheet
- General
- Geology
- Conclusion and Recommendations
- Settlement Analysis of Roadway Embankments
- Slope Stability Analysis - Static (End of Construction and Long-Term) and Seismic
- Foundation Analysis
- Soluble-Sulfates Test Results
- Spread Footings

- Driven Piles
- Design
- Ultimate Capacity Curves (Compression and Tension, if required)
- Recommended L-Pile Parameters
- Construction
- Test Pile Recommendations
- Driving Recommendations
- Drilled Shafts
- Design
- Ultimate Capacity Curves (Compression and Tension, if required)
- Recommended L-Pile Parameters
- Construction
- Static Load Test Recommendations
- Construction Recommendations
- Geotechnical Seismic Design - Recommended Response Spectra
- Site Classification
- Foundation Stiffness Matrices (if required)
- Liquefaction Potential Assessment
- Settlement (if liquefiable)
- Lateral Spread (if liquefiable)
- Reference Section
- Generalized Soil Profile(s)
- Spread Footing/Driven Pile/Drilled Shaft Design Curves
- Laboratory Test Results
- Final Boring Logs

GEOTECHNICAL INVESTIGATION FOR BRIDGE STRUCTURES

Geotechnical design criteria for structures shall be determined from subsurface investigation and laboratory testing. Geotechnical borings and testing shall be completed, and the results contained in a Final Geotechnical Design Report. The Geotechnical Design Report shall contain reproductions of the field boring logs and test results and contain foundation type recommendations so that the recommended foundation type may be included in the Field Inspection Plans.

The necessary field investigation, laboratory testing, and engineering services shall be conducted by the CONSULTANT at the direction of the LPA. The Geotechnical Investigation shall consist of the following:

- Subsurface investigations, consisting of borings on land or from a barge;
- Cone Penetrometer (CPT) Sampling/Soundings;
- Laboratory testing of disturbed and undisturbed samples;
- Geotechnical Design Report containing results of subsurface investigation and laboratory testing along with bridge foundation recommendations;
- Engineering analyses of subsurface conditions;
- Geotechnical design including geotechnical seismic design of bridge, embankments, and/or slopes;
- Preparation of necessary plan sheets and Special Provisions for inclusion in plans with only minor modifications;
- Geotechnical Investigation Report containing conclusions and recommendations as well as all supporting data.

The CONSULTANT shall be responsible for obtaining permits, licenses, and/or authority from public agencies required for conducting operations, including payment of any charges for the same, and shall not work or use public property without such authority, licenses, or permits. The CONSULTANT shall also obtain any necessary permits to transport equipment over or access public thoroughfares. When applicable, the CONSULTANT shall also notify private landowners and obtain access and permission to enter or work on their property. The LPA shall be notified in writing within five (5) working days of any landowner's refusal to grant access to his or her property.

All foundation investigation work - drilling, soils classification, and laboratory testing - and all other work in connection therewith shall follow procedures outlined in AASHTO publication Manual on Subsurface Investigation, 1988.

Subsurface Investigation

For a surface investigation, the CONSULTANT shall prepare a layout of his proposed boring program. Borehole spacing along the alignment(s) shall not exceed two hundred (200) feet.

Piezometers (open standpipe or vibrating wire) shall be set in the field along the alignments for monitoring of the groundwater table. Piezometer locations shall be noted on the boring program layout submitted for approval. Generally, piezometers shall be necessary only at locations in which footings (pile-supported or spread) or drilled shafts will be utilized or for the determination of liquefaction potential.

Soil samples shall be obtained in each boring. These samples shall be taken at intervals necessary to produce a continuous log. The sampling interval shall not exceed five (5) feet to a depth of sixty (60) feet, and ten (10) foot intervals beyond that depth. At a minimum, one boring shall be completed at each bridge site where sampling for the top twenty (20) feet below final ground line is performed on two (2)-foot sample intervals. One boring completed at a minimum depth of one hundred (100) feet below existing ground shall be required for determination of site classification and seismic design. If a second or more borings are required for a bridge due to the bridge length, then those borings shall be drilled at a minimum depth of eighty (80) feet.

Undisturbed soil samples shall be obtained in cohesive soil zones in accordance with AASHTO T207. Standard Penetration Tests (SPT) shall be conducted in cohesionless soil zones in accordance with AASHTO T206. Hammer calibrations shall have been performed in accordance with ASTM D4633 within three (3) years of the date of starting drilling operations. Field recorded SPT N-values shall be corrected to N60 and reported as N60 along with hammer efficiency or energy ratio (ER, kinetic energy/potential energy) on the final soil boring logs. Corrections for rod length, borehole diameter, and use of a linear may also be made as appropriate. The N60 values corrected for rod length, borehole diameter, and linear shall be reported as N(1)60. The corrections are significant for evaluation of liquefaction potential.

Continuous rock cores shall be obtained in any rock strata greater than six (6) inches thick. Any rock strata less than six (6) inches thick shall be identified by collecting and analyzing cuttings. Drilling in rock shall comply with AASHTO T255. All rock cores shall be retained until the construction is complete.

CPT shall be performed in accordance with ASTM D5578 - Standard Test Method for Performing Electronic Friction Cone and Piezocone Penetration Testing of Soils. Soil samples are not obtained with the CPT. For this reason, CPT soundings will be augmented with conventional borings in close proximity for correlation purposes.

A detailed log of each boring shall be prepared in the field in general accordance with ASTM D5434. A generalized soil profile for each structure site shall be developed and drawn, showing at a minimum the ground line profile, soil zone stratification, locations of the borings, and results of the standard penetration tests (N60). If laboratory testing is not involved, this profile along with the boring logs and soil or rock samples should be retained until construction is complete. A digital copy of the final soil boring log(s) shall be provided in gINT format at the time the Geotechnical Report is submitted.

Laboratory Testing

The CONSULTANT shall perform the following:

Laboratory testing of the soil or rock samples obtained during a field exploration shall be performed to adequately determine necessary classification and design parameters. The following soil/rock characteristics shall be determined from laboratory testing:

- Plasticity;
- In situ moisture content;
- Unit weight;
- Grain size;
- Shear strength;
- Angle of internal friction;
- Rock quality designation (RQD); and
- Compressibility;

A sufficient number of tests shall be performed on representative samples from each stratum designated in the field exploration to adequately determine shear strength, settlement potential, grain size distribution, seismic design properties, and bearing capacity. All testing and sampling are to be performed in accordance with AASHTO, ASTM, or the MDOT procedures and industry standards.

Unconfined Compression (UC, AASHTO T208) and Unconsolidated-Undrained (UU, AASHTO T296) triaxial compression tests shall be used to determine the shear strength characteristics of cohesive soils. A wide range of confining pressures shall be used with representative samples from each zone to develop a Mohr's failure envelope.

Consolidation tests shall be performed on representative samples of all potentially compressible soil strata. The in-situ void ratio, saturation percentage, specific gravity, over-consolidation ratio, and coefficients of compression and vertical drainage shall be determined for these tests.

The angle of internal friction for each sand zone shall be determined by performing triaxial tests at three (3) relative densities. The relative densities shall be 15, 50, and 85 percent. Three (3) confining pressures shall be utilized at each relative density. The pressures are 20, 40 and 60 psi. A total of nine (9) sand triaxial tests (points) will be run per set in order to define the failure envelope at 15, 50, and 85 percent relative densities.

Engineering Analyses

Foundation conditions shall be analyzed together with typical bent loads and elevations furnished by the designer to develop feasible foundation support systems and general foundation designs that follow current AASHTO requirements.

Following completion of the laboratory testing, all soils and rock encountered shall be described and presented on a final boring log, and each stratum shall be classified both geologically and also in accordance with the Unified Soil Classification System (USCS), ASTM D2487. Geologic classification of the generalized soil profile shall delineate the differing geologic formations encountered. Substrata within each geologic formation shall be grouped by the physical properties of the soil or rock samples obtained from the borings as determined by the laboratory testing.

If deep foundations are recommended to support the retaining wall, the ultimate pile or drilled shaft bearing capacity curves that present capacity as a function of depth shall be developed for various sizes and types of driven piles or drilled shafts. The curves are to be developed for all bent locations. The sizes and types of piles, bent locations, and estimated depth of scour are to be provided by the designer. Construction considerations pertaining to driving piles shall be provided in regard to achieving minimum tip elevations provided by the LPA.

The feasibility of drilled shaft foundations and spread footing foundations shall be examined. General construction considerations and capacity curves for acceptable sizes of shafts and footings shall be provided for those locations that the CONSULTANT determines are suited for these types of foundations. If a complete design is requested, loads to be used in the analysis will be provided by the LPA.

Each approach embankment shall be evaluated as to slope stability (static and seismic) and anticipated settlement.

Seismic considerations regarding foundations will address recommended seismic site classification, liquefaction potential, and pseudo-static seismic slope stability where required.

Findings shall be provided to the LPA.

Geotechnical Design

The following may be required:

- A. Foundations - Driven piles (and/or drilled shafts) shall be evaluated for axial compression and uplift capacity. A lateral pile capacity analysis may be required. When a lateral capacity analysis is not required, the CONSULTANT shall provide recommended soil parameters necessary to complete a

lateral capacity analysis. If drilled shafts are chosen as the foundation type, the CONSULTANT will be required to complete the axial capacity and lateral load analysis based on current FHWA and/or AASHTO guidelines. In addition, for sites requiring a load test, the CONSULTANT should evaluate an out-of-position test shaft to be load-tested for the purpose of determining the ultimate capacity of the test shaft.

- B. Embankments - Embankments shall be designed such that a minimum factor of safety of 1.3 exists against slope failure (1.4 in critical applications). The use of berms, geosynthetics, buttresses, stabilizing piles, or other methods for increasing the margin of safety against instability shall be considered by the CONSULTANT in the embankment design.

Bridge approach embankments that are determined to settle more than two (2) inches due to the existence of compressible materials below the ground surface shall be designed by the CONSULTANT with regard to mitigation of the settlement. Specified waiting periods, surcharging, wick drain designs, and/or special abutment pile designs shall be considered by the CONSULTANT.

Geotechnical Seismic Design

- A. Foundation Stiffness matrices (where required), including individual pile stiffness, pile group stiffness, footing stiffness, and abutment stiffness, will be developed using the procedures outlined in FHWA NHI-11-032 Geotechnical Engineering Circular No. 3, dated March 2011, LRFD Seismic Analysis and Design of Transportation Geotechnical Features and Structural Foundations, and the current AASHTO LRFD Bridge Design Specifications.
- B. Seismic site classification and corresponding recommended response spectra for both period and displacement will be determined per the current AASHTO LRFD Bridge Design Specifications.
- C. Liquefaction potential (where required) will be assessed per the current AASHTO LRFD Bridge Design Specifications.
- D. Geotechnical parameters will be presented in tabular format to prepare the LPile results. This information will be included in the Geotechnical Report.
- E. A preliminary lateral pile analysis using LPile developed by Ensoft, Inc. is to be performed at each retaining wall site, and the corresponding output curves are to be included in the Geotechnical Report.
- F. Pseudo-static seismic slope stability analyses (where required) shall follow the current AASHTO LRFD Bridge Design Specifications.

Pile Testing

The CONSULTANT shall use the FHWA Modified Gates Formula, referred to as FHWA-Gates, to determine the length of pile for only new bridges. The FHWA-Gates is presented in the FHWA pile manual (2006).

If a bridge has an overall span length of over 300 feet, then the pile testing method shall be the Pile Driving Analyzer (PDA). The CONSULTANT will be responsible for supplying the labor and equipment to complete the required tasks to perform the PDA method.

CADD Drawings

The CONSULTANT shall use the requirements listed under I. GENERAL REQUIREMENTS of this Scope of Work for all CADD drawings. The Special Design Sheets shall be submitted with the Final Report.

Unless otherwise indicated, drawings submitted for Final Plans shall be in the following scales: 1 inch = 20 feet, or 1 inch = 40 feet.

The retaining wall plan and profile drawings and boring logs shall contain standard notes and disclaimers. In addition, drawings should contain a table of soil strengths and unit weights used for design calculations as well as a geologic description of the individual soil zones and USCS classification.

Geotechnical Investigation Report

For work involving a subsurface field investigation, engineering analyses, and/or geotechnical designs, the CONSULTANT shall prepare a draft report of all findings and designs pertinent to the assigned Scope of Work. The Final Geotechnical Investigation Report shall be prepared and signed by an engineer license in the State of Mississippi, and shall also contain the following at a minimum:

- A cover letter containing Project Number, County and a general description of the project;
- A project layout sheet containing the project termini and a map of the project area;
- Final boring logs;
- Laboratory test results;
- Generalized soil profiles;
- Seismic site classification;
- Liquefaction potential assessment;
- Recommended seismic response spectra;
- Foundation recommendations for bridges;
- Draft design sheets and/or draft Special Provisions required for the preparation of Final Plans.

The report shall contain the following, organized as follows:

- Cover Letter
- Layout Sheet
- General
- Geology
- Conclusion and Recommendations
- Settlement Analysis of Bridge Approach or Roadway Embankments
- Slope Stability Analysis - Static (End of Construction and Long-Term) and Seismic
- Foundation Analysis
- Soluble-Sulfates Test Results
- Spread Footings
- Driven Piles
- Design
- Ultimate Capacity Curves (Compression and Tension, if required)
- Recommended LPile Parameters
- Construction
- Test Pile Recommendations
- Driving Recommendations
- Drilled Shafts
- Design
- Ultimate Capacity Curves (Compression and Tension, if required)
- Recommended LPile Parameters
- Construction
- Load Test Recommendations
- Construction Recommendations
- Geotechnical Seismic Design - Recommended Response Spectra
- Site Classification

- Foundation Stiffness Matrices (if required)
- Liquefaction Potential Assessment
- Settlement (if liquefiable)
- Lateral Spread (if liquefiable)
- Reference Section
- Spread Footing/Driven Pile/Drilled Shaft Design Curves
- Laboratory Test Results
- Final Boring Logs

PHASE B (OFFICE REVIEW) ROADWAY DESIGN

(Construction Plans and Specifications)

The CONSULTANT shall coordinate with MDOT, the City and utility companies on relocation of utility infrastructure that conflicts with construction. This includes providing field visits during relocation work for verification of location.

The Office Review Plan requirements include the following components (if included in the project):

PHASE B (Office Review) Roadway Plans

- A. Title Sheet;
- B. Detailed Index Sheet(s);
- C. General Notes Sheet(s);
- D. Typical Section Sheet(s);
- E. Summary of Quantities Sheet(s);
- F. Estimated Quantities Sheet(s);
- G. Plan Profile Sheet(s);
- H. Temporary Erosion Control Plan Profile Sheet(s);
- I. Intersection Detail Sheet(s);
- J. Traffic control plans;
- K. Complete Form Grade Sheet(s) for interchange ramps, loops, and/or channelized intersections at 25-foot intervals and at critical locations as needed;
- L. Permanent Directional Signing Sheet(s) that include layouts, details (signs and overhead assemblies);
- M. Standard, regulatory and warning signs;
- N. Temporary Erosion Control Standard Drawings;
- O. Detailed Pavement Marking Sheet(s), not covered by Standard Drawings;
- P. Permanent Signing Plans;
- Q. Traffic Signal Plans and details;
- R. ITS Plans and details;
- S. Lighting Plans to include lighting layouts, legend, lighting notes, detail sheets, and Special Provisions;
- T. Right-of-Way and Easement Coordinate Sheet(s);
- U. Standard Drawings;
- V. Other applicable plans as necessary for the construction of the project;
- W. Final Cross Section Sheets; and
- X. All calculations, notes, and data used to develop the plans

Permanent signing plans and details for new construction projects shall be developed in accordance with the requirements of the most recent edition of the MUTCD and MDOT signing policies and practices and at the direction of the LPA.

On projects which include a disturbed area over five acres, the CONSULTANT is required to prepare a LCNOI (Large Construction Notice of Intent) and shall include a detailed erosion control plan in the Phase B (Office Review) plans.

PHASE B (OFFICE REVIEW) BRIDGE PLANS

Phase B (Office Review) Bridge Plans

- A. Layout Sheet(s) including:
 - o Plan and elevation;
 - o Complete geometric controls (as approved by Bridge Division);
 - o Grades (as approved by Bridge Division);
 - o Clearances;
 - o Topographic features (original and final);
 - o Design data;
 - o Quantities;
 - o Special notes;
 - o Pile notes and bearing requirements;
 - o Erosion Control Plan Sheets; and
 - o All other pertinent details.
- B. Generalized Soil Profile;
- C. Substructure Details;
- D. Superstructure Details;
- E. Miscellaneous Details;
- F. Pile Details; and
- G. Notes, quantities, and all other necessary details.

A generalized soil profile will generally be compiled from field boring data and listed on separate sheets for the convenience of those involved in construction.

Detail sheets for substructure and superstructure shall show all details necessary for their construction and shall include, but not limited to:

- A. All dimension convenient to construction;
- B. Sufficient cross section details;
- C. Beam sizes, types and spacing;
- D. Elevations;
- E. Crown details;
- F. Reinforcing details;
- G. Pile bearing requirements, types and sizes;
- H. Prestressing data where required;
- I. Notes; and
- J. Proper cross-referencing.

Piling details, miscellaneous details, and suitable Special Provisions as are available shall be furnished by the MDOT Bridge Division Project Engineer or designee. All other details and Special Provisions that may be required shall be prepared by the CONSULTANT.

The CONSULTANT shall make all necessary design computations and prepare the Final Plans for bridge construction, quantity estimates, and required Special Provisions in accordance with the approved preliminary drawings and design data. The Final Plans shall be checked by the CONSULTANT prior to submittal to the LPA.

Estimate

A preliminary construction cost estimate shall be prepared including each of the pay items listed within the office review plans. Pay items must be separated and identified as Federal-aid participating and non-participating. The estimate is for pay items only and shall not include any adjustments such as contingencies, testing, or construction engineering cost. Any questions concerning the determination of participating or non-participating pay items should be directed to the MDOT District LPA Engineer.

Representatives of the appropriate divisions of the MDOT, LPA and the CONSULTANT shall attend the Office Review.

The Office Review Plans and quantity calculations shall be submitted no later than four (4) weeks prior to the scheduled Office Review, unless otherwise approved by the MDOT, to allow time for copies to be distributed and plans to be reviewed by the appropriate divisions of the MDOT.

If significant corrections to the office review plans are deemed necessary, a second office review submittal may be required.

In the Office Review, the MDOT and the CONSULTANT shall review and mark the plans with all required changes. The CONSULTANT shall make all approved plan changes as instructed by the MDOT.

The CONSULTANT shall submit minutes of the Office Review to the MDOT within two (2) weeks after the conclusion of the Office Review. The minutes shall include but are not limited to, a list of attendees, a list of all significant changes to the plans, and a list of all action items by both the CONSULTANT, LPA, and the MDOT.

The Final Plans shall include corrections to the office review plans as noted in the Office Review.

The construction cost estimate is to be updated and submitted with the PSE assembly.

Bridge Load Rating

The CONSULTANT shall perform load ratings of all bridges. The load ratings shall be performed in accordance with the Bridge Design and Rating manuals list in I. GENERAL REQUIREMENTS.

Load Factor Rating:

The load capacity of each bridge shall be rated in terms of the AASHTO "HS" design vehicle at both the inventory and operating rating levels and the Mississippi Legal Load Trucks at the operating rating level. The posting of bridges for maximum loads shall be based on the operating rating using the Mississippi Legal Load Trucks.

Load and Resistance Factor Rising:

The load capacity of each bridge shall be rated in terms of the AASHTO LRFD HL-93 design vehicle at both the inventory and operating levels and the Mississippi Legal Load Trucks at the legal load rating level. The posting of bridges for maximum loads shall be based on the legal load rating using typical Mississippi Legal Load Trucks.

A systematic procedure shall be followed in the load rating of bridges so that the information may be retained and utilized in the routing of permit loads. The CONSULTANT shall provide a Bridge Load Rating Report of all bridges, which will include a summary showing all load ratings in a tabulated form, calculations, support documentation, and electronic copies of computer program input files. The Bridge Load Rating Report shall be signed, sealed and dated by the CONSULTANT'S engineer. A PDF set of the Load Rating Report shall be submitted to MDOT Bridge Division at the time Final Plans are submitted. Input files from all load rating software shall be included in the submittal.

STRUCTURAL REVIEW AT 60% STAGE

Unless otherwise specified, when approximately sixty percent (60%) of the structural detailing has been completed, the CONSULTANT shall submit a PDF set of all bridge sheets to the MDOT Bridge Division for review. The CONSULTANT shall allow approximately four (4) weeks for the review of the MDOT Bridge Division, after which time the MDOT Bridge Division Project Engineer or designee will provide the CONSULTANT a list of corrections to be made.

CONSTRUCTABILITY REVIEW

The CONSULTANT may be requested by the MDOT and/or LPA to perform a constructability review of design of all roadway features to ensure safe and efficient maintenance of traffic, sufficient drainage, and the safety of construction workers during construction.

The CONSULTANT shall perform constructability design and analysis of all bridge structures, which includes, but is not limited to:

- A. Consideration of deflection;
- B. Strength of steel and concrete and stability during girder erection, concrete deck pouring sequence, or other critical stages of construction.
- C. Permissible locations of temporary falsework and girder splice connections.

The CONSULTANT shall design and detail bridges in a manner that allow fabrications and erection to be performed without undue difficulty or distress, and that ensures that locked-in construction force effects are within tolerable limits.

The CONSULTANT shall include one complete set of Erection Plans for each complex bridge structure based on the constructability design and analysis. The Erection Plans shall include:

- A. Temporary falsework locations and reactions;
- B. A sequence of construction and deck placement schedule.

The CONSULTANT shall verify that the locations of temporary falsework and girder splices do not interfere with other structures or impact other phases of construction. The CONSULTANT shall consider climatic and hydraulic conditions that may affect construction. General access of required construction equipment during construction phases shall also be considered.

Where constraints are imposed on the method of construction by environmental considerations or for other reasons, attention shall be drawn to those constraints in the Erection Plans and Final Plans.

The CONSULTANT shall allow approximately four (4) weeks for review by the MDOT, after which time the CONSULTANT shall be advised by the MDOT Bridge Division Project Engineer or designee of any needed plan changes through one or more of the following:

- A. A scheduled discussion meeting;
- B. Marked-up plans provided to the CONSULTANT;
- C. Email or other correspondence.

The CONSULTANT may be asked to perform constructability design and analysis of bridge structures designed by other CONSULTANTS and/or the MDOT. This review shall include, but is not limited to:

- A. Consideration of deflection;
- B. Strength of steel and concrete and stability during girder erection, concrete deck pouring sequence or other critical stages of construction;
- C. Permissible locations of temporary falsework and girder splice connections.

TRAFFIC SIGNAL DESIGN

The following specific requirements are typical for this phase:

Traffic Signal Plans

Design of Traffic Signal Plans shall include:

- A. Layout of traffic signal poles;
- B. Vehicle detection and controllers;
- C. Type of poles to be used;
- D. Geometric roadway changes, if necessary;
- E. Surveys;
- F. Equipment and component design;
- G. Recapitulation of quantities
- H. Design of interconnected traffic signal systems, include adaptive traffic signal control systems when applicable;
- I. Design/method of interconnection for electrical service.

Signal Timing Plans

Signal system phase times, cycle lengths, and intersection offsets will be developed using approved timing analyses software at the direction of the LPA. Timing information will be reduced to spreadsheet format to facilitate data entry by, or under the direction of, the LPA.

Advertisement:

The Consultant shall prepare legal advertisement for the referenced project and shall ensure the project follows the LPA Project Development Manual and is properly advertised per Mississippi State bidding laws and regulations. These services include the following:

- Preparing the advertisement
- Bidder Coordination
- Receive and evaluate bids
- Assemble Bids and Submit

ACRONYM DEFINITION

AASHTO	American Association of State Highway and Transportation Officials
BOP	Beginning of Project
CBR	California Bearing Ratio
CD	Collector/Distributor Road
CLOMR	Conditional Letter of Map Revision
CPT	Cone Penetrometer
EOP	End of Project
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
GLO	General Land Office
GPS	Global Positioning System
ITS	Intelligent Transportation Systems
LCNOI	Large Construction Notice of Intent
LOMR	Letter of Map Revision
LPA	Local Public Agency
LRFD	Load Resistance Factor Design
MDOT	Mississippi Department of Transportation
MSE	Mechanically Stabilized Earth
MUTCD	Manual on Uniform Traffic Control Devices
NFIP	National Flood Insurance Program
NWI	National Wetland Inventory
OHWM	Ordinary High Water Marks
PDM	Project Development Manual
ROW	Right-of-Way
RQD	Rock Quality Designation
SMD	MDOT Survey-Maps/Deeds Section
SOP	Standard Operating Procedures
TO	Transportation Operations
USACE	United States Army Corps of Engineers
USFW	United States Fish and Wildlife Service
USGS	United States Geological Survey
WRP	Wetland Reserve Program

Hall Avenue Hattiesburg BUILD Grant
Forrest County, Mississippi
FBID-8769-00(001)/108639-811000

[illegible]

Note: Construction Phases will require a separate agreement!

EXHIBIT 3

FEES AND EXPENSES

The LPA shall pay the CONSULTANT on an actual cost-plus fixed-fee basis with an upset limit of **\$920,315.02** for the satisfactory completion of the Scope of Work set forth under "Exhibit 2", hereto, for all salaries, payroll additives, overhead, direct costs and CONSULTANT'S fixed fees attributable to this CONTRACT.

Actual costs as the term is used herein shall include all direct salaries, payroll additives, overhead and direct cost. Direct salaries are those amounts actually paid to the person performing the SERVICES, which are deemed reasonably necessary by the LPA for the advancement of the Scope of Work. Overtime work is not contemplated by this CONTRACT. Accordingly, direct salaries chargeable to this CONTRACT shall not include any overtime premium. Salaries for officers, principals or partners shall not increase at a rate in excess of that for other employees. Payroll additives and overhead consist of employee fringe benefits and that part of CONSULTANT'S allowable indirect costs attributable to this CONTRACT.

Direct Costs are those charges deemed reasonably necessary by the LPA for the successful completion of the Scope of Work, which are charged directly to the project and not included in overhead.

Fixed fee as the term is used herein shall mean a dollar amount established to cover the CONSULTANT'S profit and business expenses not allocable to overhead for the successful completion of the SERVICES.

Each month, the CONSULTANT shall submit an invoice for the period beginning on the first day of the month and ending on the last day of the month.

Each month, the CONSULTANT shall submit OCR-484-C found on MDOT's website to the LPA along with the Invoice. This form certifies payments to all Subconsultants and shows all firms even if the CONSULTANT has paid no monies to the firm during that estimate period (negative report).

SCHEDULE OF MAXIMUM RATES, EXPENSES & FEES:

The following schedule of rates for SERVICE will not be exceeded for all work under this CONTRACT:

Direct Salaries:

Direct salaries shall not exceed those amounts actually paid to an employee performing SERVICES reasonably necessary for the completion of the Scope of Work set forth under "Exhibit 2" to this CONTRACT.

Upon MDOT's request, all charges for SERVICES must be substantiated by supporting data, i.e. certified time sheets, daily logs, check stubs, pay vouchers, etc.

Payroll Additive & Overhead:

The current overhead rates shall be submitted by the CONSULTANT and approved by the MDOT within nine (9) months of the end of the CONSULTANT's fiscal period. The current overhead rate, as defined in this CONTRACT, shall be the overhead rate for the CONSULTANT's most recent previous fiscal period. The CONSULTANT's failure to provide a current overhead rate within nine (9) months of the end of the CONSULTANT's fiscal period may result in the CONSULTANT being deemed ineligible for any potential Supplemental Agreements with LPA. The estimated FCCM for cost proposals, Supplemental Agreements, and invoices must be specially identified and distinguished from the other costs. Profit/Fee shall not include amounts applicable to FCCM.

Final payment of the overhead rate costs shall be adjusted after completion of the final audit to reflect the actual rates experienced by the CONSULTANT during the course of this CONTRACT; however, in no event shall such an adjustment allow this CONTRACT'S cost to exceed the maximum limitation stated. Said audit of the CONSULTANT will be conducted by the LPA, or the LPA'S designated auditor at the conclusion of this CONTRACT in accordance with Federal and the LPA requirements.

All overhead rates submitted to MDOT for approval shall comply with the current edition of the AASHTO Audit Guide, as amended. In addition, the CONSULTANT shall submit written certification in accordance with FHWA Order 4470.1A, as amended, that the indirect cost rate submitted does not include any costs which are expressly unallowable and the indirect cost rate was established only with allowable costs in accordance with the applicable cost principles contained in the Federal Acquisition Regulations (FAR) of 48 CFR part 31.

Direct Costs:

The LPA will reimburse the CONSULTANT'S actual documented expenses; or the amount allowable under the current edition of the MDOT State Travel Handbook, whichever is lower. Except as otherwise specifically provided herein, the procedures generally outlined in the MDOT State Travel Handbook shall govern the allowability of any expense reimbursement. This policy will include no meal reimbursement when there is no overnight stay. **However, Direct costs for lodging shall be reimbursed in accordance with FAR 31.205-46(a)(2).**

All direct costs must be substantiated by supporting data in accordance with the MDOT State Travel Handbook, i.e. mileage, log books, receipts, etc.

All other expenses will be reimbursed upon receipt of acceptable paid invoices.

Fixed Fee:

The CONSULTANT'S fixed fee shall be **\$65,838.59** which sum shall be paid incrementally each month in an amount determined by multiplying the total fixed fee by the project completion percentage, less any amounts previously paid for fixed fees.

Contract Maximums:

Under no circumstances shall the amount payable by the LPA for this assignment exceed **\$920,315.02** (Total of all Charges) without the prior written consent of both parties.

FEE AND EXPENSE SUMMARY

	Primes Labor Cost & Overhead	Primes Direct Costs	Primes Fixed Fee	Sub-Consultants	Project Total
Project Total	\$548,979.03	\$758.32	\$65,838.59	\$304,739.08	\$920,315.02

EXHIBIT 4

SAMPLE INVOICE – COST PLUS FIXED FEE

LOCAL PUBLIC AGENCY
ADDRESS
CITY, STATE, ZIP CODE

DATE:

ATTENTION: ACCOUNTS PAYABLE

INVOICE NO. 0000

PERIOD _____, 20__ THROUGH _____, 20__

PROFESSIONAL SERVICES IN ACCORDANCE WITH

CONTRACT DATED _____, 20__, AS RELATES TO

PROJECT NO. ____-____-____-____-____ IN _____ COUNTY, HIGHWAY _____.

CONSULTANT:

CUSTOMER NUMBER 0000000000

FILE NUMBER 000-000000

REPORT NUMBER: 000 through 000

FMS NUMBER 000000-000000LPA

	CURRENT PERIOD	PREVIOUS ESTIMATE	TOTAL ALLOWED TO DATE _____
DIRECT SALARIES	\$	\$	\$
* PAYROLL ADDITIVE (less FCCM)	\$	\$	\$
FIXED FEE (% complete X total fee less amounts previously paid – not to exceed 75%)	\$	\$	\$
PAYROLL ADDITIVE w/ FCCM only	\$	\$	\$
** DIRECT COSTS	\$	\$	\$
PROJECT TOTAL	\$	\$	\$
AMOUNT DUE THIS INVOICE:	\$	\$	\$

NOTE:

1. * PAYROLL ADDITIVES (INCLUDING ALL FRINGE BENEFITS & OVERHEAD-)
2. ** DIRECT COSTS (ATTACH SUPPORTING DATA)
3. THE CONSULTANT MAY USE ITS OWN INVOICE FORM SO LONG AS IT HAS BEEN APPROVED. PRIOR TO SUBMISSION BY THE CONSULTANT SAID FORM SHOULD, AT A MINIMUM, CONTAIN THE ABOVE INFORMATION

SUPPORTING DATA

Project No. 00-0000-00-000-00
County _____

<u>Employee and Classification</u>	<u>Pay Period Date</u>	<u>Rate of Pay</u>	<u>Period Hours</u>	<u>Period Costs</u>	<u>Period Costs</u>	<u>To Date</u>
DIRECT LABOR AND DIRECT COSTS						
John P. Public, Jr Engineer		0.00	0.0	0.00	0.00	0.00
John P. Public, Jr Designer		0.00	0.0	0.00	0.00	0.00
John P. Public, Jr Engineer		0.00	0.0	0.00	0.00	0.00
John P. Public, Jr Technician		0.00	<u>0.0</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Sub Total			0.0	0.00	0.00	0.00
Payroll Additives				<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Total Labor				0.00	0.00	0.00
Fixed Fee				0.00	0.00	0.00
Direct Costs				0.00	0.00	0.00
Subconsultant(s)				<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
 Project Total				0.00	0.00	0.00

EXHIBIT 5

NOTICE TO CONTRACTORS, FEDERAL AID CONTRACT COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964

COPELAND ANTI-KICKBACK ACT, DAVIS BACON ACT, CONTRACT WORK HOURS AND SAFETY STANDARDS ACT, CLEAN AIR ACT, ENERGY POLICY AND CONSERVATION ACT, and WORKER VISIBILITY

During the performance of this CONTRACT, the CONSULTANT, for itself, its assignees and successor-in-interest (hereinafter referred to as the "CONSULTANT") agrees as follows:

1. **Compliance with Regulations:** The CONSULTANT will comply with the Regulations of the Department of Transportation, relative to nondiscrimination in Federally-assisted programs of the U. S. Department of Transportation (Title 49, Code of Federal Regulations, Part 21, hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this CONTRACT.

2. **Nondiscrimination:** The CONSULTANT, with regard to the work performed by it after award and prior to completion of the contract work, will not discriminate on the grounds of race, religion, color, sex, national origin, age or disability in the selection and retention of subconsultants including procurement of materials and leases of equipment. The CONSULTANT will not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when this CONTRACT covers a program set forth in Appendix B of the Regulations. In addition, the CONSULTANT will not participate either directly or indirectly in discrimination prohibited by 23 C.F.R. 710.405(b).

3. **Solicitations for Subcontracts. Including Procurement of Materials and Equipment:** In all Solicitations, either by competitive bidding or negotiation made by the CONSULTANT for work to be performed under a subcontract, including procurement of materials or equipment, each potential subconsultant or supplier shall be notified by the CONSULTANT of the CONSULTANT'S obligations under this CONTRACT and the Regulations relative to nondiscrimination on the grounds of race, religion, color, sex, national origin, age or disability.

4. **Anti-kick back provisions:** All CONTRACTS and subcontracts for construction or repair shall include a provision for compliance with the Copeland "Anti-Kick Back" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR, Part 3). This Act provides that each CONSULTANT or subconsultant shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The CONSULTANT shall report all suspected or reported violations to the LPA.

5. **Davis Bacon Act:** When required by the federal grant program legislation, all construction contracts awarded to contractors and subcontractors in excess of \$2,000 shall include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 276a to a-7) and as supplemented by Department of Labor regulations (29 CFR, Part 5). Under this Act, contractors shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages not less often than once a week.

6. **Contract Work Hours and Safety Standards Act:** Where applicable, all contracts awarded by contractors and subcontractors in excess of \$100,000 which involve the employment of mechanics or laborers shall include a provision for compliance with sections 103 and 107 of the Contract Work Hours and Safety

Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor Regulations (29 CFR, Part 5). Under section 103 of the Act, each contractor shall be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in the work week. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction, safety, and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

7. Clean Air Act: Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857 (h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15) (Contracts and subcontracts in amounts in excess of \$100,000).

8. Energy Policy and Conservation Act: Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163).

9. Disadvantaged Business Enterprises: It is the policy of the Mississippi Department of Transportation to comply with the requirements of 49 C.F.R. 26, to prohibit unlawful discrimination, to meet its goal for DBE participation, to meet that goal whenever possible by race-neutral means, to create a level playing field, and to achieve that amount of DBE participation that would be obtained in a non-discriminatory market place. To meet that objective in any United States Department of Transportation assisted contracts, the LPA and the CONSULTANT shall comply with the "Mississippi Department of Transportation's Disadvantaged Business Enterprise Programs For United States Department Of Transportation Assisted Contracts".

Neither the CONSULTANT (Contractor), nor any sub-recipient or sub-contractor shall discriminate on the bases of race, color, national origin, or sex in the performance of this CONTRACT. The CONSULTANT (Contractor) shall carry out applicable requirements of 49 C.F.R. 26 in the award and administration of United States Department of Transportation assisted contracts. Failure of the CONSULTANT (Contractor) to carry out those requirements is a material breach of the contract which may result in the termination of this CONTRACT or such other remedies as the Mississippi Department of Transportation deems appropriate.

10. Worker Visibility: All workers within the right-of-way of a Federal-aid highway who are exposed either to traffic (vehicles using the highway for the purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel – personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107-2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" – for compliance with 23 CFR, Part 634.

EXHIBIT 6

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - Certification in accordance with Section 29.510 Appendix A, C.F.R./Vol. 53, No. 102, page 19210 and 19211:

- (1) The CONSULTANT certifies to the best of its knowledge and belief that it and its principals:
 - (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
 - (b) have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or CONTRACT under a public transaction, violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and
 - (d) have not within a three-year period preceding this application/proposal had one or more public transactions (federal, state or local) terminated for cause or default;
 - (e) has not either directly or indirectly entered into any agreement participated in any collusion; or otherwise taken any action in restraint of free competitive negotiation in connection with this CONTRACT.
- (2) The CONSULTANT further certifies, to the best of his/her knowledge and belief, that:
 - (f) No federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or employee of a member of Congress in connection with the awarding of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - (g) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of Congress, or any employee of a member of Congress in connection with this CONTRACT, Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions will be completed and submitted.

The certification contained in (1) and (2) above is a material representation of fact upon which reliance is placed and a pre-requisite imposed by Section 1352, Title 31, U.S. Code prior to entering into this CONTRACT. Failure to comply shall be subject to a civil penalty of not less than \$10,000 and not

more than \$100,000. The CONSULTANT shall include the language of the certification in all subcontracts exceeding \$100,000 and all sub-consultants shall certify and disclose accordingly.

I hereby certify that I am the duly authorized representative of the CONSULTANT for purposes of making this certification, and that neither I, nor any principal, officer, shareholder or employee of the above firm has:

- (a) employed or retained for commission, percentages, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above CONSULTANT) to solicit or secure this agreement,
- (b) agreed, as an express or implied condition for obtaining this CONTRACT, to employ or retain the SERVICES of any firm or person in connection with carrying out the agreement, or
- (c) paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above CONSULTANT) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the agreement; except as herein expressly stated (if any).

I acknowledge that this Agreement may be furnished to the Federal Highway Administration, United States Department of Transportation, in connection with the Agreement involving participation of Federal-Aid Highway funds, and is subject to applicable state and federal laws, both criminal and civil.

SO CERTIFIED this 15 day of April, 2021.

Neel-Schaffer, Inc.

Steve Twedt P.E.
Steve Twedt, PE

ATTEST *Kaman Yarnall*

My Commission Expires:



Nancy Cain
Notary

EXHIBIT 7

CERTIFICATION OF THE LPA

I hereby certify that I am the Chief Administrative Official, duly authorized by the LPA to execute this certification and that the above consulting firm or its representative has not been required, directly or indirectly, as an express or implied condition in connection with obtaining or carrying out this agreement to:

- (a) employ or retain, or agree to employ or retain, firm or person, or
- (b) pay, or agree to pay, to any firm, person organization, any fee, contribution, donation, or consideration of any kind except as here expressly stated (if any).

SO CERTIFIED on the _____ day of _____, 20____.

City of Hattiesburg

TOBY BARKER, MAYOR

EXHIBIT 8

{Intentionally Left Blank}

EXHIBIT 9

PRIME CONSULTANT / CONTRACTOR EEV CERTIFICATION AND AGREEMENT

By executing this Certification and Agreement, the undersigned verifies its compliance with the, "Mississippi Employment Protection Act," Section 71-11-3 of the Mississippi Code of 1972, as amended, and any rules or regulations promulgated by the LPA, Mississippi Transportation Commission [MTC], Department of Employment Security, State Tax Commission, Secretary of State, Department of Human Services in accordance with the Mississippi Administrative Procedures Law (Section 25-43-1 et seq., Mississippi Code of 1972, as amended), stating affirmatively that the individual, firm, or corporation which is contracting with the LPA has registered with and is participating in a federal work authorization program* operated by the United States Department of Homeland Security to electronically verify information of newly hired employees pursuant to the Immigration Reform and Control Act of 1986, Pub.L. 99-603, 100 Stat 3359, as amended. The undersigned agrees to inform the LPA if the undersigned is no longer registered or participating in the program.

The undersigned agrees that, should it employ or contract with any entity(s) in connection with the performance of this CONTRACT, the undersigned will secure from such entity(s) verification of compliance with the Mississippi Employment Protection Act. The undersigned further agrees to maintain records of such compliance and provide a copy of each such verification to the LPA, if requested, for the benefit of the LPA or this CONTRACT.

128686

EEV* Company Identification Number [Required]

The undersigned certifies that the above information is complete, true and correct to the best of my knowledge and belief. The undersigned acknowledges that any violation may be subject to the cancellation of the contract, ineligibility for any state or public contract for up to three (3) years, the loss of any license, permit, certificate or other document granted by any agency, department or government entity for the right to do business in Mississippi for up to one (1) year, or both, any and all additional costs incurred because of the contract cancellation or the loss of any license or permit, and may be subject to additional felony prosecution for knowingly or recklessly accepting employment for compensation from an unauthorized alien as defined by 8 U.S.C §1324a(h)(3), said action punishable by imprisonment for not less than one (1) year nor more than five (5) years, a fine of not less than One Thousand Dollars (\$1,000.00) nor more than Ten Thousand Dollars (\$10,000.00), or both, in addition to such prosecution and penalties as provided by Federal law.

BY: _____

Authorized Officer or Agent

4/15/2021
Date

Steve Twedt

Printed Name of Authorized Officer or Agent

Vice President

Title of Authorized Officer or Agent of Contractor / Consultant

SWORN TO AND SUBSCRIBED before me on this the 15 day of April, 2021.

Nancy Cain
NOTARY PUBLIC

My Commission Expires: _____

* As of the effective date of the Mississippi Employment Protection Act, the applicable federal work authorization program is E-Verify™ operated by the U. S. Citizenship and Immigration Services of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration.



**Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022**

	Man-Hours	Sub-Consultants Fee	Salary Cost	Overhead	FCCM	Total Labor Cost	Direct Cost	Fixed Fee	Total Cost
Activation	142		\$6866.97	\$10,568.27	\$10.30	\$17,445.54	\$234.12	\$2,092.23	\$19,771.89
Meetings	305		\$13,471.20	\$20,732.18	\$20.21	\$34,223.58	\$56.00	\$4,104.41	\$38,383.99
Environmental	799		\$29,539.16	\$45,460.77	\$44.31	\$75,044.24	\$56.00	\$8,999.99	\$84,100.23
Geotechnical		\$94,424.19							\$94,424.19
Roadway	1645		\$62,105.69	\$95,580.66	\$93.16	\$157,779.51	\$56.00	\$18,922.36	\$176,757.87
Bridge	1274		\$75,635.40	\$116,402.88	\$113.45	\$192,151.73	\$317.00	\$23,044.59	\$215,513.33
Hydraulics	650		\$24,287.08	\$37,377.82	\$36.43	\$61,701.33	\$28.00	\$7,399.79	\$69,129.11
Survey		\$210,314.89							\$210,314.89
PS&E/Advertisement	100		\$4,185.44	\$6,441.39	\$6.28	\$10,633.11	\$11.20	\$1,275.22	\$11,919.53
Total	4915	\$304,739.08	\$216,090.94	\$332,563.96	\$324.14	\$548,979.03	\$758.32	\$65,838.59	\$920,315.02

Grand Total	\$920,315.02
--------------------	---------------------

Notes: Project information at the top of this sheet is linked to all the tabs in the workbook, so it only has to be filled out on this page

All hour and fee amounts for each tab are linked to this summary page. If more tabs are needed for additional work or sub-consultant fees, please link to this page and highlight in red font.

All links and formulas contained in this workbook are included for convenience only. It is the consultant's responsibility to ensure all information is accurate prior to submittal.

Task items in each tab should not be considered as an exhaustive list of potential items of work. Please insert any line items that are considered to be project specific rather than absorbing the hours in items already listed.

Activation Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							
	Sheets	Senior Manager	Senior Engineer	Engineer Intern	Landscape Architect	Design Technician	Environmental Scientist	Clerical	Total Hours
Project Activation									
LPA 100		1		1					2
LPA 700/800		1	1	4					6
Kickoff Meeting		4	4	4		4		2	18
LPA, MDOT and FHWA Reporting		40	40	20				16	116
Total Hours		46	45	29	0	4	0	18	142

Raw Labor Rates	\$69.96	\$46.39	\$32.08	\$49.09	\$35.20	\$35.54	\$27.23	
Labor Cost	\$3,218.16	\$2,087.55	\$930.32	\$0.00	\$140.80	\$0.00	\$490.14	\$6,868.97

Overhead	%	153.90%	\$10,568.27
Fixed Fee	%	12.00%	\$2,092.23
FCCM Overhead	%	0.15%	\$10.30

Direct Costs:	Qty.	Unit Price ¹	
Mileage	2	\$0.560	\$1.12
Meals	1	\$41.00	\$41.00
Lodging	2	\$96.00	\$192.00
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$234.12

Total: \$19,771.89

Meetings Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							
	Sheets	Senior Manager	Senior Engineer	Engineer Intern	Landscape Architect	Design Technician	Environmental Scientist	Clerical	Total Hours
Field Review									
Print and Distribute Plans			1			2		1	4
Conduct Plan in Hand review		8	8	8	2	8			34
Prepare Field Review Report			2	2					4
Railroad Coordination									
Send Concept Plan Pkg to RF		8	16	16					40
Submit 30% Plan Package to RF		8	16	16					40
Submit 60% Plan Package to RF		8	16	16					40
Utility Relocation									
Print Plans and Specifications			1		1	2		4	8
Conduct Utility Relocation Meeting		8	8			2			18
Relocation Site Visits			8	8		24			40
Office Review									
Print Plans and Specifications			1		1	4			6
Compile Design Notebook			1	4	1	1			7
Prepare ROW/Util Status Report			2						2
Conduct Plan Review		8	8	8	2	8			34
Prepare Office Review Report			8	2					10
PS&E Assembly									
MDOT Coordination			8		8			2	18
Total Hours		48	104	80	15	51	0	7	305

Raw Labor Rates	\$69.96	\$46.39	\$32.08	\$49.09	\$35.20	\$35.54	\$27.23
Labor Cost	\$3,358.08	\$4,824.56	\$2,566.40	\$736.35	\$1,795.20	\$0.00	\$190.61

Overhead	%	153.90%	\$20,732.18
Fixed Fee	%	12.00%	\$4,104.41
FCCM Overhead	%	0.15%	\$20.21

Direct Costs:	Qty.	Unit Price ¹	
Mileage	100	\$0.560	\$56.00
Meals		\$41.00	
Lodging		\$96.00	
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$56.00

Total: \$38,383.99

Environmental Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

	No.	Estimated Hours							
MDOT Process Item Description	Sheets	Senior Manager	Senior Engineer	Engineer Intern	Archaeologist	Design Technician	Environmental Scientist	Clerical	Total Hours
Environmental Documentatlor									
ENV-160			4						4
Cultural Resource Survey			4		100	2		2	108
Hazardous Material Investigator			4	16			80	2	102
Threatened and Endangered							40	2	42
Noise Study		16	40	120		24		4	204
Relocation Study			16				80		96
Farmland Impacts							4		4
Wetland Investigator			4			1	32	2	39
Permits									
NPDES			8	24		40			72
USACE			4				40		44
Railroad		8	16	4		40			68
Quality Contro		8	8						16
Total Hours		32	108	164	100	107	276	12	799

Raw Labor Rates	\$69.96	\$46.39	\$32.08	\$31.27	\$35.20	\$35.54	\$27.23	
Labor Cost	\$2,238.72	\$5,010.12	\$5,261.12	\$3,127.00	\$3,766.40	\$9,809.04	\$326.76	\$29,539.16

Overhead % 153.90% \$45,460.77

Fixed Fee % 12.00% \$8,999.99

FCCM Overhead % 0.15% \$44.31

Direct Costs:	Qty.	Unit Price ¹	
Mileage	100	\$0.560	\$56.00
Meals		\$41.00	
Lodging		\$96.00	
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$56.00

Total: \$84,100.23

Roadway Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							
	Sheets	Senior Manager	Senior Engineer	Engineer Intern	Landscape Architect	Design Technician	Electrical Engineer	Design Technician (Electrical)	Total Hours
Base Drawing									
Drafting Topographic survey and Surface Creation			4			40			44
Field Review									
Horizontal Alignment Design									
Mainline			4	24		40			68
Vertical Alignment Design									
Mainline-New Alignment and/or Regrade			8	16		40			64
Cross Sections									
Run Pattern Lines						24			24
Cut Existing Cross Sections						16			16
Evaluate/Run Shape Files			2			16			18
Determine Proposed Template Criteria			4			4			8
Generate Proposed Templates						24			24
Determine Constructability Issues			8		2	8			18
Adjust Cross Sections For Revised						24			24
Phase Construction Details			8	16		40			64
Preliminary Earthwork Calculations			2	2		8			12
Plan Profile Sheets									
Sheet Clean-Up and Organization				24	32	24		8	88
Add Notes, Bridges, & Pipes In Profile				8		8			16
Adjust Profile for Revised Bridge						4			4
Erosion Control Sheets			1	8		8			17
Miscellaneous Sheets									
Special Design Sheets				24	4	40		12	80
Conceptual Permanent Striping			2	8		8			18
Conceptual Permanent Signing Plan			2	8		8			18
Traffic Control Plan									
Evaluate Construction Phasing			8	2		8			18
TCP Sheets				24		40			64
TCP Typical Sections				4		8			12
Traffic Signal Plan			4			24			28
Traffic Signal Details			4			16			20
Revise Plans Per Conceptual Review				24	8	32			64
Develop Opinion of Probable Cost			4			4			8
QA/QC		8	16		6		2		32
Project Management		16							16
Office Review									
Typical Sections									
Add Paving Details & Notes				16		16			32
Summary of Quantity Sheets									
Create SQ Sheets			2	2		4			8
Select Appropriate Pay Items			4	2	2	2	1		11
Add Footnotes			2		1	4			7
Estimated Quantity Sheets									
Earthwork (phased if necessary)				2		8			10
Drainage Structures				24		12			36
Permanent Erosion Control				4		4			8
Traffic Control				8		8			16
Pavement Marking (permanent and temporary)				8		4			12
Removal Items				8		12			20
Side Drains				8		8			16
Guardrail						4			4
Box Culverts				8		8			16
Bridge End Pavement						8			8
Permanent Signing				4		4			8
Hydraulic Design Data				40		8			48
Incidental Construction Items				6		8			14

Quantity Calculations			2	16	2	24			44
Plan Profile Sheets									
Sheet Clean-up and Organization			6	20	20	20		16	82
Design & Place Permanent Erosion Control Items			8	4		8			20
Place Earthwork Information (phased if necessary)			1			4			5
Traffic Control Detail Sheets									
Develop Phasing Narrative (if necessary)			8	4					12
Construction Signing Detail			2	4		8			14
TCP Sheets				8		16			24
TCP Typical Sections			2	4		8			14
Address Corrections From MDOT TCP Check			2	4		8			14
Special Design Sheets				16		24		12	52
Erosion Control Sheets(Including plan profile EC sheets)				8		16			24
Traffic Signal Plan			4			12			16
Traffic Signal Details			4			16			20
Update Opinion of Probable Cost			2			4			6
QA/QC		8	16				4		28
Project Management		16							16
Submit Office Review Plans									
2 Multi-Page PDF Files For Plans & Cross Sections				4	2	4		1	11
Complete/Submit Phase B Checklist				1		3			4
Submit Quantity Calculations (1 multi-page pdf)			1	1	1	1	2		6
Submit CADD Files						1		1	2
Electrical Design							40		40
Additional Electrical Sheets								30	30
Total Hours		48	147	426	80	815	49	80	1645

Raw Labor Rates	\$69.96	\$46.39	\$32.08	\$49.09	\$35.20	\$63.00	\$32.00		
Labor Cost	\$3,358.08	\$6,819.33	\$13,666.08	\$3,927.20	\$28,688.00	\$3,087.00	\$2,560.00		\$62,105.69

Overhead % 153.90% \$95,580.66

Fixed Fee % 12.00% \$18,922.36

FCCM Overhead % 0.15% \$93.16

Direct Costs:

	Qty.	Unit Price ¹	
Mileage	100	\$0.560	\$56.00
Meals		\$41.00	
Lodging		\$96.00	
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$56.00

Total: \$176,757.87

Bridge Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							Total Hours
	Sheets	Engineer Manager	Senior Engineer	Engineer	Engineer Intern	Senior Technician	Admin		
Design									
Geometrics			12	8					20
Prestressed Beams			24	12					36
Bearing Pads			12	8					20
Substructure			24	16					40
Deck Design			12	8					18
Heavy Block Wall Design			24	16					40
60% Plans									
Detailed Index	1		4	4					8
Summary of Quantities	1		4	4					8
General Notes & Estimated Quantities	2		12	6					18
Foundation Plan and Elevator	2		12	12					24
End Bents	5		20	40					60
Intermediate Bents	3		12	24					36
Span Details	8		24		56				80
Miscellaneous Span Details	2			12					12
Railing	2				12				12
Prestressed Beam Details	10			20	40				60
Wall Details	10		40						40
Superelevation Transition Details	1		8	4					12
Soil Profile	2			4					4
Erosion Control	2			4					4
Submit 60% structural information plans			2	4					6
Project Management		16							16
Site Visit		10	10	10					30
Constructability Review									
Review Plans for Constructability			16						16
Provide Modifications If Necessary				16					16
Office Review									
Detailed Index	1		2	2					4
Summary of Quantities	1		2	2					4
General Notes & Estimated Quantities	2		8	4					12
Foundation Plan and Elevator	2		16	16					32
End Bents	5		16	32					48
Intermediate Bents	3		8	12					20
Span Details	8		16		24				40
Miscellaneous Span Details	2		2	4					6
Railing	2		2	2	2				6
Prestressed Beam Details	10		10	20					30
Wall Details	10		16	8					24
Superelevation Transition Details	1		2	2					4
Soil Profile	2			2					2
Erosion Control	2			4					4
Estimated Quantity Calculations				16	16				32
Opinion of Probable Cost			4	4					8
Load rating				16					16
Special provisions									
QA/QC			24	16					40
Submit 1 Multi-Page PDF File of Plans				4					4
Submit Quantity Calculations (1 multi				4					4
Attend Office Review		8	8	8					24
Provide Office Review Meeting Minutes			4						4
Revise Plans Per Office Review			12	16					28
Project Management		12					2		14

Draft Final Plans									
Submit 1 Multi-Page PDF File of Plans			2	6					8
Address Draft Final Review Comments			6	12					18
Railroad Coordination									
Prepare plan packages for Railroad		24	48	48					120
Final Plans									
Submit 1 Multi-Page PDF File of Plans			2	6					8
Submit CADD Files			2	6					8
Submit Bridge Load Rating Calculations			2	6					8
Submit Design Calculations (multi-page)			2	8					10
Submit all electronic input and output			2	6					8
Submit revised cost estimate and			2	6					8
Submit QC plan set mark-ups including			2	6					8
Address Revisions/Addendums			6	6					12
Project Management		8					4		12
Total Hours		78	500	540	150	0	6	0	1274

Raw Labor Rates	\$79.90	\$71.10	\$52.80	\$34.60	\$32.00	\$25.20	\$0.00	
Labor Cost	\$6,232.20	\$35,550.00	\$28,512.00	\$5,190.00	\$0.00	\$151.20	\$0.00	\$75,635.40

Overhead	%	153.90%	\$116,402.88
Fixed Fee	%	12.00%	\$23,044.59
FCCM Overhead	%	0.15%	\$113.45

Direct Costs:	Qty.	Unit Price ¹	
Mileage	150	\$0.560	\$84.00
Meals	1	\$41.00	\$41.00
Lodging	2	\$96.00	\$192.00
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$317.00

Total: \$215,513.33

Geotechnical Sheet
Hall Avenue West
Forrest County
Project #: FBLD-8769-00(001)/108639-801000
Burns Cooley Dennis, Inc.
2/5/2021

MDOT Process Description	Item	No.	Estimated Hours							
		Sheets	Principal	Project Eng	Engineer	Engineer Intern	Permitting Technician	Technician	Cadd Tech.	Admin.
Planning			2	4	4					
Utility Clearance				1			4	8		
Coordinate Field Investigation (Site Recon)		1	1	2			3	4		
Coordinate Lab Investigation		1	1	4						
Data Assimilation/Logs			1	1	2				4	
Examination of Samples			1	4	2			2		
Develop Bridge and Wall Profiles			1	6	4			8		
Pile and Shaft Capacities			1	4	4					
Develop Lateral Load Analysis Parameters			1	2	2					
Settlement Analyses			1	2	8					
Global Stability Analyses			2	12	24					
Retaining Wall Design, Sketches and Drawings		4	60	100					24	
Review										
Seismic Design (Site Class, Seismic Zone, PGA)			1	2	6					
Pavement design		1	2	2						
Design Meetings (Teleconference)		2	8	8						
Bridge Report Preparation		2	4	10	8			8	4	
Roadway Report Preparation		6	10	10					2	
Total Hours			19.0	100.0	173.0	80.0	7.0	14.0	44.0	6.0

Raw Labor Rates	\$84.13	\$86.83	\$46.03	\$26.92	\$36.00	\$27.64	\$29.50	\$21.25	
Labor Cost	1598.5	6683.0	7963.2	1815.2	252.0	387.0	1298.0	127.5	
Overhead							%	167.33%	
Fixed Fee							%	12.00%	
FCCM Overhead							%	0.71%	

<u>Field and Lab.</u>	Qty.	Unit Price ¹	
Field Equip. Mobilization/Demobilization	400.0	\$5.00	\$2,000.00
Drilling on Land (Auger, Centerline Soil Profile)	90.0	\$19.00	\$1,710.00
Drilling on Land, 0-70' (Geotechnical)	340.0	\$25.10	\$8,534.00
Drilling on Land, 0-100' (Geotechnical)	100.0	\$26.40	\$2,640.00
Split Spoon Sampling with Standard Penetration Test (SPT)	44.0	\$20.00	\$880.00
Undisturbed Sampling	44.0	\$20.00	\$880.00
One Dim. Consolidation Tests T 216	2.0	\$600.00	\$1,200.00
Unconfined Compression Tests T 208	27.0	\$55.00	\$1,485.00
Triaxial Compression Tests(UU) T 296	13.0	\$85.00	\$1,105.00
Sand Triaxial Tests (1-pt)	18.0	\$110.00	\$1,980.00
Atterberg Limits T 89 and T 90	45.0	\$65.00	\$2,925.00
Water Content	102.0	\$8.00	\$816.00
% Finer Than the No. 200 Sieve	13.0	\$50.00	\$650.00
Shrinkage Factors of Soils(Volume Change) T 92	5.0	\$75.00	\$375.00
pH of Soils MT-30	3.0	\$40.00	\$120.00
Soil Resistivity MT-47	3.0	\$75.00	\$225.00
Grain Size Analyses(+ #200) T 68	20.0	\$115.00	\$2,300.00
Soluble Sulfate Ion in Soils and Water MT-58	10.0	\$150.00	\$1,500.00

Total Field and Lab.: \$31,325.00

Expense Items

Meals	18	\$48.00	\$864.00
Lodging	18	\$96.00	\$1,728.00
Mileage	440	0.560	\$246.40
Supplies	1	\$500.00	\$500.00

Total Direct Costs: \$3,302.40

Total Direct Plus Field and Lab Costs: \$34,627.40

Total Geotechnical \$94,424.19

Boring #	Station	Depth	Northing	Easting	Description	Drilling and sampling				Laboratory										Sulfates
						0-70	0-100	Auger	# samples	WC	AL	-200	UC	UU	Sieve	Hydro.	Consol.	Sand Triax.	Shrinkage	
	11+00	10			Roadway/Existing Fill			10	5	5	1	1						1	1	1
	23+00	5			Existing Roadway			5	3	3	1									
	25+00	5			Existing Roadway			5	3	3	1									
	27+00	5			Existing Roadway			5	3	3	1	1								
	29+00	5			Existing Roadway			5	3	3	1									
	31+00	5	661300.1	841959.7077	Existing Roadway			5	3	3	1						1	1	1	1
	33+00	5			Existing Roadway			5	3	3	1	1								
	35+00	5			Existing Roadway			5	3	3	1									
	37+00	5			Existing Roadway			5	3	3	1	1								
	39+00	5			Existing Roadway			5	3	3	1									
	41+00	5			Existing Roadway			5	3	3	1						1			
	43+00	5			Existing Roadway			5	3	3	1	1								
	45+00	5			Existing Roadway			5	3	3	1									
	47+00	5			Existing Roadway			5	3	3	1	1					1	1	1	1
	49+00	5			Existing Roadway			5	3	3	1									
	51+00	5	661299.4	872459.7072	Existing Roadway			5	3	3	1									
	53+00	5			Existing Roadway			5	3	3	1	1					1			
1	13+00	30	661359.7	838667.8678	Retaining Wall / High Fill	30			8	4	4		3	1	2					1
2	15+00	70	661322.8	838859.8312	Bridge Abutment / End Fill	70			13	7	4	2	4	2	3		1			1
3	16+00	70	661321.6	838956.6314	Intermediate Bridge Bent	70			13	7	4		4	2	3				1	1
4	17+25	100	661320.4	839064.9459	Intermediate Bridge Bent		100		20	13	4	2	5	3	4			18		1
5	18+25	70	661319	839184.8068	Intermediate Bridge Bent	70			13	7	4		4	2	3					1
6	19+50	70	661317.5	839309.8072	Bridge Abutment / End Fill	70			13	7	4	2	4	2	3					1
7	21+00	30	661315.7	839459.7859	Retaining Wall / High Fill	30			8	4	4		3	1	2		1			1
						340	100	90	88	102	45	13	27	13	20	0	2	18	5	3
																				10

Assume 2 mob demob
Assume 100 ft / day production

Hydraulics Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							Total Hours
	Sheets	Senior Manager	Senior Engineer	Engineer Intern		Design Technician			
Field Review									
A. Structure Recommendations			4						4
Design recommendations culvert and cross drains			24	24					48
Drainage details			2	8		8			18
B. Storm Sewer Design			40	40					80
Design data for Structures				40					40
Drainage details				24		16			40
C. Temporary Drainage Design			16	16					32
Bioswale Design									
D. Sediment Basin Design									
E. Hydraulic Models and Calculations									
Calculate D.A. & Flow Rate For			40	40					80
Develop Storm Drain Models			40	40					80
F. Hydraulic Report				8					8
G. No-Rise/No-Impact Certification									
Preliminary Erosion Control Sheets				4					4
Typical Sections				4					4
QA Review		4	8						12
Office Review									
General Notes			2	2					4
Summary of Quantities				24					24
Cross-Sections Draw Drainage						16			16
Cross-Sections Adjust Cross-Sections for pavement recommendation									
Drainage Detail Sheets (1"=20')				10		10			20
Draw Storm Drain Inlets & Pipes In Plan/Profile View				8		40			48
Add Drainage Notes In Plan/Profile View			2	2					4
Cross Sections				2		8			10
Erosion Control Details									
Standard Drawings				2					2
Special Provisions									
QA Review		4	8						12
Revise plans/special provisions per City comments				8		16			24
Revise Plans				4		16			20
Misc. Details				4					4
QC Review		4	8						12
Total Hours		12	194	314	0	130	0	0	650

Raw Labor Rates	\$62.70	\$46.62	\$31.50	\$46.62	\$35.38	\$35.50	\$27.20	
Labor Cost	\$752.40	\$9,044.28	\$9,891.00	\$0.00	\$4,599.40	\$0.00	\$0.00	\$24,287.08

Overhead	%	153.90%	\$37,377.82
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Fixed Fee	%	12.00%	\$7,399.79
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FCCM Overhead	%	0.15%	\$36.43
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Direct Costs:	Qty.	Unit Price ¹	
Mileage	50	\$0.560	\$28.00
Meals		\$41.00	
Lodging		\$06.00	
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$28.00

Total: \$69,129.11

Survey Sheet
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Clearpoint
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							Total Hours
	Sheets	Survey Manager	Professional Land Surveyor	Survey Draft	Admin	3 Person Survey Crew	Crew Chief	2 Person Survey Crew	
Design Surveys									
Establish/Verify the Primary Horizontal & Vertical Control		16	16	24			16	16	88
Establish Secondary Control Points as a Supplement to the Primary Control		4		16			16	16	52
Establish and Verify Approx. x TBM's (Temporary Benchmarks)		4	4	4		40	40		92
Perform Topographic Survey of Main Line (x LF @ y' Intervals)		16	16	8		120	120		280
Layout and Perform Cross Sections of Main Line (x LF @ y' Intervals)		16		8		60	60		144
Perform Topographic Survey of Intersecting Streets (x side roads - y LF @ z' Intervals)		8		8		40	40		96
Layout and Perform Cross Sections of Main Line (x side roads - y LF @ z' Intervals)		8		8		40	40		96
Traverse, Profile, & Section Major Drainage Channels (x Locations - y within Floodway Limits)		8		8		30	30		76
Utility Mapping - Locate Underground Utilities per MS. One Call System/Compiling Utility Drawings from Owners - Municipalities		12	4	8	8	30	30		92
Quality Control		40	20	40			40		140
Staking & ROW									
Centerline Staking x3		8		8			48	48	112
R.O.W. Staking x2		8		8		48	48		112
Prel. Stakeout of Bridge Abutments & R/W Acquisition Parcel Plats, Legal Descriptions & Set Pins (Estimated @ 30 Parcels)		16	8			16	16		56
Final MDOT R/W Plat, Set R/W Markers & Certification		16	24	80		60	80		280
		16	16	60		60	60		212
Total Hours		196	108	288	8	564	684	80	1928

Raw Labor Rates	\$45.67	\$66.34	\$30.00	\$18.50	\$51.00	\$30.50	\$40.00	
Labor Cost	\$8,951.32	\$7,164.72	\$8,640.00	\$148.00	\$28,764.00	\$20,862.00	\$3,200.00	\$77,730.04

Overhead % 134.00% \$104,158.25

Fixed Fee % 12.00% \$21,826.60

FCCM Overhead % 0.00% \$0.00

Direct Costs:	Qty.	Unit Price ¹	
Mileage		\$0.560	
Meals		\$46.00	
Lodging		\$96.00	
Postage			
Stakes, Hubs, Pins and Flagging	1500	\$2.00	\$3,000.00
Reproductions			
R/W Markers	60	\$60.00	\$3,600.00

¹ See State Travel Handbook

Total Direct Costs: \$6,600.00

Total: \$210,314.89

PS&E/Advertisement
Hall Avenue BUILD Grant
Forrest County
Project Number FBLD-8769-00(001)/108639-811000
Neel-Schaffer
4/12/2022

MDOT Process Item Description	No.	Estimated Hours							Total Hours
	Sheets	Senior Manager	Senior Engineer	Engineer Intern	Landscape Architect	Design Technician	Environmental Scientist	Clerical	
PS&E Assembly									
Engineer's Estimate			4						4
Right of Way Certification			4						4
Utility Certification			4						4
Encroachment Certification			1						1
Hazardous Waste Certification			1						1
Asbestos Abatement Certification			1						1
Compose Letters			1						1
Complete Forms			1						1
Assemble Specifications			8						8
Material Checklist			8						8
MDOT Coordination			8						8
Advertisement									
Print Plans and Specifications						8		8	16
Prepare Advertisement			2					1	3
Bidder Coordination			16					4	20
Receive & Evaluate Bids			4					4	8
Assemble Bids and Submit			8					2	10
Quality Control			2						2
Total Hours		0	73	0	0	8	0	19	100

Raw Labor Rates	\$69.96	\$46.39	\$32.08	\$49.09	\$35.20	\$35.54	\$27.23	
Labor Cost	\$0.00	\$3,386.47	\$0.00	\$0.00	\$281.60	\$0.00	\$517.37	\$4,185.44

Overhead	%	153.90%	\$6,441.39
Fixed Fee	%	12.00%	\$1,275.22
FCCM Overhead	%	0.15%	\$6.28

Direct Costs:	Qty.	Unit Price ¹	
Mileage	20	\$0.560	\$11.20
Meals		\$41.00	
Lodging		\$96.00	
Postage			
Supplies			
Reproductions			
Other			

¹ See State Travel Handbook

Total Direct Costs: \$11.20

Total: \$11,919.53



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve contract with Neel-Schaffer, Inc. for construction engineering and inspection services related to the Hardy Street Roundabout Project at 2nd Avenue, Green Street and Adeline Street STP-0210-00(037)LPA/108081-701000 and authorize the Mayor to execute in triplicate.
File Number: 2021-841
Minute Book #

Summary

Approve contract with Neel-Schaffer, Inc. for construction engineering and inspection services related to the Hardy Street Roundabout Project at 2nd Avenue, Green Street and Adeline Street STP-0210-00(037)LPA/108081-701000 and authorize the Mayor to execute in triplicate.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

CONSTRUCTION ENGINEERING & INSPECTION SERVICES CONTRACT

Hardy Street Roundabout Project – At 2nd Avenue / Green Street / Adeline Street STP-0210-00(037) LPA/108081-701000 Forrest

THIS CONTRACT, is made and entered into by and between the ***City of Hattiesburg***, a body Politic of the State of Mississippi (the "LPA"), and, Neel-Schaffer, Inc. (the "CONSULTANT"), a Corporation, duly registered to do business in the State of Mississippi, whose address for mailing is ***704 Hardy Street, Hattiesburg, MS 39401***, effective as of the date of latest execution below.

WITNESSETH:

WHEREAS, the LPA proposes to perform the construction engineering services for ***constructing a roundabout along Hardy Street at the intersection of 2nd Avenue, Green Street, Adeline Street***, hereinafter called the "PROJECT"; and,

WHEREAS, the LPA desires to engage a qualified and experienced CONSULTANT to perform engineering services in connection with the PROJECT, all of which are hereinafter called the "SERVICES"; and,

WHEREAS, the CONSULTANT has represented to the LPA that it is experienced and qualified to provide those services, and the LPA has relied upon such representation; and,

WHEREAS, the CONSULTANT herein was chosen for their expertise in performing the services in connection with the PROJECT and found satisfactory by the LPA; which is now desirous of entering into a contract; and

WHEREAS, the CONSULTANT herein was chosen through the LPA Consultant Selection Process pursuant to Mississippi Department of Transportation (hereinafter "MDOT") LPA Project Development Manual and pursuant to Federal Highway Administration ("FHWA") regulations, Engineering and Design Related Service Contracts, 23 C.F.R. Part 172 (as amended) and found satisfactory;

NOW, THEREFORE, for and in consideration of the mutual promises and covenants contained herein and for other good and valuable considerations flowing unto the parties, the receipt and sufficiency of which is hereby acknowledged, the LPA and the CONSULTANT do hereby contract and agree as follows:

ARTICLE I. GENERAL RECITALS

CONSULTANT shall, for the agreed fees, furnish all engineering services and materials required to perform the tasks described in the Scope of Work for the proposed transportation project. In so doing, CONSULTANT shall meet the current industry standards (and those MDOT and LPA standards specified in Exhibit 2) as to general format and content and in addition thereto, any special requirements of the LPA.

THE LPA, in support of CONSULTANT will provide the CONSULTANT a Scope of Work shown in "Exhibit 2" hereto and any other data which may be of assistance to CONSULTANT and within the possession and control of the LPA.

Manuals, guides, and specifications applicable to this CONTRACT shall be those approved and/or adopted by MDOT and in effect on the effective date of this CONTRACT, unless otherwise specified in this Contract or subsequently directed by MDOT during the course of the CONTRACT.

ARTICLE II. SCOPE OF WORK

The CONSULTANT shall conduct the SERVICES in accordance with the Scope of Work attached to this CONTRACT as "Exhibit 2" and made a part hereof as if fully set forth herein. The performance of the SERVICES referred to in "Exhibit 2" shall be the primary basis for measurement of performance under this CONTRACT. The LPA specifically reserves the right and privilege to enlarge or reduce the scope; or to cancel this CONTRACT at any time.

ARTICLE III. CONTRACT TERM

This CONTRACT shall commence upon the latest date of execution below and continue until such time as the above named project is successfully completed to the satisfaction of the LPA at which time this CONTRACT shall absolutely and finally terminate.

The construction engineering services of the CONSULTANT under this contract shall start no earlier than the **date of FHWA/MDOT concurrence in the award of the construction contract by the LPA**, and be completed within 60 days after the final inspection and acceptance of the construction work performed by others. However, the CONSULTANT may not begin work on any feature of this PROJECT prior to receiving a Notice to Proceed from the LPA. The services of the CONSULTANT are anticipated to be needed and completed in an expedient manner. It is understood that construction progress of force account work by the LPA and/or contractor's work shall influence the time period for the CONSULTANT's services. Therefore, it is necessary that construction be completed in accordance with the original time limit set forth in the original construction schedule. The estimated fees in the Cost/Fee breakdown are based on the initial construction time estimate as included in the Contract Documents. If the construction time extends beyond the contract time, through no fault of the CONSULTANT, the LPA agrees to pay the CONSULTANT for the construction engineering services to complete the project with or without Federal participation, subject to approval by MDOT and FHWA.

During the term of this CONTRACT, the LPA reserves the right to terminate this CONTRACT, subject to the approval of MDOT, in whole or in part, at any time, with or without cause, upon seven (7) days written notice to the CONSULTANT, notwithstanding any just claims by the CONSULTANT for payment of SERVICES rendered prior to the date of termination. The LPA must receive written approval from the MDOT Executive Director on behalf of the Mississippi Transportation Commission before the LPA can terminate this CONTRACT. The LPA shall be liable only for the costs, fees and expenses for demobilization and close out of contract, based on actual time and expenses incurred by CONSULTANT in the packaging and shipment of all documents covered by this CONTRACT to the LPA. In no event shall the LPA be liable for lost profits or other consequential damages.

ARTICLE IV. TIME OF PERFORMANCE

TIME IS OF THE ESSENCE IN THIS CONTRACT. The CONSULTANT shall be prepared to perform its responsibilities for providing SERVICES commencing on the date of execution of the CONTRACT.

ARTICLE V. RELATIONSHIP OF THE PARTIES

The relationship of the CONSULTANT to the LPA is that of an independent contractor, and said CONSULTANT, in accordance with its status as an independent contractor, covenants and agrees that it will conduct itself consistent with such status, that it will neither hold itself out as, nor claim to be, an officer or employee of the LPA by reason hereof. The CONSULTANT will not by reason hereof, make any claim, demand or application or for any right or privilege applicable to an officer or employee of the LPA, including

but not limited to workers' compensation coverage, unemployment insurance benefits, social security coverage, retirement membership or credit, or any form of tax withholding whatsoever.

All notices, communications, and correspondence between the LPA and the CONSULTANT shall be directed to the key personnel and agents designated in this contract.

ARTICLE VI. COMPENSATION, BILLING & AUDIT

A. Cost and Fees

The CONSULTANT shall be paid on the basis set forth in "Exhibit 3" to this CONTRACT. Under no circumstances shall the LPA be liable for any amounts, including any costs, which exceed the maximum dollar amount of compensation that is specified in and set forth in "Exhibit 3".

B. Monthly Billing

The CONSULTANT must submit monthly billing to the LPA. (A sample of a preferred invoice is attached as "Exhibit 4".) All billing must be submitted in accordance with the Local Public Agency Consultant Operating Procedures. Each billing shall include all time and allowable expenses through the end of the billing period. Direct expenses, as used herein, include the costs of travel, subsistence, shipping charges, long distance telephone calls and printing if it is not company accounting policy to include these costs in overhead rates. The LPA retains the right to verify time and expense records by audit of any or all CONSULTANT's time and accounting records at any time during the life of the CONTRACT and up to three years thereafter.

If SERVICES are rendered within a given State fiscal year, an invoice requesting payment from the CONSULTANT shall be presented to the LPA within 60 days of the end of the State fiscal year. **Should the CONSULTANT fail to present the invoice within the allotted time, legislative approval may be required before payment can be rendered.**

The CONSULTANT further agrees that FHWA or any other Federal Agency may audit the same records at any time during the life of the CONTRACT and up to three years thereafter, should the funding source for all or any part of the CONTRACT be funds of the United States of America.

C. Record Retention

The CONSULTANT shall maintain all time and expense records incurred on the PROJECT and used in support of its proposal and shall make such material available at all reasonable times during the period of the CONTRACT and for three years from the date of final payment under this CONTRACT for inspection by the LPA, and copies thereof shall be furnished upon request, at the LPA's expense. The CONSULTANT agrees that the provisions of this Article shall be included in any CONTRACT it may make with any subconsultants, assignees or transferees.

D. Retainage

The LPA shall retain the final 5% of the CONSULTANT'S CONTRACT amount until the final payment request has been received and an audit of the total PROJECT cost to date has been completed by the LPA or its designee.

ARTICLE VII. FINAL PAYMENT

The CONSULTANT agrees that acceptance of the final payment shall be in full and final settlement of all claims arising against the LPA for work done, documents furnished, cost incurred, or otherwise arising out of this CONTRACT and shall release the LPA from any and all further claims of whatever nature, whether known or unknown, for and on account of said CONTRACT, including payment for any and all work done, and labor and material furnished in connection with the same. Errors and/or omissions discovered subsequent to the acceptance by the LPA of the final contract documents shall be corrected by the CONSULTANT without additional compensation.

ARTICLE VIII. REVIEW OF WORK

Authorized representatives of the LPA may at all reasonable times review and inspect the SERVICES under this CONTRACT and any addenda or amendments thereto. Authorized representatives of the FHWA may also review and inspect the SERVICES under this CONTRACT should funds of the United States of America be in any way utilized in payment for said SERVICES. Such inspection shall not make the United States of America a party to this CONTRACT, nor will FHWA interfere with the rights of either party hereunder.

All reports, drawings, studies and maps prepared by and for the CONSULTANT, shall be made available to authorized representatives of the LPA for inspection and review at all reasonable times in the General Offices of the LPA. Authorized representatives of the FHWA may also review and inspect said reports, drawings, studies and maps prepared under the CONTRACT should funds of the United States of America be in any way utilized in payment for the same. Acceptance by the LPA shall not relieve the CONSULTANT of its professional obligation to correct, at its expense, any of its breaches, errors and/or omissions, in the final version of the work.

The CONSULTANT shall be responsible for performance of and compliance with all terms of this CONTRACT, including the Scope of Work and other exhibits attached to this contract, and including any technical specifications and special requirements of the LPA, and shall be responsible for errors and/or omissions, including those as to conduct and care, format and content, for all aspects of the CONTRACT, and including professional quality and technical accuracy of all designs, drawings, specifications, and other services furnished by the CONSULTANT.

Failure to comply with any terms of this CONTRACT shall be corrected by the CONSULTANT without additional compensation.

If any breach of CONTRACT, is discovered by LPA personnel after final acceptance of the work by the LPA, then the CONSULTANT shall, without additional compensation, cure any deficiency or breach including errors and/or omissions in designs, plans, drawings, specifications, or other services.

In the event that the project schedule requires that a breach of this CONTRACT be corrected by someone other than the CONSULTANT then the actual costs incurred by the LPA for such corrections shall be the responsibility of the CONSULTANT. The LPA shall give the CONSULTANT an opportunity to correct said breach unless (1) the LPA determines, in its sole discretion, that the CONSULTANT cannot cure the breach within the schedule established by the LPA, or (2) the LPA determines, in its sole discretion, that the CONSULTANT cannot cure the breach to the satisfaction of the LPA.

In the event that the CONSULTANT breaches this CONTRACT, and the breaches of the CONSULTANT are discovered during the construction phase, then an accounting of all costs incurred by the LPA resulting from such breach, including errors and/or omissions, will be made and such amount will be recovered from the CONSULTANT.

ARTICLE IX. RESPONSIBILITIES FOR CLAIMS AND LIABILITY

The CONSULTANT shall indemnify, defend and hold harmless the LPA and all its officers, agents and employees from any claim, loss, damage, cost, charge or expense arising out of any negligent act, actions, neglect or omission by the CONSULTANT, its agents, employees, or subconsultants during the performance of this CONTRACT, whether direct or indirect, and whether to any person or property for which LPA or said parties may be subject, except that neither the CONSULTANT nor any of his agents or subconsultants will be liable under this provision for damages arising out of the injury or damage to persons or property solely caused or resulting from the negligence of the LPA or any of its officers, agents or employees.

The CONSULTANT'S obligations under this Article, including the obligations to indemnify, defend, hold harmless, pay reasonable attorney fees or, at the LPA'S option, participate and associate with the LPA in the defense and trial or arbitration of any damage claim, lien or suit and any related settlement negotiations, shall be initiated by the LPA'S notice of claim for indemnification to the CONSULTANT. Only an adjudication or judgment after the highest appeal is exhausted specifically finding the LPA entirely responsible shall excuse performance of this provision by the CONSULTANT. In such case, the LPA shall pay all costs and fees related to this obligation and its enforcement. Should there be a finding of dual or multiple liability, costs and fees shall be apportioned accordingly.

In conjunction herewith, the LPA agrees to notify CONSULTANT in writing as soon as practicable after receipt or notice of any claim involving CONSULTANT. These indemnities shall not be limited by reason of the listing of any insurance coverage below.

ARTICLE X. INSURANCE

Prior to beginning any work under this CONTRACT, the CONSULTANT shall obtain and furnish proof of insurance through Certificates of Insurance and, at the LPA's request, copies of insurance policies of the following:

- A. Workers' Compensation Insurance in accordance with the laws of the State of Mississippi.
- B. Commercial General Liability Insurance with a minimum combined limit of not less than One Million Dollars (\$1,000,000.00) for each occurrence.
- C. Errors and Omissions (Professional Liability) Insurance in an amount not less than One Million Dollars (\$1,000,000.00) per claim; One Million Dollars (\$1,000,000.00) annual aggregate.
- D. Comprehensive Automobile Liability Insurance, in an amount not less than One Million Dollars (\$1,000,000.00) per occurrence.

The LPA shall be listed as a certificate holder of insurance on any of the insurance required under this CONTRACT.

In the event that the CONSULTANT retains any subconsultant or other personnel to perform SERVICES or carry out any activities under or incident to work on any project or phase of this CONTRACT, the CONSULTANT agrees to obtain from said subconsultant or other personnel, certificates of insurance demonstrating that said subconsultant or other personnel shall have sufficient coverage, or the CONSULTANT agrees to include said subconsultant or other personnel within the CONSULTANT'S coverage for the duration of this PROJECT or phase for which said subconsultant or other personnel is employed.

The Insurance coverage recited above shall be maintained in full force and effect by the CONSULTANT during the entire term of the CONTRACT. The LPA shall be notified of cancellation of any of the required insurance by the CONSULTANT and by the insurance company issuing any such cancellation of the required policies. Should the CONSULTANT cease to carry the errors and/or omissions coverage listed

above for any reason, it shall obtain "tail" or extended reporting period coverage at the same limits for a period of not less than three (3) years subsequent to policy termination or contract termination, whichever is longer.

All insurance carriers shall be licensed and in good standing with the Office of the Insurance Commissioner of the State of Mississippi.

A certificate of insurance acceptable to the LPA shall be issued to the LPA by the CONSULTANT prior to beginning any work under this CONTRACT and thereafter on an annual basis for the duration of this CONTRACT as evidence that policies providing the required insurance are in full force and effect. All policies of required insurance shall give thirty days written notice to the LPA before the effective date of cancellation or reduction in limits of any required insurance.

The CONSULTANT will furnish certified copies, upon request, of any or all of the policies and/or endorsements to the LPA prior to the execution of this CONTRACT and thereafter on an annual basis for the duration of this CONTRACT.

The CONSULTANT shall provide the LPA any and all documentation necessary to prove compliance with the insurance requirements of this CONTRACT as such documentation is requested, from time to time, by the LPA.

If the CONSULTANT fails to procure or maintain required insurance, the LPA may immediately elect to terminate this CONTRACT or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, and all monies so paid by the LPA shall be repaid by the CONSULTANT to the LPA upon demand, or the LPA may offset the cost of the premiums against any monies due to the CONSULTANT from the LPA.

ARTICLE XI. COVENANT AGAINST CONTINGENT FEES AND LOBBYING

The CONSULTANT shall comply with the relevant requirements of all federal, state or local laws. The CONSULTANT warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the CONSULTANT, to solicit or secure this CONTRACT, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the CONSULTANT, any fee commission, percentage, brokerage fee, gifts or any other consideration contingent upon or resulting from the award or making of the CONTRACT. The CONSULTANT warrants that it shall not contribute any money, gift or gratuity of any kind, either directly or indirectly to any employee of the LPA, or to any employee of the Mississippi Department of Transportation. For breach or violation of this warranty, the LPA shall have the right to terminate this CONTRACT without liability, and the CONSULTANT shall forfeit any sums due hereunder at the time of such breach and may be barred from performing any future services for the LPA or participating in any future contracts with the LPA.

ARTICLE XII. EMPLOYMENT OF LPA'S PERSONNEL

The CONSULTANT shall not employ any person or persons in the employ of the LPA for any work required by the terms of this CONTRACT, without the written permission of the LPA, except as may otherwise be provided for herein.

ARTICLE XIII. MODIFICATION

If, prior to the satisfactory completion of the SERVICES under this CONTRACT, the LPA materially alters the scope, character, complexity or duration of the SERVICES from those required under this CONTRACT, a supplemental agreement may be executed between the parties. Also, a supplemental agreement may be executed between the parties in the event that both parties agree the CONSULTANT's compensation should be increased due to an unanticipated increase in the nature, scope or amount of work necessary to properly provide the SERVICES required on any particular phase or project begun hereunder.

Oral agreements or conversations with the LPA, any individual member of the LPA, officer, agent, or employee of the Mississippi Department of Transportation, either before or after execution of this CONTRACT, shall not affect or modify any of the terms or obligations contained in this CONTRACT. All modifications to this CONTRACT, amendments or addenda thereto must be submitted in writing and signed by the parties thereto before any work is commenced.

The CONSULTANT may not begin work on any modifications, amendments, or addenda prior to receiving a Notice to Proceed.

Minor changes in the proposal which do not involve changes in the contract maximum not to exceed amount, extensions of time or changes in the goals and objectives of the CONTRACT may be made by written notification of such change by either the LPA or the CONSULTANT to the other party, and shall become effective upon written acceptance thereof (i.e. letter agreement).

ARTICLE XIV. SUBLETTING, ASSIGNMENT OR TRANSFER

It is understood by the parties to this CONTRACT that the work of the CONSULTANT is considered personal by the LPA. The CONSULTANT shall not assign, sublet or transfer any or all of its interest in this CONTRACT without prior written approval of the LPA. Under no circumstances will CONSULTANT be allowed to sublet more than 60% of the work required under this contract. It is clearly understood and agreed that specific projects or phases of the work may be sublet in their entirety provided that CONSULTANT performs at least 40% of the overall contract with its own forces. Consent by the LPA to any subcontract shall not relieve CONSULTANT from any of its obligations hereunder, and CONSULTANT is required to maintain final management responsibility with regard to any such subcontract.

The LPA reserves the right to review all subcontract documents prepared in connection with this CONTRACT, and the CONSULTANT agrees that it shall submit to the LPA any proposed subcontract document together with subconsultant cost estimates for review and written concurrence of the LPA in advance of their execution.

The CONSULTANT shall make prompt payment to all subconsultants no later than 15 days from receipt of each payment the LPA makes to the CONSULTANT. Each month, the CONSULTANT shall submit OCR-484-C found on MDOT's website to the LPA along with the Invoice. This form certifies payments to all subconsultants and shows all firms even if the CONSULTANT has paid no monies to the firm during that estimate period (negative report).

ARTICLE XV. OWNERSHIP OF PRODUCTS AND DOCUMENTS AND WORK MADE FOR HIRE

The CONSULTANT agrees that all reports, computer information and access, drawings, studies, notes, maps and other data, prepared by and for them under the terms of this CONTRACT shall be delivered to, become and remain in the property of the LPA upon creation and shall be delivered to the LPA upon termination or completion of work, or upon request of the LPA regardless of any claim or dispute between the parties. All such data shall be delivered within thirty (30) days of receipt of a written request by the LPA.

The CONSULTANT and the LPA intend and agree that this CONTRACT to be a contract for services and each party considers the products and results of the services to be rendered by the CONSULTANT hereunder, including any and all material produced and/or delivered under this CONTRACT (the "Work"), to be a "work made for hire" under U.S. copyright and all applicable laws. The CONSULTANT acknowledges and agrees that the LPA owns all right, title, and interest in and to the Work including, without limitation, the copyright thereto and all trademark, patent, and all intellectual property rights thereto.

If for any reason the Work would not be considered a work made for hire under applicable law, or in the event this CONTRACT is determined to be other than a contract or agreement for a work made for hire, the CONSULTANT does hereby transfer and assign to the LPA, and its successors and assigns, the entire right, title, and interest in and to any Work prepared hereunder including, without limitation, the following: the copyright and all trademark, patent, and all intellectual property rights in the Work and any registrations and copyright, and/or all other intellectual property, applications relating thereto and any renewals and extensions thereof; all works based upon, derived from, or incorporating the Work; all income, royalties, damages, claims, and payments now or hereafter due or payable with respect thereto; all causes of action, either in law or in equity, for past, present, or future infringement based on the copyrights and/or all other intellectual property; all rights, including all rights to claim priority, corresponding to the foregoing in the United States and its territorial possessions and in all foreign countries. The CONSULTANT agrees to execute all papers and perform such other proper acts as the LPA may deem necessary to secure for the LPA or its designee the rights herein assigned.

The LPA may, without any notice or obligation of further compensation to the CONSULTANT, publish, re-publish, anthologize, use, disseminate, license, or sell the Work in any format or medium now known or hereafter invented or devised. The LPA'S rights shall include, without limitation, the rights to publish, re-publish, or license a third party to publish, re-publish, or sell the Work in print, on the World Wide Web, or in any other electronic or digital format or database now known or hereafter invented or devised, as a separate isolated work or as part of a compilation or other collective work, including a work different in form from the first publication, and to include or license a third party to include the Work in an electronic or digital database or any other medium or format now known or hereafter invented or devised.

The CONSULTANT shall obtain any and all right, title, and interest to all input and/or material from any third party subconsultant, or any other party, who may provide such input and/or material to any portion of the Work so that said right, title, and interest, and all such interest in and to the Work including, without limitation, the copyright thereto and all trademark, patent, and all intellectual property rights thereto, shall belong to the LPA.

For any intellectual property rights currently owned by third parties or by the CONSULTANT and not subject to the terms of this CONTRACT, the CONSULTANT agrees that it will obtain or grant royalty-free, nonexclusive, irrevocable license(s) for or to the LPA at no cost to the LPA to use all copyrighted or copyrightable work(s) and all other intellectual property which is incorporated in the material furnished under this CONTRACT. Further, the CONSULTANT warrants and represents to the LPA that it has obtained or granted any and all such licensing prior to presentation of any Work to the LPA under this CONTRACT. This obligation of the CONSULTANT does not apply to a situation involving a third party who enters a license agreement directly with the LPA.

The CONSULTANT warrants and represents that it has not previously licensed the Work in whole or in part to any third party and that use of the Work in whole or in part will not violate any rights of any kind or nature whatsoever of any third party. The CONSULTANT agrees to indemnify and hold harmless the LPA, its successors, assigns and assignees, and its respective officers, directors, agents and employees, from and against any and all claims, damages, liabilities, costs and expenses (including reasonable attorneys' fees), arising out of or in any way connected with any breach of any representation or warranty made by CONSULTANT herein.

ARTICLE XVI. PUBLICATION AND PUBLICITY

The CONSULTANT agrees that it shall not for any reason whatsoever communicate to any third party, with the exception of the MDOT and the FHWA, in any manner whatsoever concerning any of its CONTRACT work product, its conduct under the CONTRACT, the results or data gathered or processed under this CONTRACT, which includes, but is not limited to, reports, computer information and access, drawings, studies, notes, maps and other data prepared by and for the CONSULTANT under the terms of

this CONTRACT, without prior written approval from the LPA, unless such release or disclosure is required by judicial proceeding. The CONSULTANT agrees that it shall immediately refer any third party who requests such information to the LPA and shall also report to the LPA any such third party inquiry, with the exception of the MDOT and/or the FHWA. This Article shall not apply to information in whatever form that comes into the public domain, nor shall it restrict the CONSULTANT from giving notices required by law or complying with an order to provide information or data when such order is issued by a court, administrative agency or other authority with proper jurisdiction, or if it is reasonably necessary for the CONSULTANT to defend itself from any suit or claim.

IT IS FURTHER AGREED, that all approved releases of information, findings, and recommendations shall include a disclaimer provision and that all published reports shall include that disclaimer on the cover and title page in the following form:

The opinions, findings, and conclusions in this publication are those of the author(s) and not necessarily those of the Local Public Agency, Mississippi Department of Transportation, Mississippi Transportation Commission, the State of Mississippi, or the Federal Highway Administration.

ARTICLE XVII. CONTRACT DISPUTES

This CONTRACT shall be deemed to have been executed in **Forrest** County, Mississippi, and all questions including, but not limited to, questions of interpretation, construction and performance shall be governed by the laws of the State of Mississippi, excluding its conflicts of laws provisions, and any litigation with respect to this CONTRACT shall be brought in a court of competent jurisdiction in **Forrest** County, State of Mississippi. The CONSULTANT expressly agrees that under no circumstances shall the LPA be obligated to or responsible for payment of an attorney's fee for the cost of legal action to or on behalf of the CONSULTANT.

ARTICLE XVIII. COMPLIANCE WITH APPLICABLE LAW

- A. The undersigned certify that to the best of their knowledge and belief, the foregoing is in compliance with all applicable laws.
- B. The CONSULTANT shall observe and comply with all applicable federal, state, and local laws, rules and regulations, policies and procedures, ordinances, and orders and decrees of bodies or tribunals of the United States of America or any agency thereof, the State of Mississippi or any agency thereof, and any local governments or political subdivisions, that are in effect at the time of the execution of this CONTRACT or that may later become effective.
- C. The CONSULTANT shall not discriminate against any employee nor shall any party be subject to discrimination in the performance of this CONTRACT because of race, creed, color, sex, national origin, age or disability.
- D. IT IS FURTHER SPECIFICALLY AGREED that the CONSULTANT shall comply and shall require its subconsultants to comply with the regulations for COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964, as amended, and all other applicable federal regulations as stated in "Exhibit 5" which is incorporated herein by reference.
- E. It is agreed that the CONSULTANT will comply with the provisions set forth in Department of Transportation, 49 CFR, Section 18, Et Seq., regarding Uniform Administrative Requirements for Grants and Cooperative agreements in its administration of this CONTRACT or any subcontract resulting herefrom.

- F. The CONSULTANT agrees that it will abide by the provisions of 49 CFR Section 26 regarding disadvantaged business enterprises and include the certification made in "Exhibit 5" to this CONTRACT in any and all subcontracts which may result from this CONTRACTS.
- G. The CONSULTANT shall comply and shall require its subconsultants to comply with Code of Federal Regulations CFR 23 Part 634 - Worker Visibility – as stated in "Exhibit 5".
- H. IMMIGRANT STATUS CERTIFICATION. The CONSULTANT represents that it is in compliance with the Immigration Reform and Control Act of 1986 (Public Law 99-603), as amended, in relation to all employees performing work in the State of Mississippi and does not knowingly employ persons in violation of the United States immigration laws. The CONSULTANT further represents that it is registered and participating in the Department of Homeland Security's E-Verify™ employment eligibility verification program, or successor thereto, and will maintain records of compliance with the Mississippi Employment Protection Act including, but not limited to, requiring compliance certification from all subconsultants and vendors who will participate in the performance of this Agreement and maintaining such certifications for inspection if requested. The CONSULTANT acknowledges that violation may result in the following: (a) cancellation of any public contract and ineligibility for any public contract for up to three (3) years, or (b) the loss of any license, permit, certification or other document granted by an agency, department or governmental entity for the right to do business in Mississippi for up to one (1) year, or (c) both. The CONSULTANT also acknowledges liability for any additional costs incurred by the LPA due to such contract cancellation or loss of license or permit. The CONSULTANT is required to provide the certification on Exhibit 9 in this CONTRACT to the LPA verifying that the CONSULTANT and subconsultant(s) are registered and participating in E-Verify prior to execution of this CONTRACT
- I. The covenants herein shall, except as otherwise provided, accrue to the benefit of and be binding upon the successors and assigns of the parties hereto.

ARTICLE XIX. WAIVER

Failure of either party hereto to insist upon strict compliance with any of the terms, covenants, and conditions hereof shall not be deemed a waiver or relinquishment of any similar right or power hereunder at any subsequent time, or of any other provision hereof, nor shall it be construed to be a modification of the terms of this CONTRACT.

ARTICLE XX. SEVERABILITY

If any terms or provisions of this CONTRACT are prohibited by the laws of the State of Mississippi or declared invalid or void by a court of competent jurisdiction, the remainder of this CONTRACT shall not be affected thereby and each term and provision of this CONTRACT shall be valid and enforceable to the fullest extent permitted by law.

ARTICLE XXI. ENTIRE AGREEMENT

This CONTRACT constitutes the entire agreement of the parties with respect to the subject matter contained herein and supersedes and replaces any and all prior negotiations, understandings, and agreements, written or oral, between the parties relating thereto.

ARTICLE XXII. CONFLICT OF INTEREST

The CONSULTANT covenants that no public or private interests exist and none shall be acquired directly or indirectly which would conflict in any manner with the performance of the CONSULTANT'S CONTRACT. The CONSULTANT further covenants that no employee of the CONSULTANT or of any subconsultant(s), regardless of his/her position, is to personally benefit directly or indirectly from the

performance of the SERVICES or from any knowledge obtained during the CONSULTANT'S execution of this CONTRACT.

ARTICLE XXIII. AVAILABILITY OF FUNDS

It is expressly understood and agreed that the obligation of the LPA to proceed under this CONTRACT is conditioned upon the availability of funds, the appropriation of funds by the Mississippi Legislature, and the receipt of state and/or federal funds. If, at any time, the funds anticipated for the fulfillment of this CONTRACT are not forthcoming or are insufficient, either through the failure of the federal government to provide funds or of the State of Mississippi to appropriate funds or the discontinuance or material alteration of the program under which funds were provided, or if funds are not otherwise available to the LPA for the performance of this CONTRACT, the LPA shall have the right, upon written notice to the CONSULTANT, to immediately terminate or stop work on this CONTRACT without damage, penalty, cost, or expense to the LPA of any kind whatsoever. The effective date of termination shall be as specified in the notice of termination.

ARTICLE XXIV. STOP WORK ORDER

- A. **Order to Stop Work.** The LPA may, by written order to the CONSULTANT at any time, and without notice to any surety, require the CONSULTANT to stop all or any part of the work called for by this CONTRACT. This order shall be for a specified period not exceeding twenty-four (24) months after the order is delivered to the CONSULTANT unless the parties agree to any further period. Any such order shall be identified specifically as a stop work order issued pursuant to this clause. Upon receipt of such an order, the CONSULTANT shall forthwith comply with its terms and take all steps to minimize the occurrence of costs allocable to the work covered by the order during the period of work stoppage. Before the stop work order expires, or within any further period to which the parties shall have agreed, the LPA shall either:

- (1) cancel the stop work order; or
- (2) terminate the work covered by such order according to and as provided in Article III of this CONTRACT.

Prior to the LPA'S taking official action to stop work under this CONTRACT, the Executive Director of MDOT and/or the LPA may notify the CONSULTANT, in writing, of MDOT and/or the LPA's intentions to ask the CONSULTANT to stop work under this CONTRACT. Upon notice from the Executive Director of MDOT and/or the LPA, the CONSULTANT shall suspend all activities under this CONTRACT, pending final action by the LPA.

- B. **Cancellation or Expiration of the Order.** If a stop work order issued under this clause is canceled at any time during the period specified in the order, or if the period of the order or any extension thereof expires, the CONSULTANT shall have the right to resume work. If the LPA decides that it is justified, an appropriate adjustment may be made in the delivery schedule. If the stop work order results in an increase in the time required for or in the CONSULTANT'S cost properly allocable to the performance of any part of this CONTRACT and the CONSULTANT asserts a claim for such an adjustment within 30 days after the end of the period of work stoppage, an equitable adjustment in this CONTRACT may be made by written modification of this CONTRACT as provided by the terms of this CONTRACT.
- C. **Termination of Stopped Work.** If a stop work order is not canceled and the work covered by such order is terminated, the CONSULTANT may be paid for services rendered prior to the Termination. In addition to payment for services rendered prior to the date of termination, the LPA shall be liable only for the costs, fees, and expenses for demobilization and close out of this CONTRACT, based on actual time and expenses incurred by the CONSULTANT in the packaging and shipment of all

documents covered by this CONTRACT to the LPA. In no event shall the LPA be liable for lost profits or other consequential damages.

ARTICLE XXV. KEY PERSONNEL & DESIGNATED AGENTS

CONSULTANT agrees that Key Personnel identified as assigned to this PROJECT shall not be changed or reassigned without prior approval of the LPA or, if prior approval is impossible, and then notice to the LPA and subsequent review by the LPA which may approve or disapprove the action. For purposes of implementing this section and all other sections of this CONTRACT with regard to notice, the following individuals are herewith designated as agents for the respective parties unless otherwise identified in the addenda hereto:

LPA:

For Contractual Matters:

Mayor Toby Barker

City of Hattiesburg

200 Forrest Street

Hattiesburg, MS 39401

Phone: 601-545-4501

Fax: 601-545-4642

mayor@hattiesburgms.com

For Technical Matters:

Lamar Rutland, P.E.

City of Hattiesburg

200 Forrest Street

Hattiesburg, MS 39401

Phone: 601-545-4540

Fax: 601-545-4645

lrutland@hattiesburgms.com

CONSULTANT:

For Contractual Matters:

Mike Essary, P.E.

Neel-Schaffer, Inc.

704 Hardy Street

Hattiesburg, MS 39401

Phone: 601-545-1565

Fax: 601-545-2267

Michael.essary@neel-schaffer.com

For Technical Matters:

Geoffrey Crosby, P.E.

Neel-Schaffer, Inc.

704 Hardy Street

Hattiesburg, MS 39401

Phone: 601-545-1565

Fax: 601-545-2267

Geoffrey.crosby@neel-schaffer.com

Licensure Number
from the Mississippi
Board of Licensure
for Professional
Engineers/Architects and Surveyors:

P.E. # 11856
Surveyor #

Licensure Number
from the Mississippi
Board of Licensure
for Professional
Engineers/Architect's and Surveyors:

P.E.# 19984
Surveyor #

ARTICLE XXVI. AUTHORIZATION

Both parties hereto represent that they have authority to enter into this CONTRACT and that the individuals executing this CONTRACT are authorized to execute it and bind their respective parties and certified copies of the applicable LPA Order and the Resolution of the Corporate Board of Directors of the CONSULTANT are attached hereto as "Exhibit 1" and incorporated herein by reference and made a part hereof as if fully copied herein in words and figures.

WITNESS this my signature in execution hereof, this the ____ day of _____, 20____.

City of Hattiesburg

Toby Barker, Mayor

WITNESS this my signature in execution hereof, this the 24th day of June, 2020

Neel-Schaffer, Inc.

BY: _____

Michael W. Essary
Michael W. Essary

ATTEST: _____
(for CONSULTANT)

Exhibits attached hereto and incorporated by reference into this contract include those identified on the attached page entitled "List of Exhibits".

LIST OF EXHIBITS

1. Evidence of Authority
2. Scope of Work
3. Fees and Expenses.
4. Sample Invoice
5. Notice to the CONSULTANT
6. CONSULTANT's Certification Regarding Debarment, Suspension and Other Responsibility Matters.
7. Certification of LPA
8. *{This Exhibit was intentionally left blank}*
9. Prime Consultant EEV Certification and Agreement

EXHIBIT 1

{{{Attach a copy of authority to execute contracts on behalf of the LPA}}}

**ACTIONS OF THE BOARD OF DIRECTORS OF NEEL SCHAFFER, INC.
TAKEN BY UNANIMOUS CONSENT**

Pursuant to §79-4-8.21, Mississippi Code Annotated (Rev. 2013) and other applicable law, and the Bylaws of Neel Schaffer, Inc., a Mississippi corporation (the "Corporation"), the undersigned, being the Board of Directors of the Corporation, took the actions hereinafter set forth by unanimous consent and agreement as evidenced by this written consent.

WHEREAS, Neel-Schaffer, Inc. is desirous of entering into professional services agreements, work assignments, and change orders with the Mississippi Transportation Commission and LPA's within the State of Mississippi.

WHEREAS, such contract documents require the signature of a company officer or official empowered to bind the consultant to the provisions of the agreements, work assignments and change orders.

WHEREAS, Neel-Schaffer, Inc. has several employees who are responsible for the preparation and management of professional service agreements, work assignments and change orders with the Mississippi Transportation Commission and LPA's within the State of Mississippi

NOW, THEREFORE, IT IS HEREBY:

RESOLVED that the following persons are hereby authorized and empowered to sign all professional service agreements, work assignments and change orders with the Mississippi Transportation Commission and LPA's for the 2020 calendar year.

<u>NAME</u>	<u>TITLE</u>
Robert R. Walker	Executive Vice President Area Manager
Jonathan Kiser	Vice President Engineer IV
Mike Essary	Vice President Sr. Engineer Manager
Cindy Rich	Vice President Sr. Engineer Manager
Kevin Stafford	Vice President Sr. Engineer Manager

Steve Twedt

Sr. Vice President
Area Manager

Keith Purvis

Vice President
Sr. Engineer Manager

Vincent Malavasi

Vice President
Sr. Engineer Manager

Stan Wright

Vice President
Sr. Project Manager

Mandy Hegwood

Vice President
Engineer Manager

Doug Wimberly

Vice President
Engineer Manager

FURTHER RESOLVED that the actions herein set forth are effective as of December 5, 2019 (the "Effective Date"), and that the actions herein set forth may be referred to in all respects as actions taken at the annual meeting of the Directors of the Corporation by the vote of the Directors.

WITNESS THE SIGNATURES of the Directors of the Corporation effective as of the Effective Date.

DIRECTORS:



W. HIBBETT NEEL, JR.



JOEL HUDNALL



ROBERT WALKER



CRAIG HANCHEY



JERRY TRUMPS


NELSON LUCIUS


J. CLARK ROBINSON

EXHIBIT 2

Scope of Work

INTRODUCTION

The CONSULTANT will be providing the Construction Engineering & Inspection (CE&I) services to administer this construction contract in accordance with the latest version of the Mississippi Department of transportation (MDOT) LPA Project Development Manual (PDM). The CONSULTANT is required to adhere to the MDOT standards for this project which include the Standard Specifications, Construction, MDOT Materials Division Inspection, Testing, and Certification Manual, MDOT Construction Manual, LPA PDM, and all other documents that are referred to in the Project Construction Contract. The CONSULTANT will be required to use the LPA version of Site Manager software. Should there be a conflict between the LPA PDM and this scope of work, the LPA PDM shall govern.

ENGINEERING ADMINISTRATION:

The engineering administration of construction will be the responsibility of the LPA acting through the CONSULTANT and will be subject to inspection and approval of the Chief Engineer of the MISSISSIPPI D.O.T., (hereinafter designated as the MDOT), and of the Federal Highway Administration (FHWA) or their representatives.

CONSTRUCTION ENGINEERING SERVICES:

Construction Engineering services shall consist of all engineering work, respectively, involved from the contract stage, beginning the date of FHWA/MDOT concurrence in award of the construction contract, through the preparation and submission of the final estimate and supporting documents to the MDOT, and shall include the following:

A. The CONSULTANT shall promptly prepare, verify and recommend payment of all eligible Contractor's estimates: he shall maintain a project daily diary as the official project record for each project, showing the Contractor's daily operation; and The engineer's daily activities by names, function performed and hours worked. He shall check and verify the quantities of all materials incorporated in the project; and shall make prompt preparation and submission of the final estimate and supporting documents to the LPA for approval and payment. He shall likewise make such records available at all reasonable times during the contract period. These records, documents, and data shall be available for inspection by the LPA, MDOT, and the Federal Highway Administration and any other authorized representative of the Federal Government, and copies thereof shall be furnished if requested.

B. **Subsurface Conditions and Utilities.** LPA recognizes that a comprehensive sampling and testing program implemented by trained and experienced personnel of CONSULTANT or CONSULTANT's subconsultants with appropriate equipment may fail to detect certain hidden conditions. LPA also recognizes that actual environmental, geological and geotechnical conditions that CONSULTANT properly inferred to exist between sampling points may differ significantly from those that actually exist.

CONSULTANT will locate utilities which will affect the project from information provided by the LPA and utility companies and from CONSULTANT's surveys. In that these utility

locations are based, at least in part, on information from others, CONSULTANT cannot and does not warrant their completeness and accuracy.

C. The duties, responsibilities, and limitations of authority of the resident Project engineer are listed in this scope of work.

A LISTING OF THE DUTIES, RESPONSIBILITIES AND LIMITATIONS OF AUTHORITY OF THE RESIDENT PROJECT ENGINEER.

The CONSULTANT shall furnish a resident Project Engineer, assistants and other field staff to inspect performance of the Work of the CONTRACTOR. Through more extensive on-site inspections of the Work in progress and field checks of materials and equipment by the resident Project Engineer and assistants, the CONSULTANT shall endeavor to provide further protection for the LPA against defects and deficiencies in the Work; but, the furnishing of such services will not make the CONSULTANT responsible for or guarantee the CONTRACTOR'S performance. The duties and responsibilities of the resident Project Engineer are limited to this agreement with the LPA and in the construction Contract Documents, and are further limited and described as follows:

I. General:

The resident Project Engineer's dealings in matters pertaining to the on-site work shall in general be with the CONTRACTOR, keeping the LPA advised as necessary. The resident Project Engineer dealings with subcontractors shall only be through or with the full knowledge and approval of the CONTRACTOR. The resident Project Engineer shall generally communicate with the LPA.

II. Duties and Responsibilities of the resident Project Engineer:

A. Schedules:

Review progress schedule of Shop Drawing submittals and schedule of values prepared by the CONTRACTOR and consult with the LPA concerning acceptability.

B. Conferences and Meetings:

Attend meetings with the CONTRACTOR, such as preconstruction conferences, progress meetings, job conferences and other project-related meetings, and prepare and circulate copies of minutes thereof.

C. Liaison:

a. Work principally through the CONTRACTOR'S superintendent and assist in understanding the intent of the Contract Documents; and serve as the LPA'S liaison with the CONTRACTOR when the CONTRACTOR's operations affect the LPA's on-site operations.

b. Assist in obtaining from the LPA additional details or information, when required for Proper execution of the Work.

D. Shop Drawings and Samples:

- a. Record the date of receipt of Shop Drawings and samples.
 - b. Take samples and receive samples which are furnished at the site by the CONTRACTOR and notify the LPA of availability of samples for examination.
 - c. Advise the LPA and the CONTRACTOR of the commencement of any Work requiring a Shop Drawing or sample if the submittal has not been approved by the CONSULTANT.
- E. Review of Work, Rejection of Defective Work, Inspections and Tests:
- a. Conduct on-site observations of the Work in progress to determine if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Report to the LPA any Work that is believed to be unsatisfactory, faulty or defective or does not conform to the Contract Documents, or has been damaged, or does not meet the requirements of any inspection, test or approval required to be made; and advise the LPA of Work that should be corrected or rejected or should be uncovered for observation, or requires special testing, inspection or approval.
 - c. Verify that tests, equipment and systems startups and operating and maintenance training are conducted in the presence of appropriate personnel, and that the CONTRACTOR maintains adequate records thereof-, and observe, record and report to the LPA appropriate details relative to the test procedures and startups.
 - d. Accompany visiting inspectors representing the public or other agencies having jurisdiction over the Project, record the results of these inspections and report to the LPA.
- F. Interpretation of Contract Documents:
- Report to the LPA when clarifications and interpretation of the Contract Documents are needed and transmit to the CONTRACTOR clarifications and interpretations as issued by the LPA.
- G. Modifications:
- Consider and evaluate the CONTRACTOR'S suggestions for modifications in Drawings or Specifications and report to the LPA. Transmit to the CONTRACTOR decisions as issued by the LPA.
- H. Records:
- a. Maintain at the job site orderly files for correspondence, reports of job conferences, Shop Drawings and samples, reproductions of original Contract Documents including all Work Directive Changes, Addenda, Change Orders, Field Orders, additional Drawings issued subsequent to the execution of the Contract, clarification and interpretations of the Contract Documents, progress reports, and other Project related documents.
 - b. Keep a diary signed daily, recording the CONTRACTOR hours on the job site, weather conditions, data relative to questions of Work Directive Changes, Change Orders or changed conditions, list of job site visitors, daily activities of

the prime contractors and all subcontractors, decisions, observations in general, and specific observations in more detail as in the case of observing test procedures; and send copies to the LPA.

- c. Record names, addresses and telephone numbers of all CONTRACTORS, subcontractors and major suppliers of materials and equipment.

I. Reports:

- a. Furnish the LPA periodic reports as required of progress of the Work and of the CONTRACTOR'S compliance with the progress schedule and schedule of Shop Drawing and sample submittals.
- b. Consult with the LPA in advance of scheduled major tests, inspections or start of important phases of the Work.
- c. Draft proposed Supplemental Agreements, Quantity Adjustments and Work Directive Changes, obtaining backup material from the CONTRACTOR; and recommend Supplemental Agreements, Quantity Adjustments, Work Directive Changes, and Field Orders to the LPA.
- d. Report immediately to the LPA upon the occurrence of any accident.

J. Payment Requests:

- a. Review applications for payment with the CONTRACTOR for compliance with the established procedure for their submission and forward to the LPA, noting particularly the relationship of the payment requested to the schedule of values and Work completed and materials and equipment delivered to the site but not incorporated in the Work.

K. Certificates, Maintenance and Operation Manuals:

During the course of the Work verify that certificates, maintenance and operations manuals and other data required to be assembled and furnished by the CONTRACTOR are applicable to the items actually installed and in accordance with the Contract Documents, and have this material delivered to the LPA prior to final payment for the Work.

L. Completion:

- a. Before issuing a Certificate of Substantial Completion, submit a list of observed items requiring completion or correction to the Contractor.
- b. Conduct a final inspection in the company of the LPA, the CONTRACTOR, the MDOT, & FHWA, and prepare a final list of items to be completed or corrected.
- c. Observe that all items on the final list have been completed or corrected and make recommendations to the LPA concerning acceptance.

III. Limitations of Authority

The resident Project Engineer:

- A. Shall not authorize any deviation from the Contract Documents or substitution of materials or equipment, unless authorized by the LPA.
- B. Shall not exceed the limitations of the LPA'S authority as set forth in the Contract Documents.
- C. Shall not undertake any of the responsibilities of the CONTRACTOR, subcontractors or the CONTRACTOR's superintendent.
- D. Shall not advise on, issue directions relative to, or assume control over any aspect of the means, method, techniques, sequences or procedures of construction unless such advice or directions are specifically required by the Contract Documents.
- E. Shall not accept Shop Drawings or sample submittals from anyone other than the Contractor.
- F. Shall not authorize the LPA to occupy the Project in whole or in part.
- G. Shall not participate in specialized field or laboratory tests or inspections conducted by others except as specifically authorized by LPA.

EXHIBIT 3

FEES AND EXPENSES

The LPA shall pay the CONSULTANT on a Labor-Hour/Unit Cost Basis, with an upset limit of **\$ 122,319.10** for the satisfactory completion of the Scope of Work set forth under "Exhibit 2", hereto, for all salaries, overhead, direct costs and the CONSULTANT'S fixed fees attributable to this CONTRACT.

All charges for services must be substantiated by supporting data, i.e. certified time sheets, daily logs, check stubs, pay vouchers, or other items as deemed necessary.

Payroll Additive & Overhead:

The current overhead rates shall be submitted by the CONSULTANT and approved by the MDOT within nine (9) months of the end of the CONSULTANT's fiscal period. The current overhead rate, as defined in this CONTRACT, shall be the overhead rate for the CONSULTANT's most recent previous fiscal period. The CONSULTANT's failure to provide a current overhead rate within nine (9) months of the end of the CONSULTANT's fiscal period may result in the CONSULTANT being deemed ineligible for any potential Supplemental Agreements with the LPA. Any additions to an existing Labor Hour Rate table via Letter Agreement and/or Supplemental Agreement shall utilize the overhead rate(s) applied to the original CONTRACT. The estimated FCCM for cost proposals, Supplemental Agreements, and invoices must be specially identified and distinguished from the other costs. Profit/Fee shall not include amounts applicable to FCCM.

All overhead rates submitted to MDOT for approval shall comply with the AASHTO Audit Guide, latest edition, as amended. In addition, the CONSULTANT shall submit written certification in accordance with FHWA Order 4470.1A, as amended, that the indirect cost rate submitted does not include any costs which are expressly unallowable and the indirect cost rate was established only with allowable costs in accordance with the applicable cost principles contained in the Federal Acquisition Regulations (FAR) of 48 CFR part 31.

Direct Costs:

Direct Costs are those expenses deemed reasonably necessary by the LPA for the successful completion of the Scope of Work, which are charged directly to the project and not included in overhead. These direct expenses, as used herein, include the costs of travel, subsistence, shipping charges, long distance telephone calls and printing if it is not company accounting policy to include these costs in overhead rates. **However, Direct costs for lodging shall be reimbursed in accordance with FAR 31.205-46(a)(2).** The LPA will reimburse the CONSULTANT'S actual documented expenses; or the amount allowable under the current edition of the MDOT State Travel Handbook, whichever is lower. Except as otherwise specifically provided herein, the procedures generally outlined in the MDOT State Travel Handbook shall govern the allowability of any expense reimbursement. In addition, no meal reimbursement will be allowed when there is no overnight stay.

Labor Hour / Unit-cost Rates:

Labor Hour as the term is used herein shall include all direct salaries, audited overhead rate (as approved by MDOT), and profit. The audited overhead rate shall consist of fringe benefits and the general overhead. Unit-costs, as the term is used herein shall include all direct costs, profit, and any other associated costs for the project. Labor Hour / Unit-Costs are not subject to any adjustments on the basis of the CONSULTANT'S cost experience in performing the PROJECT. The Labor Hour / Unit-costs shall not

exceed the rates established in EXHIBIT 3 (found in Table 1: Rate Schedule for Labor Hours). Once the LPA has approved and accepted the work of the CONSULTANT, the LPA will pay the CONSULTANT any unpaid amounts of the PROJECT.

Under no circumstances shall the CONSULTANT alter the personnel, classifications, and rates listed in the Labor Rate Schedule without an approved Letter Agreement signed by both parties.

Table 1: Rate Schedule for Labor Hours

PERSONNEL NAME	LABOR CLASSIFICATION	2020 Loaded Rate	2020 Loaded Rate (OT)
Geoffrey Crosby, P.E.	Project Engineer	\$127.69	
	Engineer Intern	\$80.80	
	Engineer Technician	\$96.88	
	Inspector	\$60.30	\$72.80
	Administrative Assistant	\$75.33	

SCHEDULE OF MAXIMUM RATES, EXPENSES & FEES:

Contract Maximums:

Under no circumstances shall the amount payable by the LPA for this CONTRACT exceed \$ 122,319.10 (Total of all Charges) without the prior written consent of both parties

Fee and Expense Summary

Labor Cost	Direct Cost	SubConsultant	Total
\$112,480.06	\$0.00	\$9,839.04	\$122,319.10

EXHIBIT 4

SAMPLE INVOICE [Labor-Hour/Unit Cost]

LPA's name
LPA's address

DATE:

ATTENTION: LPA, Consultant Services Administrator

INVOICE NO. 0000

PERIOD , 20 THROUGH , 20

PROFESSIONAL SERVICES IN ACCORDANCE WITH

CONTRACT DATED , 20 , AS RELATES TO

PROJECT NO. - - - - - IN COUNTY, HIGHWAY .

CONSULTANT:

CUSTOMER NUMBER 0000000000

FILE NO. 000-000000

	<u>CURRENT</u> <u>PERIOD</u>	<u>PREVIOUS</u> <u>ESTIMATE</u>	<u>TOTAL ALLOWED</u> <u>TO DATE</u>
* LABOR COSTS	\$	\$	\$
** DIRECT COSTS	\$	\$	\$
PROJECT TOTAL	\$	\$	\$

AMOUNT DUE THIS INVOICE: \$

NOTE:

1. * ATTACH SUPPORTING DATA
2. ** DIRECT COSTS (ATTACH SUPPORTING DATA)
3. THE CONSULTANT MAY USE ITS OWN INVOICE FORM SO LONG AS IT HAS BEEN APPROVED. PRIOR TO SUBMISSION BY THE CONSULTANT SAID FORM SHOULD, AT A MINIMUM, CONTAIN THE ABOVE INFORMATION

SUPPORTING DATAProject No. 00-0000-00-000-00
County _____

<u>Employee and Classification</u>	<u>Rate of Pay (in contract)</u>	<u>Current Period Hours</u>	<u>Previous Period Costs</u>	<u>Costs To Date</u>
DIRECT LABOR AND DIRECT COSTS				
John P. Public, Jr Engineer	0.00	0.00	0.00	0.00
John P. Public, Jr Designer	0.00	0.00	0.00	0.00
John P. Public, Jr Engineer	0.00	0.00	0.00	0.00
John P. Public, Jr Technician	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>	<u>0.00</u>
Sub Total		0.00	0.00	0.00
Total Labor			0.00	0.00
Direct Costs			<u>0.00</u>	<u>0.00</u>
Project Total			0.00	0.00

EXHIBIT 5

NOTICE TO CONTRACTORS, FEDERAL-AID CONTRACT COMPLIANCE WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964 COPELAND ANTI-KICKBACK ACT, DAVIS BACON ACT CONTRACT WORK HOURS AND SAFETY STANDARDS ACT CLEAN AIR ACT, ENERGY POLICY AND CONSERVATION ACT DISADVANTAGED BUSINESS ENTERPRISES, WORKER VISIBILITY

During the performance of this CONTRACT, the CONSULTANT, for itself, its assignees and successor-in-interest (hereinafter referred to as the "CONSULTANT") agrees as follows:

1. Compliance with Regulations: The CONSULTANT will comply with the Regulations of the Department of Transportation relative to nondiscrimination in Federally-assisted programs of the Department of Transportation (Title 49, Code of Federal Regulations, Part 21, hereinafter referred to as the "Regulations"), which are herein incorporated by reference and made a part of this CONTRACT.

2. Nondiscrimination: The CONSULTANT, with regard to the work performed by it after award and prior to completion of the contract work, will not discriminate on the grounds of race, religion, color, sex, national origin, age or disability in the selection and retention of subconsultants including procurement of materials and leases of equipment. The CONSULTANT will not participate either directly or indirectly in the discrimination prohibited by Section 21.5 of the Regulations, including employment practices when the CONTRACT covers a program set forth in Appendix B of the Regulations. In addition, the CONSULTANT will not participate either directly or indirectly in discrimination prohibited by 23 C.F.R. 710.405(b).

3. Solicitations for Subcontracts, Including Procurement of Materials and Equipment: In all Solicitations, either by competitive bidding or negotiation made by the CONSULTANT for work to be performed under a subcontract, including procurement of materials or equipment, each potential subconsultant or supplier shall be notified by the CONSULTANT of the CONSULTANT's obligations under this CONTRACT and the Regulations relative to nondiscrimination on the grounds of race, religion, color, sex, national origin, age or disability.

4. Anti-kickback provisions: All contracts and subcontracts for construction or repair shall include a provision for compliance with the Copeland "Anti-Kick Back" Act (18 U.S.C. 874) as supplemented in Department of Labor regulations (29 CFR, Part 3). This Act provides that each contractor or subcontractor shall be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled. The CONSULTANT shall report all suspected or reported violations to the LPA.

5. Davis Bacon Act: When required by the federal grant program legislation, all construction contracts awarded to contractors and subcontractors in excess of \$2,000 shall include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 276a to a-7) and as supplemented by Department of Labor regulations (29 CFR, Part 5). Under this Act, contractors shall be required to pay wages to laborers and mechanics at a rate not less than the minimum wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages specified in a wage determination made by the Secretary of Labor. In addition, contractors shall be required to pay wages not less often than once a week.

6. Contract Work Hours and Safety Standards Act: Where applicable, all contracts awarded by or to contractors and subcontractors in excess of \$100,000 which involve the employment of mechanics or laborers shall include a provision for compliance with sections 103 and 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by Department of Labor Regulations (29 CFR, Part 5). Under section 103 of the Act, each contractor shall be required to compute the wages of every mechanic and

laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than 1 1/2 times the basic rate of pay for all hours worked in excess of 40 hours in the work week. Section 107 of the Act is applicable to construction work and provides that no laborer or mechanic shall be required to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to his health and safety as determined under construction, safety, and health standards promulgated by the Secretary of Labor. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

7. Clean Air Act: Compliance with all applicable standards, orders, or requirements issued under section 306 of the Clean Air Act (42 U.S.C. 1857 (h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), Executive Order 11738, and Environmental Protection Agency regulations (40 CFR Part 15) (Contracts and subcontracts in amounts in excess of \$100,000).

8. Energy Policy and Conservation Act: Mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (Pub. L. 94-163).

9. Disadvantaged Business Enterprises: It is the policy of the Mississippi Department of Transportation to comply with the requirements of 49 C.F.R. 26, to prohibit unlawful discrimination, to meet its goal for DBE participation, to meet that goal whenever possible by race-neutral means, to create a level playing field, and to achieve that amount of DBE participation that would be obtained in a non-discriminatory market place. To meet that objective in any United States Department of Transportation assisted contracts, the LPA and the CONSULTANT shall comply with the "Mississippi Department of Transportation's Disadvantaged Business Enterprise Programs For United States Department Of Transportation Assisted Contracts".

Neither the CONSULTANT (Contractor), nor any sub-recipient or sub-contractor shall discriminate on the bases of race, color, national origin, or sex in the performance of this contract. The CONSULTANT (Contractor) shall carry out applicable requirements of 49 C.F.R. 26 in the award and administration of United States Department of Transportation assisted contracts. Failure of the CONSULTANT (Contractor) to carry out those requirements is a material breach of the contract which may result in the termination of this contract or such other remedies as the Mississippi Department of Transportation deems appropriate.

10. Worker Visibility: All workers within the right-of-way of a Federal-aid highway who are exposed either to traffic (vehicles using the highway for the purposes of travel) or to construction equipment within the work area shall wear high-visibility safety apparel – personal protective safety clothing that is intended to provide conspicuity during both daytime and nighttime usage, and that meets the Performance Class 2 or 3 requirements of the ANSI/ISEA 107–2004 publication entitled "American National Standard for High-Visibility Safety Apparel and Headwear" – for compliance with 23 CFR, Part 634.

EXHIBIT 6

CERTIFICATION REGARDING DEBARMENT, SUSPENSION AND OTHER RESPONSIBILITY MATTERS

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS - Certification in accordance with Section 29.510 Appendix A, C.F.R./Vol. 53, No. 102, page 19210 and 19211:

- (1) The CONSULTANT certifies to the best of its knowledge and belief that it and its principals:
 - (a) are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any federal department or agency;
 - (b) have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (federal, state or local) transaction or contract under a public transaction, violation of federal or state antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
 - (c) are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (federal, state or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification: and
 - (d) have not within a three-year period preceding this application/proposal had one or more public transactions (federal, state or local) terminated for cause or default;
 - (e) has not either directly or indirectly entered into any agreement participated in any collusion; or otherwise taken any action in restraint of free competitive negotiation in connection with this CONTRACT.
- (2) The CONSULTANT further certifies, to the best of his/her knowledge and belief, that:
 - (f) No federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a member of Congress, an officer or employee of Congress, or employee of a member of Congress in connection with the awarding of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
 - (g) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of Congress, or any employee of a member of Congress in connection with this CONTRACT, Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions will be completed and submitted.

The certification contained in (1) and (2) above is a material representation of fact upon which reliance is placed and a pre-requisite imposed by Section 1352, Title 31, U. S. Code prior to entering into this CONTRACT. Failure to comply shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000. The CONSULTANT shall include the language of the certification in all subcontracts exceeding \$100,000 and all sub-contractors shall certify and disclose accordingly.

I hereby certify that I am the duly authorized representative of the CONSULTANT for purposes of making this certification, and that neither I, nor any principal, officer, shareholder or employee of the above firm has:

(a) employed or retained for commission, percentages, brokerage, contingent fee, or other consideration, any firm or person (other than a bona fide employee working solely for me or the above consultant) to solicit or secure this agreement,

(b) agreed, as an express or implied condition for obtaining this CONTRACT, to employ or retain the services of any firm or person in connection with carrying out the agreement, or

(c) paid, or agreed to pay, to any firm, organization or person (other than a bona fide employee working solely for me or the above consultant) any fee, contribution, donation, or consideration of any kind for, or in connection with, procuring or carrying out the agreement; except as herein expressly stated (if any).

I acknowledge that this Agreement may be furnished to the Federal Highway Administration, United States Department of Transportation, in connection with the Agreement involving participation of Federal-Aid Highway funds, and is subject to applicable state and federal laws, both criminal and civil.

SO CERTIFIED this 24th day of June, 2020.

Neel-Schaffer, Inc.

BY:

Michael W. Essary

ATTEST:

Becky Coby

My Commission Expires:



Jennifer R. Nobles
Notary

EXHIBIT 7

CERTIFICATION OF THE LPA

I hereby certify that I am the Chief Administrative Official, duly authorized by the LPA to execute this certification and that the above consulting firm or its representative has not been required, directly or indirectly, as an express or implied condition in connection with obtaining or carrying out this agreement to:

- (a) employ or retain, or agree to employ or retain, firm or person, or
- (b) pay, or agree to pay, to any firm, person organization, any fee, contribution, donation, or consideration of any kind except as here expressly stated (if any).

SO CERTIFIED on the ____ day of _____, 20__.

City of Hattiesburg

Toby Barker, Mayor

EXHIBIT 8

{Intentionally Left Blank}

EXHIBIT 9

PRIME CONSULTANT / CONTRACTOR EEV CERTIFICATION AND AGREEMENT

By executing this Certification and Agreement, the undersigned verifies its compliance with the, "Mississippi Employment Protection Act," Section 71-11-3 of the Mississippi Code of 1972, as amended, and any rules or regulations promulgated by the LPA, Mississippi Transportation Commission [MTC], Department of Employment Security, State Tax Commission, Secretary of State, Department of Human Services in accordance with the Mississippi Administrative Procedures Law (Section 25-43-1 et seq., Mississippi Code of 1972, as amended), stating affirmatively that the individual, firm, or corporation which is contracting with the LPA has registered with and is participating in a federal work authorization program* operated by the United States Department of Homeland Security to electronically verify information of newly hired employees pursuant to the Immigration Reform and Control Act of 1986, Pub.L. 99-603, 100 Stat 3359, as amended. The undersigned agrees to inform the LPA if the undersigned is no longer registered or participating in the program.

The undersigned agrees that, should it employ or contract with any entity(s) in connection with the performance of this CONTRACT, the undersigned will secure from such entity(s) verification of compliance with the Mississippi Employment Protection Act. The undersigned further agrees to maintain records of such compliance and provide a copy of each such verification to the LPA, if requested, for the benefit of the LPA or this CONTRACT.

128686

EEV* Company Identification Number [Required]

The undersigned certifies that the above information is complete, true and correct to the best of my knowledge and belief. The undersigned acknowledges that any violation may be subject to the cancellation of the contract, ineligibility for any state or public contract for up to three (3) years, the loss of any license, permit, certificate or other document granted by any agency, department or government entity for the right to do business in Mississippi for up to one (1) year, or both, any and all additional costs incurred because of the contract cancellation or the loss of any license or permit, and may be subject to additional felony prosecution for knowingly or recklessly accepting employment for compensation from an unauthorized alien as defined by 8 U.S.C §1324a(h)(3), said action punishable by imprisonment for not less than one (1) year nor more than five (5) years, a fine of not less than One Thousand Dollars (\$1,000.00) nor more than Ten Thousand Dollars (\$10,000.00), or both, in addition to such prosecution and penalties as provided by Federal law.

BY:


Authorized Officer or Agent

06/24/2020

Date

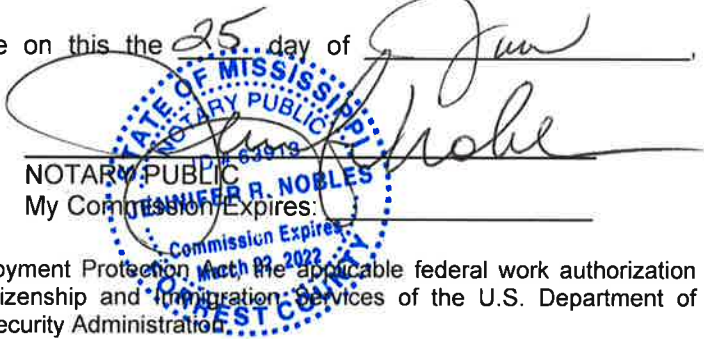
Michael W. Essary

Printed Name of Authorized Officer or Agent

Vice President

Title of Authorized Officer or Agent of Contractor / Consultant

SWORN TO AND SUBSCRIBED before me on this the 25 day of June, 2020.


NOTARY PUBLIC
My Commission Expires:

* As of the effective date of the Mississippi Employment Protection Act, the applicable federal work authorization program is E-Verify™ operated by the U. S. Citizenship and Immigration Services of the U.S. Department of Homeland Security, in conjunction with the Social Security Administration.

{Insert the Cost Fee Schedule for CE and I Projects from the gomdot.com web site here}

FEE PROPOSAL

CONSTRUCTION ENGINEERING & INSPECTION

**Hardy Street Roundabout Project
At 2nd Avenue / Green Street / Adeline Street**

**Prepared for:
*Mississippi Department of Transportation***

**Project Number:
STP-0210-00(037)LPA/108081-701000
Hattiesburg, MS**

Prepared by: Neel-Schaffer, Inc.

Date Submitted:
Date Revised:

Cost Summary

Hardy Street Roundabout Project At 2nd Avenue / Green Street / Adeline Street

Construction Engineering & Inspection Services

Neel-Schaffer, Inc.

Labor Costs

CE&I Services	\$	112,480.06
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Direct Costs

CE&I Services	\$	-
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Subtotal	Neel-Schaffer, Inc.
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\$	112,480.06
----	------------

SoilTech

Labor Costs

CE&I Services	\$	7,132.94
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Direct Costs

CE&I Services	\$	2,706.10
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Subtotal SoilTech Costs

\$	9,839.04
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PROJECT TOTAL COSTS

\$	122,319.10
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Back-up must be provided for all SubConsultants

If additional sheets are required, Consultant will be responsible for accuracy

BILLING RATE TABLE

Neel-Schaffer, Inc.

Construction Engineering & Inspection Services

Home Overhead Rate ²	151.89% %	151.75% OH + 0.14% FCCM
Field Overhead Rate ²	115.35% %	115.31% OH + 0.04% FCCM
Profit	12.00% %	

REGULAR BILLING TIME

Classification	Raw Wage Rate	Audited OH Rate ³	Profit	Regular Billing Rate
Project Engineer	\$ 45.26	\$ 68.75	\$ 13.68	\$ 127.69
Engineer Intern	\$ 28.64	\$ 43.50	\$ 8.66	\$ 80.80
Engineer Technician	\$ 34.34	\$ 52.16	\$ 10.38	\$ 96.88
Inspector	\$ 25.00	\$ 28.84	\$ 6.46	\$ 60.30
Administrative Assistant	\$ 26.70	\$ 40.55	\$ 8.07	\$ 75.33

OVERTIME BILLING RATES ***

Classification	Raw Wage Rate	Audited OH Rate ³	Profit	Regular Billing Rate
Inspector	\$ 25.00	\$ 28.84	\$ 6.46	\$ 72.80
Inspector II		\$ -	\$ -	\$ -
Additional		\$ -	\$ -	\$ -
Additional		\$ -	\$ -	\$ -
Additional		\$ -	\$ -	\$ -

² Approved by MDOT

³ Formula's may need to be adjusted if consultant has field overhead rate approved.

*** Overtime may only be allowable for those employees per Federal requirements.

*** Overtime is calculated by Raw Wage only * 1.5. Overhead and profit shall not be increased by 1.5

HOUR DISTRIBUTION / LABOR COSTS

Neel-Schaffer, Inc.

Construction Engineering & Inspection Services

STP-0210-00(037)LPA/108081-701000

REGULAR HOURS ONLY

POSITION TITLE	Hours Per Month												On Job Months	Subtotal Hours	Hourly Rate	Extension	
	2020						2021										
	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June				
Project Engineer	20	12	40	40	40	40	40	40	40	40	40	20	12	0	424	\$ 127.69	\$ 54,140.56
Engineer Intern	4	4	8	8	8	8	8	8	8	8	8	4	4	0	88	\$ 80.80	\$ 7,110.40
Engineer Technician			12	12	12	12	12	12	12	12	8			0	104	\$ 96.88	\$ 10,075.52
Inspector			126	120	96	66	40	48	56	66	32			0	650	\$ 60.30	\$ 39,195.00
Administrative Assistant	2	2	2	2	2	2	2	2	2	2	2	2	2	0	26	\$ 75.33	\$ 1,958.58

STP-0210-00(037)LPA/108081-701000

OVERTIME HOURS ONLY

POSITION TITLE	Overtime Hours Per Month												On Job Months	Subtotal Hours	Hourly Rate	Extension
	2020						2021									
	June	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June			
Inspector														0	0	\$ 72.80 \$ -
Inspector II														0	0	\$ - \$ -
Additional														0	0	\$ - \$ -
Additional														0	0	\$ - \$ -
Additional														0	0	\$ - \$ -

CONTRACTOR'S Project Completion Time: 100 Working Days

Construction Cost Estimate: \$1,164,500

DIRECT COSTS****

Neel-Schaffer, Inc.

Construction Engineering & Inspection Services

POSITION TITLE	LODGING	MEALS	TRAVEL	PRINTING	{OTHER}	MONTH TOTAL
Project Engineer						\$ -
Engineer Intern						\$ -
Engineer Technician						\$ -
Inspector						\$ -
Administrative Assistant						\$ -
TOTAL						\$ -

**** Provide detail for breakdown of Direct Costs

Mileage at \$0.575 per mile

ESTIMATED MAXIMUM FEE FOR TESTING SERVICES

Project Name Hardy Street Roundabout Project City of Hattiesburg, MS

MDOT Project No. STP-0210-00(037)LPA/108081-701000
Testing Firm Name SoilTech Consultants, Inc.

MDOT District Material Engineer Approval Date for the S&T Report 3/12/2020

Overhead Rate 195.23%
Profit 12.00%

Classification	Raw Wage Rate	Audited OH Rate	Profit	Regular Billing Rate
Project Engineer M. Volk	\$ 65.72	\$ 128.31	\$ 23.28	\$ 217.31
Project Manager L. Reese	\$ 38.41	\$ 74.99	\$ 13.61	\$ 127.01
Senior Field Techn A. Woodruff	\$ 20.76	\$ 40.53	\$ 7.35	\$ 68.64
Field Technician T. Whitaker	\$ 14.74	\$ 28.78	\$ 5.22	\$ 48.74
Admin. Assistant R. Skipper	\$ 15.37	\$ 30.01	\$ 5.45	\$ 50.82

LABOR COSTS	Hours	Regular Billing Rate	Total
Project Engineer	4	\$ 217.31	\$ 869.24
Project Manager	8	\$ 127.01	\$ 1,016.08
Senior Field Technician	70	\$ 68.64	\$ 4,804.80
Field Technician	7	\$ 48.74	\$ 341.18
Admin. Assistant	2	\$ 50.82	\$ 101.64
SUBTOTAL - LABOR COSTS	91		\$ 7,132.94

FIELD AND LABORATORY	Quantity	Unit	Unit Cost	Total Cost
pH	2	Each	\$ 30.00	\$ 60.00
Atterberg Limits T 89 and T 90	4	Each	\$ 50.00	\$ 200.00
No. 200 Wash	3	Each	\$ 38.00	\$ 114.00
Grain Size Analysis - Soils/Fine Aggregate	3	Each	\$ 65.00	\$ 195.00
Grain Size Analysis - Coarse Aggregate	2	Each	\$ 85.00	\$ 170.00
Concrete Compression Test ASTM C39 (3 Cylinders per set)	12	Each	\$ 18.00	\$ 216.00
Asphalt Density (from cut core)	5	Each	\$ 25.00	\$ 125.00

SUB-TOTAL - FIELD AND LABORATORY \$ 1,080.00

EXPENSE ITEMS	Quantity	Rate	Total Cost
Automobile travel (14 trips at 202 miles R/T from ST Ridgeland to site)	2828	x \$ 0.575	\$ 1,626.10

SUB-TOTAL - EXPENSE ITEMS \$ 2,706.10**TOTAL PROPOSED FEE** **\$ 9,839.04****Senior Field Technician Trip and Hourly Summary**

Description	Trips	Hours/Trip	Hours
Soil Samples Pickup	1	4	4
Concrete and Asphalt Sample Pickup (for MDOT Lab)	2	5	10
Asphalt Plant Oversight & Core Pick Up	3	8	24
Concrete Testing	4	6	24
Concrete Cylinder Pickup	4	3.75	15
Totals	14		77

NOTES:

The above quantities are based on the preliminary drawings and LPA Sampling and Testing Proposal dated 2/28/20.

One 5-hour trip was estimated to pick up soil samples required for the project.

Two 5-hour trips were estimated to pick samples of concrete and asphalt materials for delivery to MDOT Central lab for QC testing.

Four 6-hours trips were estimated for concrete testing. Concrete will be testing at a cumulative quantity of 1 test per 100 cubic yards.

We estimate four trips will be required for cylinder pickups. If concrete is placed back to back days, the number of trips will be reduced accordingly.

We estimate that asphalt paving will be completed in three days and that three 8-hour trips will be required for asphalt plant oversight and core pick up.

We estimate that the project manager and project engineer will spend 8 hours and 4 hours, respectively for project management and reporting.

The administrative assistant will spend approximately 2 hours inputting data.



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve agreement with Powell Construction Services, Inc. for repair and maintenance of traffic signals for the period June 30, 2021 through June 30, 2022 and authorize the Mayor to execute in duplicate.
File Number: 2021-819
Minute Book #

Summary

Approve agreement with Powell Construction Services, Inc. for repair and maintenance of traffic signals for the period June 30, 2021 through June 30, 2022 and authorize the Mayor to execute in duplicate.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.



Powell Construction Services, Inc.

- ***Helping the State of MS to Direct and Light our future***

Specialize Services

MS State License #18085-SC

Traffic Signals, Flashing & Radar warning signs, Lighted Pedestrian cross walk, and so much more.
15461 Northrup Ceuevas Rd Gulfport, Ms. 39503 Fax:888-611-8858 Cell: 228-217-8041(Gene Powell) E-mail:
traffilight2001@aol.com

City of Hattiesburg
C/O City Engineer Office
125 Walnut ST
Hattiesburg, Ms. 39401

RE: Labor, Equipment and Material Rate Agreement from 6/30/2021 through 6/30/2022

Rate Schedule Time charged:

Regular time starts from 0700hrs to 1530hrs Monday thru Friday. Time and a half apply to weekends and Monday thru Friday from 1531hrs to 0659hrs that morning. Double time rates apply to any MDOT legal holidays and for any type of emergency call outs to where a PCS Employee has to be pulled from his regular job. 4hr minimum charge is applied for all call outs completed in less than 4 hours.

Rate Schedule:

Traffic Technician / Electrician:	\$68.00 per hr.
Labor:	\$31.00 per hr.
Service Truck:	\$18.00 per hr.
Bucket Truck:	\$35.00 per hr.
Digger/Derrick Truck:	\$50.00 per hr.

All other hourly rates not listed above will be charged as per attach TE&M invoice work sheets. Unless requested at the time of a call out PCS technician will bring a standard size service truck. Once on site and issue has been determined to be aerial PCS will notify the City Maintenance department and request a City Bucket truck with operator to come out on site and help with the repair work. If it is determined that a PCS employee needs to go up in the air for trouble shooting or repair the City of Hattiesburg gives PCS permission for PCS to access and control the equipment during that time of repairs.

Authorize agent for COH

Print Name

Date

Authorize agent for PCS Inc

Print Name

Date

TEM Rate Sheet Agreement

It is agreed between PCS Inc (Powell Construction Services, Inc) and the COH (City of Hattiesburg) for the following

City of Hattiesburg agrees to:

- 1- The City of Hattiesburg will notify PCS Inc for maintenance issues with City owe Traffic Signals. This also includes, School Flashers, Radar Control Speed Signs, Traffic Counters, Lighted Pedestrian Cross Walks and Navigational Lighting
- 2- COH will provide all materials needed to make repairs.
- 3- If requested by PCS Inc the COH will provide Police officers with vehicle to help provide Traffic Control if needed.
- 4- COH will provide a City PO (Purchase Order) by e-mail to trafficlight2001@aol.com

Powell Construction agrees to:

- 1- PCS Inc agrees to respond within 3 days from time of call for nonemergency work deemed as nonfunctional detection issues, burnt out Signal bulbs and any item that does not prohibit the traffic signal from function correctly.
- 2- PCS Inc agrees to respond within 12hrs from time of call for emergency work deemed as traffic signals in non-program flash mode, cabinets or poles hit by vehicles, Power outage not related to Power source and any items that prohibits the flow of traffic.

The above agreement well stay effect from June 30th, 2021 to June 29th, 2022

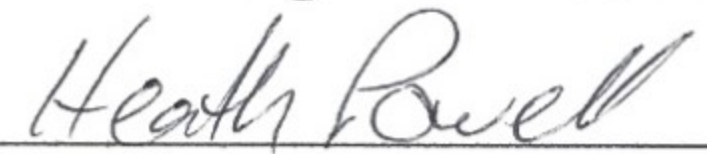
Authorize agent for COH

Print Name

Date



Authorize agent for PCS Inc



Print Name



Date



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve Exclusive Use Agreement between the City, Lamar Park Water and Sewage Association, Inc. and Garner Nichols Properties, LLC for the acceptance and treatment of sewage from the Garner Nichols dental office located at 4127 Lincoln Road; Authorize Mayor to execute in triplicate.
File Number: 2021-835
Minute Book #

Summary

Approve Exclusive Use Agreement between the City, Lamar Park Water and Sewage Association, Inc. and Garner Nichols Properties, LLC for the acceptance and treatment of sewage from the Garner Nichols dental office located at 4127 Lincoln Road; Authorize Mayor to execute in triplicate.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

Prepared By and Return to:
Jeffrey L. Hall (MSB #9363)
Attorney at Law
P. O. Drawer 18307
Hattiesburg, MS 39404-8307
Telephone: 601-336-3376

**INDEXING INSTRUCTIONS: SE 1/4 of SW ¼ and the NE 1/4 of NW
1/4 Section 24, Township 4 North,
Range 14 West, Lamar County,
Mississippi**

STATE OF MISSISSIPPI

COUNTY OF LAMAR

EXCLUSIVE USE AGREEMENT

THIS AGREEMENT made on the ____ day of May, A.D., 2021, by and between Lamar Park Water and Sewage Association, Inc. ("LPW"), having an address of 2137 Oak Grove Road, Hattiesburg, Mississippi 39402 sometimes referred to herein as "Licensor", and Garner Nichols Properties, LLC, a Mississippi limited liability company having an address of 4358 Lincoln Road, Suite 10, Hattiesburg, Mississippi 39402 ("GNP"), also sometimes referred to herein as "Licensee".

WHEREAS, LPW is a non-profit corporation that owns a Certificate of Public Convenience and Necessity ("Certificate") issued by the State of Mississippi and, pursuant to said Certificate, holds exclusive rights to provide sewer services within its Certificated Area; and

WHEREAS GNP owns property located at 4127 Lincoln Road, Hattiesburg, Lamar County, Mississippi (the "Property"); and

WHEREAS the Property may be more particularly described as follows:

See Exhibit "A" attached hereto

WHEREAS GNP desires to use the Property as a Dental Office; and

WHEREAS the Property is located within the municipal limits of the City of Hattiesburg; a portion of said Property lies within the LPW Certificated Area; and

WHEREAS GNP requests LPW provide a conduit to transfer sewage from the Dental Office lying situate on the Property to the Hattiesburg Sewer System; and

WHEREAS LPW is willing to grant GNP a license to utilize a portion of the LPW system to provide GNP a connection to the Hattiesburg Sewer System but only in accordance and pursuant to terms in this Agreement, and

NOW, FOR TEN AND NO/DOLLARS (\$10.00) and other good and valuable consideration of the mutual covenants contained in this Agreement, the receipt and sufficiency of which is hereby acknowledged, the parties agree as follows:

1. Grant of License

LPW grants to GNP a license for the use of a portion the LPW sewer system lying situate within its Certificated Area, to provide a sewer connection and conduit from the Dental Office located on the Property to the Hattiesburg Sewer System, subject to the terms and conditions of this Agreement. GNP covenants that it has obtained approval of its Utility Plan from the City of Hattiesburg. A true and correct copy of the approved Utility Plan approved is attached hereto as Exhibit B.

2. Described Purpose and Limitation, Costs of Construction

The sole purpose of this License is to provide a connection from the Dental Office building lying situate on the Property to the City of Hattiesburg Sewer System. Any future construction or development on the Property and any other parcel adjacent to the Property will be subject to different Agreement, Fees, s and/or connection charges. LPW, in its sole discretion, will determine the grant of any further connection, with or without the additional meters, within its Certificated Area. All costs of construction and any fees incurred to connect to the Hattiesburg Sewer System shall be the sole responsibility of GNP. GNP understands and acknowledges that the Dental Office is the ONLY connection to the LPW system.

3. Periodic Payments

GNP shall pay a non-refundable Connection Fee of \$5,000.00 for the use of its system within the Certificated Area connection to connect to the

Hattiesburg Sewer System. Said Connection Fee shall be due and payable immediately upon the execution of this Agreement. GNP shall also pay to LPW an annual License Fee of \$500.00. The first License Fee shall be paid upon the execution of this Agreement. Subsequent License Fee payments shall be made on the 1st day of June, 2022 and on the 1st day of June each year thereafter during the continuation of this Agreement.

4. Termination

Either party may terminate this Agreement at any time, specifying the date of termination, such notice to be given not less than 30 days prior to the date specified in such notice for the date of termination.

5. Apportionment of Payments on Termination

On any termination of this Agreement, LPW shall apportion, on a 30-day basis, the annual fee paid in advance from and including the first day of the month during which the Agreement is terminated to and including the day on which the Agreement is terminated, and LPW shall refund to GNP the unearned portion of such fee.

6. GNP to Obey Laws

GNP agrees that he will utilize the LPW system in accordance with the laws of Mississippi.

7. Release and Indemnification of LPW

GNP does hereby release LPW, its employees, agents, heirs, successors, and assigns (collectively "Releasees") from all liability of Releasees for any physical injury, death, or damage to Property that results, directly or indirectly from the use of Property in conducting its business. This release and indemnification agreement includes any and all claims, demands, debts, contracts, expenses, causes of action, lawsuits, damages and liabilities, of every kind and nature, whether known or unknown, in law or equity, that GNP had or may have, arising from or in any way related to use of the License and/or Property by GNP.

8. License not Assignable

The license and use granted by this Agreement is personal to GNP and is not assignable without the express written consent and approval of LPW.

9. No Waiver

The failure of either party to this Agreement to insist upon the performance of any of the terms and conditions of this Agreement, or the waiver of any breach of any of the terms and conditions of this Agreement, shall not be construed as subsequently waiving any such terms and conditions,

but the same shall continue and remain in full force and effect as if no such forbearance or waiver had occurred.

10. Governing Law

This Agreement shall be governed by, construed, and enforced in accordance with the laws of the State of Mississippi.

11. Mandatory Arbitration

Notwithstanding the foregoing, and anything herein to the contrary, any dispute under this Agreement shall be required to be resolved by binding arbitration of the parties hereto. If the parties cannot agree on an arbitrator, each party shall select one arbitrator and both arbitrators shall then select a third. The third arbitrator so selected shall arbitrate said dispute. The arbitration shall be governed by the rules of the American Arbitration Association then in force and effect.

12. Entire Agreement

This Agreement shall constitute the entire agreement between the parties and any prior understanding or representation of any kind preceding the date of this Agreement shall not be binding upon either party except to the extent incorporated in this Agreement.

13. Modification of Agreement

Any modification of this Agreement or additional obligation assumed by either party in connection with this Agreement shall be binding only if placed in writing and signed by each party or an authorized representative of each party.

14. Assignment of GNP Rights

The rights of each party under this Agreement are personal to that party. GNP may not assign or transfer its rights to any other person, firm, corporation, or other entity without the prior, express, and written consent of LPW.

15. City of Hattiesburg Approval

The City of Hattiesburg hereby acknowledges its consent and approval of this Agreement by the execution of this Agreement.

16. Counterparts

This Agreement may be executed in any number of counterparts, each of which shall be deemed to be an original, but all of which together shall constitute but one and the same instrument.

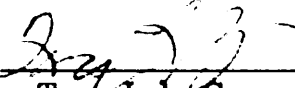
In this Agreement, any reference to a party includes that party's heirs, executors, administrators, successors and assigns, singular includes plural and masculine includes feminine.

WITNESS our signatures as of the day and date first above stated.

LAMAR PARK WATER & SEWAGE
ASSOCIATION, INC., Licensor

By: _____
Raymond Scott, President

GARNER NICHOLS PROPERTIES, LLC,
Licensee

By:  _____
Terry Lake Garner, DMJ

Approved:

CITY OF HATTIESBURG, MISSISSIPPI

By: _____

[INTENTIONALLY LEFT BLANK]

ACKNOWLEDGMENTS

STATE OF _____

COUNTY OF _____

Personally appeared before me, the undersigned authority in and for the said county and state, on this ____ day of _____, 20__, within my jurisdiction, the within named Raymond Scott, who acknowledged that he is President of Lamar Park Water and Sewage Association, Inc, a Mississippi corporation, and that for and on behalf of the said corporation, and as its act and deed he executed the above and foregoing instrument, after first having been duly authorized by said corporation so to do.

(NOTARY PUBLIC)

STATE OF Mississippi

COUNTY OF Lamar

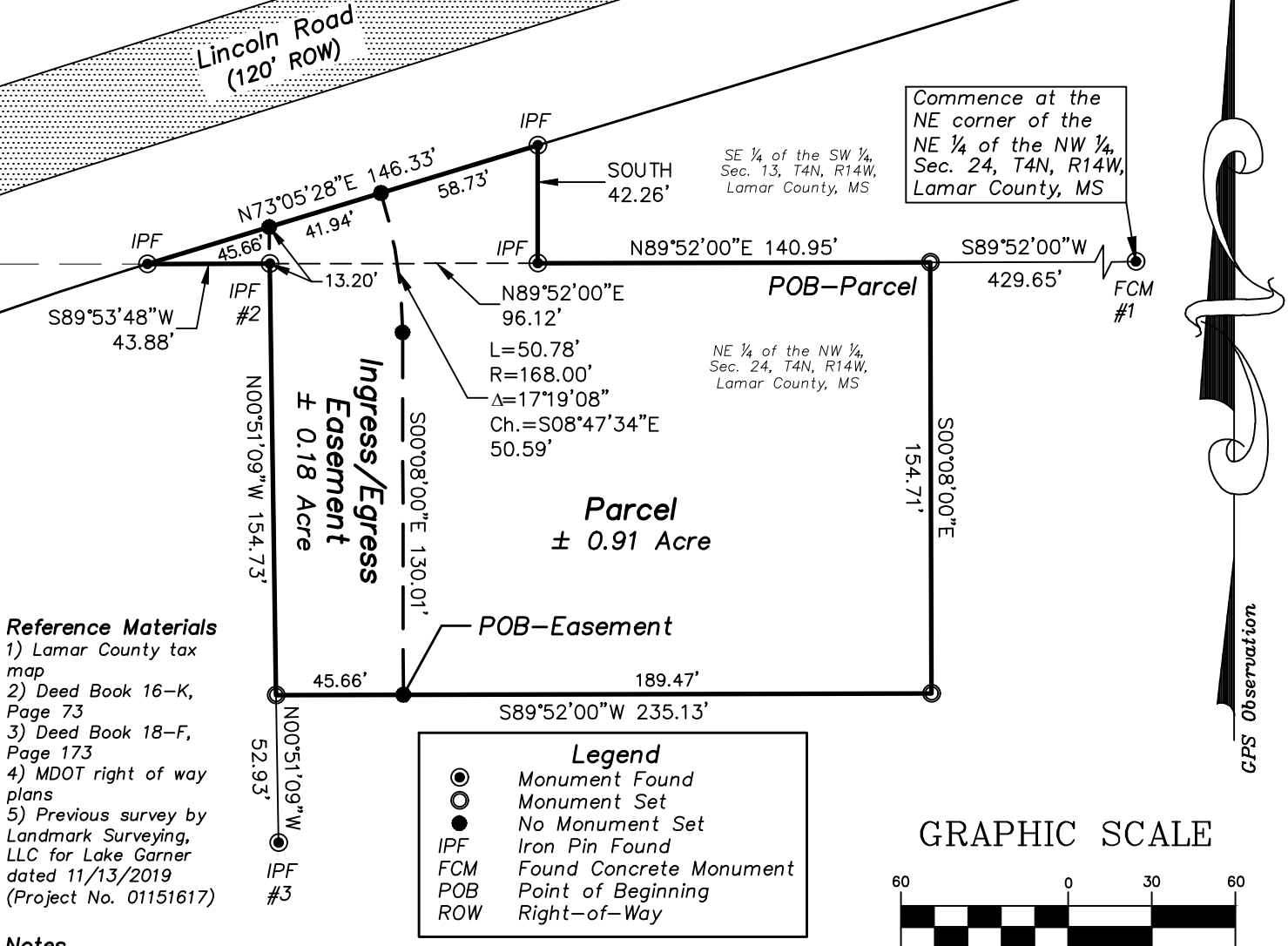
Personally appeared before me, the undersigned authority in and for the said county and state, on this 26 day of May, 2021, within my jurisdiction, the within named Terry Lake Garner, who acknowledged that he is member of Garner Nichols Properties, LLC, a Mississippi limited liability company, and that for and on behalf of the said limited liability company, and as its act and deed he executed the above and foregoing instrument, after first having been duly authorized by said limited liability company so to do.



Patty Toups
(NOTARY PUBLIC)

EXHIBIT "A"
Legal Description

Exhibit A



Reference Materials

1) Lamar County tax map
2) Deed Book 16-K, Page 73
3) Deed Book 18-F, Page 173
4) MDOT right of way plans
5) Previous survey by Landmark Surveying, LLC for Lake Garner dated 11/13/2019 (Project No. 01151617)

- Notes
- 1) No record search of easements was conducted.
2) Survey performed without the benefit of a title opinion.
3) 1/2"x18" rebar with cap set at all property corners, unless noted otherwise.
4) Orientation is based upon GPS Observation (Geodetic North).
5) Record call from #1 to #2 is S89°35'31"W for 663.51 feet.
6) Record call from #3 to #2 is N00°19'05"W for 207.97 feet.

Legal Descriptions

Parcel

A parcel of land located in the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, Lamar County, Mississippi, and being more particularly described as follows:

Commence at a concrete monument found marking the NE corner of the said NE 1/4 of the NW 1/4 of said Section 24; thence run South 89 degrees 52 minutes 00 seconds West along the north line of the said NE 1/4 of the NW 1/4 for 429.65 feet to an iron pin set, said point being the Point of Beginning; thence run South 00 degrees 08 minutes 00 seconds East for 154.71 feet to an iron pin set; thence run South 89 degrees 52 minutes 00 seconds West for 235.13 feet to an iron pin set; thence run North 00 degrees 51 minutes 09 seconds West for 154.73 feet to an iron pin found on the south line of the said SE 1/4 of the SW 1/4 of said Section 13; thence run South 89 degrees 53 minutes 48 seconds West along said south line for 43.88 feet to an iron pin found on the southern right-of-way line of Lincoln Road; thence run North 73 degrees 05 minutes 28 seconds East along said southern right-of-way line for 146.33 feet to an iron pin found; thence run South for 42.26 feet to an iron pin found on the said north line of the said NE 1/4 of the NW 1/4 of said Section 24; thence run North 89 degrees 52 minutes 00 seconds East along said north line for 140.95 feet back to the Point of Beginning. Said parcel contains 0.91 acre, more or less. Bearings in this description are based on a GPS observation of geodetic North.

Ingress/Egress Easement

An ingress/egress easement located in the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, Lamar County, Mississippi, and being more particularly described as follows:

Commence at a concrete monument found marking the NE corner of the said NE 1/4 of the NW 1/4 of said Section 24; thence run South 89 degrees 52 minutes 00 seconds West along the north line of the said NE 1/4 of the NW 1/4 for 429.65 feet to an iron pin set; thence run South 00 degrees 08 minutes 00 seconds East for 154.71 feet to an iron pin set; thence run South 89 degrees 52 minutes 00 seconds West for 189.47 feet to the Point of Beginning of said easement; thence continue South 89 degrees 52 minutes 00 seconds West for 45.66 feet to an iron pin set; thence run North 00 degrees 51 minutes 09 seconds West for 167.93 feet to the southern right-of-way line of Lincoln Road; thence run North 73 degrees 05 minutes 28 seconds East along said southern right-of-way line for 41.94 feet; thence run along a curve to the right for 50.78 feet, said curve having a radius of 168.00 feet, an included angle of 17 degrees 19 minutes 08 seconds, and a chord of South 08 degrees 47 minutes 34 seconds East for 50.59 feet; thence run South 00 degrees 08 minutes 00 seconds East for 130.01 feet back to the Point of Beginning. Said easement contains 0.18 acre, more or less. Bearings in this description are based on a GPS observation of geodetic North.

LANDMARK SURVEYING, LLC

P.O. Box 580 • Magee, Mississippi 39111
Phone: (601) 849-1796 Fax: (601) 849-1797

SCALE: 1" = 60'

DATE OF SURVEY: 07/2020

CLASS OF SURVEY: B

SURVEY FOR:

Lake Garner

SE 1/4 OF SW 1/4 OF SECTION 13 & NE 1/4 OF NW 1/4 OF SECTION 24, T 4 N, R 14 W, LAMAR COUNTY, MISSISSIPPI

BEARINGS DETERMINED BY: GPS Observation

SURVEYED BY: CM

DRAWN BY: MB

MARC A. BROOKS
LICENSED PROFESSIONAL
LAND SURVEYOR
No. 2972
STATE OF MISSISSIPPI

Digital Copy

FILED '19 DEC 5
WAYNE SMITH CHC AM9:14

THIS INSTRUMENT PREPARED BY:

Richard & Thomas, PLLC
132 Westover Drive
Hattiesburg, MS 39402
(601) 602-2457

Indexing Instructions: The property described in this instrument is situated in the SE¼ of SW¼, Section 13, Township 4 North, Range 14 West, Lamar County, Mississippi. Please index accordingly in the sectional index.

RETURN TO:

Richard & Thomas, PLLC
132 Westover Drive
Hattiesburg, MS 39402
(601) 602-2457

STATE OF MISSISSIPPI

COUNTY OF LAMAR

QUITCLAIM DEED

FOR AND IN CONSIDERATION of the sum of Ten Dollars (10.00), cash in hand paid, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, the undersigned GRANTOR

LINCOLN ROAD INVESTMENTS, LLC,
a Mississippi limited liability company
P.O. Box 1470
Hattiesburg, MS 39403-1470
Phone: (601) 579-4466

does hereby grant, bargain, sell, convey and quitclaim unto GRANTEE

GARNER PROPERTY & DEVELOPMENT, LLC,
a Mississippi limited liability company
98 Waterford Drive
Hattiesburg, MS 39402
Phone: (601) 520-1993

the following described real property, lying and being situate in Lamar County, Mississippi, described as follows, to-wit:

A parcel of land being located in the SE 1/4 of the SW 1/4 of Section 13, Township 4 North, Range 14 West, Lamar County, Mississippi, having bearings based upon Geodetic North and being more particularly described as follows:

Commence at a found concrete monument marking the SE corner of the said SE ¼ of the SW ¼; thence run South 89 degrees 52 minutes 00 seconds West along the South line of the said SE ¼ of the SW ¼ for 226.43 feet to an iron pin found; thence continue South 89 degrees 52 minutes 00 seconds West along said South line for 344.17 feet to an iron pin set, said point also being the

730

Point of Beginning; thence South 89 degrees 52 minutes 00 seconds West along said South line for 96.12 feet to an iron pin found; thence South 89 degrees 53 minutes 48 seconds West along said South line for 43.88 feet to an iron pin found on the Southern right-of-way line of Lincoln Road; thence North 73 degrees 05 minutes 28 seconds East along said Southern right-of-way line for 146.33 feet to an iron pin set; thence South for 42.26 feet back to the Point of Beginning; said parcel contains 0.07 acres, more or less.

The above conveyance is made subject to prior reservations of oil, gas and other minerals by former owners.

The above conveyance is made subject to any and all valid and outstanding oil, gas and mineral leases, exceptions, reservations and conveyances.

The above conveyance is made subject to any and all covenants, restrictions or conditions of record or in use of the subject property, and any and all rights of way and easements for public roads and public utilities as presently laid out, constructed or in use.

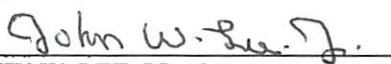
The above conveyance is made subject to those subdivision regulations of record in Minute Book 59 at Page 202, Minute Book 82 at Page 282, Minute Book 112 at Pages 144 and 290, and Minute Book 148 at Page 706 and Ordinances Book 1 at Page 507 and to those site plan regulations of record in Minute Book 142 at Page 173 and Minute Book 148 at Page 727 and Ordinances Book 1 at Page 528.

The above conveyance is made subject to the Use Restrictions and Covenants attached as Exhibit "A" hereto.

WITNESS THE SIGNATURE of said company by its manager, after being duly authorized by said company so to sign, execute and deliver the same, on this, the 30 day of November, A.D., 2019.

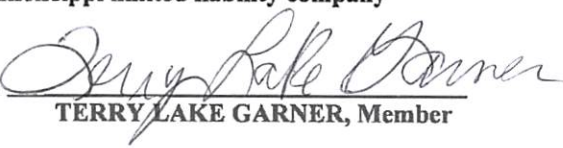
LINCOLN ROAD INVESTMENTS, LLC,
a Mississippi limited liability company

By: 
DAVID C. LEE, Member

By: 
JOHN W. LEE, Member

AGREED TO AND ACCEPTED BY:

GARNER PROPERTY & DEVELOPMENT, LLC,
a Mississippi limited liability company

By: 
TERRY LAKE GARNER, Member

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STATE OF MISSISSIPPI

COUNTY OF LAMAR

Personally appeared before me, the undersigned authority in and for the said county and state, on this 30 day of November, A.D., 2019, within my jurisdiction, the within named DAVID C. LEE and JOHN W. LEE, who acknowledged that they are Member so Lincoln Road Investments, LLC , a Mississippi limited liability company, and that for and on behalf of said company, and as its act and deed, they executed the above and foregoing instrument, after first having been duly authorized by said company so to do.

Patty Toups
NOTARY PUBLIC

My Commission Expires:



STATE OF MISSISSIPPI

COUNTY OF LAMAR

Personally appeared before me, the undersigned authority in and for the said county and state, on this 30 day of November, A.D., 2019, within my jurisdiction, the within named TERRY LAKE GARNER, who acknowledged that he is Member so Garner Property & Development, LLC , a Mississippi limited liability company, and that for and on behalf of said company, and as its act and deed, he executed the above and foregoing instrument, after first having been duly authorized by said company so to do.

Patty Toups
NOTARY PUBLIC

My Commission Expires:



CERTIFICATE OF FILING AND RECORDING

STATE OF MISSISSIPPI
LAMAR COUNTY

Wayne Smith, Chancery Clerk

LD Book 27-W Page 729-732

Indexed ✓ Recorded ✓ Abstracted ✓

Sharon Herrin D.C.

Legal Description

A parcel of land located in the SE 1/4 of the SW 1/4 of Section 13, Township 4 North, Range 14 West, Lamar County, Mississippi and being more particularly described as follows:

Commence at a Found concrete monument marking the SE Corner of the said SE 1/4 of the SW 1/4; thence South 89 degrees 52 minutes 00 seconds West along the south line of the said SE 1/4 of the SW 1/4 for 226.43 feet to an iron pin found; thence continue South 89 degrees 52 minutes 00 seconds West along said south line for 344.17 feet to an iron pin set, said point also being the Point of Beginning; thence continue South 89 degrees 52 minutes 00 seconds West along said south line for 96.12 feet to an iron pin found; thence South 89 degrees 53 minutes 48 seconds West along said south line for 43.88 feet to an iron pin found on the southern right of way line of Lincoln Road; thence North 73 degrees 05 minutes 28 seconds East along said southern right of way line for 146.33 feet to an iron pin set; thence South for 42.26 feet back to the Point of Beginning. Said parcel contains 0.07 acres, more or less. Bearings in above description are based upon GPS Observation of Geodetic North.

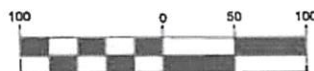
Notes

- 1) No record search of easements was conducted.
- 2) Survey performed without the benefit of a title opinion.
- 3) 1/2"X18" rebar with cap set at all property corners, unless noted otherwise.
- 4) Orientation is based upon GPS Observation (Geodetic North).
- 5) Record call from #1 to #2 is S89°35'27"W for 663.53'.

Reference Materials

- 1) Lamar County Tax Map
- 2) GLO Township Plat
- 3) Deed Book 16K, Page 73
- 4) Deed Book 18F, Page 173
- 5) MDOT right of way plans
- 6) Survey by Landmark Surveying, LLC for SNH Medical Office Properties Trust dated 02/04/2013
- 7) Survey by Waits Engineering Consultants, LLC dated 06/30/2003
- 8) Survey by Shows, Dearman and Waits, Inc. for Lincoln Road Investments, LLC dated 01/04/2013

GRAPHIC SCALE



(IN FEET)
1 inch = 100 ft.

NE Corner of the
SE 1/4 of the SW 1/4,
Sec. 13, T4N, R14W,
Lamar County, MS

Legend

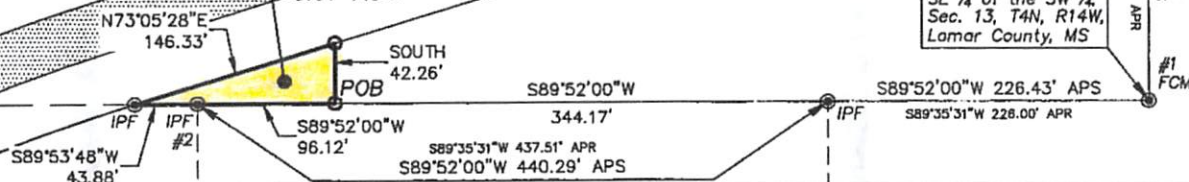
- Monument Found
- Monument Set
- IPF Iron Pin Found
- FCM Found Concrete Monument
- CTP Crimp Top Pipe Found
- POB Point of Beginning
- ROW Right of Way
- APR As Per Record
- APS As Per Survey

Lincoln Road
120' ROW

Parcel
0.07 AC±

Commence at the
SE Corner of the
SE 1/4 of the SW 1/4,
Sec. 13, T4N, R14W,
Lamar County, MS

GPS Observation





Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve Change Order No. 1 with Rowell Roofing, Inc. for the Hattiesburg American ReRoof Phase II project and authorize Mayor to execute in triplicate.
File Number: 2021-826
Minute Book #

Summary

Approve Change Order No. 1 with Rowell Roofing, Inc. for the Hattiesburg American ReRoof Phase II project and authorize Mayor to execute in triplicate.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

June 3, 2021

Re: Hattiesburg American ReRoof Phase II
Hattiesburg, Mississippi
CN 20-3788

City of Hattiesburg
P.O. Box 1898
Hattiesburg, Mississippi 39403

Attn: Lamar Rutland

Dear Mr. Rutland:

Enclosed please find three copies of AIA Document G701 Change Order Number One on the above referenced project. After your review, please executed all three copies and keep one copy for your files. Return the remaining copies to this office for our files and distribution to the contractor.

If you have any questions, please feel free to contact the office.

Respectfully,



Lisa Williams
Administrative Assistant

AIA® Document G701™ – 2017

Change Order

PROJECT: *(Name and address)*
Hattiesburg American ReRoof Phase II
Hattiesburg, Mississippi
CN20-3788

CONTRACT INFORMATION:
Contract For: General Construction
Date: December 23, 2020

CHANGE ORDER INFORMATION:
Change Order Number: 001
Date: May 28, 2021

OWNER: *(Name and address)*
City of Hattiesburg
P.O. Box 1898
Hattiesburg, MS 39402

ARCHITECT: *(Name and address)*
Landry Lewis Germany Architects, P.A.
5211 Old Highway 11
Hattiesburg, MS 39402

CONTRACTOR: *(Name and address)*
Rowell Roofing, Inc.
P.O. Box 647
Columbia, MS 39429

THE CONTRACT IS CHANGED AS FOLLOWS:

(Insert a detailed description of the change and, if applicable, attach or reference specific exhibits. Also include agreed upon adjustments attributable to executed Construction Change Directives.)

See Attached

The original Contract Sum was	\$ 173,000.00
The net change by previously authorized Change Orders	\$ 4296.90
The Contract Sum prior to this Change Order was	\$ 177,296.90
The Contract Sum will be increased by this Change Order in the amount of	\$
The new Contract Sum including this Change Order will be	\$ 177,296.90

The Contract Time will be increased by Twenty-One (21) days.
The new date of Substantial Completion will be May 28, 2021

NOTE: This Change Order does not include adjustments to the Contract Sum or Guaranteed Maximum Price, or the Contract Time, that have been authorized by Construction Change Directive until the cost and time have been agreed upon by both the Owner and Contractor, in which case a Change Order is executed to supersede the Construction Change Directive.

NOT VALID UNTIL SIGNED BY THE ARCHITECT, CONTRACTOR AND OWNER.

Landry Lewis Germany Architects, P.A.

ARCHITECT *(Firm name)*

SIGNATURE

Shane Germany, Partner

PRINTED NAME AND TITLE

DATE

Rowell Roofing, Inc.

CONTRACTOR *(Firm name)*

SIGNATURE

Randall Rowell, President

PRINTED NAME AND TITLE

DATE

City of Hattiesburg

OWNER *(Firm name)*

SIGNATURE

Toby Barker, Mayor

PRINTED NAME AND TITLE

DATE

Mr. Shane,

Confirmed.

As of now, we only have about 24 sqs of demo/reroof remaining, the section with the big curb and 1/2 the section next to it. We plan to do the section with the big curb tomorrow. Thursday we will re-work the curb that leaked over the weekend/complete wall flashings Thursday before chance of rain moves back in Thursday night and Friday.

Randy

On 4/27/2021 3:52 PM, Shane Germany wrote:

Randy,

Based on your email below, and the email dated 04/23 I have the following running totals. Please confirm with your records...

Date	Description	Area sf	Cost / sf	Total
4/20/2021	remove/replace damaged insulation 2"	96	\$1.75	\$168.00
4/21/2021	additional layer of HD coverboard	1,391	\$1.50	\$2,086.50
4/27/2021	additional layer of HD coverboard	1,256	\$1.50	\$1,884.00
4/27/2021	remove/replace damaged fiberboard	96	\$1.65	\$158.40
				\$4,296.90



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ann Jones

cc:

Date: Tuesday, June 22, 2021

Re: Approve advertising sponsorship for the 2021 Star Spangled Celebration on the River, July 2, 2021, in accordance with Mississippi 17-3-1, in the amount of \$6000.00 and authorize issuance of manual check for the same.
File Number: 2021-815
Minute Book #

Summary

Approve advertising sponsorship for the 2021 Star Spangled Celebration on the River, July 2, 2021, in accordance with Mississippi 17-3-1, in the amount of \$6000.00 and authorize issuance of manual check for the same.

Recommendation Statement

I recommend the approval of this advertisement.

Please place this on the June 22, 2021 City Council meeting for consideration.



July 2nd, 2021 6pm - 10pm

On July 2, 2021 the cities of Hattiesburg and Petal will come together for a celebration of our country's birthday with a fabulous firework display over the Leaf River in Forrest County. Music and activities will take place at Chain Park in Hattiesburg and Petal River Park in Petal. The Petal Area Chamber of Commerce and the Hattiesburg Downtown Association are working together with many private and public entities to produce a first class 4th of July experience for all attendees.

Our goal is to create an event that will draw visitors from surrounding counties to Petal and Hattiesburg and to provide family friendly festivities for residents of both cities.

No event would be complete without a variety of food vendors as well as activities for kids. We are actively seeking vendor participation at both sites. This event will not include arts and crafts vendors.

As our title sponsor, Hattiesburg Coca-Cola will be the exclusive non-alcoholic beverage distributor for all ready to drink and brewed beverages at the event. No other carbonated or non-carbonated soft drinks or beverages may be advertised, sold, distributed or sampled in any manner that is in direct competition with products or Brands of Hattiesburg Coca-Cola Bottling Company United.

A sponsor and vendor application forms are attached. Please feel free to call or email questions to:

Valerie Wilson
Petal Chamber of Commerce
Valerie@petalchamber.com
(601) 583-3306

Andrea Saffle
Hattiesburg Downtown Association
andrea@downtownhattiesburg.com
(601) 270-1373



Sponsorship proposal for Forrest County, City of Hattiesburg, and City of Petal

All -American Presenting Sponsor

INVESTMENT OF - \$6000

- ☐ Named as Presenting Sponsor with corporate name/logo on all marketing and advertising locally and regionally including TV, radio, print and social media
- ☐ Name/ Logo on all marketing materials including event flyers, event poster, t-shirts, all promotional items, as a presenting sponsor.
- ☐ Corporate name/logo on all event title banners, located at both parks.
- ☐ Opportunity to make welcoming comments at event
- ☐ Promotional booth space at the event at both parks
- ☐ Ability to provide up to four (4) banners to be posted throughout the event
- ☐ Name/ logo on event website
- ☐ Ability to provide materials to go in the bags to be handed out to all event participants**
- ☐ 6 VIP Access passes
- ☐ 10 event t-shirts



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Randy Pope

cc:

Date: Tuesday, June 22, 2021

Re: Approve revised Interlocal Agreement between City of Hattiesburg and Arnold Line Water Association, Inc., for certain utility services and authorize the Mayor to execute the same contingent upon the Attorney General's approval.
File Number: 2021-839
Minute Book #

Summary

Revised Interlocal Agreement with Arnold Line Water Association, Inc.

Recommendation Statement

I recommend approval of the revised Interlocal Agreement to be submitted to the Attorney General for final approval.

Please place this on the June 22, 2021 City Council meeting for consideration.

**STATE OF MISSISSIPPI
COUNTY OF FORREST**

**INTERLOCAL GOVERNMENTAL AGREEMENT
BETWEEN THE CITY OF HATTIESBURG, MISSISSIPPI
AND THE ARNOLD LINE WATER ASSOCIATION, INC.**

WHEREAS, the Interlocal Cooperation Act of 1974, *Miss. Code Ann.* § 17-13-1, et seq. as amended, authorizes any two (2) or more local governmental units to enter into a written contractual agreement with one another to jointly provide services and facilities and to jointly exercise and carry out any power, authority or responsibility exercised or capable of being exercised by a local governmental unit; and

WHEREAS, *Miss. Code Ann.* § 21-27-75, as amended, specifically authorizes a municipality to enter into an interlocal agreement with a rural water association operating within the corporate limits of the municipality; and

WHEREAS, the City of Hattiesburg, Mississippi ("City") is a municipal corporation organized under the laws of the State of Mississippi; and

WHEREAS, the Arnold Line Water Association, Inc. ("Arnold Line"), is a Mississippi non-profit rural water association in good standing with the Mississippi Secretary of State; and

WHEREAS, some of the customers of Arnold Line live within the City and are therefore provided City sewer services by the City, but without an interlocal agreement with Arnold Line, the City is unable to compel those persons who are delinquent in their sewer bills to pay their sewer bill since the City is unable to terminate the water service of those customers since the water is provided by Arnold Line; and

WHEREAS, the City and Arnold Line have agreed that it would be in the best interest of both parties to enter into an interlocal agreement to deal with this situation as permitted by *Miss. Code Ann. § 21-27-75*, as amended; and

WHEREAS, this Agreement is entered into pursuant to the Interlocal Cooperation Act of 1974, *Miss. Code Ann. § 17-13-1, et seq.*, and shall not take effect unless approved by the Mississippi Attorney General, and if so approved, until it is filed with the chancery clerks of Forrest and Lamar Counties and with the Secretary of State.

NOW, THEREFORE, in consideration of the above and foregoing premises and under the authority of *Miss. Code Ann. § 17-13-1 et seq.*, and the further consideration of mutual advantages and promises hereinafter contained, this contract and agreement is made and entered into on the date hereinafter stated by and between the City and Arnold Line and the parties do contract and agree to the terms and conditions hereinafter set forth:

Section 1. Effective Date and Duration

The term of this agreement shall commence on May 4, 2021, and shall run in perpetuity or until terminated in accordance with the provision of Section 5 herein. The agreement will be effective upon the approval of the Interlocal Agreement by the Attorney General of this State and thereafter, the filing of said Interlocal Agreement with the Chancery Clerk of Forrest County, the Chancery Clerk of Lamar County, and with the Secretary of State.

Section 2. Purpose

The purpose of this agreement shall be to provide account information regarding outstanding balances due for water and/or sewer in either the City or Arnold Line, as the case may be; and to authorize Dixie Utility to disconnect water service to a customer who is delinquent in sewer and garbage fees to the City until that City account is brought current.

Section 3. Organization/Statutory Authority

There will be no separate legal or administrative entity created by this Interlocal Agreement. The statutory authority for entering into this Interlocal Agreement is *Miss. Code Ann.* § 21-27-75, as amended, and *Miss. Code Ann.* § 17-25-13, as amended.

Section 4. Manner of Financing, Staffing and Supplying

There shall be no additional financing, staffing or supplying required. Both parties have existing financial resources, staffing and supplies to carry out the Agreement.

Section 5. Termination and Amendment

The parties may terminate or amend this agreement at any time, but only by proper action of the governing authorities of all the parties. This agreement may be amended at any time by the mutual consent of the parties herein by an agreement entered into pursuant to the provisions of the Interlocal Act and approved by the Attorney General.

Section 6. Administration

There shall be no joint board required to carry out the purpose of this agreement; the administration shall be through the respective administrative staffs of the parties.

Section 7. Real and personal property

There shall be no real or personal property acquired, held or disposed of in connection with this agreement.

Section 8. Other necessary and proper matters

1. Pursuant to *Miss. Code Ann.* § 21-27-75 (2), as amended the following procedures shall be followed:

- (a) The City shall notify Arnold Line in writing of any customer of the association who also has sewer service provided by the City who is thirty (30) days or more delinquent in the payment of sewer and garbage charges by a method agreeable to the City and Arnold Line.
- (b) Upon receipt of a notification Arnold Line shall terminate the water service of the named customer.
- (c) Upon receipt of written notice of the satisfaction of the delinquency and any fees connected with the delinquency and the termination of the water service and satisfaction of any delinquency in water charges due the association, the association shall restart the water service of the customer. The City will disburse the fees connected to the termination and reconnection of water service to Arnold Line.
- (d) Upon approval of the parties and the Attorney General and the filing of this Interlocal Agreement with the Forrest County Chancery Clerk, Arnold Line is authorized to terminate the water service of any customer delinquent in the payment of sewer charges to the City pursuant to the terms of this Interlocal Agreement.

2. The parties shall provide customer account information to each other to monitor delinquencies that have moved to the other's district. When a person is delinquent on the payment of an undisputed bill for water sewer service provided by a water sewer system of one of these water sewer systems, moves into the other water sewer system, and applies for or receives water from another water sewer system if the person's former water sewer system establishes that there is no dispute that the delinquent account is properly due and owed by that particular individual in that account, the new water sewer system shall refuse to provide water sewer service to the delinquent person until such person provides proof of curing the delinquency.

3. Prior to the effective date, both the City and Arnold Line shall inform affected members and customers of the Interlocal Governmental Agreement and its basic provisions.

Section 9. Severability

Should any provisions of this Agreement be found to be unconstitutional, or otherwise be contrary to the laws of the State of Mississippi or the United States of America, to the extent that it is reasonably possible to do so, the remainder of this Agreement shall remain in full force and effect.

Signed as of the 4th day of May, 2021.

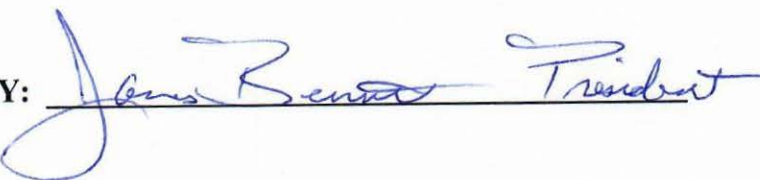
IN WITNESS WHEREOF, the parties have executed this Agreement as of the date and year first above written.

CITY OF HATTIESBURG, MISSISSIPPI, A Municipal Corporation

BY: _____
Toby Barker, Mayor

ATTEST: _____
Kermas Eaton, City Clerk

ARNOLD LINE WATER ASSOCIATION, INC.

BY:  _____
James Benoit, President

June 8th, 2021

Arnold line water met in regular session with all members present, except Mr. Williamson, Mr. Morgan, Mrs. Lowe, Mr. Smith, and Mr. Oglesby. There was 1 visitor, Jason Lamb Engineer.

The Minutes from May 11th, 2021 were read. Mr. Orton made motion to accept. Mrs. Jackson seconded motion. Motion passed.

The financial statement was passed out. Mrs. Jackson made motion to accept. Mr. Orton seconded. Motion Passed.

The Bills were presented for payment. Mr. Vail made motion to accept. Mrs. Jackson seconded. Motion Passed.

Mr. Carney went over his managers' report.

Jason will arrange a meeting with the County Administrator. Jimmy, Phil, and Dewitt will go to discuss upcoming projects that we would like to use the American Rescue plan act for.

Mr. Orton made motion that we would not provide fire flow for the upcoming Hattiesburg Market Project. Mrs. Jackson seconded. Motion passed.

Mr. Vail made motion to Ratify the action of James Bennett in signing the Interlocal Agreement with the city of Hattiesburg for certain services related to cutoffs. Mrs. Jackson seconded motion. Motion passed.

 6-8-2021

Mrs. Lowe has sent in a letter with water payment resigning for water board. Effective 6.8.2021

Mr. Orton made motion to adjourn. Mr. Vail seconded. Meeting was Adjourned.



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Ann Jones

cc:

Date: Tuesday, June 22, 2021

Re: Approve Memorandum of Understanding between City of Hattiesburg and
Forrest County Sheriff's Department for participation in the Joint State County
Work Program.
File Number: 2021-837
Minute Book #

Summary

Approve Memorandum of Understanding between City of Hattiesburg and Forrest County Sheriff's Department for participation in the Joint State County Work Program.

Recommendation Statement

I recommend the approval of this agreement.

Please place this on the June 22, 2021 City Council meeting for consideration.

**MEMORANDUM OF UNDERSTANDING
BETWEEN
THE CITY OF HATTIESBURG
AND
FORREST COUNTY SHERIFF'S DEPARTMENT**

This Memorandum of Understanding (MOU) is entered into this 22nd day of June 2021, by and between the City of Hattiesburg ("CITY"), and Forrest County Sheriff's Department, ("County") and shall be for a period terminating September 31, 2022.

ARTICLE 1: SCOPE OF UNDERTAKING

1.1 Forrest County Sheriff's Office will provide eligible (non- violent) inmates to City of Hattiesburg pursuant to the provisions of Miss. Code Ann.§ 47-5- 401 et. seq. to perform public service work under the Joint State County Work Program ("JSCWP") and Miss. Code Ann.§ 47-5-903.

1.2 Forrest County Sheriff's Office and City of Hattiesburg accepts the relationship of mutual trust and confidence established by this MOU, and each covenants with the other to utilize its best skill, effort, judgment, and cooperation in discharging the respective responsibilities in furthering the interests of the JSCWP/Jail Support/Sheriff Trustees.

ARTICLE 2: CONDITIONS

2.1 Sheriff Trusty — An inmate who has been convicted of a non—violent offense and remains in the approved county jail.

2.2 The Sheriff makes a request by letter to the Mississippi Department of Corrections Commissioner or designee for the inmate to remain in the county jail as a trusty worker.

2.3 These inmates shall be Minimum Custody and must remain on the county jail property unless on job assignment supervised by trained City employee staff.

2.4 Minimum Custody supervision off the county jail property can be trained City employees.

2.5 The following inmates are ineligible from participation in the JSCWP:

(a) Inmates serving sentences for crimes of violence and sex crimes, including, but not limited to, murder, aggravated assault, rape, sexual battery, robbery, armed robbery or child abuse.

(b) Inmates who have previously participated in the JSCWP before will not be allowed to return

to participate in the JSCWP after committing another crime.

(c) Inmates who have been convicted of an escape.

(d) No pre-trial inmate shall be utilized in this program.

2.6 In return for the opportunity to participate in the JSCWP/Jail Support/Sheriff Trusty, the assigned inmates shall perform all assigned work on-a-daily basis.

2.7 In return for the opportunity to participate in the JSCWP/Jail Support/Sheriff Trusty, the assigned inmates shall not:

(a) Consume or possess any alcoholic beverages;

(b) Consume, possess, take, smoke or otherwise use any narcotic drug, marijuana or other controlled substance;

(c) Commit any act in violation of any of the laws of the State of Mississippi or the United States;

(d) Leave Forrest County, unless on authorized leave or on work assignment;

(e) Go anywhere other than to an assigned work area;

(f) Communicate with any family members or friends while working outside of the county jail;

(g) Receive any items or contraband from anyone while working outside of the county jail;

(h) Violate any established MDOC disciplinary rule/guideline;

(i) Have contact with any individuals other than Jail staff or inmates while on their work assignments or breaks;

(j) Be allowed to operate motorized vehicles whose primary use is transportation, or otherwise leave the designated work area unattended;

(k) Be allowed to receive or make telephone calls from job sites or receive or mail letters or packages at their job sites;

(l) Enter any business establishment without the express consent, authority and supervision of the sheriff's department;

(m) Be in possession of cash/ money/ currency

(n) Make or receive calls by use of a cell phone or cellular device, tablet, digital watch and nor any electronic device

(o) Be allowed to ride in an unsecured vehicle or equipment.

Violation of any of the established MDOC rules, regulations or policies may result in an inmate's removal from the JSCWP/Jail Support/Sheriff Trusties.

ARTICLE 3: COUNTY'S RESPONSIBILITIES

3.1 Forrest County shall provide custody, supervision, and control of inmates participating in the JSCWP/Jail Support/Sheriff Trusties.

3.2 Forrest County shall provide up to thirty (30) eligible inmates to the City of Hattiesburg during regular business hours each Monday through Friday for participation in the JSCWP/Jail Support/Sheriff Trusties based on availability of inmates as determined by the Forrest County Sheriff's Office. Forrest County may provide available inmates for weekend work details upon request by the City of Hattiesburg received at least five (5) days in advance.

3.3 Forrest County shall ensure compliance with all applicable state and federal laws, regarding supervision of inmates participating in the JSCWP.

3.4 Forrest County shall provide all necessary compliance training to City of Hattiesburg employee work supervisors as required to participate in the JSCWP.

3.5 Forrest County shall assume full responsibility for all associated expenses and costs, with the exception, of medical expenses, for inmates participating in the JSCWP. Medical expenses shall be the responsibility of the Mississippi Department of Corrections.

3.6 Forrest County shall ensure JSCWP inmates are restricted to the performance of public service work for counties, municipalities, or the state.

3.7 Forrest County shall abide by all MDOC rules and regulations regarding custody, supervision and control of all JSCWP/Jail Support;/Sheriff Trusty inmates.

ARTICLE 4: CITY'S RESPONSIBILITIES

4.1 The City of Hattiesburg shall pay Forrest County Sheriff's Office an amount not to exceed \$175,000.00 annually for provision of thirty (30) eligible inmates participating in the JSCWP/Jail

Support/Sheriff Trustees on-a-daily basis.

4.2 City of Hattiesburg employee work supervisors shall complete all necessary compliance training necessary to participate in the JSCWP.

4.3 City of Hattiesburg shall notify Forrest County immediately of any escape, incident, medical emergency, or exigent circumstance regarding any inmate participating in the JSCWIP/Jail Support Sheriff Trustees.

ARTICLE 5: TERMINATION

5.1 City of Hattiesburg, at all times, must abide by MDOC rules and regulations relating the custody, supervision, and control of inmates. Failure of City of Hattiesburg to abide by MDOC rules and regulations will result in immediate termination of this MOU.

5.2 Forrest County or City of Hattiesburg may terminate this MOU provided that at least thirty (30) days written notice is provided to the other prior to the actual termination date, subject to the superior right of the Mississippi Department of Corrections to cancel its underlying JSCWP Memorandum of Understanding with Forrest County without prior notice.

FORREST COUNTY SHERIFF'S DEPARTMENT

By:_____

SHERIFF CHARLIE SIMS

CITY OF HATTIESBURG

By:_____

MAYOR TOBY BARKER



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Danny Wade, Assistant Fire Chief

cc: Kermas Eaton, City Clerk, Sherrocko Stewart, Fire Chief

Date: Tuesday, June 22, 2021

Re: Approve Memorandum of Understanding with the Mississippi State Fire Academy (MSFA) and the Hattiesburg Fire Department to administer the NFPA 1072 F: Hazardous Materials Awareness and Operations field course and authorize the Fire Chief to execute the same.
File Number: 2021-829
Minute Book #

Summary

Approve Memorandum of Understanding with the Mississippi State Fire Academy (MSFA) and the Hattiesburg Fire Department to administer the NFPA 1072 F: Hazardous Materials Awareness and Operations field course and authorize the Mayor to execute the same.

Recommendation Statement

Recommend approval of agreement with the Mississippi State Fire Academy for administering the NFPA F: Hazardous Materials Awareness and Operations field course

Please place this on the June 22, 2021 City Council meeting for consideration.



STATE FIRE ACADEMY



Terry Wages
Executive Director

Division of Mississippi Department of Insurance
1 Fire Academy U.S.A.
Jackson, Mississippi 39208-9600
Phone: (601) 932-2444

Mike Chaney
Insurance Commissioner

Memorandum of Understanding (Rev. 9/2019)

This Memorandum of Understanding is entered into between the Mississippi State Fire Academy (MSFA), #1 Fire Academy USA, Jackson, MS 39208 (Rankin County Mississippi) and the following Customer:

Customer Name: Hattiesburg Fire Department
Address: 622 Corinne Street
City, State Zip: Hattiesburg, MS 39401
Phone: 601-582-3311
Fax: 601-545-4652
Federal ID Number: _____
Contact Person/Title: Chris Carr / Battalion Chief
Email Address: ccarr@hattiesburgms.com

1. DATE(S) OF SERVICE: June 28, 2021

2. LOCATION FOR SERVICE TO BE PERFORMED: Hattiesburg Fire Department

3. DESCRIPTION OF SERVICE TO BE PROVIDED TO CUSTOMER Mississippi State Fire Academy (MSFA) shall provide the course NFPA 1072 F. Academy Staff will provide the local course coordinator a complete package to manage the delivery of the course. **No books are included.** MSFA will administer all written and skill examinations.

Examination dates must be approved by MSFA personnel. All communications concerning test scores, student activities, etc. shall be between the MSFA coordinator and the local course manager. Certificate will be issued upon successful completion of course.

All documents and curriculum provided to you from the MSFA is the property of MSFA and cannot be duplicated for use outside of this delivery. **No books are included, and customer is wholly responsible for purchasing any required books through the textbook publisher.**

4. NUMBER OF STUDENTS THIS MEMORANDUM OF UNDERSTANDING APPLIES TO:

Minimum Number: currently removed due to COVID-19 Maximum Number: 15

5. SERVICE FEE: Total Cost: No charge(grant funded) And/or Cost Per Student:

7- students Hattiesburg Fire Department

Customer agrees to pay the service fee for the minimum number of seats being reserved herein, regardless of whether the minimum number of students actually attends the training.

If a Purchase Order is required for this service, indicate so and provide a purchase order number and/or copy of the purchase order:

Please note : If there is more than one department/organization entering this agreement for this course and the fee is split between the departments/organizations, the cost per student is based on the provided number of students. If the number of students from participating departments/organizations changes, the cost per student will change. However, the total of the fees will equal the total cost above and will be split between the participating departments/organizations.

If on Academy campus Monday through Thursday, are meals to be provided: ☐ Yes ☐ No If Yes, indicate which meals are provided:
____ Breakfast served 6:30 a.m. to 7:15 a.m. ____ Lunch served 11:30 a.m. to 12:45 p.m.

If on Academy campus Monday through Thursday, are dorm beds requested: ☐ Yes ____ # of Beds ☐ No

Note: An invoice will be submitted to the customer upon completion of the service. If a purchase order number is required from your company, please fill in the appropriate blocks on this form. Payment for services is due within thirty (30) days of completion of services and receipt of invoice.

6. MODIFICATION, AMENDMENT, OR TERMINATION OF AGREEMENT:

Modifications, amendments, or termination of the Memorandum of Understanding may be made upon mutual agreement of both parties but must be in writing and signed by both parties. This Agreement may be terminated by the Academy upon written notice to the Customer should the Academy be subject to governmental budgetary cuts or if personnel cuts limit the amount of available manpower necessary to execute the professional service.

7. INSURANCE:

Customer represents that it will maintain workers' compensation insurance as prescribed by law that will insure to the benefit of the customer's personnel, as well as comprehensive general liability insurance. The Academy represents that it maintains workers compensation insurance for Academy personnel during the course of their official duties. Further, the Academy represents that as a state agency, the Mississippi Tort Claims Board views the organization as a sub-agency of the Mississippi Insurance Department. The Mississippi Insurance Department is certified by the Mississippi Tort Claims Board by participating in the Mississippi Tort Claims Fund as set forth in Chapter 46, Title 11, Mississippi Code 1972, as amended. This fund provides protection for tort claims against state employees and agencies subject to terms and limitations established by law while in the scope of their duties.

8. GOVERNING LAW:

This Agreement will be construed and governed in accordance with the laws of the State of Mississippi excluding its conflicts of laws provisions, and any litigation with respect thereto shall be brought in the courts of the State.

9. ACADEMY COURSE MATERIAL IS PROTECTED PROPERTY:

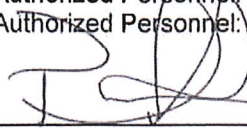
Academy course instructional material (lesson plans, power point presentations, handouts, skills check offs, etc.) shall be considered Protected Property belonging to the Academy. If part of this agreement is to provide the Customer this information for performance of this agreement, the Customer shall not copy, duplicate, transcribe, or any other form of duplication, in whole or in part, any course material submitted to them for use in fulfilling this Memorandum of Understanding, either directly or indirectly, for personal benefit, the benefit of another, or for future use. This statement of policy shall continue to be in effect whether or not the Agreement is terminated or has expired. Additionally, if any state property is utilized as part of this agreement, the Customer assures proper custody and care of the property (withstanding normal use and wear and tear).

10. ACKNOWLEDGEMENT OF MEMORANDUM OF UNDERSTANDING:

This constitutes the entire agreement of both parties with respect to the subject matter contained herein and supersedes and replaces any and all prior negotiations, understandings and agreements, written or oral, between the parties relating thereto. For the faithful performance of the terms of this agreement, the parties hereto have caused this Agreement to be executed by their undersigned authorized representatives.

PARTIES IN AGREEMENT:

Mississippi State Fire Academy
Authorized Personnel: Terry Wages, Executive Director
Authorized Personnel: Paul Ammerman, Admin. Svcs.
Daniel Cross, Instructional Svcs.

 6/10/21

Signature/Date

Signature/Date

Academy Contact Regarding this Agreement:

Telephone:
Email:

Customer: Hattiesburg Fire Department
Authorized Personnel: Sherrocko Stewart
Title: Fire Chief
Authorized Personnel: Chris Carr, Battalion Chief

Signature/Date

Optional Signature/Date:

If a Purchase Order is required for this service, indicate so and provide a purchase order number and/or copy of the purchase order:

Customer Invoicing/Billing Address:

Contact Name: _____
Contact Phone Number: _____



Memorandum

To: Mayor Toby Barker and Members of City Council

From:

cc:

Date: Tuesday, June 22, 2021

Re: Ratify and confirm the Mayor's re-appointment of Ronnie Perkins to the Pine Belt Regional Solid Waste Authority for a term beginning June 30, 2021 and ending on June 29, 2025.
File Number: 2021-832
Minute Book #

Summary

Ratify and confirm the Mayor's re-appointment of Ronnie Perkins to the Pine Belt Regional Solid Waste Authority for a term beginning June 30, 2021 and ending on June 29, 2025.

Recommendation Statement

Please place this on the June 22, 2021 City Council meeting for consideration.



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Chris McGee, Director of Parks and Recreation

cc:

Date: Tuesday, June 22, 2021

Re: Authorize the acceptance of the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) Youth Participation Initiative Grant Program award, to fund an educational pollinator garden and outdoor classroom at the Hattiesburg Community Arts Center, for a total estimated project cost of \$14,500.00(\$6,660 grant share and \$7,840.00 local share) ; authorize the Mayor to execute the same.

File Number: 2021-821

Minute Book #

Summary

MDWFP Youth Participation Initiative Award

Recommendation Statement

I recommend acceptance of the Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) Youth Participation Initiative Grant Program award, to fund an educational pollinator garden and outdoor classroom at the Hattiesburg Community Arts Center, in the amount of \$6,660.

Please place this on the June 22, 2021 City Council meeting for consideration.

Dear YPI Applicant,

Congratulations on being selected as one of the award recipients for the 2020/2021 Youth Participation Initiative (YPI) Program. **Hattiesburg Community Arts has been awarded \$6660.00.**

Your organization will be instrumental in involving Mississippi's youth in hunting and fishing activities. The MDWFP will be pleased to report to the MS Legislature this year's application statistics and is confident that excellent reports will be submitted for all of the projects funded this year. Please join in thanking our Legislators, the MDWFP Commission, and Dr. Sam Polles for implementing this important grant initiative. Please assist in spreading the word about the YPI Program and how it will help youth.

Now that you have been notified of your award, the following steps are necessary to complete the funding process:

1. Enroll online with the Mississippi Development Authority Magic Electronic Payment Process by **July 6, 2021.**

Registration Website

https://sus.magic.ms.gov/sap/bc/webdynpro/sapsrm/wda_e_suco_sreg?sap-client=100#

There are two steps to online registration. Once you enter your organization's information at the Registration Website, you will receive an email with a code (that starts with VND) and instructions to log in again to receive your MAGIC vendor number (a 10 digit number that will begin with the number 3). The Magic vendor number will be sent in a second email. You will also have to submit an IRS W-9 form with your business tax information. You can submit the W-9 online during registration. After your W-9 tax information is authenticated, your vendor number will be made available to our agencies for purchases.

****Note:** If you currently have a Mississippi vendor number, please verify that the old vendor number was converted to a Magic vendor number

<http://merlin.state.ms.us/merlin/predef.nsf/MAGICVendorInfo?OpenForm>

****If your number shows "returned no records" try searching the first five letters of the vendor name. If you have any issues you can call MDWFP Accounts Payable at 601-432-2090.**

2. Your organization must complete and sign the attached "Grant Agreement Form". **Email the completed "Grant Agreement Form" and "Invoice" by July 6, 2021 to Megan.Fedrick@wfp.ms.gov** Please save your file with your organization's name in the file name. This form will act as a contract between the listed organization and MDWFP. The form lists responsibilities of the organization as it pertains to record keeping, purchases, acknowledgements, and reporting.

Once again, congratulations on your YPI award. Please feel free to contact me if you have any questions. As your partner, the MDWFP looks forward to the successful completion of your project and involving youth in outdoor recreation.

Sincerely,



Cpt. Megan Fedrick – FW16
Director of Hunter Education
1505 Eastover Drive
Jackson, MS 39211

Office: 601-432-2174
Cell: 601-672-0438
Dispatch: 601-432-2170
Email: MeganF@mdwfp.state.ms.us



Award No. 17-2022

2021-2022 Youth Participation Initiative Program

AGREEMENT

This Agreement ("Agreement") is entered into between the State of Mississippi, Department of Wildlife, Fisheries and Parks, located at 1505 Eastover Drive, Jackson, Mississippi 39211-6374, and **Hattiesburg Community Arts** ("Recipient"),

located at 825 N Main St., Hattiesburg, MS 39401.

The MDWFP is awarding the Recipient \$ 6660.00 in funds to create, coordinate and administer the program "Hattiesburg Community Arts Center Director" ("Program"), as more fully described in Recipient's proposal ("Proposal") attached hereto as Appendix A.

Recipient expressly acknowledges and agrees to comply fully with the following terms and conditions in connection with the acceptance of this Agreement:

Recipient's Program and Use of Funds:

1. a. Recipient agrees that all funds it receives under this program shall be used exclusively for the purposes specified in Recipient's Proposal, as approved.

More specifically, no funds may be used for any unrelated, unnecessary or indirect expenses (e.g. salaries, overhead, office supplies, etc.). MDWFP shall have final approval on what may or may not be an appropriate expense.

b. In the event that Recipient's Proposal includes the use of Program Funds to purchase certain items of "equipment" as that term is defined by the Office of Purchasing and Travel of the Mississippi Department of Finance and Administration, state purchasing laws, rule and regulations, Recipient must make a good faith effort to comply with the requirements of applicable purchasing regulations. Such items may include, but are not limited to, firearms, all-terrain vehicles, Global Positioning System (GPS) devices, and similar items. The MDWFP will assist the Recipient in identifying any "equipment" items contained in the Recipient's Proposal. Should Recipient have any question as to whether or not any item intended to be purchased for its Program is or is not "equipment," Recipient shall contact the MDWFP for technical assistance. Any "equipment" purchased with Program Funds must be inventoried by the Recipient and maintained in as good condition as when purchased, less normal wear and tear. Recipient shall indemnify, save and hold the MDWFP harmless for Recipient's use of any "equipment" item or the use of any "equipment" item by a Program participant. At the

end of the Program period, Recipient shall transfer any and all "equipment" items to the MDWFP, unless such items will be used in future programs as agreed between the parties.

2. Recipient shall notify MDWFP in writing of any significant changes regarding the use of funds or any modifications to scheduled Program events and/or activities as originally proposed by Recipient in carrying out the intentions of the Proposal. Any changes regarding the use of funds or any modifications to scheduled Program events and/or activities are subject to the prior written approval of the MDWFP.
3. Recipient hereby warrants that all activities performed in connection with Recipient's Program under this Agreement will comply with all applicable federal, state or local laws, statutes, codes, circulars or other governmental restrictions.
4. At all times during the Program Period, Recipient shall maintain, and shall make available to MDWFP or any State or Federal agency authorized to audit MDWFP, financial records, inventory reports, supporting documents, statistical records and all other records pertinent to the services performed under this Agreement. Any and all records maintained by Recipient in connection with the Program are required to be copied and attached to the final report submitted to MDWFP.

OPERATIONS AND REVIEW

5. Unless the proposed project involves a mutually agreed upon MDWFP partnership, Recipient expressly acknowledges that the MDWFP will not have any direct or indirect supervision or control over Recipient's Program or spectators of, or participants in, Recipient's Programs. In the event that Recipient's Program incorporates the use of firearms or involves activities that could result in bodily injury or death or other loss, Recipient shall ensure that proper supervision and safety procedures are followed at all times. The Recipient shall name "Mississippi Department of Wildlife, Fisheries, and Parks, and its affiliates" in any liability waiver and release that the, Recipient distributes in connection with any Program organized using Program funds.
6. Recipient shall acknowledge the contribution of the MDWFP to Recipient's Program by conspicuously including the MDWFP's logo and the following statement in all Recipient issued Program press releases, signage, clothing, brochures or other public communications:

**"This project is supported by the 2021/2022 Youth Participation Initiative
Program of the Mississippi Department of Wildlife, Fisheries, and Parks."**

7. MDWFP may, at its own expense, periodically monitor and conduct an evaluation of the Recipient's Program. Recipient agrees to fully cooperate with MDWFP and provide all necessary assistance in connection with such evaluation.

PROGRAM REPORTS

8. **Final Report:** Recipient shall furnish the MDWFP with a written final report by May 30th, 2022 regarding Recipient's Program (including copies of any advertisements, press releases, brochures or other promotional material created and used in connection with the Program). Recipient's final report must also include a summary of accomplishments, inventory of equipment purchased, how many youth were reached through the program, and copies of any receipts used in connection with Program funds. The final report shall be submitted to the Director of Hunter Education, Cpt. Megan Fedrick.

Any funds not used by the Recipient are automatically forfeited to the Youth Participation Initiative Program and shall be returned with the final report in the form of a check made payable to MDWFP -Youth Participation Initiative.

REVERSION AND TERMINATION OF PROGRAM

9. MDWFP may, at its option, suspend and/or terminate the Program, reduce the amount of funds awarded to Recipient, recover any unexpended funds, and/or refuse to fund Recipient in future years, if Recipient fails to comply with any of the provisions of this Agreement or, if in MDWFP's sole judgment, Recipient becomes unfit or unable to complete the Program as described in Recipient's Proposal within the Program Period.

SPECIAL CONDITIONS

10. Recipient shall grant to MDWFP the nonexclusive, royalty-free rights. Including the non exclusive, royalty-free rights in copyright, to reproduce, publish or otherwise use, and to authorize others to duplicate or use, any Program materials developed by Recipient under the Program, including Recipient's Program proposal, in whole or in part, without further compensation to or recognition of Recipient, its representatives or contractors.

11. The MDWFP and Recipient agree that in the event of any conflict or inconsistency between this Agreement and Recipient's Proposal (Appendix A), this Agreement shall prevail.

GENERAL TERMS and CONDITIONS

12. **Availability of Funds.** It is expressly understood that the fulfillment of the conditions of this Agreement by MDWFP is conditioned upon the receipt of state and/or federal funding, and any cessation or reduction of funding shall, at the option of MDWFP, constitute grounds for the voidance of this Agreement.

13. Indemnification. Recipient agrees to indemnify, defend, save and hold harmless the MDWFP from and against all claims, demands, liabilities, suits, damages and costs of every kind and nature whatsoever, including court costs and attorney's fees, arising out of or caused by Recipient, its agents or employees in the performance of this Agreement.

14. Compliance with Laws. Recipient shall comply with all applicable laws, regulations, policies, and procedures of the United States of America or any agency thereof, the State of Mississippi or any agency thereof, and any local governments or political subdivisions that may affect the performance of duties under this Agreement. More specifically, Recipient shall not discriminate against any employee or participant, nor shall any party be subject to discrimination in the performance of this Agreement, because of race, creed, color, sex, age, national origin or disability.

IN WITNESS WHEREOF, this Agreement has been entered into and executed by the parties hereto in duplicate originals.

This _____ day of _____, 2021.

Mississippi Department of Wildlife, Fisheries, and Parks

Sam Polles, Ph.D.
Executive Director

RECIPIENT

Name:

Toby Barker, Mayor

Title:



Mississippi Department of Wildlife, Fisheries, and Parks

2021-2022 Youth Participation Initiative (YPI) Grant Program Application

Applicants should read Youth Participation Program Guidelines before completing this application.

Applicant Information

It is important that the person filling out this application provides their information below -should any questions arise. **This should be the name of the person that will be the sole contact for grant discussions and information with MDWFP.**

Name: Emily Adcock Gallaspy

Organization and Title: Hattiesburg Community Arts Center Director

Phone: 601.620.6422

Email: egallaspy@hattiesburgms.com

Proposal Title: Hattiesburg Community Arts Center Pollinator Garden and Outdoor C

Estimated Number of
Youth Participants: 200

Ages of Participants: 5-17

Requested Funds: \$7,400

Estimated Matching Funds: \$7,100

Projected Timeline Dates: May 10, 2021- Begin site pr

Has organization applied for YPI funds before: Yes ☐ NO ☒

If so, Project Name and year funded: Hattiesburg Community Arts Center Pollinator Garden and

Please keep in mind that previous awardees are not guaranteed a grant every year. Grantees need to work on outside funding as YPI funds will need to be distributed to new projects each year. This award may help you start a program, but it is not intended to fund the life of your program.

Administrators/officers Information	
-------------------------------------	--

Please provide name and contact information for current officers or administrators within your agency/organization who will approve YPI participation.

Contact Information:

Name:	Emily Adcock Gallaspy
Title:	HCAC Director
Address:	825 N. Main Street Hattiesburg, MS 39401
Phone:	601.620.6422
Email:	egallaspy@hattiesburgms.

Contact Information:

Name:	Ann Jones
Title:	Chief Administrative Officer
Address:	P.O. Box 1898 Hattiesburg, MS 39403-1898
Phone:	601.545.4503
Email:	annjones@hattiesburgms.

Contact Information:

Name:	Jennifer Shows
Title:	Grant Coordinator
Address:	P.O. Box 1898 Hattiesburg, MS 39403-1898
Phone:	601.545.4544
Email:	jshows@hattiesburgms.

Project Description

Please provide a description of your project providing goals and objectives.

The Hattiesburg Community Arts Center is seeking \$7,100 from MDWFP to fund an educational pollinator garden and outdoor classroom on the west corner of the facility. The classroom would cover a 4,000 square-foot space and consist of eight 8' x 4' raised beds in a radial pattern for native wildflowers and a circular bed in the center for trees and larger plants. Ten classroom benches and four picnic tables will surround the garden for outdoor classes and lectures. A south-facing archway will serve as the entrance to the garden. This project would give the HCAC a creative way to expand conservation efforts in Downtown Hattiesburg using arts and education.

The Hattiesburg Community Arts Center, formerly the location of the Hattiesburg American newspaper, sits in the heart of Downtown Hattiesburg. The 36,000 square-foot facility sits on approximately three acres and is within walking distance from neighborhoods, Hawkins Elementary School, the Hattiesburg Public Library, and many shops and restaurants. By establishing an educational garden in this area, the HCAC

Provide a description of how the project will:

1.) Meet the objectives and goals set by the Youth Participation Initiative.

2.) How will your program be evaluated?

The Hattiesburg Community Arts Center will engage community members in the revival and beautification of Downtown Hattiesburg by involving locals in the creation, maintenance, and use of the pollinator garden and outdoor classroom. The HCAC has an extensive volunteer base through the HCAC Residency Program. The program was established to give local non-profits and art organizations an affordable venue for programming and events. Each month, HCAC residents are required to submit volunteer hours in exchange for free or reduced venue rental or supplies. The HCAC Residency Program includes people from Hattiesburg Concert Association, Sacred Heart Catholic School's CenterStage, a youth theater program, and the Hattiesburg Downtown Association. In 2020, HCAC organized beautification projects for four public parks around Hattiesburg with the help of volunteers from these organizations. Also, the HCAC has developed a strong working relationship with the Mississippi Inland Cleanup Program, United Way, and the University of Southern Mississippi through collaborative programming and cleanup efforts in the Downtown Hattiesburg area.

Volunteer opportunities and community public art installation will be posted on Hattiesburg Parks and Recreation and Hattiesburg Downtown Association's Facebook

Project recruitment and retention

Will this project recruit new anglers, hunter/or shooters? Yes ☐ No ☒

How many new potential participants will the project reach? 200

How will this project recruit and/or retain anglers, hunters, or shooters?

Though this project does not directly deal with hunting, fishing, or firearms, we hope that by educating children in Hattiesburg on our native wildlife, they will also take advantage of other park services offered through the State of Mississippi. The HCAC will promote any MDWFP youth events and programs to interested children.

Does the project include a mentoring component? If so, please describe.

This project will not create any new mentoring programs. The HCAC will happily arrange for any organization to use the garden and classroom for mentorship efforts but will not be directly involved with the selection process for those programs. The University of Southern Mississippi and Pathway

Describe how the youth will be selected to participate in your project.

All HCAC activities held in the garden and outdoor classroom will be promoted through the City of Hattiesburg and open to children of all ages and abilities. In the past, HCAC programming has reached children up to a 30-mile radius from Hattiesburg, MS.

Advertisement

Please list the media outlets utilized to advertise your event/activity.

- ☒ Social media (Facebook, Twitter, etc.)
- ☒ Email
- ☒ Website
- ☐ Radio
- ☐ Posting Flyers
- ☒ Newspaper/Newsletter
- ☒ Invitation/Word of mouth
- ☐ Other, explain

*** You will be required to provide proof of all advertising with the final report***

Project Timeline

<u>Activity</u>	<u>Date</u>	<u>Location</u>
Begin site cleanup	May, 10, 2021	Hattiesburg Community Arts Center
Begin planting garden	May 24, 2021	Hattiesburg Community Arts Center
Complete garden	June 7, 2021	Hattiesburg Community Arts Center
Children's initial garden contribution	June 7-June 25, 2021	Hattiesburg Community Arts Center
Opening Day	June 26, 2021	Hattiesburg Community Arts Center-Art Market
Continued programming	June 27, 2021-May 30, 2022	Hattiesburg Community Arts Center

Project Budget

Item	Cost of item	YPI Funds	In-Kind Match
Site Prep (\$2,000) and Tools (\$500)	\$2,500	\$500	\$2,000
Raised Flower Beds (8)	\$2,200	\$2,200	
Landscaping Materials: pavers (\$150), edging (\$200), landscaping fabric (\$400), and mulch(\$500)	\$1,250	\$750	\$500
Annual maintenance	\$2,400		\$2,400
Picnic Tablet	\$1,000	\$1,000	
Native plants and	\$2,100	\$2,100	
Classroom benches	\$1,350	\$850	500
Other: (paint (\$200), painting supplies (\$150), archway (\$800), planter boxes (\$150), stepping stones (\$200), art installation	\$1,700		\$1,700
TOTAL	\$14,500	\$7,400	\$7,100



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Acknowledge receipt of a Corrected Water Easement and a Corrected Permanent Access Easement from Garner Property & Development, LLC for a certain property located in Lamar County described as a part of the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, and more particularly described in the attached documents.
File Number: 2021-827
Minute Book #

Summary

Acknowledge receipt of a Corrected Water Easement and a Corrected Permanent Access Easement from Garner Property & Development, LLC for a certain property located in Lamar County described as a part of the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, and more particularly described in the attached documents.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

Grantee, prepared by and return to:City of HattiesburgDepartment of EngineeringP O Box 1898Hattiesburg, MS 39403-1898Phone: (601) 544-4540Account No.**Grantor Address:**Garner Property & Development, LLC4358 Lincoln Road #Hattiesburg, MS 39402Phone: 601-271-7300Business No.**CORRECTED PERMANENT ACCESS EASEMENT****INDEXING INSTRUCTIONS:**

**A part of the SE 1/4 of the SW 1/4 of
Section 13 and in the NE 1/4 of the NW 1/4
of Section 24, Township 4 North, Range
14 West, Lamar County, Mississippi**

Initials

_____,_____,_____

STATE OF MISSISSIPPI

County of Lamar

For and in consideration of the sum of Ten Dollars (\$10.00), and other good and valuable considerations, including the benefits to be derived herefrom, the receipt and sufficiency of which is hereby acknowledged, cash in hand paid, and other good and valuable considerations, including the benefits to be derived herefrom, the receipt and sufficiency of which is hereby acknowledged, I, the undersigned, hereby grant, bargain, sell, and convey unto the City of Hattiesburg, Mississippi, a municipal corporation, a **Permanent Access Easement** over, across and upon a parcel of real property described as being located in the City of Hattiesburg, County of Lamar, State of Mississippi and being more particularly described as follows, to-wit:

An ingress/egress easement located in the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, Lamar County, Mississippi, and being more particularly described as follows:

Commence at a concrete monument found marking the NE corner of the said NE 1/4 of the NW 1/4 of said Section 24; thence run South 89 degrees 52 minutes 00 seconds West along the north line of the said NE 1/4 of the NW 1/4 for 429.65 feet to an iron pin set; thence run South 00 degrees 08 minutes 00 seconds East for 154.71 feet to an iron pin set; thence run South 89 degrees 52 minutes 00 seconds West for 189.47 feet to the Point of Beginning of said easement; thence continue South 89 degrees 52 minutes 00 seconds West for 45.66 feet to an iron pin set; thence run North 00 degrees 51 minutes 09 seconds West for 167.93 feet to the southern right-of-way line of Lincoln Road; thence run North 73 degrees 05 minutes 28 seconds East along said southern right-of-way line for 41.94 feet; thence run along a curve to the right for 50.78 feet, said curve having a radius of 168.00 feet, an included angle of 17 degrees 19 minutes 08 seconds, and a chord of South 08 degrees 47 minutes 34 seconds East for 50.59 feet; thence run South 00 degrees 08 minutes 00 seconds East for 130.01 feet back to the Point of Beginning. Said easement contains 0.18 acre, more or less. Bearings in this description are based on a GPS observation of geodetic North.

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

The Grantee herein is given full rights to do whatever may be reasonably necessary and proper for the enjoyment of the easement granted herein, including the right of ingress and egress and the right to clear said easement area of selected vegetation such as shrubs, trees, and other vegetation, change of grade, installation and/or removal of pavements and any other structure named herein or otherwise as may be necessary to maintain the water. The Grantee will restore any damage to the easement area or Grantor' adjacent property caused by this action or Grantee's use of the easement area.

This permanent easement shall run with the land.

It is further understood and agreed that the consideration herein named is in full, complete and final payment and settlement of any claims or demands for damage accrued, accruing, or to accrue to the grantor herein, her heirs, assigns, or legal representatives for or on account of the construction of said access including change of grade, water damage, and/or any other damage, right or claim whatsoever.

It is further understood and agreed that this instrument constitutes the entire agreement between the grantor and the grantee, there being no oral agreements or representations of any kind.

Witness (my) (our) signature(s) this the 8 day of June AD, 2021.

Signature/Date: [Signature]
Print Name: Lake Garner

Signature/Date: _____
Print Name: _____

Sole owner
Garner Property + Development LLC

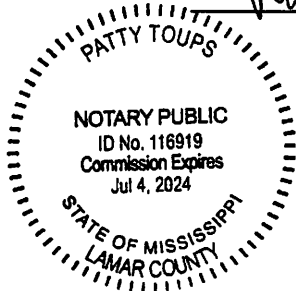
Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

STATE OF MISSISSIPPI

COUNTY OF Lamar

Personally appeared before me, the undersigned authority in and for the said County and State,
on this 8 day of June, 2021, within my jurisdiction, the within
named, Lake Garner and n/a,
who acknowledged before me that (he) (she) (they) signed, executed and delivered the above
and foregoing instrument.

(SEAL)



Patty Toups

(NOTARY PUBLIC)

My commission expires: 7-4-2024.

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

Grantee, prepared by and return to:	Grantor Address:
<u>City of Hattiesburg</u>	<u>Garner Property & Development, LLC</u>
<u>Department of Engineering</u>	<u>4358 Lincoln Road #20</u>
<u>P O Box 1898</u>	<u>Hattiesburg, MS 39402</u>
<u>Hattiesburg, MS 39403-1898</u>	
<u>Phone: (601) 544-4540</u>	<u>Phone: (601) 271-7300</u>
<u>Account No.</u>	<u>Business No.</u>

CORRECTED WATER EASEMENT

INDEXING INSTRUCTIONS:

**A part of the SE 1/4 of the SW 1/4 of
Section 13 and in the NE 1/4 of the NW
1/4 of Section 24, Township 4 North,
Range 14 West, Lamar County,
Mississippi**

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

STATE OF MISSISSIPPI
COUNTY OF LAMAR

FOR AND IN CONSIDERATION of Ten and No/100 Dollars (\$10.00), cash in hand paid, and other good and valuable considerations, including the benefits to be derived herefrom, the receipt and sufficiency of which is hereby acknowledged, I/we, the undersigned, hereby grant, bargain, sell, and convey unto the City of Hattiesburg, Mississippi, a municipal corporation, a Water Easement over, across and upon a parcel of real property, for the installation and maintenance of a water line on the following described property located in the City of Hattiesburg, County of Forrest, State of Mississippi:

A water easement located in the SE 1/4 of the SW 1/4 of Section 13 and in the NE 1/4 of the NW 1/4 of Section 24, Township 4 North, Range 14 West, Lamar County, Mississippi, and being more particularly described as follows:

Commence at a concrete monument found marking the NE corner of the said NE 1/4 of the NW 1/4 of said Section 24; thence run South 89 degrees 52 minutes 00 seconds West along the north line of the said NE 1/4 of the NW 1/4 for 429.65 feet to an iron pin set; thence run South 00 degrees 08 minutes 00 seconds East for 154.71 feet to an iron pin set; thence run South 89 degrees 52 minutes 00 seconds West for 221.46 feet to the Point of Beginning of said easement; thence continue South 89 degrees 52 minutes 00 seconds West for 10.00 feet; thence run North 00 degrees 08 minutes 00 seconds West for 130.01 feet; thence run North 08 degrees 45 minutes 16 seconds West for 38.35 feet to the southern right-of-way line of Lincoln Road; thence run North 73 degrees 05 minutes 28 seconds East along said southern right-of-way line for 10.10 feet; thence run South 08 degrees 45 minutes 16 seconds East for 40.53 feet; thence run South 00 degrees 08 minutes 00 seconds East for 130.76 feet back to the Point of Beginning. Said easement contains 0.04 acre, more or less. Bearings in this description are based on a GPS observation of geodetic North.

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

The Grantee herein is given full rights to do whatever may be necessary and proper for the enjoyment of the rights granted herein, including the right of ingress and egress and the right to clear said easement of selected vegetation such as shrubs, trees, and other vegetation, as may be necessary.

It is further understood and agreed that the consideration herein named is in full, complete and final payment and settlement of any claims or demands for damage accrued, accruing, or to accrue to the grantors herein, their heirs, assigns, or legal representatives, for or on account of the re-construction and maintenance of the existing sewer, and/or any other damage, right or claim whatsoever.

It is further understood and agreed that this instrument constitutes the entire agreement between the grantor and the grantee, there being no oral agreements or representations of any kind.

Witness (my) (our) signature(s) this the 8 day of June
AD, 2021.

Signature/Date: 
Print Name: Lake Garner
Sole member/owner
Garner Property + Development

Signature/Date: _____
Print Name: _____

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County

STATE OF MISSISSIPPI

COUNTY OF Lamar

Personally appeared before me, the undersigned authority in and for the said County and State, on this 8 day of June, 2021, within

my jurisdiction, the within named, Lake Garner and n/a, who acknowledged before me that (he) (she)

(they) signed, executed and delivered the above and foregoing instrument.

Patty Toups

(NOTARY PUBLIC)

(SEAL)



My commission expires: 7-4-2024.

Garner Property & Development, LLC
4358 Lincoln Road #20
Hattiesburg, MS 39402
Lamar County



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Acknowledge receipt of closing documents for the Fire Station No. 9 Construction project; Authorize advertisement of Notice of Final Settlement; Approve final acceptance of the project and approve payment of final pay application to the contractor.
File Number: 2021-823
Minute Book #

Summary

Acknowledge receipt of closing documents for the Fire Station No. 9 Construction project; Authorize advertisement of Notice of Final Settlement; Approve final acceptance of the project and approve payment of final pay application to the contractor.

Recommendation Statement

I recommend approval of this project.

Please place this on the June 22, 2021 City Council meeting for consideration.

NOTICE OF FINAL SETTLEMENT

NOTICE is hereby given that the contract between the City of Hattiesburg, Mississippi, as Owner and Hanco Corporation dated February 11, 2020, for the Fire Station No. 9 Construction project, as per approved plans and specification on file in the City Clerk's Office, has been fully and completely performed and exercised, and that final settlement thereof and thereunder will be made.

THIS NOTICE is given pursuant to and under the terms and provisions of Section 31-5-53, Mississippi Code of 1972, annotated as amended and pursuant to the authority conferred by Order of the Mayor and City Council of Hattiesburg, Mississippi, appearing for record upon and as part of the official minutes of said City of Hattiesburg.

WITNESS my signature and the official seal of said City, on this the 22nd day of August, 2017,
A.D.

CITY OF HATTIESBURG, MISSISSIPPI

BY: _____
CITY CLERK

(S E A L)

Publish (1) Sunday, June 27th, 2020
Return PROOF to City Clerk's Office
P O Box 1898
Hattiesburg, MS 39403

AIA Document G702™ – 1992

Application and Certificate for Payment

TO OWNER: Attn: Tim Pittman City of Hattiesburg P.O. Box 1898 Hattiesburg, MS 39403	PROJECT: 491 Fire Station No. 9 City of Hattiesburg 200 Forrest Street Hattiesburg, MS 39401	APPLICATION NO: 16 PERIOD TO: 04/28/2021 CONTRACT FOR: Fire Station No. 9 CONTRACT DATE: 02/11/2020 PROJECT NOS: / / CN 19-3707	Distribution to: OWNER ☐ ARCHITECT ☐ CONTRACTOR ☐ FIELD ☐ OTHER ☐
FROM CONTRACTOR: HANCO CORPORATION P.O. BOX 17678 HATTIESBURG, MS 39404-7678	VIA ARCHITECT: Landry-Lewis-Germany Architects, P.A. 5211 Old Hwy 11 Hattiesburg, MS 39402		

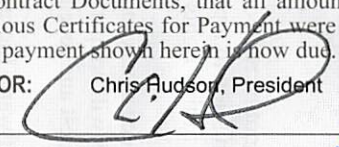
CONTRACTOR'S APPLICATION FOR PAYMENT

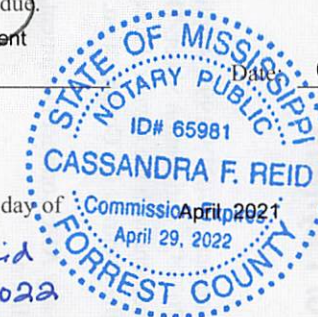
Application is made for payment, as shown below, in connection with the Contract. AIA Document G703™, Continuation Sheet, is attached.

1. ORIGINAL CONTRACT SUM	\$ 2,389,900.00
2. NET CHANGE BY CHANGE ORDERS	\$ 3,943.00
3. CONTRACT SUM TO DATE (Line 1 ± 2)	\$ 2,393,843.00
4. TOTAL COMPLETED & STORED TO DATE (Column G on G703)	\$ 2,393,843.00
5. RETAINAGE:	
a. 0.00 % of Completed Work (Columns D + E on G703)	\$ 0.00
b. 0.00 % of Stored Material (Column F on G703)	\$ 0.00
Total Retainage (Lines 5a + 5b, or Total in Column I of G703)	\$ 0.00
6. TOTAL EARNED LESS RETAINAGE	\$ 2,393,843.00 (Line 4 minus Line 5 Total)
7. LESS PREVIOUS CERTIFICATES FOR PAYMENT	\$ 2,333,996.92 (Line 6 from prior Certificate)
8. CURRENT PAYMENT DUE	\$ 59,846.08
9. BALANCE TO FINISH, INCLUDING RETAINAGE (Line 3 minus Line 6)	\$ 0.00

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTIONS
Total changes approved in previous months by Owner	\$ 3,943.00	\$ 0.00
Total approved this month	\$ 0.00	\$ 0.00
TOTAL	\$ 3,943.00	\$ 0.00
NET CHANGES by Change Order	\$ 3,943.00	

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the Contractor for Work for which previous Certificates for Payment were issued and payments received from the Owner, and that current payment shown herein is now due.

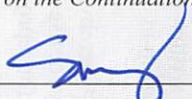
CONTRACTOR: Chris Hudson, President
By: 
State of: Mississippi
County of: Forrest
Subscribed and sworn to before me this 28th day of April, 2022
Notary Public: Cassandra F. Reid
My commission expires: April 29, 2022



ARCHITECT'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising this application, the Architect certifies to the Owner that to the best of the Architect's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents, and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$ 59,846.08
(Attach explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT: 
By: _____ Date: 5/20/21
This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to any rights of the Owner or Contractor under this Contract.

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



Document G702™ – 1992 Instructions

Application and Certificate for Payment

GENERAL INFORMATION

Purpose and Related Documents. AIA Document G702™–1992, Application and Certificate for Payment, is to be used in conjunction with AIA Document G703™, Continuation Sheet. These documents are designed to be used on a Project where a Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Document A201™, General Conditions of the Contract for Construction.

Use of Current Documents. Prior to using any AIA Contract Document, users should consult www.aia.org or a local AIA component to verify the most recent edition.

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The AIA hereby grants the purchaser a limited license to reproduce a maximum of ten copies of a completed G702, but only for use in connection with a particular project. The AIA will not permit reproduction outside of the limited license for reproduction granted above, except upon written request and receipt of written permission from the AIA.

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To report copyright violations of AIA Contract Documents, e-mail The American Institute of Architects' legal counsel, copyright@aia.org.

COMPLETING G702

After the Contractor has completed AIA Document G703, Continuation Sheet, summary information should be transferred to AIA Document G702, Application and Certificate for Payment.

The Contractor should sign G702, have it notarized, and submit it, together with G703, to the Architect.

The Architect should review G702 and G703 and, if they are acceptable, complete the Architect's Certificate for Payment on G702.

The Architect may certify a different amount than that applied for, pursuant to Sections 9.5 and 9.6 of A201. The Architect should then initial all figures on G702 and G703 that have been changed to conform to the amount certified and attach an explanation. The completed G702 and G703 should be forwarded to the Owner.

MAKING PAYMENT

The Owner should make payment directly to the Contractor based on the amount certified by the Architect on AIA Document G702, Application and Certificate for Payment. The completed form contains the name and address of the Contractor. Payment should not be made to any other party unless specifically indicated on G702.

EXECUTING THE DOCUMENT

Persons executing the document should indicate the capacity in which they are acting (i.e., president, secretary, partner, etc.) and the authority under which they are executing the document. Where appropriate, a copy of the resolution authorizing the individual to act on behalf of the firm or entity should be attached.

Continuation Sheet

Page 2 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as PROJECT #1491 containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 04/28/2021
 APPLICATION DATE: 04/28/2021
 PERIOD TO: CN 19-3707
 ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
001	Taxes	\$83,646.00	\$83,646.00	\$0.00	\$0.00	\$83,646.00	100%	\$0.00	
002	Bond	\$24,154.00	\$24,154.00	\$0.00	\$0.00	\$24,154.00	100%	\$0.00	
003	Insurance	\$19,400.00	\$19,400.00	\$0.00	\$0.00	\$19,400.00	100%	\$0.00	
004	Safety Equipment	\$5,000.00	\$5,000.00	\$0.00	\$0.00	\$5,000.00	100%	\$0.00	
005	Power, Water, Gas	\$10,800.00	\$10,800.00	\$0.00	\$0.00	\$10,800.00	100%	\$0.00	
006	Telephone & Fax	\$3,600.00	\$3,600.00	\$0.00	\$0.00	\$3,600.00	100%	\$0.00	
007	Port-O-Lets	\$3,600.00	\$3,600.00	\$0.00	\$0.00	\$3,600.00	100%	\$0.00	
008	Trailer	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
009	Temp. Fence	\$6,900.00	\$6,900.00	\$0.00	\$0.00	\$6,900.00	100%	\$0.00	
010	Project Sign	\$1,900.00	\$1,900.00	\$0.00	\$0.00	\$1,900.00	100%	\$0.00	
011	Layout Engineering	\$3,600.00	\$3,600.00	\$0.00	\$0.00	\$3,600.00	100%	\$0.00	
012	Superintendent Months 1-4	\$17,400.00	\$17,400.00	\$0.00	\$0.00	\$17,400.00	100%	\$0.00	
013	Superintendent Months 5-8	\$17,400.00	\$17,400.00	\$0.00	\$0.00	\$17,400.00	100%	\$0.00	
014	Superintendent Months 9-12	\$17,400.00	\$17,400.00	\$0.00	\$0.00	\$17,400.00	100%	\$0.00	
015	Equipment 1-6	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
016	Equipment 7-12	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
017	Small Tools	\$7,500.00	\$7,500.00	\$0.00	\$0.00	\$7,500.00	100%	\$0.00	
018	Interim Cleanup	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
019	Final Cleaning	\$4,200.00	\$4,200.00	\$0.00	\$0.00	\$4,200.00	100%	\$0.00	
020	Trash Hauling	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
021	Building Concrete Footing Excavation	\$1,400.00	\$1,400.00	\$0.00	\$0.00	\$1,400.00	100%	\$0.00	
022	Building Concrete Formwork Material	\$2,500.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	100%	\$0.00	
023	Building Concrete Reinforcing Steel, Material	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
	GRAND TOTAL	\$308,400.00	\$308,400.00	\$0.00	\$0.00	\$308,400.00	100%	\$0.00	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.

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Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

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COMPLETING G703-1992

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The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

Continuation Sheet

Page 3 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.

PROJECT: 491

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 16

APPLICATION DATE: 04/28/2021

PERIOD TO: 04/28/2021

ARCHITECT'S PROJECT NO: CN 19-3707

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	% <i>(G ÷ C)</i>	BALANCE TO FINISH <i>(C – G)</i>	RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>	THIS PERIOD					
024	Building Concrete Reinforcing Steel Labor	\$5,900.00	\$5,900.00	\$0.00	\$0.00	\$5,900.00	100%	\$0.00	
025	Building Concrete Footing Ready Mix North 1/2	\$10,500.00	\$10,500.00	\$0.00	\$0.00	\$10,500.00	100%	\$0.00	
026	Building Concrete Footing Ready Mix South 1/2	\$10,500.00	\$10,500.00	\$0.00	\$0.00	\$10,500.00	100%	\$0.00	
027	Building Concrete Slab on Grade Ready Mix	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
028	Building Concrete Elevated Ready Mix	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
029	Building Concrete Spot Footing Labor	\$3,800.00	\$3,800.00	\$0.00	\$0.00	\$3,800.00	100%	\$0.00	
030	Buildning Concrete Cont. Footing Labor	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
031	Building Concrete Slab on Grade Labor	\$14,000.00	\$14,000.00	\$0.00	\$0.00	\$14,000.00	100%	\$0.00	
032	Building Concrete Slab On Deck Labor	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
033	Building Concrete Elevate Slab Labor	\$3,200.00	\$3,200.00	\$0.00	\$0.00	\$3,200.00	100%	\$0.00	
034	Building Concrete Stair Labor	\$1,400.00	\$1,400.00	\$0.00	\$0.00	\$1,400.00	100%	\$0.00	
035	Building Concrete Pumping	\$5,700.00	\$5,700.00	\$0.00	\$0.00	\$5,700.00	100%	\$0.00	
036	Building Concrete Finishing	\$6,800.00	\$6,800.00	\$0.00	\$0.00	\$6,800.00	100%	\$0.00	
037	CMU Masonry Material	\$16,500.00	\$16,500.00	\$0.00	\$0.00	\$16,500.00	100%	\$0.00	
038	CMU Masonry Labor	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
039	Cmu Masonry Block Fill	\$5,300.00	\$5,300.00	\$0.00	\$0.00	\$5,300.00	100%	\$0.00	
040	Cmu Masonry Block Cleaning	\$6,500.00	\$6,500.00	\$0.00	\$0.00	\$6,500.00	100%	\$0.00	
041	Structural Steel Shop Drawings	\$7,000.00	\$7,000.00	\$0.00	\$0.00	\$7,000.00	100%	\$0.00	
042	Structural Steel Columns Material	\$9,500.00	\$9,500.00	\$0.00	\$0.00	\$9,500.00	100%	\$0.00	
	GRAND TOTAL	\$477,000.00	\$477,000.00	\$0.00	\$0.00	\$477,000.00	100%	\$0.00	

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AIA® Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

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COMPLETING G703-1992

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Column G. Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H. Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

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Change Orders. Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 or G732 form, whichever is applicable.

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The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

Continuation Sheet

Page 4 of 13

AIA Document G702™-1992, Application and Certificate for Payment, or G732™-2009, Application and Certificate for Payment, Construction Manager as PROJECT #1491 containing Contractor's signed certification is attached.
In tabulations below, amounts are in US dollars.

Fire Station No. 9 City of Hattiesburg

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 04/28/2021
APPLICATION DATE: 04/28/2021
PERIOD TO: CN 19-3707
ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G + C)	BALANCE TO FINISH (C - G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
043	Structural Steel 2nd Floor Beams Material	\$17,500.00	\$17,500.00	\$0.00	\$0.00	\$17,500.00	100%	\$0.00	
044	Structural Steel Roof Beams	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
045	Structural Steel Lattice Frame Columns Material	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
046	Structural Steel Bay Doors Misc. Materials	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
047	Structural Steel Exterior Stairs & Rails Material	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
048	Structural Steel Interior Stairs & Rails Material	\$8,900.00	\$8,900.00	\$0.00	\$0.00	\$8,900.00	100%	\$0.00	
049	Structural Steel Joist Material	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
050	Structural Steel Decking Material	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
051	Structural Steel Erection Labor	\$14,500.00	\$14,500.00	\$0.00	\$0.00	\$14,500.00	100%	\$0.00	
052	Anchor Bolts Material	\$1,700.00	\$1,700.00	\$0.00	\$0.00	\$1,700.00	100%	\$0.00	
053	Anchor Bolts Labor	\$1,400.00	\$1,400.00	\$0.00	\$0.00	\$1,400.00	100%	\$0.00	
054	Expansion Joint Covers	\$600.00	\$600.00	\$0.00	\$0.00	\$600.00	100%	\$0.00	
055	Rough Carentry Material	\$4,700.00	\$4,700.00	\$0.00	\$0.00	\$4,700.00	100%	\$0.00	
056	Rough Carpentry Labor	\$3,900.00	\$3,900.00	\$0.00	\$0.00	\$3,900.00	100%	\$0.00	
057	Cement Siding Material	\$3,000.00	\$3,000.00	\$0.00	\$0.00	\$3,000.00	100%	\$0.00	
058	Cement Siding Labor	\$6,700.00	\$6,700.00	\$0.00	\$0.00	\$6,700.00	100%	\$0.00	
059	Insulated Sheathing Material	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
060	Insulated Sheathing Labor	\$19,200.00	\$19,200.00	\$0.00	\$0.00	\$19,200.00	100%	\$0.00	
061	Finish Carpentry Material	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
062	Finish Carpentry Labor	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
063	Visqueen	\$3,400.00	\$3,400.00	\$0.00	\$0.00	\$3,400.00	100%	\$0.00	
GRAND TOTAL		\$674,500.00	\$674,500.00	\$0.00	\$0.00	\$674,500.00	100%	\$0.00	

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AIA® Document G703™ – 1992 Instructions

Continuation Sheet

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			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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Continuation Sheet

Page 5 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009,

Application and Certificate for Payment, Construction Manager as **PROJECT EDITOR**

containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

16

04/28/2021

APPLICATION DATE:

04/28/2021

PERIOD TO:

CN 19-3707

ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	%(G + C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
064	Batt Insulation @ Walls	\$10,400.00	\$10,400.00	\$0.00	\$0.00	\$10,400.00	100%	\$0.00	
065	Batt Insulation @ Ceiling	\$3,000.00	\$3,000.00	\$0.00	\$0.00	\$3,000.00	100%	\$0.00	
066	Simple Saver Insulation Material	\$5,600.00	\$5,600.00	\$0.00	\$0.00	\$5,600.00	100%	\$0.00	
067	Rigid Polyiso Insulation	\$5,000.00	\$5,000.00	\$0.00	\$0.00	\$5,000.00	100%	\$0.00	
068	Standing Seam Roof @ PEMB Material	\$19,000.00	\$19,000.00	\$0.00	\$0.00	\$19,000.00	100%	\$0.00	
069	Standing Seam Roof @ PEMB Labor	\$14,500.00	\$14,500.00	\$0.00	\$0.00	\$14,500.00	100%	\$0.00	
070	Standing Seam Roof @ Structural Steel Material	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
071	Standing Seam Roof @ Structural Steel Labor	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
072	Ice & Water Shield Material	\$1,900.00	\$1,900.00	\$0.00	\$0.00	\$1,900.00	100%	\$0.00	
073	Ice & Water Shield Labor	\$4,900.00	\$4,900.00	\$0.00	\$0.00	\$4,900.00	100%	\$0.00	
074	Metal Wall Panels @ PEMB Material	\$14,500.00	\$14,500.00	\$0.00	\$0.00	\$14,500.00	100%	\$0.00	
075	Metal Wall Panels @ PEMB Labor	\$9,700.00	\$9,700.00	\$0.00	\$0.00	\$9,700.00	100%	\$0.00	
076	Metal Wall Panels @ Structural Steel Material	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
077	Metal Wall Panels @ Structural Steel Labor	\$6,800.00	\$6,800.00	\$0.00	\$0.00	\$6,800.00	100%	\$0.00	
078	TPO Roof	\$6,600.00	\$6,600.00	\$0.00	\$0.00	\$6,600.00	100%	\$0.00	
079	Gutters & Downspouts Material	\$1,500.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	100%	\$0.00	
080	Gutters & Downspouts Labor	\$900.00	\$900.00	\$0.00	\$0.00	\$900.00	100%	\$0.00	
081	Sealants @ Building	\$6,800.00	\$6,800.00	\$0.00	\$0.00	\$6,800.00	100%	\$0.00	
082	HM Doors & Frames Material	\$13,500.00	\$13,500.00	\$0.00	\$0.00	\$13,500.00	100%	\$0.00	
083	Wood Doors Material	\$7,500.00	\$7,500.00	\$0.00	\$0.00	\$7,500.00	100%	\$0.00	
084	Door Hardware 1st Floor Material	\$14,000.00	\$14,000.00	\$0.00	\$0.00	\$14,000.00	100%	\$0.00	
GRAND TOTAL		\$856,600.00	\$856,600.00	\$0.00	\$0.00	\$856,600.00	100%	\$0.00	

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**AIA**[®]**Document G703[™] – 1992 Instructions****Continuation Sheet****GENERAL INFORMATION**

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COMPLETING G703-1992

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Column G. Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

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Construction Change Directives. Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Section 7.3 of AIA Document A201 or Section 7.3 of AIA Document A232.

The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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Continuation Sheet

Page 6 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Advisor Edition, containing Contractor's signed certification is attached.

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

PROJECT: 491

Fire Station No. 9 City of Hattiesburg

APPLICATION NO: 16

APPLICATION DATE: 04/28/2021

PERIOD TO: 04/28/2021

ARCHITECT'S PROJECT NO: CN 19-3707

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	% <i>(G ÷ C)</i>	BALANCE TO FINISH <i>(C – G)</i>	RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>	THIS PERIOD					
085	Door Hardware 2nd Floor Material	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
086	Door Frame Labor	\$5,700.00	\$5,700.00	\$0.00	\$0.00	\$5,700.00	100%	\$0.00	
087	Door & Hardware Labor	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
088	Overhead Doors Door 100B	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
089	Overhead Doors Door 100C	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
090	Overhead Door Door 100D	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
091	Overhead Door Door 100E	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
092	Overhead Door Door 104A	\$9,000.00	\$9,000.00	\$0.00	\$0.00	\$9,000.00	100%	\$0.00	
093	Aluminum Windows Curtain Wall Material	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
094	Aluminum Windows Curtain Wall Labor	\$10,500.00	\$10,500.00	\$0.00	\$0.00	\$10,500.00	100%	\$0.00	
095	Aluminum Windows Storefront Entrance Material	\$4,000.00	\$4,000.00	\$0.00	\$0.00	\$4,000.00	100%	\$0.00	
096	Aluminum Windows Storefront Entrance Labor	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
097	Aluminum Windows Storefront Windows Material	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
098	Aluminum Windows Storefront Windows Labor	\$12,200.00	\$12,200.00	\$0.00	\$0.00	\$12,200.00	100%	\$0.00	
099	Alum Metal Framing Shop Drawings & Design	\$5,000.00	\$5,000.00	\$0.00	\$0.00	\$5,000.00	100%	\$0.00	
100	Alum Metal Framing 8" Studs, PEMB Material	\$8,300.00	\$8,300.00	\$0.00	\$0.00	\$8,300.00	100%	\$0.00	
101	Alum Metal Framing 8" Studs, Struc Steel 1st Material	\$10,700.00	\$10,700.00	\$0.00	\$0.00	\$10,700.00	100%	\$0.00	
102	Alum Metal Framing 8" Studs 2nd Material	\$10,700.00	\$10,700.00	\$0.00	\$0.00	\$10,700.00	100%	\$0.00	
	GRAND TOTAL	\$1,040,700.00	\$1,040,700.00	\$0.00	\$0.00	\$1,040,700.00	100%	\$0.00	

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AIA® Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

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COMPLETING G703-1992

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The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G - C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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Continuation Sheet

Page 7 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009,

Application and Certificate for Payment, Construction Manager as PROJECT 491

containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

16

04/28/2021

APPLICATION DATE:

04/28/2021

PERIOD TO:

CN 19-3707

ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
103	Alum Metal Framing 8" Studs PEMB Labor	\$11,900.00	\$11,900.00	\$0.00	\$0.00	\$11,900.00	100%	\$0.00	
104	Alum Metal Framing 8" Studs Struc Steel 1st Labor	\$14,700.00	\$14,700.00	\$0.00	\$0.00	\$14,700.00	100%	\$0.00	
105	Alum Metal Framing 8" Studs Struc Steel 2nd Labor	\$14,700.00	\$14,700.00	\$0.00	\$0.00	\$14,700.00	100%	\$0.00	
106	Alum Metal Framing 3-5/8" Studs Struc Steel 1st Material	\$2,700.00	\$2,700.00	\$0.00	\$0.00	\$2,700.00	100%	\$0.00	
107	Alum Metal Framing 3-5/8" Studs Struc Steel 2nd Material	\$2,700.00	\$2,700.00	\$0.00	\$0.00	\$2,700.00	100%	\$0.00	
108	Alum Metal Framing 3-5/8" Studs Struc Steel 1st Labor	\$8,900.00	\$8,900.00	\$0.00	\$0.00	\$8,900.00	100%	\$0.00	
109	Alum Metal Framing 3-5/8" Studs Struc Steel 2nd Labor	\$8,900.00	\$8,900.00	\$0.00	\$0.00	\$8,900.00	100%	\$0.00	
110	Drywall Material	\$8,400.00	\$8,400.00	\$0.00	\$0.00	\$8,400.00	100%	\$0.00	
111	Drywall Labor	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
112	Ceramic Tile Material	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
113	Ceramic Tile Labor	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
114	Acoustical Ceiling LAT-1 Material	\$7,300.00	\$7,300.00	\$0.00	\$0.00	\$7,300.00	100%	\$0.00	
115	Acoustical Ceiling LAT-1 Labor	\$6,300.00	\$6,300.00	\$0.00	\$0.00	\$6,300.00	100%	\$0.00	
116	Acoustical Ceiling LAT-2 Material	\$1,700.00	\$1,700.00	\$0.00	\$0.00	\$1,700.00	100%	\$0.00	
117	Acoustical Ceiling LAT-2 Labor	\$1,300.00	\$1,300.00	\$0.00	\$0.00	\$1,300.00	100%	\$0.00	
118	Resilient Material	\$16,000.00	\$16,000.00	\$0.00	\$0.00	\$16,000.00	100%	\$0.00	
119	Resilient Labor	\$5,500.00	\$5,500.00	\$0.00	\$0.00	\$5,500.00	100%	\$0.00	
120	Painting Finsihing	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
121	Painting Interior	\$23,000.00	\$23,000.00	\$0.00	\$0.00	\$23,000.00	100%	\$0.00	
122	Painting Exterior	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
	GRAND TOTAL	\$1,233,700.00	\$1,233,700.00	\$0.00	\$0.00	\$1,233,700.00	100%	\$0.00	

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Document G703™ – 1992 Instructions

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			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000	-	65,000	

Continuation Sheet

Page 8 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as ~~PROJECT~~ ^{ADDENDUM} 49-1 containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 16

APPLICATION DATE: 04/28/2021

PERIOD TO:

ARCHITECT'S PROJECT NO:

04/28/2021

04/28/2021

CN 19-3707

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	%(G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
123	Painting Floor	\$4,000.00	\$4,000.00	\$0.00	\$0.00	\$4,000.00	100%	\$0.00	
124	Specialties Labor	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
125	Toilet Partitions Material	\$1,500.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	100%	\$0.00	
126	Toilet Accessories Material	\$2,600.00	\$2,600.00	\$0.00	\$0.00	\$2,600.00	100%	\$0.00	
127	Flagpole Material	\$1,500.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	100%	\$0.00	
128	Corner Guards Material	\$900.00	\$900.00	\$0.00	\$0.00	\$900.00	100%	\$0.00	
129	Fire Extinguishers Material	\$800.00	\$800.00	\$0.00	\$0.00	\$800.00	100%	\$0.00	
130	Interior Signage & Plaque Material	\$4,300.00	\$4,300.00	\$0.00	\$0.00	\$4,300.00	100%	\$0.00	
131	City o Hattiesburg Sign Allowance	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00	100%	\$0.00	
132	Fire Station Sign Allowance	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00	100%	\$0.00	
133	Alumninum Canopy Material	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
134	Aluminum Canopy Labor	\$700.00	\$700.00	\$0.00	\$0.00	\$700.00	100%	\$0.00	
135	Exterior Signage	\$9,300.00	\$9,300.00	\$0.00	\$0.00	\$9,300.00	100%	\$0.00	
136	Comm Appliances	\$7,300.00	\$7,300.00	\$0.00	\$0.00	\$7,300.00	100%	\$0.00	
137	S/S Cabinets & helves	\$5,500.00	\$5,500.00	\$0.00	\$0.00	\$5,500.00	100%	\$0.00	
138	Refrigerator & Dishwasher Allowance	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
139	Washer & Dryer Allowance	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
140	Manual Roller Shades	\$4,300.00	\$4,300.00	\$0.00	\$0.00	\$4,300.00	100%	\$0.00	
141	PEMB Material #1	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
142	PEMB Material #2	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
143	PEMB Material #3	\$20,000.00	\$20,000.00	\$0.00	\$0.00	\$20,000.00	100%	\$0.00	
144	PEMB Labor	\$12,300.00	\$12,300.00	\$0.00	\$0.00	\$12,300.00	100%	\$0.00	
145	Fire Sprinkler Design	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
146	Fire Sprinkler Labor	\$11,400.00	\$11,400.00	\$0.00	\$0.00	\$11,400.00	100%	\$0.00	
GRAND TOTAL		\$1,381,100.00	\$1,381,100.00	\$0.00	\$0.00	\$1,381,100.00	100%	\$0.00	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

Purpose and Related Documents. AIA Document G703™, Continuation Sheet, is to be used in conjunction with AIA Document G702™, Application and Certificate for Payment, or AIA Document G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition. These documents are designed for use on Projects where the Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Documents A201™, General Conditions of the Contract for Construction, and A232™, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

Use of Current Documents. Prior to using any AIA Contract Document, users should consult www.aia.org or a local AIA component to verify the most recent edition.

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COMPLETING G703-1992

Heading. This information should be completed in a manner consistent with similar information on AIA Document G702, Application and Certificate for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, whichever is applicable.

Columns A, B and C. These columns should be completed by identifying the various portions of the Project and their scheduled values consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required. Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

Column D. Enter in this column the amount of completed Work covered by the previous application (columns D & E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

Column E. Enter here the value of Work completed at the time of this application, including the value of materials incorporated in the project that were listed on the previous application under Materials Presently Stored (column F).

Column F. Enter here the value of Materials Presently Stored for which payment is sought. The total of the column must be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period.)

Column G. Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H. Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

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A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

Continuation Sheet

Page 9 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009,

Application and Certificate for Payment, Construction Manager as PROJECT # 491

containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

16

04/28/2021

APPLICATION DATE:

04/28/2021

PERIOD TO:

CN 19-3707

ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
147	Fire Sprinkler Test & Trim Out	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
148	Fire Sprinkler Material	\$17,100.00	\$17,100.00	\$0.00	\$0.00	\$17,100.00	100%	\$0.00	
149	Plumbing Slab Rough Material	\$9,000.00	\$9,000.00	\$0.00	\$0.00	\$9,000.00	100%	\$0.00	
150	Plumbing Slab Rough Labor	\$9,000.00	\$9,000.00	\$0.00	\$0.00	\$9,000.00	100%	\$0.00	
151	Plumbing Stack Out Material	\$16,500.00	\$16,500.00	\$0.00	\$0.00	\$16,500.00	100%	\$0.00	
152	Plumbing Stack Out Labor	\$16,500.00	\$16,500.00	\$0.00	\$0.00	\$16,500.00	100%	\$0.00	
153	Plumbing Fixtures/Trim Materials	\$24,000.00	\$24,000.00	\$0.00	\$0.00	\$24,000.00	100%	\$0.00	
154	Plumbing Fixtures/Trim Labor	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
155	HVAC Rough Material	\$22,000.00	\$22,000.00	\$0.00	\$0.00	\$22,000.00	100%	\$0.00	
156	HVAC Rough Labor	\$22,000.00	\$22,000.00	\$0.00	\$0.00	\$22,000.00	100%	\$0.00	
157	HVAC A/C Equip	\$41,000.00	\$41,000.00	\$0.00	\$0.00	\$41,000.00	100%	\$0.00	
158	HVAC Air Distribution Material	\$18,500.00	\$18,500.00	\$0.00	\$0.00	\$18,500.00	100%	\$0.00	
159	HVAC Air Distribution Labor	\$18,500.00	\$18,500.00	\$0.00	\$0.00	\$18,500.00	100%	\$0.00	
160	HVAC Air Compressor	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
161	HVAC Trim Out Material	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
162	HVAC Trim Out Labor	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
163	HVAC Test & Balance	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
164	Electrical Mobilization	\$5,000.00	\$5,000.00	\$0.00	\$0.00	\$5,000.00	100%	\$0.00	
165	Relocate Overhead Lines	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
166	Light Fixture Material	\$39,000.00	\$39,000.00	\$0.00	\$0.00	\$39,000.00	100%	\$0.00	
167	Light Fixture Labor	\$5,000.00	\$5,000.00	\$0.00	\$0.00	\$5,000.00	100%	\$0.00	
168	Switchgear Material	\$18,900.00	\$18,900.00	\$0.00	\$0.00	\$18,900.00	100%	\$0.00	
169	Switchgear Labor	\$3,000.00	\$3,000.00	\$0.00	\$0.00	\$3,000.00	100%	\$0.00	
170	Rough Site Material	\$16,130.00	\$16,130.00	\$0.00	\$0.00	\$16,130.00	100%	\$0.00	
	GRAND TOTAL	\$1,762,230.00	\$1,762,230.00	\$0.00	\$0.00	\$1,762,230.00	100%	\$0.00	

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AIA® Document G703™ – 1992 Instructions

Continuation Sheet

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			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

Continuation Sheet

Page 10 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009, Application and Certificate for Payment, Construction Manager as Adviser Edition, containing Contractor's signed certification is attached.

PROJECT: 491 Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 16
APPLICATION DATE: 04/28/2021
PERIOD TO: 04/28/2021
ARCHITECT'S PROJECT NO: CN 19-3707

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	% <i>(G ÷ C)</i>	BALANCE TO FINISH <i>(C – G)</i>	RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>	THIS PERIOD					
171	Rough Site Labor	\$23,500.00	\$23,500.00	\$0.00	\$0.00	\$23,500.00	100%	\$0.00	
172	Rough Wall Ceiling Material	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
173	Rough wall Celing Labor	\$19,000.00	\$19,000.00	\$0.00	\$0.00	\$19,000.00	100%	\$0.00	
174	Branch Conductors Material	\$7,000.00	\$7,000.00	\$0.00	\$0.00	\$7,000.00	100%	\$0.00	
175	Branch Conductors Labor	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
176	Feeder Conductors Material	\$9,600.00	\$9,600.00	\$0.00	\$0.00	\$9,600.00	100%	\$0.00	
177	Feeder Conductors Labor	\$1,000.00	\$1,000.00	\$0.00	\$0.00	\$1,000.00	100%	\$0.00	
178	Wiring Device Material	\$1,600.00	\$1,600.00	\$0.00	\$0.00	\$1,600.00	100%	\$0.00	
179	Wiring Device Labor	\$2,250.00	\$2,250.00	\$0.00	\$0.00	\$2,250.00	100%	\$0.00	
180	Equipment Storage & Rental	\$6,000.00	\$6,000.00	\$0.00	\$0.00	\$6,000.00	100%	\$0.00	
181	Temp Power	\$3,200.00	\$3,200.00	\$0.00	\$0.00	\$3,200.00	100%	\$0.00	
182	Close Outs	\$500.00	\$500.00	\$0.00	\$0.00	\$500.00	100%	\$0.00	
183	Generator Material	\$29,570.00	\$29,570.00	\$0.00	\$0.00	\$29,570.00	100%	\$0.00	
184	Generator Labor	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
185	Comm/Data	\$11,000.00	\$11,000.00	\$0.00	\$0.00	\$11,000.00	100%	\$0.00	
186	Fire Alarm Material	\$5,500.00	\$5,500.00	\$0.00	\$0.00	\$5,500.00	100%	\$0.00	
187	Fire Alarm Labor	\$1,250.00	\$1,250.00	\$0.00	\$0.00	\$1,250.00	100%	\$0.00	
188	Site Mobilizaation	\$3,000.00	\$3,000.00	\$0.00	\$0.00	\$3,000.00	100%	\$0.00	
189	Stripe Topsoil	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
190	Site Grading	\$11,700.00	\$11,700.00	\$0.00	\$0.00	\$11,700.00	100%	\$0.00	
191	Import Fill #1	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
192	Import Fill #2	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
193	Import Fill #3	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
194	Import Fill #4	\$18,000.00	\$18,000.00	\$0.00	\$0.00	\$18,000.00	100%	\$0.00	
	GRAND TOTAL	\$2,001,900.00	\$2,001,900.00	\$0.00	\$0.00	\$2,001,900.00	100%	\$0.00	

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Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

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COMPLETING G703-1992

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Column H. Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

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A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G TOTAL COMPLETED AND STORED TO DATE (D + E + F)	H % (G - C)	I BALANCE TO FINISH (C - G)	J RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

Continuation Sheet

Page 11 of 13

AIA Document G702™–1992, Application and Certificate for Payment, or G732™–2009,

Application and Certificate for Payment, Construction Manager as ~~Proprietor~~ **Architect**

containing Contractor's signed certification is attached.

Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO:

16

04/28/2021

APPLICATION DATE:

04/28/2021

PERIOD TO:

CN 19-3707

ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	% (G ÷ C)	BALANCE TO FINISH (C – G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
195	Construction Entrance	\$3,500.00	\$3,500.00	\$0.00	\$0.00	\$3,500.00	100%	\$0.00	
196	Crushed Stone #1	\$17,900.00	\$17,900.00	\$0.00	\$0.00	\$17,900.00	100%	\$0.00	
197	Crushed Stone #2	\$17,900.00	\$17,900.00	\$0.00	\$0.00	\$17,900.00	100%	\$0.00	
198	Termite Control	\$1,000.00	\$1,000.00	\$0.00	\$0.00	\$1,000.00	100%	\$0.00	
199	Seeding/Grassing	\$5,100.00	\$5,100.00	\$0.00	\$0.00	\$5,100.00	100%	\$0.00	
200	Fine Grading	\$2,700.00	\$2,700.00	\$0.00	\$0.00	\$2,700.00	100%	\$0.00	
201	Respread Topsoil	\$2,500.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	100%	\$0.00	
202	Irrigation Sleeves	\$1,100.00	\$1,100.00	\$0.00	\$0.00	\$1,100.00	100%	\$0.00	
203	Erosion Control	\$7,500.00	\$7,500.00	\$0.00	\$0.00	\$7,500.00	100%	\$0.00	
204	Chain Link Fence	\$2,900.00	\$2,900.00	\$0.00	\$0.00	\$2,900.00	100%	\$0.00	
205	Mill Asphalt	\$2,500.00	\$2,500.00	\$0.00	\$0.00	\$2,500.00	100%	\$0.00	
206	Asphalt Paving	\$17,500.00	\$17,500.00	\$0.00	\$0.00	\$17,500.00	100%	\$0.00	
207	Pavement Markings	\$8,000.00	\$8,000.00	\$0.00	\$0.00	\$8,000.00	100%	\$0.00	
208	Site Signs	\$600.00	\$600.00	\$0.00	\$0.00	\$600.00	100%	\$0.00	
209	Parking Bumpers	\$1,300.00	\$1,300.00	\$0.00	\$0.00	\$1,300.00	100%	\$0.00	
210	Bike Rack	\$500.00	\$500.00	\$0.00	\$0.00	\$500.00	100%	\$0.00	
211	Concrete Paving Labor North Drive North 1/2	\$14,200.00	\$14,200.00	\$0.00	\$0.00	\$14,200.00	100%	\$0.00	
212	Concrete Paving Labor North Drive South 1/2	\$14,200.00	\$14,200.00	\$0.00	\$0.00	\$14,200.00	100%	\$0.00	
213	Concrete Paving Labor South Drive North 1/2	\$14,200.00	\$14,200.00	\$0.00	\$0.00	\$14,200.00	100%	\$0.00	
214	Concrete Paving Labor South Drive South 1/2	\$14,200.00	\$14,200.00	\$0.00	\$0.00	\$14,200.00	100%	\$0.00	
214a	Concrete Paving Labor Employee Parking Lot	\$14,200.00	\$14,200.00	\$0.00	\$0.00	\$14,200.00	100%	\$0.00	
GRAND TOTAL		\$2,165,400.00	\$2,165,400.00	\$0.00	\$0.00	\$2,165,400.00	100%	\$0.00	

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Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

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COMPLETING G703-1992

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A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G		H BALANCE TO FINISH (C - G)	I RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD		TOTAL COMPLETED AND STORED TO DATE (D + E + F)	% (G ÷ C)		
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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Document G703™ – 1992

Continuation Sheet

Page 12 of 13

16

AIA Document G702™-1992, Application and Certificate for Payment, or G732™-2009,

Application and Certificate for Payment, Construction Manager as Adviser Edition,

containing Contractor's signed certification is attached.

PROJECT: 191
Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 04/28/2021

APPLICATION DATE: 04/28/2021

PERIOD TO: CN 19-3707

ARCHITECT'S PROJECT NO:

ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED (Not in D or E)	TOTAL COMPLETED AND STORED TO DATE (D+E+F)	%(G ÷ C)	BALANCE TO FINISH (C - G)	RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
215	Concrete Paving Material North Drive North 1/2	\$15,300.00	\$15,300.00	\$0.00	\$0.00	\$15,300.00	100%	\$0.00	
216	Concrete Paving Material North Drive South 1/2	\$15,300.00	\$15,300.00	\$0.00	\$0.00	\$15,300.00	100%	\$0.00	
217	Concrete Paving Material South Drive North 1/2	\$15,300.00	\$15,300.00	\$0.00	\$0.00	\$15,300.00	100%	\$0.00	
218	Concrete Paving Material South Drive South 1/2	\$15,300.00	\$15,300.00	\$0.00	\$0.00	\$15,300.00	100%	\$0.00	
219	Concrete Paving Material Employee Parking Lot	\$15,300.00	\$15,300.00	\$0.00	\$0.00	\$15,300.00	100%	\$0.00	
220	Reinforcing Steel @ Conc Paving Material	\$13,000.00	\$13,000.00	\$0.00	\$0.00	\$13,000.00	100%	\$0.00	
221	Reinforcing Steel @ Conc Paving Labor	\$8,800.00	\$8,800.00	\$0.00	\$0.00	\$8,800.00	100%	\$0.00	
222	Construction/Control Joints @ Conc Paving	\$9,500.00	\$9,500.00	\$0.00	\$0.00	\$9,500.00	100%	\$0.00	
223	Sealants @ Conc Paving	\$12,800.00	\$12,800.00	\$0.00	\$0.00	\$12,800.00	100%	\$0.00	
224	Stand Up Curb Labor	\$12,500.00	\$12,500.00	\$0.00	\$0.00	\$12,500.00	100%	\$0.00	
225	Stand Up Curve Material	\$1,800.00	\$1,800.00	\$0.00	\$0.00	\$1,800.00	100%	\$0.00	
226	Sidewalk Labor	\$4,400.00	\$4,400.00	\$0.00	\$0.00	\$4,400.00	100%	\$0.00	
227	Sidewalk Material	\$2,900.00	\$2,900.00	\$0.00	\$0.00	\$2,900.00	100%	\$0.00	
228	Bollards Labor	\$2,000.00	\$2,000.00	\$0.00	\$0.00	\$2,000.00	100%	\$0.00	
229	Bollards Material	\$1,100.00	\$1,100.00	\$0.00	\$0.00	\$1,100.00	100%	\$0.00	
230	Generator Foundation	\$5,700.00	\$5,700.00	\$0.00	\$0.00	\$5,700.00	100%	\$0.00	
231	Site Fire Water Labor	\$15,000.00	\$15,000.00	\$0.00	\$0.00	\$15,000.00	100%	\$0.00	
232	Site Fire Water Material	\$10,000.00	\$10,000.00	\$0.00	\$0.00	\$10,000.00	100%	\$0.00	
233	Site Sewer	\$3,400.00	\$3,400.00	\$0.00	\$0.00	\$3,400.00	100%	\$0.00	
	GRAND TOTAL	\$2,344,800.00	\$2,344,800.00	\$0.00	\$0.00	\$2,344,800.00	100%	\$0.00	

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Document G703[™] – 1992 Instructions

Continuation Sheet

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COMPLETING G703–1992

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			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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Continuation Sheet

Page 13 of 13

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PROJECT: 491
Fire Station No. 9 City of Hattiesburg

In tabulations below, amounts are in US dollars.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: 16

APPLICATION DATE: 04/28/2021

PERIOD TO:

ARCHITECT'S PROJECT NO:

04/28/2021
04/28/2021
CN 19-3707

A	B	C	D	E	F	G		H	I
ITEM NO.	DESCRIPTION OF WORK	SCHEDULED VALUE	WORK COMPLETED		MATERIALS PRESENTLY STORED <i>(Not in D or E)</i>	TOTAL COMPLETED AND STORED TO DATE <i>(D+E+F)</i>	% <i>(G ÷ C)</i>	BALANCE TO FINISH <i>(C – G)</i>	RETAINAGE <i>(If variable rate)</i>
			FROM PREVIOUS APPLICATION <i>(D + E)</i>	THIS PERIOD					
234	Site Water	\$5,800.00	\$5,800.00	\$0.00	\$0.00	\$5,800.00	100%	\$0.00	
235	Storm Drainage #1	\$12,600.00	\$12,600.00	\$0.00	\$0.00	\$12,600.00	100%	\$0.00	
236	Storm Drainage #2	\$12,600.00	\$12,600.00	\$0.00	\$0.00	\$12,600.00	100%	\$0.00	
237	Storm Drainage #3	\$12,600.00	\$12,600.00	\$0.00	\$0.00	\$12,600.00	100%	\$0.00	
238	Downspout Adapters	\$1,500.00	\$1,500.00	\$0.00	\$0.00	\$1,500.00	100%	\$0.00	
239	CO #1 Flag Pole Lighting	\$3,943.00	\$3,943.00	\$0.00	\$0.00	\$3,943.00	100%	\$0.00	

CAUTION: You should sign an original AIA Contract Document, on which this text appears in RED. An original assures that changes will not be obscured.



AIA®

Document G703™ – 1992 Instructions

Continuation Sheet

GENERAL INFORMATION

Purpose and Related Documents. AIA Document G703™, Continuation Sheet, is to be used in conjunction with AIA Document G702™, Application and Certificate for Payment, or AIA Document G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition. These documents are designed for use on Projects where the Contractor has a direct Agreement with the Owner. Procedures for their use are covered in AIA Documents A201™, General Conditions of the Contract for Construction, and A232™, General Conditions of the Contract for Construction, Construction Manager as Adviser Edition.

Use of Current Documents. Prior to using any AIA Contract Document, users should consult www.aia.org or a local AIA component to verify the most recent edition.

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COMPLETING G703–1992

Heading. This information should be completed in a manner consistent with similar information on AIA Document G702, Application and Certificate for Payment, or G732™, Application and Certificate for Payment, Construction Manager as Adviser Edition, whichever is applicable.

Columns A, B and C. These columns should be completed by identifying the various portions of the Project and their scheduled values consistent with the schedule of values submitted to the Architect at the commencement of the Project or as subsequently adjusted. The breakdown may be by sections of the Work or by Subcontractors and should remain consistent throughout the Project. Multiple pages should be used when required. Column C should be subtotaled at the bottom when more than one page is used and totaled on the last page. Initially, this total should equal the original Contract Sum. The total of column C may be adjusted by Change Orders during the Project.

Column D. Enter in this column the amount of completed Work covered by the previous application (columns D & E from the previous application). Values from column F (Materials Presently Stored) from the previous application should not be entered in this column.

Column E. Enter here the value of Work completed at the time of this application, including the value of materials incorporated in the project that were listed on the previous application under Materials Presently Stored (column F).

Column F. Enter here the value of Materials Presently Stored for which payment is sought. The total of the column must be recalculated at the end of each pay period. This value covers both materials newly stored for which payment is sought and materials previously stored which are not yet incorporated into the Project. Mere payment by the Owner for stored materials does not result in a deduction from this column. Only as materials are incorporated into the Project is their value deducted from this column and incorporated into column E (Work Completed—This Period.)

Column G. Enter here the total of columns D, E and F. Calculate the percentage completed by dividing column G by column C.

Column H. Enter here the difference between column C (Scheduled Value) and column G (Total Completed and Stored to Date).

Column I. This column is normally used only for contracts where variable retainage is permitted on a line-item basis. It need not be completed on projects where a constant retainage is withheld from the overall contract amount.

Change Orders. Although Change Orders could be incorporated by changing the schedule of values each time a Change Order is added to the Project, this is not normally done. Usually, Change Orders are listed separately, either on their own G703 form or at the end of the basic schedule. The amount of the original contract adjusted by Change Orders is to be entered in the appropriate location on the G702 or G732 form, whichever is applicable.

Construction Change Directives. Amounts not in dispute that have been included in Construction Change Directives should be incorporated into one or more Change Orders. Amounts remaining in dispute should be dealt with according to Section 7.3 of AIA Document A201 or Section 7.3 of AIA Document A232.

The following is an example of a Continuation Sheet for work in progress. Please note that dollar amounts shown below are for illustrative purposes only, and are not intended to reflect actual construction costs.

A ITEM NO.	B DESCRIPTION OF WORK	C SCHEDULED VALUE	D WORK COMPLETED		F MATERIALS PRESENTLY STORED (Not in D or E)	G TOTAL COMPLETED AND STORED TO DATE (D + E + F)	H % (G ÷ C)	I BALANCE TO FINISH (C - G)	J RETAINAGE (If variable rate)
			FROM PREVIOUS APPLICATION (D + E)	THIS PERIOD					
1	MOBILIZATION	5,000	5,000	0	0	5,000	100	0	
2	STUMP REMOVAL	5,000	5,000	0	0	5,000	100	0	
3	EARTH WORK	15,000	10,000	5,000	0	15,000	100	0	
4	LOWER RETAINING WALL	10,000	0	5,000	0	5,000	50	5,000	
5	CURBS & MISC. CONC.	5,000	0	0	0	0	0	5,000	
6	PAVING, UPPER DRIVE	20,000	0	0	0	0	0	20,000	
7	PAVING, LOWER DRIVE	20,000	0	0	0	0	0	20,000	
8	PAVERS	20,000	0	0	10,000	10,000	50	10,000	
9	BRICK WORK	5,000	0	0	0	0	0	5,000	
10									
11	GRAND TOTAL	105,000	20,000	10,000	10,000	40,000		65,000	

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City of Hattiesburg -Hattiesburg, MS
CN 19-3707

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3. Consent of Surety for Final Payment
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5. Contractor's Affidavit of Release of Liens (G706A)
6. Statement Releasing Owner from claims and/or damages
7. Contract Document Statement
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23. As-Built - Separate

**AIA**[®]**Document G707™ – 1994****Consent Of Surety to Final Payment**

Bond # 016220565

PROJECT: *(Name and address)*

Fire Station No. 9 City of Hattiesburg

Hattiesburg, MS 39401 Project CN #19-3707

ARCHITECT'S PROJECT NUMBER:

OWNER: ☐

CONTRACT FOR: Construction

ARCHITECT: ☐TO OWNER: *(Name and address)*

City of Hattiesburg

P.O. Box 1898

Hattiesburg, MS 39401

CONTRACT DATED: 2/11/2020

CONTRACTOR: ☐SURETY: ☐OTHER: ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

Liberty Mutual Insurance Company

175 Berkeley Street

Boston, MA 02116

, SURETY,

on bond of

(Insert name and address of Contractor)

Hanco Corporation

P O Box 17678

Hattiesburg, MS 39404

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety
 of any of its obligations to

(Insert name and address of Owner)

City of Hattiesburg

P.O. Box 1898

Hattiesburg, MS 39401

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date: **April 26th, 2021***(Insert in writing the month followed by the numeric date and year.)*

Liberty Mutual Insurance Company

*(Surety)**(Signature of authorized representative)*

Kimberly B. Barhum, Attorney-in-Fact

(Printed name and title)

Attest:

(Seal):



This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: 8201348-016030

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Kimberly B. Barhum; Joseph R. Beattie; Christopher H. Boone; Jim E. Brashier; Lisa R. Butler; David Fortenberry; Loren Richard Howell, Jr.; R. T. Jones; Dewey B. Mason; Mary J. Norval; Kathleen B. Scarborough; Susan Skrimetta; Sharon Tuten; Andrew P. Underwood; Troy P. Wagener

all of the city of Biloxi state of MS each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 3rd day of June, 2019.



Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: David M. Carey
David M. Carey, Assistant Secretary

State of PENNSYLVANIA ss
County of MONTGOMERY

On this 3rd day of June, 2019 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.



COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: Teresa Pastella
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.

Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.

Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 26th day of April, 2021.



By: Renee C. Llewellyn
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-810-832-8240 between 9:00 am and 4:30 pm EST on any business day.



AIA Document G706A™ – 1994

Contractor's Affidavit of Release of Liens

PROJECT: (Name and address)
Fire Station No. 9
City of Hattiesburg
Hattiesburg, MS

ARCHITECT'S PROJECT NUMBER: CN19-3707

OWNER: ☐

ARCHITECT: ☐

CONTRACTOR: ☐

SURETY: ☐

OTHER: ☐

CONTRACT FOR: General
Construction

CONTRACT DATED: February 11, 2020

TO OWNER: (Name and address)
City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

STATE OF: Mississippi
COUNTY OF: Forrest

The undersigned hereby certifies that to the best of the undersigned's knowledge, information and belief, except as listed below, the Releases or Waivers of Lien attached hereto include the Contractor, all Subcontractors, all suppliers of materials and equipment, and all performers of Work, labor or services who have or may have liens or encumbrances or the right to assert liens or encumbrances against any property of the Owner arising in any manner out of the performance of the Contract referenced above.

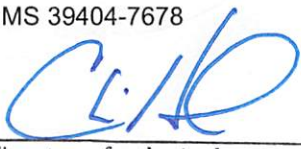
EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.

CONTRACTOR: (Name and address)
Hanco Corporation
P.O. Box 17678
Hattiesburg, MS 39404-7678

BY:


(Signature of authorized
representative)
Chris Hudson/President
(Printed name and title)

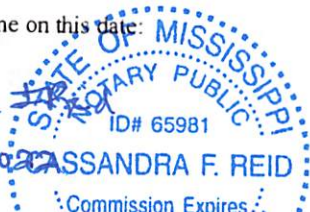
Subscribed and sworn to before me on this date:

April 30, 2021

Notary Public:

My Commission Expires:

April 29, 2022





P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

RE: Fire Station No. 9
City of Hattiesburg - Hattiesburg, MS
CN 19-3707

City of Hattiesburg:

We hereby certify that all bills for labor and materials incorporated into the above captioned project under our contract, have been paid and that the Owner is released from any and all claims and/or damages under this contract.

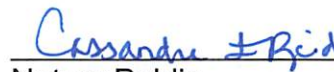
Sincerely,
Hanco Corporation



Chris Hudson

State of Mississippi
County of Forrest

Sworn to and subscribed before me, the undersigned authority, on this the
30th Day of April, 2021.


Notary Public
My Commission Expires on April 29, 2022





P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

Certification

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

RE: Fire Station No. 9
City of Hattiesburg – Hattiesburg, MS 39401
CN 19-3707

City of Hattiesburg:

We hereby certify that the above referenced project has been constructed in accordance with contract documents.

Very Truly Yours,
Hanco Corporation

Chris Hudson

State of Mississippi
County of Forrest

Sworn to and subscribed before me, the undersigned authority on this the
30th Day of April, 2021.

Notary Public

My Commission Expires on April 29, 2022





P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

Non-Asbestos Certification

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

RE: Fire Station No. 9
City of Hattiesburg – Hattiesburg, MS 39401
CN 19-3707

City of Hattiesburg:

We hereby certify that all material incorporated in this project are non-asbestos containing materials.

Very Truly Yours,
Hanco Corporation

Chris Hudson

State of Mississippi
County of Forrest

Sworn to and subscribed before me, the undersigned authority, on this the
30th Day of April, 2021.

Cassandra F. Reid
Notary Public
My Commission Expires on April 29, 2022





P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

RE: Fire Station No. 9
City of Hattiesburg - Hattiesburg, MS
CN 19-3707

Date of Completion: April 30, 2021

We hereby guarantee all work performed by us to be free from defective materials and workmanship for a period of one (1) year, or such longer period of time as may be stipulated in the contract documents.

Sincerely,
Hanco Corporation

A handwritten signature in blue ink, appearing to read "C. Hudson", is written over the printed name of Chris Hudson.

Chris Hudson
President

State of Mississippi
County of Forrest

Sworn to and subscribed before me, the undersigned authority on this the 30th day of April, 2021.

A handwritten signature in blue ink, appearing to read "Cassandra F. Reid", is written over the printed name of Cassandra F. Reid.

Notary Public

My Commission Expires on April 29, 2022





P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

Guarantee

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

RE: Fire Station No. 9
City of Hattiesburg - Hattiesburg, MS
CN 19-3707

Date of Substantial Completion: April 30, 2021

We hereby guarantee all work performed by us on the above captioned project to be free from defective materials and workmanship for a period of one (1) year or such longer period of time as may be called for in the contract documents for such portions of the work.

All guarantees and warranties shall be obtained in the Owner's name. Within the guaranty period, if repairs or changes are requested in connection with guaranteed work which, in the opinion of the Owner, are rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract, the Contractor shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition building, site, equipment or contents thereof. The contractor shall make good any work, materials, equipment or contents of said buildings or site which may be disturbed by fulfilling any such Guaranty.

If, after notice, the Contractor fails to proceed promptly to comply with the terms of the guaranty, the Owner may have the defects corrected and the Contractor and his Sureties shall be liable for all expense incurred.



P.O. BOX 17678
HATTIESBURG, MS
39404

P 601.583.6500
F 601.583.6503

All special guarantees applicable to definite parts of the work stipulated in the project manual or other documents forming part of the contract shall be subject to the terms of this paragraph during the first year of the life of such special guaranty.

Very Truly Yours,
Hanco Corporation

Chris Hudson
President

State of Mississippi
County of Forrest

Sworn to and subscribed before me, the undersigned authority, on this the
30th Day of April 2021.

Cassandra F. Reid
Notary Public

My Commission Expires on: April 29, 2022



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17. Storefronts & Glazing
18. Floor Warranty & O/M
19. Manual Roller Shade Warranty
20. Fire Sprinkler System - Separate
21. Electrical Warranty - Separate
22. Plumbing/HVAC Warranty - Separate
23. As-Built - Separate

FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI

7460 U.S. Hwy 49
HATTIESBURG, MS 39401

BIDS
JAN. 23



LANDRY
LEWIS
GERMANY
ARCHITECTS, P. A.

5211 OLD HIGHWAY 11, HATTIESBURG, MS 39402
P: 601.271.7711 WWW.LLGARCH.COM
CREATING LANDMARKS SINCE 1910...

INDEX OF DRAWINGS

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		C4.4	DRAINAGE DETAILS	A3.1	BUILDING SECTIONS	S0.2		FP1.1	SECOND FLOOR FIRE PROTECTION PLAN	M1.1	FIRST FLOOR HVAC PLAN	E1.1	SITE ELECTRICAL PLAN
	C1.0	C4.5	DRAINAGE DETAILS	A3.2	BUILDING SECTIONS	S1.1	FOUNDATION PLAN			M1.2	SECOND FLOOR HVAC PLAN	E2.0	LIGHTING PLANS
	C1.1	C4.6	DRAINAGE DETAILS	A4.1	WALL SECTIONS	S1.2	SECOND FLOOR FRAMING	PLUMBING	P1.0	M1.3	ROOF PLAN HVAC	E2.1	POWER AND COMMUNICATION PLANS
		C4.7	UTILITY DETAILS	A4.2	WALL SECTIONS	S1.3	ROOF FRAMING PLAN	P1.0	PLUMBING SCHEDULES, LEGEND, AND NOTES	M1.4	HVAC KITCHEN HOOD SCHEDULES, DETAILS, AND NOTES	E3.0	MECHANICAL EQUIPMENT ELECTRICAL PLANS
	C1.2	C4.8	MISCELLANEOUS DETAILS	A4.3	WALL SECTIONS	S2.1	BLOG. SECTION	P1.1	BELOW FIRST FLOOR PLUMBING PLAN AND DETAILS	M1.5	HVAC KITCHEN HOOD DETAILS		ELECTRICAL AND COMMUNICATION DETAILS
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		C4.10	MISCELLANEOUS DETAILS	A4.5	WALL SECTIONS	S2.3	BLOG. ELEVATIONS	P1.3	BELOW SECOND FLOOR PLUMBING PLAN	M1.7	HVAC KITCHEN EQUIPMENT ELECTRICAL DIAGRAMS		
		C4.11	MISCELLANEOUS DETAILS	A4.6	WALL SECTIONS	S2.4	BLOG. ELEVATIONS	P1.4	ABOVE SECOND FLOOR PLUMBING PLAN	M1.8	HVAC PIPING SCHEMATICS		
	C2.1		ARCHITECTURAL	A4.7	PLAN DETAILS	S2.5	BLOG. ELEVATIONS	P1.5	ROOF PLUMBING PLAN				
		A1.1	FIRST FLOOR PLAN	A5.1	OPENING TYPES & SCHEDULE	S3.1	DETAILS						
	C2.2	A1.2	SECOND FLOOR / MEZZANINE PLAN	A6.1	FINISH SCHEDULE	S3.2	DETAILS						
	C2.3		PLAN	A6.2	OPENING DETAILS	S3.3	DETAILS						
	C2.4	A1.3	FIRST FLOOR REFLECTED CEILING PLAN	A6.3	OPENING DETAILS	S3.4	DETAILS						
	C2.5		PLAN	A6.4	INTERIOR ELEVATIONS								
	C2.6	A1.4	SECOND FLOOR REFLECTED CEILING PLAN	A6.5	MILLWORK SECTIONS								
	C2.7	A1.5	ROOF PLAN	A7.1	LIFE SAFETY DATA SHEET								
	C2.8	A1.6	ENLARGED TOILET PLANS	A7.2									
	C3.0	A1.7	ENLARGED STAIR PLANS	A8.1									
	C4.0												

CIVIL ENGINEER - THE WALKER ASSOCIATES
STRUCTURAL ENGINEER - SECOND MOMENT, LLC
MECHANICAL, PLUMBING AND FIRE PROTECTION ENGINEER- STEPHENS MECHANICAL, LLC
ELETRICAL ENGINEER - CANNON ENGINEERING, LLC

FIRE STATION No. 9

CITY OF HATTIESBURG

HATTIESBURG, MISSISSIPPI

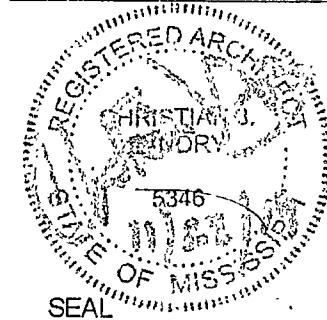


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SET NO. 2

CN18-3707

Nov. 22, 2019



Notes and Legend

GENERAL NOTES:

1. IT IS A SPECIFIC REQUIREMENT OF THIS PROJECT THAT THE PRIME CONTRACTOR'S JOB SUPERINTENDENT BE ON THE JOB AT ALL TIMES WORK IS BEING PERFORMED.
2. CONTRACTOR SHALL RESTORE ALL AREAS OUTSIDE OF THE CONSTRUCTION LIMITS DAMAGED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION AT NO COST TO THE OWNER. IN ADDITION, ALL AREAS SHALL BE MAINTAINED IN A NEAT AND ORDERLY FASHION DURING THE COURSE OF THE WORK.
3. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. SHOULD ANY SPECIAL EQUIPMENT BE REQUIRED TO PERFORM WORK OVER AND AROUND UTILITIES, THE CONTRACTOR SHALL PROVIDE SUCH EQUIPMENT AT NO COST TO THE OWNER.
4. WRITTEN DIMENSIONS AND ELEVATIONS SHALL GOVERN OVER SCALED DIMENSIONS AND ELEVATIONS.
5. IF THE CONTRACTOR DURING THE COURSE OF THE WORK FINDS ANY DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS AND THE ACTUAL FIELD CONDITIONS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER PRIOR TO ANY ADDITIONAL WORK. THE ENGINEER WILL MAKE A RECOMMENDATION ON HOW TO PROCEED.
6. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES TO PREVENT EROSION EVEN IF NOT SHOWN ON EROSION CONTROL PLAN.
7. CONTRACTOR SHALL COORDINATE WITH THE OWNER AND ENGINEER RELATIVE TO PLACEMENT OF ALL ITEMS OF WORK PRIOR TO ANY WORK BEING PERFORMED.
8. JOINT SEALANT SHALL BE DOW CORNING 890-SL SELF-LEVELING SILICONE OR APPROVED EQUAL.
9. REINFORCING STEEL SHALL BE DEFORMED BARS GRADE 60. FIELD BENDING OF REINFORCING BARS IS PERMITTED.
10. REINFORCING SHALL NOT EXTEND THROUGH ANY CONTROL, CONSTRUCTION, OR EXPANSION JOINTS.
11. THE LOCATION AND SPACING OF SIGNS AS SHOWN ON THE SITE LAYOUT ARE APPROXIMATE AND MAY BE ADJUSTED AS NECESSARY TO FIT THE FIELD CONDITIONS.
12. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT EXISTING STRUCTURES SUCH AS PIPES, INLETS, APRONS, BOX CULVERT, ETC. FROM DAMAGE WHICH MIGHT OCCUR DURING CONSTRUCTION. EXTREME CARE SHOULD BE EXERCISED IN UNDERCUT AREAS AND THE UNDERCUT DEPTH MAY BE ADJUSTED AT CROSS DRAINS, AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL REPLACE OR REPAIR, AS DIRECTED BY THE ENGINEER, ANY STRUCTURES DAMAGED DURING THE LIFE OF THE CONTRACT. NO PAYMENT WILL BE MADE FOR REPLACEMENT OR REPAIR OF DAMAGED ITEMS.
13. VOIDS CREATED BY THE REMOVAL OF POSTS; CONCRETE ANCHORS, FOOTINGS, ETC, SHALL BE BACKFILLED AND TAMPED IN ACCORDANCE WITH SECTION 203 OF THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
14. ALL PLASTIC DRUMS SHALL HAVE A BALLASTING COLLAR MADE FROM RECYCLED TRUCK TIRES OR OTHER SUITABLE MATERIAL.
15. ALL SIGN POST LENGTHS SHALL BE VERIFIED IN THE FIELD PRIOR TO FABRICATION.
16. ALL CONCRETE PIPE JOINTS ARE TO BE WRAPPED IN TYPE V GEOTEXTILE FABRIC, 2 FEET IN WIDTH. ALL PICKUP HOLES ARE TO BE PLUGGED AND COVERED WITH TYPE V GEOTEXTILE FABRIC TO THE SATISFACTION OF THE ENGINEER.
17. 35% SHRINKAGE FACTOR SHALL BE USED IN THE EARTHWORK CALCULATIONS.
18. ALL TRAFFIC CONTROL DEVICES ON THIS PROJECT SHOULD COMPLY WITH PART VI OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
19. UTILITIES ON THE DRAWINGS ARE SHOWN IN THEIR ORIGINAL LOCATION BASED UPON THE ESTIMATED INFORMATION AVAILABLE TO THE ENGINEER. THE ENGINEER CANNOT AND DOES NOT WARRANT THAT THIS INFORMATION IS COMPLETE OR ACCURATE. THE CONTRACTOR MUST COORDINATE DIRECTLY WITH THE INVOLVED UTILITY OWNERS TO HAVE UNDERGROUND UTILITY LINES FIELD LOCATED IN ADVANCE OF CONSTRUCTION.
20. WORK FOR THIS PROJECT REQUIRES EXCAVATION IN THE IMMEDIATE VICINITY OF TRAFFIC AND ADJACENT PROPERTIES. THEREFORE, THE RISK OF A FAILURE OCCURRING DURING THE EXCAVATION REQUIRES THAT EXTREME CAUTION BE EXERCISED. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO PLACE WHAT BRACING, SHORING, OR GROUND SUPPORT SYSTEM THAT IS DEEMED NECESSARY TO PREVENT A FAILURE AND PROTECT THE PERSONS WORKING NEAR THE EXCAVATION, THE PUBLIC THAT MAY BE ABOVE THE EXCAVATION, OR ANY STRUCTURE ADJACENT TO THE EXCAVATION. ALL COSTS FOR ANY PROTECTIVE MEASURES, INCLUDING THE MATERIALS AND LABOR FOR DESIGNING, DRAWING AND CONSTRUCTING THE FACILITY, SHALL BE INCLUDED IN THE CONTRACT ITEMS.
21. FLUORESCENT ORANGE SHEETING SHALL BE USED ON ALL CONSTRUCTION AND TRAFFIC CONTROL SIGNS EXCEPT FOR THOSE DESIGNATED OTHERWISE.
22. THE EROSION CONTROL DEVICES REFERENCED IN THESE PLANS ARE THE MINIMUM REQUIREMENT. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ENSURE THAT SILT DOES NOT LEAVE THE RIGHT OF WAY OR CONTAMINATE WATERS OF THE U.S. DURING CONSTRUCTION.
23. TOE WALLS REQUIRED ON ALL DOWNSTREAM FLARED END SECTIONS. TOE WALLS AT UPSTREAM FLARED END SECTIONS WILL BE CONSTRUCTED WHERE DIRECTED BY THE ENGINEER.
24. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO OBTAIN ALL PERMITS (BUILDING, GRADING, HAUL, ETC.) NECESSARY FOR CONSTRUCTION OF THE PROJECT. ANY AND ALL NECESSARY PERMIT FEES SHALL BE INCLUDED IN THE LUMP SUM BID PRICE.

UTILITY OWNERS:

CABLE & FIBER OPTIC - COMCAST CABLE - 601-268-1188
GAS - SPIRE ENERGY: 601-544-6001
POWER - MISSISSIPPI POWER COMPANY: 601-545-4161
TELEPHONE - AT&T 601-583-8779
WATER & SEWER - CITY OF HATTIESBURG PUBLIC SERVICES DEPARTMENT: 601-545-4540, WATER/SEWER DIVISION: 601-545-4545

UTILITY NOTES:

1. EXTREME CAUTION IS RECOMMENDED FOR THE LOCATION OF WATER, GAS, SEWER, AND COMMUNICATION LINES DUE TO UNAVAILABILITY OF RECORDED LOCATIONS AND THE INABILITY TO LOCATE ALL LINES. THE CONTRACTOR SHALL ENSURE ALL UTILITIES ARE PROTECTED DURING CONSTRUCTION. CONTRACTOR SHALL EMPLOY ALL MEANS NECESSARY TO PROTECT EXISTING UTILITIES EVEN IF NOT INCLUDED IN THE PROJECT PLANS/SPECIFICATIONS.
2. THE PROFESSIONAL ASSUMES NO RESPONSIBILITY FOR THE ACCURACY OF THE LOCATION OF UNDERGROUND UTILITIES SHOWN.

SHRINKAGE FACTORS:

GRANULAR MATERIAL (LVM) = 1.50
UNCLASSIFIED EXCAVATION = 1.35

LEGEND:

EXISTING CENTERLINE	
EXISTING CURB & GUTTER	
EXISTING DRAINAGE PIPING	
EXISTING EDGE OF PAVEMENT	
EXISTING ASPHALT SHOULDER (mill material - 1" depth)	
EXISTING FENCE	
EXISTING GAS (SERVICE OR MAIN)	
EXISTING OVERHEAD POWER	
EXISTING UNDERGROUND POWER	
EXISTING SEWER SERVICE (GRAVITY)	
EXISTING WATER MAIN	
EXISTING FIBER OPTIC	
EXISTING UNDERGROUND CABLE	
EXISTING CONTOUR	
EXISTING CONTOUR	
PROPOSED CONTOUR	
PROPOSED CURB & GUTTER	
PROPOSED DOMESTIC WATER MAIN	
PROPOSED FIRE WATER MAIN	
PROPOSED SANITARY SEWER SERVICE	
PROPOSED DRAINAGE PIPING	
PROPOSED SIDEWALK	
PROPOSED FRENCH DRAIN	
PROPOSED UTILITY SLEEVE	
ASPHALT OVERLAY	
PROPOSED 8' WIDE FLEXAMAT ROLL CUT TO SPECIFIED LENGTH	

ABBREVIATIONS: CONT

SQUARE YARDS	S.Y.
SQUARE FEET	S.F.
STATION	STA.
STREET	ST
TO BE REMOVED	T.B.R.
TO BE MODIFIED	T.B.M.
TO BE RELOCATED	T.B.R.L.
VARIABLE	VAR.
WEST	W
WITH	W/

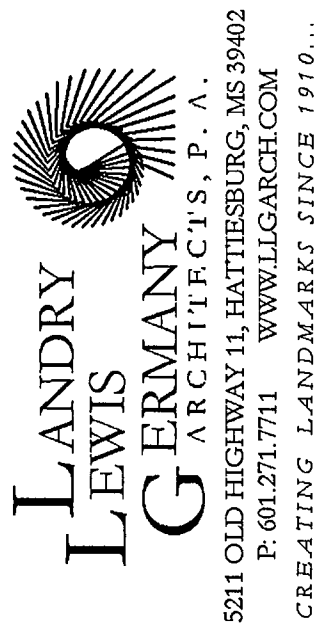
SYMBOLS:

CENTERLINE	
EX. OR PROPOSED GAS VALVE	
EX. OR PROPOSED GAS METER	
EXISTING SPOT ELEV.	+ 100.00
EX. OR PROPOSED GUY WIRE	
EX. OR PROPOSED HYDRANT	
EX. OR PROPOSED LIGHT POLE	
EX. OR PROPOSED POWER POLE	
EXISTING SEWER MANHOLE	
EX. OR PROPOSED SIGN	
EX. OR PROPOSED WATER METER	
EX. OR PROPOSED WATER VALVE	
EX. OR PROPOSED SPRINKLER HEAD	
PROPERTY CORNER (FOUND)	
PROPERTY CORNER (SET)	
PROPOSED B.O.C. SPOT ELEV.	+ 100.00
PROPOSED PAVEMENT SPOT ELEV.	+ 100.00
TRAFFIC FLOW DIRECTION/PAVEMENT MARKING	
EXISTING MONUMENT NGS DATA IDENTIFIER	

ABBREVIATIONS:

AVENUE	AVE
ASPHALT	ASPH.
BACK OF CURB	B.O.C.
BENCH MARK	BM
BUSINESS	BUS.
CONCRETE	CONC.
CURB AND GUTTER	C&G
CORRUGATED POLY VINYL CHLORIDE	CPVC
EAST	E
EDGE OF PAVEMENT	EOP
ELEVATION	ELEV.
ESTIMATED	EST.
EXISTING	EX.
IN PLACE TO REMAIN	I.P.T.R.
INVERT	INV.
LINEAR FEET	L.F.
LOOP	LP
MINIMUM	MIN.
MISCELLANEOUS	MISC.
MODIFIED	MOD.
POUNDS PER SQUARE INCH	P.S.I.
POLYVINYL CHLORIDE	PVC
RADIUS (# INDICATES FEET)	R100.0'
REINFORCED CONCRETE PIPE	RCP
REQUIRED	REQ'D
RESIDENCE	RES
SHOULDER	SHDR.

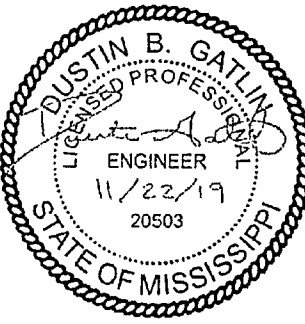
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FINAL DATE	NOVEMBER 22, 2019
REVISION SCHEDULE	
REV #	REV DATE



SHEET TITLE
Notes and Legend

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER

C1.0

Project Summary and Compliance Data

GENERAL DESCRIPTION OF PROJECT:

The proposed project consists of the construction of a +/- 6,580 sq. ft. fire station with necessary site improvements (paving, drainage, etc.). The Walker Associates, Engineers-Planners-Designers, PLLC performed civil engineering services only. Contact Architect (Landry Lewis Germany) for design data for other disciplines.

CITY OF HATTIESBURG LAND DEVELOPMENT CODE DATA:

Code Utilized: City of Hattiesburg Land Development Code, Ordinance #3209, adopted February 2, 2017.Can be found at:
<http://www.hattiesburgms.com/wp-content/uploads/Land-Development-Code-Ord-3209-Interactive-Revised-09.27.18.pdf>
Parcel Zoning: B-5 (Regional Business District)
Applicable Land Development Code Sections: 5 - Use Regulations, 6 - Dimensional Standards and Measurements, 7 - Standards of Design, and 10 - Signs.

SECTION 5 - USE REGULATIONS

See Table 5.1 for allowable uses per zoning condition.
Fire Station constructed within B-5 Regional Business District Zoning: permitted with conditions

SECTION 6 - DIMENSIONAL STANDARDS AND MEASUREMENTS (SITE SPECIFIC DATA IS PROVIDED IN ITALIC FONT)

Min. Lot Size in SF/Width at Setback: No Minimum Lot Size, 100' width at setback (+/- 175' width at setback provided)
Max Floor Area Ratio: 1.50
Setbacks:
Min. Front: 0'
Max. Front: 30'
Min. Side: 0' or 10' (>10' side setback provided)
Min. Rear: 0'
Max Height: 72 feet (structure is less than 75' in height -- see Architectural drawings)
Max Impervious Surface Lot Coverage: 90% (max impervious coverage: 50%)
Buffer in Feet: 50 feet (not required, adjoining parcels are also B-5 zoning)

SECTION 7 - STANDARDS OF DESIGN

All design standards listed in the Land Development Code are not listed below. Only ones pertinent to this particular development are listed below.

7.1.1.2 - Curb cuts shall be located a minimum of 10 feet from a parcel or lot line.
+/- 30 feet provided - Sheet Site Layout sheet.

7.5.2.3 - Max Driveway Width: 24 feet

7.5.3.8 - All landscaped areas that may be encroached upon by a motor vehicle shall be protected by a cement wheel stop appropriately anchored to the pavement, and set a minimum of 30 inches back from the edge of the pavement. (Landscape islands are protected by curbs and/or wheel stops in all parking areas.)

7.5.3.9 - Landscape islands: minimum of 8 feet in width and 15 feet in length, installed for each 150 lineal feet of parking area and shall cap ends of parking rows. Islands shall be landscaped per Land Development Code.

7.6.1.1 - Sidewalks shall be provided along all public streets on the entire frontage of a development site and align with the existing sidewalks on adjacent properties including both frontages and corners lots. Minimum sidewalk width is five feet.

7.6.1.2 - Sidewalks shall be ADA compliant. ADA access ramps shall be constructed at street corners.

7.7.1.1 - Streets, driveways, parking lots, walks and service areas shall be adequately illuminated as evenly as possible, not exceeding an average of 0.3 foot-candles diminishing to zero at a site's boundary. Lighting intensity shall be demonstrated by means of a site lighting plan illustrating compliance. See electrical engineering drawings for compliance with this requirement. (Not included in Scope of Services for The Walker Associates).

7.7.1.2 - 7.7.3.2 - See these sections for additional lighting requirements (these items not included in The Walker Associates Scope of Services).

7.8 - Building Form and Materials - See Architectural drawings (this work not included in The Walker Associates Scope of Services).

7.9 - Accessory Uses and Equipment - See Architectural drawings (this work not included in The Walker Associates Scope of Services).

7.10 - Landscaping (this work not included in The Walker Associates Scope of Services).

7.10.1.2 - Parking lot islands shall contain a minimum of one large, shade or canopy tree per island. Parking islands directly abutting buildings shall substitute shrub plantings.

7.10.1.3 - Landscaped areas shall be at least 75 percent covered with grass or other types of live or organic ground cover. Planting shall be established prior to building occupancy. (this work not included in The Walker Associates Scope of Services).

7.10.2.1 - A green strip 10 feet in width shall be planted with at least one large, deciduous tree per 60 feet of lineal frontage. (this work not included in The Walker Associates Scope of Services).

7.11.2 - Zoning Buffer Requirements (see Table 7.11-2 Zoning Buffer Requirements in Land Development Code). No buffer is required for this project due to adjoining parcels also being zoned B-5 (Regional Business District).

SECTION 7 - STANDARDS OF DESIGN CONTINUED

PARKING LOT SUMMARY

Total Number of
Parking Spaces = 21 (including 1 ADA compliant spaces)

Total Number of
ADA Spaces = 1 (Van Accessible)

SECTION 10 - SIGNS

No signs are proposed at this time and none are covered by The Walker Associates Scope of Services.

END OF CITY OF HATTIESBURG COMPLIANCE DATA

ADDITIONAL PROJECT DESIGN DATA AND INFORMATION

SURVEYING DATA:

- Field data collection performed by The Walker Associates, Engineers-Planners-Designers, PLLC staff.
- Responsible Professional Surveyor: Tim Brewer, RF PS, Survey Manager.
- Field data collection performed multiple days during March 2019.
- Mississippi 811 system utilized for utility locate requests. Ticket No. 19032513421165 (March 25, 2019).

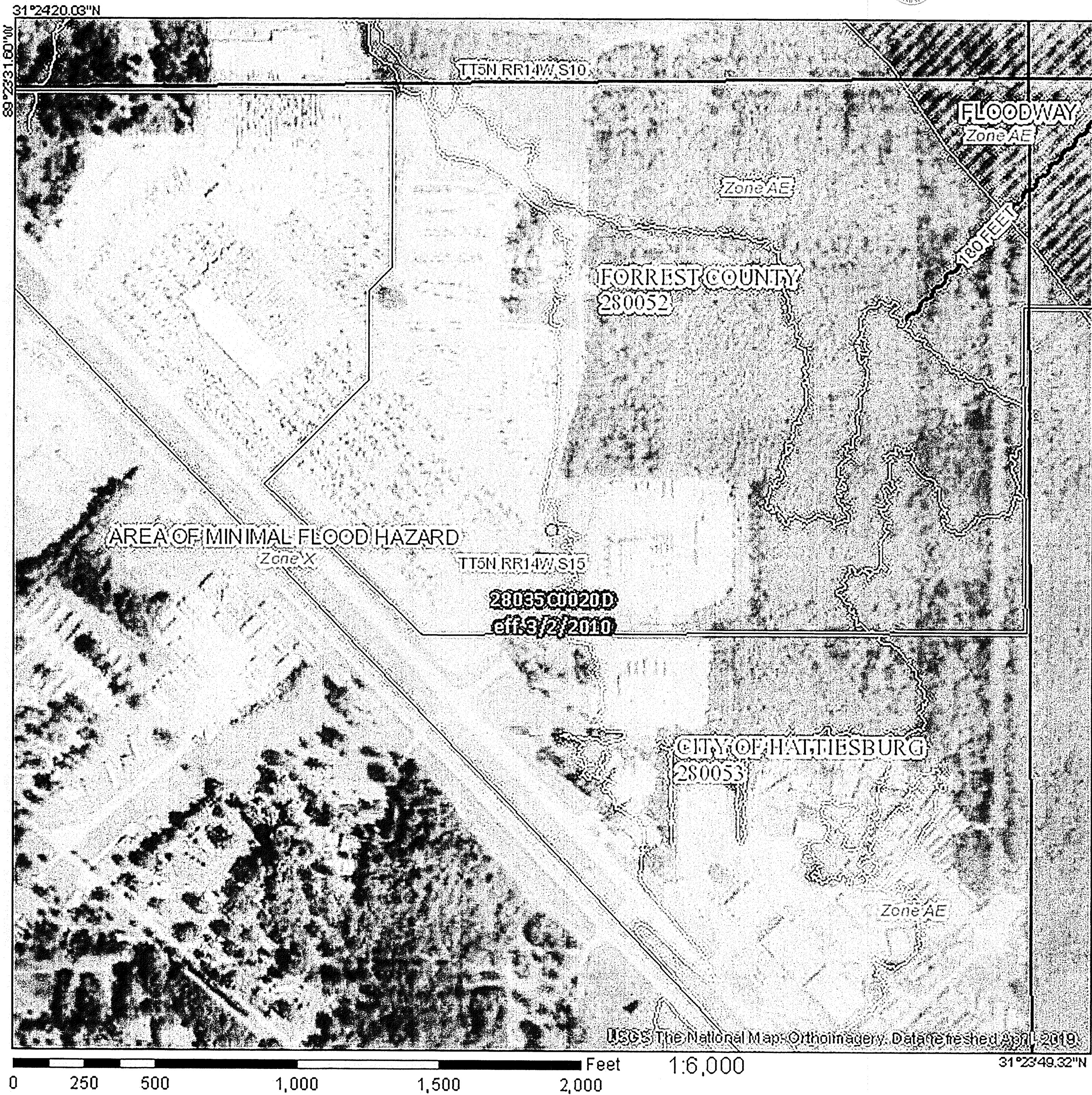
DESIGN ENGINEERING DATA:

- TWA Client: Landry Lewis Germany Architects
Responsible Professional Engineer: Dustin Gatlin, P.E.

FLOOD MAPPING

- Building is located in Zone "X" (areas of minimal flood hazard, which are the areas outside the SFHA and higher than the elevation of the 0.2-percent-annual-chance flood) per flood map number 28035C0020D, dated 03/02/2010.

National Flood Hazard Layer FIRMette



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS	Without Base Flood Elevation (BFE) Zone A, V, AE, AH, AO, AR Also known as the 100-Year Floodplain Regulatory Floodway Zone AE, AO, AH, VE, AR
OTHER AREAS OF FLOOD HAZARD	0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X Future Conditions 1% Annual Chance Flood Hazard Zone X Area with Reduced Flood Risk due to Levee. See Notes. Zone X Area with Flood Risk due to Levee Zone D
OTHER AREAS	NO SCREEN Area of Minimal Flood Hazard Zone X Effective LOMRs Area of Undetermined Flood Hazard Zone E
GENERAL STRUCTURES	Channel, Culvert, or Storm Sewer Levee, Dike, or Floodwall
OTHER FEATURES	Cross Sections with 1% Annual Chance Water Surface Elevation Coastal Transect Base Flood Elevation Line (BFE) Limit of Study Jurisdiction Boundary Coastal Transect Baseline Profile Baseline Hydrographic Feature
MAP PANELS	Digital Data Available No Digital Data Available Unmapped



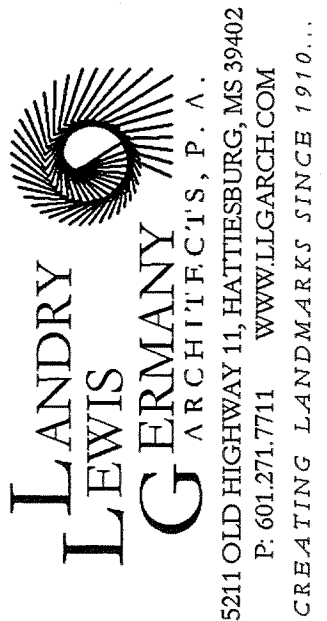
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 7/20/2019 at 9:17:27 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

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Project Summary and Compliance Data

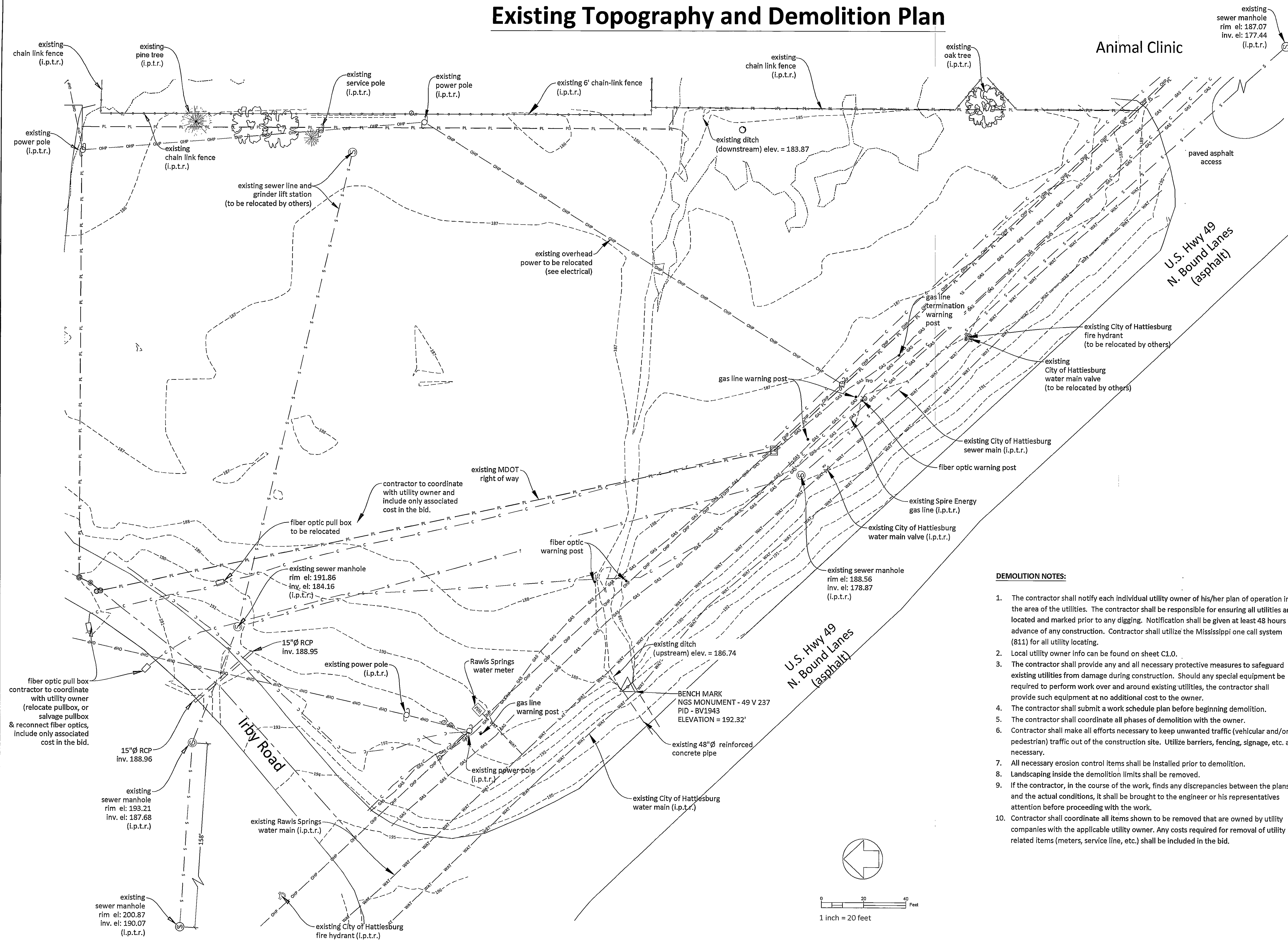
FIRE STATION No. 9



CN18-3707
SHEET NUMBER

C1.1

Existing Topography and Demolition Plan



DEMOLITION NOTES:

1. The contractor shall notify each individual utility owner of his/her plan of operation in the area of the utilities. The contractor shall be responsible for ensuring all utilities are located and marked prior to any digging. Notification shall be given at least 48 hours in advance of any construction. Contractor shall utilize the Mississippi one call system (811) for all utility locating.
2. Local utility owner info can be found on sheet C1.0.
3. The contractor shall provide any and all necessary protective measures to safeguard existing utilities from damage during construction. Should any special equipment be required to perform work over and around existing utilities, the contractor shall provide such equipment at no additional cost to the owner.
4. The contractor shall submit a work schedule plan before beginning demolition.
5. The contractor shall coordinate all phases of demolition with the owner.
6. Contractor shall make all efforts necessary to keep unwanted traffic (vehicular and/or pedestrian) traffic out of the construction site. Utilize barriers, fencing, signage, etc. as necessary.
7. All necessary erosion control items shall be installed prior to demolition.
8. Landscaping inside the demolition limits shall be removed.
9. If the contractor, in the course of the work, finds any discrepancies between the plans and the actual conditions, it shall be brought to the engineer or his representatives attention before proceeding with the work.
10. Contractor shall coordinate all items shown to be removed that are owned by utility companies with the applicable utility owner. Any costs required for removal of utility related items (meters, service line, etc.) shall be included in the bid.

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FINAL DATE
NOVEMBER 22, 2019

REVISION SCHEDULE

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**LANDRY
LEWIS
GERMANY**
ARCHITECTS, P. A.

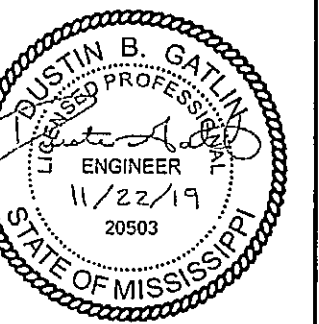
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CREATING LANDMARKS SINCE 1910...

Existing Topography and Demolition Plan

FIRE STATION No. 9

HATTIESBURG, MS

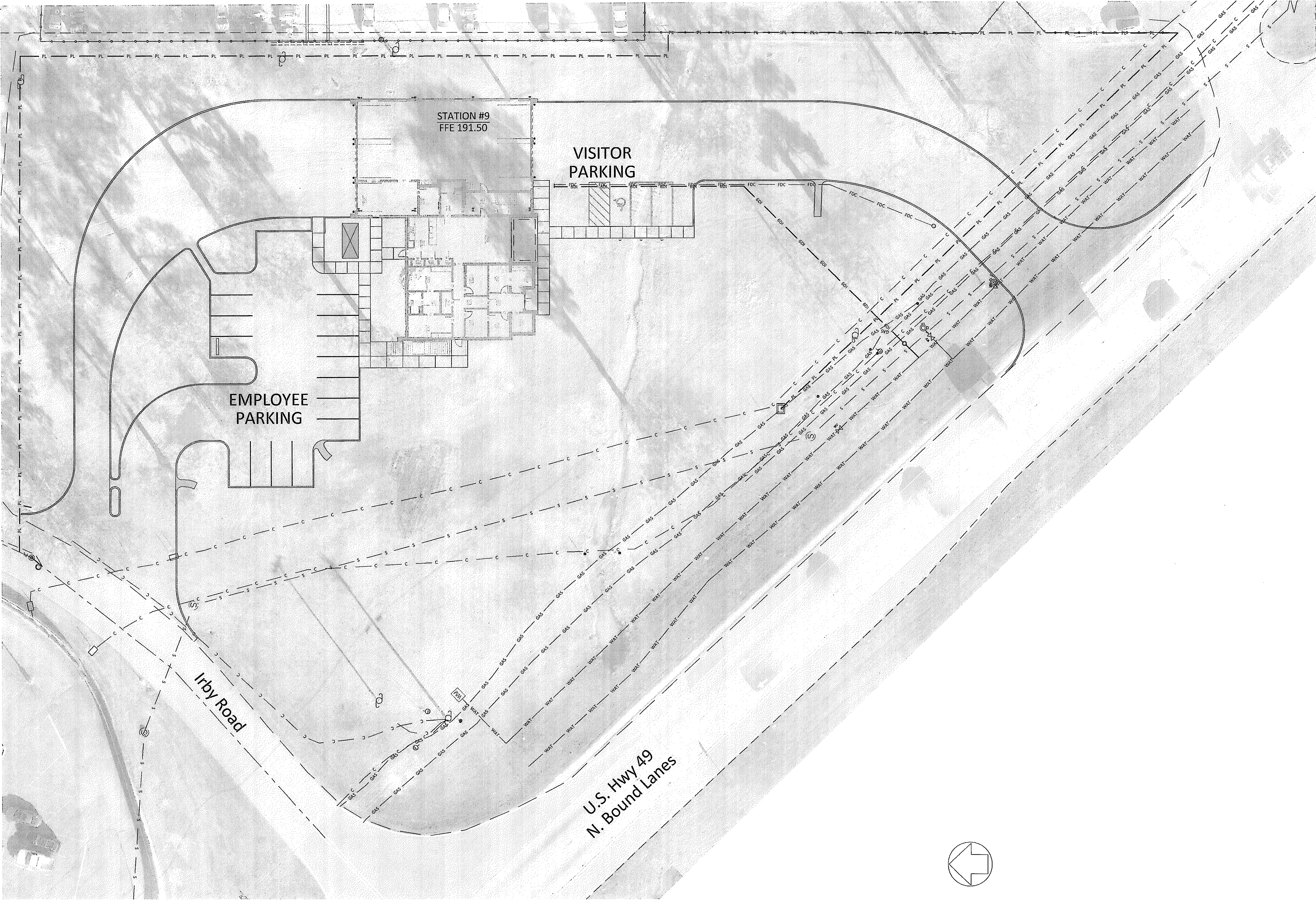


CN18-3707

SHEET NUMBER

C1.2

Proposed Overall Site with Aerial Imagery of Existing Site



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SHEET TITLE
Proposed Overall Site with Aerial Imagery
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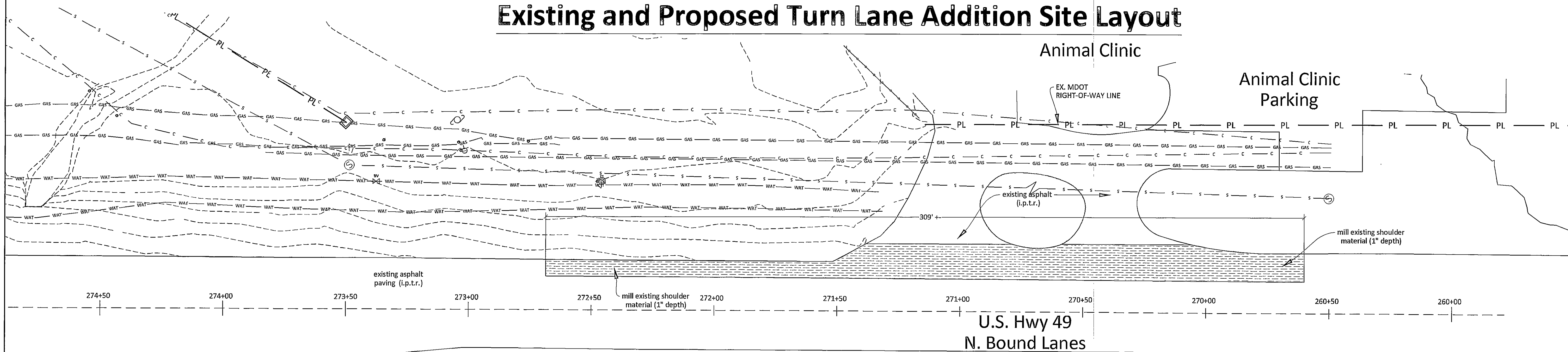
PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER
C2.0

Existing and Proposed Turn Lane Addition Site Layout



EXISTING SITE CONDITIONS AND DEMOLITION PLAN

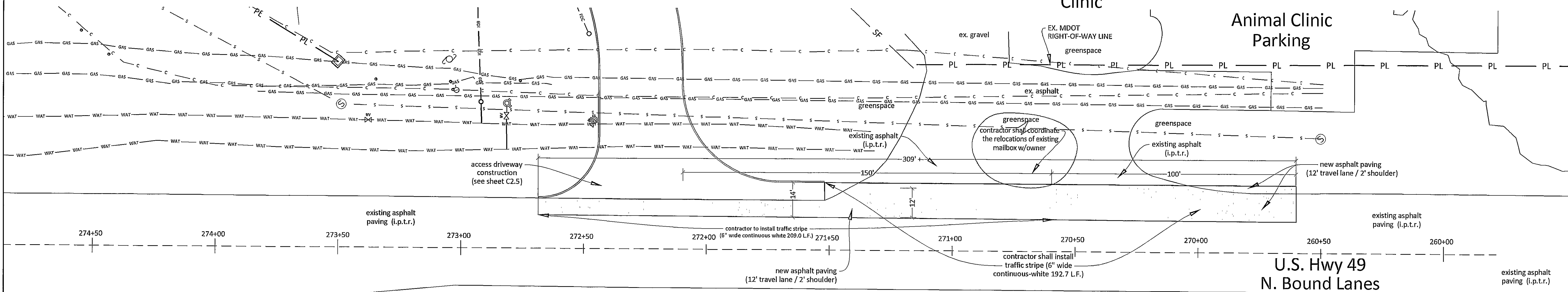
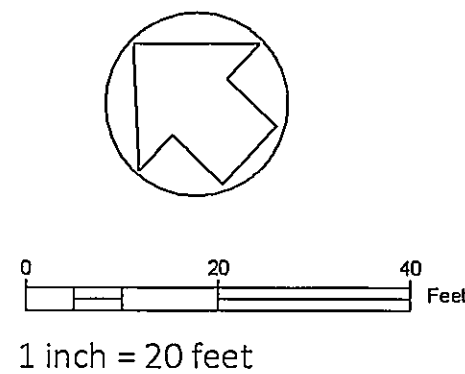
DEMOLITION NOTES:

1. The contractor shall notify each individual utility owner of his/her plan of operation in the area of the utilities. The contractor shall be responsible for ensuring all utilities are located and marked prior to any digging. Notification shall be given at least 48 hours in advance of any construction. Contractor shall utilize the Mississippi 811, Inc. for all utility locating.
2. Local utility owner info can be found on sheet C1.0.
3. The contractor shall provide any and all necessary protective measures to safeguard existing utilities from damage during construction. Should any special equipment be required to perform work over and around existing utilities, the contractor shall provide such equipment at no additional cost to the owner.
4. The contractor shall submit a work schedule plan before beginning demolition.
5. The contractor shall coordinate all phases of demolition with the owner.
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7. All necessary erosion control items shall be installed prior to demolition.
8. Landscaping inside the demolition limits shall be removed.
9. If the contractor, in the course of the work, finds any discrepancies between the plans and the actual conditions, it shall be brought to the engineer or his representatives attention before proceeding with the work.
10. Contractor shall coordinate all items shown to be removed that are owned by utility companies with the applicable utility owner. Any costs required for removal of utility related items (meters, service line, etc.) shall be included in the bid.

LEGEND

Existing Asphalt Shoulder (mill material - 1" depth)

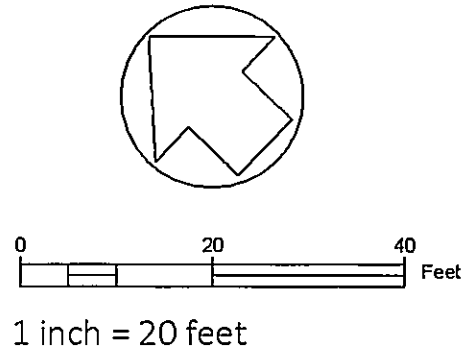
Asphalt Overlay (see sheet C2.1 / C2.2)



PROPOSED TURN LANE LAYOUT

General Site Layout Notes:

1. Written dimensions and elevations shall govern over scaled dimensions and elevations.
2. Contractor will be responsible for all layout of the work. The engineer shall provide the contractor bench marks, control points, and an autocad file (after execution of an electronic disclosure as provided by The Walker Associates, Engineers-Planners-Designers, PLLC) for use in layout. All layout shall be performed by a registered professional surveyor (cost paid by contractor, per the specifications).
3. All radii measurements are shown on back of curb.
4. Where measurements are within curb lines, the dimension shown is to the back of curb.



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SHEET TITLE
Existing and Proposed Turn Lane Addition Site Layout

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

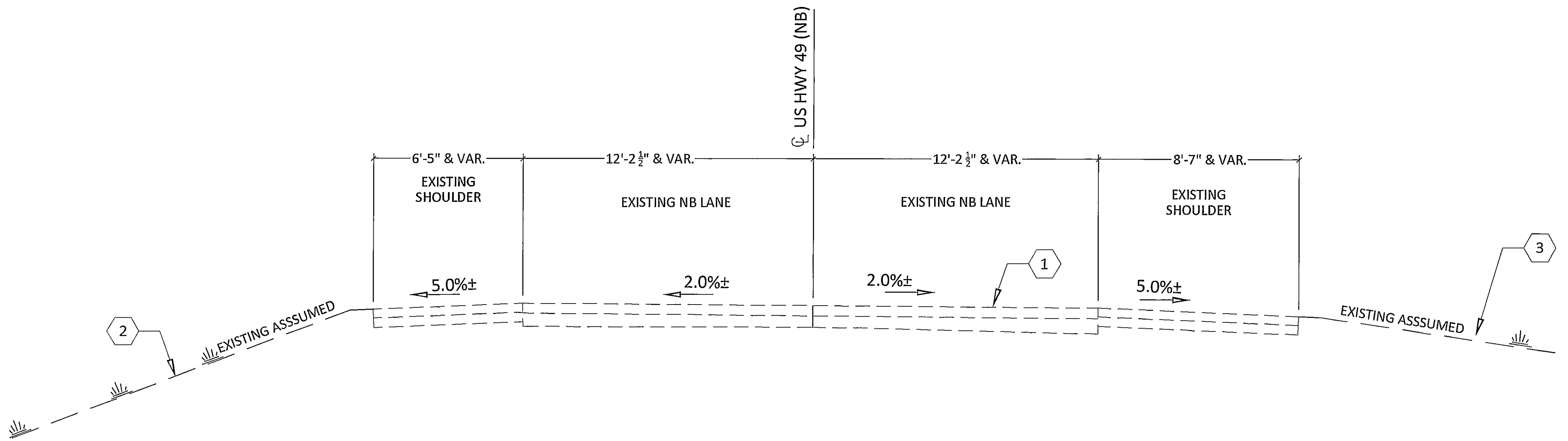


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C2.1

Turn Lane Addition Sections

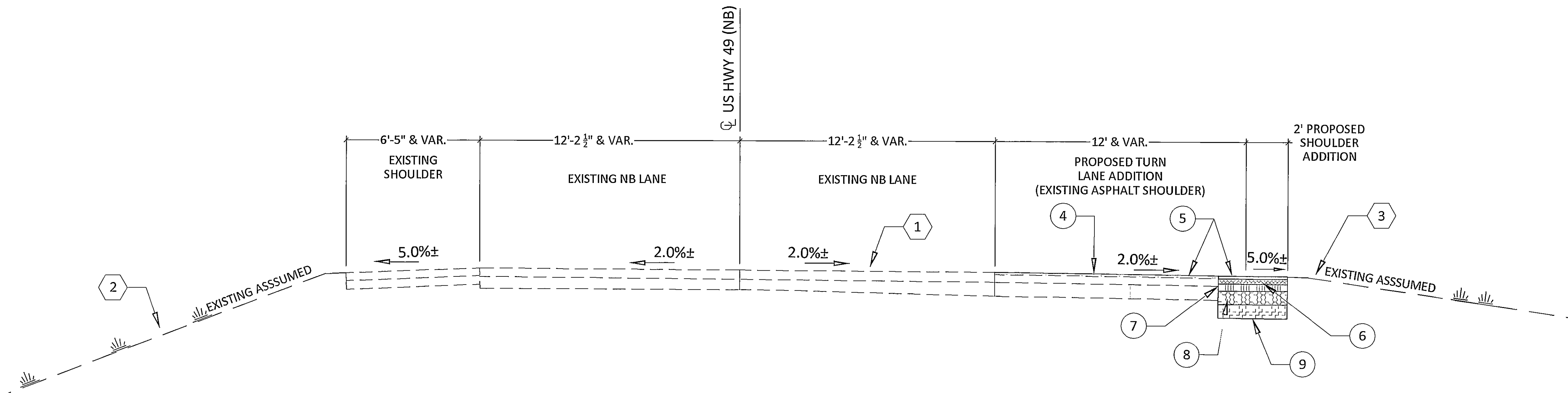
EXISTING SECTION

US HWY 49 NORTH BOUND



PROPOSED SECTION

US HWY 49 NORTH BOUND



NOTE:

LANE WIDTHS AND GRADES VARY DEPENDING ON STATIONING.
WIDTHS AND GRADES SHOWN ARE APPROXIMATED AND MAY NOT
EXACTLY MATCH FIELD CONDITIONS.

- 1 EXISTING PAVEMENT (I.P.T.R.)
- 2 EXISTING GROUND (I.P.T.R.)
- 3 EXISTING GRADE (REPAIR AS NECESSARY)

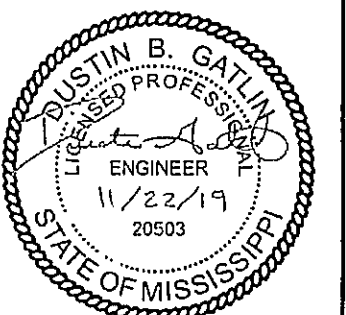
- 4 MILL FOR A DEPTH OF 1"
- 5 1" HOT MIX ASPHALT (HT 9.5 MM)(POLYMER MODIFIED)
- 6 2" HOT MIX ASPHALT (HT 12.5 MM)(POLYMER MODIFIED)
- 7 3" HOT MIX ASPHALT (HT 19 MM)(POLYMER MODIFIED)
- 8 6" GRANULAR MATERIAL (CRUSHED STONE) (SIZE 610)
- 9 EXISTING SUBGRADE. TEST SOIL AND IF NOT MEETING A
CLASS 9-12 BORROW MATERIAL, REMOVE & REPLACE WITH
MINIMUM OF 12" OF CLASS 9-12. DENSITY TO ACHIEVE 95%
S.P.D. MINIMUM FOR EXISTING OR BORROW MATERIAL.

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FINAL DATE	NOVEMBER 22, 2019
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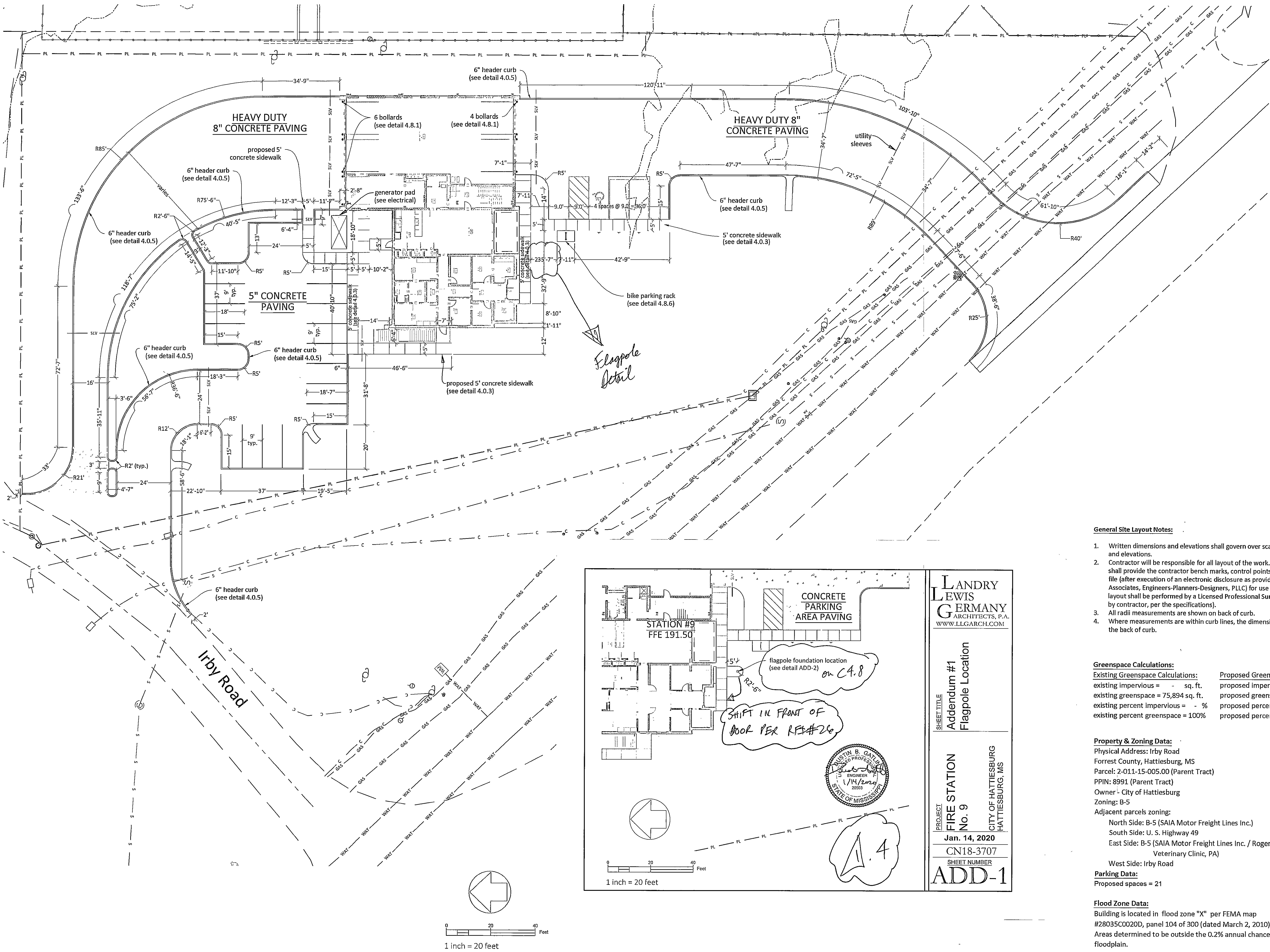
SHEET TITLE
Turn Lane Addition Sections

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER
C2.2

Site Layout



STATION #9
FFE 191.50

CONCRETE
PARKING
AREA PAVING

flagpole foundation location
(see detail ADD-2)

SHIFT IN FRONT OF
DOOR PER REF#26

1 inch = 20 feet

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SHEET TITLE
Addendum #1
Flagpole Location

PROJECT
FIRE STATION
No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

Jan. 14, 2020
CN18-3707
SHEET NUMBER
ADD-1

- General Site Layout Notes:**
- Written dimensions and elevations shall govern over scaled dimensions and elevations.
 - Contractor will be responsible for all layout of the work. The engineer shall provide the contractor bench marks, control points, and an autocad file (after execution of an electronic disclosure as provided by The Walker Associates, Engineers-Planners-Designers, PLLC) for use in layout. All layout shall be performed by a Licensed Professional Surveyor (cost paid by contractor, per the specifications).
 - All radii measurements are shown on back of curb.
 - Where measurements are within curb lines, the dimension shown is to the back of curb.
- Greenspace Calculations:**
- | Existing Greenspace Calculations: | Proposed Greenspace Calculations: |
|--------------------------------------|--------------------------------------|
| existing impervious = - sq. ft. | proposed impervious = 39,176 sq. ft. |
| existing greenspace = 75,894 sq. ft. | proposed greenspace = 36,184 sq. ft. |
| existing percent impervious = - % | proposed percent impervious = 51.5% |
| existing percent greenspace = 100% | proposed percent greenspace = 47.6% |
- Property & Zoning Data:**
- Physical Address: Irby Road
Forrest County, Hattiesburg, MS
Parcel: 2-011-15-005.00 (Parent Tract)
PPIN: 8991 (Parent Tract)
Owner: City of Hattiesburg
Zoning: B-5
Adjacent parcels zoning:
North Side: B-5 (SAIA Motor Freight Lines Inc.)
South Side: U. S. Highway 49
East Side: B-5 (SAIA Motor Freight Lines Inc. / Rogers Veterinary Clinic, PA)
West Side: Irby Road
- Parking Data:**
Proposed spaces = 21
- Flood Zone Data:**
Building is located in flood zone "X" per FEMA map #28035C0020D, panel 104 of 300 (dated March 2, 2010). Areas determined to be outside the 0.2% annual chance floodplain.

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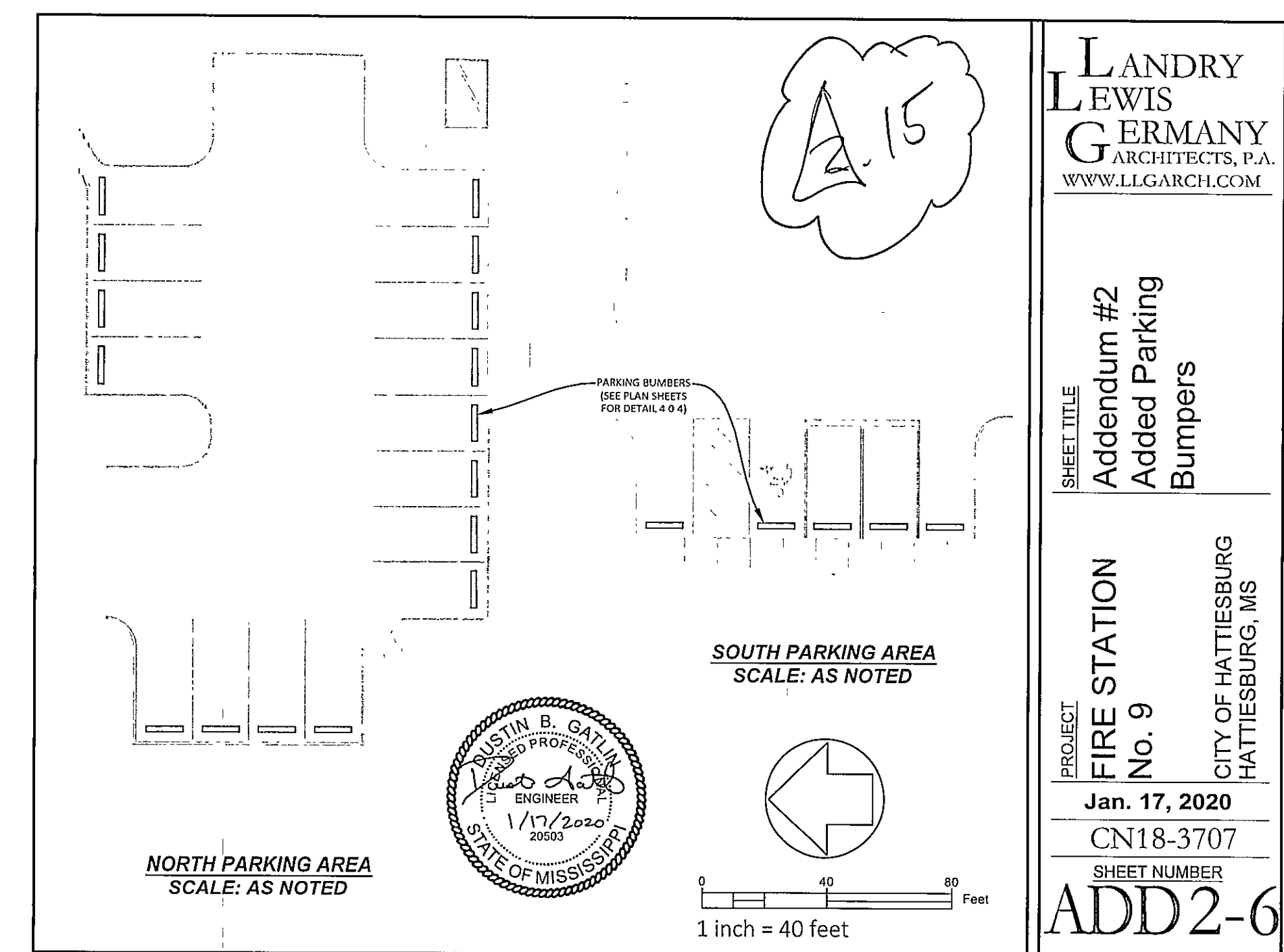
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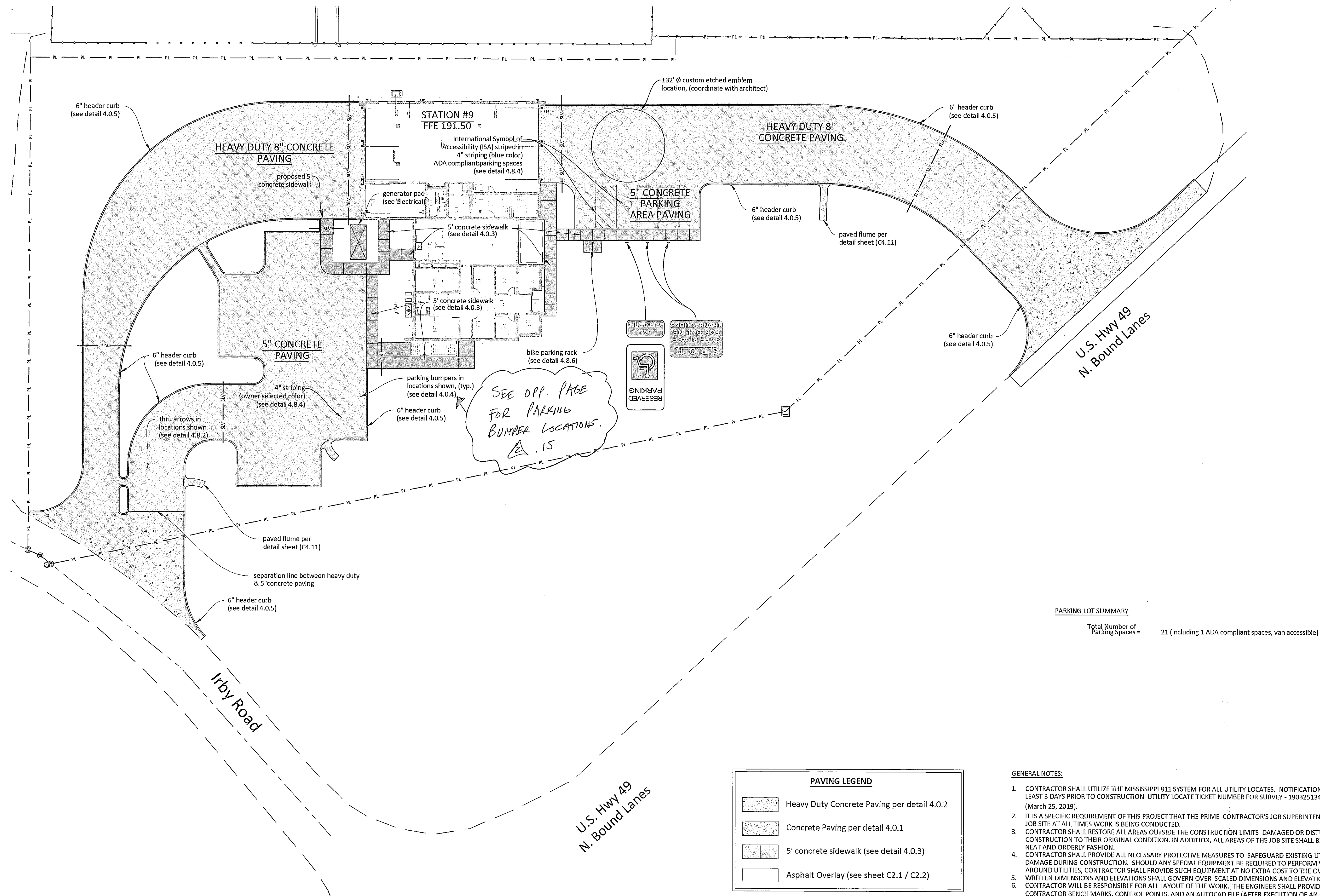
PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



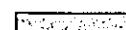
CN18-3707
SHEET NUMBER
C2.3



Paving Striping and Signage



PAVING LEGEND

- | | |
|---|---|
|  | Heavy Duty Concrete Paving per detail 4.0.2 |
|  | Concrete Paving per detail 4.0.1 |
|  | 5' concrete sidewalk (see detail 4.0.3) |
|  | Asphalt Overlay (see sheet C2.1 / C2.2) |

GENERAL NOTES:

1. CONTRACTOR SHALL UTILIZE THE MISSISSIPPI 811 SYSTEM FOR ALL UTILITY LOCATES. NOTIFICATION SHALL BE GIVEN AT LEAST 3 DAYS PRIOR TO CONSTRUCTION. UTILITY LOCATE TICKET NUMBER FOR SURVEY - 19032513421165 (March 25, 2019).
2. IT IS A SPECIFIC REQUIREMENT OF THIS PROJECT THAT THE PRIME CONTRACTOR'S JOB SUPERINTENDENT BE ON THE JOB SITE AT ALL TIMES WORK IS BEING CONDUCTED.
3. CONTRACTOR SHALL RESTORE ALL AREAS OUTSIDE THE CONSTRUCTION LIMITS DAMAGED OR DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. IN ADDITION, ALL AREAS OF THE JOB SITE SHALL BE MAINTAINED IN A NEAT AND ORDERLY FASHION.
4. CONTRACTOR SHALL PROVIDE ALL NECESSARY PROTECTIVE MEASURES TO SAFEGUARD EXISTING UTILITIES FROM DAMAGE DURING CONSTRUCTION. SHOULD ANY SPECIAL EQUIPMENT BE REQUIRED TO PERFORM WORK OVER AND AROUND UTILITIES, CONTRACTOR SHALL PROVIDE SUCH EQUIPMENT AT NO EXTRA COST TO THE OWNER.
5. QUANTITY DIMENSIONS AND ELEVATIONS SHALL GOVERN OVER SCALED DIMENSIONS AND ELEVATIONS.
6. CONTRACTOR WILL BE RESPONSIBLE FOR ALL LAYOUT OF THE WORK. THE ENGINEER SHALL PROVIDE THE CONTRACTOR BENCH MARKS, CONTROL POINTS, AND AN AUTOCAD FILE (AFTER EXECUTION OF AN ELECTRONIC DISCLOSURE AS PROVIDED BY THE WALKER ASSOCIATES, ENGINEERS-PLANNERS-DESIGNERS, PLLC) FOR USE IN LAYOUT. ALL LAYOUT SHALL BE PERFORMED BY A LICENSED PROFESSIONAL SURVEYOR (COST PAID BY CONTRACTOR).
7. IF THE CONTRACTOR, IN THE COURSE OF THE WORK, FINDS ANY DISCREPANCIES BETWEEN THE CONSTRUCTION PLANS AND THE ACTUAL CONDITIONS, IT SHALL BE BROUGHT TO THE ENGINEER OR HIS REPRESENTATIVES ATTENTION BEFORE PROCEEDING WITH THE WORK.
8. CONTRACTOR SHALL OBTAIN CONSTRUCTION ENTRANCE FOR ACCESS TO THE SITE.
9. THE CONTRACTOR WILL BE RESPONSIBLE FOR ALL TESTING (CONCRETE, EARTHWORK DENSITIES, ETC.) AS REQUIRED IN THE SPECIFICATIONS AND SHALL PROVIDE COPIES OF ALL TEST RESULTS TO THE ENGINEER FOR APPROVAL.

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SHEET TITLE
Paving Striping and Signage

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

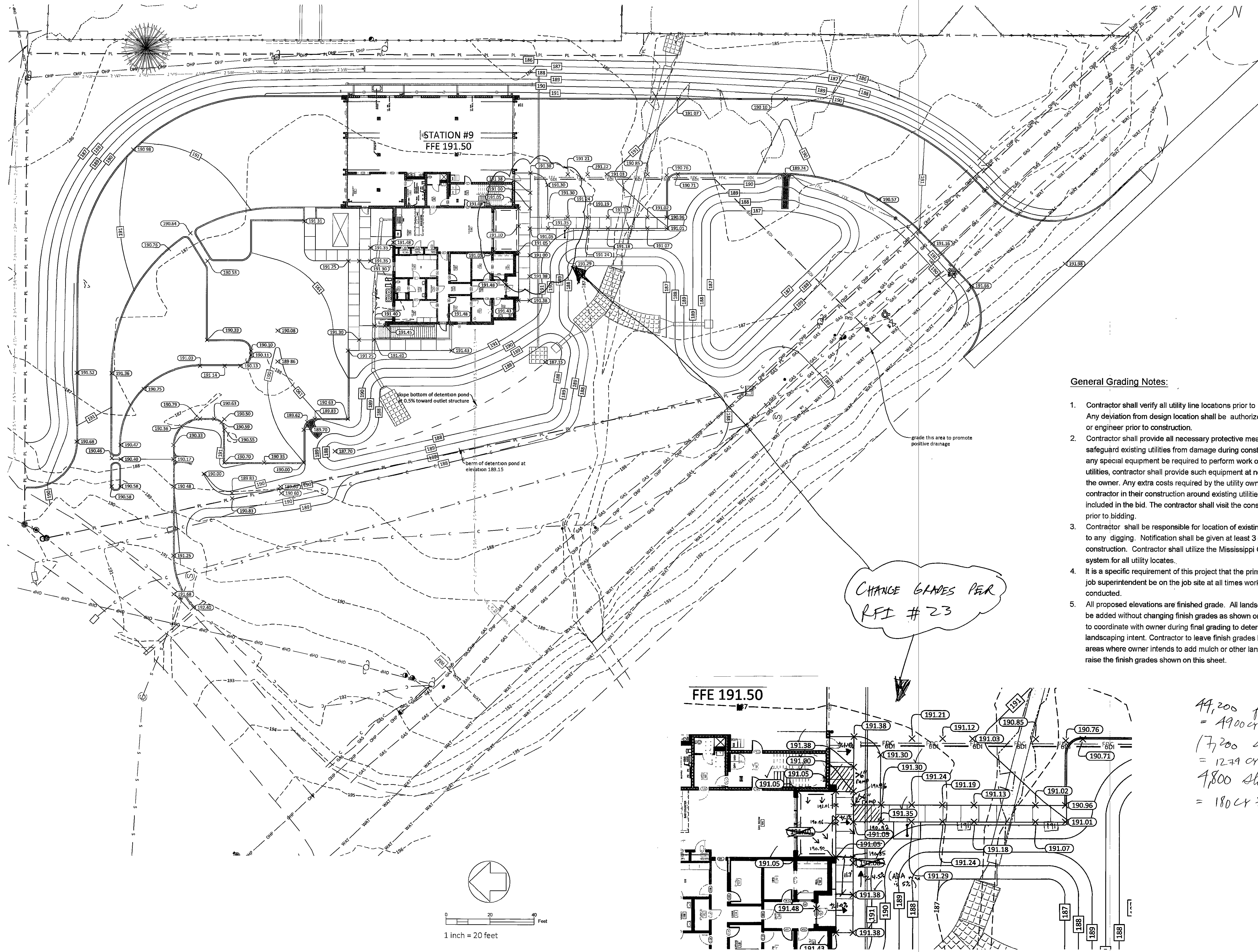
A circular professional engineer seal for Dustin B. Gatlin, State of Mississippi. The seal features a rope-like border. Inside the border, the text "DUSTIN B. GATLIN" is at the top, "LICENSED PROFESSIONAL" is on the left, "ENGINEER" is at the bottom, and "STATE OF MISSISSIPPI" is on the right. In the center, the date "11/22/19" and the license number "20503" are printed. A signature is written across the seal.

CN18-3707

SHEET NUMBER

C2.4

Site Grading



General Grading Notes:

- Contractor shall verify all utility line locations prior to construction. Any deviation from design location shall be authorized by the owner or engineer prior to construction.
- Contractor shall provide all necessary protective measures to safeguard existing utilities from damage during construction. Should any special equipment be required to perform work over and around utilities, contractor shall provide such equipment at no extra cost to the owner. Any extra costs required by the utility owners to aid the contractor in their construction around existing utilities shall be included in the bid. The contractor shall visit the construction site prior to bidding.
- Contractor shall be responsible for location of existing utilities prior to any digging. Notification shall be given at least 3 days prior to construction. Contractor shall utilize the Mississippi One Call system for all utility locates.
- It is a specific requirement of this project that the prime contractor's job superintendent be on the job site at all times work is being conducted.
- All proposed elevations are finished grade. All landscaping performed should be added without changing finish grades as shown on these plans. Contractor to coordinate with owner during final grading to determine proposed landscaping intent. Contractor to leave finish grades lower than shown in areas where owner intends to add mulch or other landscaping items that could raise the finish grades shown on this sheet.

CHANGE GRADES PER
RFI #23

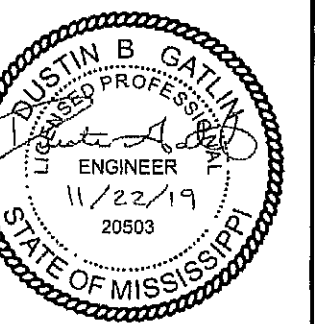
47,200 full grade (3' avg)
= 4900 CY * 1.4 = 6,900 LVM
17,200 sloped grade (full)
= 1274 CY * 1.4 = 1,800 LVM
4,800 sloped grade (half)
= 180 CY * 1.4 = 252 LVM
7952 LVM
≈ 9000
= 1150
= 7850 LVM

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Site Grading

PROJECT
FIRE STATION No. 9



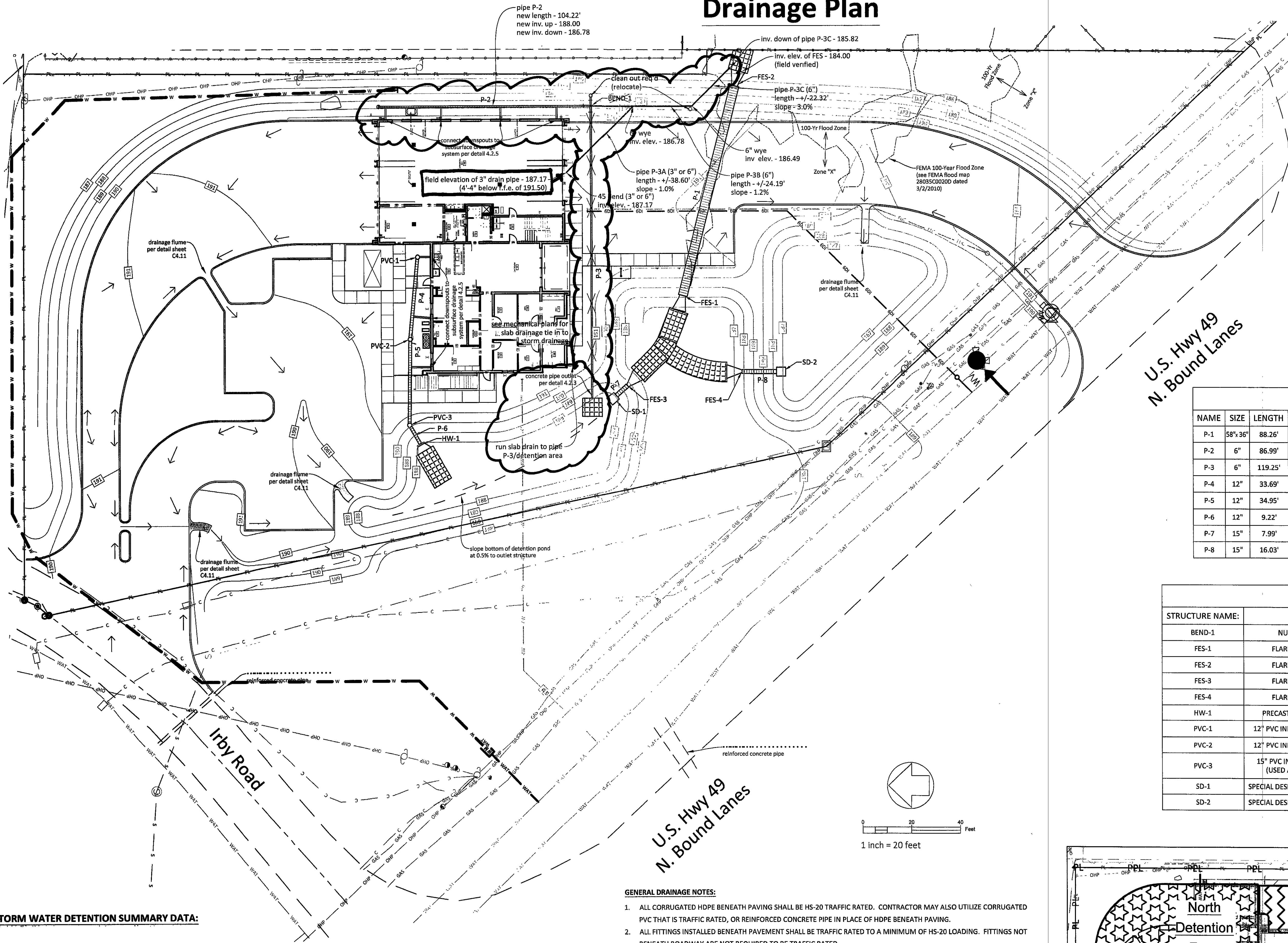
CN18-3707

SHEET NUMBER

C2.5

CITY OF HATTIESBURG
HATTIESBURG, MS

Drainage Plan



STORM WATER DETENTION SUMMARY DATA:

North Detention 25 Year Event

- Pre-development flow = 1.53 cfs
- Post-development flow = 4.39 cfs
- Required storage volume = 1,566 cu. ft.
- Provided storage volume at Emergency Overflow Elev. = 4,317 cu. ft.
- Inv. elev. orifice = 187.00
- Emergency overflow elev. = 189.15
- Orifice size = 6"
- Orifice flow at max water level = 1.01 cfs

North Detention 100 Year Event

- Pre-development flow = 1.82 cfs
- Post-development flow = 5.23 cfs
- Required storage volume = 2,429 cu. ft.
- Provided storage volume at Emergency Overflow Elev. = 4,317 cu. ft.
- Inv. elev. orifice = 187.00
- Emergency overflow elev. = 189.15
- Orifice size = 6"
- Orifice flow at max water level = 1.01 cfs

South Detention 25 Year Event

- Pre-development flow = .89 cfs
- Post-development flow = 2.27 cfs
- Required storage volume = 562 cu. ft.
- Provided storage volume at Emergency Overflow Elev. = 6,487 cu. ft.
- Inv. elev. orifice = 187.00
- Emergency overflow elev. = 189.00
- Orifice size = 5"
- Orifice flow at max water level = 0.88 cfs

South Detention 100 Year Event

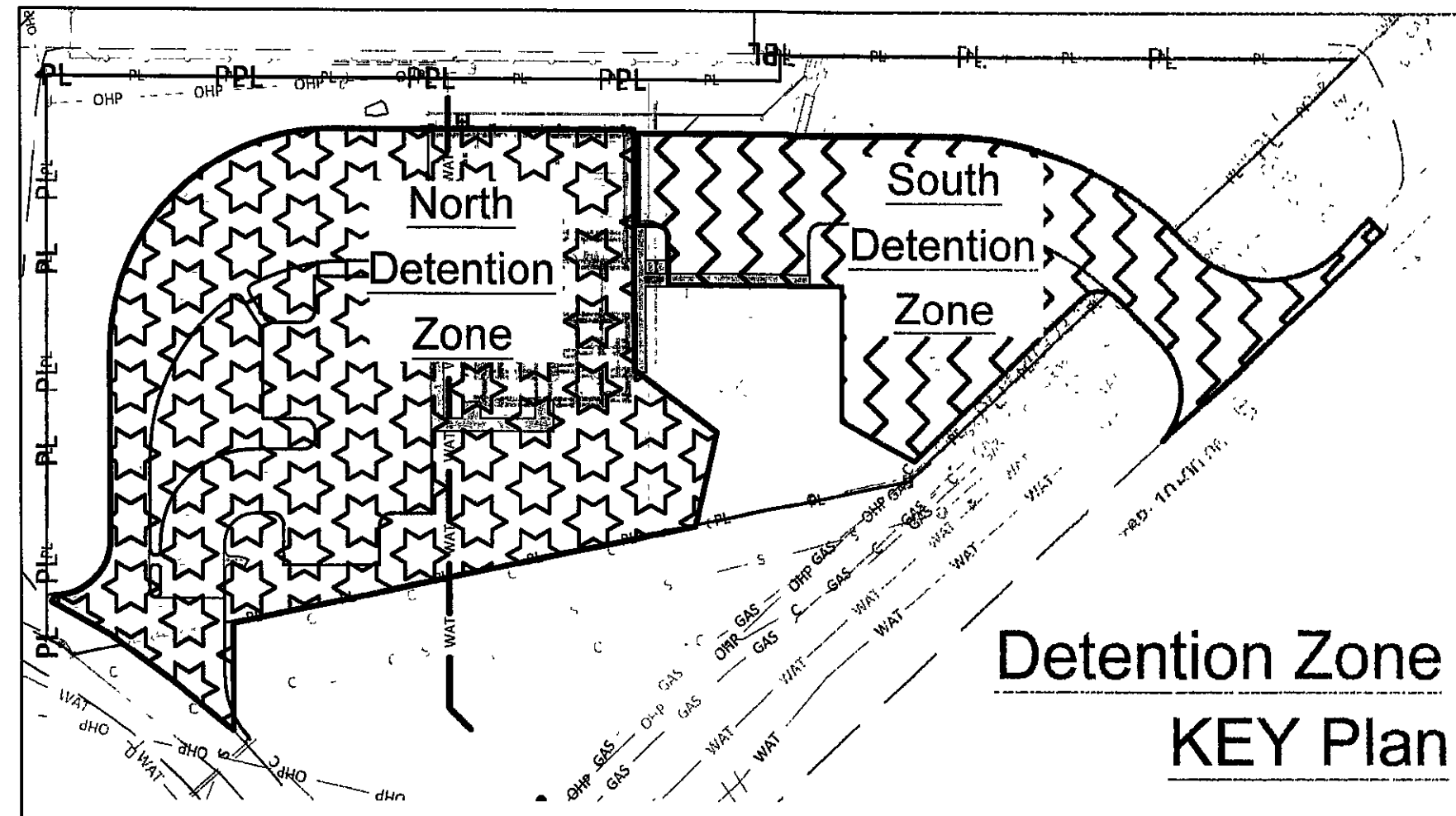
- Pre-development flow = 1.04 cfs
- Post-development flow = 2.68 cfs
- Required storage volume = 667 cu. ft.
- Provided storage volume at Emergency Overflow Elev. = 6,487 cu. ft.
- Inv. elev. orifice = 187.00
- Emergency overflow elev. = 189.00
- Orifice size = 5"
- Orifice flow at max water level = 0.88 cfs

GENERAL DRAINAGE NOTES:

1. ALL CORRUGATED HDPE BENEATH PAVING SHALL BE HS-20 TRAFFIC RATED. CONTRACTOR MAY ALSO UTILIZE CORRUGATED PVC THAT IS TRAFFIC RATED, OR REINFORCED CONCRETE PIPE IN PLACE OF HDPE BENEATH PAVING.
2. ALL FITTINGS INSTALLED BENEATH PAVEMENT SHALL BE TRAFFIC RATED TO A MINIMUM OF HS-20 LOADING. FITTINGS NOT BENEATH ROADWAY ARE NOT REQUIRED TO BE TRAFFIC RATED.
3. ALL FITTINGS REQUIRED (INCLUDING VERTICAL BENDS) FOR CONNECTION BETWEEN MECHANICAL SYSTEM PIPING AND CIVIL SITE PIPING (SDR, D.I. & CPVC) SHALL BE INCLUDED.
4. CONTRACTOR MAY UTILIZE PRECAST INLETS, JUNCTION BOXES, AND CATCH BASINS; HOWEVER, ALL TOPS FOR CURB INLETS SHALL BE CAST IN PLACE. NO PRECAST TOPS WILL BE ACCEPTED.
5. ALL FITTINGS, ADAPTERS, ETC. REQUIRED FOR INSTALLATION OF FRENCH DRAIN SHALL BE INCLUDED IN BASE BID EVEN IF NOT SHOWN ON THE PLANS.
6. ALL TRENCHES SHALL BE BACKFILLED WITH MAXIMUM OF 6" LIFTS UNTIL 2 FEET OF COVER EXISTS OVER PIPE, BACKFILL SHALL ACHIEVE 98% STANDARD PROCTOR DENSITY. REMAINDER OF TRENCH AND ADJACENT TO STRUCTURES SHALL BE BACKFILLED AT A MAXIMUM OF 9" LAYERS USING MECHANICAL TAMPING EQUIPMENT ON EACH AND EVERY LAYER WITH A MINIMUM OF 1 COMPACTION TEST PER EACH LAYER AT NO MORE THAN 100 FEET APART. ALL COMPACTION TESTS SHALL BE PAID FOR BY THE CONTRACTOR.

Pipe Table						
NAME	SIZE	LENGTH	SLOPE	INV UP	INV DN	MATERIAL
P-1	58"x 36"	88.26'	2.37%	186.09	184.00	48 inch Concrete Arch Pipe
P-2	6"	86.99'	0.50%	186.99	186.99	6 inch Corrugated HDPE Pipe
P-3	6"	119.25'	0.75%	186.99	186.99	6 inch Corrugated HDPE Pipe
P-4	12"	33.69'	0.50%	188.50	188.33	12 inch Corrugated HDPE Pipe
P-5	12"	34.95'	0.50%	188.33	188.16	12 inch Corrugated HDPE Pipe
P-6	12"	9.22'	0.50%	188.16	188.11	12 inch Corrugated HDPE Pipe
P-7	15"	7.99'	0.63%	187.05	187.00	15 inch Concrete Pipe
P-8	15"	16.03'	0.62%	186.90	186.80	15 inch Concrete Pipe

STRUCTURE TABLE				
STRUCTURE NAME:	DETAILS	RIM ELEV.	Pipes In:	Pipes Out:
BEND-1	NULL STRUCTURE	N/A	N/A	N/A
FES-1	FLARED END SECTION	N/A	N/A	N/A
FES-2	FLARED END SECTION	N/A	N/A	N/A
FES-3	FLARED END SECTION	N/A	N/A	N/A
FES-4	FLARED END SECTION	N/A	N/A	N/A
HW-1	PRECAST CONC. HEADWALL	N/A	N/A	N/A
PVC-1	12" PVC INLET W/ DOMED GRATE	191.50	P-4, 188.50	P-4, 188.50
PVC-2	12" PVC INLET W/ DOMED GRATE	191.42	P-4, 188.33	P-4, 188.33
PVC-3	15" PVC INLET W/ SOLID GRATE (USED AS JUNCTION BOX)	191.12	P-5, 188.16	P-5, 188.16
SD-1	SPECIAL DESIGN DETENTION OUTLET	189.15	P-7, 187.05	P-7, 187.05
SD-2	SPECIAL DESIGN DETENTION OUTLET	189.00	P-8, 186.90	P-8, 186.90



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SHEET TITLE
Drainage Plan

PROJECT
FIRE STATION No. 9

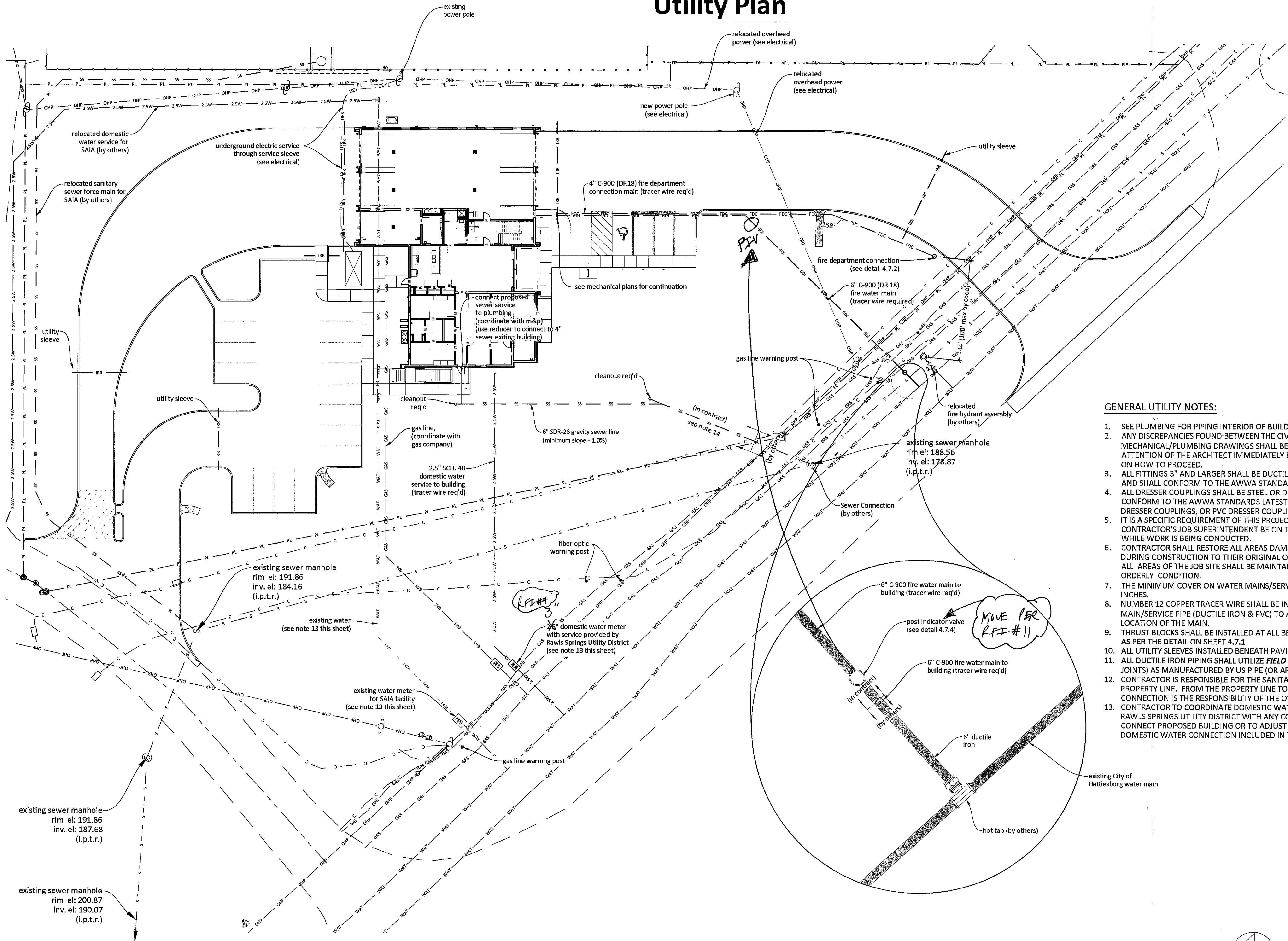
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SHEET NUMBER

C2.6

Utility Plan



GENERAL UTILITY NOTES:

1. SEE PLUMBING FOR PIPING INTERIOR OF BUILDING.
2. ANY DISCREPANCIES FOUND BETWEEN THE CIVIL DRAWINGS AND MECHANICAL/PLUMBING DRAWINGS SHALL BE BROUGHT TO THE ATTENTION OF THE ARCHITECT IMMEDIATELY FOR A RECOMMENDATION ON HOW TO PROCEED.
3. ALL FITTINGS 3" AND LARGER SHALL BE DUCTILE IRON MECHANICAL JOINT AND SHALL CONFORM TO THE AWWA STANDARDS LATEST EDITION.
4. ALL DRESSER COUPLINGS SHALL BE STEEL OR DUCTILE IRON AND SHALL CONFORM TO THE AWWA STANDARDS LATEST EDITION. NO "KNOCK ON", DRESSER COUPLINGS, OR PVC DRESSER COUPLINGS WILL BE ALLOWED.
5. IT IS A SPECIFIC REQUIREMENT OF THIS PROJECT THAT THE PRIME CONTRACTOR'S JOB SUPERINTENDENT BE ON THE JOB SITE AT ALL TIMES WHILE WORK IS BEING CONDUCTED.
6. CONTRACTOR SHALL RESTORE ALL AREAS DAMAGED OR DISTURBED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION. IN ADDITION, ALL AREAS OF THE JOB SITE SHALL BE MAINTAINED IN A NEAT AND ORDERLY CONDITION.
7. THE MINIMUM COVER ON WATER MAINS/SERVICE LINES SHALL BE 36 INCHES.
8. NUMBER 12 COPPER TRACER WIRE SHALL BE INSTALLED ON ALL WATER MAIN/SERVICE PIPE (DUCTILE IRON & PVC) TO ASSIST IN FUTURE LOCATION OF THE MAIN.
9. THRUST BLOCKS SHALL BE INSTALLED AT ALL BENDS, TEES, FITTINGS, ETC. AS PER THE DETAIL ON SHEET 4.7.1
10. ALL UTILITY SLEEVES INSTALLED BENEATH PAVING SHALL BE SDR-26.
11. ALL DUCTILE IRON PIPING SHALL UTILIZE **FIELD LOK GASKETS** (AT ALL JOINTS) AS MANUFACTURED BY US PIPE (OR APPROVED EQUAL).
12. CONTRACTOR IS RESPONSIBLE FOR THE SANITARY SEWER UP TO THE PROPERTY LINE. FROM THE PROPERTY LINE TO THE SEWER MANHOLE CONNECTION IS THE RESPONSIBILITY OF THE OWNER.
13. CONTRACTOR TO COORDINATE DOMESTIC WATER CONNECTION WITH RAWLS SPRINGS UTILITY DISTRICT WITH ANY COST NECESSARY TO CONNECT PROPOSED BUILDING OR TO ADJUST THE EXISTING SAIA DOMESTIC WATER CONNECTION INCLUDED IN THE BID.

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SHEET TITLE
Utility Plan

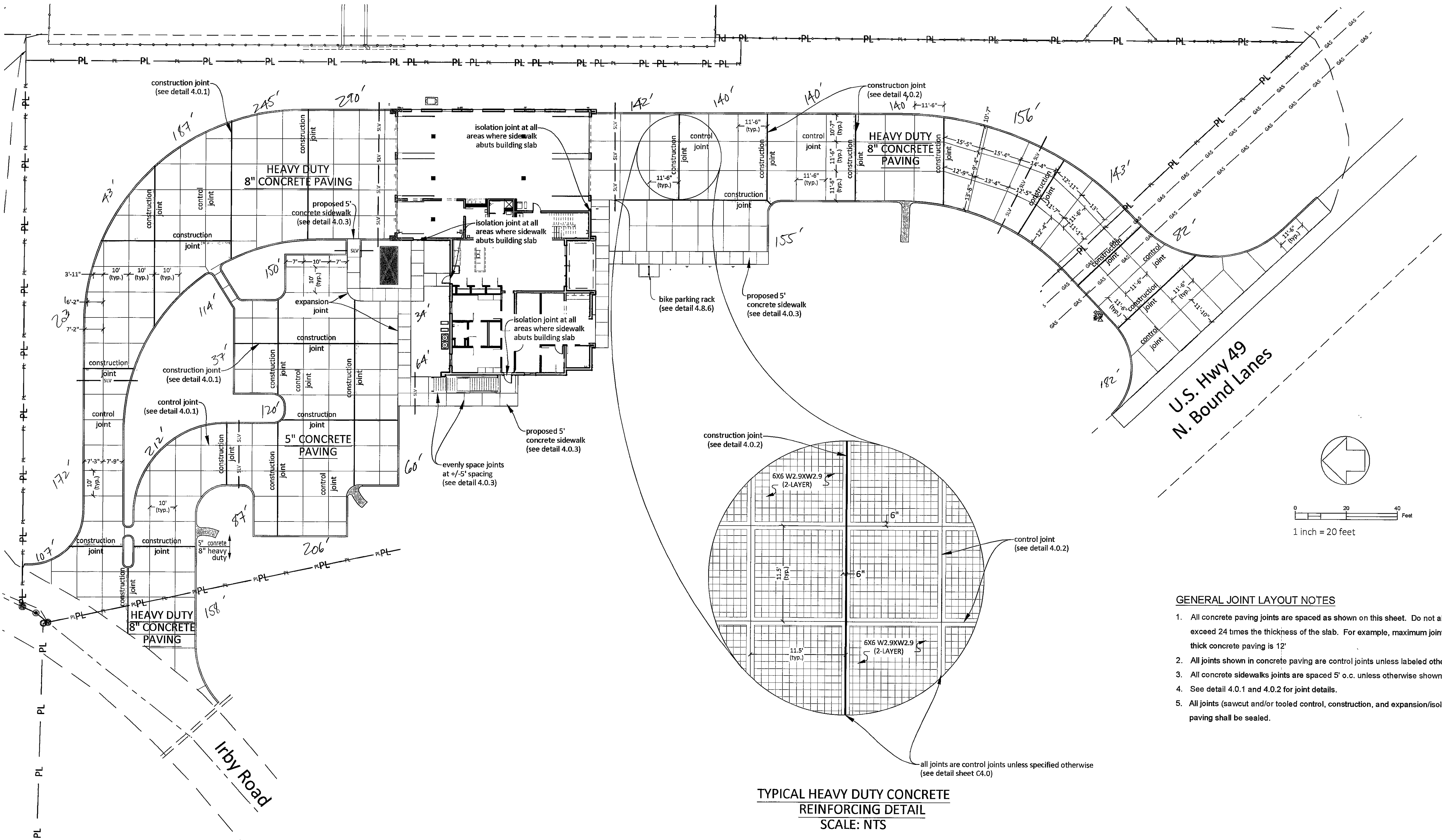
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CN18-3707
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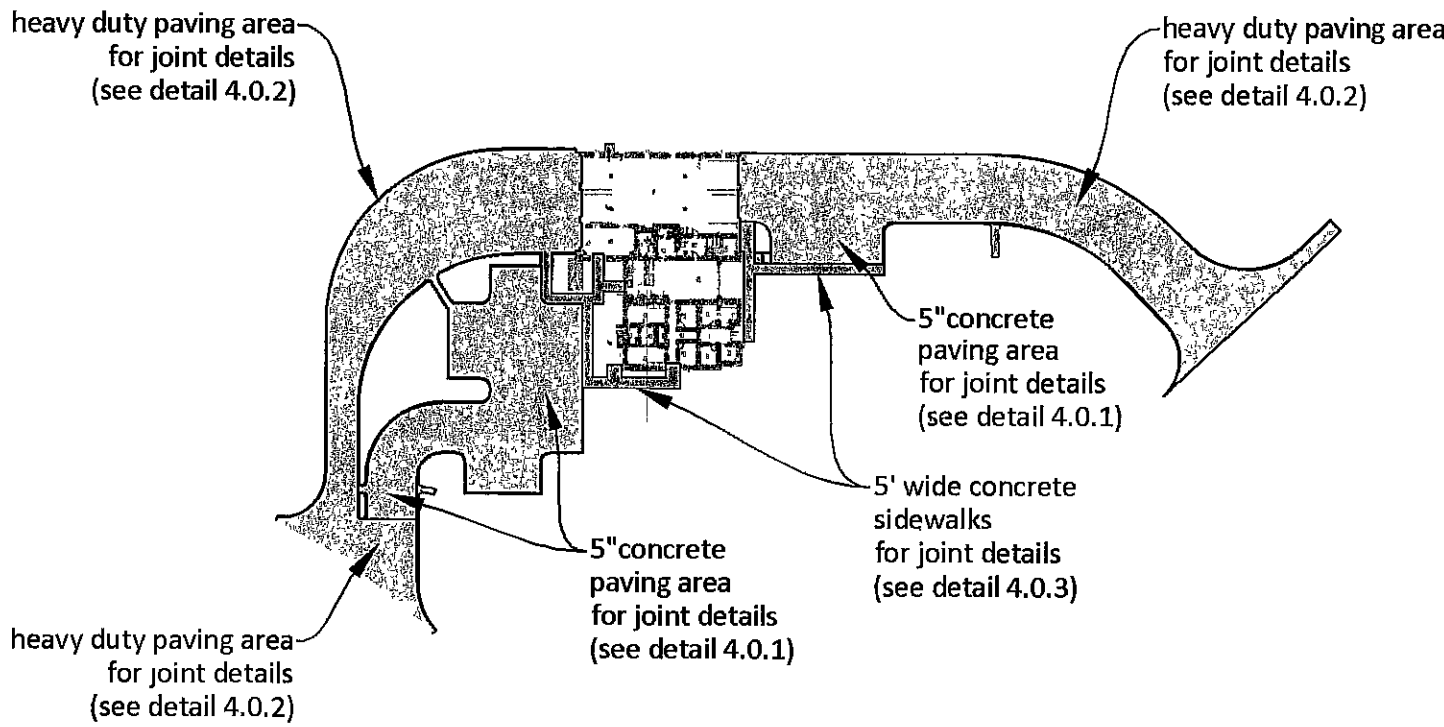
Joint Layout



GENERAL JOINT LAYOUT NOTES

1. All concrete paving joints are spaced as shown on this sheet. Do not allow joints to exceed 24 times the thickness of the slab. For example, maximum joint spacing for 6" thick concrete paving is 12'
2. All joints shown in concrete paving are control joints unless labeled otherwise.
3. All concrete sidewalks joints are spaced 5' o.c. unless otherwise shown on this sheet.
4. See detail 4.0.1 and 4.0.2 for joint details.
5. All joints (sawcut and/or tooled control, construction, and expansion/isolation) in paving shall be sealed.

TYPICAL HEAVY DUTY CONCRETE
REINFORCING DETAIL
SCALE: NTS



KEY PLAN
SCALE: NTS

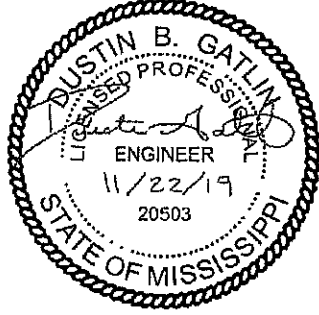
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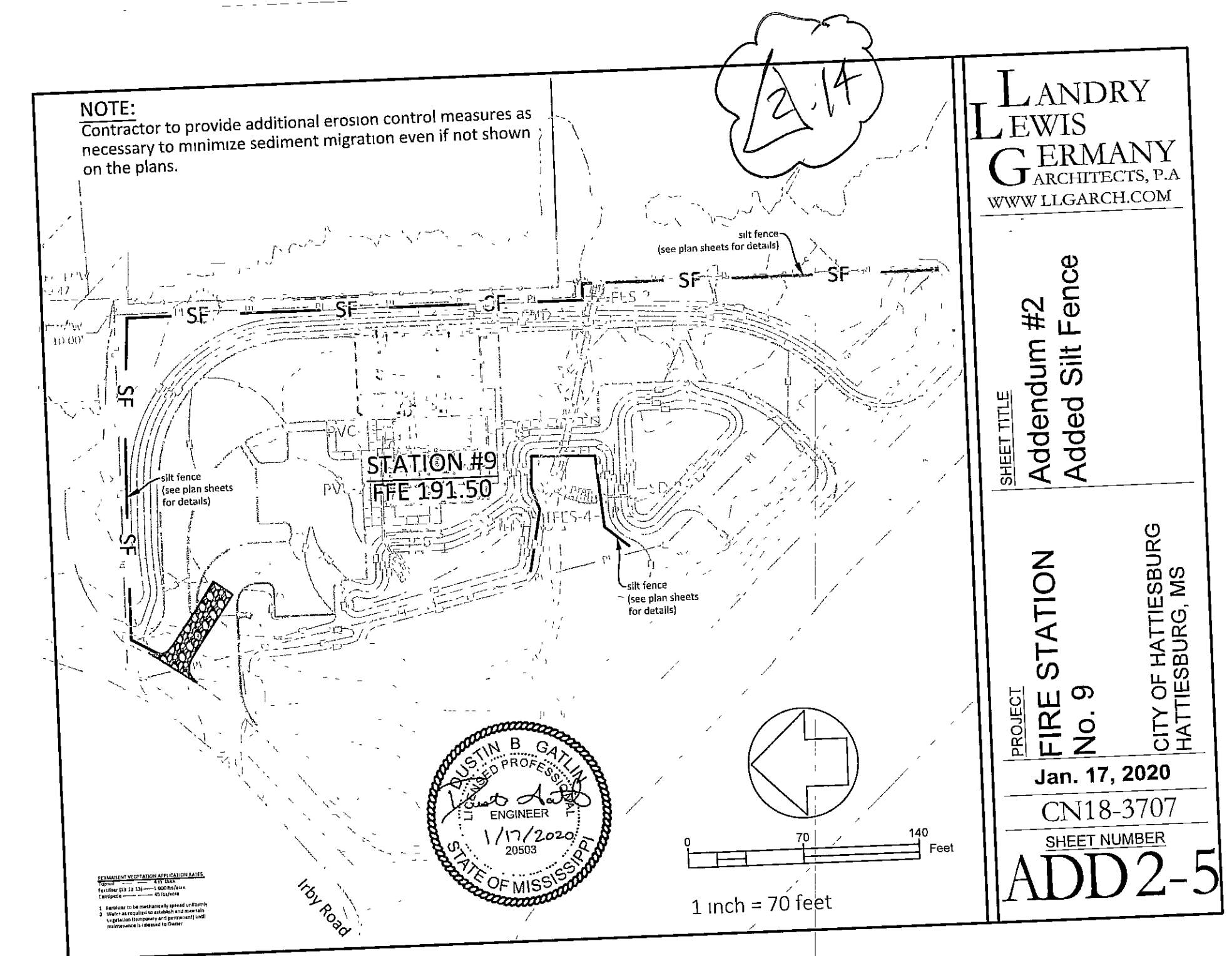
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SHEET TITLE
Joint Layout

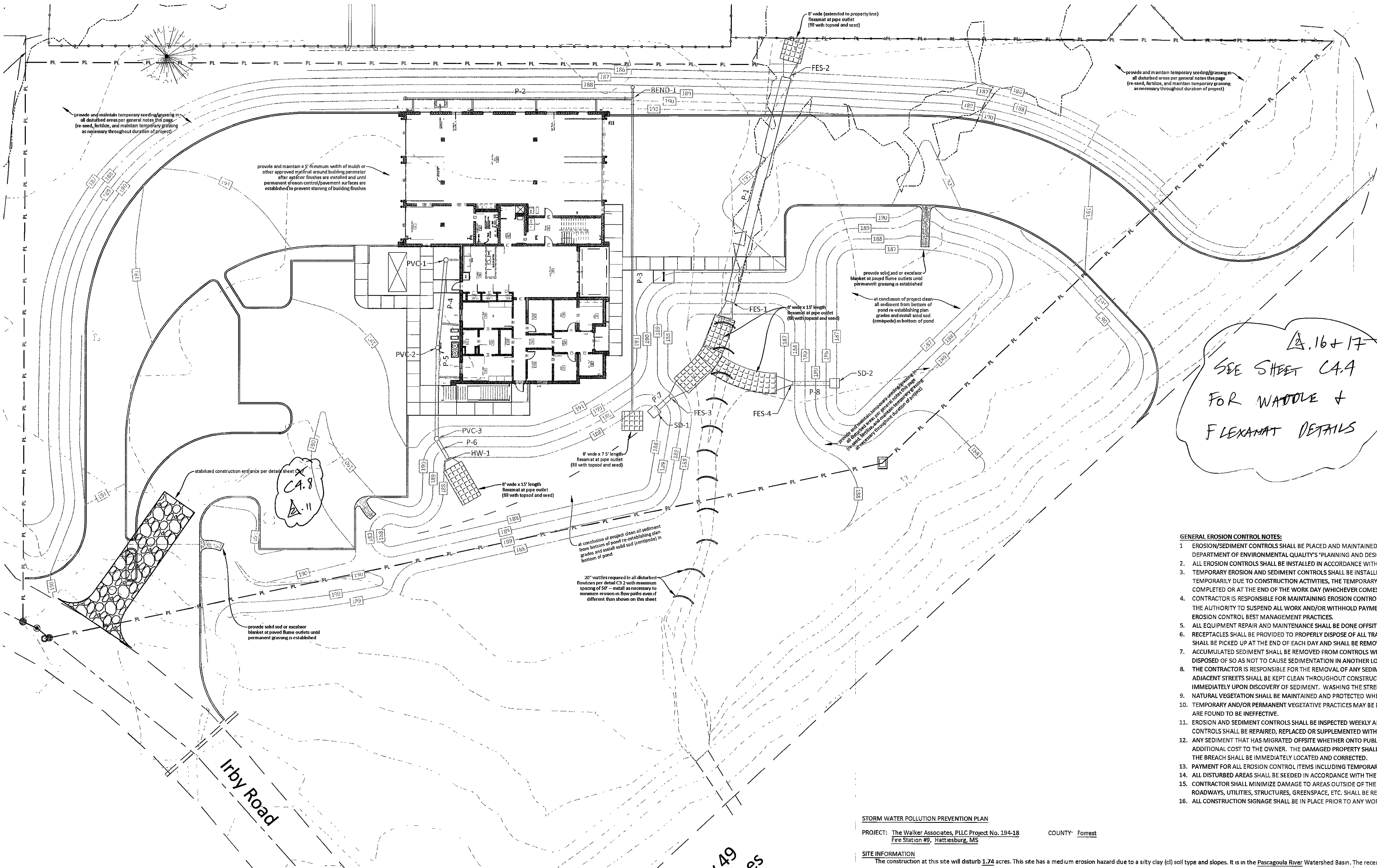
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SHEET NUMBER
C2.8

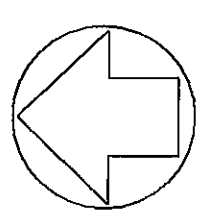


Erosion Control Plan



PERMANENT VEGETATION APPLICATION RATES
Topsoil — 4 ft. thick
Fertilizer (15-15-15) — 1,000 lbs/acre
Grassseed — 40 lbs/acre
1. Fertilizer to be mechanically spread uniformly
2. Water as required to establish and maintain vegetation (temporary and permanent) until maintenance is released to Owner.

U.S. Hwy 49
N. Bound Lanes



0 20 40 Feet
1 inch = 20 feet

- GENERAL EROSION CONTROL NOTES:**
1. EROSION/SEDIMENT CONTROLS SHALL BE PLACED AND MAINTAINED USING BEST MANAGEMENT PRACTICES (BMP'S) AS OUTLINED IN THE MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY'S "PLANNING AND DESIGN MANUAL FOR THE CONTROL OF EROSION, SEDIMENT, AND STORMWATER".
 2. ALL EROSION CONTROLS SHALL BE INSTALLED IN ACCORDANCE WITH THE DETAILS.
 3. TEMPORARY EROSION AND SEDIMENT CONTROLS SHALL BE INSTALLED PRIOR TO THE START OF ANY WORK. IF REQUIRED TO REMOVE THE CONTROLS TEMPORARILY DUE TO CONSTRUCTION ACTIVITIES, THE TEMPORARY EROSION CONTROLS SHALL BE REINSTALLED IMMEDIATELY ONCE THOSE ACTIVITIES ARE COMPLETED OR AT THE END OF THE WORK DAY (WHICHEVER COMES FIRST).
 4. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING EROSION CONTROL MEASURES THROUGHOUT THE DURATION OF THE PROJECT. THE ENGINEER WILL HAVE THE AUTHORITY TO SUSPEND ALL WORK AND/OR WITHHOLD PAYMENTS FOR FAILURE OF THE CONTRACTOR TO MAINTAIN PROPER MAINTENANCE OF THE EROSION CONTROL BEST MANAGEMENT PRACTICES.
 5. ALL EQUIPMENT REPAIR AND MAINTENANCE SHALL BE DONE OFFSITE.
 6. RECEPTACLES SHALL BE PROVIDED TO PROPERLY DISPOSE OF ALL TRASH AND WASTE. ALL CONSTRUCTION DEBRIS SHALL BE PICKED UP AT THE END OF EACH DAY AND SHALL BE REMOVED COMPLETELY FROM THE SITE AT THE END OF THE PROJECT.
 7. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM CONTROLS WHEN IT REACHES 1/2 THE HEIGHT OF THE CONTROL. THE SEDIMENT SHALL BE PROPERLY DISPOSED OF SO AS NOT TO CAUSE SEDIMENTATION IN ANOTHER LOCATION.
 8. THE CONTRACTOR IS RESPONSIBLE FOR THE REMOVAL OF ANY SEDIMENT OR CONSTRUCTION DEBRIS THAT IS TRACKED ONTO ADJACENT PAVED AREAS, ADJACENT STREETS SHALL BE KEPT CLEAN THROUGHOUT CONSTRUCTION AND SHALL BE CLEANED WITH A STREET SWEEPER OR SIMILAR TECHNIQUE IMMEDIATELY UPON DISCOVERY OF SEDIMENT. WASHING THE STREET OR OTHER PAVED AREAS IS NOT AN ACCEPTABLE FORM OF CLEANING.
 9. NATURAL VEGETATION SHALL BE MAINTAINED AND PROTECTED WHENEVER POSSIBLE.
 10. TEMPORARY AND/OR PERMANENT VEGETATIVE PRACTICES MAY BE DEEMED NECESSARY IF THE CONTROLS FOUND IN THIS STORMWATER MANAGEMENT PLAN ARE FOUND TO BE INEFFECTIVE.
 11. EROSION AND SEDIMENT CONTROLS SHALL BE INSPECTED WEEKLY AND FOLLOWING ANY RAIN EVENT. NONFUNCTIONING, INEFFECTIVE OR DAMAGED CONTROLS SHALL BE REPAIRED, REPLACED OR SUPPLEMENTED WITH FUNCTIONAL CONTROLS WITHIN 24 HOURS OF DISCOVERY.
 12. ANY SEDIMENT THAT HAS MIGRATED OFFSITE WHETHER ONTO PUBLIC OR PRIVATE PROPERTY SHALL BE REMOVED IMMEDIATELY UPON DISCOVERY AT NO ADDITIONAL COST TO THE OWNER. THE DAMAGED PROPERTY SHALL BE RESTORED TO THE CONDITION PRIOR TO THE SEDIMENT MIGRATION. THE SOURCE OF THE BREACH SHALL BE IMMEDIATELY LOCATED AND CORRECTED.
 13. PAYMENT FOR ALL EROSION CONTROL ITEMS INCLUDING TEMPORARY AND PERMANENT EROSION CONTROL SHALL BE INCLUDED IN THE BASE BID.
 14. ALL DISTURBED AREAS SHALL BE SEEDDED IN ACCORDANCE WITH THE S.W.P.P.P. AND THE CONTRACT SPECIFICATIONS.
 15. CONTRACTOR SHALL MINIMIZE DAMAGE TO AREAS OUTSIDE OF THE PROPOSED CONSTRUCTION LIMITS. ANY DAMAGE TO ADJACENT PROPERTY INCLUDING ROADWAYS, UTILITIES, STRUCTURES, GREENSPACE, ETC. SHALL BE REPAIRED BY THE CONTRACTOR AT NO EXPENSE TO THE OWNER.
 16. ALL CONSTRUCTION SIGNAGE SHALL BE IN PLACE PRIOR TO ANY WORK ON THE SITE.

STORM WATER POLLUTION PREVENTION PLAN

PROJECT: The Walker Associates, PLLC Project No. 194-18 COUNTY: Forrest
Fire Station #9, Hattiesburg, MS

SITE INFORMATION

The construction at this site will disturb 1.74 acres. This site has a medium erosion hazard due to a silty clay (cl) soil type and slopes. It is in the Pascagoula River Watershed Basin. The receiving stream, Big Creek, from this site is not impaired.

SEDIMENT AND EROSION CONTROL REQUIREMENTS

1. VEGETATIVE CONTROLS: Permanent erosion controls (soil preparation, fertilizing, seeding, and mulching, sodding, and matting) will be placed as shown on the plans. Any disturbed areas laid-up for over 14 days will be seeded within 7 calendar days.
2. Buffer zones shall be maintained between land disturbing activities and perennial water bodies. Appropriate buffers will be maintained, as construction allows, and re-established when construction is complete near environmentally sensitive areas. Buffer zones are 5-feet from streams and 15-feet from the Right-of-Way.
3. Topsoil should be stockpiled and used in areas that will be re-vegetated. When final grade is reached it should be distributed to a minimum of 2 inches on 3:1 slopes and 4 inches on flatter slopes.
4. Heavy equipment use in areas to be re-vegetated should be avoided. If compaction cannot be avoided, the top 4 inches of the soil bed should be tilled before re-vegetation. Any necessary fertilizer or other soil amendments should be added during the tilling process.
5. STRUCTURAL CONTROLS: Temporary silt fence, straw wattles, sandbags, paved ditches, and riprap will be placed as shown on the plans. No linear areas of ten (10) or more disturbed acres are involved in this project. Therefore, no sediment basins are required.
6. Construction entrances/exits shall be installed wherever traffic will be leaving a construction site and moving directly onto a paved public road.
7. Storm drain inlets-inlets that could receive storm water from construction activities shall be protected by surrounding or covering with a filter material until final stabilization has been achieved. Protect the inlet with silt fence, wattles, and/or sandbags to prevent sediment from entering before the curb and gutter is placed. Block and gravel curb inlet filters or sand bags may be necessary to prevent sediment from entering after the curb gutter is placed.
8. A concrete wash out area will be constructed in accordance to EPA Guidelines in areas approved the Engineer for concrete trucks to wash the mixer chutes and a memo will be sent to the concrete supplier to use a minimum amount of water. Drivers will be instructed to return any materials to the concrete batch plant and complete final washing procedures at that location.
9. HOUSEKEEPING PRACTICES: The contractor is reminded of his responsibilities as outlined in Section 107 of the Specifications which include equipment maintenance and repair, concrete chute wash-off, trash/debris, storage of chemicals and other toxic materials, and sanitary facilities. Storm water pollution prevention best management practice techniques are to be applied throughout the construction of this project the cost of which is to be included in regular bid items.
10. POST-CONSTRUCTION CONTROL MEASURES: Upon completion of construction, vegetative growth along the roadway foreslopes will provide a buffer zone for loose material originating beyond the backslope. Flatter grades and ditch treatments minimize erosion. Paved ditches and flumes along with rock outlets are required.

IMPLEMENTATION SEQUENCE

1. Build construction entrance/exist.
2. Install silt fence, wattles, and other sedimentation controls as indicated on construction plans and standard detail sheets.
3. Proceed with site work including demolition, grading, and other necessary site related work. Install silt fence around topsoil or excavation stockpiles. Install culverts/inlets with inlet/outlet protection (as indicated on plans) and rip rap/flexamat.
4. Plant needed temporary vegetation on disturbed or problematic areas and maintain temporary vegetation throughout duration of project.
5. Plant and/or place permanent vegetation in all disturbed areas as soon as possible.
5. After site is stabilized (Engineer will determine if site is stabilized), remove all temporary measures, vegetating these areas.

MAINTENANCE PLAN

The contractor will inspect all disturbed areas, erosion and sediment controls after each significant rainfall but not less than once per week and record the results of this inspection on the "Monthly Inspection Report and Certification Form for Erosion and Sediment Controls" included with the permit. The monthly inspection reports and this SWPPP will be available for inspection during construction and submitted to MDEQ with the Notice of Termination as required. The contractor shall make needed repairs to installed erosion control items weekly and after each significant rainfall as necessary. This includes, but is not limited to, removing sediment, repairing, reinstalling, or replacing silt fence, straw wattles, or other temporary erosion control measures, repairing washes, ditches, or other permanent erosion control devices.

DOCUMENTATION AND COMPLIANCE

SMALL CONSTRUCTION GENERAL PERMIT (SCGP): Construction Activities that disturb one acre or less than five acres require coverage under the Small CGP. The Small CGP requires no submittals to the MDEQ unless specifically requested. The contractor is responsible for all documentation on the project and for keeping it on file for at least three (3) years. Some examples of acceptable documentation include the Daily Diary/Log and Rainfall Documentation. Contractor shall submit copies of all inspection reports to the Engineer on a monthly basis.

A.16 + 17
SEE SHEET C4.4
FOR WADDLE +
FLEXAMAT DETAILS

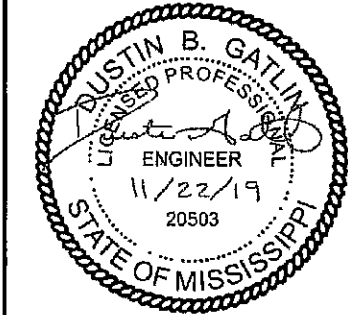
- SEE SILT FENCE A.14
LAYOUT OPP. PAGE.
DETAIL ON C4.8
A.10

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DBG	
FINAL DATE	NOVEMBER 22, 2019
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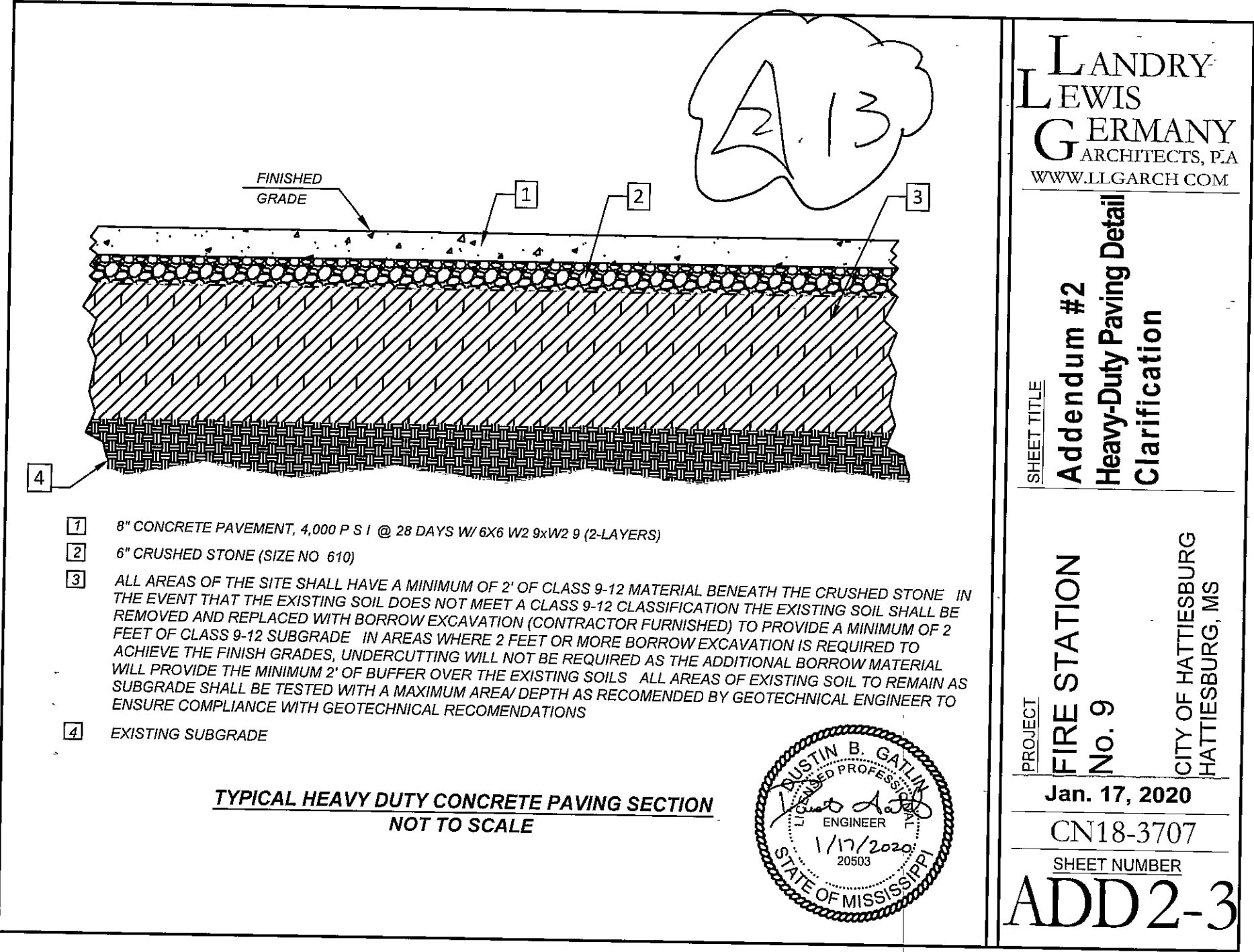
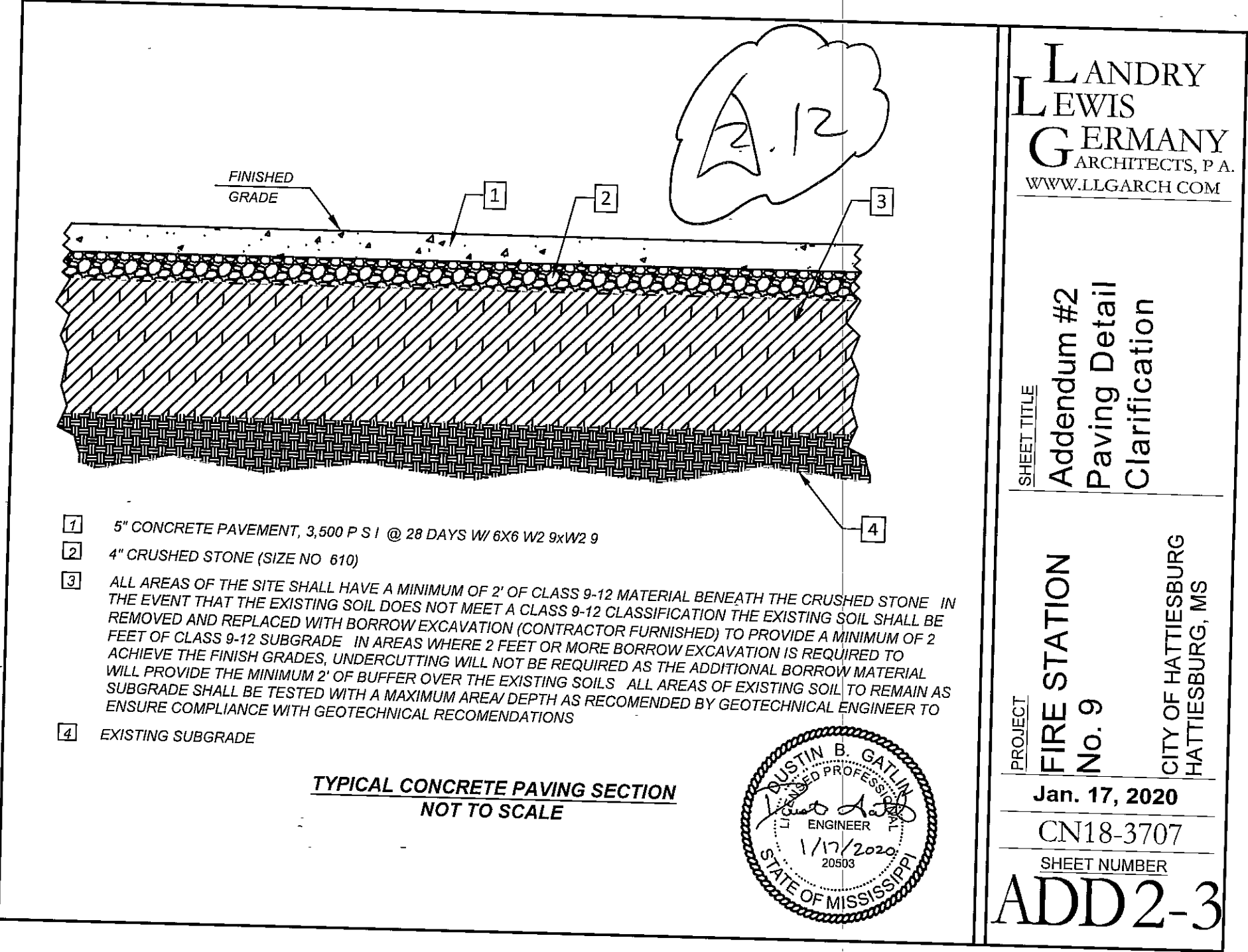
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Erosion Control Plan

PROJECT
FIRE STATION No. 9

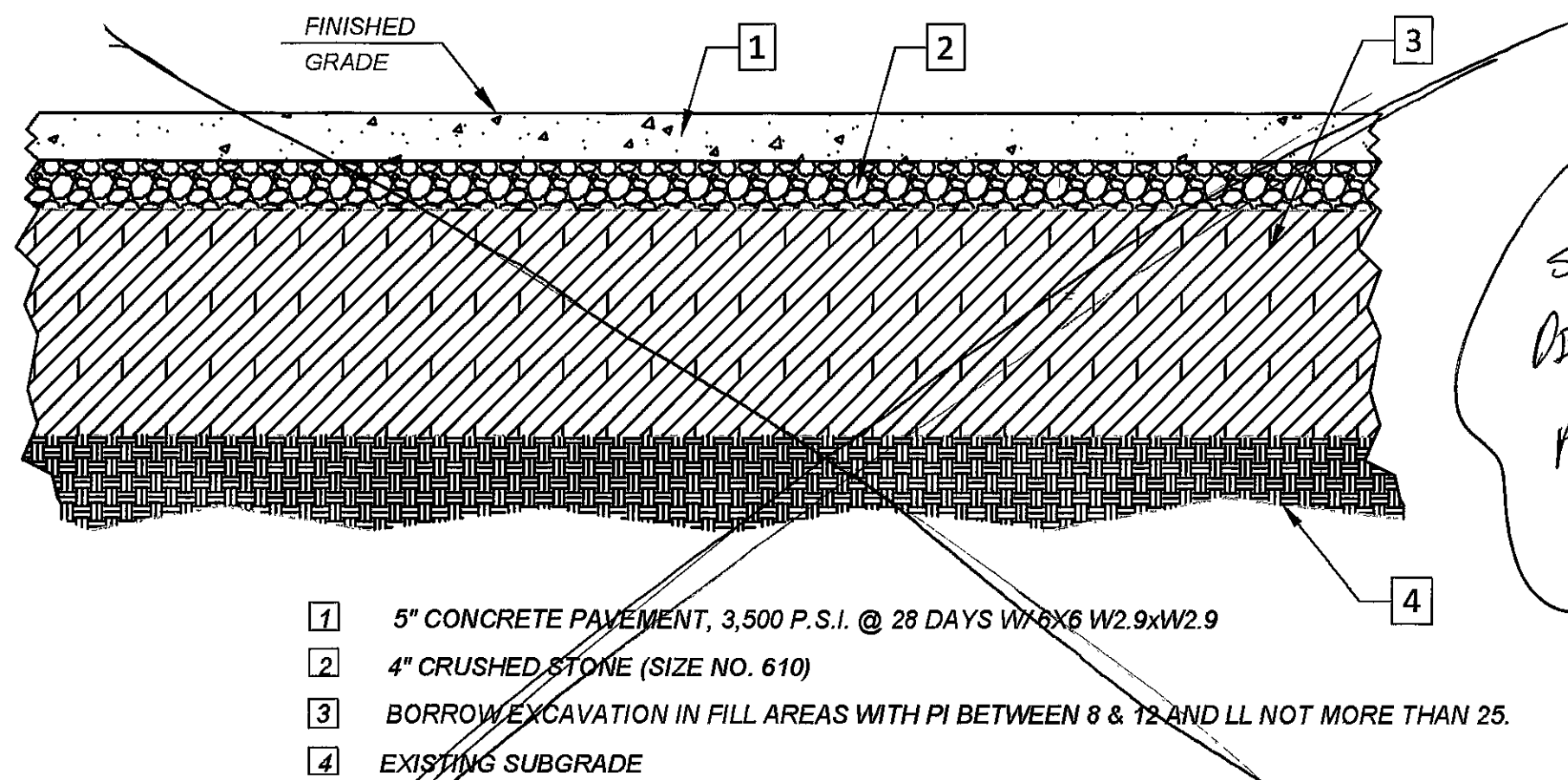


CN18-3707
SHEET NUMBER

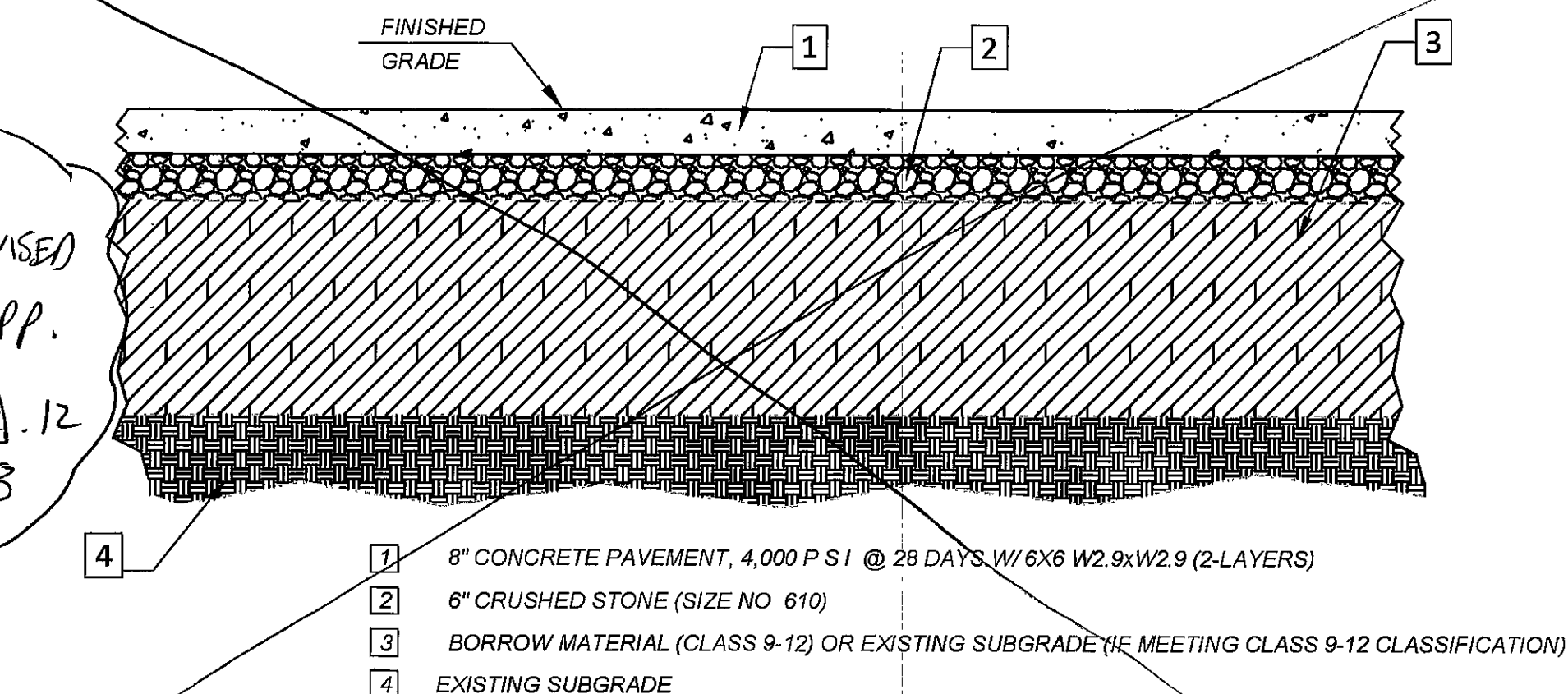
C3.0



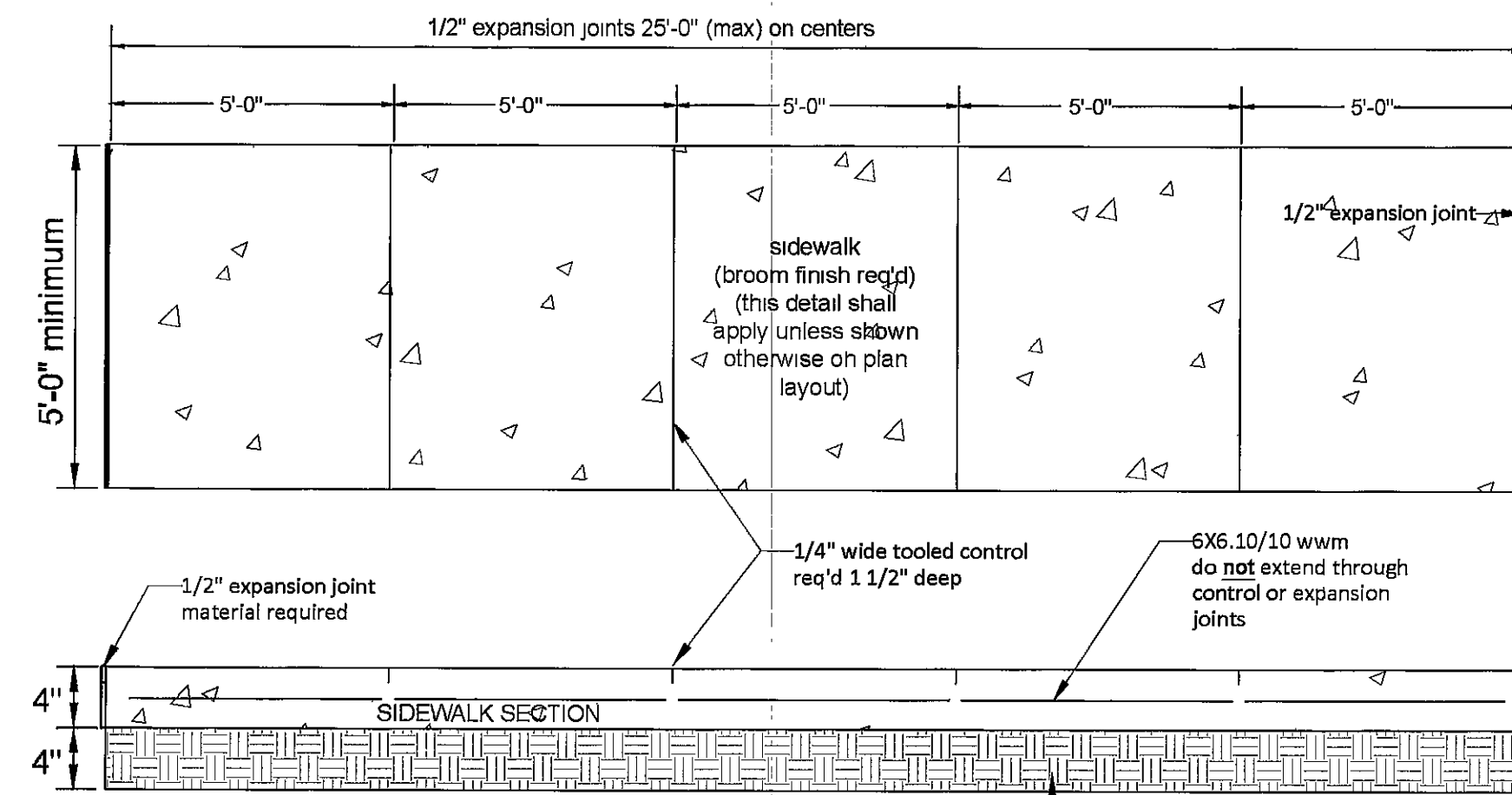
Paving Details



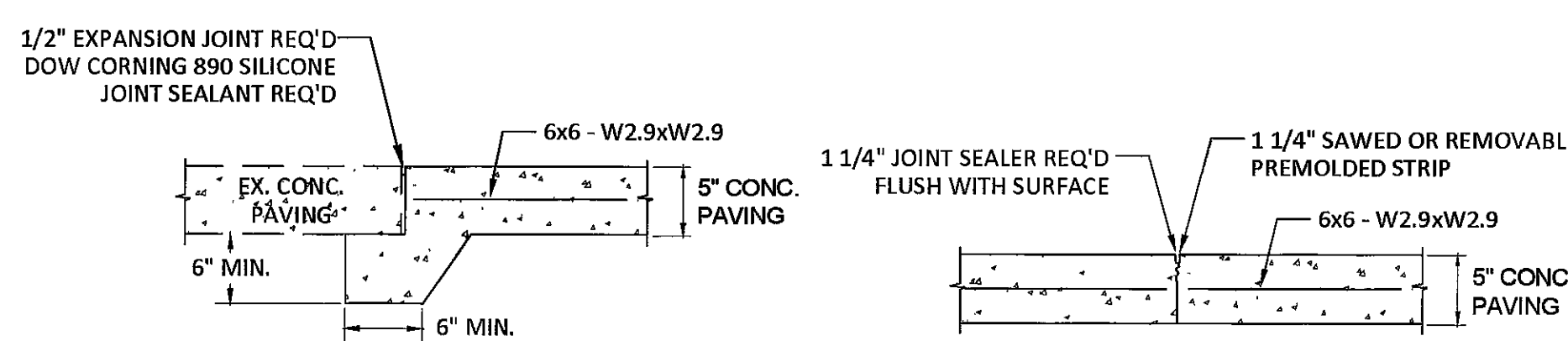
TYPICAL CONCRETE PAVING SECTION
NOT TO SCALE



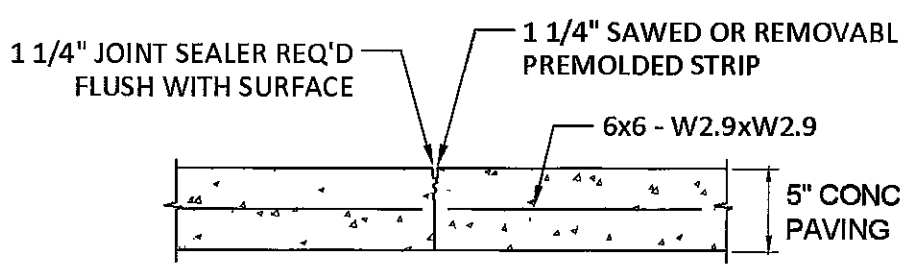
TYPICAL HEAVY DUTY CONCRETE PAVING SECTION
NOT TO SCALE



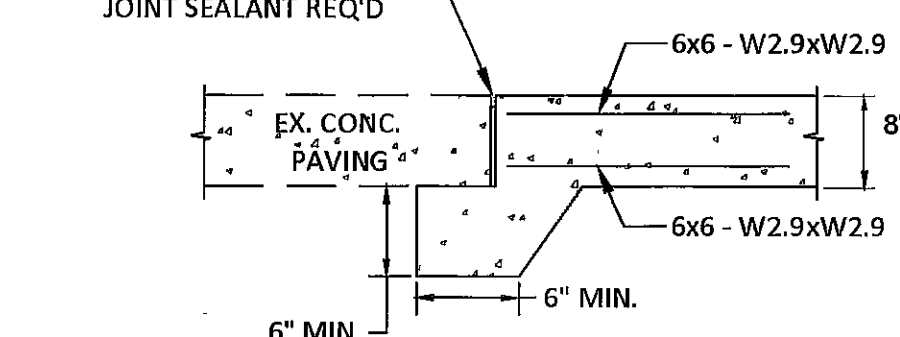
SIDEWALK DETAIL
NTS



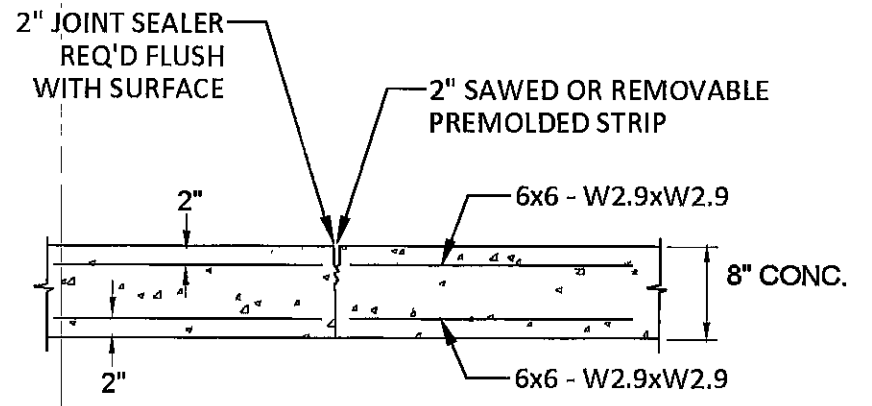
TYPICAL JOINT BETWEEN EXISTING
AND NEW CONCRETE



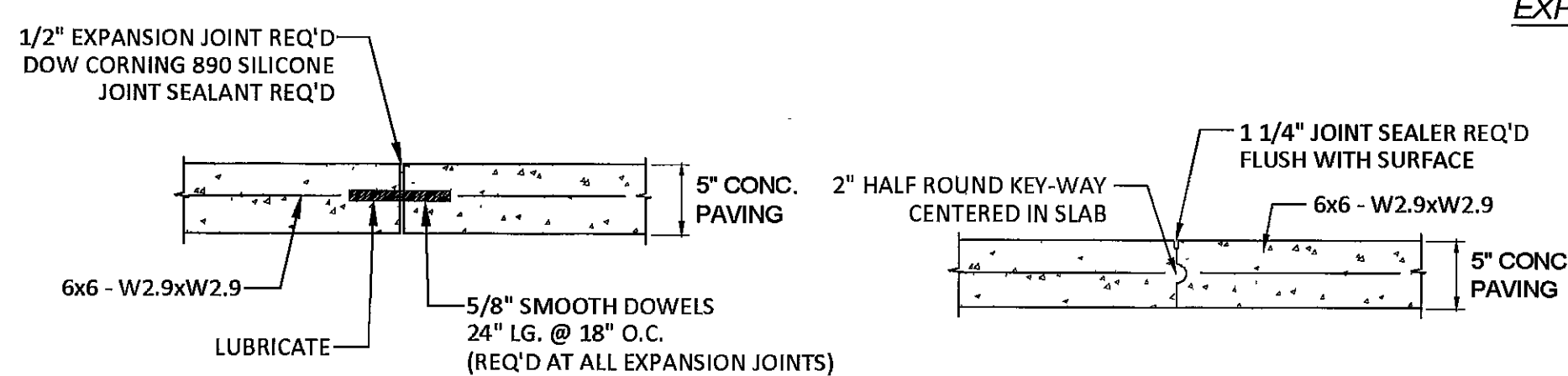
TYPICAL CONTROL JOINT



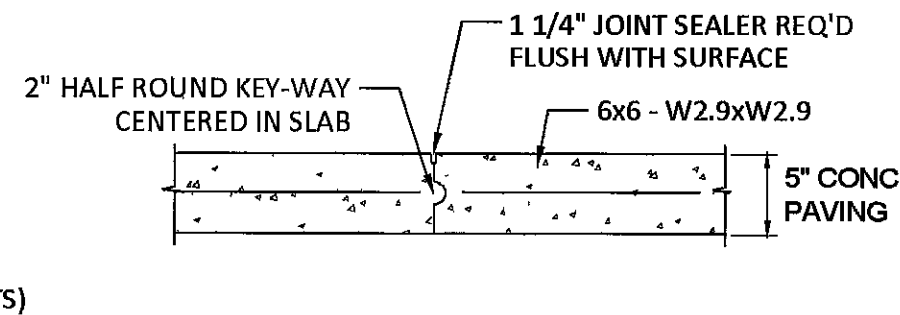
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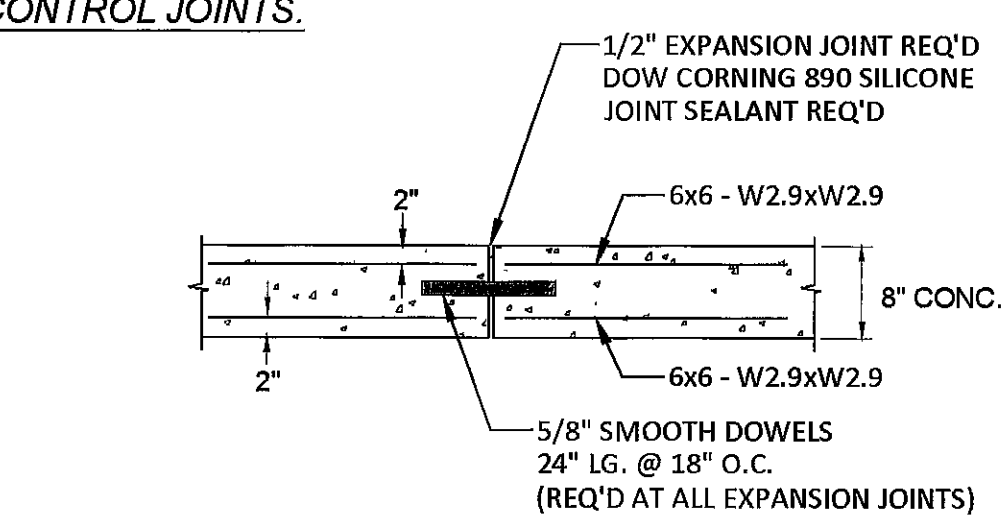
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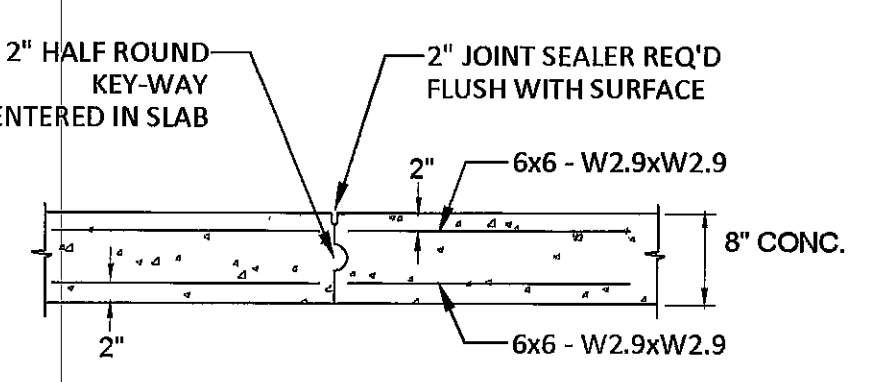
TYPICAL EXPANSION JOINT



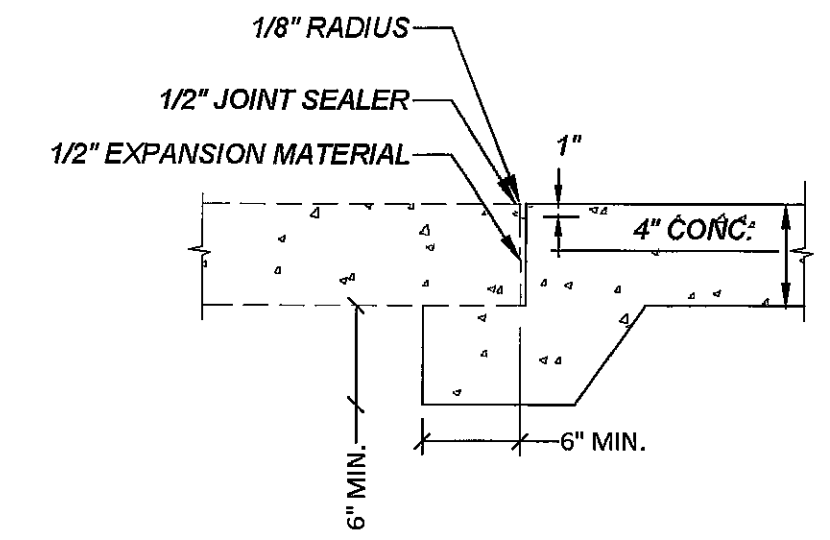
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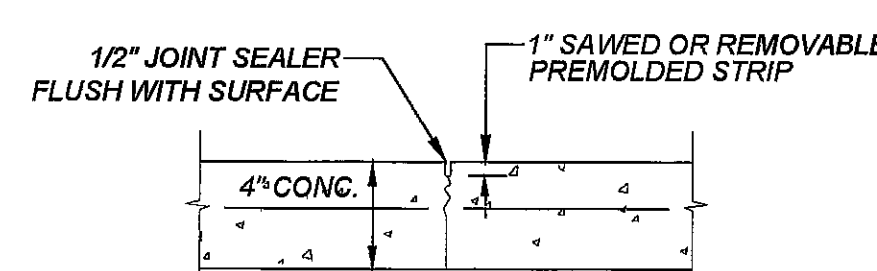
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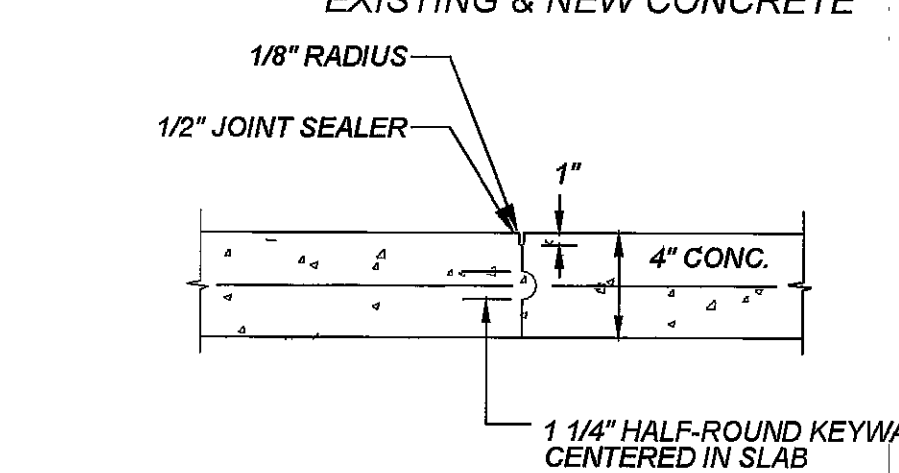
TYPICAL CONSTRUCTION JOINT



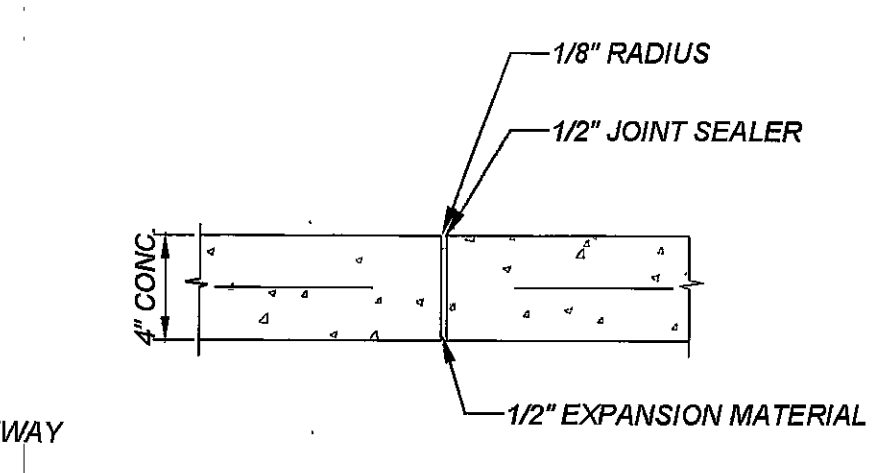
TYPICAL JOINT BETWEEN
EXISTING & NEW CONCRETE



TYPICAL CONTROL JOINT



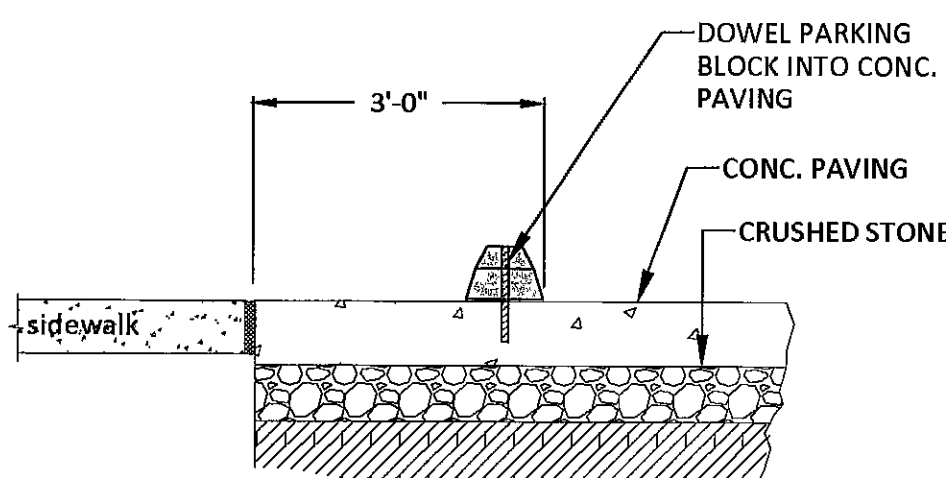
TYPICAL CONSTRUCTION JOINT



TYPICAL EXPANSION JOINT

1. EXPANSION JOINTS SHALL BE FORMED OF PREFORMED JOINT FILLER CUT TO FULL CROSS-SECTION AND SHALL EXTEND WIDTH OF CONSTRUCTION.
2. CONCRETE SHALL BE 3,500 PSI.
3. CONTROL JOINTS SHALL BE PLACED 10'-12' ON CENTERS OR AS INDICATED ON JOINT LAYOUT SHEETS.
4. EXPANSION JOINTS REQUIRED AT LOCATIONS WHERE THE NEW CONCRETE TIES INTO EXISTING PAVEMENTS, BUILDINGS, OR SIDEWALKS.

4.0.1 - TYPICAL 5" CONCRETE PAVING SECTION & JOINT DETAILS
NOT TO SCALE

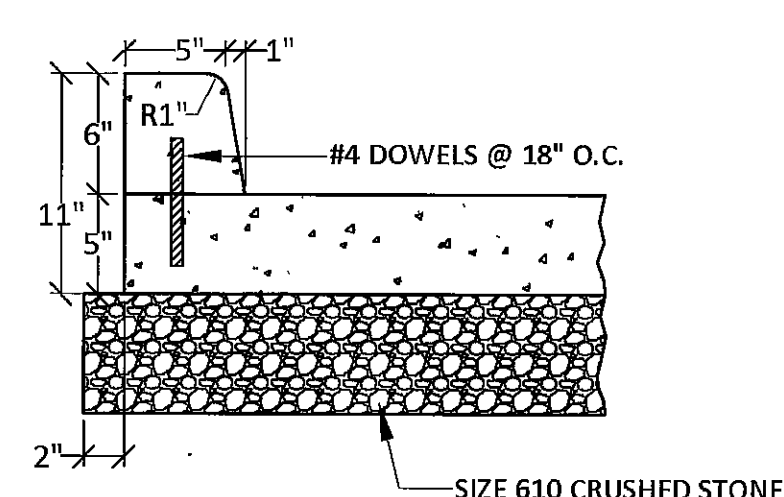


PARKING BLOCK SPECIFICATIONS:

1. PARKING BLOCK SUBMITTALS REQUIRED.
2. LENGTH TO BE 6'.

4.0.4 - TYPICAL FLUSH CONC. SIDEWALK ADJACENT TO CONC. PAVING
(ALSO SHOWING PARKING BLOCK INSTALLATION)
NOT TO SCALE

4.0.2 - TYPICAL HEAVY-DUTY CONCRETE PAVING SECTION & JOINT DETAILS
NOT TO SCALE



4.0.5 - TYPICAL TYPE 1
HEADER CURB DETAIL
NOT TO SCALE

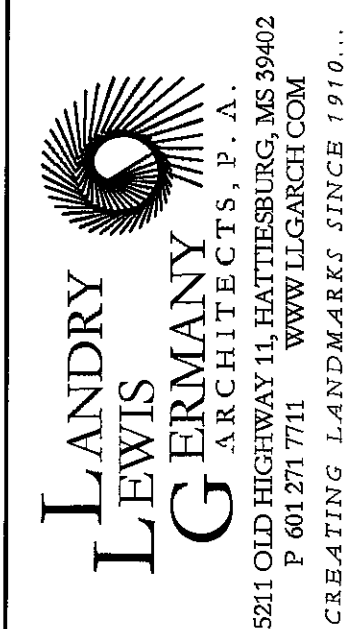
GENERAL PAVING NOTES:

1. ALL IN-SITU SOIL SHALL BE PROOF ROLLED PRIOR TO PLACEMENT OF BORROW EXCAVATION. ANY AREAS "PUMPING" WHEN PROOF ROLLED SHALL BE REMOVED AND REPLACED WITH BORROW EXCAVATION OR SCARIFIED TO A MINIMUM DEPTH OF 12" AND RE-COMPACTED IN 6" LIFTS TO NOT LESS THAN 98% STANDARD PROCTOR DENSITY. SEE GEOTECHNICAL REPORT FOR ADDITIONAL PROOF ROLL REQUIREMENTS.

4.0.3 - TYPICAL SIDEWALK & JOINT DETAILS
SCALE: NTS

1. Expansion joints shall be formed of preformed joint filler cut to full cross-section and shall extend width of construction.
2. Concrete shall be 3,000 psi minimum.
3. Expansion joints are required where the proposed concrete ties to existing concrete or building slabs.
4. All concrete sidewalks and ramps shall be constructed on a minimum of 4" of select fill (class 9-8) compacted to 98% S.P.D.
5. Any soft or yielding areas in the subgrade shall be removed and backfilled with borrow material.

DRAWN	CRW
CHECKED	
DBG	
FINAL DATE	NOVEMBER 22, 2019
REVISION SCHEDULE	
REV #	REV DATE



SHEET TITLE
Paving Details

PROJECT
FIRE STATION No. 9



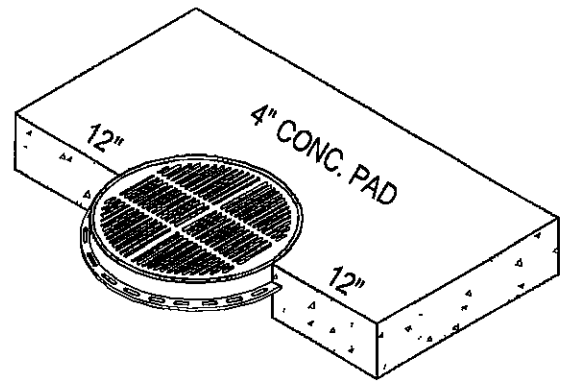
CN18-3707

SHEET NUMBER

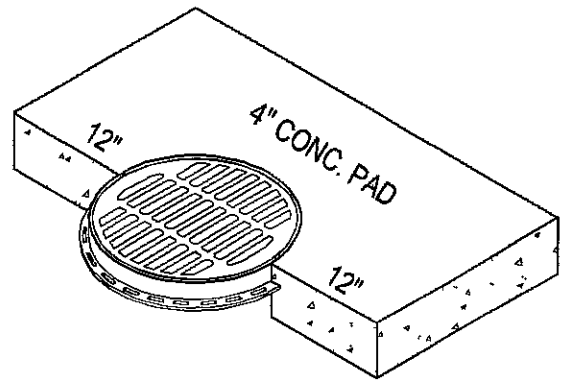
C4.0

Drainage Details

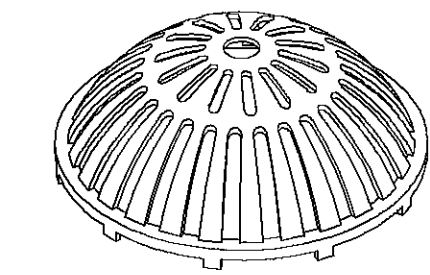
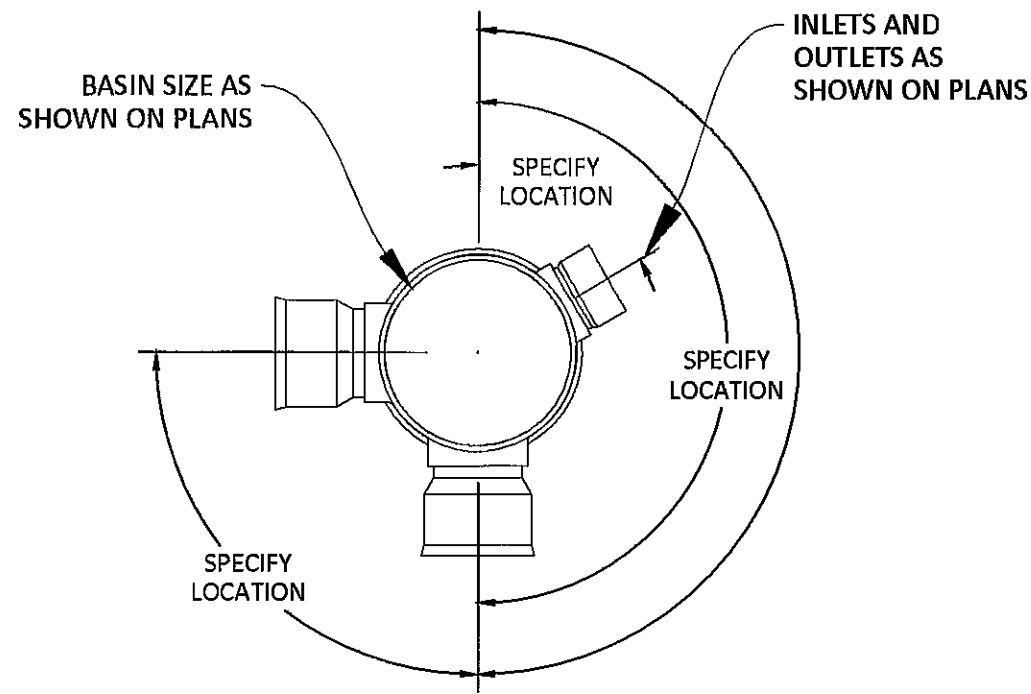
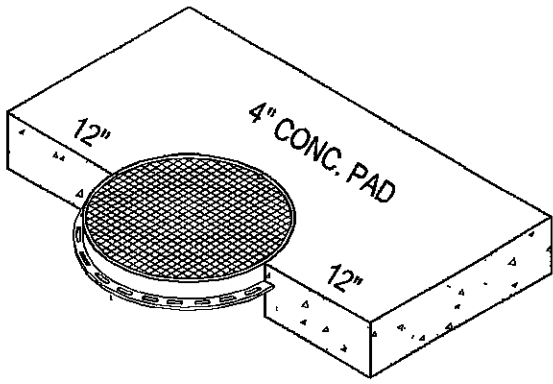
PEDESTRIAN GRATE



STANDARD GRATE

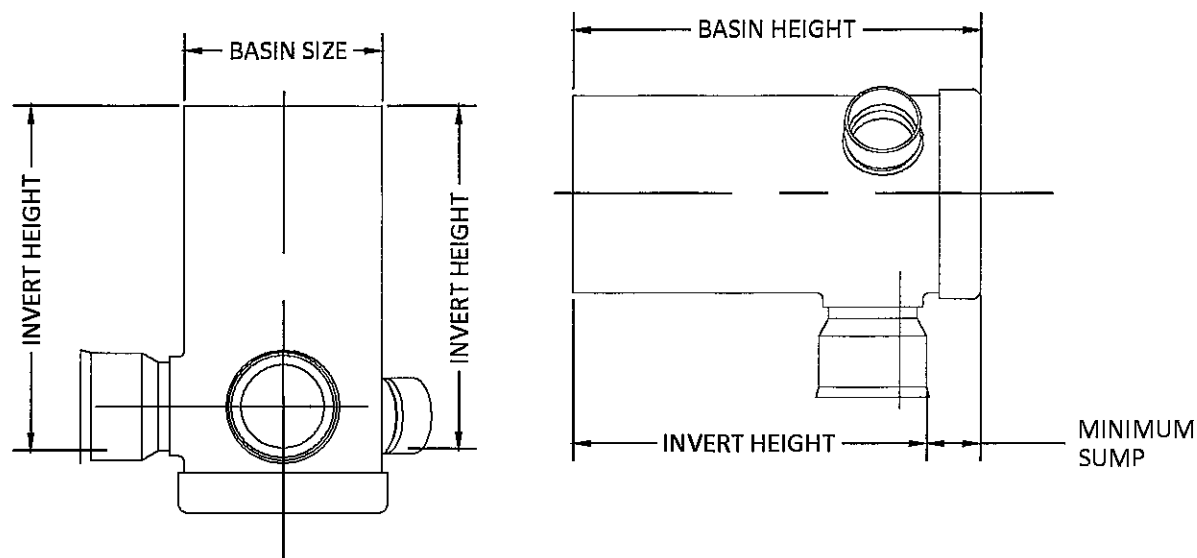


SOLID GRATE



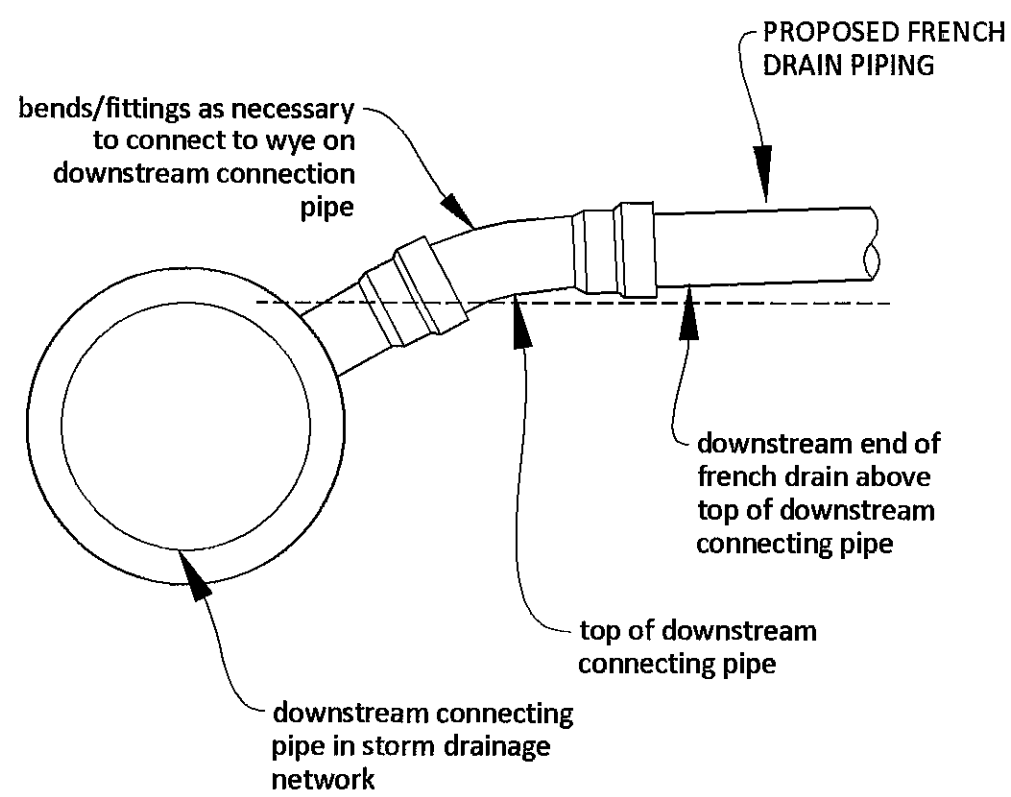
DOMED GRATE
(NO CONC. PAD REQ'D)

PVC INLETS SHALL BE MANUFACTURED BY CONTECH CONSTRUCTION PRODUCTS (MIDDLETOWN, OH) OR APPROVED EQUAL.

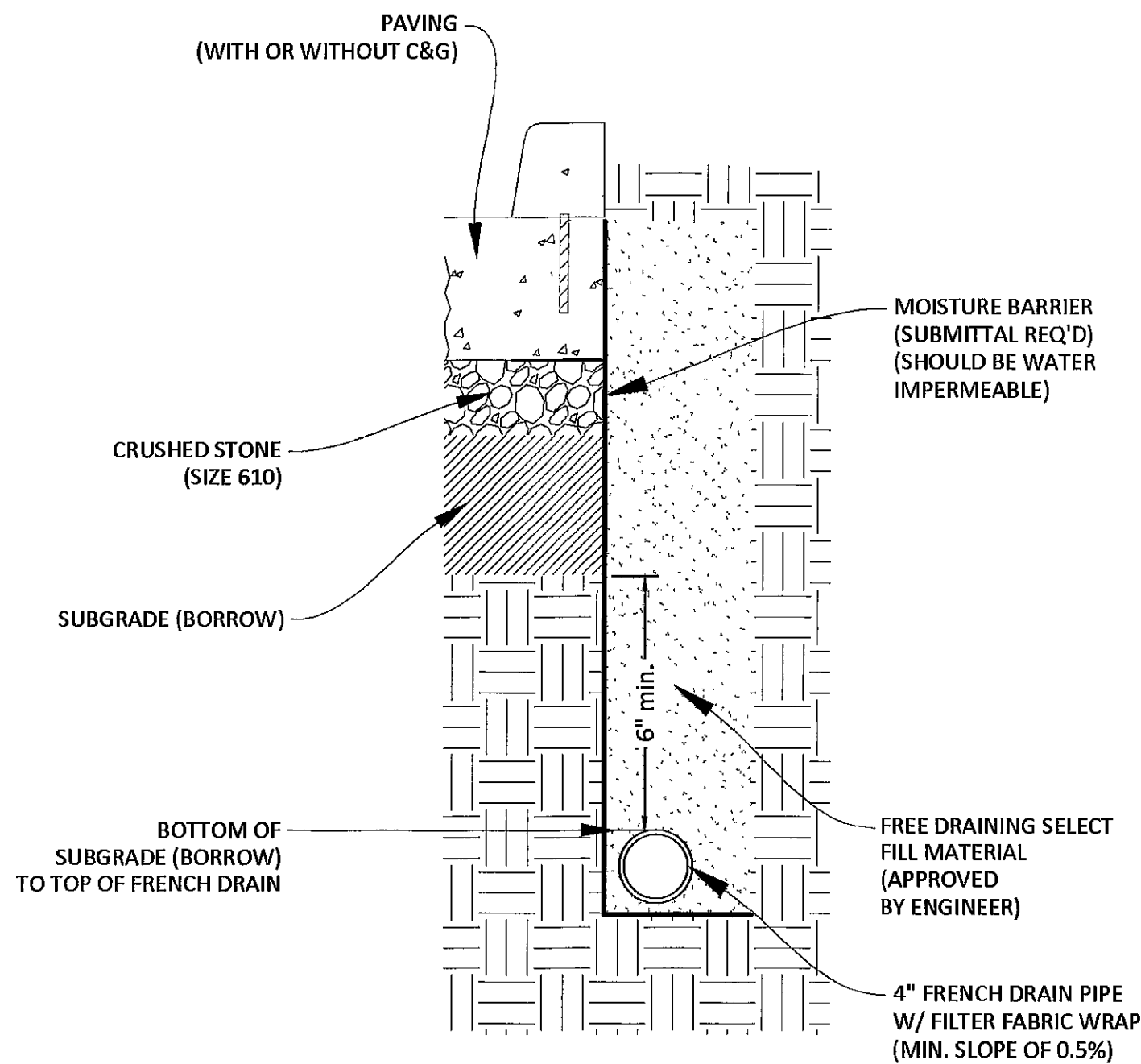


TYPICAL PVC INLET DETAIL

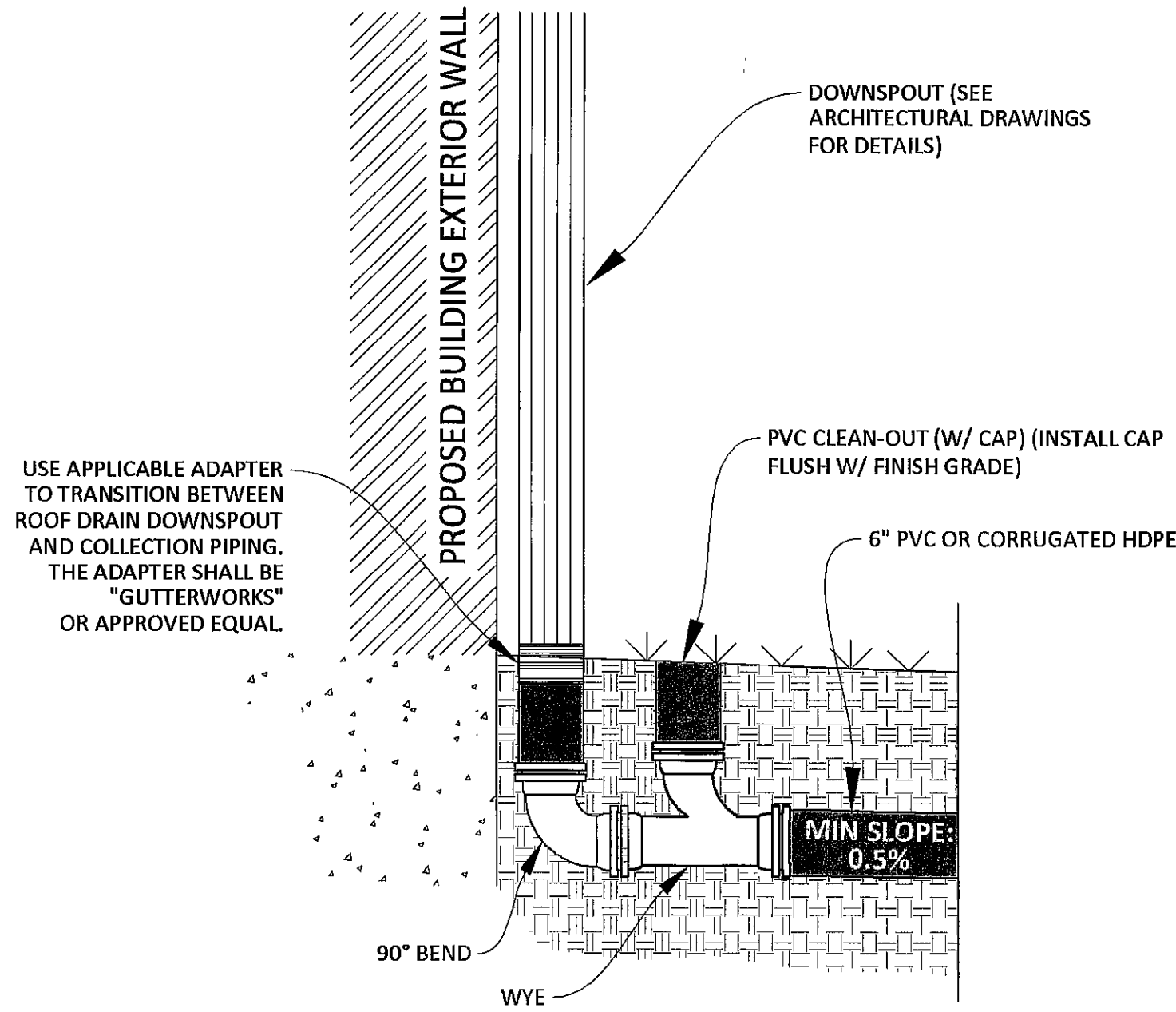
4.2.1 - TYPICAL PVC INLET DETAIL
NOT TO SCALE



4.2.4 - TYPICAL FRENCH DRAIN
CONNECTION DETAIL
NOT TO SCALE

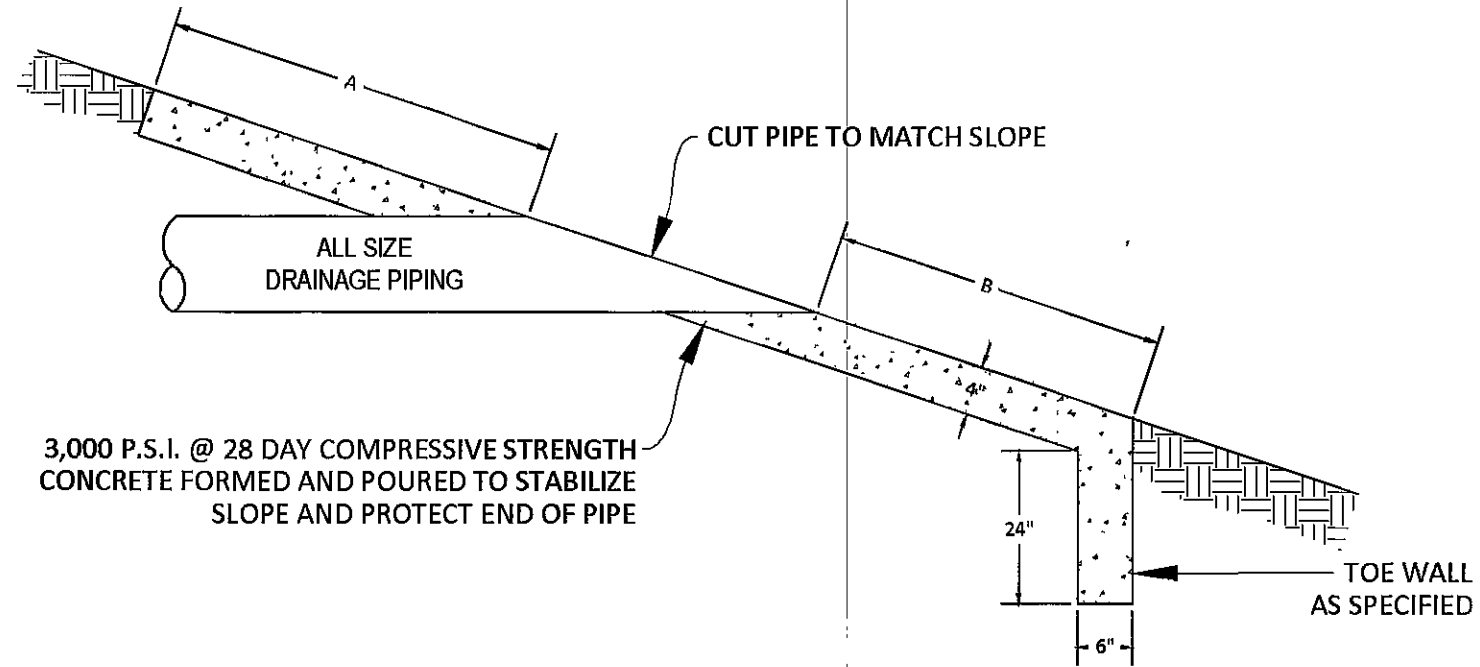


4.2.2 - TYPICAL FRENCH
DRAIN DETAIL
NOT TO SCALE

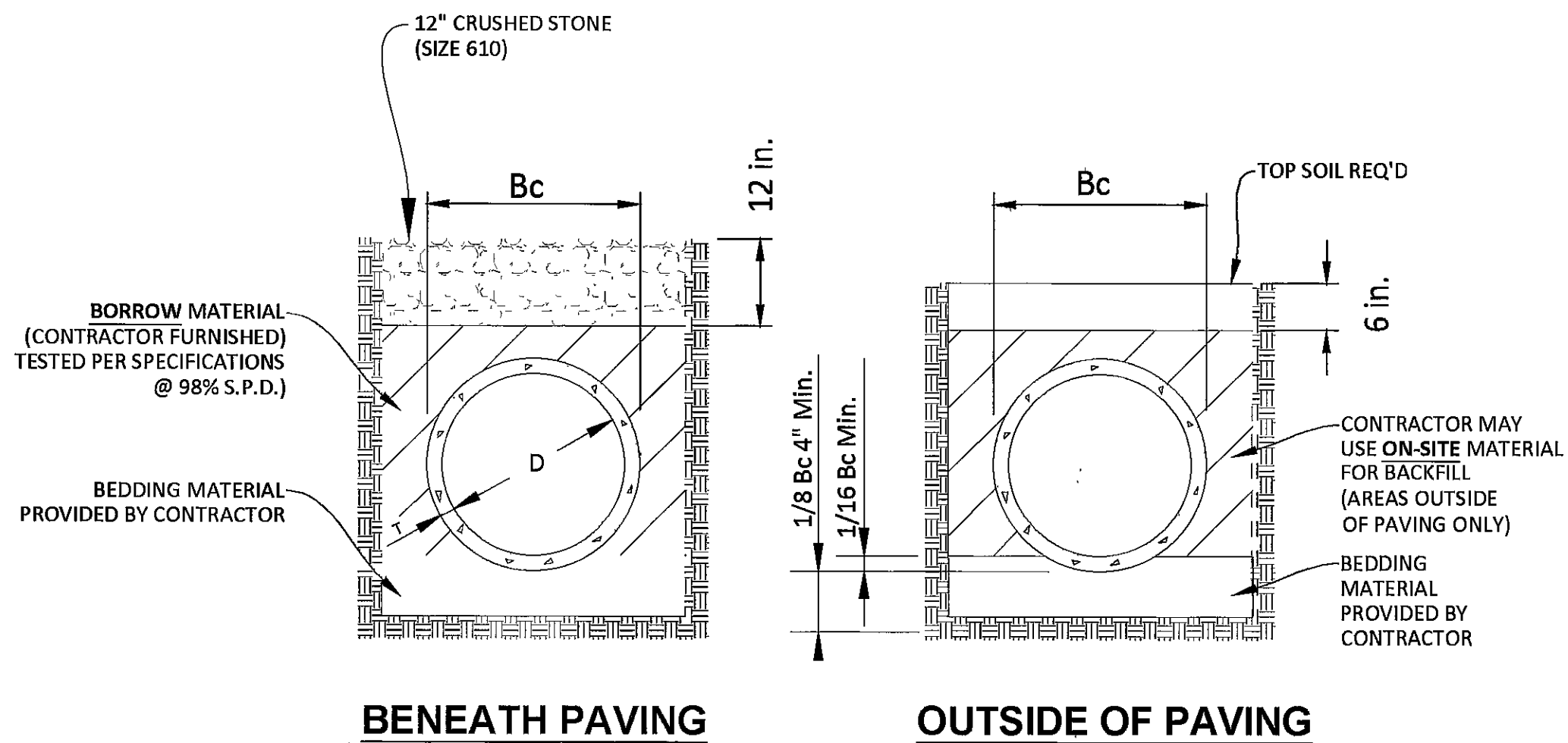


4.2.5 - TYPICAL ROOF DRAIN DOWNSPOUT
DETAIL (UNDERGROUND)
NOT TO SCALE

DIMENSIONS OF PAD			
PIPE DIAMETER	A	B	C (WIDTH)
4 INCH	1'-0"	1'-0"	1'-0"
6 INCH	1'-0"	2'-0"	1'-0"
>8 INCH	2'-0"	3'-0"	2'-0"



4.2.3 - TYPICAL PIPE OUTLET DETAIL
NOT TO SCALE



BENEATH PAVING

OUTSIDE OF PAVING

4.2.6 - TYPICAL PIPE TRENCH DETAIL
NOT TO SCALE

DRAWN	CRW
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FINAL DATE	NOVEMBER 22, 2019
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SHEET TITLE
Drainage Details

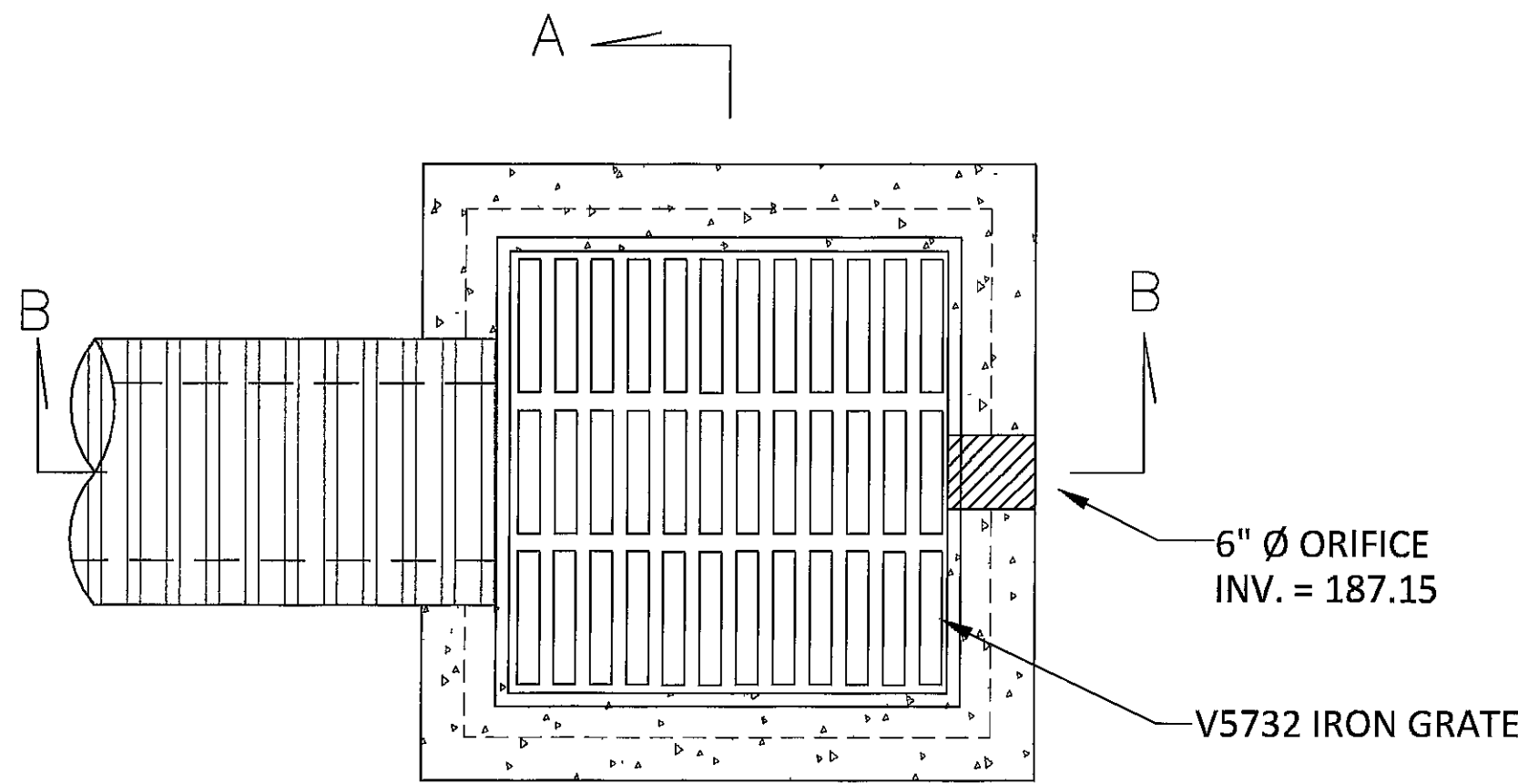
PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



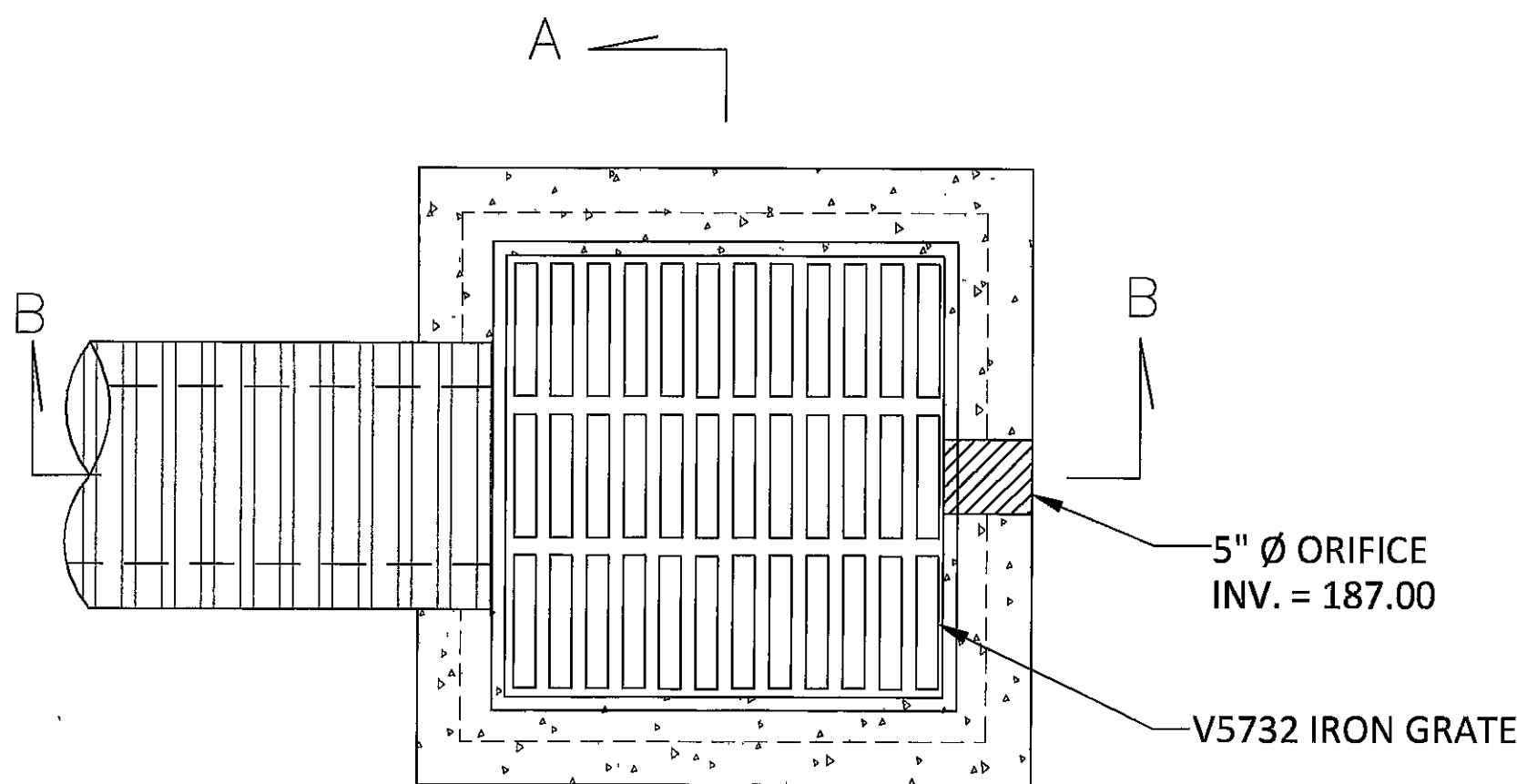
CN18-3707
SHEET NUMBER

C4.2

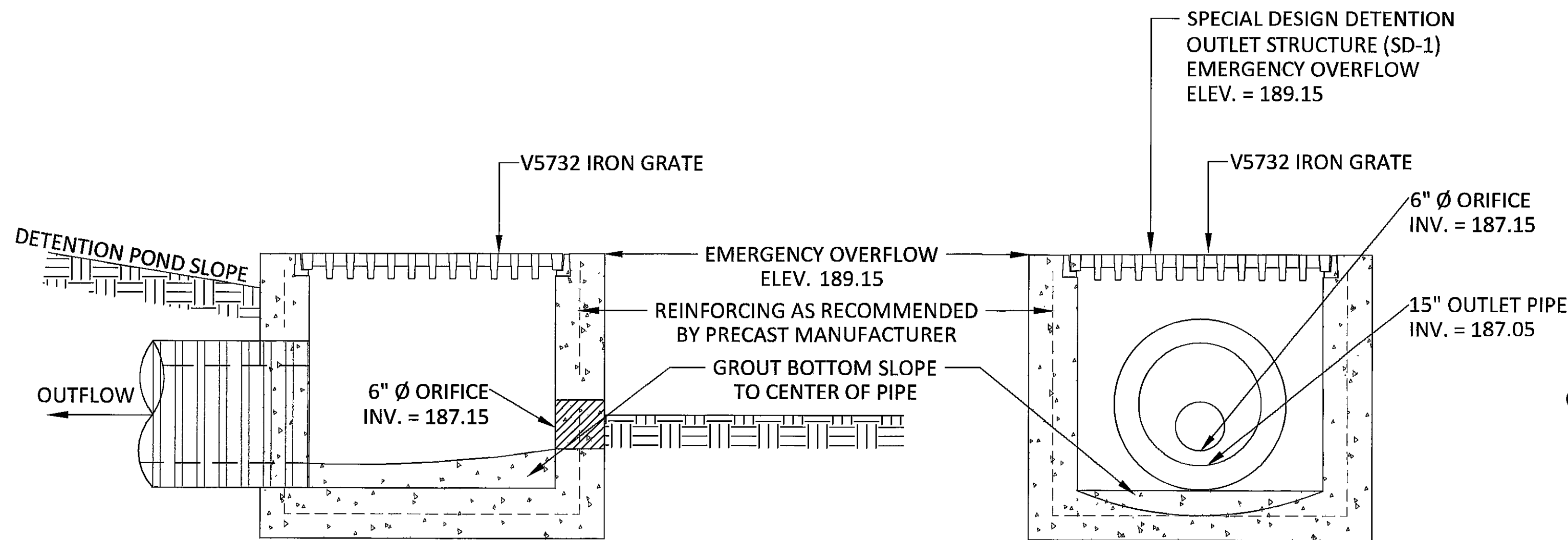
Special Design Structures



PLAN VIEW



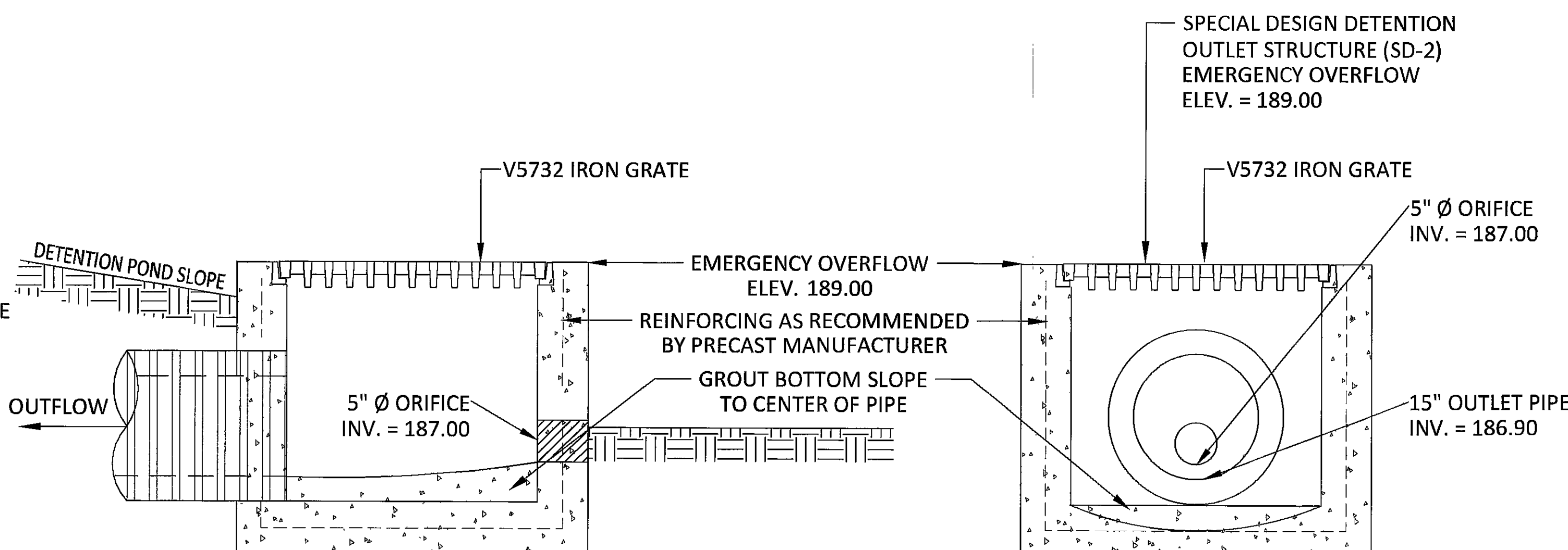
PLAN VIEW



SECTION A-A

SECTION B-B

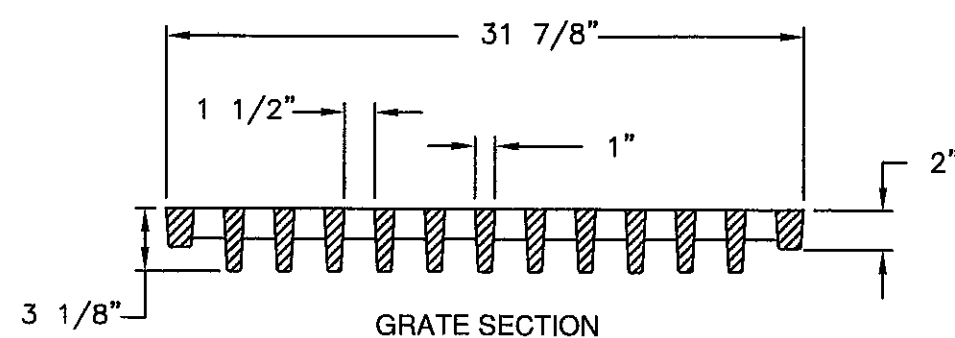
4.3.1 - SPECIAL DESIGN DROP STRUCTURE (SD-1) DETAIL
(NORTH DETENTION POND OUTLET)
SCALE: 1" = 1'-0"



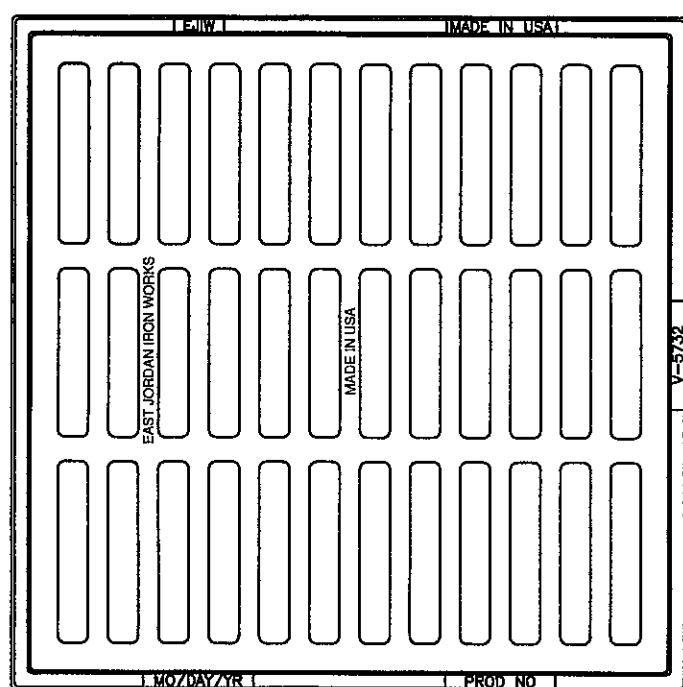
SECTION A-A

SECTION B-B

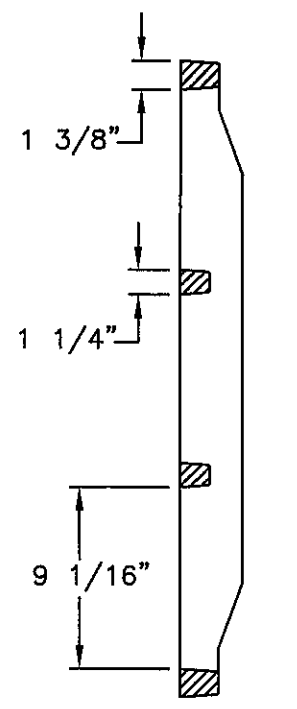
4.3.2 - SPECIAL DESIGN DROP STRUCTURE (SD-2) DETAIL
(SOUTH DETENTION POND OUTLET)
SCALE: 1" = 1'-0"



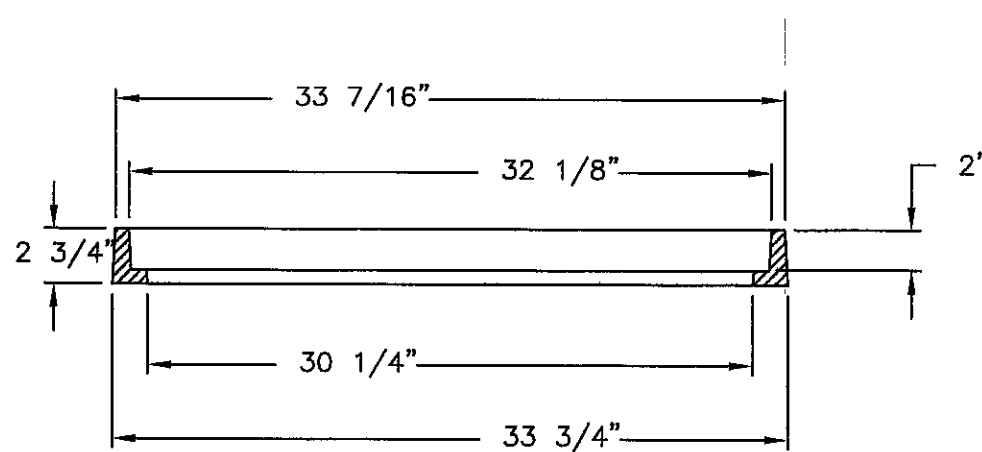
GRATE SECTION



PLAN VIEW



GRATE SECTION



FRAME SECTION

4.3.3 - V5732 GRATE DETAILS
NOT TO SCALE

DRAWN
CRW

CHECKED
DBG

FINAL DATE
NOVEMBER 22, 2019

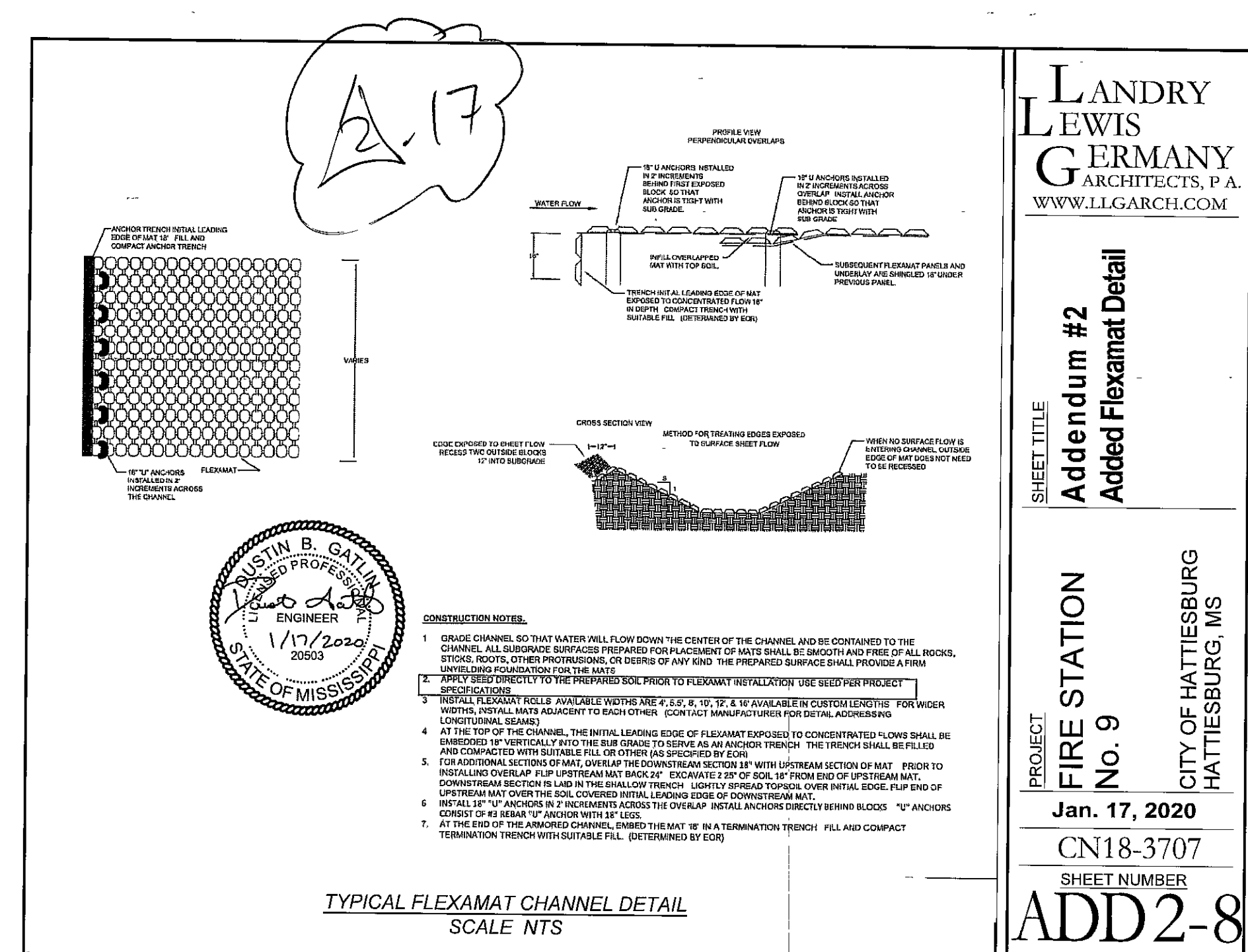
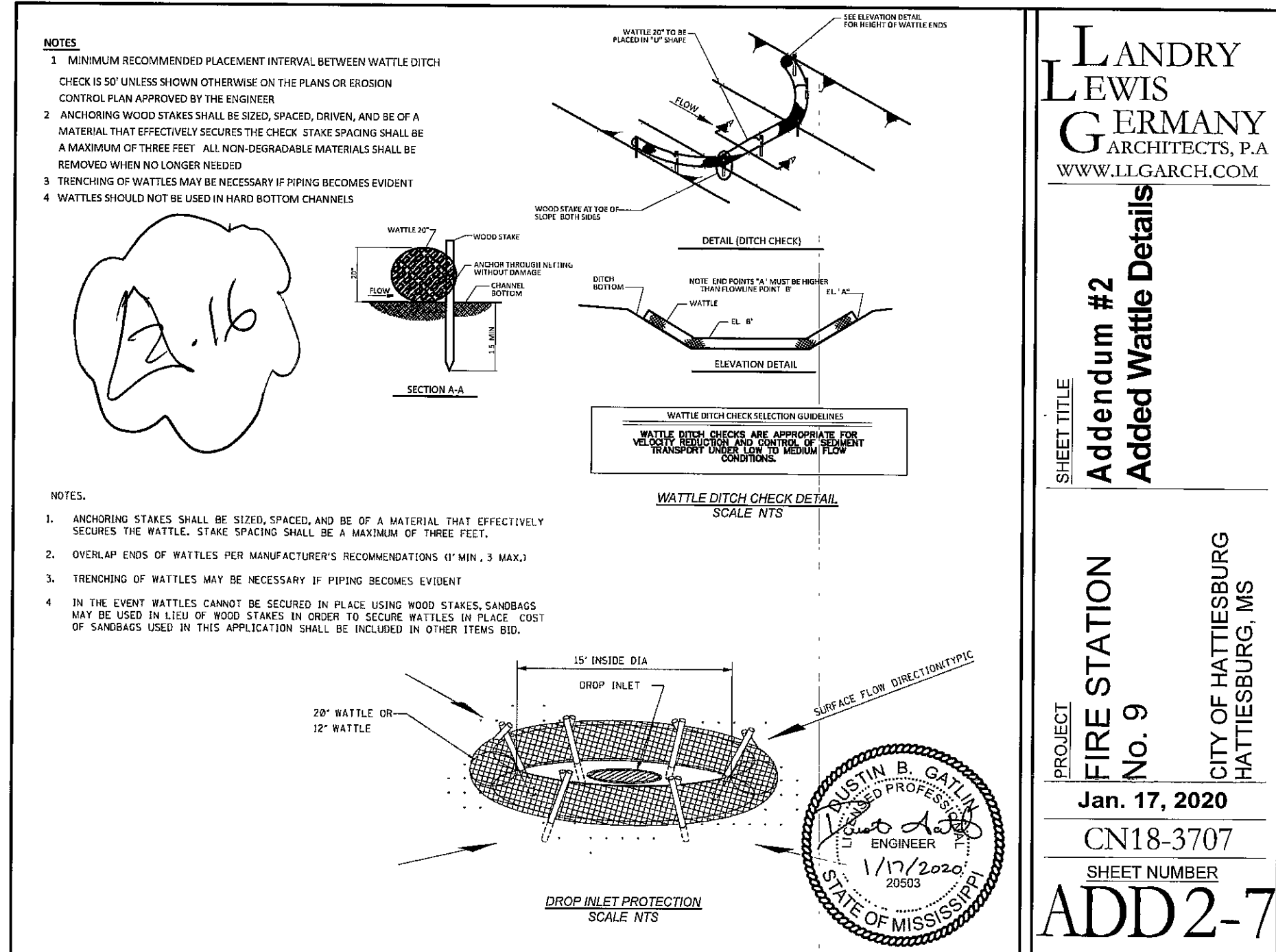
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REV # REV DATE

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SHEET TITLE
Special Design Structures

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

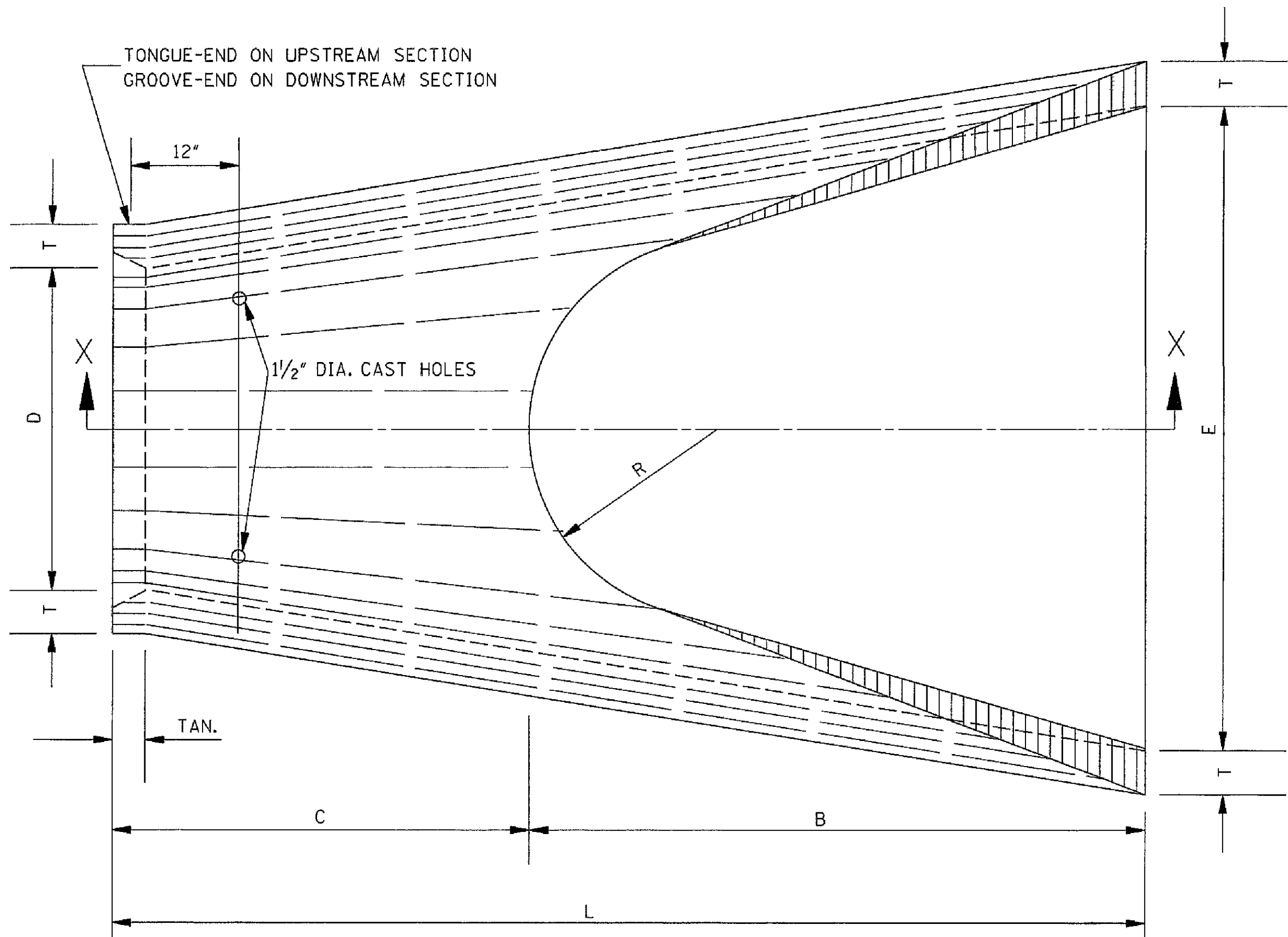
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SHEET NUMBER
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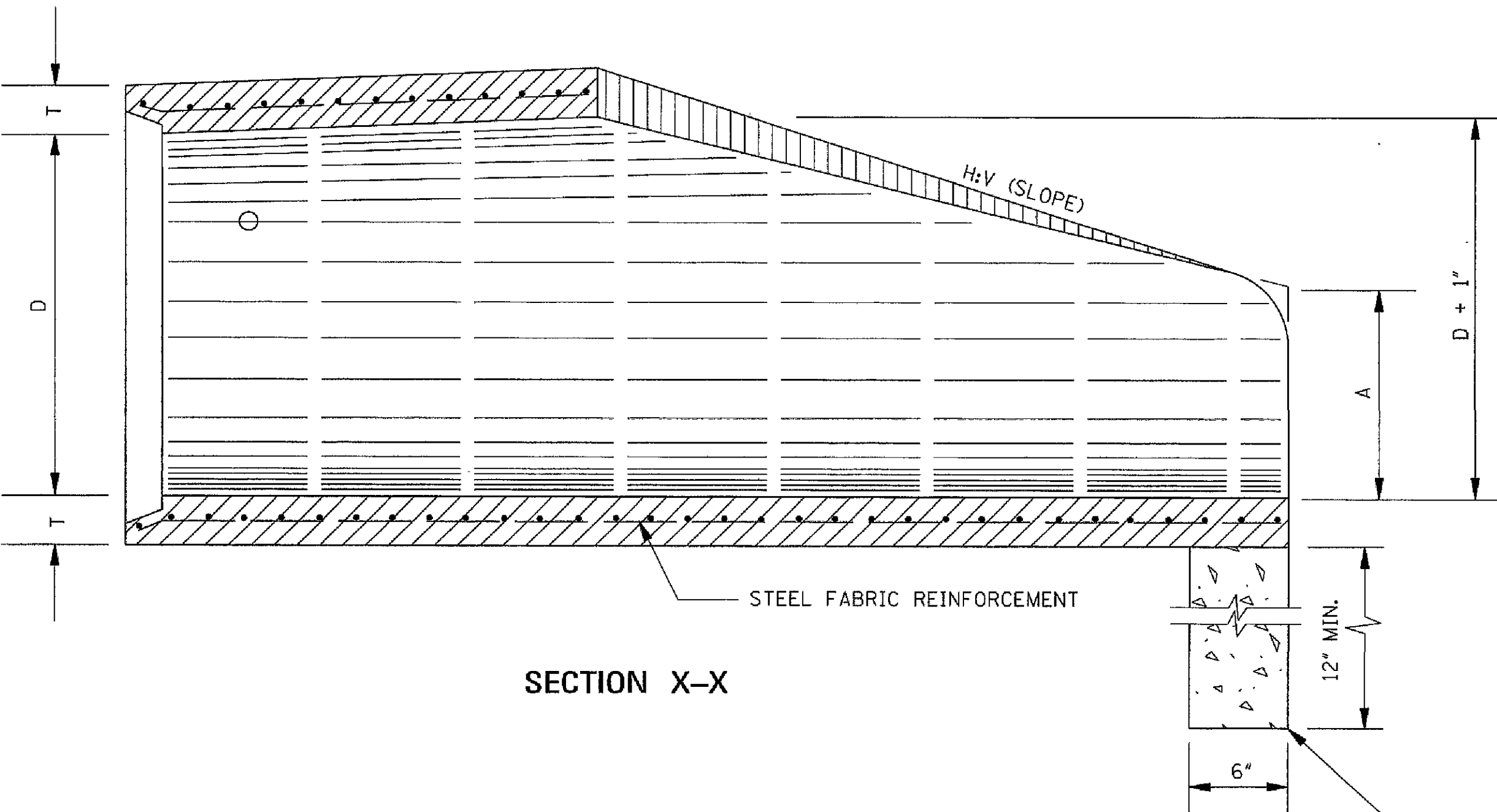
Drainage Details

BELL AND SPIGOT END OPTION

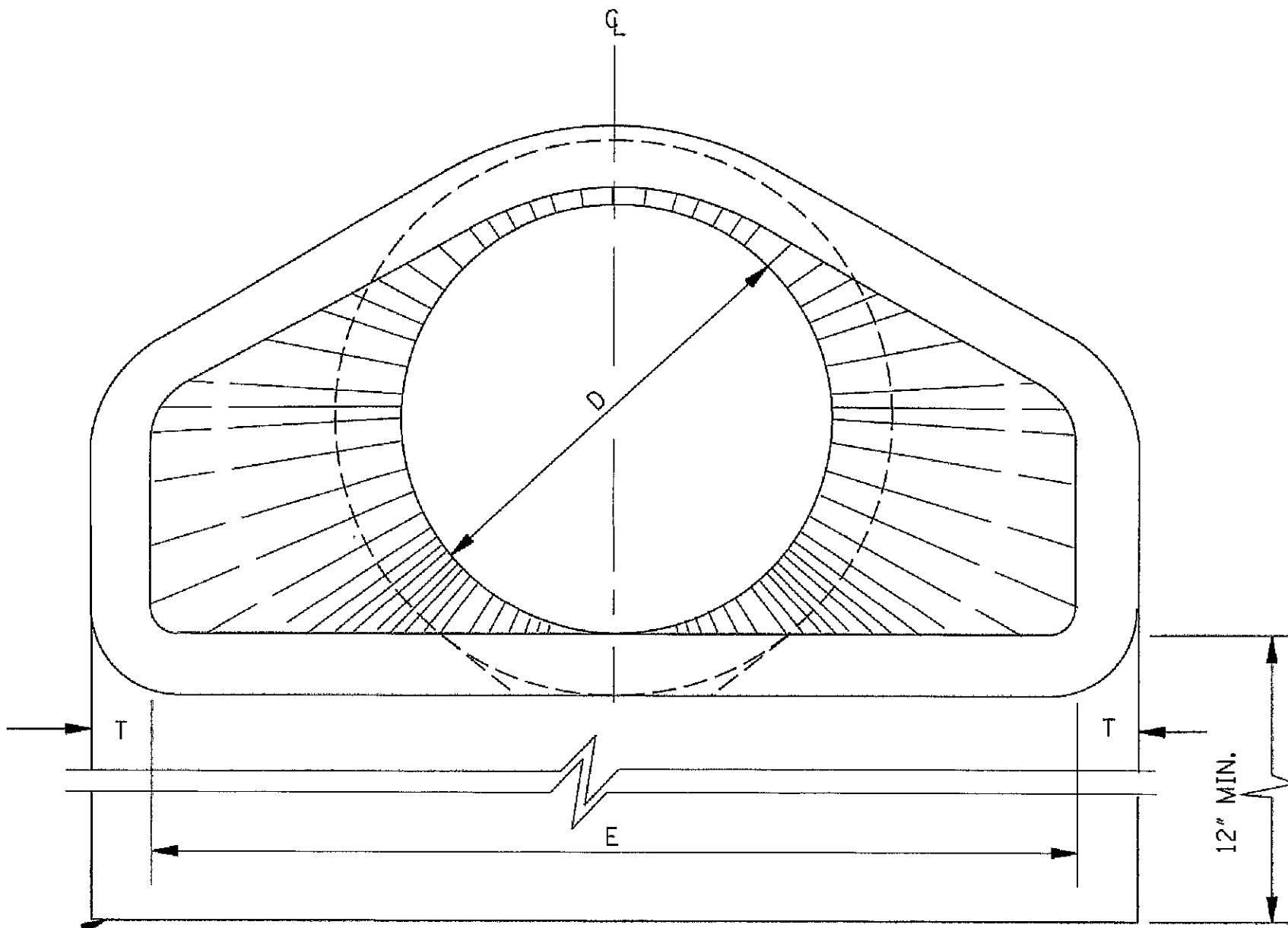
NOTE: BELL-END ON DOWNSTREAM SECTION
SPIGOT-END ON UPSTREAM SECTION.



PLAN OF DOWNSTREAM END



SECTION X-X



END ELEVATION

TOE WALL REQUIRED ON ALL FLARED END SECTIONS. TO BE PAID FOR AS CLASS "B" STRUCTURAL CONCRETE - MINOR STRUCTURES.

TABLE OF DIMENSIONS							
D	T	H:V	A	B	C	E	L
15"	2 1/4"	3:1	6"	2'-3"	4'-1"	2'-8"	6'-1"
18"	2 1/2"	3:1	9"	2'-3"	3'-10"	3'-0"	6'-1"
24"	3"	3:1	10"	3'-8"	2'-6"	4'-0"	6'-2"
30"	3 1/2"	3:1	1'-0"	4'-6"	1'-8"	5'-0"	6'-2"
36"	4"	3:1	1'-3"	5'-3"	2'-11"	6'-0"	8'-2"
42"	4 1/2"	3:1	1'-9"	5'-3"	2'-11"	6'-6"	8'-2"
48"	5"	3:1	2'-0"	6'-0"	2'-2"	7'-0"	8'-2"
54"	5 1/2"	3:1	2'-4"	6'-6"	1'-10"	7'-6"	8'-4"
* 60"	6"	3:1	2'-10"	6'-6"	1'-10"	8'-0"	8'-4"
* 66"	6 1/2"	3:1	3'-4"	6'-6"	1'-10"	8'-6"	8'-4"
* 72"	7"	3:1	3'-10"	6'-6"	1'-10"	9'-0"	8'-4"

* NOTE: SEE GENERAL NOTE 2.

TOE WALL CONC. QUANTITY (yd ³)
0.056
0.063
0.083
0.102
0.123
0.134
0.145
0.156
0.167
0.177
0.188

GENERAL NOTES:

- REINFORCEMENT SHALL CONFORM TO THE REQUIREMENTS OF REINFORCED CONCRETE PIPE OF LIKE DIAMETER PER AASHTO M 170, TABLE 2, WALL B.
- 2 - 1/2" DIA. CAST HOLES REQUIRED AS SHOWN TO ACCOMMODATE 2 - 1" DIA. TIE BOLTS, USED IN TIEING SECTION TO PIPE CULVERT.
- LENGTH (L) OF A BELL-END OPTION MAY VARY BY A NOMINAL EXTENSION ON THE BELL END.
- FLARED END SECTIONS SHOULD BE REGARDED AS OBSTACLES UNDER THE BELOW CONDITIONS AND AS SUCH SHOULD BE LOCATED OUTSIDE OF THE CLEAR ZONE:
 - CROSS DRAINS WITH SINGLE ROUND PIPES OF DIAMETER GREATER THAN 36" OR EQUIVALENT FOR ARCH PIPES.
 - CROSS DRAINS WITH MULTIPLE ROUND PIPES OF DIAMETER GREATER THAN 30" OR EQUIVALENT FOR ARCH PIPES.
 - PARALLEL SIDE DRAINS WITH SINGLE ROUND PIPES OF DIAMETER GREATER THAN 24" OR EQUIVALENT FOR ARCH PIPES.
- ALL SIZES OF FLARED END SECTIONS FOR CIRCULAR CONCRETE PIPE MAY BE FURNISHED WITH EITHER BELL AND SPIGOT OR TONGUE AND GROOVE ENDS.

DRAWN
CRW

CHECKED
DBG

FINAL DATE
NOVEMBER 22, 2019

REVISION SCHEDULE
REV # REV DATE

LANDRY
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5211 OLD HIGHWAY 11, HATTIESBURG, MS 39402
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CREATING LANDMARKS SINCE 1910...

SHEET TITLE
Drainage Details

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

ENGINEER
AUSTIN B. GATLIN
11/22/19
20503
STATE OF MISSISSIPPI

CN18-3707

SHEET NUMBER
C4.4

Drainage Details

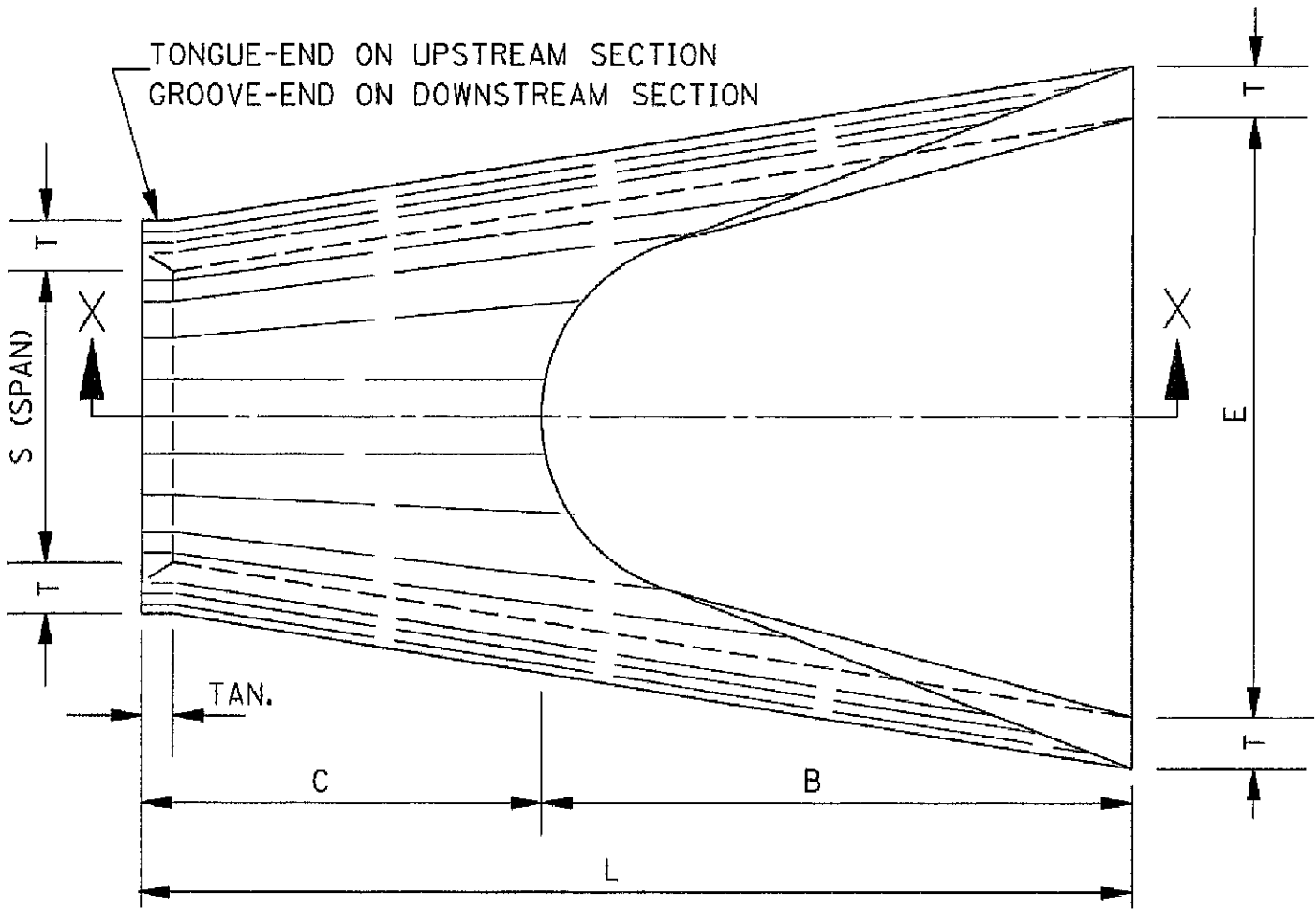
FLARED END SECTION FOR CONCRETE ARCH PIPE									
EQUIV. SIZE	R	S	T	H:V	A	B	C	E	L
18"	13 1/2"	22"	2 1/2"	3:1	7"	2'-3"	3'-9"	3'-0"	6'-0"
24"	18"	28 1/2"	3"	3:1	8"	3'-3"	2'-9"	4'-0"	6'-0"
30"	22 1/2"	36 1/4"	3 1/2"	3:1	10"	4'-0"	2'-0"	5'-0"	6'-0"
36"	26 5/8"	43 3/4"	4"	3:1	10 3/4"	5'-0"	3'-0"	6'-0"	8'-0"
42"	31 5/16"	51 1/8"	4 1/2"	3:1	1'-3 3/16"	5'-0"	3'-0"	6'-6"	8'-0"
48"	36"	58 1/2"	5"	3:1	1'-9"	5'-0"	3'-0"	7'-0"	8'-0"
54"	40"	65"	5 1/2"	3:1	2'-1 1/2"	5'-0"	3'-0"	7'-6"	8'-0"
60"	45"	73"	6"	3:1	2'-2"	6'-3"	1'-9"	8'-0"	8'-0"
72"	54"	88"	7"	3:1	2'-11"	6'-6"	1'-10"	10'-0"	8'-4"

TOE WALL CONC. QUANTITY (yd ³)
0.063
0.083
0.102
0.123
0.134
0.145
0.156
0.167
0.207

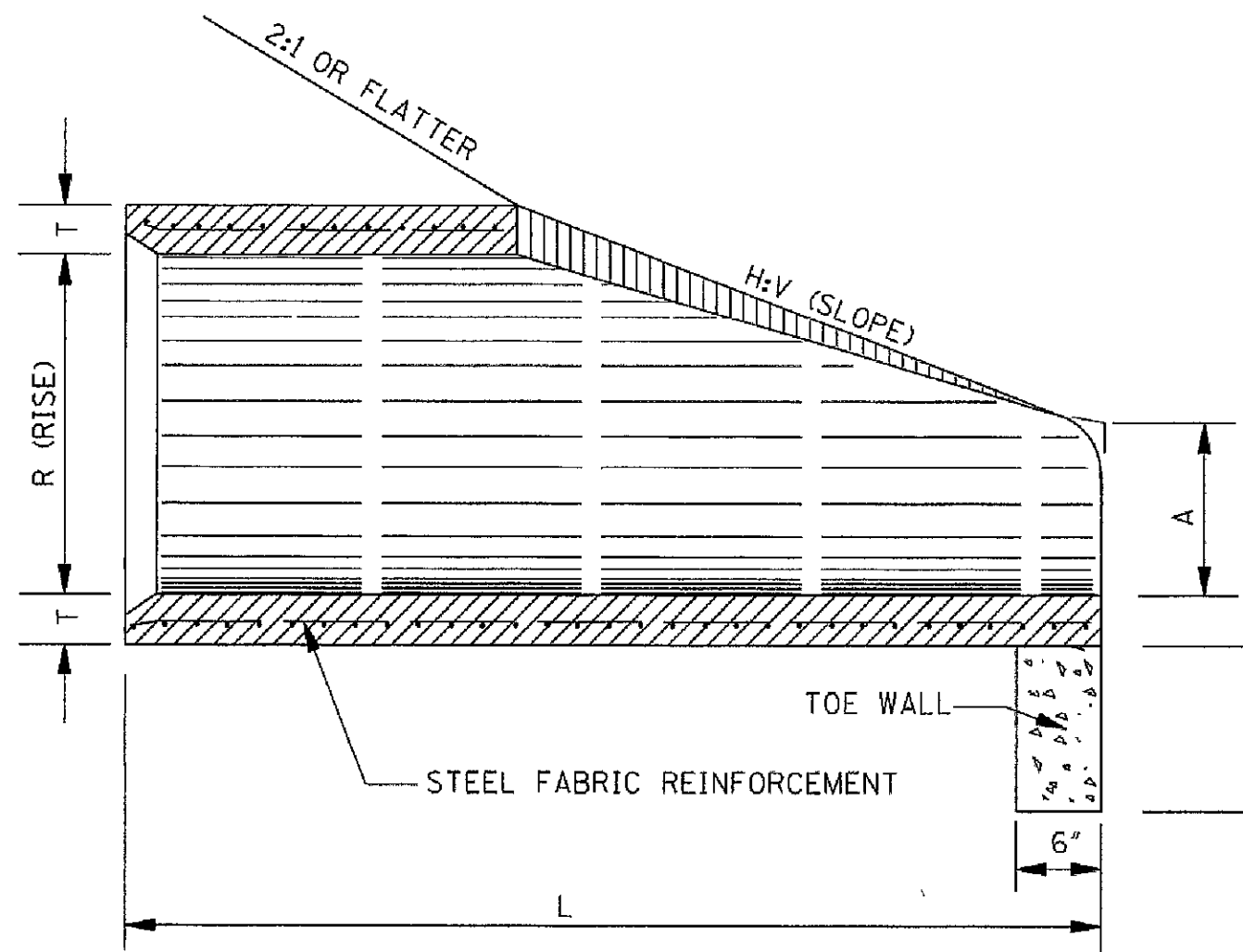
FLARED END SECTION FOR CONC. ARCH PIPE-SHORT FLARE										
EQUIV. SIZE	R	S	T	H:V	A	B	C	E	L	GROOVE TONGUE
* 18"	13 1/2"	22"	2 1/2"	3:1	7"	2'-3"	3'-9"	3'-0"	6'-0"	2 1/4"
24"	18"	28 1/2"	3 1/2"	3.12:1	9"	3'-3"	2'-9 1/2"	4'-0"	6'-0 1/2"	3"
30"	22 1/2"	36 1/4"	4"	2.94:1	9 1/2"	4'-2"	3'-10 1/2"	5'-0"	8'-0 1/2"	3 1/2"
36"	26 5/8"	43 3/4"	4 1/2"	3.08:1	11 5/8"	5'-0"	3'-0 1/2"	6'-0"	8'-0 1/2"	4"
42"	31 5/16"	51 1/8"	4 1/2"	3.08:1	1'-4 3/16"	5'-0"	3'-0 1/2"	6'-6"	8'-0 1/2"	4"
48"	36"	58 1/2"	5"	3.16:1	1'-10"	5'-0"	3'-0 1/2"	7'-0"	8'-0 1/2"	5"
54"	40"	65"	5 1/2"	3.24:1	2'-3"	5'-0"	3'-0 5/8"	7'-6"	8'-0 5/8"	5"
60"	45"	73"	6"	3.33:1	2'-9"	5'-0"	3'-0 5/8"	8'-0"	8'-0 5/8"	5"

TOE WALL CONC. QUANTITY (yd ³)
0.063
0.083
0.102
0.123
0.134
0.145
0.156
0.167

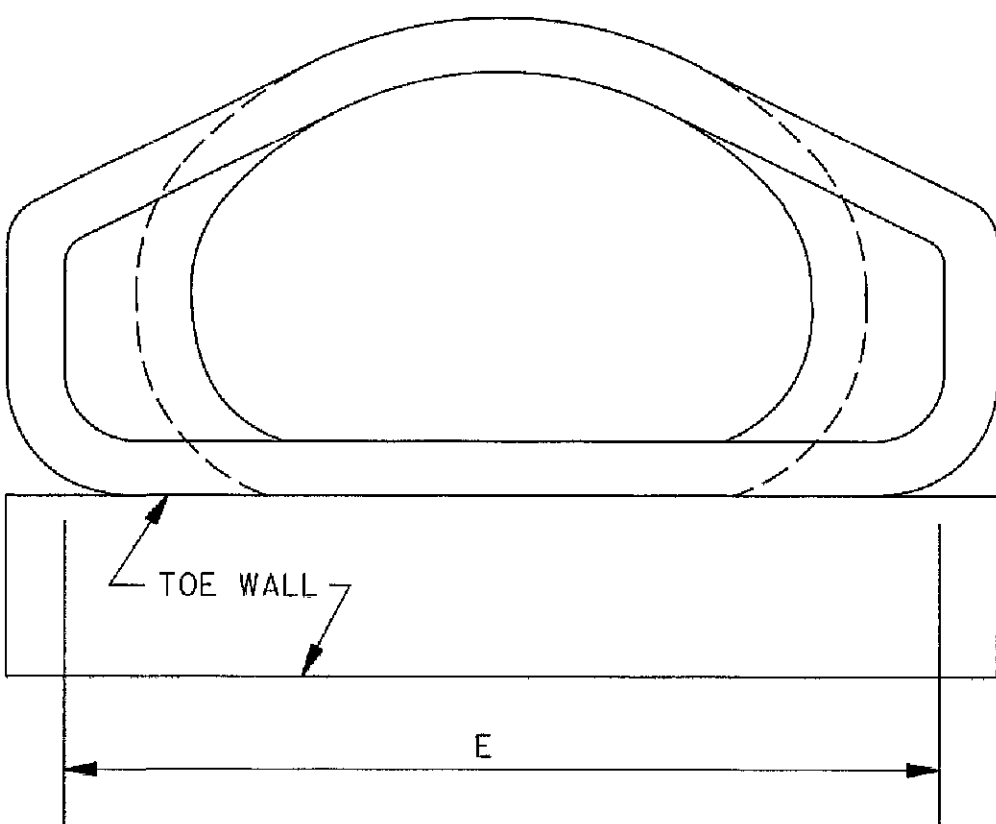
NOTES: *1. EQUIVALENT 18" FLARED END SECTION SIMILAR TO TYPE I.
2. DIMENSIONS A, B, C, E AND L MAY VARY 1"±.



PLAN OF DOWNSTREAM END



SECTION X-X



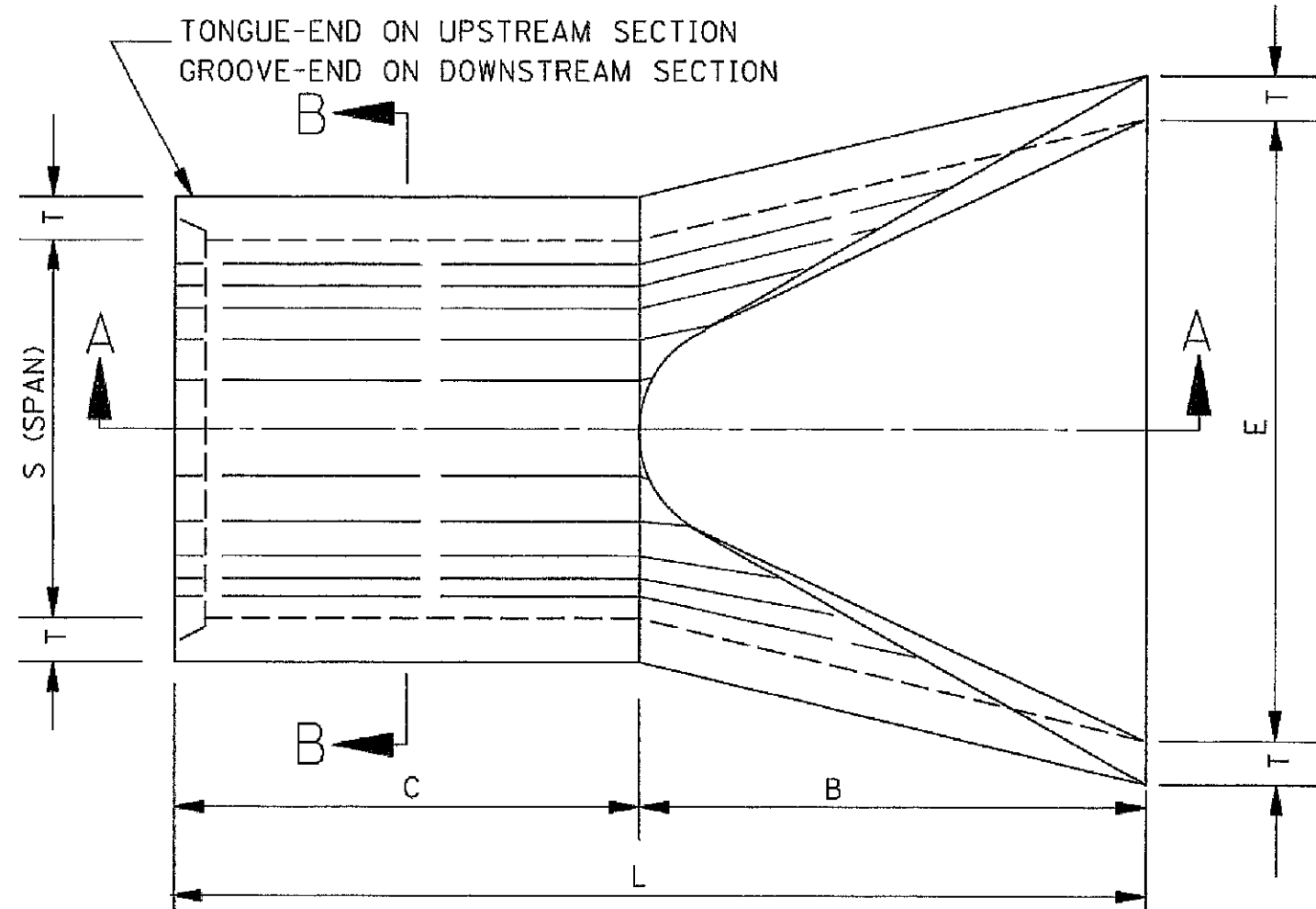
FRONT ELEVATION

BELL AND SPIGOT END OPTION TYPE I

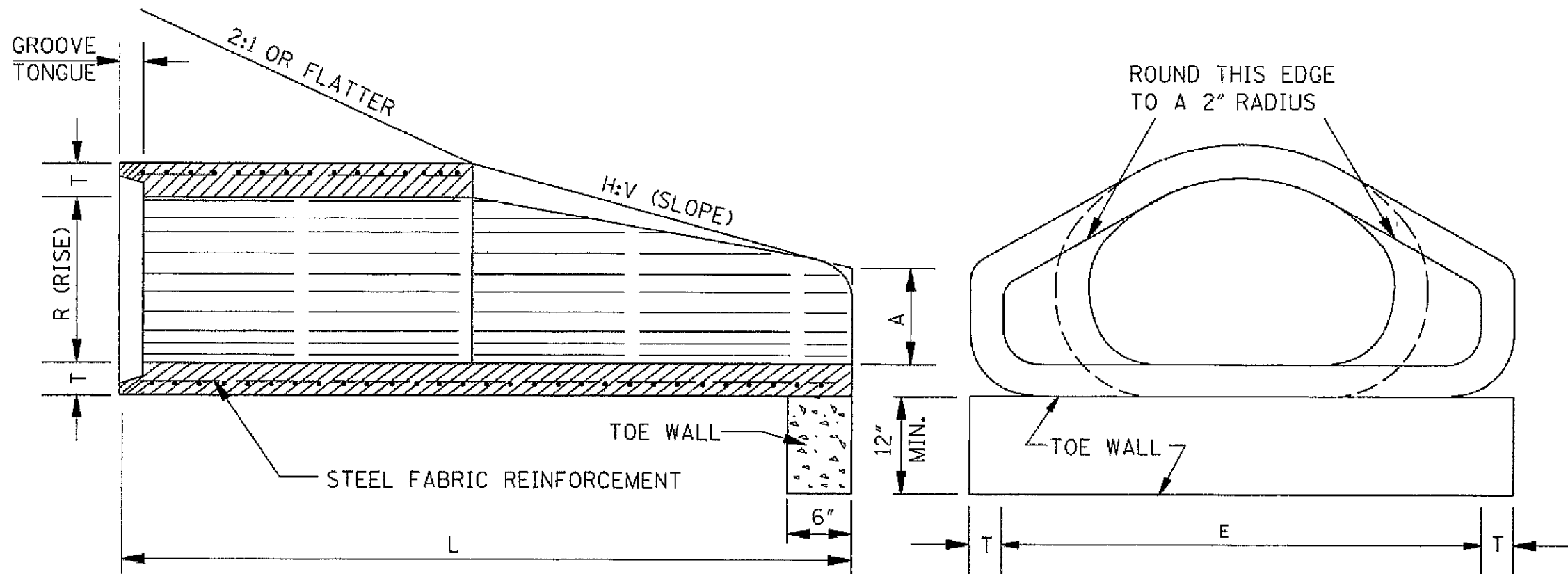
NOTE: BELL-END ON DOWNSTREAM SECTION
SPIGOT-END ON UPSTREAM SECTION.

GENERAL NOTES:

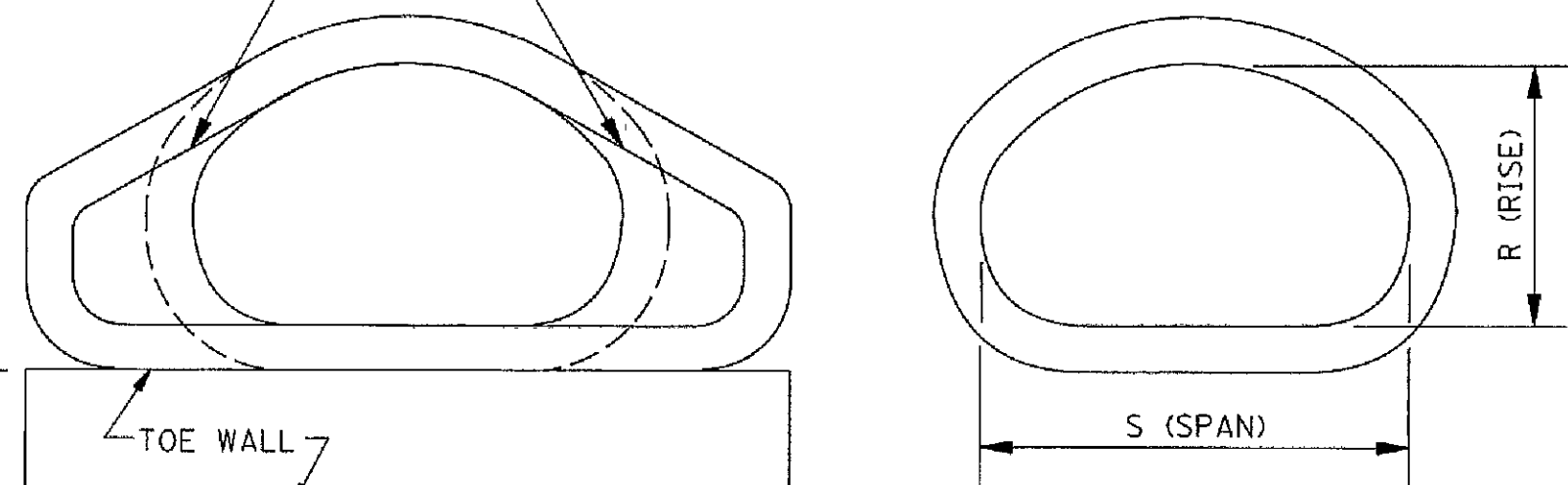
- FLARED END SECTIONS SHOULD BE REGARDED AS OBSTACLES UNDER THE BELOW CONDITIONS AND AS SUCH SHOULD BE LOCATED OUTSIDE OF THE CLEAR ZONE.
 - CROSS DRAINS WITH SINGLE ROUND PIPES OF DIAMETER GREATER THAN 36" OR EQUIVALENT FOR ARCH PIPES.
 - CROSS DRAINS WITH MULTIPLE ROUND PIPES OF DIAMETER GREATER THAN 30" OR EQUIVALENT FOR ARCH PIPES.
 - PARALLEL SIDE DRAINS WITH SINGLE ROUND PIPES OF DIAMETER GREATER THAN 24" OR EQUIVALENT FOR ARCH PIPES.
- UNLESS OTHERWISE DESIGNATED, EITHER TYPE I OR TYPE II MAY BE USED, PROVIDED THE SELECTED TYPE IS COMPATIBLE WITH THE CONFIGURATION OF THE PIPE TO WHICH IT SHALL BE ATTACHED.



PLAN OF DOWNSTREAM END



SECTION A-A



SECTION B-B

BELL AND SPIGOT END OPTION TYPE II

NOTE: BELL-END ON DOWNSTREAM SECTION
SPIGOT-END ON UPSTREAM SECTION.

- ALL SIZES OF TYPE I AND TYPE II FLARED END SECTIONS FOR CONCRETE ARCH PIPE MAY BE FURNISHED WITH EITHER BELL AND SPIGOT OR TONGUE AND GROOVE ENDS.
- REINFORCEMENT (SINGLE LINE) FOR FLARED END SECTION SHALL CONFORM TO REQUIREMENTS OF AASHTO M 206 FOR CLASS II ARCH PIPE.
- TOE WALL REQUIRED ON ALL FLARED END SECTIONS. TO BE PAID FOR AS CLASS "B" STRUCTURAL CONCRETE - MINOR STRUCTURES.
- FLARED END SECTIONS MUST MEET THE REQUIREMENTS FOR ARCH PIPE OF EITHER AASHTO M 206 OR ASTM C 506.

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FINAL DATE
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REVISION SCHEDULE
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CREATING LANDMARKS SINCE 1910...

SHEET TITLE
Drainage Details

PROJECT
FIRE STATION No. 9



CN18-3707

SHEET NUMBER

C4.5

Drainage Details

HOLE OPENING											
ROUND RCP		OPENING				ARCH RCP		OPENING			
		INCHES	CONCRETE DEDUCTION PER OPENING (C.Y.)					INCHES	CONCRETE DEDUCTION PER OPENING (C.Y.)		
SIZE	T	HO	OP			SIZE	T	HO	OP		
12	2.00	20	4.0	0.017		-	-	-	-	-	-
15	2.25	24	4.5	0.032		18X11	2.25	25.5X18.5	1.5	0.015	
18	2.50	26	4.0	0.045		22X13	2.50	30X21	1.5	0.045	
21	2.75	28	3.5	0.060		-	-	-	-	-	-
24	3.00	32	4.0	0.076		29X18	3.00	38X27	1.5	0.073	
27	3.25	40	6.5	0.095		-	-	-	-	-	-
30	3.50	40	5.0	0.116		36X23	3.50	46X33	1.5	0.108	

*BASED ON 5" WALL THICKNESS; FOR 3 1/2" WALL, MULTIPLY BY 0.694

MINIMUM PIPE DEPTH TOP OF COVER TO PIPE INVERT			
ROUND RCP SIZE	DEPTH (INCHES)	ARCH RCP SIZE	DEPTH (INCHES)
12	27.0	-	-
15	30.5	18X11	23.5
18	33.0	22X13	25.5
21	35.5	-	-
24	40.0	29X18	30.5
27	44.5	-	-
30	46.0	36X23	35.5

MAXIMUM PIPE SIZE			
INLET OR JUNCTION BOX	ROUND RCP		ARCH RCP
	IW SIDE	IL SIDE	IL SIDE
2X2	12	18	NONE
2X3	12	24	NONE
3X5	24	30	22X13

CONCRETE QUANTITIES			
INLET OR JUNCTION BOX	BOTTOM C.Y.	RISER C.Y./FT	COVER C.Y.
2X2	0.074	0.099	0.123
2X3	0.111	0.181	0.201
3X5	0.279	0.275	0.266

NOTE: CONCRETE CUBIC YARDS PER INLET/JUNCTION BOX = BOTTOM + (TOTAL RISER HEIGHT (FT) X C.Y./FT) + (COVER - GRATE OPENING) - ANY HOLE OPENINGS

GENERAL DATA											
	WALL THICKNESS		INSIDE DIMENSION		OUTSIDE DIMENSION		BASE HEIGHT	RISER HEIGHT	WEIGHTS		
	WT		IW	IL	OW	OL	B	R	BOTTOM	BASE / RISER	COVER
FEET	INCHES		INCHES		INCHES		3" INCREMENTS		LB	LB/FT	LB
2 X 2	3/2		24	24	31	31	24 - 54	18 - 48	300	401	500
2 X 3	5		24	36	34	46	24 - 54	18 - 48	450	735	815
3 X 6	5		36	60	46	70	24 - 54	18 - 48	1125	1114	1077

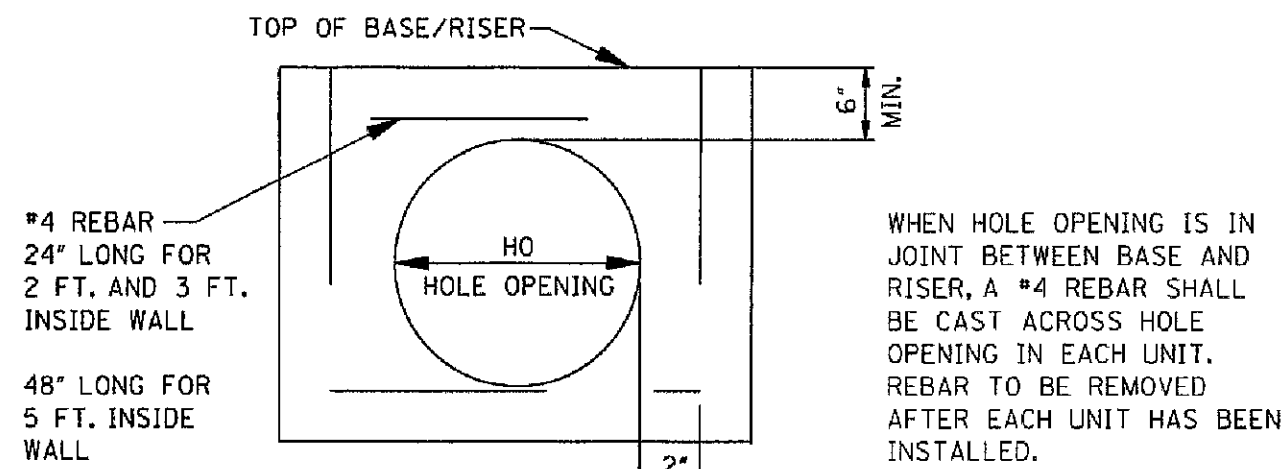
2' X 2' WALL REINFORCEMENT (SQ. IN. PER LIN. FT.)									
DEPTH OF INSTALLATION	BASE		TOP RISER		INTERIOR RISER #1		INTERIOR RISER #2		INTERIOR RISER #4
	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	
0 - 4	0.07	3.942	-	-	-	-	-	-	-
0 - 8	0.13	5.862	0.07	3.942	-	-	-	-	-
0 - 12	0.20	7.786	0.07	3.942	0.13	5.862	-	-	-

2' X 3' WALL REINFORCEMENT (SQ. IN. PER LIN. FT.)									
DEPTH OF INSTALLATION	BASE		TOP RISER		INTERIOR RISER #1		INTERIOR RISER #2		INTERIOR RISER #4
	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	
0 - 4	0.10	5.840	-	-	-	-	-	-	-
0 - 8	0.20	9.928	0.10	5.840	-	-	-	-	-
0 - 12	0.25	5.545	0.10	5.840	0.20	9.928	-	-	-

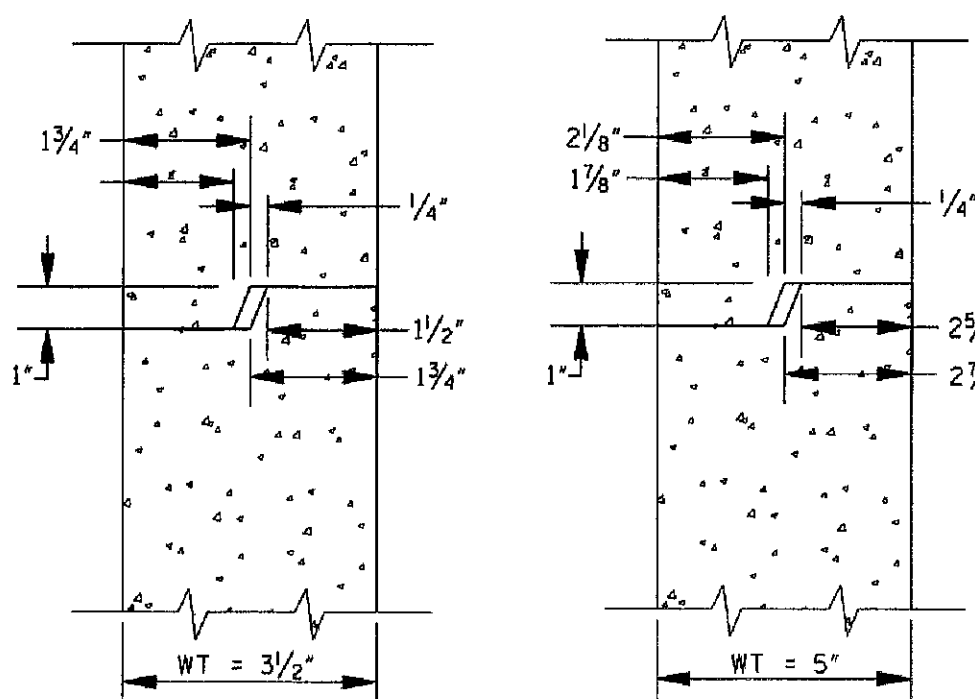
3' X 5' WALL REINFORCEMENT (SQ. IN. PER LIN. FT.)									
DEPTH OF INSTALLATION	BASE		TOP RISER		INTERIOR RISER #1		INTERIOR RISER #2		INTERIOR RISER #4
	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	AREA	LB/FT	
0 - 8	0.30	21.039	0.24	17.3264	-	-	-	-	-
0 - 12	0.74	53.570	0.24	17.3264	0.60	43.316	-	-	-
0 - 16	0.88	61.526	0.24	17.3264	0.60	43.316	0.74	53.570	-
0 - 20	1.14	78.146	0.24	17.3264	0.60	43.316	0.74	53.570	1.02
0 - 24	1.44	98.654	0.24	17.3264	0.60	43.316	0.74	53.570	1.02

COVER / BOTTOM REINFORCEMENT				
INLET OR JUNCTION BOX	COVER	LBS. OF STEEL	BOTTOM	LBS. OF STEEL
2 X 2	#4 @ 9" EW	12.247	WWF-W6.0 X W6.0 - 3 X 3	10.559
2 X 3	#4 @ 9" EW	17.859	WWF-W6.0 X W6.0 - 3 X 3	16.602
3 X 5	#4 @ 9" EW	36.741	WWF-W6.0 X W6.0 - 3 X 3	37.208

NOTE: REINFORCEMENT STEEL (LBS PER INLET/JUNCTION BOX) = BOTTOM + TOTAL FOR EACH RISER (TOP PLUS ANY INTERIOR RISERS) (BASE HEIGHT + TOTAL HEIGHT OF RISERS) + COVER; HOLE AND GRATE OPENINGS NOT DEDUCTED

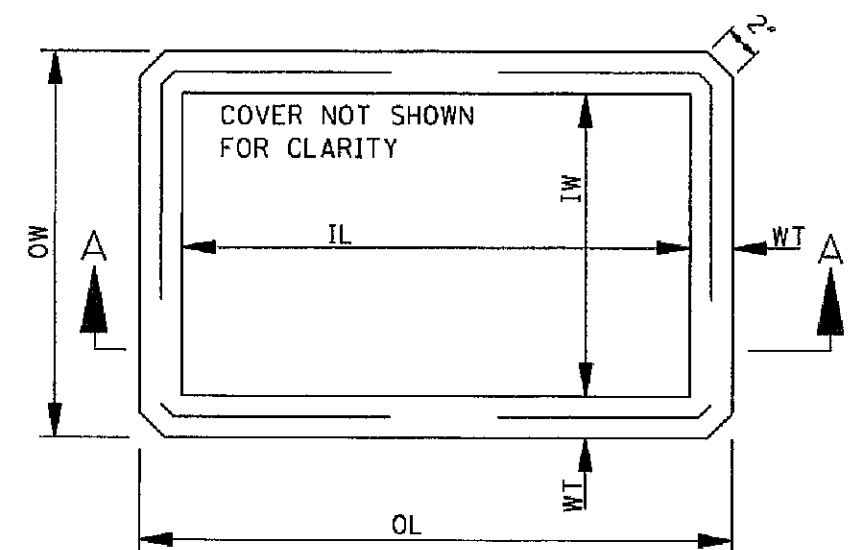


DETAIL FOR HOLE OPENING

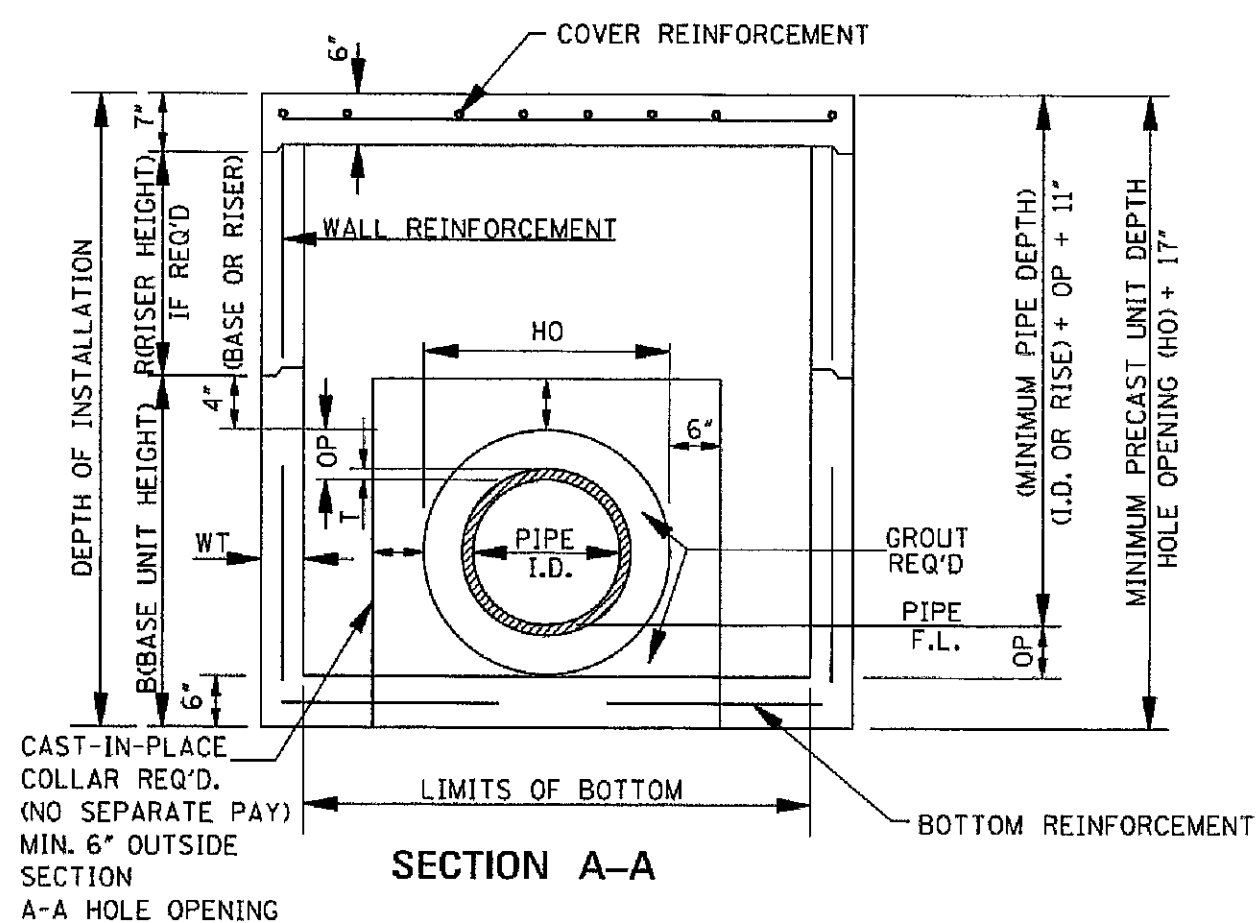


2 X 2 JOINT DETAIL

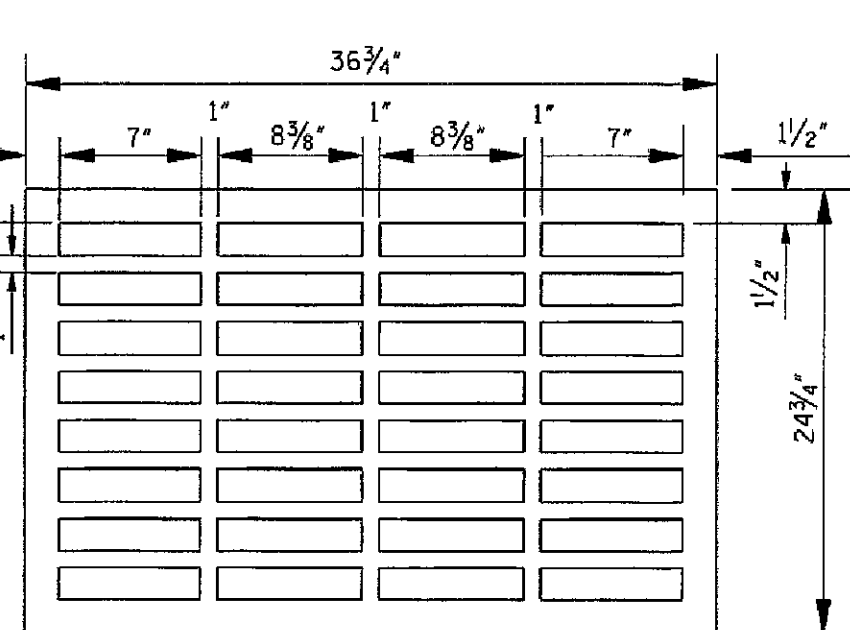
2 X 3 & 3 X 5 JOINT DETAIL



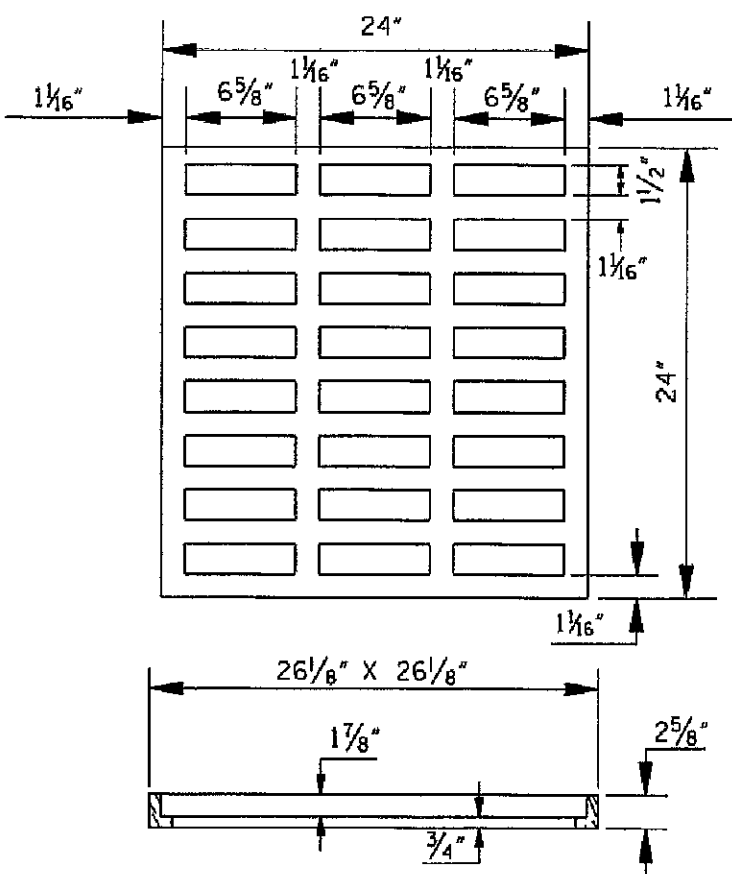
PLAN FOR BASE/ RISER INLET / JUNCTION BOX



SECTION A-A

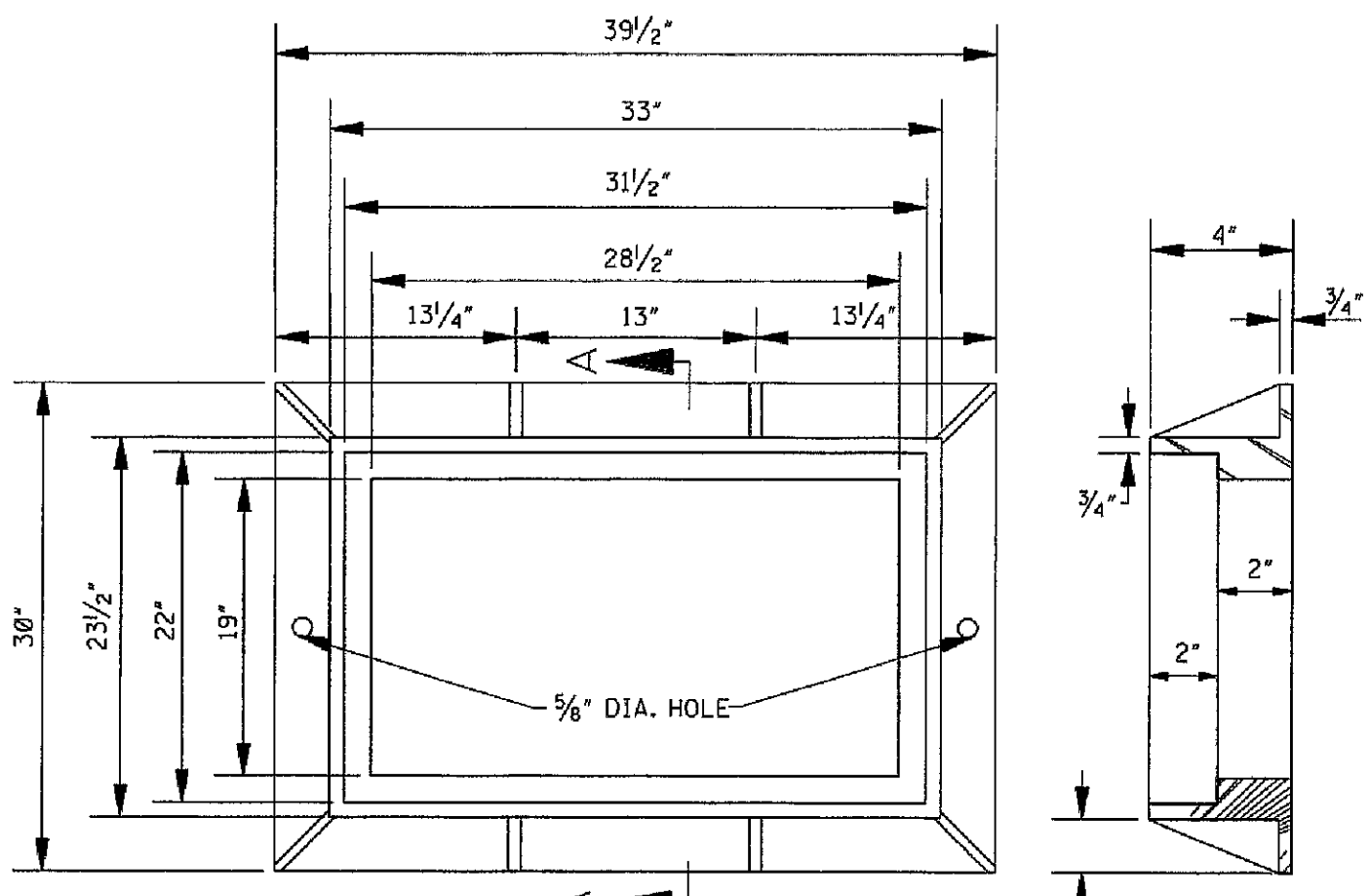


2'X3' FRAME AND GRATE
VULCAN V-4873
HEAVY DUTY LOAD RATING
WEIGHT: 340 LBS.
OPEN AREA: 453 SQ. IN.
CONCRETE DEDUCT FOR
GRATE OPENING: 1.32 C.Y.

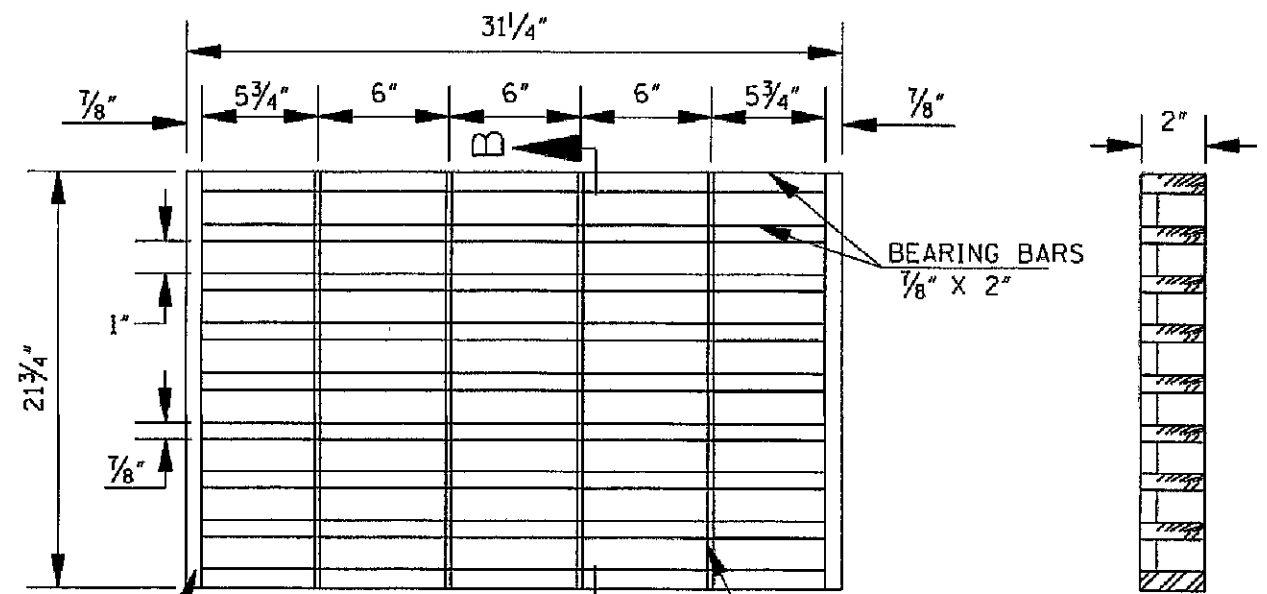


2'X2' FRAME AND GRATE
VULCAN V-5724-3
HEAVY DUTY LOAD RATING
WEIGHT: 212 LBS.
OPEN AREA: 268 SQ. IN.
CONCRETE DEDUCT FOR
GRATE OPENING: 0.88 C.Y.

GRATE DETAILS



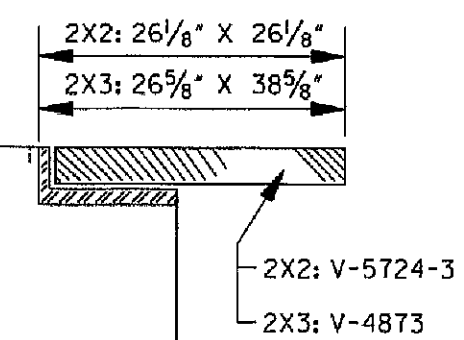
PLAN VIEW - FRAME CAST IRON



PLAN VIEW - GRATE ASTM A588 STEEL

MDOT SS-3 GRATE
HEAVY DUTY LOAD RATING
FRAME WEIGHT: 244 LBS.
GRATE WEIGHT: 200 LBS.
OPEN AREA: 324.5 SQ. IN.

CONCRETE DEDUCT FOR
GRATE OPENING: 0.070 C.Y.

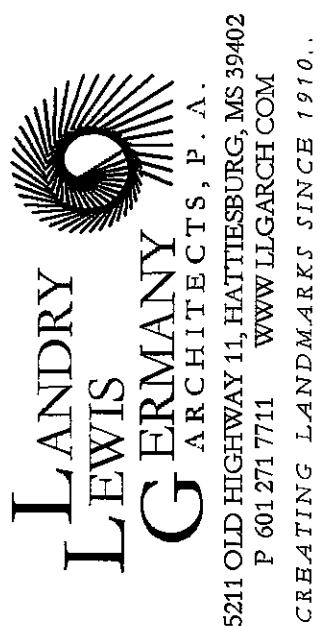


2 X 2 & 2 X 3 DROP INLET WALL DETAIL WHEN FRAME AND GRATE IS USED WITHOUT COVER

GENERAL NOTES:

- CONCRETE SHALL HAVE COMPRESSIVE STRENGTH OF 4000 PSI MINIMUM AT 28 DAYS.
- REINFORCING FOR BOTTOM AND WALLS SHALL BE WELDED WIRE FABRIC, ASTM A-185, AND OF THE AREA AS SHOWN IN THE TABLE.
- REINFORCING FOR COVER SHALL BE ASTM A615/A, AND OF THE SIZE AS SHOWN IN THE TABLE AND DRAWINGS.
- JOINT TO BE SEALED WITH FLEXIBLE PLASTIC GASKET FOR JOINT CONDUIT, AASHTO SPECIFICATION M-198 OR MDOT SPECIFICATION.
- 2 1/2" LIFTING HOLES TO BE LOCATED ON EACH SIDE OF BOX SECTIONS FOR HANDLING.
- GROUT FOR JOINING PIPE TO PRECAST UNITS WILL BE A COMMERCIAL MASONRY GROUT MEETING MDOT SPECIFICATIONS.
- WHEN INTERIOR RISER UNITS ARE REQUIRED, UNITS SHALL BE MARKED TO IDENTIFY EACH UNIT.
- CONCRETE & REINFORCING STEEL FOR PRECAST INLETS AND JUNCTION BOXES SHALL BE PAID FOR AS THE CALCULATED QUANTITY SHOWN ON THE RECAP SHEET FOR CAST-IN-PLACE INLETS & JUNCTION BOXES.

DRAWN	CRW
CHECKED	DBG
FINAL DATE	NOVEMBER 22, 2019
REVISION SCHEDULE	
REV #	REV DATE



SHEET TITLE
Drainage Details

PROJECT
FIRE STATION No. 9

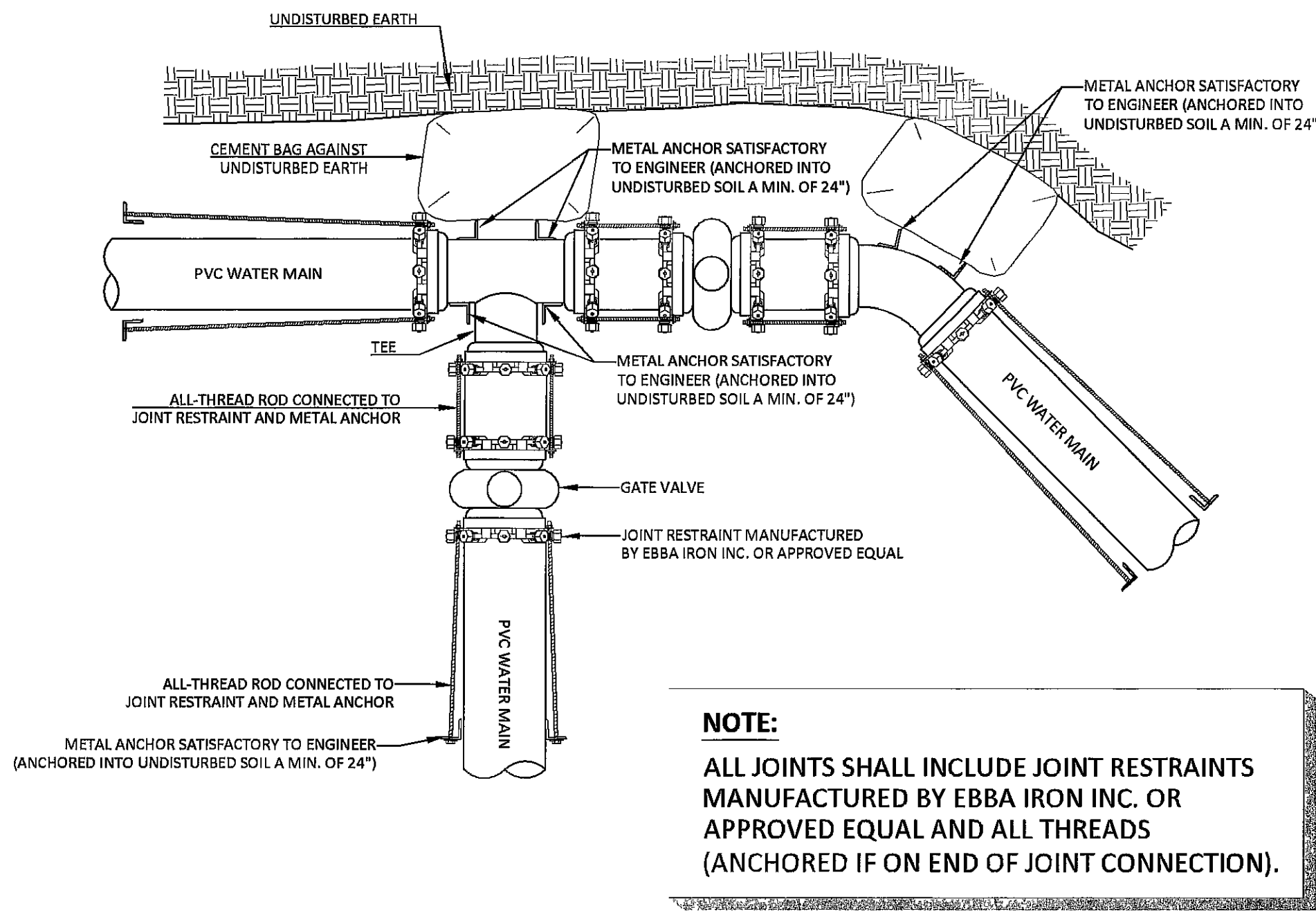


CN18-3707

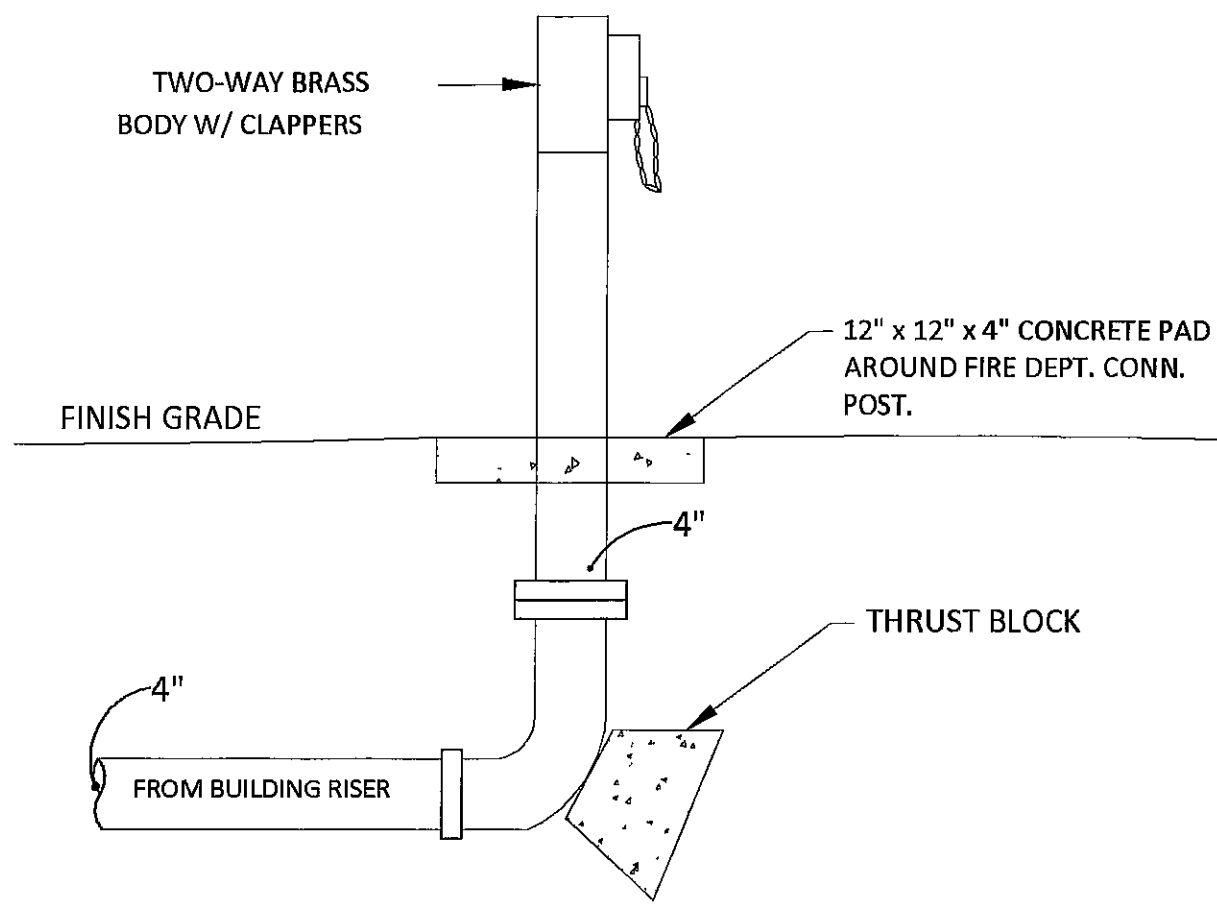
SHEET NUMBER

C4.6

Utility Details

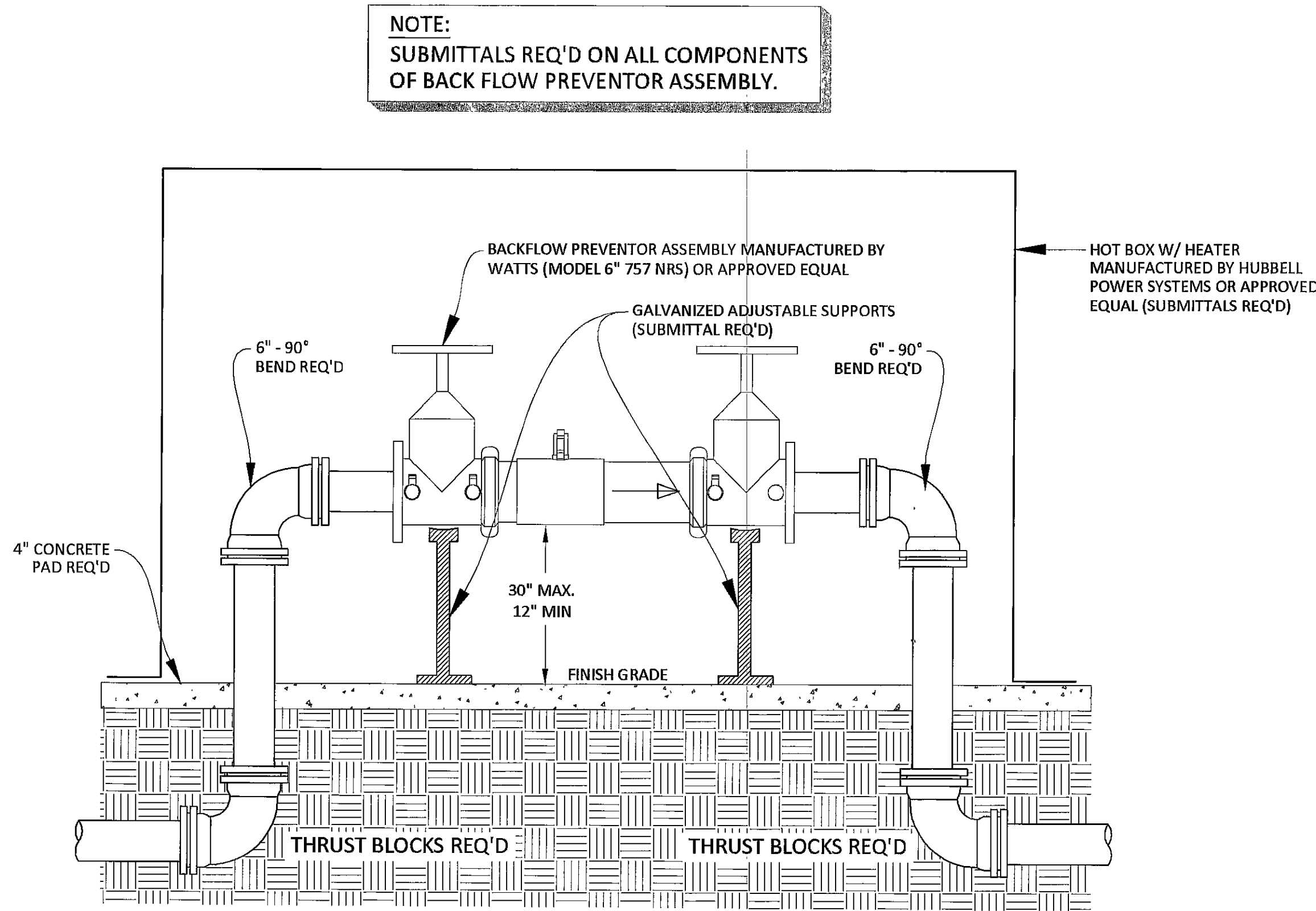


4.7.1 - TYPICAL WATER MAIN THRUST BLOCK DETAIL (EXTERIOR OF BLDG)
NOT TO SCALE

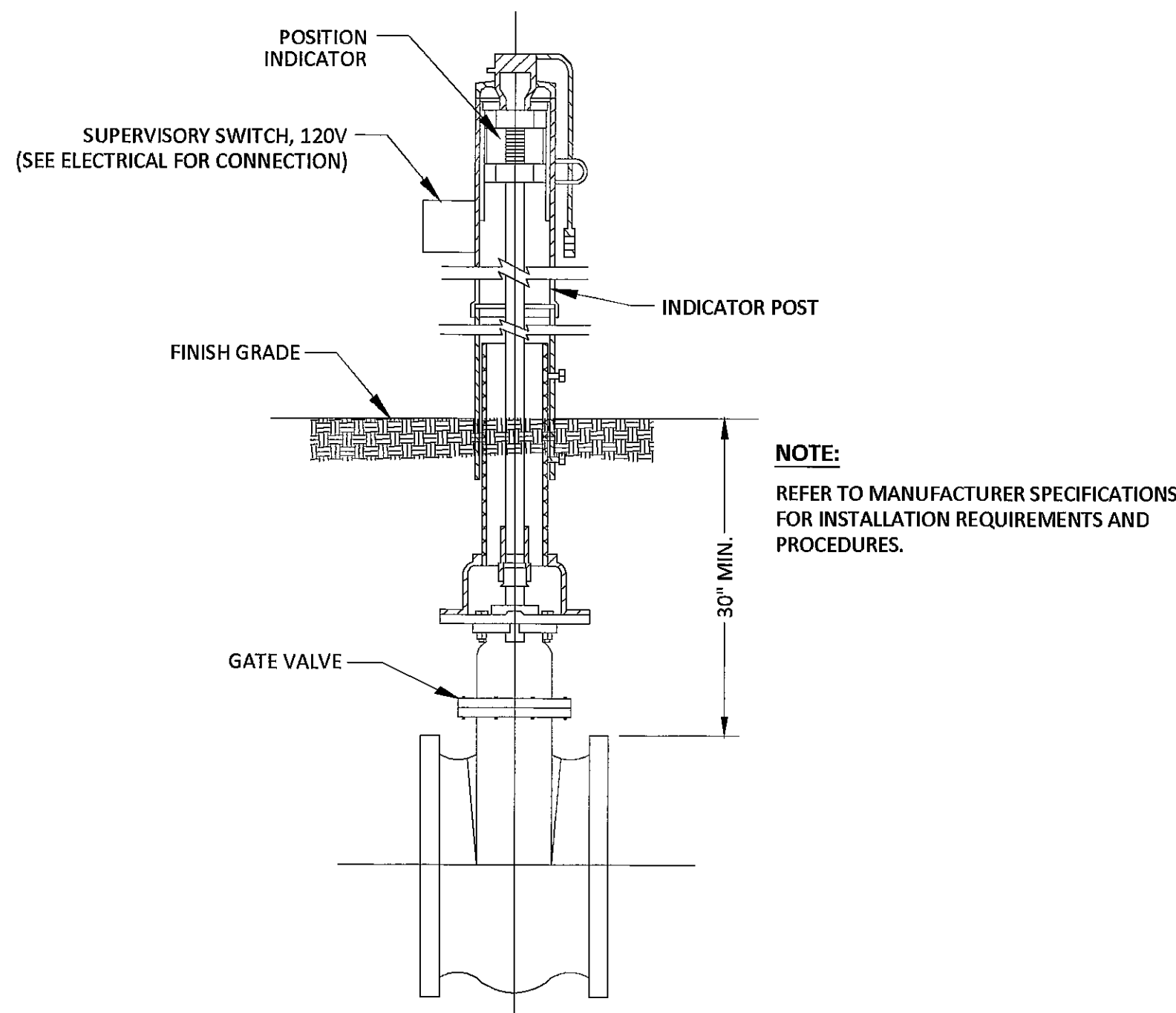


NOTE:
FREE STANDING SIEMSE FIRE DEPT. CONNECTIONS EQUAL TO POTTER ROEMER SERIES 5763-D 6"x 2 1/2" TWO WAY, LETTERING AUTO. SPRKR., STANDARD 24" SLEEVE LENGTH (PROVIDE ADDITIONAL LENGTH AS REQUIRED).

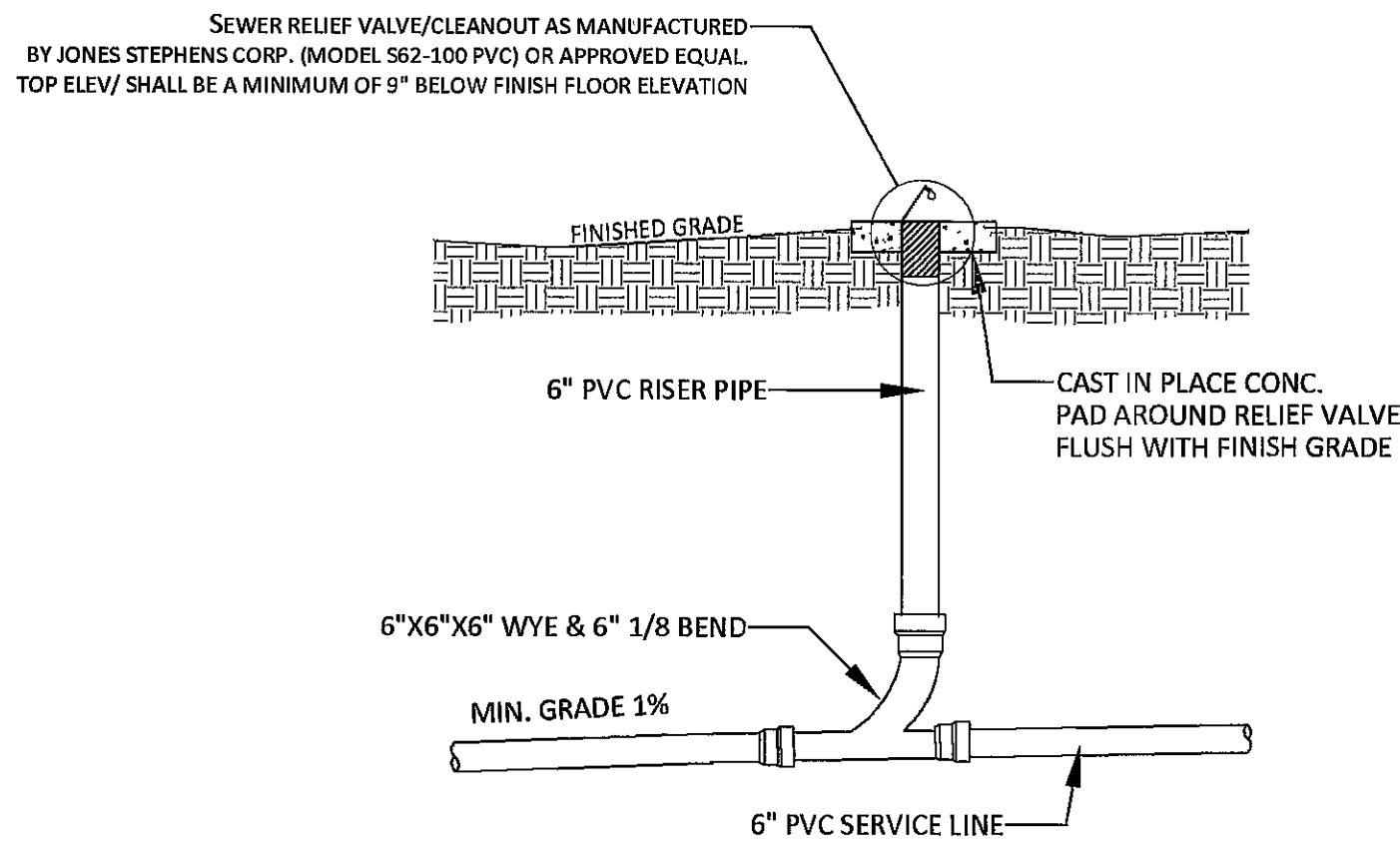
4.7.2 - TYPICAL FREE STANDING FIRE DEPARTMENT CONNECTION DETAIL
NOT TO SCALE



4.7.3 - BACKFLOW PREVENTOR
NOT TO SCALE



4.7.4 - TYPICAL POST INDICATOR VALVE DETAIL
NOT TO SCALE



4.7.5 - TYPICAL SEWER CLEANOUT DETAIL
NOT TO SCALE

DRAWN
CRW

CHECKED
DBG

FINAL DATE
NOVEMBER 22, 2019

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LANDRY
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CREATING LANDMARKS SINCE 1970...

SHEET TITLE
Utility Details

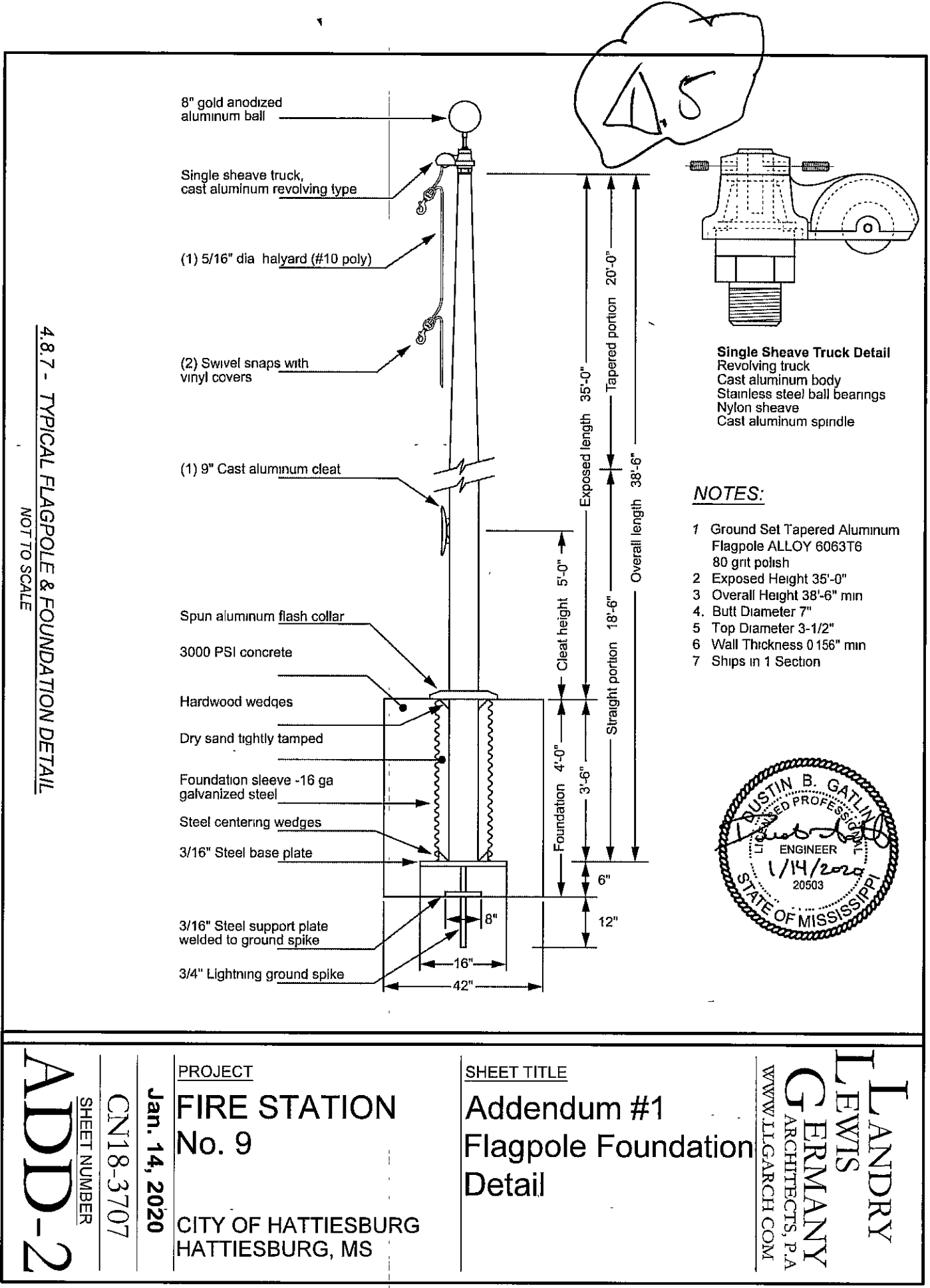
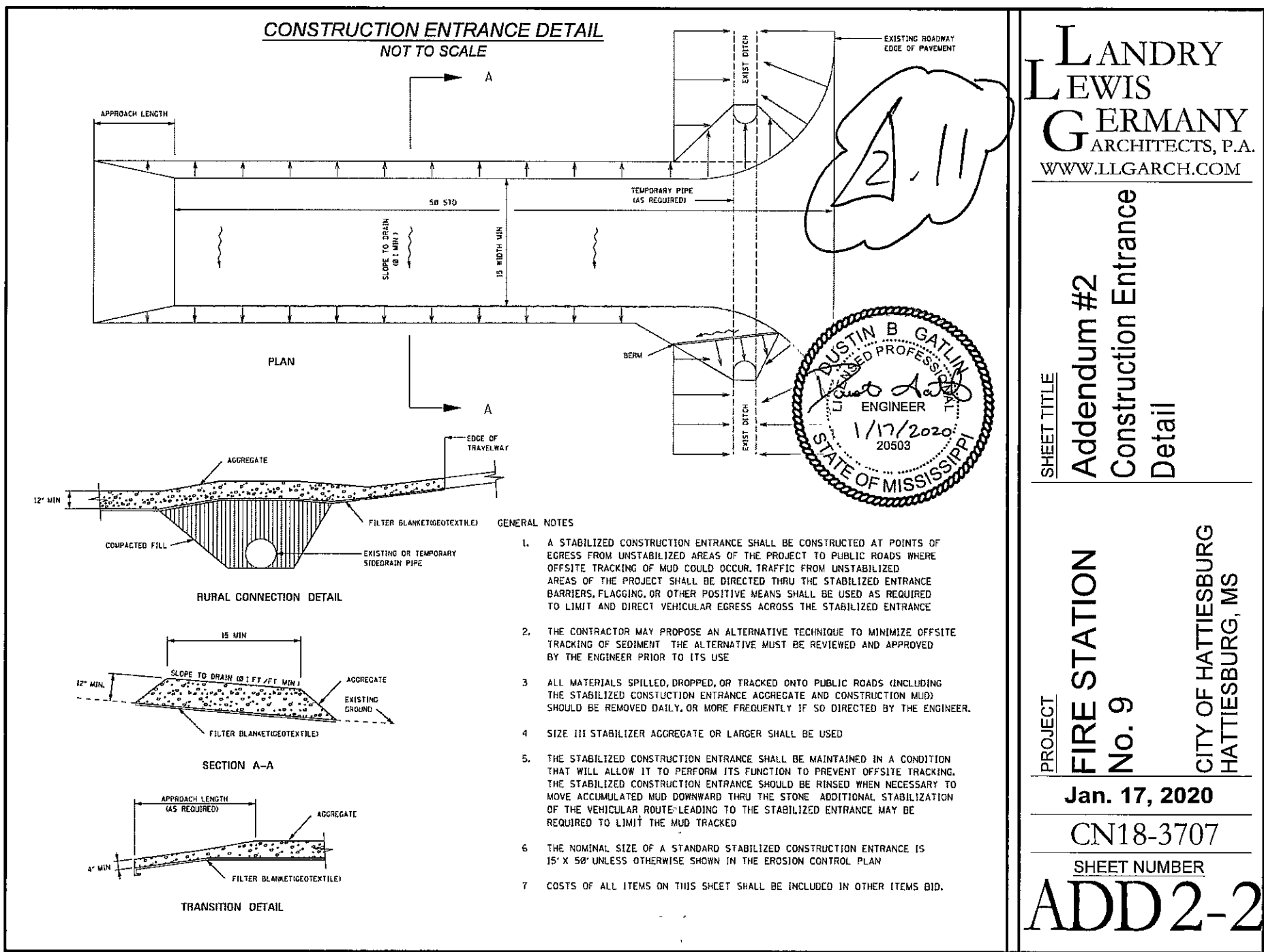
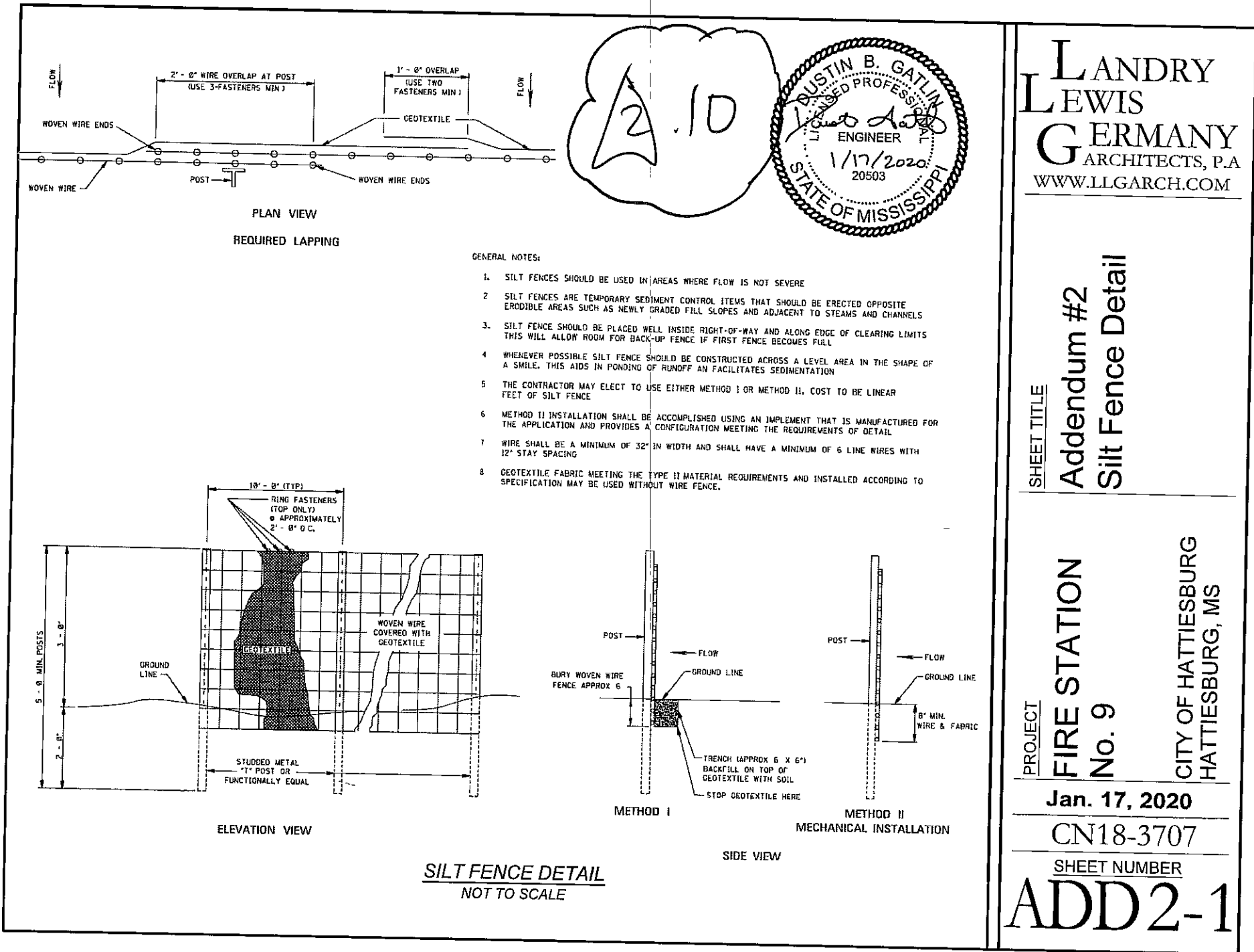
PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

JUSTIN B. GALLUN
REGISTERED PROFESSIONAL
ENGINEER
11/22/19
20653
STATE OF MISSISSIPPI

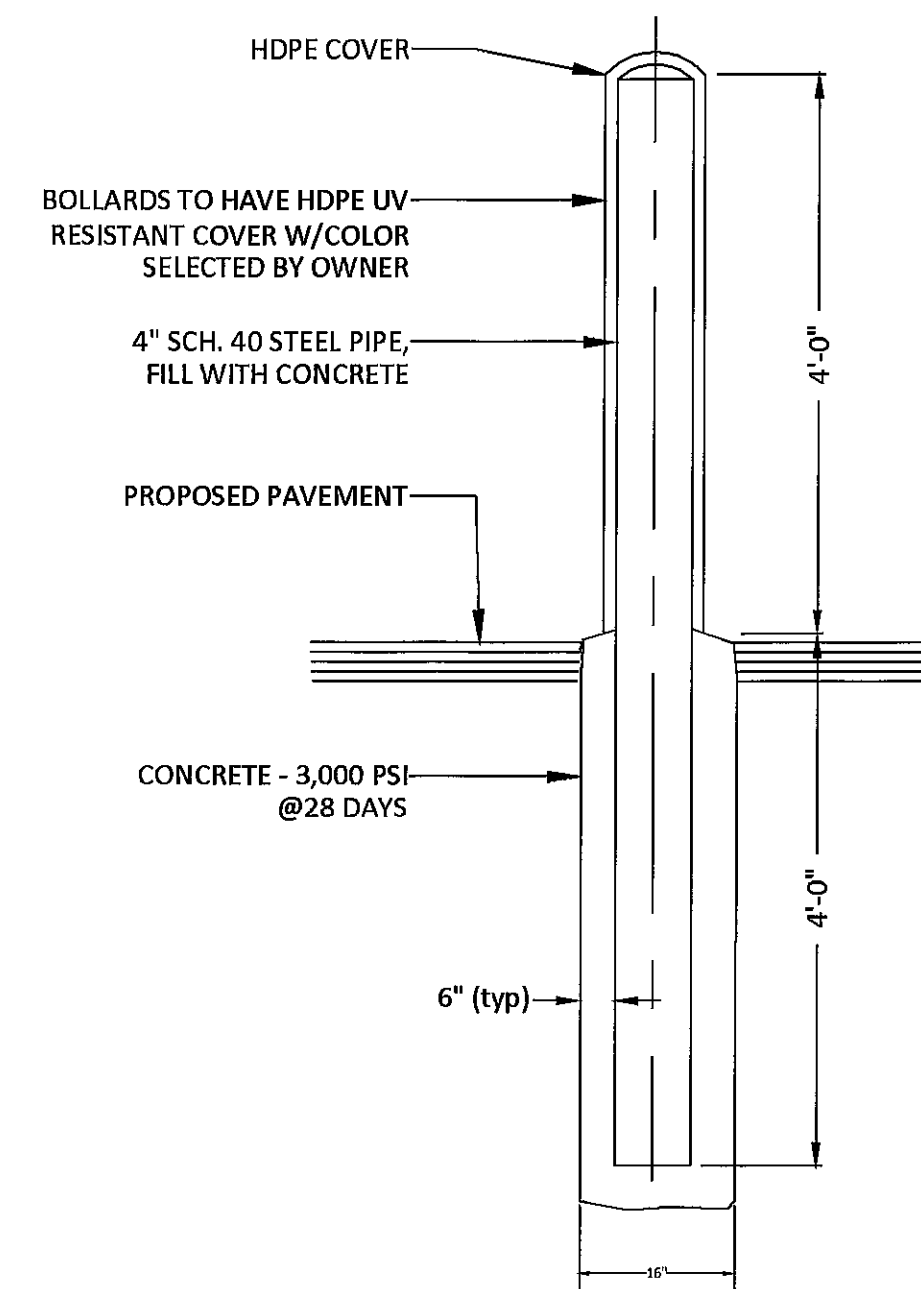
CN18-3707

SHEET NUMBER

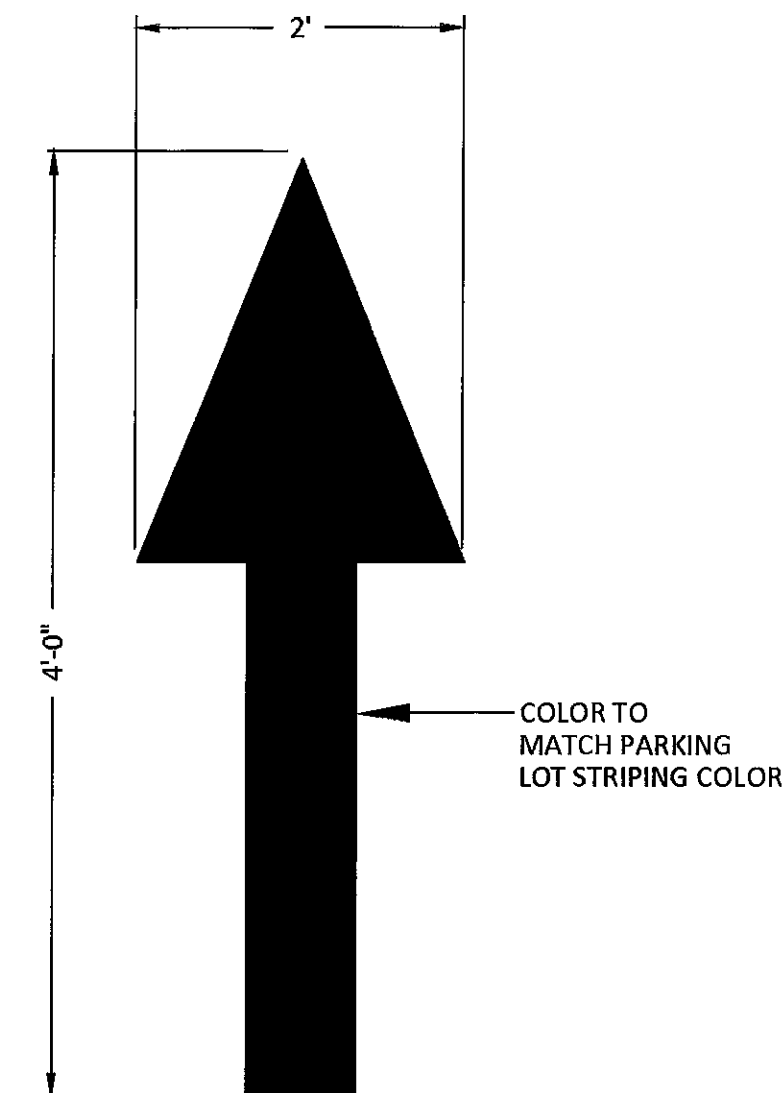
C4.7



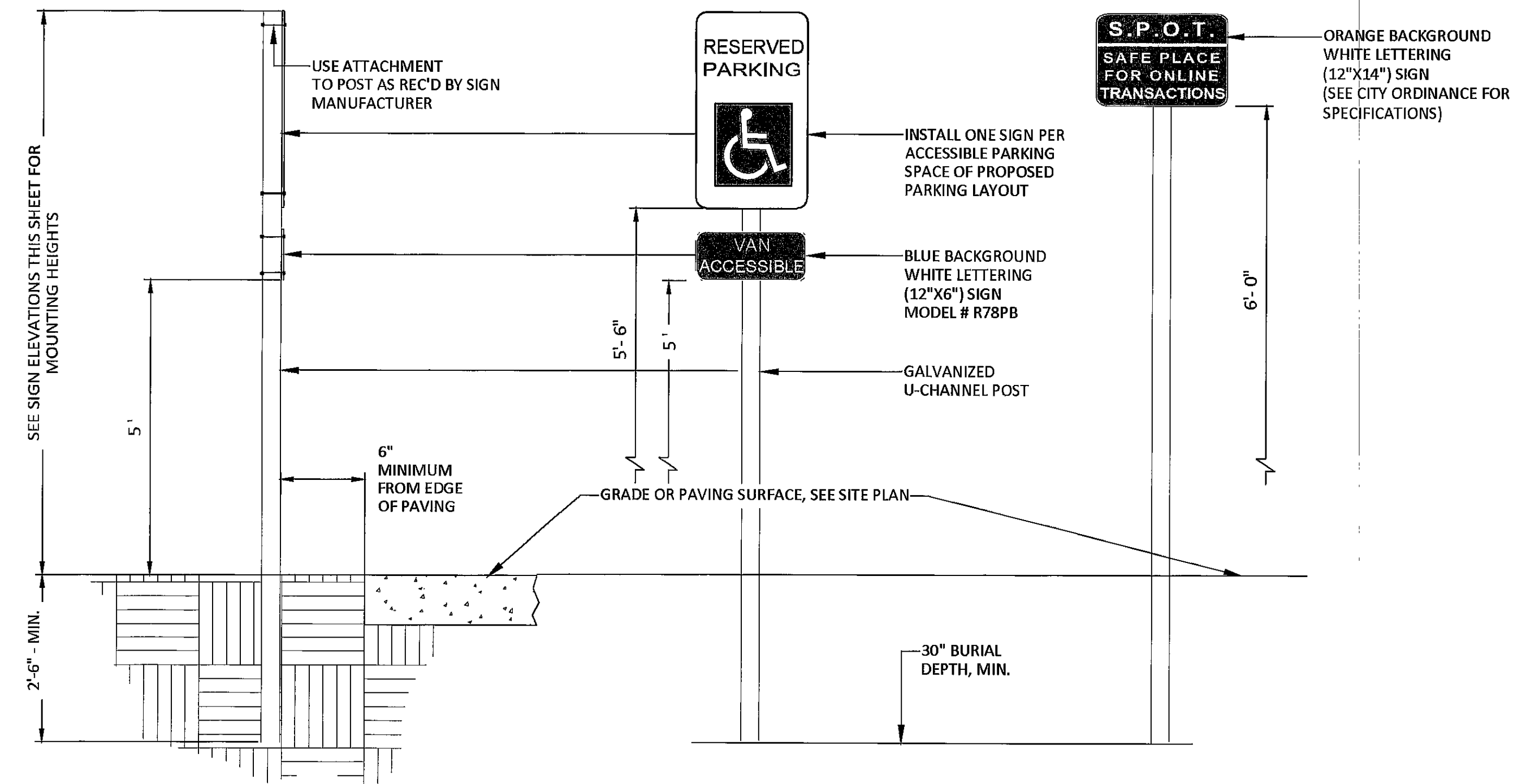
Miscellaneous Details



4.8.1 - TYPICAL BOLLARD DETAIL
NOT TO SCALE



4.8.2 - TYPICAL STRIPED ARROW DETAIL
NOT TO SCALE

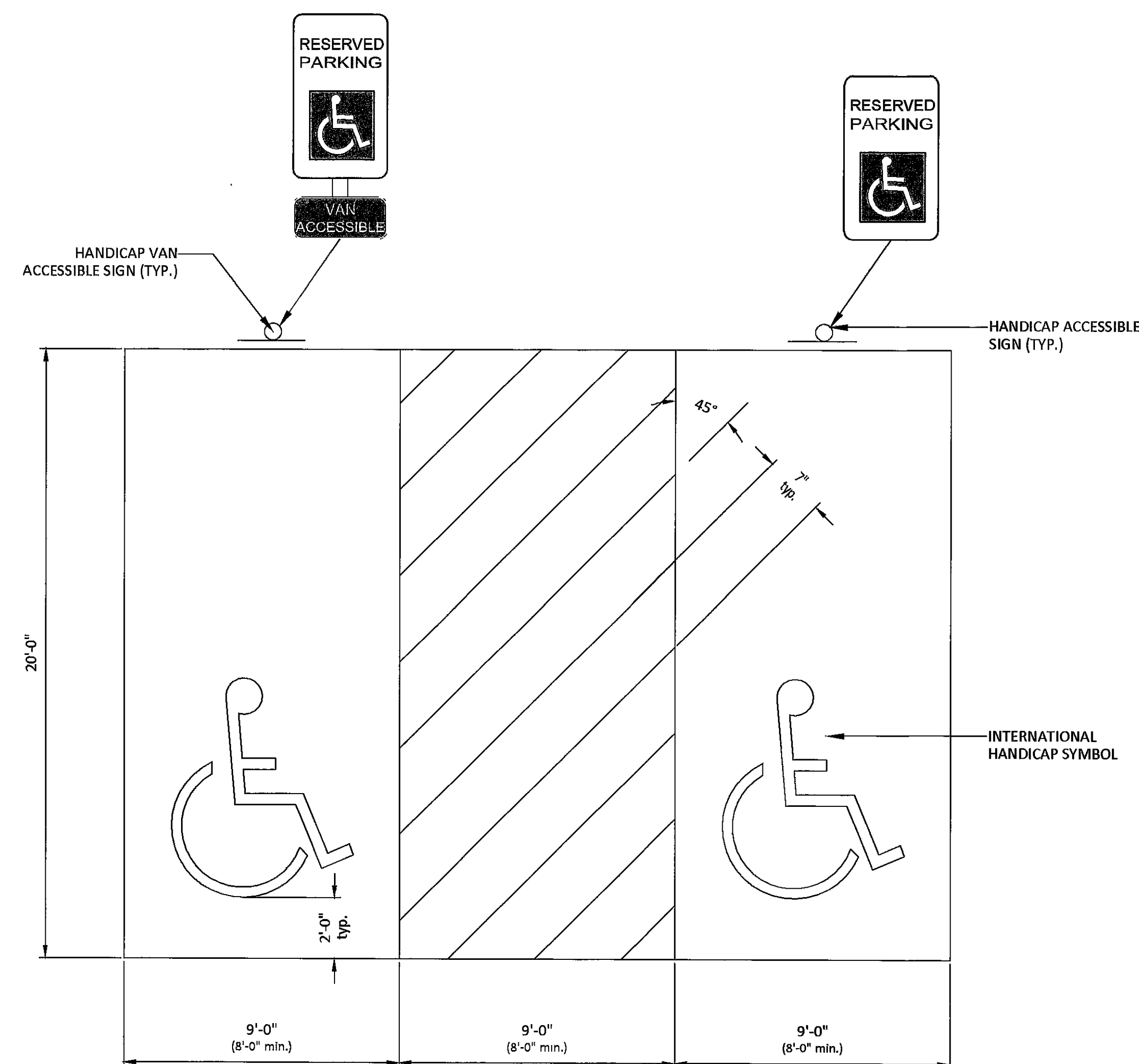


4.8.3 - TYPICAL SIGNAGE DETAIL
NOT TO SCALE

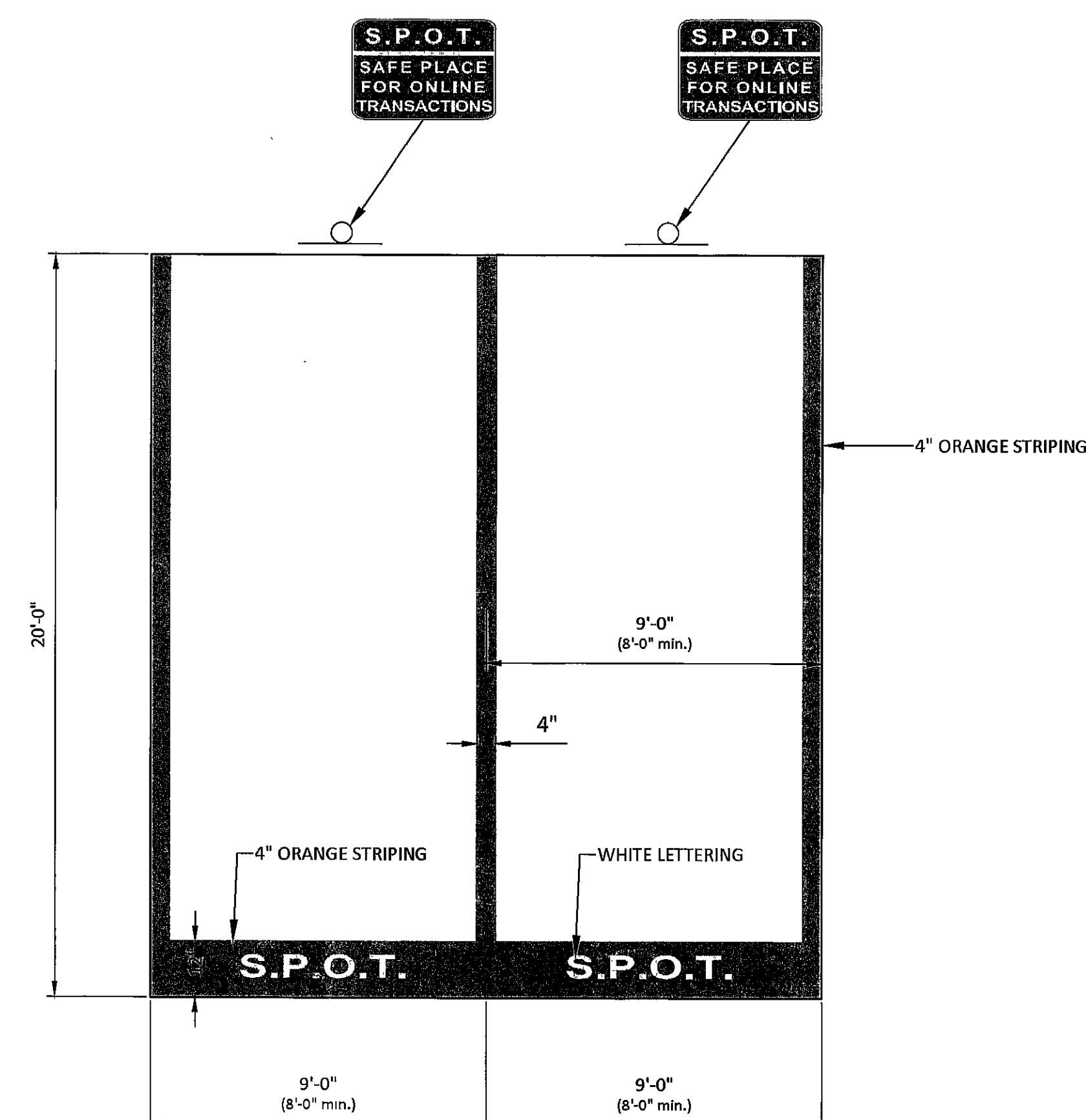
SIGN SPECIFICATIONS:

SIGNS TO BE AS MANUFACTURED BY "BEST
MANUFACTURING SIGN SYSTEMS" OR
APPROVED EQUAL SIGNS TO BE MADE OF
HEAVY 18GA BONDORIZED STEEL OR .080"
2MM ALUM GRAPHIC SIDE
TO BE BAKED ENAMEL W/SCREEN PRINTED
COPY

**SUBMITTALS REQ'D ON ALL
SIGNS AND POSTS.**



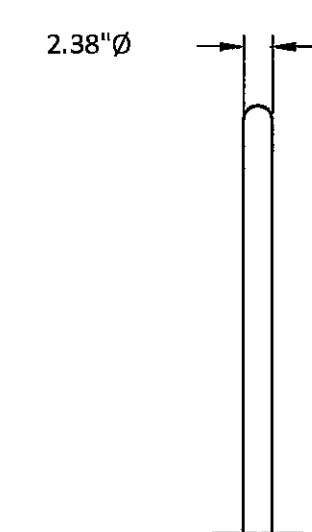
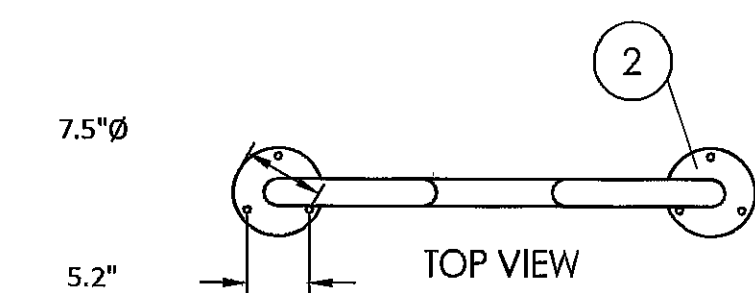
4.8.4 - HANDICAP PARKING STRIPING DETAIL
NOT TO SCALE



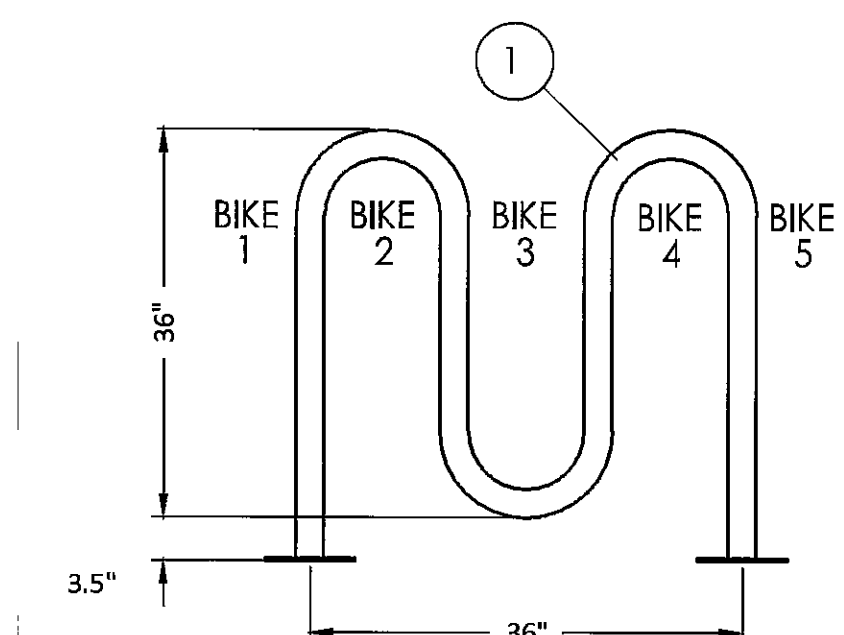
4.8.5 - SAFE PLACE FOR ONLINE TRANSACTIONS
STRIPING DETAIL
NOT TO SCALE

GENERAL NOTES:

- (1) TUBING - Ø 2 3/8" x 154"
WALL STEEL TUBING
- (2) SECURE WITH STAINLESS
STEEL ANCHOR BOLTS
- (3) SUBMITTAL REQ'D ON
BIKE RACK ASSEMBLY



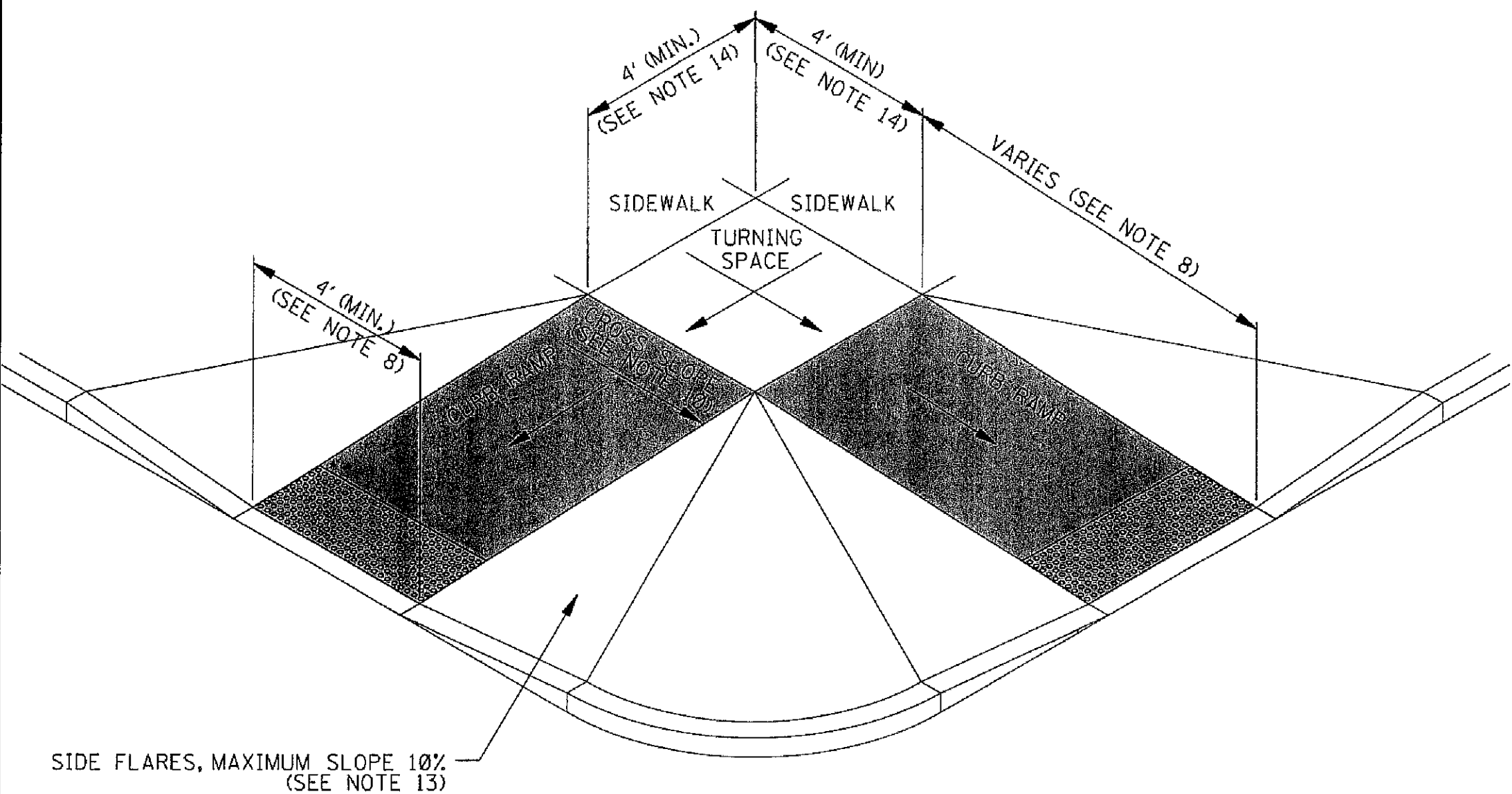
RIGHT SIDE VIEW



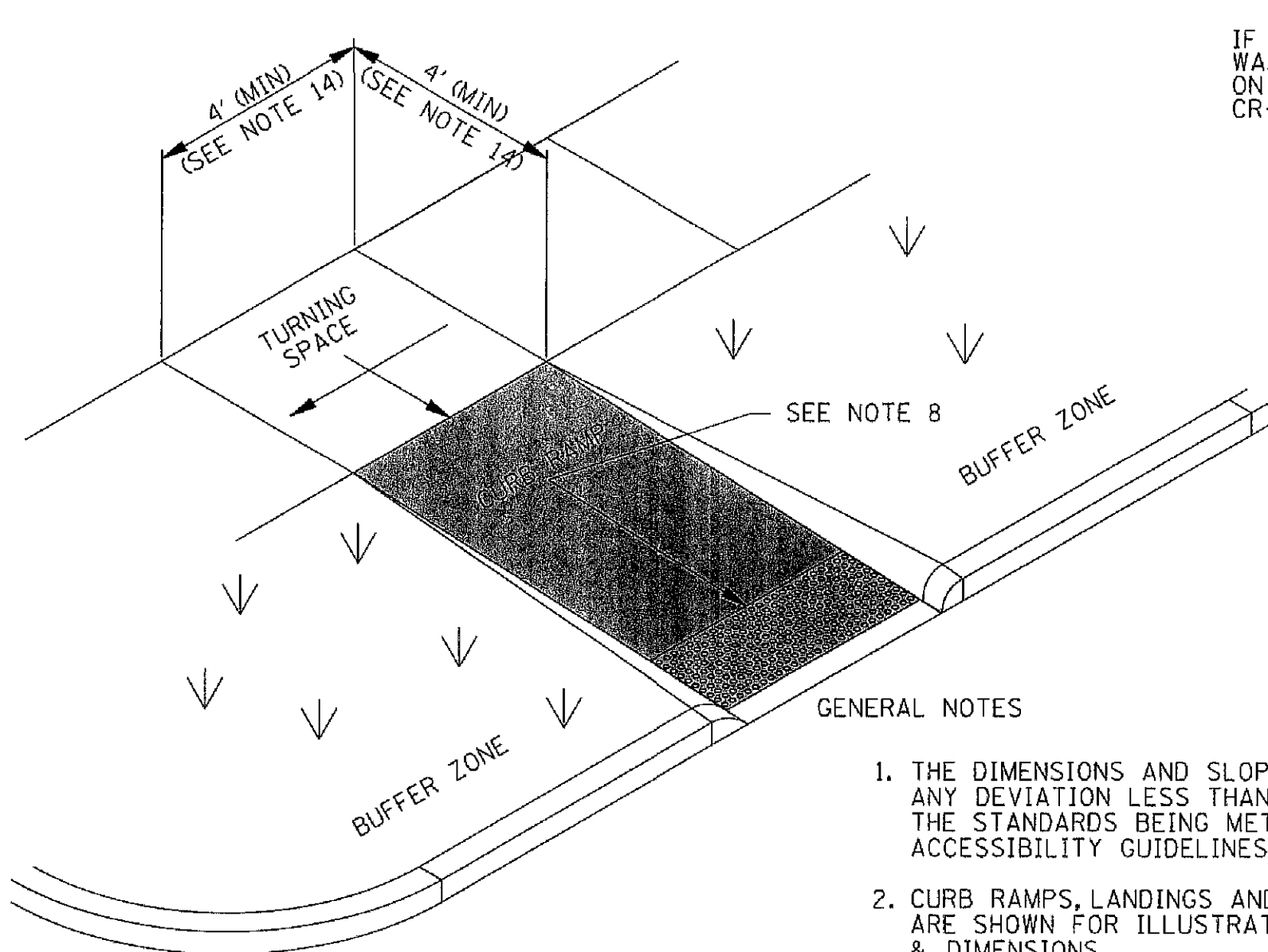
FRONT VIEW

4.8.6 - TYPICAL FIVE BIKE STORAGE RACK DETAIL
NOT TO SCALE

Miscellaneous Details

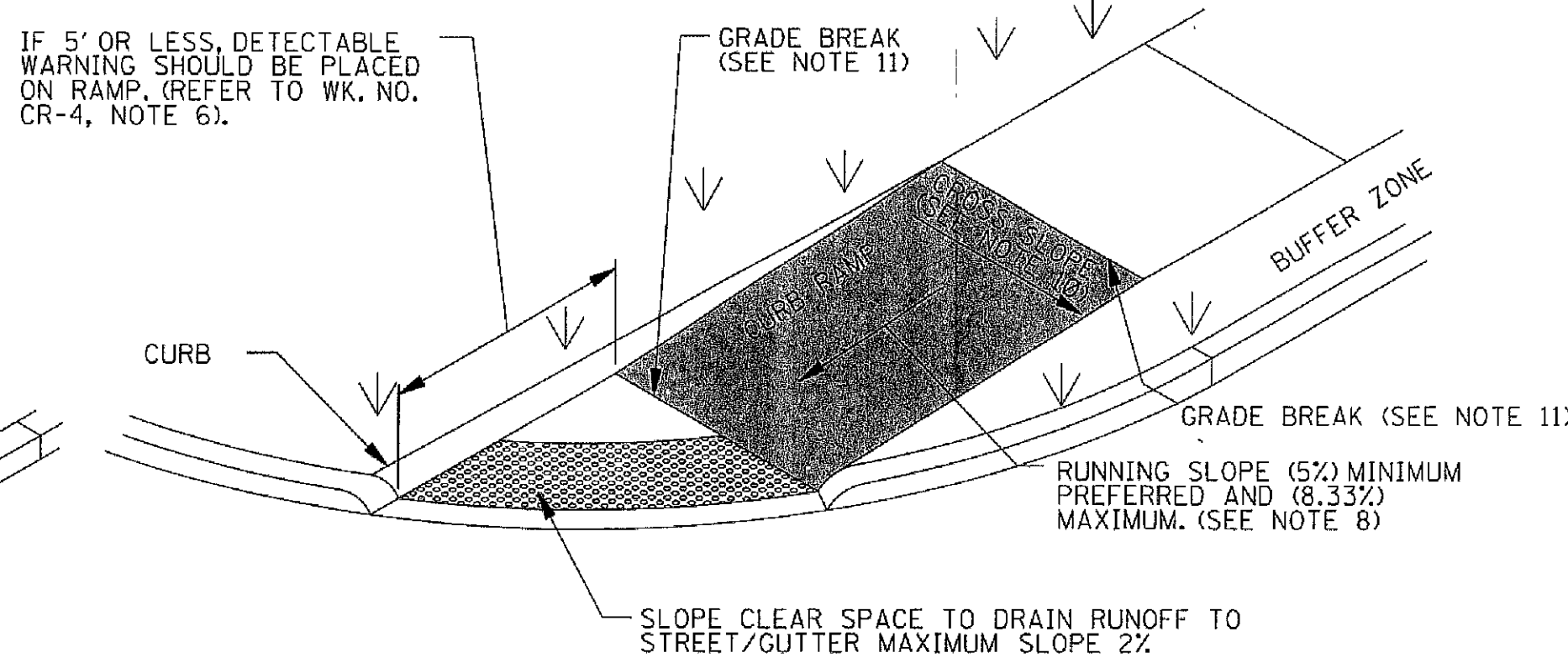


TYPE 1 – PERPENDICULAR CURB RAMP



TYPE 2 – PERPENDICULAR RETURNED CURB RAMP

SIDES OF CURB RAMPS MAY BE RETURNED, PROVIDING USEFUL DIRECTIONAL CUES, IF PROTECTED FROM CROSS TRAVEL BY LANDSCAPING, STREET FURNITURE, POLES, OR EQUIPMENT.



TYPE 3 – ALTERNATE PERPENDICULAR RETURNED CURB RAMP

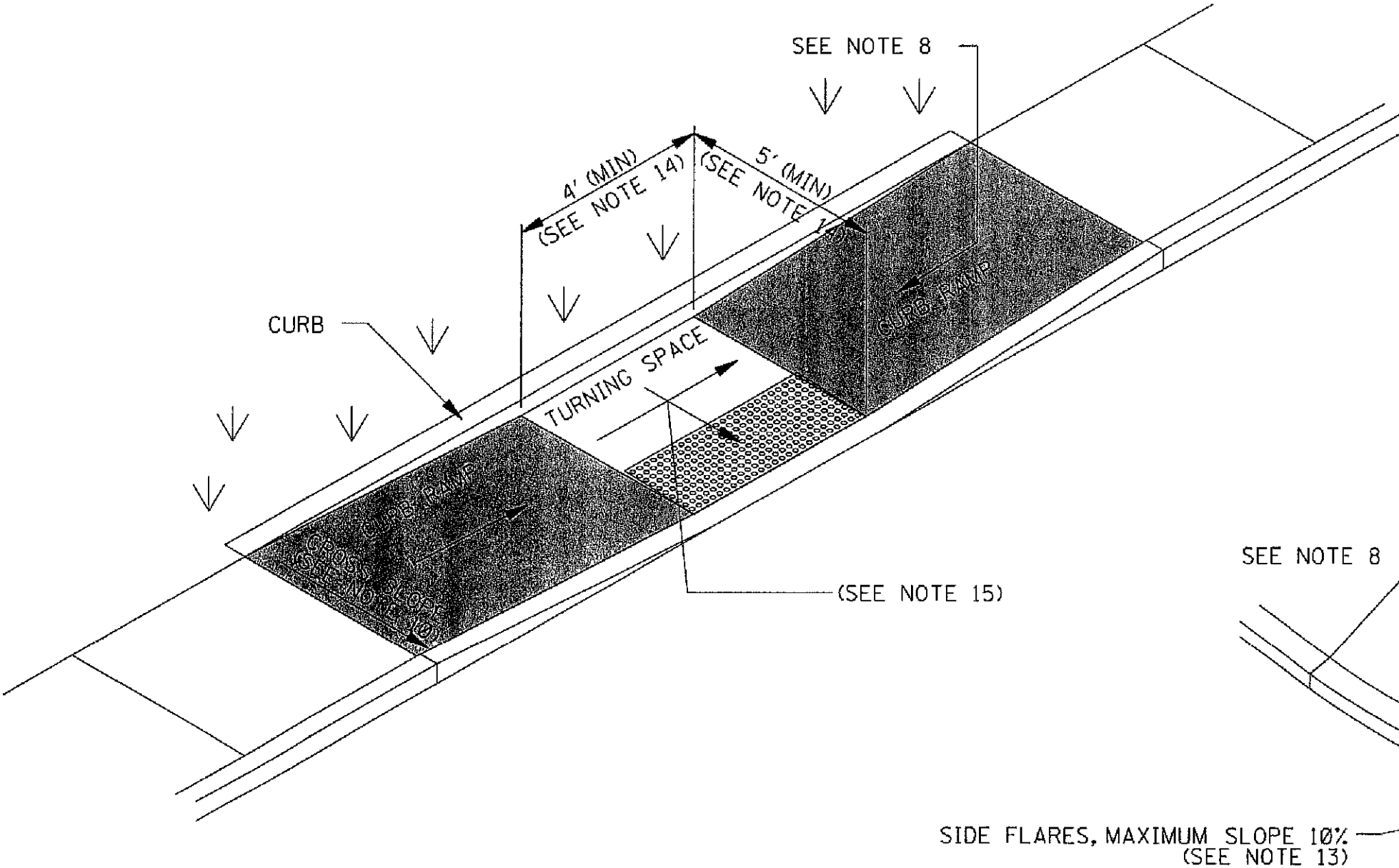
- GENERAL NOTES
1. THE DIMENSIONS AND SLOPES PRESENTED IN THE DETAILS ARE THE MINIMUM NECESSARY TO COMPLY WITH THE ADA AND MDOT STANDARDS. ANY DEVIATION LESS THAN THE MINIMUM WIDTH OR GREATER THAN THE MAXIMUM SLOPE FROM THESE STANDARDS MUST BE DOCUMENTED WITH THE STANDARDS BEING MET TO THE GREATEST EXTENT PRACTICABLE AND CONSISTENT WITH THE MOST CURRENT PUBLIC RIGHT-OF-WAY ACCESSIBILITY GUIDELINES (PROWAG).
 2. CURB RAMPS, LANDINGS AND BLENDED TRANSITIONS MAY REQUIRE THE USE OF DETECTABLE WARNINGS. DETECTABLE WARNINGS ON THIS SHEET ARE SHOWN FOR ILLUSTRATION ONLY. REFER TO THE DETECTABLE WARNING DETAILS ON WK. NO. CR-4 FOR DETAILS ON PLACEMENT, ORIENTATION & DIMENSIONS.
 3. THE LOCATION, ORIENTATION, AND TYPE OF CURB RAMPS SHOULD BE AS SHOWN IN THE PLANS.
 4. ANY COMBINATION OF PERPENDICULAR, PERPENDICULAR RETURNED, AND PARALLEL CURB RAMPS MAY BE USED TO ACHIEVE AN ACCESSIBLE DESIGN AS LONG AS THE BASIC REQUIREMENTS FOR CURB RAMPS ARE MET.
 5. CURB RAMPS SHALL BE PAID FOR AS SIDEWALK.
 6. THE THICKNESS OF THE CURB RAMP SHALL BE A MINIMUM OF 4".
 7. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE OF 4' MINIMUM BY 4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE.

CURB RAMP NOTES:

8. THE CLEAR WIDTH OF CURB RAMP RUNS (EXCLUDING ANY FLARED SIDES), BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE THE WIDTH OF THE SIDEWALK, OR 4' MINIMUM. THE RUNNING SLOPE OF A CURB RAMP SHALL BE 5% MINIMUM, AND 8.33% MAXIMUM (7.1% PREFERRED). THE RUNNING SLOPE OF BLENDED TRANSITIONS SHALL BE 5% MAXIMUM.
9. WHERE THE SLOPE OF THE ROADWAY EXCEEDS 8.33%, THE CURB RAMP LENGTH IS THE LENGTH NECESSARY TO MEET THE EXISTING SIDEWALK. IT IS NOT NECESSARY THAT THE RAMP EXCEED 15'.
10. THE CROSS SLOPE OF CURB RAMPS, BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE 2% MAXIMUM (1.5% PREFERRED). AT PEDESTRIAN STREET CROSSINGS WITHOUT YIELD OR STOP CONTROL AND AT MIDBLOCK PEDESTRIAN STREET CROSSINGS, THE CROSS SLOPE IS PERMITTED TO EQUAL THE STREET OR HIGHWAY GRADE.
11. GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMP RUNS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. GRADE BREAKS SHALL NOT BE PERMITTED ON THE SURFACE OF RAMP RUNS AND TURNING SPACES. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.
12. RAMP TRANSITIONS BETWEEN WALKS, TURNING SPACES, LANDINGS, GUTTERS, OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT VERTICAL CHANGES.
13. WHERE A PEDESTRIAN CIRCULATION PATH CROSSES THE CURB RAMP, FLARED SIDES SHALL BE SLOPED 10% MAXIMUM, MEASURED PARALLEL TO THE CURB LINE.

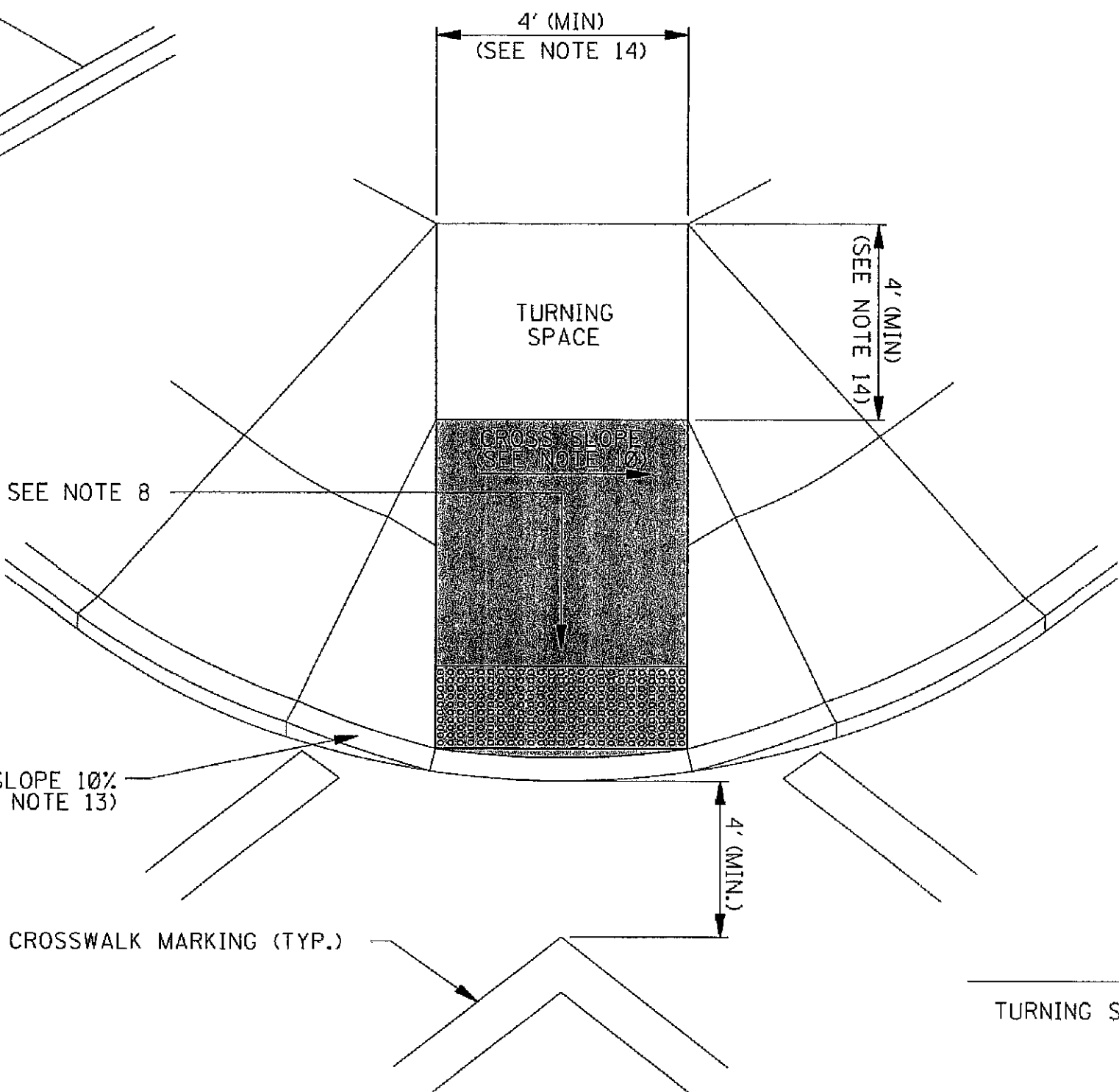
TURNING SPACE NOTES:

14. A TURNING SPACE 4' MINIMUM BY 4' MINIMUM SHALL BE PROVIDED AT THE TOP OF PERPENDICULAR RAMPS AND AT THE BOTTOM OF PARALLEL RAMPS. TURNING SPACES ARE ALLOWED TO OVERLAP OTHER TURNING SPACES AND CLEAR SPACES. IF THE TURNING SPACE IS CONSTRAINED BY A CURB, WALL, OR OTHER OBSTRUCTION, THE TURNING SPACE SHALL BE 4' MINIMUM BY 5' MINIMUM, WITH THE 5' DIMENSION PROVIDED IN THE DIRECTION OF TRAVEL TOWARD THE CONSTRAINT.
15. THE RUNNING SLOPE OF TURNING SPACES SHALL BE 2% MAXIMUM (1.5% PREFERRED). THE CROSS SLOPE OF TURNING SPACES SHALL BE 2% MAXIMUM (1.5% PREFERRED). AT PEDESTRIAN STREET CROSSINGS WITHOUT YIELD OR STOP CONTROL AND AT MIDBLOCK PEDESTRIAN STREET CROSSINGS, THE CROSS SLOPE SHALL BE PERMITTED TO EQUAL THE STREET OR HIGHWAY GRADE.
16. BEYOND THE BOTTOM GRADE BREAK, A CLEAR SPACE 4' MINIMUM BY 4' MINIMUM SHALL BE PROVIDED WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING AND WHOLLY OUTSIDE THE PARALLEL VEHICLE TRAVEL LANE.
17. THE COUNTER SLOPE OF THE GUTTER OR STREET AT THE FOOT OF CURB RAMP RUNS, BLENDED TRANSITIONS, AND TURNING SPACES SHALL BE 5% MAXIMUM. IT IS BEST PRACTICE TO PROVIDE A 2" LEVEL STRIP AT THE GUTTER IF THE GRADE BREAK EXCEEDS 11%.



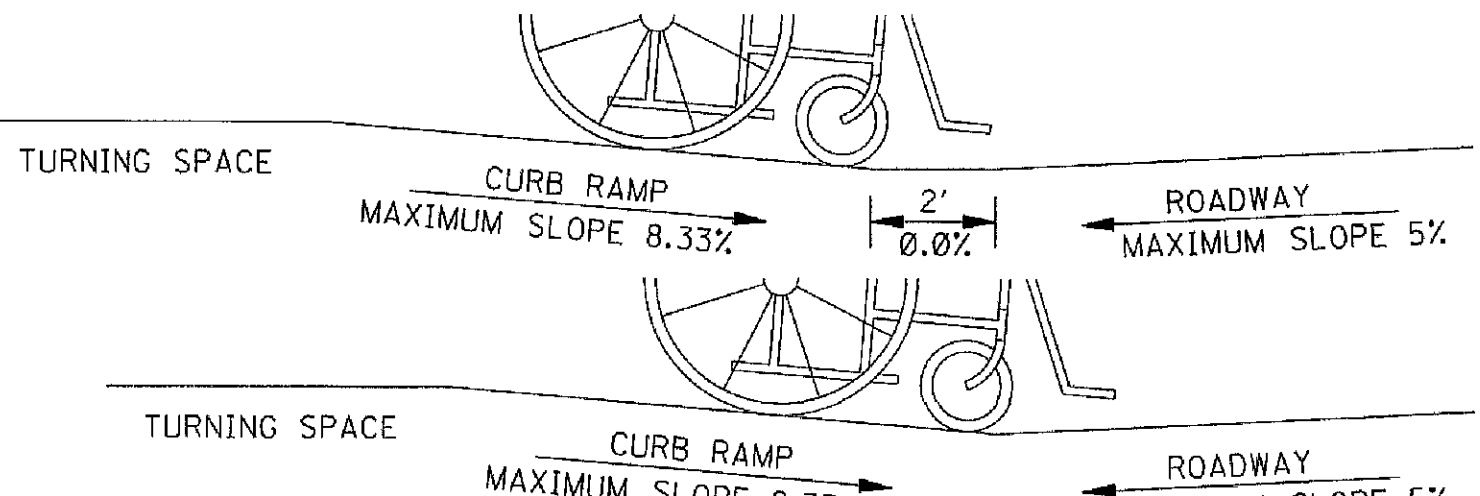
TYPE 4 – PARALLEL CURB RAMP

THE CURB BEHIND THE TURNING SPACE AND RAMPS IS NOT REQUIRED, BUT IS SUGGESTED FOR RETAINING SOIL AND PROVIDING AN EDGE FOR PEDESTRIANS WITH VISUAL IMPAIRMENTS.



TYPE 5 – DIAGONAL CURB RAMP

DIAGONAL CURB RAMPS ARE UNACCEPTABLE IN NEW CONSTRUCTION. THEY MAY BE USED FOR ALTERATIONS ONLY IF IT IS THE ONLY OPTION THAT WILL WORK.



COUNTER SLOPE CONDITIONS

DRAWN	CRW
CHECKED	DBG
FINAL DATE	NOVEMBER 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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Miscellaneous Details

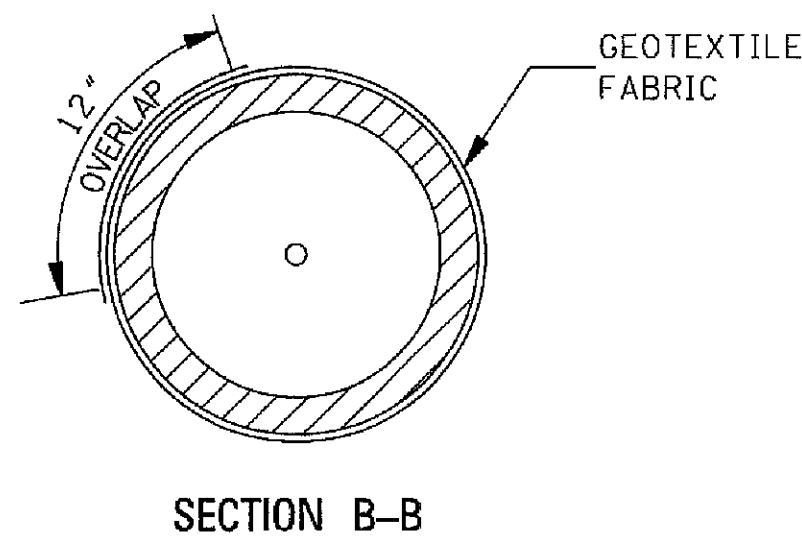
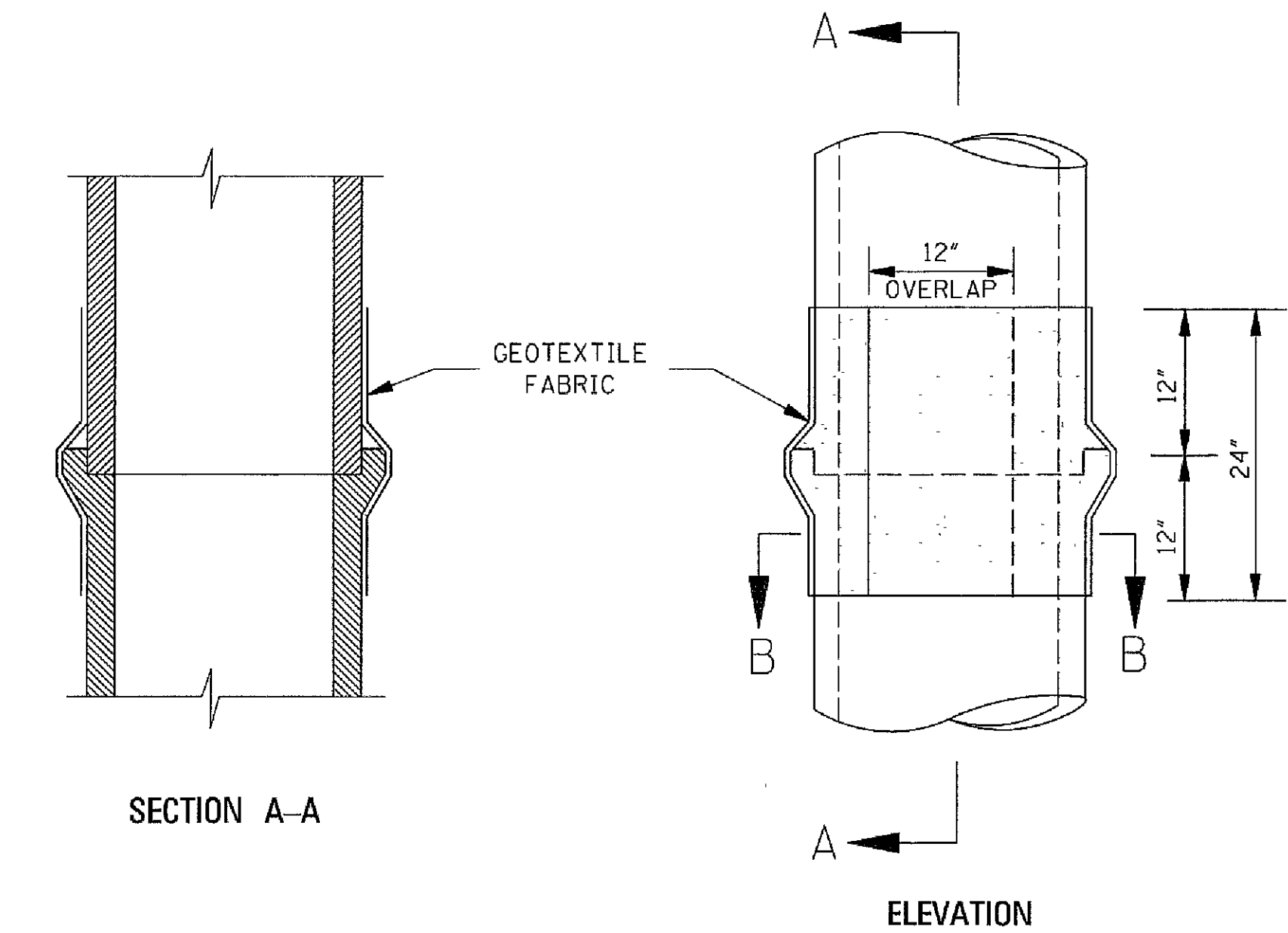
PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

AUSTIN B. GALLIA
REGISTERED PROFESSIONAL
ENGINEER
11/22/19
20503
STATE OF MISSISSIPPI

CN18-3707
SHEET NUMBER

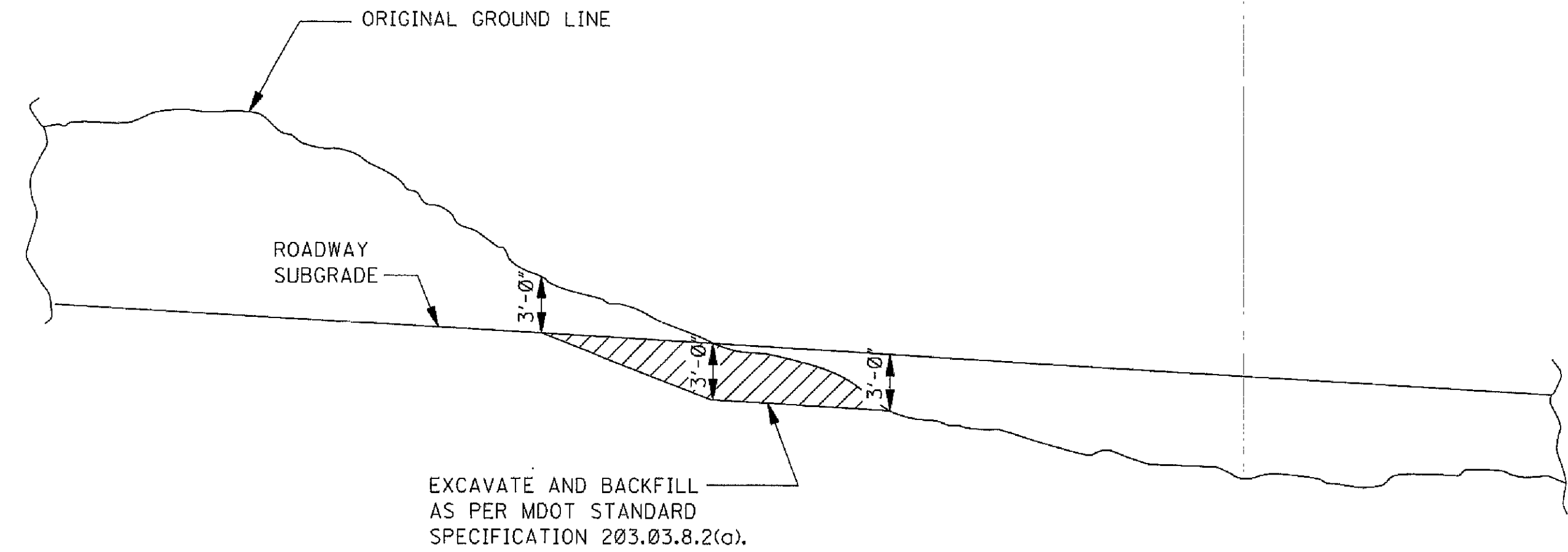
C4.9

Miscellaneous Details

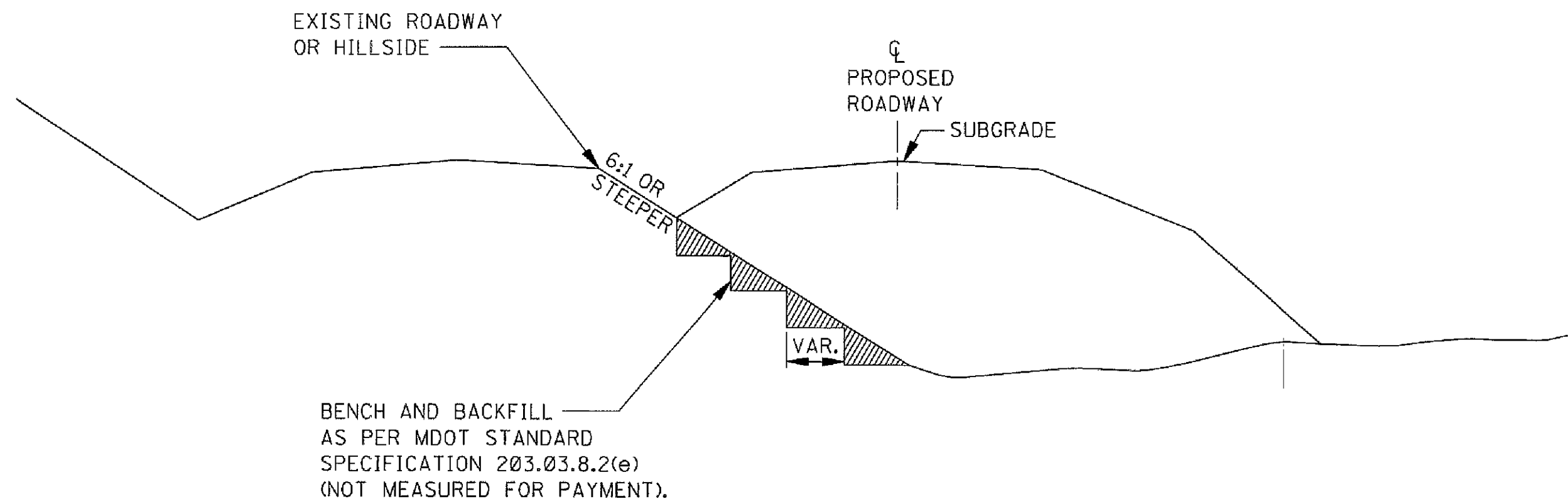


STACKED PIPE JOINTS

NOTE: EACH STACKED PIPE JOINT SHALL BE TREATED FIRST WITH A BITUMINOUS PLASTIC SEALER MATERIAL AND SECONDLY WRAPPED WITH 24" WIDE TYPE V GEOTEXTILE FABRIC (AASHTO M 288). THE FABRIC SHALL OVERLAP A MINIMUM OF 12" AT THE WRAP AND SHALL BE SECURED WITH STRING OR WIRE AS APPROVED BY THE ENGINEER PRIOR TO BACKFILLING. THE COST SHALL BE ABSORBED IN OTHER ITEMS BID.



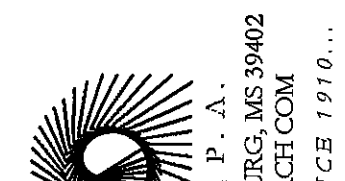
PROFILE SHOWING REQUIRED EXCAVATION AT GRADE POINTS



CROSS-SECTION SHOWING REQUIRED BENCHING UNDER EMBANKMENTS ON STEEP SLOPES

EXCAVATION AT GRADE POINTS

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DBG	
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NOVEMBER 22, 2019	
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Miscellaneous Details

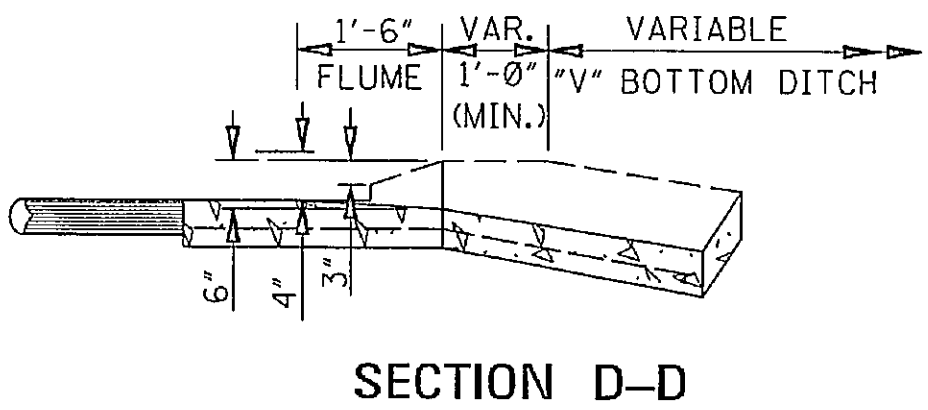
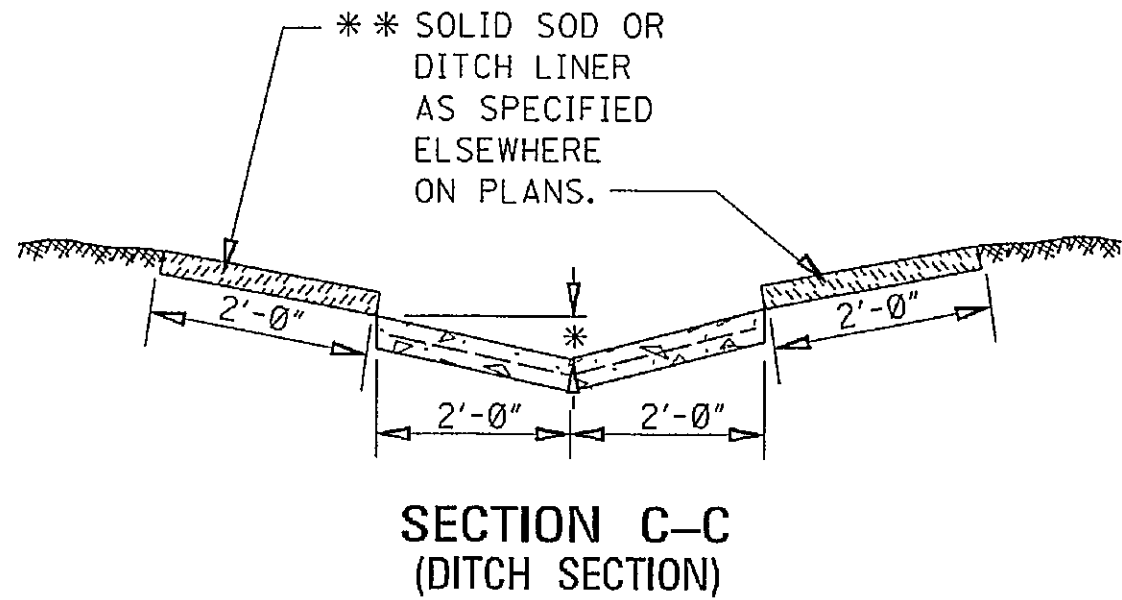
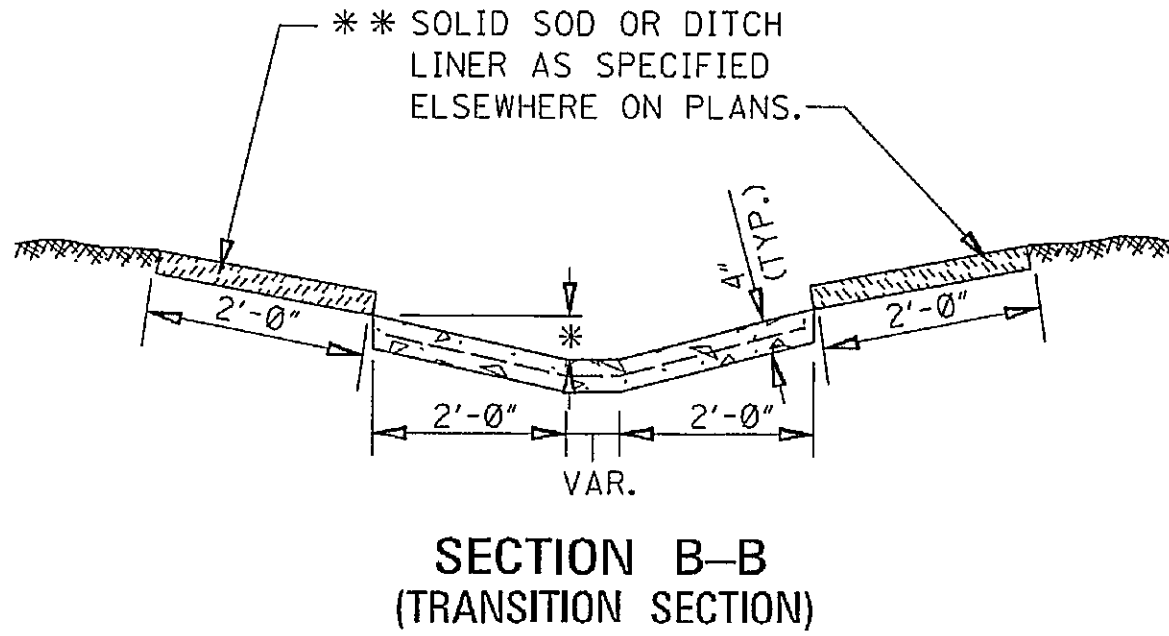
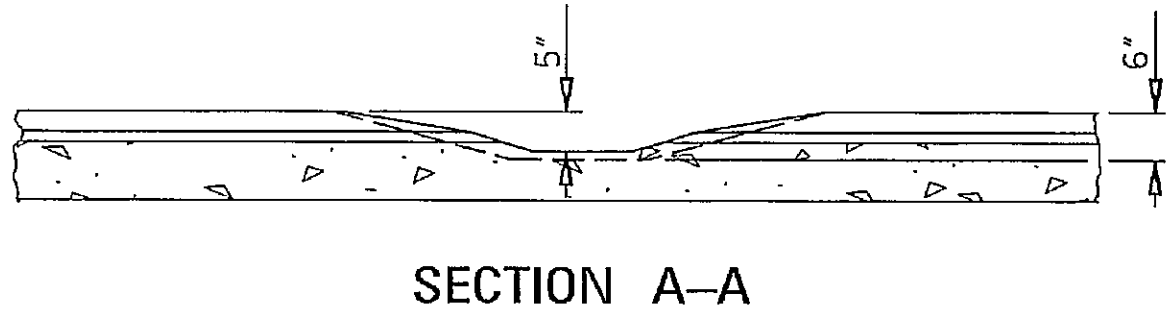
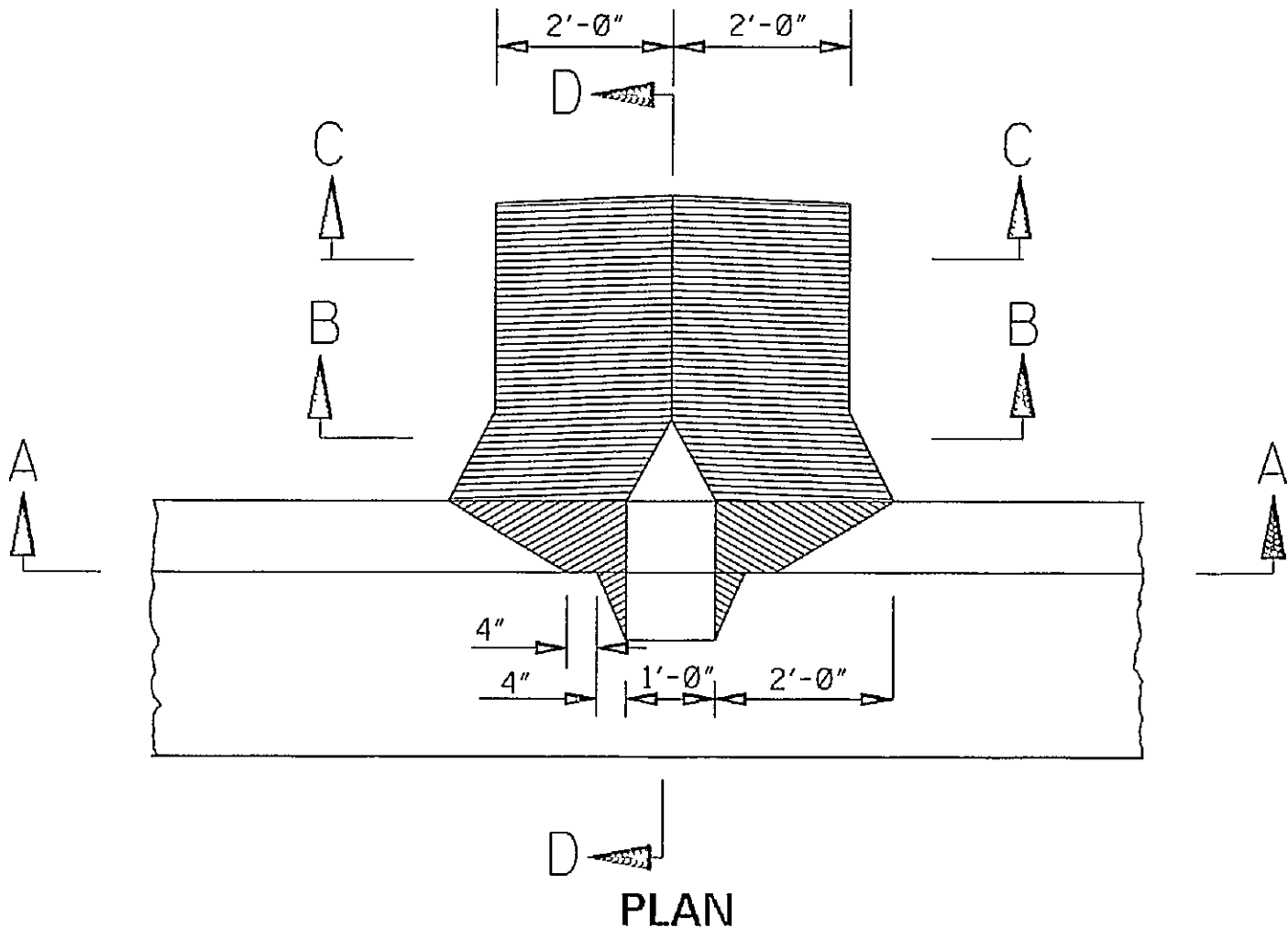
PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



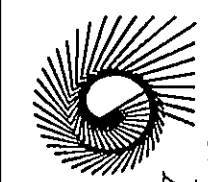
CN18-3707
SHEET NUMBER
C4.10

Miscellaneous Details

FLUME – TYPE “A”
(INTERMEDIATE RUNOFF THROUGH CURB & GUTTER)



DRAWN	
CRW	
CHECKED	
DBG	
FINAL DATE	
NOVEMBER 22, 2019	
REVISION SCHEDULE	
REV #	REV DATE

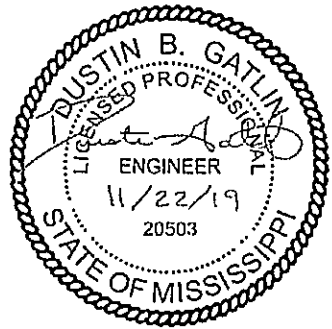


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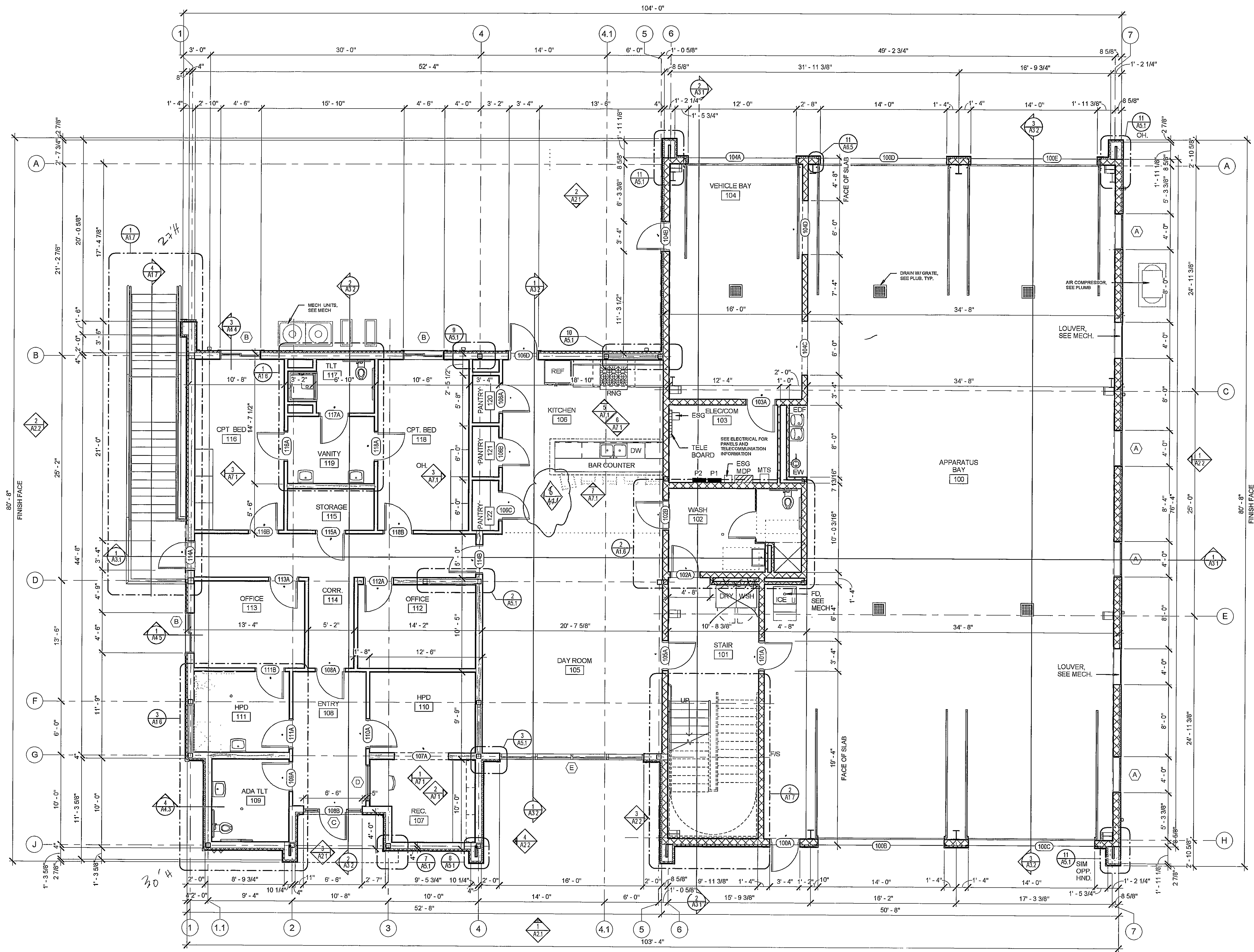
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FIRE STATION No. 9
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HATTIESBURG, MS



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SHEET NUMBER
C4.11



FIRST FLOOR PLAN - 1
3/16" = 1'-0"

GENERAL ABBREVIATIONS & NOTES:

- NIC NOT IN CONTRACT
FV FIELD VERIFY
TYP TYPICAL CONDITION
OH OPPOSITE HAND / MIRROR VIEW
SIM SIMILAR CONDITION
MIN MINIMUM
EDF ELEC DRINKING FOUNTAIN AS SPEC
EVW EYE WASH STATION AS SPEC
1. DIMENSIONS SHOWN TO EXTERIOR WALLS ARE TO EXTERIOR FACE OF STUD / CMU (SLAB EDGE) UNLESS OTHERWISE NOTED.
2. DIMENSIONS SHOWN TO INTERIOR WALLS ARE TO FACE OF STUD / CMU RESPECTIVELY.
3. REFER TO SPECIFICATIONS AND SCHEDULES AS REQUIRED REGARDING ITEMS NOT CALLED OUT ON PLANS (I.E. DOOR SIGNAGE, FINISH ACCESSORIES, HARDWARE, MISCELLANEOUS SPECIALTIES, ETC.)

PARTITION LEGEND:

- 3-5/8" NON-RATED METAL STUD PARTITION:
3-5/8" 20 GA MTL STUDS @ 16" O.C. WITH ONE (1) LAYER 5/8" GYP. BD. ON EXPOSED SIDES AND 3-1/2" ACOUSTICAL BATT. - EXTEND TO 8" ABOVE HIGHEST ADJACENT CEILING BRACE @ 4'-0" O.C. TO STRUCTURE ABOVE
- 8" NON-RATED METAL STUD PARTITION:
8" 20 GA MTL STUDS @ 16" O.C. WITH ONE (1) LAYER 5/8" GYP. BD. ON EXPOSED SIDES AND 6" ACOUSTICAL BATT. - EXTEND TO 8" ABOVE HIGHEST ADJACENT CEILING BRACE @ 4'-0" TO STRUCTURE ABOVE
- 8" CMU PARTITION:
8" CONCRETE MASONRY UNIT PARTITION, EXTEND TO 14" A.F.F. UNLESS OTHERWISE NOTED. SEE STRUCTURAL.

LEGEND:

- NAME ROOM TAG
DOOR TAG
WINDOW TAG
COLUMN LINE
ELEVATION TAG
BUILDING SECTION
WALL SECTION
SECTION DETAIL
ENLARGED PLAN / ENLARGED DETAIL

SQUARE FOOTAGE			
NAME	AREA	LEVEL	COMMENTS
ADMINISTRATION	2,703 SF	1ST LEVEL	COOL & HEAT
APPARATUS	3,891 SF	1ST LEVEL	HEAT ONLY
1ST LEVEL 2	6,594 SF		
LIVING QTRS	2,412 SF	2ND LEVEL	COOL & HEAT
MEZZANINE	848 SF	2ND LEVEL	HEAT ONLY
2ND LEVEL 2	3,260 SF		
	9,854 SF		

DRAWN
SG / CES

CHECKED
JKL

FINAL DATE
Nov. 22, 2019

REVISION SCHEDULE
REV # REV DATE

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FIRST FLOOR PLAN

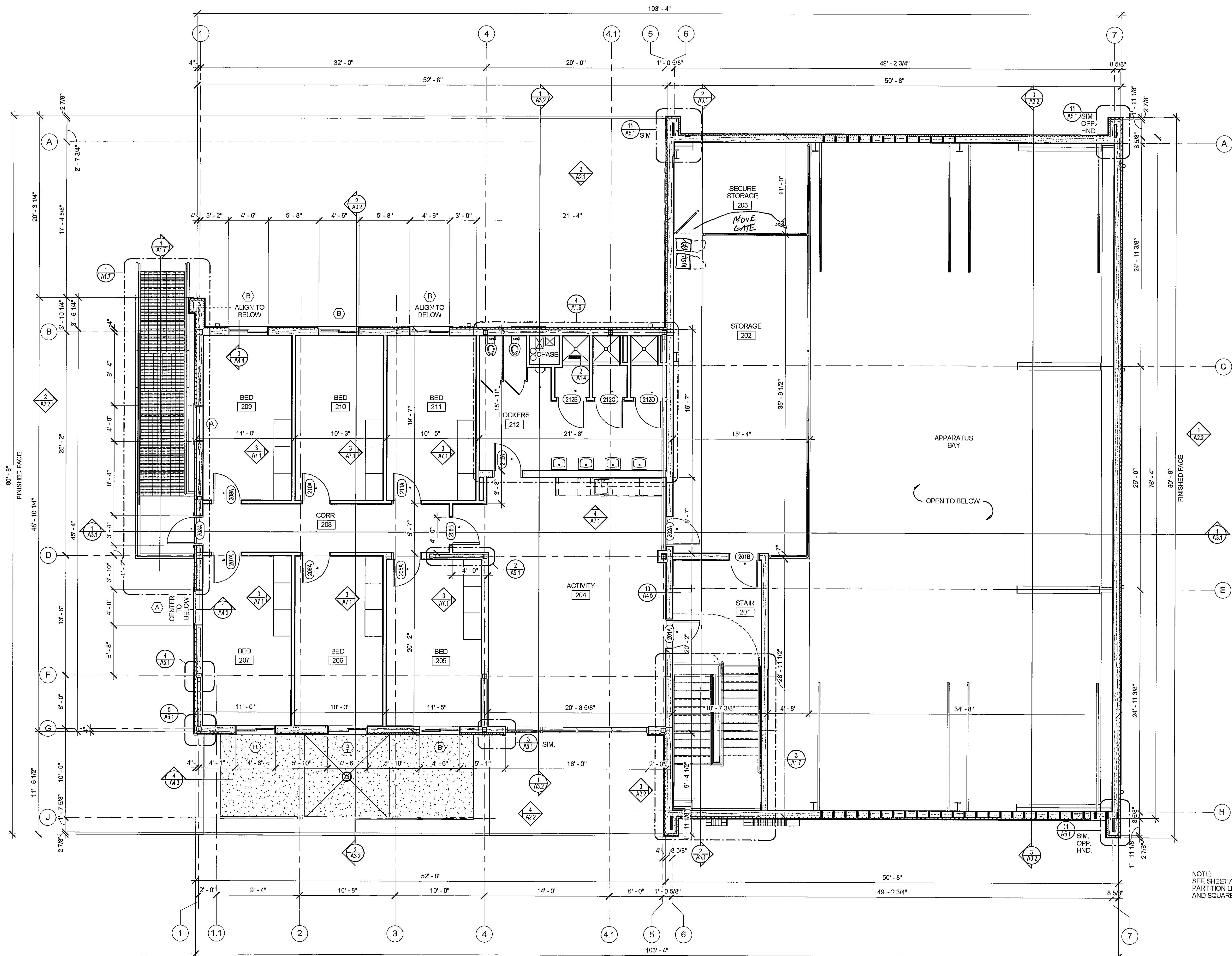
PROJECT
FIRE STATION No. 9



CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707
SHEET NUMBER

A1.1



SECOND FLOOR/MEZZANINE PLAN - 1
3/16" = 1'-0"

NOTE:
SEE SHEET A1.1 FOR GENERAL NOTES,
PARTITION LEGEND, DRATING LEGEND
AND SQUARE FOOTAGE SUMMARY

DRAWN	SG/CES
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

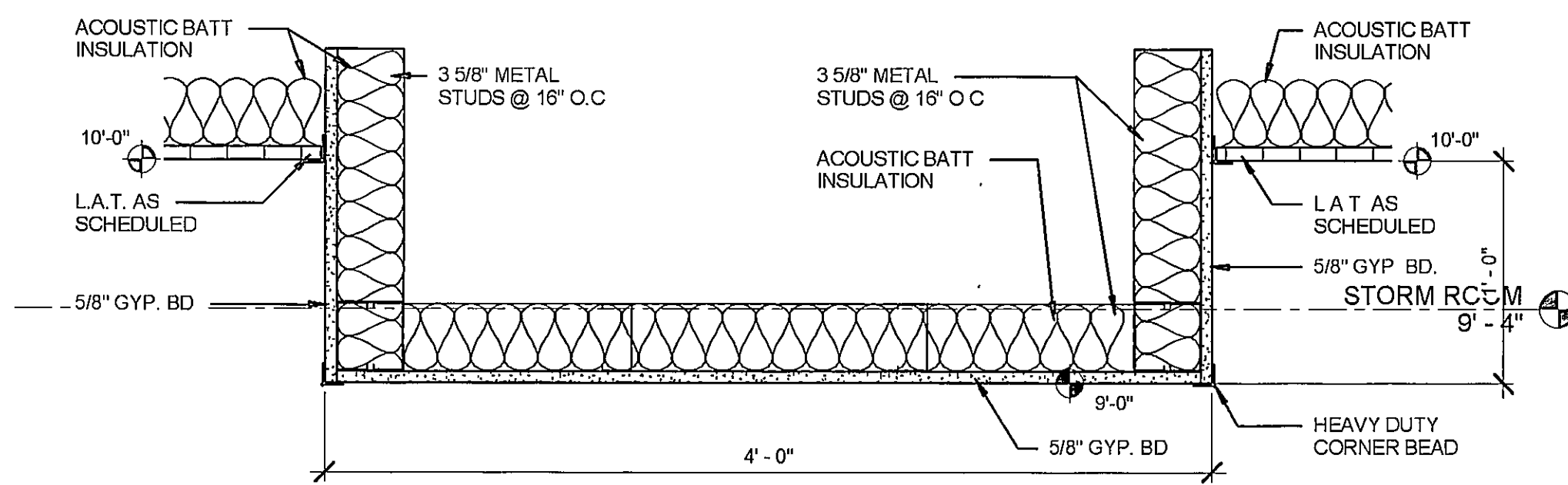
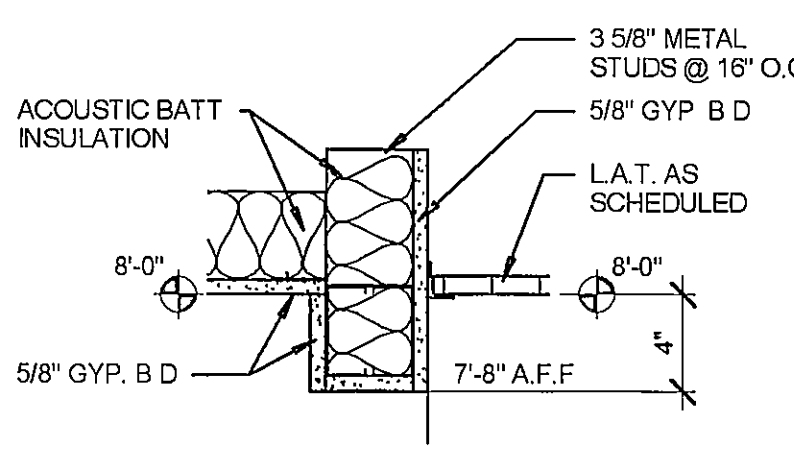
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SECOND FLOOR / MEZZANINE PLAN

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FIRE STATION No. 9
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HATTIESBURG, MS

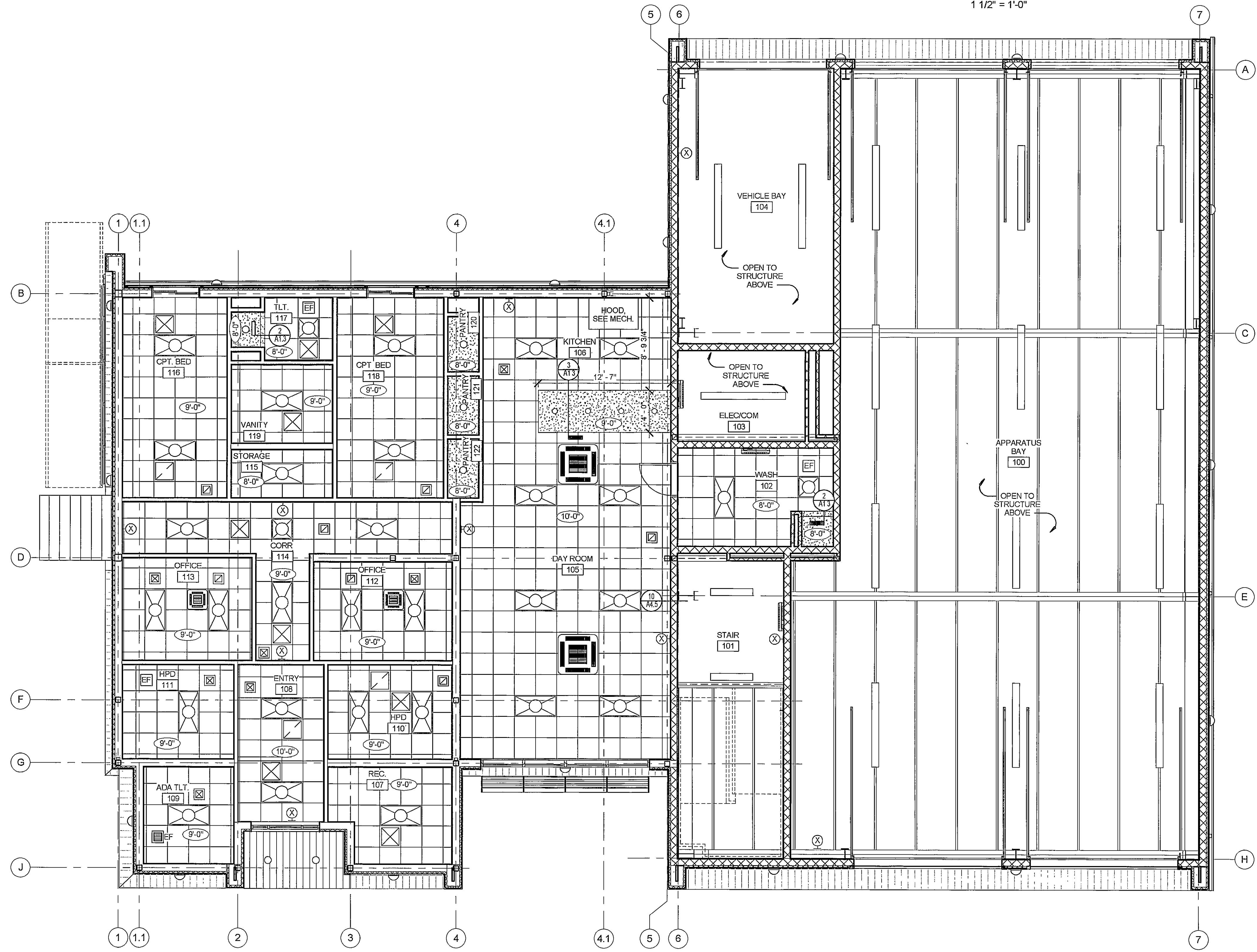


CN18-3707
SHEET NUMBER
A1.2



FURRING DETAIL - 2
1 1/2" = 1'-0"

FURRING DETAIL - 3
1 1/2" = 1'-0"



N
FIRST FLOOR REFLECTED CEILING PLAN - 1
3/16" = 1'-0"

REFLECTED CEILING PLAN LEGEND

	EXTERIOR LIGHT SEE ELEC.
	EXIT LIGHT SEE ELEC.
	DOWN LIGHT - SEE ELEC.
	2'X2' LIGHT - SEE MECH.
	2'X4' LIGHT SEE ELEC.
	SUSPENDED OR FLUSH MOUNT LIGHT SEE ELEC.
	WALL MOUNTED LIGHT - SEE ELEC.
	12'X12' RETURN - SEE MECH.
	2'X2' RETURN - SEE MECH.
	12'X12' SUPPLY GRILLE - SEE MECH.
	2'X2' SUPPLY GRILLE - SEE MECH.
	CEILING CASSETTE - SEE MECH.
	WALL MNTD A/C UNIT - SEE MECH.
	SUSPENDED HEATER UNIT - SEE MECH.
	GYP. BD. CEILING
	2'X2' LAY IN ACOUSTIC TILE
	PRE-FINISHED SMOOTH FACED METAL SOFFIT PANELS

DRAWN	SG/CES
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV. #	REV. DATE

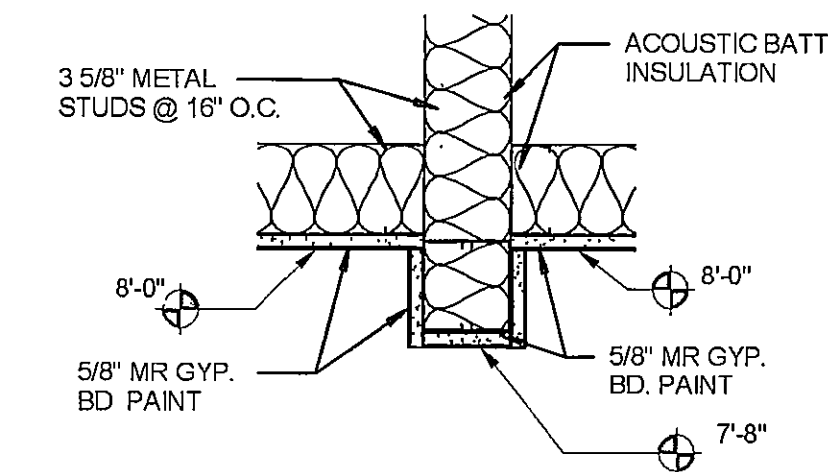
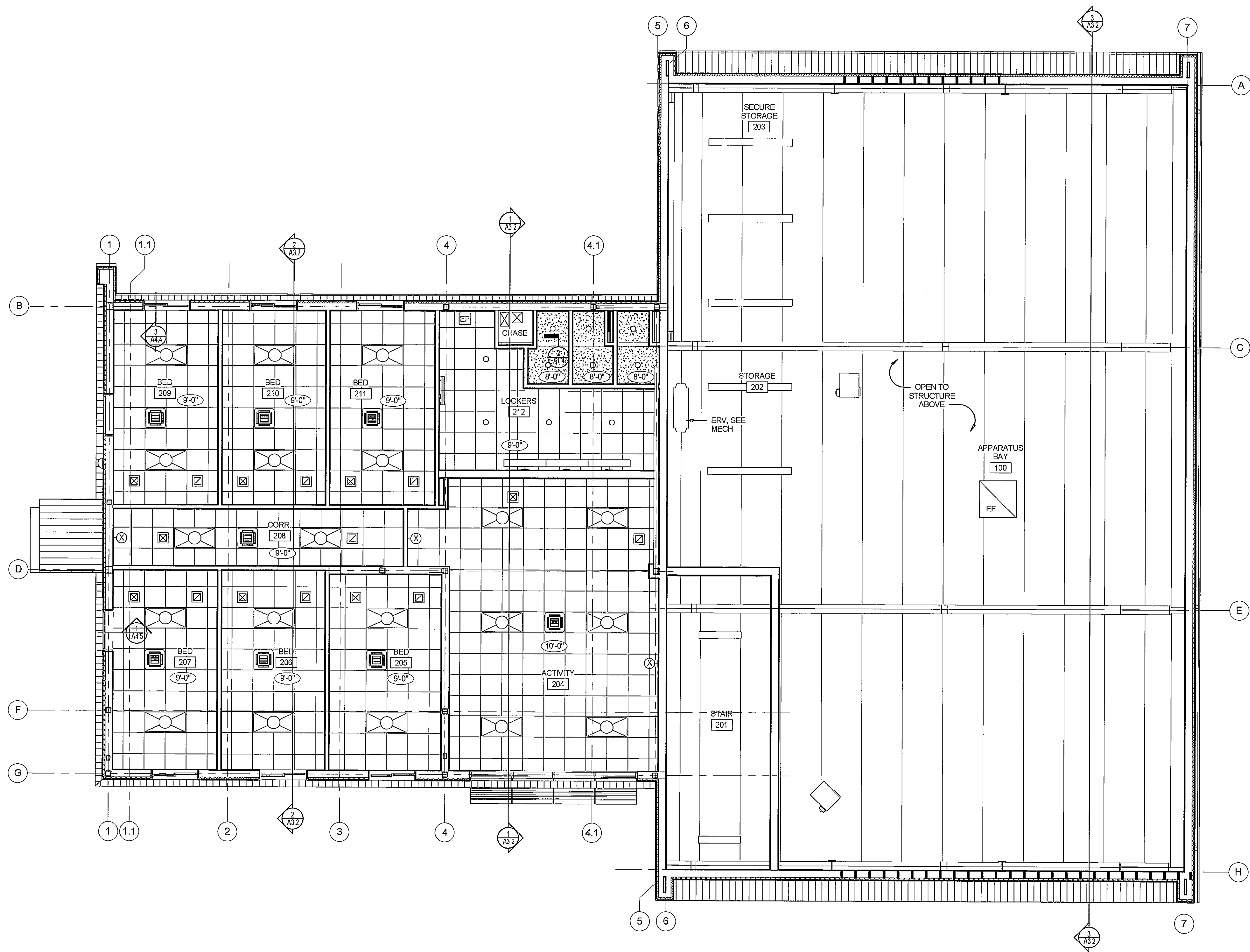
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SHEET TITLE
FIRST FLOOR REFLECTED CEILING
PLAN

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER
A1.3



DETAIL @ SHOWER FURRING - 2
1 1/2" = 1'-0"

REFLECTED CEILING PLAN LEGEND

	EXTERIOR LIGHT SEE ELEC
	EXIT LIGHT SEE ELEC.
	DOWN LIGHT - SEE ELEC
	2'X2' LIGHT - SEE MECH
	2'X4' LIGHT SEE ELEC.
	SUSPENDED OR FLUSH MOUNT LIGHT SEE ELEC.
	WALL MOUNTED LIGHT - SEE ELEC.
	12'X12' RETURN - SEE MECH
	2'X2' RETURN - SEE MECH
	12'X12' SUPPLY GRILLE - SEE MECH.
	2'X2' SUPPLY GRILLE - SEE MECH.
	CEILING CASSETTE - SEE MECH.
	WALL MNTD A/C UNIT - SEE MECH.
	SUSPENDED HEATER UNIT- SEE MECH.
	GYP. BD. CEILING
	2'X2' LAY IN ACOUSTIC TILE
	PRE-FINISHED SMOOTH FACED METAL SOFFIT PANELS

SECOND FLOOR REFLECTED CEILING PLAN - 1
3/16" = 1'-0"

DRAWN SG/CES	
CHECKED JKL	
FINAL DATE Nov. 22, 2019	
REVISION SCHEDULE	
REV #	REV DATE

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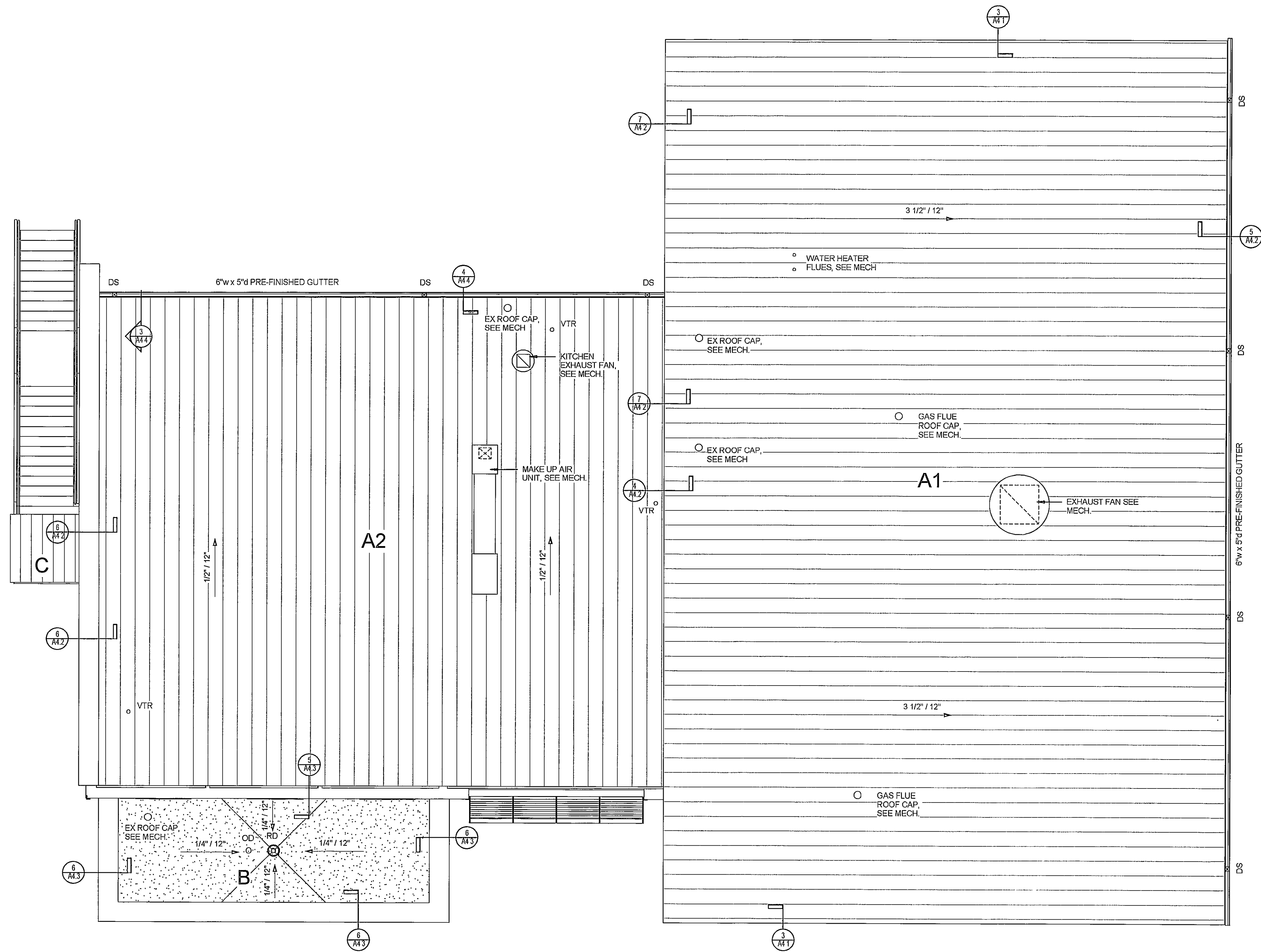
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SECOND FLOOR REFLECTED CEILING PLAN

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER

A1.4



ROOF PLAN - 1
3/16" = 1'-0"

ROOF NOMENCLATURE SCHEDULE

A1 / A2

- 1. METAL ROOF PANELS MECHANICALLY FASTENED WITH CLIPS
- 2. SLIP SHEET (SEE MANUFACTURERS REQUIREMENTS)
- 3. FULLY ADHERED WATER PROOFING MEMBRANE, SEE SPECS.
- 4. INSULATION AND DECKING AS SHOWN IN WALL SECTIONS
- 5. SEE ROOF PLAN FOR SLOPES

B

- 1. (TPO) SINGLE PLY ROOF SYSTEM WITH HOT AIR WELDED SEAMS
- 2. SLIP SHEET (SEE MANUFACTURERS REQUIREMENTS)
- 3. TAPERED INSULATION MIN. 1 1/2" @ ROOF DRAIN
- 4. METAL DECKING, SEE STRUCTURAL
- 5. SEE ROOF PLAN FOR SLOPES

C

- 1. METAL CANOPY WITH TENSION ROD AND CLEVIS ENDS - DESIGN BY CANOPY MANUFACTURER.

ROOF NOTES

- 1. INSTALL MECHANICAL CURBS, EQUIPMENT CURBS, EXPANSION JOINTS, TREATED WOOD BLOCKING, ETC. AS RECOMMENDED BY ROOFING MANUFACTURER TO ENSURE A WATER TIGHT SEAL OF ROOF AND IN COMPLIANCE WITH MANUFACTURER'S GUIDELINES TO ACHIEVE SPECIFIED WARRANTIES.
- 2. DIMENSIONS, DETAILS, EQUIPMENT SIZE AND LOCATION SHOWN IN THESE DOCUMENTS ARE FOR INFORMATION AND REFERENCE ONLY. EXACT SIZE, LOCATION, TYPE OF MATERIAL AND TYPE OF CONSTRUCTION ARE THE RESPONSIBILITY OF THE CONTRACTOR TO CONFIRM. CONTRACTOR TO PROVIDE ROOF MANUFACTURER SHOP DRAWINGS.
- 3. ALL CRICKETS AND TAPERED INSULATION SHALL BE INSTALLED WITH A FINISHED 1/4" PER FOOT MIN. SLOPE.
- 4. CRICKET THE UP SLOPE SIDE OF ALL CURBS AND SQUARE PROJECTIONS.
- 5. REFER TO ROOF SCHEDULE FOR TYPE OF ROOF SYSTEM. AREAS ARE MARKED WITH DESIGNATED LETTER, SEE ROOF PLAN.
- 6. REFER TO MEP DRAWINGS FOR SIZE AND LOCATION OF ADDITIONAL DECK PENETRATIONS.
- 7. REFER TO GENERAL DETAILS FOR TYPICAL ROOF DRAIN AND OVERFLOW DRAIN DETAILS.
- 8. OVERFLOW ROOF DRAINS TO BE LOCATED MAX 2'-0" FROM ROOF DRAIN, AND A MAX 2" ABOVE ROOF DRAIN OPENING.
- 9. BASE FLASHING MIN. HEIGHT 10" AND MAX. HEIGHT 20" FROM FINISH DECK.

- DS 5" x 4" d PRE-FINISHED METAL DOWNSPOUT WITH WALL MOUNTING BRACKETS AT TOP CENTER AND BOTTOM. TIE TO UNDERGROUND COLLECTION SYSTEM, SEE CIVIL.
- OD OVERFLOW DRAIN WITH LAMBS TONGUE TERMINATION - SEE PLUMBING
- RD ROOF DRAIN, SEE PLUMBING

ROOF DESIGN CRITERIA

ASCE 7-CURRENT
MINIMUM DESIGN LOADS AND ASSOCIATED CRITERIA
FOR BUILDINGS AND OTHER STRUCTURES.

RISK CATEGORY II
SEE STRUCTURE FOR WIND LOADING NOTES:

ALL EDGE CONDITIONS TO SHALL MEET
ANSI/SPRI ES-1 CURRENT

ANSI/SPRI ED-1 CURRENT

DRAWN	GGA
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

LANDRY
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SHEET TITLE
ROOF PLAN

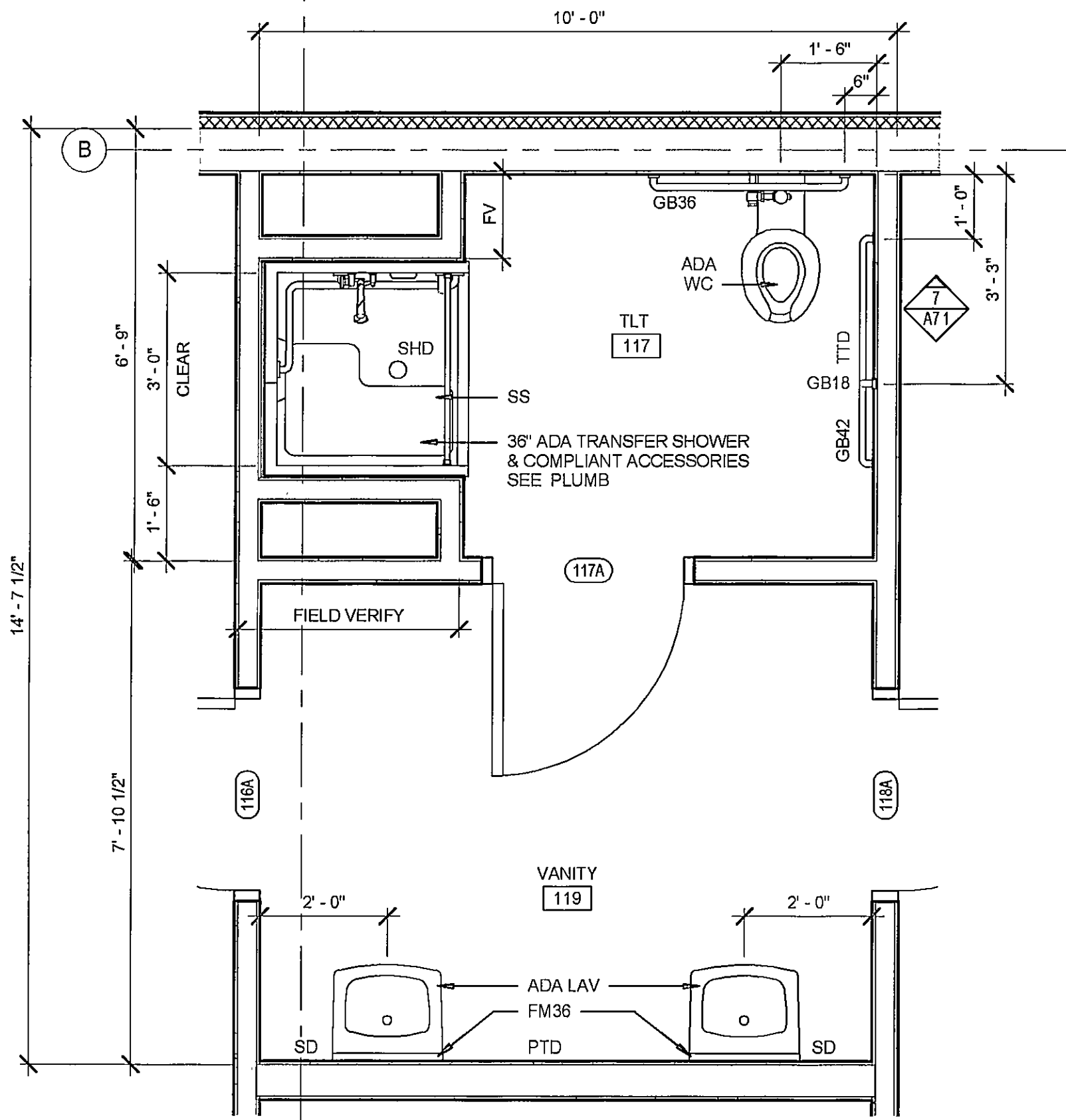
PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

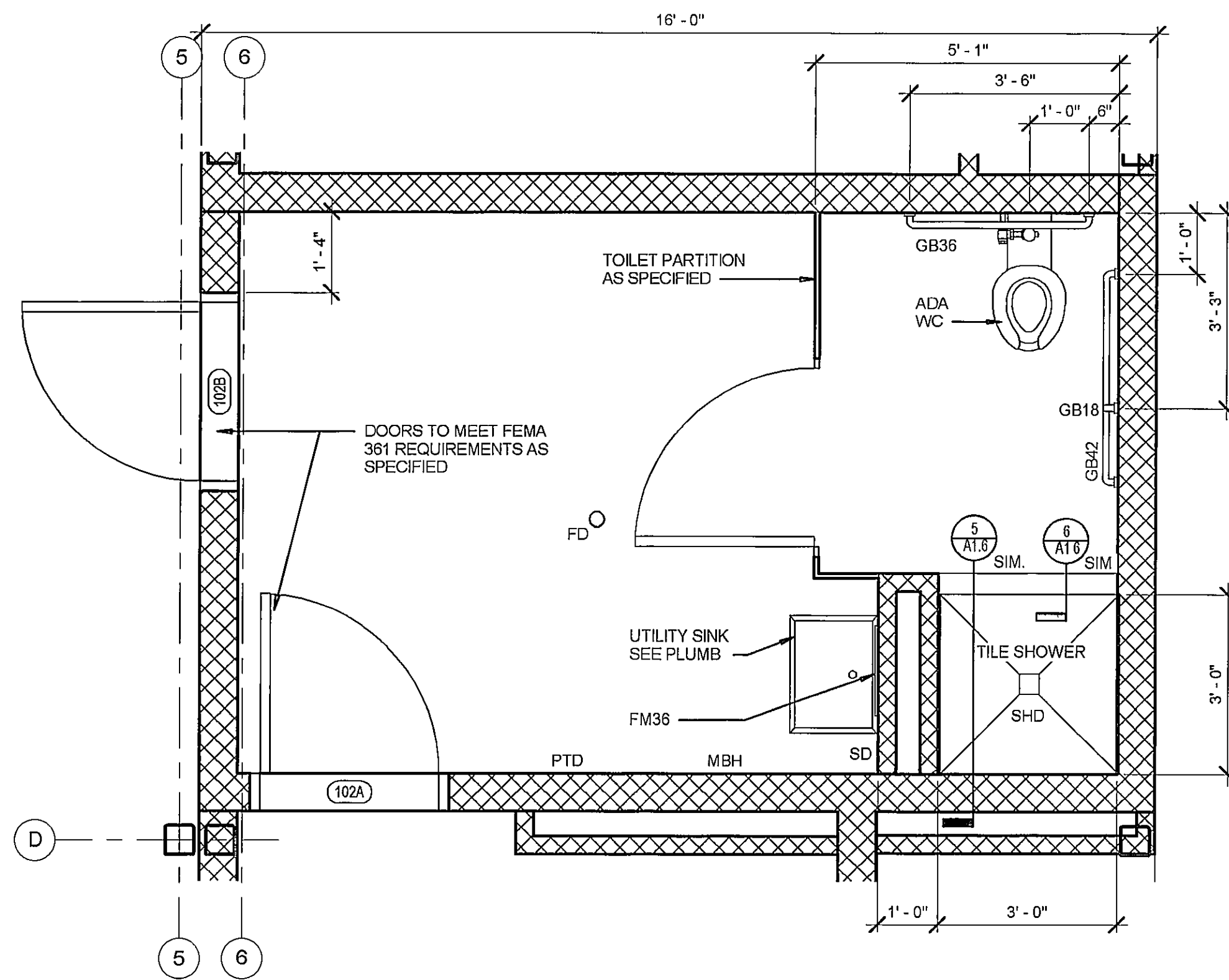


CN18-3707
SHEET NUMBER

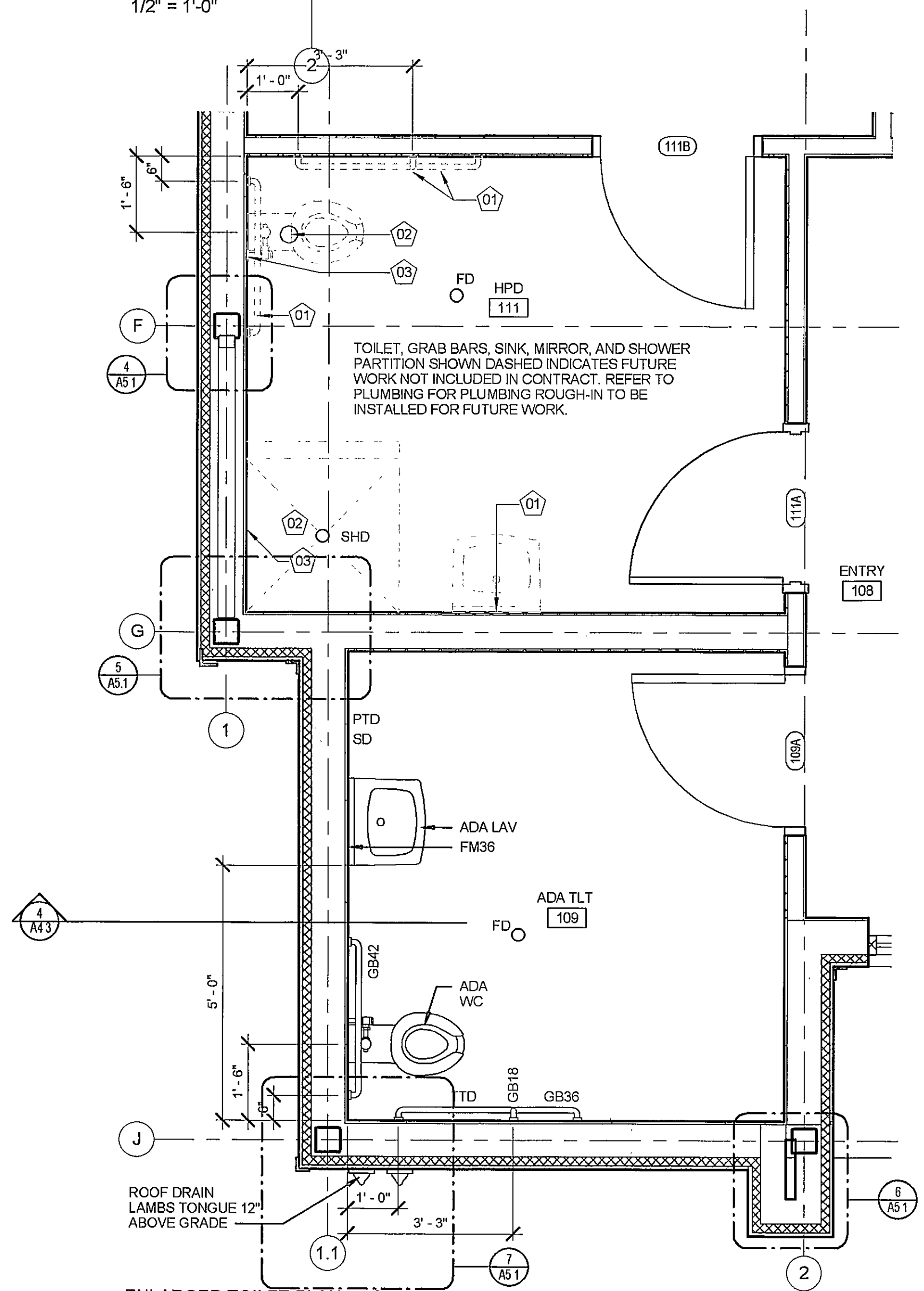
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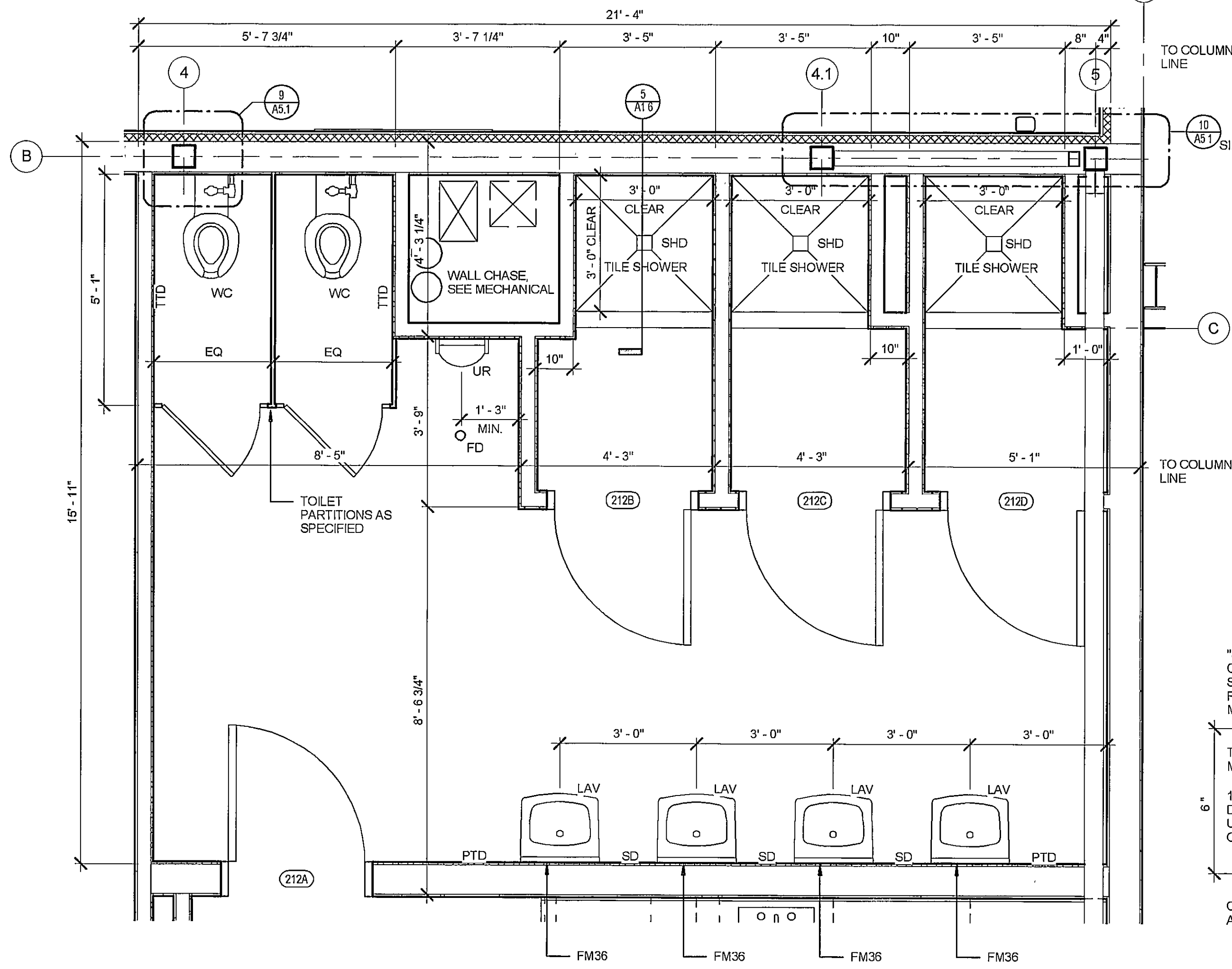
ENLARGED TOILET PLAN - 1
1/2" = 1'-0"



ENLARGED TOILET PLAN - 2
1/2" = 1'-0"



ENLARGED TOILET PLAN - 3
1/2" = 1'-0"



ENLARGED TOILET PLAN - 4
1/2" = 1'-0"

KEYED WORK NOTES:

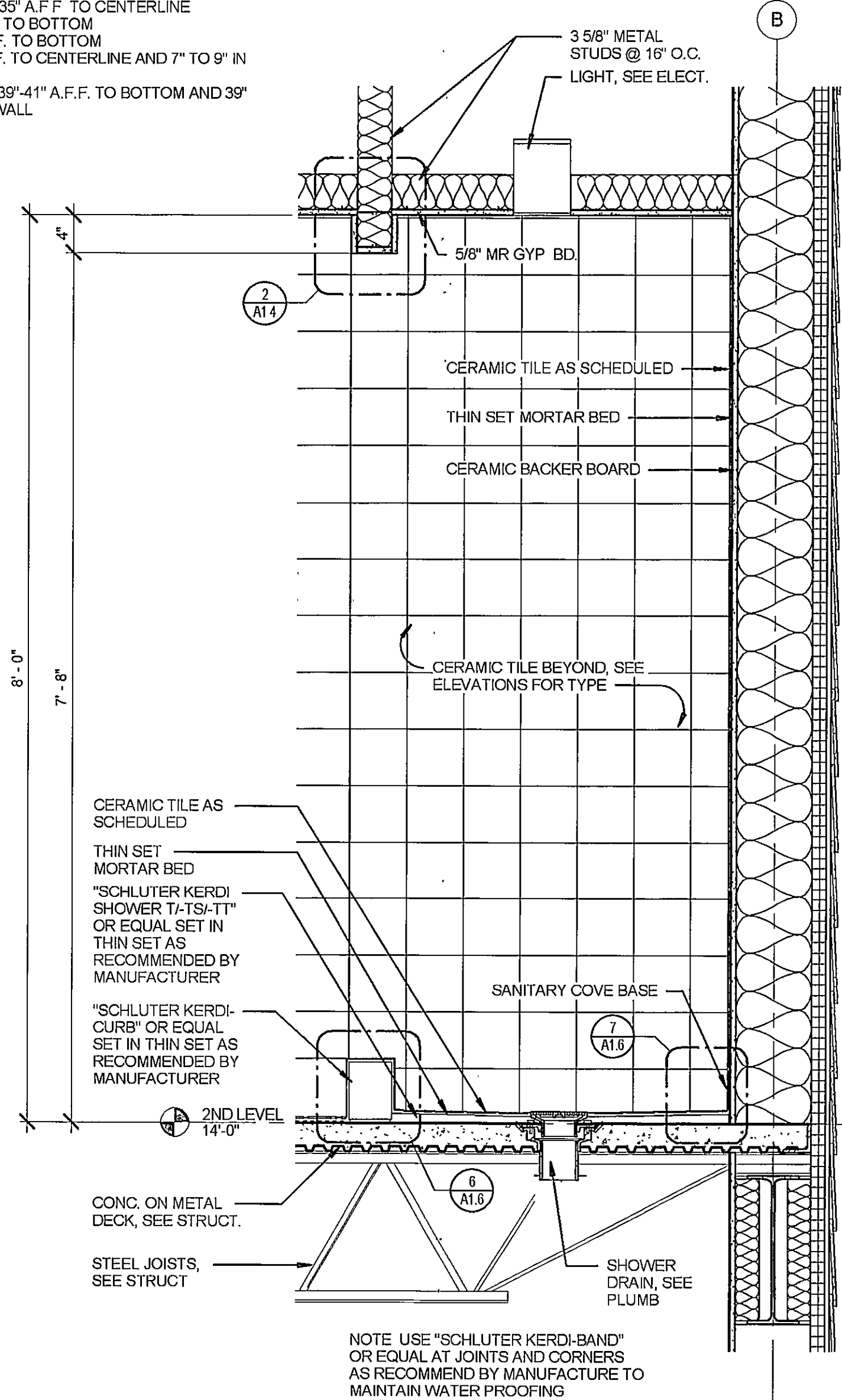
- 01 INSTALL BLOCKING AS REQUIRED FOR FUTURE GRAB BARS, WALL MOUNTED LAVATORY, AND MIRROR TO BE INSTALLED BY OTHERS.
- 02 COORDINATE AND INSTALL SANITARY LINE COVER PLATE FLUSH WITH FLOOR FINISH
- 03 COORDINATE AND INSTALL DOMESTIC WATER SUPPLY COVER PLATES FLUSH WITH WALL FINISH

TOILET PLAN NOTES:

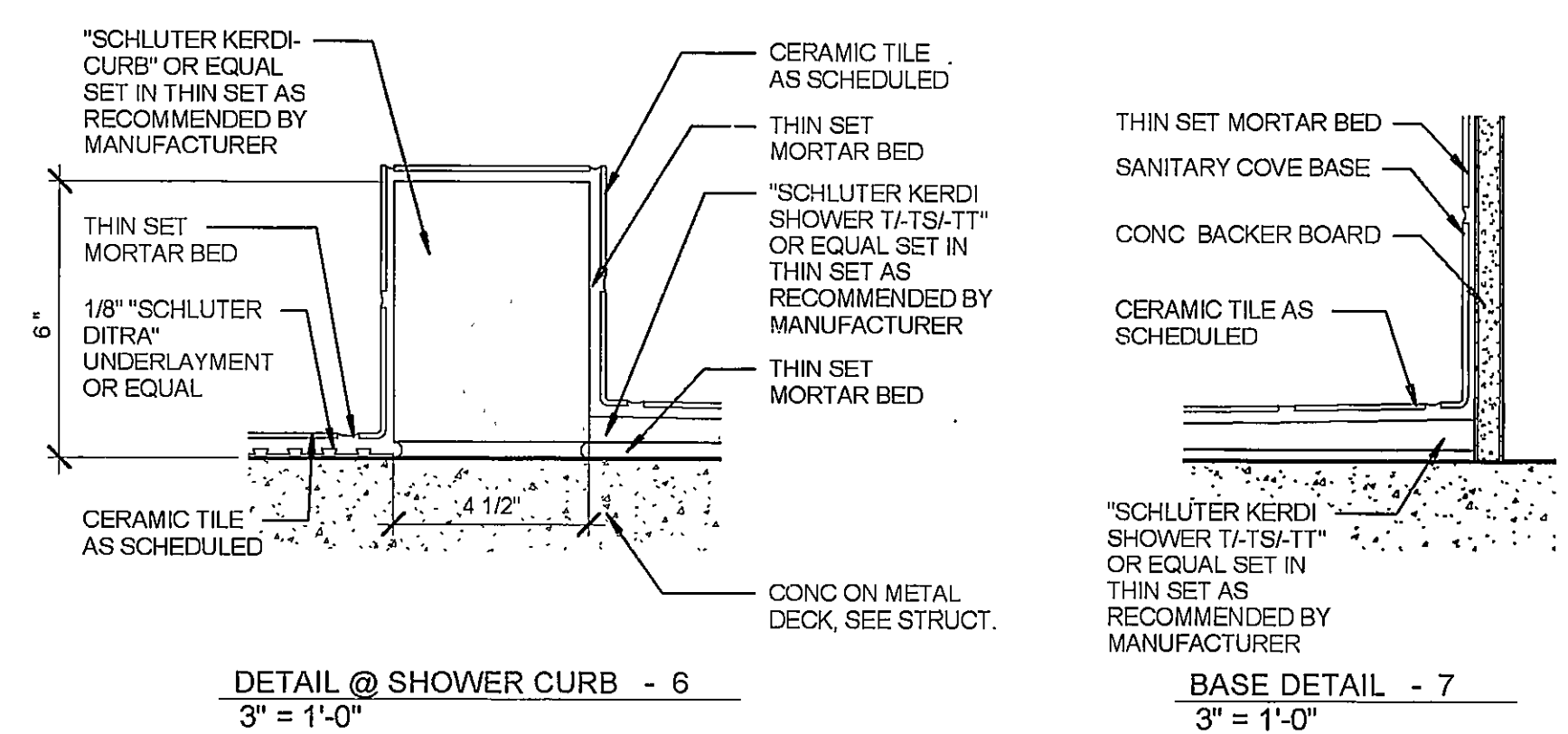
- 1. TOILET ACCESSORY LOCATIONS AND FIXTURE CENTERLINES ARE DIMENSIONED RELATIVE TO FINISHED FACE OF WALL AS SHOWN
- 2. CONTRACTOR TO PROVIDE BLOCKING FOR ALL WALL MOUNTED ACCESSORIES WHERE INDICATED AND COORDINATE TRADES AS REQUIRED.
- 3. CONTRACTOR SHALL COORDINATE ROUGH OPENING SIZES FOR BUILT-IN SHOWER UNITS AND ADJUST FRAMING AS REQUIRED AT CONTROL SIDE PARTITION
- 4. MOUNT GRAB BARS 35\"/>

TOILET ACCESSORY ABBREVIATIONS

ADA	ADA ACCESSIBLE FIXTURE
WC	WATER CLOSET
GB	GRAB BAR (SIZE INDICATED ON PLAN)
LAV	LAVATORY
FM36	18X36\"/>



SECTION @ SHOWER - 5
1" = 1'-0"



DETAIL @ SHOWER CURB - 6
3" = 1'-0"

BASE DETAIL - 7
3" = 1'-0"

DRAWN
SG/CBS

CHECKED
JKL

FINAL DATE
Nov. 22, 2019

REVISION SCHEDULE

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ENLARGED TOILET PLANS

FIRE STATION No. 9

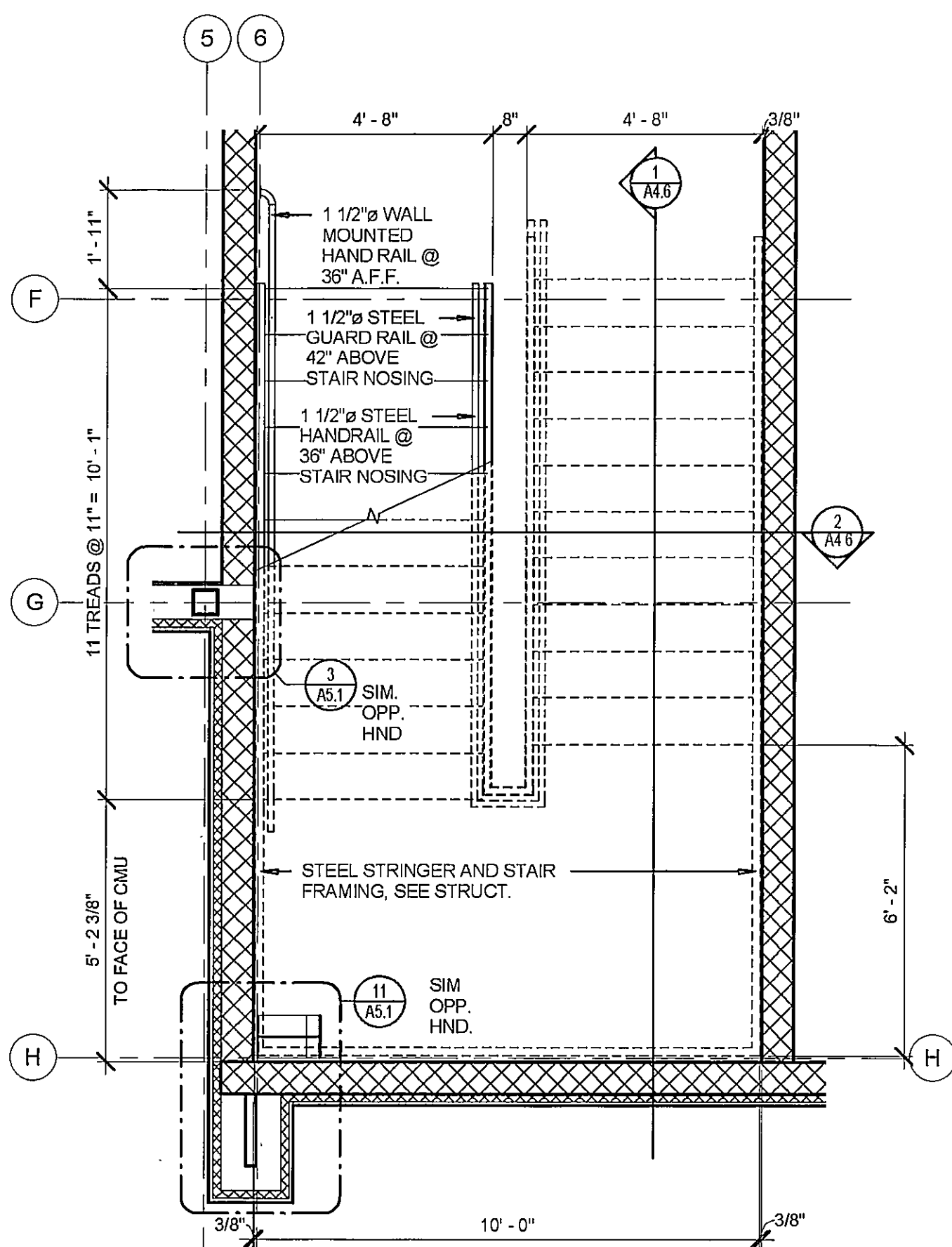
CITY OF HATTIESBURG, MS

PROJECT

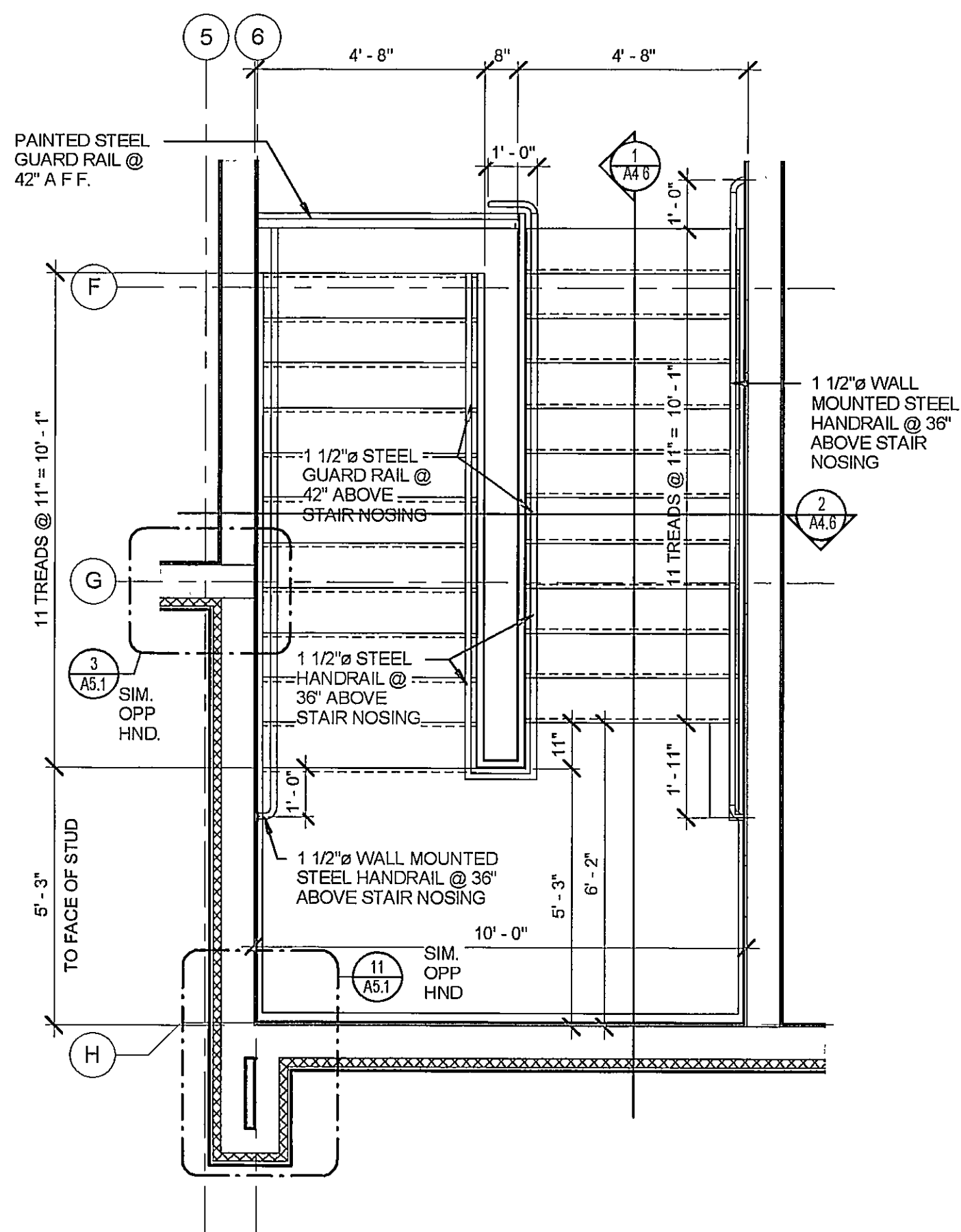
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SHEET NUMBER

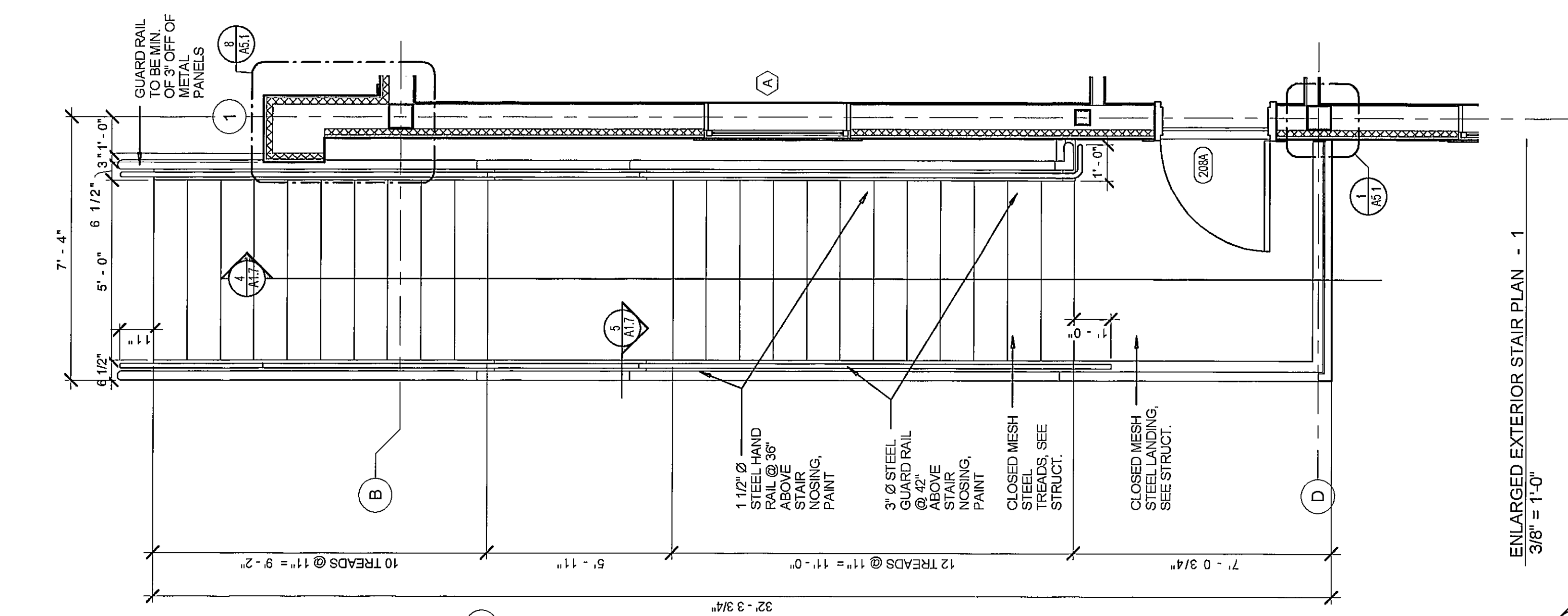
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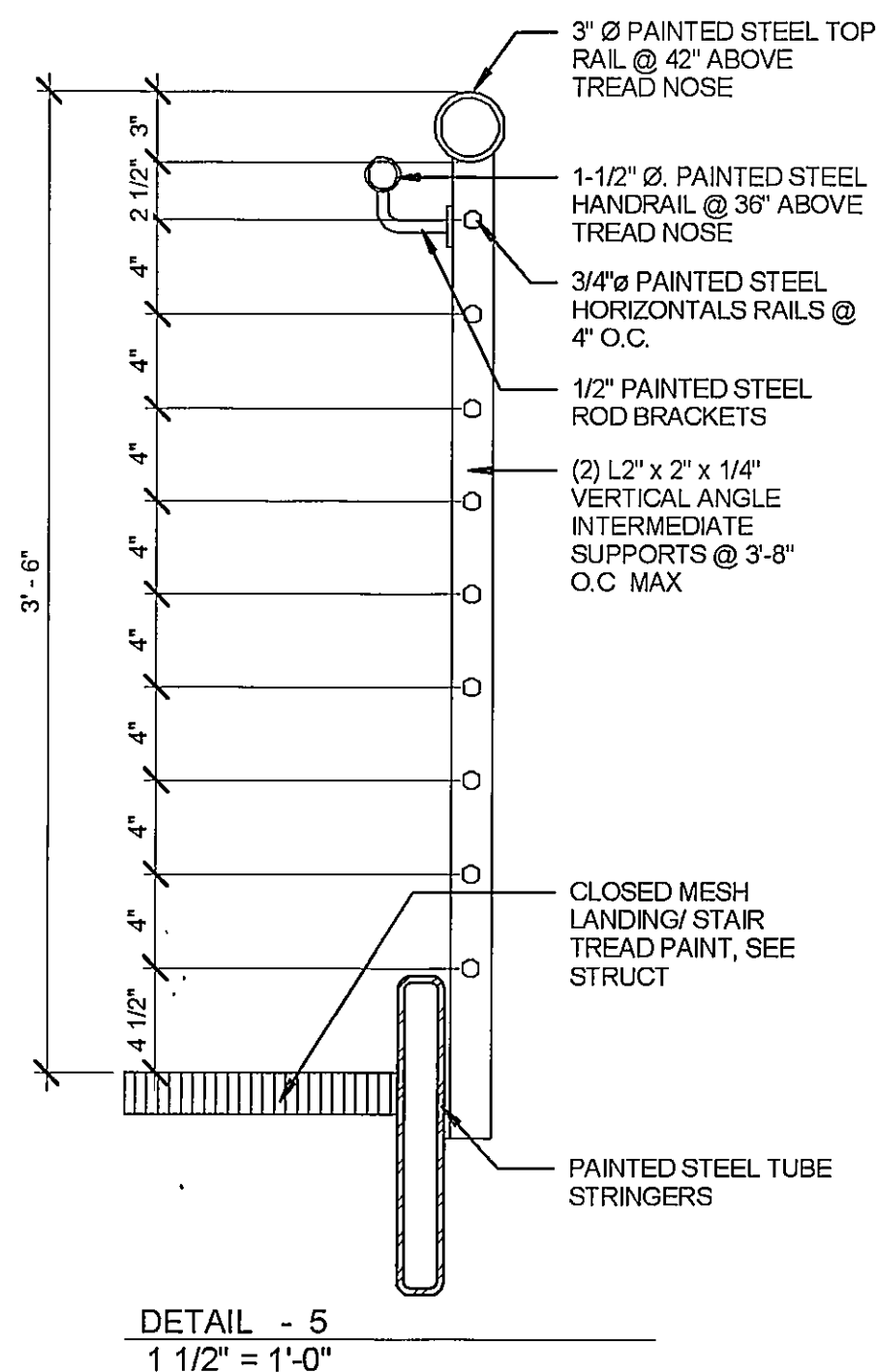
FIRST FLOOR ENLARGED STAIR - 2
3/8" = 1'-0"



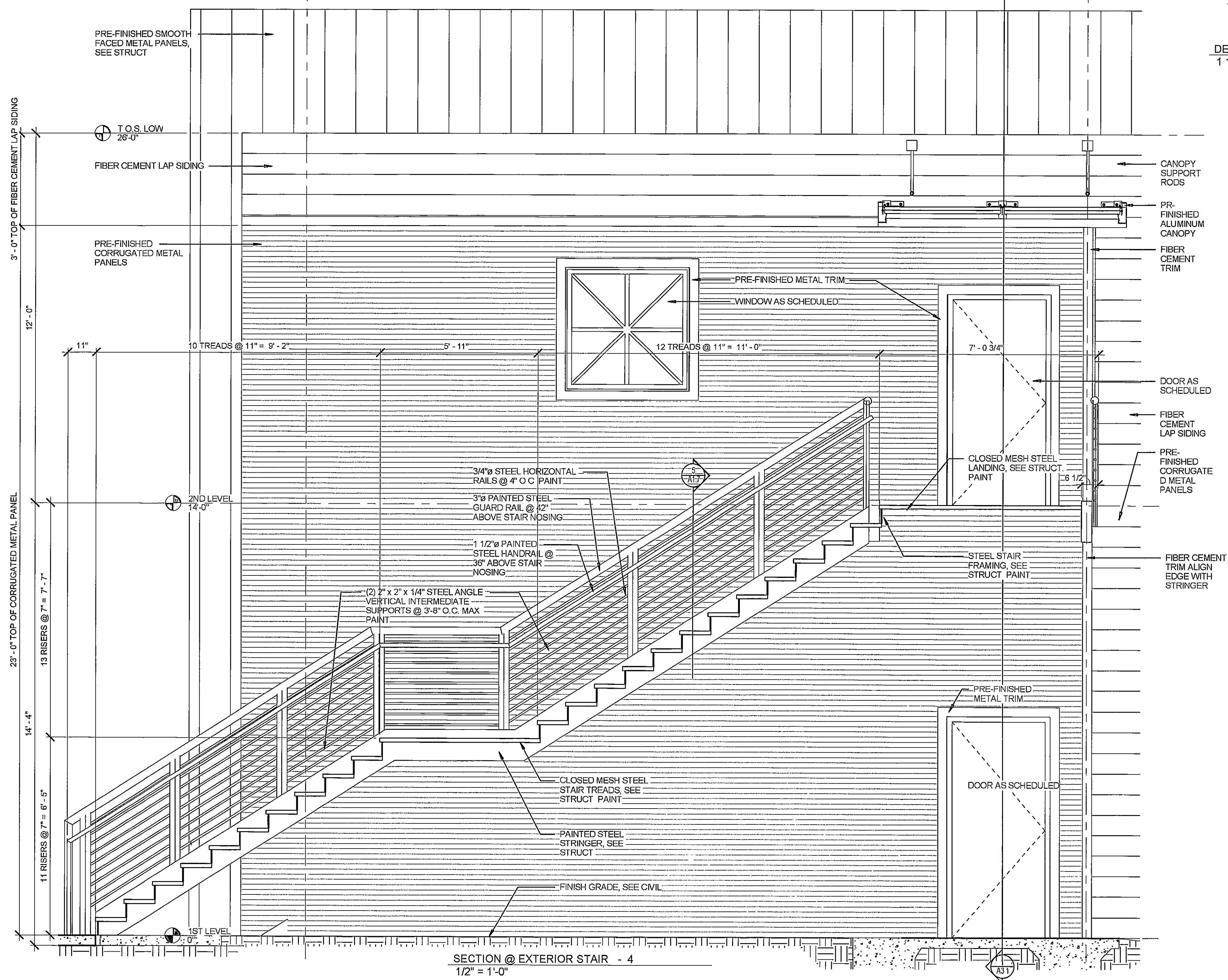
SECOND FLOOR ENLARGED STAIR - 3
3/8" = 1'-0"



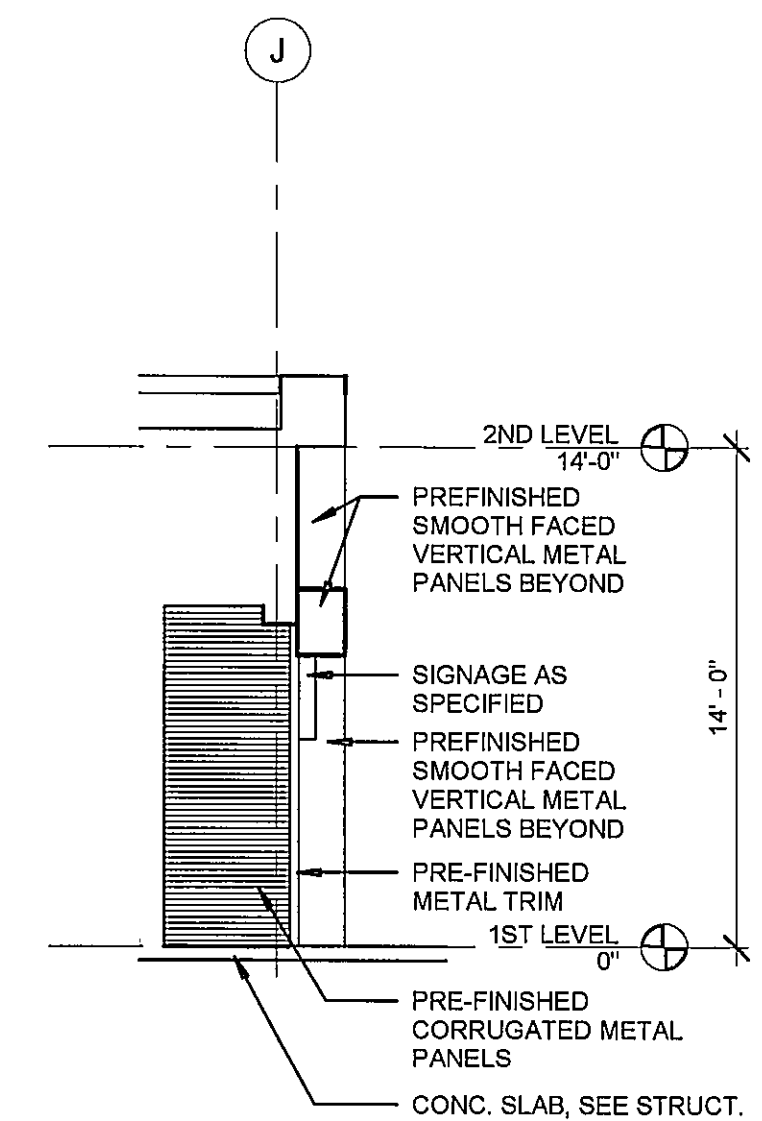
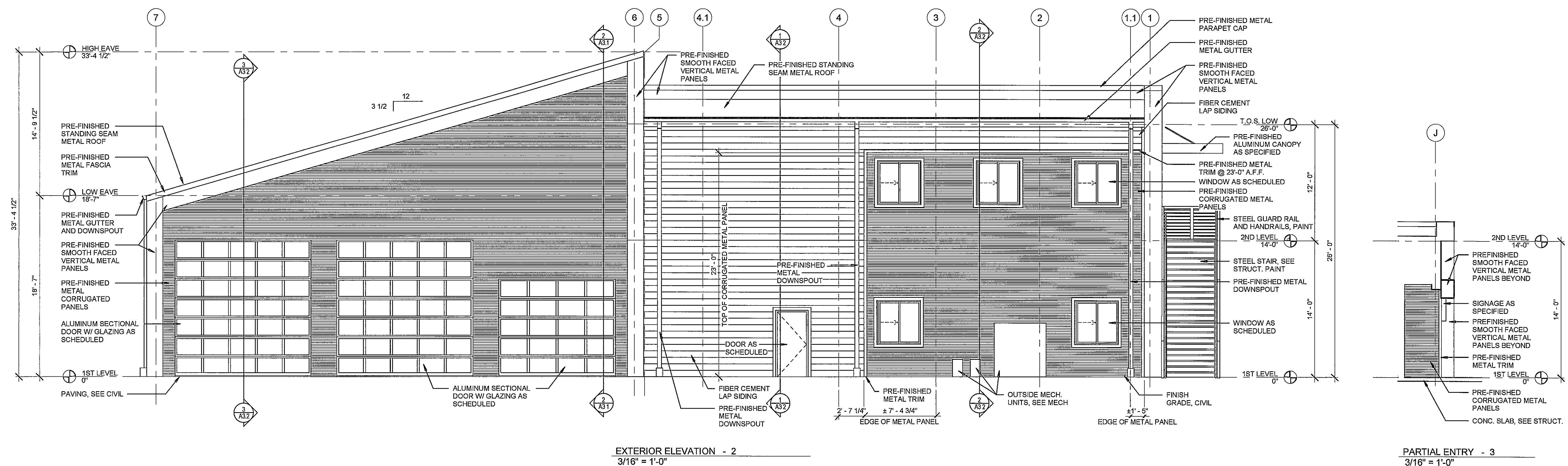
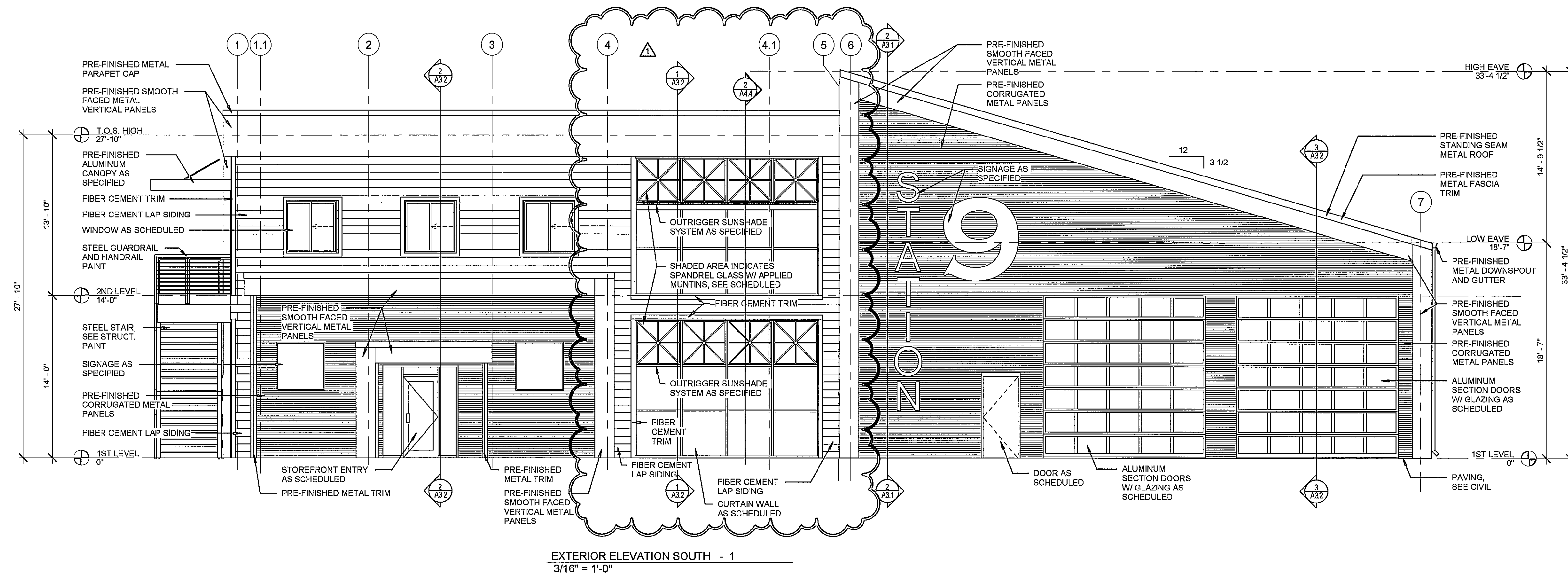
ENLARGED EXTERIOR STAIR PLAN - 1
3/8" = 1'-0"

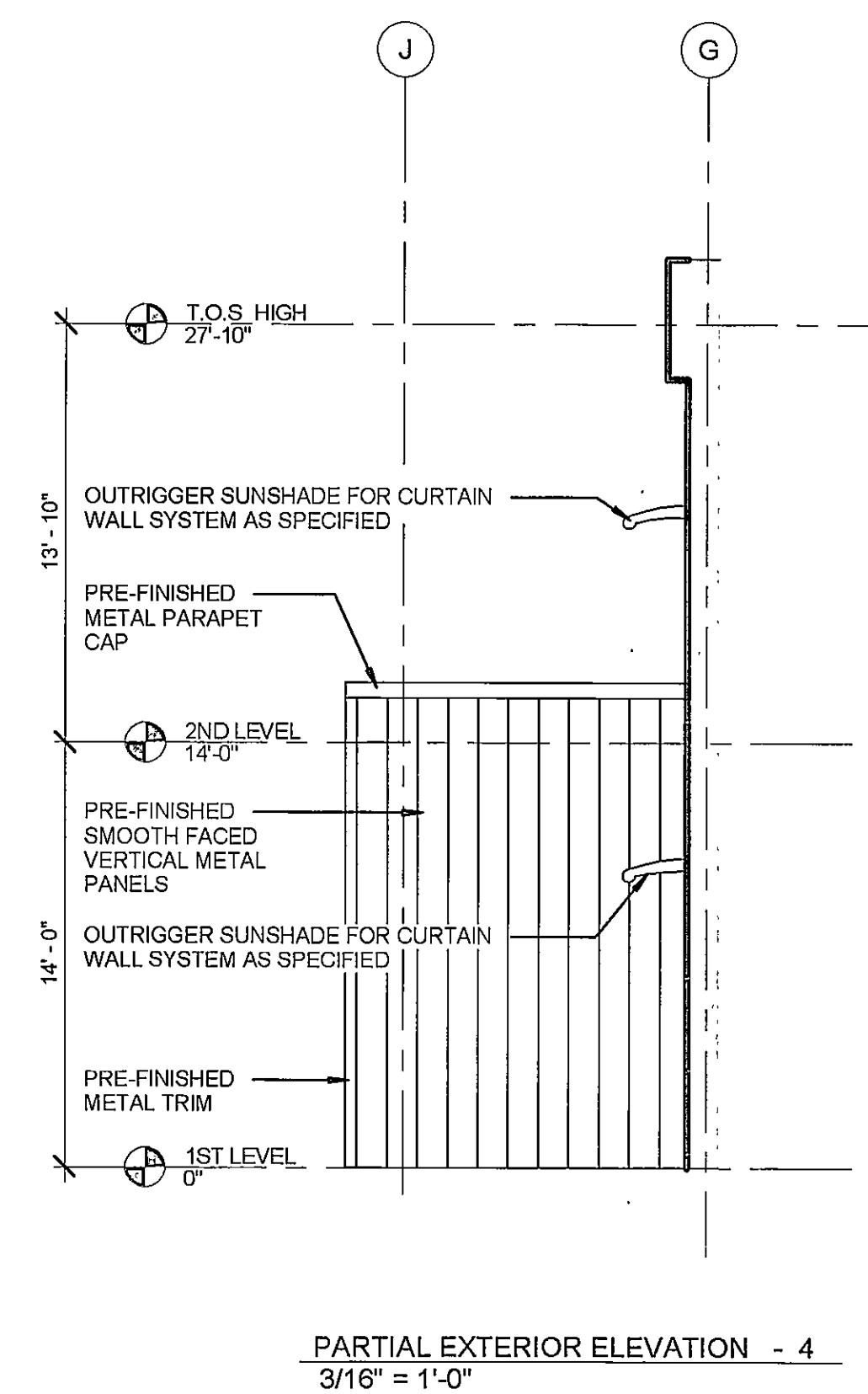
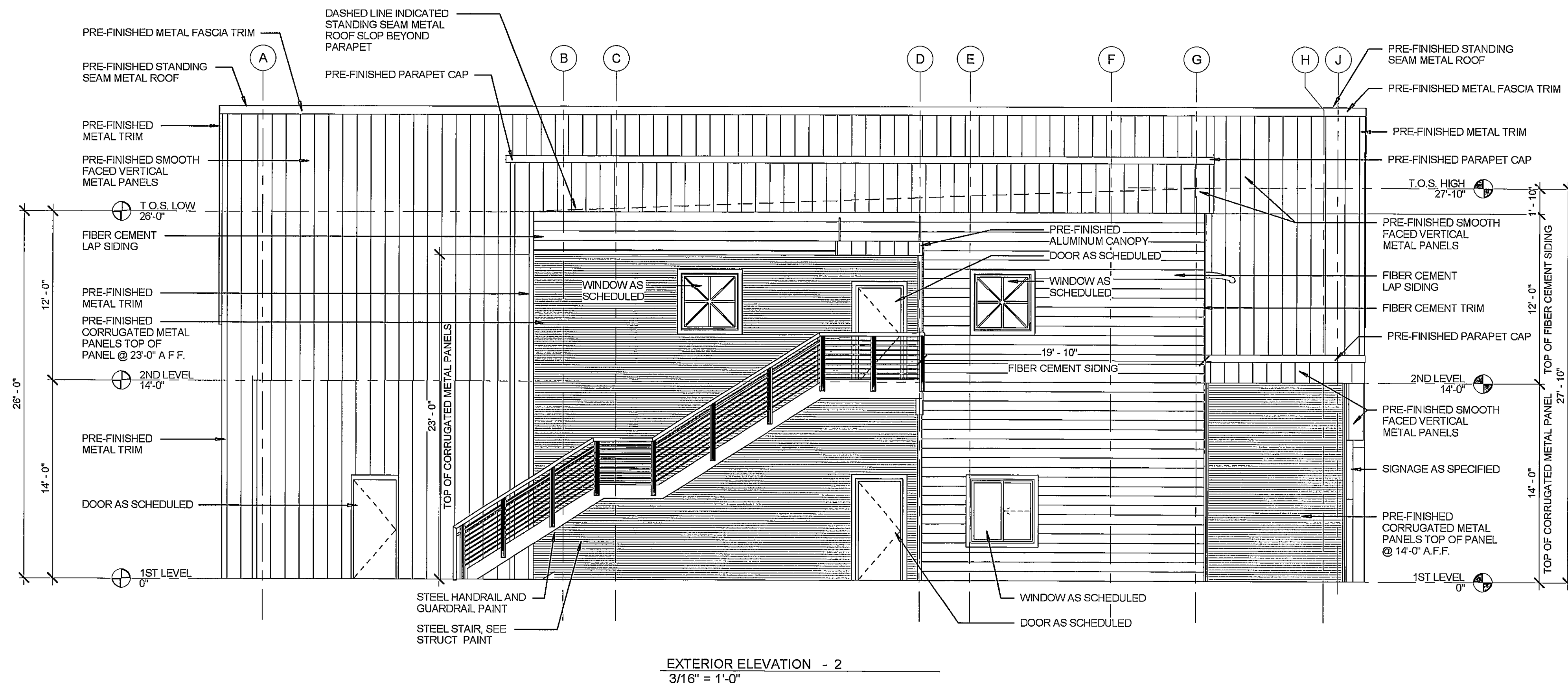
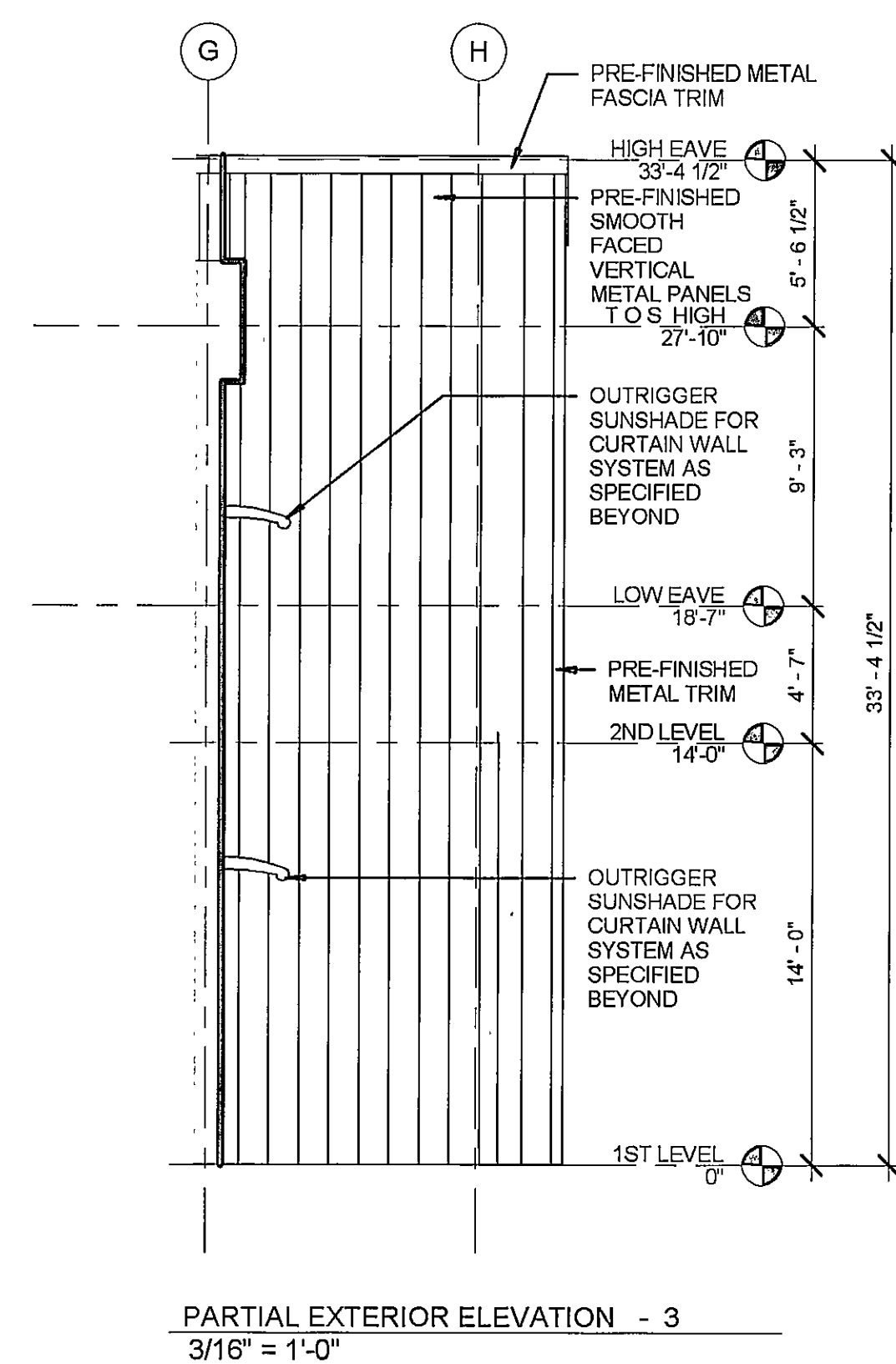
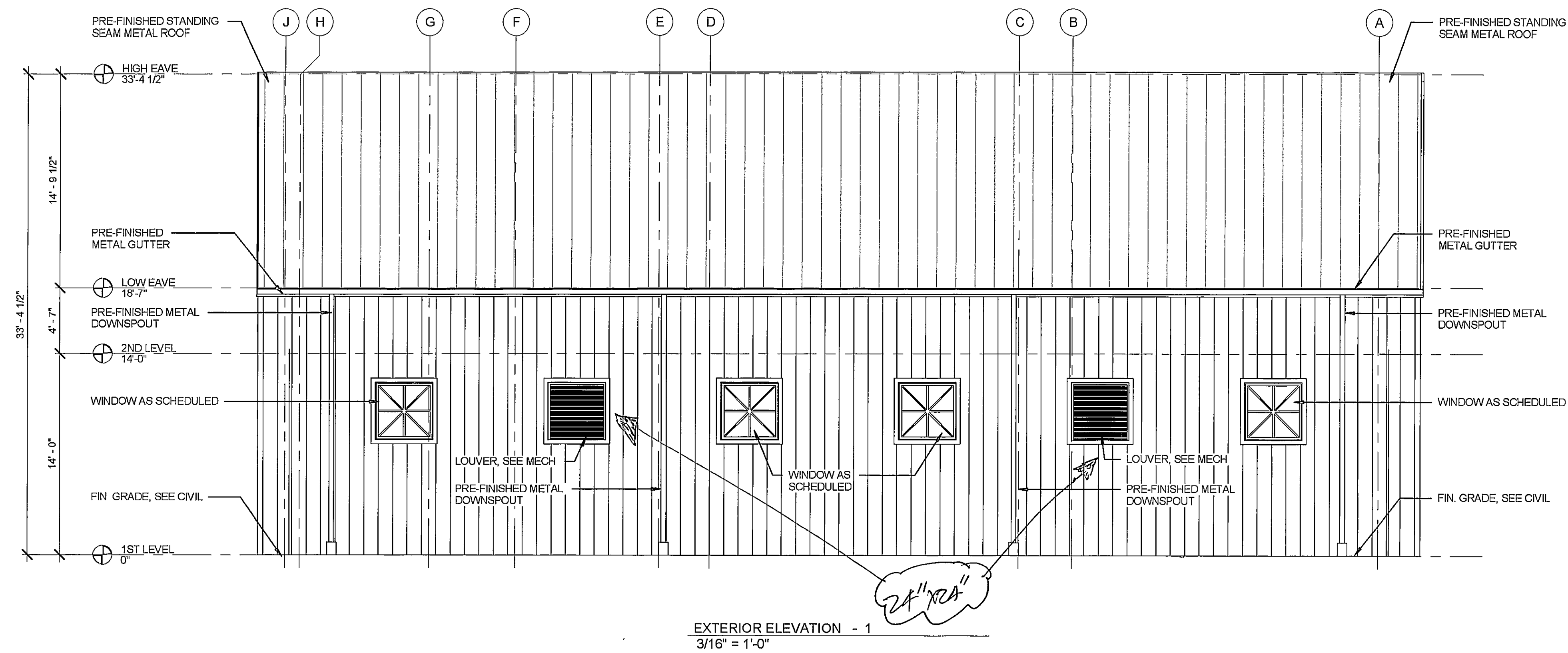


DETAIL - 5
1 1/2" = 1'-0"



SECTION @ EXTERIOR STAIR - 4
1/2" = 1'-0"





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CES

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JKL

FINAL DATE
Nov. 22, 2019

REVISION SCHEDULE

REV #	REV DATE

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SHEET TITLE
EXTERIOR ELEVATIONS

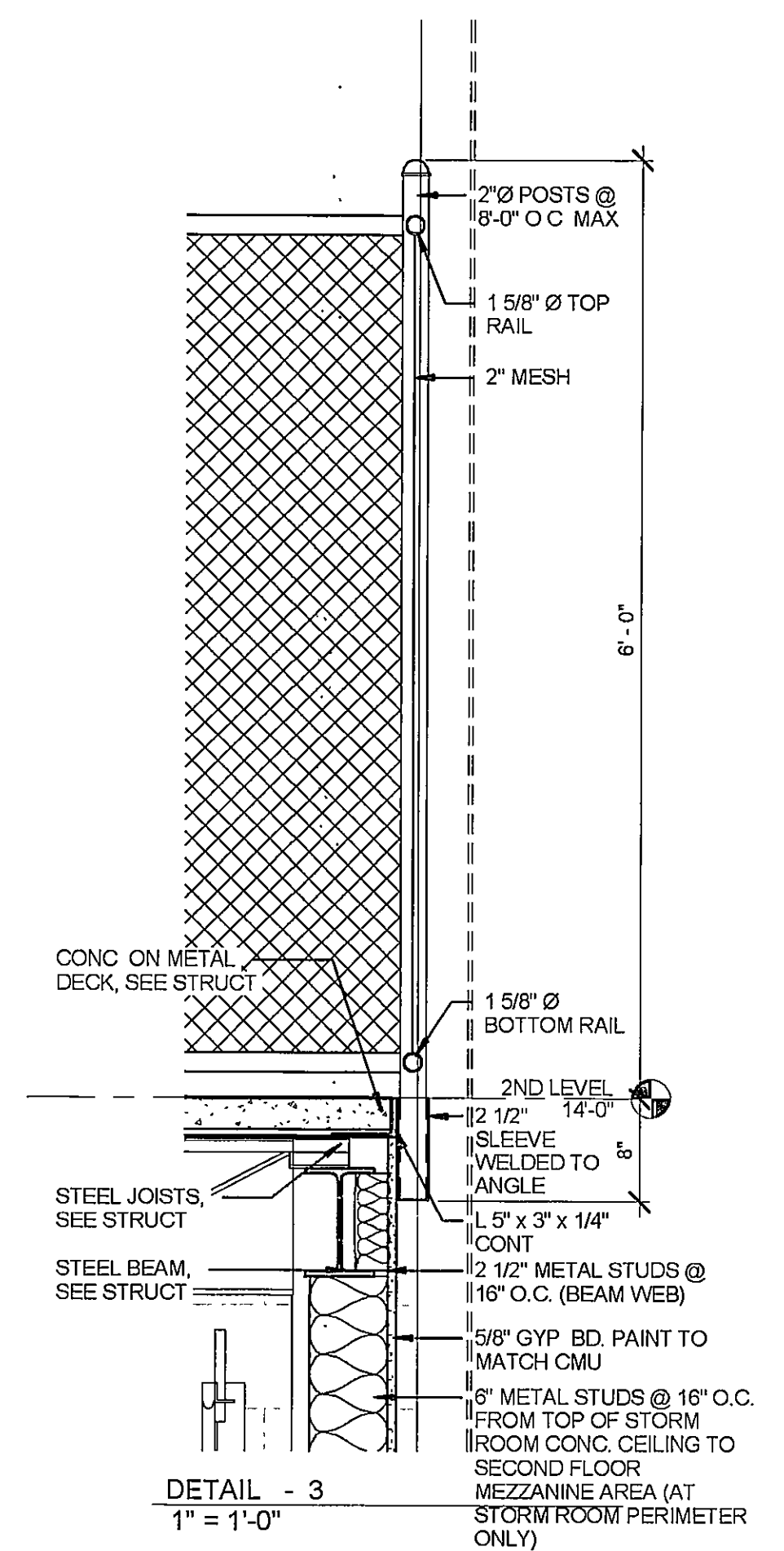
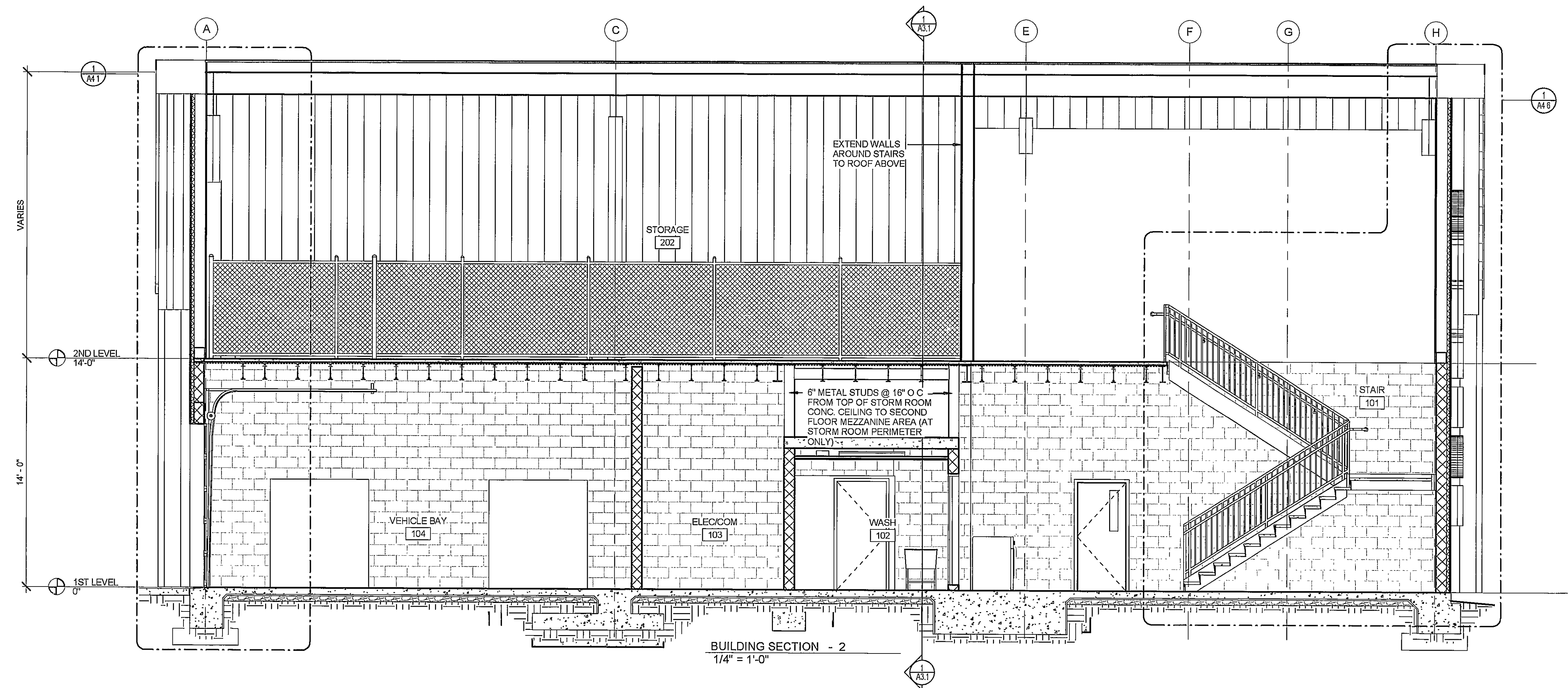
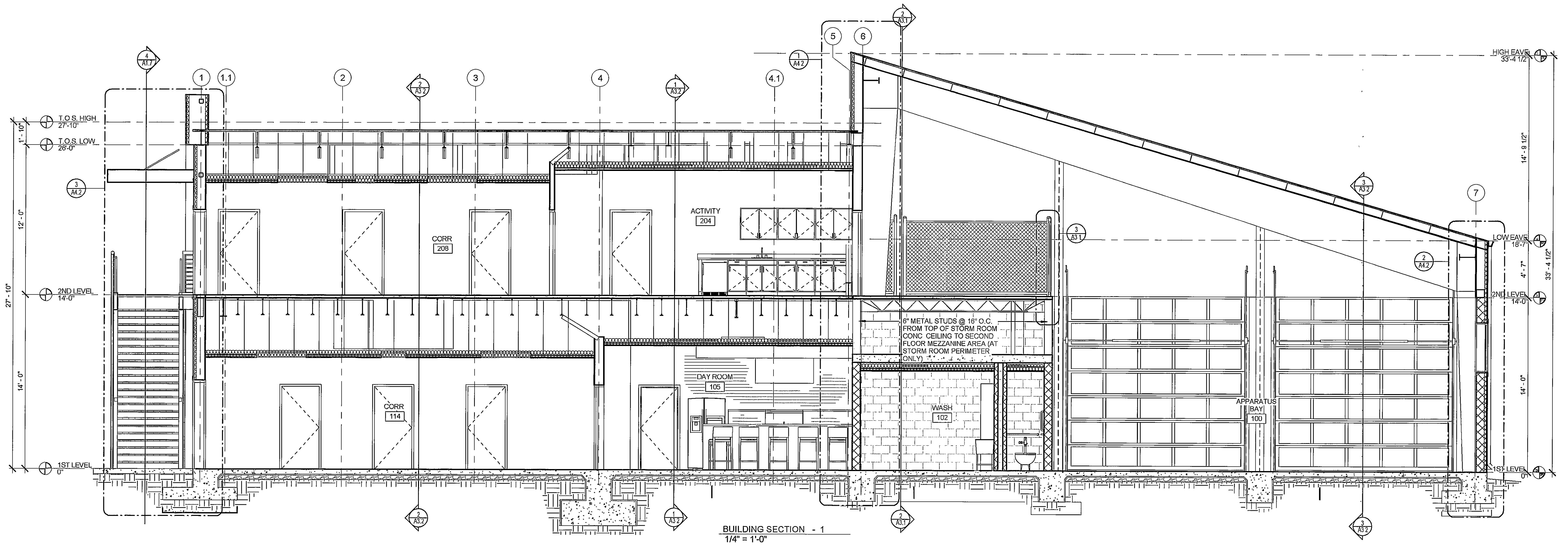
PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

REGISTERED ARCHITECT
STATE OF MISSISSIPPI
5346
11/22/19

CN18-3707

SHEET NUMBER
A2.2



DRAWN	CES
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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BUILDING SECTIONS

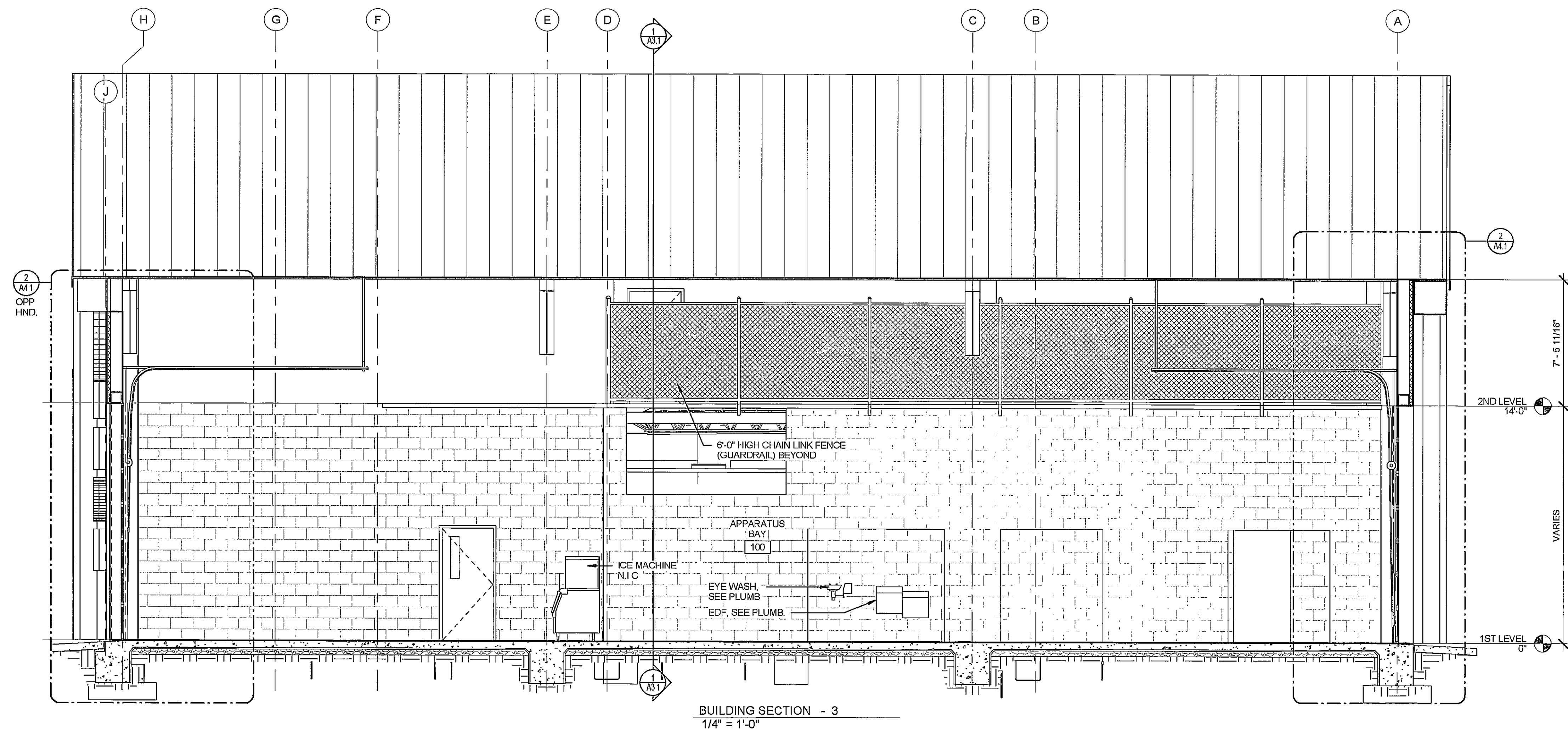
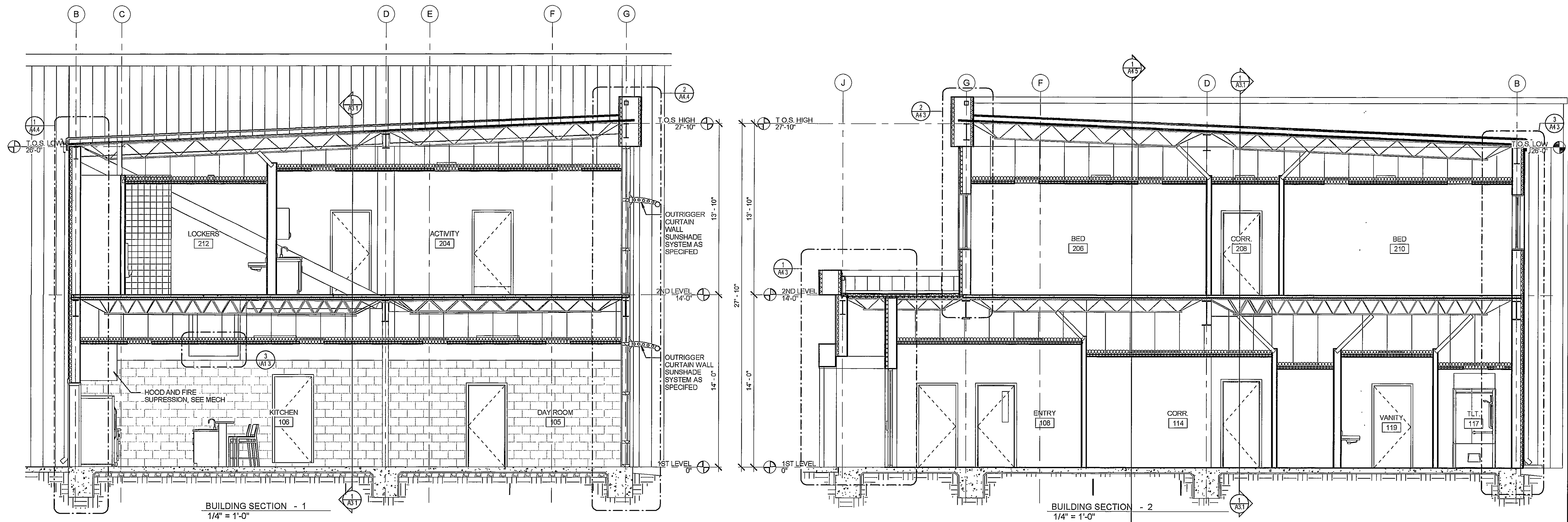
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707
SHEET NUMBER

A3.1



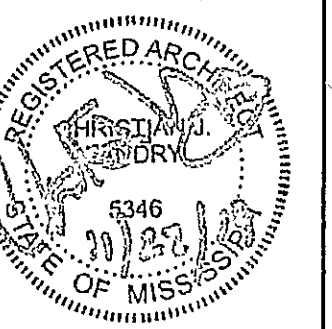
DRAWN	CES
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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SHEET TITLE
BUILDING SECTIONS

PROJECT
FIRE STATION No. 9

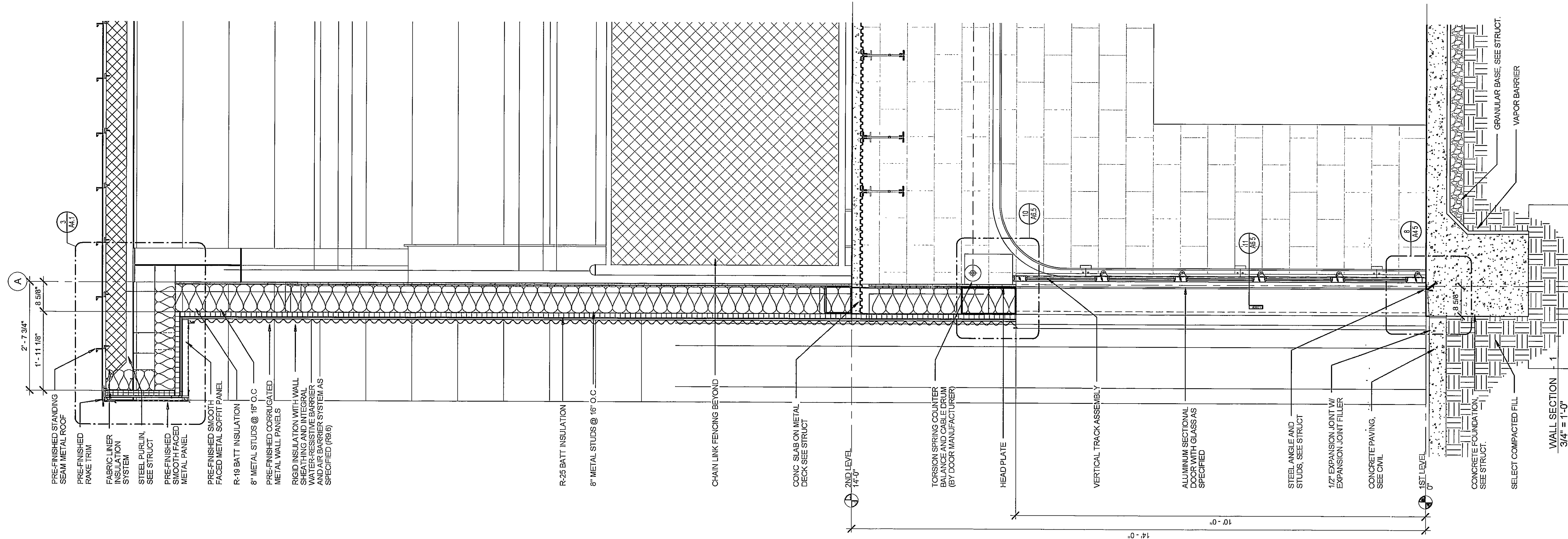
CITY OF HATTIESBURG
HATTIESBURG, MS



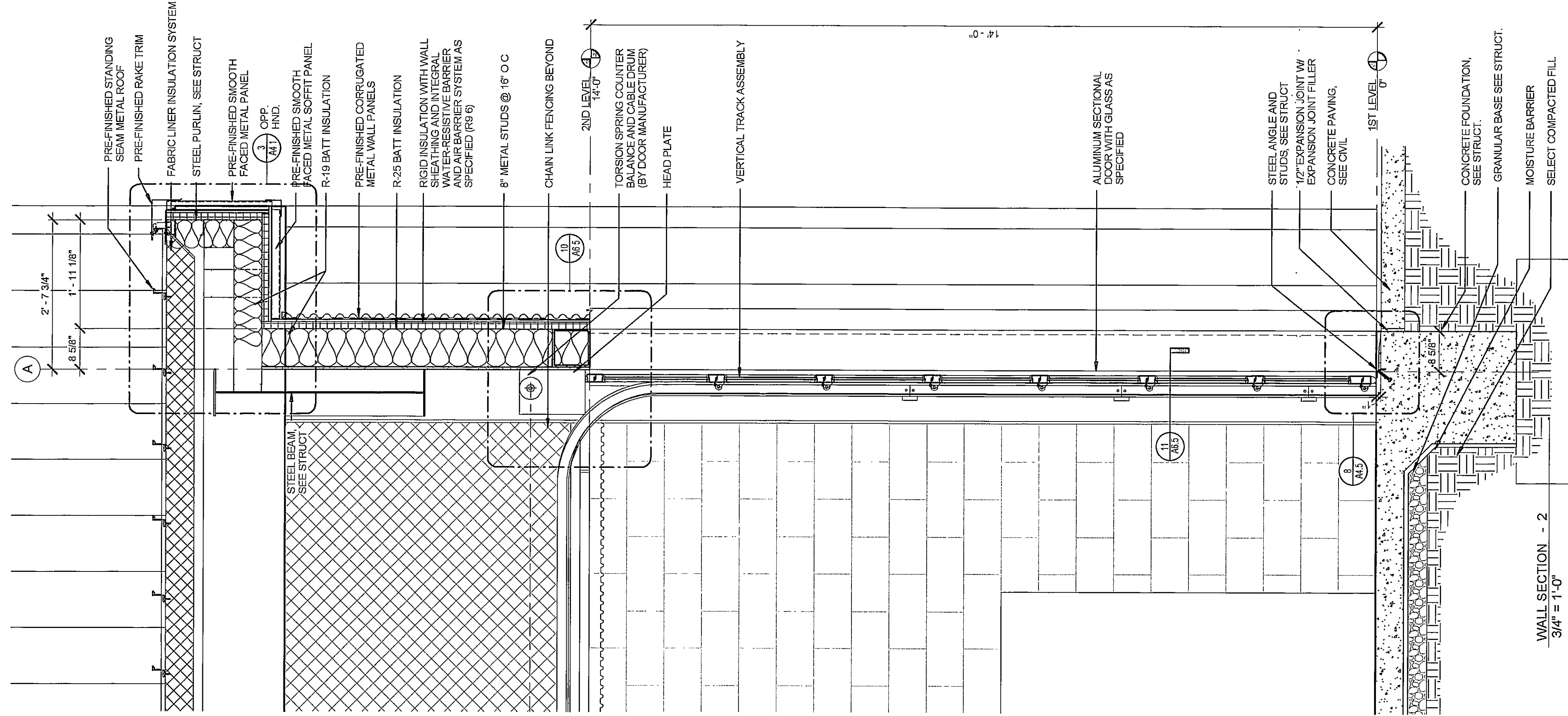
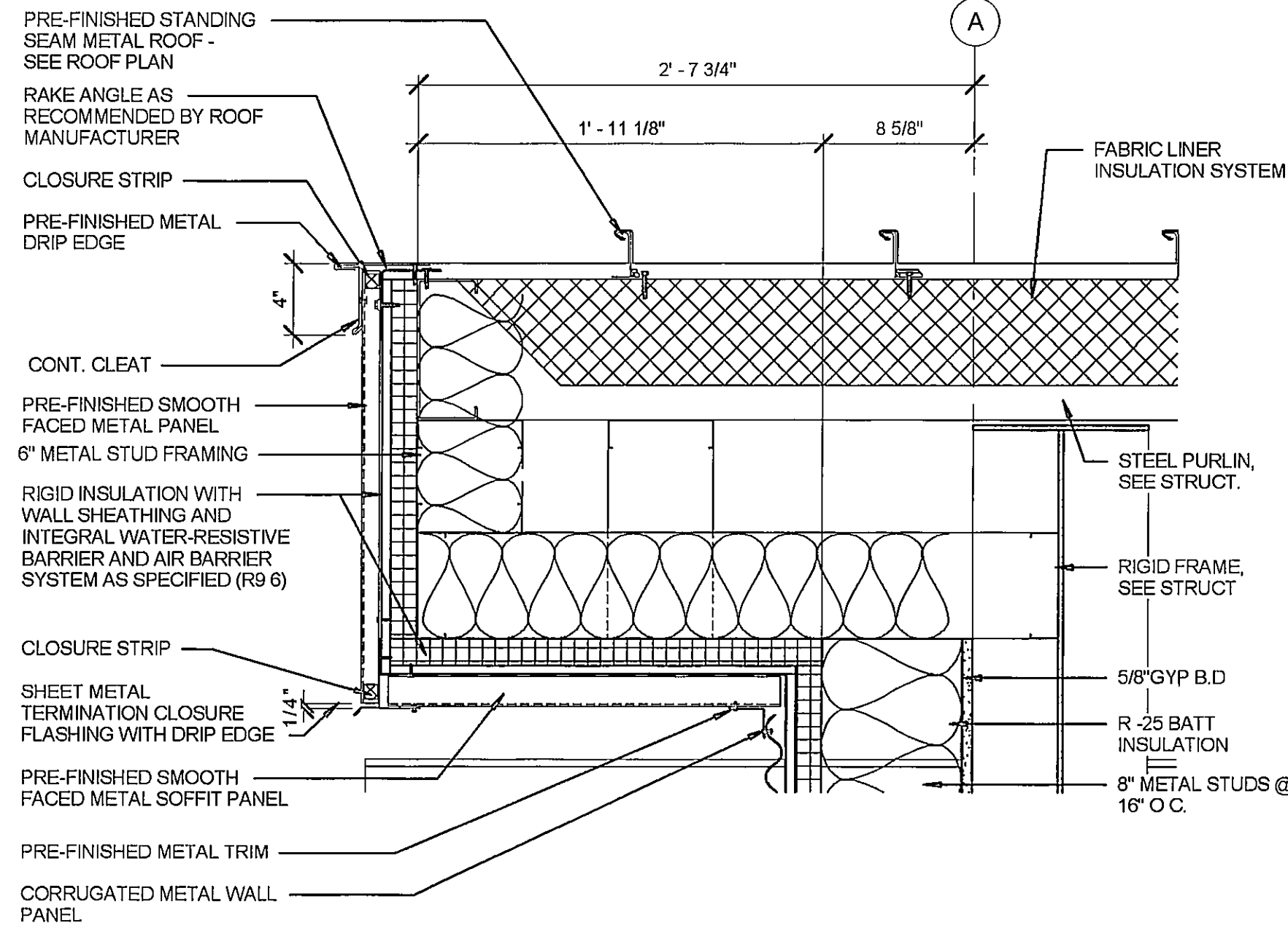
CN18-3707

SHEET NUMBER

A3.2



RAKE DETAIL - 3
1 1/2" = 1'-0"



WALL SECTION - 2
3/4" = 1'-0"



PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

SHEET TITLE
WALL SECTIONS

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SHEET NUMBER

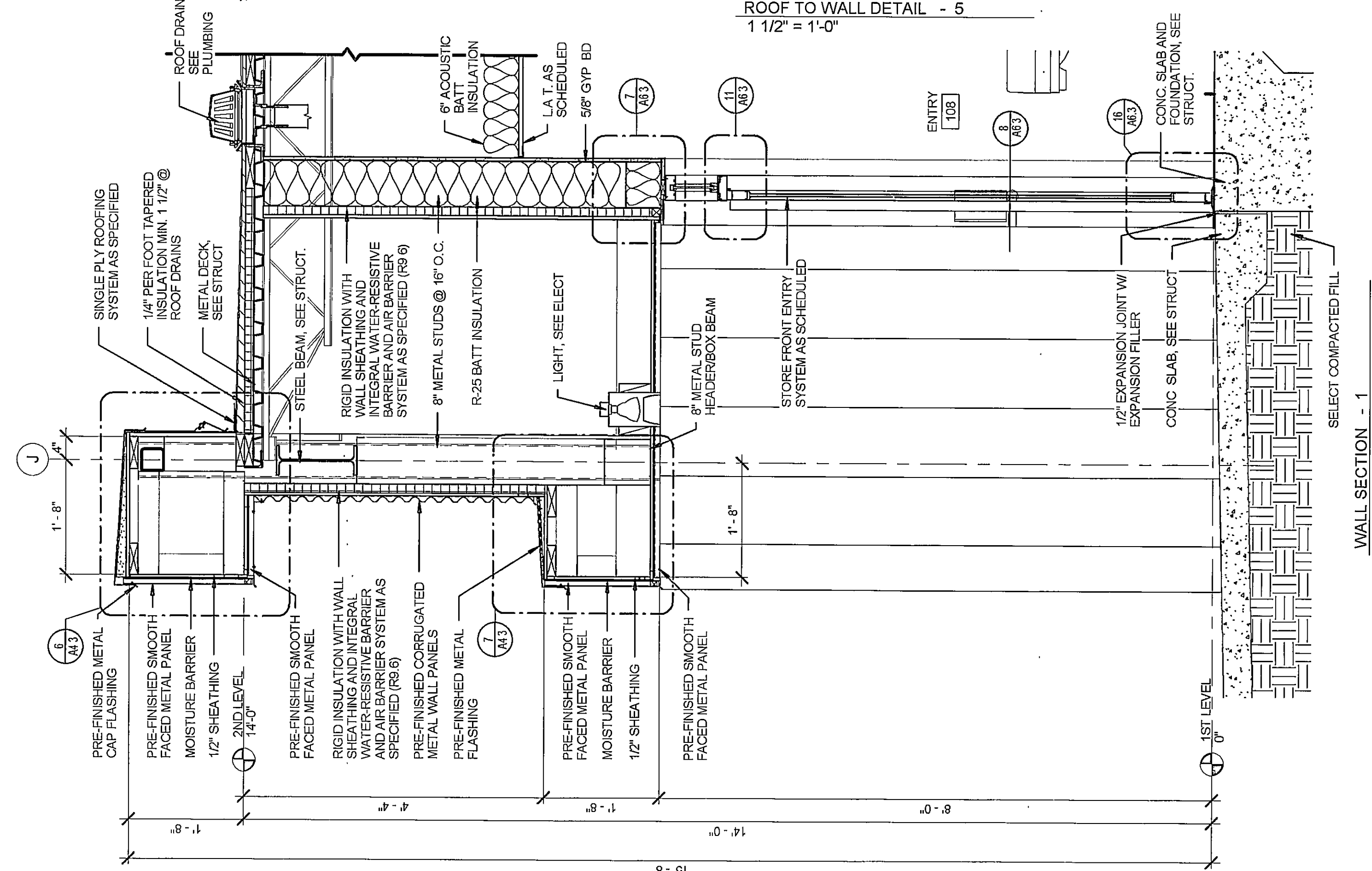
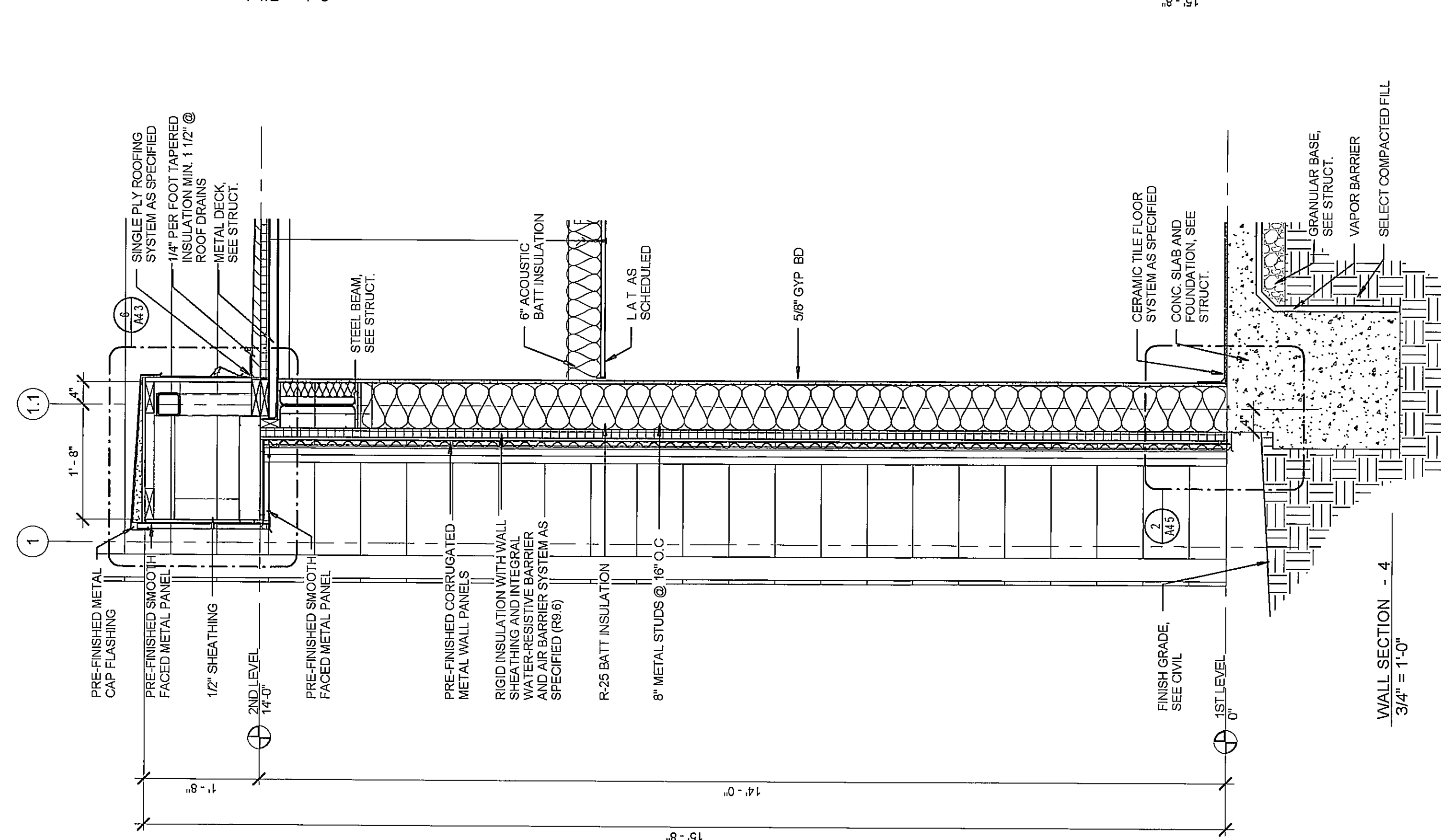
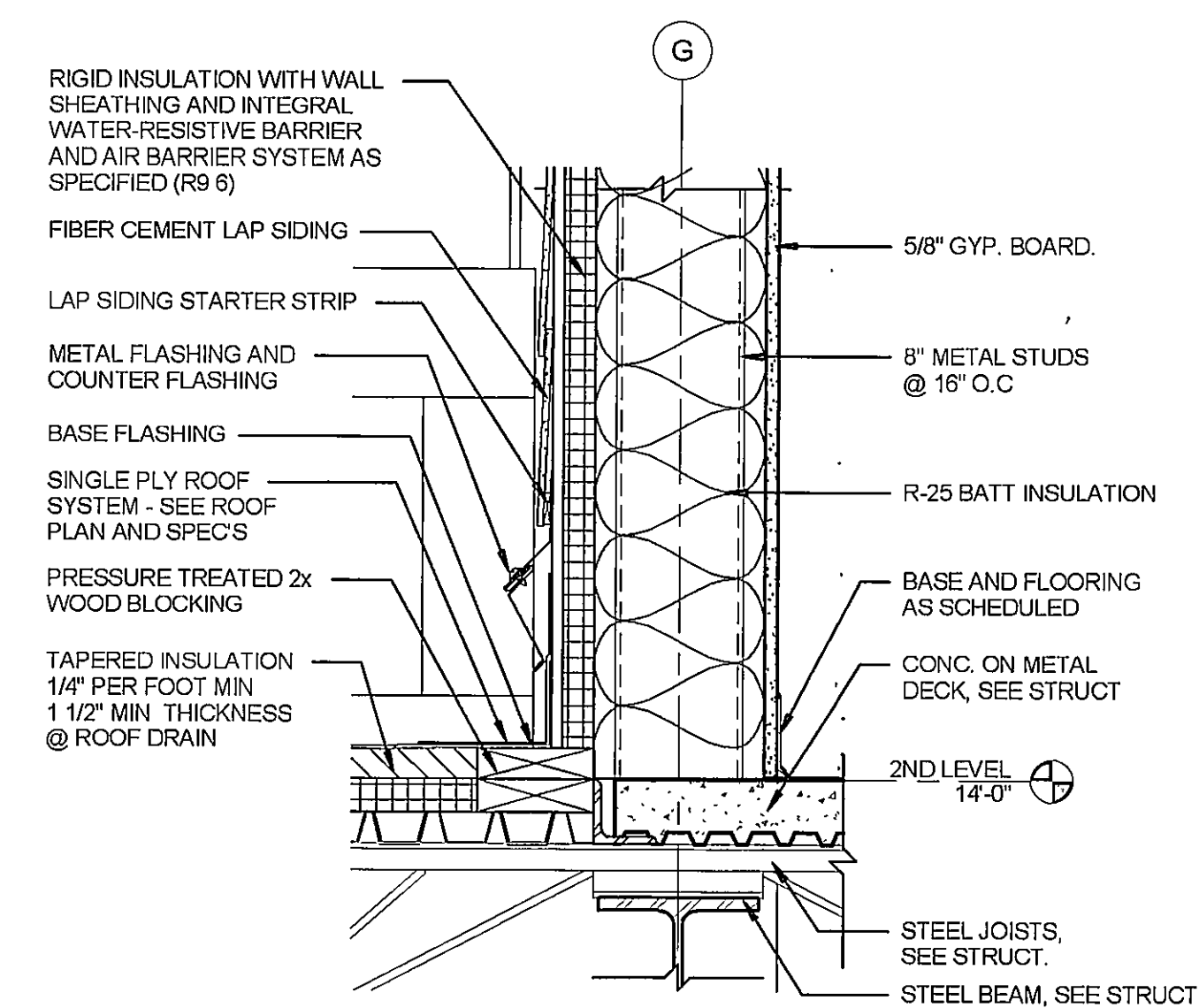
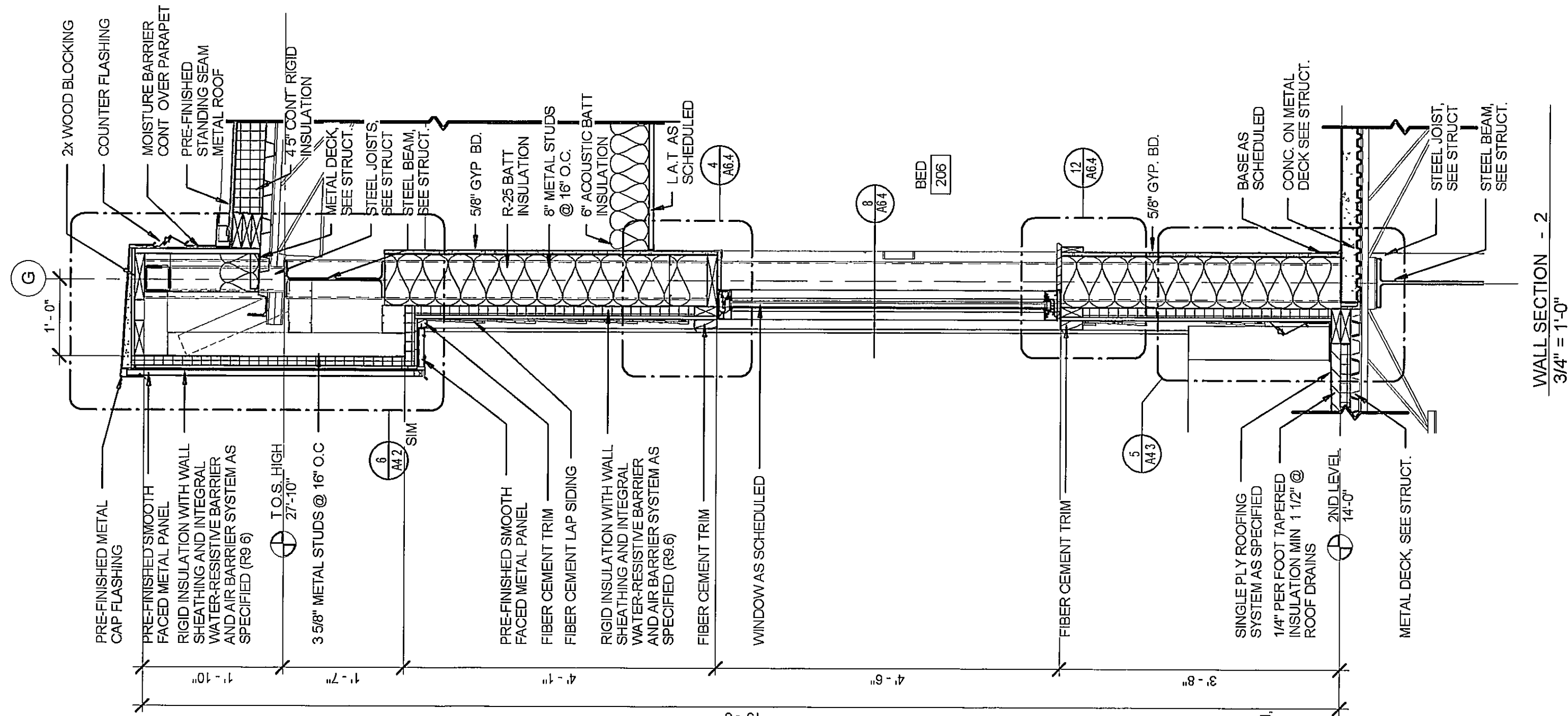
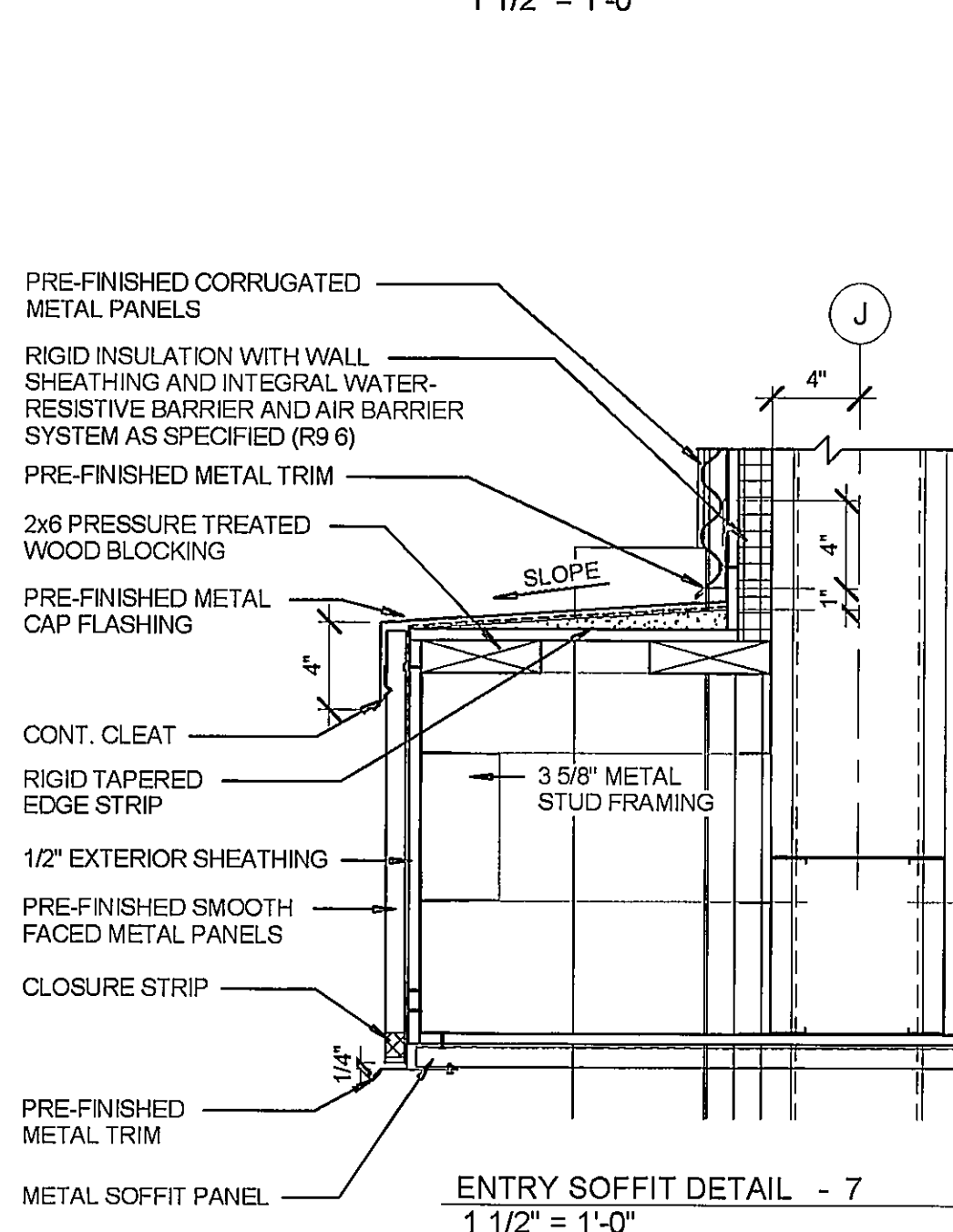
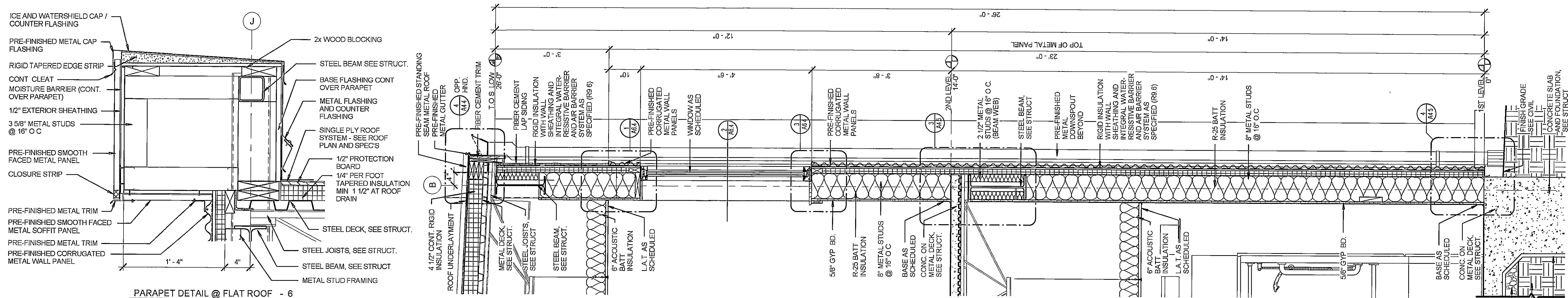
CN18-3707

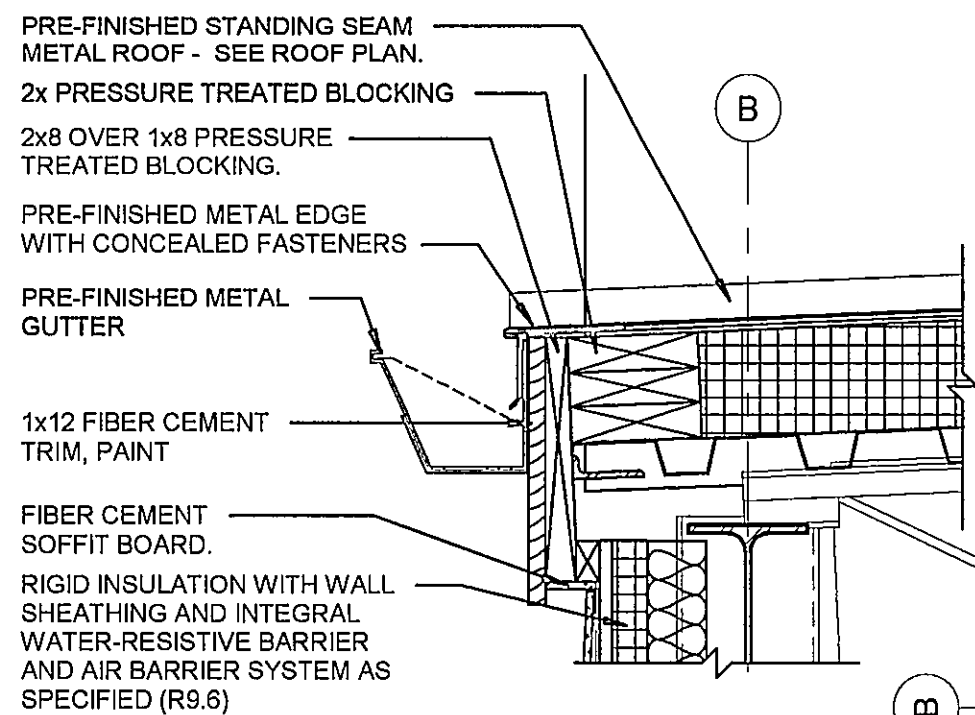
REVISION SCHEDULE
REV # REV DATE

FINAL DATE
Nov. 22, 2019

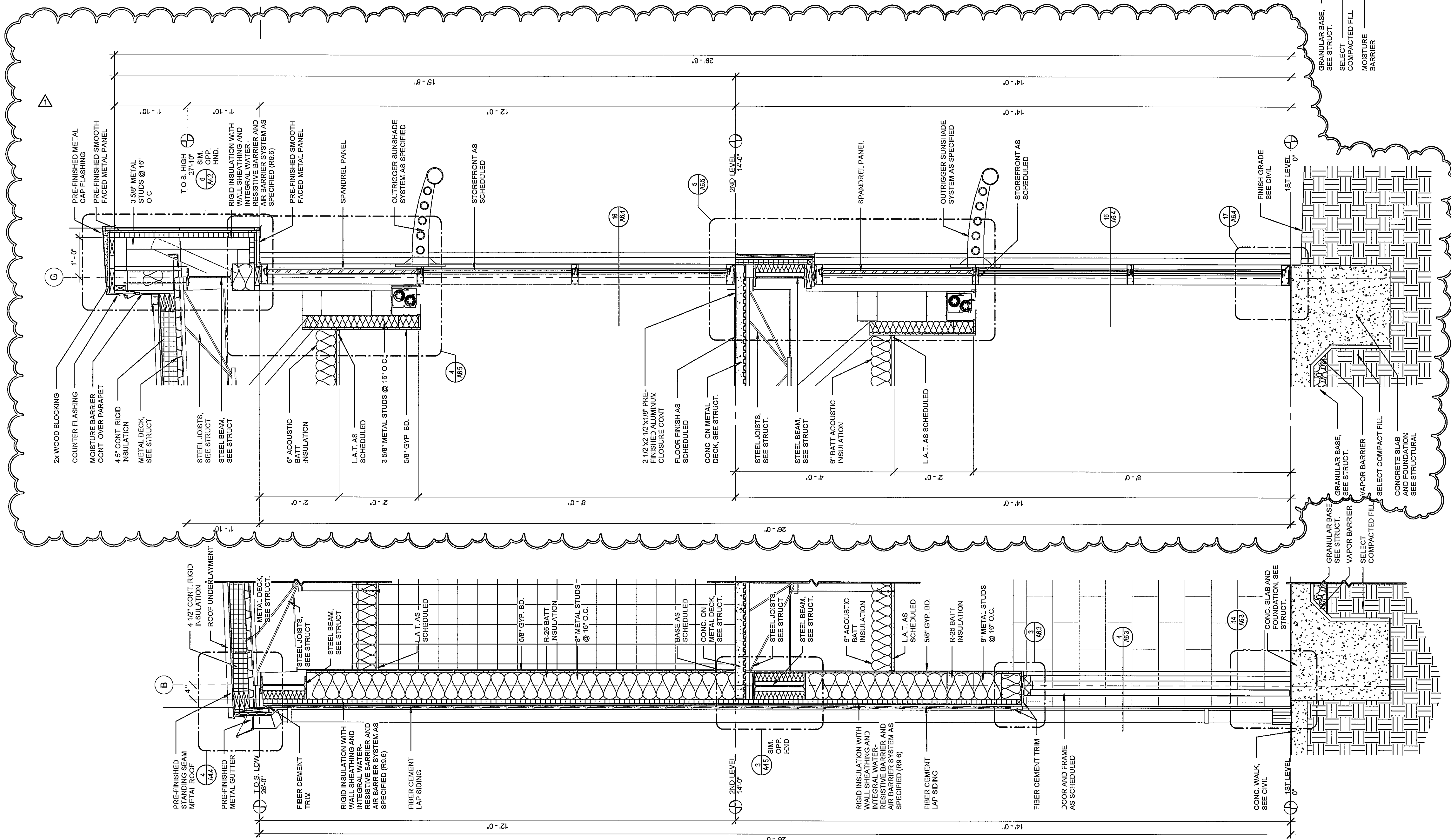
CHECKED
JKL

DRAWN
CES





DETAIL @ ROOF EDGE - 4
1 1/2" = 1'-0"



WALL SECTION - 1
3/4" = 1'-0"

WALL SECTION - 2
3/4" = 1'-0"

WALL SECTION - 3
3/4" = 1'-0"



PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

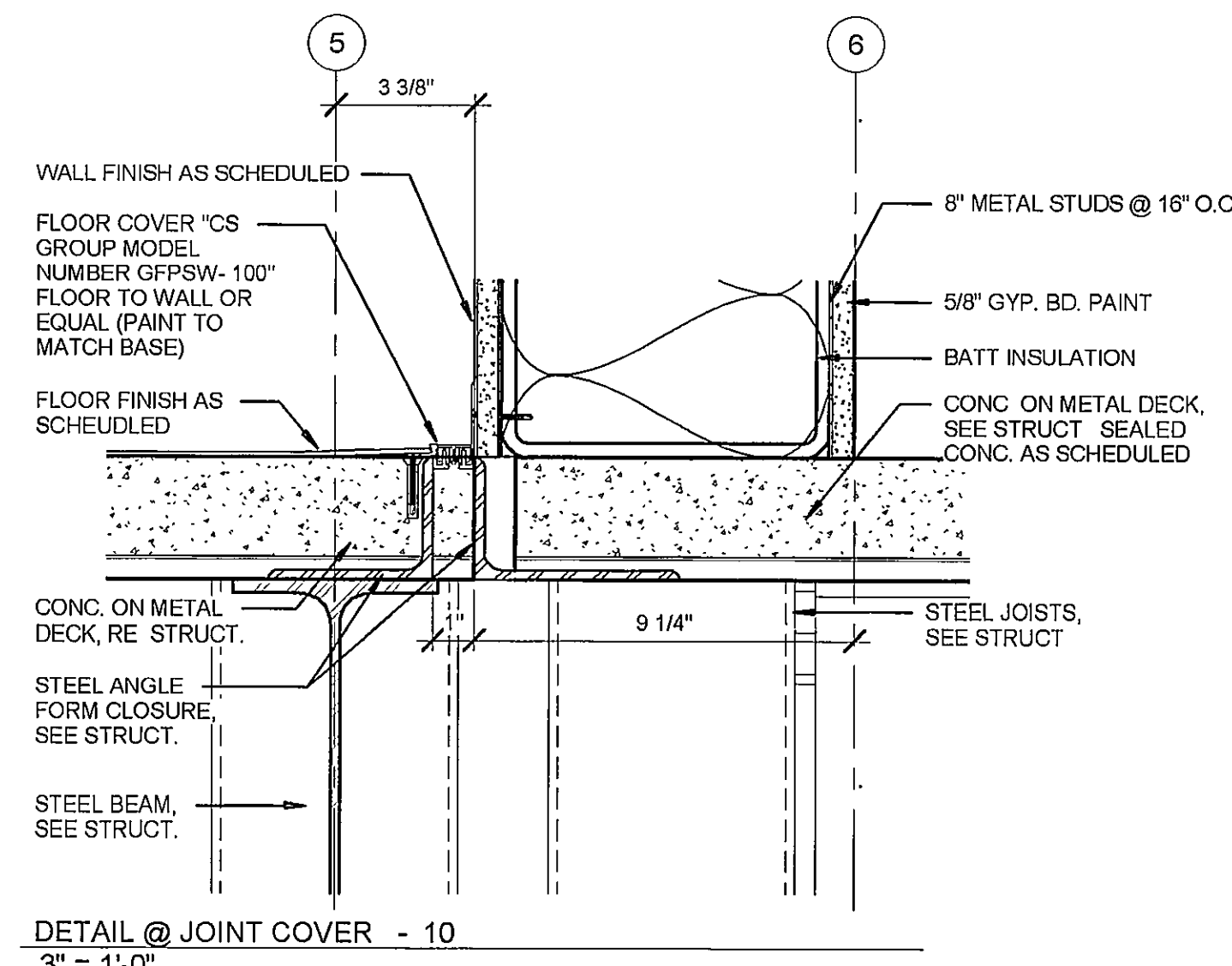
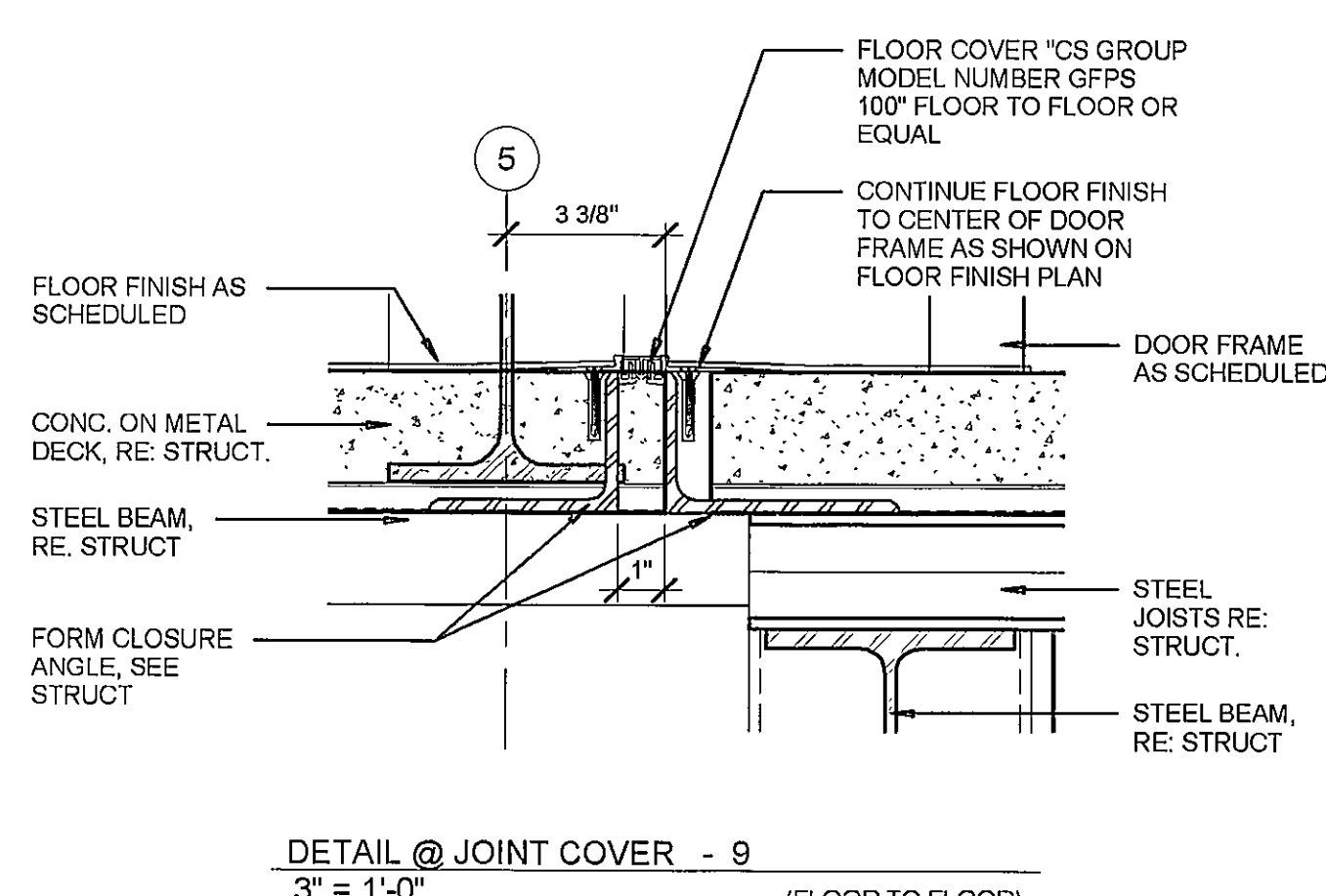
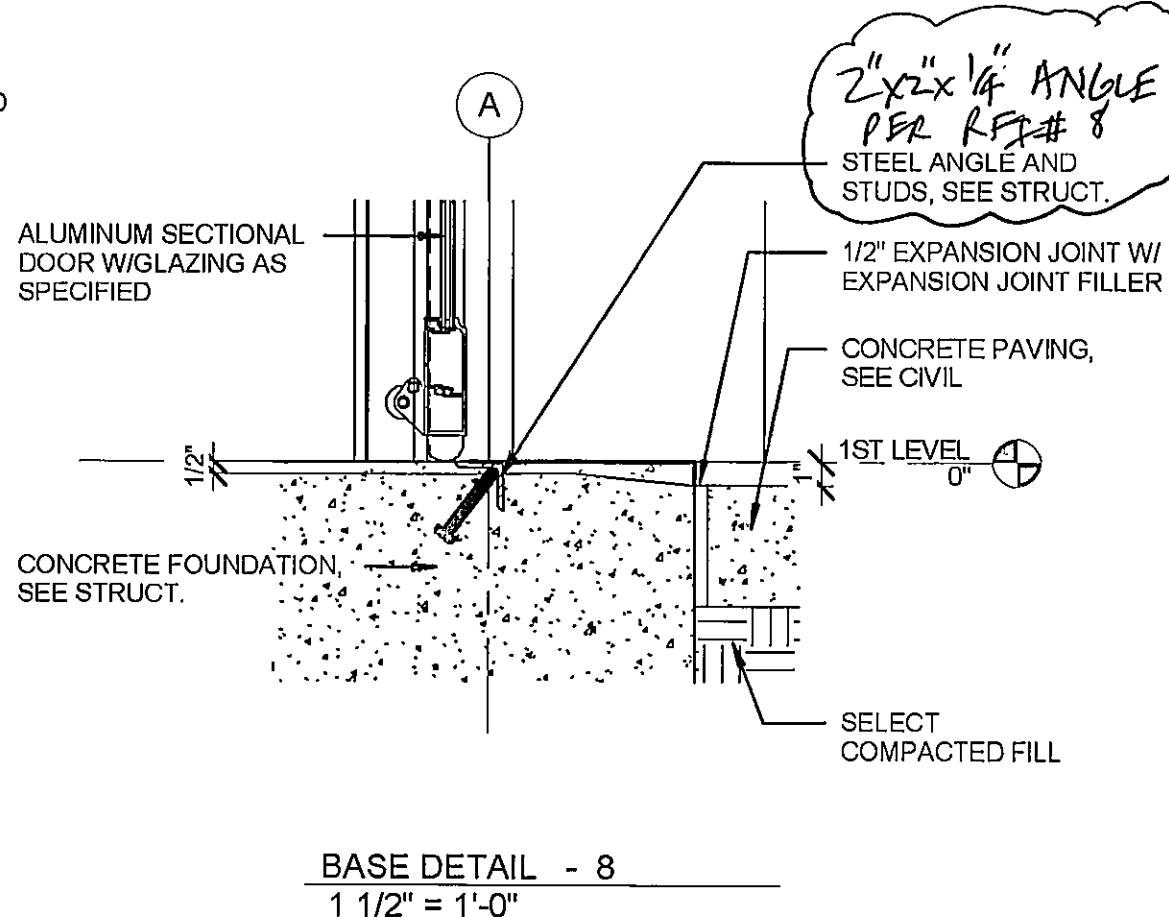
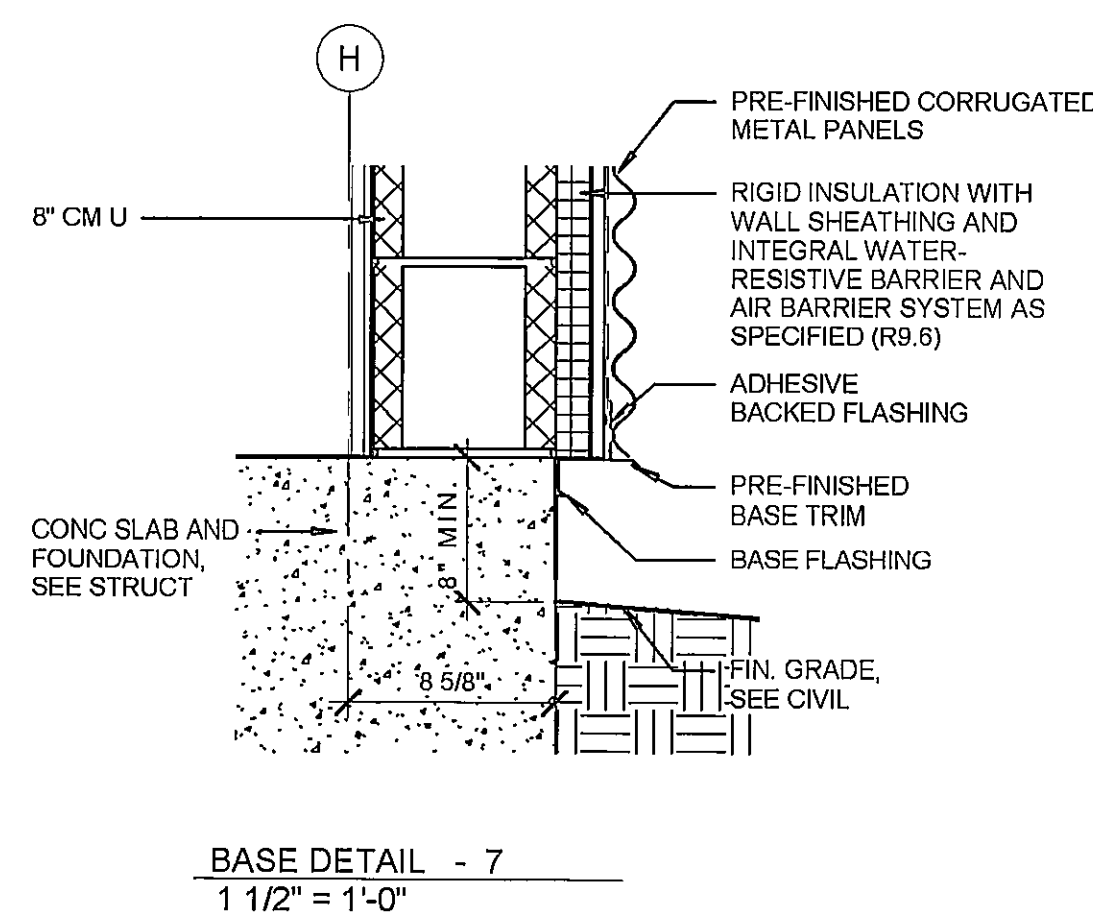
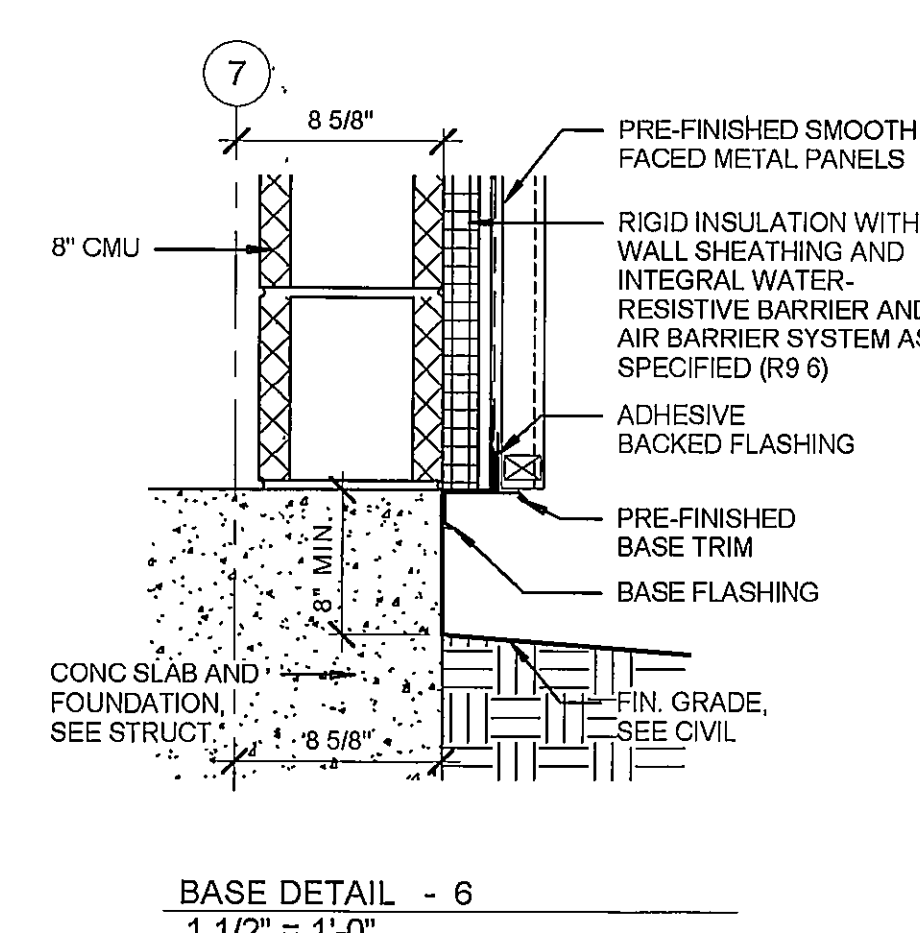
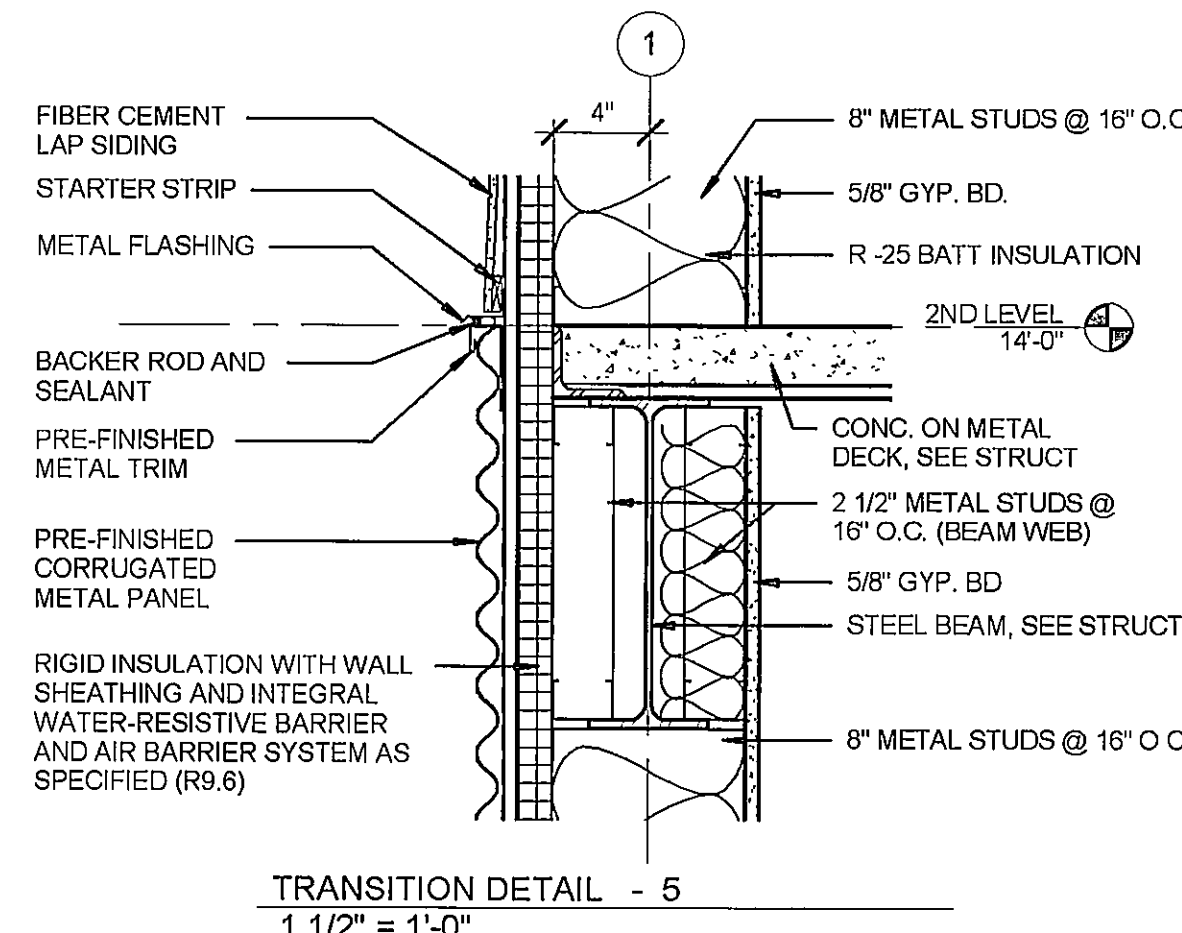
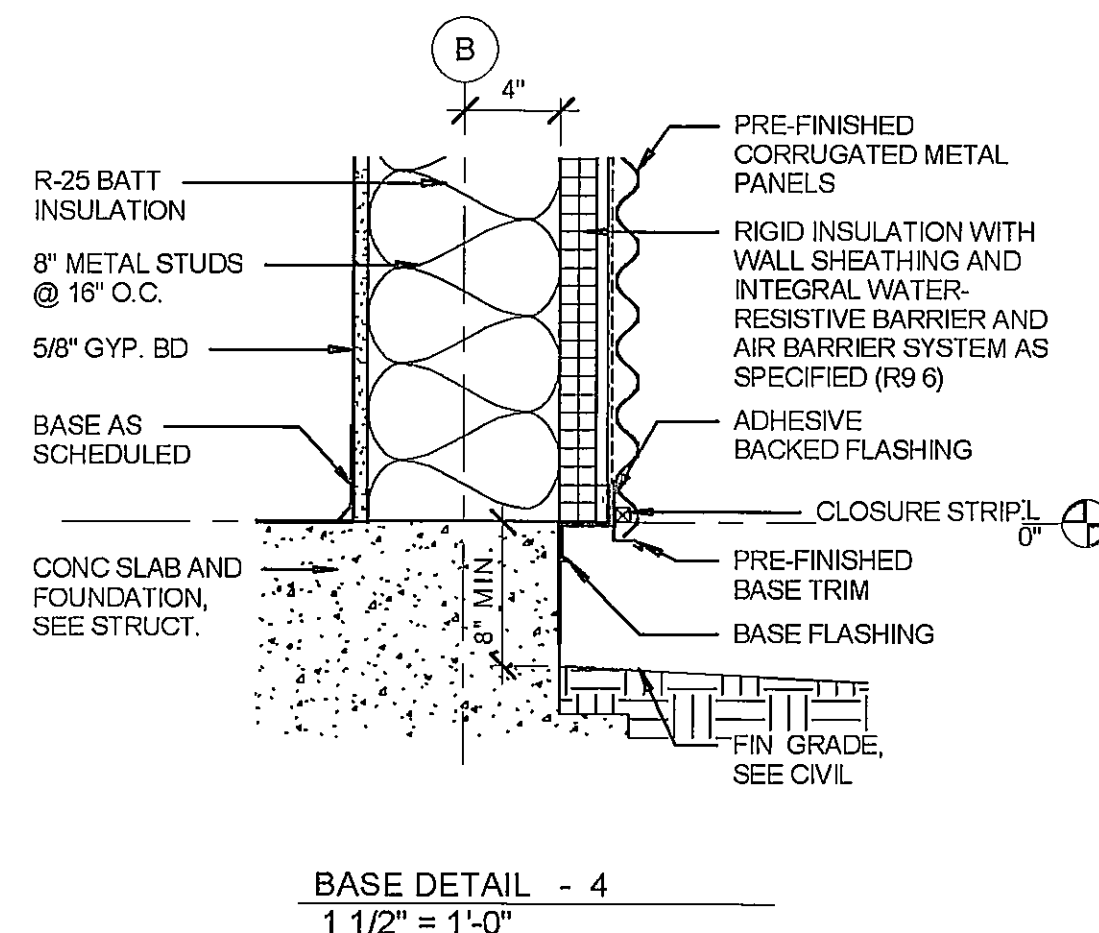
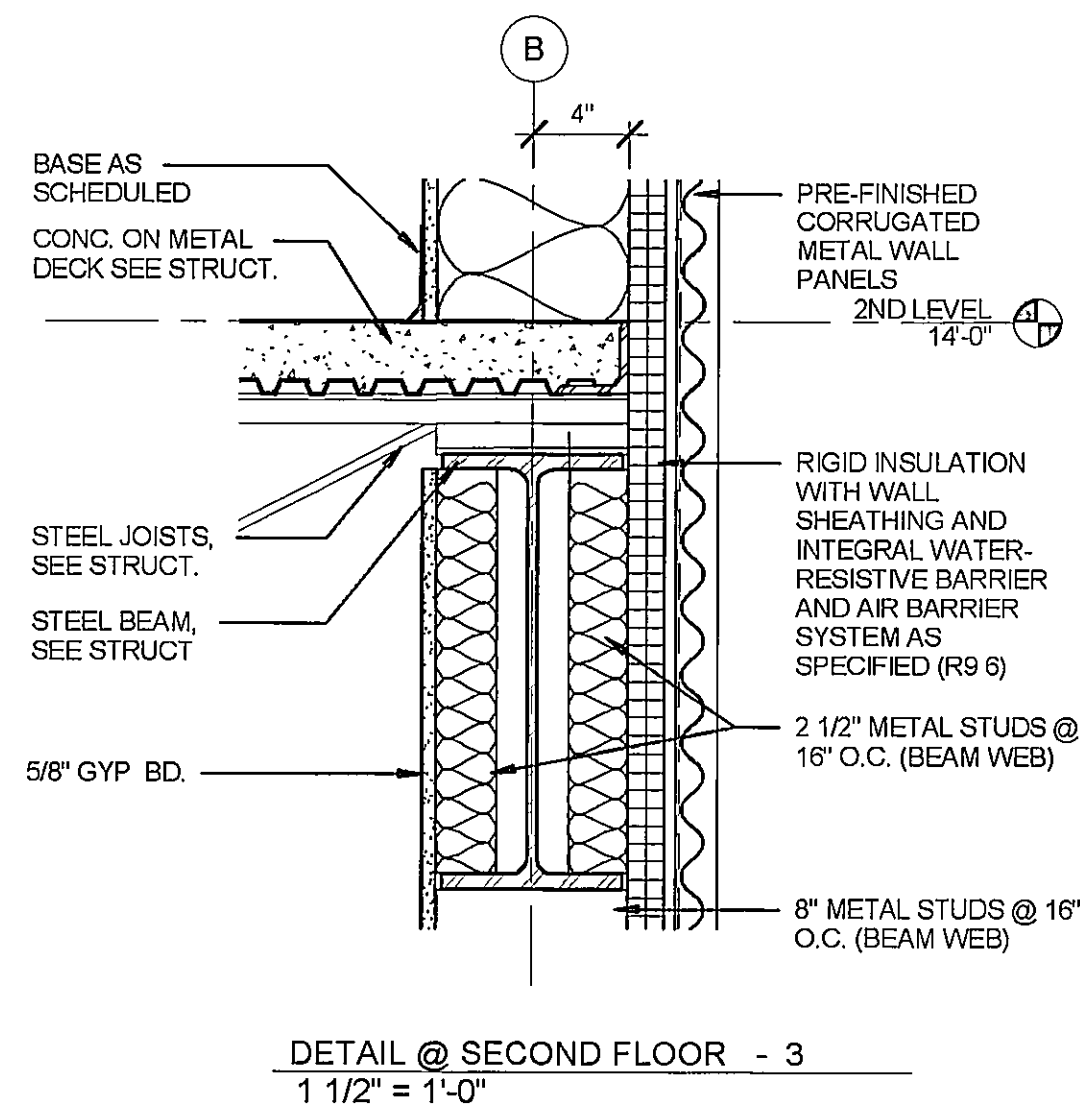
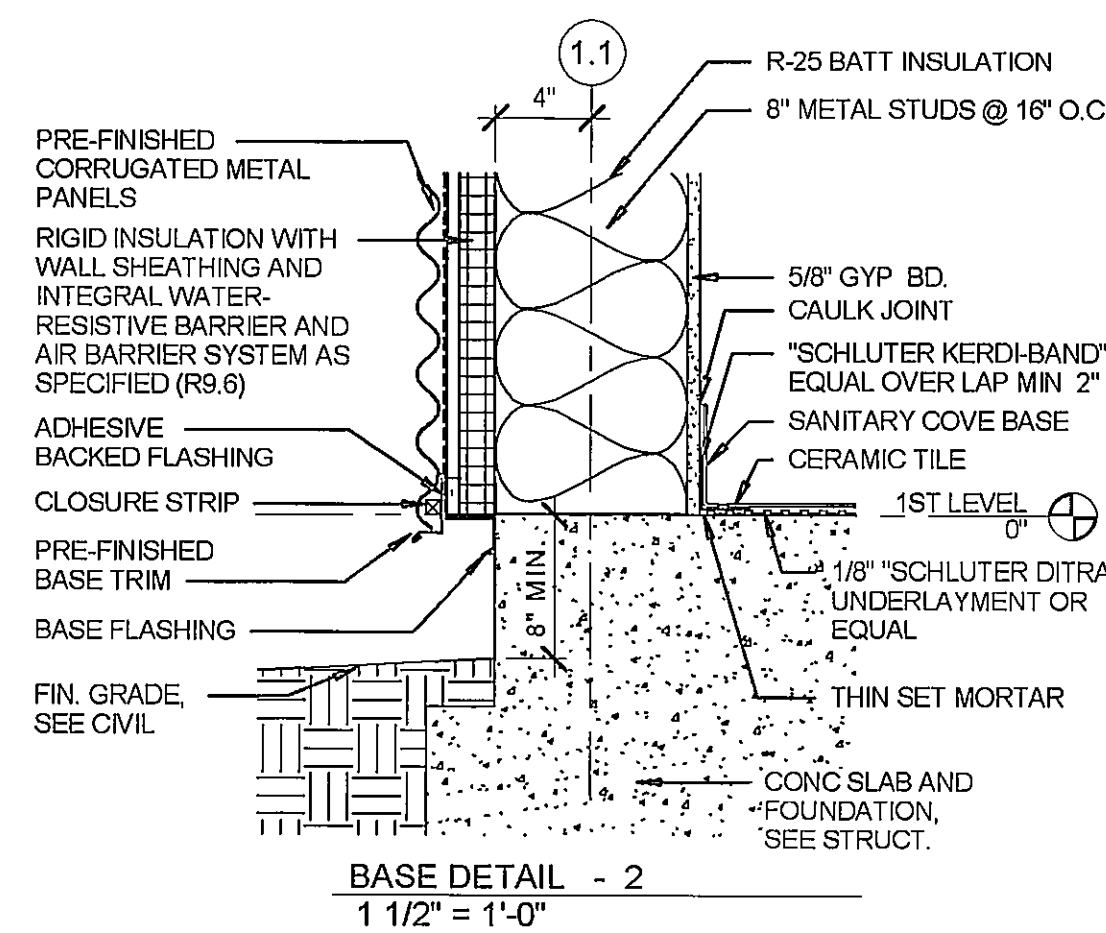
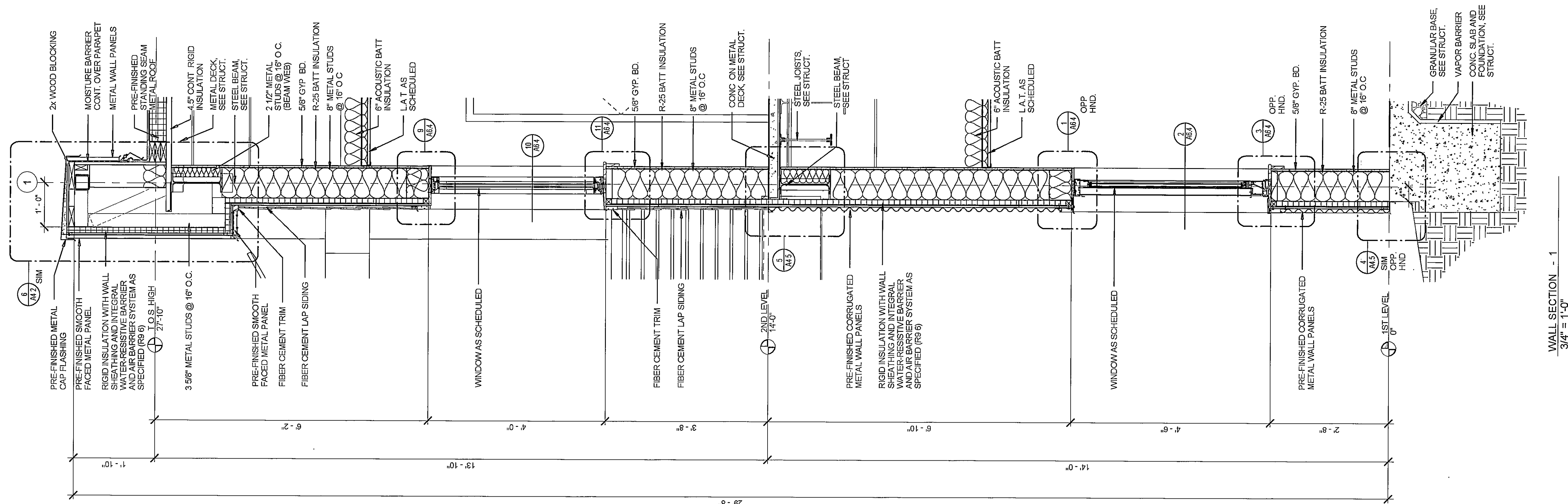
SHEET TITLE
WALL SECTIONS

LANDRY LEWIS GERMANY ARCHITECTS, P. A.
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CREATING LANDMARKS SINCE 1910...

REVISION SCHEDULE
REV # REV DATE
1 7/15/2020

DRAWN
CES
CHECKED
JKL
FINAL DATE
APRIL 2, 2020

CN18-3707
SHEET NUMBER
A4.4

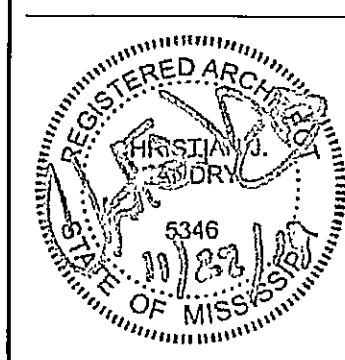


DRAWN	CES
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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WALL SECTIONS

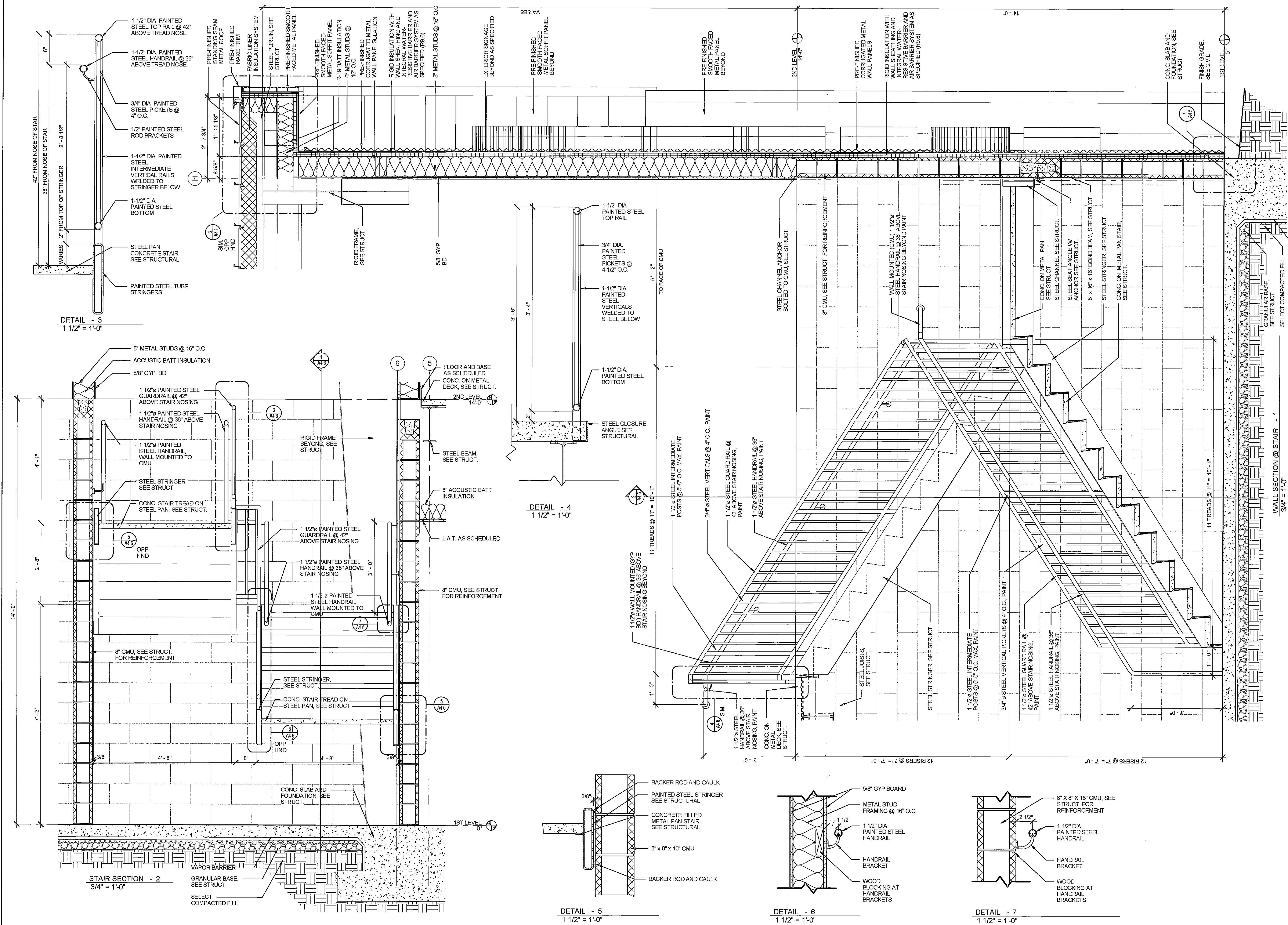
PROJECT
FIRE STATION No. 9



CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707
SHEET NUMBER

A4.5



DRAWN
CES

CHECKED
JKL

FINAL DATE
Nov. 22, 2019

REVISION SCHEDULE
REV # REV DATE

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P 601.271.7711 WWW.LGARCH.COM
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SHEET TITLE
WALL SECTIONS

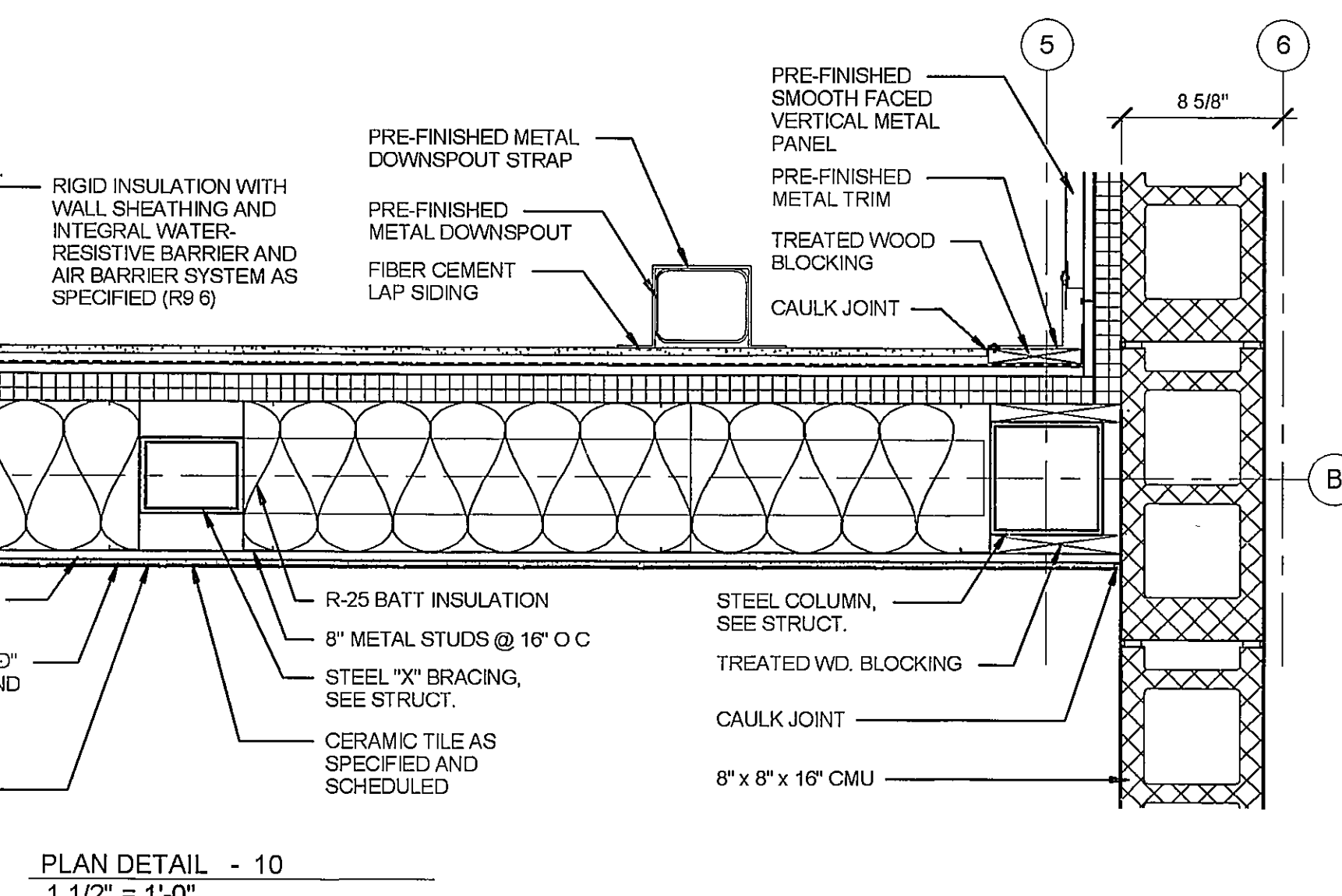
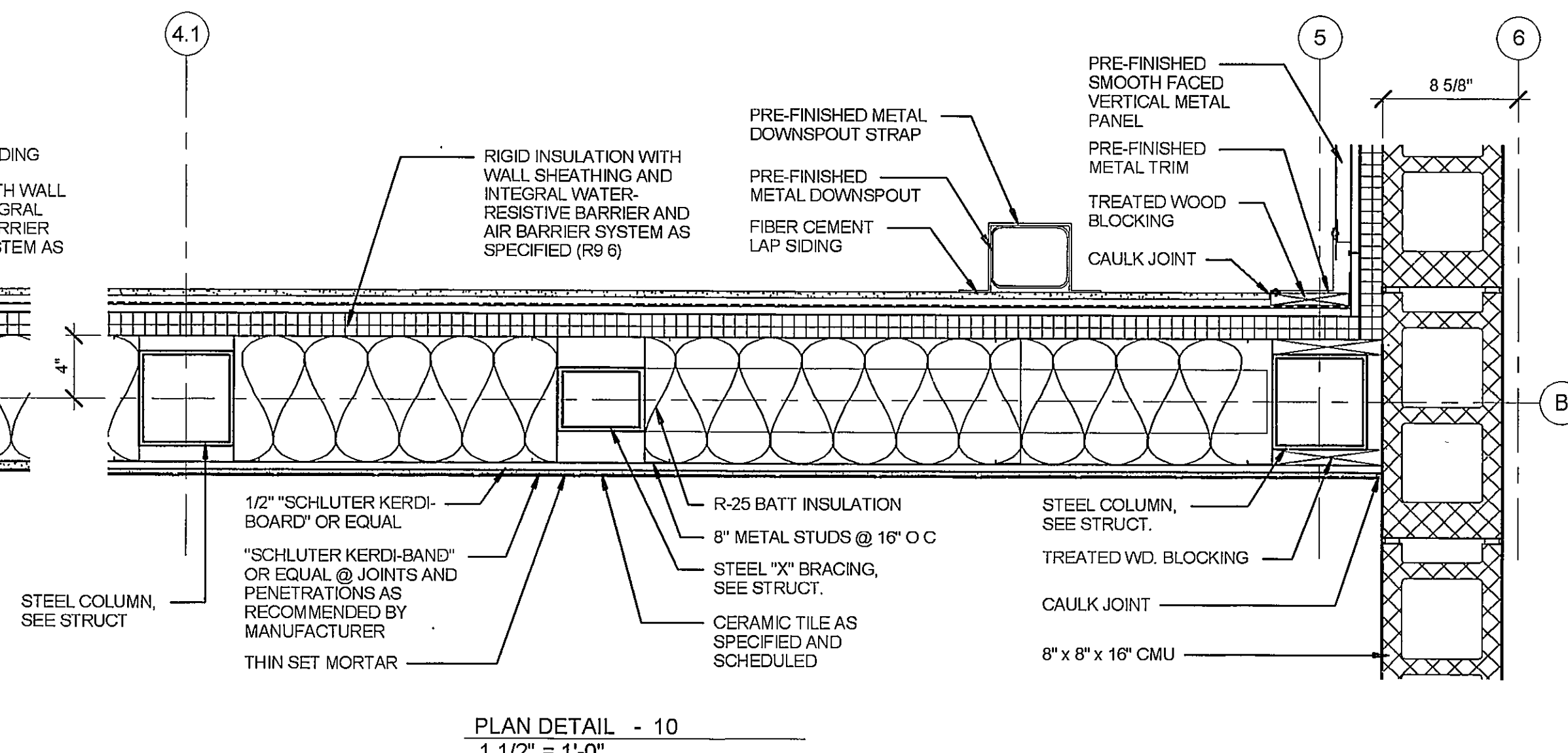
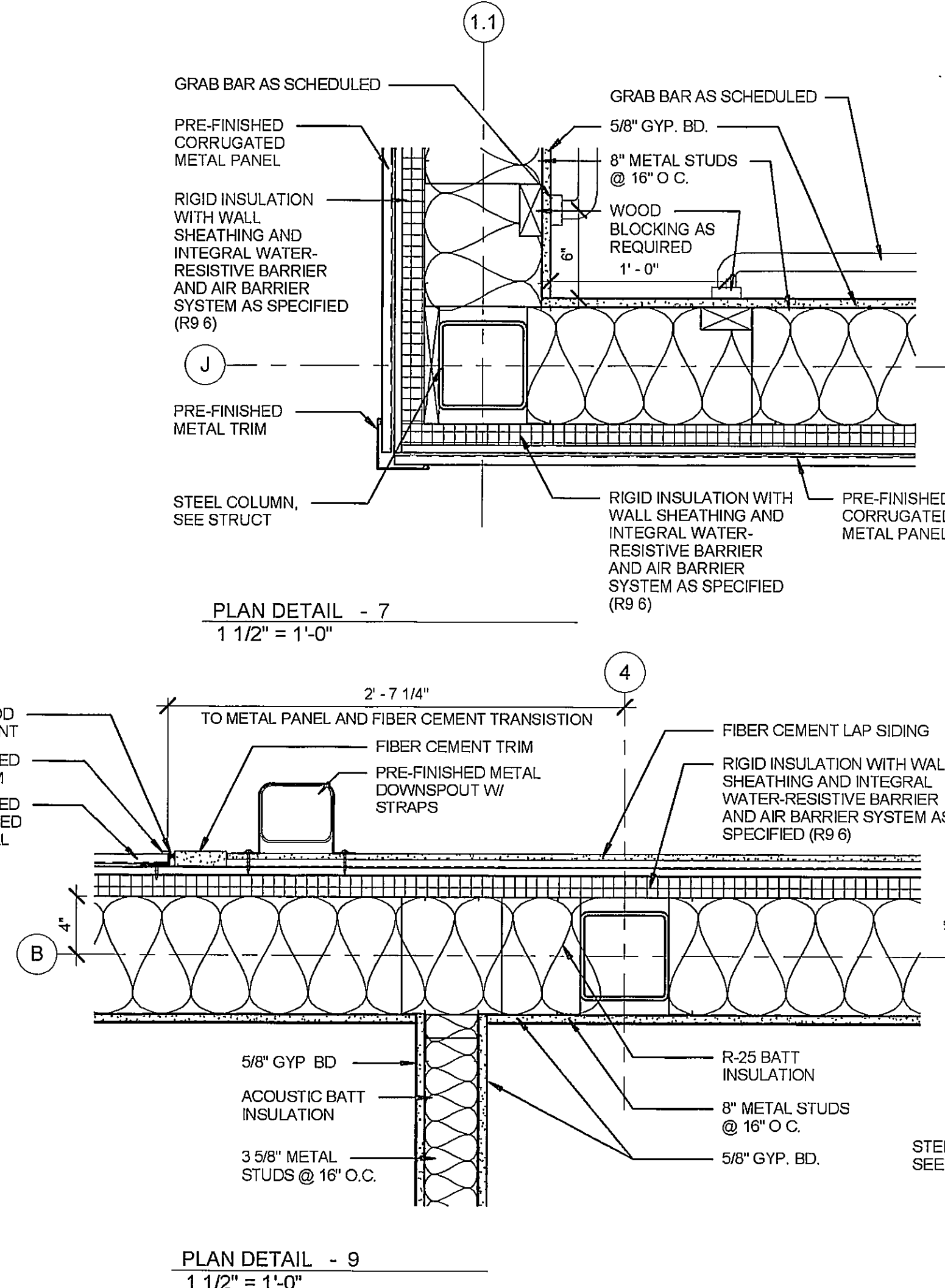
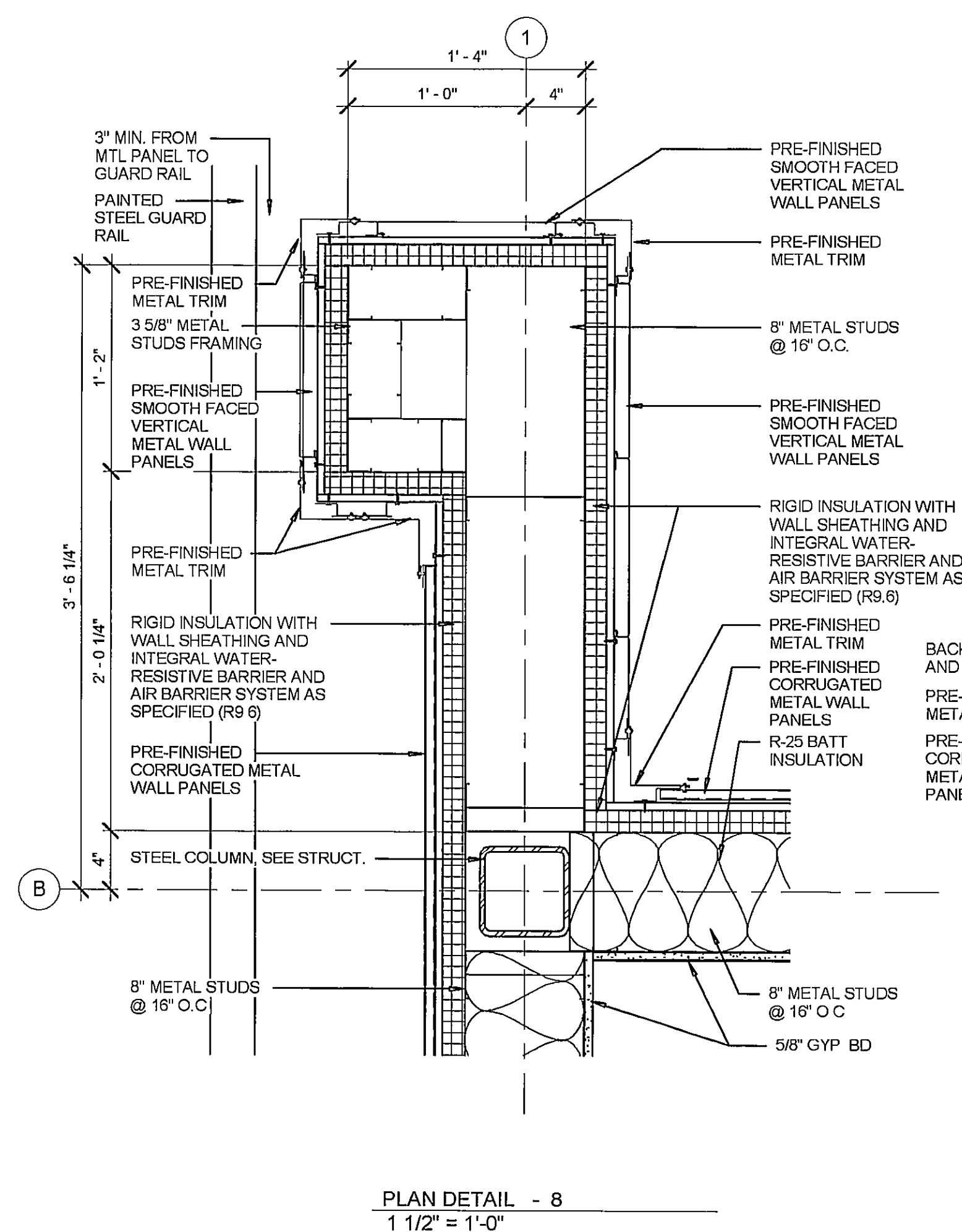
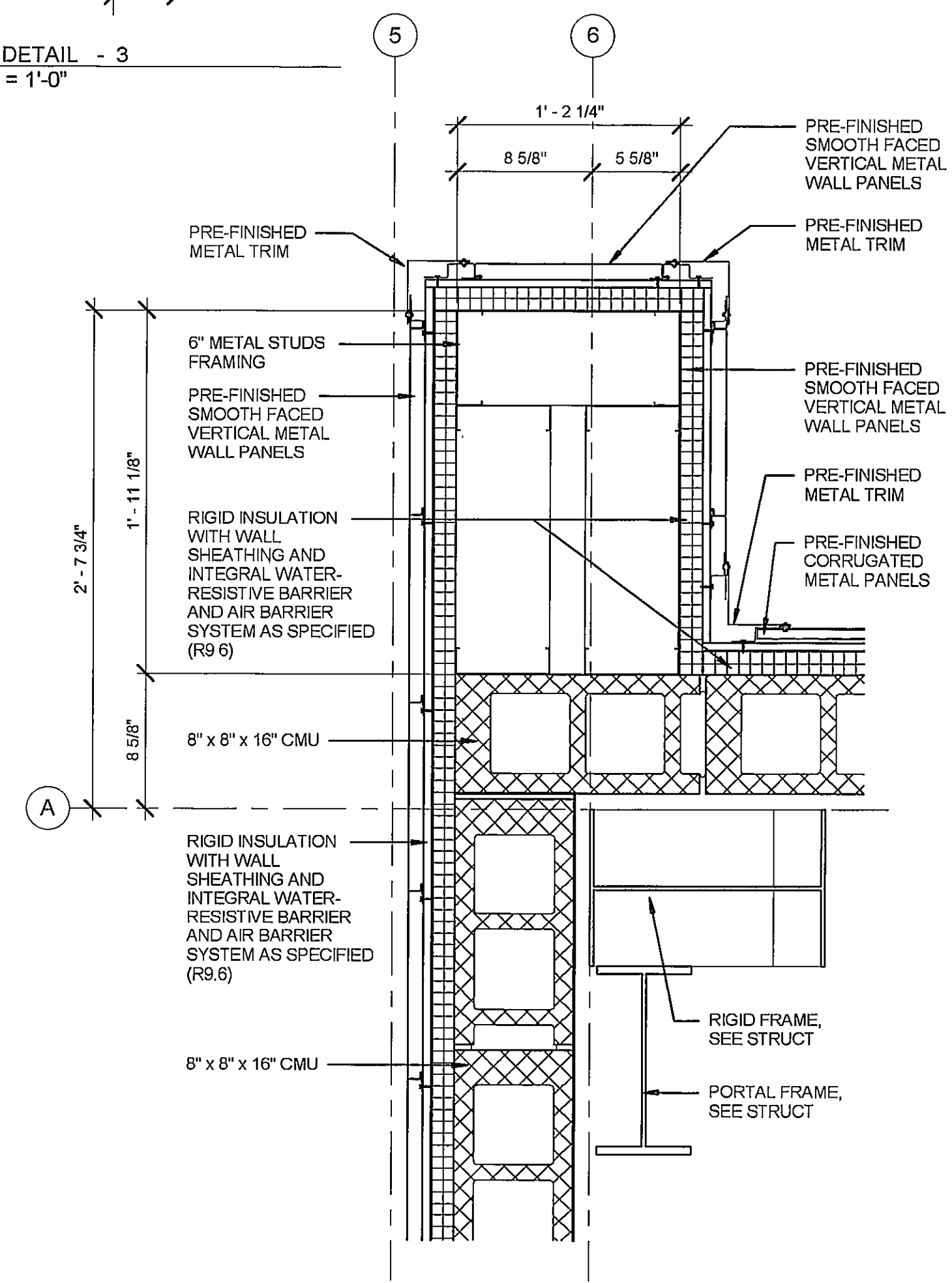
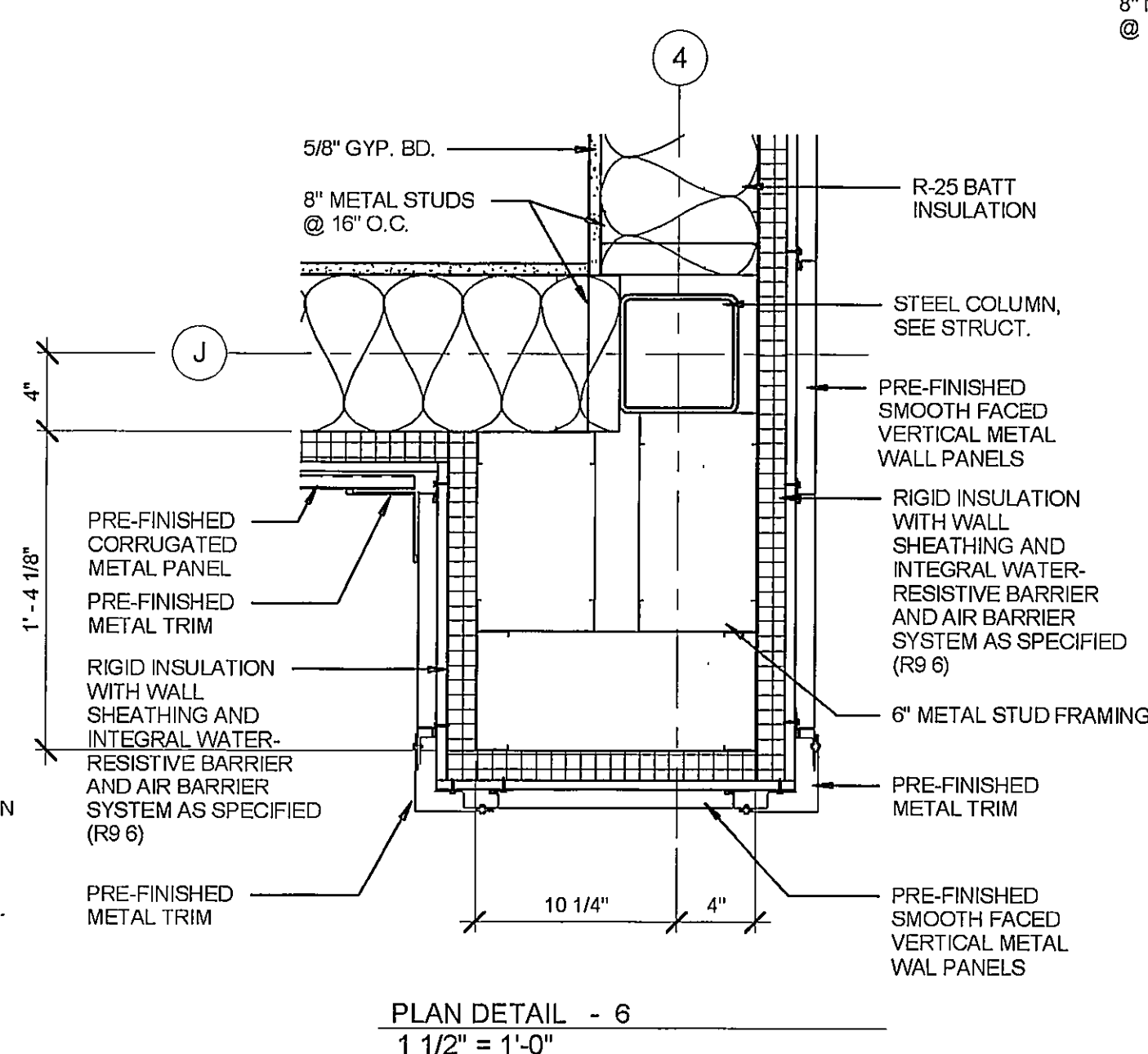
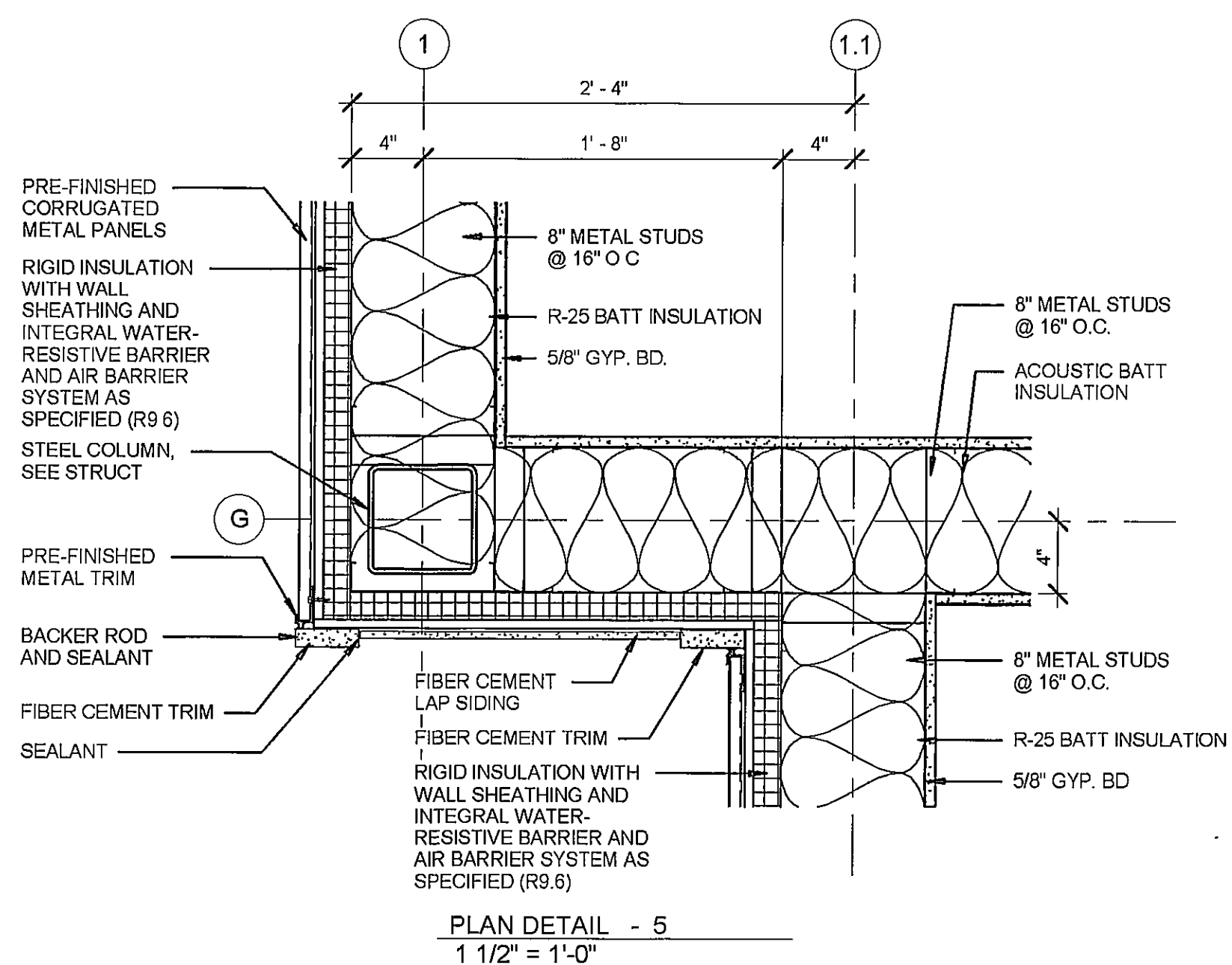
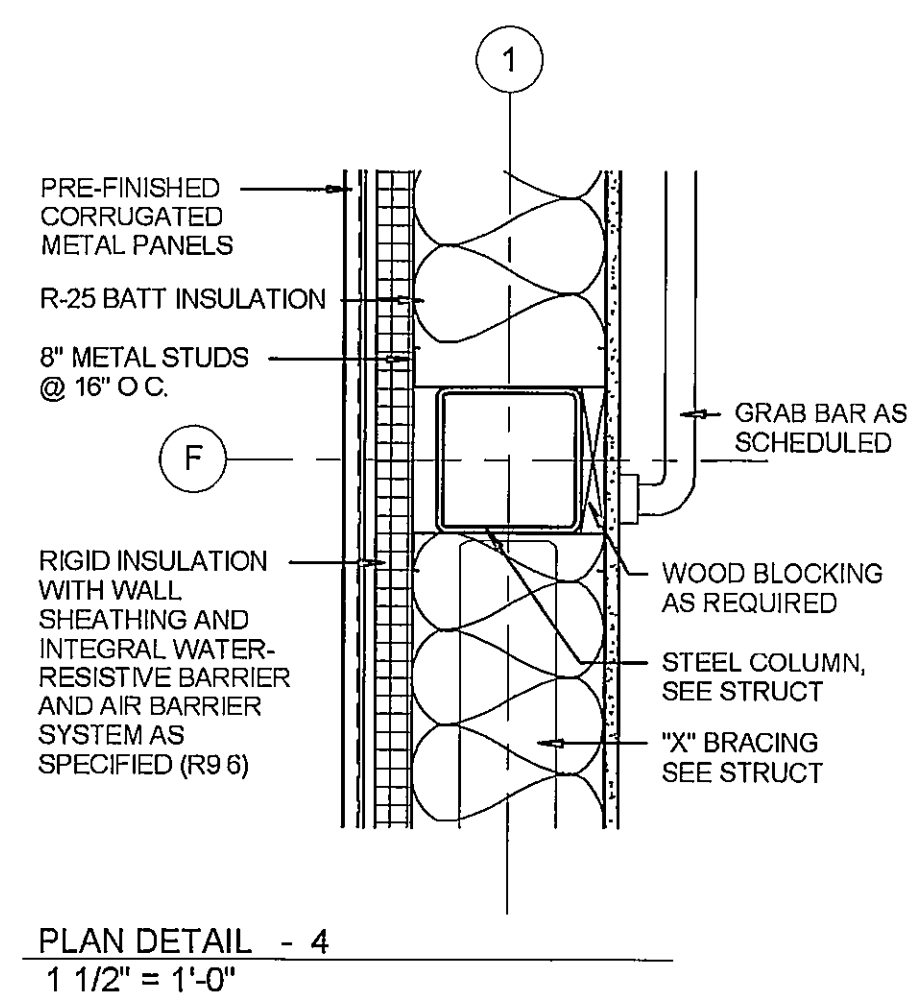
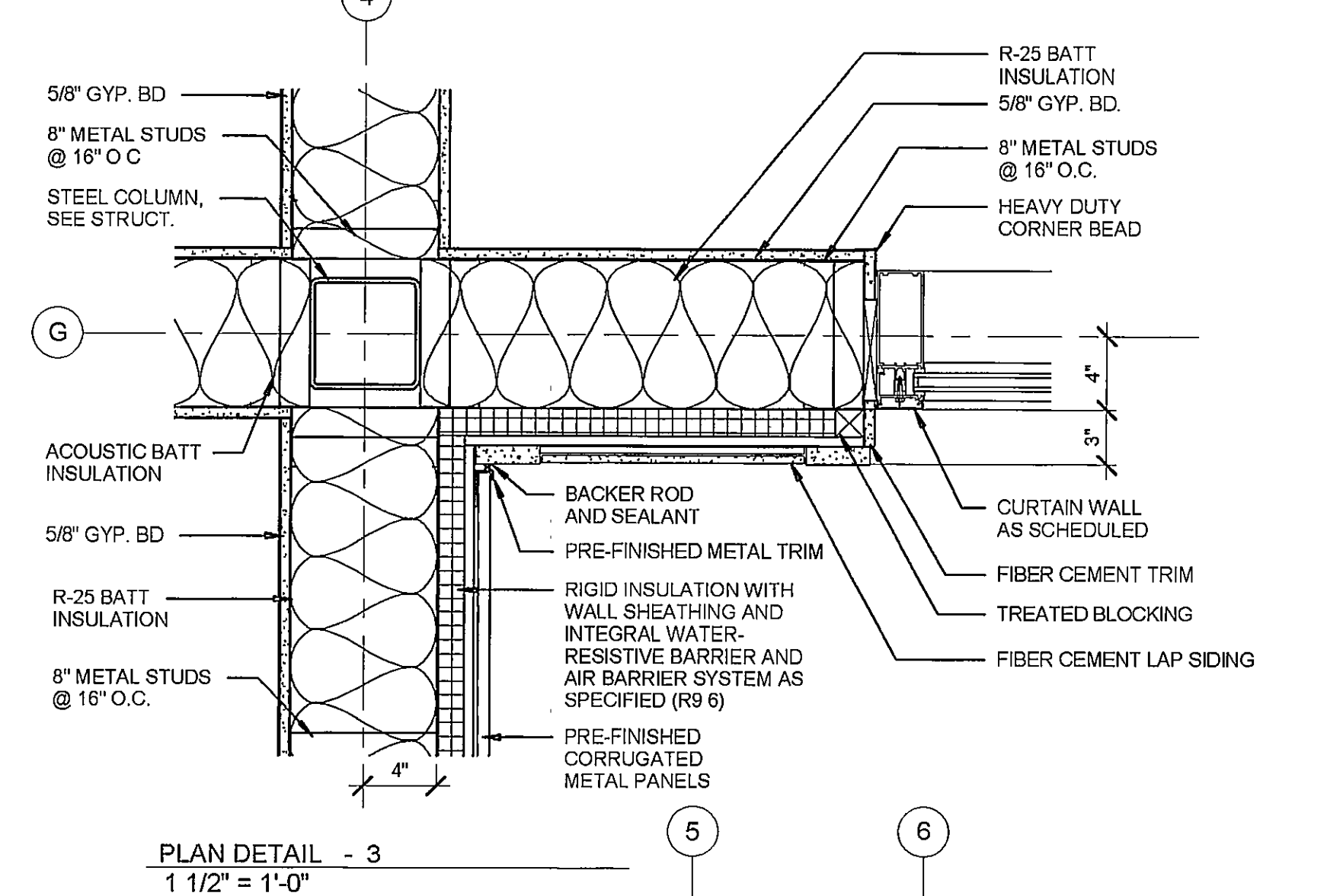
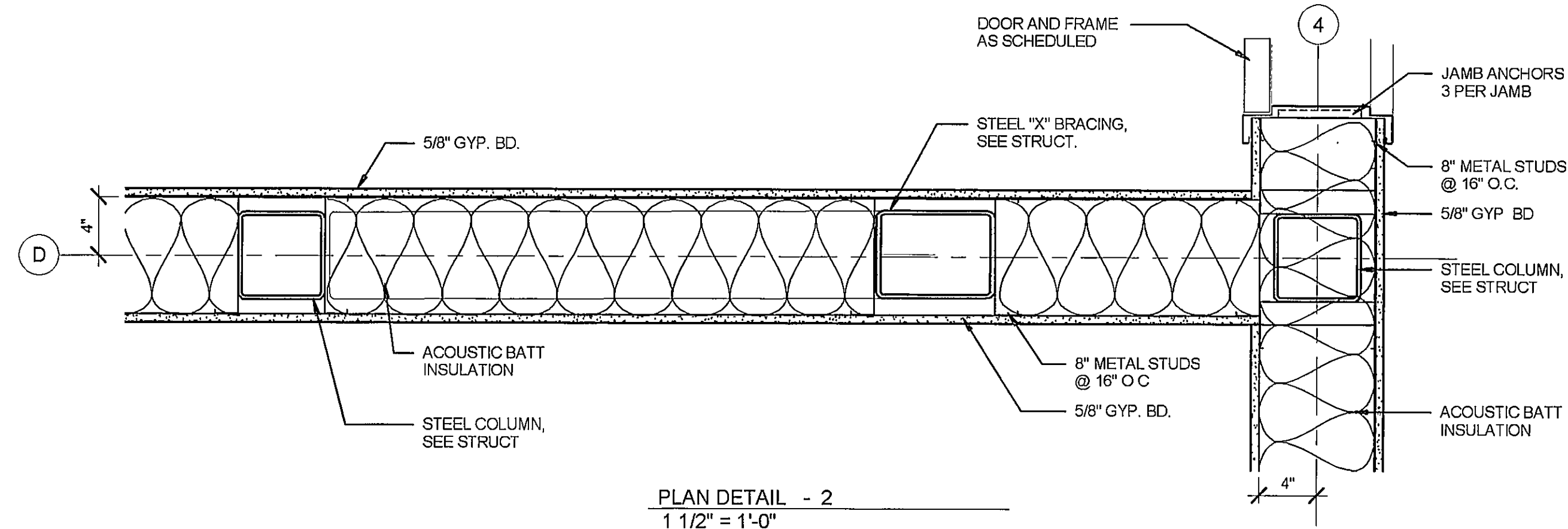
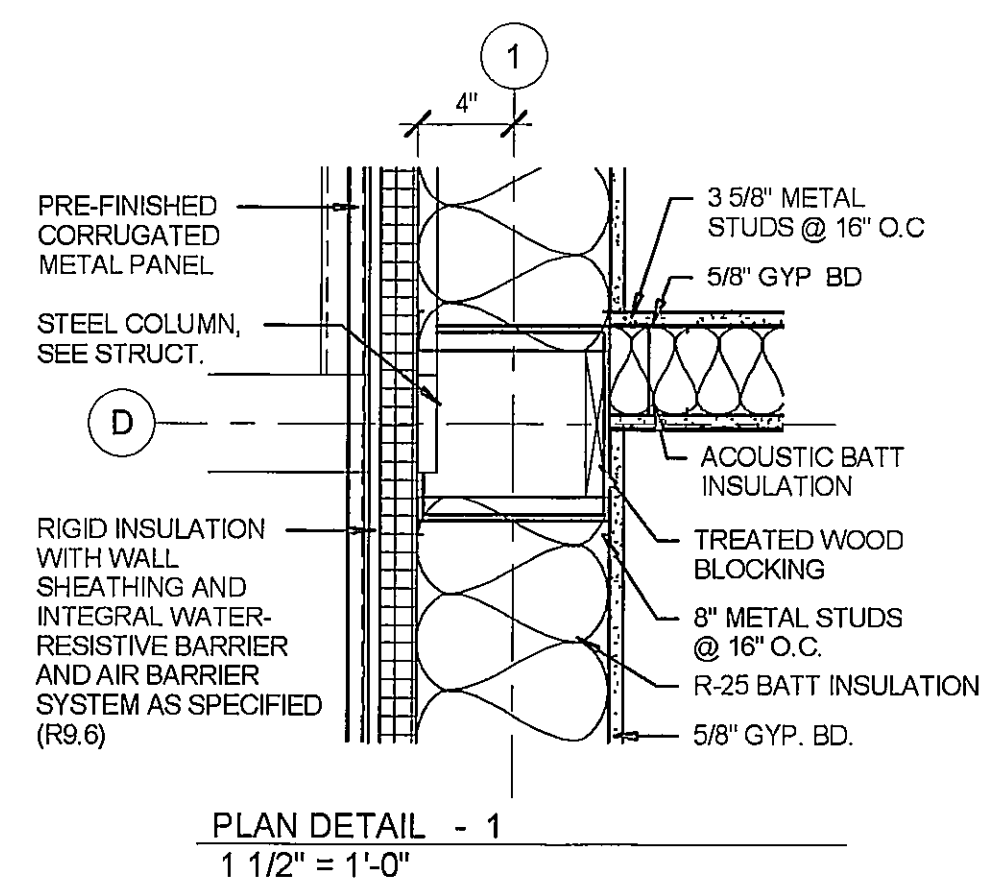
PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707

SHEET NUMBER

A4.6

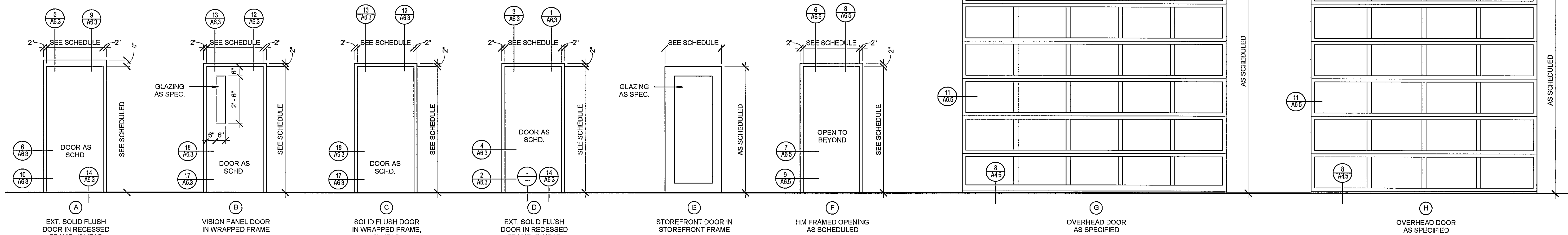


DOOR SCHEDULE										
OPNG NO.	OPNG TYPE	DOOR			FRAME			HDW SET NO	FIRE RATING	COMMENTS
		W	HGT	CONST.	FINISH	GAUGE	DEPTH			
100A	A	3'-0"	7'-0"	16G	PAINT	16	6"			
100B	G	14'-0"	14'-0"	-	-					OVERHEAD DOOR AS SPECIFIED
100C	G	14'-0"	14'-0"	-	-					OVERHEAD DOOR AS SPECIFIED
100D	G	14'-0"	14'-0"	-	-					OVERHEAD DOOR AS SPECIFIED
100E	G	14'-0"	14'-0"	-	-					OVERHEAD DOOR AS SPECIFIED
101A	B	3'-0"	6'-8"	WD	TRANS	16G	8 3/4"	PAINT	03	
102A	C	3'-0"	6'-8"	14G	PAINT	14G	8 3/4"	PAINT		REFER TO SPECIFICATION SECTION 08 10 10 FOR DOOR, FRAME AND HARDWARE
102B	C	3'-0"	7'-0"	14G	PAINT	14G	8 3/4"	PAINT		REFER TO SPECIFICATION SECTION 08 10 10 FOR DOOR, FRAME AND HARDWARE
103A	C	3'-0"	6'-8"	16G	PAINT	16G	8 3/4"	PAINT	07	
104A	H	12'-0"	12'-0"	-	-					OVERHEAD DOOR AS SPECIFIED
104B	A	3'-0"	7'-0"	16G	PAINT	16G	6"	PAINT	01	
104C	F	6'-0"	6'-8"	-	-	16G	8 3/4"	PAINT		FRAMED OPENING
104D	F	6'-0"	6'-8"	-	-	16G	8 3/4"	PAINT		FRAMED OPENING
105A	B	3'-0"	6'-8"	WD	TRANS	16G	8 3/4"	PAINT	04	
106A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	10	PADLOCK BY OWNER
106B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	10	PADLOCK BY OWNER
106C	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	10	PADLOCK BY OWNER
106D	D	3'-0"	6'-8"	16G	PAINT	16G	6"	PAINT	01	
107A	F	6'-0"	6'-8"	-	-	16G	10 3/8"	PAINT		FRAMED OPENING
108A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	09	
108B	E	3'-0"	7'-0"	ALUM.	ANOD.	ALUM.	-	ANOD.	02	STOREFRONT AS SPECIFIED
109A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	14	
110A	B	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	11	
111A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	14	
111B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
112A	B	3'-0"	6'-8"	WD	TRANS	16G	10 3/8"	PAINT	11	
113A	B	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	11	
114A	D	3'-0"	7'-0"	16G	PAINT	16G	6"	PAINT	01	
114B	C	3'-0"	6'-8"	WD	TRANS	16G	10 3/8"	PAINT	08	
115A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	12	
116A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
116B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
117A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
118A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
118B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
202A	C	3'-0"	6'-8"	WD	TRANS	16G	10 3/8"	PAINT	15	
205A	C	3'-0"	6'-8"	WD	TRANS	16G	10 3/8"	PAINT	13	
206A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
207A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
208A	D	3'-0"	6'-8"	16G	PAINT	16G	6"	PAINT	01	
208B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	08	
209A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
210A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
211A	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	13	
212A	C	3'-0"	6'-8"	WD	TRANS	16G	10 3/8"	PAINT	16	
212B	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	17	
212C	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	17	
212D	C	3'-0"	6'-8"	WD	TRANS	16G	6"	PAINT	17	

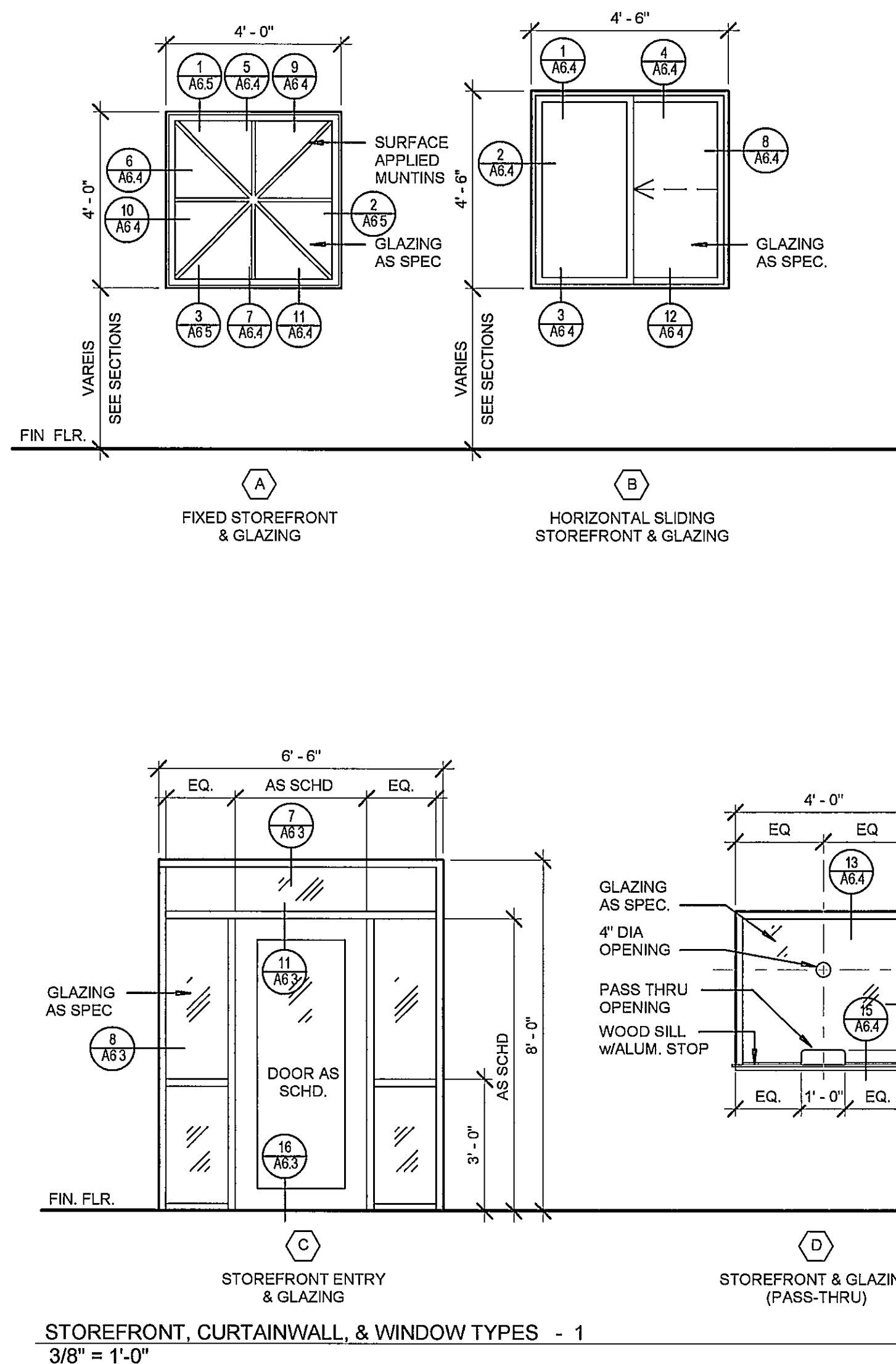
DOOR SCHEDULE LEGEND & NOTES:

16G STEEL DOOR/FRAME AS SPEC., GAUGE INDICATED
WD WOOD DOOR AS SPEC.
TRANS TRANSPARENT FINISH AS SPEC.
ALUM ALUMINUM STOREFRONT AS SPEC.
ANOD ANODIZED ALUMINUM FINISH AS SPEC.

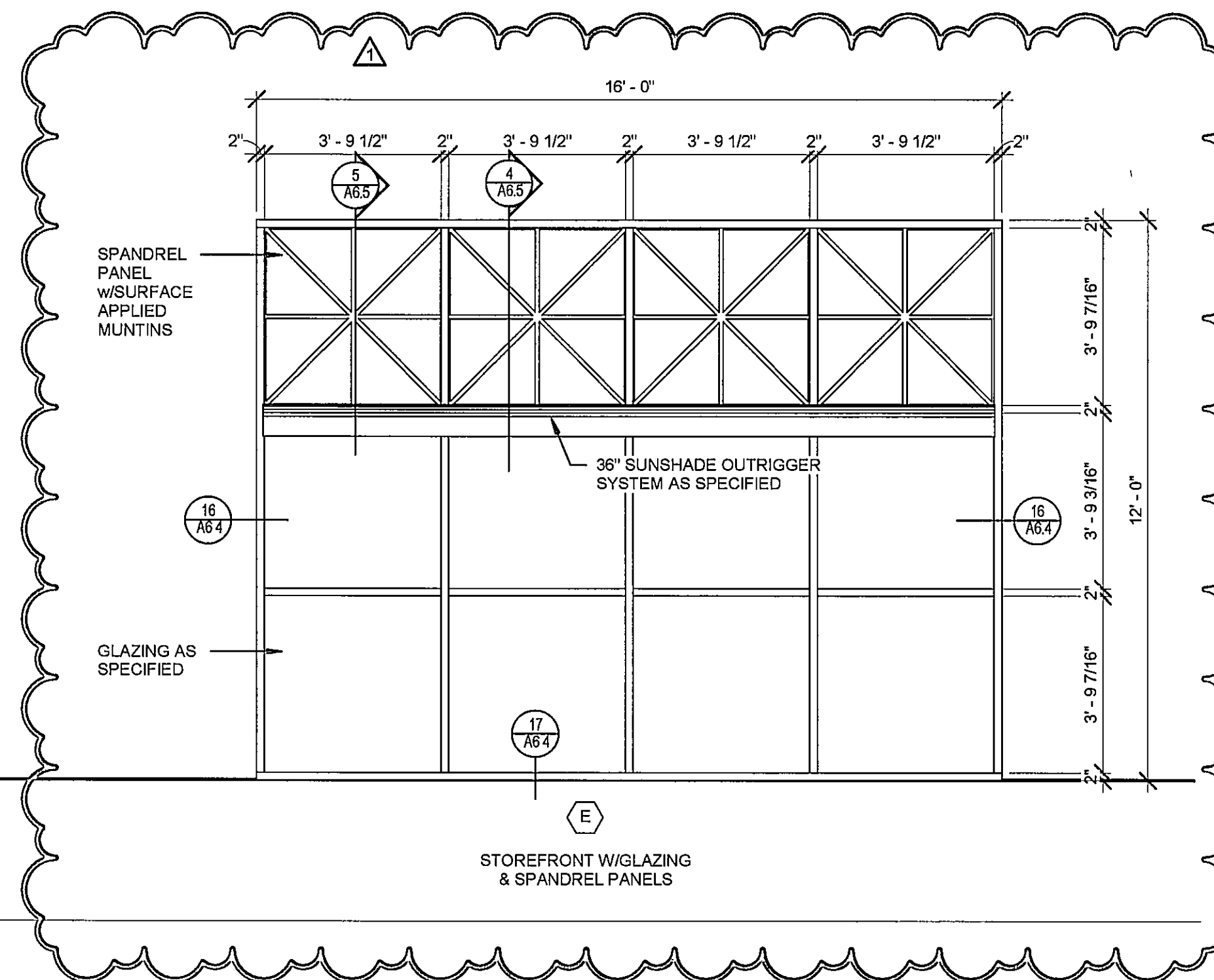
- PAINTED SURFACES TO BE SHOP-PRIMED AS SPECIFIED
- CONTRACTOR TO FIELD VERIFY FRAME DEPTH AS REQ'D



DOOR & FRAME TYPES - 2
3/8" = 1'-0"



STOREFRONT, CURTAINWALL, & WINDOW TYPES - 1
3/8" = 1'-0"



DRAWN

SG

CHECKED

JKL

FINAL DATE

APRIL 2, 2020

REVISION SCHEDULE

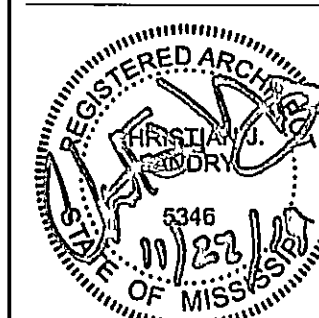
REV # REV DATE

1 7/15/2020

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CREATING LANDMARKS SINCE 1910...

SHEET TITLE
OPENING TYPES & SCHEDULE

PROJECT
FIRE STATION No. 9

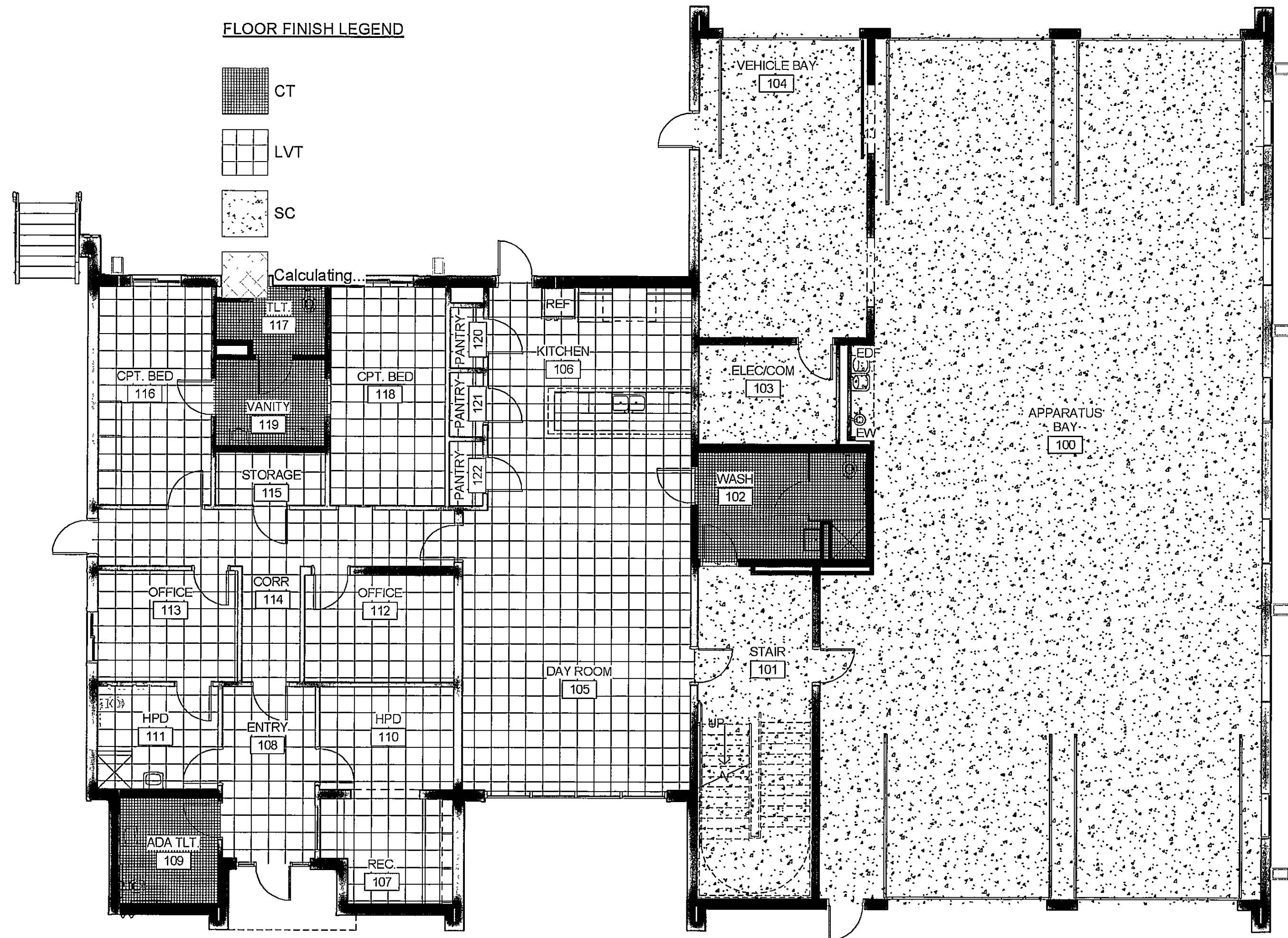


CITY OF HATTIESBURG
HATTIESBURG, MS

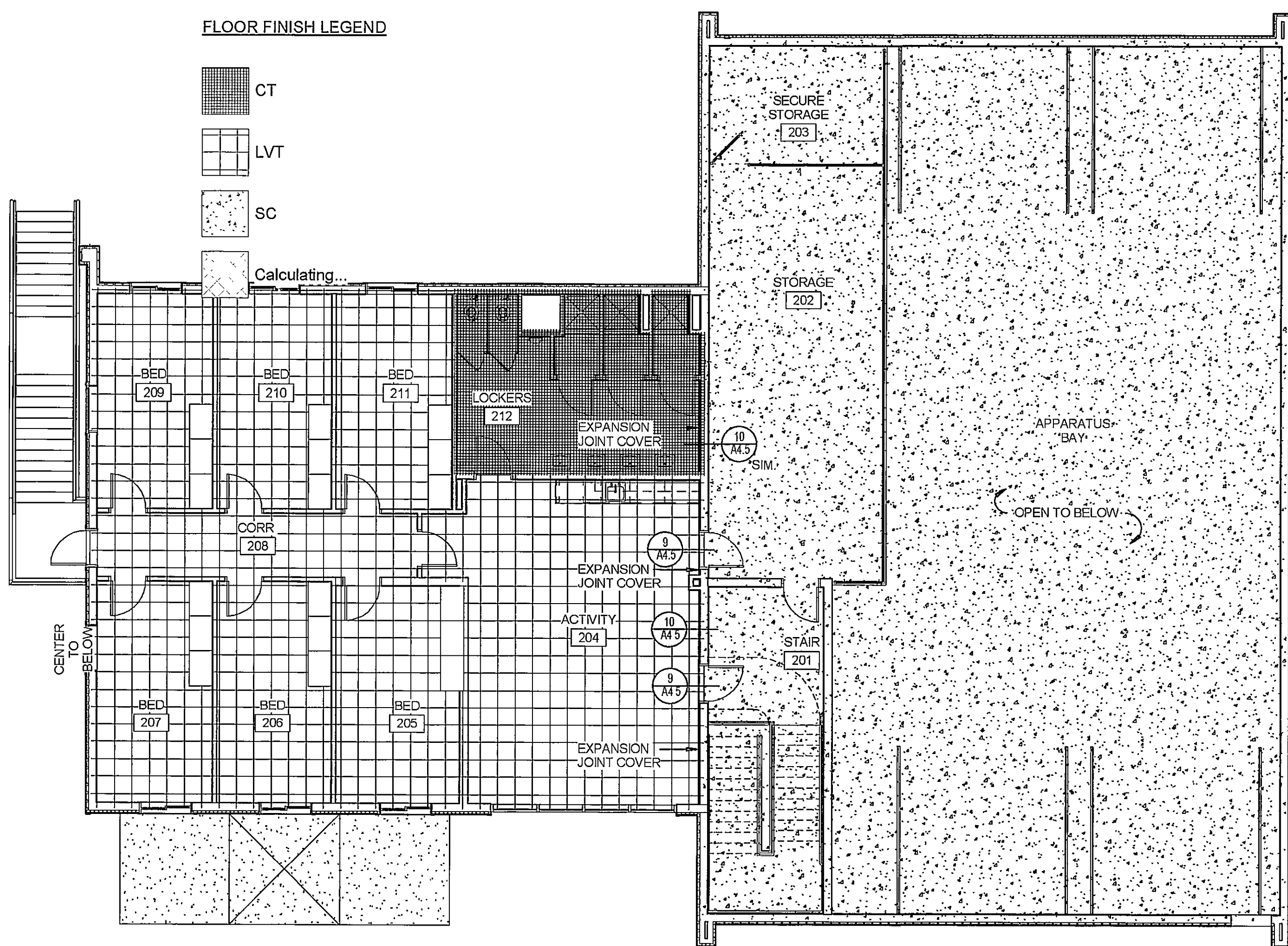
CN18-3707

SHEET NUMBER

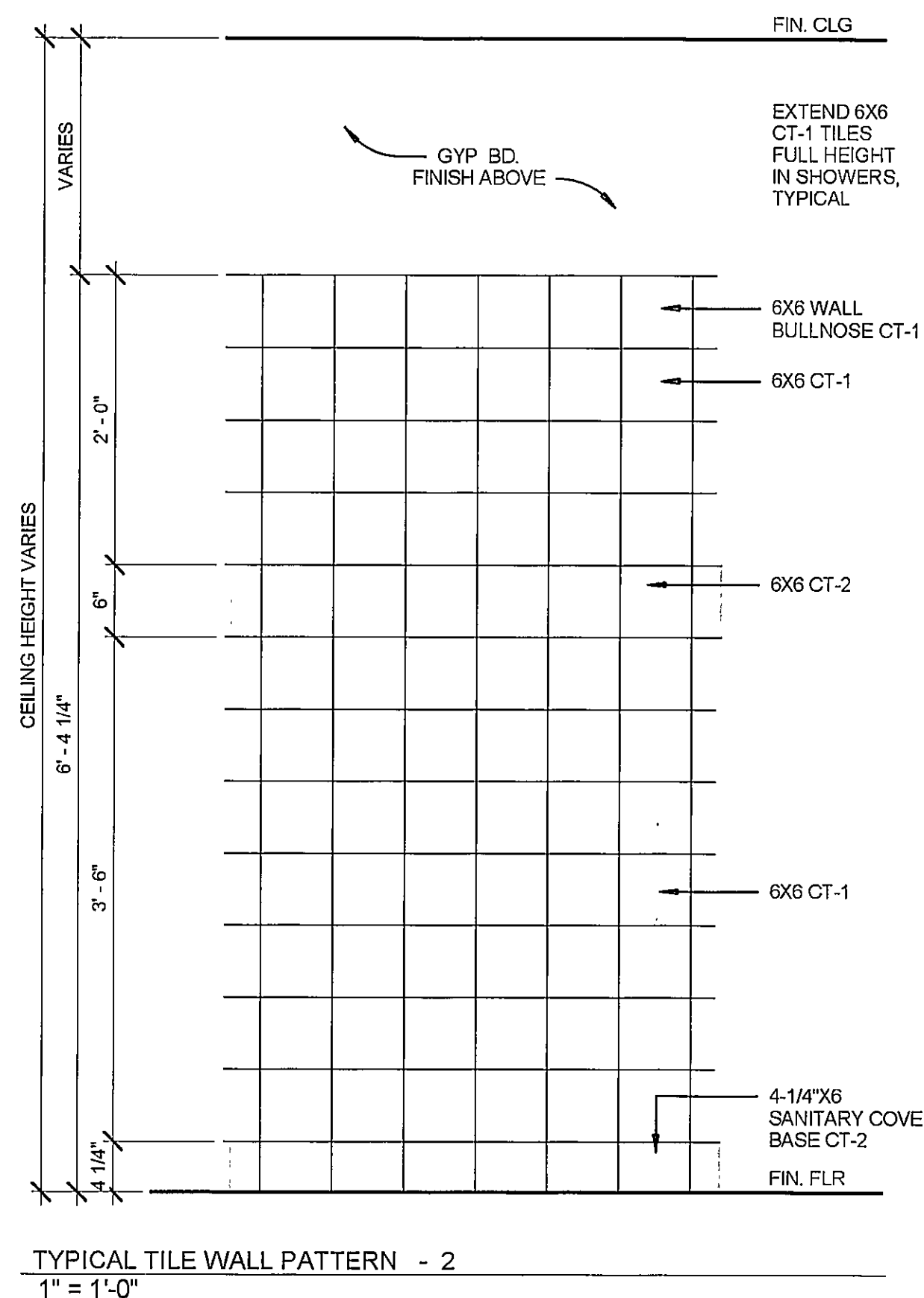
A6.1



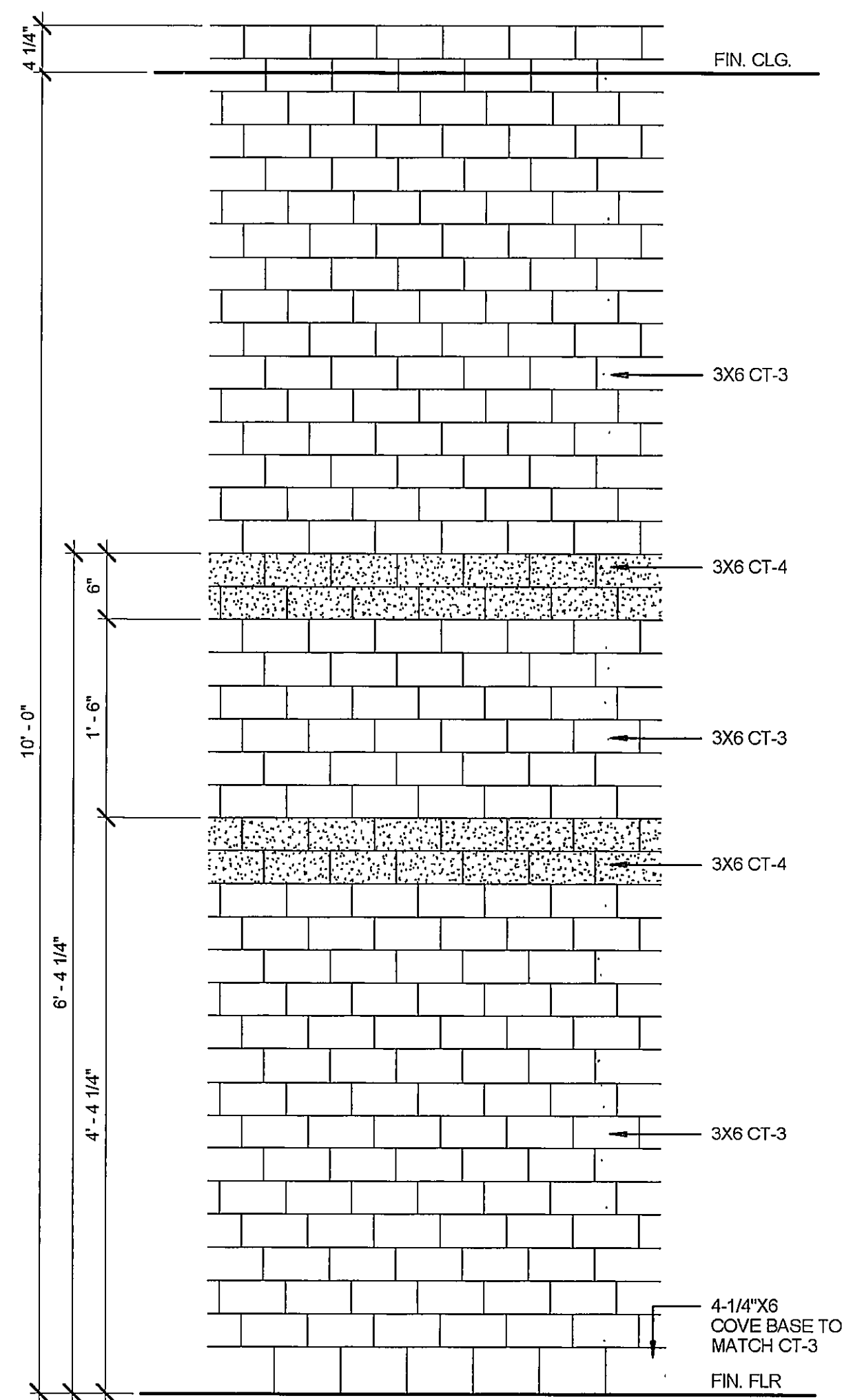
FIRST FLOOR PLAN - 3
1/8" = 1'-0"



SECOND FLOOR/MEZZANINE PLAN - 4
1/8" = 1'-0"



TYPICAL TILE WALL PATTERN - 2
1" = 1'-0"

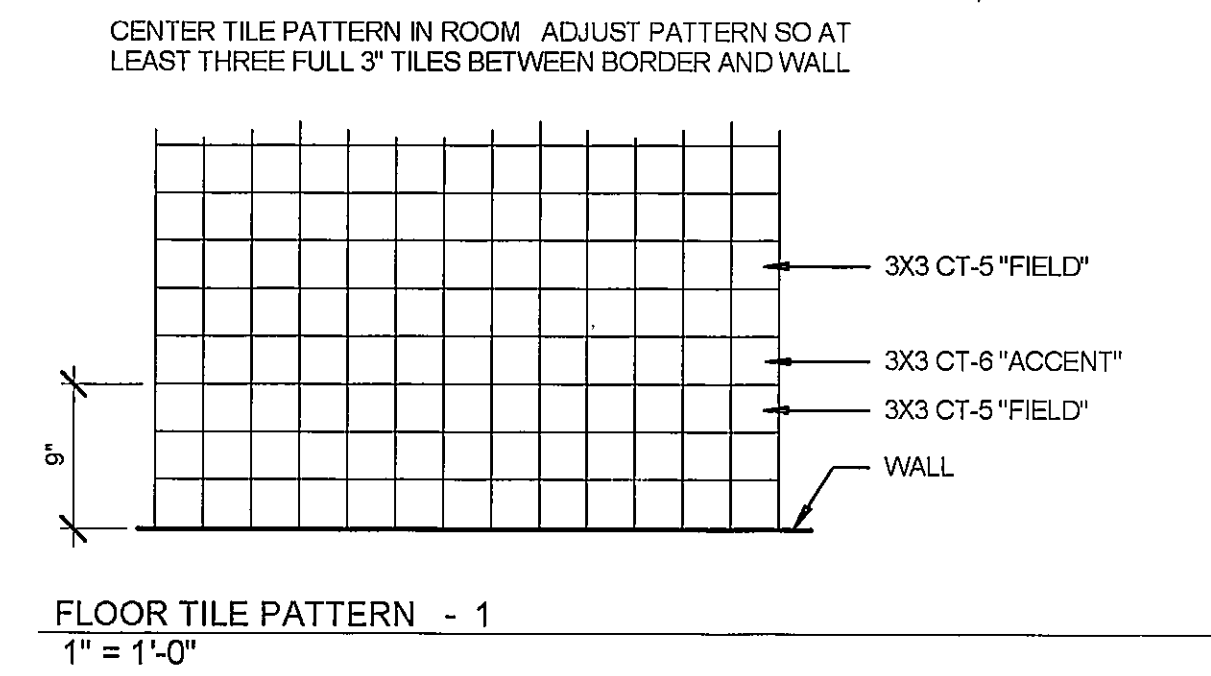


SUBWAY TILE WALL PATTERN - 5
1" = 1'-0"

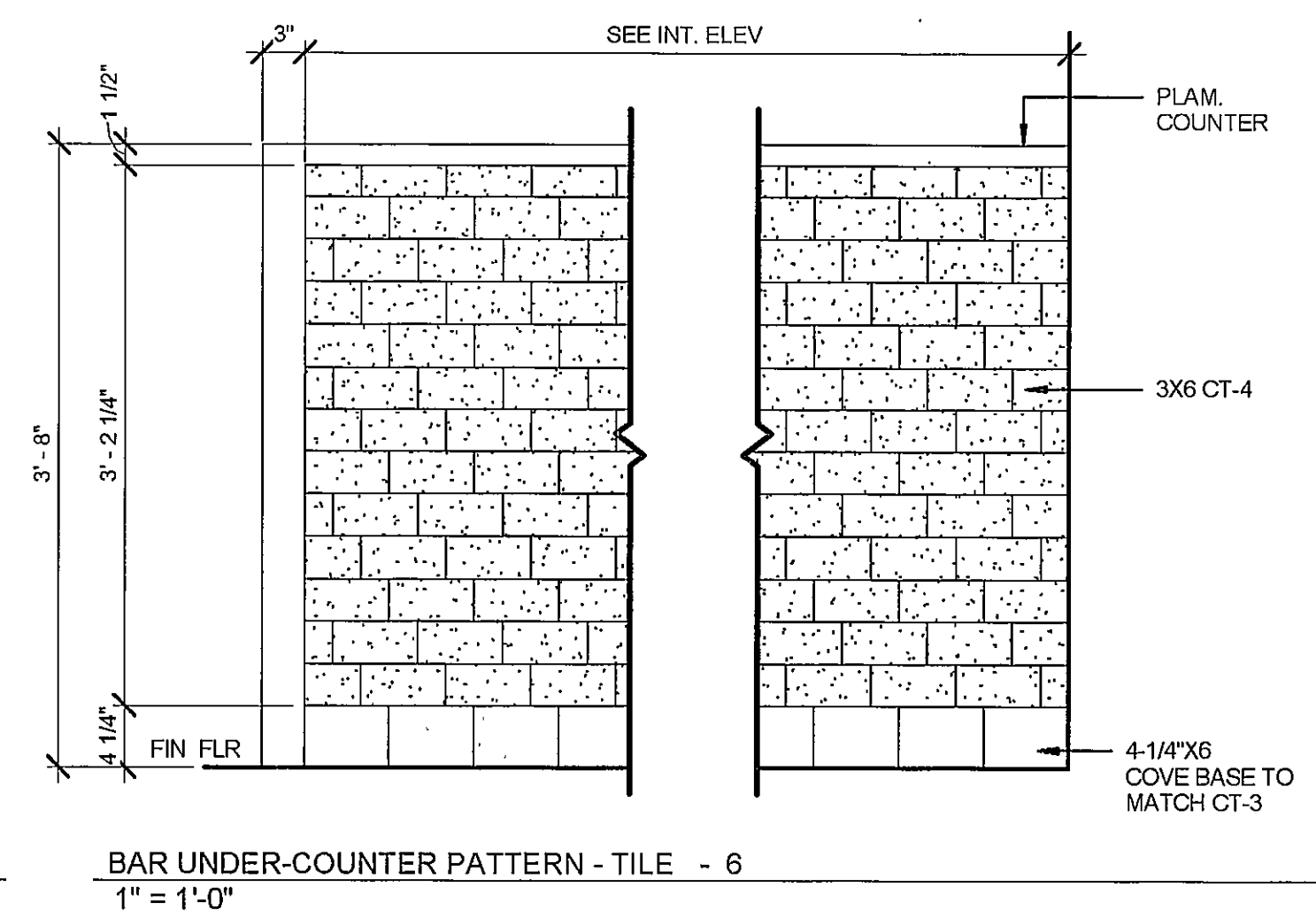
FINISH SCHEDULE						
ROOM NAME	ROOM NO.	FINISHES				REMARKS
		FLOOR	BASE	WALLS	CEILING	
APPARATUS BAY	100	SC	NONE	PAINT	NONE	
STAIR	101	SC	RB	PAINT	NONE	
WASH	102	CT	RB, CT	PAINT, CT	LAT-2	SHOWER TO BE CT FINISH
ELEC/COM	103	SC	NONE	PAINT	NONE	
VEHICLE BAY	104	SC	NONE	PAINT	NONE	
DAY ROOM	105	LVT	RB	PAINT	LAT-1	
KITCHEN	106	LVT	RB, CT	PAINT, CT	LAT-1	SEE FINISH SCHEDULE NOTES
REC.	107	LVT	RB	PAINT	LAT-1	
ENTRY	108	LVT	RB	PAINT	LAT-1	
ADA TLT.	109	CT	CT	PAINT	LAT-2	
HPD	110	LVT	RB	PAINT	LAT-1	
HPD	111	LVT	RB	PAINT	LAT-2	
OFFICE	112	LVT	RB	PAINT	LAT-1	
OFFICE	113	LVT	RB	PAINT	LAT-1	
CORR.	114	LVT	RB	PAINT	LAT-1	
STORAGE	115	LVT	RB	PAINT	LAT-1	
CPT. BED	116	LVT	RB	PAINT	LAT-1	
TLT.	117	CT	CT	PAINT	LAT-2	
CPT. BED	118	LVT	RB	PAINT	LAT-1	
VANITY	119	CT	CT	PAINT	LAT-2	
PANTRY	120	LVT	RB	PAINT	GYP.	
PANTRY	121	LVT	RB	PAINT	GYP.	
PANTRY	122	LVT	RB	PAINT	GYP.	
STAIR	201	SC	RB	PAINT	NONE	
STORAGE	202	SC	RB	PAINT	NONE	
SECURE STORAGE	203	SC	RB	PAINT	NONE	
ACTIVITY	204	LVT	RB	PAINT	LAT-1	
BED	205	LVT	RB	PAINT	LAT-1	
BED	206	LVT	RB	PAINT	LAT-1	
BED	207	LVT	RB	PAINT	LAT-1	
CORR.	208	LVT	RB	PAINT	LAT-1	
BED	209	LVT	RB	PAINT	LAT-1	
BED	210	LVT	RB	PAINT	LAT-1	
BED	211	LVT	RB	PAINT	LAT-1	
LOCKERS	212	CT	CT	PAINT, CT	LAT-2	SHOWER ROOMS TO BE CT FINISH

* CEILINGS AS NONE ARE EXPOSED STRUCTURE TO PAINT
FINISH SCHEDULE LEGEND & NOTES: A.18

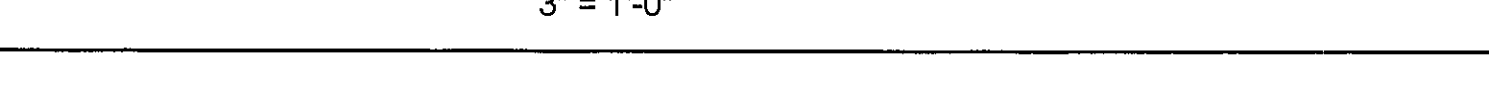
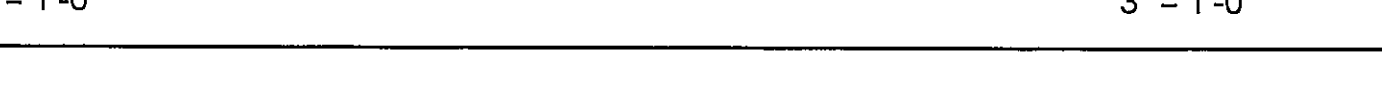
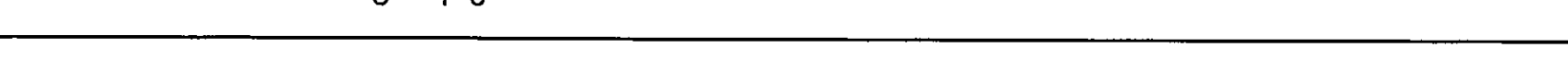
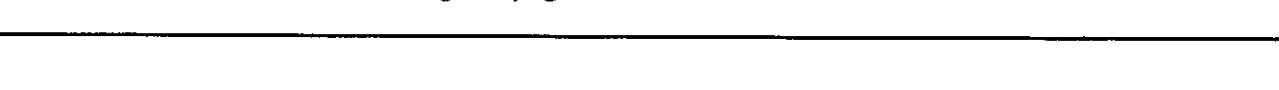
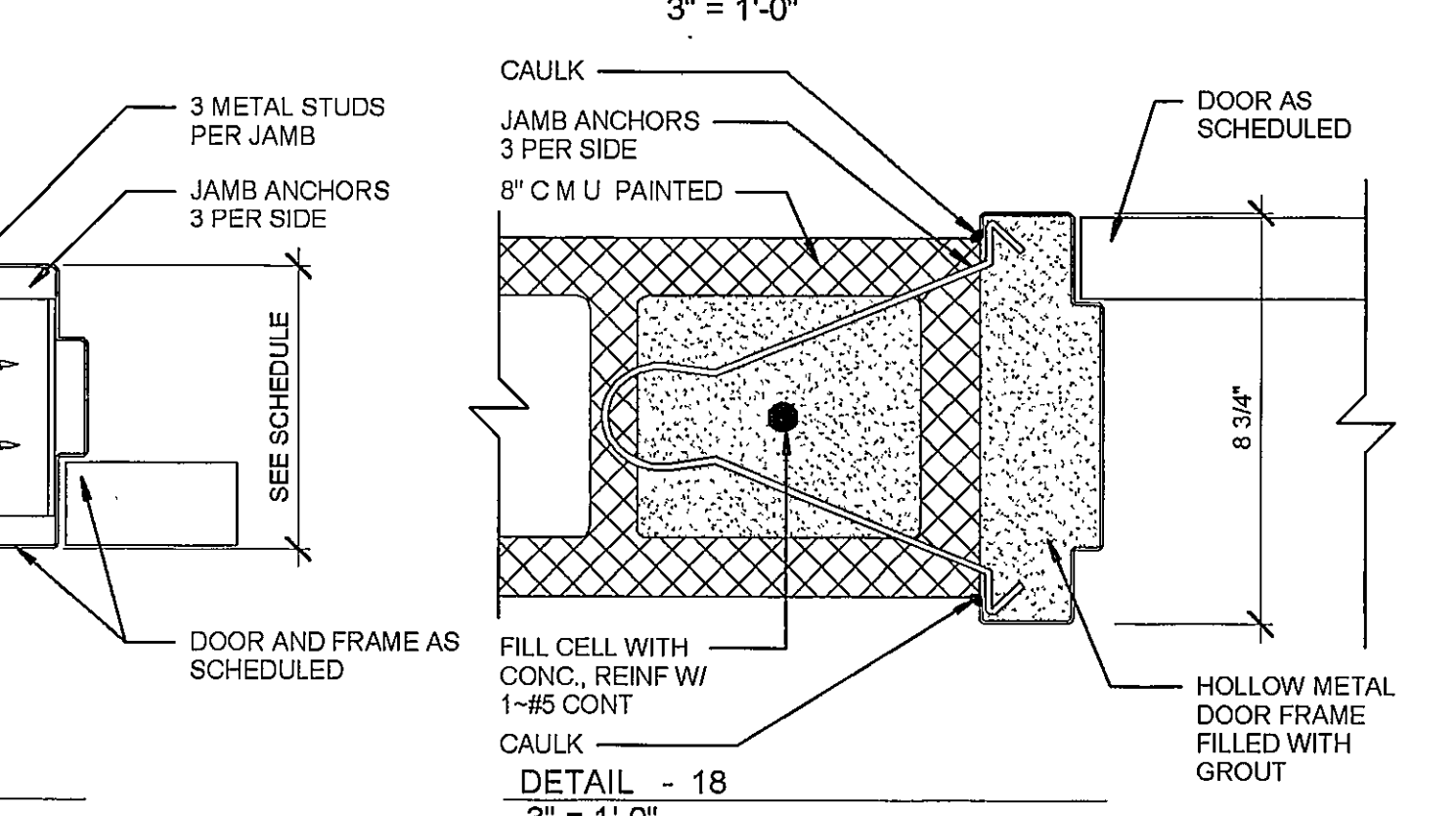
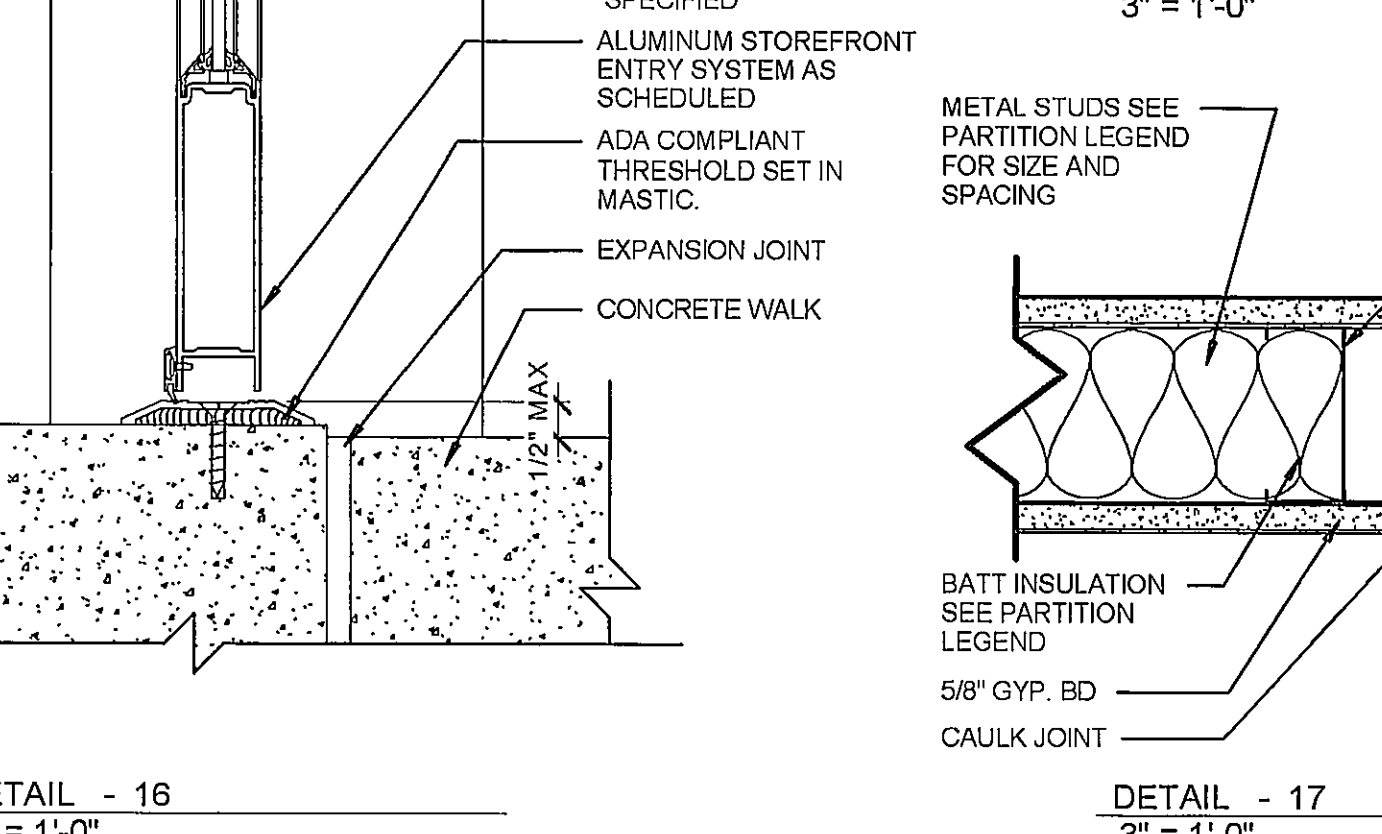
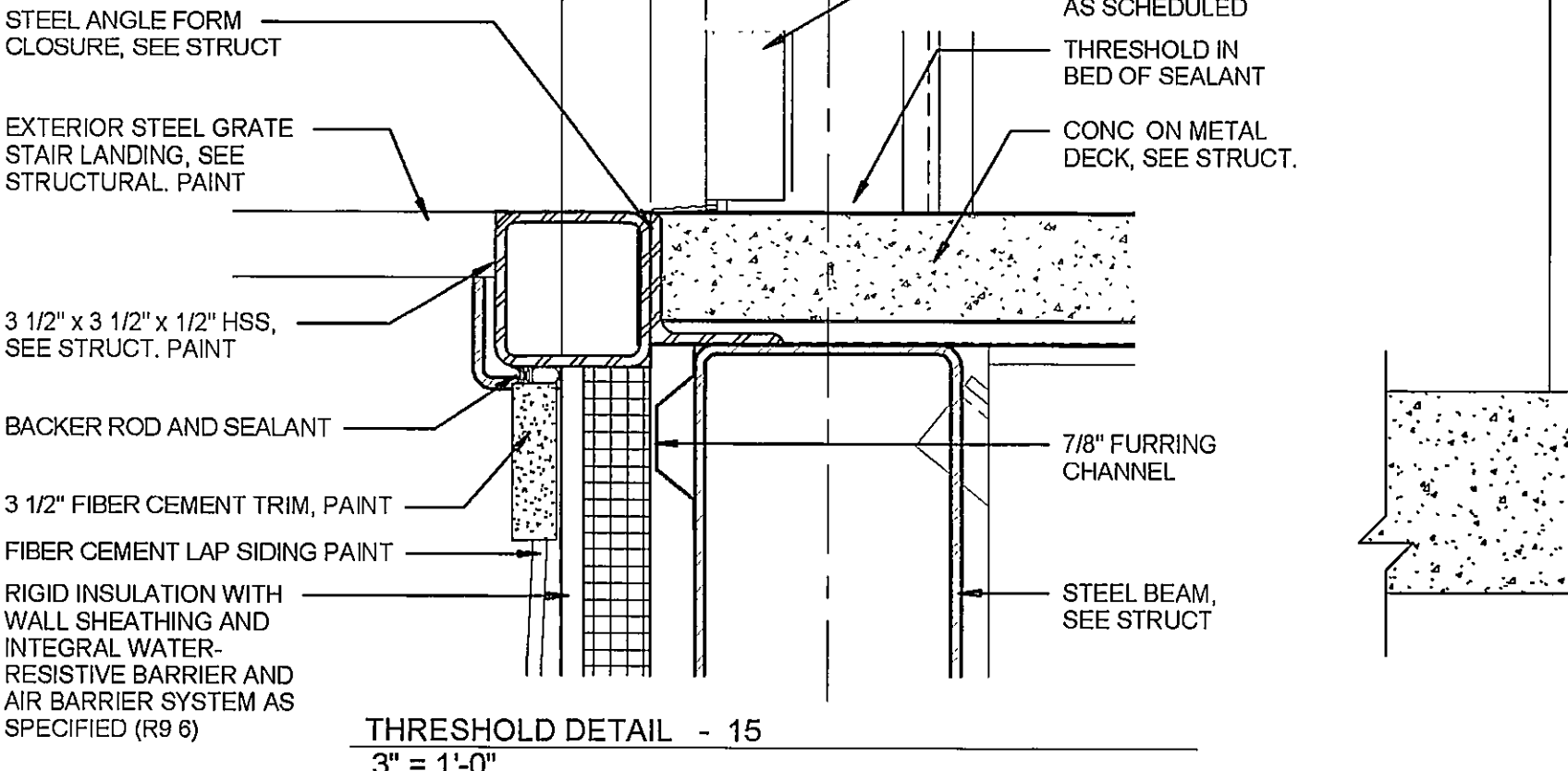
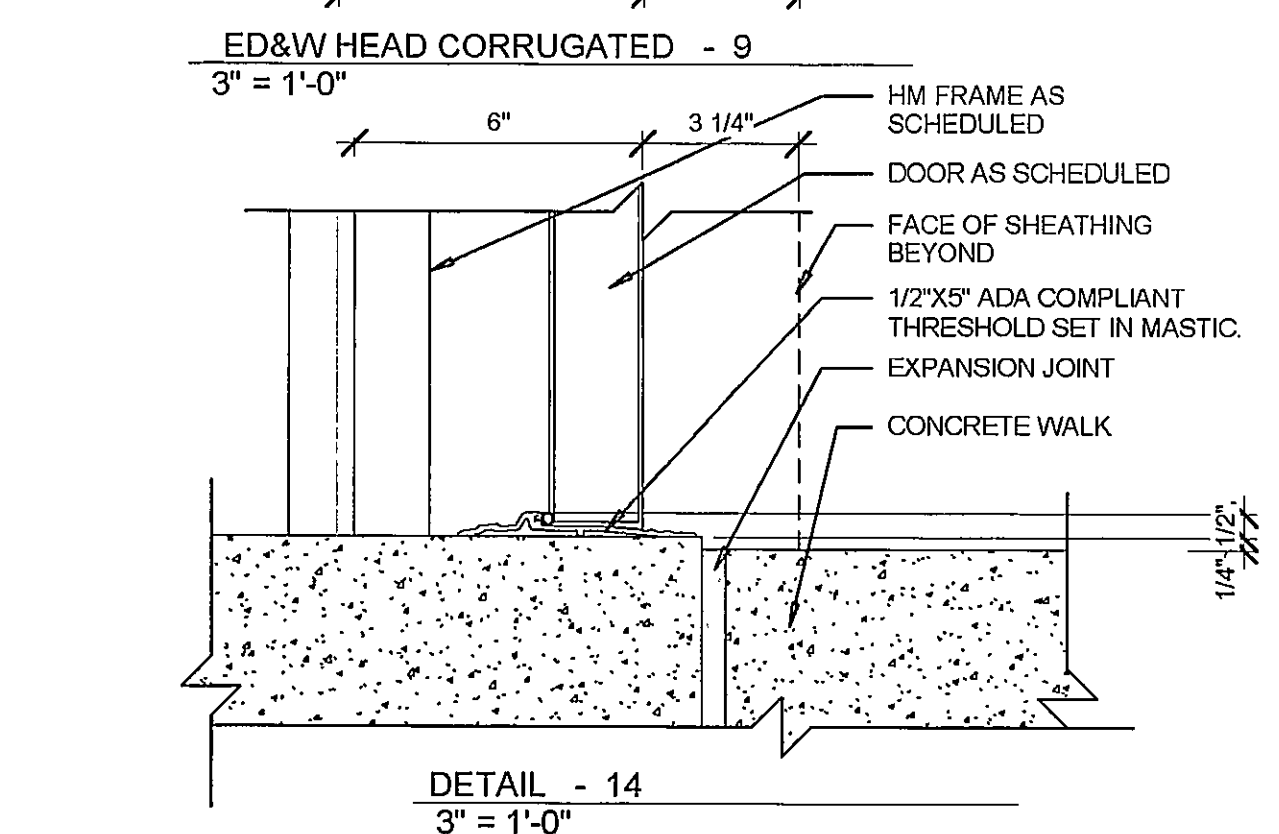
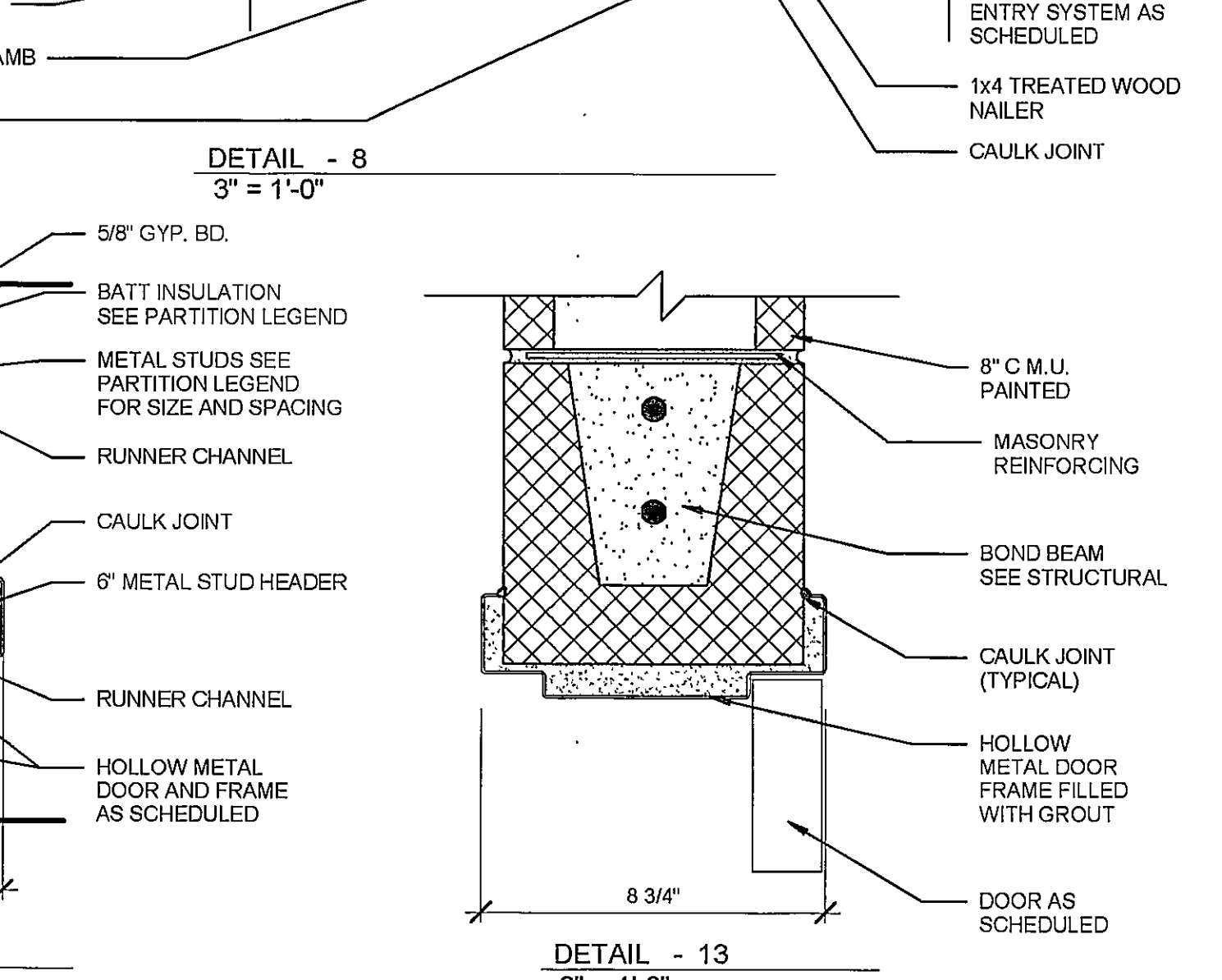
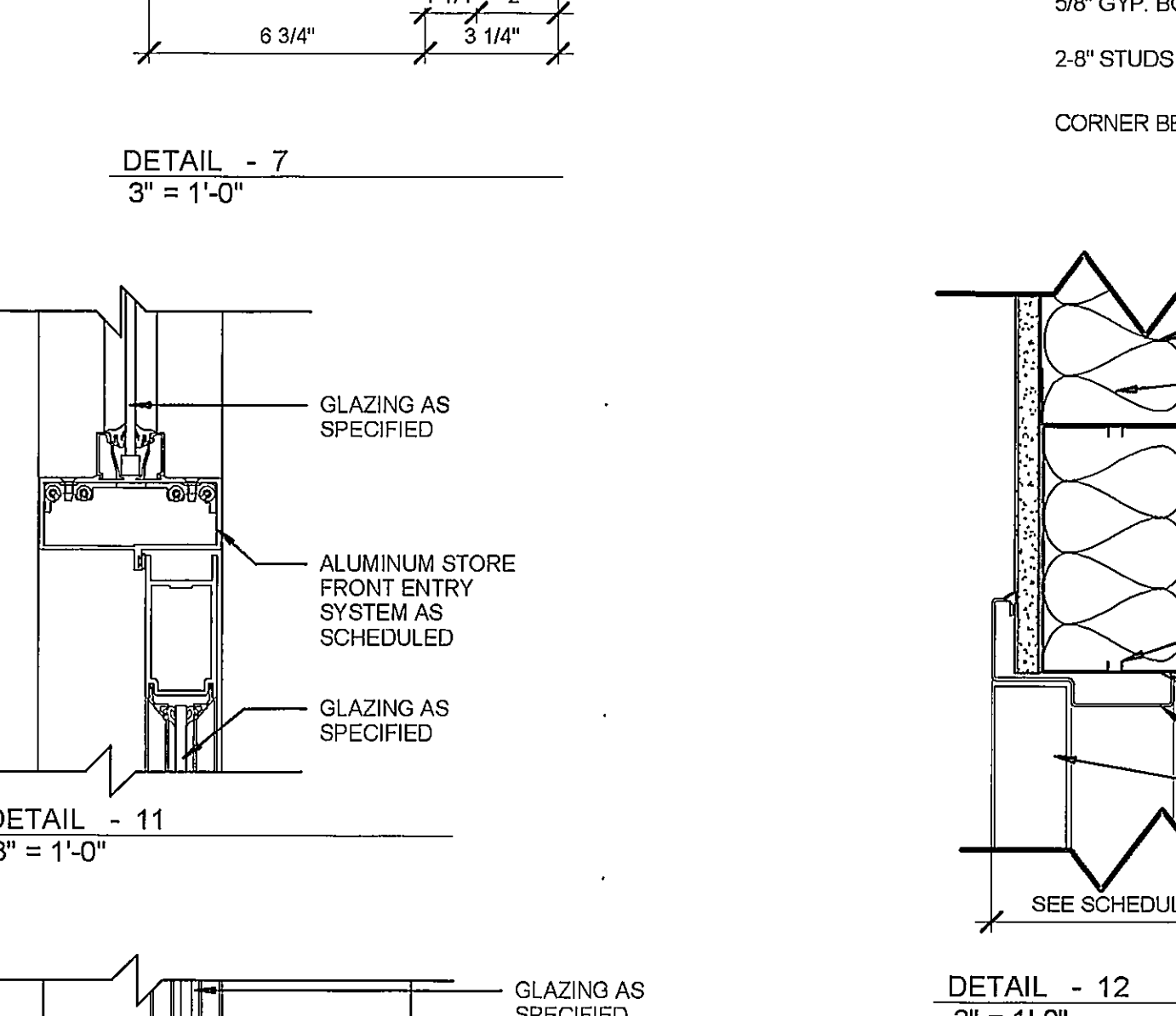
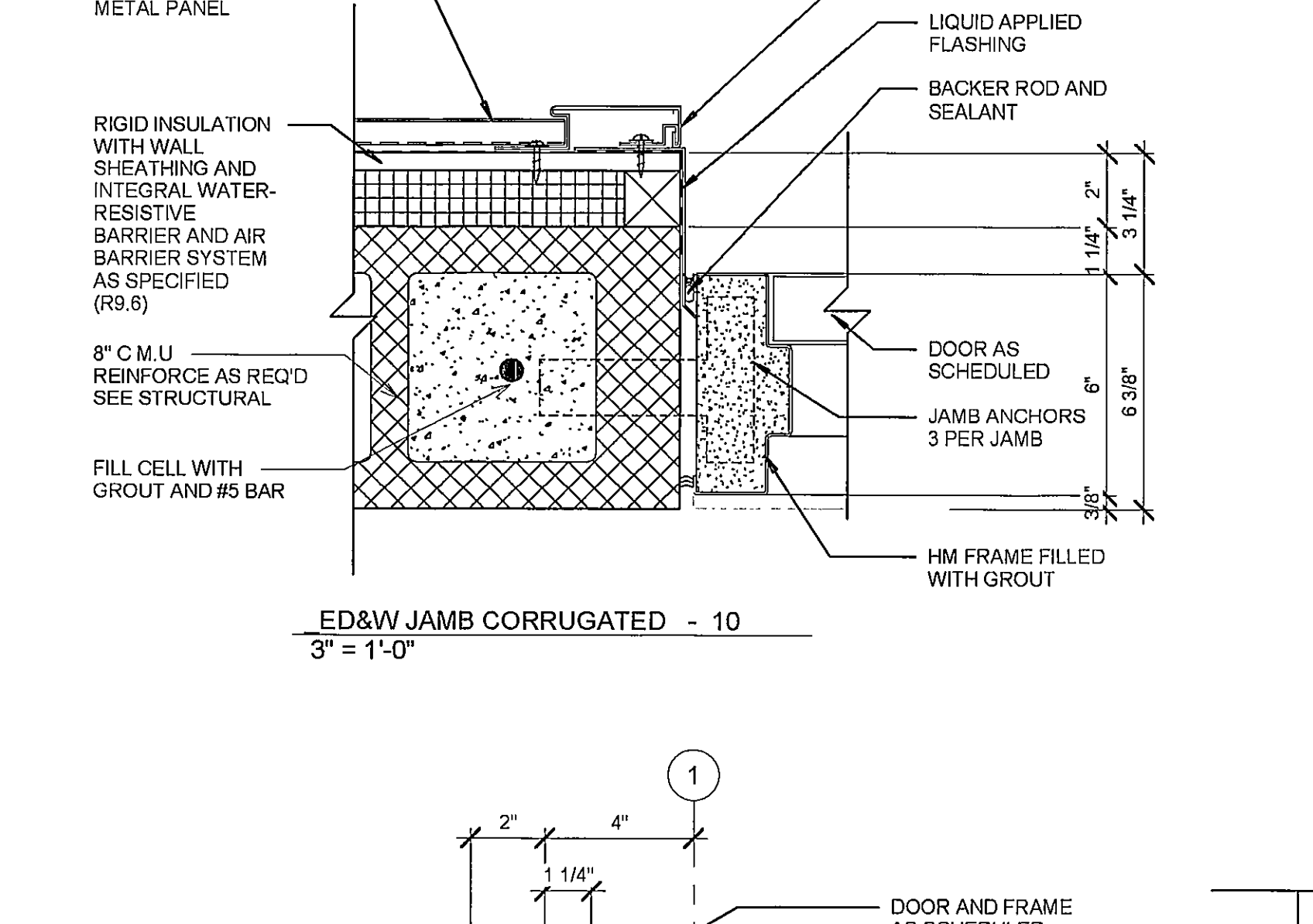
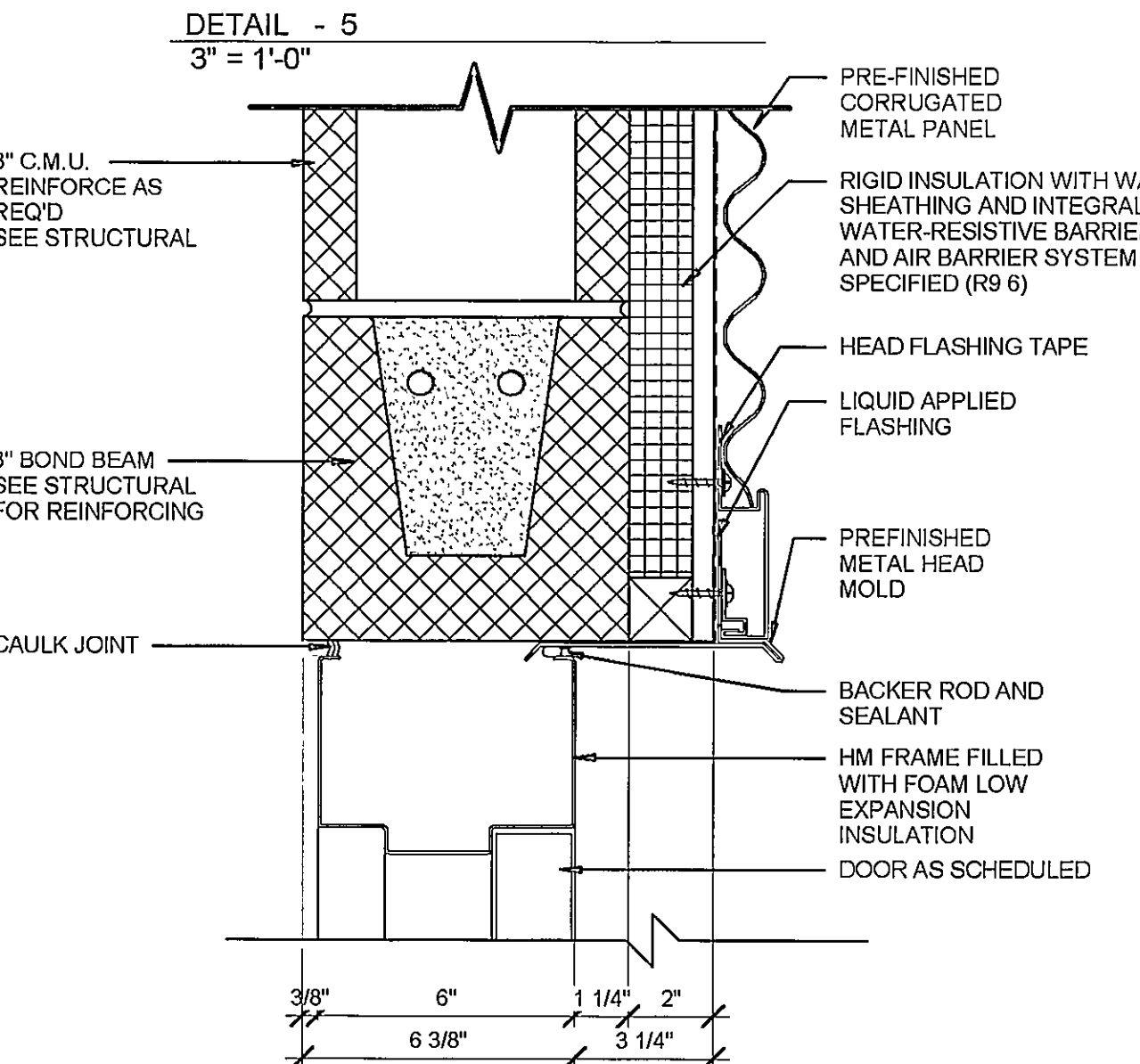
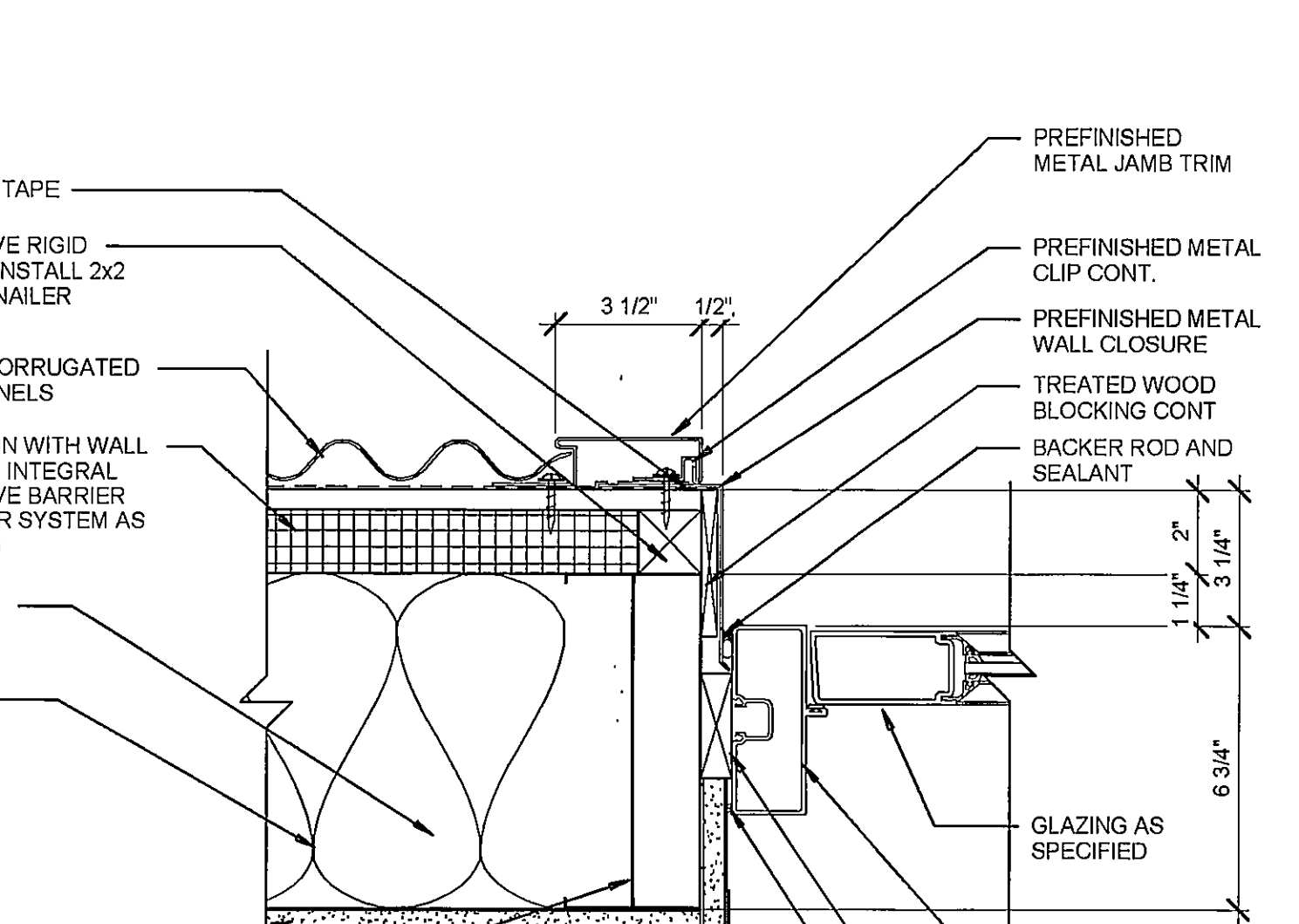
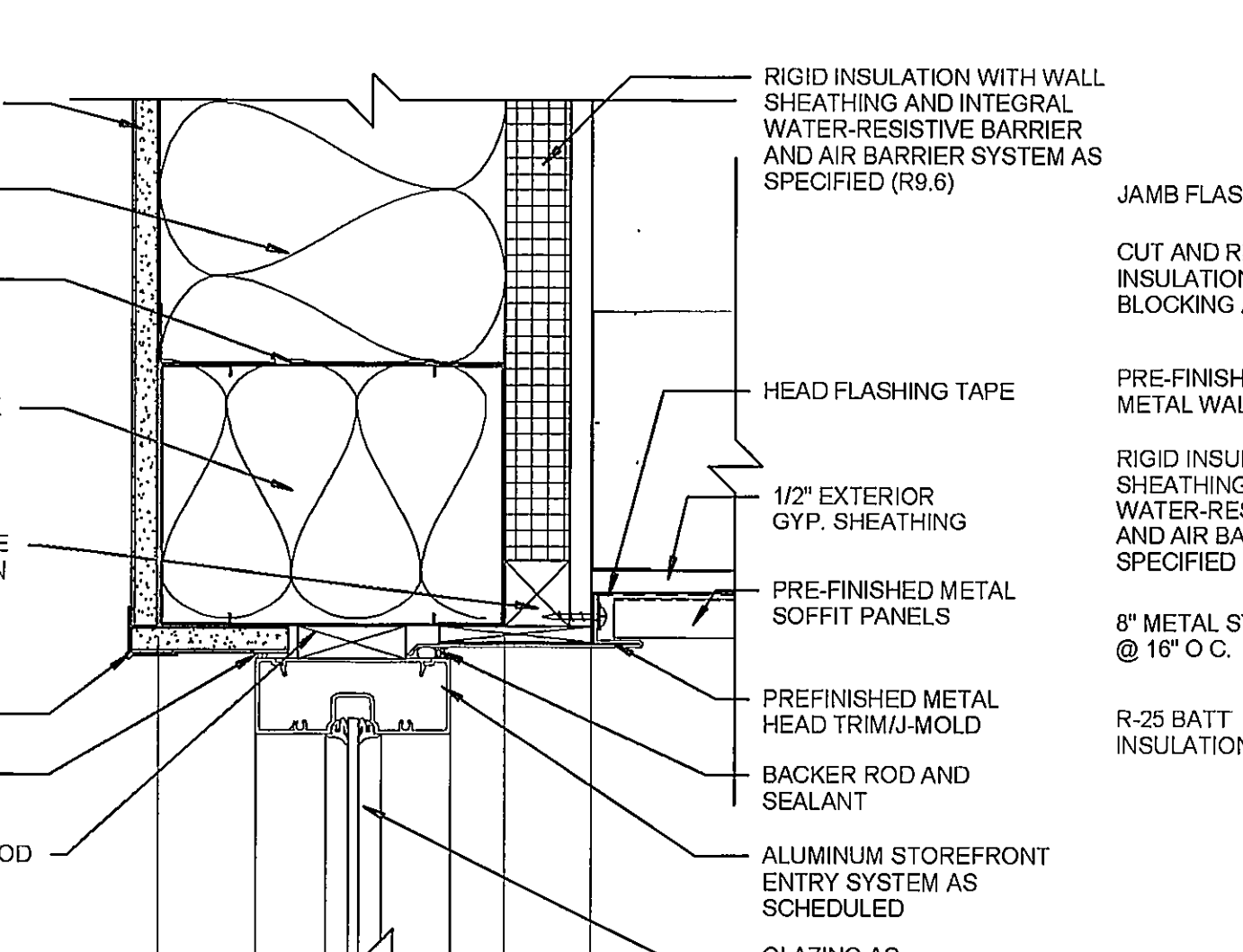
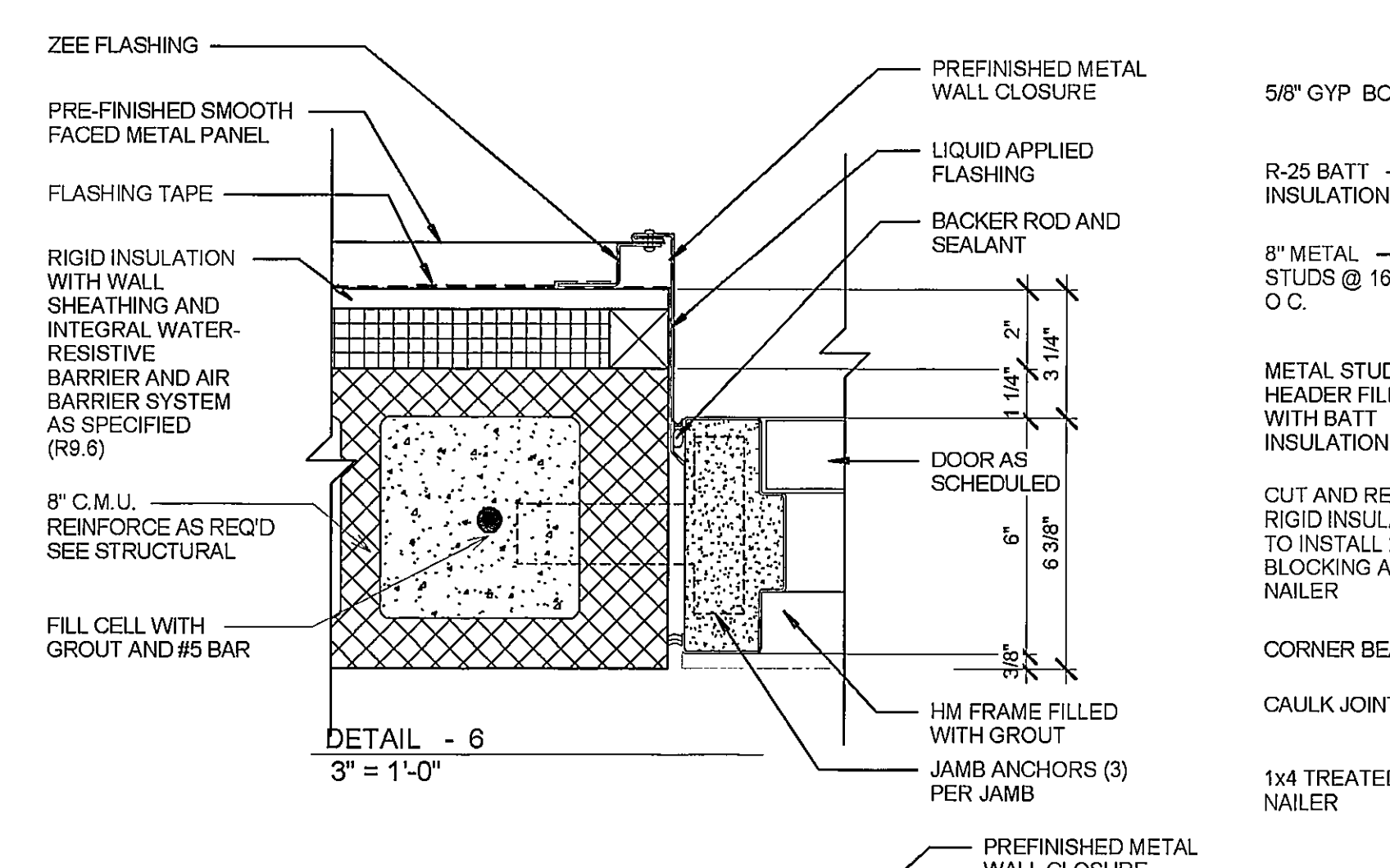
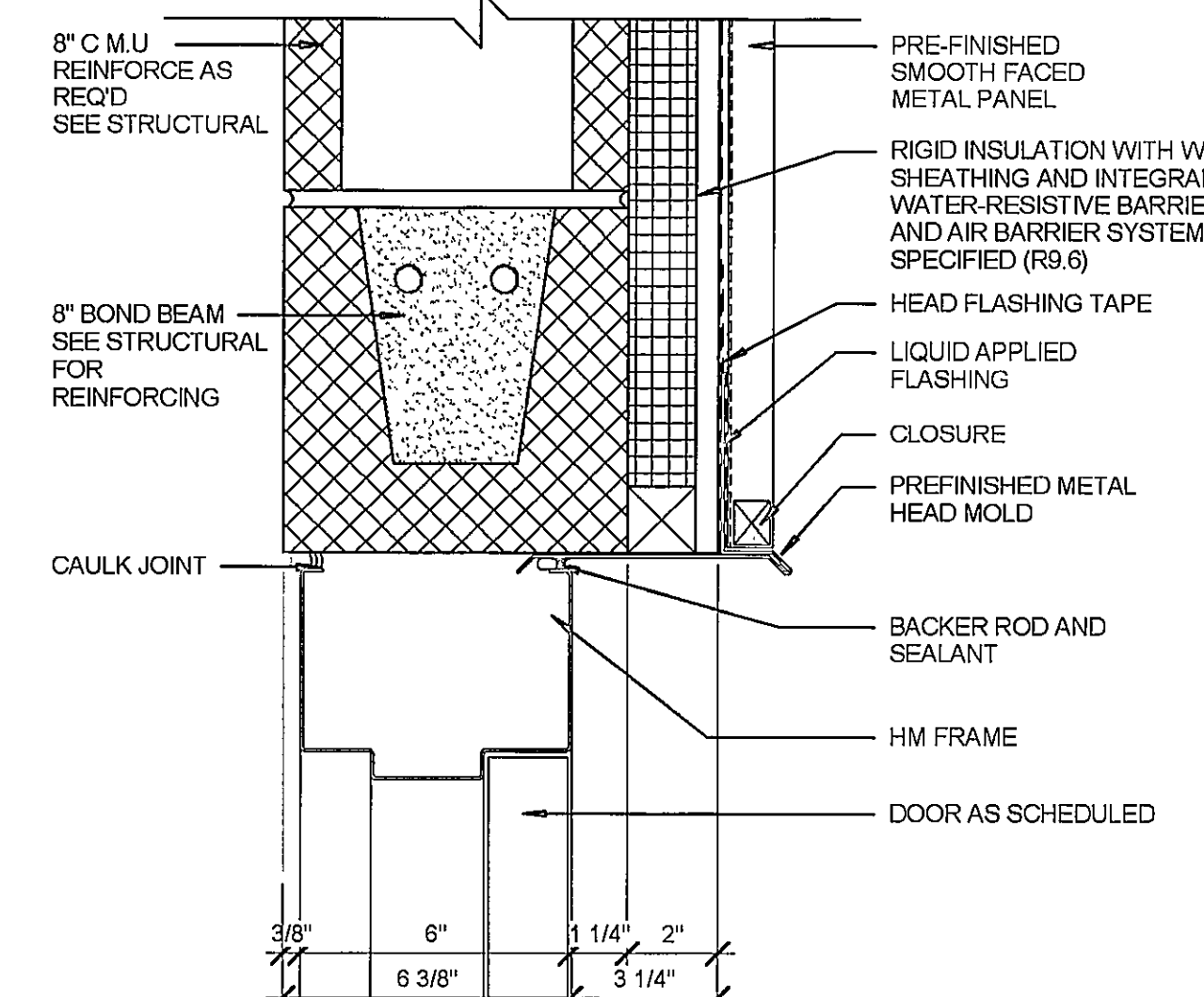
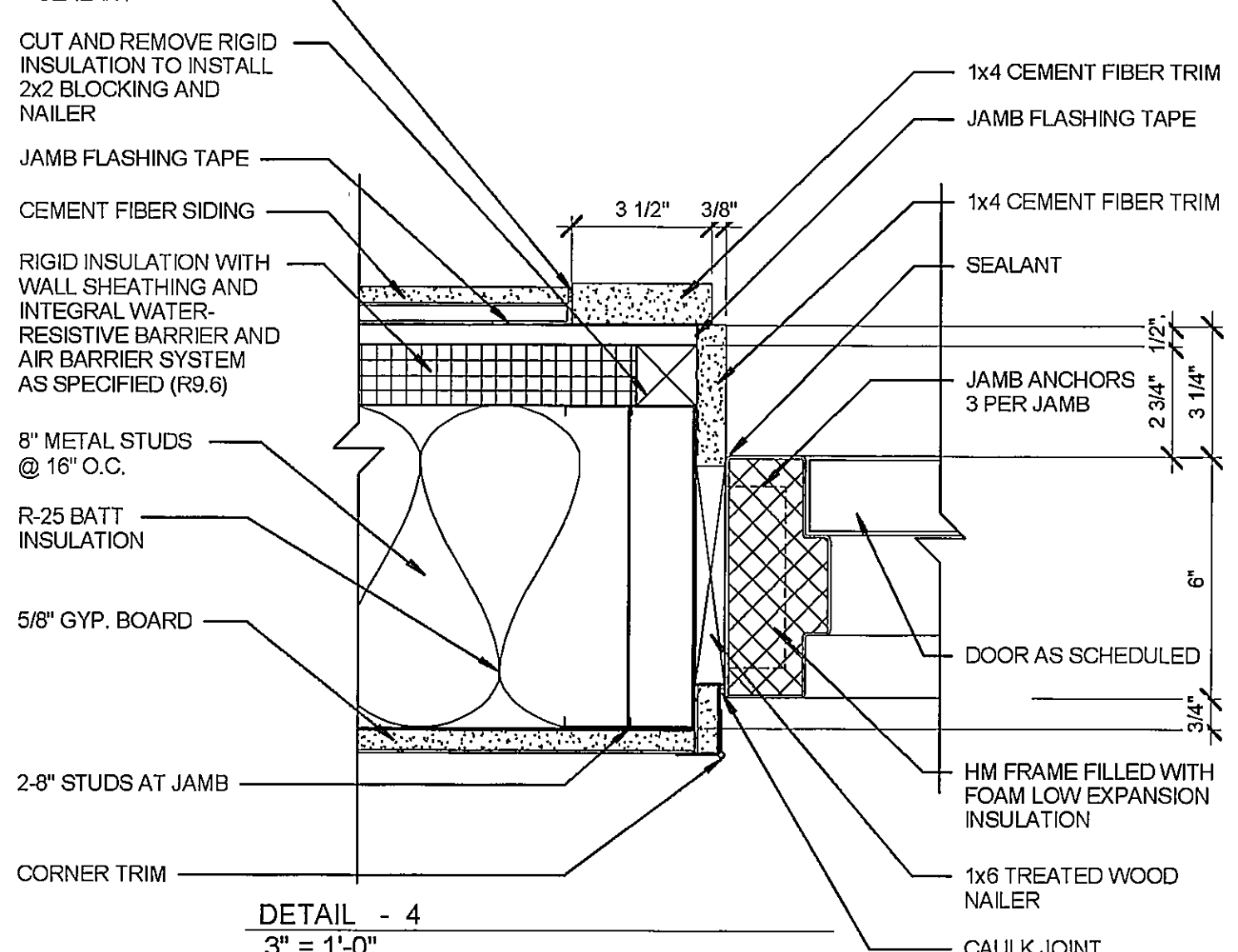
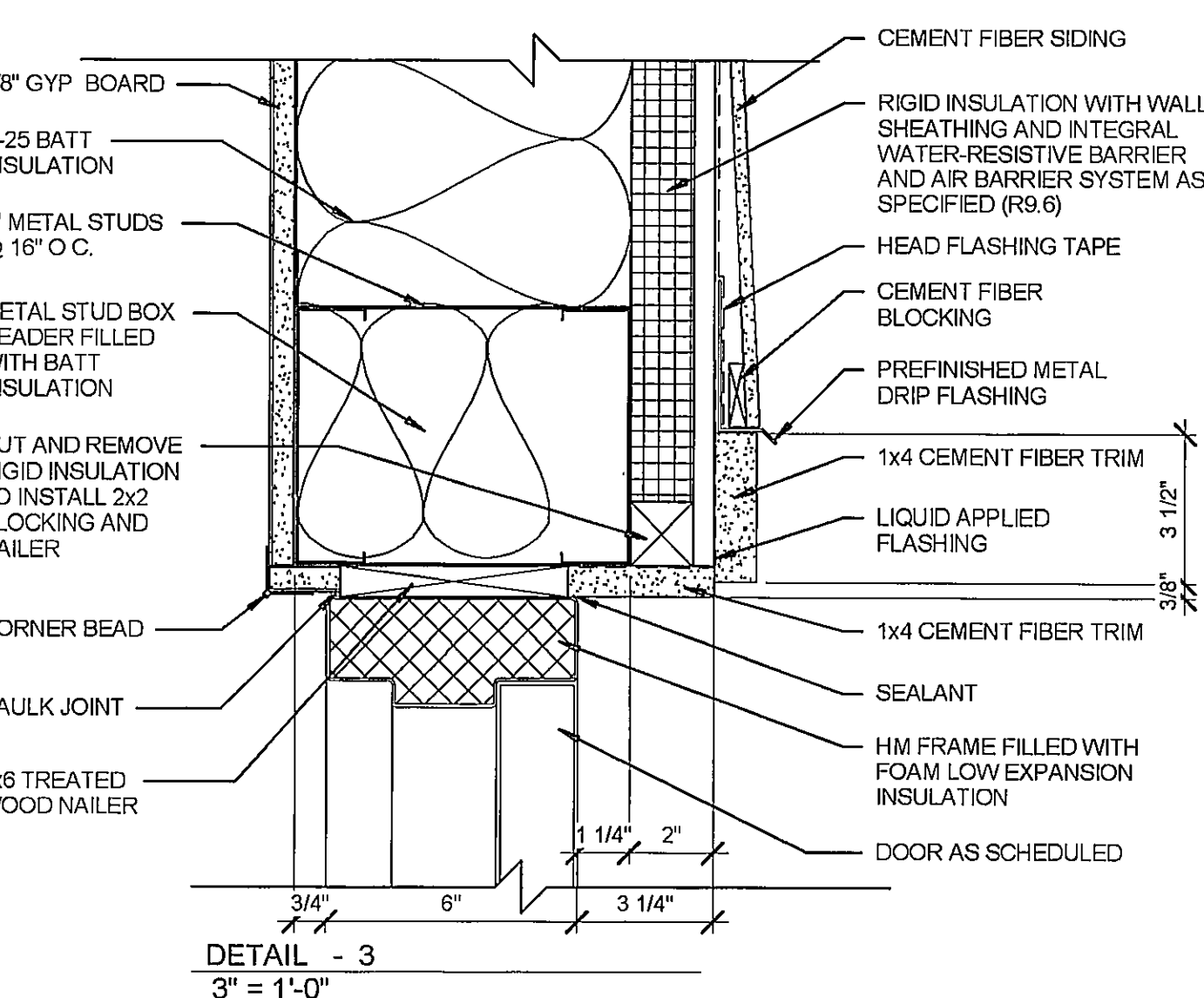
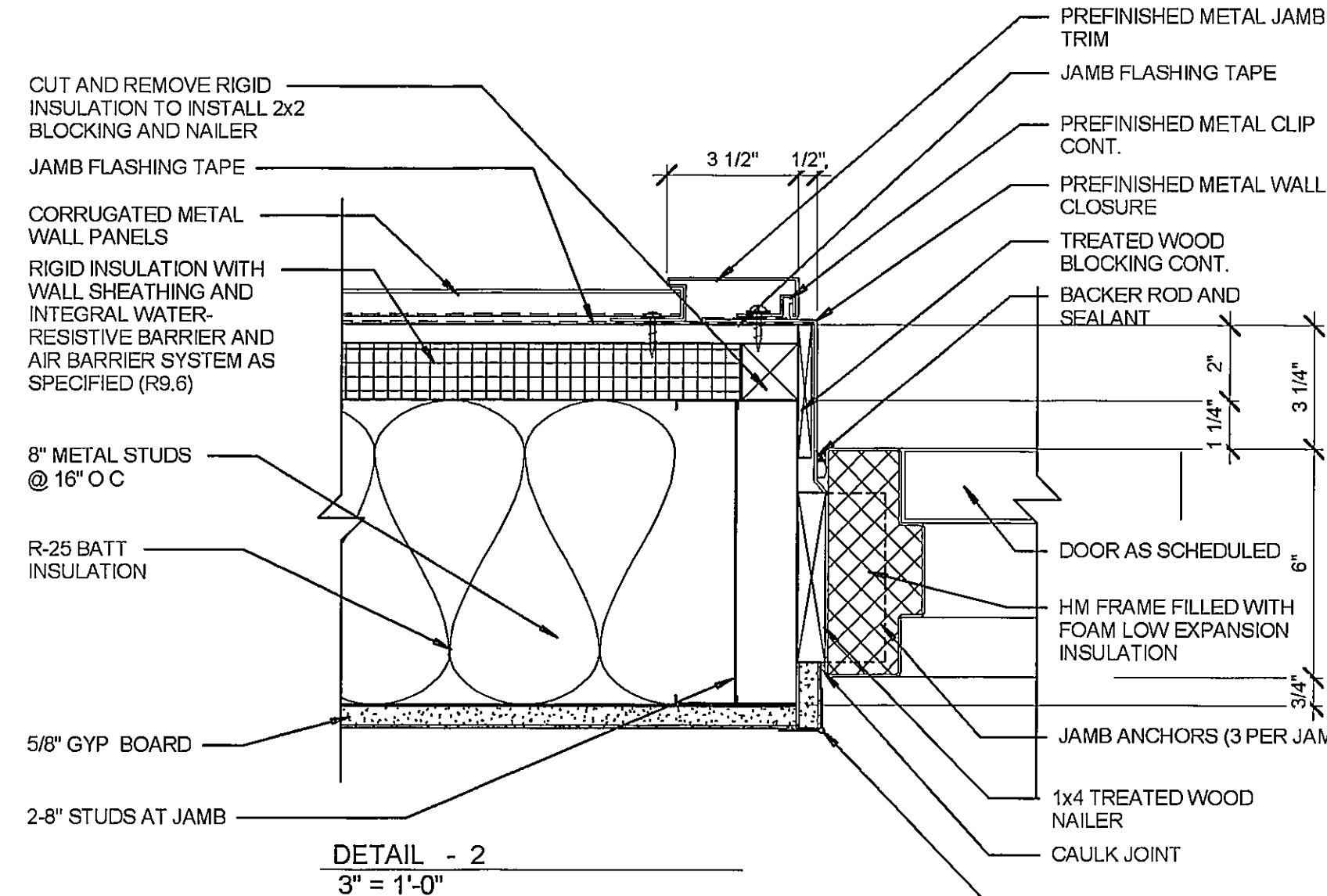
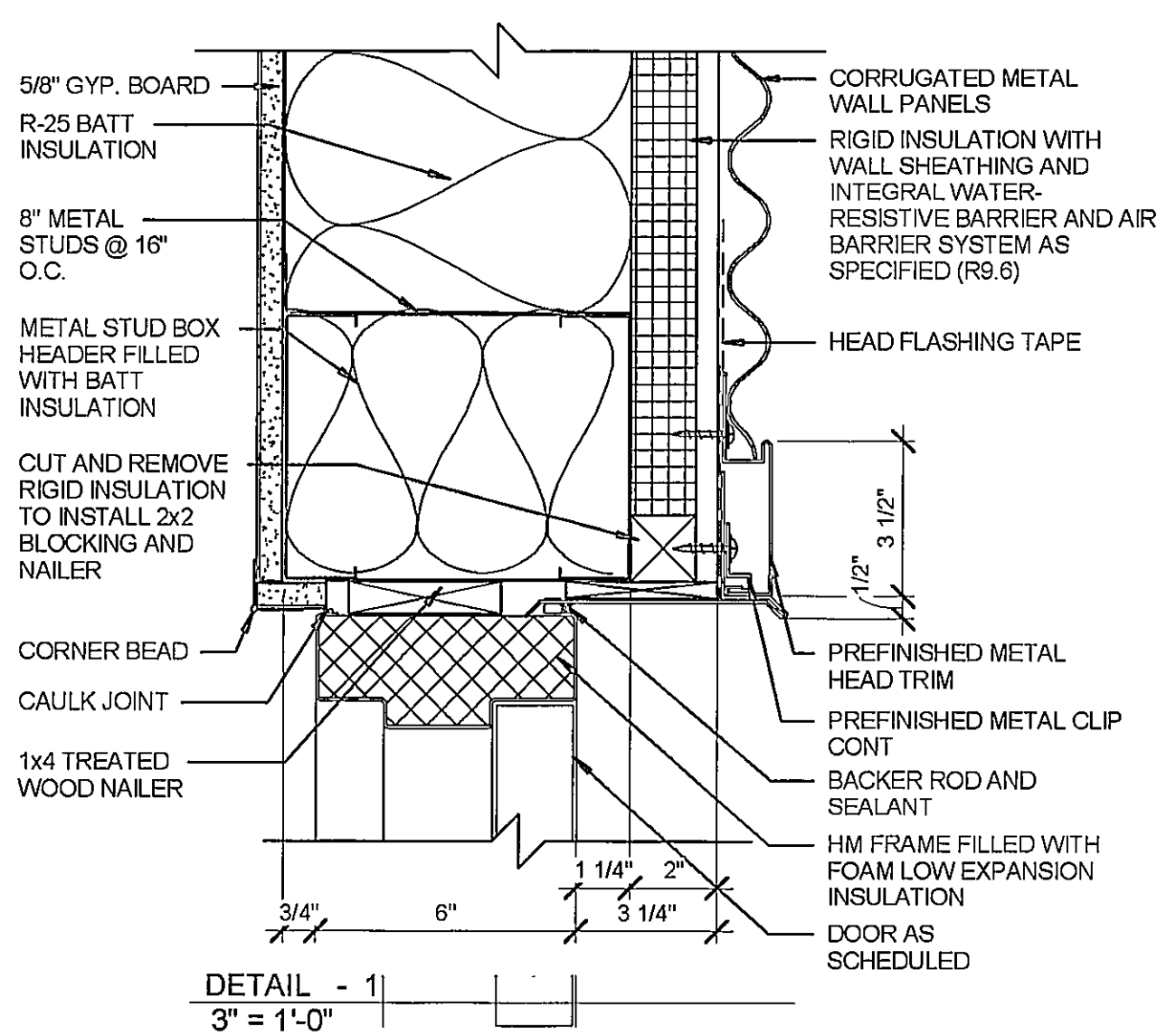
- REFER TO REFLECTED CEILING PLANS FOR CEILING HEIGHTS, SOFFITS, & FURRING LOCATIONS.
- WHERE WALLS ARE TO BE PAINTED, ARCHITECT SHALL SELECT ONE BASE AND UP TO ONE ACCENT WALL COLOR PER ROOM
- CEILINGS INDICATED AS 'NONE' REFER TO EXPOSED STRUCTURE, OPEN TO ABOVE
- KITCHEN-106 TO HAVE CT SUBWAY TILE (6X6) FINISH MIN. ONE FULL TILE HEIGHT ABOVE CEILING AND CT BASE ON INTERIOR FACE OF NORTH EXTERIOR WALL. REFER TO INTERIOR ELEVATIONS AND COORDINATE TRADES AS REQUIRED FOR SERVICE CONNECTIONS.
- FLOOR FINISH PLAN HATCHING AND FINISH PATTERNS SHOWN FOR BIDDING PURPOSES. ARCHITECT TO APPROVE FINAL ALIGNMENT OF GROUT LINES, TILE PATTERNS, AND COLOR SELECTIONS PRIOR TO INSTALLATION.



FLOOR TILE PATTERN - 1
1" = 1'-0"



BAR UNDER-COUNTER PATTERN - TILE - 6
1" = 1'-0"



DRAWN	JMH
CHECKED	JKL
FINAL DATE	Nov. 22, 2019
REVISION SCHEDULE	
REV. #	REV. DATE

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CREATING LANDMARKS SINCE 1976

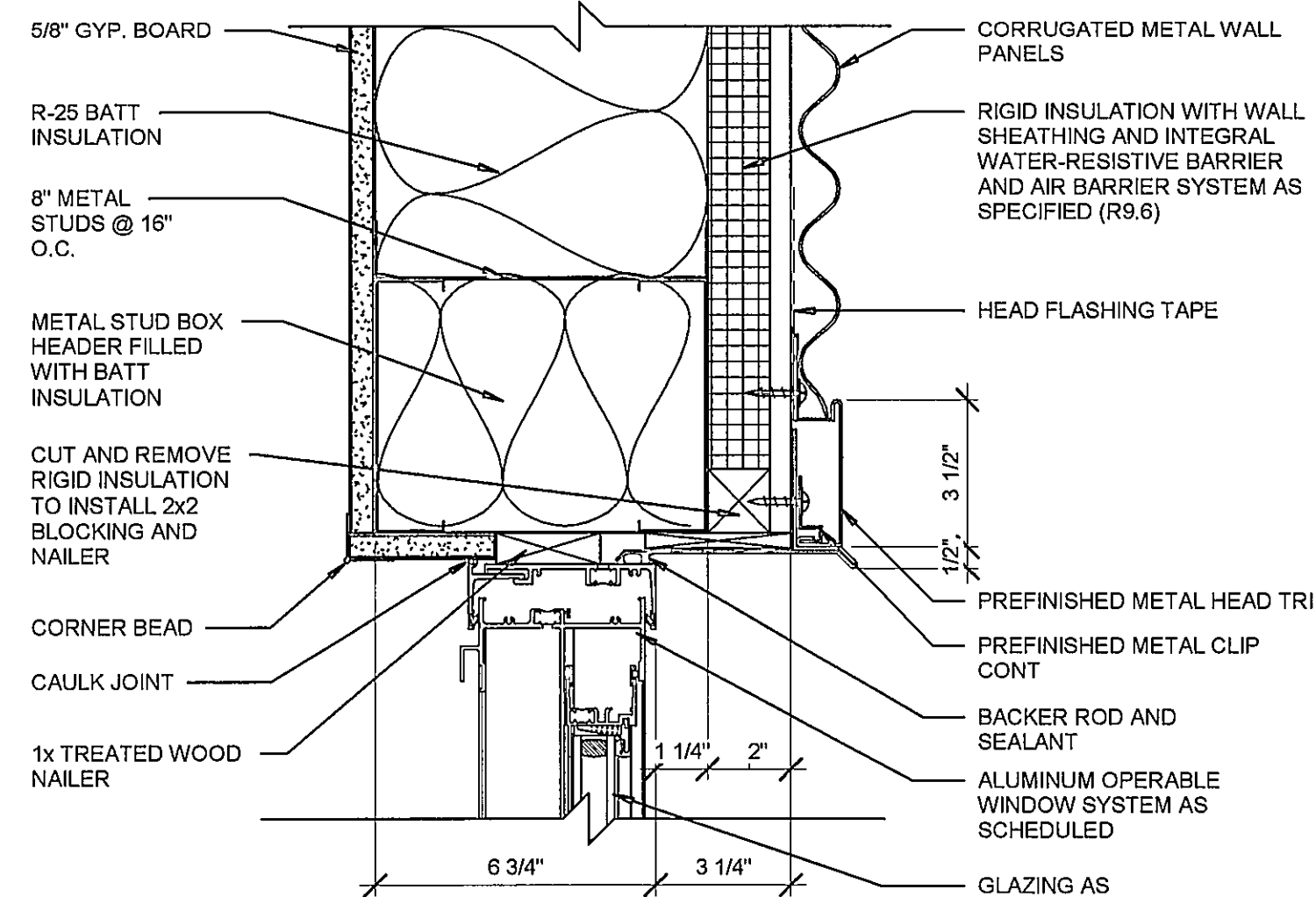
SHEET TITLE
OPENING DETAILS

PROJECT
FIRE STATION No. 9

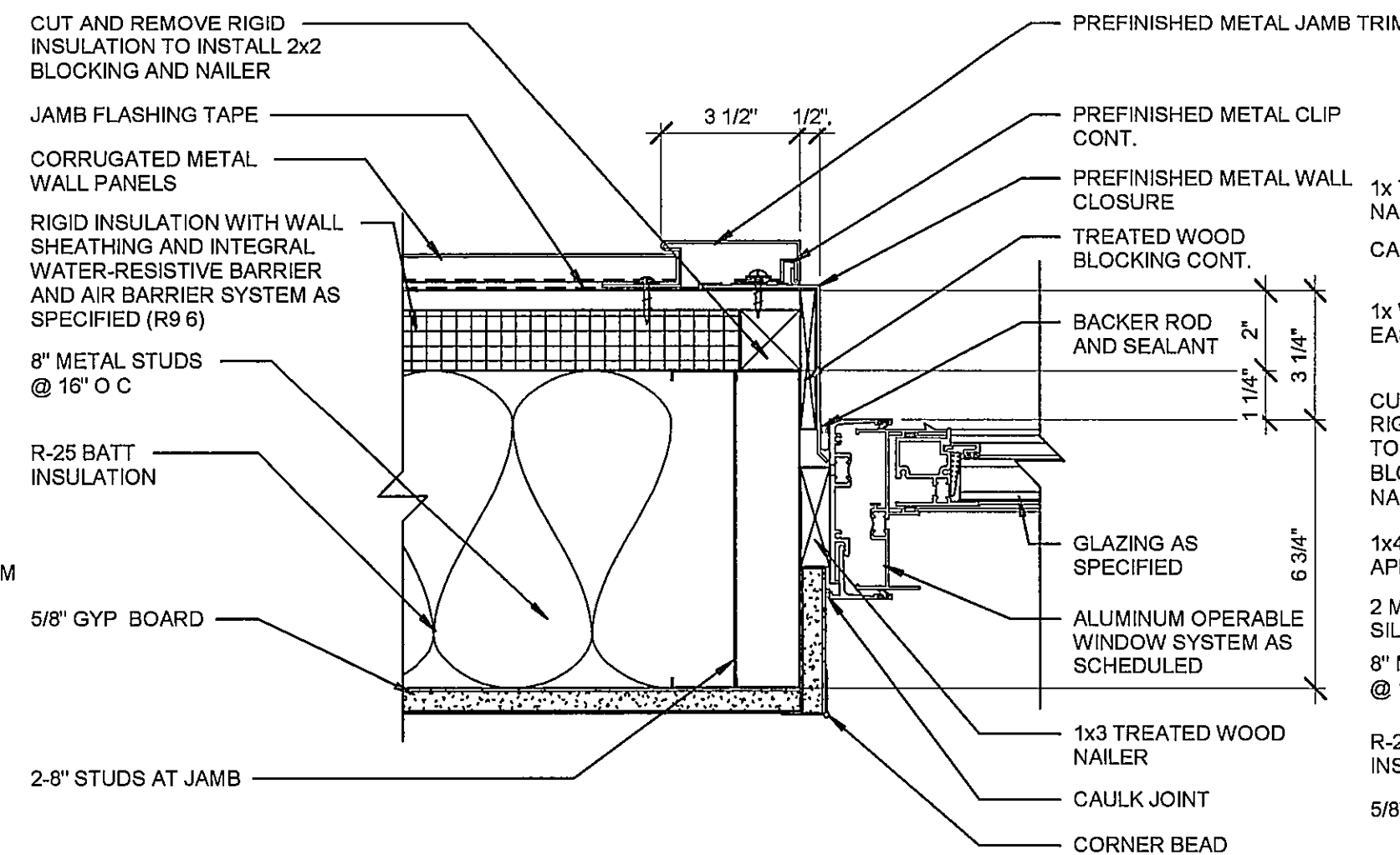


CN18-3707
SHEET NUMBER

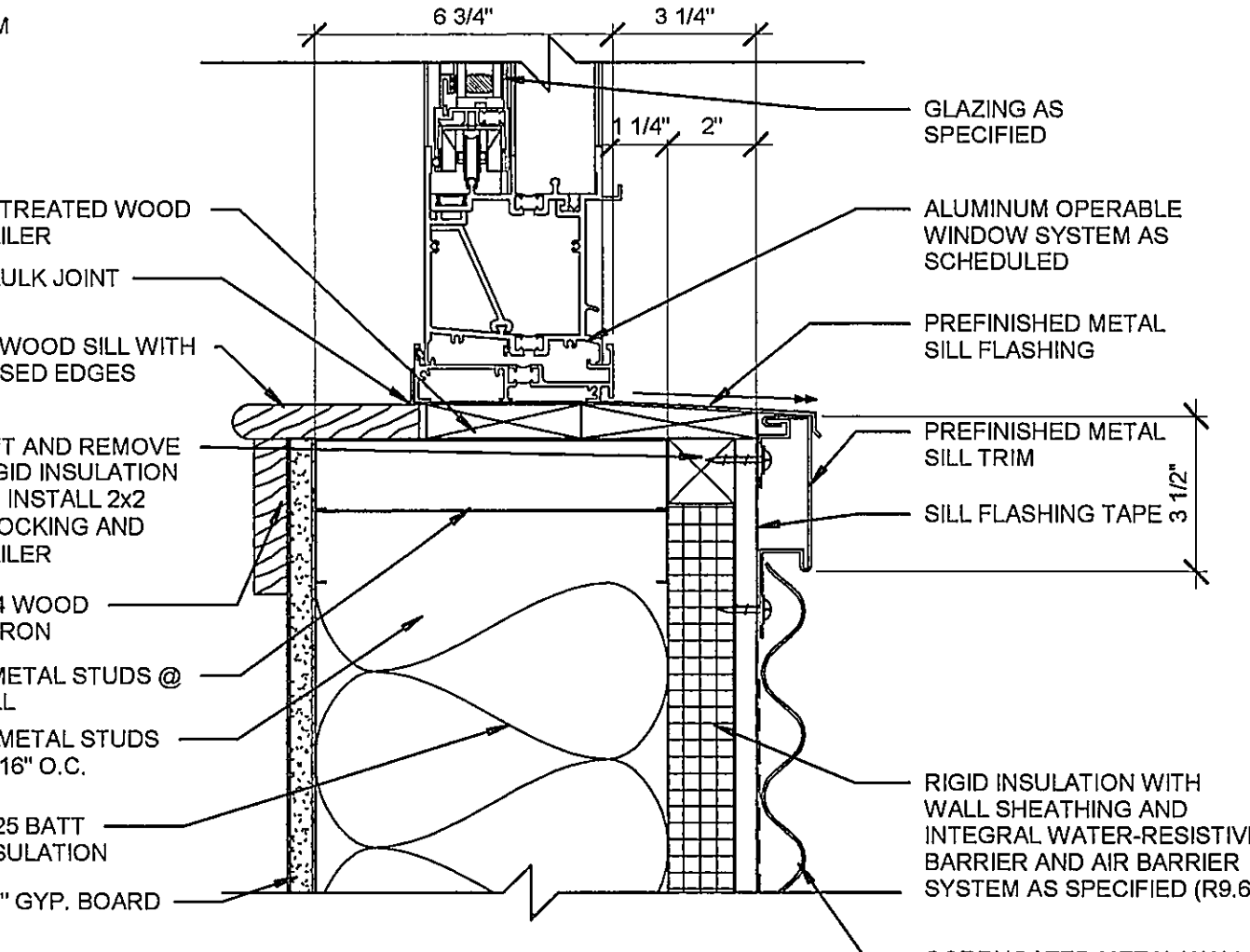
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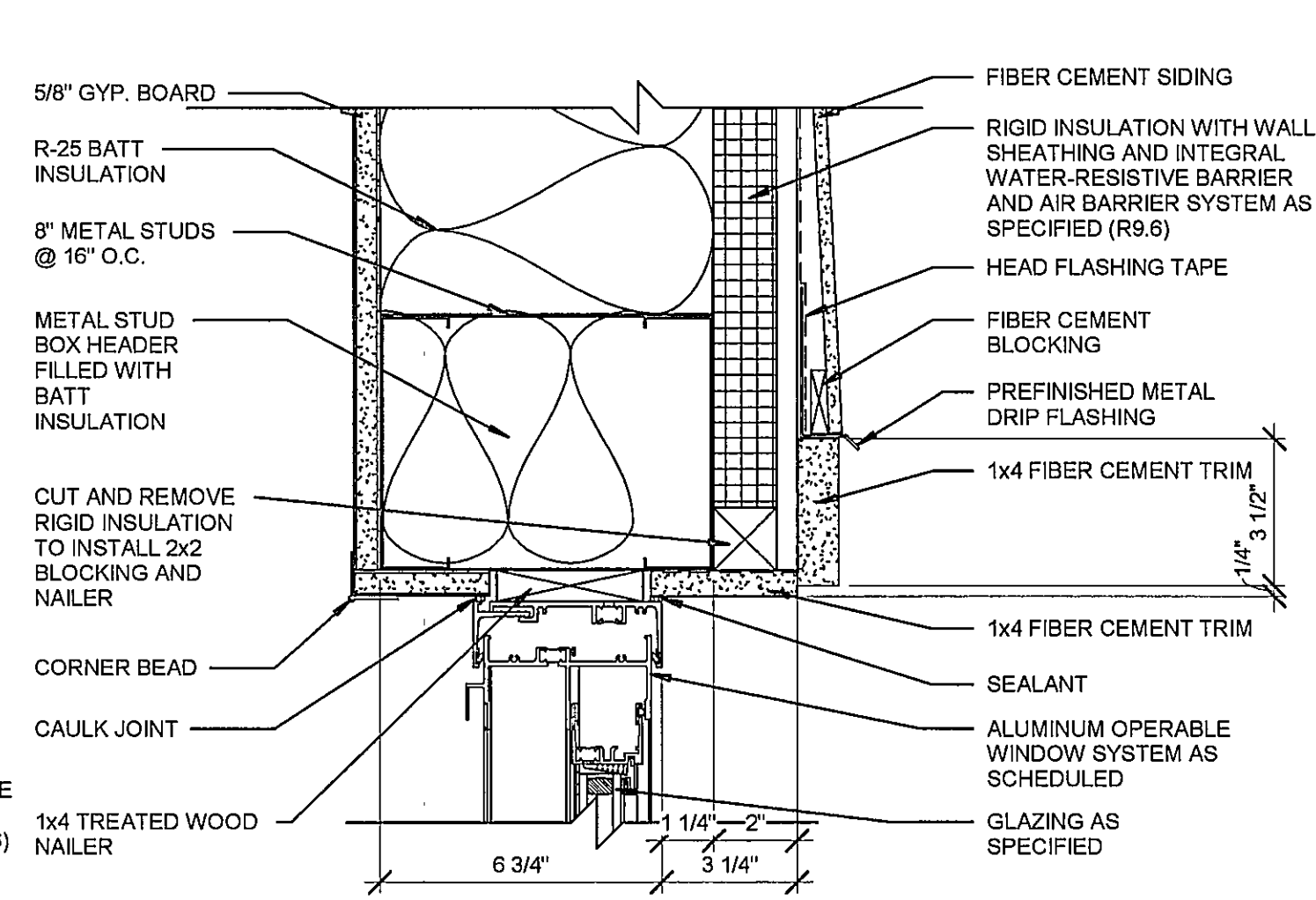
DETAIL - 1
3" = 1'-0"



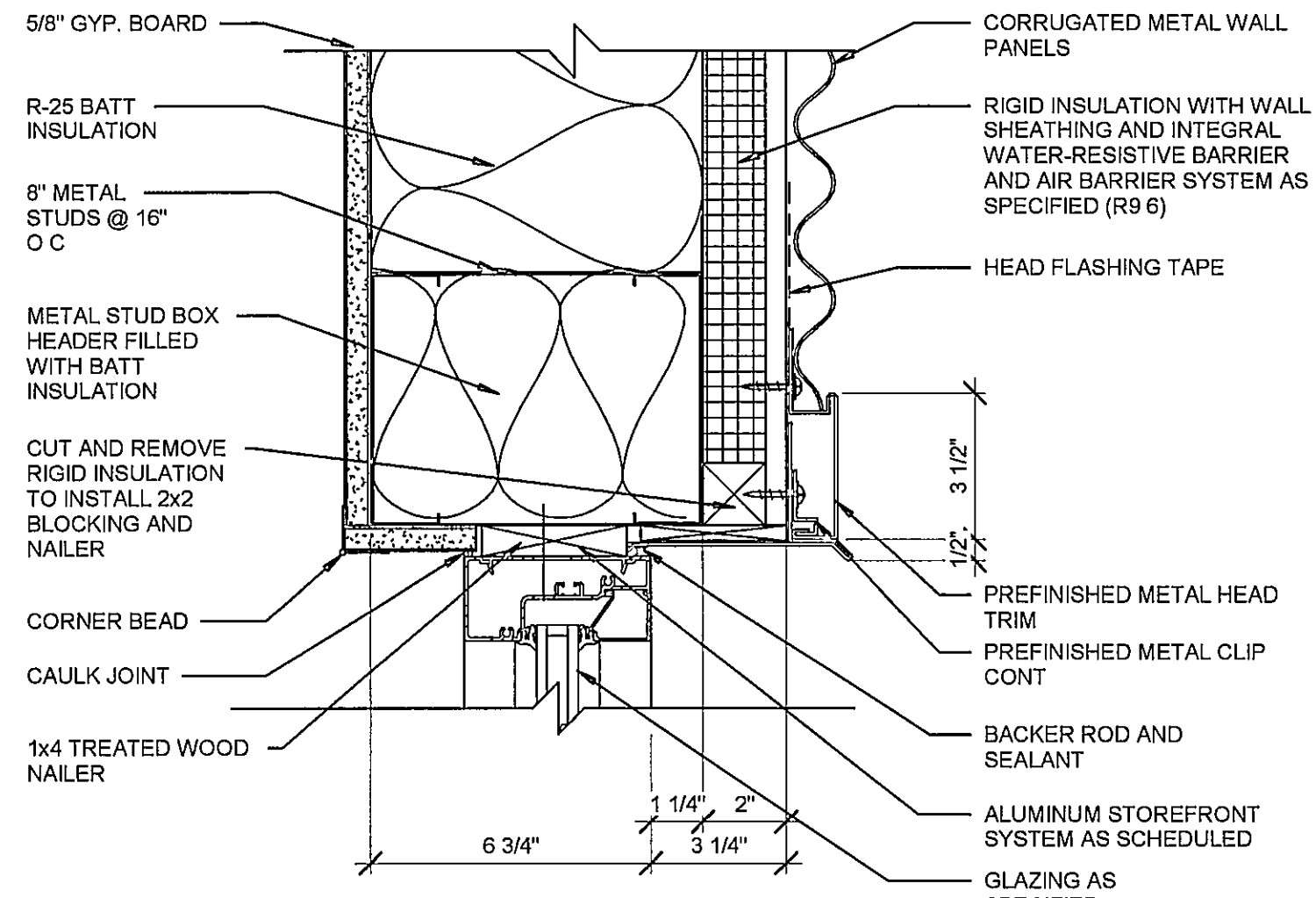
DETAIL - 2
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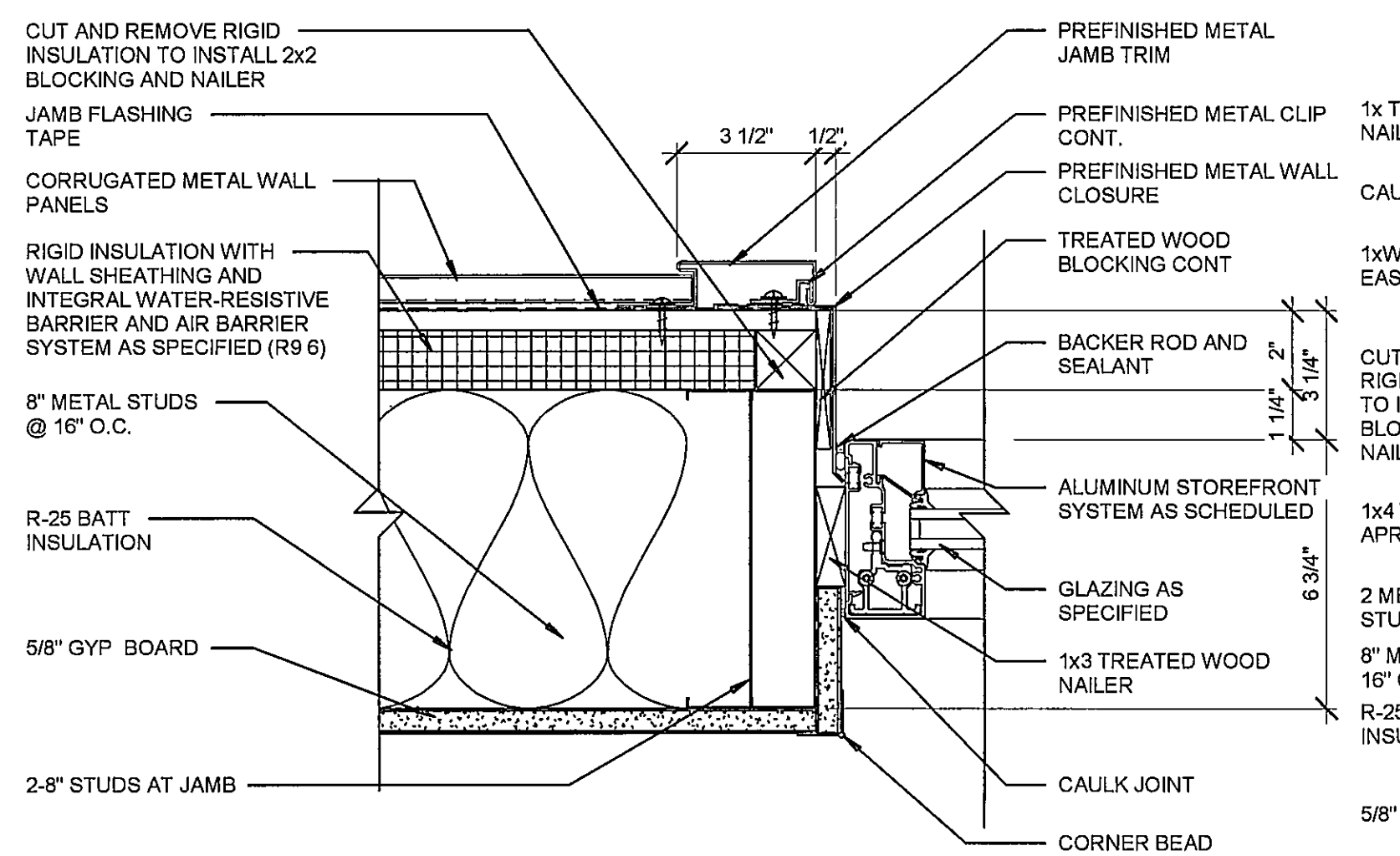
DETAIL - 3
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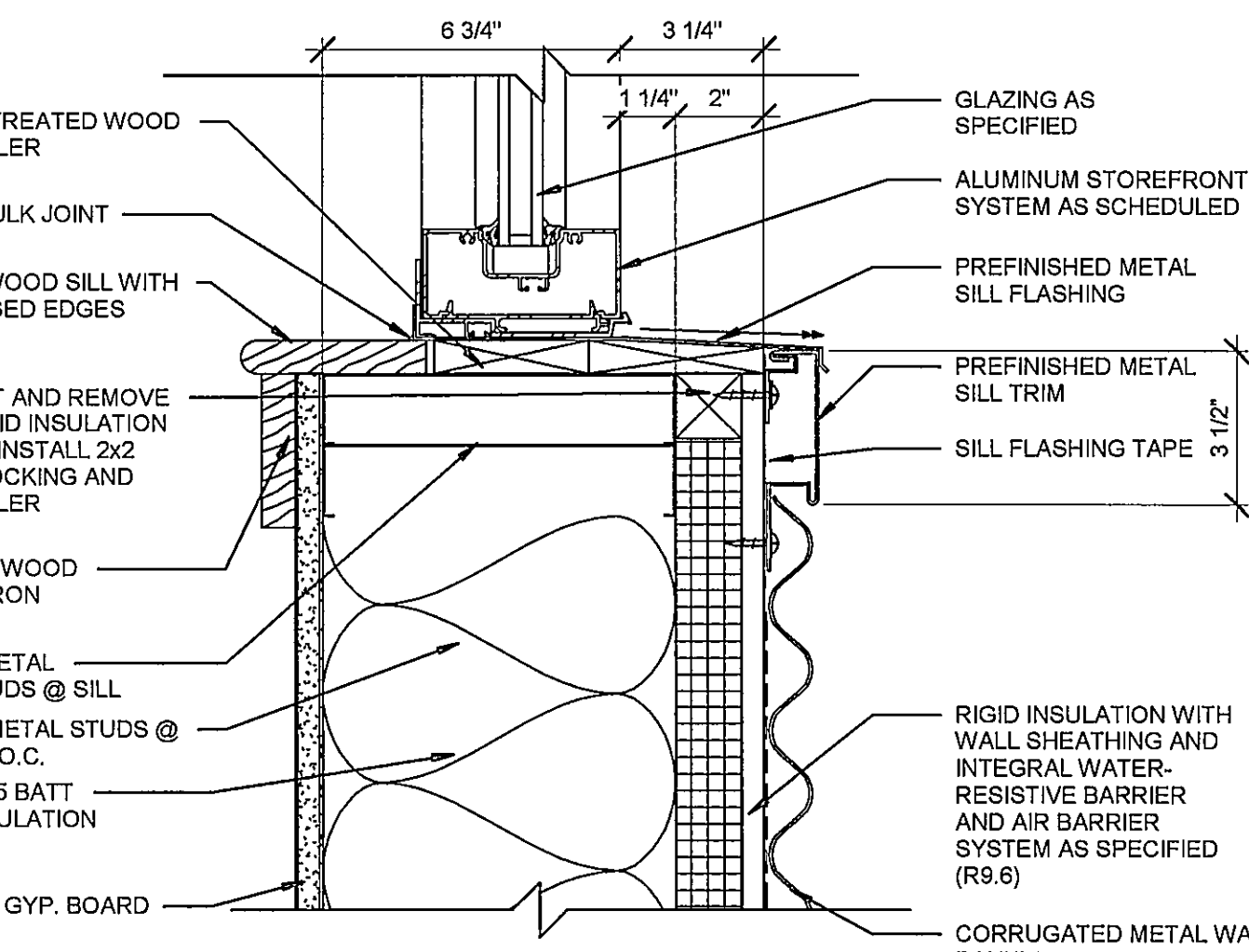
DETAIL - 4
3" = 1'-0"



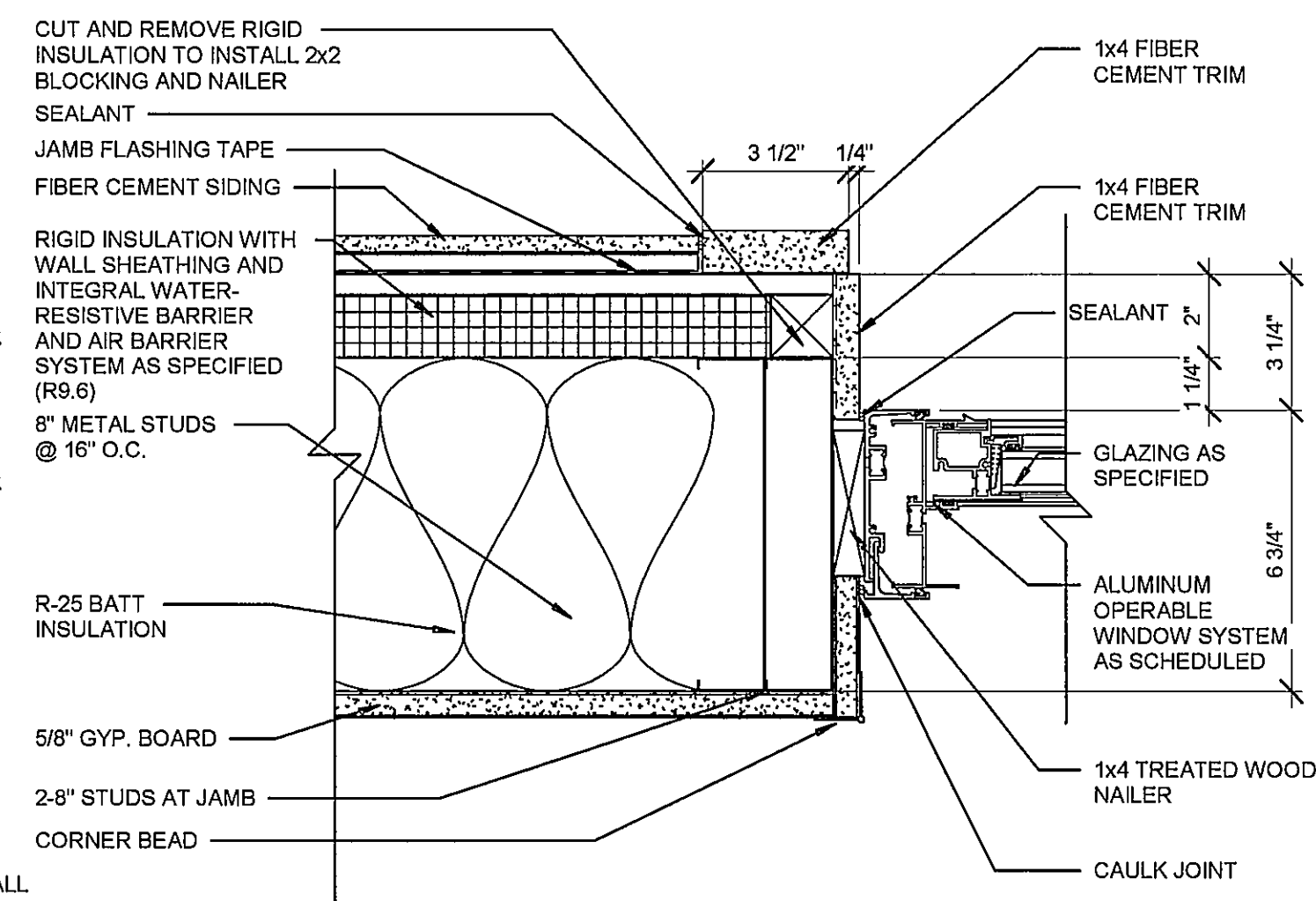
DETAIL - 5
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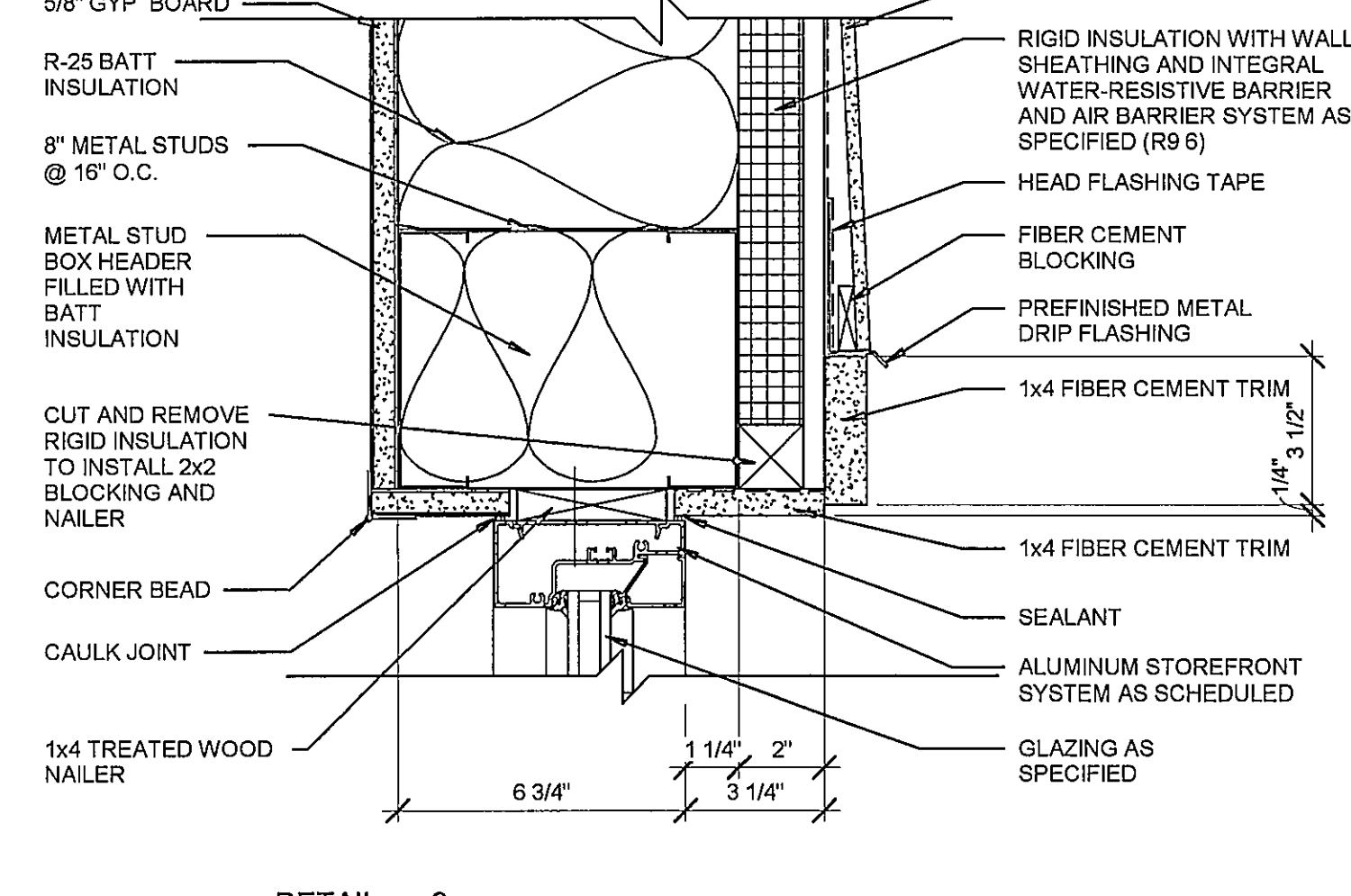
DETAIL - 6
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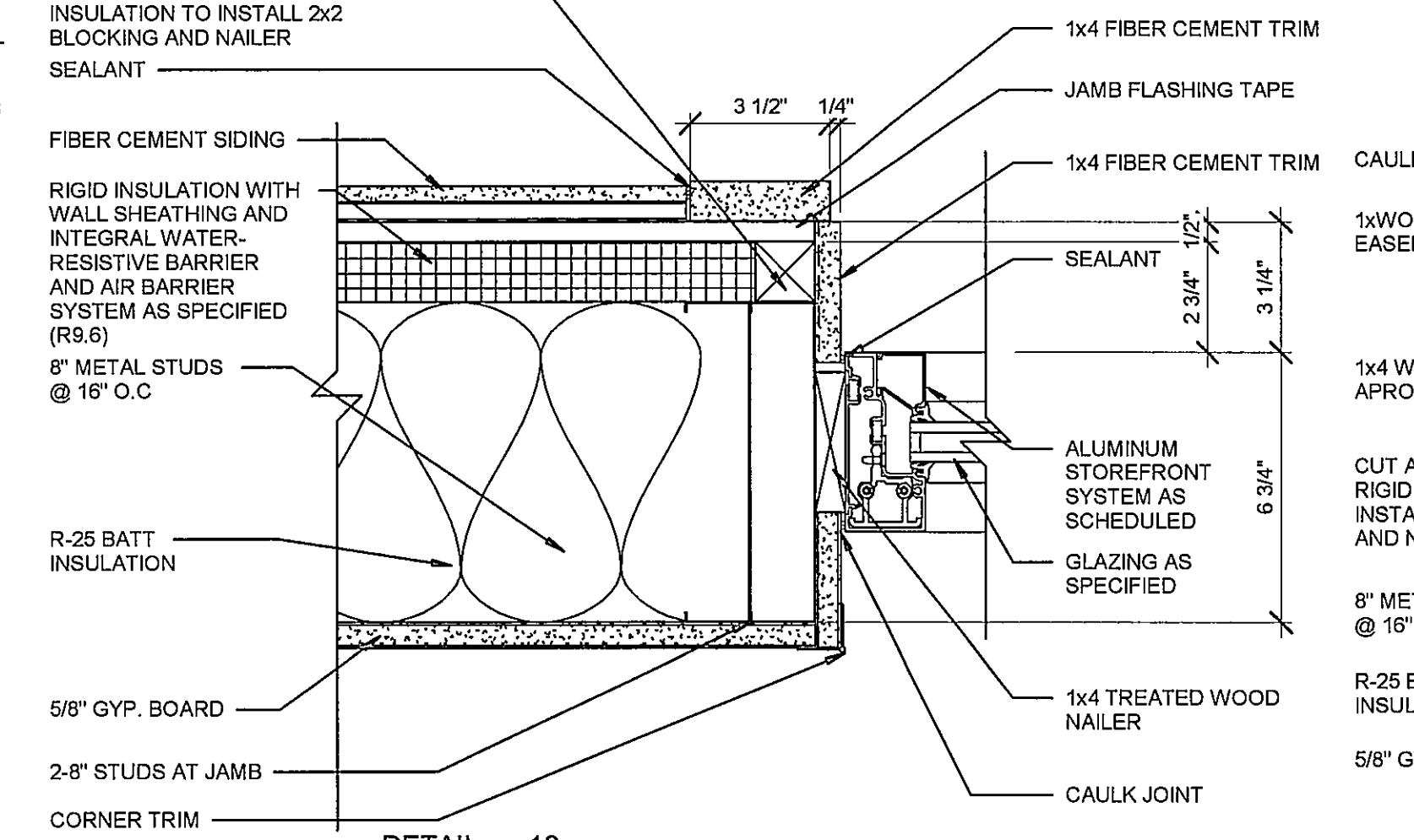
DETAIL - 7
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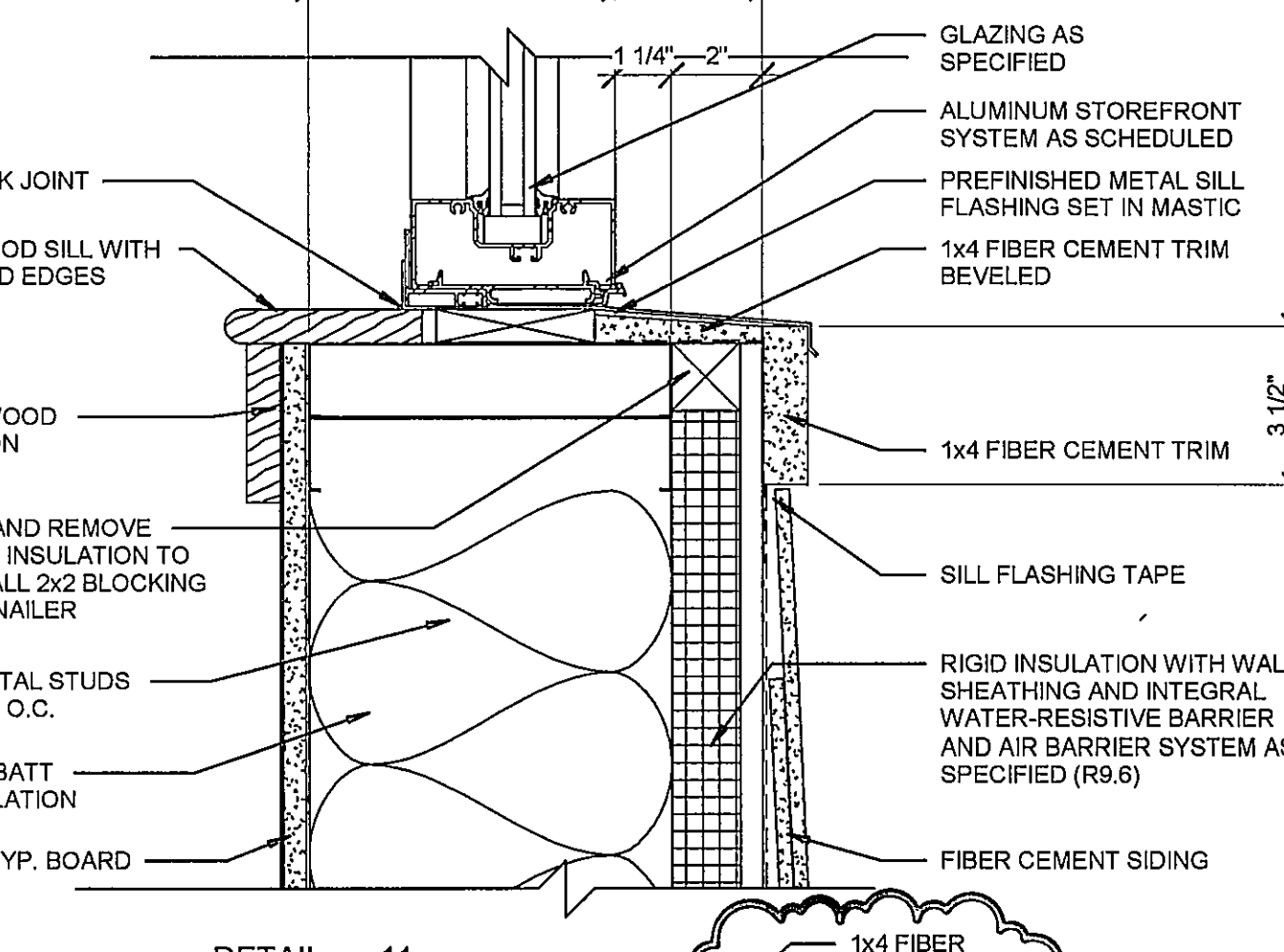
DETAIL - 8
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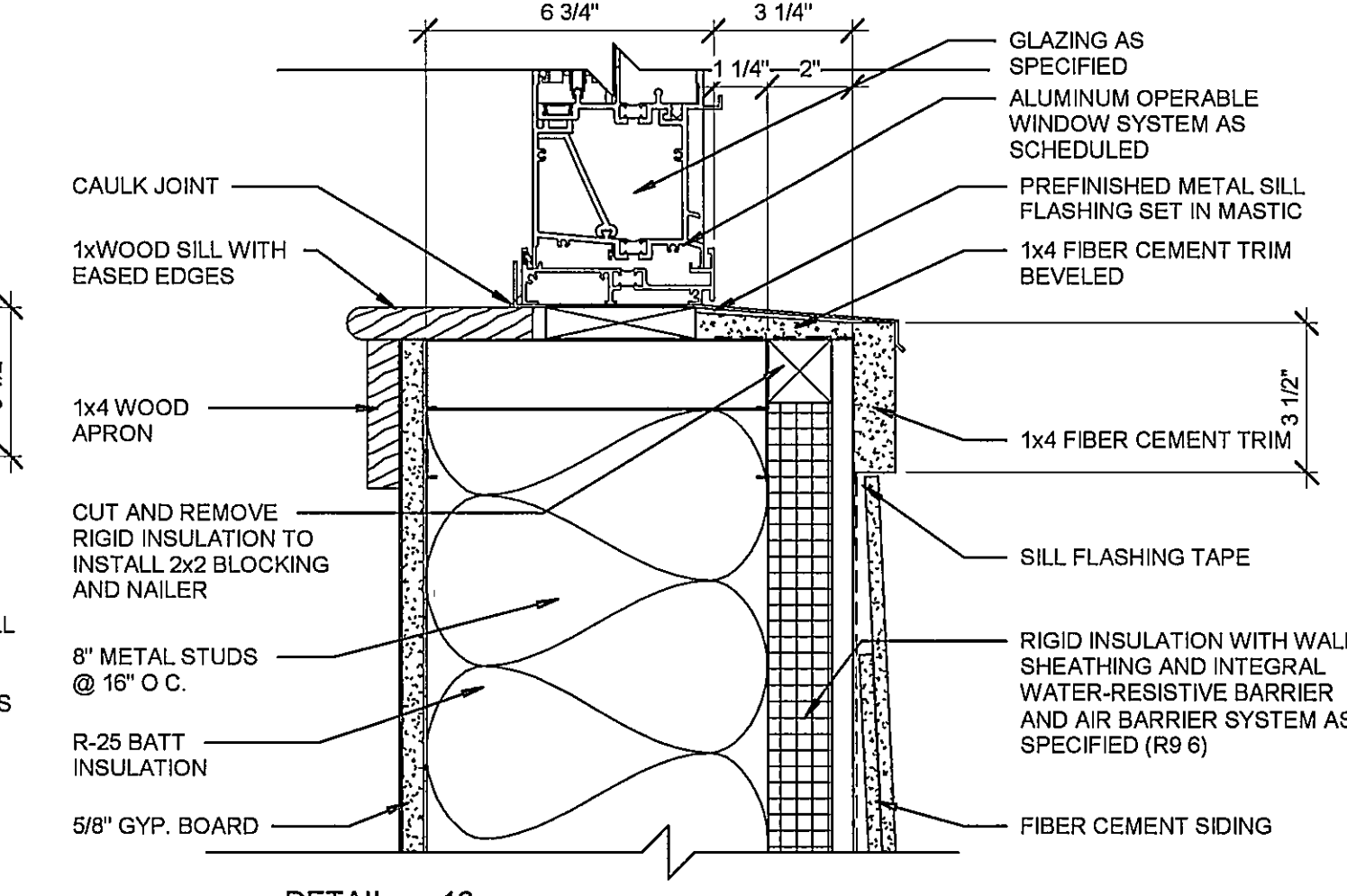
DETAIL - 9
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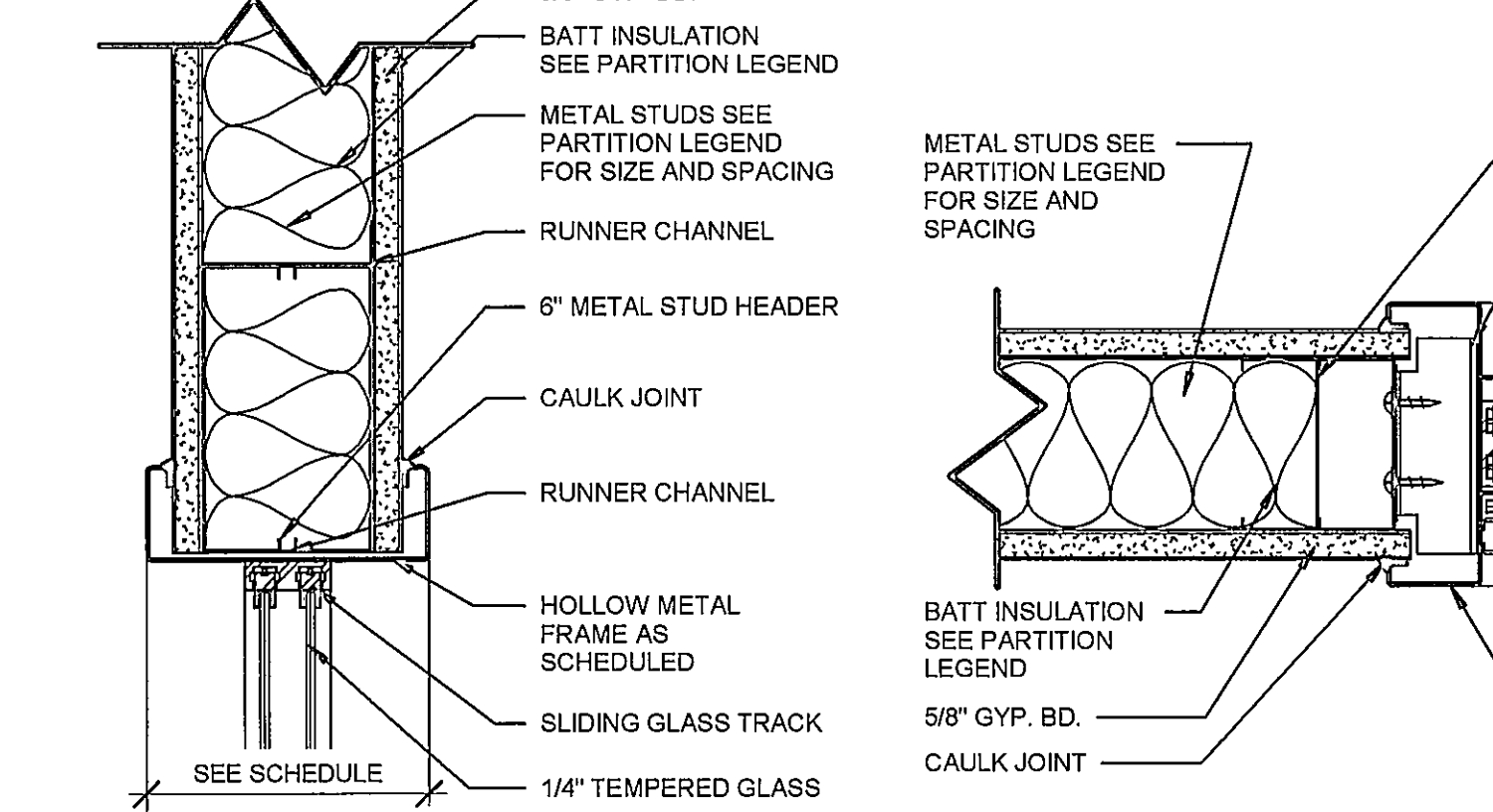
DETAIL - 10
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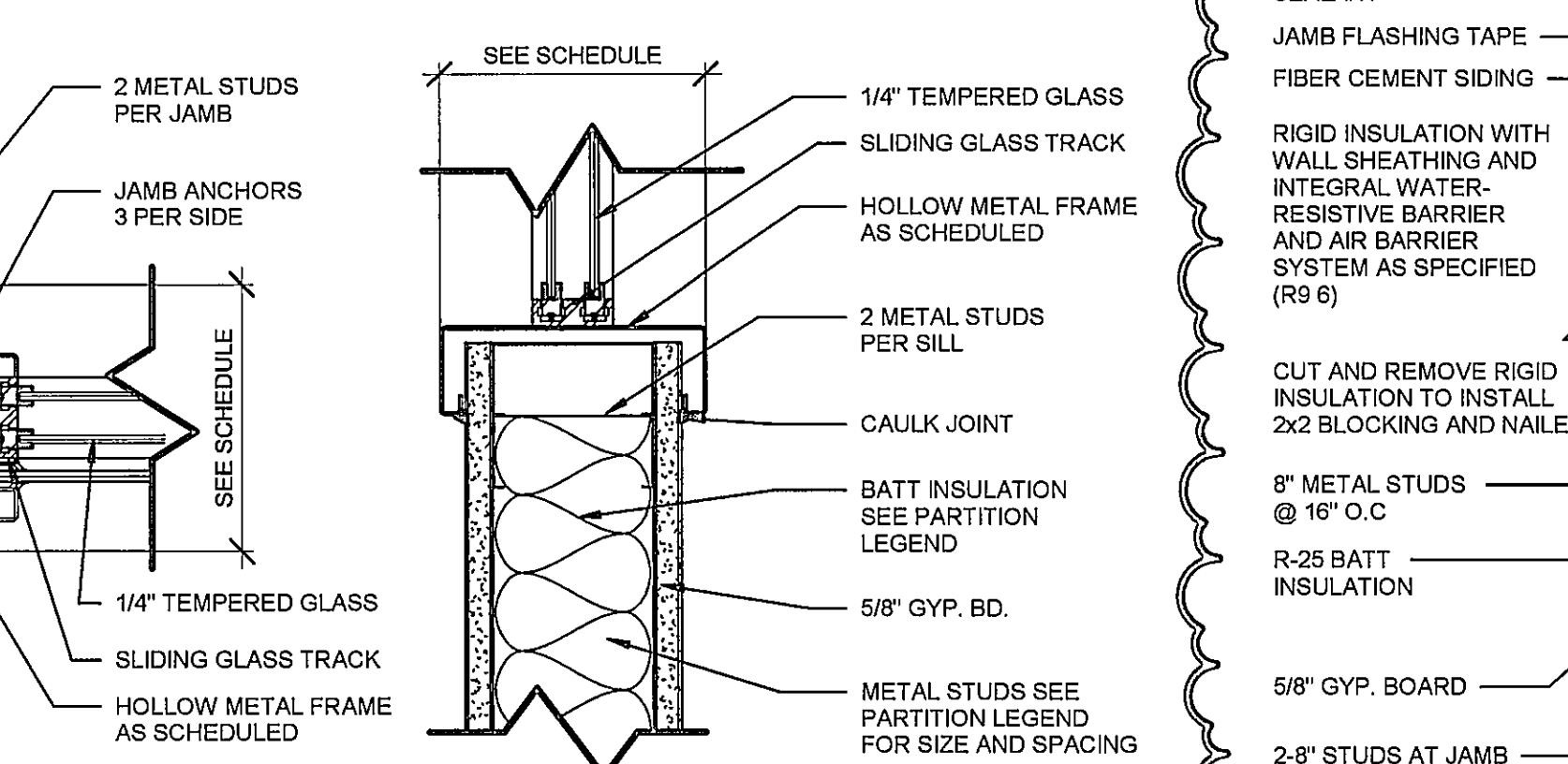
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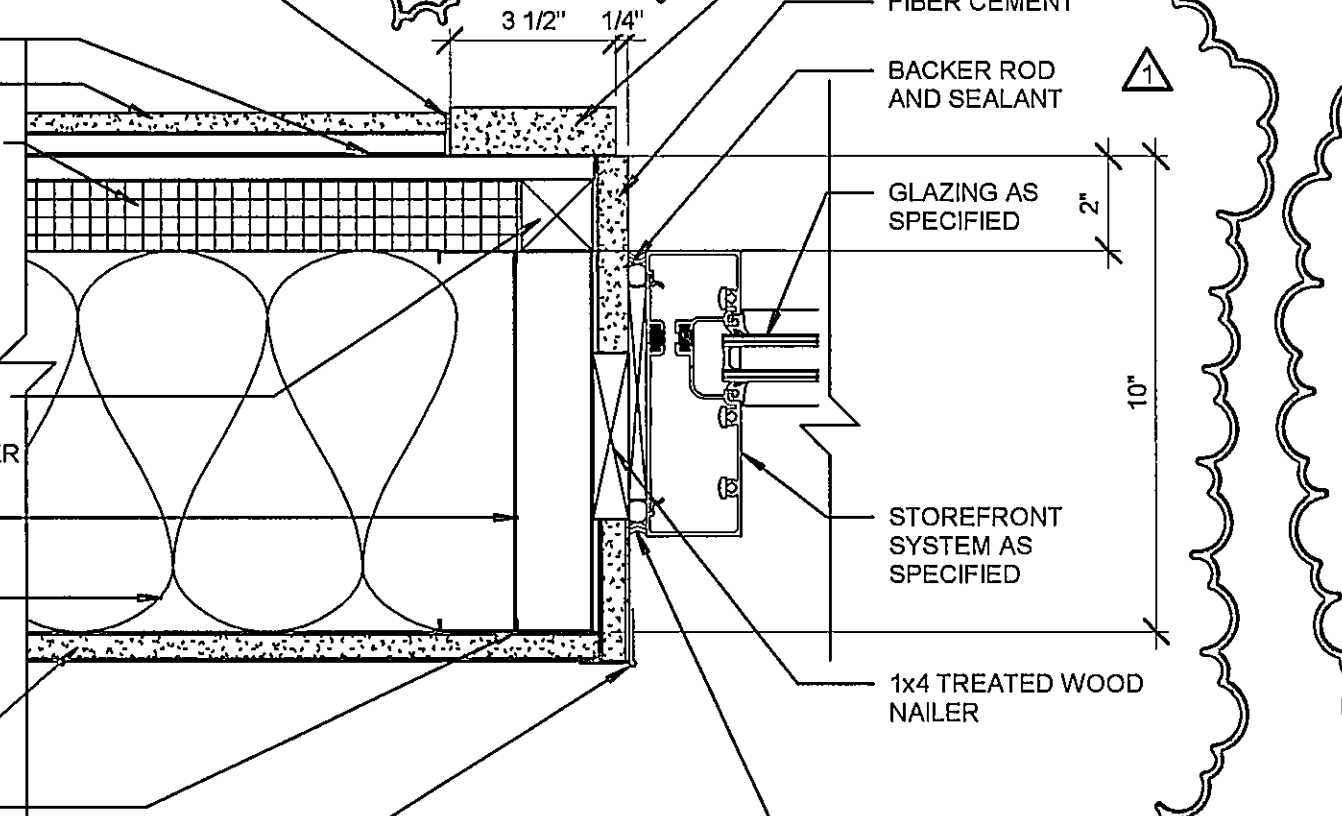
DETAIL - 12
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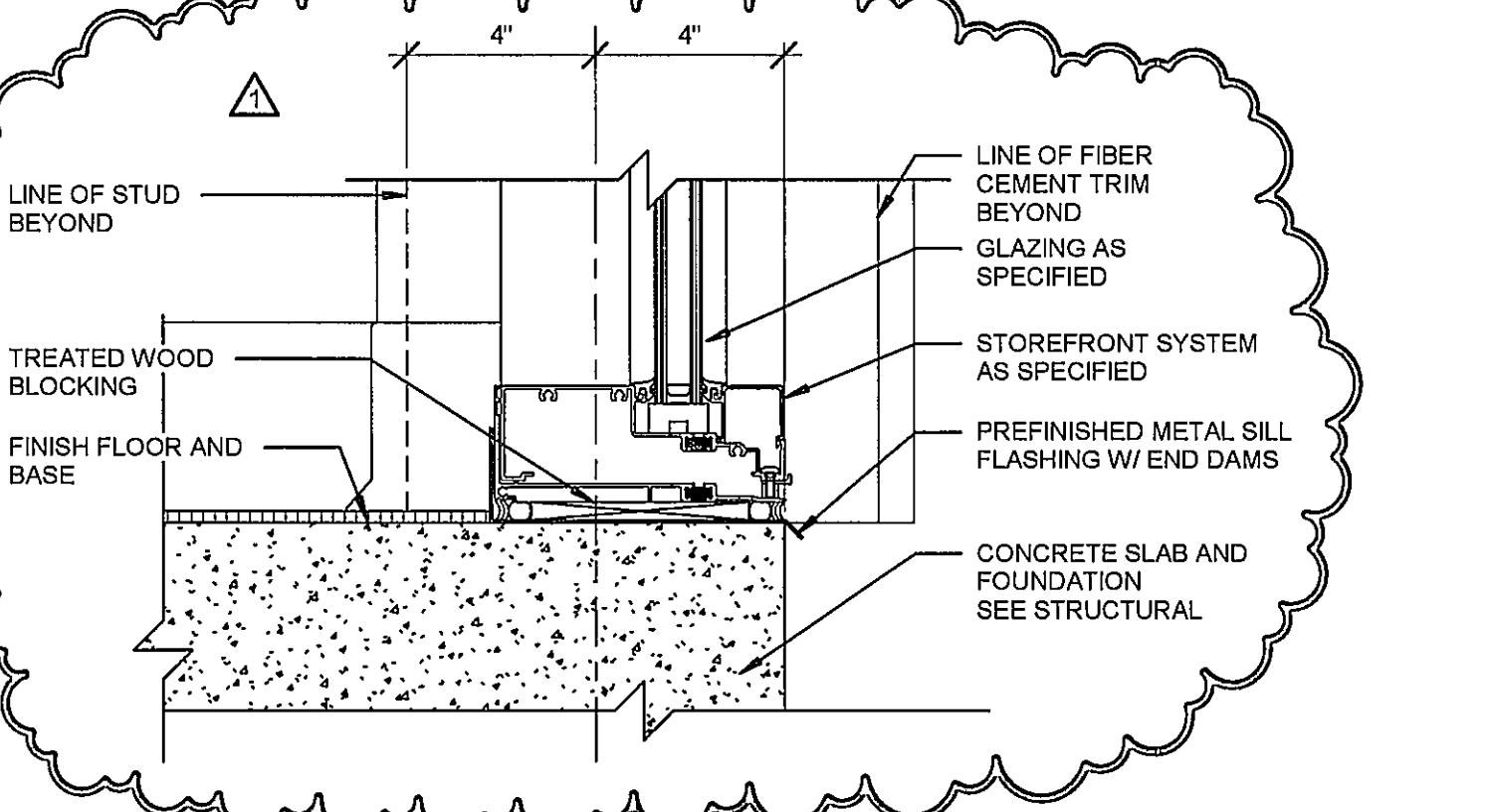
DETAIL - 13
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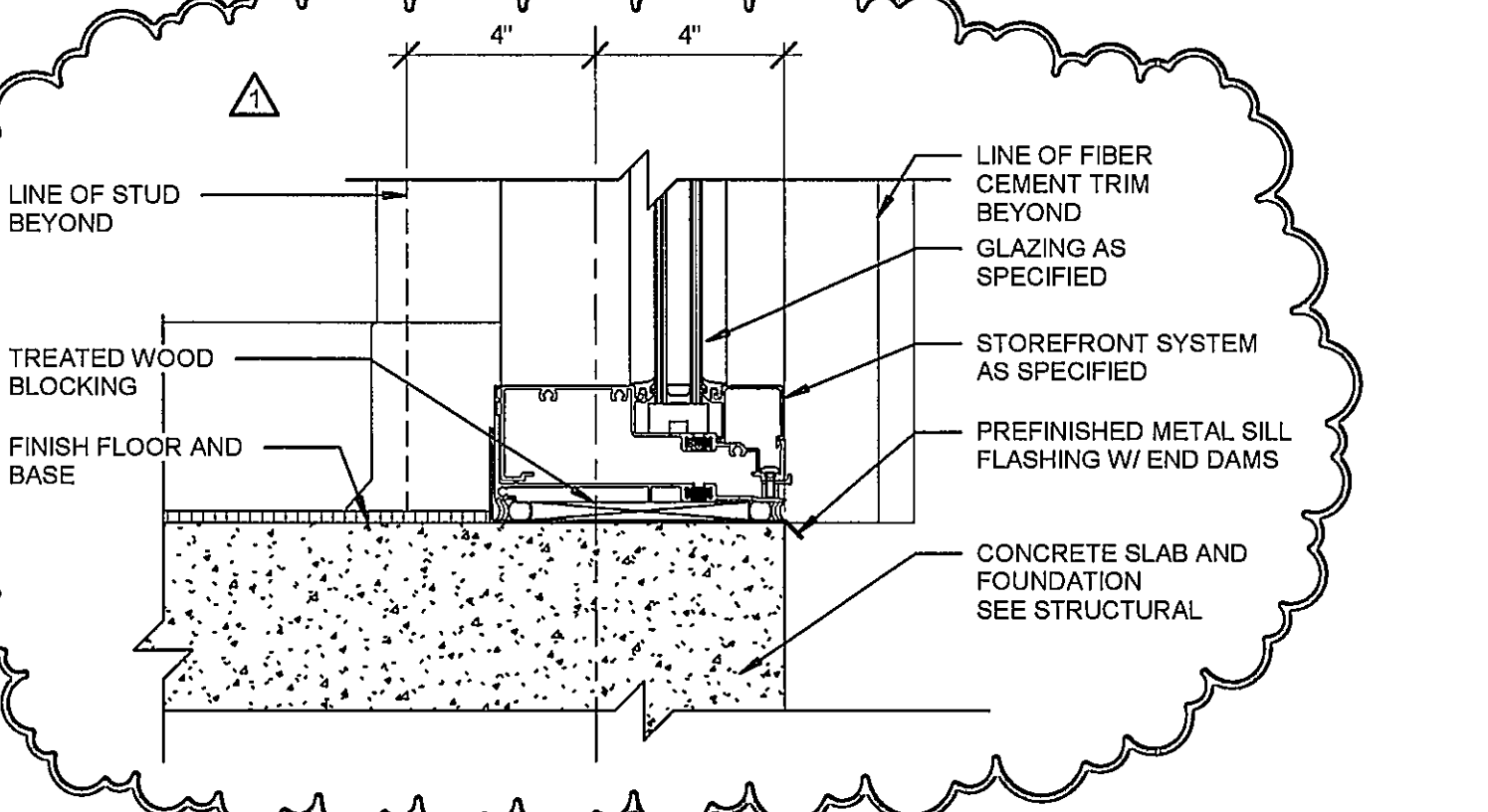
DETAIL - 14
3" = 1'-0"



DETAIL - 15
3" = 1'-0"



DETAIL - 16
3" = 1'-0"



DETAIL - 17
3" = 1'-0"

PROJECT	JMH
CHECKED	JKL
FINAL DATE	APRIL 2, 2020
REVISION SCHEDULE	REV# REVDATE
1	7/15/2020

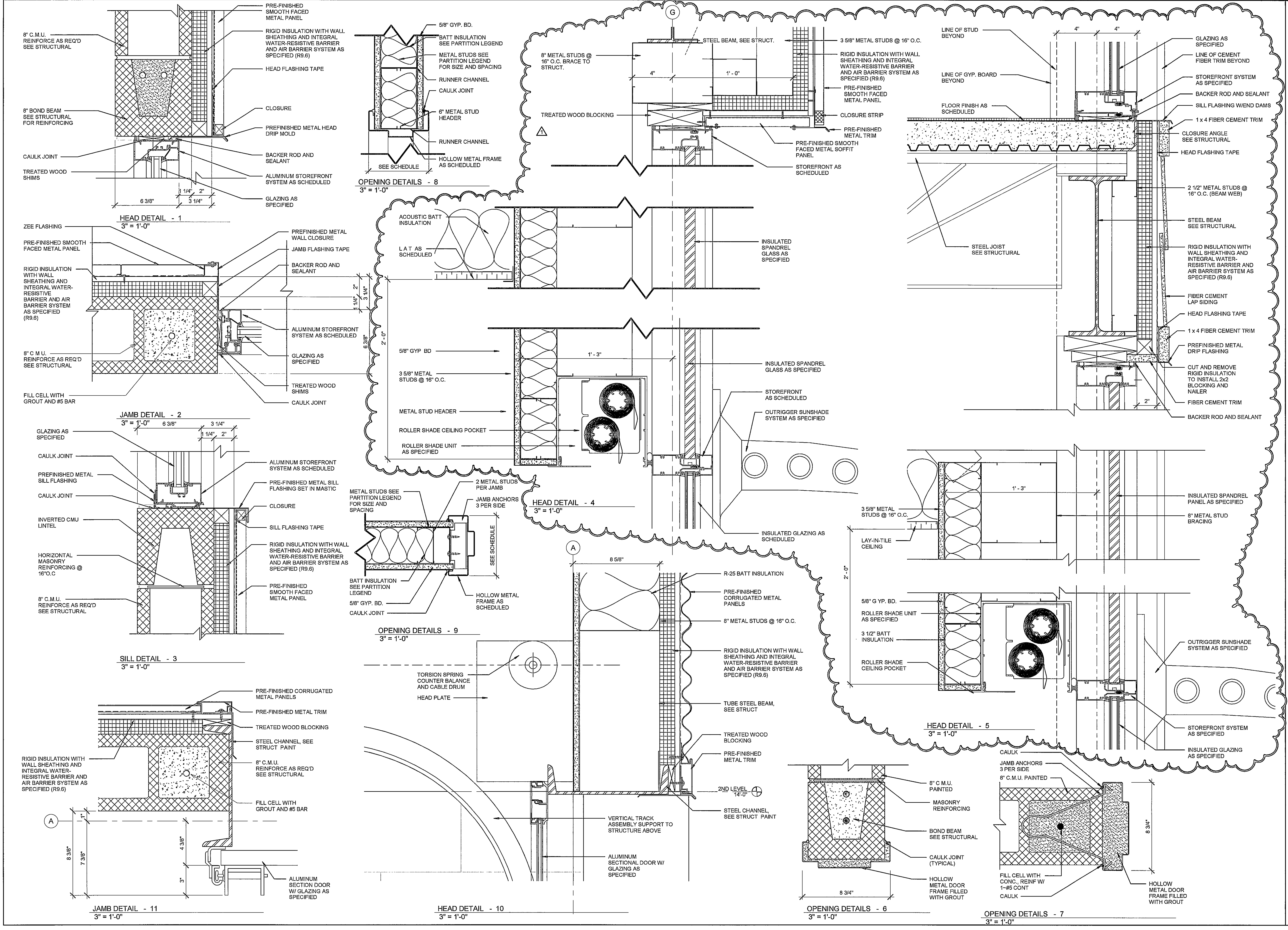
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CREATING LANDMARKS SINCE 1916...

PROJECT
FIRE STATION No. 9
CITY OF HATTIESBURG
HATTIESBURG, MS

REGISTERED ARCHITECT
STATE OF MISSISSIPPI
6346
11/23/16

CN18-3707
SHEET NUMBER

A6.4



DRAWN	SG/CES
CHECKED	JKL
FINAL DATE	APRIL 2, 2020
REVISION SCHEDULE	
REV #	REV DATE
1	7/15/2020

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CREATING LANDMARKS SINCE 1910...

SHEET TITLE
OPENING DETAILS

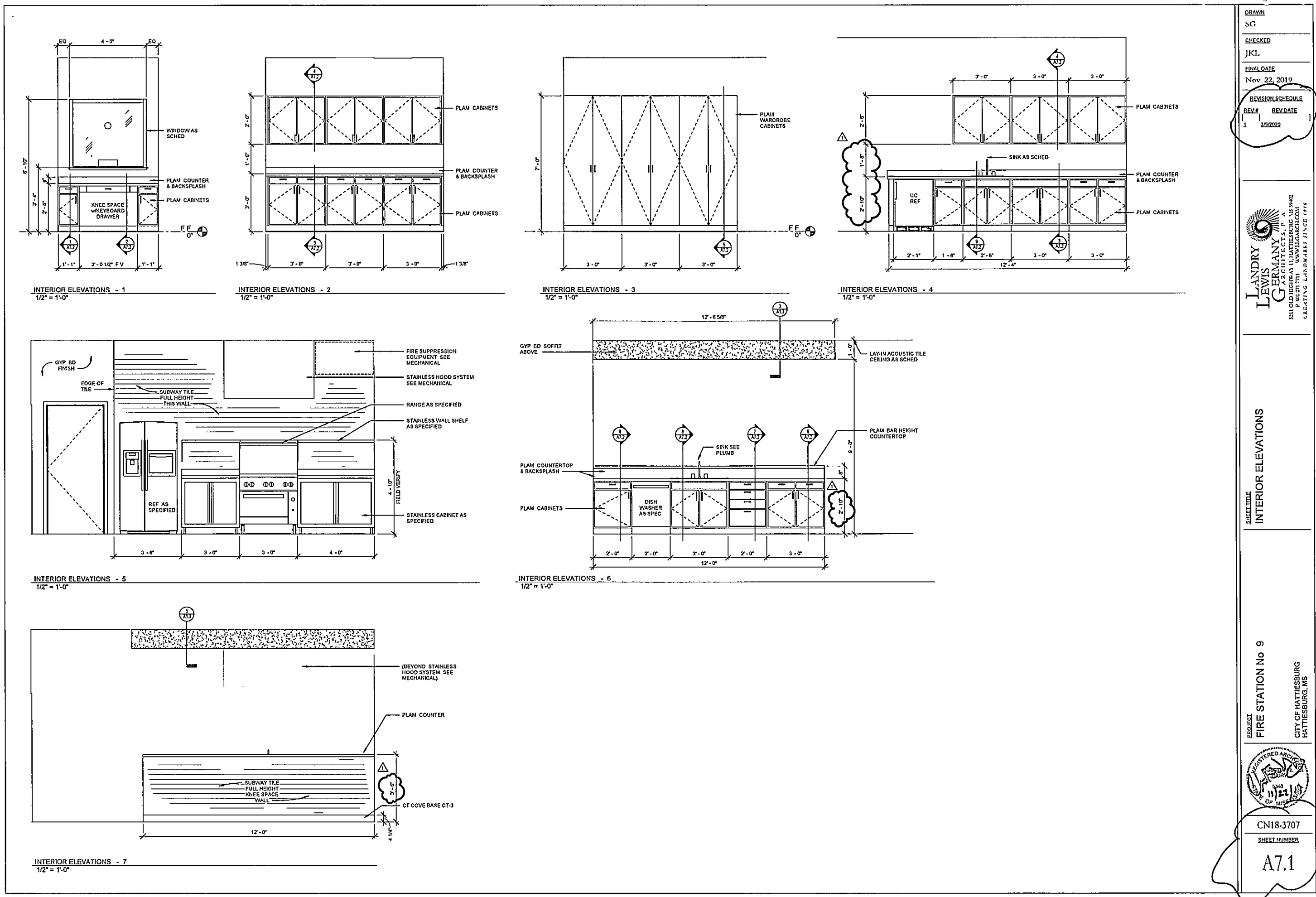
PROJECT
FIRE STATION No. 9



CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707
SHEET NUMBER

A6.5



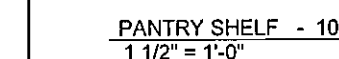
OWNER	SET
DESIGNER	JCL
DATE	Nov 23, 2019
PROJECT	REVISIONS
NO.	DATE
1	202002

LANDSKAP
LANDSCAPE ARCHITECTS
1000 HUNTERMAN AVENUE SUITE 100
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PHONE: 601.266.1111
WWW.LANDSKAP.COM

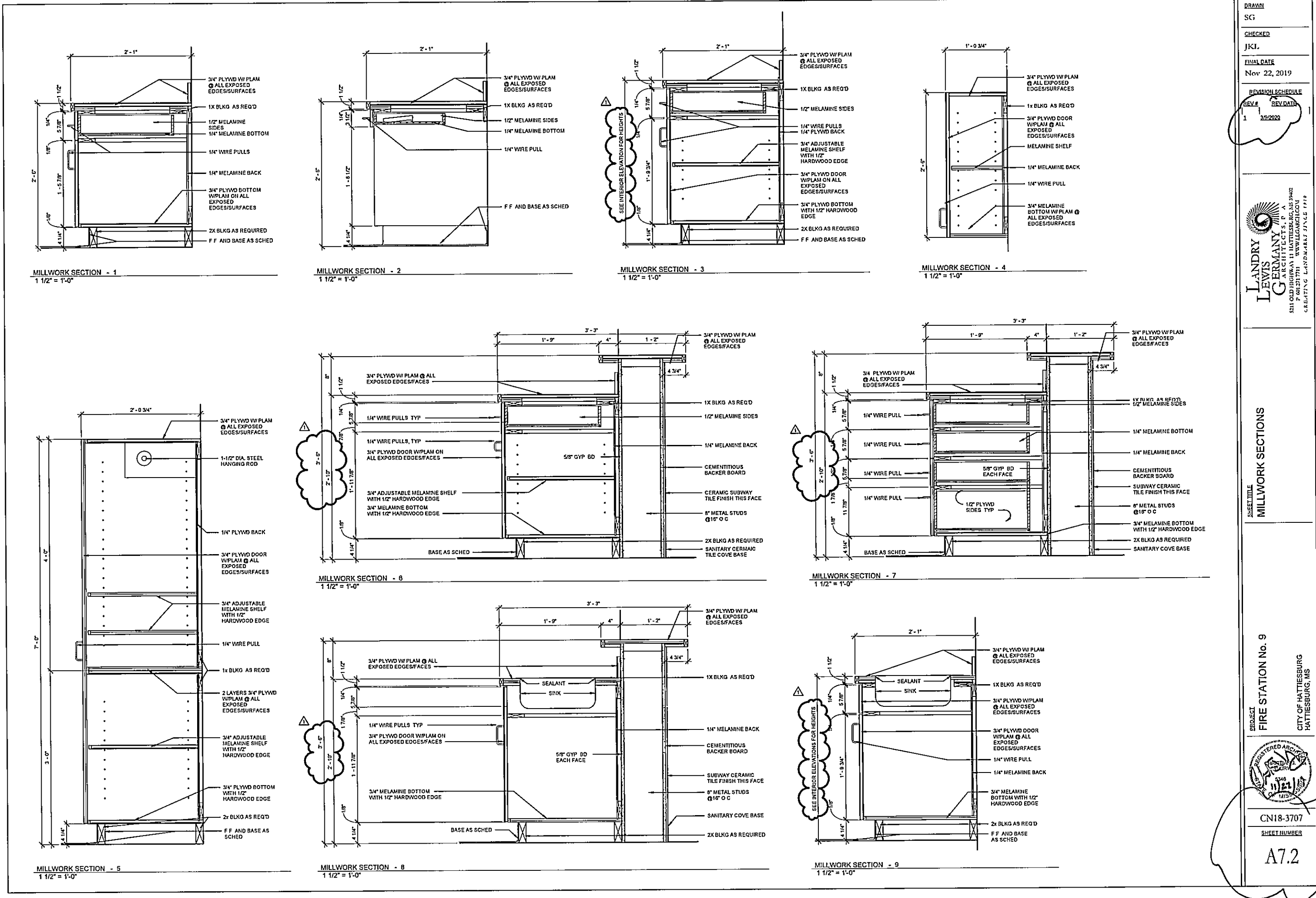
INTERIOR ELEVATIONS

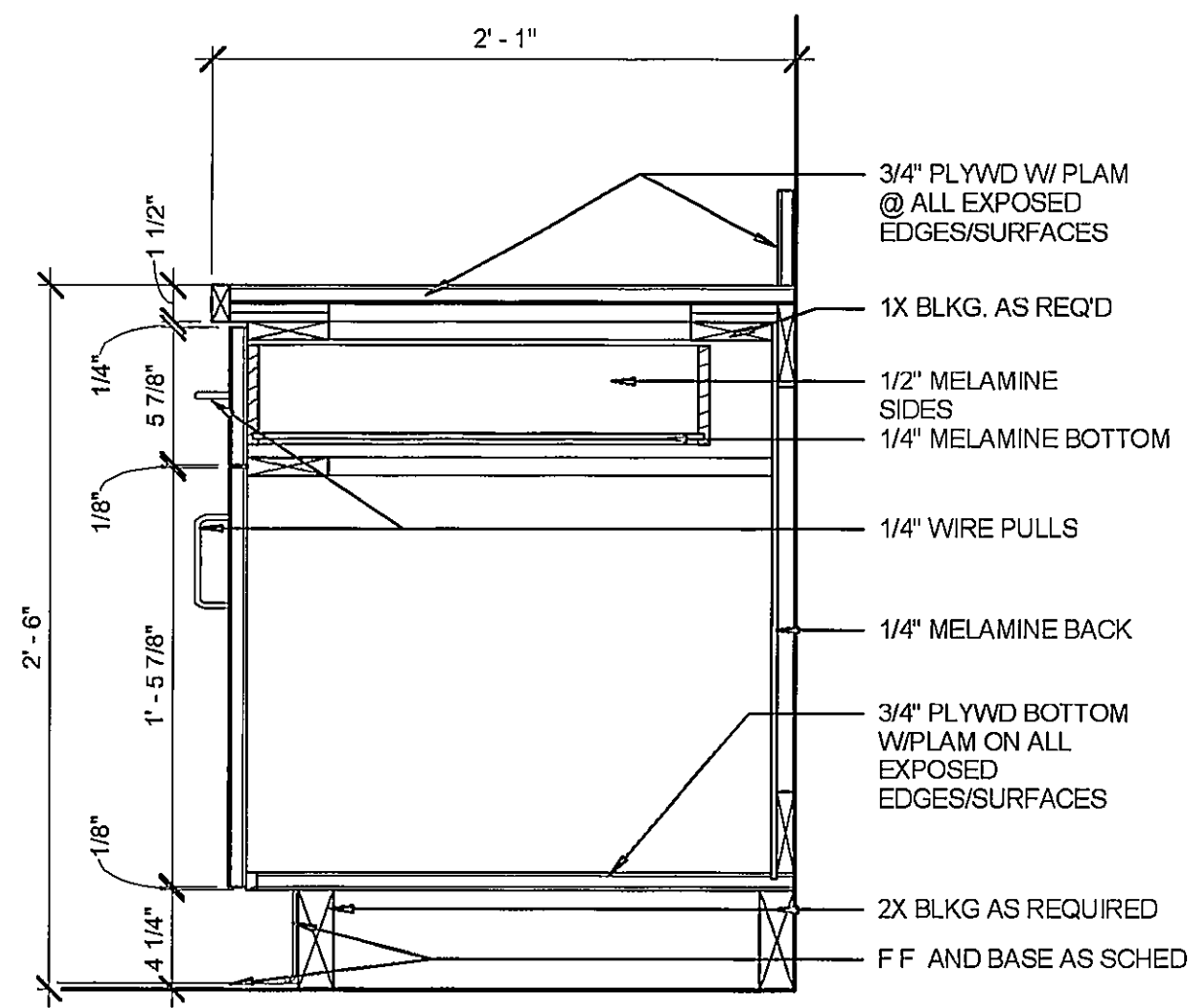
PROJECT: FIRE STATION No. 9
CITY OF HATTIESBURG, MISSISSIPPI

CN18-3707
Sheet 1 of 10
A7.1

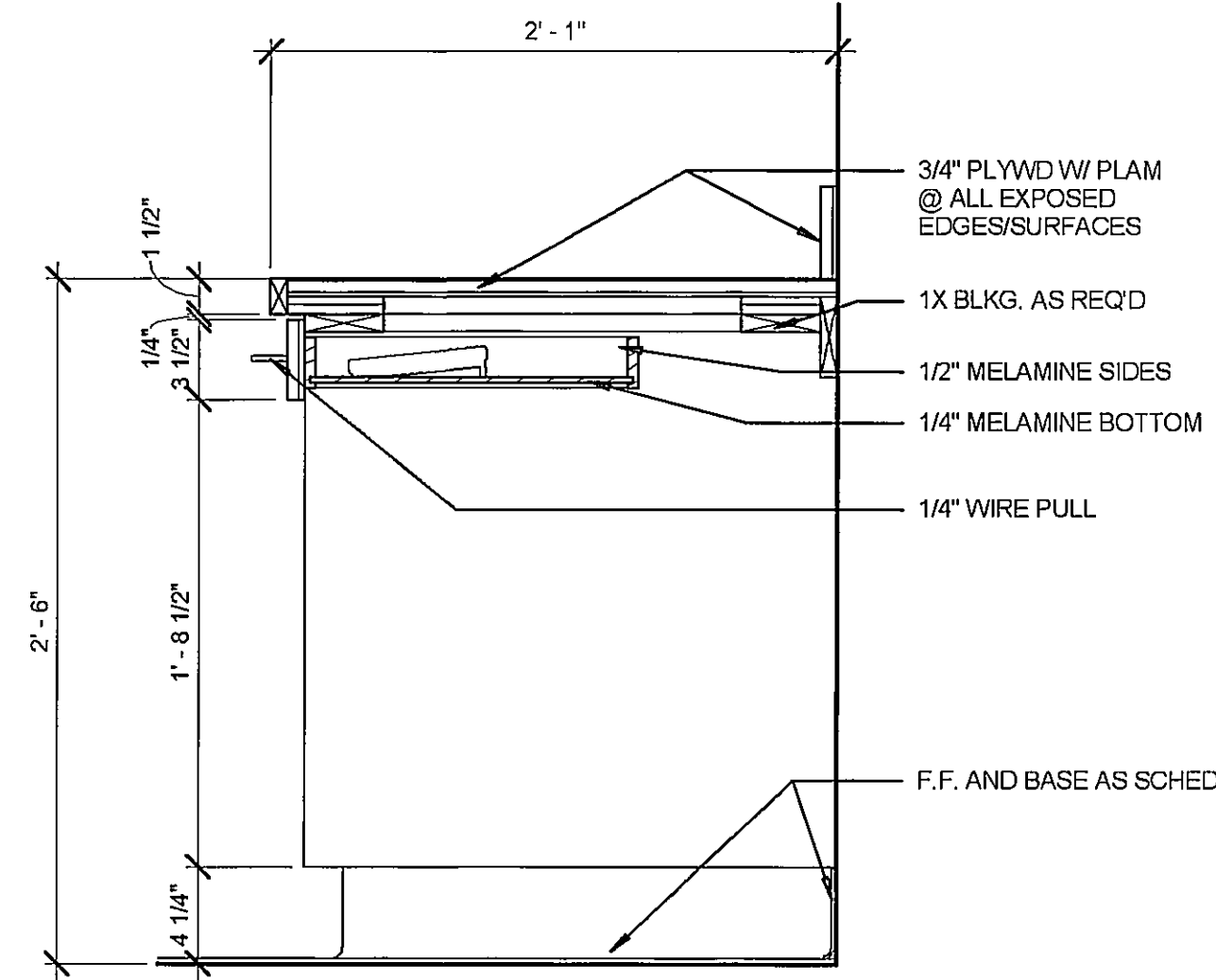


CHECK C/L	PROJECT DATE	REV. DATE	 LANDRY LEWIS GERMANY ARCHITECT P.A. 1000 E. 10TH AVE. SUITE 100 DENVER, CO 80202 P. 303.733.1100 F. 303.733.1101 WWW.LLG-PA.COM	SHEET TITLE	CITY OF HATTIESBURG HATSBURG	NAME	SHEET NO.	ADD-3
				ADDENDUM NO. ONE MILLWORK ELEVATIONS AND SECTIONS FIRE STATION No. 9				

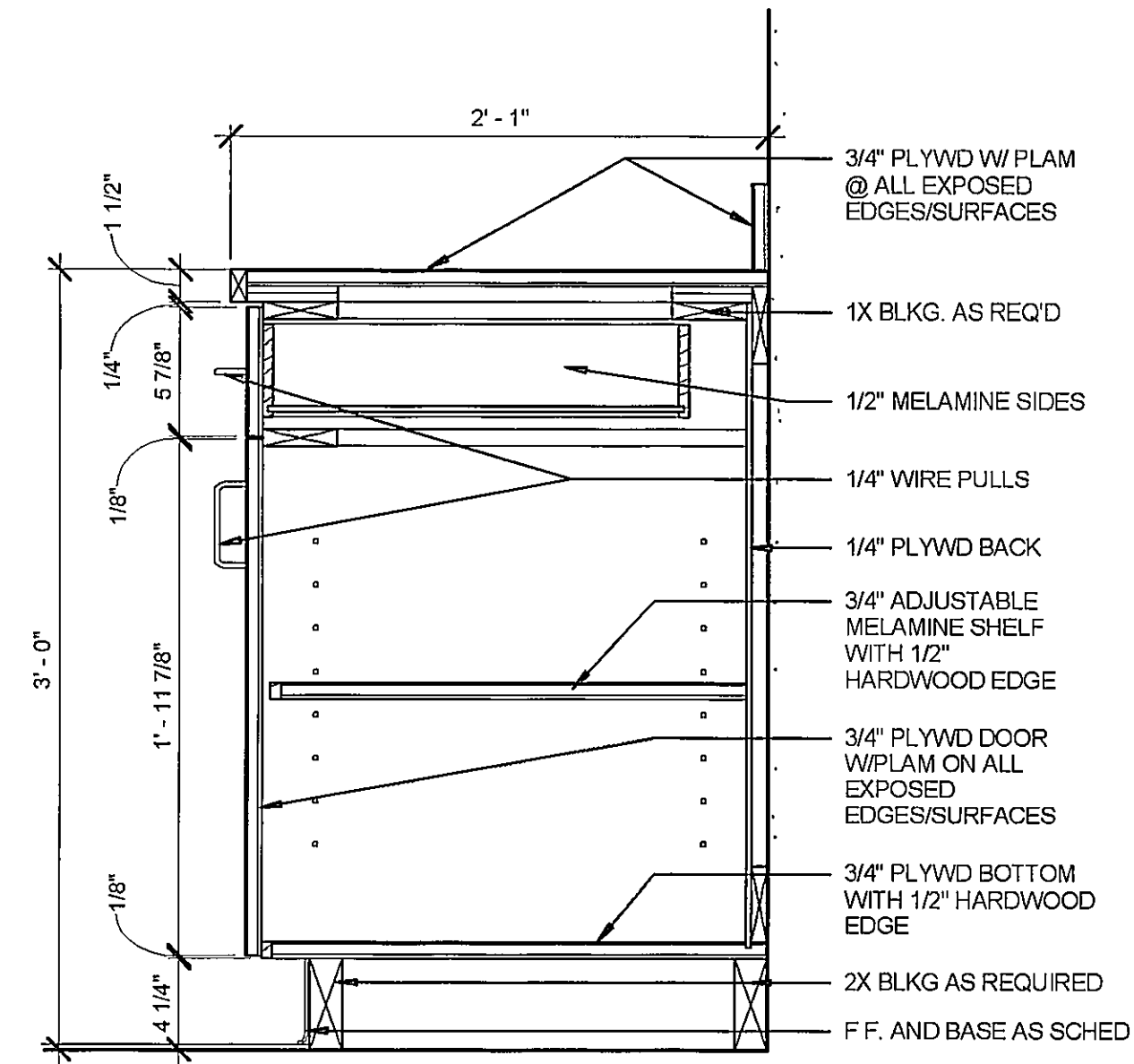




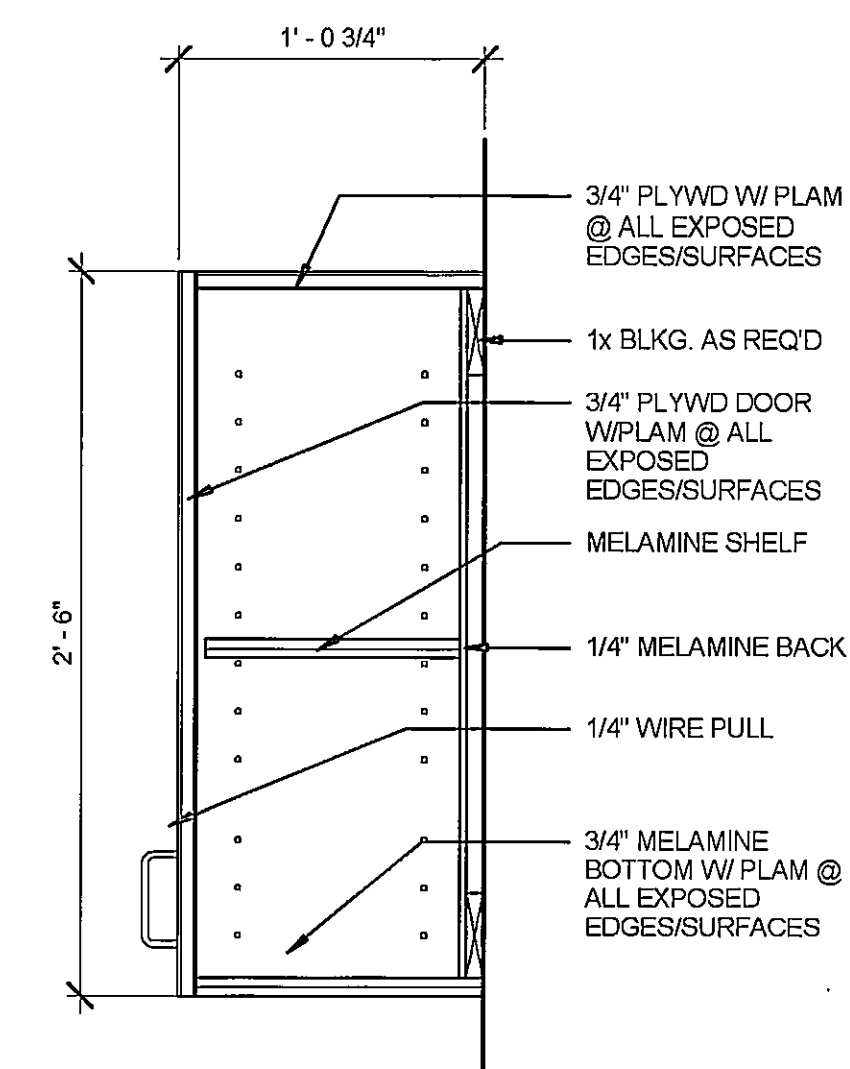
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1 1/2" = 1'-0"



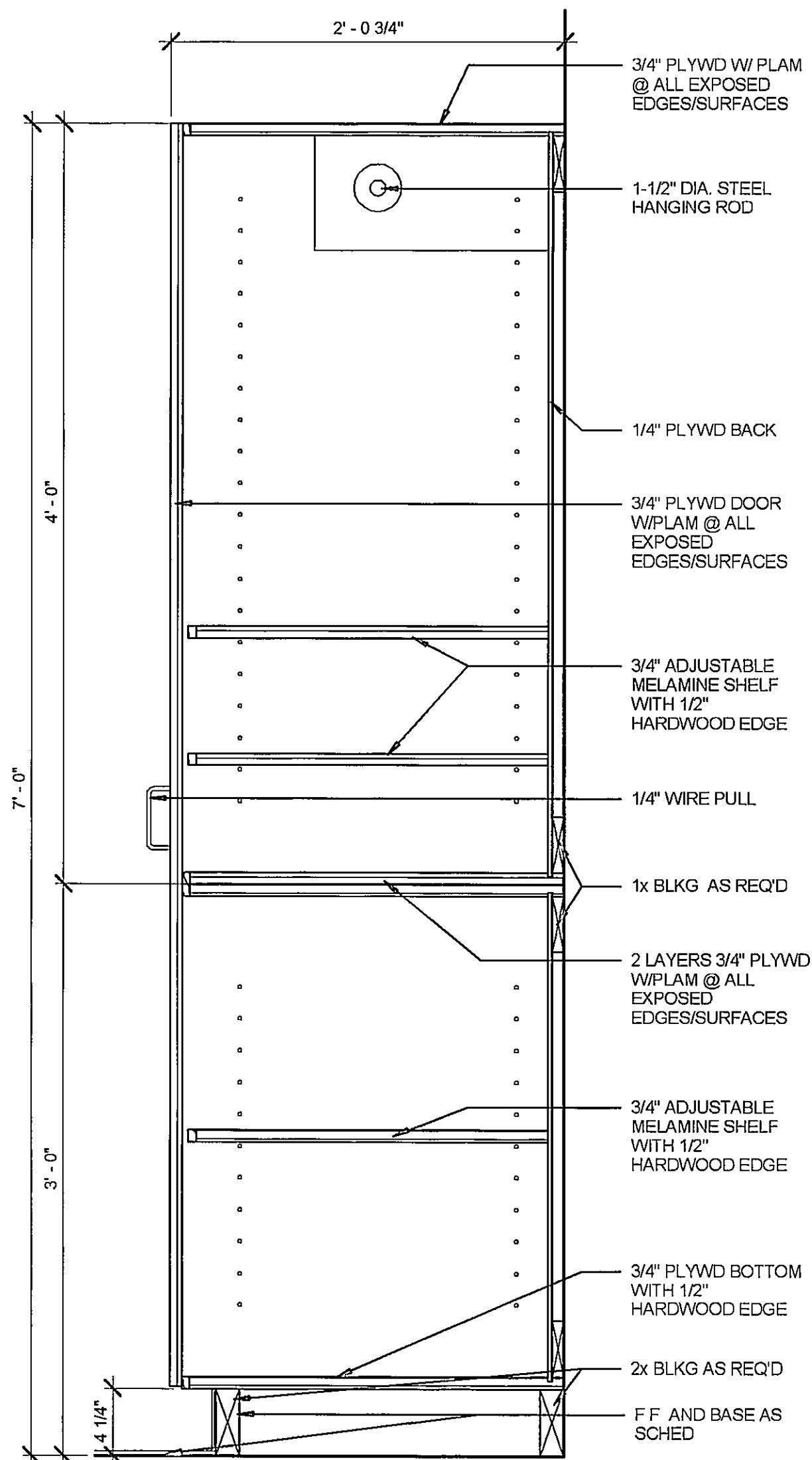
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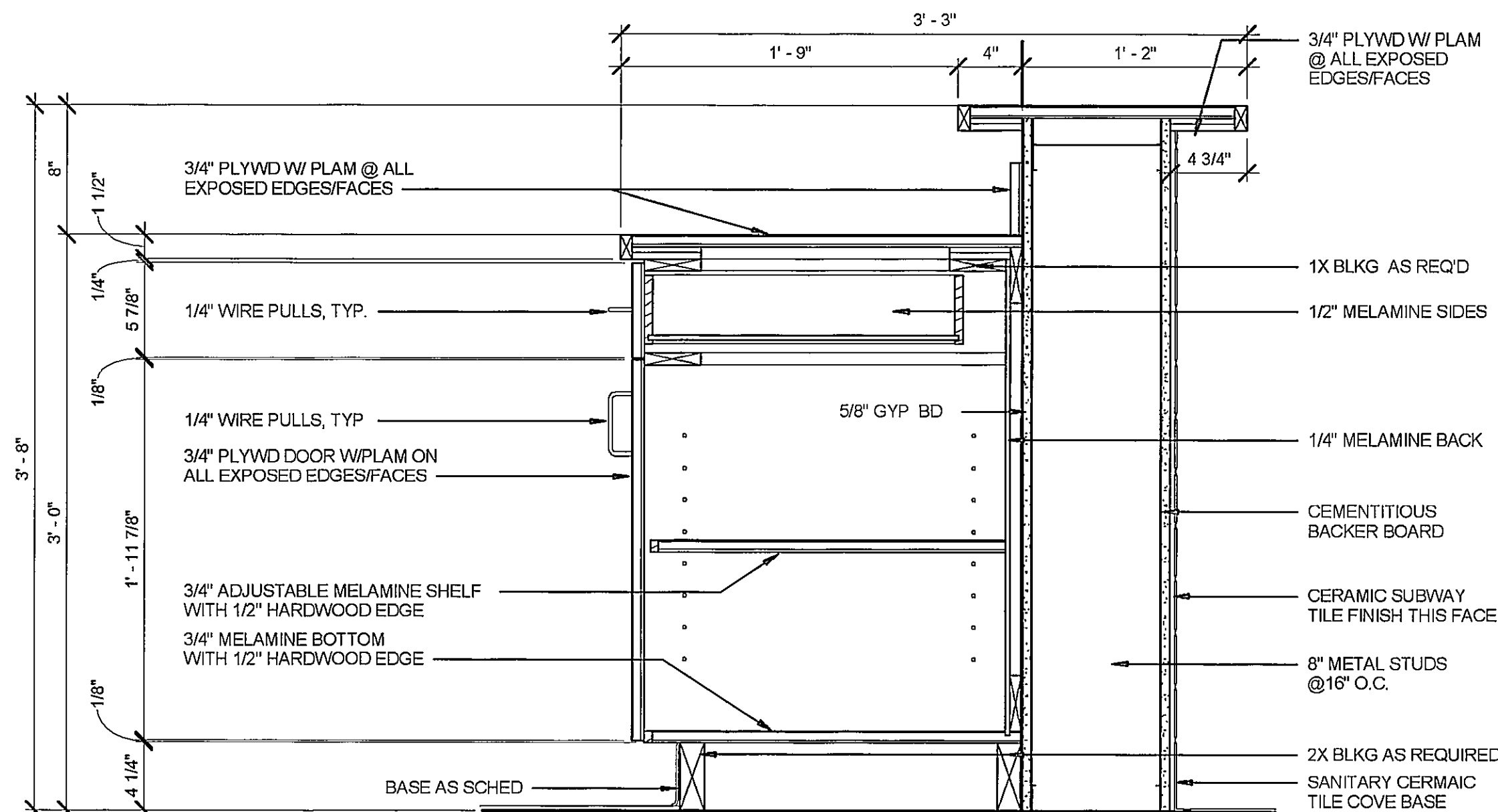
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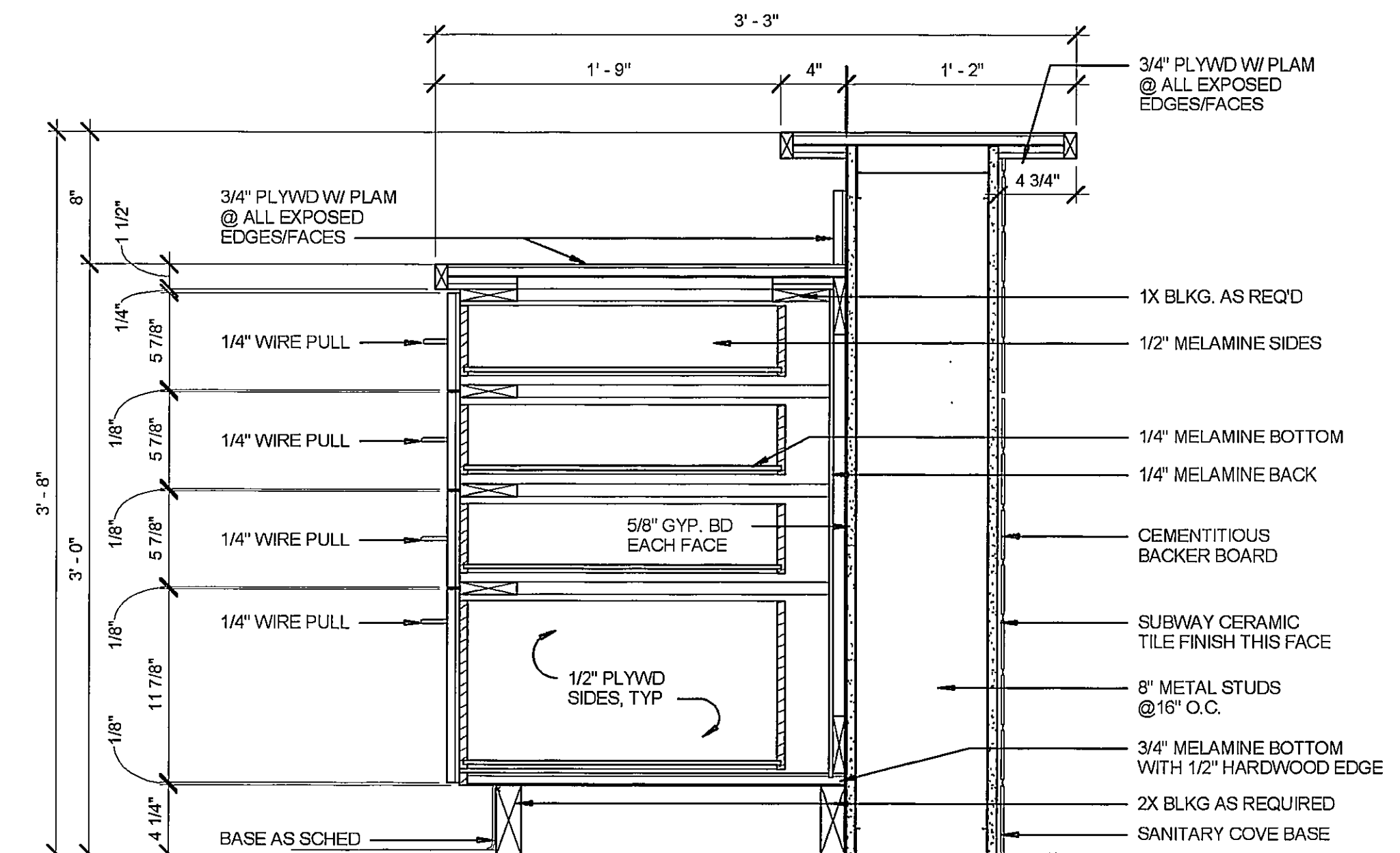
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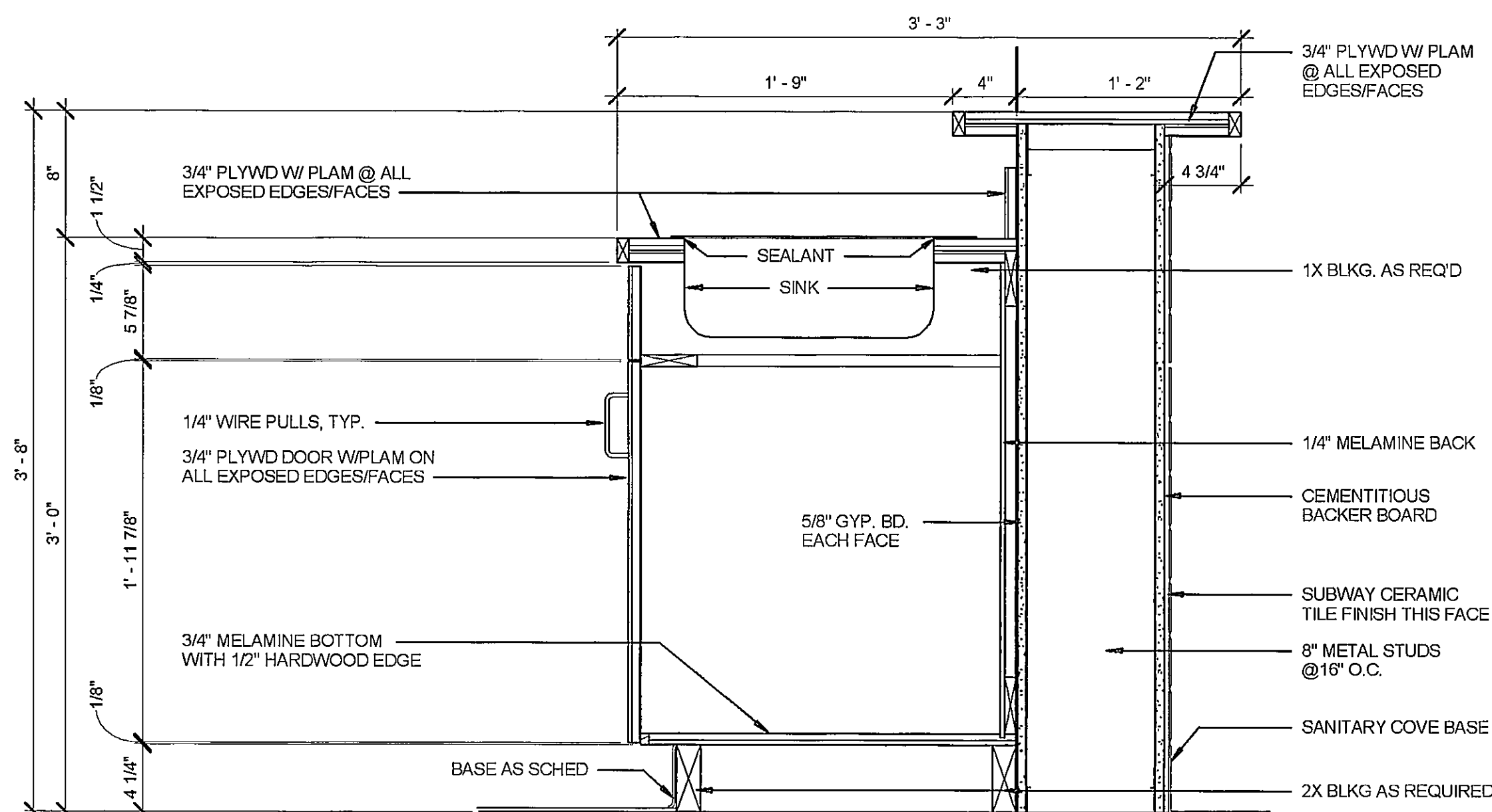
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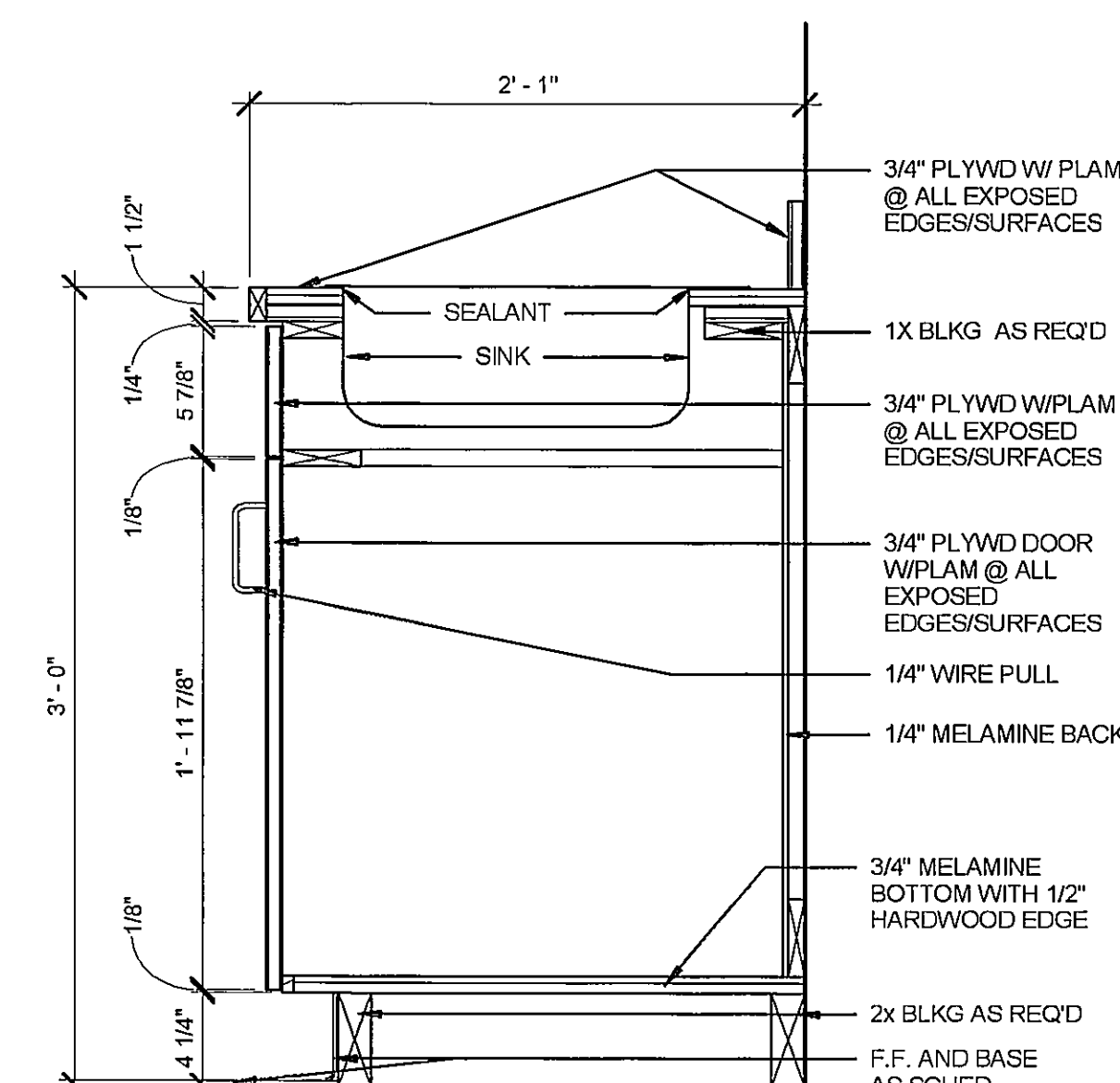
MILLWORK SECTION - 6
1 1/2" = 1'-0"



MILLWORK SECTION - 7
1 1/2" = 1'-0"



MILLWORK SECTION - 8
1 1/2" = 1'-0"



MILLWORK SECTION - 9
1 1/2" = 1'-0"

DRAWN

SG

CHECKED

JKL

FINAL DATE

Nov. 22, 2019

REVISION SCHEDULE

REV #

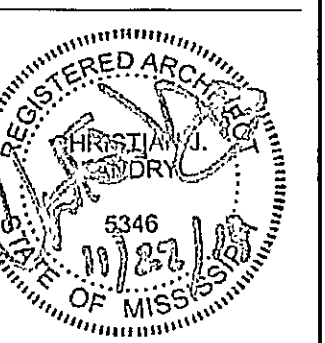
REV DATE

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SHEET TITLE
MILLWORK SECTIONS

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707

SHEET NUMBER

A7.2

1. THE OWNER WILL EMPLOY THE SERVICES OF ONE OR MORE SPECIAL INSPECTORS TO PROVIDE SPECIAL INSPECTIONS DURING CONSTRUCTION FOR THE ITEMS IN THE SPECIAL INSPECTION TABLE BELOW.
2. THE SPECIAL INSPECTORS SHALL BE A QUALIFIED PERSON WHO SHALL DEMONSTRATE COMPETENCE, TO THE SATISFACTION OF THE BUILDING OFFICIAL, AND THE ENGINEER OF RECORD, FOR INSPECTION OF THE PARTICULAR TYPE OF CONSTRUCTION OR OPERATION REQUIRING SPECIAL INSPECTION.
3. DUTIES AND RESPONSIBILITIES OF THE SPECIAL INSPECTOR:
A. SHALL OBSERVE THE WORK ASSIGNED FOR CONFORMANCE WITH THE CONTRACT DOCUMENTS. THE INSPECTOR MAY NOT ALTER, MODIFY, ENLARGE, OR WAIVE THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.
B. SHALL FURNISH INSPECTION REPORTS TO THE BUILDING OFFICIAL, THE ENGINEER OF RECORD, AND THE CONTRACTOR. ALL DISCREPANCIES SHALL BE BROUGHT TO THE IMMEDIATE ATTENTION OF THE CONTRACTOR FOR CORRECTION, THEN IF UNCORRECTED, SUBMIT A COMPLETE LIST OF ALL OUTSTANDING DISCREPANCIES ON A WEEKLY BASIS TO THE OWNER, THE BUILDING OFFICIAL, AND THE ENGINEER OF RECORD UNTIL ALL CORRECTIONS HAVE BEEN COMPLETED.
C. SHALL SUBMIT A FINAL SIGNED REPORT STATING WHETHER THE WORK REQUIRING SPECIAL INSPECTION WAS TO THE BEST OF THE INSPECTOR'S KNOWLEDGE, IN CONFORMANCE WITH THE APPROVED PLANS & SPECIFICATIONS & THE APPLICABLE WORKMANSHIP PROVISIONS OF THE CODE.
4. WHERE SPECIAL INSPECTION REQUIREMENTS DUPLICATE THE REQUIREMENTS OF A SPECIFIED QUALITY ASSURANCE TESTING PROGRAM, DUPLICATE INSPECTIONS SHALL BE REQUIRED.

SPECIAL INSPECTION	FREQUENCY	REFERENCED STANDARD
SOILS		
1. VERIFY MATERIALS BELOW FOOTINGS ARE ADEQUATE TO ACHIEVE TO ACHIEVE THE BEARING CAPACITY	PERIODIC	GEOTECHNICAL ENGINEERING REPORT
2. VERIFY EXCAVATIONS ARE EXTENDED TO PROPER DEPTH AND HAVE REACHED PROPER MATERIALS	PERIODIC	
3. PERFORM CLASSIFICATION AND COMPACTION TESTING OF CONTROLLED FILL MATERIALS.	PERIODIC	
4. VERIFY USE OF PROPER MATERIALS, DENSITIES, AND LIFT THICKNESS DURING PLACEMENT AND COMPACTION OF CONTROLLED FILL.	CONTINUOUS	
5. PRIOR TO PLACEMENT OF CONTROLLED FILL, OBSERVE SUBGRADE AND VERIFY THAT SITE HAS BEEN PROPERLY PREPARED	PERIODIC	

CONCRETE		
ISOLATED SPREAD FOOTINGS & CONTINUOUS LINE FOOTINGS ARE INCLUDED. ALL ELEVATED STRUCTURAL SLABS ON METAL DECK ARE INCLUDED PATIOS, DRIVEWAYS, & SIDEWALKS ARE EXCLUDED		
1. INSPECTION OF REINFORCING STEEL , PLACEMENT OF SAME	PERIODIC	ACI 318 3.5, 7.1-7.7
2. INSPECT BOLTS TO BE INSTALLED IN CONCRETE, PRIOR TO & DURING PLACEMENT OF CONCRETE	CONTINUOUS	
3. INSPECT EPOXY SET ANCHORS AND EXPANSION ANCHORS INSTALLED IN HARDENED CONCRETE	CONTINUOUS	PRODUCT ICBO REPORT
4. VERIFYING USE OF REQUIRED DESIGN MIX.	PERIODIC	ACI 318 CH 4, 5.2-5.4
5. SAMPLING FRESH CONCRETE & PERFORMING SLUMP, AIR CONTENT, TEMPERATURE TESTS AT THE TIME OF MAKING SPECIMENS FOR STRENGTH TESTS	CONTINUOUS	ASTM C172, C31 ACI 318 5.6, 5.8
6. INSPECTION OF CONCRETE PLACEMENT FOR PROPER APPLICATION TECHNIQUES	CONTINUOUS	ACI 318 5.9, 5.10
7. INSPECTION FOR MAINTENANCE OF SPECIFIED CURING TEMPERATURE & TECHNIQUES	PERIODIC	ACI 318 5.11-5.13
8. INSPECT FORMWORK FOR SHAPE, LOCATION & DIMENSIONS PRIOR TO PLACING	PERIODIC	ACI 318 6.1.1

STEEL CONSTRUCTION		
1. MATERIAL VERIFICATION OF HIGH-STRENGTH BOLTS, NUTS, & WASHERS A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARD REQUIRED. B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.	PERIODIC	APPLICABLE ASTM MATERIAL SPEC. AISC ASD A3.4
2. INSPECTION OF HIGH STRENGTH BOLTING - BEARING TYPE CONNECTION	PERIODIC	AISC 360, M2.5
3. MATERIAL VERIFICATION OF STRUCTURAL STEEL A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARD REQUIRED. B. MANUFACTURER'S CERTIFIED MILL TEST REPORT'S REQUIRED.		ASTM A6, A568
4. MATERIAL VERIFICATION OF WELD FILLER MATERIALS A. IDENTIFICATION MARKINGS TO CONFORM TO ASTM STANDARD SPECIFIED B. MANUFACTURER'S CERTIFICATE OF COMPLIANCE REQUIRED.		AISC ASD, A3.6
5. INSPECTION OF WELDING A. COMPLETE & PARTIAL PENETRATION GROOVE WELDS B. MULTI-PASS FILLET WELDS C. SINGLE PASS FILLET WELDS GREATER THAN 5/16" D. SINGLE PASS FILLET WELDS LESS THAN/EQUAL TO 5/16" E. FLOOR & DECK WELDS	CONTINUOUS CONTINUOUS CONTINUOUS PERIODIC PERIODIC	AWS D1.1
6. INSPECTION OF STEEL FRAME JOINT DETAILS FOR COMPLIANCE WITH CONTRACT DOCUMENTS A. DETAILS SUCH AS BRACING & STIFFENERS B. MEMBER LOCATIONS C. APPLICATION OF JOINT DETAILS AT EACH CONNECTION	PERIODIC	

MASONRY CONSTRUCTION		
AS MASONRY CONSTRUCTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE A. PROPORTIONS OF SITE PREPARED MORTAR B. PLACEMENT OF THE MASONRY UNITS & CONSTRUCTION OF MORTAR JOINTS C. LOCATION OF REINFORCEMENT, CONNECTIONS	PERIODIC PERIODIC PERIODIC	ACI 530, ASCE 6/TMS 602 ART. 2.6A ACI 530, ASCE 6/TMS 602 ART. 3.3B ACI 530, ASCE 6/TMS 602 ART. 3.4,3.6A
THE INSPECTION PROGRAM SHALL VERIFY:		
A. SIZE & LOCATION OF STRUCTURAL ELEMENTS B. TYPE, SIZE & LOCATION OF ANCHORS, INCLUDING OTHER DETAILS OF ANCHORAGE OF MASONRY TO STRUCTURAL MEMBERS, FRAMES, OR OTHER CONNECTIONS C. SPECIFIED SIZE, GRADE, & TYPE OF REINFORCEMENT D. PROTECTION OF MASONRY DURING COLD WEATHER (BELOW 40 DEG.) OR HOT WEATHER (ABOVE 90 DEG.) E. SHAPE OF BOND BEAMS MATCHES EXACTLY WHAT IS SHOWN ON STRUCTURAL DRAWINGS - NO OPEN BOTTOM SHAPES WHEN U-SHAPES ARE REQUIRED	PERIODIC PERIODIC PERIODIC PERIODIC PERIODIC	ACI 530, ASCE 6/TMS 602 ART. 3.3G ACI 530, ASCE 5/TMS 402 1.2.2e, 2.1.4, 3.1.6 ACI 530, ASCE 5/TMS 402 1.13 ACI 530, ASCE 6/TMS 602 ART. 2.4, 3.4 ACI 530, ASCE 6/TMS 602 ART. 1.8C, 1.8D
PRIOR TO GROUTING, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE A. GROUT SPACE IS CLEAN B. PLACEMENT OF REINFORCEMENT & CONNECTORS C. CONSTRUCTION OF MORTAR JOINTS GROUT PLACEMENT SHALL BE VERIFIED TO ENSURE COMPLIANCE WITH CODE & CONSTRUCTION DOCUMENT REQUIREMENTS PREPARATION OF ANY REQUIRED GROUT SPECIMENS, MORTAR SPECIMENS, AND/OR PRISMS SHALL BE OBSERVED COMPLIANCE WITH REQUIRED INSPECTION PROVISIONS OF THE CONSTRUCTION DOCUMENTS AND THE APPROVED SUBMITTALS SHALL BE VERIFIED	PERIODIC PERIODIC PERIODIC CONTINUOUS PERIODIC	ACI 530, ASCE 6/TMS 602 ART. 3.2D ACI 530, ASCE 5/TMS 402 1.13 ACI 530, ASCE 6/TMS 602 ART. 3.4 ACI 530, ASCE 6/TMS 602 ART. 3.3B ACI 530, ASCE 6/TMS 602 ART. 3.5 ACI 530, ASCE 6/TMS 602 ART. 1.4 ACI 530, ASCE 6/TMS 602 ART. 1.5

LIGHT GAGE STEEL TRUSSES/WOOD

AS TRUSS ERECTION BEGINS, THE FOLLOWING SHALL BE VERIFIED TO ENSURE COMPLIANCE A. ERECTION USES PROPER SLINGS /SPREADER BARS TO AVOID TWISTING OF TRUSSES THE INSPECTION PROGRAM SHALL VERIFY: A. HURRICANE TIES INSTALLED PROPERLY B. X-BRACING INSTALLED C. BRACING INSTALLED AT TOP & BOTTOM CHORDS D. BRACING INSTALLED ON MEMBER DIAGONALS / VERTICALS E. ROOF SHEATHING ATTACHED AT PROPER SPACING F. TRUSSES INSTALLED PLUMB, STRAIGHT G. TRUSS MEMBERS NOT DAMAGED DURING ERECTION H. CONNECTION OF PIGGYBACK TO PRIMARY TRUSSES INSTALLED CORRECTLY	FREQUENCY	REFERENCED STANDARD
	PERIODIC	
	PERIODIC	CONTRACT DOCUMENTS
	PERIODIC	CONTRACT DOCUMENTS
	PERIODIC	CONTRACT DOCUMENTS
	PERIODIC	APPROVED SHOP DRAWINGS
	PERIODIC	CONTRACT DOCUMENTS
	PERIODIC	
	PERIODIC	APPROVED SHOP DRAWINGS

GENERAL NOTES:

1. All concrete shall conform to current ACI specifications and shall be as follows: regular sand and gravel with minimum of 3000 psi compressive strength in 28 days in footings, curbs, piers, walks, and gradebeams. Concrete for floor slabs shall have a minimum 28 day compressive strength of 4000 psi. All concrete shall have 3/4" maximum aggregate size, maximum slump of 5".
2. Provide necessary reinforcing steel accessories to hold bars in proper position.
3. Provide corner bars of same size and number as horizontal bars at all corners of gradebeams and walls.
4. All reinforcing shall be deformed, ASTM 615, Grade 60.
5. All detailing and fabrication of reinforcing bars must follow the ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures."
6. All placing of reinforcing bars in the forms must follow the CRSI "Recommended Practice for Placing Reinforcing Bars."
7. All bars are to be supported in the forms with wire bar supports meeting the requirements of the ACI "Manual of Standard Practice for Detailing Reinforced Concrete Structures".
8. Lap splices as specifically called for, but as least 36 bar diameters (18" min.).
9. Welded wire fabric must have end laps of one full mesh plus 2" and wiring all laps securely together. Welded wire fabric should extend into supporting beams and walls for anchorage.
10. All concrete slabs that are not otherwise provided for shall have reinforcing consisting of 6"x6"-W2.1x W2.1 welded wire fabric.
11. All reinforcing bars shall be securely wired together in the forms. Two-way mats of steel, column ties, and beam stirrups shall be tied sufficiently to hold them securely in place.
12. Provide keys of 2"x4" at all construction joints. Control joints in slab on grade shall be sawed 1-1/4" deep within 8 hours of pouring slab. Seal all joints with sealant.
13. All reinforcing shall have concrete cover as specified in ACI-318.
14. Design live loads for roofs and wind are in accordance with the "International Building Code", 2018 Edition. Loads for:
- 2nd floor corridors live load is 100 psf
 - 2nd floor typical is live load 70 psf
 - Roof live load is 20 psf, Dead load is 20 psf, Snow load is 5psf
- ULTIMATE WIND SPEED = 141 MPH
BLDG CLASSIFICATION - IV
EXPOSURE CATEGORY = C
15. The contractor shall be responsible for the design, placement, and maintenance of any and all shoring, bracing, or tie-backs needed to support any part of the construction during the construction process. It is the contractor's responsibility to ensure the safety and integrity of the structure until the necessary permanent elements are in place.

STRUCTURAL NOTES:

1. Unless shown otherwise, the following loose lintel schedule shall be used.
- | | |
|-----------------|--|
| Clear Spacing | Lintel angle for each 4" masonry thickness |
| to 4'-0" | 3-1/2"x 3-1/2x 1/4" |
| 4'-1" to 6'-0" | 4"x 3-1/2"x 3/8" |
| 6'-1" to 8'-0" | 5"x 3-1/2"x 3/8" |
| 8'-1" to 10'-0" | 6"x 3-1/2"x 3/8" |
| over 10'-0" | consult engineer |
2. All wide flange beams shall have a minimum yield strength of 50 ksi, and conform to ASTM A-992
3. All structural steel except as noted above shall conform ASTM specification A-36 or ASTM A-500, Grade B, as applicable.
4. No splices in structural steel shall be accepted without approval of the engineer except where shown on the drawings.
5. Bolts for structural steel shall be ASTM A-325-X high-strength bolts. Anchor bolts shall be ASTM F1554, grade 36..
6. All welding rods used shall be grade 70xx.
7. All structural steel shall be manufactured and erected in accordance with the Ninth Edition of the American Institute of Steel Construction Manual.
8. Where possible, all bolt holes shall be shop drilled. Holes made at the job site shall be mechanically drilled. No burning of holes will be allowed.
9. All steel connections not otherwise noted shall be welded all around. The weld size shall be equal to the thinner material to be connected.
10. All steel joists and bridging shall conform to the Steel Joist Institute standards of fabrication and erection. Joist bridging shall be as required by SJI. Do not connect bottom chord extensions until roof loads are in place. Concentrated loads on joists shall be placed at joist panel points, or the joist shall be reinforced as per SJI recommendations.

DESIGN BUILDING CODE

INTERNATIONAL BUILDING CODE - 2018 EDITION

DESIGN CODES

AISC MANUAL OF STEEL CONSTRUCTION , NINTH EDITION
STEEL JOIST INSTITUTE - STANDARD SPECIFICATIONS
LOAD TABLES FOR STEEL JOISTS & JOIST GIRDERS
ACI 318 - BUILDING REQUIREMENTS FOR REINFORCED CONCRETE

SOIL BEARING PRESSURE

GEOTECHNICAL REPORT BY TERRACON CONSULTANTS INC.
BLOXI, MS REPORT NUMBER E-4195029
NET ALLOWABLE BEARING PRESSURE 3000PSF

METAL WALL STUDS

MINIMUM METAL STUD SIZE TO BE 800S200-54 (50KSI) AT 16" O.C. (MIN.)
EXTERIOR METAL STUD WALLS TO BE DESIGNED BY STUD SUPPLIER
CONTRACTOR TO PROVIDE SHOP DRAWINGS AND CALCULATIONS FOR METAL STUD DESIGN FOR APPROVAL.
ALLOWABLE DEFLECTION FOR GLASS = H or L/720
ALLOWABLE DEFLECTION FOR ALL OTHER = H/360

WIND LOADING NOTES

BUILDING RISK CATEGORY IV
ULTIMATE WIND SPEED 141 MILES PER HOUR
EXPOSURE CATEGORY C

METAL BUILDING NOTES

ALL WIND/SEISMIC LOADS SHALL BE DETERMINED BY THE METAL BUILDING MANUFACTURER. ALL SECOND FLOOR LOADINGS APPLIED TO THE METAL BUILDING SHALL BE DETERMINED BY THE METAL BUILDING MANUFACTURER. MINIMUM LOADS FOR SEISMIC DETERMINATION ON THE SECOND FLOOR SHALL BE 100PSF DEAD LOAD AND 100PSF LIVE LOAD. IF THE METAL BUILDING MANUFACTURER CANNOT / WILL NOT DESIGN THE BUILDING TO RESIST SEISMIC LOADS FROM THE SECOND FLOOR DO NOT BID ON THIS PROJECT.

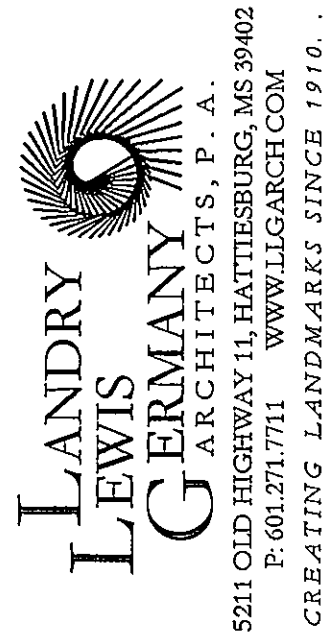
MAXIMUM DRIFT TO BE H/360
MAXIMUM DEFLECTION OF PURLINS BEAMS AND GIRTS TO BE L/360.
BASES OF COLUMNS TO BE PINNED.
MAXIMUM DEPTH METAL BUILDING COLUMNS TO BE 24"
MAXIMUM DEPTH OF PORTAL FRAME COLUMNS TO BE 24" FROM THE CENTER LINE OF THE MAIN FRAME COLUMN.
MIN. WEB AND FLANGE THICKNESS SHALL BE .25" FOR ALL METAL BUILDING COLUMNS.

SEISMIC NOTES

Ss= 13.1% S1=7.3%
Seismic Design Category C
Seismic Site Class D
Sms=0.21 Sm1=0.176
Sds= 0.14 Sd1=0.117

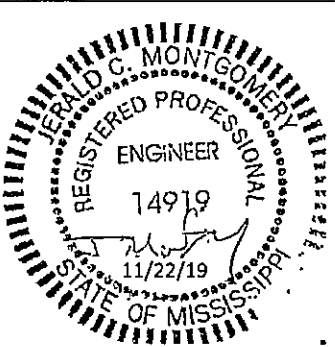
① NOTES
12" = 1'-0"

<u>DRAWN</u>	
CSF	
<u>CHECKED</u>	
MG	
<u>FINAL DATE</u>	
11/22/2019	
<u>REVISION SCHEDULE</u>	
<u>REV #</u>	<u>REV DATE</u>



SHEET TITLE
NOTES

PROJECT
FIRESTATION NO. 9

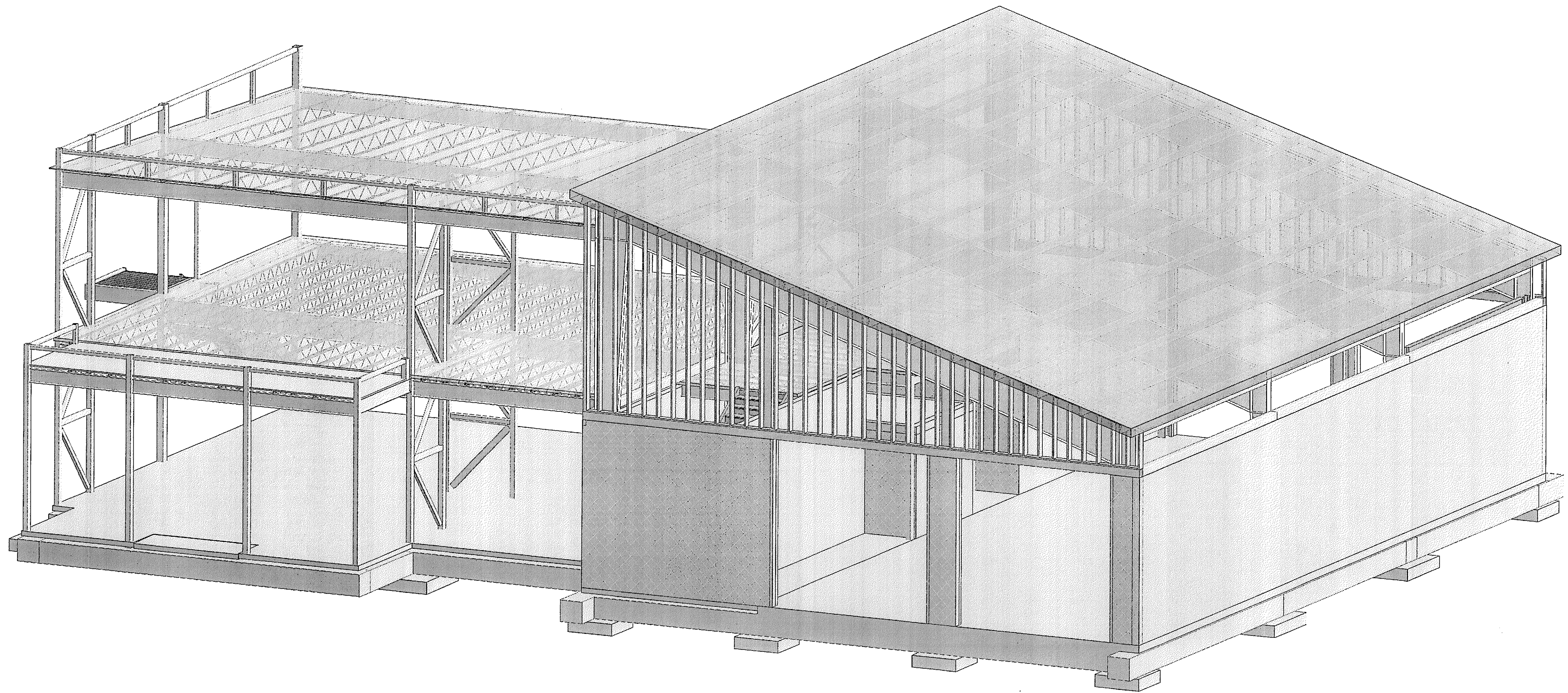


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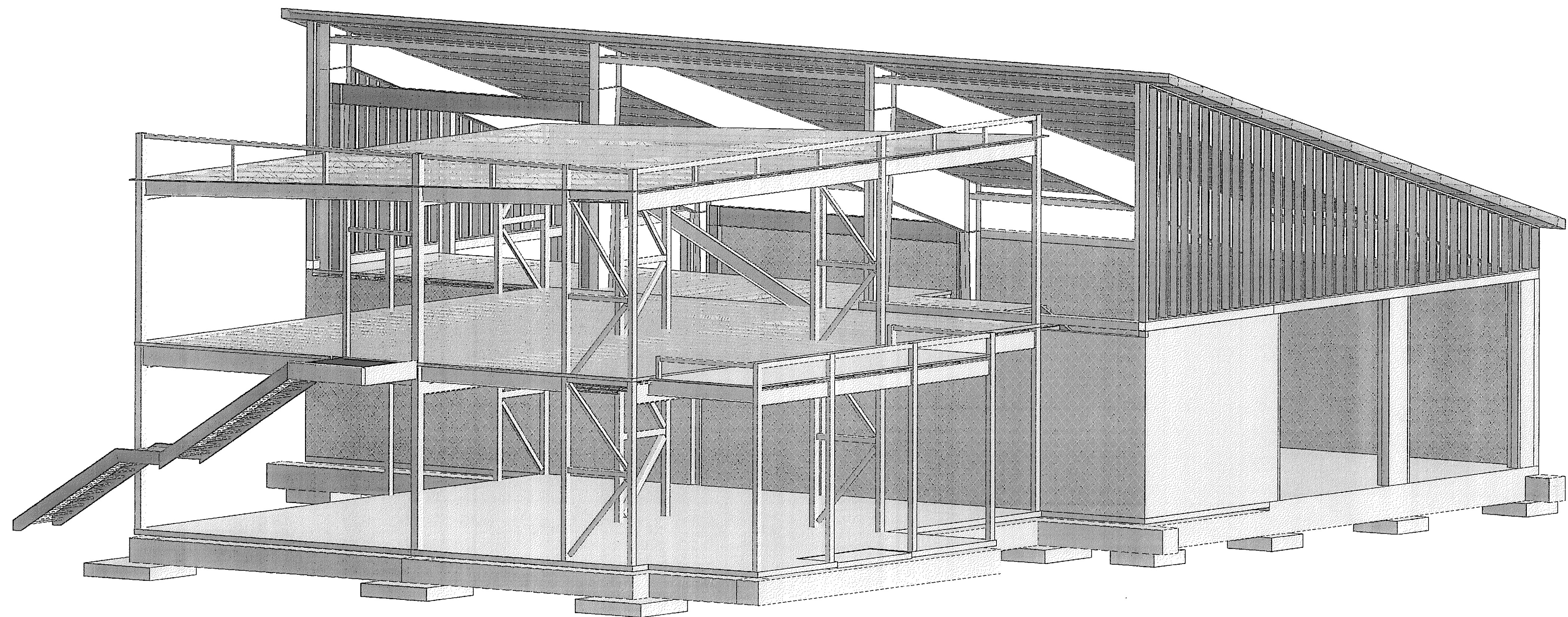
SHEET NUMBER

S0.1

CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI

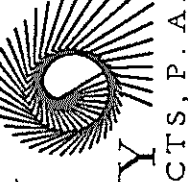


① 3D 2ND VIEW



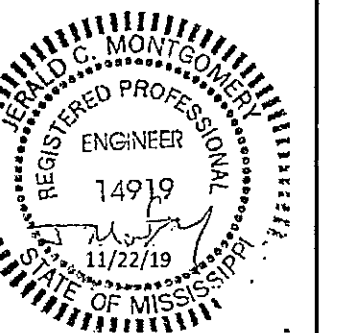
② 3D

DRAWN	CSF
CHECKED	MG
FINAL DATE	11/22/2019
REVISION SCHEDULE	
REV #	REV DATE


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SHEET TITLE
 3D

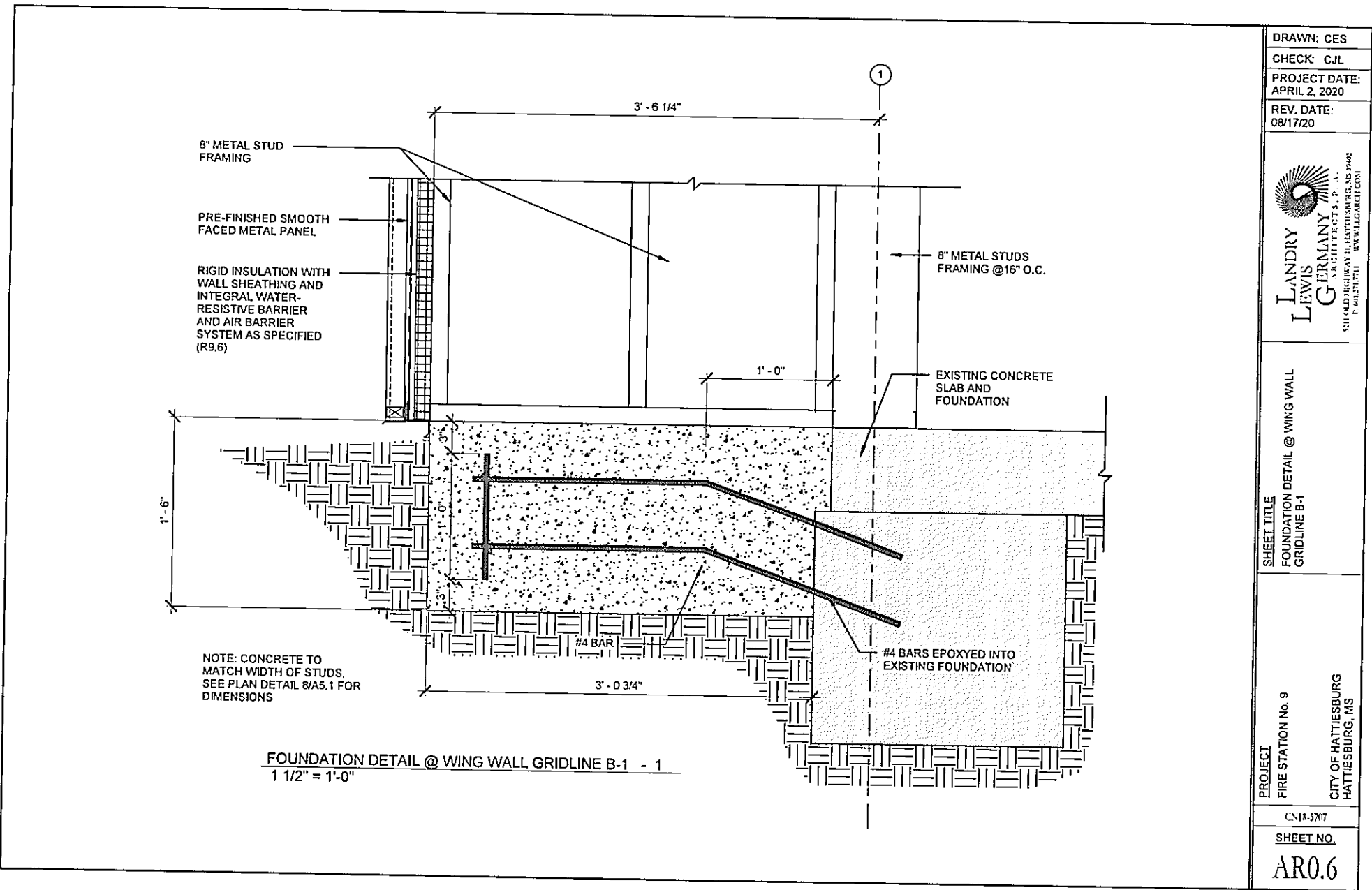
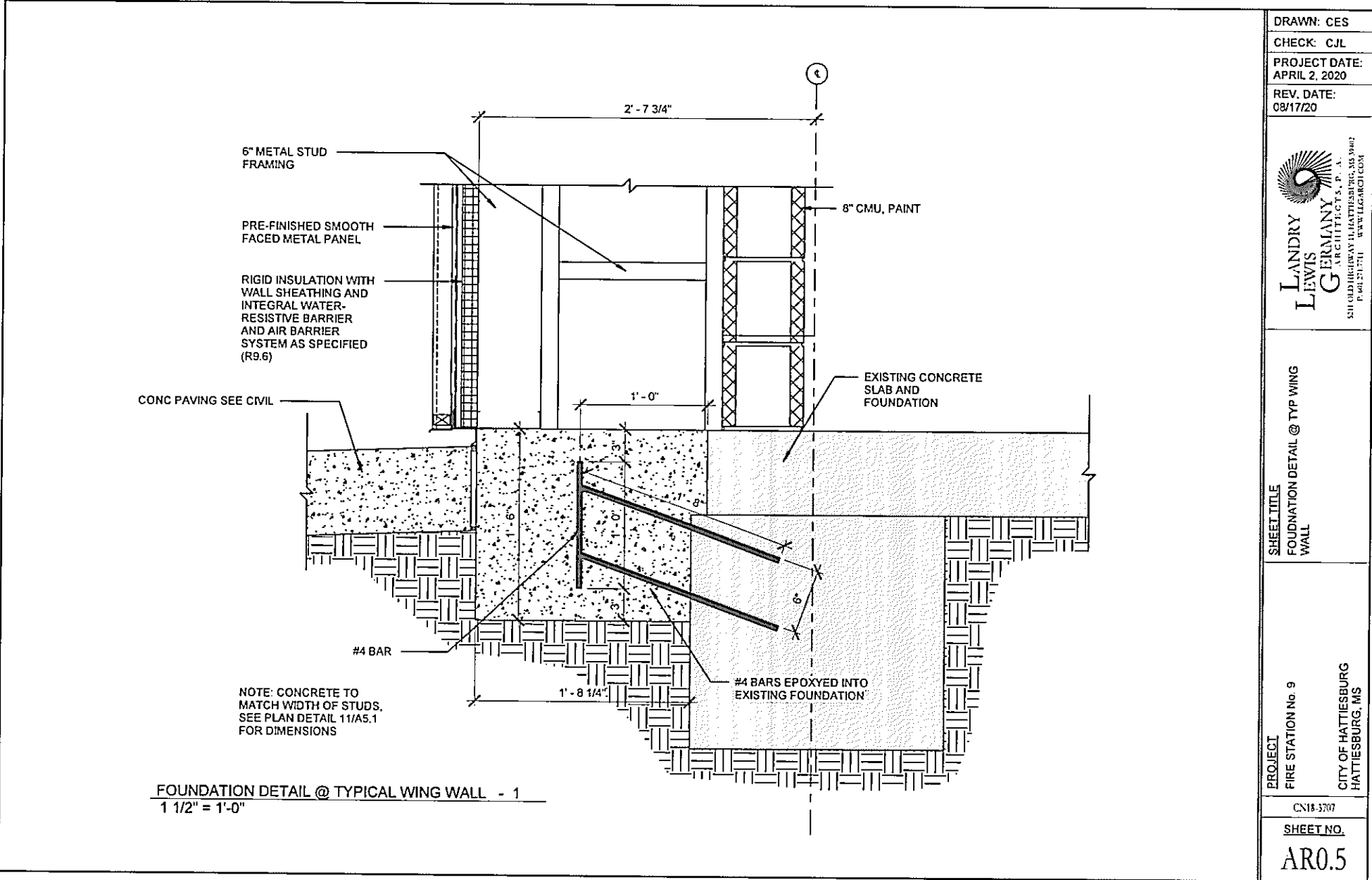
PROJECT
 FIRESTATION NO. 9
 CITY OF HATTIESBURG
 HATTIESBURG, MISSISSIPPI

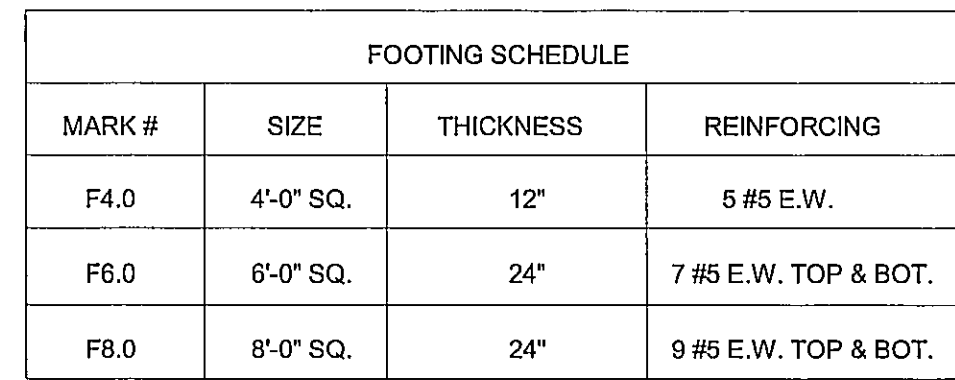


CN18-3707

SHEET NUMBER

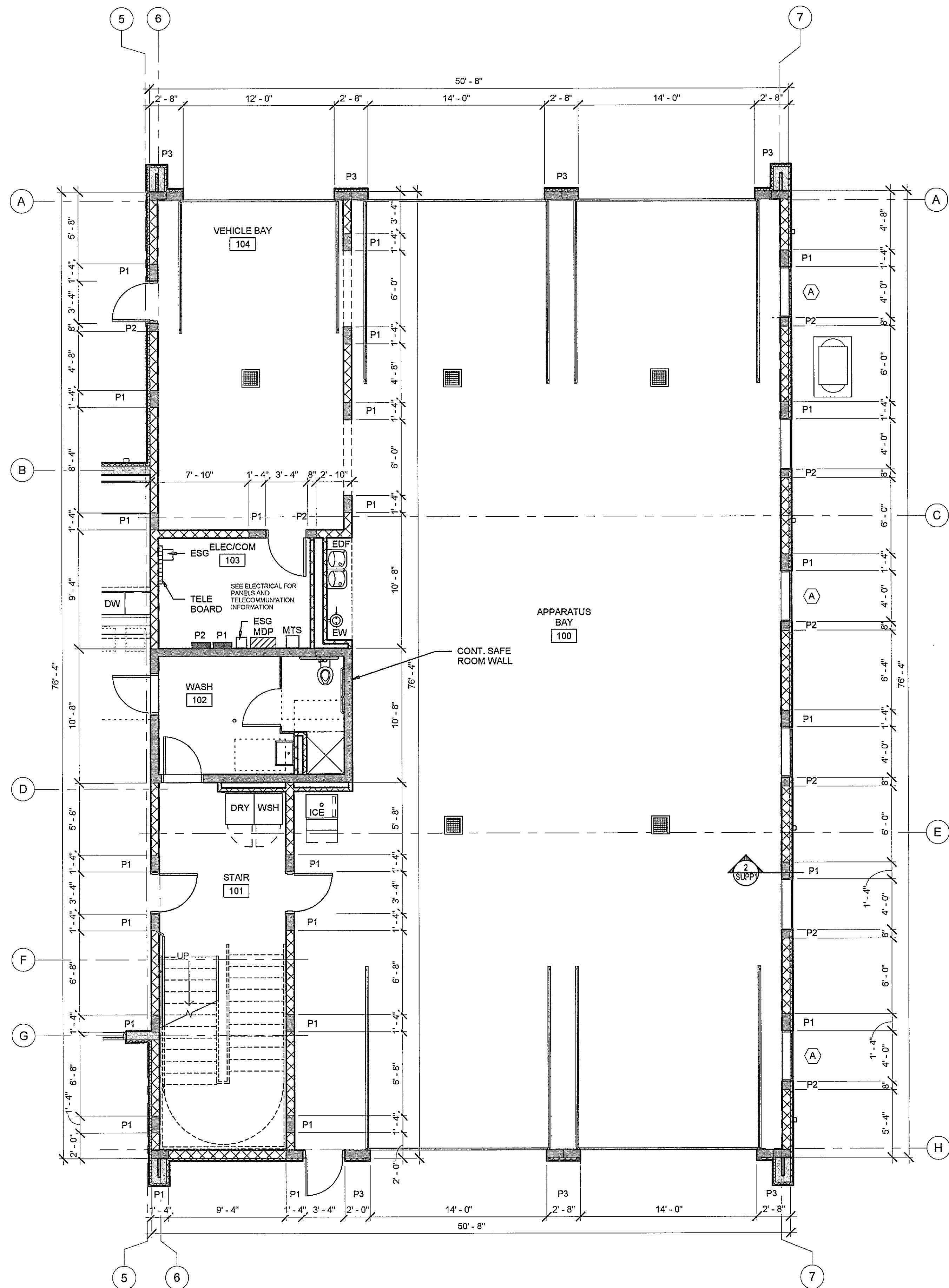
S0.2





INSTANT FOOTINGS FOR
PILASTERS @ (7) LOCATIONS
PER DETAILS ON
OPPOSITE PAGE PER
RFI #16 (✱)

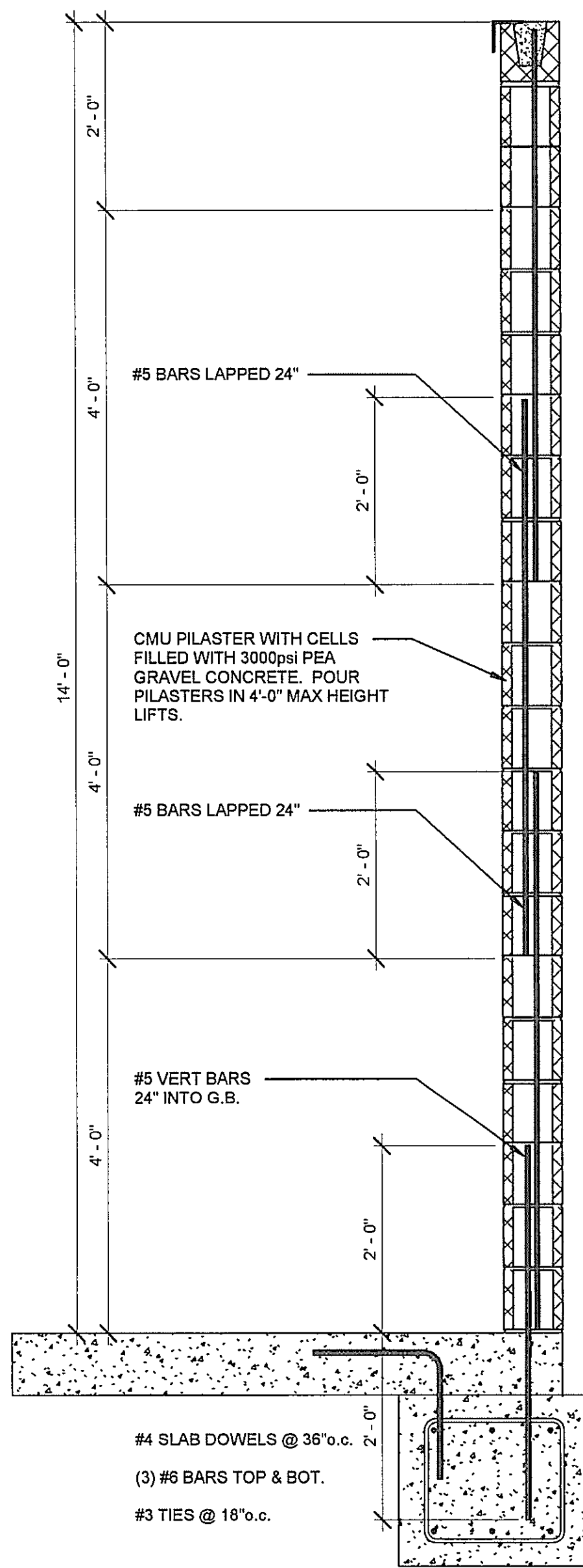
SEE SUPPI
ON NEXT PAGE
FOR PILASTER
LOCATIONS. RFI #003



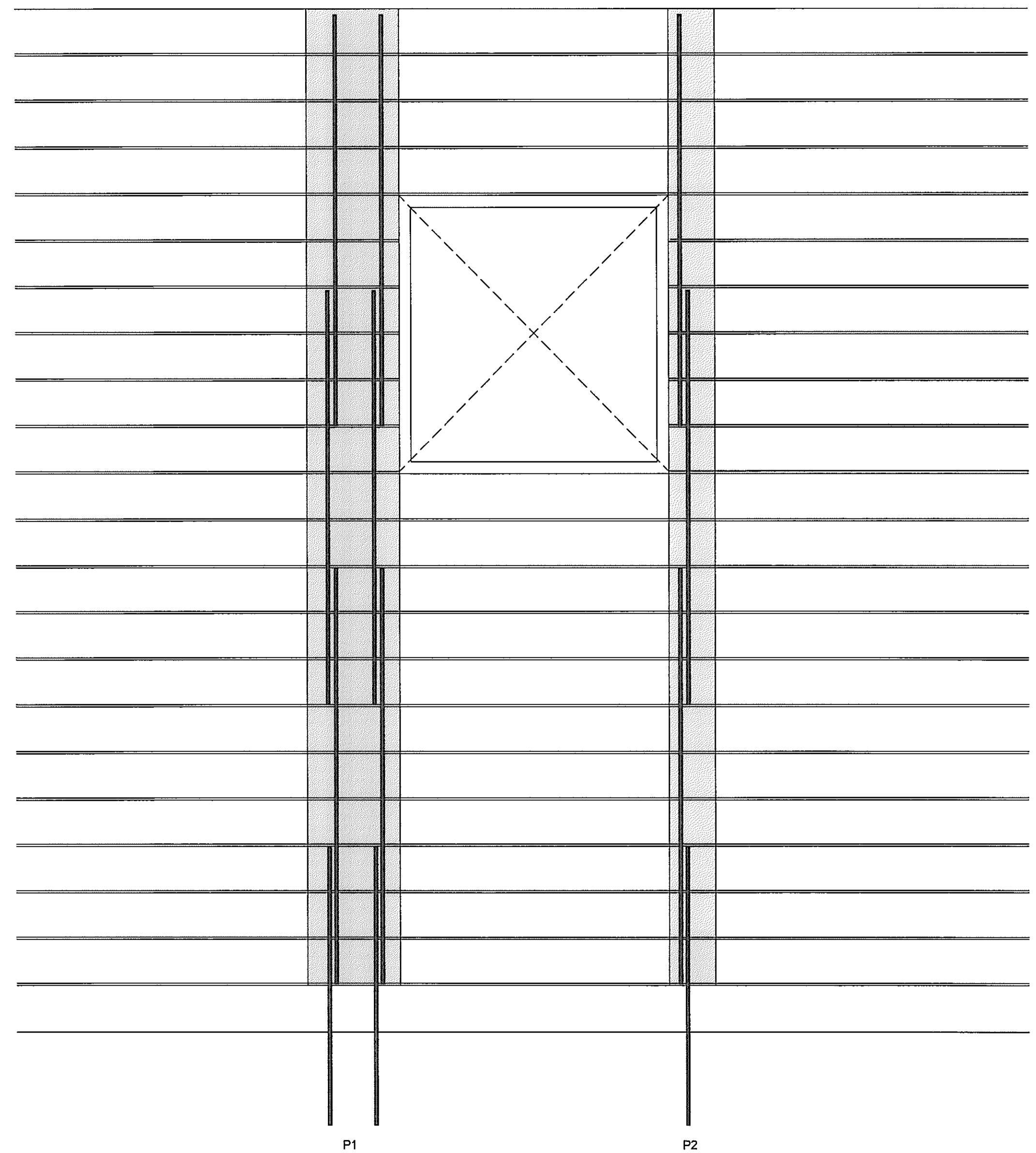
FIRST FLOOR PILASTER LAYOUT PLAN - 1
3/16" = 1'-0"

PILASTER LEGEND:

- P1 P1 INDICATES 8"x16" CMU PILASTER WITH EACH CELL FILLED WITH 3000psi PEA GRAVEL CONCRETE. POUR PILASTERS IN 4'-0" MAX HEIGHT LIFTS.
- P2 P2 INDICATES 8"x16" CMU PILASTER WITH ONE CELL FILLED WITH 3000psi PEA GRAVEL CONCRETE. POUR PILASTERS IN 4'-0" MAX HEIGHT LIFTS.
- P3 P3 INDICATES 2'-8"x16" CMU PILASTER WITH ONE CELL FILLED WITH 3000psi PEA GRAVEL CONCRETE. POUR PILASTERS IN 4'-0" MAX HEIGHT LIFTS.



TYPICAL PILASTER SECTION - 2
3/4" = 1'-0"



TYPICAL PILASTER ELEVATION - 3
3/4" = 1'-0"

RFI #003

DRAWN	JMH
CHECKED	MH
FINAL DATE	APRIL 2, 2020
REVISION SCHEDULE	
REV #	REV DATE

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SHEET TITLE
PLASTER PLAN, SECTION AND
NOTES

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707

SHEET NUMBER

SUPP1

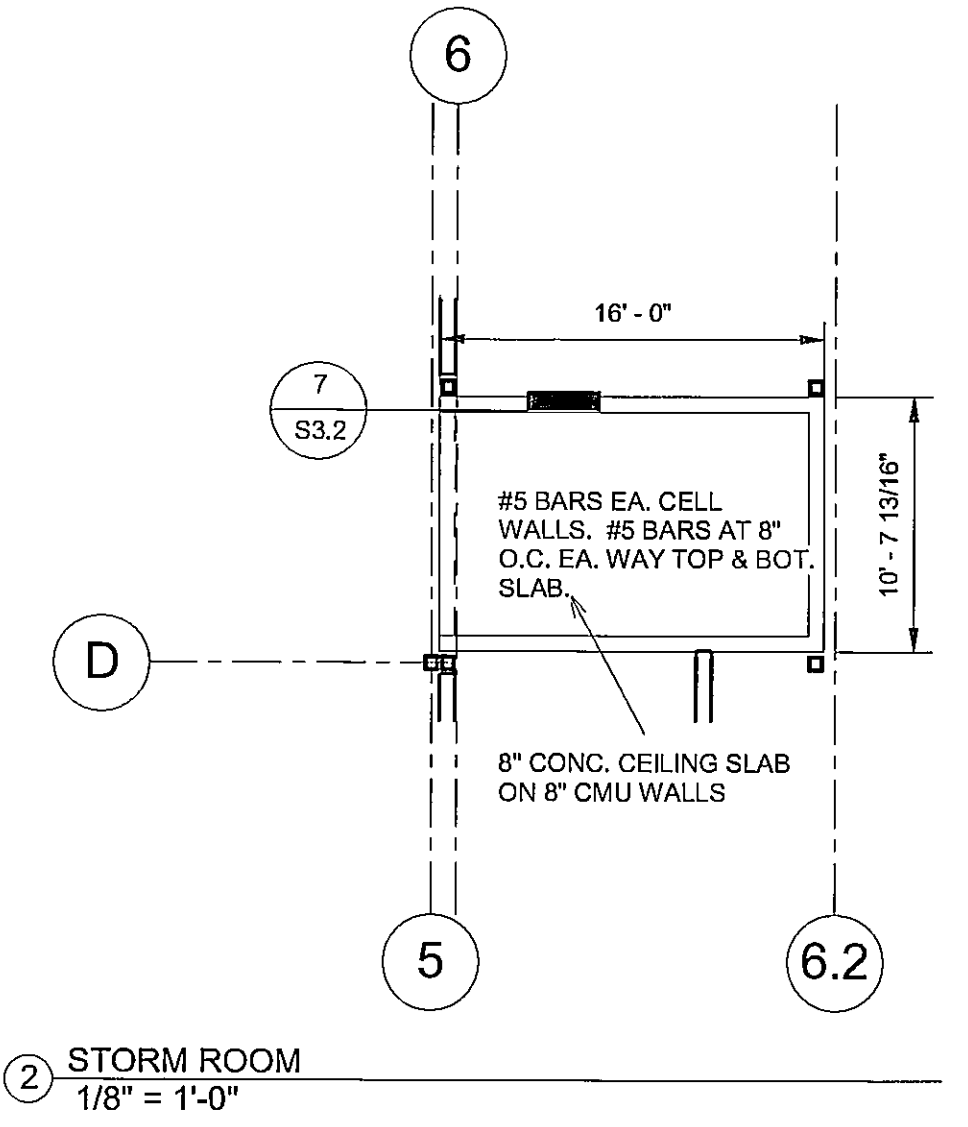
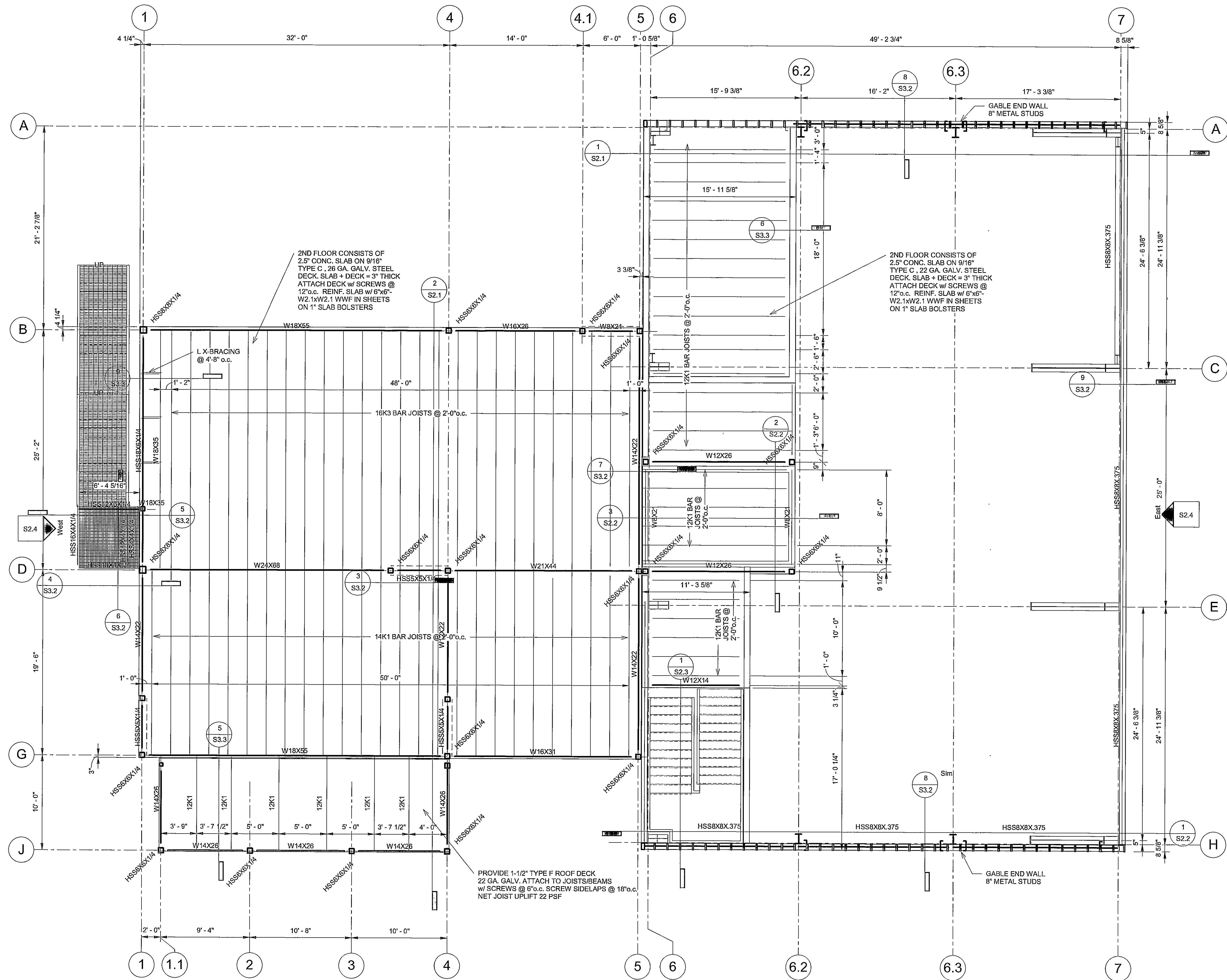
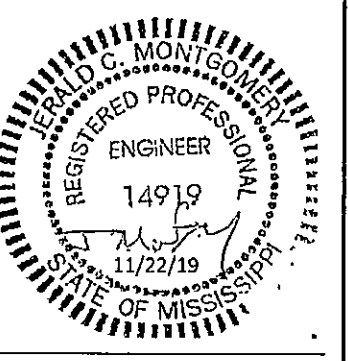


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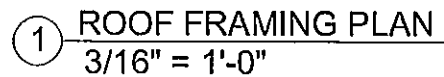
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5211 OLD HIGHWAY 11 HATTIESBURG, MS 39402
P 601.271.3711 WWW.LLGARCH.COM
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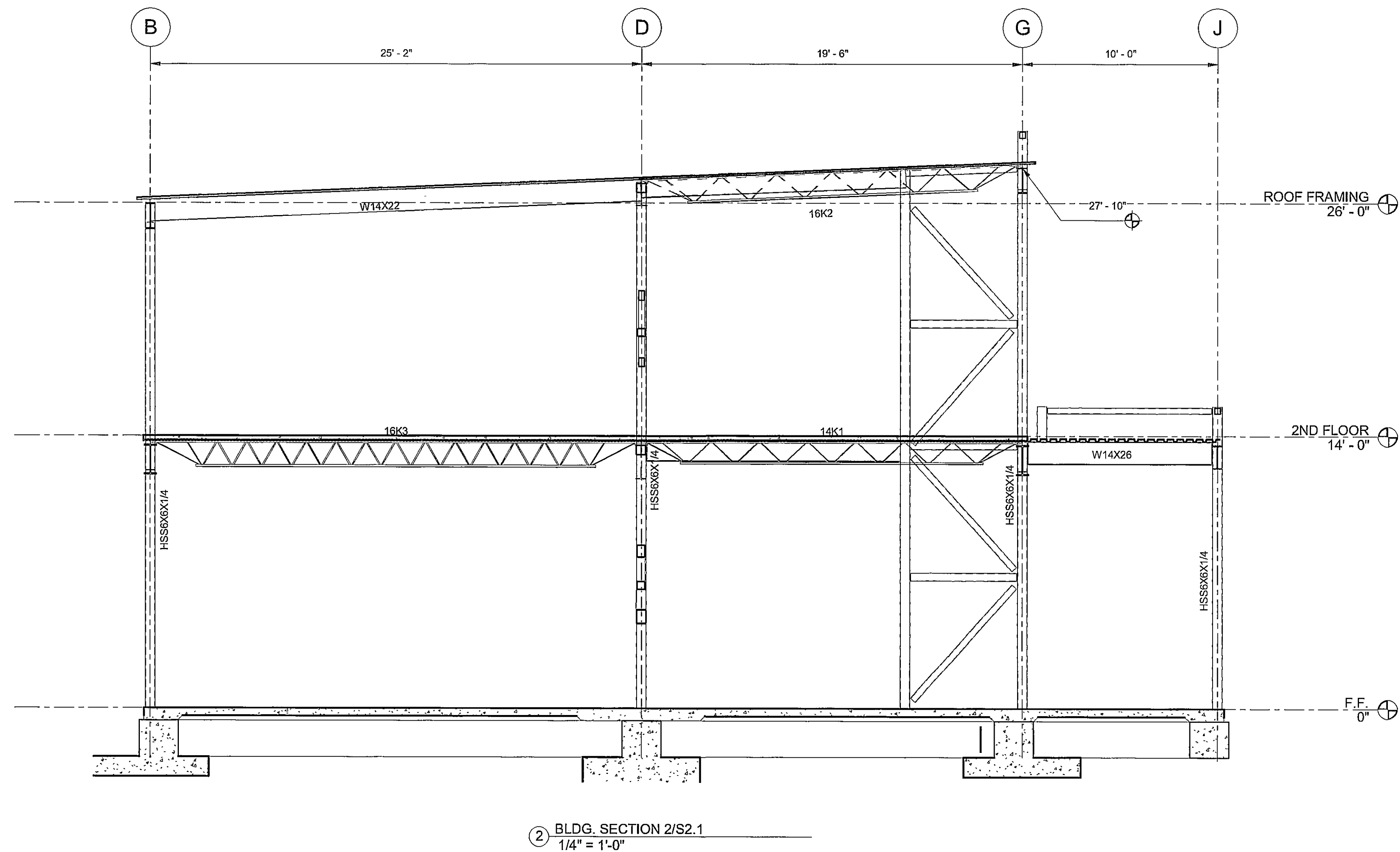
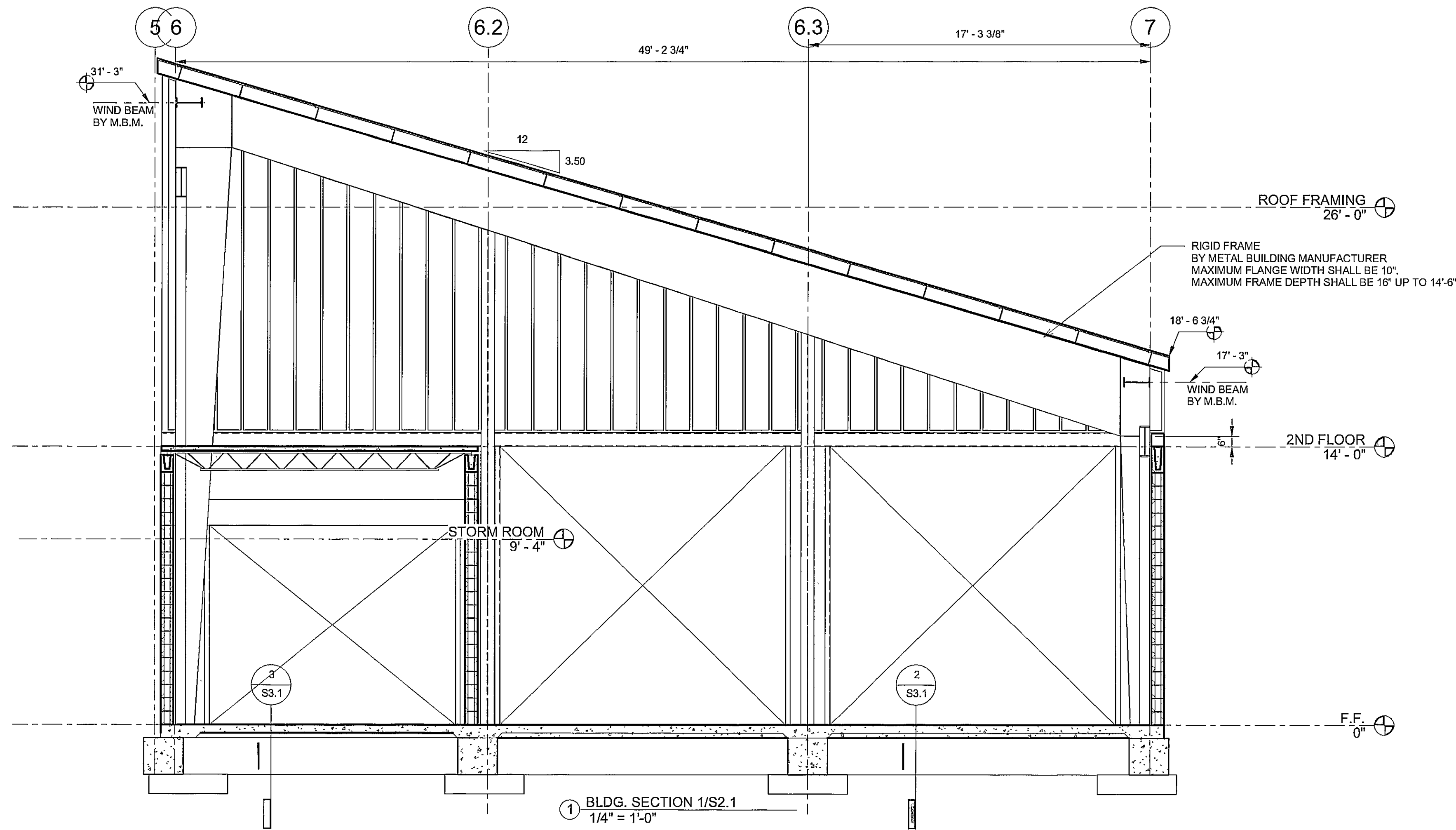
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SECOND FLOOR FRAMING

PROJECT
FIRESTATION NO. 9
CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI



CN18-3707
SHEET NUMBER
S1.2





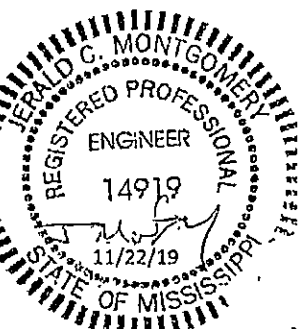
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CHECKED	MG
FINAL DATE	11/22/2019
REVISION SCHEDULE	
REV #	REV DATE


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SHEET TITLE
BLDG. SECTIONS

PROJECT
FIRESTATION NO. 9

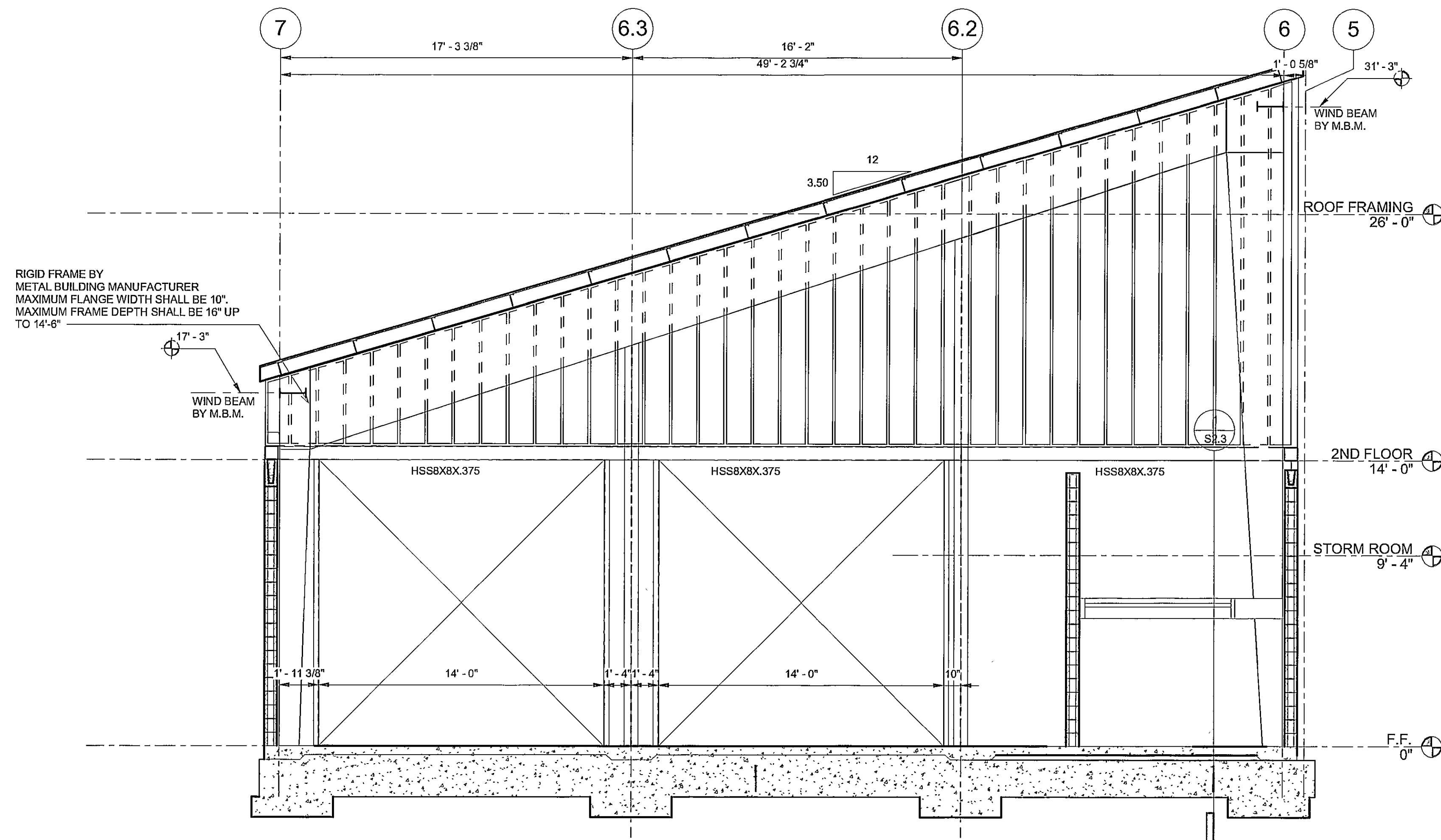
CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI



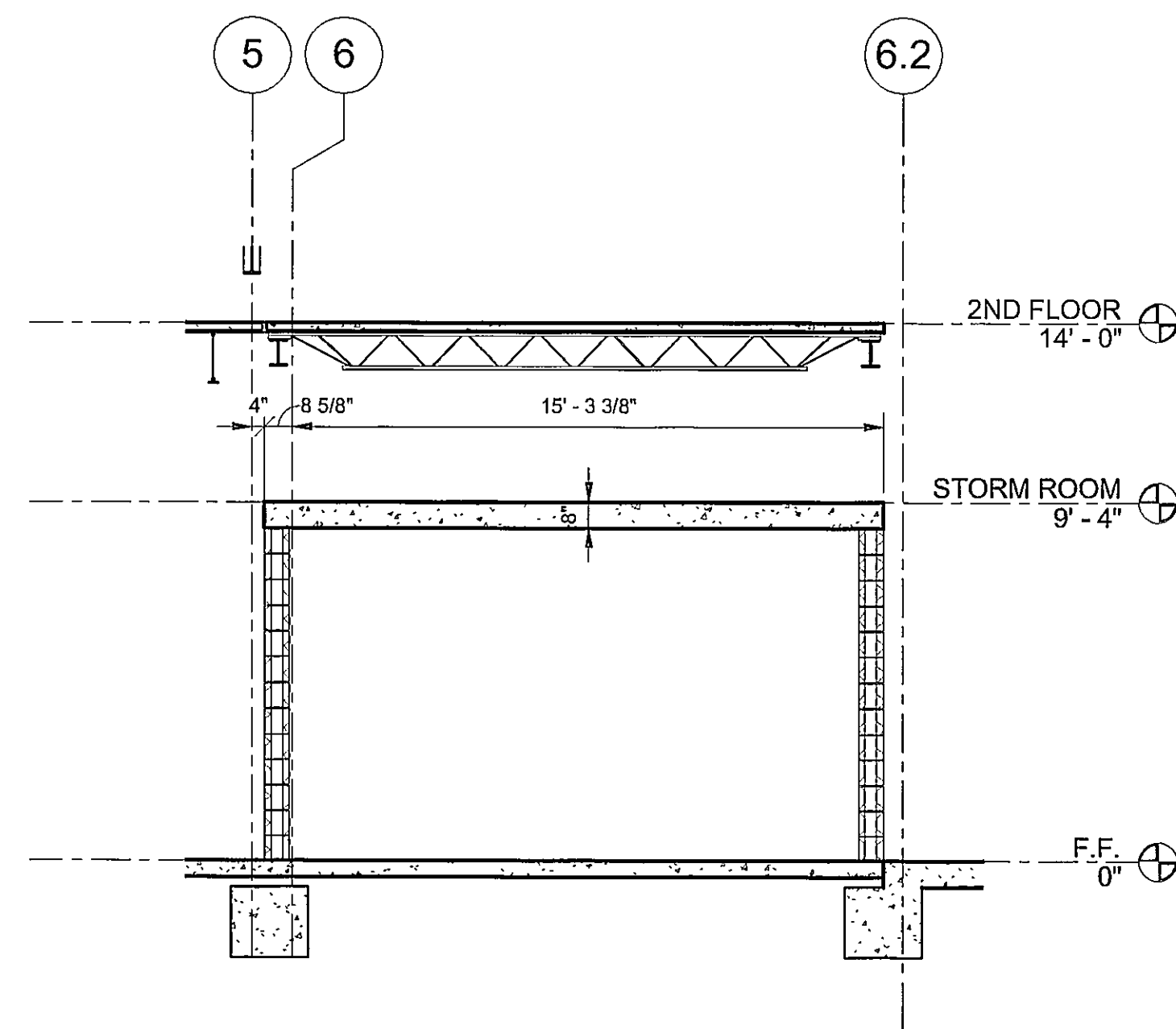
CN18-3707

SHEET NUMBER

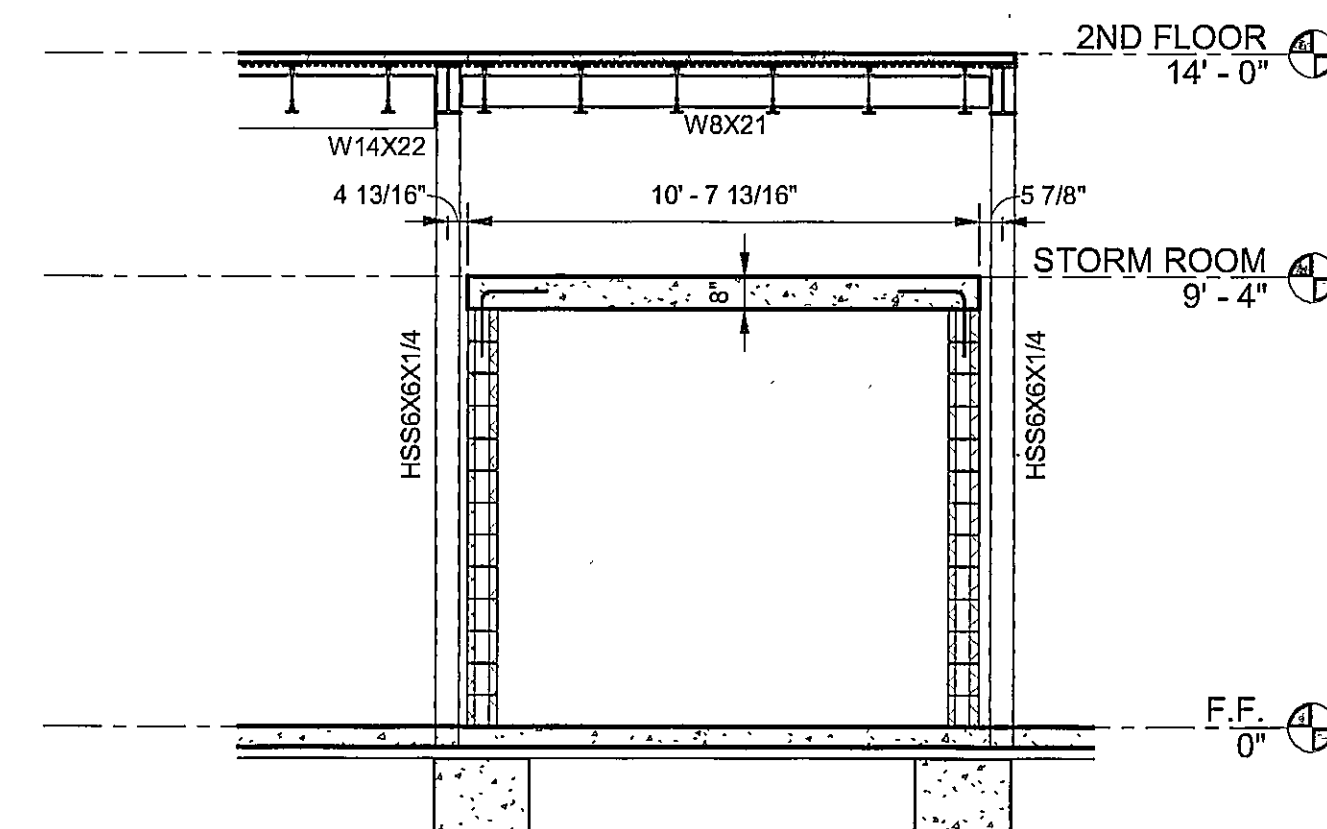
S2.1



① BLDG. SECTION 1/S2.2
1/4" = 1'-0"



③ BLDG. SECTION 3/S2.2
1/4" = 1'-0"



② BLDG. SECTION 2/S2.2
1/4" = 1'-0"

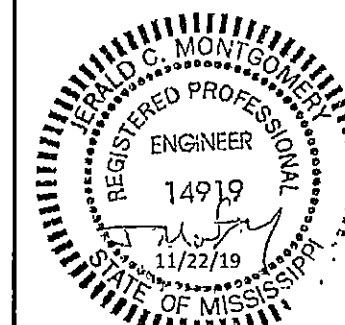
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FINAL DATE	11/22/2019
REVISION SCHEDULE	
REV #	REV DATE

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PROJECT
FIRESTATION NO. 9

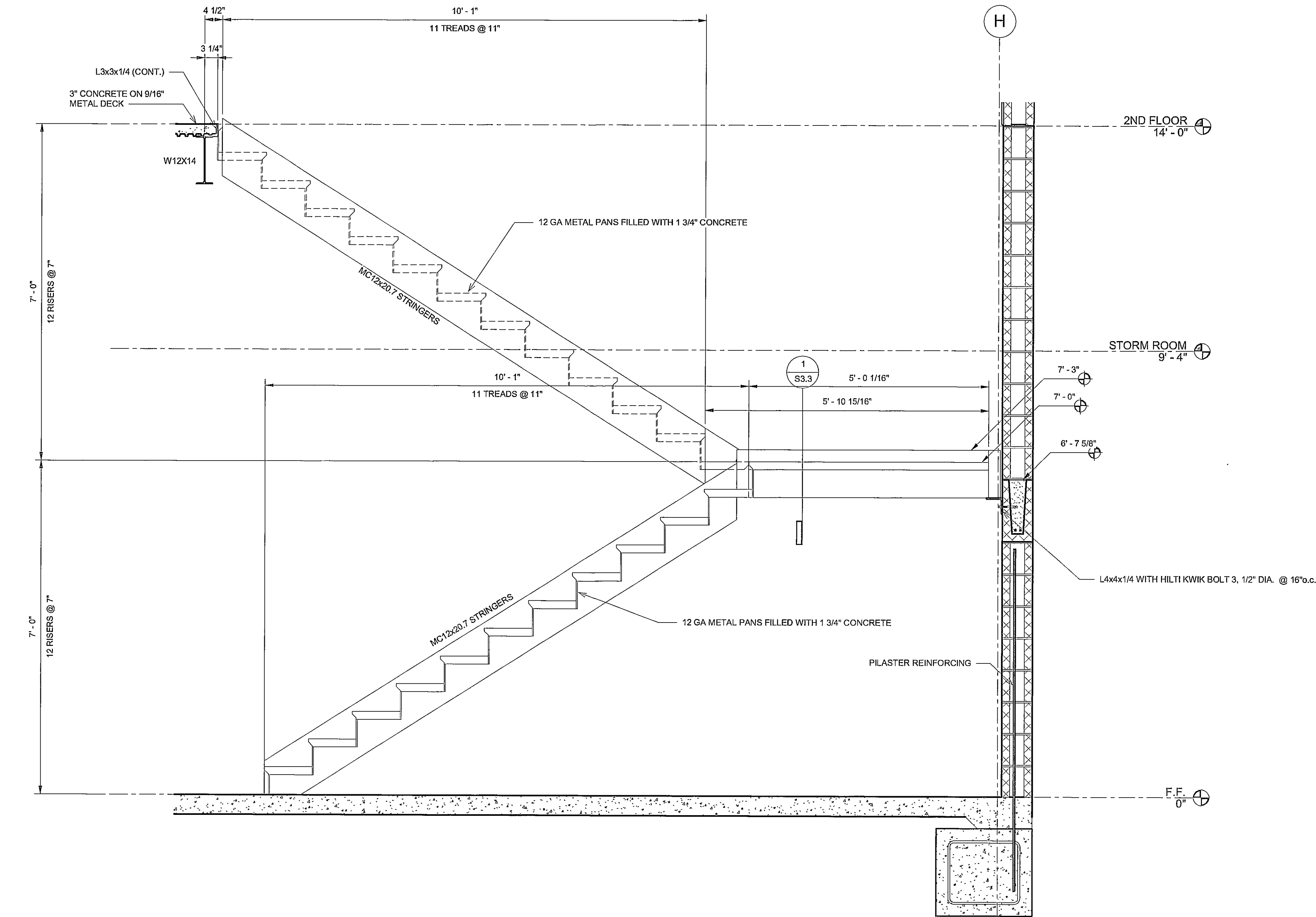
CITY OF HATTIESBURG
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CN18-3707

SHEET NUMBER

S2.2



1 STAIR FRAMING DETAIL 1/S2.3
3/4" = 1'-0"

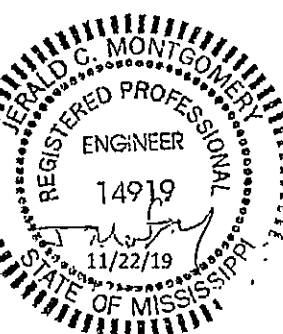
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Author	
CHECKED	
Checker	
FINAL DATE	
11/22/2019	
REVISION SCHEDULE	
REV #	REV DATE

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SHEET TITLE
BLDG. SECTIONS

PROJECT
FIRESTATION NO. 9

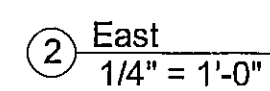
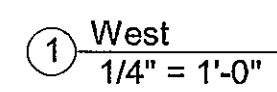
CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI



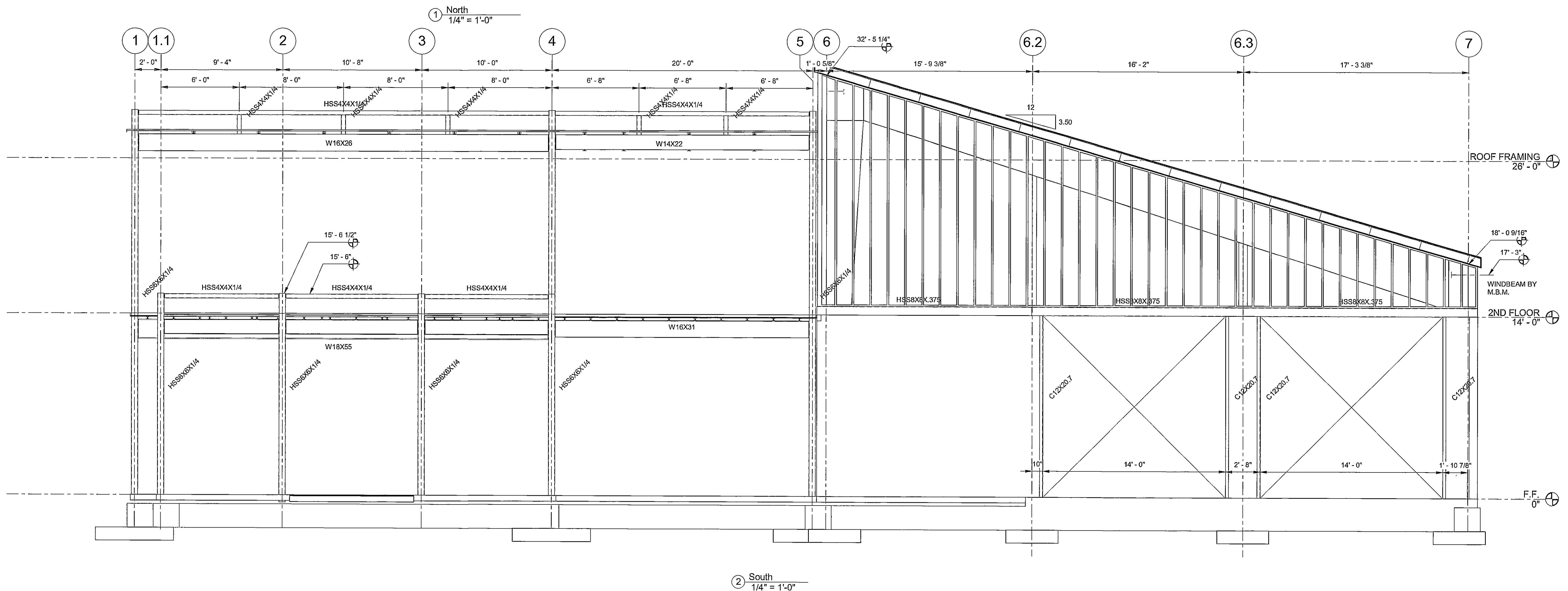
CN18-3707

SHEET NUMBER

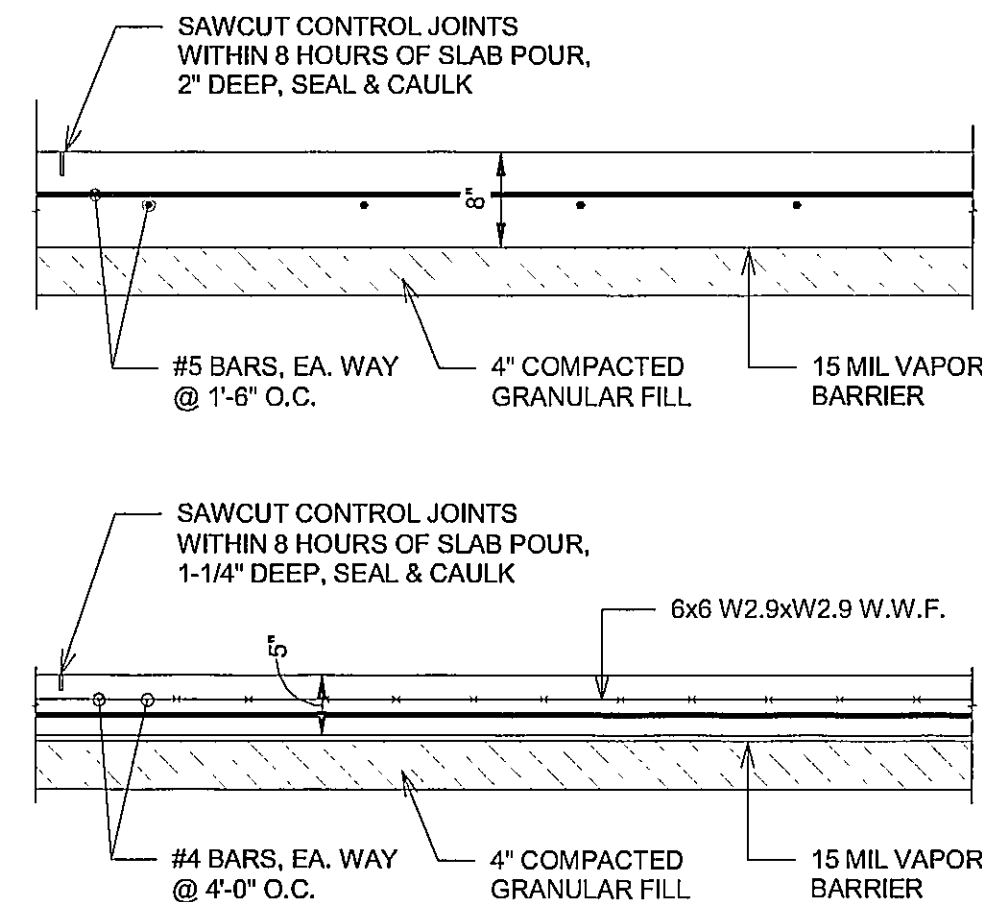
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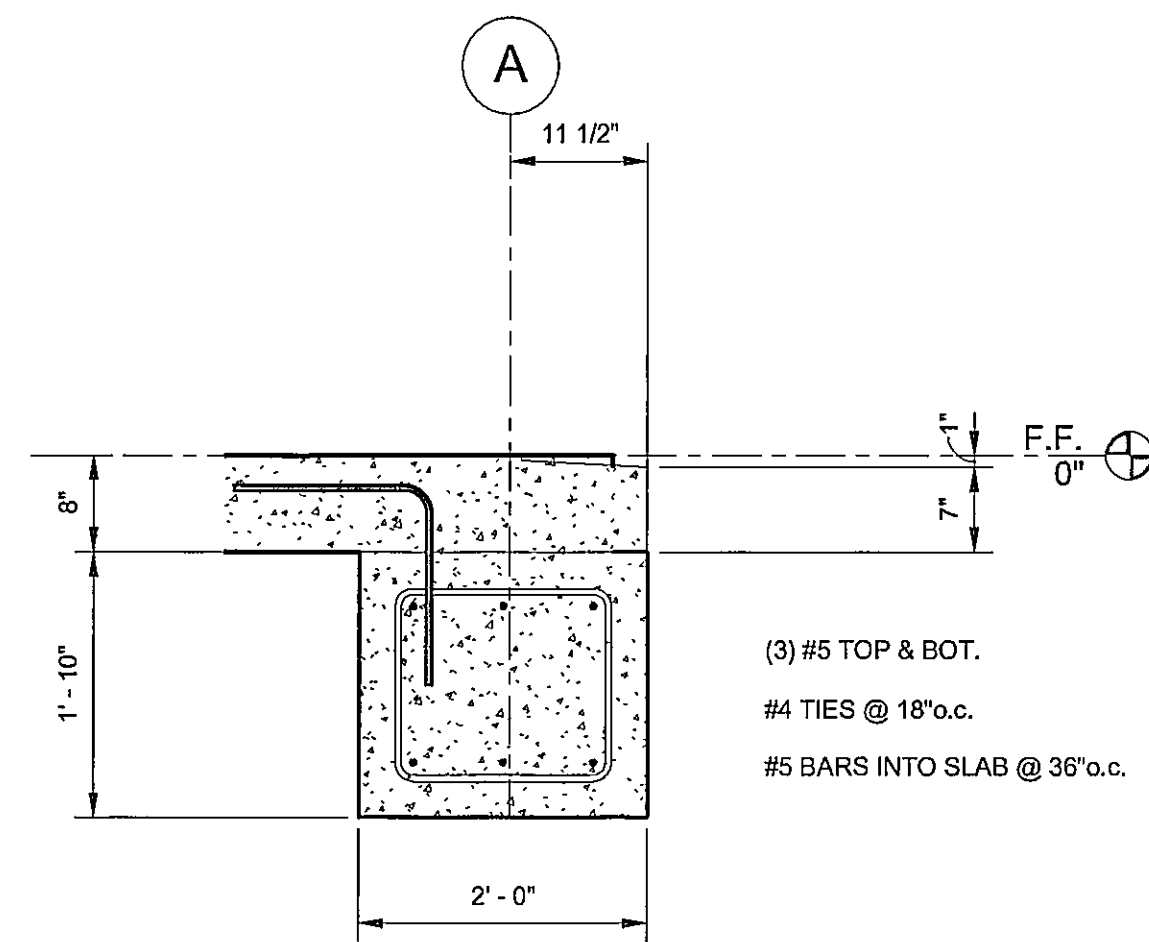
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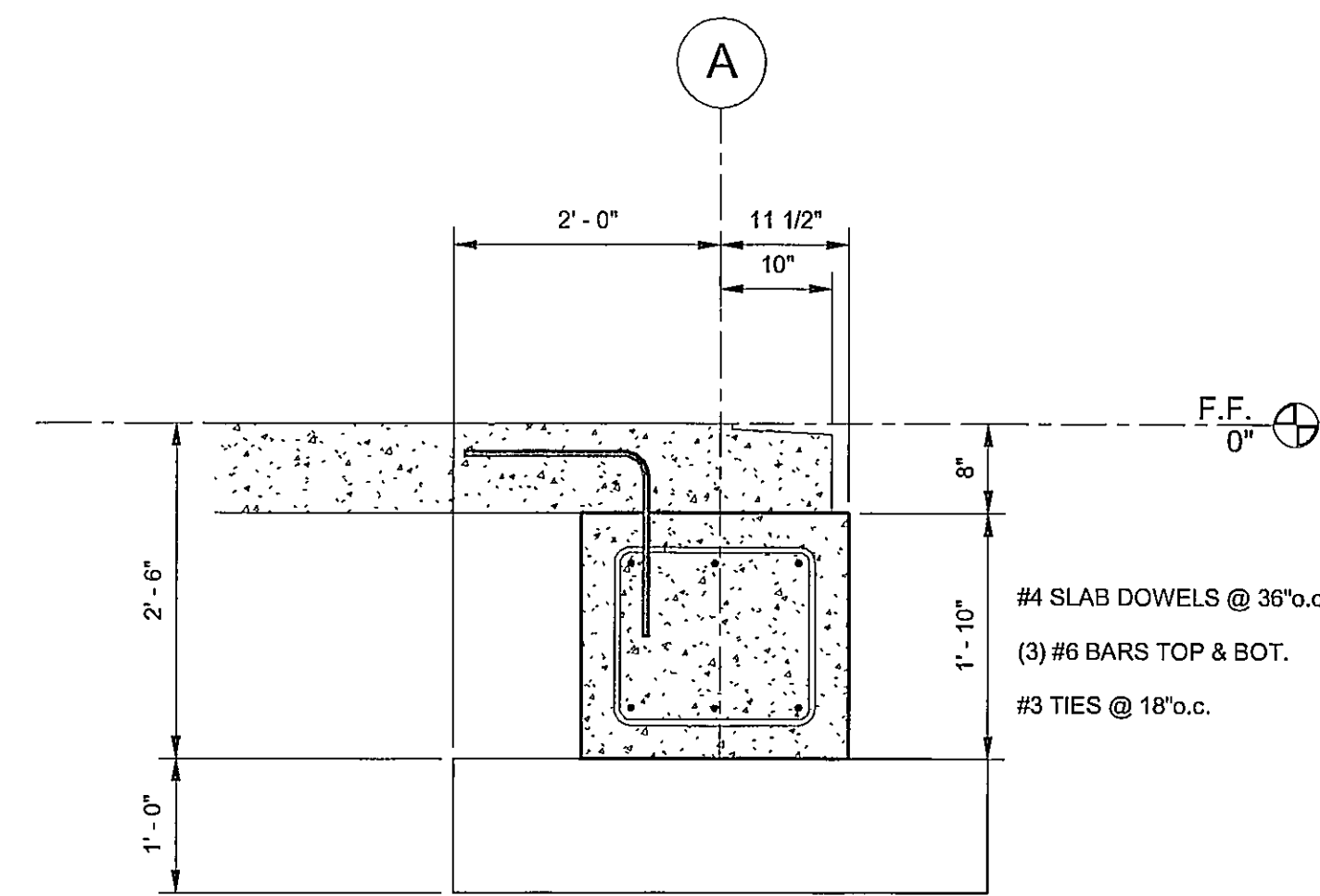
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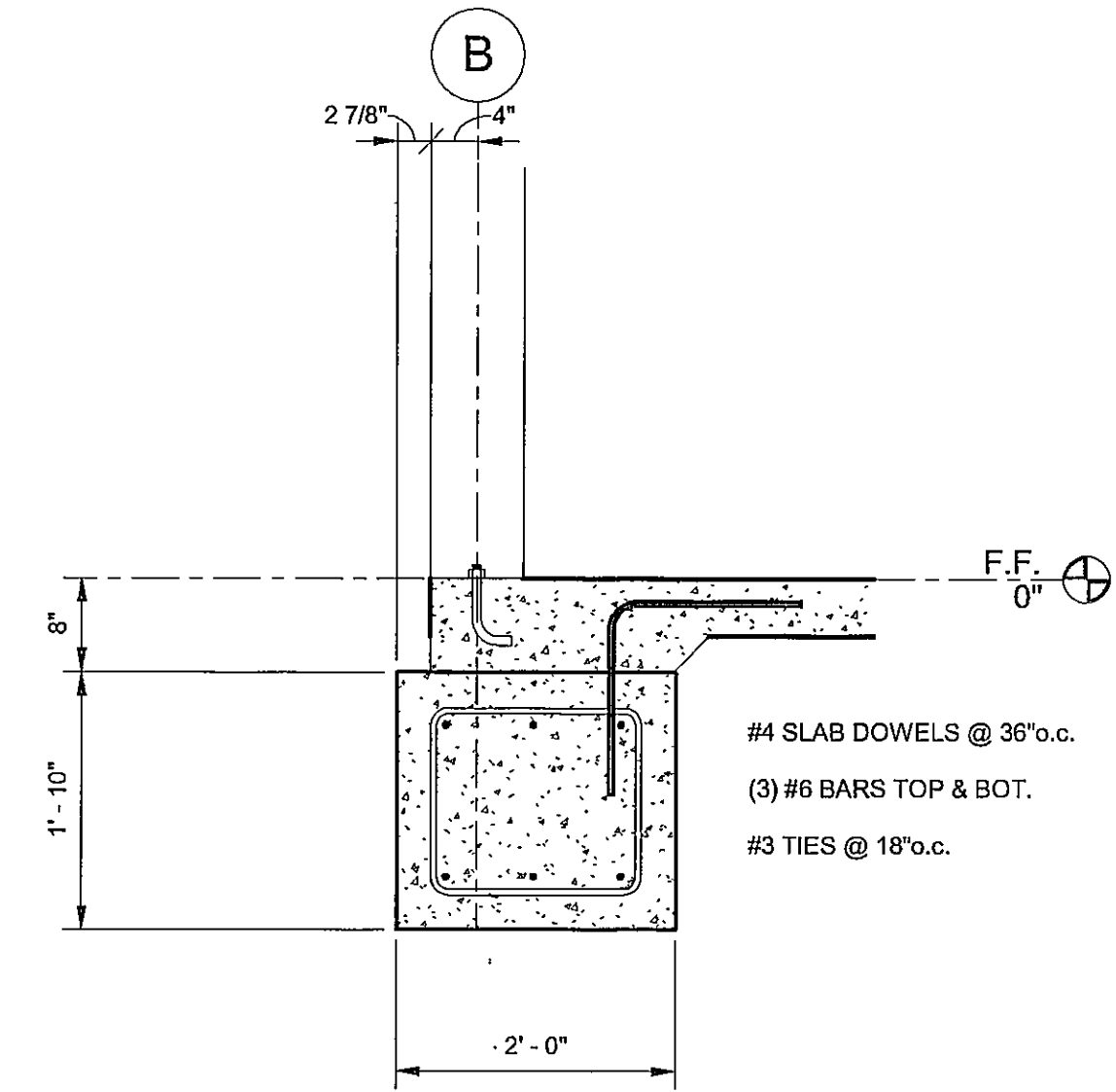
1 TYPICAL SLAB ON GRADE DETAIL
3/4" = 1'-0"



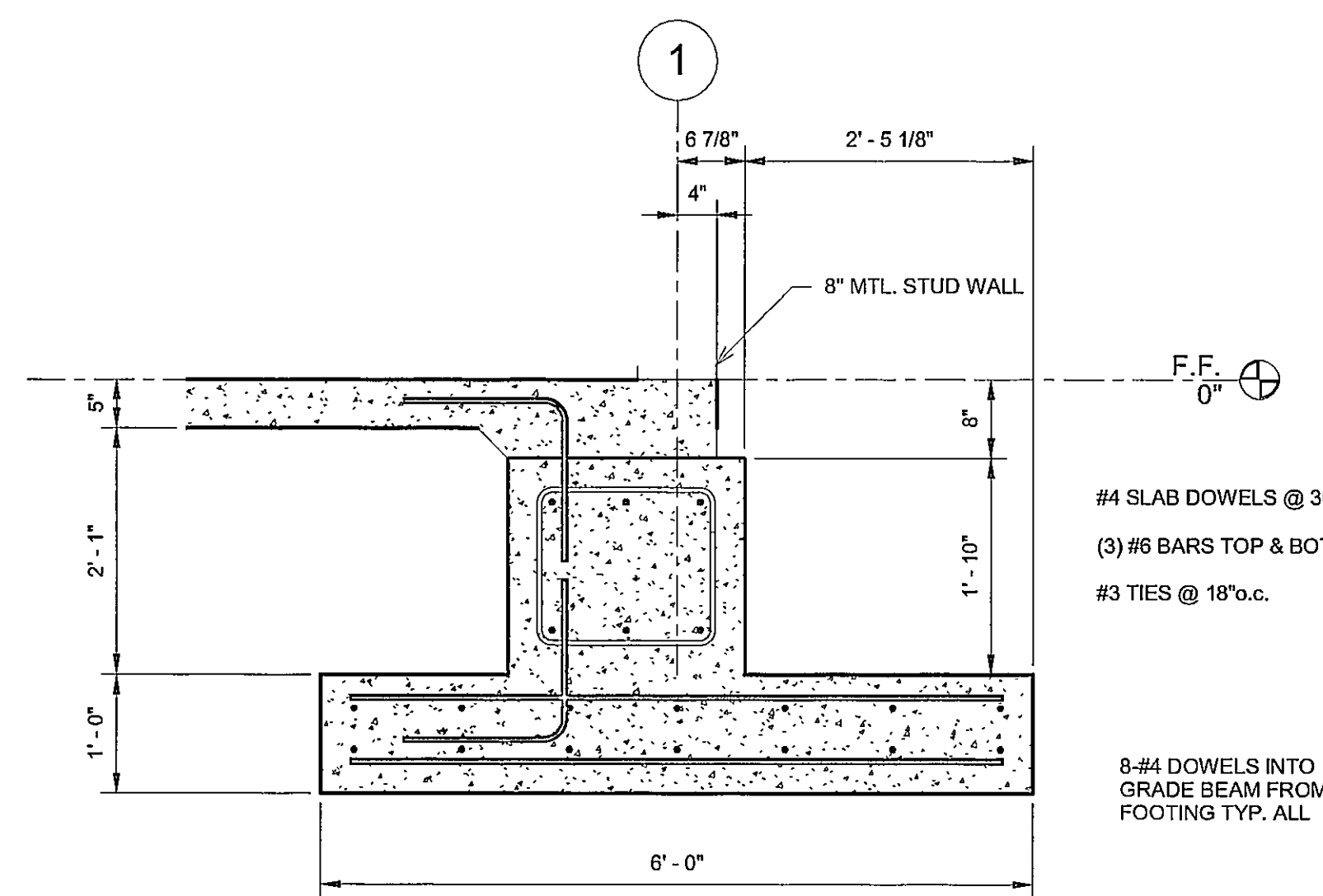
2 FOUNDATION DETAIL 2/S3.1
3/4" = 1'-0"



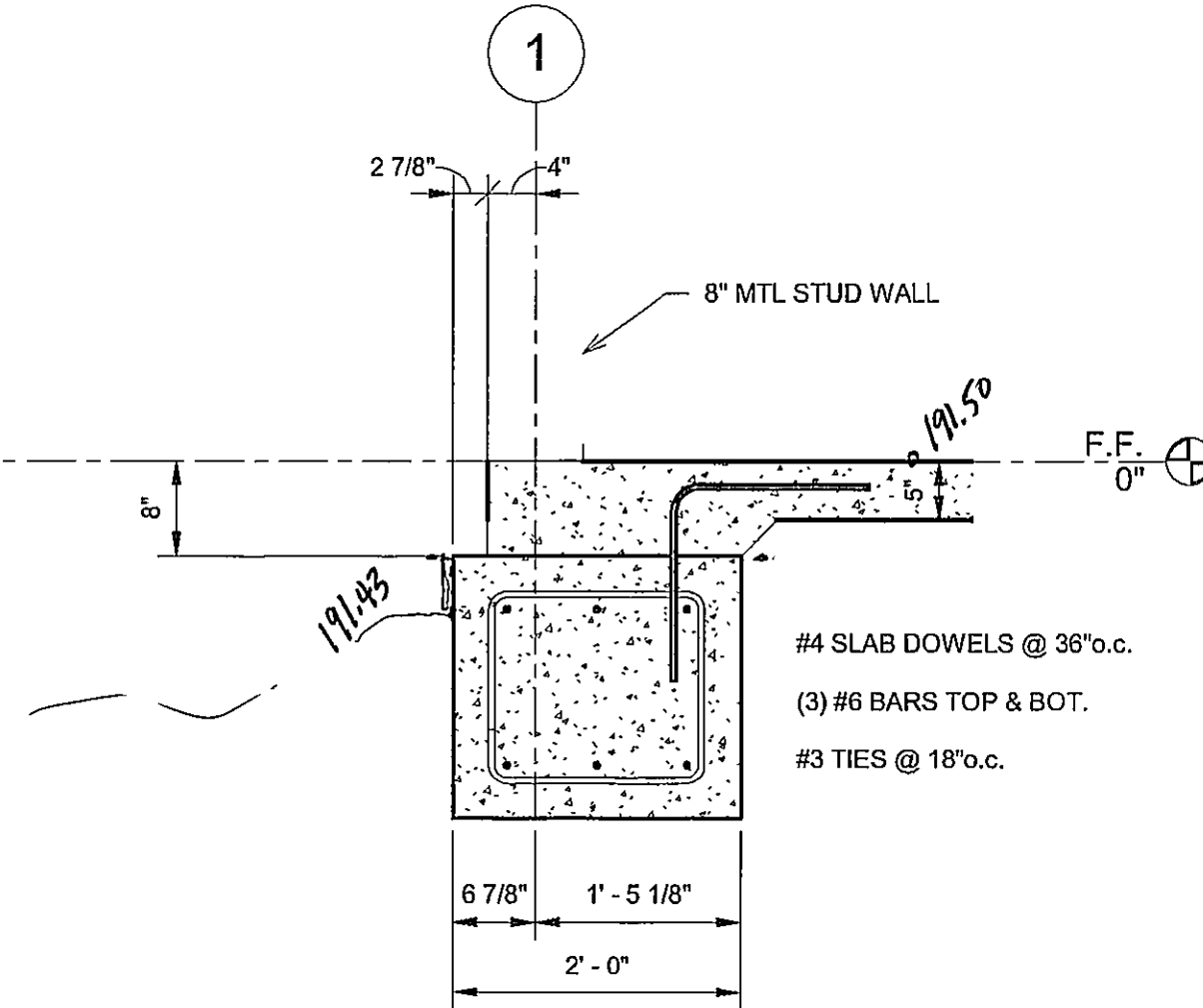
3 FOUNDATION DETAIL 3/S3.1
3/4" = 1'-0"



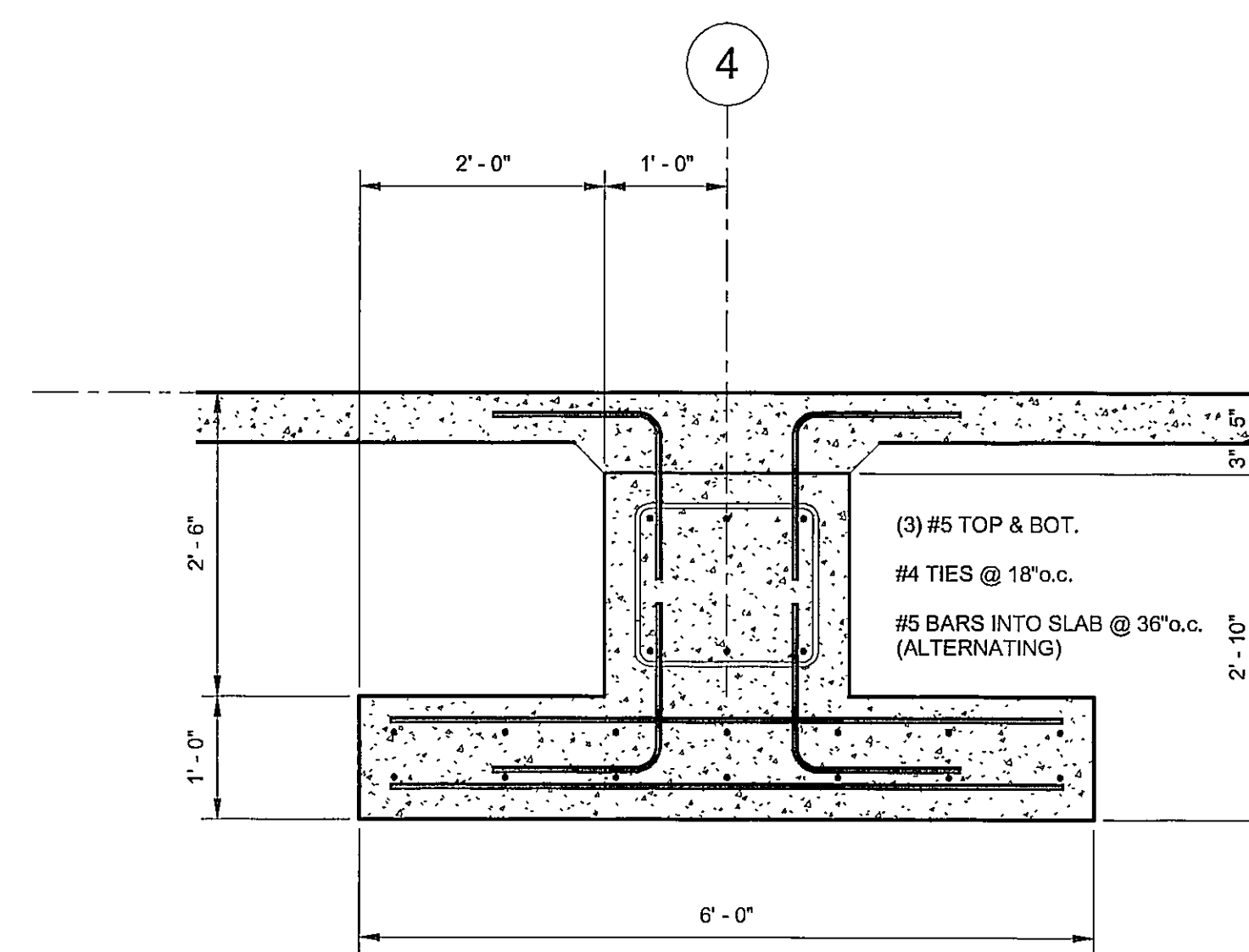
4 FOUNDATION DETAIL 4/S3.1
3/4" = 1'-0"



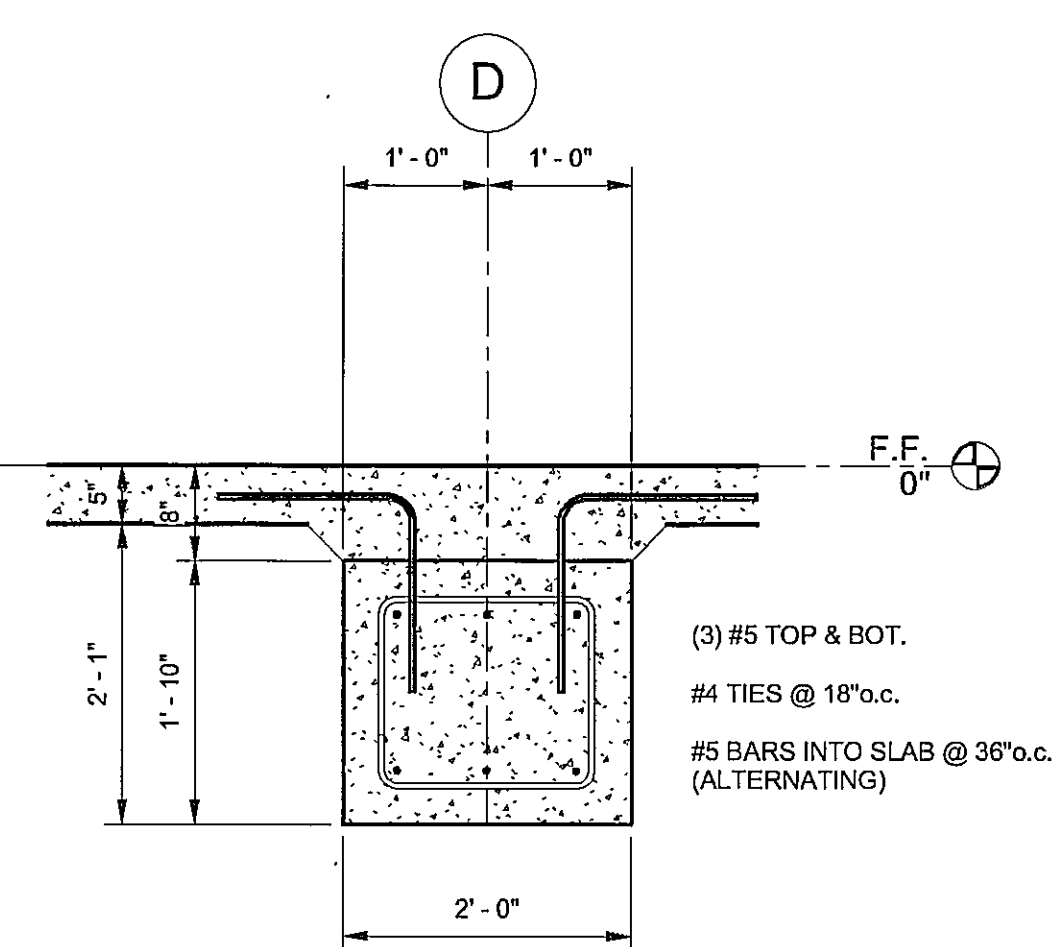
5 FOUNDATION DETAIL 5/S3.1
3/4" = 1'-0"



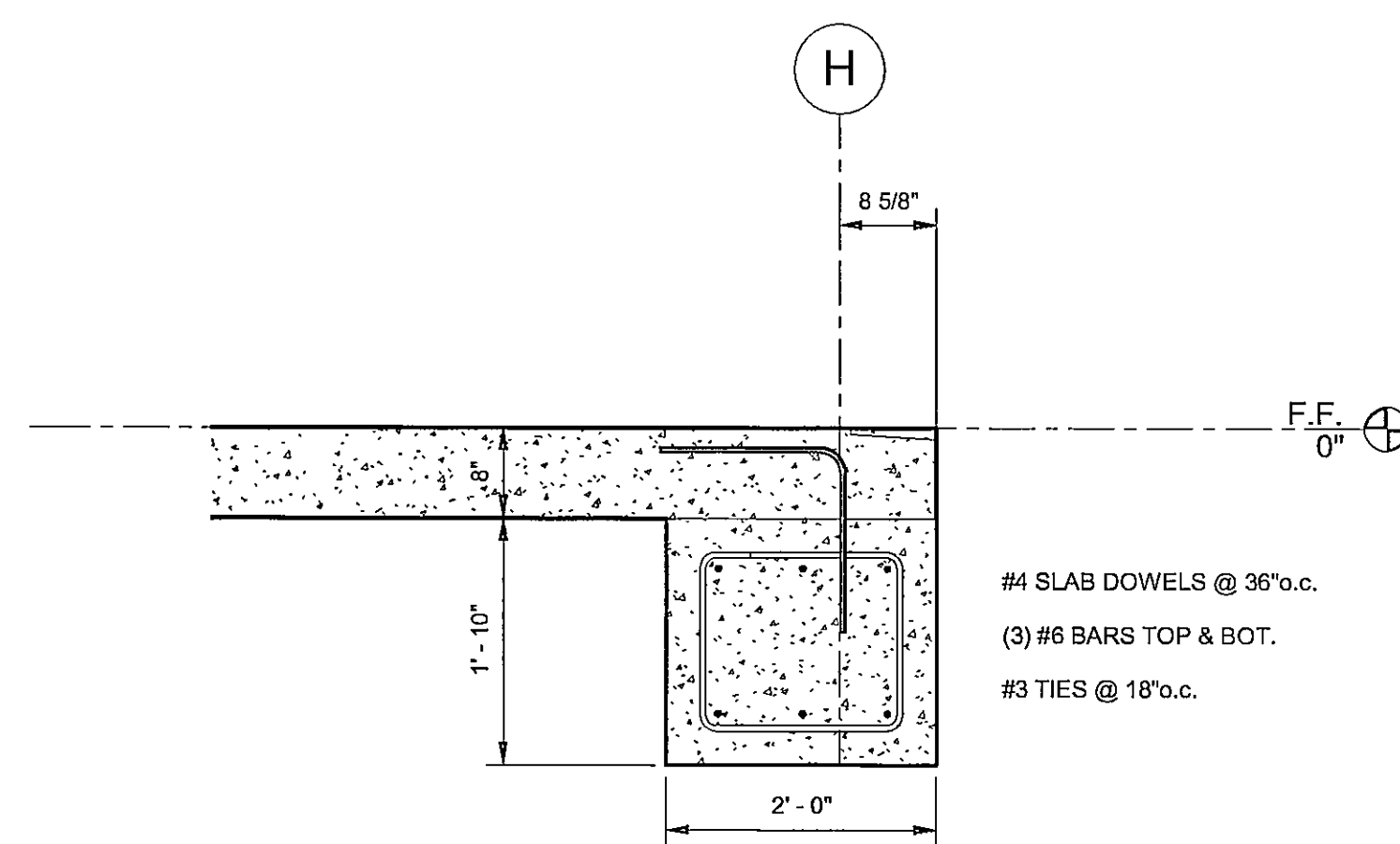
6 FOUNDATION DETAIL 6/S3.1
3/4" = 1'-0"



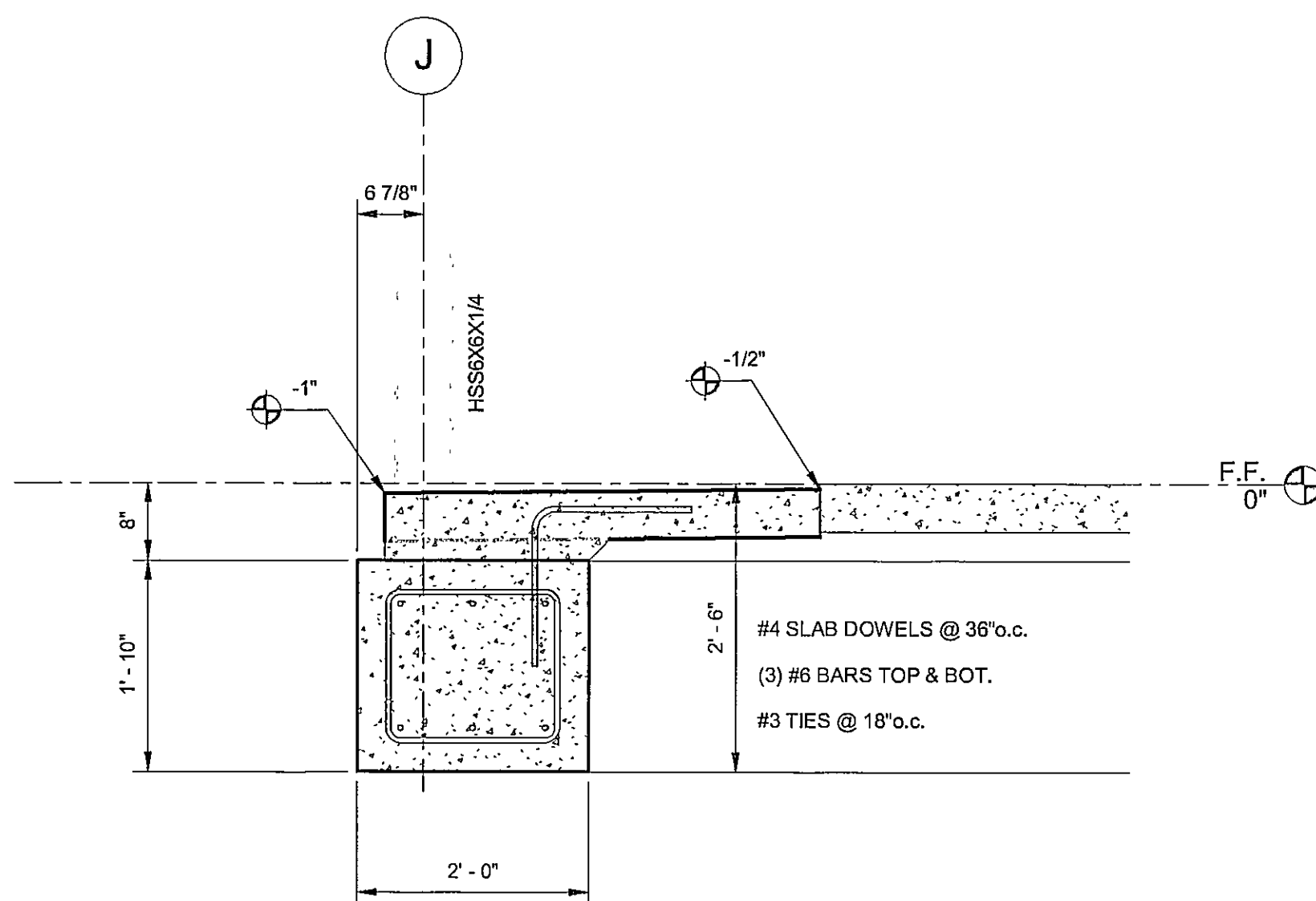
7 FOUNDATION DETAIL 7/S3.1
3/4" = 1'-0"



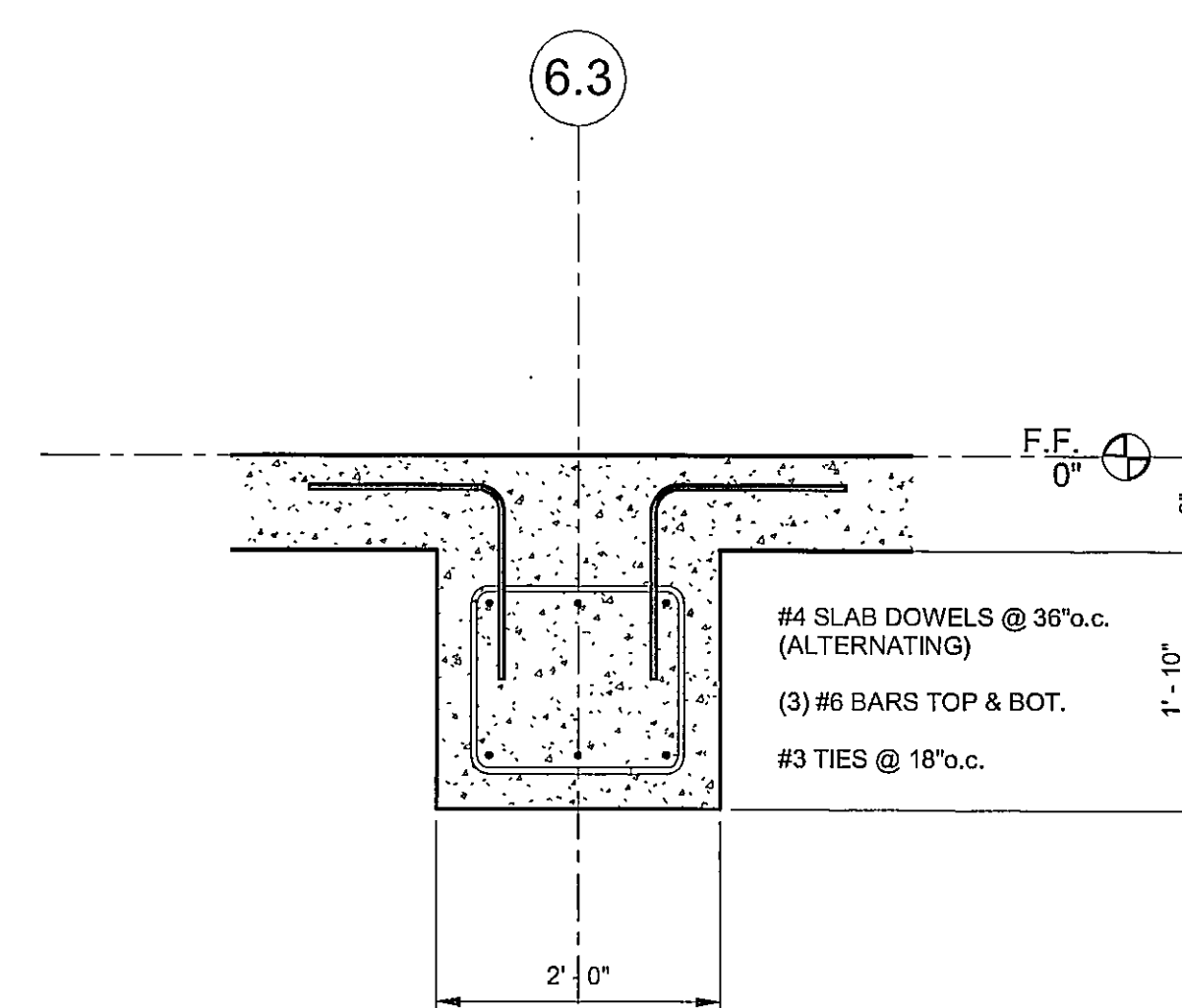
12 FOUNDATION DETAIL 12/S3.1
3/4" = 1'-0"



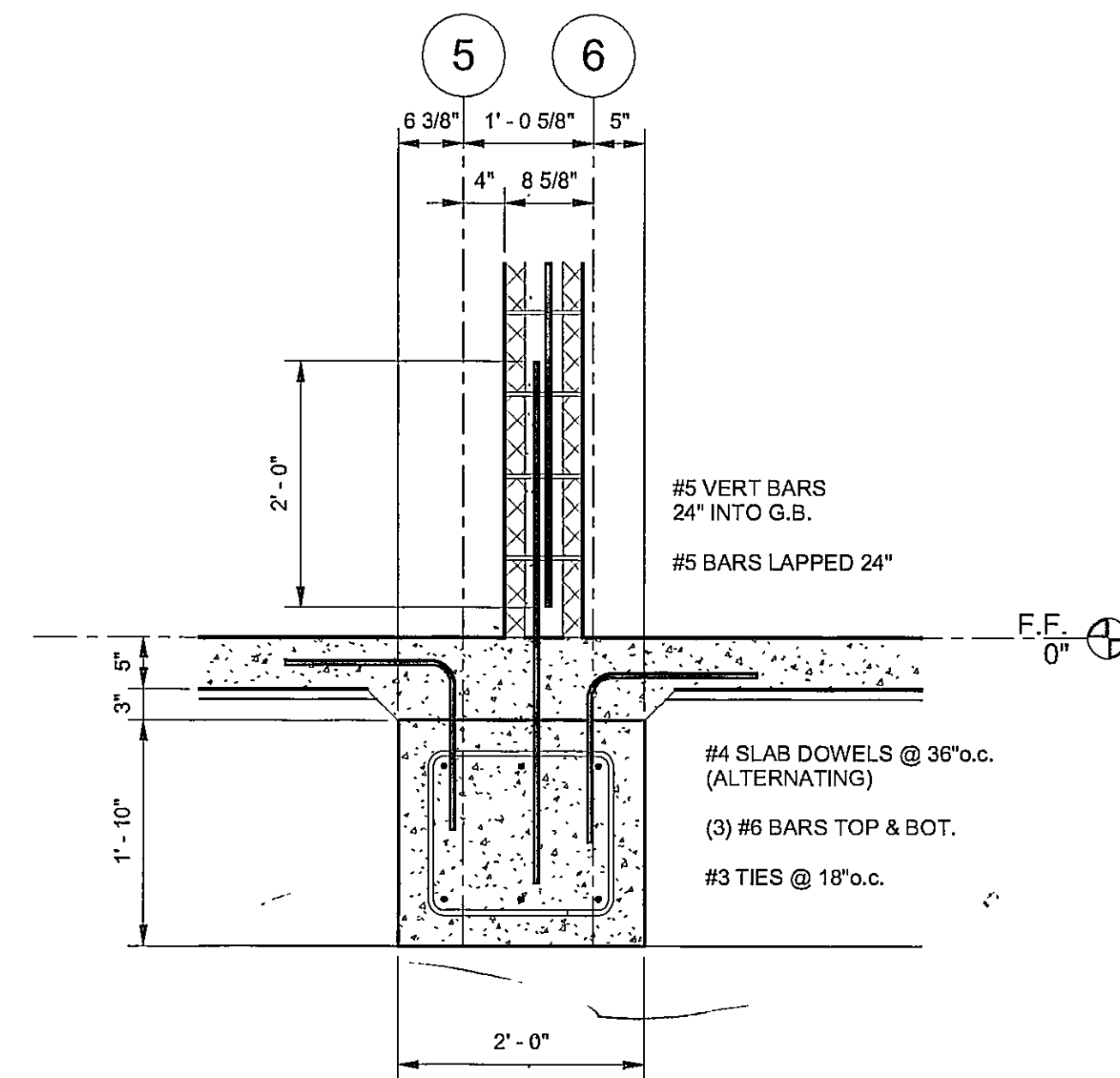
8 FOUNDATION DETAIL 8/S3.1
3/4" = 1'-0"



9 FOUNDATION DETAIL 9/S3.1
3/4" = 1'-0"



10 FOUNDATION DETAIL 10/S3.1
3/4" = 1'-0"



11 FOUNDATION DETAIL 11/S3.1
3/4" = 1'-0"

DRAWN
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CHECKED
MG

FINAL DATE
11/22/2019

REVISION SCHEDULE

REV #	REV DATE

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DETAILS

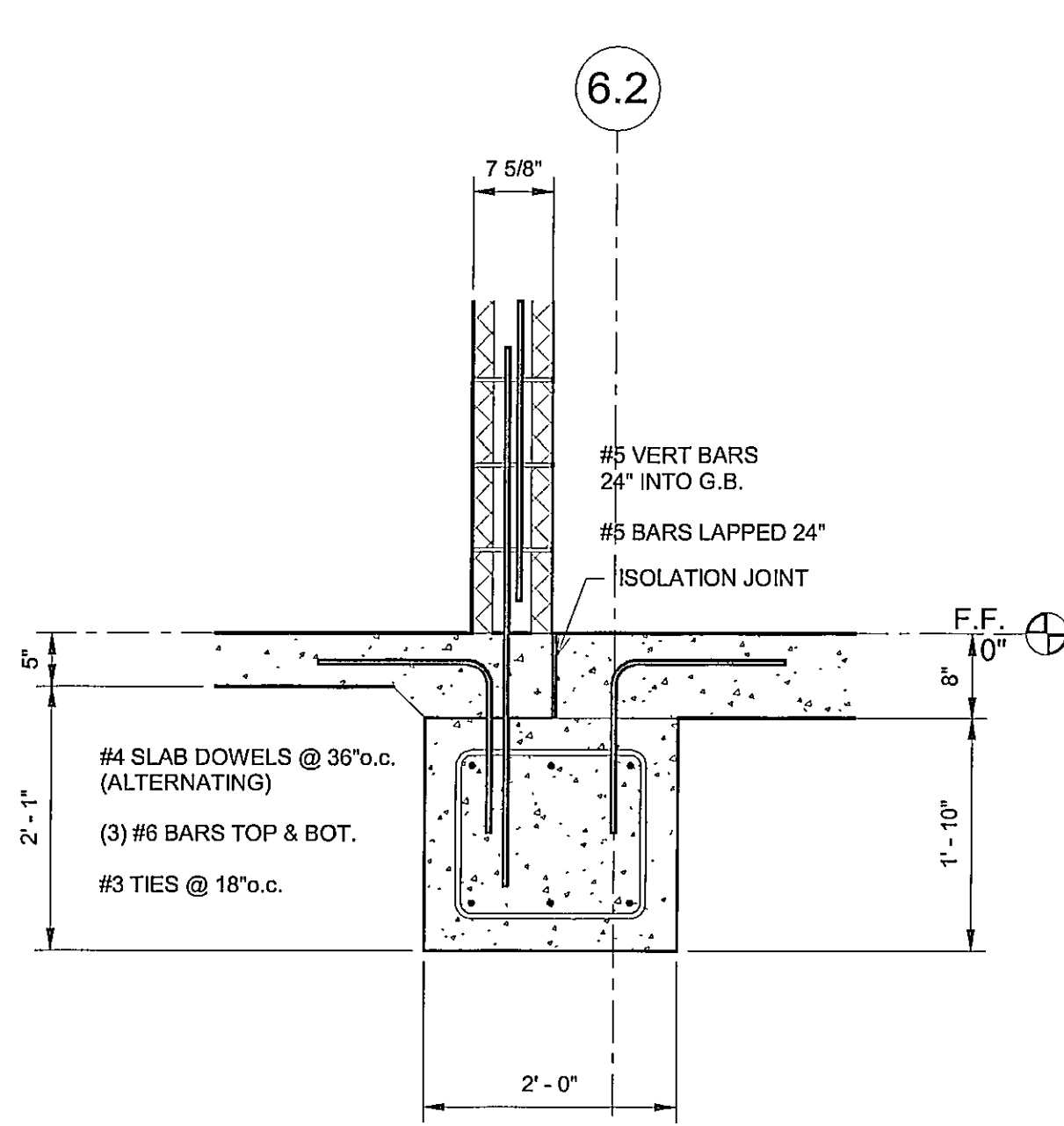
PROJECT
FIRESTATION NO. 9

CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI

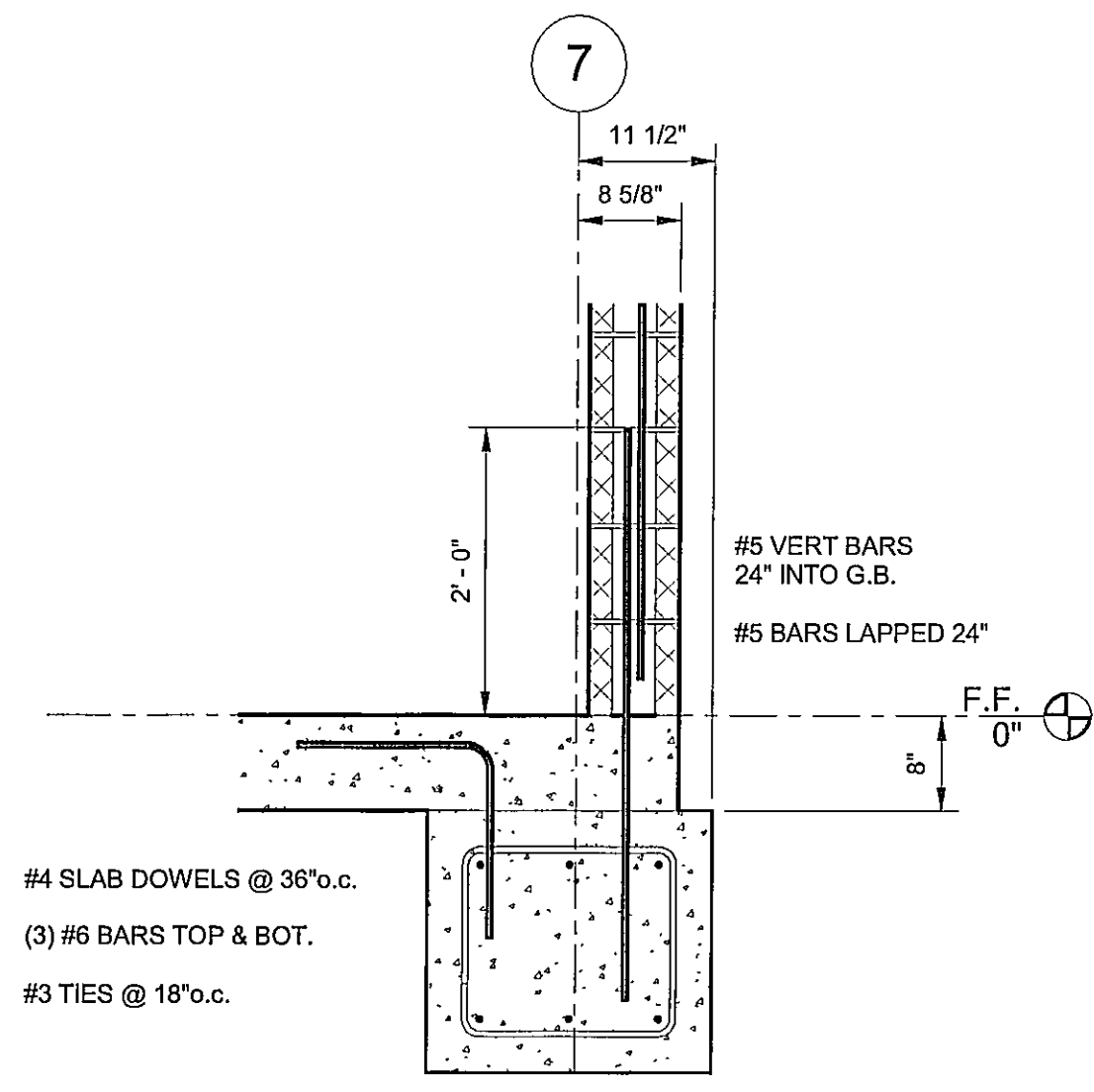
CN18-3707

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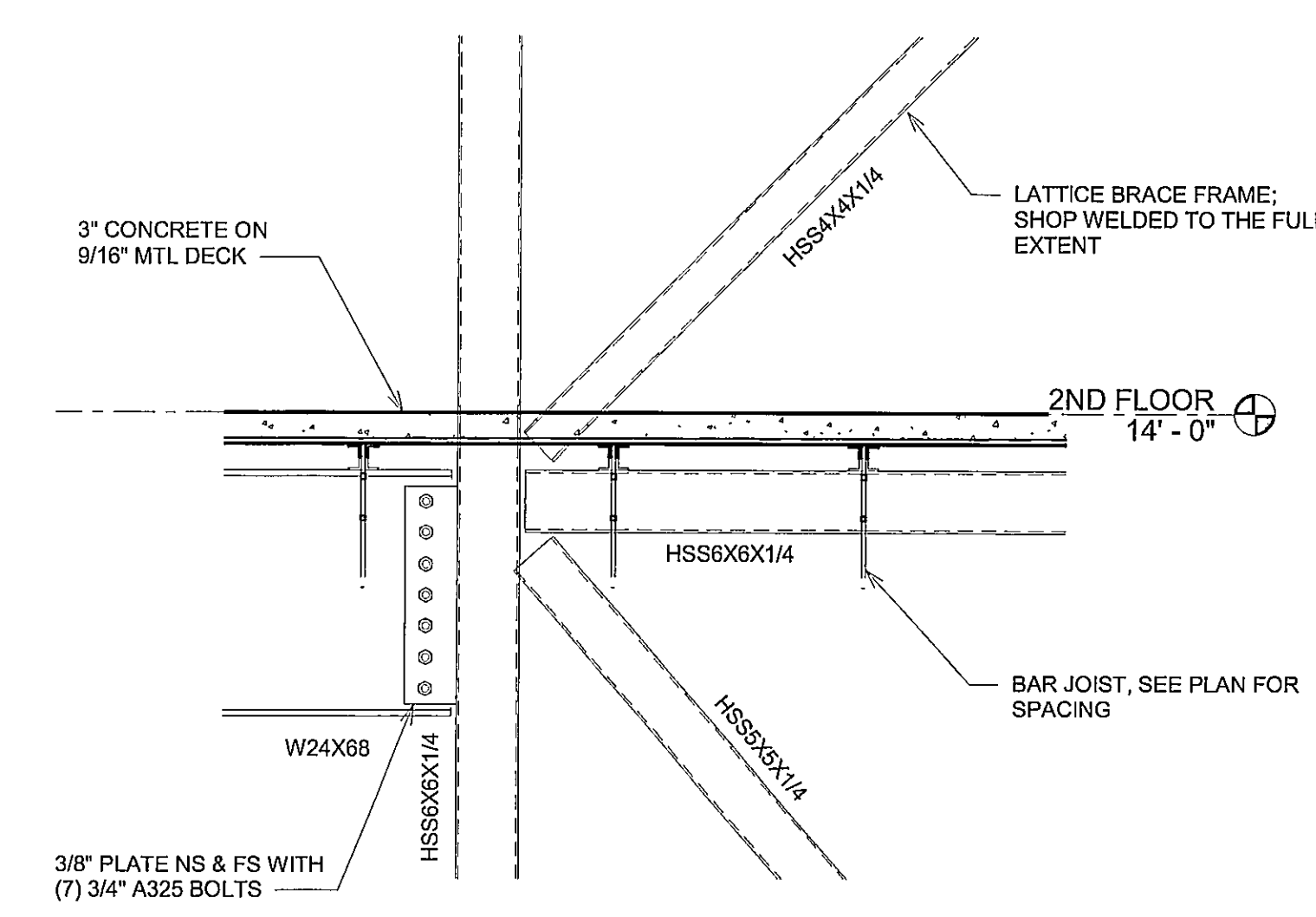
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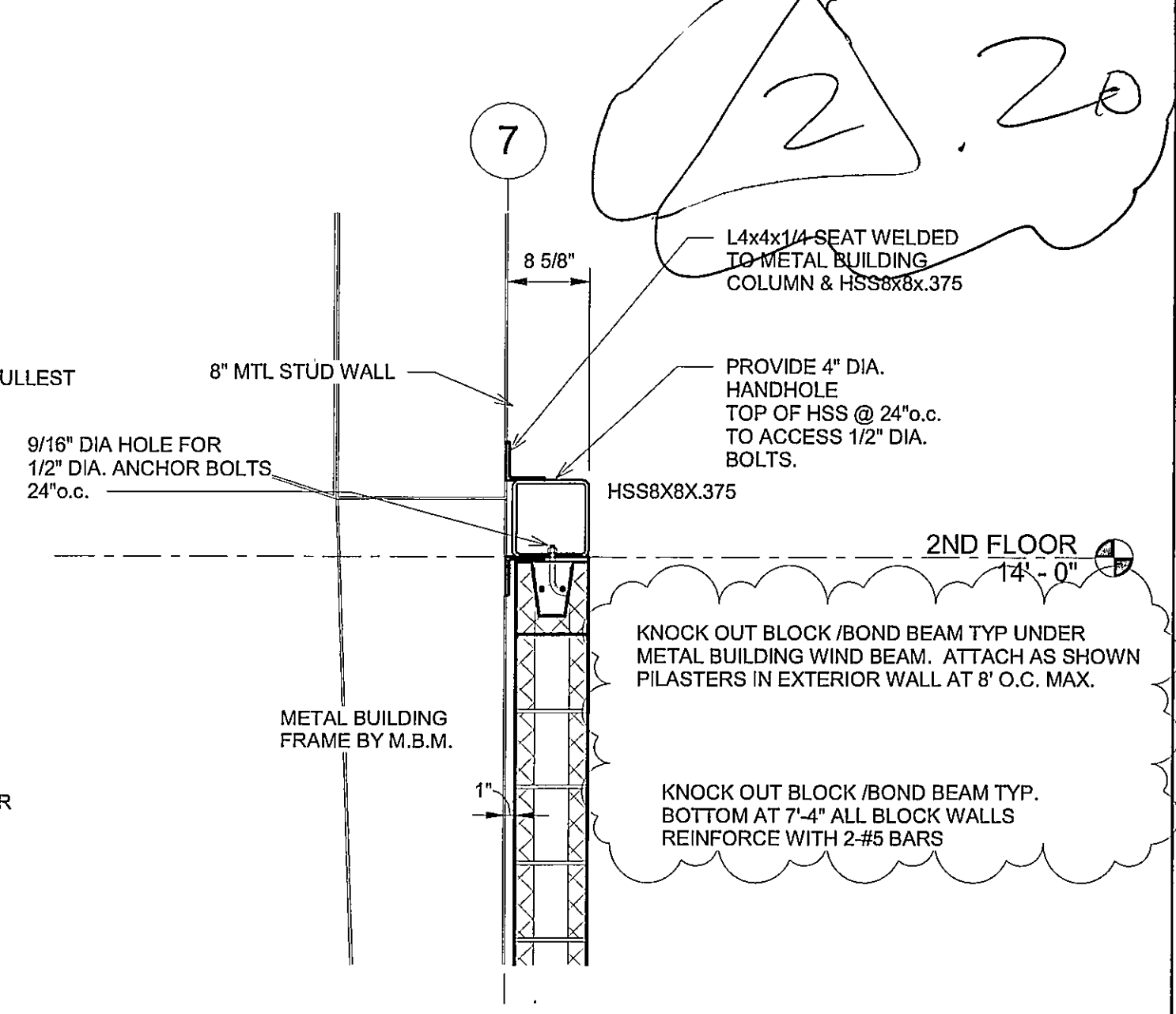
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3/4" = 1'-0"



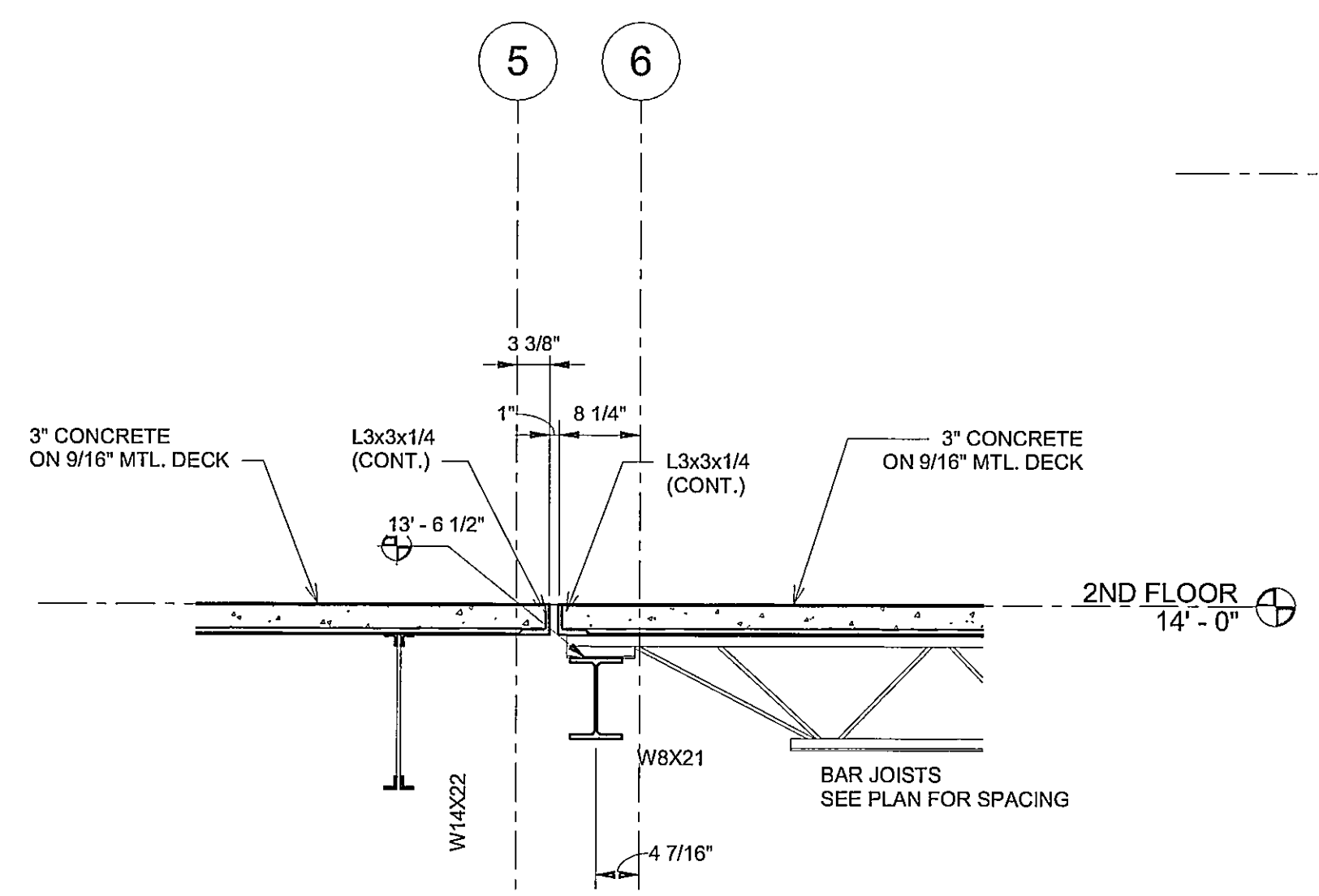
② FOUNDATION DETAIL 2/S3.2
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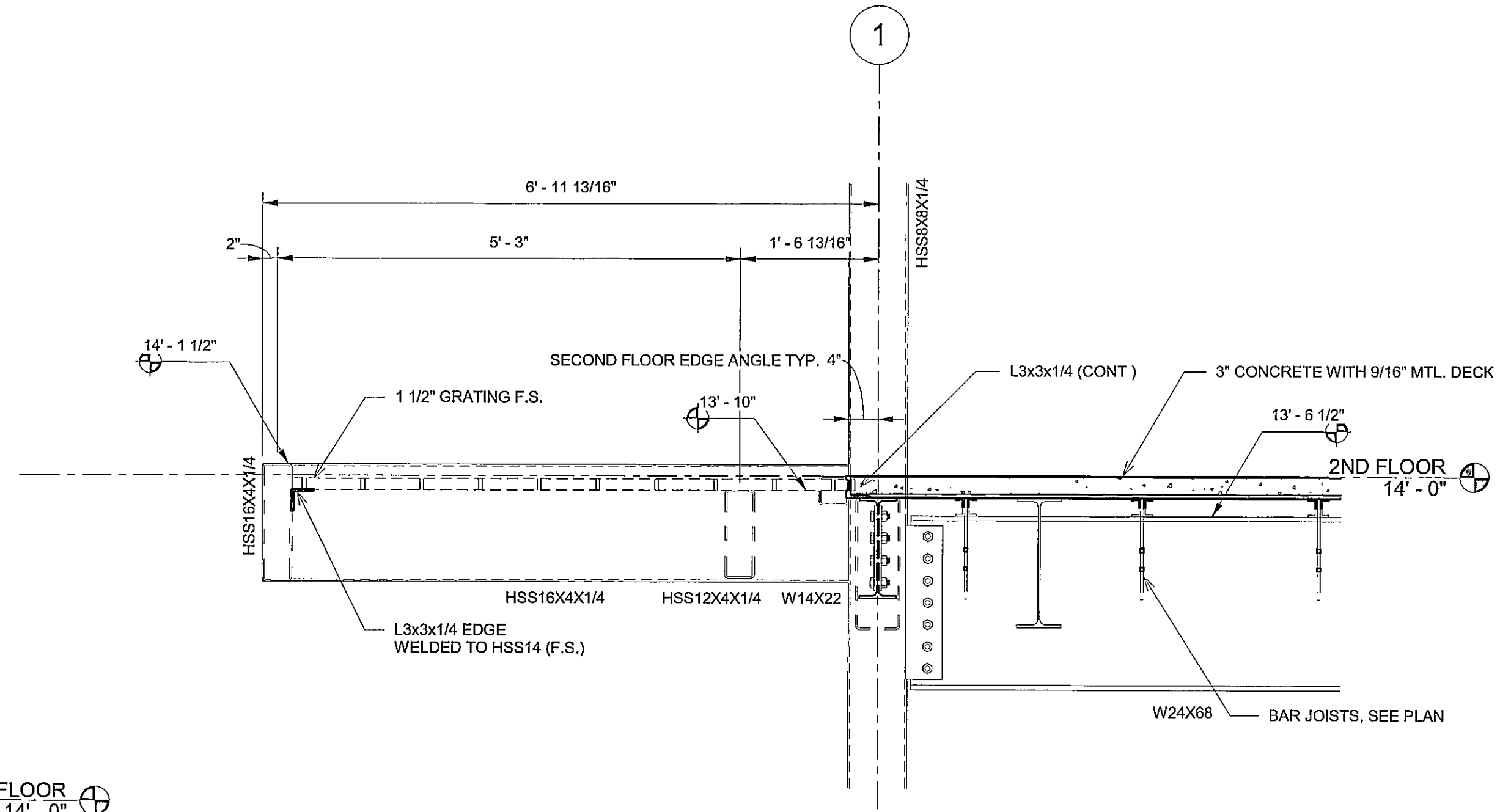
③ FRAMING DETAIL 3/S3.2
3/4" = 1'-0"



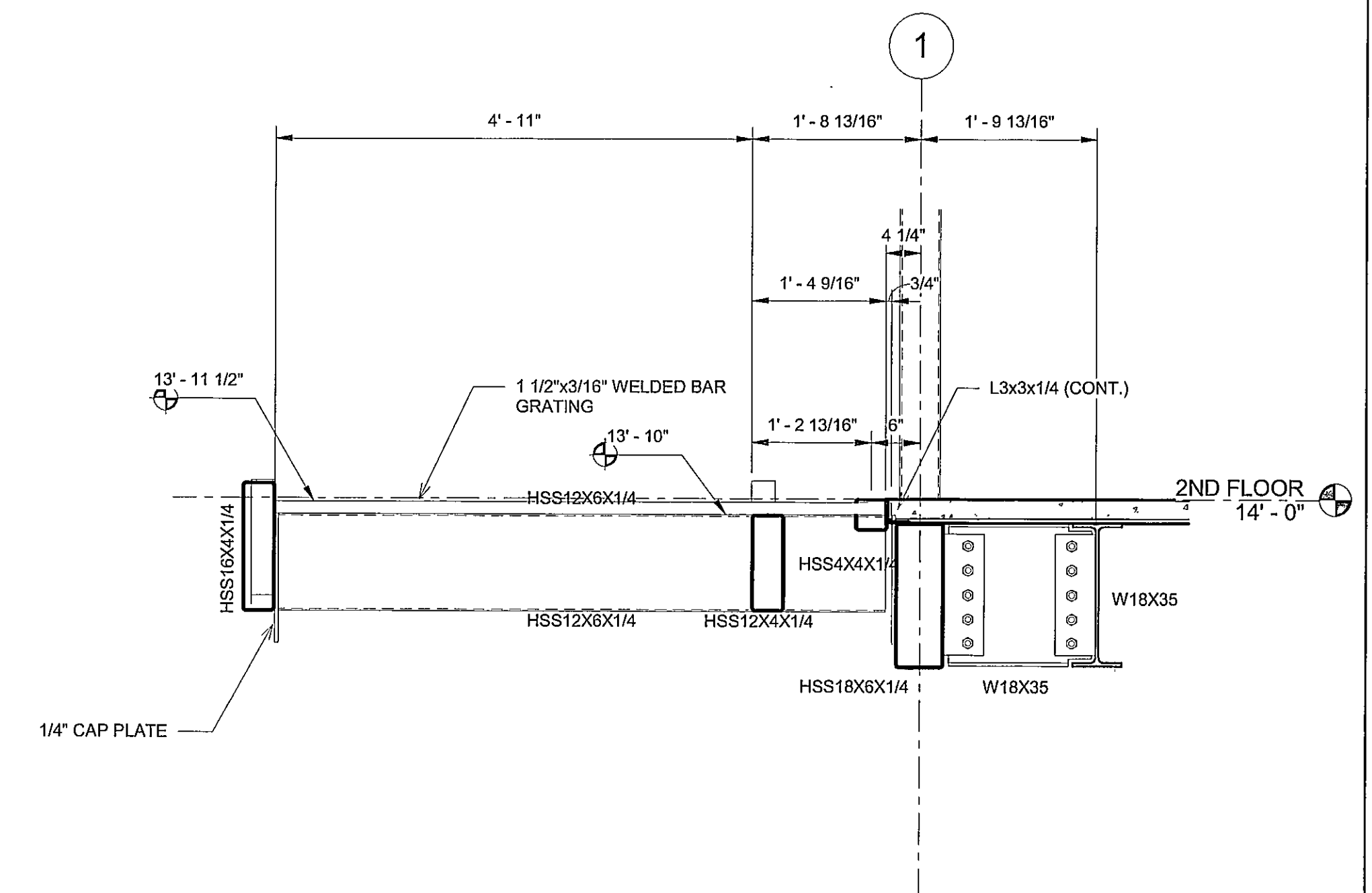
⑨ FRAMING DETAIL 9/S3.2
3/4" = 1'-0"



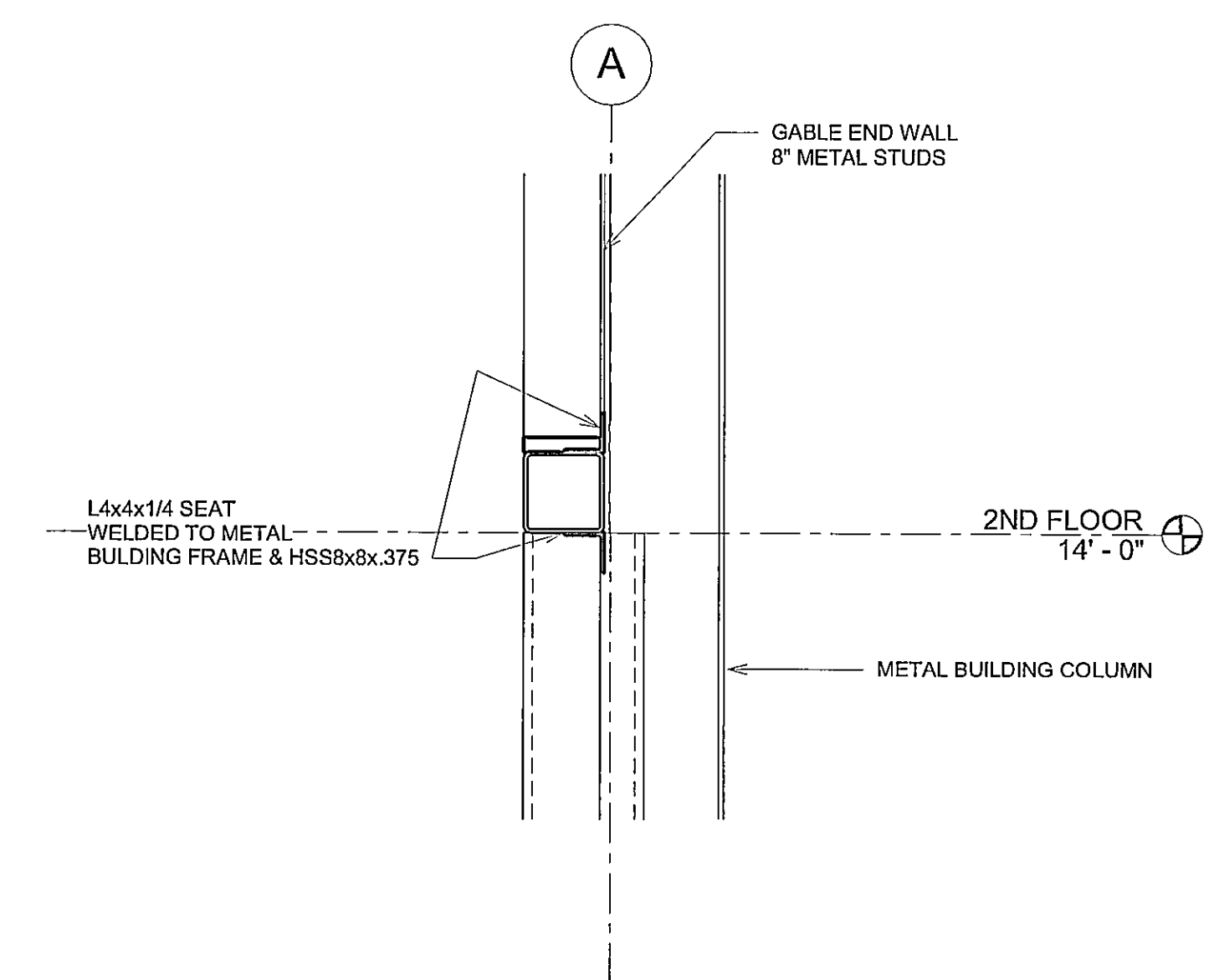
⑦ FRAMING DETAIL 7/S3.2
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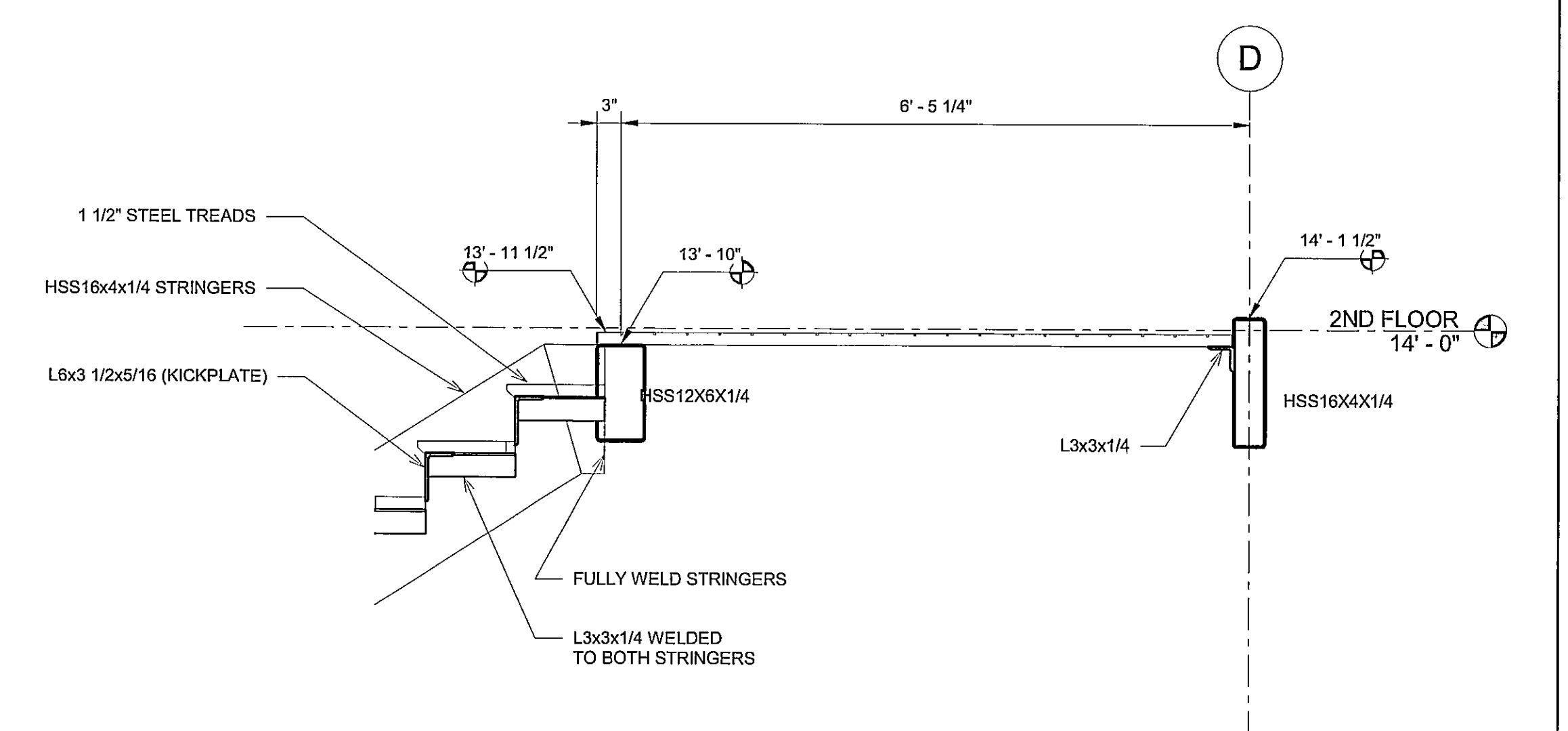
④ FRAMING DETAIL 4/S3.2
3/4" = 1'-0"



⑤ FRAMING DETAIL 5/S3.2
3/4" = 1'-0"



⑧ FRAMING DETAIL 8/S3.2
3/4" = 1'-0"



⑥ FRAMING DETAIL 6/S3.2
3/4" = 1'-0"

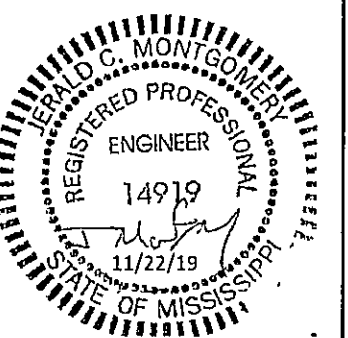
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MG
FINAL DATE
11/22/2019

REVISION SCHEDULE	REV #	REV DATE
1	Date 1	
#1	1/15/20	
BOND BEAMS AND PILASTERS		

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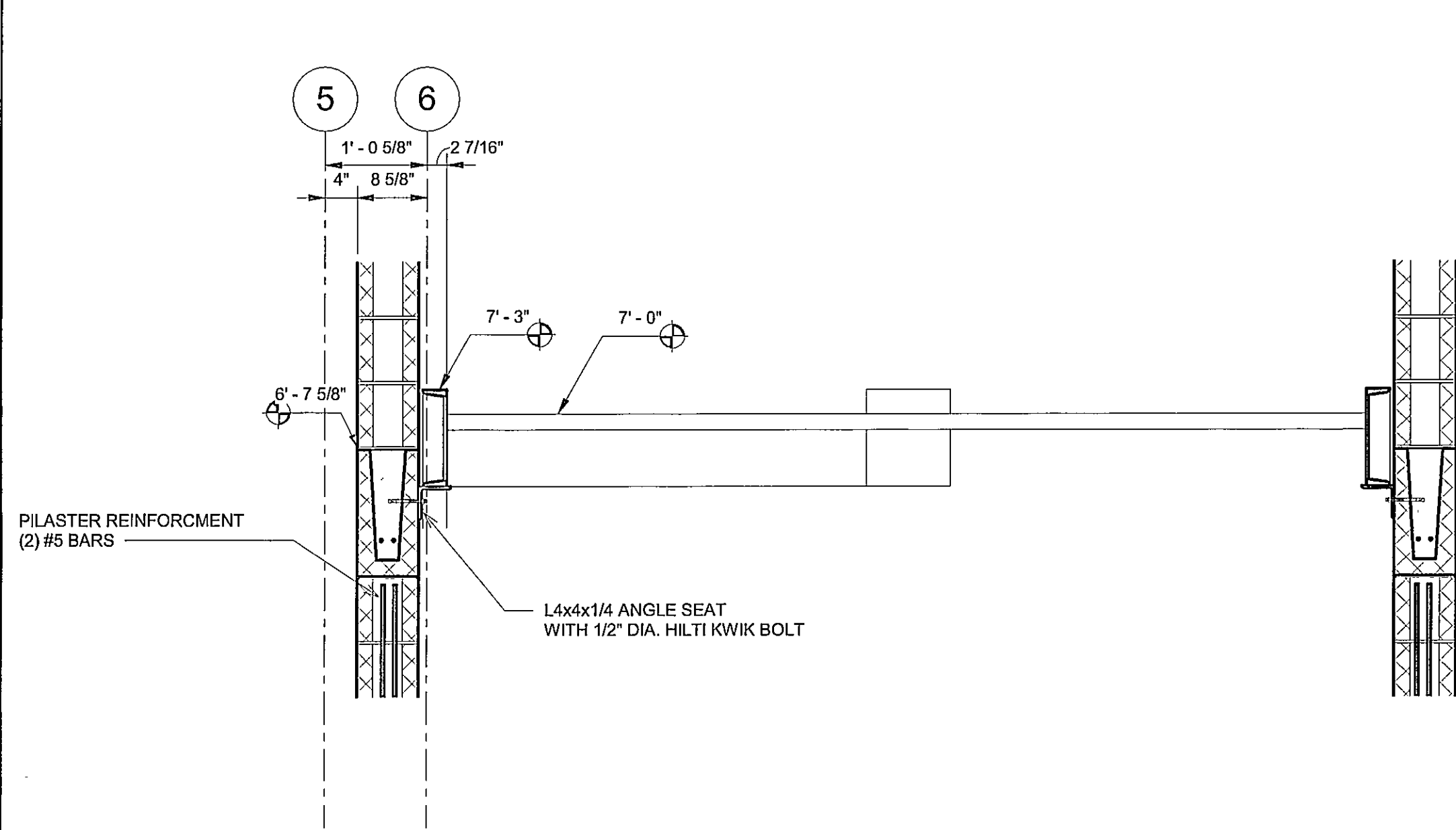
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DETAILS

PROJECT
FIRESTATION NO. 9

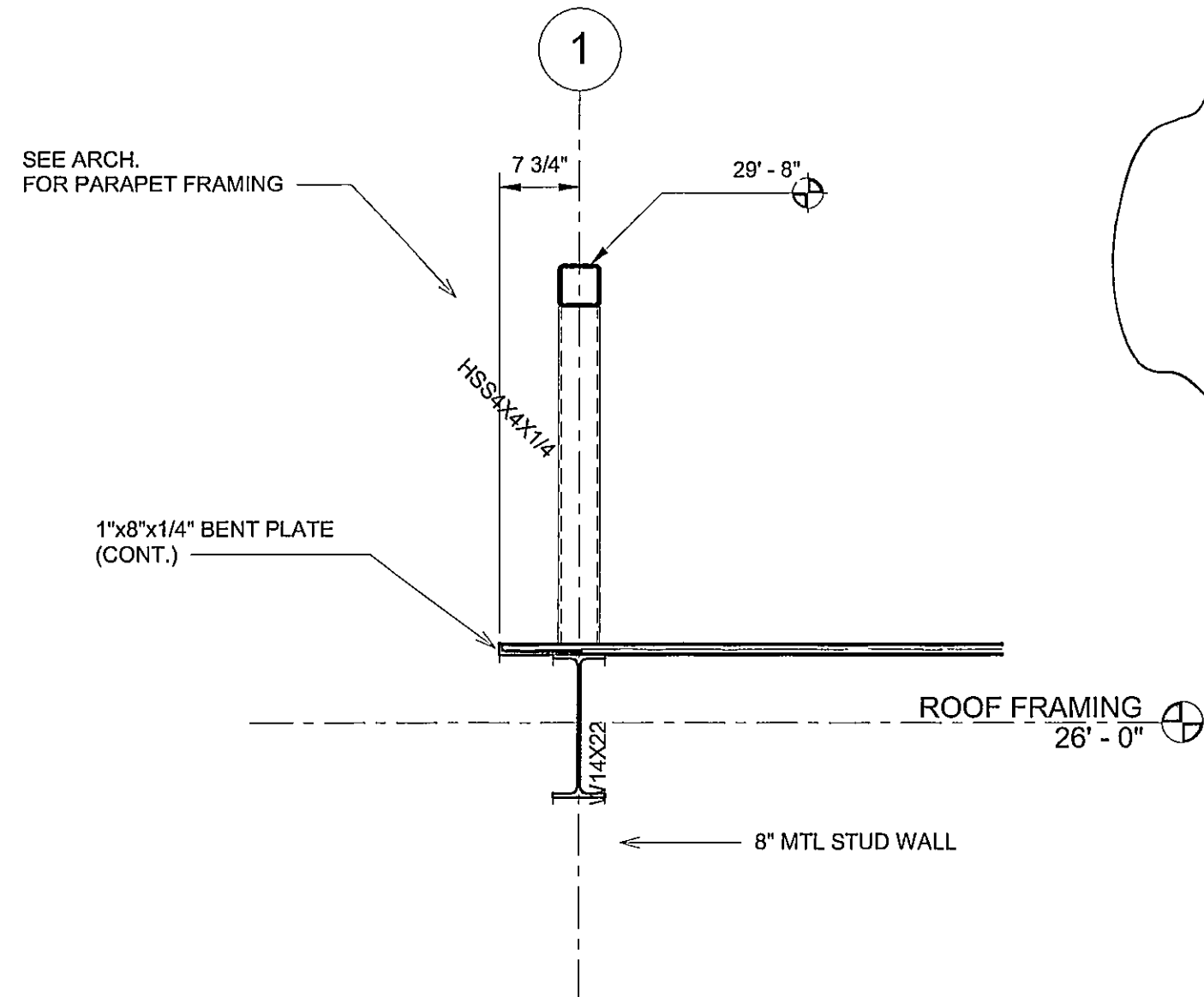


CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI

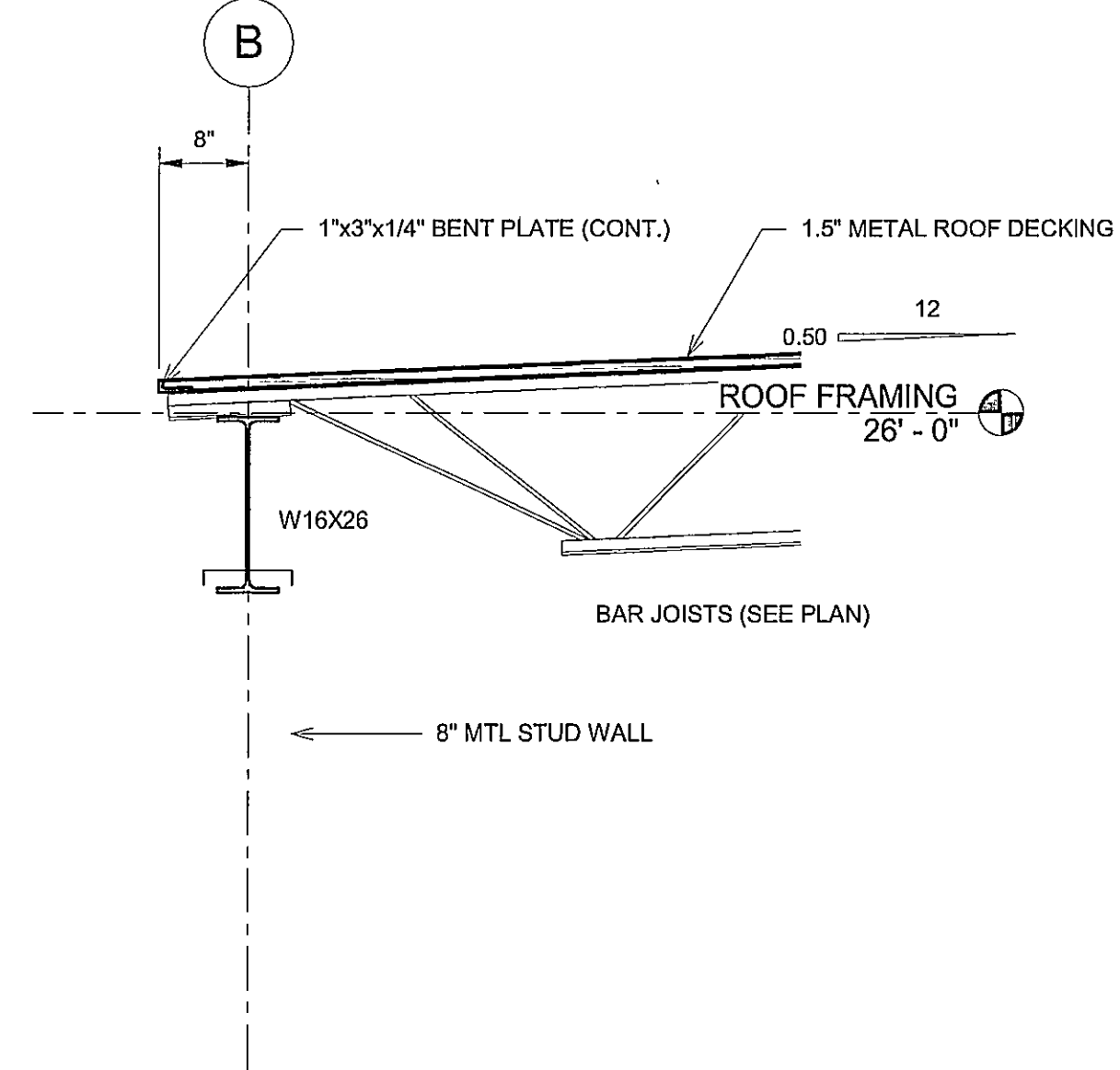
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SHEET NUMBER
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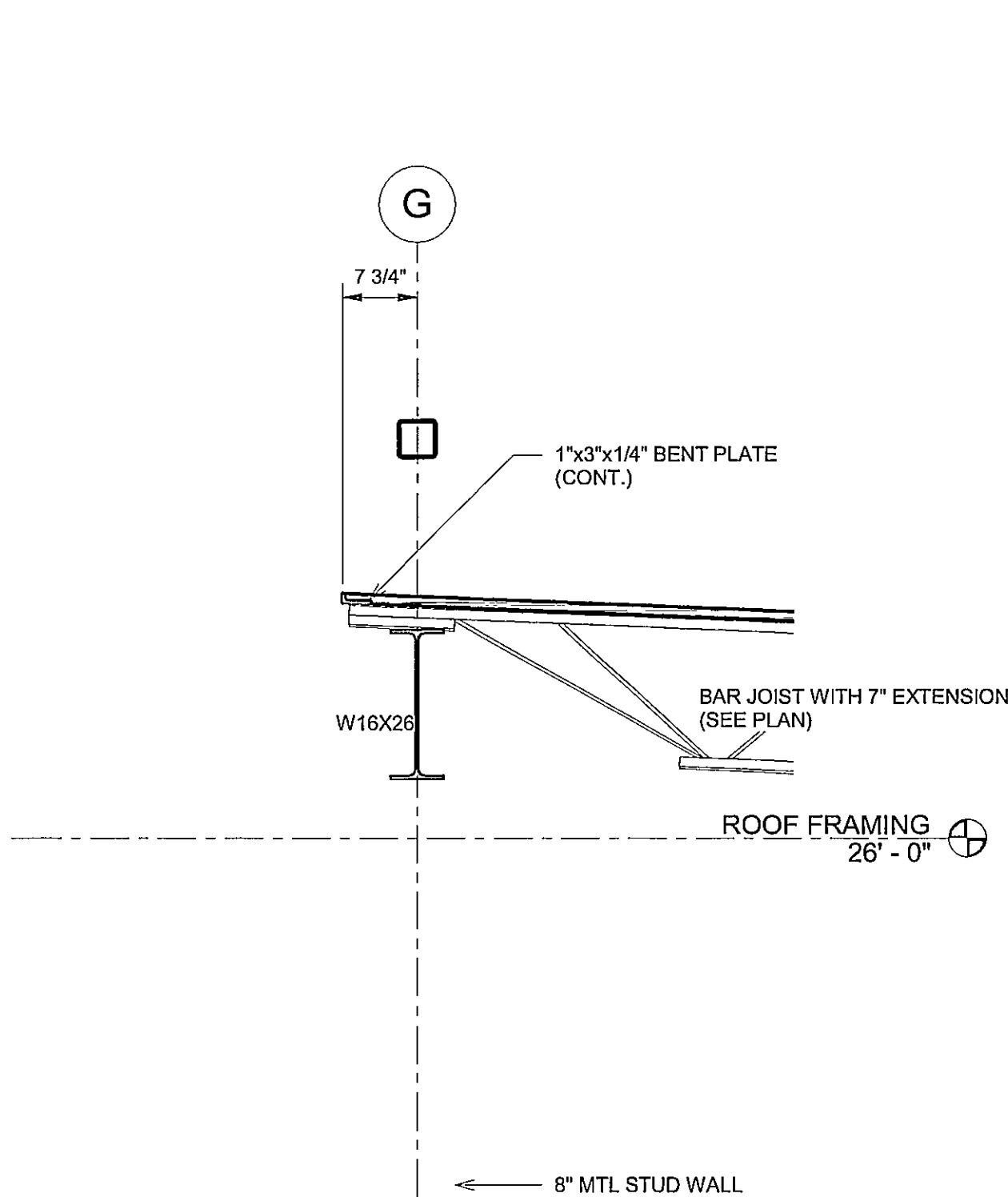
① FRAMING DETAIL 1/S3.3
3/4" = 1'-0"



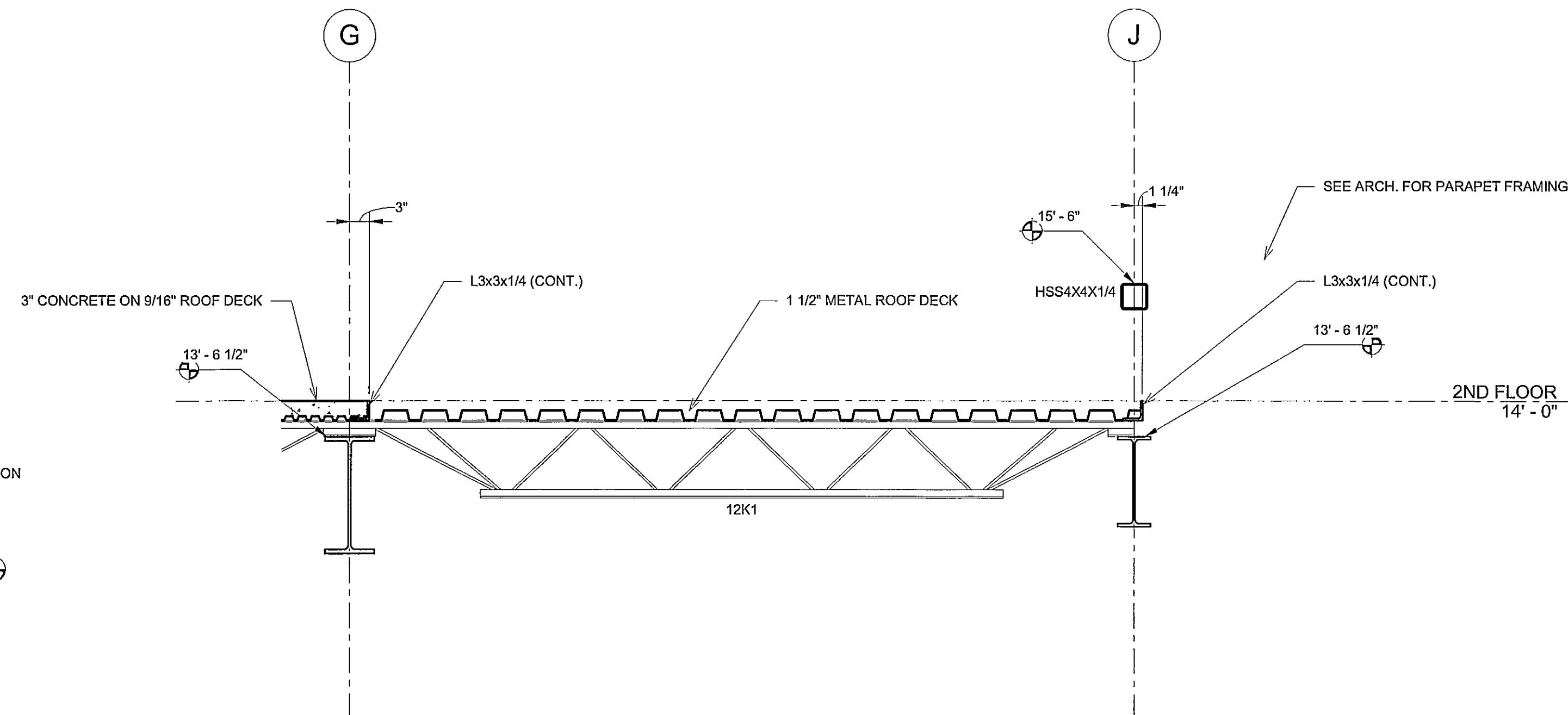
② ROOF FRAMING DETAIL 2/S3.3
3/4" = 1'-0"



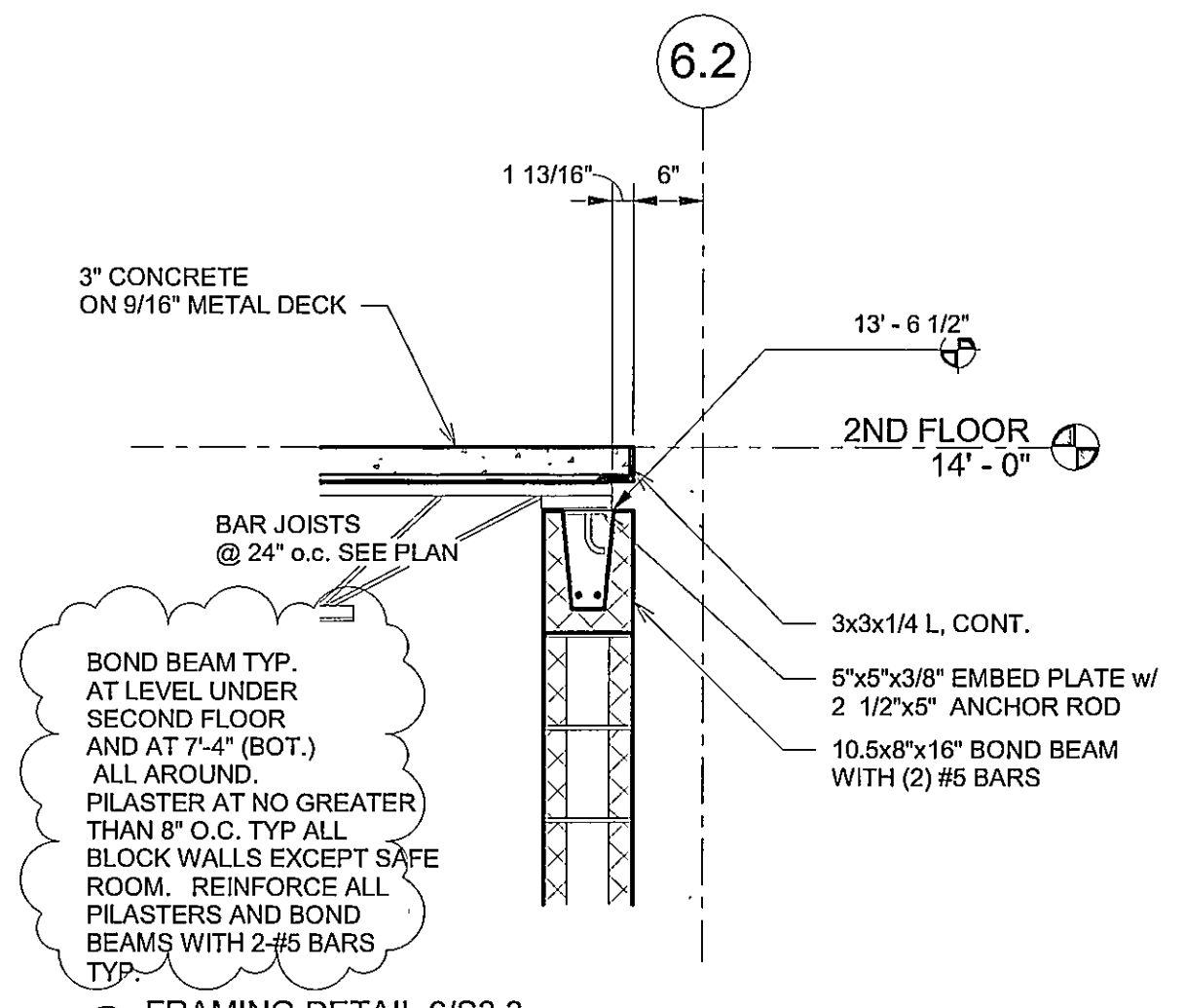
③ ROOF FRAMING DETAIL 3/S3.3
3/4" = 1'-0"



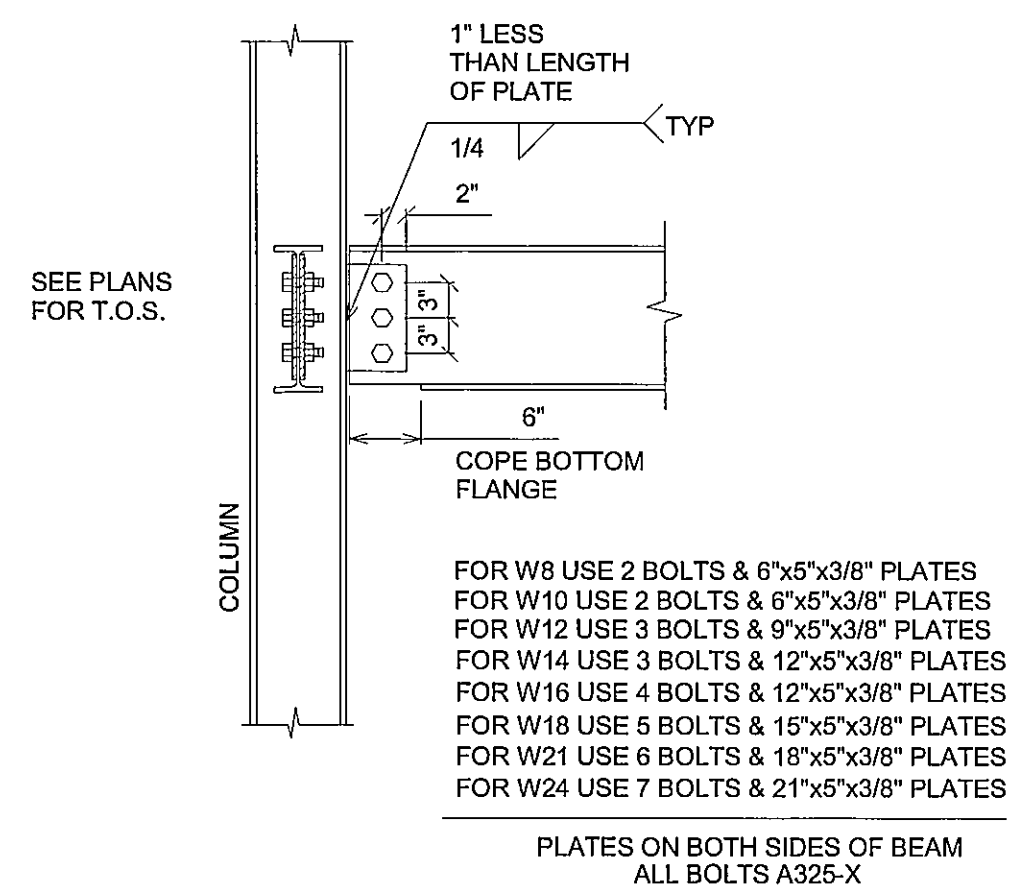
④ ROOF FRAMING DETAIL 4/S3.3
3/4" = 1'-0"



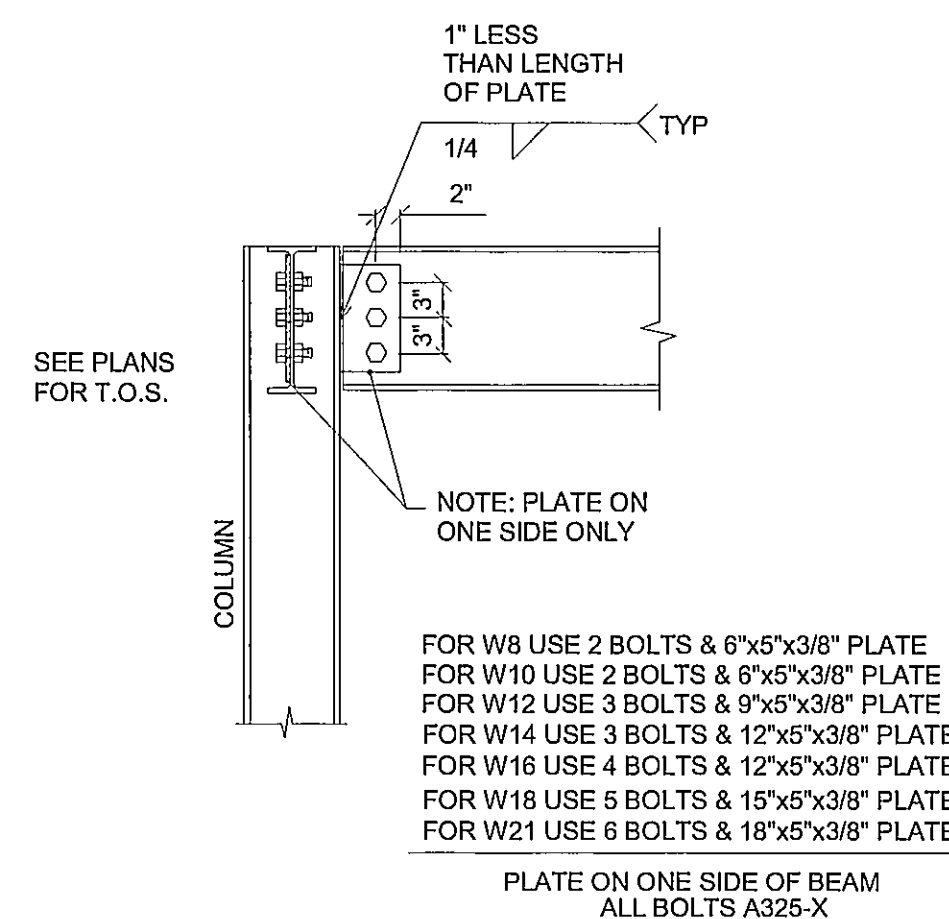
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3/4" = 1'-0"



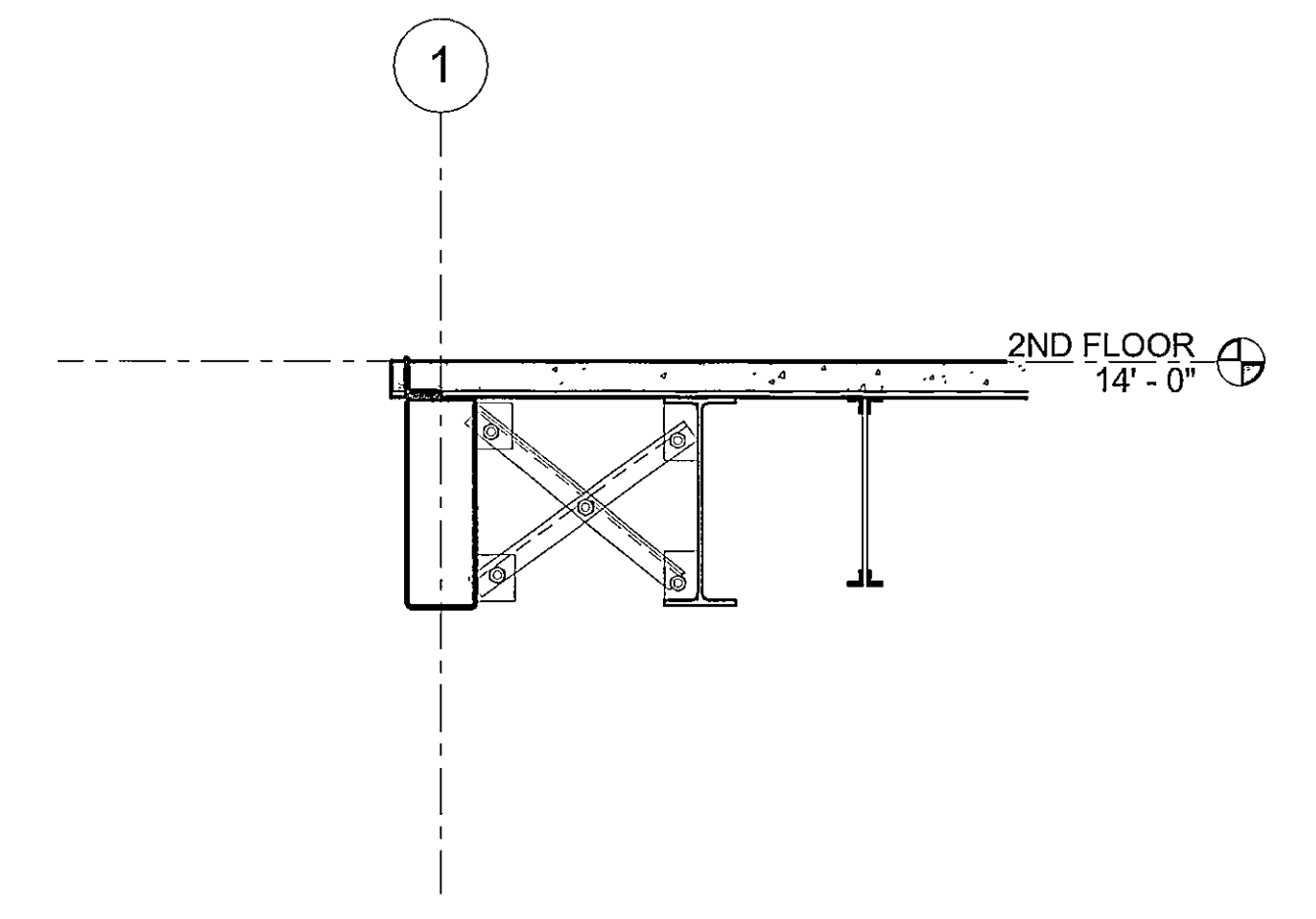
⑥ FRAMING DETAIL 6/S3.3
3/4" = 1'-0"



⑦ 2ND FLOOR CONNECTION DETAIL
3/4" = 1'-0"



⑧ ROOF CONNECTION DETAIL
3/4" = 1'-0"



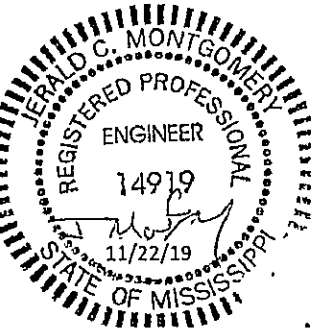
⑨ DETAIL 9/S3.3
3/4" = 1'-0"

DRAWN	CSF
CHECKED	MG
FINAL DATE	11/22/2019
REVISION SCHEDULE	
REV #	REV DATE
1	Date 1
#1 11/15/20 BOND BEAMS AND PILASTERS	

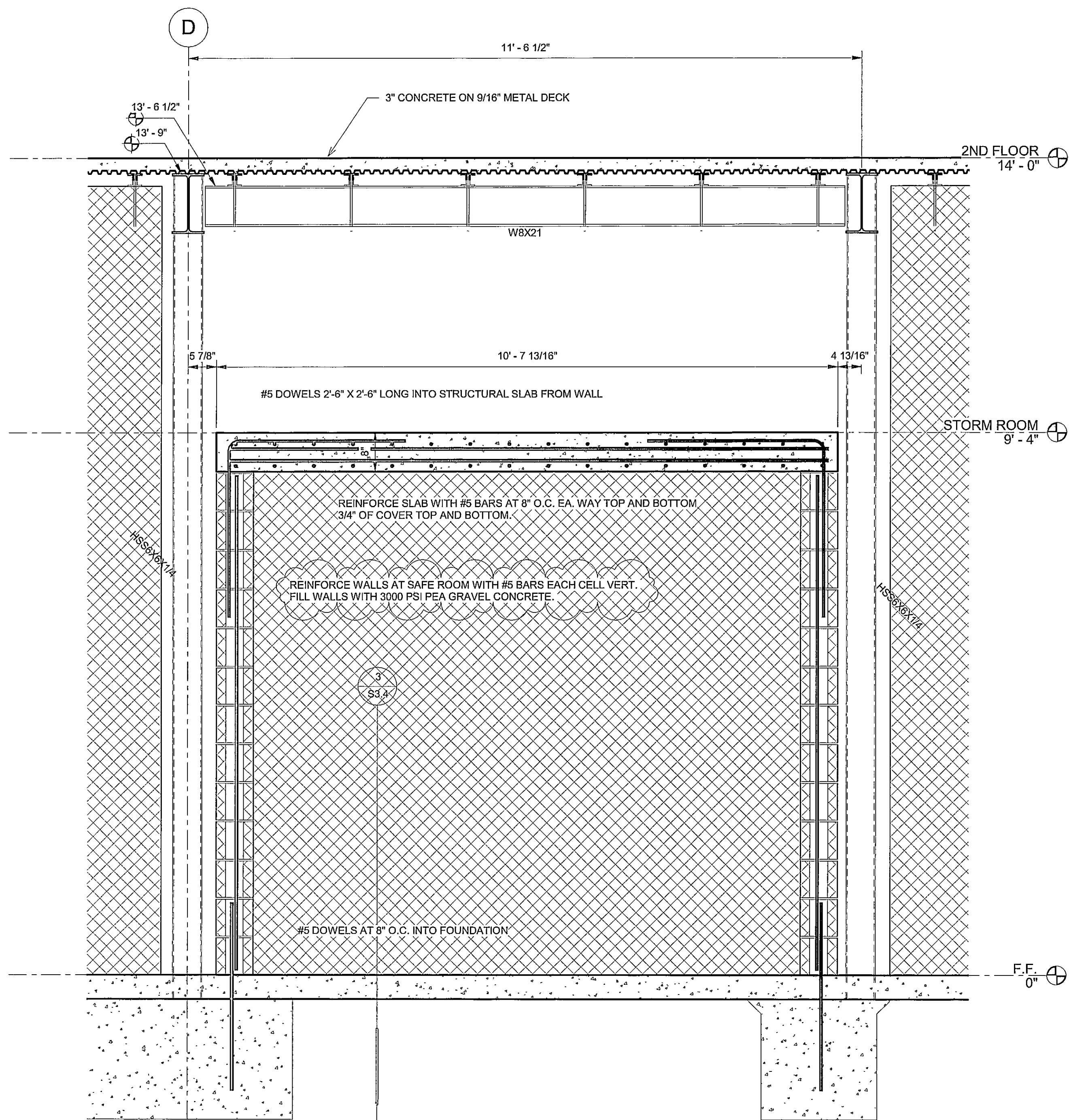
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DETAILS

PROJECT
FIRESTATION NO. 9

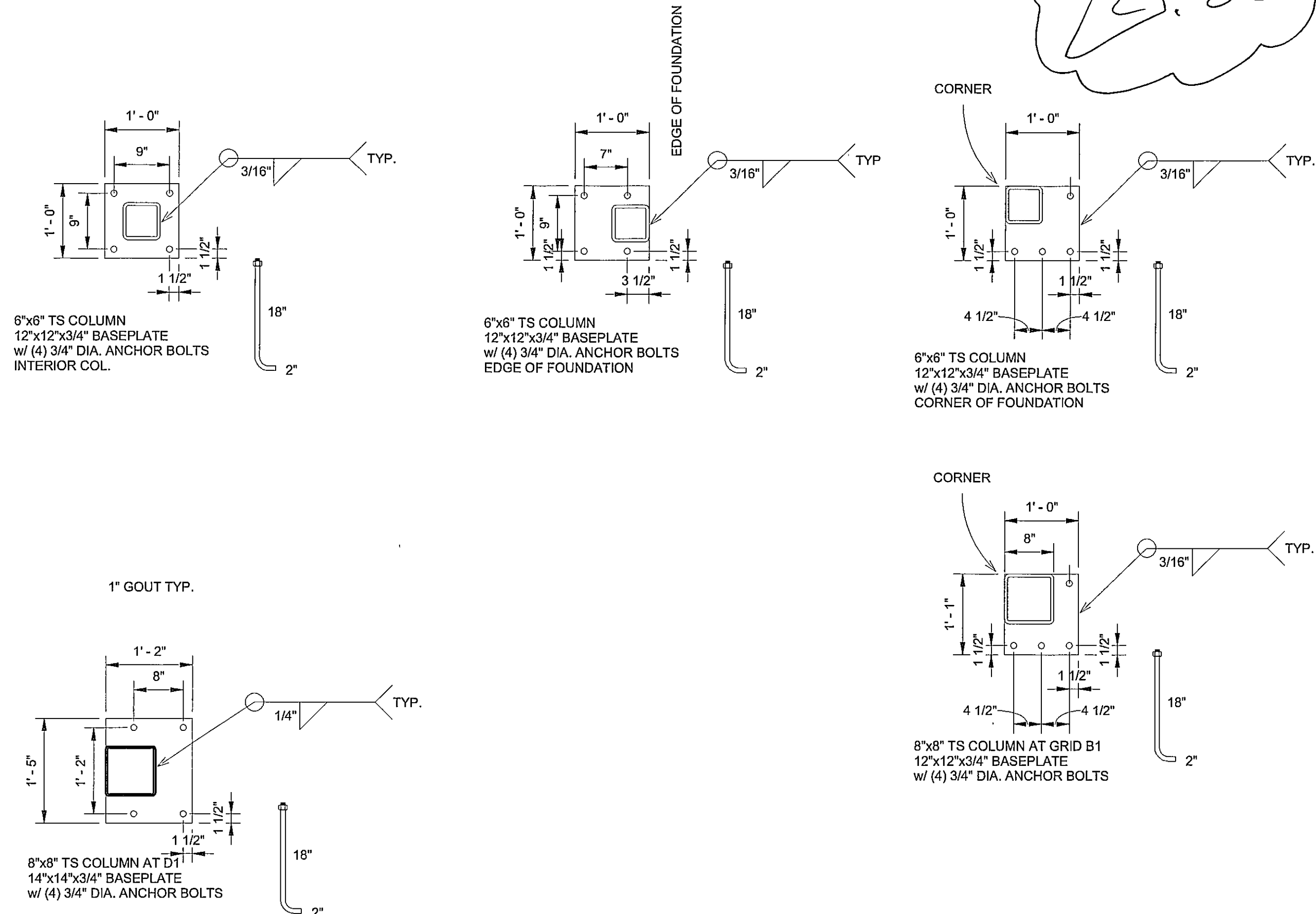


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CN18-3707
SHEET NUMBER
S3.3

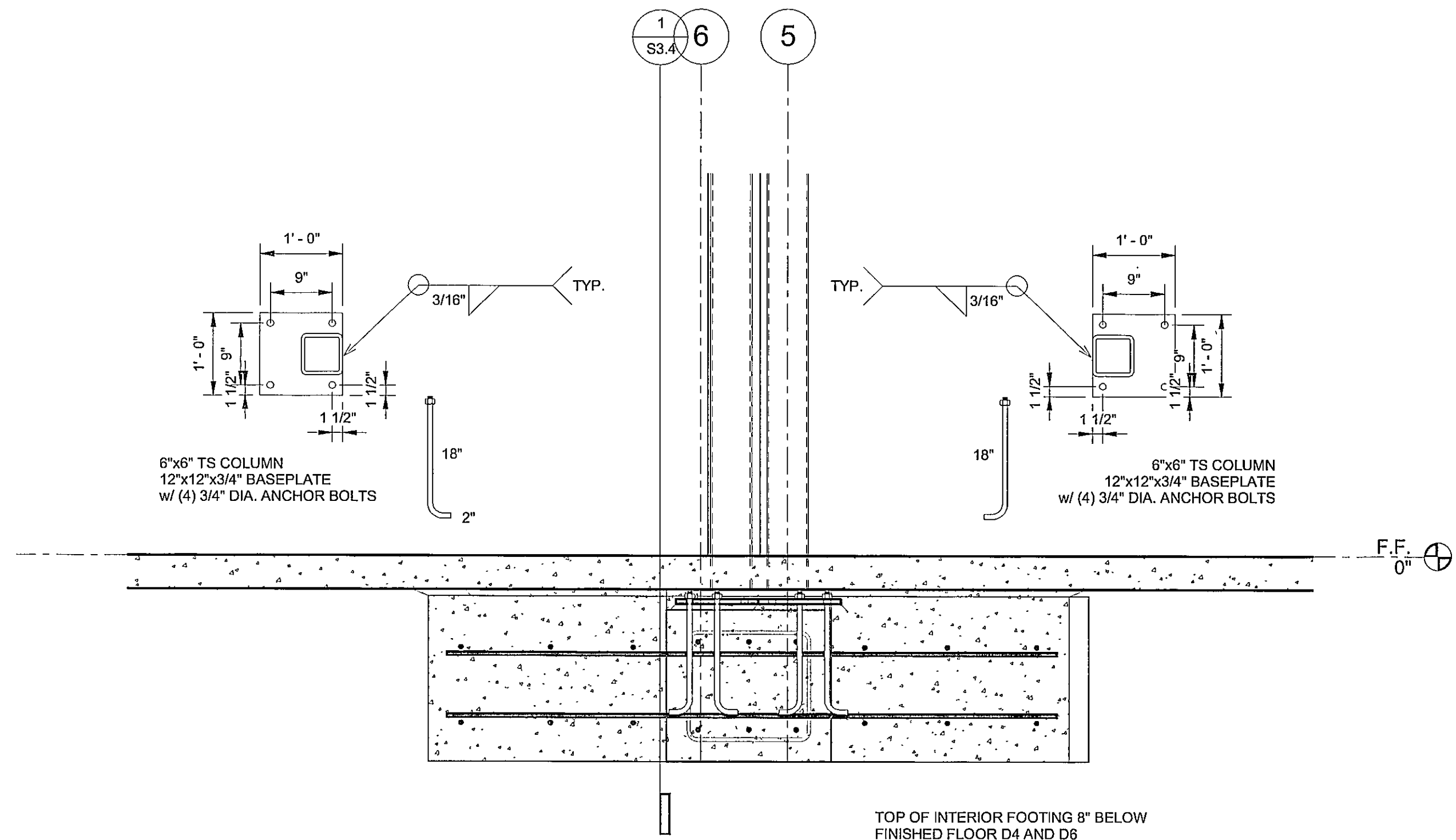


① FRAMING DETAIL 1/S3.4
3/4" = 1'-0"

② BASE PLATES
3/4" = 1'-0"



③ FOUNDATION DETAIL 3/S3.4
3/4" = 1'-0"



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Author

CHECKED
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11/22/2019

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REV #	REV DATE
1	Date 1

#1 1/15/20
BOND BEAMS
AND PILASTERS

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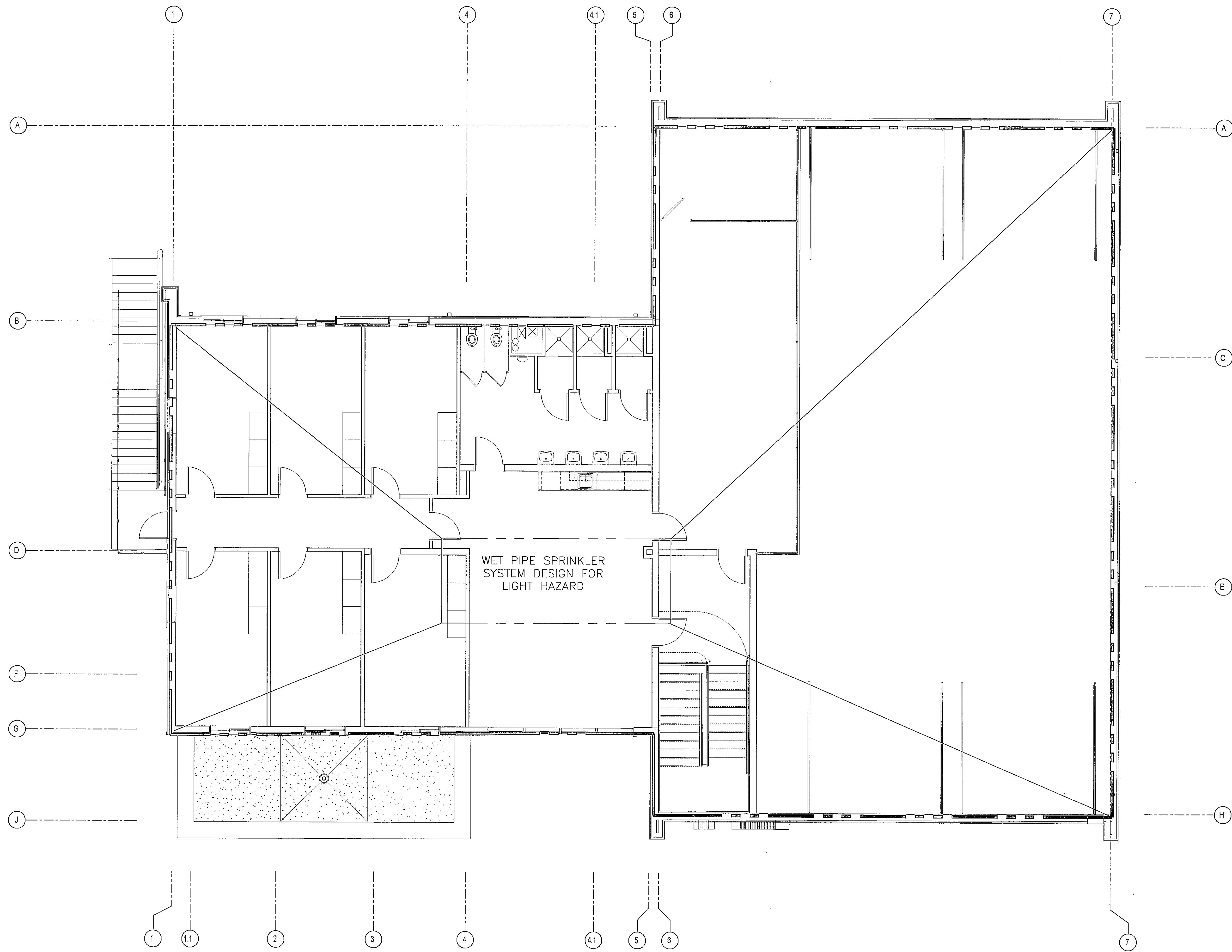
SHEET TITLE
DETAILS

PROJECT
FIRESTATION NO. 9
CITY OF HATTIESBURG
HATTIESBURG, MISSISSIPPI

REGISTERED PROFESSIONAL
ENGINEER
14919
11/23/19
STATE OF MISSISSIPPI

CN18-3707

SHEET NUMBER
S3.4



SECOND FLOOR FIRE PROTECTION PLAN
3/8" = 1'-0"

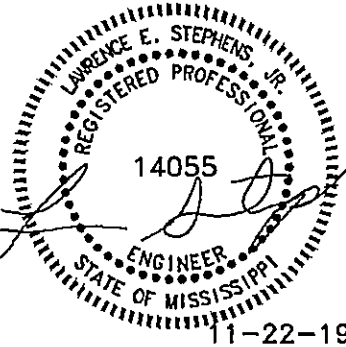
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CHECKED	LES
FINAL DATE	November 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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SECOND FLOOR FIRE PROTECTION
PLAN

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707

SHEET NUMBER

FP1.1

A. GENERAL

- ALL WORK SHALL CONFORM TO THE LATEST EDITIONS OF THE INTERNATIONAL CODE AND ALL LOCAL ORDINANCES AS ADOPTED BY THE LOCAL JURISDICTION.
- CONTRACTOR SHALL PROVIDE ALL MATERIALS AND LABOR NECESSARY FOR THE COMPLETE INSTALLATION AND OPERATION OF THE SYSTEMS INDICATED ON THE CONTRACT DOCUMENTS AND DRAWINGS EVEN IF NOT SPECIFICALLY SHOWN.
- THE DRAWINGS ARE, IN PART, DIAGRAMMATIC AND DO NOT ALWAYS SHOW ALL NECESSARY MATERIALS AND EQUIPMENT TO SCALE OR IN EXACT LOCATIONS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CHECK ALL MEASUREMENTS, COORDINATE ALL WORK WITH OTHER TRADES, REVIEW ALL ARCHITECTURAL AND STRUCTURAL DRAWINGS, AND VISIT THE JOBSITE TO MAKE APPROPRIATE MEASUREMENTS.
- CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS AND SHALL PAY ALL ASSOCIATED FEES FOR SCOPE OF WORK.
- WHEN THE SPECIFICATIONS OR DRAWINGS ARE UNCLEAR OR IN CONFLICT WITH CODES OR OTHER TRADES, THE CONTRACTOR SHALL BRING THIS TO THE ATTENTION OF THE ENGINEER FOR CLARIFICATION BEFORE SUBMITTING A BID.
- SUBMITTALS AND SHOP DRAWINGS FOR ALL EQUIPMENT, MATERIALS, AND ACCESSORIES SHALL BE PROVIDED TO THE OWNER AND ENGINEER FOR REVIEW AND COMMENT PRIOR TO ORDER, MANUFACTURE, FABRICATION, AND INSTALLATION. FAILURE TO DO SO SHALL NOT RELIEVE THIS CONTRACTOR OF THE RESPONSIBILITY, CONSEQUENCES, AND POSSIBLE COSTS OF SUCH ACTION OR LACK OF ACTION REGARDLESS OF ANY AND ALL ERRORS OR OMISSIONS ON THESE DOCUMENTS. THIS ENGINEER SHALL NOT BE HELD LIABLE FOR ANY COSTS ASSOCIATED WITH THIS CONTRACTOR'S FAILURE TO COMPLY WITH THIS ITEM. IF SUBSTITUTIONS FOR SPECIFIED ITEMS ARE MADE, IT IS THIS CONTRACTOR'S RESPONSIBILITY TO PROVE PERFORMANCE, COMPATIBILITY, AND CONFORMANCE WITH THE ORIGINAL DESIGN AND SPECIFICATIONS. RE-DESIGN BY THIS ENGINEER TO ACCOMMODATE SUBSTITUTIONS SHALL NOT BE PERFORMED. OTHERWISE, IT WILL BE CONSIDERED ADDITIONAL WORK FOR WHICH COMPENSATION WILL BE REQUIRED.
- ALL ACTUAL EQUIPMENT, MATERIALS, AND ACCESSORIES TO BE INSTALLED SHALL BE FULLY COORDINATED WITH THE ELECTRICAL, MECHANICAL, CIVIL, STRUCTURAL, AND ARCHITECTURAL CONTRACTORS PRIOR TO ORDER, MANUFACTURE, FABRICATION, AND INSTALLATION. THIS INCLUDES BUT IS NOT LIMITED TO ELECTRICAL DATA, WEIGHTS, PLUMBING REQUIREMENTS, DIMENSIONS, PENETRATIONS, ETC. FAILURE TO DO SO SHALL NOT RELIEVE THIS CONTRACTOR OF THE RESPONSIBILITY, CONSEQUENCES, AND POSSIBLE COSTS OF SUCH ACTION OR LACK OF ACTION REGARDLESS OF ANY AND ALL ERRORS OR OMISSIONS ON THESE DOCUMENTS. THIS ENGINEER SHALL NOT BE HELD LIABLE FOR ANY COSTS ASSOCIATED WITH THIS CONTRACTOR'S FAILURE TO COMPLY WITH THIS ITEM.
- ANY AND ALL DEVIATIONS FROM THE DESIGN DOCUMENTS WITHOUT THIS ENGINEER'S APPROVAL INDICATES ACCEPTANCE BY THIS CONTRACTOR AND/OR OWNER FOR THE RESPONSIBILITY OF THE PERFORMANCE OF THE SYSTEM AFFECTED. THIS ENGINEER SHALL NOT BE HELD LIABLE FOR ANY COSTS ASSOCIATED WITH THIS CONTRACTOR'S FAILURE TO FOLLOW THE DESIGN DOCUMENTS. IF MODIFICATIONS TO THE SPECIFIED DESIGN ARE MADE, IT IS THIS CONTRACTOR'S RESPONSIBILITY TO PROVE PERFORMANCE, COMPATIBILITY, AND CONFORMANCE WITH THE ORIGINAL DESIGN AND SPECIFICATIONS. RE-DESIGN BY THIS ENGINEER TO ACCOMMODATE MODIFICATIONS SHALL NOT BE PERFORMED. OTHERWISE, IT WILL BE CONSIDERED ADDITIONAL WORK FOR WHICH COMPENSATION WILL BE REQUIRED. SITE VISITS, INSPECTIONS, CALCULATIONS, COORDINATION, ETC. PERFORMED BY THIS ENGINEER TO INVESTIGATE PROBLEMS ASSOCIATED WITH DESIGN DEVIATIONS WILL ALSO BE CONSIDERED ADDITIONAL WORK FOR WHICH COMPENSATION WILL BE REQUIRED.
- ANY ERRORS OR OMISSIONS ON THESE DOCUMENTS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF THE ENGINEER FOR REVIEW AND CORRECTION.
- THIS ENGINEER SHALL NOT BE HELD LIABLE FOR COSTS ASSOCIATED WITH ERRORS AND/OR OMISSIONS ON THESE DOCUMENTS IN EXCESS OF THE COST AND/OR TIME FOR THIS ENGINEER TO CORRECT THE DOCUMENTS. IN ANY CASE, THE LIMIT OF LIABILITY FOR THIS ENGINEER SHALL BE NO MORE THAN THE COST OF THIS ENGINEER'S INDIVIDUAL FEE, REGARDLESS OF THE TOTAL DESIGN FEE CHARGED FOR THE SET OF CONSTRUCTION DOCUMENTS.
- TO THE FULLEST EXTENT PERMITTED BY LAW, THE TOTAL LIABILITY IN THE AGGREGATE, OF THIS ENGINEER AND THIS ENGINEER'S OFFICERS, DIRECTORS, EMPLOYEES, AGENTS, AND INDEPENDENT PROFESSIONAL ASSOCIATES, AND ANY OF THEM, TO OWNER AND ANY ONE CLAIMING BY, THROUGH OR UNDER OWNER, FOR ANY AND ALL INJURIES, CLAIMS, LOSSES, EXPENSES, OR DAMAGES WHATSOEVER ARISING OUT OF OR IN ANY WAY RELATED TO THIS ENGINEER'S SERVICES, THE PROJECT OR THESE DOCUMENTS, FROM ANY CAUSE OR CAUSES WHATSOEVER, INCLUDING BUT NOT LIMITED TO, THE NEGLIGENCE, ERRORS, OMISSIONS, STRICT LIABILITY, BREACH OF CONTRACT, MISREPRESENTATION, OR BREACH OF WARRANTY OF THIS ENGINEER; OR THIS ENGINEER'S OFFICERS, DIRECTORS, EMPLOYEES, AGENTS OR INDEPENDENT PROFESSIONAL ASSOCIATES, OR ANY OF THEM, SHALL NOT EXCEED THE TOTAL COMPENSATION RECEIVED BY THIS ENGINEER FOR SERVICES PROVIDED.
- THE USE OF THESE DOCUMENTS FOR CONSTRUCTION SIGNIFIES THIS OWNER, TENANT, AND CONTRACTOR'S AGREEMENT WITH THE ABOVE REQUIREMENTS REGARDLESS OF ANY OTHER PRIOR, CURRENT, OR FUTURE AGREEMENT AND/OR CONTRACT.

- B. CODES, FEES, PERMITS, ETC.: THE PLUMBING CONTRACTOR SHALL BE PROPERLY LICENSED AND SHALL SECURE ALL PERMITS AND PAY ALL FEES AS REQUIRED FOR THE COMPLETE PLUMBING INSTALLATION, INCLUDING SANITARY SEWER AND POTABLE WATER TIE-INS TO THE SERVING UTILITIES. ALL WORK SHALL BE IN STRICT ACCORDANCE WITH THE INTERNATIONAL PLUMBING CODE AS AMENDED BY STATE AND COUNTY AUTHORITIES.

- C. SCOPE OF WORK: THE WORK CONSISTS OF MATERIALS AND LABOR FOR A COMPLETE, OPERABLE PLUMBING SYSTEM INCLUDING, BUT NOT LIMITED TO THE FOLLOWING.

- SANITARY SEWER SYSTEM, OUTSIDE UTILITIES, SOIL AND WASTE DRAIN AND VENT PIPING AND FIXTURE CONNECTIONS.
- DOMESTIC COLD AND HOT WATER SYSTEM TO ALL SINKS & LAVATORIES. VERIFY W/ OWNER. PIPING SHALL BE DISINFECTED I.A.W. THE PLUMBING CODE.
- ALL PLUMBING FIXTURES AND EQUIPMENT INCLUDING FLOOR DRAINS, HOSE BIBBS, WATER HEATERS, ETC. AS REQUIRED. VERIFY LOCATIONS WITH OWNER.
- PROVIDE TRAP PRIMERS FOR ALL FLOOR DRAINS AND HUB DRAINS.
- WATER AND DRAIN PIPING SHALL BE PRESSURE TESTED I.A.W. THE PLUMBING CODE.
- BUILDING SHALL HAVE A MINIMUM 2" WATER SUPPLY.

D. MATERIALS

- FIXTURES AND EQUIPMENT ALL FIXTURES AND EQUIPMENT SHALL BE STANDARD, FIRST QUALITY COMPLETE WITH ALL TRIM, TRAPS, ETC., AS REQUIRED OR AS SPECIFIED BY OWNER. TOILETS, URINALS, AND LAVATORIES SHALL BE INSTALLED I.A.W. THE ACCESSIBILITY CODE FOR BUILDING CONSTRUCTION.
- PIPING
 - DRAIN, WASTE, VENT, AND SANITARY SEWER PIPING SHALL BE APPROVED, DWV SCHEDULE 40 PVC WITH PVC-DWV FITTINGS AND SOLVENT CEMENT JOINTS. ALL EXPOSED DRAIN PIPING (UNDER SERVICE SINK, WALL MOUNTED SINKS, ETC.) SHALL BE INSULATED AND JACKETED.

b. DOMESTIC WATER

- ABOVE GRADE - POLYETHYLENE (PEX) CONFORMING TO ASTM 5876 & F877. COLD WATER PIPING SHALL BE COLORED BLUE AND HOT WATER PIPING SHALL BE COLORED RED. FITTINGS SHALL BE MANUFACTURED FROM SOLID BRASS AND CONFORM TO ASTM F1807. PIPE AND FITTINGS SHALL BE MANUFACTURED IN THE UNITED STATES. PIPE AND FITTINGS SHALL CONFORM TO NATIONAL SANITATION FOUNDATION (NSF) STANDARD 61. INSTALLATION SHALL COMPLY WITH THE LATEST INSTALLATION INSTRUCTIONS PUBLISHED BY THE MANUFACTURER.
- BELOW GRADE, INSIDE STRUCTURE-POLYETHYLENE COATED TYPE K SOFT COPPER TUBING WITH NO JOINTS BELOW SLAB. COATED PIPE SHALL EXTEND THROUGH THE BUILDING SLAB IF PRESENT.
- BELOW GRADE, OUTSIDE STRUCTURE-POLYETHYLENE COATED TYPE K HARD DRAWN COPPER WITH POLYETHYLENE COATED WROT COPPER FITTINGS AND SOLDERED JOINTS.
- INSULATION
 - COLD WATER: INSULATE ALL PIPING ABOVE SLAB OR GRADE (INCLUDING TRAP PRIMERS) WITH 1/2" THICK FIBERGLASS WITH VAPOR SEAL.
 - HOT WATER: INSULATE ALL PIPING 1-1/4" OR SMALLER WITH 1" THICK FIBERGLASS. INSULATE ALL PIPING 1-1/2" OR LARGER WITH 1-1/2" THICK FIBERGLASS.
 - EXPOSED EXTERIOR PIPE INSULATION SHALL BE JACKETED WITH ALUMINUM, GALVANIZED SHEET METAL, PAINTED CANVAS, OR UV RESISTANT PLASTIC AND SEALED WEATHER TIGHT.
- ALL HOT WATER SUPPLIES SHALL BE EQUIPPED WITH ANTI-SCALD/TEMPERING DEVICES CONFORMING TO ASSE 1070. LAVATORY AND HAND WASH DEVICES SHALL LIMIT THE TEMPERATURE TO NO MORE THAN 110F. THE WATER HEATER SHALL BE SET TO NO MORE THAN 120F.
- PROVIDE WATER HAMMER ARRESTORS FOR HOT AND COLD WATER SUPPLY AT ALL HARD SHUTOFF DEVICES (LAVATORIES, SINKS, DRINKING FOUNTAINS, DISHWASHERS, CLOTHES WASHERS, ETC.).
 - DIELECTRIC UNIONS SHALL BE INSTALLED AT ALL DIS-SIMILAR METAL CONNECTIONS.
- GAS
 - UNDERGROUND - POLYETHYLENE PLASTIC PIPE
 - ABOVE GROUND - SCHEDULE 40 BLACK STEEL
 - EXPOSED EXTERIOR GAS PIPING SHALL BE PAINTED WITH A RUST PREVENTATIVE PRIMER AND TOPCOAT

E. PRESSURE TESTING

- SANITARY, DRAIN, WASTE, AND VENT
 - PLUG ALL OPENINGS EXCEPT THOSE AT THE UPPERMOST 10 FT OF THE SYSTEM.
 - FILL SYSTEM WITH WATER TO MAINTAIN NO LESS THAN 10 FT HEAD ON ALL JOINTS AND PIPES BELOW THE UPPERMOST 10 FT OF THE SYSTEM. MAINTAIN PRESSURE FOR 12 HOURS.
 - IF LOSS OF PRESSURE OCCURS, LOCATE AND REPAIR LEAKS AND REPEAT TEST PROCEDURE.
 - DOCUMENT TEST AND PROVIDE TO OWNER. INSPECTION BY LOCAL AUTHORITY MAY BE REQUIRED.
- WATER SUPPLY
 - ALL SYSTEM PIPES AND JOINTS SHALL BE TESTED.
 - ISOLATE PORTION OF SYSTEM TO BE TESTED WITH SHUTOFF VALVES AND/OR CAPS.
 - FILL SYSTEM WITH AIR (FOR PIPE OTHER THAN PLASTIC) OR WATER (FOR PLASTIC PIPE) TO A PRESSURE OF 100 PSI. MAINTAIN PRESSURE FOR 12 HOURS.
 - IF LOSS OF PRESSURE OCCURS, LOCATE AND REPAIR LEAKS AND REPEAT TEST PROCEDURE.
 - DOCUMENT TEST AND PROVIDE TO OWNER. INSPECTION BY LOCAL AUTHORITY MAY BE REQUIRED.
- GAS SUPPLY
 - ALL SYSTEM PIPES AND JOINTS SHALL BE TESTED
 - ISOLATE PORTION OF SYSTEM TO BE TESTED WITH SHUTOFF VALVES AND/OR CAPS.
 - FILL SYSTEM WITH AIR TO A PRESSURE OF 20 PSI. MAINTAIN PRESSURE FOR 12 HOURS.
 - IF LOSS OF PRESSURE OCCURS, LOCATE AND REPAIR LEAKS AND REPEAT TEST PROCEDURE.
 - DOCUMENT TEST AND PROVIDE TO OWNER. INSPECTION BY LOCAL AUTHORITY MAY BE REQUIRED.

F. DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

- PRIOR TO STARTING WORK, VERIFY SYSTEM IS COMPLETE, FLUSHED, AND CLEAN.
- ENSURE PH OF WATER TO BE TREATED IS BETWEEN 7.4 AND 7.6 BY ADDING ALKALI (CAUSTIC SODA OR SODA ASH) OR ACID (HYDROCHLORIC).
- INJECT DISINFECTANT (FREE CHLORINE IN LIQUID, POWDER, TABLET OR GAS FORM) THROUGHOUT SYSTEM TO OBTAIN 50 TO 80 MG/L RESIDUAL.
- BLEED WATER FROM OUTLETS TO ENSURE DISTRIBUTION AND TEST FOR DISINFECTANT RESIDUAL AT MINIMUM 15 PERCENT OF OUTLETS.
- MAINTAIN DISINFECTANT IN SYSTEM FOR 24 HOURS.
- TEST FOR DISINFECTANT RESIDUAL. IF FINAL DISINFECTANT RESIDUAL TESTS LESS THAN 25 MG/L, REPEAT TREATMENT.
- FLUSH DISINFECTANT FROM SYSTEM UNTIL RESIDUAL IS EQUAL TO THAT OF INCOMING WATER OR 1.0 MG/L.
- TAKE SAMPLES NO SOONER THAN 24 HOURS AFTER FLUSHING FROM 10 PERCENT OF OUTLETS AND FROM WATER ENTRY. ANALYZE IN ACCORDANCE WITH AWWA C651. REPEAT ENTIRE PROCEDURE IF CONTAMINATION REMAINS.
- DOCUMENT DISINFECTION AND PROVIDE TO OWNER. INSPECTION BY LOCAL AUTHORITY MAY BE REQUIRED.
- ALL PIPING SHALL BE LABELED IN ACCORDANCE WITH ASTM STANDARD A13.1. LABELS SHALL INCLUDE PIPING SERVICE (COLD WATER, HOT WATER, HOT WATER RETURN, VENT, ETC.), SIZE, AND DIRECTION OF FLOW.
- THE FINISHED FLOOR OF ALL AREAS SERVED BY A FLOOR DRAIN SHALL BE SLOPED A MINIMUM OF 1/16" PER FOOT DOWNWARD TOWARD THE FLOOR DRAIN. THE SLOPE SHALL BE CONTINUOUS AND CONSISTENT FOR THE ENTIRE AREA BOUND BY THE ENCLOSING WALLS UNLESS OTHERWISE INDICATED IN THE ARCHITECTURAL OR FOUNDATION PLANS. THE TOP OF THE FLOOR DRAIN STRAINER SHALL BE THE LOWEST POINT IN THE SLOPED AREA. SHALL BE INSTALLED LEVEL, AND SHALL BE INSTALLED FLUSH WITH THE SURROUNDING FINISHED FLOOR. COORDINATE WITH GC.
- COORDINATE ALL REQUIRED WALL, FLOOR, CEILING, AND ROOF PENETRATION LOCATIONS AND SIZES WITH THE GC PRIOR TO CONSTRUCTION. GC SHALL PROVIDE ALL REQUIRED FRAMED OPENINGS, HEADERS, MASONRY OPENINGS, LINTELS, ETC. AS NECESSARY.
- COORDINATE ALL PIPE & FIXTURE LOCATIONS, SIZES, AND ROUTING WITH GC PRIOR TO CONSTRUCTION. GC SHALL PROVIDE A CLEAR PATH THROUGH FRAMING AND MASONRY COMPONENTS TO ACCOMMODATE PIPE ROUTING.

PLUMBING LEGEND

—SS—	SANITARY SEWER
==SS==	EXIST. SANITARY SEWER
—A—	COMPRESSED AIR
—W—	SOIL OR WASTE PIPING (W.)
-----	VENT PIPING
—W—	WATER SERVICE PIPING
—W—	EXIST. WATER SERVICE PIPING
—C—	COLD WATER PIPING (CW)
—H—	HOT WATER PIPING (HW)
—G—	GAS PIPING
—RD—	ROOF DRAIN
F.W.C.O.	FINISH WALL CLEANOUT
F.F.C.O.	FINISH FLOOR CLEANOUT
F.G.C.O.	FINISH GRADE CLEANOUT
VTR	VENT THRU ROOF
EXIST.	EXISTING
ELEV.	ELEVATION
U.G.	UNDERGROUND
ABV.	ABOVE
CLG.	CEILING
CONC.	CONCRETE
FIN.	FINISH
O.C.	ON CENTER
→↯→	GATE VALVE (G.V.)
→↯→	BALL VALVE (B.V.)
⊥	CLEAN OUT
oz.	OUNCES
(TYP.)	TYPICAL
GALV.	GALVANIZED
DWN	DOWN
SAN.	SANITARY
AUX. D.	AUXILIARY DRAIN
BLDG	BUILDING
AFF.	ABOVE FINISH FLOOR

WATER HAMMER ARRESTOR SCHEDULE

SIZE	FIXTURE UNITS	PDI STANDARD
1/2"	1-11	A
3/4"	12-32	B
1"	33-60	C
1-1/2"	61-113	D
1-3/4"	114-154	E
2"	155-330	F

PLUMBING FIXTURE SCHEDULE

FIXTURE	MARK	TRAP	WASTE	VENT	CW	HW	REMARKS
WATER CLOSET	WC-1	—	4"	4"	1"	—	FLUSH VALVE FLOOR MOUNTED
WATER CLOSET	WC-2	—	4"	4"	1"	—	FLUSH VALVE FLOOR MOUNTED - ADA COMPLIANT
URINAL	UR-1	—	3"	2"	3/4"	—	FLUSH VALVE WALL MOUNTED
LAVATORY	L-1	1 1/4"	2"	1 1/2"	3/4"	1/2"	WALL HUNG - ADA COMPLIANT
SINK	S-1	1 1/2"	2"	2"	1 1/2"	1/2"	STAINLESS STEEL, COUNTER MOUNT, SINGLE COMPARTMENT
KITCHEN SINK	KS-1	1 1/2"	2"	2"	1 1/2"	1/2"	STAINLESS STEEL, COUNTER MOUNT, DOUBLE COMPARTMENT
MOP SINK	MS-1	3"	3"	2"	3/4"	3/4"	FLOOR MOUNT, TERRAZZO, W/ MOP HANGER
DRINKING FOUNTAIN	EDF-1	1 1/4"	1 1/2"	1 1/2"	1 1/2"	—	WALL HUNG
DRINKING FOUNTAIN	EDF-2	1 1/4"	1 1/2"	1 1/2"	1 1/2"	—	WALL HUNG - ADA COMPLIANT
SHOWER	SH-1	2"	2"	2"	1 1/2"	1/2"	MIXING VALVE, ADA COMPLIANT W/GRAB BARS ETC.
WATER HEATER	WH-1	—	—	—	3/4"	3/4"	SEE WH SCHEDULE
WATER HEATER	WH-2	—	—	—	3/4"	3/4"	SEE WH SCHEDULE
HOSE BIBB	HB-1	—	—	—	3/4"	3/4"	BOX MOUNTED, FREEZE PROOF, VACUUM BREAKER
FLOOR DRAIN	FD-1	3"	3"	2"	—	—	TYPE A - STRAINER
FLOOR DRAIN	FD-2	3"	3"	2"	—	—	TYPE A - STRAINER, W/ TRAP PRIMER
FLOOR DRAIN	FD-3	2"	2"	2"	—	—	TYPE A - STRAINER (SCHLUTER SHOWER DRAIN SYSTEM)
EYE WASH	EWS-1	2"	2"	2"	1 1/2"	1 1/2"	EYE WASH STATION
UTILITY SINK	US-1	2"	2"	2"	1 1/2"	1 1/2"	MOP/UTILITY SINK (TUB TYPE)
TRENCH DRAIN	TD-1	3"	3"	2"	—	—	SQUARE TYPE
EXPANSION TANK	ET-1	—	—	—	3/4"	—	RATED BUTYL BLADDER TANK, 5 GALLON
WASHING MACHINE CONNECTION	WMB-1	2"	2"	2"	1 1/2"	1 1/2"	WASHING MACHINE CONNECTION BOX
REFRIGERATOR ICE MAKER CONN.	IMB-1	—	—	—	1/4"	—	ICE MAKER BOX - 3/4" FILTER INLET WATER CONNECTION
ROOF DRAIN	RD-1	4"	4"	3"	—	—	

NOTES:

WATER HEATER SCHEDULE

MARK	LOCATION	MIN. STORAGE	MIN. RECOVERY	TEMP. SETTING	TEMP RISE	ELECT. HEAT		NATURAL GAS			REMARKS
						VOLT.	KW	INPUT	GAS PRESSURE	GPM@60F	
WH-1, 2	CORRIDOR 127	NA	127	120	100	120	Ø	V	BTU	IN. WC	IN.
						=		=	200,000	6"	5.6
	NOTES:	PROVIDE WITH PIPING COVERS PC-35-SUS, ISOLATION VALVE KITS IK-WV-200-1-TH, CONDENSATE NEUTRALIZER (#NC-1), MOUNT TO WALL AT 12" A.F.F.									
		FOR PROPANE TOO NATURAL GAS CHANGE OVER GAS VALVE & MANIFOLD PLATE. CHANGE REGULATOR FROM NAT. GAS TO LIQUID. CERTIFIED INSTALLER WILL BE RE'QD.									

DRAWN

MDH

CHECKED

LES

FINAL DATE

November 22, 2019

REVISION SCHEDULE

REV # REV DATE

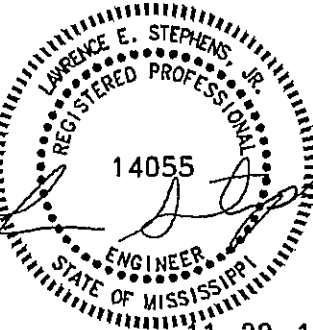
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PLUMBING SCHEDULES, LEGEND AND NOTES

SHEET TITLE

PROJECT FIRE STATION No. 9

CITY OF HATTIESBURG HATTIESBURG, MS



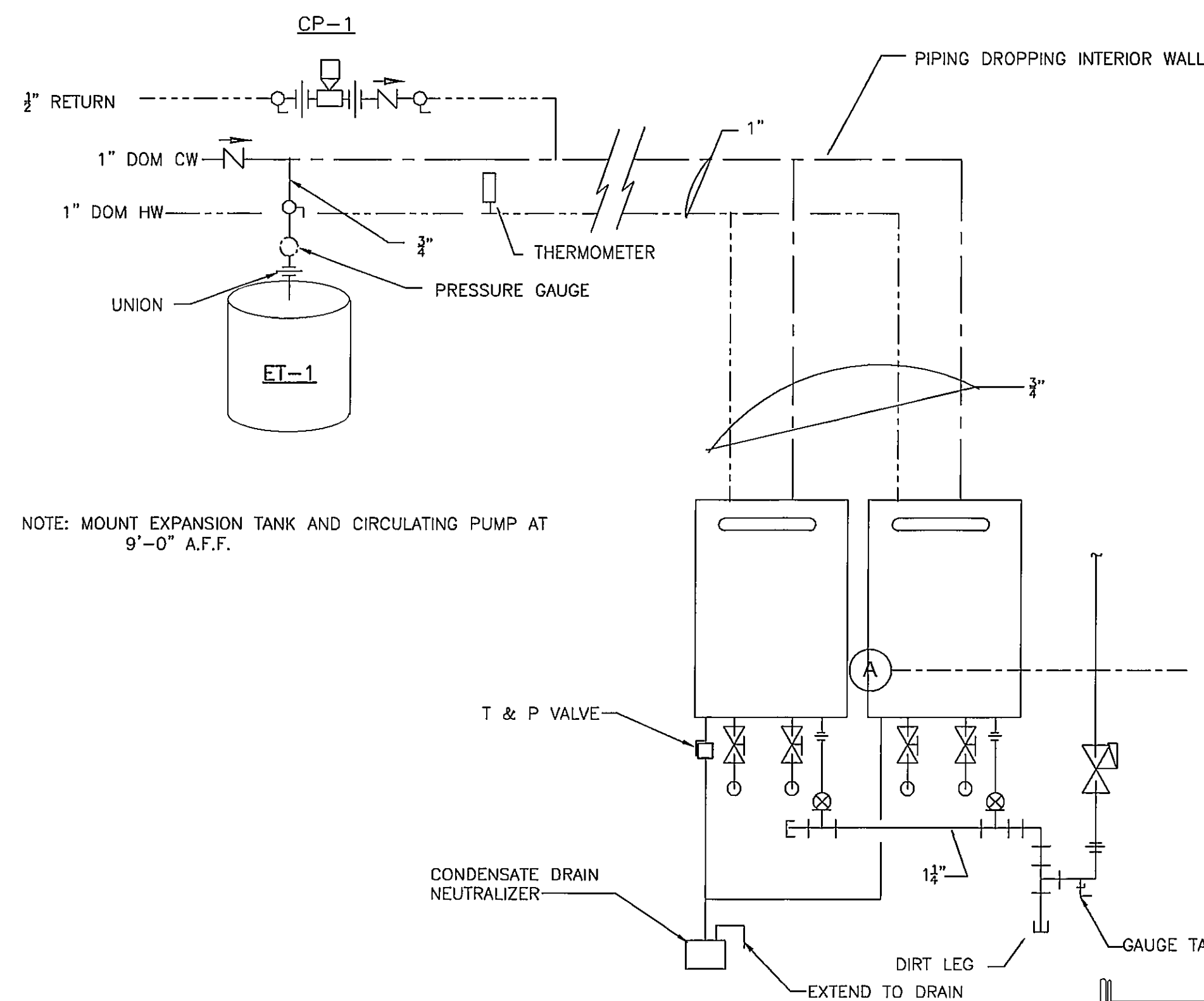
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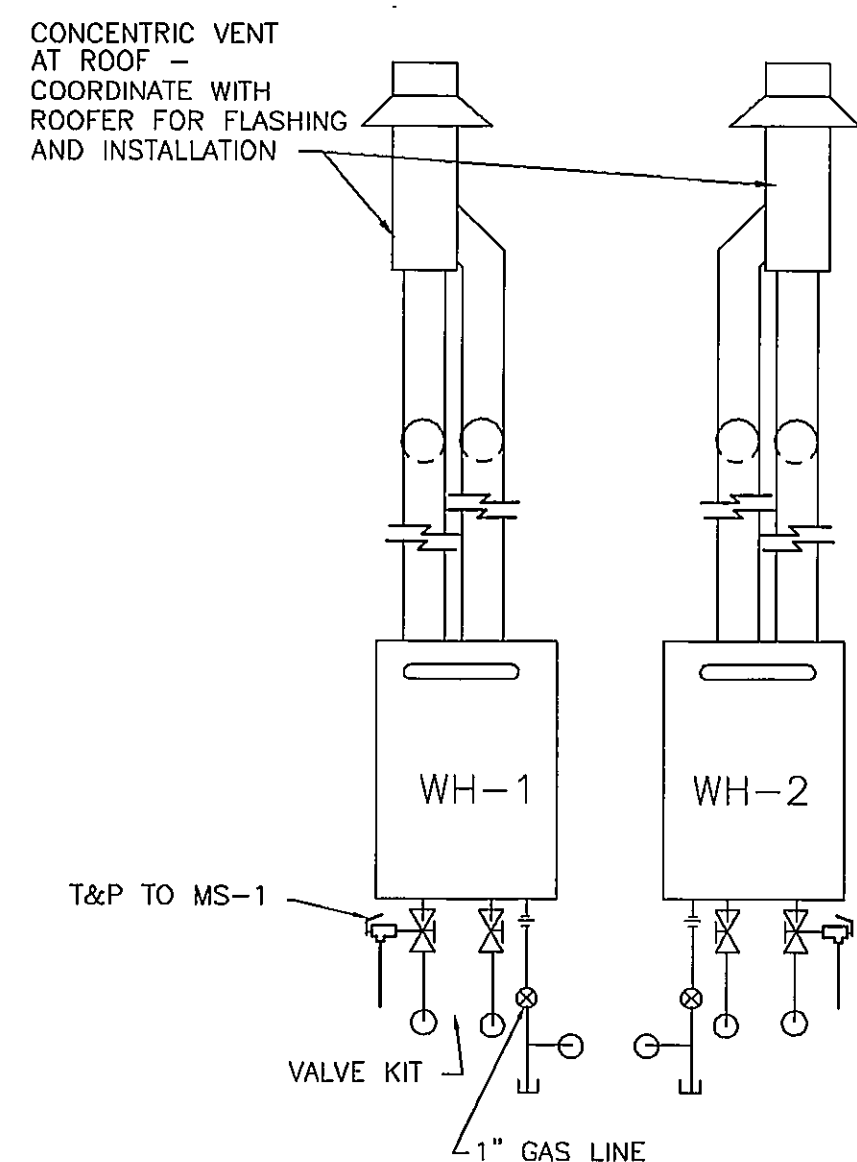
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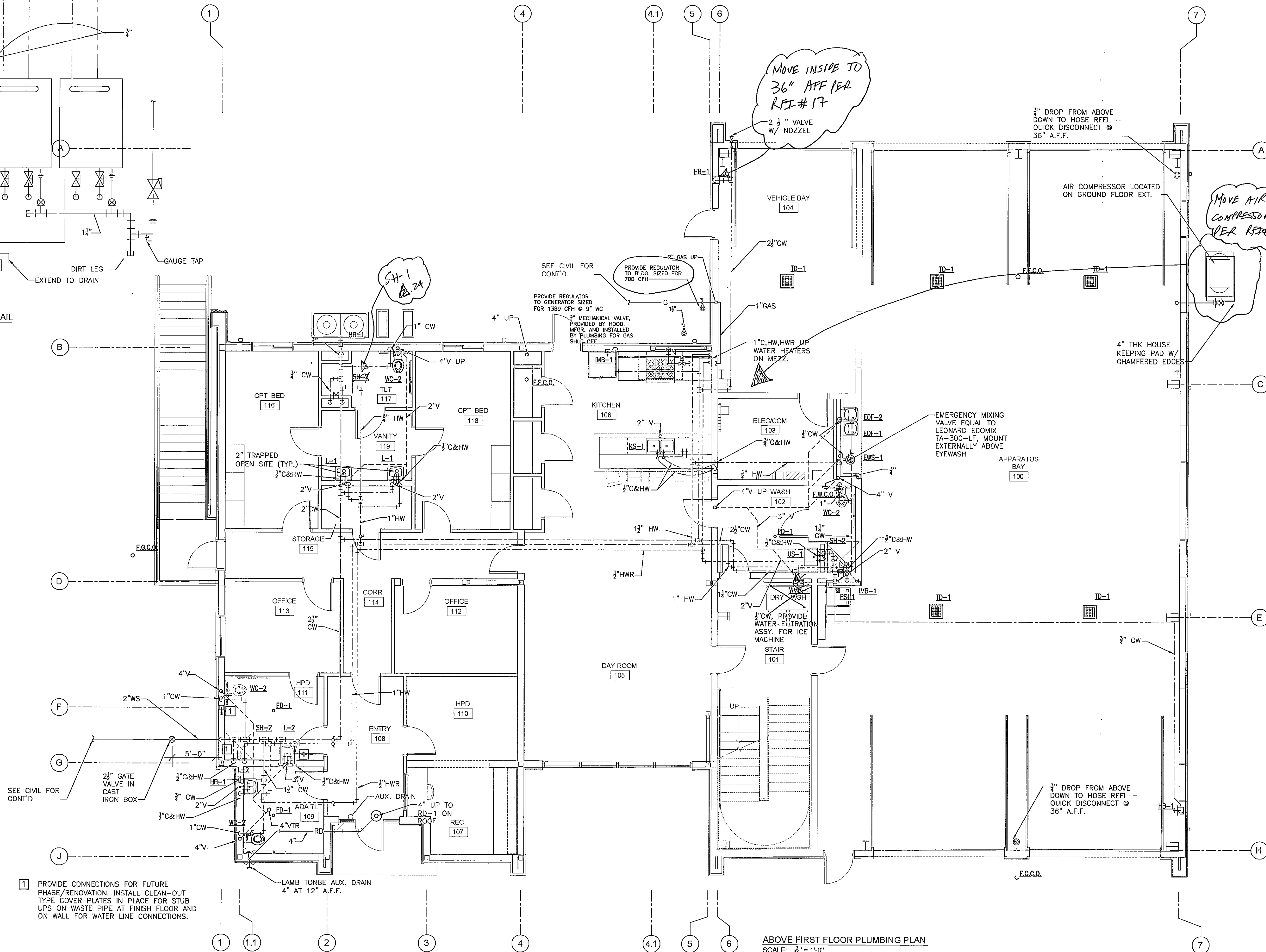
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WATER HEATER INSTALLATION DETAIL
NO SCALE



WATER HEATER FLUE DETAIL
NO SCALE



ABOVE FIRST FLOOR PLUMBING PLAN
SCALE: 1/8" = 1'-0"

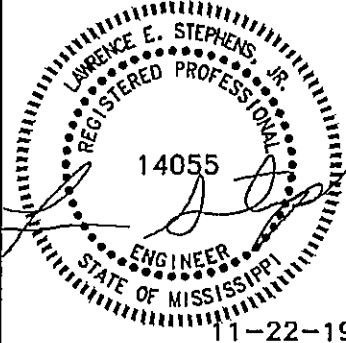
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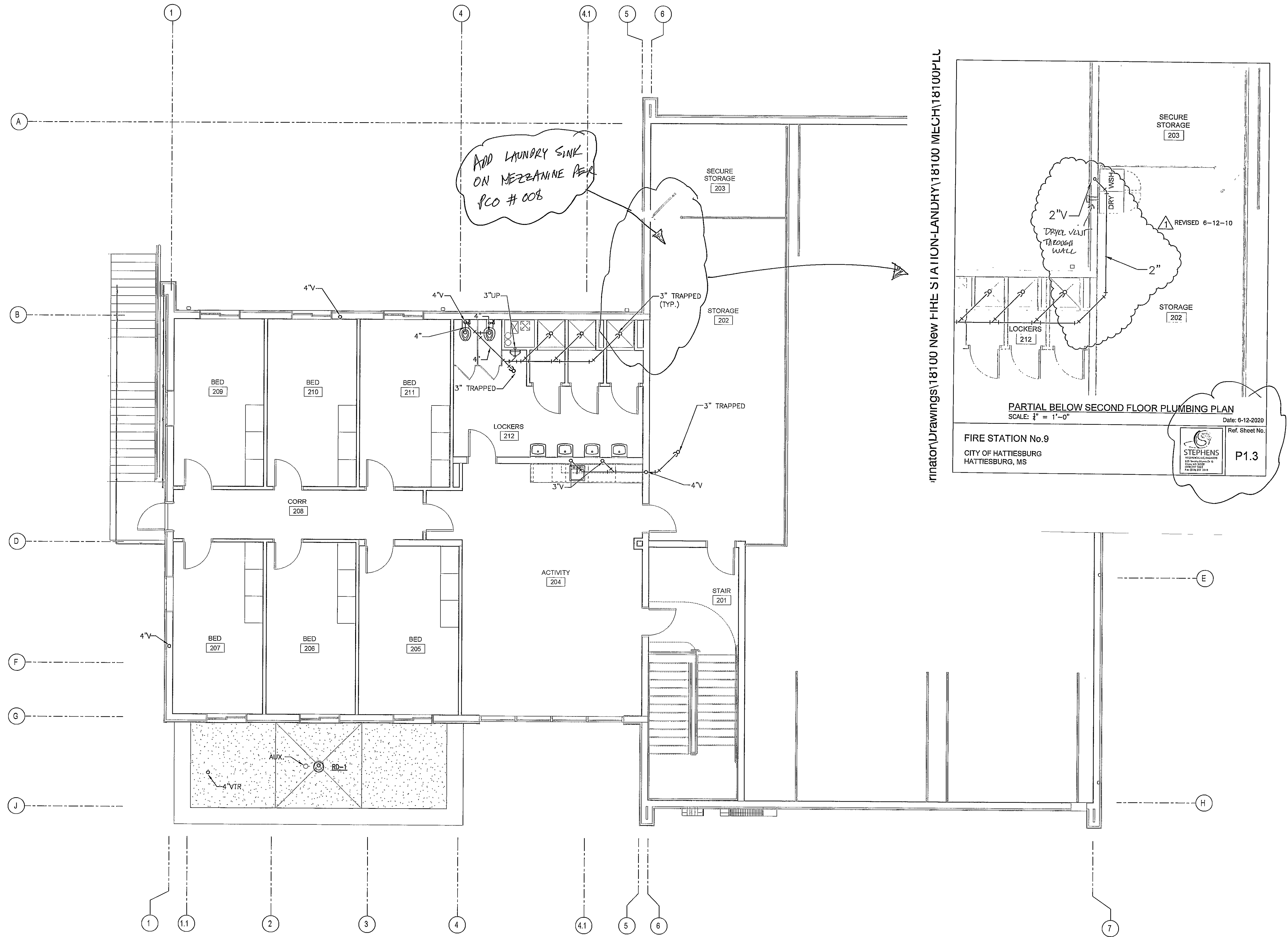
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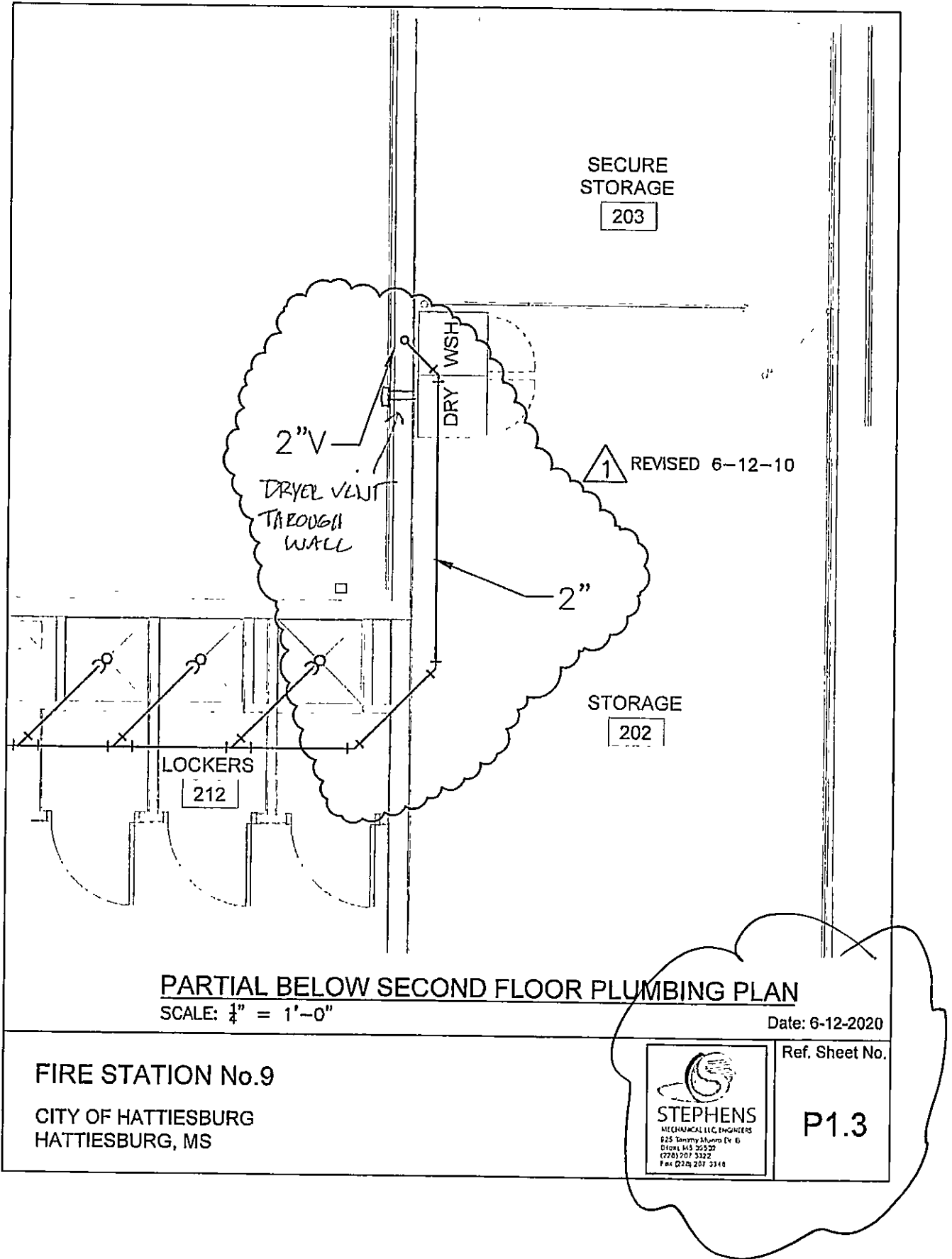
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BELOW SECOND FLOOR PLUMBING PLAN
SCALE: $\frac{3}{8}" = 1'-0"$

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PROJECT

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HATTIESBURG, MS

SHEET TITLE

**BELOW SECOND FLOOR PLUMBING
PLAN**

ENGINEER

JAMES E. STEPHENS

14055

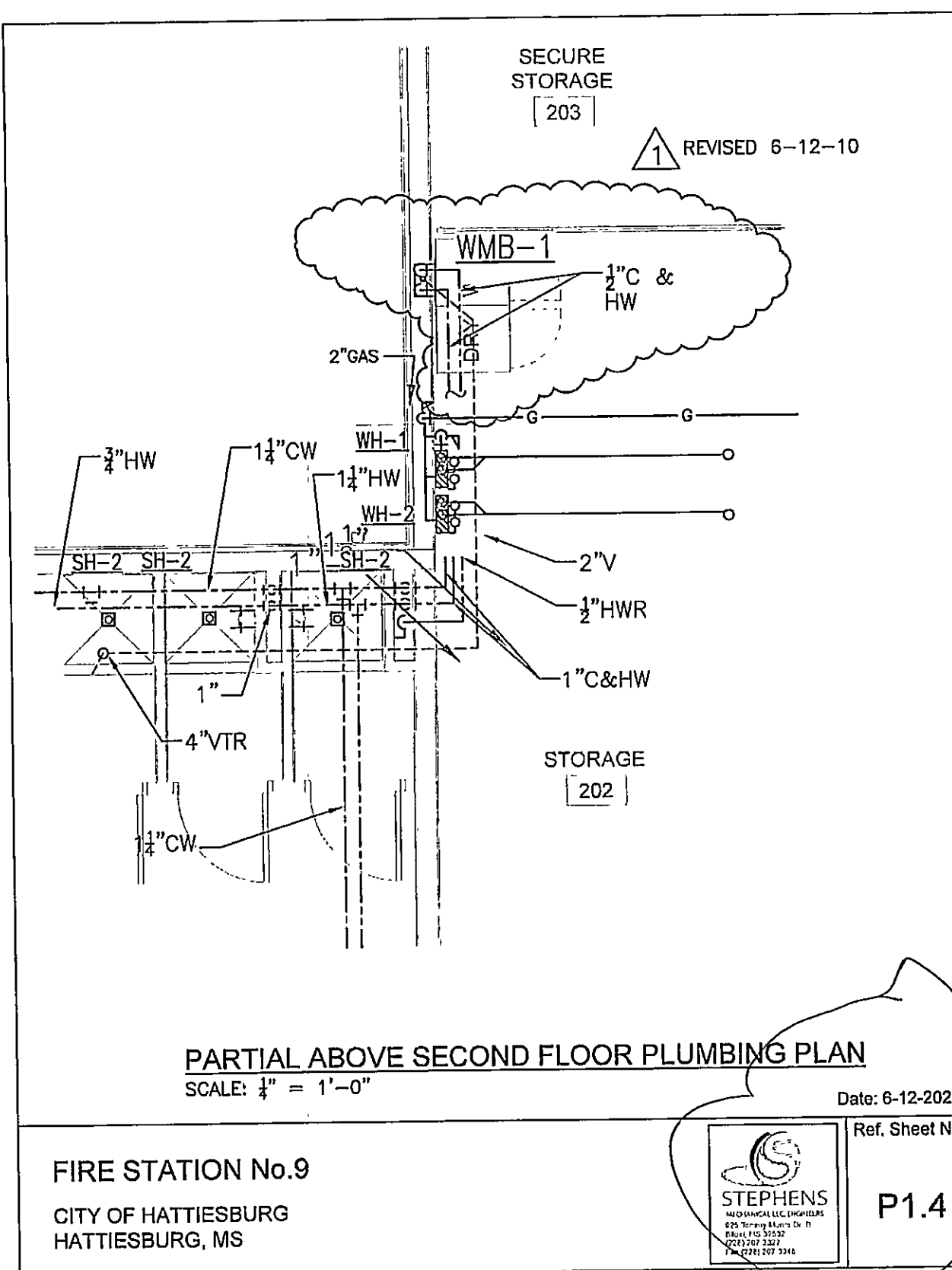
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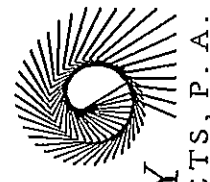
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irigator\Drawings\18100 New Fire Station-LANDRY\18100 MECH\18100PLC

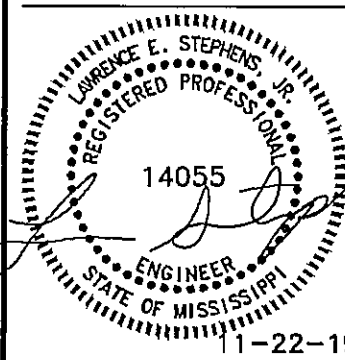


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FINAL DATE	November 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

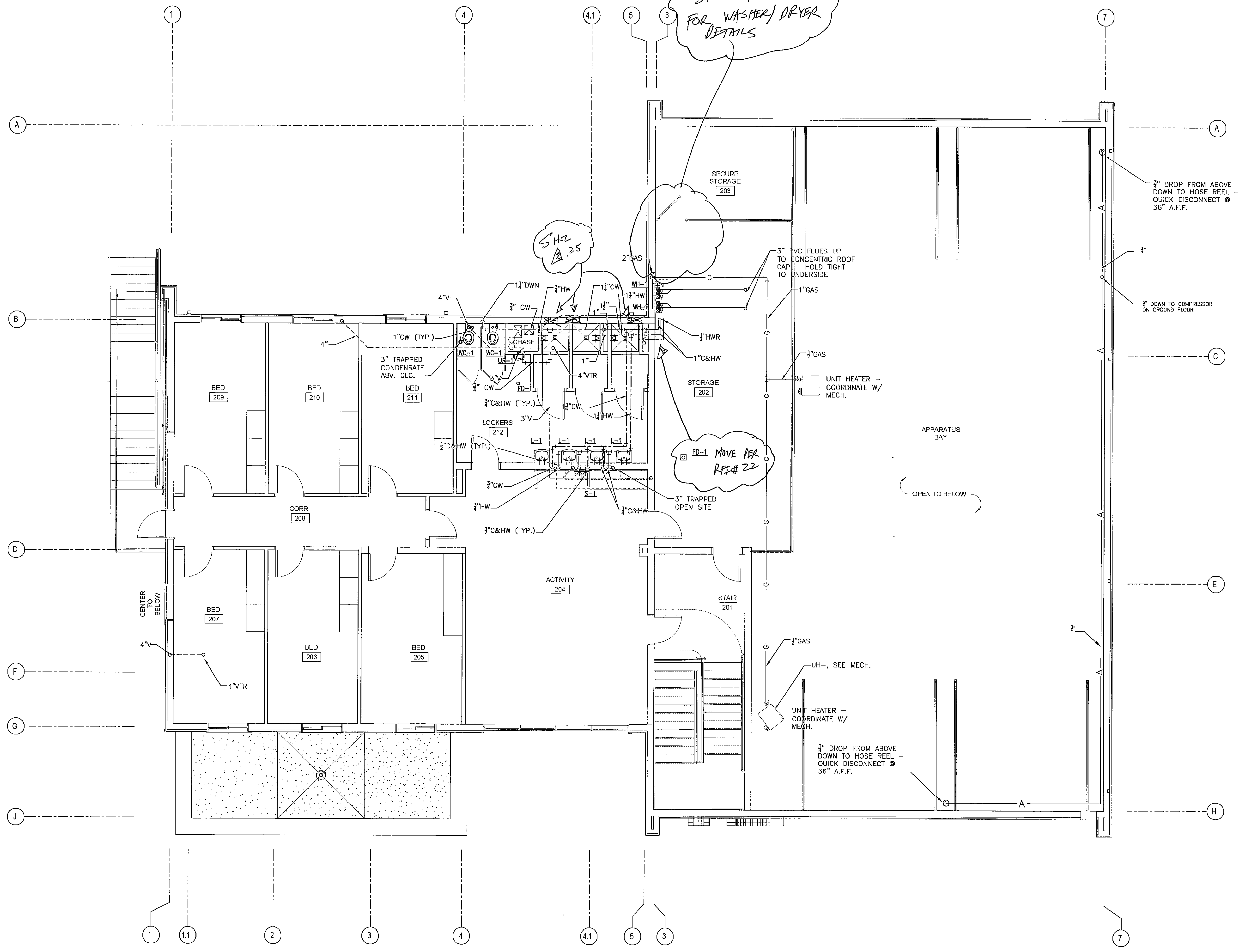

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ABOVE SECOND FLOOR PLUMBING PLAN

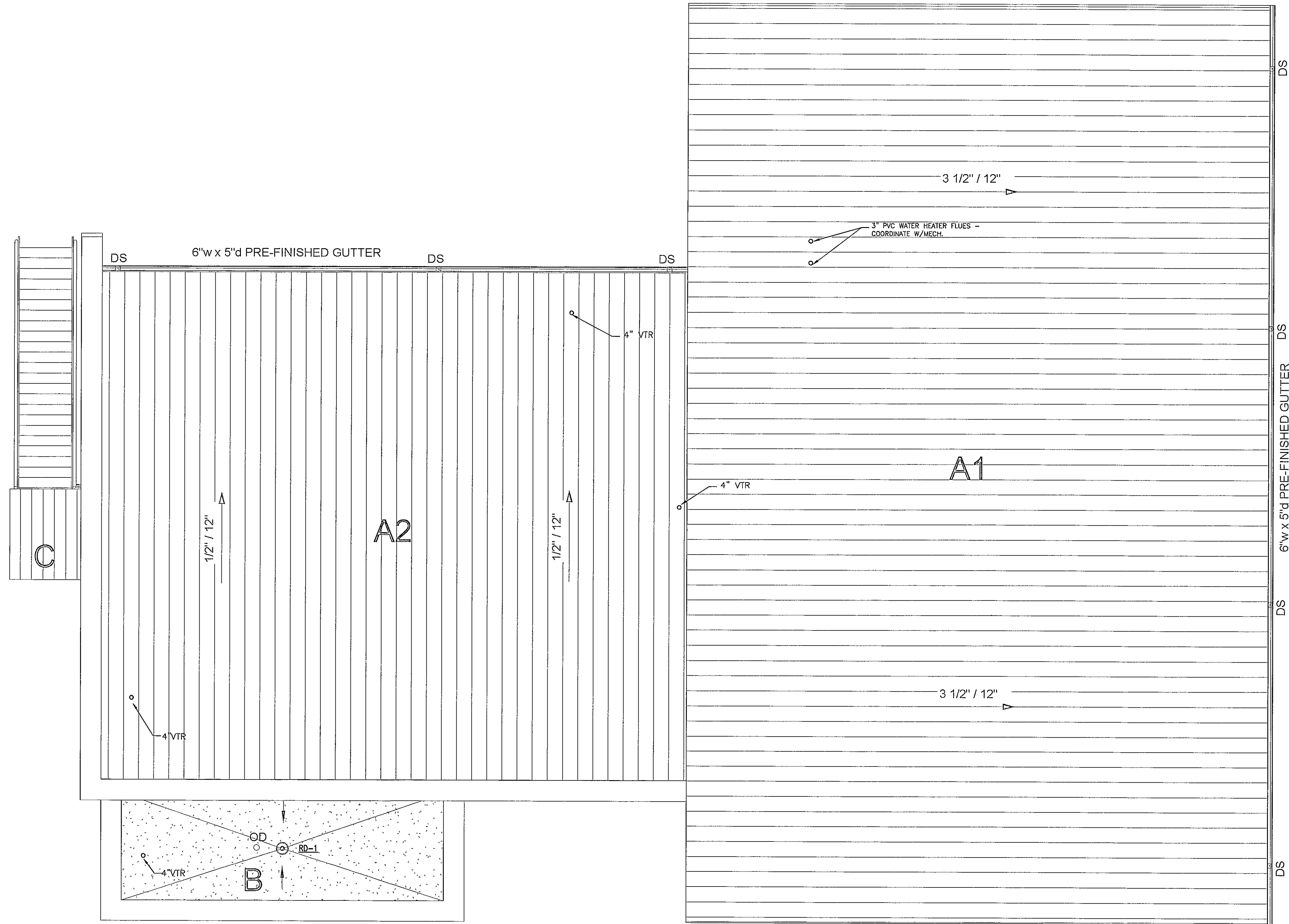
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P1.4



ABOVE SECOND FLOOR PLUMBING PLAN
 SCALE: 1/8" = 1'-0"



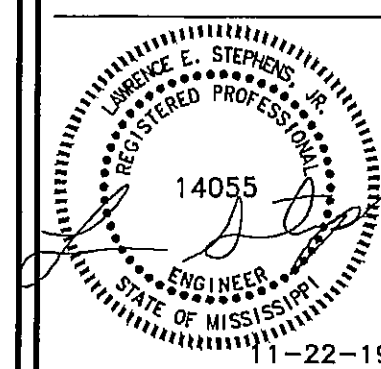
ROOF PLUMBING PLAN
SCALE: $\frac{3}{16}" = 1'-0"$

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ROOF PLUMBING PLAN

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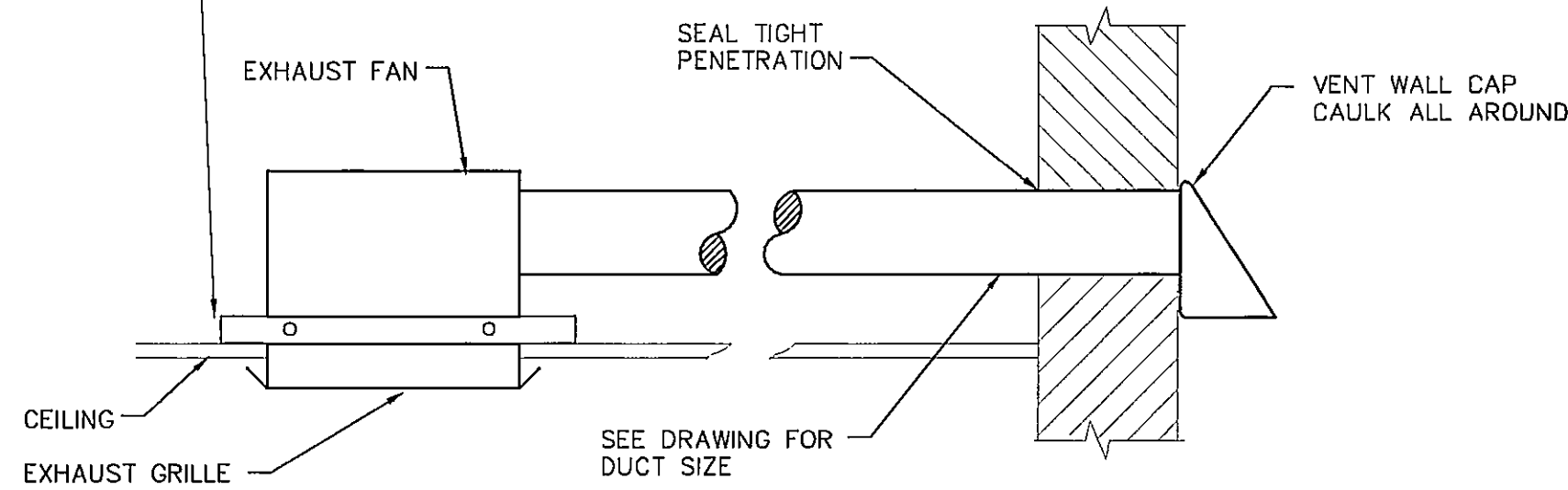


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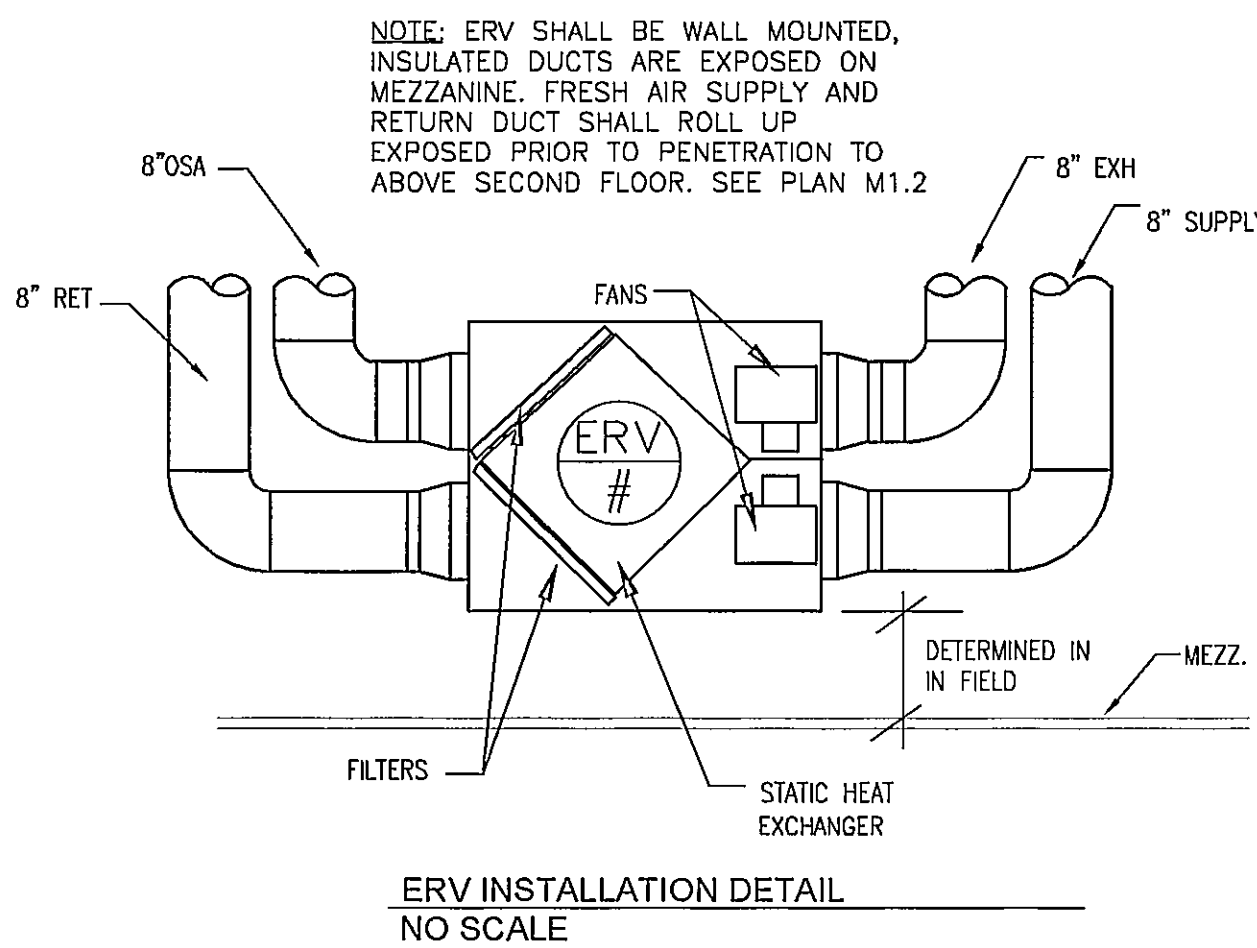
SHEET NUMBER

P1.5

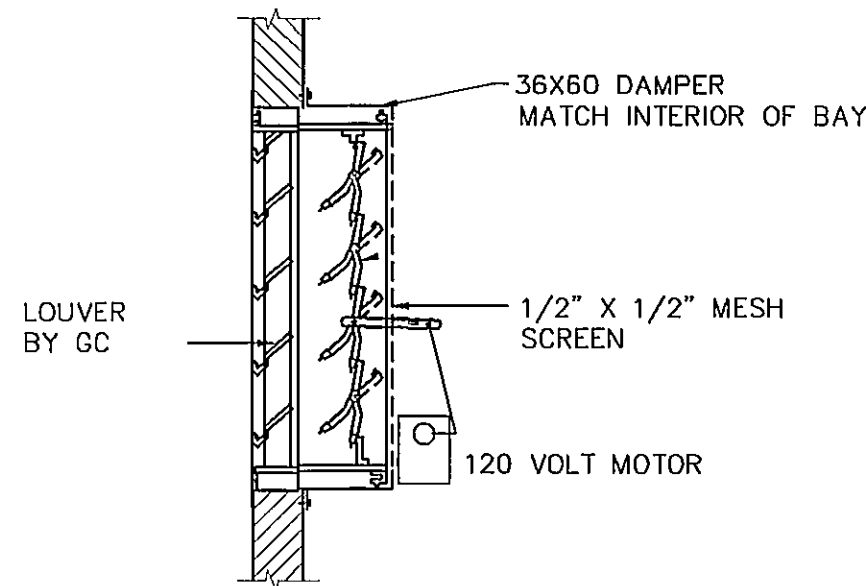
2X3/4" 20 GA. SUPPORT CHANNELS FOR FAN. ATTACH TO CEILING SUPPORT GRID. (2 REQUIRED)



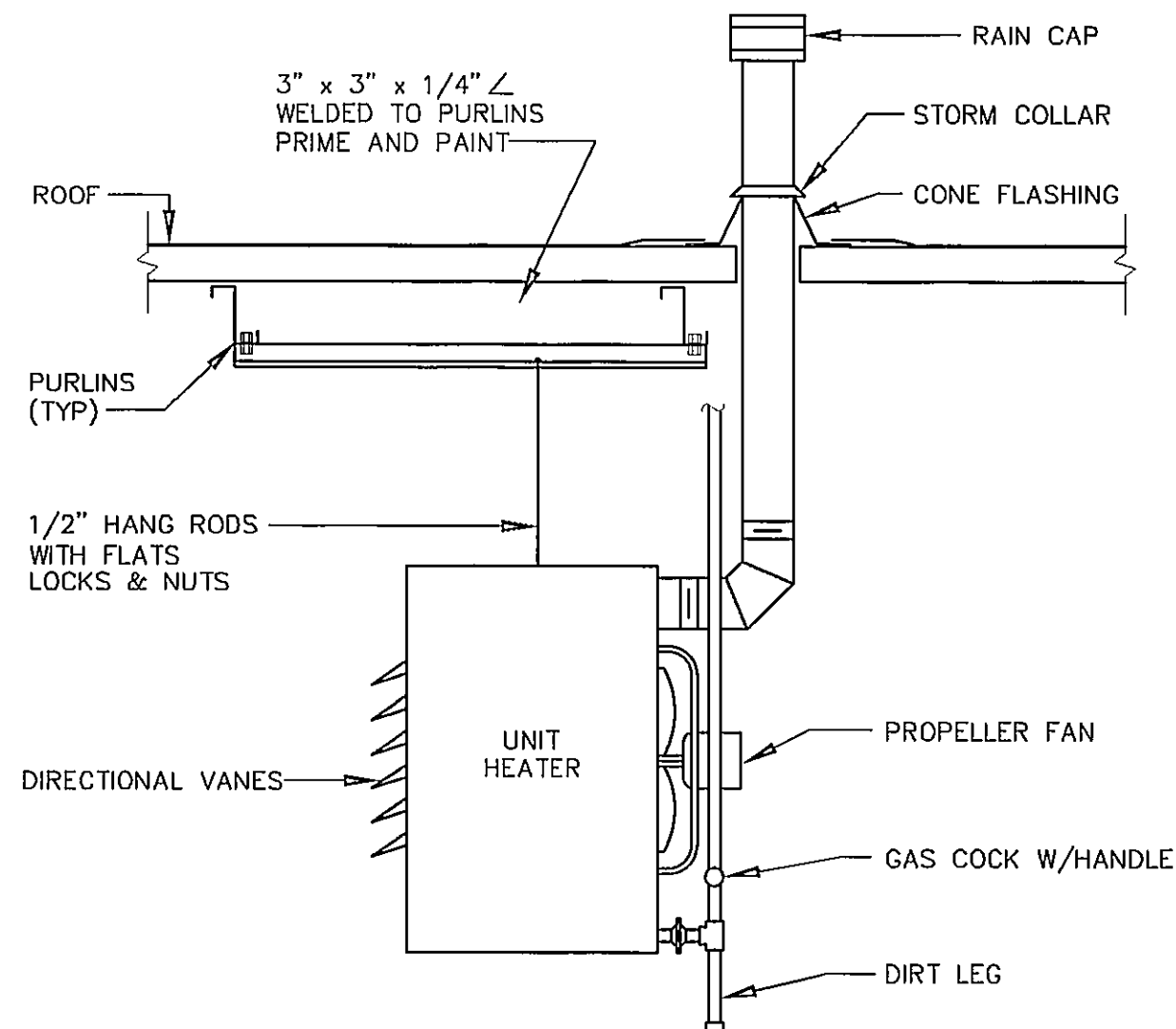
TOILET EXHAUST FAN DETAIL
NO SCALE



ERV INSTALLATION DETAIL
NO SCALE



ENGINE BAY INTAKE LOUVER SCHEMATIC
NO SCALE



UNIT HEATER INSTALLATION DETAIL
NO SCALE

DUCTLESS SPLIT SYSTEM HEAT PUMP SCHEDULE

MARK	TYPE	INDOOR UNIT-DX							OUTDOOR UNIT-AIR COOLED					
		CFM	ESP	SEER	CAPACITY	COOL/HEAT	VOLTAGE	MDL	MCA/MOCP	VOLTAGE	CAPACITY	COOL/HEAT	MDL. & MFCR	
DHP-1	WALL MOUNTED	318	.5	16	12,000	COOLING ONLY	208-1 PH	HITACHI DCP12NWB21S	9	15	208-1 PH	12,000	COOLING ONLY	HITACHI DCP12CSB21S
DHP-2	WALL MOUNTED	364	.5	16	9,000 CL/9,500 HTG		208-1 PH	HITACHI DHP09NWB21S	1	15	208-1 PH	10,000	CL/9,000 HTG	HITACHI DHP09CSB21S

NOTES:

1) MIN. SEER ON THESE UNITS SHALL BE 13 2) UNITS SHALL USE 410 A REFRIGERANT

ACCESSORIES:

FILTER, OUTDOOR UNIT COIL GUARD, REMOTE WIRELESS CONTROLLER, SINGLE POINT ELECTRICAL CONN. AT OUTDOOR UNIT FOR BOTH INDOOR & OUTDOOR POWER.
SOUND CRITERIA NOT TO EXCEED dba 47 HIGH SPD INDOOR UNIT

MULTIZONE INDOOR UNIT SCHEDULE

MARK	TYPE	INDOOR UNIT DX						ELECTRICAL					CONNECTED TO OUTDOOR UNIT AND CONTROLLER
		COOLING CAP.	HEATING CAP.	CFM	OA	ESP	MODEL	VOLT.	Ø	FLA	MCA	OVER CURRENT	
IU-1,2	CEILING CONCEALED/ DUCTED	6,000	6,700	300		0.4	HITACHI HIDM006B22S	208	1	-	1.0	15	OU-1,
IU-4,5,10-16	CLG RECESSED - 4-WAY AIRFLOW	8,000	9,000	353		N/A	HITACHI HICM008B21S	208	1	-	0.7	15	OU-1,
IU-3, 9	CEILING CONCEALED/ DUCTED	8,000	9,000	335		0.2	HITACHI HIDM008B22S	208	1	-	0.7	15	OU-1,
IU-6,7,17	CLG RECESSED - 4-WAY AIRFLOW	18,000	20,000	565		N/A	HITACHI HIC4018B21S	208	1	-	1.0	15	OU-1,
IU-8	WALL MOUNTED	6,000	6,700	353		N/A	HITACHI TIWM006B21S	208	1	-	0.3	15	OU-1,
IU-19	WALL MOUNTED	8,000	9,000	353		N/A	HITACHI TIWM008B21S	208	1	-	0.3	15	OU-1,
IU-20	HIGH STATIC CEILING CONCEALED/DUCTED	18,000	20,000	424		.02	HITACHI HIDH018B22S	208	1	-	1.0	15	OU-1

NOTES: 1) MIN. SEER SHALL BE ENERGY STAR 2) UNITS SHALL USE R-410A REFRIGERANT
ACCESSORIES: 1.) ANTI-BACTERIAL AIR FILTER 2.) MOTION SENSOR KIT 3.) DUCT ADAPTER 4.) GRILLE FOR FRONT DISCHARGE 5.) AIR OUTLET SHUTTER PLATE
EQUALS: DAIKIN, FUJITSU, MITSUBISHI

MULTIZONE OUTDOOR UNIT HEAT PUMPS

MARK	TYPE	COOLING CAPACITY	HEATING CAPACITY	ELECTRICAL				MODEL
				VOLT.	Ø	MCA	OVER CURRENT	
OU-1	VARIABLE REFR. FLOW UNIT	168,000	189,000	208	3	60	80	HITACHI HVAHR168B32S

ACCESSORIES: INVERTER TECHNOLOGY FOR CAPACITY CONTROL, COIL GUARD, SEACOAST PROTECTION, TWINNING KIT FOR COMBINATION UNITS
NOTES: COMBINATION UNITS SHALL HAVE INDIVIDUAL DISCONNECTS FOR EACH MODULAR UNIT
EQUALS: DAIKIN, FUJITSU, MITSUBISHI

ENERGY RECOVERY VENTILATOR SCHEDULE

MARK	TYPE	CFM	MOTOR		ELECTRICAL					OUTDOOR AIR SIDE		BUILDING SIDE		ACCES.	MODEL
			HP	ESP	VOLT.	Ø	FLA	MCA	MOCP	ENTERING	LEAVING	LEAVING	ENTERING		
ERV-1	LATENT WHEEL	450	1/2	0.54"	208	1	4.9	6.4	15	96.0db/78.0wb	80.3db/67.1wb	88.9db/73.4wb	72.0db/60.0wb	1,2,3,4	HITACHI TERV045
NOTES:															
ACCESSORIES: 1) SUPPLY AIR SENSORS 2) MERV 8 FILTERS, 2" PLEATED 3) DISCONNECT SWITCH 4) SINGLE POINT ELEC. CONN. FOR ECM MOTORS															
EQUALS: RENEWAIRE															

CHANGE OVER BOX SCHEDULE

MARK	TYPE	MCA	BREAKER SIZE	MAX. BRANCH CAPACITY	VOLTAGE	NO. OF BRANCHES	MFCR & MDL
COB-1	CHANGE-OVER BOX TYPE	0.4	15	264,000	208-1Ø	8	HITACHI COB08M264B22S
COB-2	CHANGE-OVER BOX TYPE	0.2	15	132,000	208-1Ø	4	HITACHI COB04M132B22S
COB-3	CHANGE-OVER BOX TYPE	0.4	15	264,000	208-1Ø	8	HITACHI COB08M264B22S
COB-4	CHANGE-OVER BOX TYPE	0.2	15	132,000	208-1Ø	4	HITACHI COB04M132B22S

ACCESSORIES: 1) UNITS SHALL USE 410 A REFRIGERANT 2) JOINT KIT 3) BALL VALVES

EXHAUST FAN SCHEDULE

MARK	SERVICE	CFM	SP	TYPE	OPENING	OUTLET	INTERLOCKED	ACCES.	MOTOR HP	VOLT	Ø	MODEL
EF-1-3	TOILETS	50	0.1"	CEILING	13-3/4" x 10-3/8"	6"	SWITCH. SEE ELECTRICAL	1,2,6				GREENHECK SP-A50
EF-4	WASH	50	0.1"	CEILING	13-3/4" x 10-3/8"	6"	SWITCH. SEE ELECTRICAL	1,2,6				GREENHECK SP-A50
EF-5	LOCKERS	300	0.25"	CEILING	10-1/2" x 10-1/2"	8"	SWITCH. SEE ELECTRICAL	1,2,6	FRAC	115	1	GREENHECK SP-A50
EF-6	ENG. BAY	6000	0.1"	ROOF MTD	26.5x26.5	-			1	115	1	GREENHECK AE-24-431-B10

ACCESSORIES: 1) BACKDRAFT DAMPER 2) DISCONNECT 3) BIRDSCREEN 4) PRE FAB ROOF CURB 5) MOTORIZED DAMPER 6) CEILING GRILLE 7) DOOR MICRO SWITCH
EQUALS: ACME, PENN, COOK, CARNES

GAS FIRED UNIT HEATER SCHEDULE

MARK	FUEL	CAPACITY BTU/HR	CFM	GAS CONN.	EFF.	ELECT. REQ'D VOLTS	PHASE	FLA	MOCP	FLUE SIZE	ACCESSORIES	REMARKS	EQUAL TO MFCR & MODEL
UH-1,2	NAT.	49,800	456	1/2"	83%	115v	1 Ø	2.4	15	4 IN.	1,2,3	-	REZNOR UDAP-60

ACCESSORIES: HANGER KIT, T-STAT, VENT CAP
APPROVED EQUALS: LENNOX, MODINE

HVAC LEGEND

	RECTANGULAR DUCT WITH 2" DUCT WRAP
	ROUND DUCT WITH 2" DUCT WRAP
	ROUND DUCT WITH 2" DUCT WRAP
	FLEX DUCT
	SUPPLY DUCT UP
	SUPPLY DUCT DOWN
	RETURN/EXHAUST DUCT UP
	RETURN/EXHAUST DUCT DOWN
	ROUND ELBOW - 5 PIECE 90, 3 PIECE 45
	ROUND ELBOW(12" OR LESS)-5 PIECE 90, 3 PIECE 45
	MANUAL VOLUME DAMPER
	CEILING DIFFUSER (FLOW DIRECTION INDICATED)
	RETURN AIR GRILLE
	THERMOSTAT (CONTROLLER LOCATION)
	REMOTE TEMPERATURE SENSOR
	HUMIDISTAT
	EQUIPMENT TAG
	DIFFUSER/GRILLE TAG
	CFM CUBIC FEET PER MINUTE
	AHU AIR HANDLING UNIT
	EF- EXHAUST FAN
	IU- INDOOR UNIT
	OU- OUTDOOR UNIT
	OSA DEDICATED OUTSIDE AIR SYSTEM
	E/A EXHAUST AIR TO OUTDOORS
	O/A OUTDOOR AIR INTAKE
	R/A ROOM AIR TO BE EXHAUSTED
	F/A FRESH AIR TO INSIDE
	CEILING RECESSED CASSETTE AHU
	ABOVE CEILING HORIZONTAL DUCTED AHU
	R - REFRIGERANT LINE SETS
	D - CONDENSATE DRAIN LINE

HVAC GENERAL NOTES

- RECTANGULAR DUCT DIMENSIONS ARE METAL-TO-METAL SIZE. SEE HVAC LEGEND FOR INSULATION TYPE.
- ROUND DUCT DIMENSIONS ARE METAL-TO-METAL SIZE AND SHALL BE WRAPPED IN 2" INSULATION.
- EXPOSED ROUND DUCT SHALL BE RIGID SPIRAL DUCT.
- CONCEALED ROUND DUCT MAY BE SNAP-LOCK. SEAL ALL JOINTS AND SEAMS
- CEILING DIFFUSERS SHALL HAVE FOUR-WAY DEFLECTION UNLESS OTHERWISE INDICATED.
- CENTER GRILLES, DIFFUSERS, & ZONE UNITS IN LAY-IN CEILING TILES
- OUTSIDE A/C UNITS SHALL BE INSTALLED ON HOUSEKEEPING PADS W/ TURNED-DOWN EDGES.
- SEE SPECIFICATIONS SECTION 15000 FOR APPROVAL OF SUBSTITUTED EQUIPMENT OTHER THAN AS SCHEDULED.
- INSTALL PER MECHANICAL CODE.
- TERMINAL DEVICES TO BE SUPPORTED INDEPENDENT OF DUCT.
- SIZE REFRIGERANT LINES PER MFCR'S RECOMMENDATIONS

HVAC SPECIFIC NOTES

- REFRIGERANT LINES FROM OUTDOOR CONDENSING UNITS SHALL BE EXTENDED FROM UNIT THRU WALL TO INDOOR CHANGE OVER BOXES TO INDOOR UNITS.
- REFRIGERANT LINES AND CHANGE OVER BOXES NOT SHOWN FOR CLARITY. EXACT LOCATION OF CHANGE OVER BOXES (CONTROLLERS) SHALL BE DETERMINED IN THE FIELD WITH ACCESSIBILITY. REFRIGERANT SIZES PER MANUFACTURERS RECOMMENDATIONS.
- COORDINATE EXACT LOCATION OF INDOOR CEILING AND ABOVE CEILING AHUS WITH ELECTRICAL LIGHTING/POWER, PLUMBING, ARCHITECTURAL, STRUCTURAL ETC.
- IN BERTHING SPACES AND CORRIDORS RECESSED AHUS SHALL REQUIRE LOUVER ANGLE ADJUSTMENTS TO PREVENT SHORT CYCLING PER MFCR'S RECOMMENDATIONS.
- INSTALL REMOTE TEMPERATURE SENSOR DEVICE IN SUPPLY DUCT SIDE OF OSA-1 AIR HANDLER TO CONTROL DISCHARGE AIR TEMPERATURE TO MAINTAIN RETURN (MAT) DURING WINTER TEMPERATURES ABOVE 59 DEGREES F

DRAWN

MDH

CHECKED

LES

FINAL DATE

November 22, 2019

REVISION SCHEDULE

REV #

REV DATE

LANDRY LEWIS GERMANY ARCHITECTS, P. A.
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CREATING LANDMARKS SINCE 1910

SHEET TITLE
HVAC SCHEDULES AND DETAILS

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

PROFESSOR
14055
ENGINEER
STATE OF MISSISSIPPI

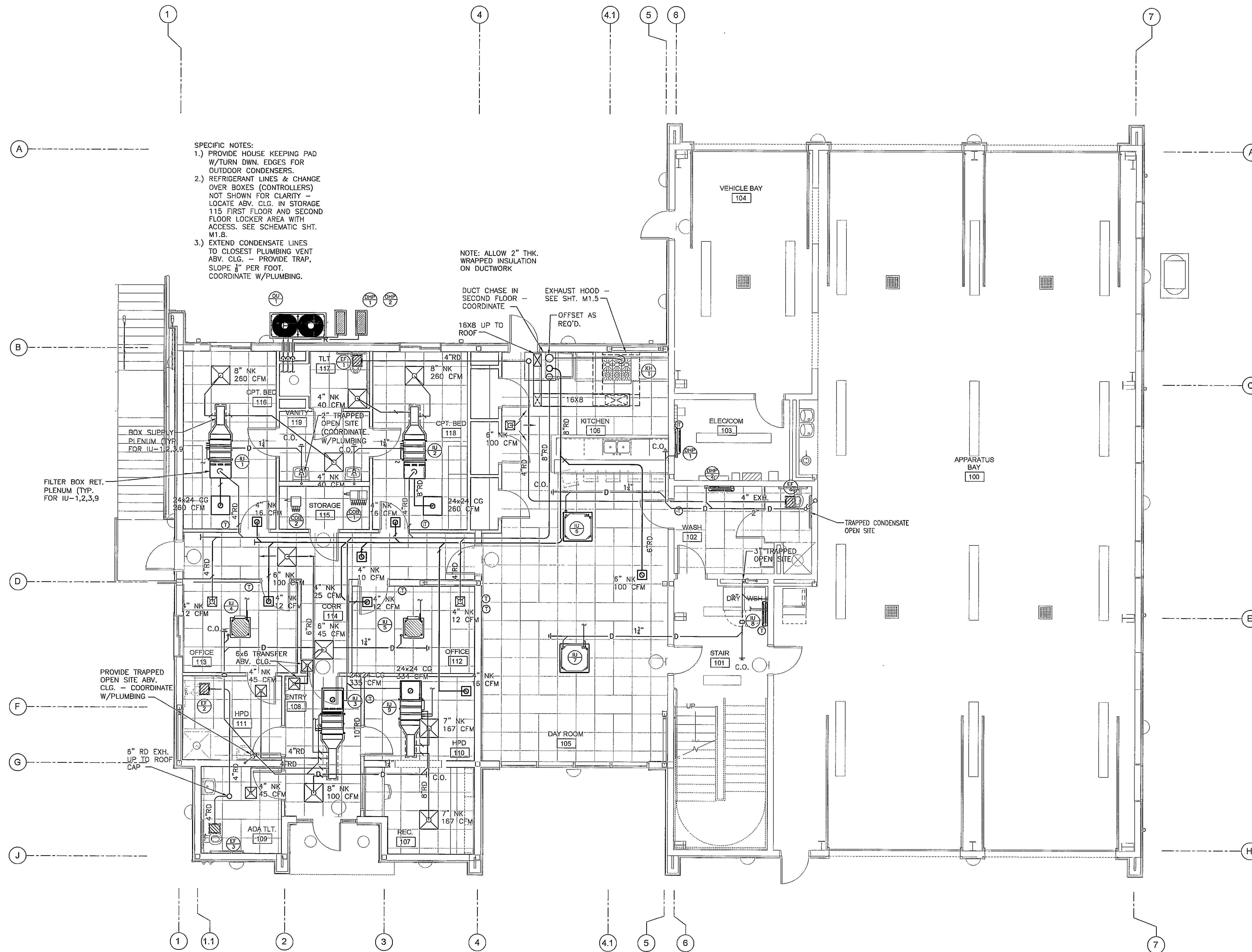
11-22-19

11-22-19

CN18-3707

SHEET NUMBER

M1.0



- SPECIFIC NOTES:
- 1.) PROVIDE HOUSE KEEPING PAD W/TURN DWN. EDGES FOR OUTDOOR CONDENSERS.
 - 2.) REFRIGERANT LINES & CHANGE OVER BOXES (CONTROLLERS) NOT SHOWN FOR CLARITY - LOCATE ABV. CLG. IN STORAGE 115 FIRST FLOOR AND SECOND FLOOR LOCKER AREA WITH ACCESS. SEE SCHEMATIC SHT. M1.8.
 - 3.) EXTEND CONDENSATE LINES TO CLOSEST PLUMBING VENT ABV. CLG. - PROVIDE TRAP. SLOPE $\frac{1}{8}$ " PER FOOT. COORDINATE W/PLUMBING.

NOTE: ALLOW 2" THK. WRAPPED INSULATION ON DUCTWORK

DUCT CHASE IN SECOND FLOOR - COORDINATE

EXHAUST HOOD - SEE SHT. M1.5

OFFSET AS REQ'D.

BOX SUPPLY PLENUM (TYP. FOR IU-1,2,3,9

PROVIDE TRAPPED OPEN SITE ABV. CLG. - COORDINATE W/PLUMBING

6" RD EXH. UP TO ROOF CAP

TRAPPED CONDENSATE OPEN SITE

FIRST FLOOR HVAC PLAN
SCALE: $\frac{1}{8}$ " = 1'-0"

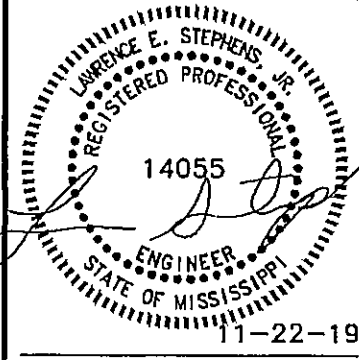
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REV #	REV DATE

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FIRST FLOOR HVAC PLAN

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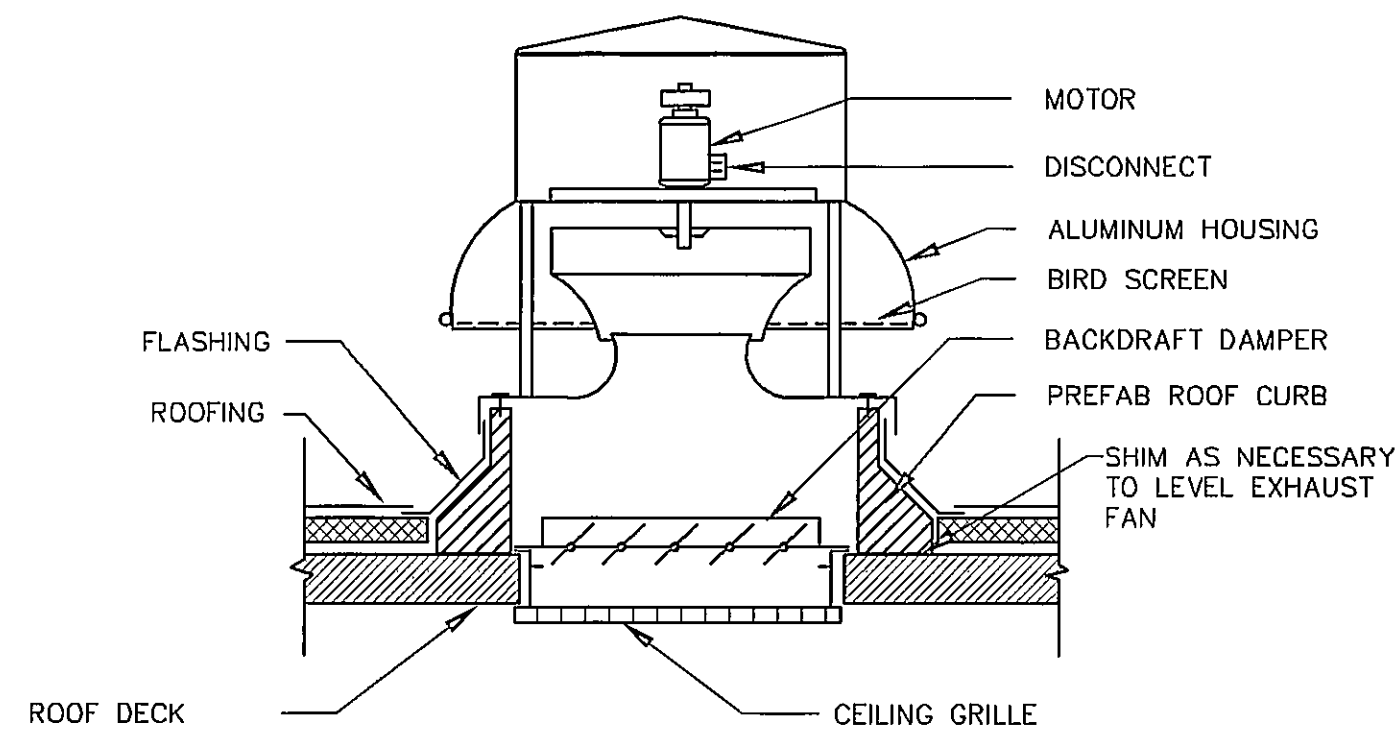
CITY OF HATTIESBURG
HATTIESBURG, MS



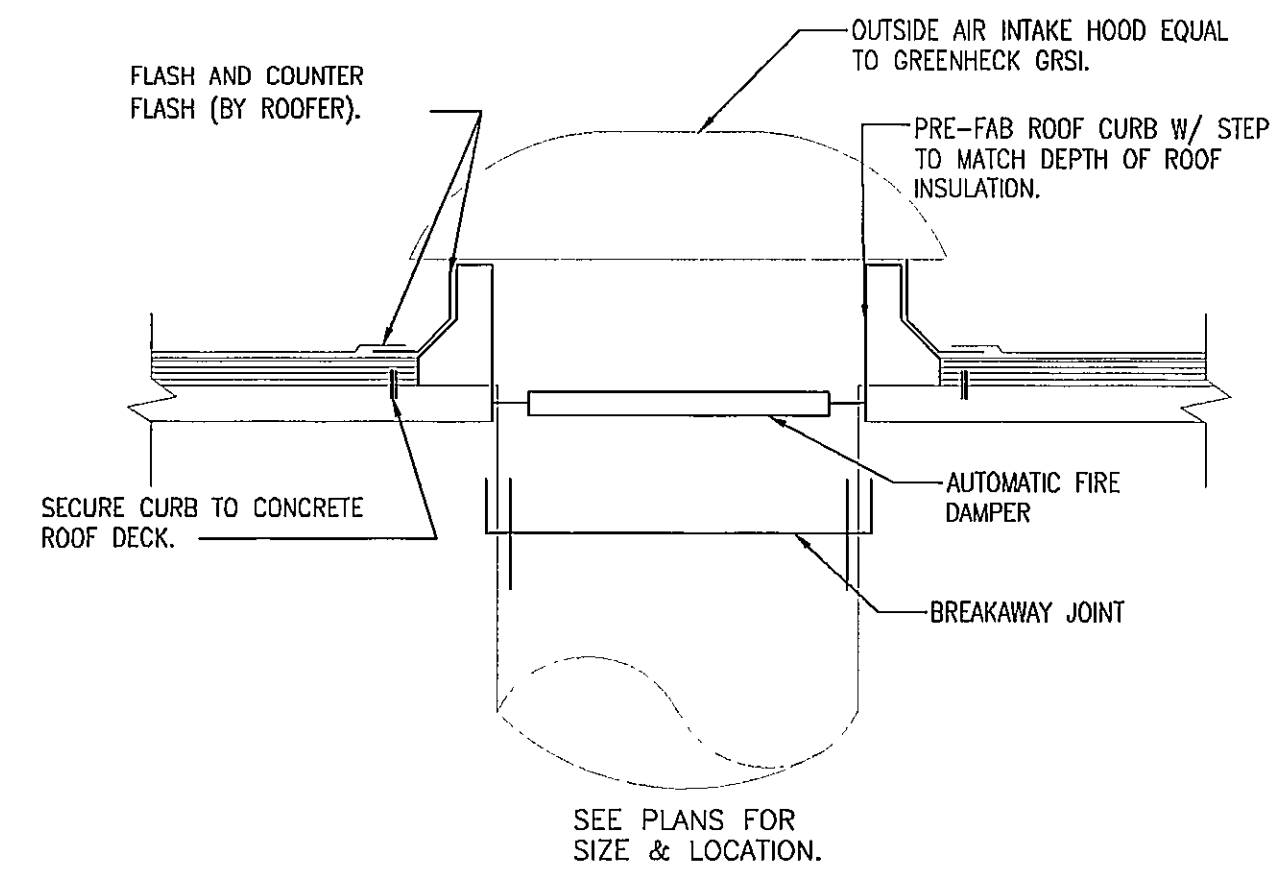
CN18-3707

SHEET NUMBER

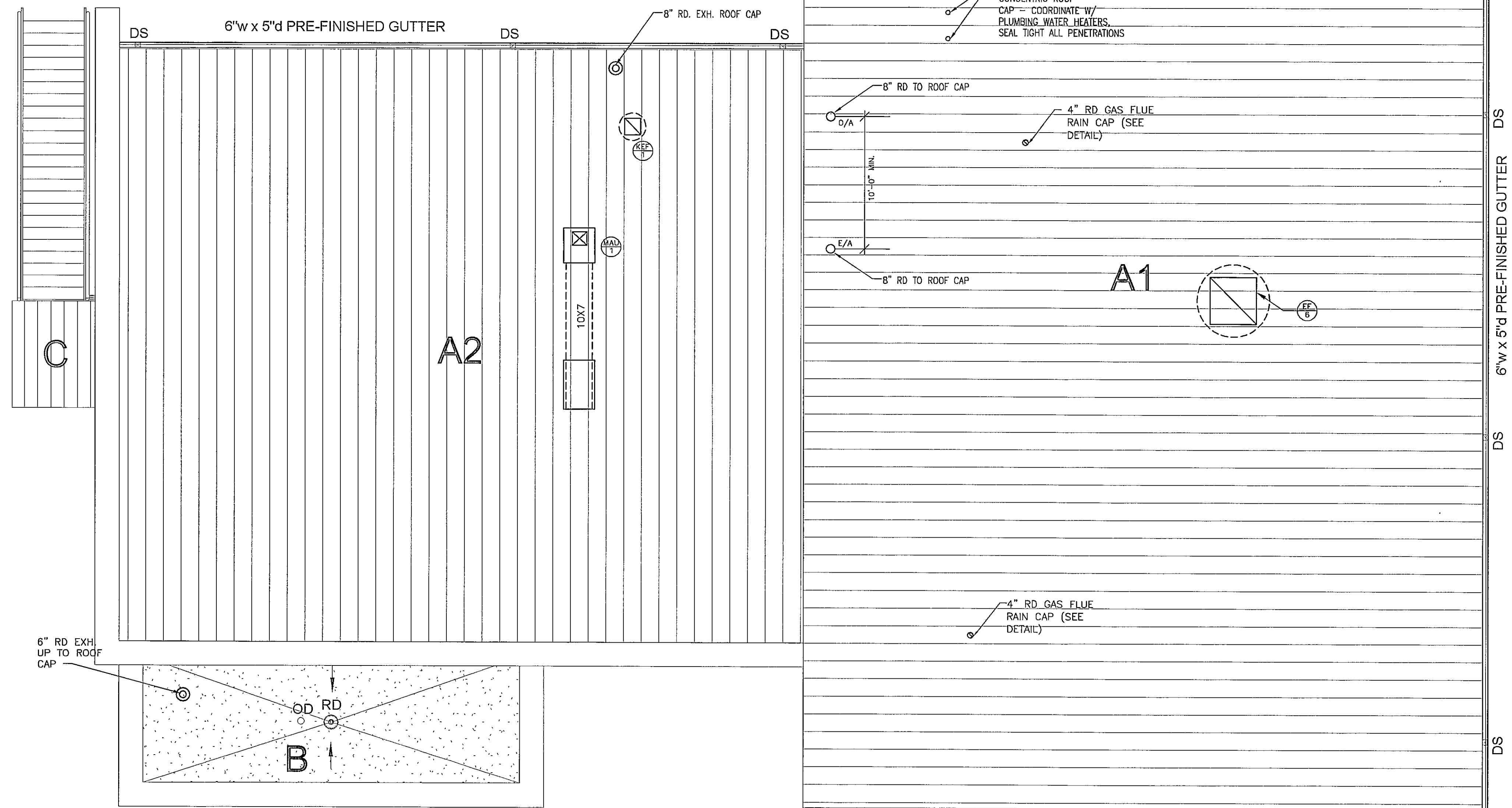
M1.1



APARATUS BAY EXHAUST FAN DETAIL
NO SCALE



OSA INTAKE DETAIL
NO SCALE



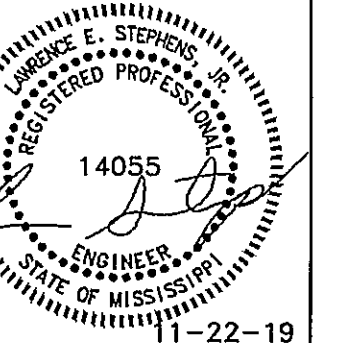
ROOF HVAC PLAN
SCALE: $\frac{3}{16}'' = 1'-0''$

DRAWN	MDH
CHECKED	LES
FINAL DATE	November 22, 2019
REVISION SCHEDULE	
REV #	REV DATE

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SHEET TITLE
ROOF HVAC PLAN

PROJECT
FIRE STATION No. 9



CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707
SHEET NUMBER

M1.3

HOOD INFORMATION - Job#3935815

HOOD NO.	TAG	MODEL	LENGTH	MAX. COOKING TEMP.	APPLIANCE DUTY	DESIGN CFM/ft	TOTAL EXH. CFM	EXHAUST PLENUM RISER(S)							TOTAL SUPPLY CFM	HOOD CONSTRUCTION	HOOD CONFIG.	
								WIDTH	LENG.	HEIGHT	DIA.	CFM	VEL.	S.P.			END TO END	ROW
1	KH-1	5424 ND-2-PSP-F	4' 0"	600 Deg.	Heavy	225	900			4'	10"	900	1650	-0.551'	720	430 SS Where Exposed	ALONE	ALONE

PATENT NUMBERS

AC-PSP (United States) - US Patent 7963830 B2
AC-PSP Wall (Canada) - CA Patent 2820509
AC-PSP Island (Canada) - CA Patent 2520330

SPECIFICATION: CAPTRATE® GREASE-STOP® SOLID FILTER

THE CAPTRATE GREASE-STOP SOLID FILTER IS A SINGLE-STAGE FILTER FEATURING A UNIQUE S-Baffle DESIGN IN CONJUNCTION WITH A SLOTTED REAR Baffle DESIGN, TO DELIVER EXCEPTIONAL FILTRATION EFFICIENCY.

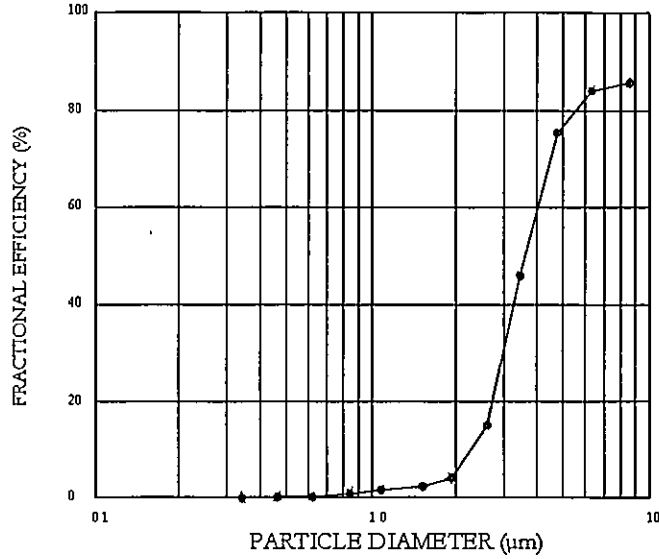
FILTER IS STAINLESS STEEL CONSTRUCTION, AND SIZED TO FIT INTO STANDARD 2-INCH DEEP HOOD CHANNEL(S).

UNITS SHALL INCLUDE STAINLESS STEEL HANDLES AND A FASTENING DEVICE TO SECURE THE TWO COMPONENTS WHEN ASSEMBLED.

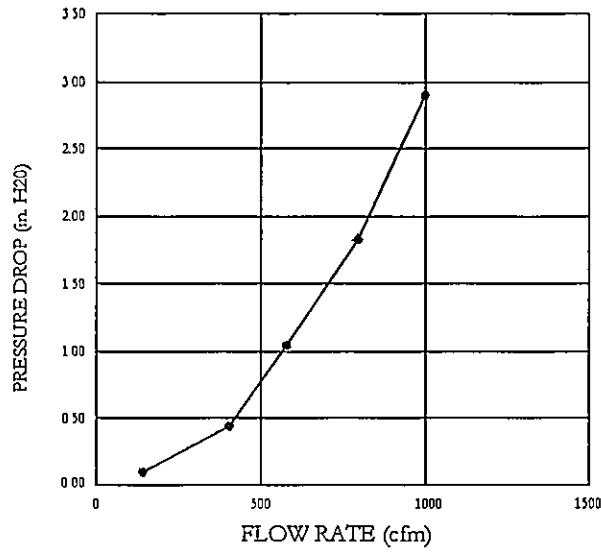
GREASE EXTRACTION EFFICIENCY PERFORMANCE SHALL REMOVE AT LEAST 75% OF GREASE PARTICLES FIVE MICRONS IN SIZE, AND 85% GREASE PARTICLES SEVEN MICRONS IN SIZE AND LARGER, WITH A CORRESPONDING PRESSURE DROP NOT TO EXCEED 1.0 INCHES OF WATER GAUGE.

THE CAPTRATE GREASE-STOP SOLID WAS TESTED TO ASTM STANDARD ASTM F2519-05.

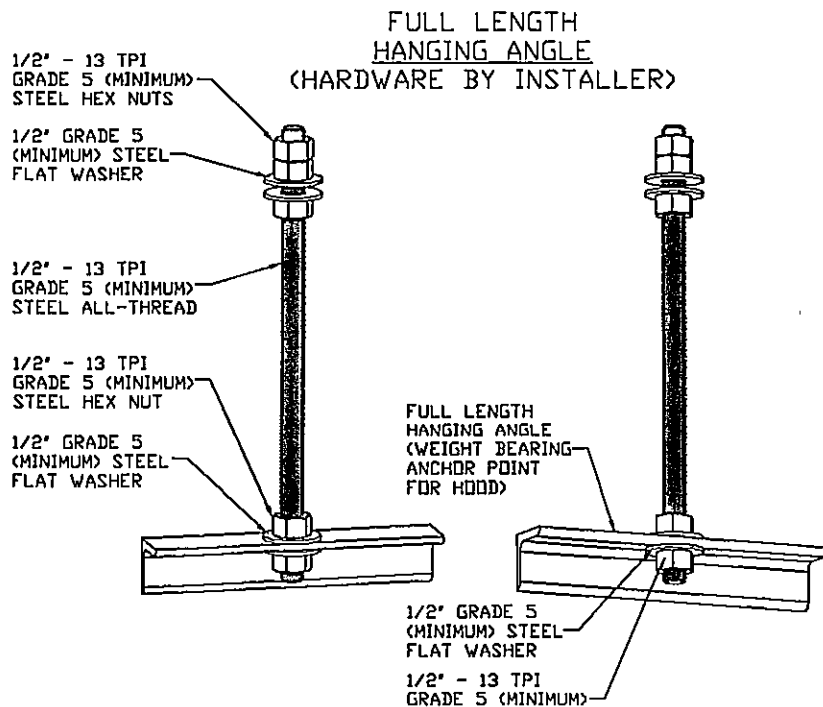
EFFICIENCY VS PARTICLE DIAMETER



PRESSURE DROP VS FLOW RATE

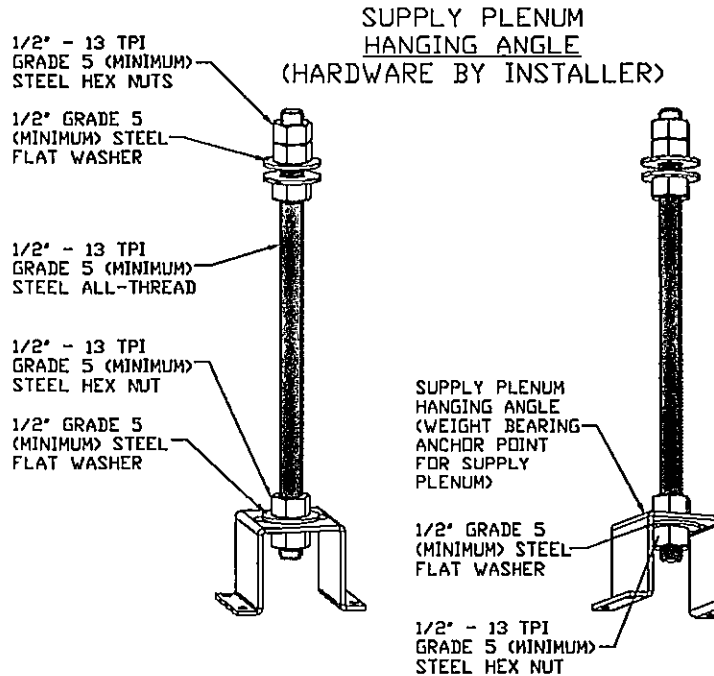


CAPTRATE FILTERS ARE BUILT IN COMPLIANCE WITH:
NFPA #96
NSF STANDARD #2
UL STANDARD #1046
INT. MECH. CODE (IMC)
ULC-S649



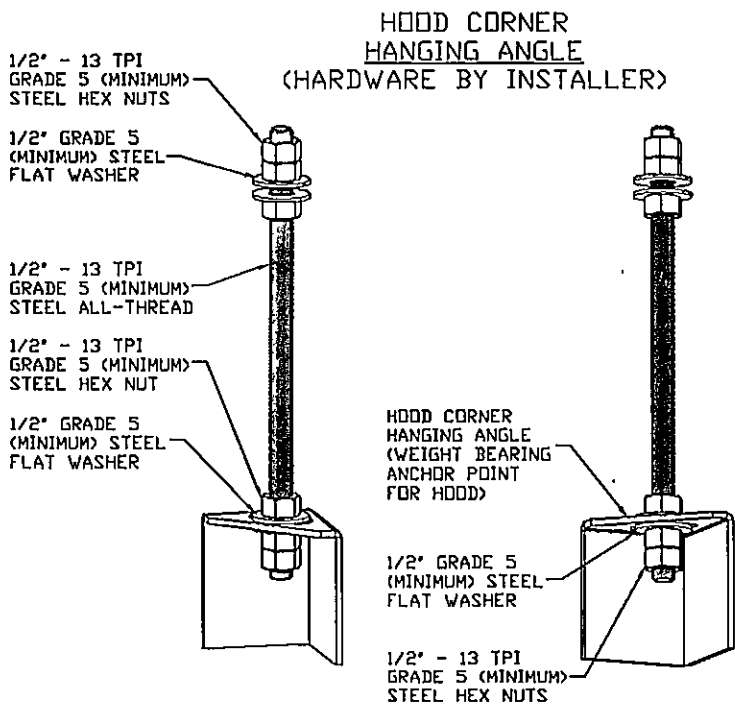
ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION ABOVE CEILING ANCHORS. SINGLE HEX NUT BENEATH HANGING ANGLE IS ACCEPTABLE FOR FULL LENGTH HANGING ANGLES. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



ASSEMBLY INSTRUCTIONS

HANGING ANGLE MUST BE SUPPORTED WITH 1/2" - 13 TPI GRADE 5 (MINIMUM) ALL-THREAD, SANDWICH HANGING ANGLES AND CEILING ANCHOR POINTS WITH 1/2" GRADE 5 (MINIMUM) STEEL FLAT WASHERS AND 1/2" - 13 TPI GRADE 5 (MINIMUM) HEX NUTS AS SHOWN. MUST USE DOUBLED HEX NUT CONFIGURATION BENEATH HOOD HANGING ANGLES AND ABOVE CEILING ANCHORS. MAINTAIN 1/4" OF EXPOSED THREADS BENEATH BOTTOM HEX NUT. TORQUE ALL HEX NUTS TO 57 FT-LBS.



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HOOD OPTIONS

HOOD NO.	TAG	OPTION
1	KH-1	FIELD WRAPPER 18.00' High Front, Left, Right BACKSPLASH 80.00' High X 60.00' Long 430 SS Vertical SENSOR-CV

PERFORATED SUPPLY PLENUM(S)

HOOD NO.	TAG	POS.	LENGTH	WIDTH	HEIGHT	TYPE	RISER(S)			
							WIDTH	LENG.	DIA.	S.P.
1	KH-1	Front	60"	14"	6"	MUA	12"	28"		0.168"

GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW"
ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW"
IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING
CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW"
DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER
THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE
SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12".
DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.
IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO
CAPTIVEAIRE SYSTEMS MODEL "DW"- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

CAPTIVEAIRE SYSTEMS RECOMMENDS THE USE OF LISTED, PRE-FABRICATED ROUND GREASE EXHAUST DUCT TO REDUCE STATIC PRESSURE IN THE SYSTEM, MINIMIZE INSTALLATION AND INSPECTION TIMES, AND ENSURE DUCT IS LIQUID TIGHT

HVAC DISTRIBUTION NOTE

HIGH VELOCITY DIFFUSERS OR HVAC RETURNS SHOULD NOT BE PLACED WITHIN TEN (10) FEET OF THE EXHAUST HOOD. PERFORATED DIFFUSERS ARE RECOMMENDED.

VERIFY CEILING HEIGHT

____' - ____"

HEIGHT REQUIRED TO VERIFY THAT HOOD FITS SPACE AND TO SIZE THE ENCLOSURE PANELS

CUSTOMER APPROVAL TO MANUFACTURE:

Approved as Noted ☐
Approved with NO Exception Taken ☐
Revise and Resubmit ☐
SIGNATURE _____
Your Title _____ Date _____

CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH
NFPA #96
UL 710 & UL710 STANDARDS
ETL LISTED 3054804-001
CAPTIVE-AIRE HOODS ARE BUILT IN COMPLIANCE WITH
NFPA #96
AND ARE RECOGNIZED BY ONE OR MORE OF THE FOLLOWING
NSF INTERNATIONAL
ETL LISTED FILE# 3054804-001

ETL LISTING DESCRIPTION BLOCK
THE CAPTIVE-AIRE MODEL
ND HAS BEEN E.T.L.
TESTED, LISTED, AND
APPROVED TO EXHAUST
A MINIMUM OF 150/200/250 CFM
PER LINEAR FOOT OVER
450/600/700 DEGREE COOKING
EQUIPMENT, RESPECTIVELY.

FOR QUESTIONS, CALL THE
NORTHERN GULF COAST SALES & ENGINEERING
59040 AMBER ST. STE. B SLIDELL, LA 70461
PHONE: (985) 781-4107, (888) 781-4107
FAX: (919) 747-5637

DRAWN

MDH

CHECKED

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FINAL DATE

November 22, 2019

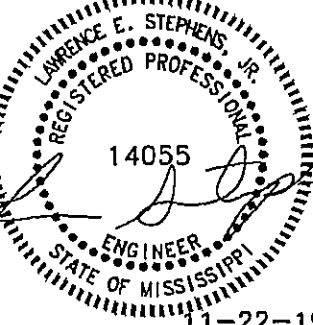
REVISION SCHEDULE

REV # REV DATE

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CREATING LANDMARKS SINCE 1910.

SHEET TITLE
HVAC KITCHEN HOOD SCHEDULES
DETAILS AND NOTES

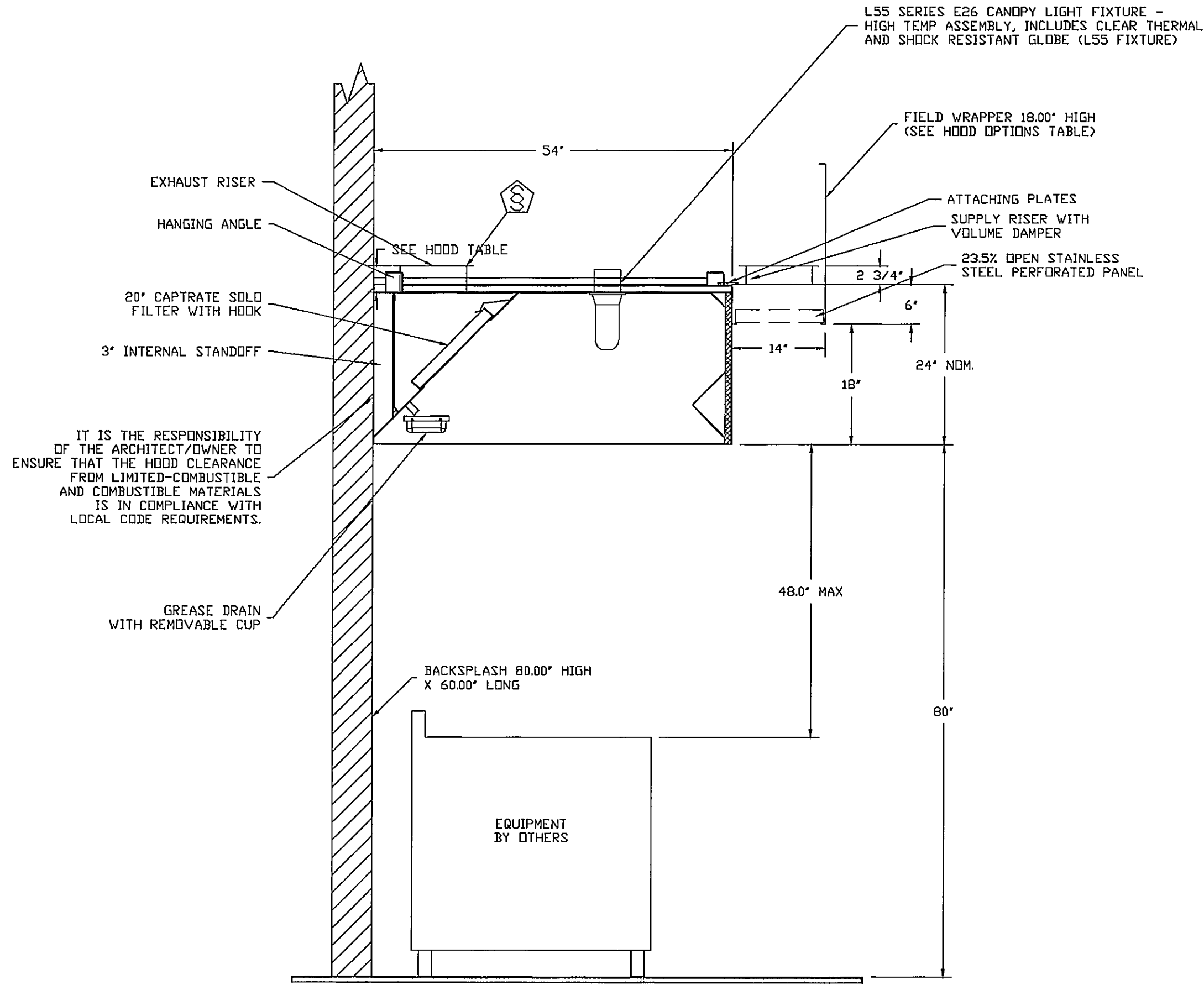
PROJECT
FIRE STATION No. 9



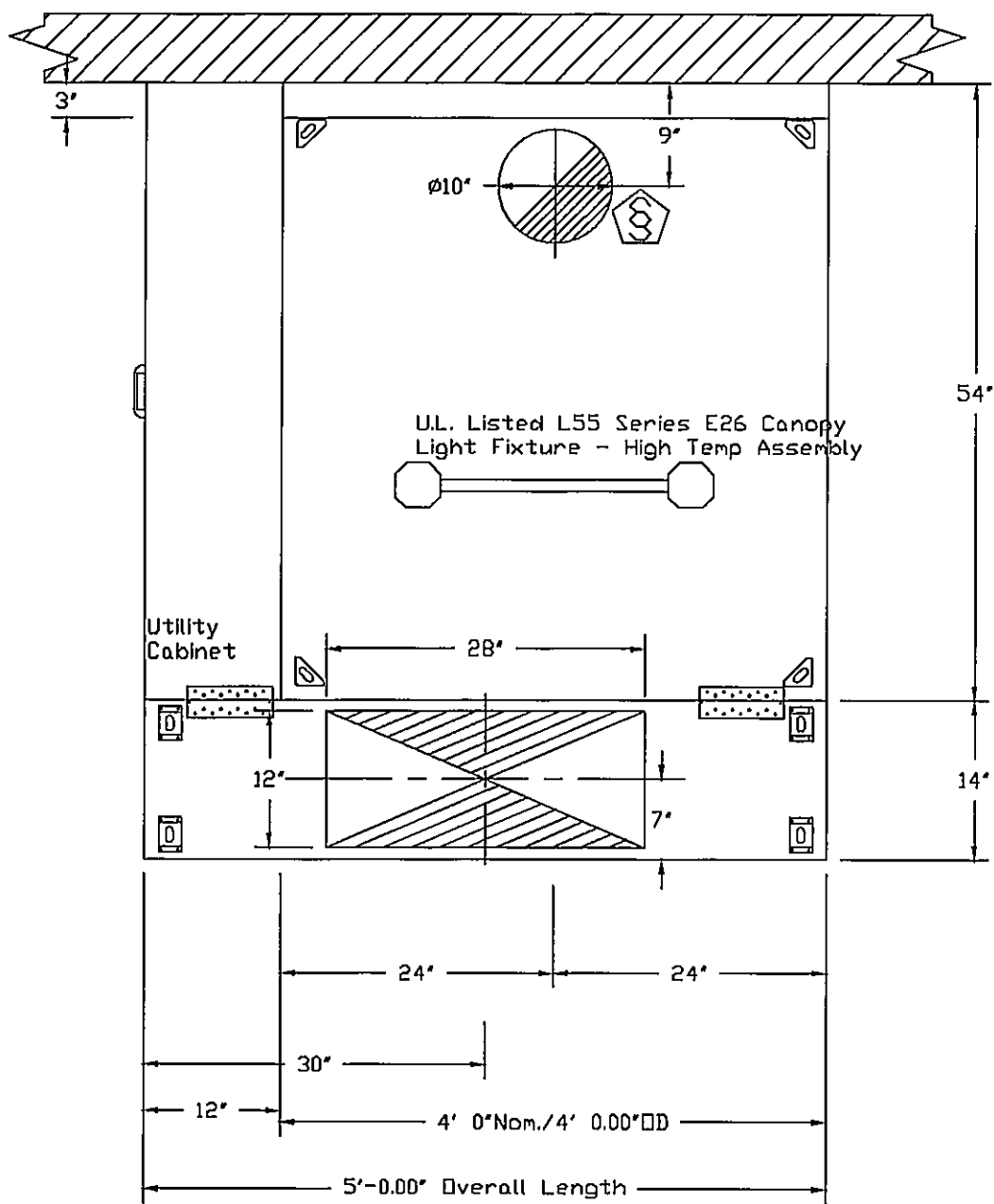
CN18-3707

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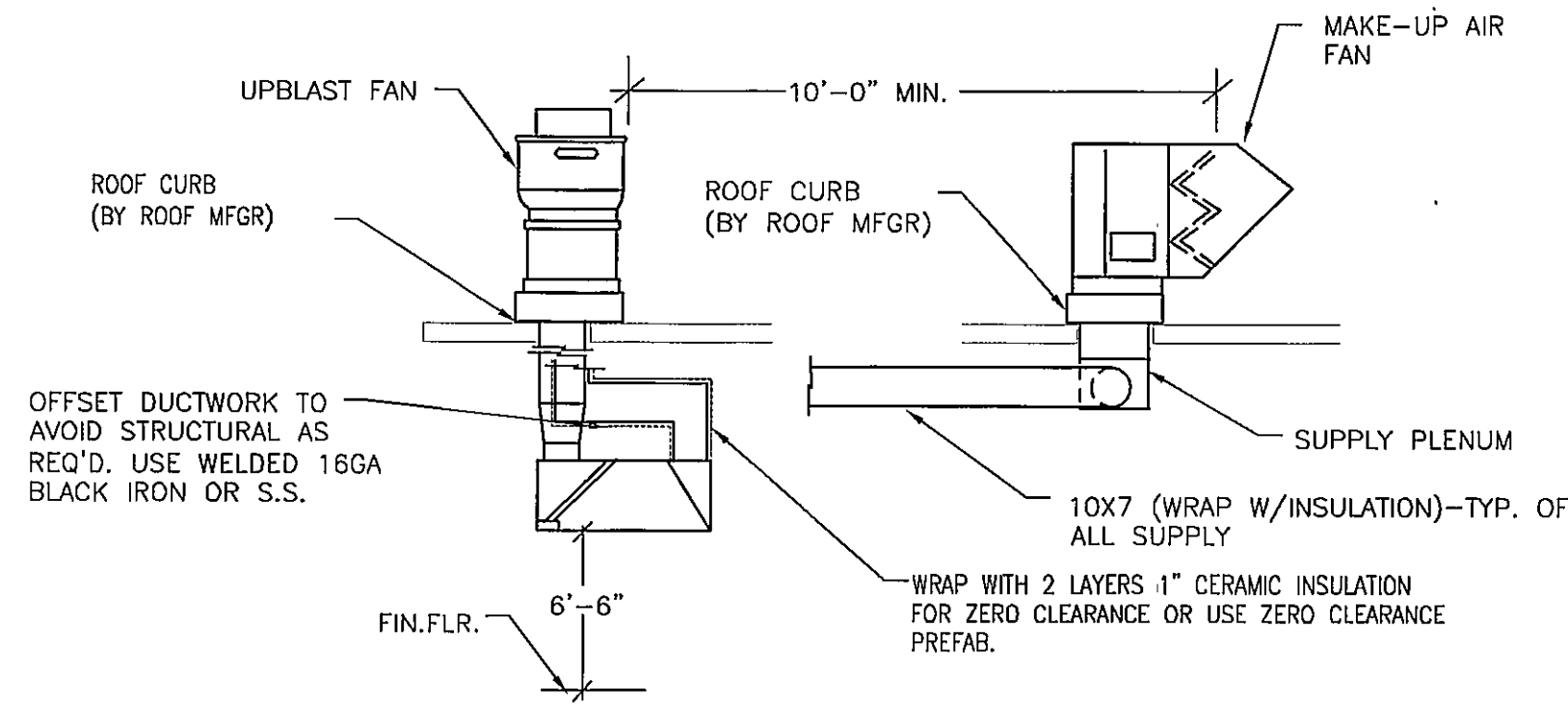
M1.4



SECTION VIEW - MODEL 5424ND-2-PSP-F
HOOD - #1 (KH-1)



PLAN VIEW - Hood #1 (KH-1)
4' 0.00\"/>



KITCHEN HOOD EQUIPMENT INSTALLATION SCHEMATIC
NO SCALE

Fire System Information - Job#3935815

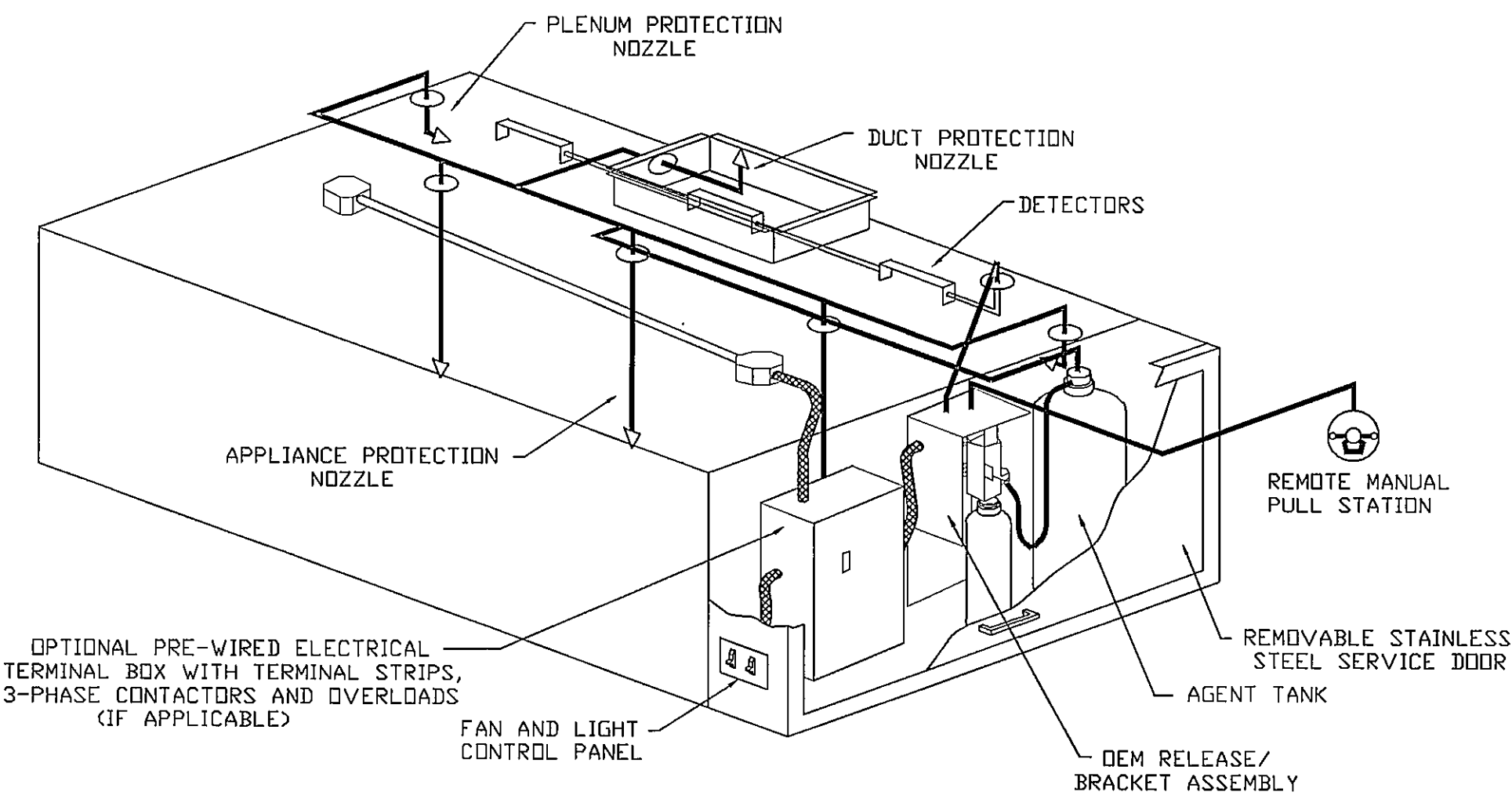
FIRE SYSTEM NO.	Tag	TYPE	SIZE	FLOW POINTS	INSTALLATION	
					SYSTEM	LOCATION ON HOOD
1		Ansul R102	3.0	2	Fire Cabinet Left	Left

GAS VALVE(S)

FIRE SYSTEM NO.	TAG	TYPE	SIZE	SUPPLIED BY
1		Mechanical	2.000	Distributor

Fire System Parts List Key

FIRE SYSTEM NO.	TAG	KEY NUMBER - PART DESCRIPTION	QTY. BY FACTORY	QTY. BY DIST.
1		0 - 0 - 43-15733 AIR CYLINDER ASSEMBLY - Air Cylinder and Tubing for Mechanical Gas Valves (Ansul Part #15733)	0	1
		0 - 0 - Tank Strap Tank Strap - used for ANSUL Tanks	1	0
		0 - 0 - UCTANKBRACKET Tank Bracket for fire system tank installation in utility cabinets	1	0
		1 - 1 - AT - 3.0 TANK(#1B) - 3.0 Gallon SS Tank (for use with Automan Release, Actuator, or SS Enclosure (UL/ULC)) Macola # 01-429862	1	0
		3 - 3 - ANS-DEM REGULATED RELEASE - Ansul Regulated Mechanical Release/Bracket Assembly, DEM, R-102, Cartridge Detection Included, Ansul Part # 79493	1	0
		5 - 5 - LIQ-3.0 AGENT - Ansulex Low PH Wet Chemical Agent, 3 Gallon (UL) 79372	0	1
		7 - 7 - 101-20 CARTRIDGE - Carbon Dioxide 101-20, 3 Gallon Cartridge (R-102)	0	1
		10 - 10 - TLINK LINK - Test Link (1 test link) Ansul Part # 24916, Macola # 20-24916	0	1
		11 - 11 - MICRO-SDA MICROSWITCH KIT- Includes 2 switches and Mounting Hardware, Single Dual Electric Switch, One Standard Switch, One Alarm Duty Switch Ansul Part # 437155, Macola # 08-437155	1	0
		27 - 27 - QPSA-1/2 PULLEY SEAL - 1/2" Hood Seal (UL) Ansul Part # 423253, Macola # 32-79768	1	0
	34 - 34 - RPS-A REMOTE PULL STATION - Red composite (without wire rope) 434618 (Old Macola #06-4835)	1	0	
	35 - 35 - PE-LT PULLEY ELBOW - Low Temp. Pulley Elbow, Set Screw Type Ansul Part # 415670, Macola # 11-415671	2	0	
	36 - 36 - PE-HT PULLEY ELBOW - High Temp Pulley Elbow, Compression Type, Ansul Part # 423251, Macola # 10-45771	1	0	
	ADDITIONAL PARTS TO BE DETERMINED...			



TYPICAL ANSUL R-102 SYSTEM LAYOUT

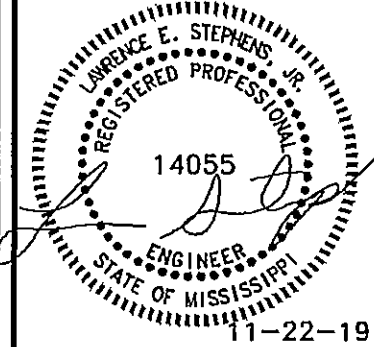
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<u>CHECKED</u>
LES
<u>FINAL DATE</u>
November 22, 2019
<u>REVISION SCHEDULE</u>
REV #
REV DATE

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CREATING LANDMARKS SINCE 1910

SHEET TITLE
HVAC KITCHEN HOOD DETAILS

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



11-22-19

CHN18-3707

SHEET NUMBER

M1.5

Table with 13 columns: FAN UNIT NO., TAG, FAN UNIT MODEL #, CFM, ESP., RPM, H.P., B.H.P., Ø, VOLT, FLA, DISCHARGE VELOCITY, WEIGHT (LBS.), SONES. Row 1: 1, KEF-1, DUS0HFA, 900, 1.000, 1431, 0.500, 0.3270, 1, 115, 5.6, 342 FPM, 76, 14.6.

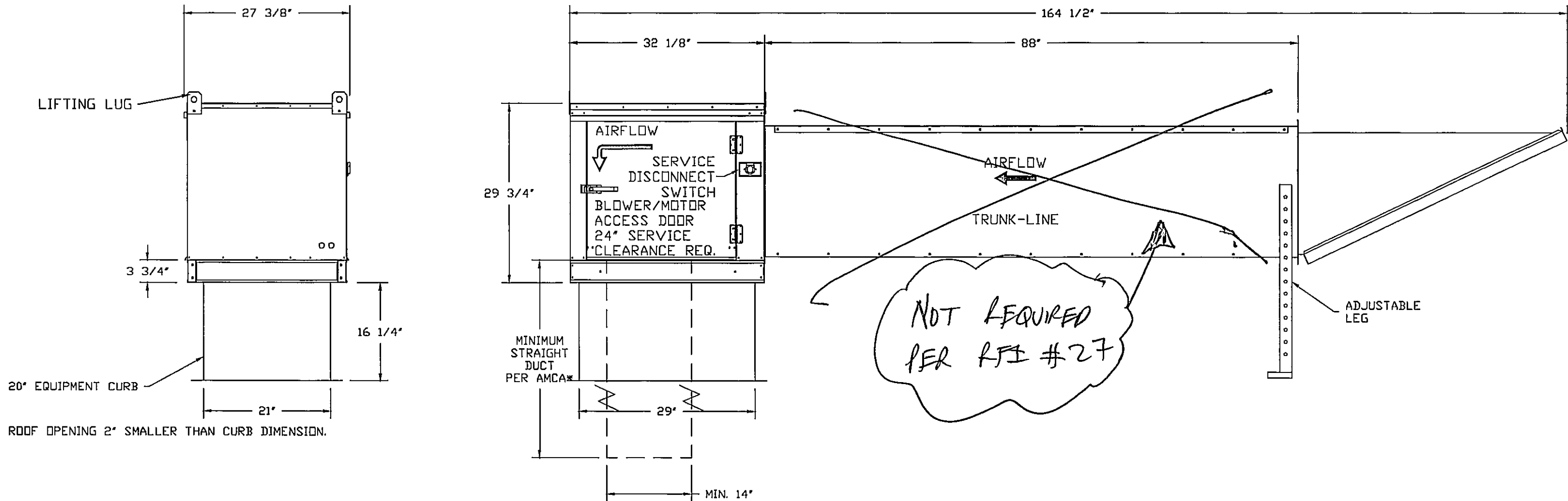
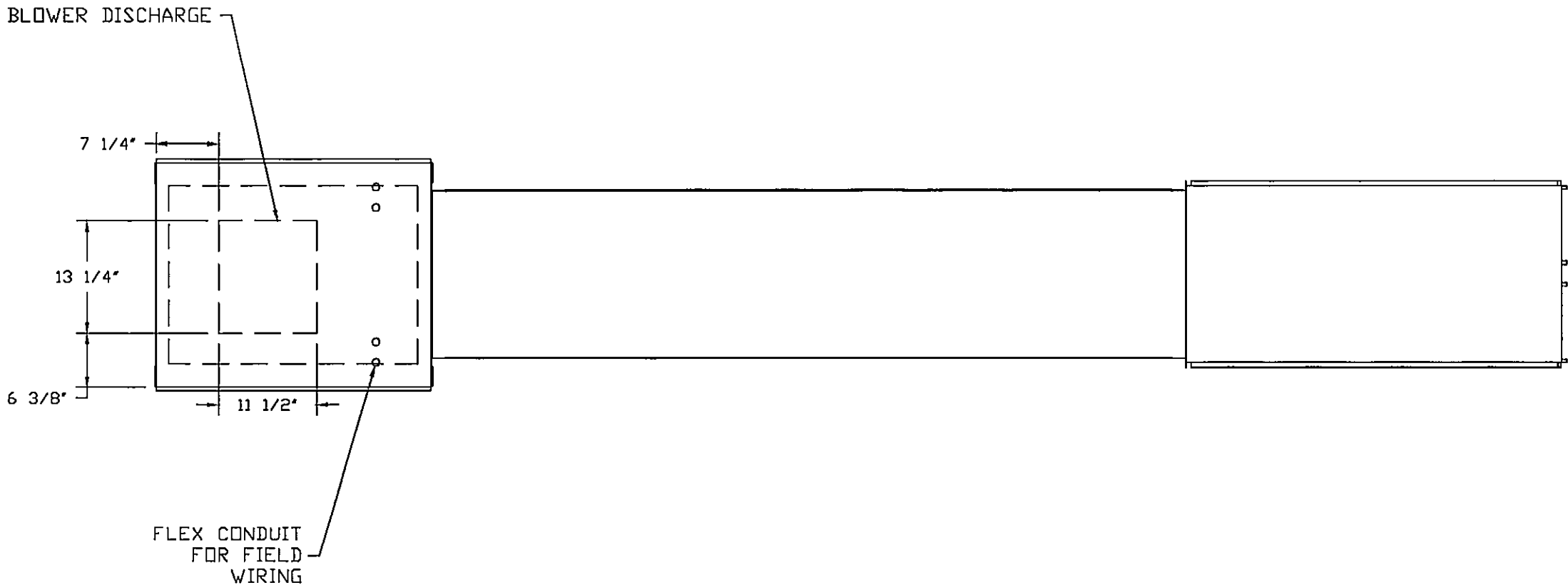
Table with 13 columns: FAN UNIT NO., TAG, FAN UNIT MODEL #, BLOWER, HOUSING, MIN CFM, DESIGN CFM, ESP., RPM, H.P., B.H.P., Ø, VOLT, FLA, WEIGHT (LBS.), SONES. Row 1: 2, KSF-1, A1-1SD, 1SMF-1-MOD, A1, 0, 720, 0.400, 1030, 1.000, 0.1530, 1, 115, 10.2, 330, 9.2.

Table with 3 columns: FAN UNIT NO., TAG, OPTION (Qty. - Descr.). Row 1: 1, KEF-1, 1 - Grease Box, 1 - ECM Wiring Package-Exhaust - PWM Signal from ECPM03 Prewire (NIDEC Motor).

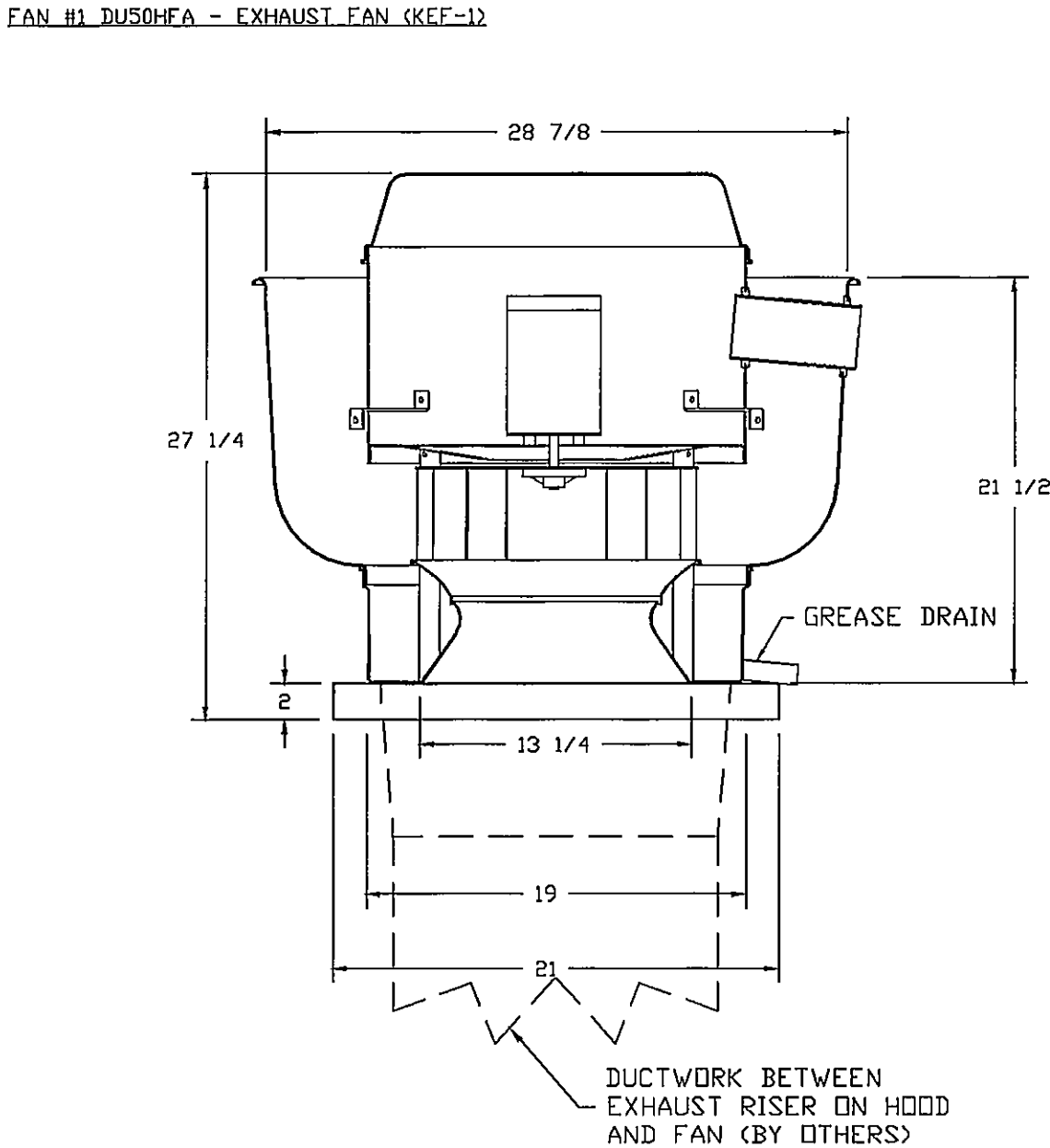
Table with 8 columns: FAN UNIT NO., TAG, GREASE CUP, GRAVITY DAMPER, WALL MOUNT, SIDE DISCHARGE, GRAVITY DAMPER, MOTORIZED DAMPER, WALL MOUNT. Row 1: 1, KEF-1, YES, , , , , , .

Table with 6 columns: NO., ON FAN, TAG, WEIGHT, ITEM, SIZE. Row 1: 1, # 1, KEF-1, 31 LBS, Curb, 19.500"W x 19.500"L x 20.000"H 3.000:12.000 Pitch Vented Hinged.

FAN #2 A1-1SD - SUPPLY FAN (KSF-1)
1. UNTEMPERED SUPPLY UNIT WITH 15" DIRECT DRIVE FAN IN SIZE #1 HOUSING
2. TRUNKLINE W/INTAKE HOOD W/VEZ FILTERS
3. DOWN DISCHARGE - AIR FLOW RIGHT -> LEFT
4. ECM WIRING PACKAGE FOR SUPPLY MOTORS WITH PWM SIGNAL FROM ECPM03 PREWIRE.



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.
SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE



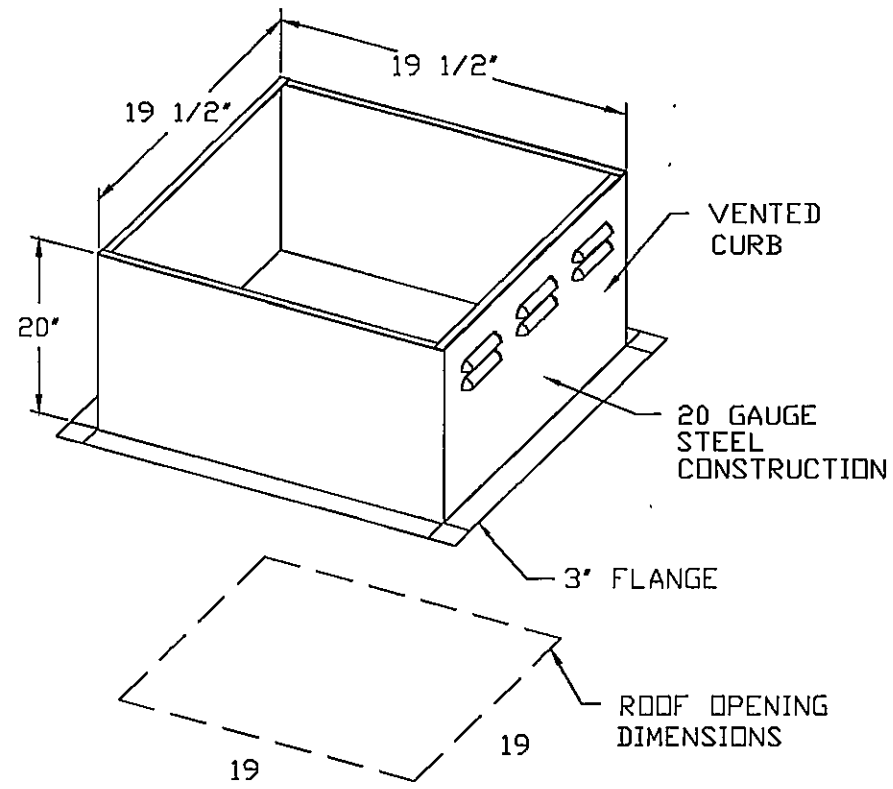
- FEATURES:
- DIRECT DRIVE CONSTRUCTION (NO BELTS/PULLEYS)
 - ROOF MOUNTED FANS
 - RESTAURANT MODEL
 - UL705 AND UL762 AND ULC-S645
 - VARIABLE SPEED CONTROL
 - INTERNAL WIRING
 - WEATHERPROOF DISCONNECT
 - THERMAL OVERLOAD PROTECTION (SINGLE PHASE)
 - HIGH HEAT OPERATION 300°F (149°C)
 - GREASE CLASSIFICATION TESTING

NORMAL TEMPERATURE TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING AIR AT 300°F (149°C) UNTIL ALL FAN PARTS HAVE REACHED THERMAL EQUILIBRIUM, AND WITHOUT ANY DEGRADING EFFECTS TO THE FAN WHICH WOULD CAUSE UNSAFE OPERATION.

ABNORMAL FLARE-UP TEST
EXHAUST FAN MUST OPERATE CONTINUOUSLY WHILE EXHAUSTING BURNING GREASE VAPORS AT 600°F (316°C) FOR A PERIOD OF 15 MINUTES WITHOUT THE FAN BECOMING DAMAGED TO ANY EXTENT THAT COULD CAUSE AN UNSAFE CONDITION.

OPTIONS

GREASE BOX.
ECM WIRING PACKAGE-EXHAUST - PWM SIGNAL FROM ECPM03 PREWIRE (NIDEC MOTOR).



PITCHED CURBS ARE AVAILABLE FOR PITCHED ROOFS.
SPECIFY PITCH:
EXAMPLE: 7/12 PITCH = 30° SLOPE

GREASE DUCT & CHIMNEY SPECIFICATIONS:
PROVIDE GREASE DUCT EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW" ROUND 20 GAUGE 430 STAINLESS STEEL DUCTWORK. MODEL "DW" IS LISTED TO UL-1978 AND IS INSTALLED USING "V" CLAMP LOCKING CONNECTIONS SEALED WITH 3M FIRE BARRIER 2000 PLUS. MODEL "DW" DOES NOT REQUIRE WELDING PROVIDING IT HAS BEEN INSTALLED PER THE MANUFACTURES INSTALLATION GUIDE.
PROVIDE RATED ACCESS DOORS AT EVERY CHANGE IN DIRECTION AND EVERY 12' ON CENTER. PER MANUFACTURES LISTING MODEL "DW" HORIZONTAL RUNS LESS THAN 75 FT. CAN BE SLOPED 1/16" PER 12", HORIZONTAL RUNS MORE THAN 75 FT. CAN BE SLOPED 3/16" PER 12". DUCT SHOULD BE SLOPED AS MUCH AS POSSIBLE TO REDUCE THE CHANCE OF GREASE ACCUMULATION IN HORIZONTAL RUNS.
IF THE DUCT OR CHIMNEY IS WITHIN 18 INCHES OF COMBUSTIBLE MATERIAL, PROVIDE UL-2221 OR UL-103 HT LISTED DOUBLE WALL GREASE DUCT OR DOUBLE WALL CHIMNEY EQUAL TO CAPTIVEAIRE SYSTEMS MODEL "DW- 2R, 2R TYPE HT, 3R, OR 3Z" ROUND 20 GAUGE 430 STAINLESS INNER DUCT INSULATED WITH A 24 GAUGE 430 STAINLESS OUTER SHELL.

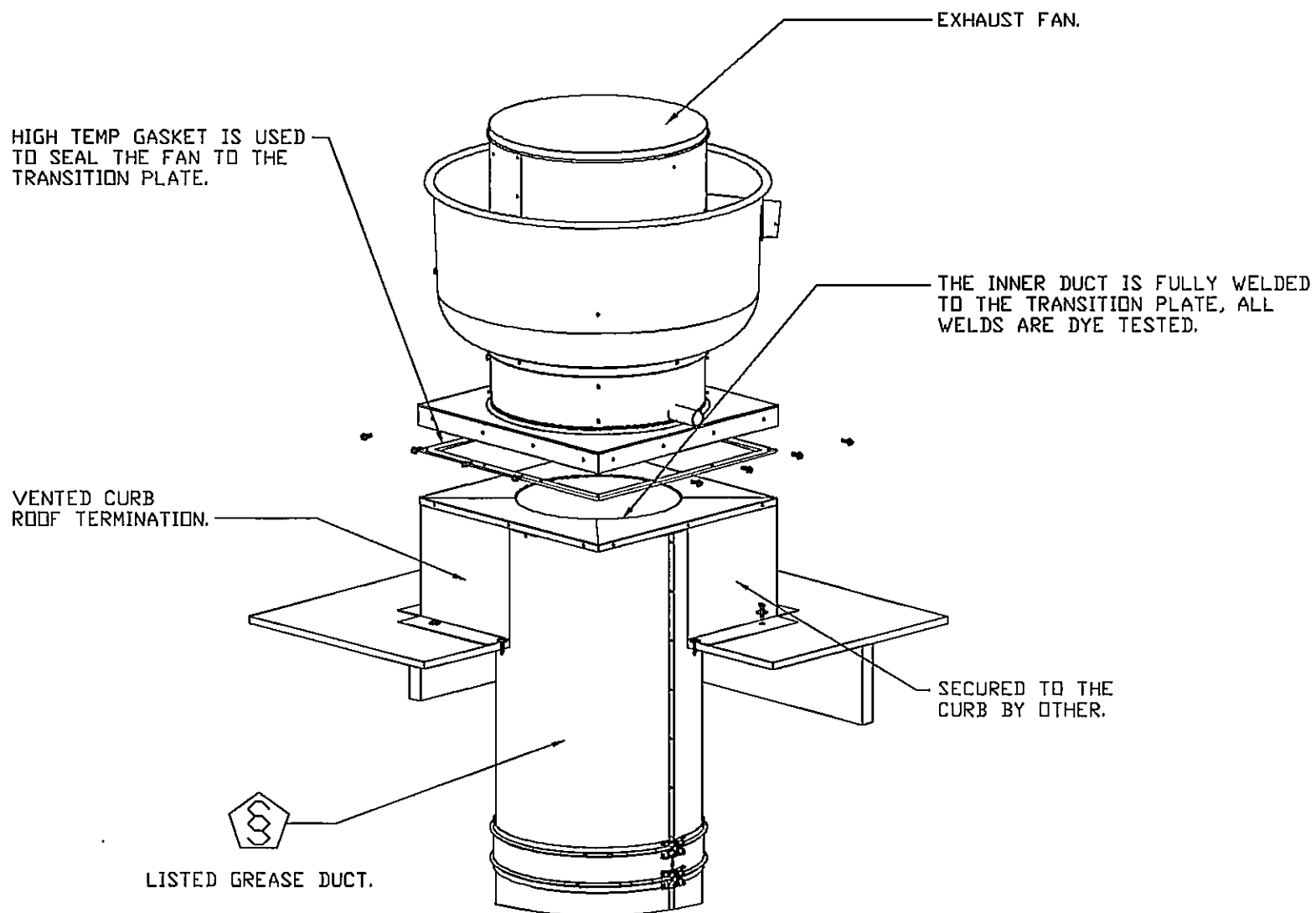


Table with 2 columns: REV #, REV DATE. Row 1: 1, November 22, 2019.

LANDRY LEWIS GERMANY ARCHITECTS, P. A.
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CREATING LANDMARKS SINCE 1970

SHEET TITLE
HVAC MAKE-UP AIR/EXHAUST SCHEDULES AND DETAILS

PROJECT
FIRE STATION No. 9

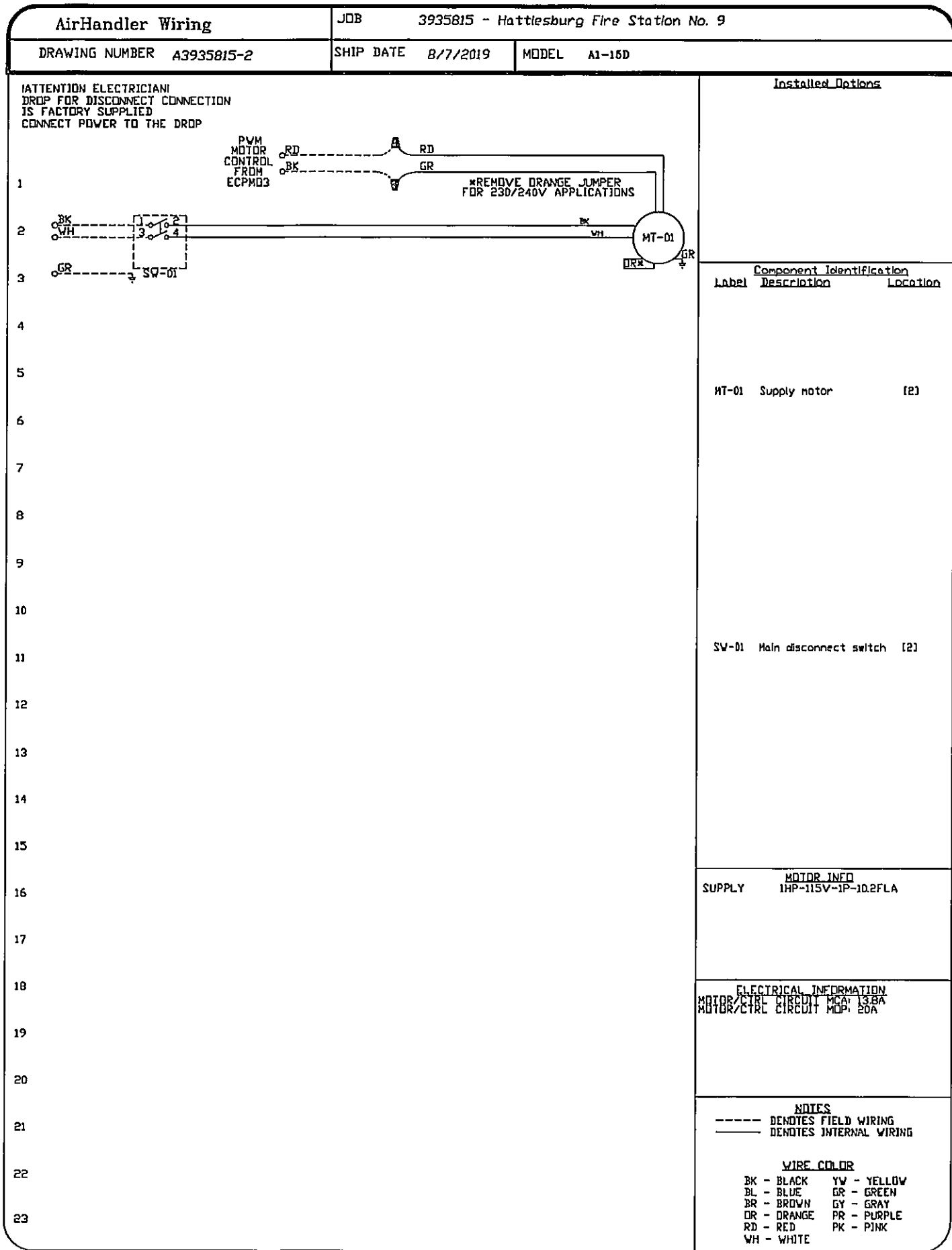
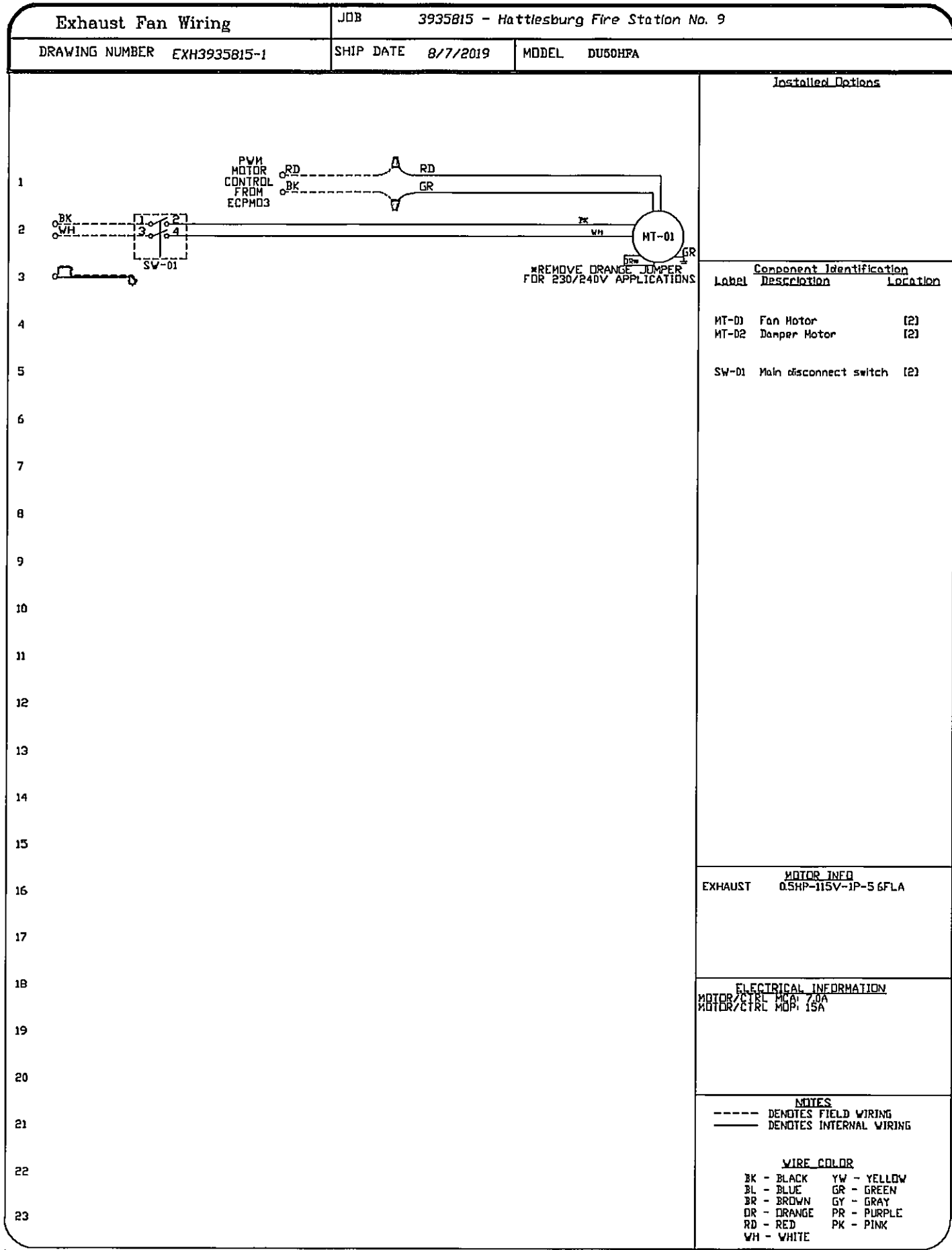
ENGINEER
JAMES E. STEPHENSON
14055
STATE OF MISSISSIPPI
11-22-19

CITY OF HATTIESBURG
HATTIESBURG, MS

CN18-3707

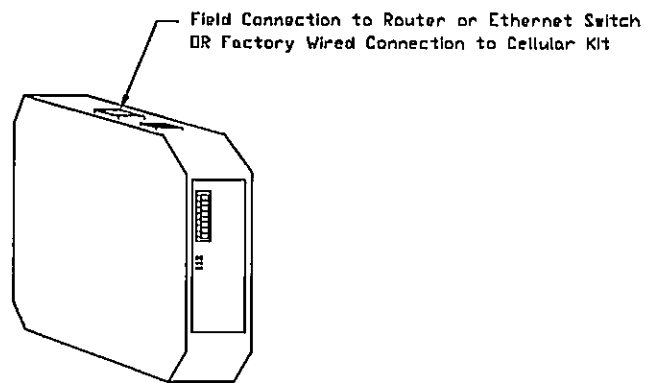
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ELECTRICAL PACKAGE - Job#3935815

NO.	TAG	PACKAGE #	LOCATION	SWITCHES		OPTION	FANS CONTROLLED				
				LOCATION	QUANTITY		FAN TAG	TYPE	Φ	H.P.	VOLT FLA
1		SC-111110FP	Utility Cabinet Left	03 - Utility Cabinet Left	1 Light	Smart Controls Thermostatic Control	KEF-1	Exhaust	1	0.500	115 5.6
				Hood # 1	1 Fan		KSF-1	Supply	1	1.000	115 10.2

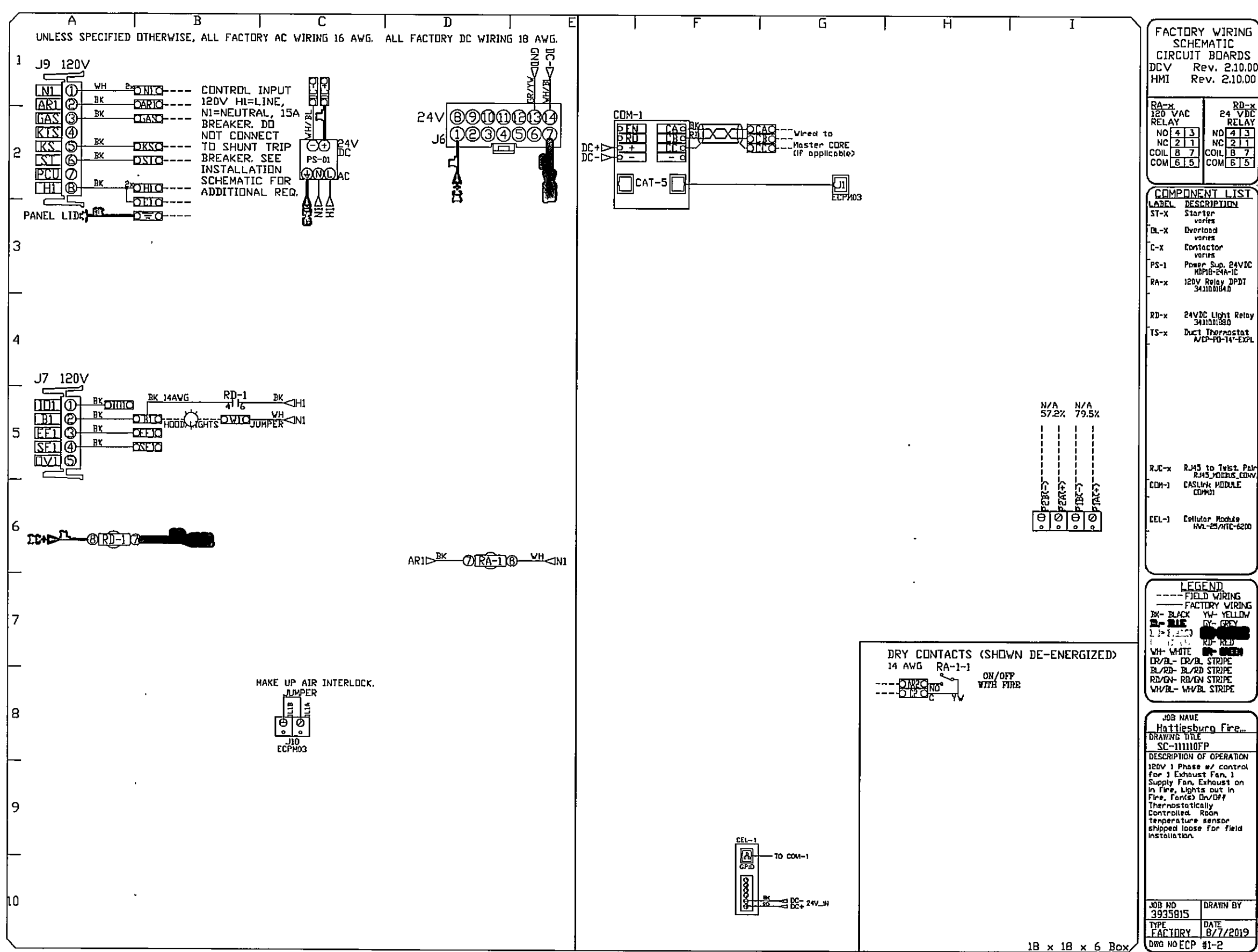
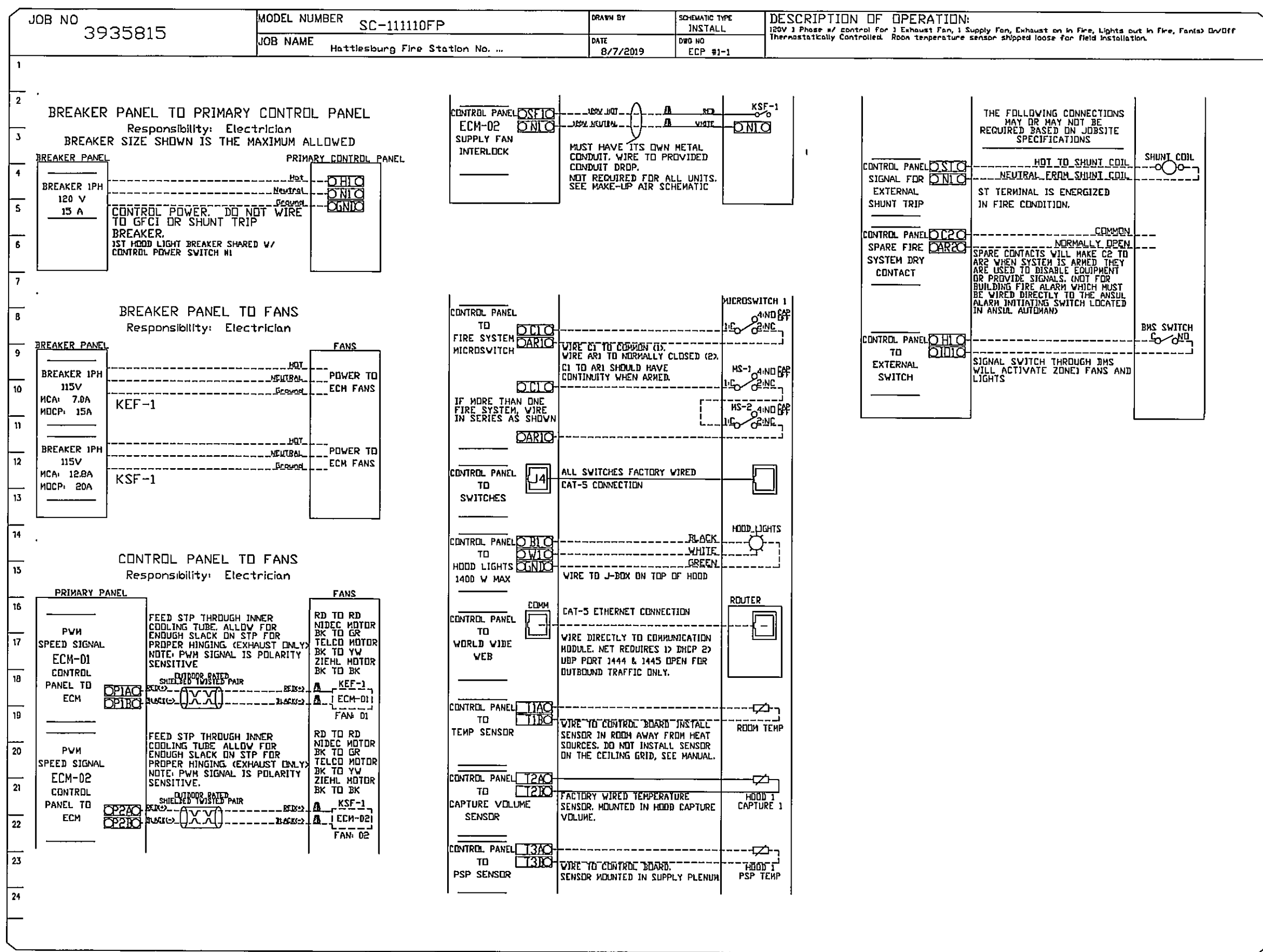


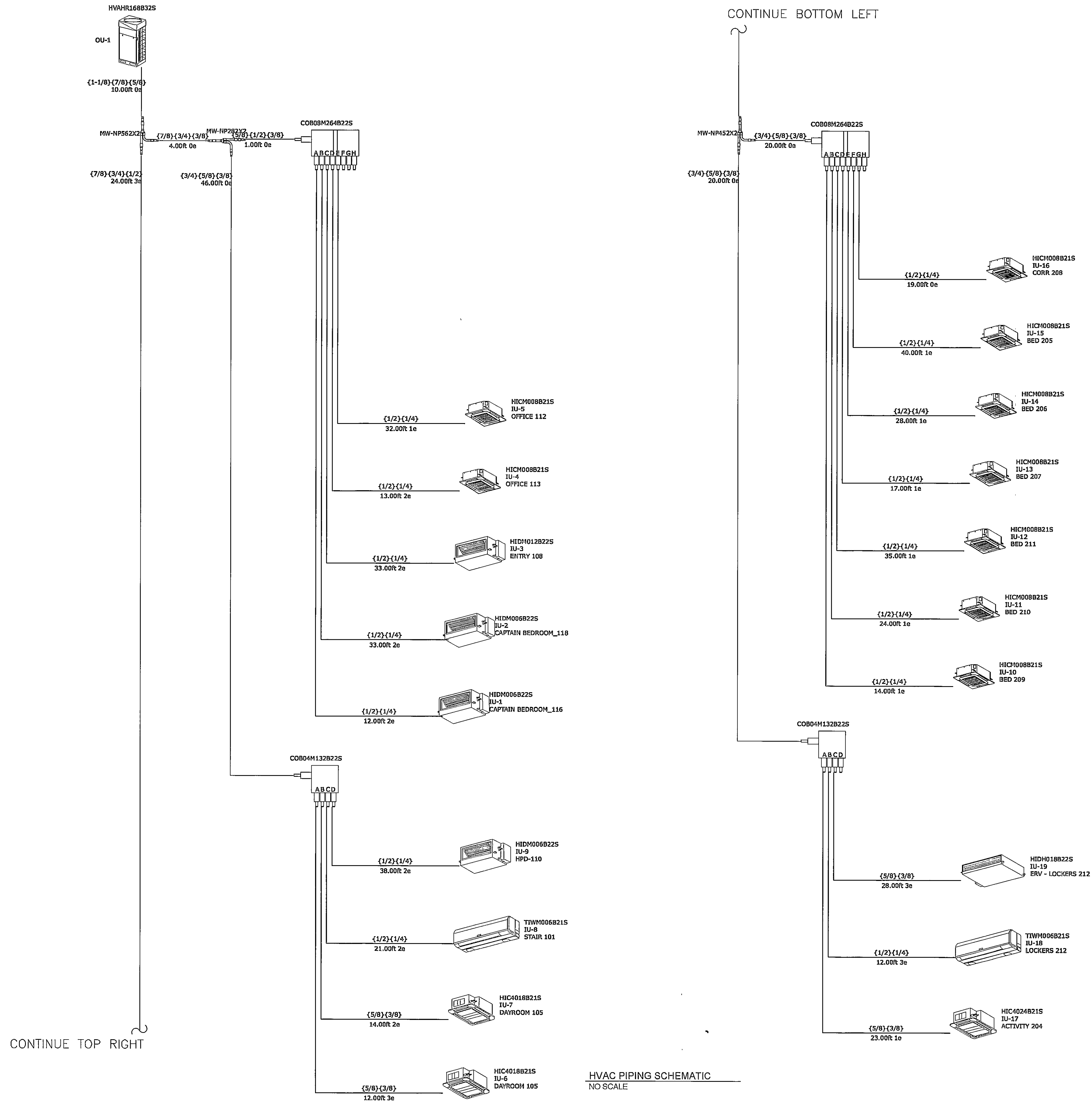
CASlink Monitor and Control

- Hood control panel to support communications to cloud-based Building Management System.
- Hood Control Panel to allow cloud-based Building Management System to monitor real time parameters outlined as MONITOR in the points list.
- Hood Control Panel to allow cloud-based Building Management System to control parameters outlined as CONTROL in the points list.
- Hood control panel to allow remote changes to system setting such as VFD Frequencies, ECM speeds, temperature set points, fan and wash schedules, etc.

MONITORING AND CONTROL POINTS LIST

DCV Packages	Function	SC Packages	Function
Room Temperature	MONITOR	Room Temperature(s)	MONITOR
Duct Temperature(s)	MONITOR	Duct Temperature(s)	MONITOR
HVA Discharge Temperature	MONITOR	HVA Discharge Temperature	MONITOR
Kitchen RTU Discharge Temperature	MONITOR	Kitchen RTU Discharge Temperature	MONITOR
Fan Speed	MONITOR	Controller Faults	MONITOR
Fan Amperage	MONITOR	Fan Faults	MONITOR
Fan Power	MONITOR	Fan Status	MONITOR
VFD Faults	MONITOR	PCU Faults	MONITOR
Controller Faults	MONITOR	PCU Filter Clog Percentages	MONITOR
Fan Faults	MONITOR	Fire Condition	MONITOR
Fan Status	MONITOR	Center Fire System	MONITOR
PCU Faults	MONITOR	Building Pressures	MONITOR
PCU Filter Clog Percentages	MONITOR	Fans Buttons(s)	MONITOR & CONTROL
Fire Condition	MONITOR	Lights Buttons(s)	MONITOR & CONTROL
Center Fire System	MONITOR	Wash Button	MONITOR & CONTROL
Building Pressures	MONITOR		
Prep Time Button	MONITOR & CONTROL		
Fans Button	MONITOR & CONTROL		
Lights Button	MONITOR & CONTROL		
Wash Button	MONITOR & CONTROL		





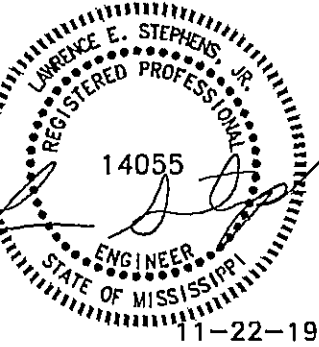
HVAC PIPING SCHEMATIC
NO SCALE

DRAWN	
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CHECKED	
LES	
FINAL DATE	
November 22, 2019	
REVISION SCHEDULE	
REV #	REV DATE

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CREATING LANDMARKS SINCE 1910...

SHEET TITLE
HVAC PIPING SCHEMATICS

PROJECT
FIRE STATION No. 9



CITY OF HATTIESBURG
HATTIESBURG, MS

11-22-19

14055

11-22-19

11-22-19

PANEL BOARD SCHEDULE						
DESCRIPTION	CIRCUIT	BREAKER	FRAME	FEEDER	SERVICE TO	
PANEL MDP 208Y/120V, 3PH, 4 WIRE 400 AMP MAIN LUGS 42 KAIC EQUAL TO SQUARE D I-LINE SURFACE MOUNT, NEMA 1 WITH INTEGRAL 250 KA SPD WITH SELF CONTAINED DISCONNECT	1	80A/3P	100 AMP	3-4, 1-6G	OUTDOOR HEATPUMP UNIT	
	2	150A/3P	225 AMP	4-1/0, 1-4G	PANEL P1	
	3	150A/3P	225 AMP	4-1/0, 1-4G	PANEL P2	
	4	150A/3P	225 AMP	4-1/0, 1-4G	PANEL P3	
	5	100A/3P	100 AMP	—	SPARE	
	6-10	-/3P	100 AMP	—	SPARE	
PANEL P1 208Y/120V, 3PH, 4 WIRE 225 AMP MAIN LUGS 22 KAIC EQUAL TO SQUARE D NQOD SURFACE MOUNT, NEMA 1 WITH INTEGRAL 125 KA SPD A. 10	1-40	20A/1P	100 AMP	2-12, 1-12G	RECEPTACLES, MISCELLANEOUS POWER	
	41-50	20A/1P	100 AMP	—	SPARE	
	51-53	20A/1P	100 AMP	2-6, 1-6G	SITE LIGHTING	
	54-57	20A/1P	100 AMP	2-6, 1-6G	LIGHTING	
	58-60	20A/1P	100 AMP	—	SPARE	
		20A/1P 30A/2P			WASHING MACHINE DRYER	
PANEL P2 208Y/120V, 3PH, 4 WIRE 225 AMP MAIN LUGS 22 KAIC EQUAL TO SQUARE D NQOD SURFACE MOUNT, NEMA 1 WITH INTEGRAL 125 KA SPD	1	20A/1P	100 AMP	2-12, 1-12G	UNIT HEATERS	
	2	20A/1P	100 AMP	2-12, 1-12G	WATER HEATERS	
	3	20A/1P	100 AMP	2-12, 1-12G	KITCHEN HOOD SUPPLY FAN KSF-1	
	4	20A/1P	100 AMP	2-10, 1-10G	KITCHEN HOOD EXHAUST FAN KEF-1	
	5	30A/1P	100 AMP	2-12, 1-12G	EXHAUST FAN EF-6	
	6-10	20A/1P	100 AMP	—	SPARE	
	11,12	20A/2P	100 AMP	2-12, 1-12G	INDOOR HEAT PUMP UNITS (IU)	
	13,14	15A/2P	100 AMP	2-12, 1-12G	DHP INDOOR UNITS	
	15,16	15A/2P	100 AMP	2-12, 1-12G	DHP OUTDOOR UNITS	
	17-20	15A/2P	100 AMP	2-12, 1-12G	COB UNITS	
	21	15A/2P	100 AMP	2-12, 1-12G	ERV-1	
	22	20A/2P	100 AMP	—	SPARE	
	23-26	20A/1P	100 AMP	2-12, 1-12G	MISCELLANEOUS GENERATOR CIRCUITS	
	27-30	20A/1P	100 AMP	—	SPARE	
	PANEL P3 208Y/120V, 3PH, 4 WIRE 225 AMP MAIN LUGS 22 KAIC EQUAL TO SQUARE D NQOD-RELAY SURFACE MOUNT, NEMA 1 WITH INTEGRAL 125 KA SPD	1-14	20A/1P	100 AMP	2-12, 1-12G	RECEPTACLES, MISCELLANEOUS POWER
		15,16	20A/1P	100 AMP	—	SPARE
17-19		20A/1P	100 AMP	2-12, 1-12G	LIGHTING	
20-30		20A/1P	100 AMP	—	SPARE	

ELECTRICAL LEGEND			
SYMBOL	DESCRIPTION	MOUNT	REMARKS
	LUMINAIRE, CEILING MOUNT	—	SEE LUMINAIRE SCHEDULE
	WALL MOUNTED LUMINAIRE	—	SEE LUMINAIRE SCHEDULE
	EMERGENCY LIGHT	—	SEE LUMINAIRE SCHEDULE
	EXIT SIGN	—	SEE LUMINAIRE SCHEDULE
	SINGLE POLE SWITCH	FLUSH/48" AFF	SEE SPECIFICATIONS
	THREE-WAY SWITCH	FLUSH/48" AFF	SEE SPECIFICATIONS
	PILOT LIGHT SWITCH	FLUSH/48" AFF	HUBBELL 1221PL-1
	SINGLE POLE DOUBLE THROW SWITCH	48" AFF	FLUSH MNT/WITH ILC-SSA IN BOX, HUBBELL 1385-1
	DIMMER SWITCH	FLUSH/48" AFF	SEE SPECIFICATIONS
	DUPLEX RECEPTACLE	18" AFF	
	GFI RECEPTACLE	18" AFF	
	WEATHERPROOF RECEPTACLE	18" AFF	W/ WEATHERPRF. COVERPLT.
	DRYER RECEPTACLE, 208/120V, 30A, 4W	18" AFF	LEVITON 278, NEMA 14-30R
	POWER REEL	STRUT/PURLIN	SEE DETAIL
	DOUBLE-GANGED,PARTITIONED JUNCTION BOX		WITH- TRANSFORMER RELAY, SEE SPECS.
	SAFETY SWITCH, NEMA 1	AS REQ'D	SEE SPECIFICATIONS
	SAFETY SWITCH, NEMA 3R	AS REQ'D	SEE SPECIFICATIONS
	SAFETY SWITCH, NEMA 3R,FUSED	AS REQ'D	SEE SPECIFICATIONS
	DISTRIBUTION PANELBOARD		SEE SPECIFICATIONS, SCHEDULE
	LIGHTING & POWER PANELBOARD		SEE SPECIFICATIONS, SCHEDULE
	SERVICE DISCONNECT, ENCLOSED CIRCUIT BREAKER		SEE SPECIFICATIONS, SCHEDULE
	MANUAL TRANSFER SWITCH		SEE SPECIFICATIONS, SCHEDULE
	MAGNETIC MOTOR STARTER	AS REQ'D	
	MANUAL MOTOR STARTER	AS REQ'D	SEE SPECIFICATIONS
	MOTOR		HORSEPOWER NOTED
	MAGNETIC MOTOR STARTER	AS REQ'D	SEE SPECIFICATIONS
	START-STOP SWITCH, NEMA 3R	48" AFF	SEE SPECIFICATIONS
	MOTORIZED DOOR CONTROLLER	48" AFF	BY DOOR SUPPLIER, INSTALLED BY ELECTRICAL CONTRACTOR
	MOTORIZED DOOR CONNECTION	AS REQ'D	
	SPECIAL ELECTRICAL CONNECTION	AS REQ'D	
	EXHAUST FAN CONNECTION	AS REQ'D	
	WATER HEATER CONNECTION	AS REQ'D	
	UNIT HEATER CONNECTION	AS REQ'D	
	DISPOSER CONNECTION	AS REQ'D	
	DISHWASHER CONNECTION	AS REQ'D	
	HOOD CONNECTION	AS REQ'D	
	PHOTOELECTRIC SWITCH	SOFFIT	ELECTRONIC TYPE
	GAS SOLONOID VALVE CONNECTION	AS REQ'D	
	TELEPHONE/DATA OUTLET	18" AFF/NTD	SEE SPECIFICATIONS
	CATV OUTLET	18" AFF/NTD	
	TELEPHONE OUTLET	NOTED	
	120 VOLT, SINGLE STATION SMOKE DETECTOR	CEILING	CENTEX 9120 W/9V ALKALINE BATTERY
	FIRE ALARM RECEIVING STATION	RACK	
	RADIO UNIT	SHELF	
	HORN SPEAKER	WALL/14' AFF	
	CEILING SPEAKER	FLUSH CEILING	
	ALERT UNIT	WALL/NOTED	
	JUNCTION BOX		
	FLEXIBLE CONDUIT		
	CONDUIT CONCEALED		
	CONDUIT EXPOSED		
	CONDUIT BELOW FLOOR/GRADE		
	CIRCUIT CONDUCTORS		
	GROUND CONDUCTORS		
	EXISTING OVERHEAD PRIMARY		UTILITY OWNED TO REMAIN
	NEW UNDERGROUND SERVICE LATERAL		SEE POWER RISER DIAGRAM
	NEW UNDERGROUND PRIMARY	24" BELOW GRADE	CONDUIT BY CONTRACTOR
	TELEPHONE SERVICE CONDUIT	24" BELOW GRADE	CONDUIT BY CONTRACTOR
	CATV SERVICE CONDUIT	24" BELOW GRADE	

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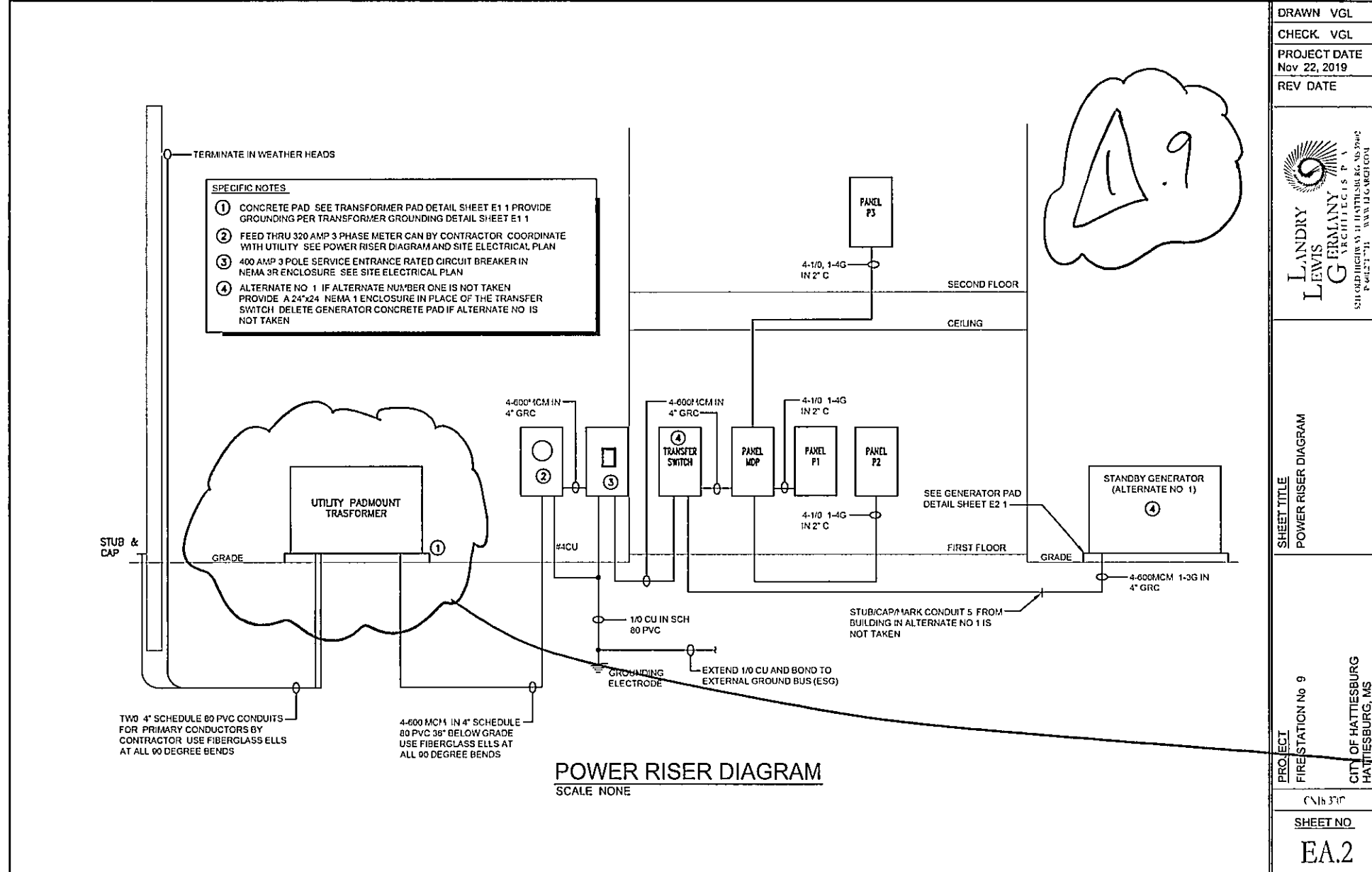
LUMINAIRE SCHEDULE				
MARK	LAMPS	MOUNTING	DESCRIPTION	EQUALS
A	60W-7,000 LUMEN LED	RECESSED GRID	DAYBRITE ZYG6-74L-840-4DS-UVW-DM	METALUX WILLIAMS
Aa	60W-7,000 LUMEN LED	RECESSED GRID	DAYBRITE ZYG6-74L-840-4DS-UVW-DM-EMLED	METALUX WILLIAMS
A1	42W-840 LUMEN LED	RECESSED GRID	DAYBRITE ZYG6-4LS-840-4DS-UVW-DM	METALUX WILLIAMS
A1a	42W-1000 LUMEN LED	RECESSED GRID	DAYBRITE ZYG6-4LS-840-4DS-UVW-DM-EMLED	METALUX WILLIAMS
B	132W-16,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-16L-840-12S-MJUD-EMLED	METALUX WILLIAMS
Ba	132W-18,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-16L-840-12S-MJUD-EMLED	METALUX WILLIAMS
C	41W-7,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-7L-840-12S-MJ	METALUX WILLIAMS
Ca	41W-7,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-7L-840-12S-MJ-EMLED	METALUX WILLIAMS
Ca	41W-7,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-7L-840-12S-MJ-EMLED	METALUX WILLIAMS
C1a	60W-11,000 LUMEN LED	12" PENDANT	DAYBRITE LIX1-84L-840-12S-MJUD-EMLED	METALUX WILLIAMS
D	28W-2,000 LUMEN LED	WALL/ABOVE MIRROR	DAYBRITE DM-4S-C-20A-40 U 2T	METALUX WILLIAMS
F	70W-6,000 LUMEN LED	WALL/VANES	GARCO 194L-32L-700W-N4-12S-RAL	METALUX WILLIAMS
Fa	70W-6,000 LUMEN LED	WALL/VANES	GARCO 194L-32L-700W-N4-12S-RAL-EPBC	METALUX WILLIAMS
G	25W-2,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 61N-PRF-CL-25-60-CC-210-U	METALUX WILLIAMS
H	11W-1,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 45N-CL-10-80-40-U-3-CC-CL-DM-CC	METALUX WILLIAMS
Hb	11W-1,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 45N-CL-10-80-40-U-3-CC-CL-DM-CC-CAEM	METALUX WILLIAMS
J	13W-1,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER CUL69A-UX210-CUL692-41-40K-8-CL-DM	METALUX WILLIAMS
K	21W-2,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 45N-PRF-CL-25-60-CC-210-U	METALUX WILLIAMS
K1	30W-3,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 61N-PRF-CL-25-60-CC-210-U	METALUX WILLIAMS
K1a	30W-3,000 LUMEN LED	RECESSED CEILING	LIGHTOLIER 61N-PRF-CL-25-60-CC-210-U-CAEM	METALUX WILLIAMS
L	33W-3,000 LUMEN LED	RECESSED CEILING	DAYBRITE ZYG6-36L-840-2DS-UVW-DM	METALUX WILLIAMS
S1	70W-7000 LUMEN LED	22 POLYESTER	GARCO GL13-13-70L-11N-UV-NPIS-LP-PC-AM	CRILE, MCGRAW EDISON
S1 POLE	SINGLE ASSEMBLY CONCRETE BASE		GARCO RS-25-1-01-00	PHILIPS, MCGRAW EDISON
X	RED LED	WALL ABOVE DOOR/CORING	CHLORIDE E65SL-3	PHILIPS, MCGRAW EDISON

LUMINAIRE NOTES:
1) ALTERNATE LUMINAIRES ARE ALLOWED WITH 10 DAY PRIOR APPROVAL. ALL PRIOR APPROVALS SHALL BE SENT TO THE OFFICE OF THE ARCHITECT 10 DAYS PRIOR TO THE BID. ALL FIXTURES MUST BE EQUAL TO THE SPECIFIED ITEMS LISTED BY CATALOG NUMBERS IN MATERIAL, QUALITY, WARRANTY, PHYSICALLY, SIZE, AND COLOR. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING FIXTURES TO ENGINEERS AND ARCHITECTS SATISFACTORY. THE ENGINEER WILL REVIEW PRIOR APPROVAL SUBMITTALS "ONE" TIME PRIOR TO BID. IF REJECTED, THE CONTRACTOR SHALL SUPPLY ALL FIXTURES AS SPECIFIED. REPEAT SUBMITTALS WILL NOT BE ACCEPTED PRIOR TO CRAWTHID.
2) LUMINAIRES WITH LOWER CASE "X" INDICATES LUMINAIRE WITH EMERGENCY BALLAST AS SCHEDULED OR FOR FIXTURE TO BE ROUTED THROUGH AN EMERGENCY LIGHTING INVERTER. SEE DRAWING NOTES AND LUMINAIRE CATALOG NUMBER FOR ADDITIONAL INFORMATION.

18

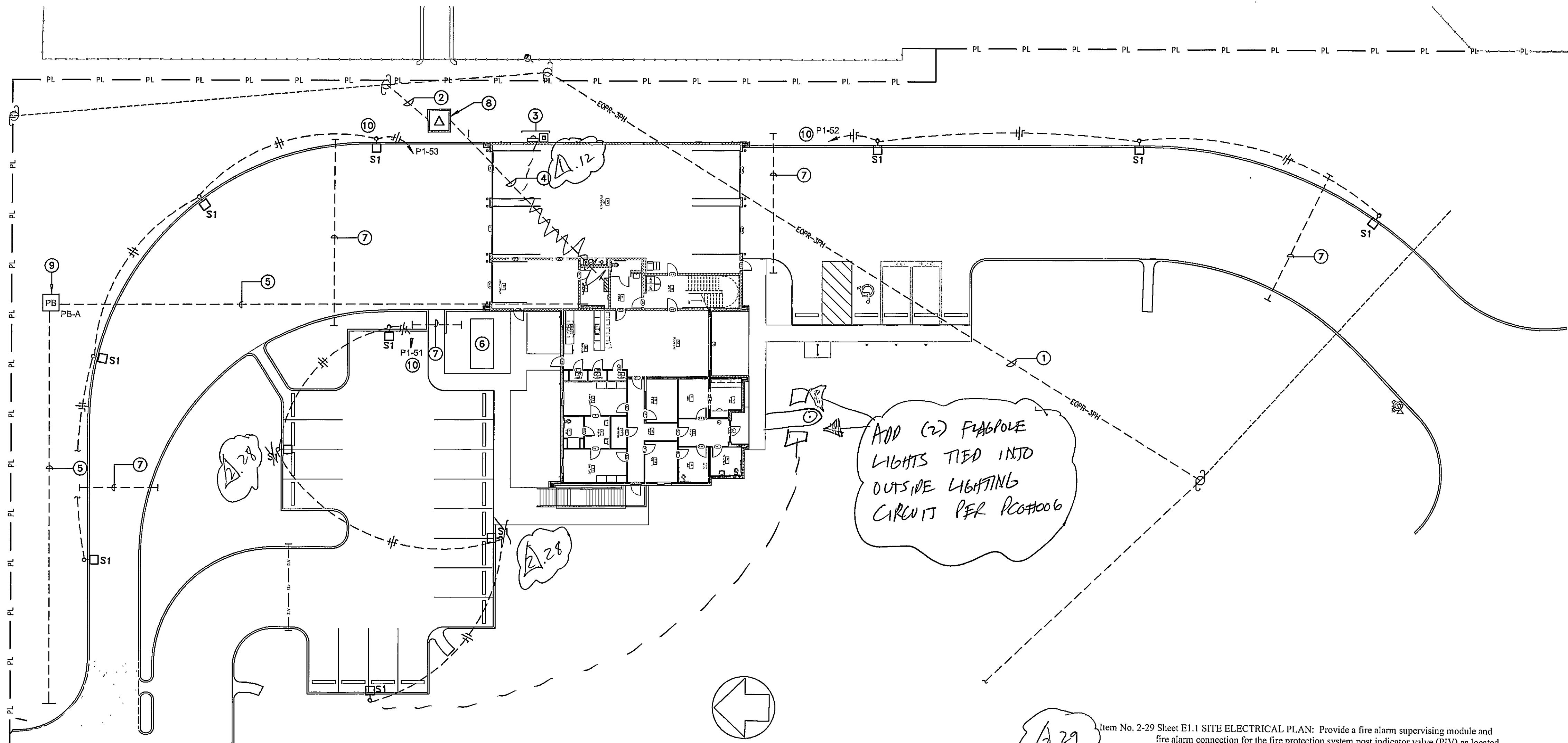
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Nov. 22, 2019
CN18-3707
SHEET NUMBER

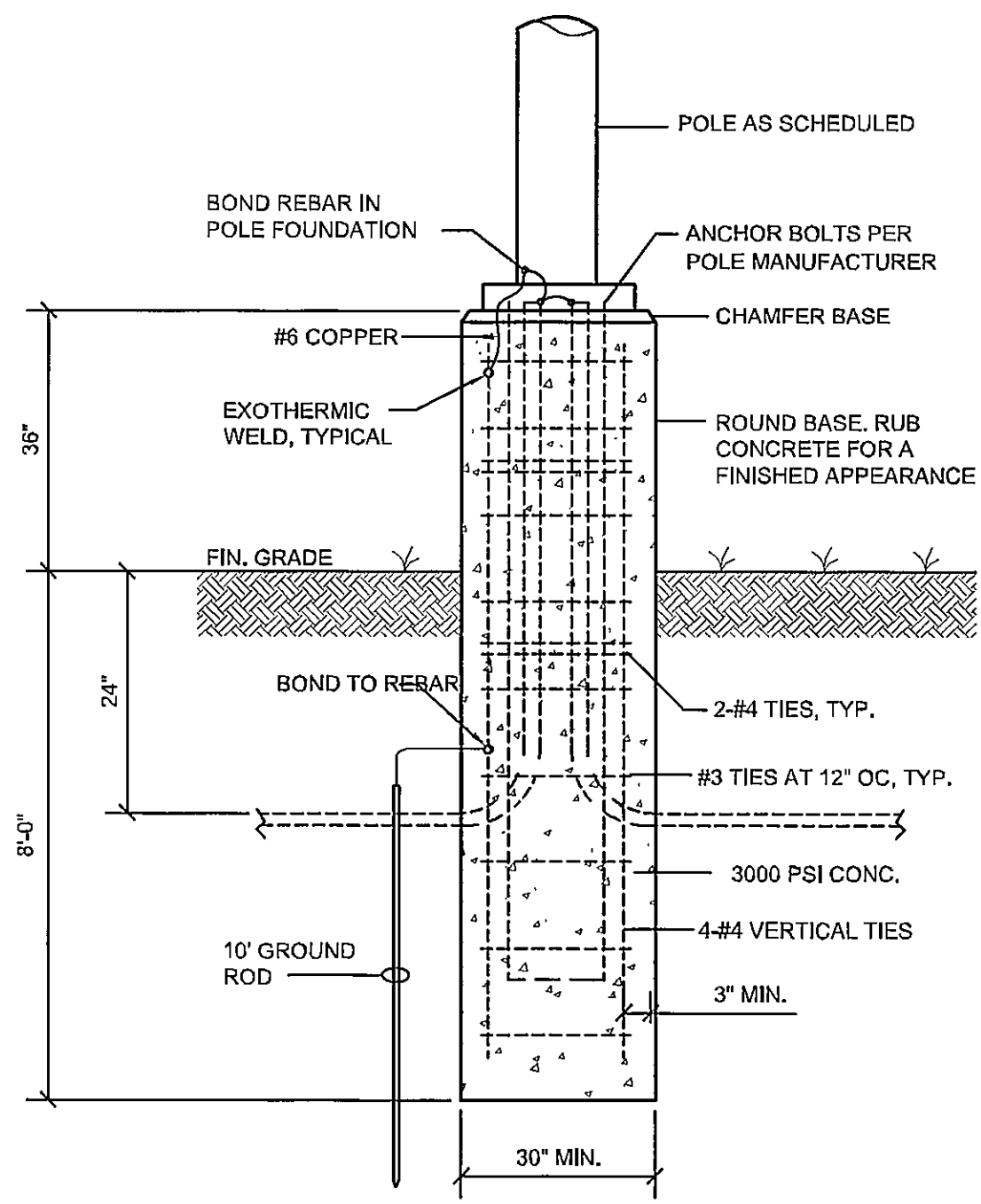


CHANGE TO POLE MOUNTED
TRANSFORMER PER RFI#7

E1.0

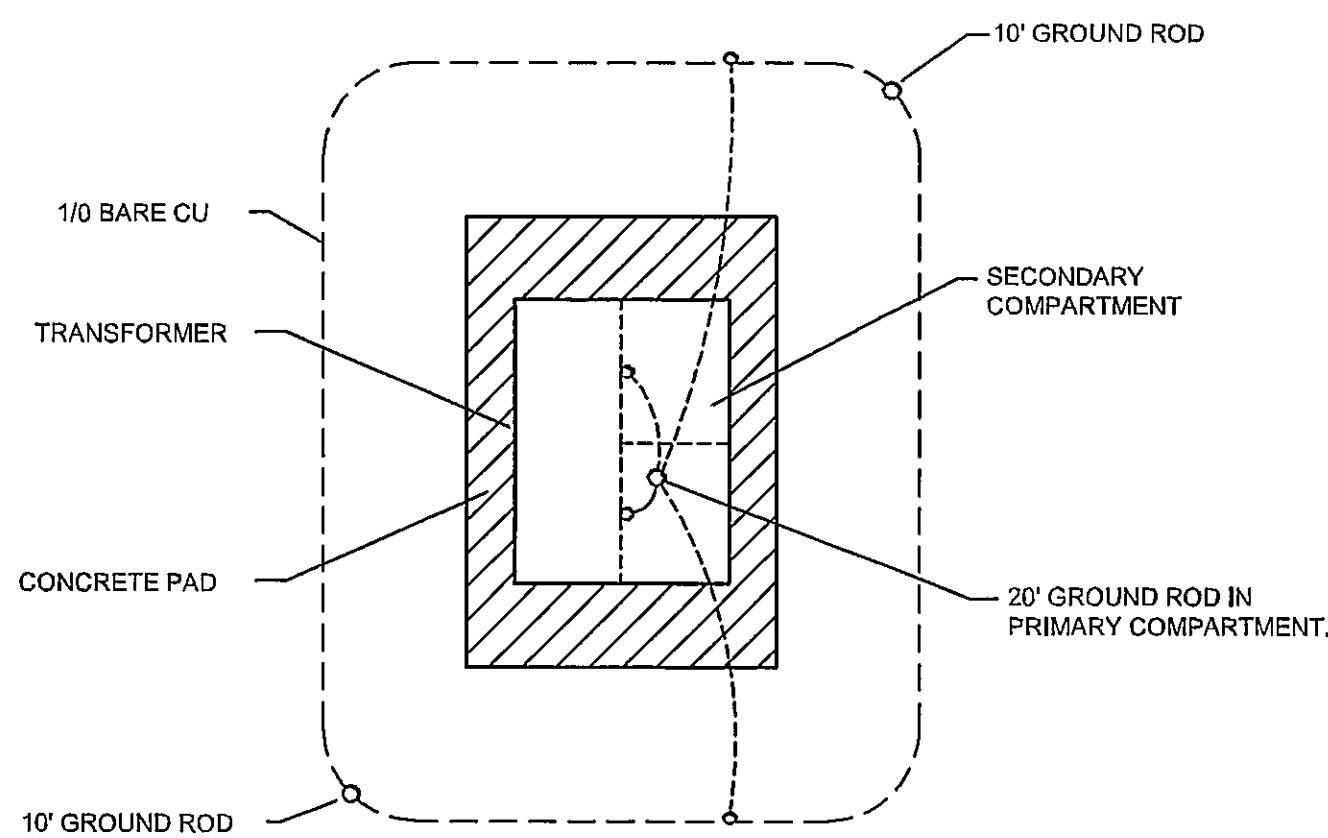


SITE ELECTRICAL PLAN
SCALE: 1" = 20'



NOTE: CONTRACTOR SHALL VERIFY DIMENSIONS OF POLE BASE AND PROVIDE CONCRETE BASE A MINIMUM OF 6" LARGER ON EACH SIDE THAN ANCHOR BOLT CIRCLE.

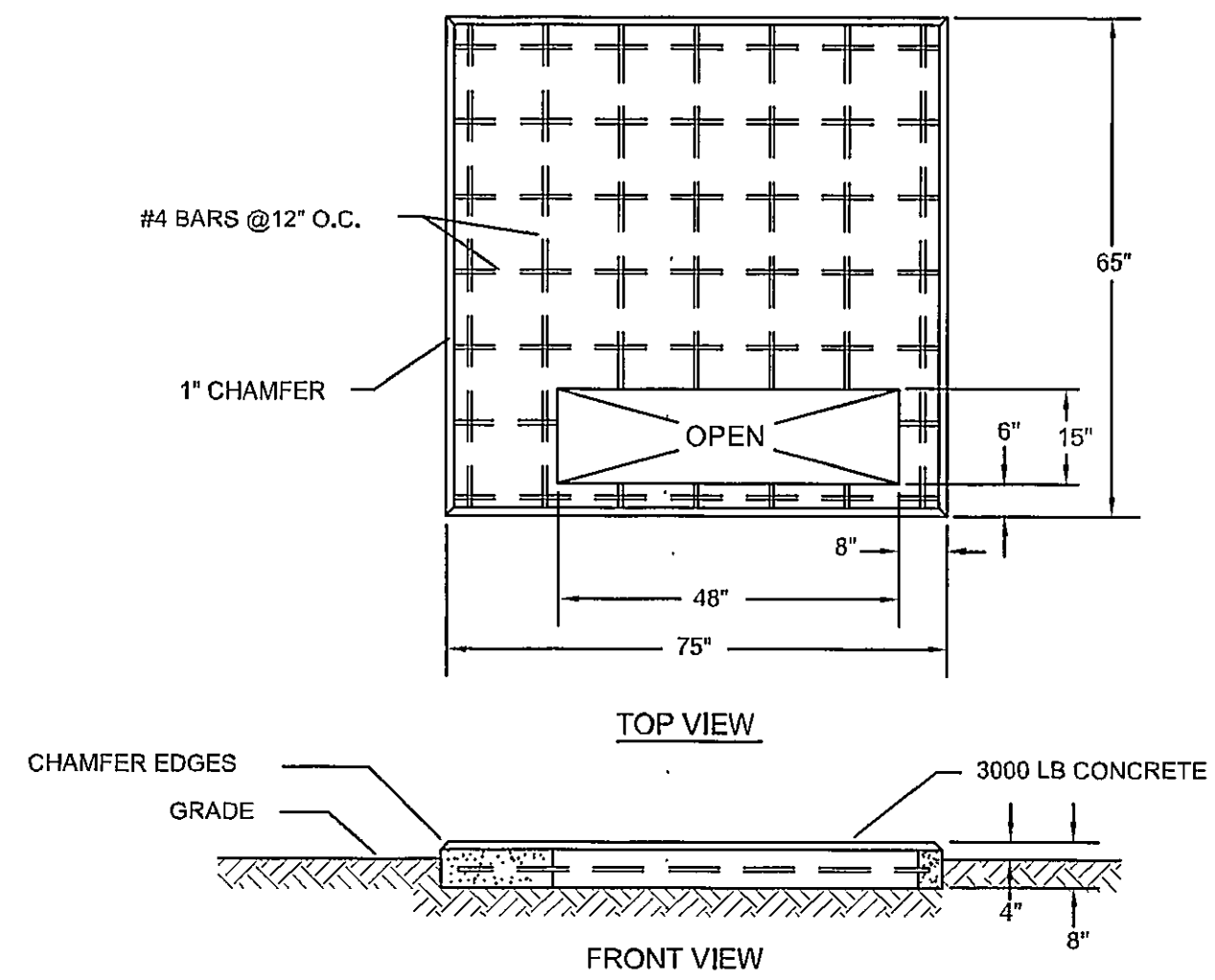
SITE LIGHTING POLE FOUNDATION A.11



NOTES:

1. PROVIDE A 1/0 BARE COPPER GIRDLE PLACED 3 FEET AWAY AND BURIED A MINIMUM OF 18" DEEP.
2. VERIFY RESISTANCE TO GROUND TO BE LESS THAN 10 OHMS.
3. MAKE ALL CONNECTIONS USING EXOTHERMIC WELDS.

TRANSFORMER GROUNDING DETAIL A.11



NOTES:

1. CONTRACTOR SHALL VERIFY SIZE, LOCATION, AND ORIENTATION OF PAD WITH UTILITY BEFORE CONSTRUCTION.
2. CONCRETE SHALL HAVE A MINIMUM ULTIMATE 28 DAY COMPRESSION STRENGTH OF NOT LESS THAN 3000 POUNDS. PAD SHALL BE CURED NOT LESS THAN 72 HOURS.

PADMOUNT TRANSFORMER PAD DETAIL A.11

GENERAL ELECTRICAL NOTES

- 1) ALL ELECTRICAL WORK AND INSTALLATION SHALL COMPLY WITH THE LATEST EDITION OF INTERNATIONAL BUILDING CODE (IBC), THE NATIONAL ELECTRICAL CODE (NEC) AND WITH ALL LOCAL CODE REQUIREMENTS.
- 2) LOCATIONS OF THE SITE LIGHTING ASSEMBLIES SHOWN ON THE PLANS ARE APPROXIMATE. ALL LIGHTING LOCATIONS SHALL BE MARKED IN THE FIELD BY THE CONTRACTOR AND APPROVED BY THE ENGINEER.
- 3) ROUTING OF BRANCH CIRCUIT CONDUITS AND BORE LOCATIONS ARE SHOWN FOR REFERENCE ONLY. EXACT ROUTING SHALL BE DETERMINED IN THE FIELD.
- 4) IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO PROTECT EXISTING STRUCTURES SUCH AS PIPES, INLETS, APRONS, CULVERTS, ETC. FROM DAMAGE THAT MAY OCCUR DURING CONSTRUCTION. THE CONTRACTOR SHALL REPLACE OR REPAIR ANY STRUCTURES DAMAGED AS DIRECTED BY THE ENGINEER. NO PAYMENT SHALL BE MADE FOR REPLACEMENT OR REPAIR OF DAMAGED ITEMS.
- 5) ANY SURFACES DAMAGED DURING CONSTRUCTION (CAUSED BY TRUCKS, EQUIPMENT, ETC.) SHALL BE RESTORED BY THE CONTRACTOR TO THE CIVIL ENGINEER'S SPECIFICATIONS. CONTRACTOR SHALL PROVIDE TEMPORARY EROSION CONTROL FOR THESE AREAS UNTIL THEY HAVE BEEN RESTORED.
- 6) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- 7) CONTRACTOR SHALL COORDINATE ALL WORK WITH OTHER TRADES PRIOR TO INSTALLATION. SEE MECHANICAL DRAWINGS FOR EXACT LOCATION AND SIZE OF EQUIPMENT WHICH ARE PROVIDED BY OTHERS AND CONNECTED BY ELECTRICAL.
- 8) ROUTING OF CONDUITS, DEVICE, & EQUIPMENT LOCATIONS SHOWN ARE SCHEMATIC. CONTRACTOR SHALL COORDINATE ROUTING IN FIELD AS REQUIRED FOR A CLEAN AND NEAT INSTALLATION.
- 9) 30" LATERAL WORKING SPACE AND 36" FOR 208/120V SYSTEMS IN FRONT OF EQUIPMENT SHALL BE MAINTAINED FOR ALL ELECTRICAL PANELS AND DISCONNECTS. COORDINATE WITH MECHANICAL CONTRACTOR AND FINAL EQUIPMENT LOCATIONS PRIOR TO INSTALLATION OF DISCONNECTS.
- 10) THE CIRCUIT REQUIREMENTS SHOWN FOR MECHANICAL EQUIPMENT ARE BASED ON ELECTRICAL DATA FOR EQUIPMENT SCHEDULED. THE CONTRACTOR SHALL VERIFY ALL EQUIPMENT ELECTRICAL REQUIREMENTS PRIOR TO ROUTING OF CIRCUIT. THE MIN. CIRCUIT REQUIREMENTS SHALL BE BASED ON EQUIPMENT NAMEPLATE OR CODE REQUIREMENTS, WHICHEVER IS MORE STRINGENT. ADDITIONAL COMPENSATION WILL NOT BE ALLOWED FOR EQUIPMENT SUBSTITUTIONS BY THE CONTRACTOR.
- 11) FINAL CONNECTION TO ALL EQUIPMENT IS SHOWN SCHEMATIC. MAKE FINAL CONNECTION AS REQUIRED PER MANUFACTURER'S INSTALLATION REQUIREMENTS.
- 12) LOCATIONS OF ALL ELECTRICAL EQUIPMENT, SWITCHES, OUTLETS, LUMINAIRES, ETC. SHALL BE COORDINATED WITH ARCHITECTURAL PLANS, MILLWORK DRAWINGS, & ELEVATIONS PRIOR TO ROUGH-IN.
- 13) CONTRACTOR SHALL COORDINATE LOCATIONS OF ALL FLOOR RECEPTACLES AND FLOOR COMMUNICATION OUTLETS WITH ARCHITECT PRIOR TO ROUGH-IN.
- 14) ALL SWITCHES, POWER, DATA, & TELEPHONE OUTLETS INDICATED TO BE INSTALLED ABOVE COUNTERTOPS SHALL BE MOUNTED 8" CENTER LINE ABV. BACKSPLASH, COORD. WITH ARCHITECTURAL DRAWINGS AND MILLWORK AND MAKE ADJUSTMENTS AS REQUIRED.
- 14) ANY CONCRETE SIDEWALKS: PARKING LOT, & ASPHALT AREAS THAT ARE CUT DUE TO INSTALLATION OF NEW ELECTRICAL WORK SHALL BE REPAIRED PER ARCHITECT'S DIRECTION.
- 15) THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO TRENCHING OR BORING. ANY DAMAGE TO UTILITIES CAUSED BY THE CONTRACTOR SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- 16) ALL TRENCHES SHALL BE BACK FILLED AND COMPACTED WITH NEW SOD PLACED OVER TRENCHED AREAS. ANY DAMAGE TO GRASS SURFACES CAUSED BY TRUCKS, EQUIPMENT, ETC. SHALL BE REPAIRED BY CONTRACTOR TO ARCHITECT'S SATISFACTION.

SPECIFIC NOTES:

1. EXISTING OVERHEAD PRIMARY DISTRIBUTION LINE TO BE RELOCATED TO REMOVE CONFLICT WITH LOCATION AND CONSTRUCTION OF NEW BUILDING. COORDINATE WITH LOCAL UTILITY AND ARCHITECT TWO WEEKS PRIOR TO COMMENCING THIS WORK. THE CONTRACTOR SHALL PAY THE UTILITY ANY COSTS INVOLVED IN RELOCATING THIS PRIMARY LINE.
2. FOUR (4) SCHEDULE 80 PVC CONDUITS WITH FIBERGLASS ELLS 48" BELOW GRADE FOR UTILITY PRIMARY CONDUCTORS. INSTALL PULLCORD, PRIMARY CONDUCTORS BY UTILITY. COORDINATE WITH THE UTILITY FOR EXACT LOCATION OF THE NEW PADMOUNT TRANSFORMER.
3. LOCATION OF FEED-THRU UTILITY METER AND SERVICE ENTRANCE DISCONNECT, AND GENERATOR EMERGENCY SHUTDOWN BUTTON. SEE POWER RISER DIAGRAM.
4. 4-600 MCM CONDUCTORS IN 4" SCHEDULE 80 PVC 36" BELOW GRADE AS SERVICE LATERAL CONDUCTORS.
5. 4" SCHEDULE 80 PVC CONDUIT WITH PULLCORD 36" BELOW GRADE FOR COMMUNICATIONS SERVICE CABLES. COORDINATE WITH LOCAL COMMUNICATION SERVICE PROVIDER.
6. STANDBY EMERGENCY GENERATOR LOCATION. SEE DETAILS.
7. 1 1/2" SCHEDULE 40 PVC 18" BELOW GRADE FOR IRRIGATION CABLE ACCESS BELOW DRIVES AND PARKING AREAS. PROVIDE MAGNETIC MARKER TAPE 6" ABOVE CONDUIT TO AID IN LOCATING. COORDINATE WITH THE GENERAL CONTRACTOR FOR EXACT LOCATIONS.
8. UTILITY PAD MOUNT TRANSFORMER ON CONCRETE PAD. SEE TRANSFORMER PAD DETAIL. COORDINATE WITH THE UTILITY.
9. PULLBOX FOR COMMUNICATION SERVICE CONDUITS. SEE DETAIL.
10. ROUTE CIRCUIT THRU CONTACTOR C1.

DRAWN

VGL

CHECKED

VGL

FINAL DATE

NOVEMBER 22, 2019

REVISION SCHEDULE

REV # REV DATE

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SHEET TITLE
SITE ELECTRICAL PLAN

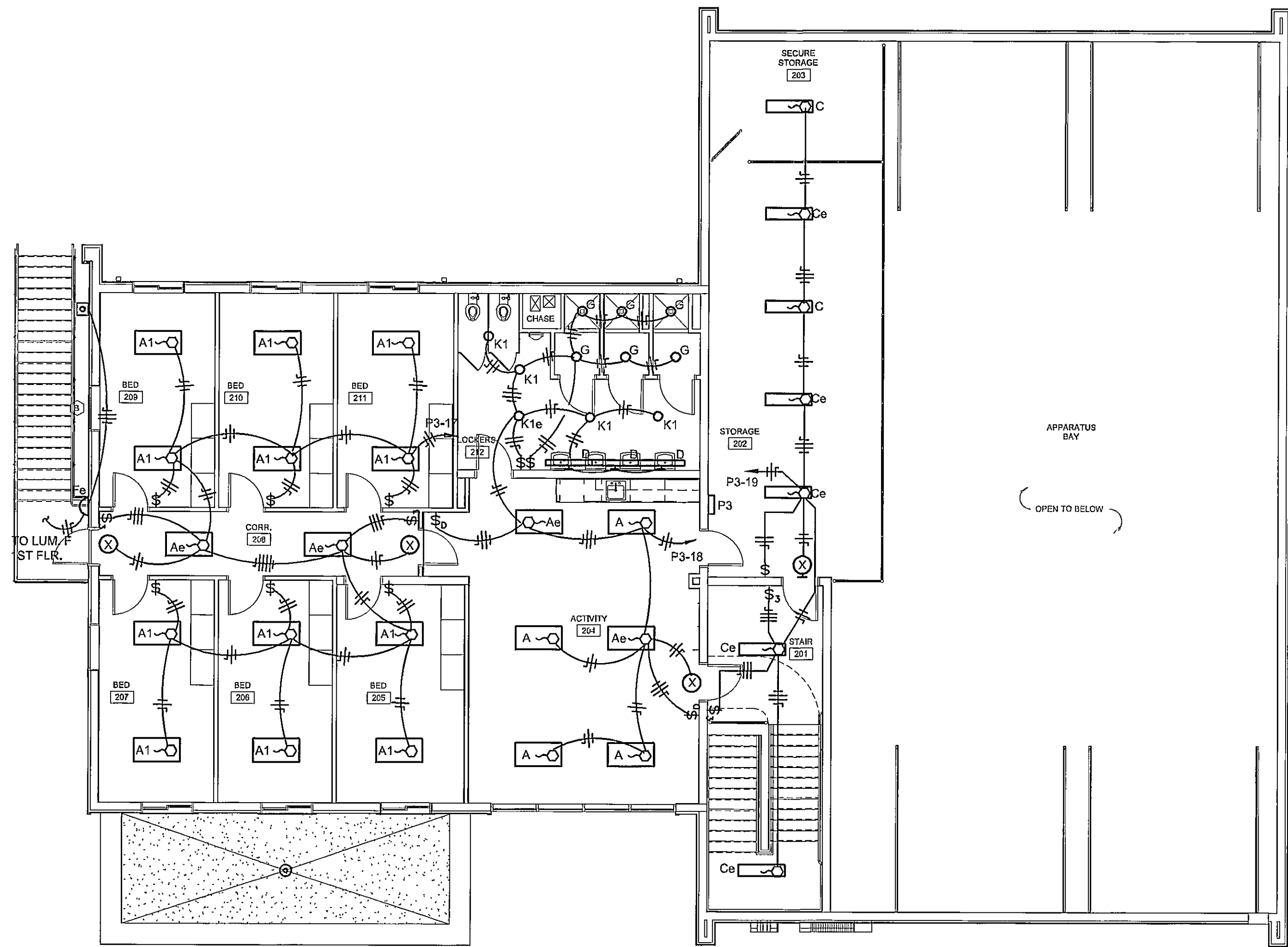
PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS

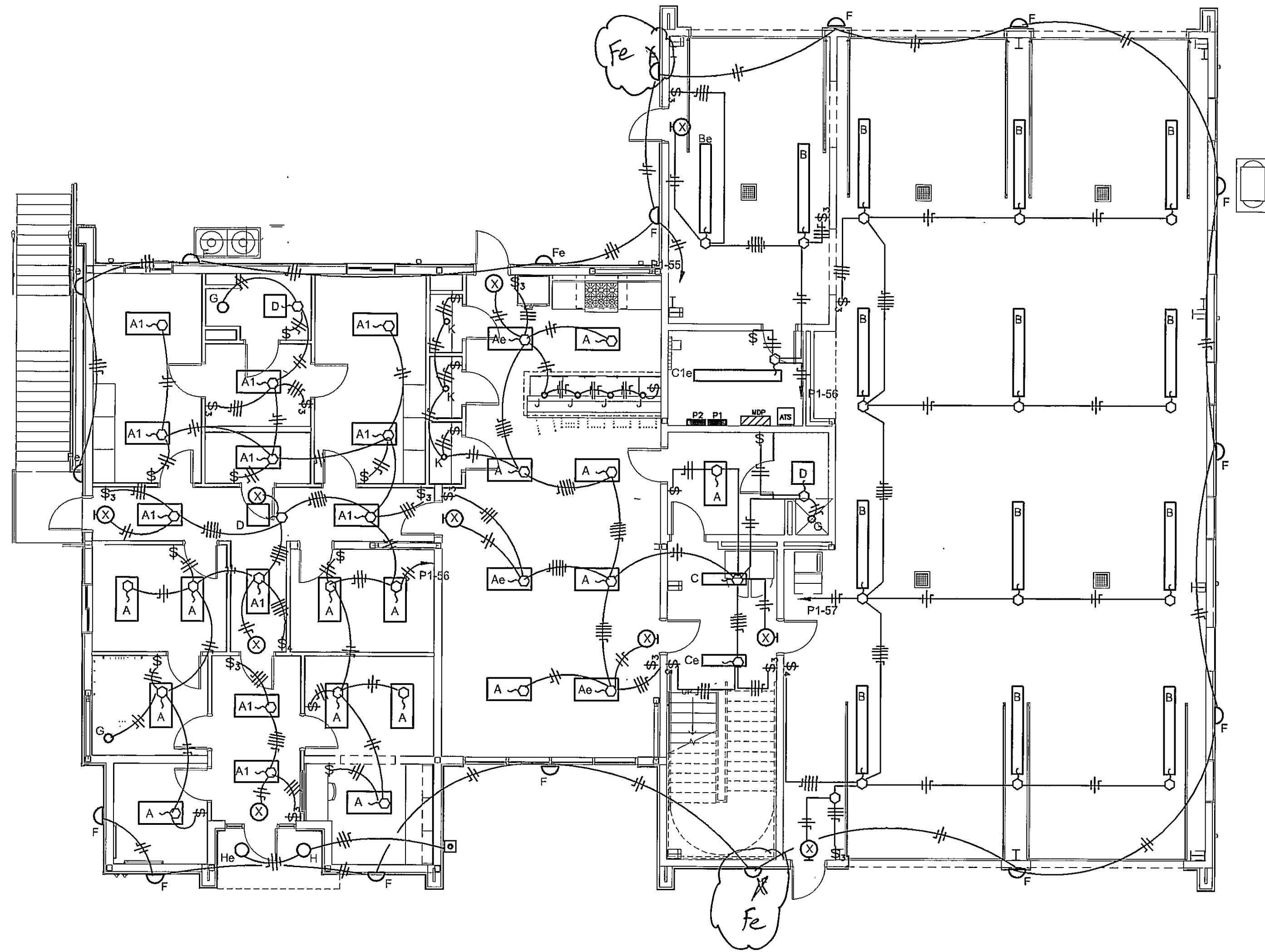
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SHEET NUMBER

E1.1



SECOND FLOOR LIGHTING PLAN - 2
3/16" = 1'-0"



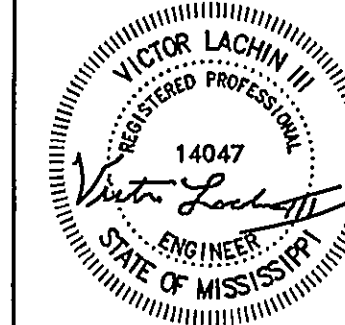
FIRST FLOOR LIGHTING PLAN - 1
3/16" = 1'-0"

SHEET TITLE

LIGHTING PLANS

PROJECT
FIRE STATION No. 9

CITY OF HATTIESBURG
HATTIESBURG, MS



CN18-3707

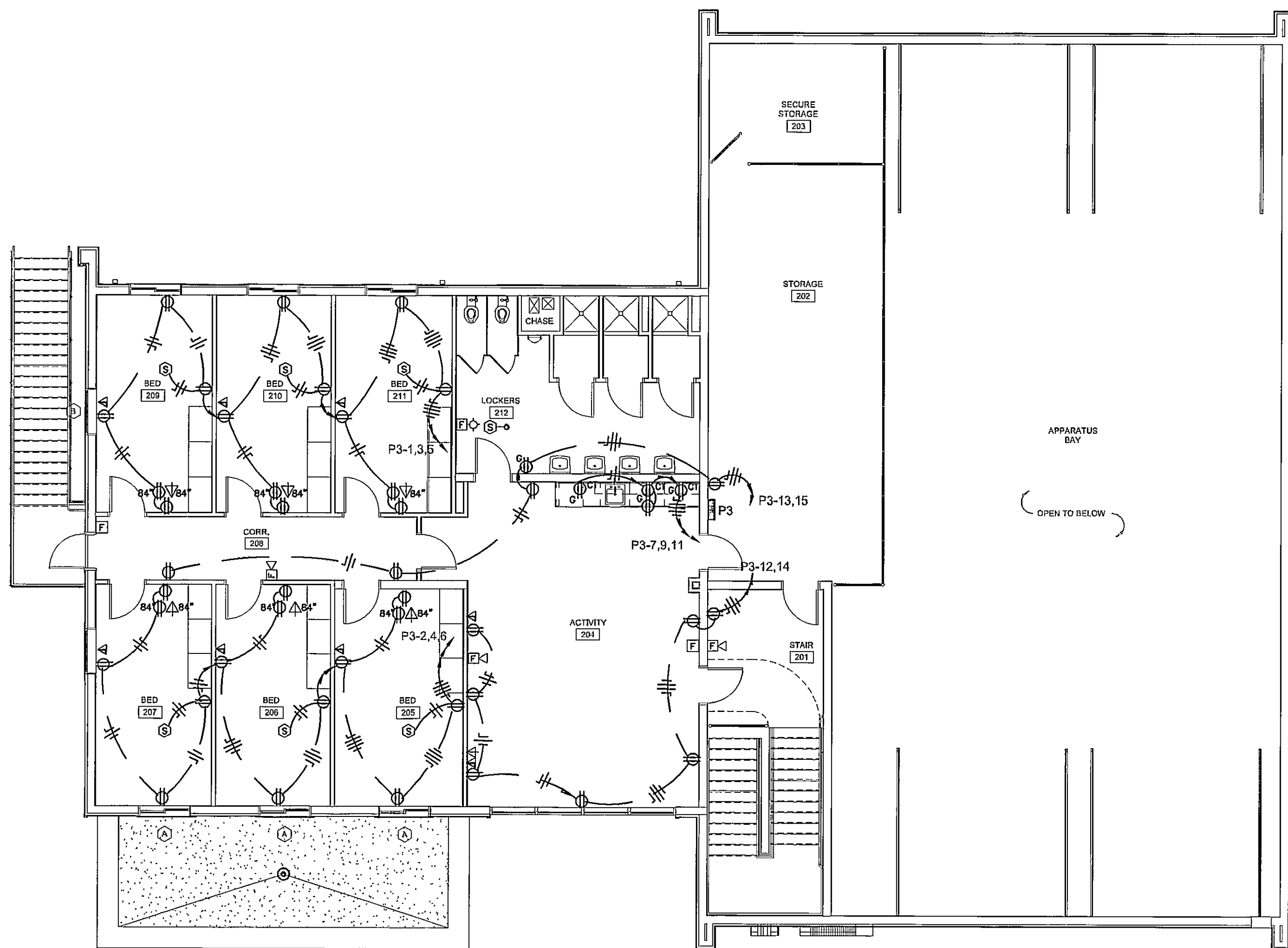
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E2.0

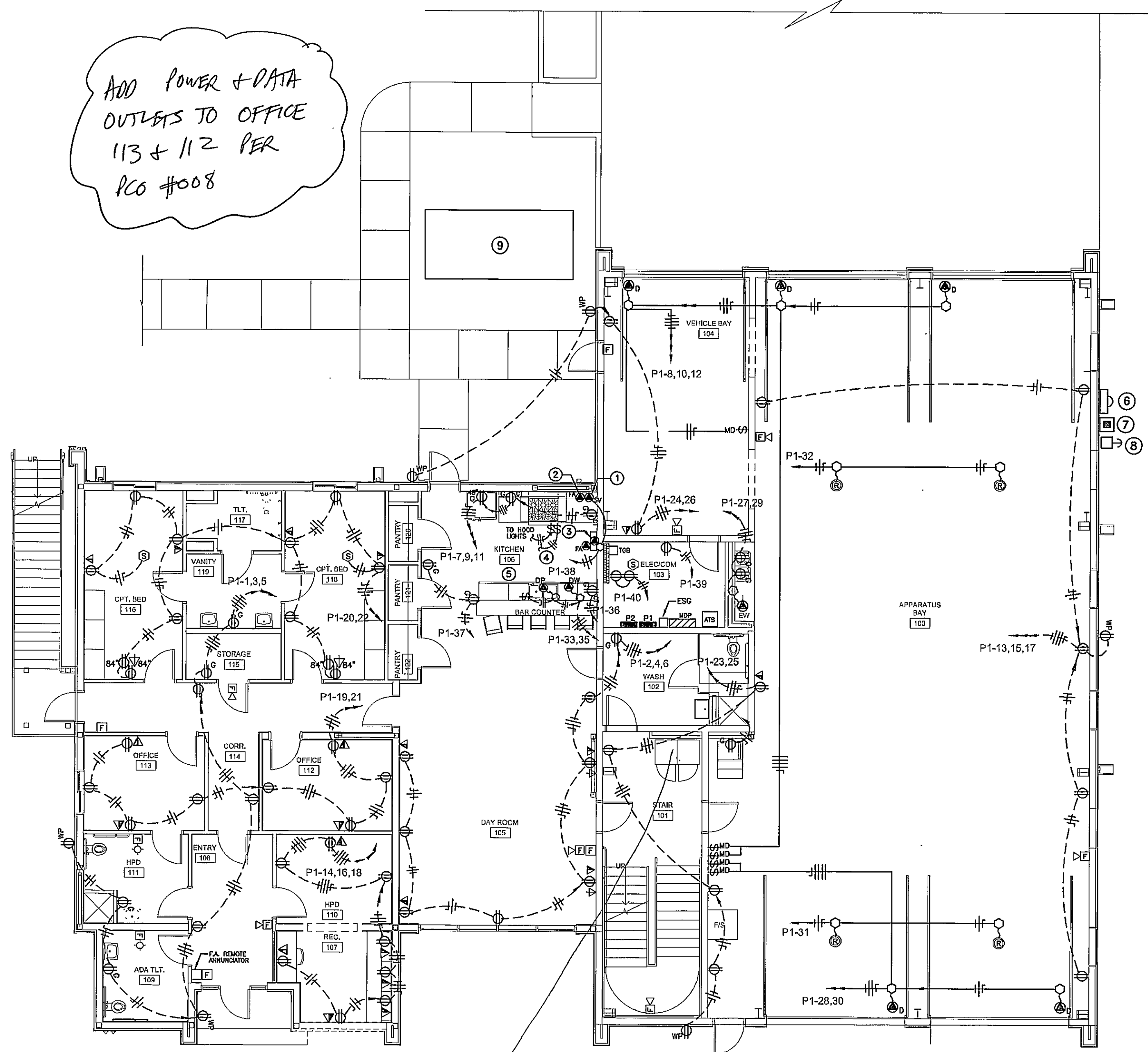
REVISION SCHEDULE
REV # REV DATE

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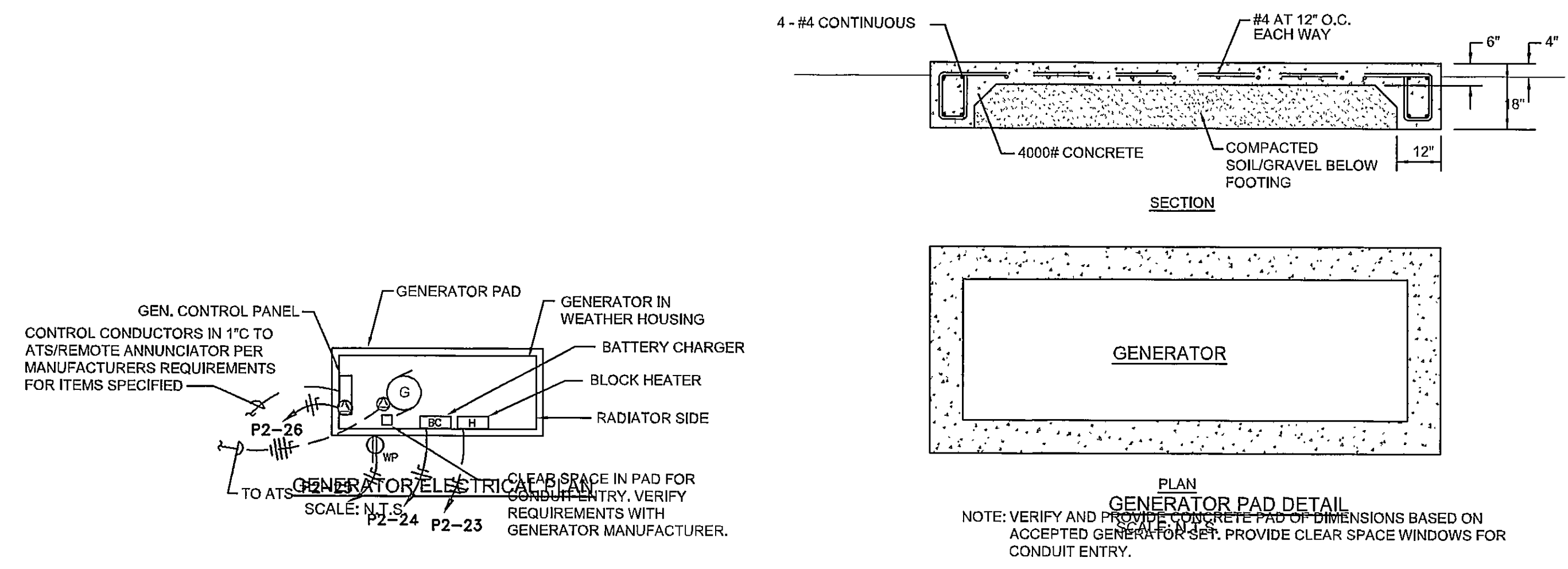
SECOND FLOOR POWER AND COMMUNICATIONS PLAN
3/16" = 1'-0"



FIRST FLOOR POWER AND COMMUNICATIONS PLAN
3/16" = 1'-0"

Item No. 1-14 Sheet E2.1, POWER AND COMMUNICATIONS PLANS: Provide dedicated 2-10, 1-10G for the washing machine circuit and dedicated 3-10, 1-10G for the dryer circuit at Stair 101. Provide a duplex receptacle for the washer and a 30 amp 250V 4W flush mounted receptacle for the dryer. Homerun to panel P1.

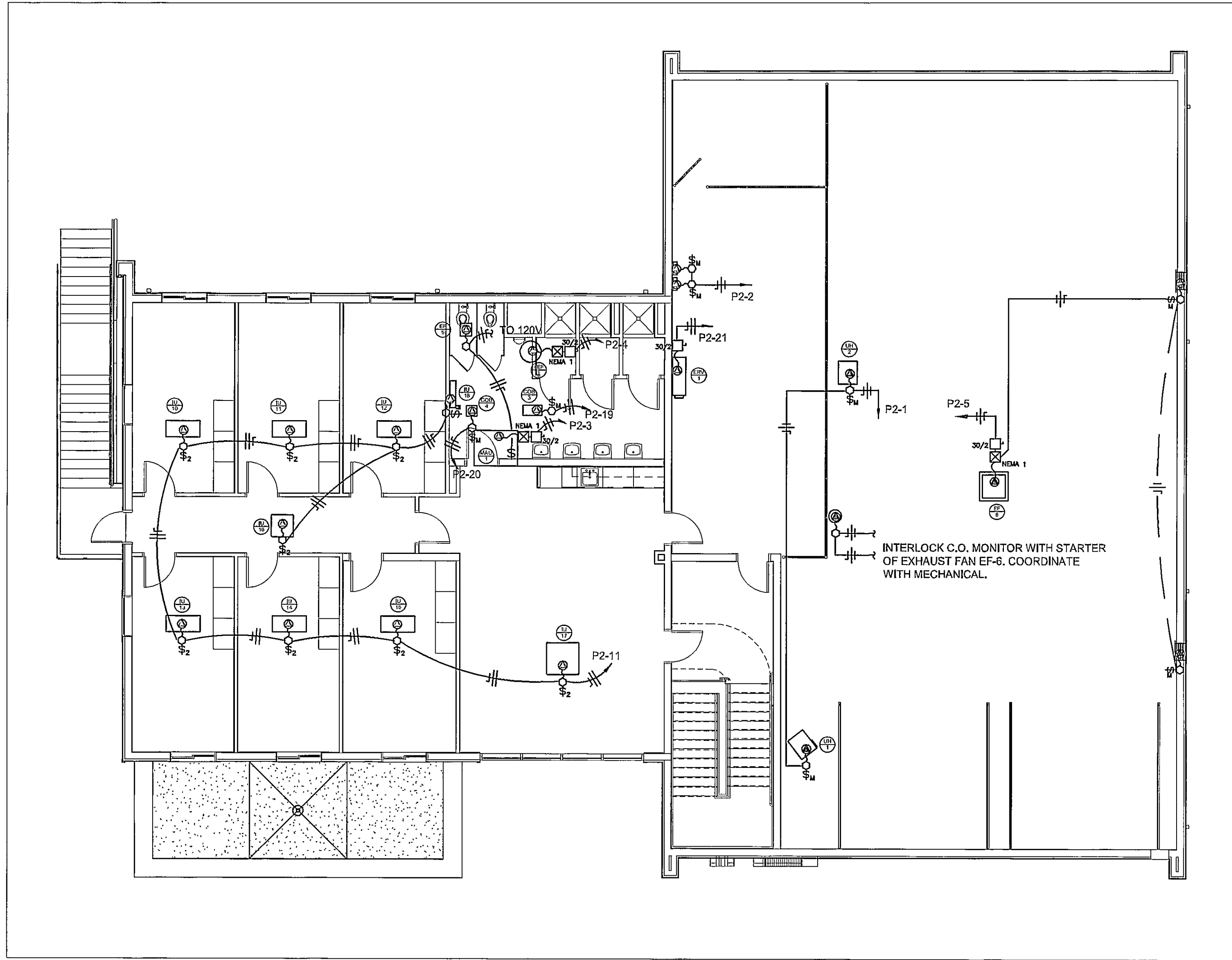
Item No 2-31 Sheet E2.1 POWER AND COMMUNICATIONS PLAN. Provide/install fire alarm system supervising modules and associated circuit for the fire protection system flow and tamper switches on the fire riser. The fire riser location is in Stair 101.



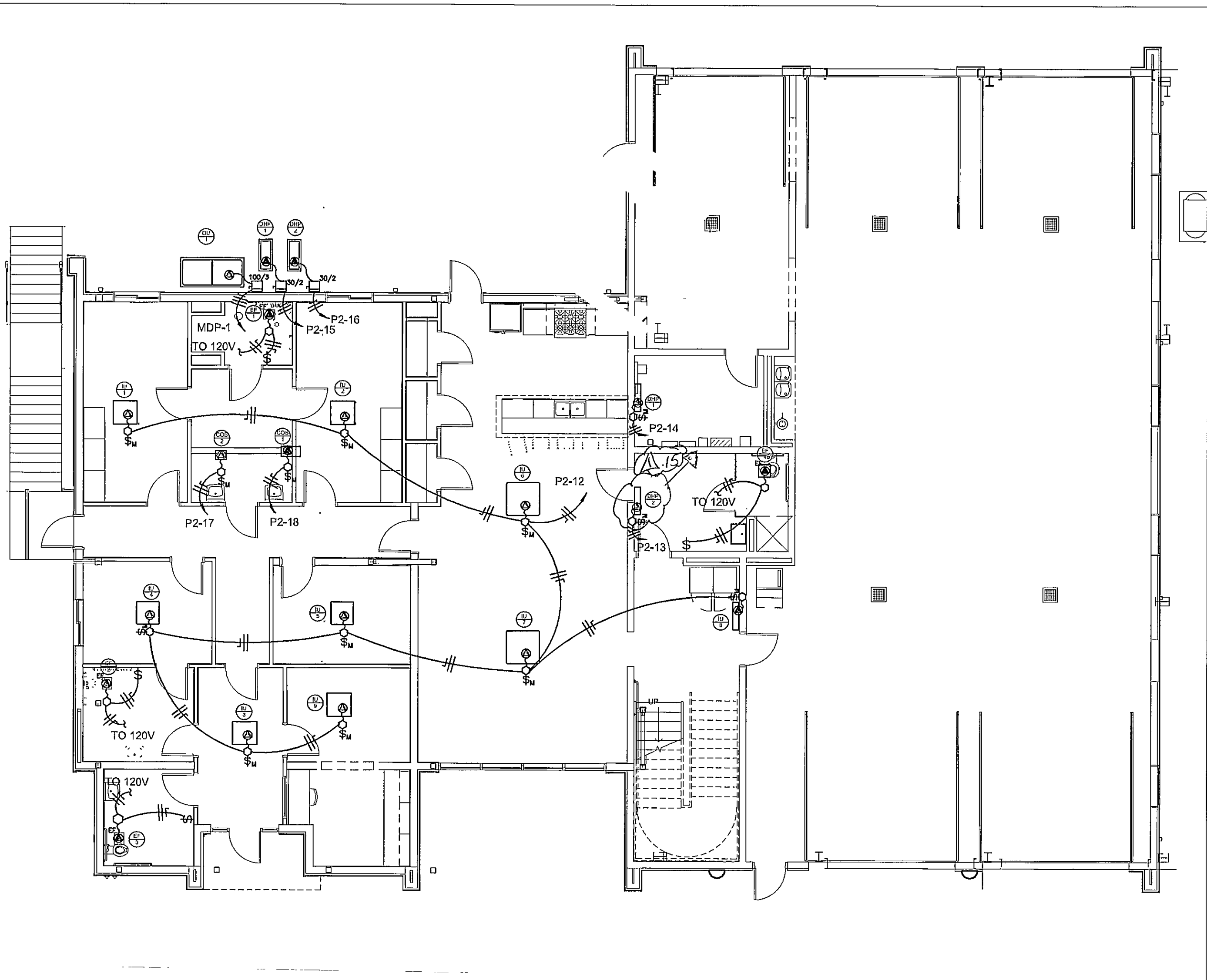
NOTE: VERIFY AND PROVIDE CONCRETE PROOF OF DIMENSIONS BASED ON ACCEPTED GENERATOR SET. PROVIDE CLEAR SPACE WINDOWS FOR CONDUIT ENTRY.

MOVE TO 2ND FLOOR PER DETAIL ON NEXT PAGE

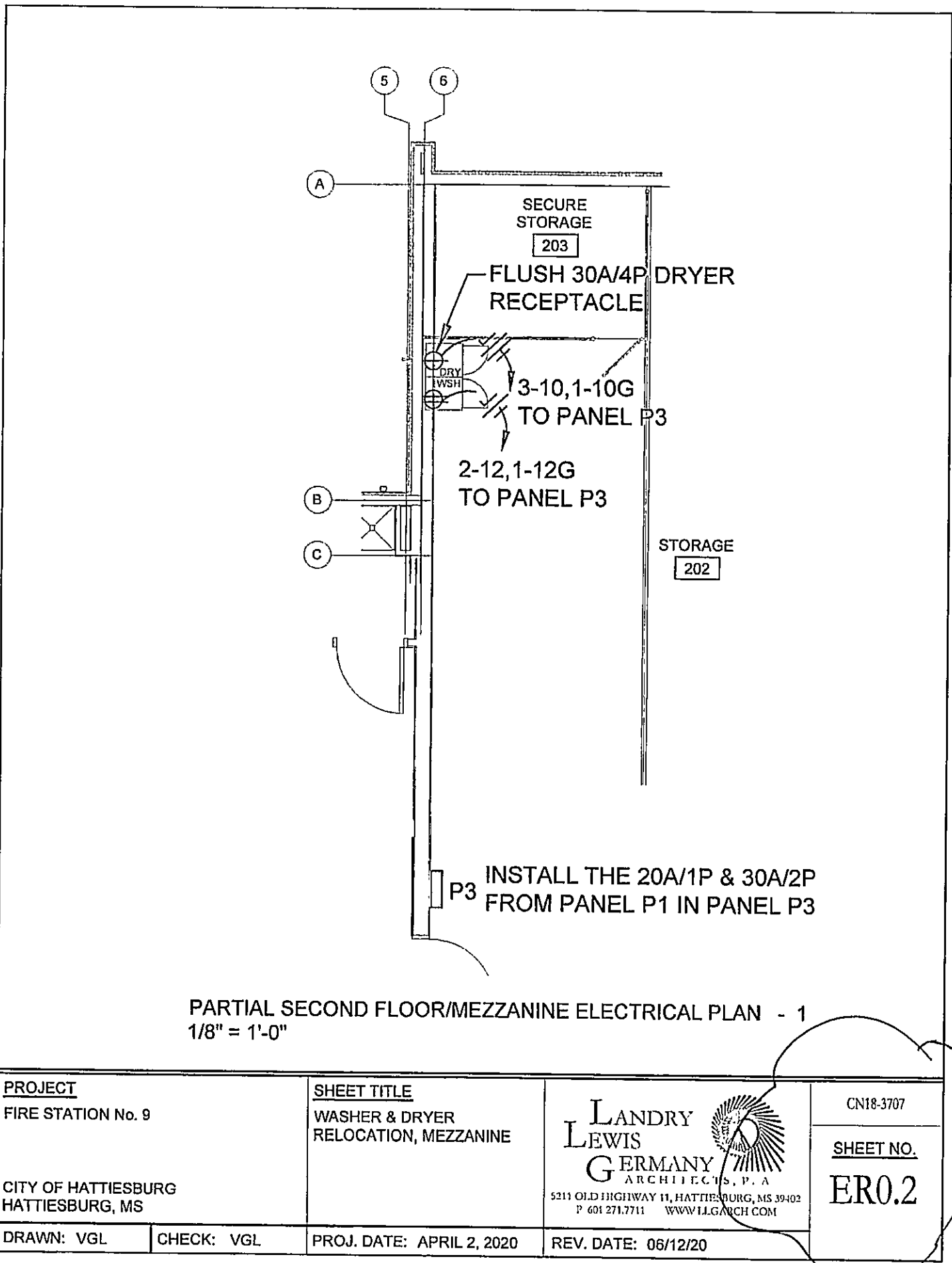
- SPECIFIC NOTES:**
- 1 MAKE CONNECTION TO ELECTRICALLY HELD GAS TRIN VALVE. ROUTE THRU RELAY FOR REMOVAL OF POWER TO VALVE UPON ACTIVATION OF THE HOOD SUPPRESSION SYSTEM OR THE FIRE ALARM SYSTEM. COORDINATE WITH FIRE ALARM AND PLUMBING CONTRACTORS.
 - 2 PROVIDE SUPERVISED, ADDRESSABLE N.O. FIRE ALARM RELAY FOR MONITORING ELECTRIC GAS TRIN VALVE 120V POWER. ACTIVATION OF THE FIRE ALARM SYSTEM OR HOOD SUPPRESSION SYSTEM SHALL CAUSE GAS VALVE TO CLOSE. COORDINATE WITH PLUMBING AND ELECTRICAL CONTRACTORS. RELAY SHALL BE RATED FOR CONTINUOUS DUTY BASED ON VALVE OPERATING CURRENT.
 - 3 HOOD SUPPRESSION SYSTEM. PROVIDE SUPERVISED, ADDRESSABLE FIRE ALARM RELAYS WITHIN HOOD SUPPRESSION SYSTEM ENCLOSURE. ACTIVATION OF THE FIRE ALARM SYSTEM OR THE HOOD SUPPRESSION SYSTEM SHALL CAUSE SHUTDOWN OF THE HOOD SUPPLY FAN. THE HOOD EXHAUST FAN SHALL ACTIVATE AND/OR REMAIN ON. IN ADDITION, ACTIVATION OF THE FIRE ALARM SYSTEM OR THE HOOD SUPPRESSION SYSTEM SHALL CAUSE GAS VALVE TO CLOSE TO REMOVE GAS SUPPLY TO ALL EQUIPMENT BELOW THE HOOD. COORDINATE WITH FIRE ALARM & MECHANICAL CONTRACTORS.
 - 4 #12 AWG TO HOOD FAN CONTROLS ON ROOF. SEE MECHANICAL EQUIPMENT ELECTRICAL PLAN. COORDINATE WITH MECHANICAL.
 - 5 ALL ROUGH-IN AND ELECTRICAL CIRCUIT/CONTROL REQUIREMENTS OF ALL KITCHEN EQUIPMENT SHALL BE COORDINATED WITH EQUIPMENT SUPPLIER PRIOR TO INSTALLATION. COORDINATE ROUGH-IN WITH MECHANICAL. CONTRACTOR SHALL VERIFY NEMA CONFIGURATION OF ALL RECEPTACLES WITH EQUIPMENT SUPPLIER. FINAL ELECTRICAL CONNECTION OF ALL KITCHEN EQUIPMENT BY ELECTRICAL CONTRACTOR.
 - 6 FEED THRU 320 AMP 3 PHASE METER CAN BY CONTRACTOR. COORDINATE WITH UTILITY. SEE POWER RISER DIAGRAM AND SITE ELECTRICAL PLAN.
 - 7 400 AMP 3 POLE SERVICE ENTRANCE RATED CIRCUIT BREAKER IN NEMA 3R ENCLOSURE. SEE POWER RISER DIAGRAM AND SITE ELECTRICAL PLAN.
 - 8 STANDBY GENERATOR SHUT DOWN PUSHBUTTON. PROVIDE A GENERATOR EMERGENCY SHUTDOWN SWITCH ON EXTERIOR OF THE BUILDING. SWITCH SHALL BE TURN-TO-RELEASE, TRIGGER ACTION WITH 40MM MUSHROOM HEAD, N.O. N.C. CONTACTS EQUAL TO SQUARE D #XB48S8445. INSTALL IN HOFFMAN BOX AT 60" AFF. BOX SHALL HAVE A HINGED LOCKING POLYCARBONATE COVER. PROVIDE 6"x6" PERMANENT SIGN ON BOX COVER WORDED "GENERATOR EMERGENCY SHUTDOWN SWITCH" USING 1/2" RED LETTERING ON WHITE FIELD. ROUTE 2-12, 1-12G TO GENERATOR CONTROL PANEL. OPERATION OF BUTTON SHALL CAUSE GENERATOR TO SHUTDOWN. PROVIDE RELAY IN GENERATOR CONTROL PANEL FOR OPERATION. COORDINATE WITH GENERATOR SUPPLIER.
 - 9 STANDBY GENERATOR. COORDINATE WITH ARCHITECT AND CIVIL ENGINEER FOR EXACT LOCATION. SEE GENERATOR PAD DETAIL AND ELECTRICAL PLAN THIS SHEET.



SECOND FLOOR MECHANICAL EQUIPMENT ELECTRICAL PLAN
3/16" = 1'-0"



FIRST FLOOR MECHANICAL EQUIPMENT ELECTRICAL PLAN
3/16" = 1'-0"



DRAWN
VGL

CHECKED
VGL

FINAL DATE
November 22, 2019

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SHEET TITLE
MECHANICAL EQUIPMENT
ELECTRICAL PLANS

PROJECT
FIRE STATION No. 9

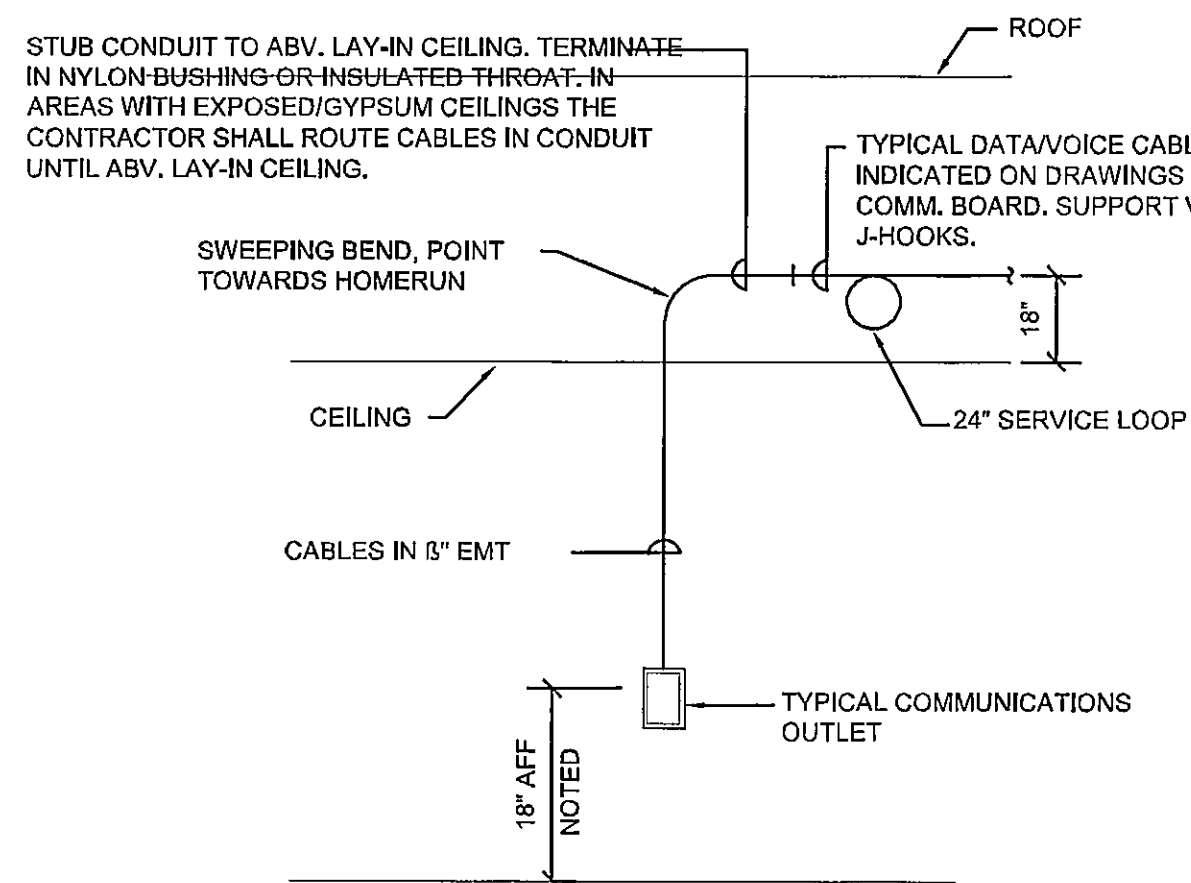
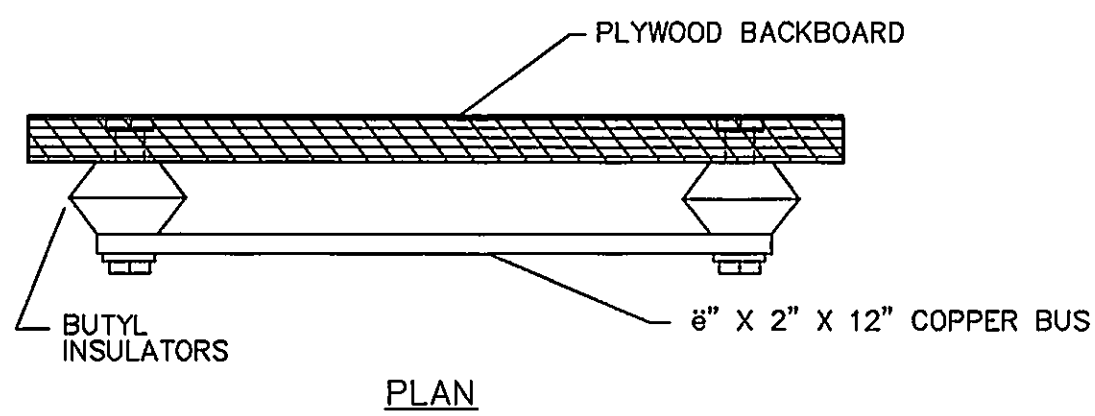
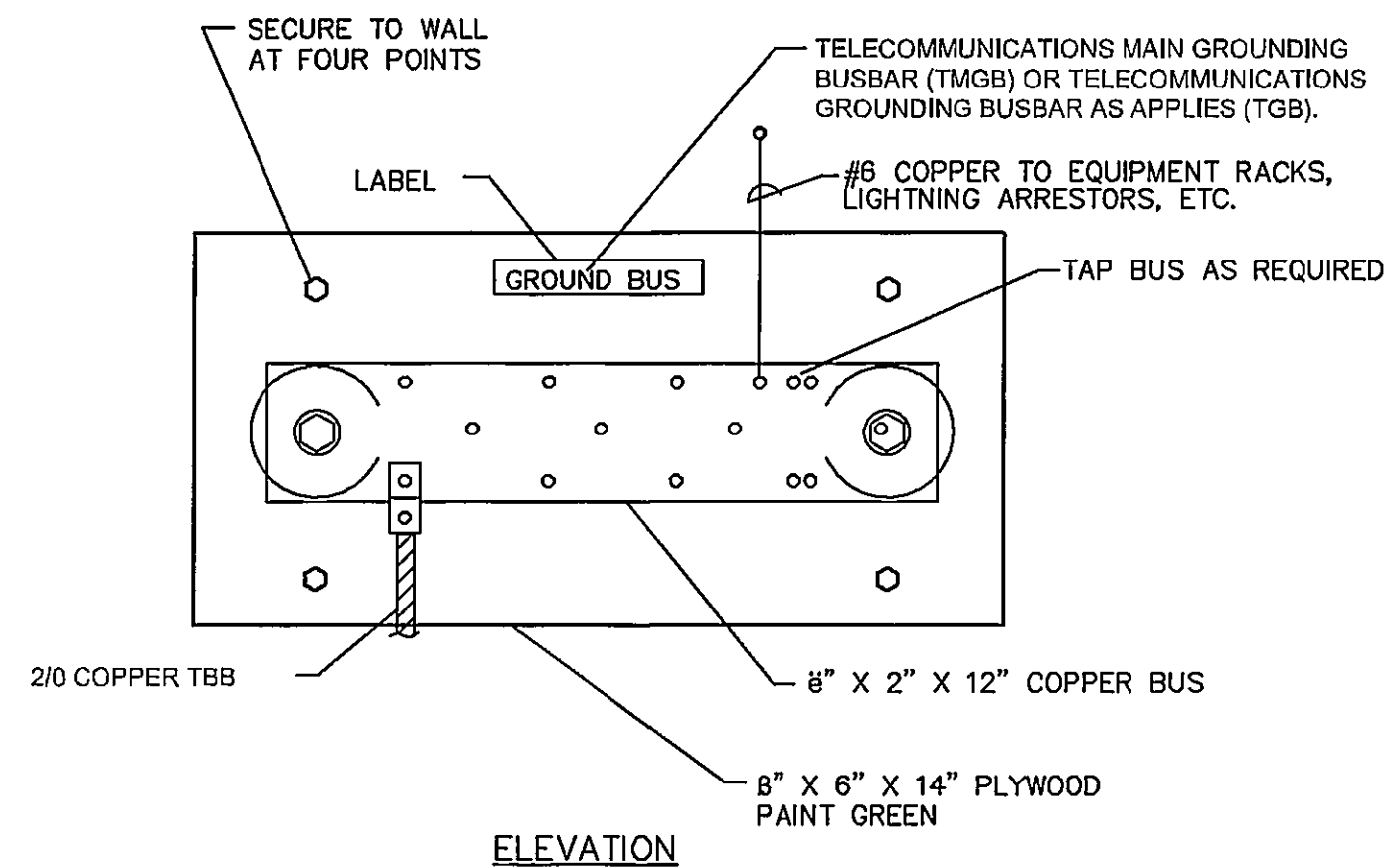
CITY OF HATTIESBURG
HATTIESBURG, MS

VICTOR LACHIN, III
 REGISTERED PROFESSIONAL ENGINEER
 STATE OF MISSISSIPPI

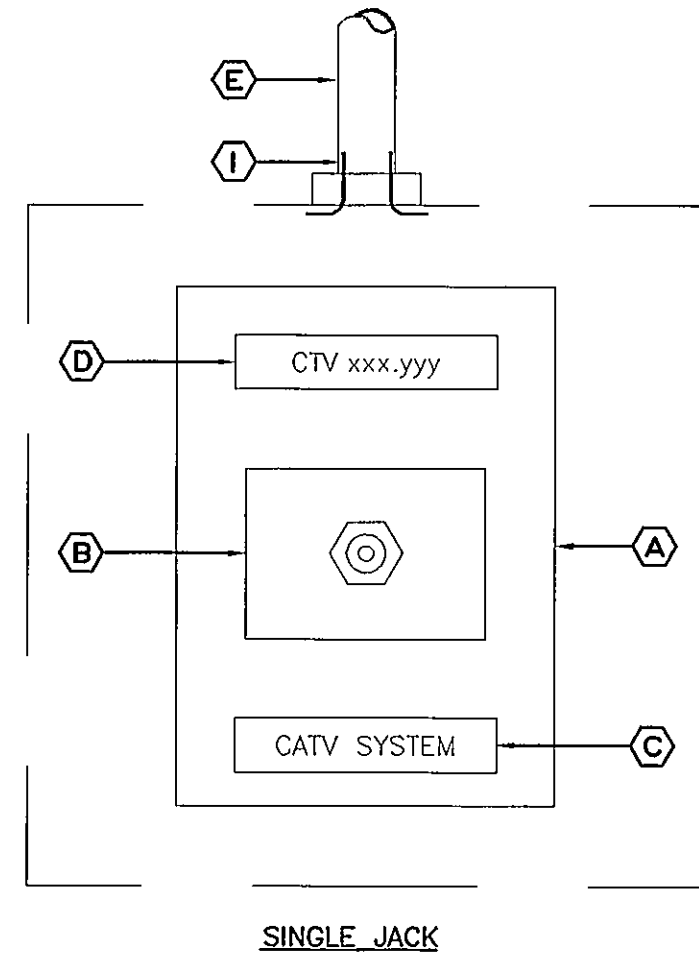
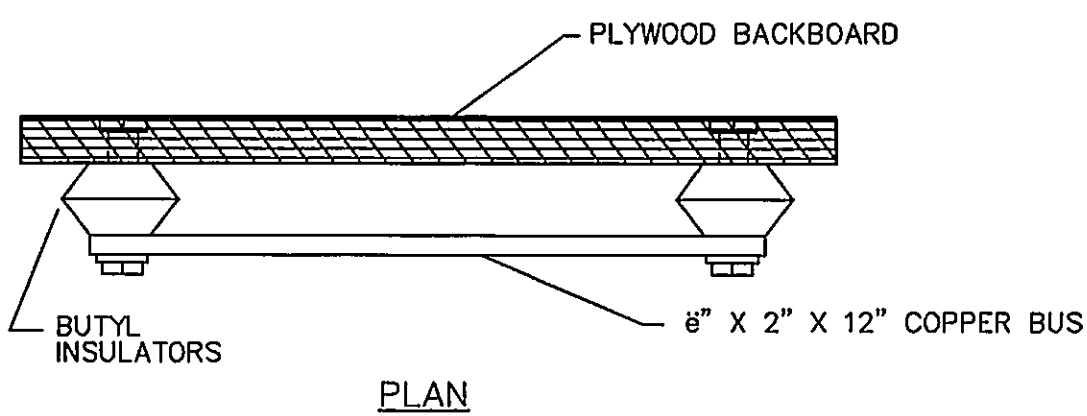
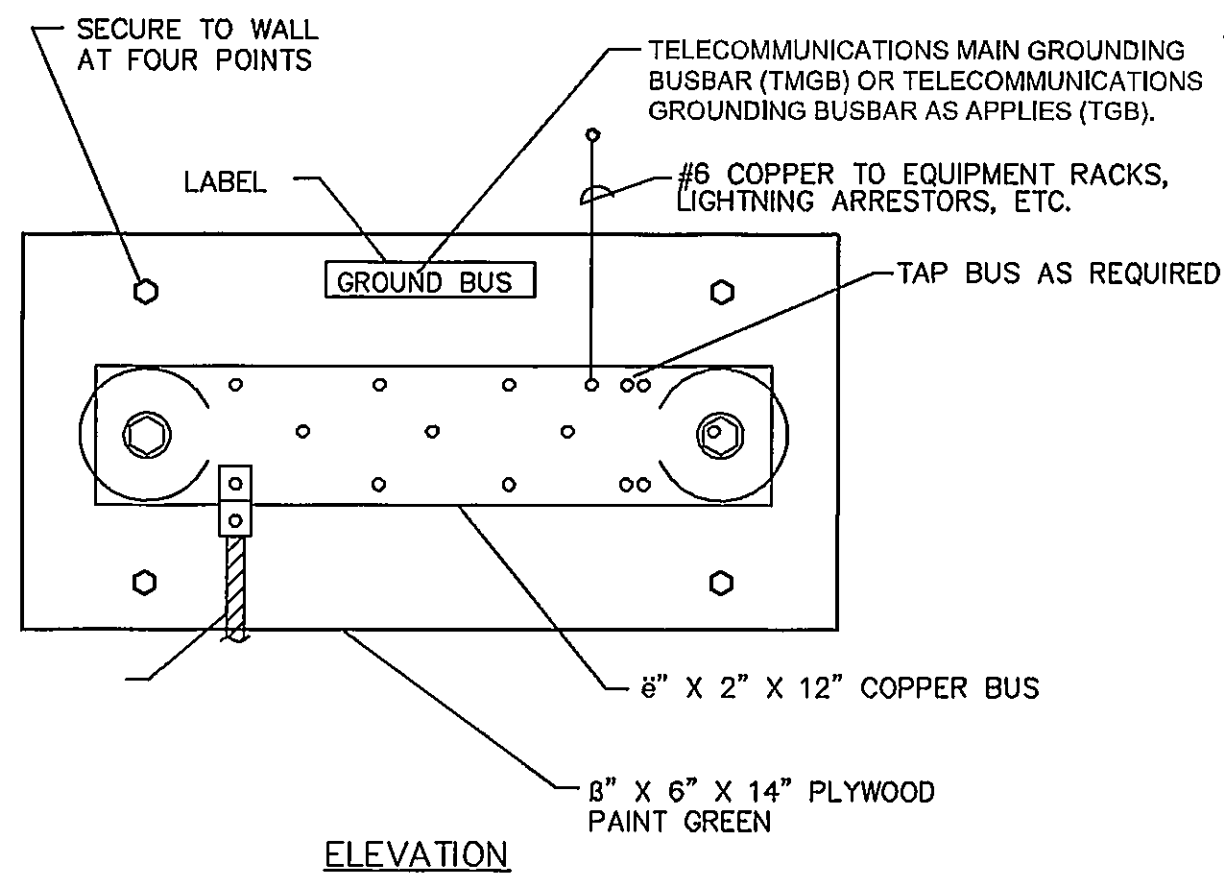
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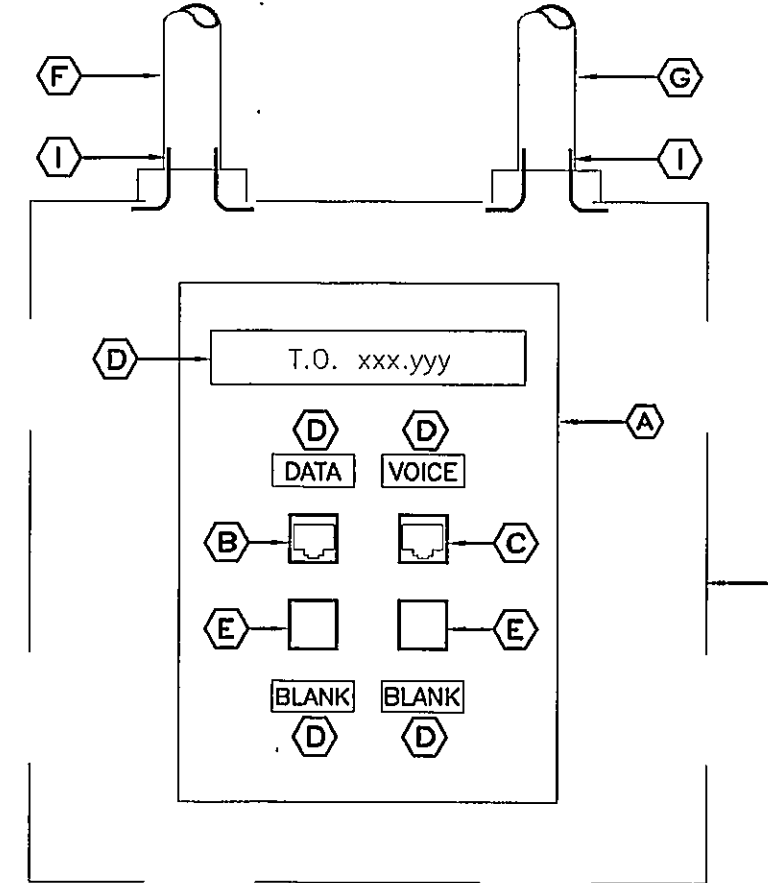
E2.2



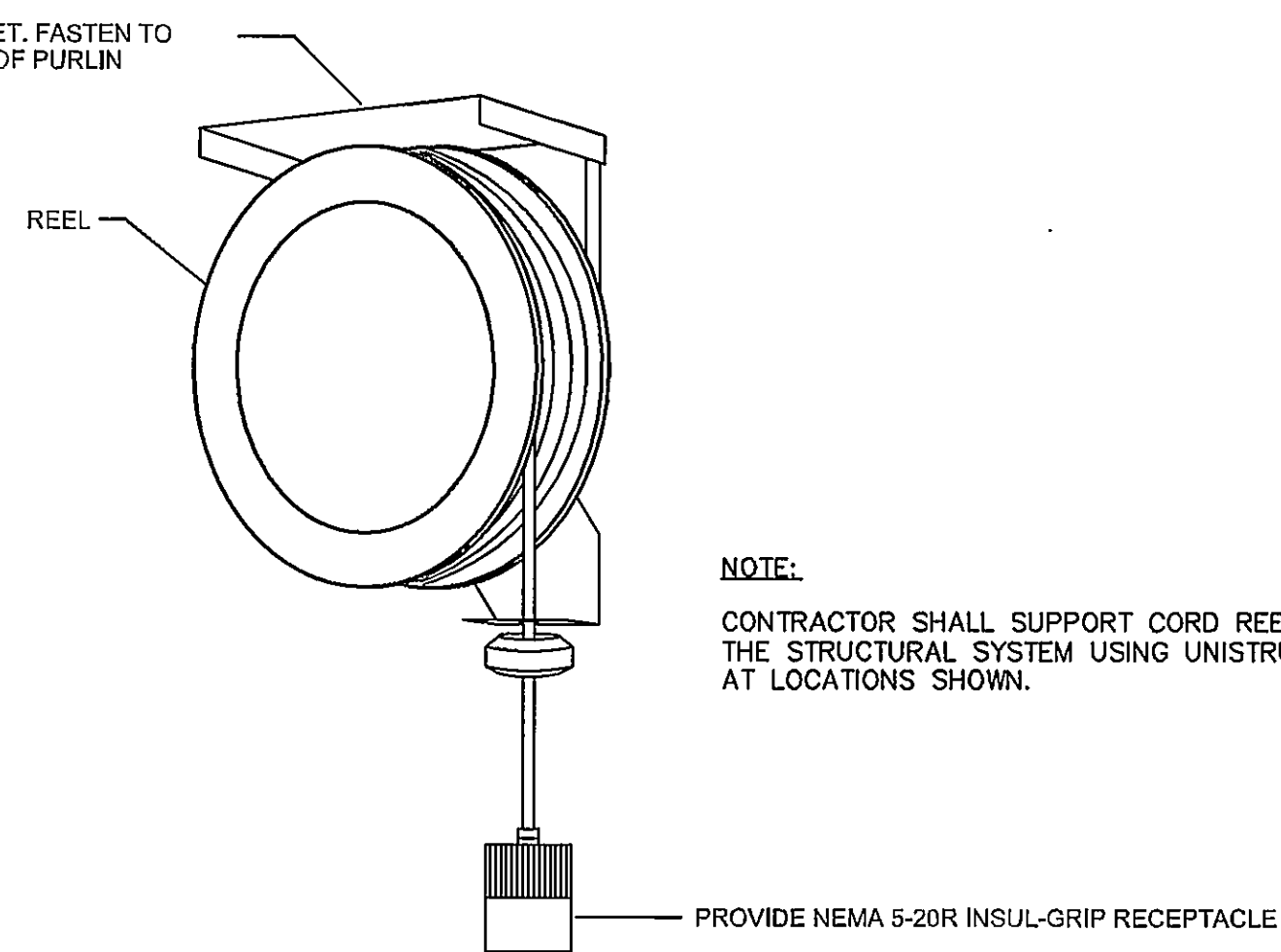
COMMUNICATIONS OUTLET
INSTALLATION DETAIL
SCALE: N.T.S.



CATV OUTLET
COVERPLATE DETAIL (◁)◁
SCALE: N.T.S.



VOICE/DATA OUTLET
COVERPLATE DETAIL (◁)◁
SCALE: N.T.S.



STANDARD DUTY CORD REEL WITH OPEN HOUSING AND SWING MOUNT SPRING RETRACTION, WITH RATCHET. REEL WIRING SHALL BE 35" SJOW CORD, 16 GAUGE, COPPER. EQUAL TO BALCRANK 2520-003 WITH RECEPTACLE MODIFICATIONS AS DETAILED.

COMMERCIAL "CATV" OUTLET SPECIFIC NOTES:

- (A) COVERPLATE - SEE SPECIFICATIONS
- (B) SNAP-IN COUPLER WITH ONE "F-TYPE" VIDEO CONNECTOR ASSEMBLY. COUPLER SHALL HAVE ANGLED INSERTION FOR GRAVITY FEED OF WORK AREA EQUIPMENT CABLE. SEE SPECIFICATIONS.
- (C) WHITE PAPER LABEL UNDER CLEAR PLASTIC COVER INDICATING CATV SYSTEM OUTLET IDENTIFIER. SEE "T.O. NOMENCLATURE" THIS SHEET. PROVIDE LASER PRINTED INSERTS WITH 6" TEXT, ROMAN "S" FONT. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
- (D) WHITE PAPER LABEL UNDER CLEAR PLASTIC COVER INDICATING SYSTEM OUTLET TYPE (COMMERCIAL CATV). PROVIDE LASER PRINTED INSERTS WITH 6" TEXT, ROMAN "S" FONT. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
- (E) 3/4" EMT WITH CATV CABLE TO COMMUNICATIONS BOARD.

TELECOMMUNICATIONS SPECIFIC NOTES

- (A) COVERPLATE: IVORY PLASTIC FOR SEPARATE OR COUPLED JACKS. ALL COVERPLATES SHALL HAVE OPENINGS FOR FOUR SEPARATE MODULAR JACKS OR TWO DUAL COUPLED JACKS.
- (B) SNAP-IN COUPLER WITH ONE 8-PIN MODULAR DATA JACK ASSEMBLY. SEE SPECIFICATIONS.
- (C) SNAP-IN COUPLER WITH ONE 6-PIN MODULAR VOICE JACK ASSEMBLY. SEE SPECIFICATIONS.
- (D) ALPHANUMERIC LABEL UNDER CLEAR PLASTIC COVER DENOTING TELECOMMUNICATIONS OUTLET (T.O.) IDENTIFIER. ALL T.O. IDENTIFIER NOMENCLATURE SHALL BE A THREE LEVEL SCHEME AS INDICATED IN THE T.O. NOMENCLATURE DETAIL. COORDINATE WITH GOVERNMENT FOR EXACT NUMBERING. PROVIDE LASER PRINTED INSERTS WITH 6" TEXT, ROMAN "S" FONT. HANDWRITTEN LABELS ARE NOT ACCEPTABLE.
- (E) BLANK SNAP-IN COVER FOR FUTURE MODULAR JACK.
- (F) 1" EMT WITH DATA CABLE TO COMMUNICATIONS BOARD.
- (G) 1" EMT WITH VOICE CABLE TO COMMUNICATIONS BOARD.
- (H) 1" EMT WITH DATA & VOICE CABLES TO COMMUNICATIONS BOARD.
- (I) INSULATED THROAT.
- (J) 4" SQUARE BOX BEYOND IN WALL.
- (K) 6"x6" STAINLESS STEEL COVERPLATE.
- (L) 2 1/2" GROMMETTED HOLE FOR PROJECTOR CABLE.
- (M) 2" EMT WITH AUDIO-VISUAL ("AV") CABLE TO COMMUNICATIONS BOARD.

TELECOMMUNICATIONS GENERAL NOTES

1. MAKE ALL TERMINATIONS IN STRICT ACCORDANCE WITH TIA GUIDELINES AS WELL AS THE MANUFACTURER'S PRINTED INSTRUCTIONS FOR BOTH THE CABLE AND THE TERMINATION DEVICE FOR ALL FIELD CONNECTIONS IN THE "HORIZONTAL TELECOMMUNICATIONS LINK" STRIP CABLE JACKET BACK A MAXIMUM OF 1 INCH FROM THE POINT OF TERMINATION. MAINTAIN FACTORY SYMMETRICAL CABLE TWISTS TO WITHIN 0.5 INCHES (13 MM MAXIMUM) OF THE POINT OF TERMINATION. PROVIDE CABLE SLACK AT EACH END TO ALLOW MINIMUM OF FIVE FUTURE RETERMINATIONS WITHOUT RE-ROUTING CABLE.
2. ATTACH CAT 6 CABLES TO JACK ASSEMBLIES USING FACTORY FURNISHED CABLE-TIE EYELETS AND CABLE TIES FOR CABLE MANAGEMENT AND STRAIN RELIEF. CONFORM TO MANUFACTURER'S RECOMMENDED INSTRUCTIONS.
3. INDIVIDUAL SNAP-IN MODULAR JACKS MAY BE PROVIDED IN LIEU OF COUPLER TYPE JACK ASSEMBLY.
4. USE J-HOOKS OR OTHER INDUSTRY ACCEPTED METHOD TO ROUTE STATION CABLES FROM THE COMMUNICATIONS BOARD IF RACEWAY NOT DETAILED.

FIRE STATION No. 9

CITY OF HATTIESBURG MISSISSIPPI

HATTIESBURG, MISSISSIPPI

CN 18-3707

November 22, 2019

**PROJECT
MANUAL
SET NO**

SECTION 00 00 01 – INDEX TO SPECIFICATIONS

SECTION NUMBER	SECTION NAME	PAGES
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DIVISION ZERO – PROCUREMENT AND CONTRACTING REQUIREMENTS

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00 00 02	CIVIL INDEX	1
00 00 03	ARCHITECTURAL INDEX	2
00 00 04	STRUCTURAL INDEX	1
00 00 05	MECHANICAL INDEX	1
00 00 06	ELECTRICAL INDEX	1
00 01 01	PROJECT TITLE PAGE	1
00 01 10	SEALS PAGE	4
00 01 15	LIST OF DRAWING SHEETS	2
00 11 13	ADVERTISEMENT FOR BIDS	1
00 21 13	INSTRUCTIONS TO BIDDERS	10
00 42 13	PROPOSAL FORM	3
00 50 00	CONTRACT FORMS AND SUPPLEMENTS	1
00 72 00	GENERAL CONDITIONS	41
00 73 00	SUPPLEMENTARY CONDITIONS	15

DIVISION ONE - GENERAL REQUIREMENTS

01 10 00	SUMMARY AND ALTERNATES	1
01 21 00	ALLOWANCES	1
01 25 13	PRODUCTS AND SUBSTITUTIONS	6
01 29 00	SCHEDULES, REPORTS, & PAYMENTS	3
01 33 00	SUBMITTALS	4
01 42 00	DEFINITIONS AND STANDARDS	4
01 45 29	QUALITY CONTROL SERVICES	3
01 50 00	TEMPORARY FACILITIES	8
01 77 00	PROJECT CLOSE-OUT	6

DIVISION TWO – EXISTING CONDITIONS

02 30 00	SOIL INVESTIGATION	39
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DIVISION THREE - CONCRETE

03 10 00	CONCRETE FORMING AND ACCESSORIES	4
03 20 00	CONCRETE REINFORCING	2
03 30 00	CAST IN PLACE CONCRETE	9

DIVISION FOUR - MASONRY

04 20 00	BRICK AND CONCRETE UNIT MASONRY	7
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DIVISION FIVE - METALS

05 12 00	STRUCTURAL STEEL FRAMING	4
05 12 10	STEEL JOIST AND TRUSSES	3

05 31 00	STEEL DECKING	3
05 40 00	COLD-FORMED STRUCTURAL WALL FRAMING	4

DIVISION SIX – WOOD, PLASTICS AND COMPOSITES

06 10 00	ROUGH CARPENTRY	7
06 16 13	INSULATING SHEATHING	5
06 20 00	FINISH CARPENTRY	7

DIVISION SEVEN - THERMAL AND MOISTURE PROTECTION

07 21 00	INSULATION	3
07 26 16	UNDER-SLAB VAPOR BARRIER	2
07 41 13	METAL ROOF PANELS	6
07 42 13	FORMED METAL WALL PANELS	10
07 54 23	FULLY ADHERED TPO ROOFING	16
07 62 00	SHEET METAL FLASHING AND TRIM	7
07 92 00	JOINT SEALERS	6

DIVISION EIGHT - OPENINGS

08 10 10	IMPACT HOLLOW METAL DOORS, FRAMES AND HARDWARE	7
08 11 13	STEEL DOORS AND FRAMES	5
08 14 16	FLUSH WOOD DOORS	5
08 33 13	OVERHEAD SECTIONAL DOORS	5
08 41 13	ALUMINUM ENTRANCES AND STOREFRONTS	6
08 44 00	ALUMINUM CURTAINWALL SYSTEM	6
08 71 00	DOOR HARDWARE	16
08 81 00	GLASS AND GLAZING	4

DIVISION NINE - FINISHES

09 25 00	GYPSUM DRYWALL AND METAL STUDS	9
09 30 13	CERAMIC TILE	7
09 30 50	TILE SETTING MATERIALS AND ACCESSORIES	5
09 51 23	ACOUSTICAL CEILINGS	4
09 65 00	RESILIENT FLOORING AND BASE	5
09 90 00	PAINTING	9

DIVISION TEN - SPECIALTIES

10 21 13	TOILET PARTITIONS	4
10 28 00	TOILET ACCESSORIES	4
10 42 60	SPECIALTY SIGNS	2
10 44 16	FIRE EXTINGUISHERS CABINETS AND ACCESSORIES.	3
10 53 00	PRE-MANUFACTURED ALUMINUM CANOPY	2
10 95 00	MISCELLANEOUS SPECIALTIES	7

DIVISION TWELVE – FURNISHINGS

12 49 20	MANUAL ROLLER SHADE	5
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DIVISION THIRTEEN – SPECIAL CONSTRUCTION

13 34 19	METAL BUILDING SYSTEMS	7
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DIVISION TWENTY-ONE – FIRE SUPPRESSION

21 13 13	FIRE PROTECTION	12
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DIVISION TWENTY-TWO – PLUMBING

22 00 00	PLUMBING GENERAL PURPOSE	20
22 07 19	PLUMBING PIPING INSULATION	10

DIVISION TWENTY-THREE – HEATING, VENTILATING, AND AIR CONDITIONING

23 00 00	AIR SUPPLY DISTRIBUTION, VENTILATION AND EXHAUST	16
23 03 00	BASIC MECHANICAL MATERIALS AND METHODS	4
23 05 93	TESTING, ADJUSTING AND BALANCING FOR HVAC	7
23 07 00	THERMAL INSULATION FOR MECHANICAL SYSTEMS	38
23 23 00	REFRIGERANT PIPING	19
23 37 13	DIFFUSERS, REGISTERS AND GRILLES	3
23 54 16	HEATING SYSTEMS: GAS-FIRED HEATERS	4
23 81 00	UNITARY AIR CONDITIONING EQUIPMENT	5
23 82 02	VARIABLE REFRIGERANT FLOW HVAC SYSTEMS	26
23 31 13	METAL DUCTS	15

DIVISION TWENTY-SIX – ELECTRICAL

26 05 19	LOW VOLTAGE ELECTRICAL POWER CONDUCTIONS AND CABLES	8
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS	6
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEM	4
26 05 34	CONDUIT	8
26 05 37	BOXES	6
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEM	4
26 09 19	ENCLOSED CONTRACTORS	2
26 09 23	LIGHTING CONTROL DEVICES	5
26 21 00	LOW VOLTAGE ELECTRICAL SERVICE ENTRANCE	2
26 24 16	PANELBOARDS	7
26 27 17	EQUIPMENT WIRING	2
26 27 26	WIRING DEVICES	7
26 28 13	FUSES	1
26 28 17	ENCLOSED CIRCUIT BREAKERS	2
26 28 18	ENCLOSED SWITCHES	3
26 29 13	ENCLOSED CONTROLLERS	6
26 32 14	EMERGENCY GENERATION SYSTEM	6
26 43 00	SURGE PROTECTIVE DEVICES	4
26 51 00	INTERIOR LIGHTING	6
26 56 00	EXTERIOR LIGHTING	4

DIVISION TWENTY-SEVEN – COMMUNICATIONS

27 10 05	STRUCTURED CABLING FOR VOICE AND DATA-INSIDE PLANT	7
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DIVISION TWENTY-EIGHT – ELECTRONIC SAFETY AND SECURITY

28 46 00	FIRE DETECTION AND ALARM	8
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DIVISION THIRTY-TWO – EXTERIOR IMPROVEMENTS

32 31 13	CHAIN LINK FENCING AND GATES	4
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CIVIL SPECIFICATIONS

DIVISION ZERO – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 00 00	SMALL CONSTRUCTION STORM WATER GENERAL	39
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DIVISION ONE - GENERAL REQUIREMENTS

01 57 13	TEMPORARY EROSION & SEDIMENTATION CONTROL	9
01 71 23	CONSTRUCTION LAYOUT AND SURVEYING	1

DIVISION THIRTY-ONE – EARTHWORK

31 00 00	EARTHWORK	7
31 10 00	SITE CLEARING	3

DIVISION THIRTY-TWO – EXTERIOR IMPROVEMENTS

32 12 10	HOT MIX BITUMINOUS PAVEMENT	2
32 13 00	CAST IN PLACE CONCRETE PAVING AND EXTERIOR SLABS	12
32 13 13 .50	CONCRETE FORMWORK – PAVING	3
32 13 13 .51	CONCRETE REINFORCEMENT – PAVING	2
32 16 00	CONCRETE CURBS, GUTTERS, AND WALKS	5
32 17 23	PAVEMENT MARKINGS	1

DIVISION THIRTY-THREE – UTILITIES

33 11 00	WATER UTILITY PIPING (SITE WORK)	8
33 30 00	SANITARY SEWERAGE SYSTEM (SITE WORK)	24
33 40 00	STORM DRAINAGE UTILITIES	4

TOTAL		803
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SECTION 00 00 02 – CIVIL INDEX TO SPECIFICATION
(LOCATED AT THE END OF THE SPECIFICATION BOOK)

SECTION NUMBER	SECTION NAME	PAGES
DIVISION ZERO – PROCUREMENT AND CONTRACTING REQUIREMENTS		
00 00 00	SMALL CONSTRUCTION STORM WATER GENERAL	39
DIVISION ONE - GENERAL REQUIREMENTS		
01 57 13	TEMPORARY EROSION & SEDIMENTATION CONTROL	9
01 71 23	CONSTRUCTION LAYOUT AND SURVEYING	1
DIVISION THIRTY-ONE – EARTHWORK		
31 00 00	EARTHWORK	7
31 10 00	SITE CLEARING	3
DIVISION THIRTY-TWO – EXTERIOR IMPROVEMENTS		
32 12 10	HOT MIX BITUMINOUS PAVEMENT	2
32 13 00	CAST IN PLACE CONCRETE PAVING AND EXTERIOR SLABS	12
32 13 13 .50	CONCRETE FORMWORK – PAVING	3
32 13 13 .51	CONCRETE REINFORCEMENT – PAVING	2
32 16 00	CONCRETE CURBS, GUTTERS, AND WALKS	5
32 17 23	PAVEMENT MARKINGS	1
DIVISION THIRTY-THREE – UTILITIES		
33 11 00	WATER UTILITY PIPING (SITE WORK)	8
33 30 00	SANITARY SEWERAGE SYSTEM (SITE WORK)	24
33 40 00	STORM DRAINAGE UTILITIES	4

SECTION 00 00 03 – ARCHITECTURAL INDEX TO SPECIFICATIONS

SECTION NUMBER	SECTION NAME	PAGES
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DIVISION ZERO – PROCUREMENT AND CONTRACTING REQUIREMENTS

00 00 00	SPEC COVER	1
00 01 01	PROJECT TITLE PAGE	1
00 01 10	SEALS PAGE	2
00 01 15	LIST OF DRAWING SHEETS	4
00 11 13	ADVERTISEMENT FOR BIDS	1
00 21 13	INSTRUCTIONS TO BIDDERS	10
00 42 13	PROPOSAL FORM	3
00 50 00	CONTRACT FORMS AND SUPPLEMENTS	1
00 72 00	GENERAL CONDITIONS	41
00 73 00	SUPPLEMENTARY CONDITIONS	15

DIVISION ONE - GENERAL REQUIREMENTS

01 10 00	SUMMARY AND ALTERNATES	1
01 21 00	ALLOWANCES	1
01 25 13	PRODUCTS AND SUBSTITUTIONS	6
01 29 00	SCHEDULES, REPORTS, & PAYMENTS	3
01 33 00	SUBMITTALS	4
01 42 00	DEFINITIONS AND STANDARDS	4
01 45 29	QUALITY CONTROL SERVICES	3
01 50 00	TEMPORARY FACILITIES	8
01 77 00	PROJECT CLOSE-OUT	6

DIVISION TWO – EXISTING CONDITIONS

02 30 00	SOIL INVESTIGATION	39
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DIVISION FOUR - MASONRY

04 20 00	BRICK AND CONCRETE UNIT MASONRY	7
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DIVISION FIVE - METALS

05 40 00	COLD-FORMED STRUCTURAL WALL FRAMING	4
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DIVISION SIX – WOOD, PLASTICS AND COMPOSITES

06 10 00	ROUGH CARPENTRY	7
06 16 13	INSULATING SHEATHING	5
06 20 00	FINISH CARPENTRY	7

DIVISION SEVEN - THERMAL AND MOISTURE PROTECTION

07 21 00	INSULATION	3
07 26 16	UNDER-SLAB VAPOR BARRIER	2
07 41 13	METAL ROOF PANELS	6
07 42 13	FORMED METAL WALL PANELS	10

07 54 23	FULLY ADHERED TPO ROOFING	16
07 62 00	SHEET METAL FLASHING AND TRIM	7
07 92 00	JOINT SEALERS	6

DIVISION EIGHT - OPENINGS

08 10 10	IMPACT HOLLOW METAL DOORS, FRAMES AND HARDWARE	7
08 11 13	STEEL DOORS AND FRAMES	5
08 14 16	FLUSH WOOD DOORS	5
08 33 13	OVERHEAD SECTIONAL DOORS	5
08 41 13	ALUMINUM ENTRANCES AND STOREFRONTS	6
08 44 00	ALUMINUM CURTAINWALL SYSTEM	6
08 71 00	DOOR HARDWARE	16
08 81 00	GLASS AND GLAZING	4

DIVISION NINE - FINISHES

09 25 00	GYPSUM DRYWALL AND METAL STUDS	9
09 30 13	CERAMIC TILE	7
09 30 50	TILE SETTING MATERIALS AND ACCESSORIES	5
09 51 23	ACOUSTICAL CEILINGS	4
09 65 00	RESILIENT FLOORING AND BASE	5
09 90 00	PAINTING	9

DIVISION TEN - SPECIALTIES

10 21 13	TOILET PARTITIONS	4
10 28 00	TOILET ACCESSORIES	4
10 42 60	SPECIALTY SIGNS	2
10 44 16	FIRE EXTINGUISHERS CABINETS AND ACCESSORIES.	3
10 53 00	PRE-MANUFACTURED ALUMINUM CANOPY	2
10 95 00	MISCELLANEOUS SPECIALTIES	7

DIVISION TWELVE – FURNISHINGS

12 49 20	MANUAL ROLLER SHADE	5
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DIVISION THIRTY-TWO – EXTERIOR IMPROVEMENTS

32 31 13	CHAIN LINK FENCING AND GATES	4
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SECTION 00 00 04 – STRUCTURAL INDEX TO SPECIFICATIONS

SECTION NUMBER	SECTION NAME	PAGES
DIVISION THREE - CONCRETE		
03 10 00	CONCRETE FORMING AND ACCESSORIES	4
03 20 00	CONCRETE REINFORCING	2
03 30 00	CAST IN PLACE CONCRETE	9
DIVISION FIVE - METALS		
05 12 00	STRUCTURAL STEEL FRAMING	4
05 12 10	STEEL JOIST AND TRUSSES	3
05 31 00	STEEL DECKING	3
DIVISION THIRTEEN – SPECIAL CONSTRUCTION		
13 34 19	METAL BUILDING SYSTEM	7

SECTION 00 00 05 – MECHANICAL INDEX TO SPECIFICATIONS

SECTION NUMBER	SECTION NAME	PAGES
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DIVISION TWENTY-ONE – FIRE SUPPRESSION

21 13 13	FIRE PROTECTION	12
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DIVISION TWENTY-TWO – PLUMBING

22 00 00	PLUMBING GENERAL PURPOSE	20
22 07 19	PLUMBING PIPING INSULATION	10

DIVISION TWENTY-THREE – HEATING, VENTILATING, AND AIR CONDITIONING

23 00 00	AIR SUPPLY DISTRIBUTION, VENTILATION AND EXHAUST	16
23 03 00	BASIC MECHANICAL MATERIALS AND METHODS	4
23 05 93	TESTING, ADJUSTING AND BALANCING FOR HVAC	7
23 07 00	THERMAL INSULATION FOR MECHANICAL SYSTEMS	38
23 23 00	REFRIGERANT PIPING	19
23 37 13	DIFFUSERS, REGISTERS AND GRILLES	3
23 54 16	HEATING SYSTEMS: GAS-FIRED HEATERS	4
23 81 00	UNITARY AIR CONDITIONING EQUIPMENT	5
23 82 02	VARIABLE REFRIGERANT FLOW HVAC SYSTEMS	26
23 31 13	METAL DUCTS	15

SECTION 00 00 06 – ELECTRICAL INDEX TO SPECIFICATIONS

SECTION NUMBER	SECTION NAME	PAGES
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DIVISION TWENTY-SIX – ELECTRICAL

26 05 19	LOW VOLTAGE ELECTRICAL POWER CONDUCTIONS AND CABLES	8
26 05 26	GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS	6
26 05 29	HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEM	4
26 05 34	CONDUIT	8
26 05 37	BOXES	6
26 05 53	IDENTIFICATION FOR ELECTRICAL SYSTEM	4
26 09 19	ENCLOSED CONTRACTORS	2
26 09 23	LIGHTING CONTROL DEVICES	5
26 21 00	LOW VOLTAGE ELECTRICAL SERVICE ENTRANCE	2
26 24 16	PANELBOARDS	7
26 27 17	EQUIPMENT WIRING	2
26 27 26	WIRING DEVICES	7
26 28 13	FUSES	1
26 28 17	ENCLOSED CIRCUIT BREAKERS	2
26 28 18	ENCLOSED SWITCHES	3
26 29 13	ENCLOSED CONTROLLERS	6
26 32 14	EMERGENCY GENERATION SYSTEM	6
26 43 00	SURGE PROTECTIVE DEVICES	4
26 51 00	INTERIOR LIGHTING	6
26 56 00	EXTERIOR LIGHTING	4

DIVISION TWENTY-SEVEN – COMMUNICATIONS

27 10 05	STRUCTURED CABLING FOR VOICE AND DATA-INSIDE PLANT	7
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DIVISION TWENTY-EIGHT – ELECTRONIC SAFETY AND SECURITY

28 46 00	FIRE DETECTION AND ALARM	8
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PROJECT TITLE PAGE

PROJECT MANUAL

1.01 Project Information

Project Name: FIRE STATION NO. 9
Project Location: HATTIESBURG, MS
Issue Date: 11/22/2019
CN# 18-3707

1.02 Owner Information

City of Hattiesburg
200 Forrest Street
Hattiesburg, MS 39401

1.03 Architect Information

Landry Lewis Germany Architects, P.A.
5211 Old Highway 11
Hattiesburg, MS 39402
601-271-7711
www.llgarch.com

END OF SECTION

SEALS PAGE

A. DESIGN PROFESSIONALS OF RECORD

Architect:

Landry Lewis Germany Architects, P.A., 5211 Old Highway 11, Hattiesburg, MS 39402

Responsible for Divisions 01-49 Sections except where indicated as prepared by professionals of record below.

Civil Engineer:

The Walker Associates, 2203 Hardy Street, Hattiesburg, Mississippi 39401

Responsible for:

00 00 00 SMALL CONSTRUCTION STORM WATER GENERAL
01 57 13 TEMPORARY EROSION & SEDIMENTATION CONTROL
01 71 23 CONSTRUCTION LAYOUT AND SURVEYING
31 00 00 EARTHWORK
31 10 00 SITE CLEARING
32 12 10 HOT MIX BITUMINOUS PAVEMENT
32 13 00 CAST IN PLACE CONCRETE PAVING AND EXTERIOR SLABS
32 13 13 .50 CONCRETE FORMWORK – PAVING
32 13 13 .51 CONCRETE REINFORCEMENT – PAVING
32 16 00 CONCRETE CURBS, GUTTERS, AND WALKS
32 17 23 PAVEMENT MARKINGS
33 11 00 WATER UTILITY PIPING (SITE WORK)
33 30 00 SANITARY SEWERAGE SYSTEM (SITE WORK)
33 40 00 STORM DRAINAGE UTILITIES

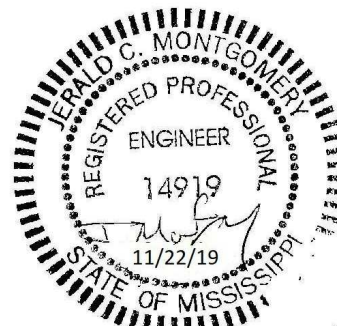


Structural Engineer:

Second Moment Structural Engineering, LLC, 228 Zelma Lane, Florence, Mississippi 39073

Responsible for:

03 10 00 CONCRETE FORMING AND ACCESSORIES
03 20 00 CONCRETE REINFORCING
03 30 00 CAST IN PLACE CONCRETE
05 12 00 STRUCTURAL STEEL FRAMING
05 12 10 STEEL JOIST AND TRUSSES
05 31 00 STEEL DECKING
13 34 19 METAL BUILDING SYSTEM

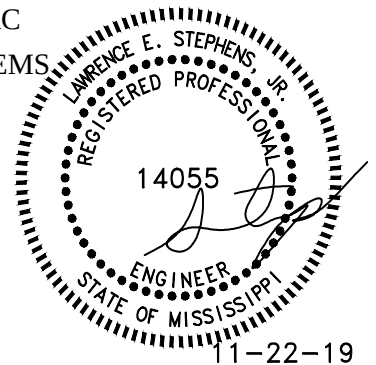


Mechanical Engineer:

Stephens Mechanical, LLC, 925 Tommy Monro Drive, Suite B, Gulfport, MS 39532

Responsible for

21 13 13 FIRE PROTECTION
22 00 00 PLUMBING GENERAL PURPOSE
22 07 19 PLUMBING PIPING INSULATION
23 00 00 AIR SUPPLY DISTRIBUTION, VENTILATION AND EXHAUST
23 03 00 BASIC MECHANICAL MATERIALS AND METHODS
23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC
23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS
23 23 00 REFRIGERANT PIPING
23 37 13 DIFFUSERS, REGISTERS AND GRILLES
23 54 16 HEATING SYSTEMS: GAS-FIRED HEATERS
23 81 00 UNITARY AIR CONDITIONING EQUIPMENT
23 82 02 VARIABLE REFRIGERANT FLOW HVAC SYSTEMS
23 31 13 METAL DUCTS



Electrical Engineer:

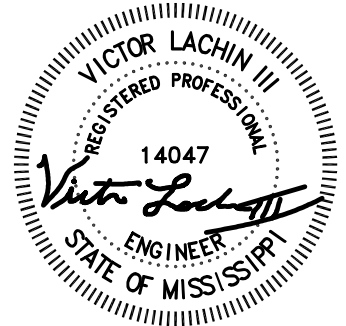
Canon Engineering, LLC., 511 32nd Avenue, Gulfport, Mississippi 39507

Responsible for:

26 05 19 LOW VOLTAGE ELECTRICAL POWER CONDUCTIONS AND CABLES
26 05 26 GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS
26 05 29 HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEM
26 05 34 CONDUIT
26 05 37 BOXES
26 05 53 IDENTIFICATION FOR ELECTRICAL SYSTEM
26 09 19 ENCLOSED CONTRACTORS
26 09 23 LIGHTING CONTROL DEVICES
26 21 00 LOW VOLTAGE ELECTRICAL SERVICE ENTRANCE
26 24 16 PANELBOARDS
26 27 17 EQUIPMENT WIRING
26 27 26 WIRING DEVICES
26 28 13 FUSES
26 28 17 ENCLOSED CIRCUIT BREAKERS
26 28 18 ENCLOSED SWITCHES
26 29 13 ENCLOSED CONTROLLERS
26 32 14 EMERGENCY GENERATION SYSTEM
26 43 00 SURGE PROTECTIVE DEVICES
26 51 00 INTERIOR LIGHTING

26 56 00 EXTERIOR LIGHTING
27 10 05 STRUCTURED CABLING FOR VOICE AND DATA-INSIDE PLANT
28 46 00 FIRE DETECTION AND ALARM

END OF SECTION



LIST OF DRAWING SHEETS

CONTRACT DRAWINGS

1.01 LIST OF DRAWINGS

1.01.A. Drawings consist of the Contract Drawings and other drawings listed on the Table of Contents page of the separately bound drawing set, as modified by subsequent Addenda and Contract modifications:

1. Titled: FIRE STATION NO. 9
2. Dated: 11/22/2019

LIST OF DRAWINGS

2.01 List of Drawings: Drawings consist of the following Contract Drawings and other drawings of type indicated:

2.01.A. Architect:

1. Landry Lewis Germany Architects, P.A., 5211 Old Highway 11, Hattiesburg, MS 39402
2. Responsible for:
 - a. COVER TITLE COVER SHEET
 - A1.1 FIRST FLOOR PLAN
 - A1.2 SECOND FLOOR / MEZZANINE PLAN
 - A1.3 FIRST FLOOR PLAN REFLECTED CEILING PLAN
 - A1.4 SECOND FLOOR REFLECTED CEILING PLAN
 - A1.5 ROOF PLAN
 - A1.6 ENLARGED TOILET PLANS
 - A1.7 ENLARGED STAIR PLANS
 - A2.1 EXTERIOR ELEVATIONS
 - A2.2 EXTERIOR ELEVATIONS
 - A3.1 BUILDING SECTIONS
 - A3.2 BUILDING SECTIONS
 - A4.1 WALL SECTIONS
 - A4.2 WALL SECTIONS
 - A4.3 WALL SECTIONS
 - A4.4 WALL SECTIONS
 - A4.5 WALL SECTIONS
 - A4.6 WALL SECTIONS
 - A5.1 PLAN DETAILS
 - A6.1 OPENING TYPES & SCHEDULE
 - A6.2 FINISH SCHEDULE
 - A6.3 OPENING DETAILS
 - A6.4 OPENING DETAILS
 - A6.5 OPENING DETAILS

- A7.1 INTERIOR ELEVATIONS
- A7.2 MILWORK SECTIONS
- A8.1 LIFE SAFETY DATA SHEET

2.01.B. Civil Engineer:

1. The Walker Associates, 2203 Hardy Street, Hattiesburg, Mississippi 39401
2. Responsible for:
 - a. C1.0 NOTES AND LEGEND
 - C1.1 PROJECT SUMMARY AND COMPLIANCE DATA
 - C1.2 EXISTING TOPOGRAPHY AND DEMOLITION PLAN
 - C2.0 PROPOSED OVERALL SITE W AERIAL IMAGERY OF EXISTING SITE
 - C2.1 EXISTING AND PROPOSED TURN LANE ADDITION SITE LAYOUT
 - C2.2 TURN LANE ADDITION SECTIONS
 - C2.3 SITE LAYOUT
 - C2.4 PAVING STRIPING AND SIGNAGE
 - C2.5 SITE GRADING
 - C2.6 DRAINAGE PLAN
 - C2.7 UTILITY PLAN
 - C2.8 JOINT LAYOUT
 - C3.0 EROSION CONTROL PLAN
 - C4.0 PAVING DETAILS
 - C4.2 DRAINAGE DETAILS
 - C4.3 SPECIAL DESIGN STRUCTURES
 - C4.4 DRAINAGE DETAILS
 - C4.5 DRAINAGE DETAILS
 - C4.6 DRAINAGE DETAILS
 - C4.7 UTILITY DETAILS
 - C4.8 MISCELLANEOUS DETAILS
 - C4.9 MISCELLANEOUS DETAILS
 - C4.10 MISCELLANEOUS DETAILS
 - C4.11 MISCELLANEOUS DETAILS

2.01.C. Structural Engineer:

1. Second Moment Structural Engineering, LLC, 228 Zelma Lane, Florence, Mississippi 39073
2. Responsible for:
 - a. S0.1 NOTES
 - S0.2 3D
 - S1.1 FOUNDATION PLAN

- S1.2 SECOND FLOOR FRAMING
- S1.3 ROOF FRAMING PLAN
- S2.0 BLDG. SECTION
- S2.1 BLDG. SECTION
- S2.2 BLDG. SECTION
- S2.3 BLDG. SECTION
- S2.4 BLDG. ELEVATIONS
- S2.5 BLDG. ELEVATIONS
- S3.1 DETAILS
- S3.2 DETAILS
- S3.3 DETAILS
- S3.4 DETAILS

2.01.D. Fire-Protection Engineer:

- 1. Stephens Mechanical, LLC, 925 Tommy Monro Drive, Suite B, Gulfport, MS 39532
- 2. Responsible for
 - a. FP1.0 FIRST FLOOR FIRE PROTECTOIN PLAN, DETAILS, AND
NOTES
 - FP1.1 SECOND FLOOR FIRE PROTECTION PLAN

2.01.E. Plumbing Engineer:

- 1. Stephens Mechanical, LLC, 925 Tommy Monro Drive, Suite B, Gulfport, MS 39532
- 2. Responsible for:
 - a. P1.0 PLUMBING SCHEDULES, LEGEND, AND NOTES
 - P1.1 BELOW FIRST FLOOR PLUMBING PLAN AND DETAILS
 - P1.2 ABOVE FIRST FLOOR PLUMBING PLAN
 - P1.3 BELOW SECOND FLOOR PLUMBING PLLAN
 - P1.4 ABOVE SECOND FLOOR PLUMBING PLAN
 - P1.5 ROOF PLUMBING PLAN

2.01.F. HVAC Engineer:

- 1. Stephens Mechanical, LLC, 925 Tommy Monro Drive, Suite B, Gulfport, MS 39532
- 2. Responsible for
 - a. M1.0 HVAC SCHEDULES AND DETAILS
 - M1.1 FIRST FLOOR HVAC PLAN
 - M1.2 SECOND FLOOR HVAC PLAN
 - M1.3 ROOF PLAN HVAC
 - M1.4 HVAC KITCHEN HOOD SCHEDULES, DETAILS, AND NOTES

- M1.5 HVAC KITCHEN HOOD DETAILS
- M1.6 HVAC MAKE UP AIR/EXHAUST SCHEDULE AND DETAILS
- M1.7 HVAC KITCHEN EQUIPMENT ELECTRICAL DIAGRAMS
- M1.8 HVAC PIPING SCHEMATICS

2.01.G. Electrical Engineer:

1. Canon Engineering, LLC., 511 32nd Avenue, Gulfport, Mississippi 39507
2. Responsible for:
 - a. E1.0 ELECTRICAL LEGENDS, SCHEDULES
 - E1.1 SITE ELECTRICAL PLAN
 - E2.0 LIGHTING PLANS
 - E2.1 POWER AND COMMUNICATION PLANS
 - E2.2 MECHANICAL EQUIPMENT ELECTRICAL PLANS
 - E3.0 ELECTRICAL AND COMMUNICATION DETAILS

END OF SECTION

SECTION 00 11 13 – ADVERTISEMENT FOR BIDS

ADVERTISEMENT FOR BIDS

At the option of the bidder, Sealed Bids, in duplicate and/or bids submitted electronically via www.llgarchplans.com will be received by the City of Hattiesburg until **10:00 a.m.** on **January 23, 2020** in the City Council Chambers at City Hall, 200 Forrest Street, Hattiesburg, MS 39401 at which time and place they will be publicly opened and read for construction of the following project:

**FIRE STATION NO. 9
HATTIESBURG, MS**

A single bid will be received for the complete project.

Bids may be submitted in person or, for those interested, bids may be electronically submitted at www.llgarchplans.com under the project name. Bid documents are available online for viewing and ordering at www.llgarchplans.com. Plan holders and bidders are required to log-in or register for a free account to view and order Bid Documents and to submit bids electronically. A valid email address is required for registration. Documents are available via paper copy or pdf. Bid documents must be purchased through www.llgarchplans.com. Any questions regarding website registration and online orders should be directed to Plan House at (601) 336-6378.

The bid bond shall be payable unconditionally to City of Hattiesburg. Bids on the project must be received on or before the period scheduled for the project and no bid may be withdrawn after the scheduled closing time for the project, for a period of 45 days. All bids submitted must comply with requirements of Title 31, Chapter 3 (§31-3-1 et seq.) of Mississippi Code of 1972 as amended.

Award will be made based on the Lowest and Best Bid received in accordance with Title 31, Chapter 7 (§31-7-13 et seq.) of Mississippi Code of 1972 as amended. The Owner reserves the right to reject any and all bids and to waive informalities.

CITY OF HATTIESBURG, MISSISSIPPI

BY: _____

TITLE: Kermas Eaton, City Clerk

Publish on December 12, 2019 and December 19, 2019

Return Proof to LLG Architects, PA

5211 Old Highway 11

Hattiesburg, MS 39402

INSTRUCTIONS TO BIDDERS

FORM OF INSTRUCTIONS TO BIDDERS

- 1.01 SEE AIA A701, INSTRUCTIONS TO BIDDERS following this document.
- 1.02 The instructions in this document amend or supplement the Instructions To Bidders and other provisions of the Bidding and Contract Documents.
- 1.03 RELATED DOCUMENTS
 - 1.03.A. Document 011000 - Summary.
 - 1.03.B. Document 001113 - Advertisement for Bids.
 - 1.03.C. Document 004213 - Proposal Form.
 - 1.03.D. Document 007300 - Supplementary Conditions:

MODIFICATIONS TO FORM OF INSTRUCTION TO BIDDERS

- 2.01 The following modifications to AIA A701, INSTRUCTIONS TO BIDDERS amend or supplement the Instructions To Bidders and other provisions of the Bidding and Contract Documents as follows;
- 2.02 ARTICLE 4 BIDDING PROCEDURES
 - 2.02.A. Add Subsection 4.2.1.1, "Each bid must be accompanied by the bidder's certified check or a bid bond, duly executed by the bidder as principal and having surety thereon, a surety company approved by the Owner and signed by an agent resident of Mississippi, in the amount of five percent (5%) of the bid. All bid bonds must be accompanied by an appropriate Power of Attorney designating the Mississippi Resident Agent."
 - 2.02.B. Add Subsection 4.3.1.1, "Bids shall be submitted as directed in Document 001113 - Advertisement For Bids. Bids may be submitted in person or, for those interested, bids can be electronically submitted at www.llgarchplans.com under the project name."
 - 2.02.C. Add Subsection 4.4.4, "After submission of the bid, but prior to the closing time of the bid opening the bidder may modify their sealed bid by indicating on the outside of the sealed bid envelope a deduction or add to the base bid or to any alternates which may be appropriate. The modification must be initialed by the bidder or bidders authorized representative and include the date and time of the modification. No bid modifications can be made by fax, e-mail or telephone."
- 2.03 ARTICLE 5 CONSIDERATION OF BIDS
 - 2.03.A. Add Subsection 5.3.3, "If the contract is awarded, the Owner shall give the apparent successful Bidder a Notice of Award within forty-five (45) calendar days after the date of the Bid opening."
 - 2.03.B. Add Subsection 5.3.4, "The contractors, if requested by the Owner, shall require all contractors that submit a Bid to submit a Proposed Project Schedule and Schedule of Values to the Architect/Engineer within seventy-two (72) hours of the bid opening. If the contract is bid per the Unit Price Form, then the submission of the Schedule of Values is not required."
 - 2.03.C. Add Subsection 5.3.5, "Where required by law, award will be made based on the Lowest and Best Bid received in accordance with Title 31, Chapter 7 (§31 7 13 et seq.) of

Mississippi Code of 1972 as amended. The Owner reserves the right to reject any and all bids and to waive informalities."

SUPPLEMENTARY INSTRUCTIONS

3.01 LIQUIDATED DAMAGES FOR FAILURE TO ENTER INTO CONTRACT

- 3.01.A. The successful bidder, upon his failure or refusal to execute and deliver the contract and bond required within ten days after he has received notice of the acceptance of his bid, will forfeit to the Owner as liquidated damages the security deposited with his bid.

3.02 PRE-BID CONFERENCE

- 3.02.A. A pre-bid conference may be held on a date and time to be specified by Addendum. Present will be the Architect, Mechanical and Electrical Engineers, representatives of the Owner relative to administration and maintenance. General Contractors as well as Mechanical, Electrical and other sub-contractors are encouraged to attend.

END OF SECTION

AIA® Document A701™ – 2018

Instructions to Bidders

for the following Project:
(Name, location, and detailed description)

Fire Station No. 9
Hattiesburg, Mississippi
CN 18-3707

THE OWNER:
(Name, legal status, address, and other information)

City of Hattiesburg
200 Forrest Street
Hattiesburg, Mississippi 39401

THE ARCHITECT:
(Name, legal status, address, and other information)

Landry Lewis Germany Architects, P.A.
5211 Old Highway 11
Hattiesburg, Mississippi 39402

TABLE OF ARTICLES

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| 6 | POST-BID INFORMATION |
| 7 | PERFORMANCE BOND AND PAYMENT BOND |
| 8 | ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS |

ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

- .1 the Bidder has read and understands the Bidding Documents;
- .2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;
- .3 the Bid complies with the Bidding Documents;
- .4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;
- .5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and
- .6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Paragraphs deleted)

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

VIA email - shane@llgarch.com

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Paragraphs deleted)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:

(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

As indicated in the Advertisement for Bids

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted.

(Paragraphs deleted)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

- .1 a designation of the Work to be performed with the Bidder's own forces;
- .2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and
- .3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.

(Paragraphs deleted)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013.)

.5 Drawings

Number	Title	Date
Section 00 10 15	List of Drawing Sheets	11/22/2019

.6 Specifications

Section	Title	Date
Index 00 00 01	Index to Specifications	11/22/2019

.7 Addenda:

Number	Date	Pages
To be determined		

.8 Other Exhibits:

(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[] AIA Document E204™—2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017.)

[] The Sustainability Plan:

Title	Date	Pages
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[] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages
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.9 Other documents listed below:

(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

PROPOSAL FORM

PROPOSAL OF (HEREINAFTER CALLED "BIDDER"),

Firm Name: _____ ,

Operating as a _____ (corporation/a partnership/an individual)

Doing (State) Business as _____ .

FOR **CITY OF HATTEISBURG**, (HEREINAFTER CALLED "OWNER").

THE BIDDER, IN COMPLIANCE WITH YOUR ADVERTISEMENT FOR BIDS FOR THE
CONSTRUCTION OF THE FOLLOWING PROJECT:

**FIRE STATION NO. 9
HATTIESBURG, MS 39401**

**LANDRY LEWIS GERMANY ARCHITECTS, P.A.
PROJECT CN# 19-3707**

AND HAVING EXAMINED THE PLANS AND SPECIFICATIONS WITH RELATED DOCUMENTS AND THE SITE OF THE PROPOSED WORK, AND BEING FAMILIAR WITH ALL OF THE CONDITIONS SURROUNDING THE CONSTRUCTION OF THE PROPOSED PROJECT INCLUDING THE AVAILABILITY OF MATERIALS AND LABOR, HEREBY PROPOSES TO FURNISH ALL LABOR, MATERIALS, AND SUPPLIES, AND TO CONSTRUCT THE PROJECT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, WITHIN THE TIME SET FORTH HEREIN, AND AT THE PRICES STATED BELOW. THESE PRICES ARE TO COVER ALL EXPENSES INCURRED IN PERFORMING THE WORK REQUIRED UNDER THE CONTRACT DOCUMENTS OF WHICH THIS PROPOSAL IS A PART.

BIDDER HEREBY AGREES TO COMMENCE WORK UNDER THIS CONTRACT ON OR BEFORE A DATE TO BE SPECIFIED IN A WRITTEN "NOTICE TO PROCEED" FROM THE ARCHITECT AND TO SUBSTANTIALLY COMPLETE THE PROJECT WITHIN THE FOLLOWING CONSECUTIVE CALENDAR DAYS; _____ (BIDDER INSERT DAYS).

BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING ADDENDA:

No. _____, No. _____, No. _____

No. _____, No. _____, No. _____

BASE BID: BIDDER AGREES TO PERFORM ALL OF THE GENERAL, MECHANICAL, AND ELECTRICAL CONSTRUCTION, AND ALL OTHER WORK SHOWN ON DRAWINGS OR SPECIFIED HEREIN FOR THE SUM OF:

_____,
\$_____

Amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

ALTERNATE PROPOSALS: REFER TO SECTION 01 11 00 SUMMARY AND ALTERNATES. THE FOLLOWING ALTERNATES WHICH MODIFY THE SCOPE OF THE WORK PER SECTION 011100 MAY BE SELECTED BY THE OWNER AS IT DETERMINES SUCH TO BE IN ITS BEST INTEREST:

Alternate No. 1: PROVIDE AND INSTALL GENERATOR EQUIPMENT & INSTALLATION. REFER TO ELECTRICAL SPECIFICATIONS FOR REQUIREMENTS.

_____,
\$_____

Alternate No. 2: [_____]

_____,
\$_____

Amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words will govern.

OWNERS RIGHTS:

Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

BID SECURITY:

Enclosed is a bid bond signed by a Mississippi Agent or certified check payable to the Owner in the sum equal to at least five percent (5%) of the base bid. This sum is to become the property of the Owner in the event the contract, Contract Bond and Certificate of Insurance are not executed within ten (10) days of Notification of Bidder of acceptance of bid. These liquidated damages are for the delay and additional expense to the Owner.

BIDDER QUALIFICATIONS:

I certify that I meet all qualifications specified for this project, and that for Base Bids exceeding \$50,000.00 I possess a Mississippi Certificate of Responsibility valid for this project.

Mississippi Certificate of Responsibility Number _____.

Note: when the bidder is a joint venture, the joint venture Mississippi Certificate of Responsibility Number is _____.

OR the joint venture member firms and their respective Mississippi Certificate of Responsibility Numbers are _____.

BIDDER CERTIFIES THAT HE IS: (INITIAL)

a Mississippi Resident Contractor _____
OR a Non Resident Contractor _____

WHEN A NON RESIDENT CONTRACTOR SUBMITS A BID FOR A MISSISSIPPI PUBLIC PROJECT, HE SHALL ATTACH THERETO A COPY OF HIS RESIDENT STATE'S CURRENT LAW PERTAINING TO SUCH STATE'S TREATMENT OF NON RESIDENT CONTRACTOR AS REQUIRED BY TITLE 31, CHAPTER 3 - 31-3-21 (3) OF THE MISSISSIPPI CODE OF 1972 AS AMENDED.

ACCEPTANCE

I agree to hold this proposal open for acceptance for 45days after the bid date and certify that I am authorized to enter my firm into a binding contract if this proposal is accepted.

SIGNATURE

Date: _____ .

Name: _____ .

Title: _____ .

Firm: _____ .

(Exact name of firm corresponding to Mississippi Certificate of Responsibility Number and Bid Bond as applicable and as it is to appear in a contract).

Address: _____ .

City/State/Zip: _____ .

Office: (____) _____

Cell: (____) _____

END OF PROPOSAL

END OF SECTION

CONTRACT FORMS AND SUPPLEMENTS

PART 1 GENERAL

1.01 AGREEMENT AND CONDITIONS OF THE CONTRACT

- 1.01.A. The Agreement form is AIA A101.
- 1.01.B. The General Conditions form is AIA A201.
- 1.01.C. Power of Attorney: Attorneys in fact who sign contract bonds must file with each bond a certified and effectively dated copy of their Power of Attorney.

1.02 FORMS

- 1.02.A. Use the following forms for the specified purposes unless otherwise indicated elsewhere in Contract Documents.
- 1.02.B. Bond Forms:
 - 1. Bid Bond Form: AIA A310.
 - 2. Performance and Payment Bond Form: AIA A312. Bond shall include payment of taxes.
- 1.02.C. Post-Award Certificates and Other Forms:
 - 1. Schedule of Values Form: AIA G703.
 - 2. Application for Payment Forms: AIA G702 with AIA G703 (for Contractors).
- 1.02.D. Clarification and Modification Forms:
 - 1. Architect's Supplemental Instructions Form: AIA G710.
 - 2. Construction Change Directive Form: AIA G714.
 - 3. Change Order Form: AIA G701.

1.03 REFERENCE STANDARDS

- 1.03.A. AIA A101 - Standard Form of Agreement Between Owner and Contractor where the basis of Payment is a Stipulated Sum 2017.
- 1.03.B. AIA A201 - General Conditions of the Contract for Construction 2017.
- 1.03.C. AIA A310 - Bid Bond 2010.
- 1.03.D. AIA A312 - Performance Bond and Payment Bond 2010.
- 1.03.E. AIA G701 - Change Order 2017.
- 1.03.F. AIA G702 - Application and Certificate for Payment 1992.
- 1.03.G. AIA G703 - Continuation Sheet 1992.
- 1.03.H. AIA G710 - Architect's Supplemental Instructions 2017.
- 1.03.I. AIA G714 - Construction Change Directive 2017.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

GENERAL CONDITIONS

FORM OF GENERAL CONDITIONS

- 1.01 Document A-201, issued by the American Institute of Architects, 2017 edition, relates to the work of this project and is hereby made part of this Contract, a copy of which follows.
- 1.01.A. The Contractor is hereby specifically directed, as a condition of the Contract, to obtain the necessary number of copies of Document A 201, to acquaint himself with the Articles contained therein and to notify and apprise all subcontractors, suppliers, and any other parties to the contract or individuals or agencies engaged on the work as to its contents.
- 1.01.B. No contractual adjustments shall be due or become exigent as a result of failure on the part of the contractor to fully acquaint himself and all other parties to the contract with the conditions of Document A 201.

RELATED REQUIREMENTS

- 2.01 SECTION 007300 - Supplementary Conditions.
- 2.02 SECTION 014216 - Definitions.

SUPPLEMENTARY CONDITIONS

- 3.01 REFER TO DOCUMENT 007300 - Supplementary Conditions for amendments to these general conditions.

END OF SECTION

AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:

(Name and location or address)

Fire Station No. 9
City of Hattiesburg
CN 18-3707

THE OWNER:

(Name, legal status and address)

City of Hattiesburg
200 Forrest Street
Hattiesburg, Mississippi 39404

THE ARCHITECT:

(Name, legal status and address)

Landry Lewis Germany Architects, P.A.
5211 Old Highway 11
Hattiesburg, Mississippi 39402

TABLE OF ARTICLES

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ADDITIONS AND DELETIONS:

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

14 **TERMINATION OR SUSPENSION OF THE CONTRACT**

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document

G202™-2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and

delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely

upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;

- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will

promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or

expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during

that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

§ 13.4.6 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;

- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

SUPPLEMENTARY CONDITIONS

PART 1 GENERAL

1.01 INTRODUCTION

- A. The following supplements modify the “General Conditions of the Contract for Construction”, AIA Document A201-2017. Where a portion of the General Conditions is modified or deleted by these Supplementary Conditions, the unaltered portions of the General Conditions shall remain in effect.

1.02 ARTICLE 1 GENERAL PROVISIONS

A. §1.1.7 Instruments of Service

1. Add the following Sections:

- a. §1.1.7.1 The Project Manual is a volume assembled for the Work which may include the bidding requirements, sample forms, Conditions of the Contract and Specifications.

B. §1.2 Correlation and Intent of the Contract Documents

1. Add the following Sections after Section 1.2.2:

- a. §1.2.2.1 In the case of conflicts or discrepancies between Drawings and Division 2-50 of the Specifications or within or among the Contract Documents and not clarified by addendum, the Architect will determine which takes precedence in accordance with Sections 4.2.11, 4.2.12, and 4.2.13. Interpretations will be based on the following priorities:
- 1) .1 Modifications
 - 2) .2 The Agreement
 - 3) .3 Addenda, with those of later date having precedence over those of earlier date
 - 4) .4 The Supplementary Conditions
 - 5) .5 The General Conditions of the Contract for Construction
 - 6) .6 Division 1 of the Specifications
 - 7) .7 Drawings and Divisions 2-50 of the Specifications
 - 8) .8 Other Documents specifically enumerated in the Agreement as part of the Contract Documents

C. §1.7 Digital Data Use and Transmission

1. Add the following Sections:

- a. §1.7.1 Contractor’s Use of Instruments of Service in Electronic Form.
- b. §1.7.1.1 The Architect may, with the concurrence of the Owner, furnish to the Contractor versions of instruments of Service in electronic form. The Contract Documents executed or identified in accordance with Subparagraphs 1.1.2 and 1.1.7 shall prevail in case of an inconsistency with versions made through electronic operations involving computers.

- c. §1.7.1.2 The Contractor shall not transfer or reuse instruments of Service in electronic form without prior written consent of the Architect.

D. Add Section §1.9 Periodic Meetings

- 1. Add the following Sections:
 - a. §1.9.1 Representatives of the Owner, Contractor and Architect shall meet periodically at mutually agreed-upon intervals for the purpose of establishing procedures to facilitate cooperation, communication and timely responses among the participants.
 - b. §1.9.2 By participating in this arrangement, the parties do not intend to create additional contractual obligations or modify the legal relationships which may otherwise exist.

1.03 ARTICLE 2 OWNER

A. §2.3 Information and Services Required of the Owner

- 1. Delete §2.3.6 and substitute the following:
 - a. §2.3.6 The Owner shall furnish the Contractor one set of PDF Contract Documents. Additional contract documents may be provided from on hand copies produced and returned during the bidding process. The Contractor may purchase additional copies or print the pdf documents at his own expense.

1.04 ARTICLE 3 CONTRACTOR

A. §3.2 Review of Contract Documents and Field Conditions by Contractor

- 1. Add the following Section:
 - a. §3.2.5 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for evaluating and responding to the Contractor's requests for information that are not prepared in accordance with the Contract Documents or where the requested information is available to the Contractor from a careful study and comparison of the Contract Documents, field conditions, other Owner-provided information, Contractor-prepared coordination drawings, or prior Project correspondence or documentation. Reimbursements may be funds retained in the Contractor's Application for Payment.

B. §3.4 Labor and Materials

- 1. Add the following after Section 3.4.2:
 - a. §3.4.2.1 After the Contract has been executed, the Owner and the Architect will consider requests for the substitution of products in place of those specified only under the conditions set forth in the General Requirements (Division 1 of the Specifications). By making requests for substitutions, the Contractor:
 - 1) .1 represents that the Contractor has personally investigated the proposed substitute product and determined that it is equal or superior in all aspects to that specified.

- 2) .2 represents that the Contractor will provide the same warranty for the substitution as the Contractor would have provided for the product specified.
 - 3) .3 certifies that the cost data presented is complete and includes all related costs for the substituted product and for Work that must be changed as a result of the substitution, except for the Architect's redesign costs, and waives all claims for additional costs related to the substitution which subsequently become apparent; and
 - 4) .4 shall coordinate the installation of the accepted substitute, making such changes as may be required for the Work to be complete in all respects.
 - b. §3.4.2.2 The Owner shall be entitled to reimbursement from the Contractor amounts paid to the Architect for reviewing the Contractor's proposed substitutions and to make agreed-upon changes in the Drawings and Specifications resulting from such Substitutions. Reimbursements may be funds retained in the Contractor's Application for Payment.
- C. §3.8 Allowances
 1. Delete §3.8.2.2 and substitute the following:
 - a. §3.8.2.2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; except that if installation is included as part of the allowance in Division 1-50 of the Specifications, the installation and labor costs for greater or lesser quantities of Work shall be determined in accordance with Article 7;
- D. §3.9 Superintendent
 1. Delete §3.9.2 and substitute the following:
 - a. §3.9.2 The Contractor, as soon as practicable after award of the Contract, but no later than the preconstruction conference, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. The Architect may reply within 14 days to the Contractor in writing stating (1) whether the Owner or the Architect has reasonable objection to the proposed superintendent or (2) that the Architect requires additional time to review. Failure of the Architect to reply within the 14 day period shall constitute notice of no reasonable objection.
 2. Delete §3.9.3 and substitute the following:
 - a. §3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.
 3. Add the following Section:
 - a. §3.9.4 The Contractor shall employ a superintendent or an assistant to the superintendent who will perform as a coordinator for mechanical and electrical Work. The coordinator shall be knowledgeable in mechanical and electrical

systems and capable of reading, interpreting and coordinating Drawings, Specifications, and shop drawings pertaining to such systems. The coordinator shall assist the Subcontractors in arranging space conditions to eliminate interference between the mechanical and electrical systems and other Work and shall supervise the preparation of coordination drawings documenting the spatial arrangements for such systems within restricted spaces. The coordinator shall assist in planning and expediting the proper sequence of delivery of mechanical and electrical equipment to the site. Space priorities within restricted areas shall be: (1) mechanical systems, (2) plumbing systems, (3) fire sprinkler piping systems.

E. §3.12 Shop Drawings, Product Data and Samples

1. Add the following Section:

- a. §3.12.11 The Architect's review of Contractor's submittals will be limited to examination of an initial submittal and one (1) resubmittal. The Owner is entitled to obtain reimbursement from the Contractor amounts paid to the Architect for evaluation of additional resubmittals. Reimbursements may be funds retained in the Contractor's Application for Payment.

1.05 ARTICLE 4 ARCHITECT

A. §4.2 Administration of the Contract

1. Add the following after Section 4.2.2:

- a. §4.2.2.1 The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for site visits made necessary by the fault of the Contractor or by defects and deficiencies in the Work. Reimbursements may be funds retained in the Contractor's Application for Payment.

2. Add the following after Section 4.2.14:

- a. §4.2.14.1 Contractor's request for information shall be prepared and submitted in accordance with Division 1 "General Requirements" sections on AIA Document G716-2004. The Architect will return without action requests for information that does not conform to requirements of the Contract Documents.

1.06 ARTICLE 5 SUBCONTRACTORS

A. §5.2 Award of Subcontracts and Other Contracts for Portions of the Work

1. Add the following Section:

- a. §5.2.5 Not later than twenty-one days after the date of commencement of the Work, the Contractor shall furnish in writing to the Owner through the Architect the names of persons or entities proposed as subcontractors, manufacturers, fabricators, material suppliers, equipment suppliers, and systems for the products, identified in the General Requirements (Division 1 of the Specifications).

1.07 ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

A. §6.1 Owner's Right to Perform Construction and to Award Separate Contracts

1. Add the following Section:

- a. §6.1.5 The Contractor, including his subcontractors, shall keep informed of the progress and the detailed work of the Owner or other Contractors and shall immediately notify the Architect of lack of progress or delays by other Contractors which are affecting Contractor's Work. Failure of Contractor to keep informed of the progress of the work of the Owner or other Contractors and / or failure of Contractor to give notice of lack of progress or delays by the Owner or other Contractors shall be deemed to be acceptance by Contractor of the status of progress by other Contractors for the proper coordination and completion of Contractor's Work. If, through acts or neglect on the part of the Contractor, the Owner or any other Contractor or subcontractor shall suffer loss or damage or assert any claims of whatever nature against the Owner, the Contractor shall defend, indemnify and hold harmless the Owner from any such claims or alleged damages, and the Contractor shall resolve such alleged damages or claims directly with the other Contractors or subcontractors.

1.08 ARTICLE 7 CHANGES IN THE WORK

A. §7.1 General

1. Add the following Section:

- a. §7.1.4 The combined overhead and profit included in the total cost to the Owner of a change in the Work shall be based on the following schedule:
 - 1) .1 For the Contractor, the Work performed by the Contractor's own forces, fifteen percent of the cost.
 - 2) .2 For the Contractor, for Work performed by the Contractor's Subcontractors, five percent of the amount due the Subcontractor.
 - 3) .3 For each Subcontractor or Sub-subcontractor involved, for Work performed by that Subcontractor's or Sub-subcontractor's own forces, ten percent of the cost.
 - 4) .4 For each Subcontractor involved, for Work performed by the Subcontractor's Sub-subcontractor, ten percent of the amount due the Sub-subcontractor.
 - 5) .5 Cost to which overhead and profit is to be applied shall be determined in accordance with Subparagraph 7.3.4.
 - 6) .6 In order to facilitate checking of quotations for extras or credits, all proposals, except those so minor that their propriety can be seen by inspection, shall be accompanied by a complete itemization of costs including labor, materials and Subcontracts. Labor and materials shall be itemized in the manner prescribed above. Where major cost items are Subcontracts, they shall be itemized also. In no case will a change involving over Five Hundred Dollars be approved without such itemization.

1.09 ARTICLE 8 TIME

A. §8.2 Progress and Completion

1. Delete §8.2.1 and substitute the following:

- a. §8.2.1 Time limits stated in the Contract Documents are of the essence to the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work and that the Contractor is fully capable of properly completing the work within the Contract time.

B. §8.3 Delays and Extension of Time

1. Delete §8.3.1 and substitute the following:
 - a. §8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine. However, to the fullest extent permitted by law, and notwithstanding any other provisions in the Contract Documents, the Owner, and the Architect and their agents and employees shall not be liable for any damage for delay whether for direct or indirect costs, extended home office overhead, idle or inefficient labor or equipment, cost escalations or monetary claims of any nature arising from or attributable to delay by any cause whatsoever. The Contractor's sole and exclusive right and remedy for delay by any cause whatsoever is an extension of the Contract Time but no increase in the Contract Sum.
2. Delete §8.3.2 and substitute the following:
 - a. §8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15. Any delay, interference, hindrance or disruption, from whatever source or cause, in the progress of the Contractor's Work shall be a basis for an extension of time unless the delay, interference hindrance or disruption is (1) the fault and the responsibility of the Contractor, its subcontractors and suppliers and (2) directly affects the overall completion of the Work as reflected on the critical path of the updated Construction Schedule. The contractor expressly agrees that the Owner shall have the benefit of any float in the construction schedule and delay in construction activities which do not affect the overall completion of the work does not entitle the Contractor to any extension in the Contract Time.
 - 1) .1 Any claims by the Contractor for an increase in Contract Time must follow the procedures and limits a set forth in Article 15 "Claims and Disputes" including, but not limited to the requirement that the Contractor give notice of any claim for extension in Contract Time within twenty-one (21) days after occurrence of the event giving rise to such claim.
3. Add the following Sections:

- a. §8.3.4 This provision specifies the procedure for the determination of time extensions for unusually severe weather. In order for the Owner and Architect to award a time extension under this clause, the following conditions must be satisfied:
 - 1) .1 The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during the time allotted to achieve Substantial Completion.
 - 2) .2 The unusually severe weather must actually cause a delay in the completion of the project. The delay must be beyond the control and without the fault of negligence of the contractor.
- b. §8.3.5 The schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for weather time evaluations. The Contractor's activity durations for inclusion in the progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.
- c. §8.3.6 Monthly anticipated adverse weather delay workdays based on five (5) day work week, unless Contractor stipulates a different work schedule prior to Notice to Proceed.
- d. §8.3.7 Upon acknowledgement of the Notice to Proceed (NTP) and continuing throughout the contract, the Contractor shall record on the daily report, the occurrence of adverse weather and resultant impact to normally scheduled work. Actual adverse weather delay days must prevent work on the overall projects' critical activities for 50 percent or more of the contractor's scheduled workday. The number of actual adverse weather days shall include days impacted by adverse weather (even if adverse weather occurred in previous month), be calculated chronologically from the first to the last day of each month and be recorded as full days. If the number of actual adverse weather delay days exceeds the number of days anticipated in paragraph 8.3.5 above, the Owner and the Architect will convert any qualifying delays to calendar days giving full consideration for equivalent fair weather workdays and issue a modification in accordance with the contract.

1.10 ARTICLE 9 PAYMENTS AND COMPLETION

A. §9.3 Applications for Payment

- 1. Delete §9.3.1 and substitute the following:
 - a. §9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents. The form of

Application for Payment, duly notarized, shall be a current authorized edition of AIA Document G702™-1992, Application and Certificate for Payment, supported by a current authorized edition of AIA Document G703™-1992, Continuation Sheet.

2. Add the following after Section 9.3.1.2:
 - a. §9.3.1.3 Until final payment, the Owner will hold retainage in the amount of five percent (5%) and the amount retained by the prime contractor from each payment due the subcontractor shall not exceed the percentage withheld by the owner from the prime contractor. On contracts of which the total amount is Two Hundred Fifty Thousand Dollars (\$250,000.00) or greater, or on any contract with a subcontract, regardless of amount, five percent (5%) shall be retained until the work is at least fifty percent (50%) complete, on schedule and satisfactory in the architect's and/or engineers opinion, at which time fifty percent (50%) of the retainage held to date shall be returned to the prime contractor for distribution to the appropriate subcontractors and suppliers. Provided, however, that future retainage shall be withheld at the rate of two and one-half percent (2 ½ %).
 - b. §9.3.1.4 The full contract retainage may be reinstated if the manner of completion of the work and its progress do not remain satisfactory to the Architect.
 - c. §9.3.1.5 The contractors shall submit with each Application for Payment a monthly certification to the project architect listing subcontractors and payments to those subcontractors paid by funds received from the prior Application for Payment. This certification shall be submitted on a form entitled "Affidavit Certifying Payment To All Subcontractors" and will be provided to the contractor by the architect.

B. §9.8 Substantial Completion

1. Add the following after Section 9.8.3:
 - a. §9.8.3.1 The Architect will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Substantial Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for additional inspections. Reimbursements may be funds retained in the Contractor's Application for Payment.

C. §9.10 Final Completion and Final Payment

1. Add the following after Section 9.10.1:
 - a. §9.10.1.1 The Architect will perform no more than two (2) inspections to determine whether the Work or a designated portion thereof has attained Final Completion in accordance with the Contract Documents. The Owner is entitled to reimbursement from the Contractor for amounts paid to the Architect for additional inspections. Reimbursements may be funds retained in the Contractor's Application for Payment.

D. Add Section §9.11 Liquidated Damages:

1. Add the following Sections:
 - a. §9.11.1 It is hereby understood and mutually agreed, by and between the contractor and the Owner, that the date of beginning, rate of progress, and the time of completion of the work to be done hereunder are essential conditions of this contract, and it is further mutually understood and agreed that the work embraced in this contract shall be commenced on a date to be specified in the work order.
 - b. §9.11.2 The contractor agrees that said work shall be prosecuted regularly, diligently, and uninterruptedly at such rate of progress as will ensure substantial completion thereof within the time specified. It is expressly understood and agreed by and between the contractor and the Owner, that the time of completion of the work described herein is a reasonable time for the completion of same, taking into consideration the average climactic range and usual industrial conditions, prevailing in this locality.
 - c. §9.11.3 If the said contractor shall neglect, fail or refuse to complete the work within the time herein specified, then the contractor does hereby agree as a part of the consideration for the awarding of this contract to pay to the Owner the amount specified herein, not as a penalty but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day that the contract shall be in default after the time stipulated for completing the work.
 - d. §9.11.4 The said amount is fixed and agreed upon by and between the contractor and the Owner because of the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, and said amount is agreed to be the amount of damages which the Owner would sustain and said amounts shall be retained from time to time by the Owner from current periodical estimates.
 - e. §9.11.5 It is further agreed that time is of the essence of each and every portion of this contract and of the specifications wherein a definite and certain length of time is fixed for the performance of any act whatsoever. Where under the contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall not be charged with liquidated damages or any excess cost when the delay in completion of the work is due to unforeseeable cause beyond the control and without the fault of the contractor, including, but not restricted to, extreme acts of God, or the public enemy, acts of the Owner, acts of another contractor in the performance of a contract with the Owner, fires, floods, epidemics, and quarantine restrictions: provided; however, that the contractor shall, within seven (7) days from the beginning of such delay, notify the Owner, in writing of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the contractor within a reasonable time of its decision in the matter.
 - f. §9.11.6 The contractor is familiar with the weather in the area; therefore, contractor has considered and computed weather in contractor's calculation of time necessary to complete this contract within the specified calendar days and accordingly agrees that rain, dryness, heat or cold will not be a basis for

extension of the completion date, unless otherwise stipulated in the Contract Documents.

- g. §9.11.7 It is agreed and understood that the project be substantially complete on or before the time set forth on the Contractor's proposal form commencing on a date set forth in a notice to proceed from the Architect to the Contractor. If the said contractor shall neglect, fail or refuse to complete the work within the time specified herein, then the contractor shall pay to the Owner the sum of \$500.00 for each and every calendar day after the time stipulated herein for the substantial completion of the work and the Owner may deduct the said sum of \$500.00 per day from any balance due the contractor, as liquidated damages for loss and default as herein set forth, as herein set forth, which daily sum is agreed to be a reasonable sum for liquidated damages for this project.

1.11 ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

A. §10.2 Safety of Persons and Property

- 1. Add the following after Section 10.2.4:
 - a. §10.2.4.1 When use or storage of explosives or other hazardous materials or equipment or unusual methods are necessary, the Contractor shall give the Owner reasonable advance notice in writing.

1.12 ARTICLE 11 INSURANCE AND BONDS

A. §11.1 Contractor's Insurance and Bonds

- 1. Add the following after Section 11.1.1:
 - a. §11.1.1.1 The insurance required by Subparagraph 11.1.1 shall be written for not less than the following limits, or greater if required by law:
 - 1) .1 General Liability (Commercial General Liability Including XCU):
 - a) General Aggregate: \$1,000,000 Aggregate.
 - b) Products & Completed Operations: \$1,000,000 Aggregate.
 - c) Personal & Advertising Injury: \$500,000 Per Occurrence.
 - d) Bodily Injury & Property Damage: \$500,000 Per Occurrence.
 - e) Fire Damage Liability: \$50,000 Per Occurrence.
 - f) Medical Expense: \$5,000 Per Person.
 - 2) .2 Owners & Contractors Protective Liability:
 - a) Bodily Injury and Property Damage: \$1,000,000 Aggregate
 - b) Bodily Injury & Property Damage: \$500,000 Per Occurrence
 - 3) .3 Automobile Liability (Owned, Non-owned & Hired Vehicles):
 - a) Contractor Insurance Option Number 1:
 - 1. Bodily Injury and Property Damage (Combined Single Limit):\$500.000 Per Occurrence.
 - b) Contractor Insurance Option Number 2:
 - 1. Bodily Injury: \$250,000 Per Person.,

2. Bodily Injury: \$500,000 Per Accident.,
3. Property Damage: \$100,000 Per Occurrence.
- 4) .4 Excess Liability (Umbrella on projects over \$500,000):
 - a) Bodily Injury & Property Damage (Combined Single Limit):
\$1,000,000 Aggregate
- 5) .5 Workers' Compensation: (As Required by Statute)
- 6) .6 Employers' Liability:
 - a) Accident: \$100,000 Per Occurrence.
 - b) Disease: \$500,000 Policy Limit.
 - c) Disease: \$100,000 Per Employee.
- 7) .7 Property Insurance:
 - a) General Builder's Risk: Equal to Value of Work.
- b. §11.1.1.2 Liability Insurance shall include all major divisions of coverage and be on a comprehensive basis including:
 - 1) .1 Premises Operations (including X, C and U coverages as applicable).
 - 2) .2 Independent Contractors' Protective
 - 3) .3 Products and Completed Operations.
 - 4) .4 Personal Injury Liability with Employment Exclusion deleted
 - 5) .5 Contractual, including specified provision for Contractor's obligation under paragraph 3.18.2 Owned, non-owned and hired motor vehicles.
 - 6) .6 Broad Form Property Damage including Completed Operations.
- c. §11.1.1.3 If the General Liability coverages are provided by a Commercial General Liability Policy on a claims-made basis, the policy date or Retroactive Date shall predate the Contract; the termination date of the policy or applicable extended reporting period shall be earlier than the termination date of coverages required to be maintained after final payment, certified in accordance with Subparagraph 9.10.2.
- d. §11.1.1.4 If this insurance is written on a Commercial General Liability policy form, the certificates shall be ACORD form 25-S, completed and supplemented in accordance with AIA Document G715™-1991, Instruction Sheet and Supplemental Attachment for ACORD Certificate of Insurance 25-S.
- e. §11.1.1.5 Performance Bond and Payment Bond:
 - 1) .1 The Contractor shall furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder. Bonds may be obtained through the Contractor's usual source and the cost thereof shall be included in the Contract Sum. The amount of each bond shall be equal to 100 percent of the Contract Sum.
 - 2) .2 The Contractor shall deliver the required bonds to the Owner not later than three days following the date the Agreement is entered into, or if the Work is to be commenced prior thereto in response to a letter of

intent, the Contractor shall, prior to the commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished.

- 3) .3 The Contractor shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix thereto a certified and current copy of the power of attorney.

B. §11.2 Owner's Insurance

1. Delete §11.2.1 and substitute the following:
 - a. §11.2.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.
2. Add the following Sections:
 - a. §11.2.1.1 If the Owner is damaged by the failure of the Contractor to purchase and maintain such insurance without so notifying the Owner in writing, then the Contractor shall bear all reasonable costs attributable thereto.
3. Delete §11.2.2 and substitute the following:
 - a. §11.2.2 Failure to Purchase Required Property Insurance. If the Contractor fails to purchase and maintain the required property insurance, with all the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, The Contractor shall inform the Owner in writing prior to commencement of the Work. Upon receipt of notice from the Contractor, the Owner may delay commencement of the Work and may obtain insurance that will protect the interests of the parties and deduct costs of insurance from contract by change order. If the Owner is damaged by the failure of the Contractor to purchase and maintain such insurance without so notifying the Owner in writing, then the Contractor shall bear all reasonable costs attributable thereto.
4. Delete §11.2.3 and substitute the following:
 - a. §11.2.3 Notice of Cancellation or Expiration of Contractor's Required Property Insurance. The Contractor shall provide written notice of any cancellation or expiration of coverages required at least 30 days prior to any lapse in coverage event. Failure to notify Owner of any lapse in coverage event is the sole responsibility of the Contractor and any damages to the Owner or the Property shall be the Contractor's responsibility to bear all costs. Such notice requirement shall appear on the policy coverages page.
5. Delete §11.4 in its entirety.
6. Delete §11.5 in its entirety.

1.13 ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

A. §12.2 Correction of Work:

1. Add the following after Section 12.2.2.3:
 - a. §12.2.2.4 Upon request by the Owner and prior to the expiration of one year from the date of Substantial Completion, the Architect will conduct, and the Contractor shall attend a meeting with the Owner to review the facility operations and performance.

1.14 ARTICLE 15 CLAIMS AND DISPUTES

A. §15.1.6 Claims for Additional Time

1. Delete §15.1.6.2 and substitute the following:
 - a. §15.1.6.2 Unusually Adverse Weather Delays:
 - 1) .1 The Contractor shall anticipate delays in the progress of the Work, due to adverse weather, during the stipulated Contract Time in the amount of days published in recognized official data. If documented evidence (from recognized official data) indicates weather delays in excess of this amount, then they shall be declared as unusually adverse weather and then the Contractor may be granted an Extension of Time for each Work Day, in excess of the normal days, in which the weather prevented work on the Project Site for fifty (50) percent or more of the Contractor's "Normal Work Day", but only if such prevented work was critical to the timely completion of the project.
 - 2) .2 Contractor's "Normal Workday" shall be defined on the basis of Hours Per Day/Days Per Week as stated by the Contractor at the beginning of the Project. Example: If the Contractor indicates that his "normal" (regular) schedule is a 6-Day Work Week, meaning Monday through Saturday, then a rain on Sunday (since not a scheduled Workday) will not necessarily delay the Work of the Project. However, site conditions, as a result of the rain, could partially or fully prevent scheduled outside work on Monday (and thereafter) thereby making the Contractor eligible to apply for a Weather Delay Extension of Time on the basis of the conditions stated in the paragraph above.
2. Add the following Sections:
 - a. §15.1.6.3 Claims for increase in the Contract Time shall set forth in detail the circumstances that form the basis for the Claim, the date upon which each cause of delay began to affect the progress of the Work, the date upon which each cause of delay ceased to affect the progress of the Work and the number of days' increase in the Contract Time claimed as a consequence of each such cause of delay. The Contractor shall provide such supporting documentation as the Owner may require including, where appropriate, a revised construction schedule indicating all the activities affected by the circumstances forming the basis of the Claim.
 - b. §15.1.6.4 The Contractor shall not be entitled to a separate increase in the Contract Time for each one of the causes of delay which may have concurrent or interrelated effects on the progress of the Work, or for concurrent delays due to the fault of the Contractor.

B. §15.1.7 Waiver of Claims for Consequential Damages

1. Delete §15.1.7 and substitute the following:
 - a. §15.1.7 Waiver of Claims for Consequential Damages. The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. If, before expiration of 30 days from the date of execution for this agreement, the Owner obtains by separate agreement and furnishes to the Contractor a similar mutual waiver of all claims from the Architect against the Contractor for consequential damages which the Architect may incur as a result of any act or omission of the Owner or Contractor, then the waiver of consequential damages by the Owner and Contractor contained in this subparagraph 15.1.7 shall be applicable to claims by the Contractor against the Architect. This mutual waiver includes:
 - 1) .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
 - 2) .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising from the Work.
- C. Delete §15.3 Mediation in its entirety including all subsections.
- D. Delete §15.4 Arbitration in its entirety including all subsections.
- E. Add Section §15.3 Resolution of Claims and Disputes
 1. Add the following Sections:
 - a. §15.3.1 If a Claim has not been resolved after consideration of the foregoing and of further evidence presented by the parties or requested by the Architect, the Architect will notify the parties in writing that the Architect's decision will be made within seven days. After receipt of the Architect's decision, either party may file a claim in court for resolution of the dispute. However, any action or suit filed in court shall only be filed in the Chancery Court of the County of the Owner's principal place of business. In the event a legal action or suit is filed in a court other than the designated court, then the other party shall be entitled to have a case transferred to the designated court and be reimbursed for all attorney's fees and expenses incurred in transferring the case.
 - b. §15.3.2 Attorney's Fees: In the event of default or breach by any party hereto, the non-defaulting party shall have the right to enforce this contract and/or seek damages for its breach in the Courts of the county of the Owner's principal place of business. In addition to such other damages as may be provided herein or as may be proved by the non-defaulting party, the defaulting party shall be liable and responsible for all attorney's fees, court costs, expert witness fees or other out of pocket expenses incurred by the non-defaulting party as a result, directly or indirectly, of the breach or default by the defaulting party.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

FIRE STATION NO. 9
HATTIESBURG, MS

11/22/2019
CN 18-3707

END OF SECTION

SUMMARY AND ALTERNATES

PART 1 GENERAL

1.01 PROJECT IDENTIFICATION

- 1.01.A. Project Name: HATTIESBURG FIRE STATION NO. 9
- 1.01.B. Owner's Name: CITY OF HATTIESBURG
- 1.01.C. Architect's Name: LANDRY LEWIS GERMANY ARCHITECTS, P.A.
- 1.01.D. Drawings and Project Manual dated: 11/22/2019

1.02 ABBREVIATED WRITTEN SUMMARY

- 1.02.A. Briefly, and without force and effect upon contract documents, work of contract can be summarized as follows:
 - 1. The work consists of construction of a new fire station apparatus bay with attached two story administration and sleeping quarters facility. The project includes all site preparation and site work, drainage, utility connections, mechanical, electrical, and fire protection services as required for a complete & operational facility at contract closeout.
- 1.02.B. Refer to the following Sections for additional information related to the scope of work.
 - 1. Allowances as described in Section 012100 - Allowances are included in the scope of the work.

1.03 ALTERNATES

- 1.03.A. ALTERNATE 001: GENERATOR EQUIPMENT & INSTALLATION
 - 1. The work consists of providing and installation of a standby emergency generator unit to be located on the project site as indicated in the Contract Documents. Refer to Electrical Drawings & Specifications for scope of work as required.

1.04 OWNER OCCUPANCY

- 1.04.A. Owner intends to occupy the Project upon Substantial Completion.
- 1.04.B. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.
- 1.04.C. Schedule the Work to accommodate Owner occupancy.

END OF SECTION

ALLOWANCES

PART 1 GENERAL

1.01 GENERAL

- 1.01.A. Coordinate allowance work with related work to ensure that each selection is completely integrated and interfaced with related work. Requirements for the work of allowances are shown and specified to an extent established by date of contract documents; additional requirements are established by change order. At earliest possible date, advise Architect of date each final allowance selection must be completed.
- 1.01.B. Submit proposals for allowance work as directed and in the manner specified for change orders. Indicate quantities, unit costs, and total purchase amounts. Taxes, insurance, bond, delivery charges and trade discounts are included. Where requested, furnish detailed breakdown of quantity survey. Deliver excess materials of allowance work to Owner's storage space, or dispose of by other means as directed.
- 1.01.C. Use only as directed by Owner or Architect, by way of change order. Include related costs and reasonable Contractor margins in change order proposals. Prior to project closeout, submit final allowance change order proposal, crediting Owner with unused amount (if any) of allowance. Allowance includes all overhead, profit, insurance, bond, taxes, delivery charges or other costs related to changes authorized.

1.02 ALLOWANCES SCHEDULE

- 1.02.A. Include the stipulated sum of \$2,000.00 for purchase, delivery, and installation of refrigerator and dishwasher appliances to be selected by the Owner. Contractor shall coordinate the delivery and installation as required as part of the Contract prior to close-out.
- 1.02.B. Include the stipulated sum of \$2,000.00 for purchase, delivery, and installation of electric washer & dryer appliances to be selected by the Owner. Contractor shall coordinate the delivery and installation as required as part of the Contract prior to close-out.
- 1.02.C. Include the stipulated sum of \$3,500.00 for purchase, delivery, and installation of a "City of Hattiesburg" pan formed lighted signage to be selected by the Owner. Sign to be located on the front elevation of the administration entrance as noted.
- 1.02.D. Include the stipulated sum of \$3,500.00 for purchase, delivery, and installation of a "Hattiesburg Fire Station" pan formed lighted signage to be selected by the Owner. Sign to be located on the front elevation of the administration entrance as noted.

PART 2 PRODUCTS - NOT USED

PART 3 EXECUTION - NOT USED

END OF SECTION

SECTION 01 25 13 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. Definitions: "Products" is defined to include purchased items for incorporation into the work, regardless of whether specifically purchased for project or taken from Contractor's stock of previously purchased products. "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined or otherwise fabricated, processed, installed or applied to form units of work. "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, etc.). Definitions in this paragraph are not intended to negate the meaning of other terms used in contract documents, including "specialties," "systems," "structure," "finishes," "accessories," "furnishings," "special construction," and similar terms, which are self-explanatory and have recognized meanings in the construction industry.
- B. Substitutions: The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to contract documents, where requested by Owner, Architect or Engineer, are "changes" not "substitutions." Requested substitutions during bidding period, which have been accepted prior to Bid Date, are included in contract document and are not subject to requirements for substitutions as specified herein. Contractor's determination of and compliance with governing regulations and orders issued by governing authorities do not constitute "substitutions;" and do not constitute a basis for change orders, except as provided for in contract documents. Otherwise, Contractor's requests for changes in products, materials and methods of construction required by contract documents are considered requests for "substitutions," and are subject to requirements hereof.
- C. Standards: Refer to Division-1 section "Definitions and Standards" for applicability of industry standards to products of project, and for acronyms used in text of specification sections.

1.3 QUALITY ASSURANCE:

- A. Source Limitations: To the greatest extent possible for each unit of work, provide products, materials or equipment of a singular generic kind and from a single source.
- B. Compatibility of Options: Where more than one choice is available as options for Contractor's selection of a product or material, select an option which is compatible with other products and materials already selected (which may have been from among options for those other products and materials). Total compatibility among options is not assured by limitations within contract

documents, but must be provided by Contractor. Compatibility is a basic general requirement of product/material selections.

1.4 SUBMITTALS:

- A. Requests for Substitutions: Submit 3 copies, fully identified for product or method being replaced by substitution, including related specification section and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include product data/drawings, description of methods, samples where applicable, Contractor's detailed comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected work, cost information or proposal, and Contractor's statement to the effect that proposed substitution will result in overall work equal-to-or-better-than work originally indicated.

1.5 PRODUCT DELIVER-STORAGE-HANDLING:

- A. General: Deliver, handle and store products in accordance with manufacturer's recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimize long-term storage of products at site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products recognized to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1.6 WARRANTIES (GUARANTEES):

- A. Categories of Specific Warranties: Warranties on the work are in several categories, including those of General Conditions, and including (but not necessarily limited to) the following specific categories related to individual units of work specified in sections of Divisions 2 through 16 of these specifications:
- B. Special Project Warranty (Guarantee): A warranty specifically written and signed by Contractor for a defined portion of the work; and, where required, countersigned by subcontractor, installer, manufacturer or other entity engaged by Contractor.
- C. Specified Product Warranty: A warranty which is required by contract documents, to be provided for a manufactured product incorporated into the work; regardless of whether manufacturer has published a similar warranty without regard for specific incorporation of product into the work, or has written and executed a special project warranty as a direct result of contract document requirements.
- D. Coincidental Product Warranty: A warranty which is not specifically required by contract documents (other than as specified in this Section); but which is available on a product incorporated into the work, by virtue of the fact that manufacturer of product has published warranty in connection with purchases and uses of product without regard for specific applications except as otherwise limited by terms of warranty.

- E. Refer to individual sections of Divisions 2 through 16 for the determination of units of work which are required to be specifically or individually warranted, and for the specific requirements and terms of those warranties (or guarantees).
- F. General Limitations: It is recognized that specific warranties are intended primarily to protect Owner against failure of the work to perform as required, and against deficient, defective and faulty materials and workmanship, regardless of sources. Except as otherwise indicated, specific warranties do not cover failures in the work which result from: 1) Unusual and abnormal phenomena of the elements, 2) The Owner's misuse, maltreatment or improper maintenance of the work, 3) Vandalism after time of substantial completion, or 4) Insurrection or acts of aggression including war.
- G. Related Damages and Losses: In connection with Contractor's correction of warranted work which has failed, remove and replace other work of project which has been damaged as a result of such failure, or must be removed and replaced to provide access for correction of warranted work.
- H. Consequential Damages: Except as otherwise indicated or required by governing regulation, special project warranties and product warranties are not extended to cover damage to building contents (other than work of Contract) which occurs as a result of failure of warranted work.
- I. Reinstatement of Warranty Period: Except as otherwise indicated, when work covered by a special project warranty or product warranty has failed and has been corrected by replacement or restoration, reinstate warranty by written endorsement for the following time period, starting on date of acceptance of replaced or restored work.
 - 1. A period of time ending upon date original warranty would have expired if there had been no failure.
- J. Replacement Cost, Obligations: Except as otherwise indicated, costs of replacing or restoring failing warranted units or products is Contractor's obligation, without regard for whether Owner has already benefited from use through a portion of anticipated useful service lives.
- K. Rejection of Warranties: Owner reserves the right, at time of substantial completion or thereafter, to reject coincidental product warranties submitted by Contractor, which in opinion of Owner tend to detract from or confuse interpretation of requirements of contract documents.
- L. Contractor's Procurement Obligations: Do not purchase, subcontract for, or allow others to purchase or sub-subcontract for materials or units of work for project where a special project warranty, specified product warranty, certification or similar commitment is required, until it has been determined that entities required to countersign such commitments are willing to do so.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT COMPLIANCE'S:

- A. General: The compliance requirements, for individual products as indicated in contract documents, are multiple in nature and may include generic, descriptive, proprietary,

performance, prescriptive, compliance with standards, compliance with codes, conformance with graphic details and other similar forms and methods of indicating requirements, all of which must be complied with. Also "allowances" and similar provisions of contract documents will have a bearing on selection process.

- B. Procedures for Selecting Products: Contractor's options for selecting products are limited by contract document requirements, and governing regulations, and are not controlled by industry and governing regulations, and are not controlled by industry traditions or procedures experienced by Contractor on previous construction projects. Required procedures include, but are not necessarily limited to, the following for various indicated methods of specifying:
- C. Single Product/Manufacturer Name: Provide product indicated, except advise Architect/Engineer before proceeding, where known that named product is not a feasible or acceptable selection.
- D. Two or More Product/Manufacturer Names: Provide one of the named products, at Contractor's option; but excluding products which do not comply with requirements. Do not provide or offer to provide an unnamed product, except where none of named products comply with requirements or are a feasible selection; advise Architect/Engineer before proceeding.
- E. "Or Equal": Where named products in specifications text are accompanied by the term "or equal," or other language of similar effect, comply with those contract document provisions concerning "substitutions" for obtaining Architect's approval (by change order) to provide an unnamed product. "Named", except as otherwise indicated, is defined to mean manufacturer's name for product, as recorded in published product literature, of latest issue as of date of contract documents. Refer requests to use products of a later (or earlier) model to Architect for acceptance before proceeding.
- F. Standards, Codes and Regulations: Where only compliance with an imposed standard, code or regulation is required, selection from among products which comply with requirements including those standards, codes and regulations, is Contractor's option.
- G. Performance Requirements: Provide products which comply with specific performances indicated, and which are recommended by manufacturer (in published product literature or by individual certification) for application indicated. Overall performance of a product is implied where product is specified with only certain specific performance requirements.
- H. Prescriptive Requirements: Provide products which have been produced in accordance with prescriptive requirements, using specified ingredients and components, and complying with specified requirements for mixing, fabricating, curing, finishing, testing and similar operations in manufacturing process.
- I. Visual Matching: Where matching with an established sample is required, final judgment of whether a product proposed by Contractor matches sample satisfactorily is Architect's judgment. Where no product within specified cost category is available, which matches sample satisfactorily and complies with requirements, comply with contract document provisions concerning, "substitutions" and "change orders" for selection of a matching product outside established cost category or, of a product not complying with requirements.
- J. Visual Selection: Except as otherwise indicated, where specified product requirements include "...as selected from manufacturer's standard colors, patterns, textures..." or words of similar

effect, the selection of manufacturer and basic product (complying with requirements) is Contractor's option, and subsequent selection of color, pattern and texture is Architect's selection. Where specified product requirements include "...as selected from standard colors, patterns, textures available within the industry...", or words to that effect, selection of product (complying with requirements, and within established cost category) is Architect's selection, including designation of manufacturer where necessary to obtain desired color, pattern or texture.

2.2 SUBSTITUTIONS:

- A. Conditions: Contractor's request for substitution will be received and considered when extensive revisions to contract documents are not required and changes are in keeping with general intent of contract documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Architect. Otherwise, requests will be returned without action except to record non-compliance with these requirements.
- B. Where request is directly related to an "or equal" clause or other language of same effect in contract documents.
- C. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly or to coordinate various activities properly.
- D. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial non-compliance's which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance as claimed.
- E. Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can be so approved.
- F. Where substantial advantage is offered Owner, in terms of cost, time, energy conservation or other valuable considerations, after deducting offsetting responsibilities Owner may be required to bear, including additional compensation to Architect for redesign and evaluation services, increased cost of other work by Owner or separate contractors, and similar considerations.
- G. Work-Related Submittals: Contractor's submittal of (and Architect's acceptance of) shop drawings, product data or samples which relate to work not complying with requirements of contract documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

2.3 GENERAL PRODUCT REQUIREMENTS:

- A. General: Provide products which comply with requirements, and which are undamaged and unused at time of installation, and which are complete with accessories, trim, finish, safety

guards and other devices and details needed for a complete installation and for intended use and effect.

- B. Standard Products: Where available, provide standard products of types which have been produced and used previously and successfully on other projects and in similar applications.
- C. Continued Availability: Where additional amounts of a product, by nature of its application, are likely to be needed by Owner at a later date for maintenance and repair or replacement work, provide a standard, domestically produced product which is likely to be available to Owner at such later date.
- D. Nameplates: Except as otherwise indicated for required approval labels, and operating data, do not permanently attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products which will be exposed to view either in occupied spaces or on exterior of the work.
- E. Labels: Locate required labels and stamps on a concealed surface or, where required for observation after installation, on an accessible surface which, in occupied spaces, is not conspicuous.
- F. Equipment Nameplates: Provide permanent nameplate on each item of service-connected or power operated equipment. Indicate manufacturer, product name, model number, serial number, capacity, speed, ratings and similar essential operating data. Locate nameplates on an easily accessed surface which, in occupied spaces, is not conspicuous.

PART 3 - EXECUTION (not applicable)

END OF SECTION

SECTION 01 29 00 - SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-I Specification sections, apply to work of this section.

1.2 PROGRESS SCHEDULE:

- A. Bar-Chart Schedule: Not more than 14 days after date established for "Notice to Proceed", submit a bar-chart type progress schedule indicating a time bar for each major category or unit of work to be performed at site, properly sequenced and intermeshed and showing completion of the work sufficiently in advance of date established for "substantial completion of the work".
- B. Distribution: Following initial submittal to and response by Architect, print and distribute progress schedule to Architect, Engineers, Owner, separate contractors (if any), principal subcontractors and suppliers or fabricators, and others with a need-to-know schedule-compliance requirement. Distribute and post subsequent updated issues to same entities, when revisions are made; except delete entities from distribution when they have completed assigned work and are no longer involved in performance of scheduled work.

1.3 SCHEDULE OF VALUES:

- A. General: Prepare schedule of values, as required by General Conditions. Provide breakdown of Contract Sum in sufficient detail to facilitate continued evaluation of payment requests and progress reports. Break down principal subcontract amounts into several line items. Round off to nearest whole dollar, but with total equal to Contract Sum. Submit copy of schedule of values to Architect and Engineers.
- B. Time Coordination: In coordination of initial submittals and other administrative "start up" activities, submit schedule of values to Architect at earliest feasible date, but in no case later than 7 days before initial payment request is to be submitted.
- C. Listing: Arrange schedule with columns to indicate generic name of item, change orders (numbers) which have affected value, dollar value of item, and percentage of Contract Sum (to nearest one-hundredth percent and adjusted to total 100 percent).

1.4 PAYMENT REQUESTS:

- A. General: Except as otherwise indicated, sequence of progress payments is to be regular, and each must be consistent with previous applications and payments. It is recognized that certain applications involve extra requirements, including initial application, application at times of substantial completion, and final payment application.

- B. Application Transmittal: Submit 3 executed copies of each payment application, each copy of which is completed with waivers of lien and similar attachments. Transmit each copy with a transmittal form listing those attachments, and recording appropriate information related to application in a manner acceptable to Architect. Transmit to Architect by means ensuring receipt within 24 hours.
- C. Payment Application Times: The "period" for each progress payment is from the twenty-sixth (26th) of the month to the twenty-fifth (25th). Payment shall be made by the tenth (10th).
- D. Payment Application Forms: AIA Document G702 and Continuation Sheets; 1992 form, available from "Publications, a Division of the AIA Service Corporation", 1735 New York Ave. NW., Washington, DC, 20006 (also available at most local AIA chapter offices).
- E. Application Preparation: Except as otherwise indicated, complete every entry provided for on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by Architect without action. Entries must match current data of schedule of values and progress schedule and report. Listing must include amounts of change orders issued prior to last day of the "period of construction" covered by application.
- F. Waivers of Lien: For each payment application, submit waivers of lien to the owner.
- G. Extension of Time: See Supplementary Conditions, specifically ARTICLE 8 TIME and ARTICLE 9 PAYMENTS AND COMPLETION as it relates to the Extension of Time and Liquidated Damages.
 - 1. Extension of Time: The Contractor must submit each month, with his application for payment, a separate letter stating that he is requesting an extension of time or that he had no need for an extension for that period of time. Failure to include a letter stating that he is requesting an extension of time shall be considered a request for zero additional days for that payment period. Complete justification on a specific day by day basis, which shall include, but is not limited to, weather reports, site condition reports, a listing of which trades are delayed and which trades are not delayed (with verification from each trade), photo of the site and appropriate correspondence. The receipt of this request and data will be evaluated and accepted or rejected with the processing of the application for payment. The final determination as to the granting of an extension of time will be in the sole discretion of Architect/Owner, and Contractor agrees that this is a reasonable and appropriate method of resolution and agrees to abide by the decision of Architect. Weather delays for work to be performed inside of the building, shall not be allowed after the building reaches the enclosure stage unless Contractor can furnish clean and convincing proof that such an extension would be justified and Architect grants such extension.
- H. Application at Time of Substantial Completion:
 - 1. See Section 01 77 00 - Project Closeout.
- I. Final Payment Application:
 - 1. See Section 0 177 00 - Project Closeout.

PART 2 - PRODUCTS (not applicable)

FIRE STATION NO. 9
HATTIESBURG, MS

11/22/2019
CN 18-3707

PART 3 - EXECUTION (not applicable)

END OF SECTION

SECTION 01 33 00 - SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. The types of submittal requirements specified in this section include shop drawings, product data, samples and miscellaneous work-related submittals. Individual submittal requirements are specified in applicable sections for each unit of work. Refer to other Division-1 sections and other contract documents for requirements of administrative submittals.

1.3 Definitions: Work-related submittals of this section are categorized for convenience as follows:

- A. Shop drawings include specially-prepared technical data for this project, including drawings, diagrams, performance curves, data sheets, schedules, templates, patterns, reports, calculations, instructions, measurements and similar information not in standard printed form for general application to a range of similar projects.
- B. Product data include standard printed information on materials, products and systems; not specially-prepared for this project, other than the designation of selections from among available choices printed therein.
- C. Samples include both fabricated and un-fabricated physical examples of materials, products and units of work; both as complete units and as smaller portions of units of work; either for limited visual inspection or (where indicated) for more detailed testing and analysis.
- D. Mock-ups are a special form of samples, which are too large or otherwise inconvenient for handling in specified manner for transmittal of sample submittals.
- E. Miscellaneous submittals related directly to the work (non-administrative) include warranties, maintenance agreements, workmanship bonds, physical work records, quality testing and certifying reports, copies of industry standards, record drawings, field measurement data, operating and maintenance materials, and similar information, devices and materials applicable to the work and not processed as shop drawings, product data or samples.
- F. Color Selection: No color selection's will be made until all required samples and shop drawings have been submitted for coordination and approval.

1.4 SPECIFIC CATEGORY SUBMITTAL REQUIREMENTS:

- A. General: Except as otherwise indicated in individual work sections, comply with requirements specified herein for each indicated category of submittal. Provide and process intermediate submittals, where required between initial and final, similar to initial submittals.
- B. Shop Drawings: Provide newly-prepared information, on reproducible sheets, with graphic information at accurate scale (except as otherwise indicated), with name of preparer indicated (firm name). Show dimensions which are based on field measurement. Identify materials and products in the work shown. Indicate compliance with standards, and special coordination requirements. Do not allow shop drawing copies without appropriate final "Action" markings by Architect to be used in connection with the work.
- C. Submittal: One correctable translucent reproducible print and one blue-line or black-line print; reproducible will be returned.
- D. Product Data: Collect required data into one submittal for each unit of work or system; and mark each copy to show which choices and options are applicable to project. Include manufacturer's standard printed recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements. Maintain one set of product data (for each submittal) at project site, available for reference by Architect and others.
- E. Submittals: Do not submit product data, or allow its use on the project, until compliance with requirements of contract documents has been confirmed by Contractor. Submittal is for information and record, unless otherwise indicated. Initial submittal is final submittal unless returned promptly by Architect, marked with an "Action" which indicates an observed non-compliance. Submit 2 copies, plus 2 additional copies (which will be returned) where required for maintenance manuals.
- F. Installer's Copy: Do not proceed with installation of materials, products or systems until final copy of applicable product data is in possession of Installer.
- G. Samples: Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected, and describe or identify variations between units of each set. Provide full set of optional samples where Architect's selection is required. Prepare samples to match Architect's sample where so indicated. Include information with each sample to show generic description, source or product name and manufacturer, limitations, and compliance with standards. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by Architect. Architect will not "test" samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of Contractor.
- H. Submittal: At Contractor's option, provide preliminary submittal of a single set of samples for Architect's review and "Action". Otherwise, initial submittal is final submittal unless returned with "Action" which requires resubmittal. Submit 2 sets of samples in final submittal; one set will be returned.
- I. Quality Control Set: Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Architect, and by others.

- J. Mock-Ups: Mock-ups and similar samples specified in individual work sections recognized as a special type of sample. Comply with requirements for "samples" to greatest extent possible, and process transmittal forms to provide a record of activity.
- K. Inspection and Test Reports: Classify each as either "shop drawing" or "product data", depending upon whether report is uniquely prepared for project or a standard publication of workmanship control testing at point of production, and process accordingly.
- L. Warranties: Refer to "Products" section for specific general requirements on warranties, product/workmanship bonds, and maintenance agreements. In addition to copies desired for Contractor's use, furnish 2 executed copies.
- M. Closeout Submittals: Refer to individual work sections and to "closeout" sections for specific requirements on submittal of closeout information, materials, tools and similar items.
- N. Record Document Copies: Furnish one set.
- O. Maintenance/Operating Manuals: Furnish 2 bound copies.
- P. Materials and Tools: Refer to individual work sections for required quantities of spare parts, extra and overrun stock, maintenance tools and devices, keys, and similar physical units to be submitted.
- Q. General Distribution: Provide additional distribution of submittals (not included in foregoing copy submittal requirements) to subcontractors, suppliers, fabricators, installers, governing authorities and others as necessary for proper performance of the work. Include such additional copies in transmittal to Architect where required to receive "Action" marking before final distribution. Record distributions on transmittal forms.

1.5 ACTION ON SUBMITTALS:

- A. Architect's Action: Where action and return is required or requested, Architect/Engineer will review each submittal, mark with "Action", and where possible return within 2 weeks of receipt. Where submittal must be held for coordination, Contractor will be so advised by A/E without delay.
- B. Final Unrestricted Release: Work may proceed, provided it complies with contract documents, when submittal is returned with the following:
- C. Marking: "Approved"
- D. Final-But-Restricted Release: Work may proceed, provided it complies with notations and corrections on submittal and with contract documents, when submittal is returned with the following:
- E. Marking: "Approved as Noted".
- F. Returned for Resubmittal: Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow

submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the work:

- G. Marking: "Returned for Resubmittal".
- H. Other Action: Where submittal is returned for other reasons, with Architect explanation included, it will be marked as follows:
- I. Marking: "Action Not Required".
- J. Reviewing is only for conformance with the design concept of the project and compliance with the information given in the contract documents. The contractor is responsible for verification of all markings, changes, additions, or notes made on these drawings by the Architect. The contractor is responsible for dimensions to be confirmed and correlated at the site; for compliance with contract documents for information that pertains solely to fabrication processes or to techniques of construction and for co-ordination of the work of all trades. Approval of the shop drawings is not considered an extension of time nor a change in the contract sum unless stated in separate letter or change order.

PART 2 - PRODUCTS (not applicable).

PART 3 - EXECUTION (not applicable).

END OF SECTION

SECTION 01 42 00 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 DEFINITIONS:

- A. General Explanation: A substantial amount of specification language constitutes definitions for terms found in other contract documents, including drawings which must be recognized as diagrammatic in nature and not completely descriptive of requirements indicated thereon. Certain terms used in the contract documents are defined generally in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the work to extent not stated more explicitly in another provision of contract documents.
- B. General Requirements: The provisions or requirements of Division-1 sections. General Requirements apply to entire work of Contract and, where so indicated, to other elements which are included in the project.
- C. Indicated: The term "Indicated" is a cross-reference to graphics, notes or schedules on drawings, to other paragraphs or schedules in the specifications, and to similar means of recording requirements in contract documents. Where terms such as "shown", "noted", "scheduled", and "specified" are used in lieu of "indicated", it is for purpose of helping reader locate cross-reference, and no limitation of location is intended except as specifically noted.
- D. Directed, Requested, Etc.: Where not otherwise explained, terms such as "directed", "requested", "authorized", "selected", "approved", "required", "accepted", and "permitted" mean "directed by Architect/Engineer", "requested by Architect/Engineer", etc. However, no such implied meaning will be interpreted to extend Architect's responsibility into Contractor's area of construction supervision.
- E. Approve: Where used in conjunction with Architect's response to submittals, requests, applications, inquiries, reports and claims by Contractor, the meaning of term "approved" will be held to limitations of Architect's responsibilities and duties as specified in General and Supplementary Conditions. In no case will "approval" by Architect be interpreted as a release of Contractor from responsibilities to fulfill requirements of contract documents.
- F. Project Site: The space available to Contractor for performance of the work, either exclusively or in conjunction with others performing other work as part of the project. The extent of project site is shown on drawings, may or may not be identical with description of land upon which project is to be built.
- G. Furnish: Except as otherwise defined in greater detail, term "furnish" is used to mean supply and deliver to project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance.

- H. Install: Except as otherwise defined in greater detail, term "install" is used to describe operations at project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning and similar operations, as applicable in each instance.
- I. Provide: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- J. Installer: The entity (person or firm) engaged by Contractor or its subcontractor or subcontractor for performance of a particular unit of work at project site, including installation, erection, application and similar required operations. It is a general requirement that such entities (Installers) be expert in operations they are engaged to perform.
- K. Testing Laboratory: An independent entity engaged to perform specific inspections or tests of the work, either at project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.

1.3 SPECIFICATION EXPLANATIONS:

- A. Overlapping and Conflicting Requirements: Where compliance with 2 or more industry standards or sets of requirements is specified, and overlapping of those different standards or requirements establishes different or conflicting minimums or levels of quality, most stringent requirement (which is generally recognized to be also most costly) is intended and will be enforced, unless specifically detailed language written into contract documents (not by way of reference to an industry standard) clearly indicates that a less stringent requirement is to be fulfilled. Refer apparently-equal-but-different requirements, and uncertainties as to which level of quality is more stringent, to Architect for a decision before proceeding.
- B. Contractor's Options: Except for overlapping or conflicting requirements, where more than one set of requirements are specified for a particular unit of work, option is intended to be Contractor's regardless of whether specifically indicated as such.
- C. Minimum Quality/Quantity: In every instance, quality level or quantity shown or specified is intended as minimum for the work to be performed or provided. Except as otherwise specifically indicated, actual work may either comply exactly with that minimum (within specified tolerances), or may exceed that minimum within reasonable limits. In complying with requirements, indicated numeric values are either minimums or maximums as noted or as appropriate for context of requirements. Refer instances of uncertainty to Architect for decision before proceeding.
- D. Specialists; Assignments: In certain instances, specification text requires (or at least implies) that specific work be assigned to specialists or expert entities, who must be engaged for performance of those units of work. These must be recognized as special requirements over which Contractor has no choice or option. These assignments must not be confused with (and are not intended to interfere with) normal application of regulations, union jurisdictions and similar conventions. One purpose of such assignments is to establish which party or entity involved in a specific unit of work is recognized as "expert" for indicated construction processes or operations. Nevertheless, final responsibility for fulfillment of entire set of requirements remains with Contractor.

- E. Trades: Except as otherwise indicated, the use of titles such as "carpentry" in specification text, implies neither that the work must be performed by an accredited or unionized tradespeople of corresponding generic name (such as "carpenter"), nor that specified requirements apply exclusively to work by tradespeople of that corresponding generic name.
- F. Abbreviations: The language of specifications and other contract documents is of the abbreviated type in certain instances and implies words and meanings which will be appropriately interpreted. Actual word abbreviations of a self-explanatory nature have been included in texts. Specific abbreviations have been established, principally for lengthy technical terminology and primarily in conjunction with coordination of specification requirements with notations on drawings and in schedules. Trade association names and titles of general standards are frequently abbreviated. Singular words will be interpreted as plural and plural words will be interpreted as singular where applicable and where full context of the contract documents so indicates.

1.4 DRAWING SYMBOLS:

- A. General: Except as otherwise indicated, graphic symbols used on drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards", published by John Wiley & Sons, Inc., eighth edition.
- B. M/E Drawings: Graphic symbols used on mechanical/electrical drawings are generally aligned with symbols recommended by ASHRAE, supplemented by more specific symbols were appropriate as recommended by other recognized technical associations including ASME, ASPE, IEEE, and similar organizations. Refer instances of uncertainty to Architect/Engineer for clarification before proceeding.

1.5 INDUSTRY STANDARDS:

- A. General Applicability of Standards: Applicable standards of construction industry have same force and effect (and are made a part of contract documents by reference) as if copied directly into contract documents, or as if published copies were bound herewith.
- B. Referenced standards (referenced directly in contract documents or by governing regulations) have precedence over non-referenced standards which are recognized in industry for applicability to work.
- C. Non-referenced standards recognized in the construction industry are hereby defined, except as otherwise limited in contract documents, to have direct applicability to the work,
- D. and will be so enforced for performance of the work.
- E. Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.
- F. Copies of Standards: Provide where needed for proper performance of the work; obtain directly from publication sources.

- G. Abbreviations and Names: Where acronyms or abbreviations are used in specifications or other contract documents, they are defined to mean the industry recognized name of trade association, standards generating organization, governing authority or other entity applicable to context of text provision. Refer to "Encyclopedia of Associations," published by Gale Research Co., available in large libraries.

1.6 GOVERNING REGULATIONS/AUTHORITIES:

- A. General: The procedure followed by Architect has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to Contractor's responsibilities for performing the work. Contact governing authorities directly for necessary information and decision having a bearing on the performance of the work including but not limited to facilities to protect the public during construction.

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION (not applicable)

END OF SECTION

SECTION 01 45 29 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. General: Required inspection and testing services are intended to assist in the determination of probable compliance of the work with requirements specified or indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the contract documents.
- B. Definitions: The requirements of this section relate primarily to customized fabrication and installation procedures, not to the production of standard products. Quality control services include inspections and tests and related actions including reports, performed by independent agencies and governing authorities, as well as directly by the Contractor. These services do not include Contract enforcement activities performed directly by the Architect.
- C. Specific quality control requirements for individual units of work are specified in the _____ sections of these specifications that specify the individual element of the work. These requirements, including inspections and tests, cover both production of standard products, and fabrication of customized work. These requirements also cover quality control of the installation procedures.
- D. Inspections, tests and related actions specified in this section and elsewhere in the contract documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the contract documents.
- E. Requirements for the Contractor to provide quality; control services as required by the Architect, the Owner, governing authorities or other authorized entities are not limited by the provisions of this section.

1.3 RESPONSIBILITIES:

- A. Contractor Responsibilities: Except where they are specifically indicated as being the Owner's responsibility, or where they are to be provided by another identified entity, inspections, tests and similar quality control services are the Contractor's responsibility these services also include those specified to be performed by an independent agency and not directly by the Contractor. Costs for these services shall be included in the Contract Sum. The Contractor shall employ and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified.
- B. The Owner will engage and pay for the services of an independent agency to perform inspections and tests that are specified as the Owner's responsibility.

- C. Retest Responsibility: Where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance of related work with the requirements of the contract documents, then retests are the responsibility of the Contractor regardless of whether the original test was the Contractor's responsibility. Retesting of work revise or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original work.
- D. Responsibility for Associated Services: The Contractor is required to cooperate with the independent agencies performing required inspections, tests and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:
 - 1. Providing access to the work.
 - 2. Taking samples or assistance with taking samples.
 - 3. Delivery of samples to test laboratories.
 - 4. Security and protection of samples and test equipment at the project site.
- E. Coordination: The Contractor and each independent agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition the Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing and replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities. Qualification for Service Agencies: Except as otherwise indicate, engage inspection and test service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which are recognized in the industry as specialized in the types of inspections and tests to be performed.

1.4 SUBMITTALS:

- A. General: Refer to Division-1 section on "Submittals" for the general requirements on submittals. Submit a certified written report of each inspection, test or similar service, directly to the Architect/Engineer, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate. Submit additional copies of each written report directly to the governing authority, when the authority so directs.
- B. Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:
 - 1. Name of testing agency or test laboratory.
 - 2. Dates and locations of samples and tests or inspections.
 - 3. Names of individuals making the inspection or test.
 - 4. Designation of the work and test method.
 - 5. Complete inspection or test data.
 - 6. Test results.
 - 7. Interpretations of test results.
 - 8. Notation of significant ambient conditions at the time of sample-taking and testing.

9. Comments or professional opinion as to whether inspected or tested work complies with requirements of the contract documents.
10. Recommendations on retesting, if applicable.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION:

- A. General: Upon completion of inspection, testing, sample-taking and similar services performed on the work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Protect work exposed by or for quality control service activities and protect repaired work. Repair and protection are the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION

SECTION 01 50 00 - TEMPORARY FACILITIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. Definitions: Specific administrative and procedural minimum actions are specified in this section, as extensions of provisions in General Conditions and other contract documents. These requirements have been included for special purposes as indicated. Nothing in this section is intended to limit types and amounts of temporary work required, and no omission from this section will be recognized as an indication by Architect that such temporary activity is not required for successful completion of the work and compliance with requirements of contract documents. Provisions of this section are applicable to, but not by way of limitation, utility services, construction facilities, security/protection provisions, and support facilities.

1.3 QUALITY ASSURANCE:

- A. General: In addition to compliance with governing regulations and rules/recommendations of franchised utility companies, comply with specific requirements indicated and with applicable local industry standards for construction work (published recommendations by local consensus "building councils").
- B. ANSI Standards: Comply with applicable provisions of ANSI A10- Series standards on construction safety, including A10.3, A10.4, A10.5, A10.6, A10.7, A10.8, A10.9, A10.10, A10.11, A10.12, A10.13, A10.14, A10.15, A10.17, A10.18, A10.20, and A10.22. NFPA Code: Comply with NFPA Code 241 "Building Construction and Demolition Operations."

1.4 JOB CONDITIONS:

- A. General: Establish and initiate use of each temporary facility at time first reasonably required for proper performance of the work. Terminate use and remove facilities at earliest reasonable time, when no longer needed or when permanent facilities have, with authorized use, replaced the need.
- B. Conditions of Use: Install, operate, maintain and protect temporary facilities in a manner and at locations which will be safe, non-hazardous, sanitary and protective of persons and property, and free of deleterious effects.

PART 2 - PRODUCTS AND EXECUTION

2.1 TEMPORARY UTILITY SERVICES:

- A. The types of services required include, but not by way of limitation, water, sewerage, surface drainage, electrical power and telephones. Where possible and reasonable, connect to existing franchised utilities for required services; and comply with service companies' recommendations on materials and methods, or engage service companies to install services. Locate and relocate services (as necessary) to minimize interference with construction operations.
1. Electrical Service: After award of the contract, the electrical contractor shall install an electrical service and meter to be extended to the construction site and terminated on a pole convenient to the building.
 - a. The general contractor unless otherwise indicated shall pay for all electrical utility cost including fuel used by either temporary or permanent heating systems or both until substantial completion.
 2. Potable Water: After award of the contract, the mechanical contractor shall install either the permanent water line or a one and one-half (1-1/2) inch temporary line with meter and tap. Provide hose bibs at suitable locations but not less than every two hundred feet (200') around the building.
 - a. The general contractor unless otherwise indicated shall pay for water.
 3. Gas and other utilities: Tie into utilities as indicated on the plans for permanent connections.
 - a. Utility cost shall be paid by the owner.

2.2 TEMPORARY CONSTRUCTION FACILITIES:

A. GENERAL

1. The types of temporary construction facilities required include, but not by way of limitation, water distribution, drainage, dewatering equipment, enclosure of work, heat, ventilation, electrical power distribution, lighting, hoisting facilities, stairs, ladders, and roads. Provide facilities reasonably required to perform construction operations properly and adequately.

B. WATER DISTRIBUTION:

1. Mechanical contractor shall pipe to each floor level and provide hose lengths sufficient to reach entire area of construction work, not less than 3/4" hose size. Prevent freezing of water distribution by either prompt drainage after each use, or by suitable protection. Maintain 30 psi minimum water pressure at hose outlets.

C. ENCLOSURE

1. Before the building is enclosed and at any time work is performed outside the building enclosure, each contractor shall provide all heating, equipment, fuel, labor, supervision and maintenance necessary to protect his work and material against injury from the elements, including but not limited to dampness and cold. Each contractor shall provide approved temporary heating devices, electrical power, adequate and proper fuel, enclosures, etc., required for performing the work of his trades.

2. The general contractor shall enclose the building as soon as possible after starting construction and notify all contractors in writing when enclosure is completed. The building shall be considered enclosed when the walls have been constructed, a watertight roof has been applied and all doors, windows and other openings have been closed in an approved manner with permanent and/or temporary closures which provide in the opinion of the Architect a sufficient number of operating window units for the escape of construction moisture.

D. CONSTRUCTION HEAT

1. Construction heat shall be all heat, whether furnished by temporary heating units or by the permanent heating system, necessary to heat the building enclosure prior to the Owner's assumption of responsibility for the building heat.

E. RESPONSIBILITY

1. After enclosure, the general contractor will be fully responsible for providing construction heat until the building is accepted for occupancy by the Owner.

F. PERMANENT HEATING AND VENTILATION SYSTEM

1. The mechanical contractor shall furnish permanent heating and ventilating systems to heat and ventilate all building areas using heat and air from the permanent systems when available.
2. The electrical contractor shall furnish the electrical service, wiring and equipment necessary to utilize the permanent and temporary heating and ventilating systems, completing same concurrently with mechanical work.
3. The electrical contractor shall pay the costs for making electrical connections to heating or ventilating equipment or controls for temporary use other than to permanently located equipment.
4. Operate the heating and air supply systems used during construction to provide proper temperature and relative humidity for the work of each contractor. Maintain minimum temperature and humidity conditions as follows:
5. Maintain a minimum temperature of 50 degrees at all times in the spaces involved during the placing, setting, and curing of concrete, plaster, ceramic tile, or similar materials. Supply heat in a manner that will prevent the rapid drying of materials. Supply air for drying of materials.
6. Before delivery of materials and during the installation of finished woodwork, applying paint or varnish finishes, or applying impervious membranes or fabrics such as vinyl, maintain a minimum temperature of 70 degrees. Before installation dry the structure out by heat and ventilation to such an extent that moisture contained within partitions, walls, floors, or other structures will not adversely affect the installation or application of finished materials. Maintain a temperature of not less than 70 degrees in spaces where composition flooring is being laid and has been laid for the duration of the contract.

7. At a date established in substantial completion certificate or beneficial occupancy, whichever is earlier, the Owner will assume responsibility for providing heat to all parts of the building and all contractors will be relieved of their duties to furnish construction heat.

G. TEMPORARY POWER AND LIGHTING SYSTEM

1. The electrical contractor will provide a temporary light and power system within the building for the use of each contractor as specified herein.
2. Electrical Power: The electrical contractor will provide and maintain weatherproof, grounded, power distribution system sufficient to accommodate construction operations requiring power, use of power tools, electrical heating, lighting, and start-up testing of permanent electric-powered equipment prior to its permanent connection to electrical system. Provide overload protection. Locate multiple outlets (not less than 4-gang), spaced so that entire area of construction can be reached by power tools on a single extension cord of 100' maximum length.
3. Lighting: The electrical contractor will provide and maintain sufficient temporary lighting to ensure proper workmanship everywhere; by combined use of daylight, general lighting, and portable plug-in task lighting. Provide general lighting with local switching which will enable energy conservation during periods of varying activity (work-in-progress, traffic only, security check, lock-up, etc.).
4. Provide uniformly spaced general lighting equivalent to not less than one 200-watt incandescent lamp per 1000 square feet of floor area, and one 100-watt lamp per fifty feet of corridor.
5. Additional Power or Lighting: Contractor requiring any additional temporary lighting and power shall arrange to have the electrical contractor make a proper connection to the temporary system and provide facilities to suit their requirements to the extent possible and be responsible for the cost and maintenance thereof.
6. Portable Tools: Each contractor shall be responsible for maintaining portable tools and appliances operated from the temporary light and power system with suitable cords and plugs in good condition and with non-current-carrying parts grounded through a grounding conductor.
7. Maintenance and Repair: The temporary light and power system shall be used under the direction of the electrical contractor to the extent that in the event of heavy loading, he shall designate where loads may be connected so as to prevent overloading of circuits. Each contractor shall coordinate his use of temporary power so that the demand does not exceed the service available.
8. The repair of any damage to the system, including replacement of blown fuses, resulting from misuse or from connecting faulty equipment into the system, shall be paid for by each contractor responsible for the damage. Although the temporary light and power system is furnished for the use of each contractor, the components and materials furnished by the electrical contractor shall remain his property and any costs attributed to loss or damage to same shall be reimbursed by each contractor whose employees are found to be responsible for said loss and damage.

9. Each contractor requiring power for loads larger than those defined available and for electric welders shall make his own arrangements for these facilities and pay the energy costs for same. Remove such facilities immediately after work is completed.

H. PERMANENT ELECTRICAL SERVICE

1. In accordance with the job progress and conditions, the electrical contractor will make the permanent electrical service and distribution system for the building available for use for testing and adjusting of equipment and for operation of the required heating and ventilating equipment that is installed in permanent position. Enclosures and partitions must be in place around the major items of electrical equipment before such equipment may be energized.

I. CONSTRUCTION AIDS

1. Scaffolding and staging shall be provided by contractor for both interior and exterior work as required. Furnish, install and maintain scaffolding in accordance with requirements of all laws and regulations in effect.

J. LIFTING DEVICES AND HOISTING FACILITIES

1. Contractor shall provide lifting devices necessary for the proper and efficient movement of materials; provide operating personnel for equipment as required. Equipment shall be provided with safety devices as required by local and state codes.

K. ACCESS PROVISIONS

1. Provide ramps, stairs, ladders and similar temporary access elements as reasonably required to perform the work and facilitate its inspection during installation. Comply with reasonable requests of governing authorities performing inspections.

2.3 SECURITY/PROTECTION PROVISIONS:

- A. The types of temporary security and protection provisions required include, but not by way of limitation, fire protection, barricades, warning signs/lights, site enclosure fence, building enclosure/lockup, personnel security, theft prevention program and similar provisions intended to minimize property losses, personal injuries and claims for damages at project site. Provide security/protection services and systems in coordination with activities and in a manner to achieve 24-hour, 7-day-per-week effectiveness.

B. SECURITY

1. The Owner will not be responsible for the safety of contractor's work, material and/or equipment.

C. FIRE EXTINGUISHERS

1. Provide types, sizes, numbers and locations as would be reasonably effective in extinguishing fires during early stages, by personnel at project site. Provide Type A extinguishers at locations of low-potential for either electrical or grease-oil-flammable liquids fires; provide Type ABC dry chemical extinguishers at other locations; comply

with recommendations of NFPA No. 10. Post warning and quick-instructions at each extinguisher location, and instruct all personnel at project site, at time of their first arrival, on proper use of extinguishers and other available facilities at project site. Post local fire department call number on each telephone instrument at project site.

D. SITE ENCLOSURE FENCE

1. At earliest reasonable date enclose project site, or portion thereof determined by Contractor to be sufficient to contain entire construction activity. Provide 6' high-chain link steel fence with 3 strands of barbed wire on angle brackets at top. Provide 6' high gates for both personnel and trucks, with locks held under strict security control. At earliest reasonable date enclose project site, or portion thereof determined by Contractor to be sufficient to contain entire construction activity.

2.4 BUILDING ENCLOSURE AND LOCKUP

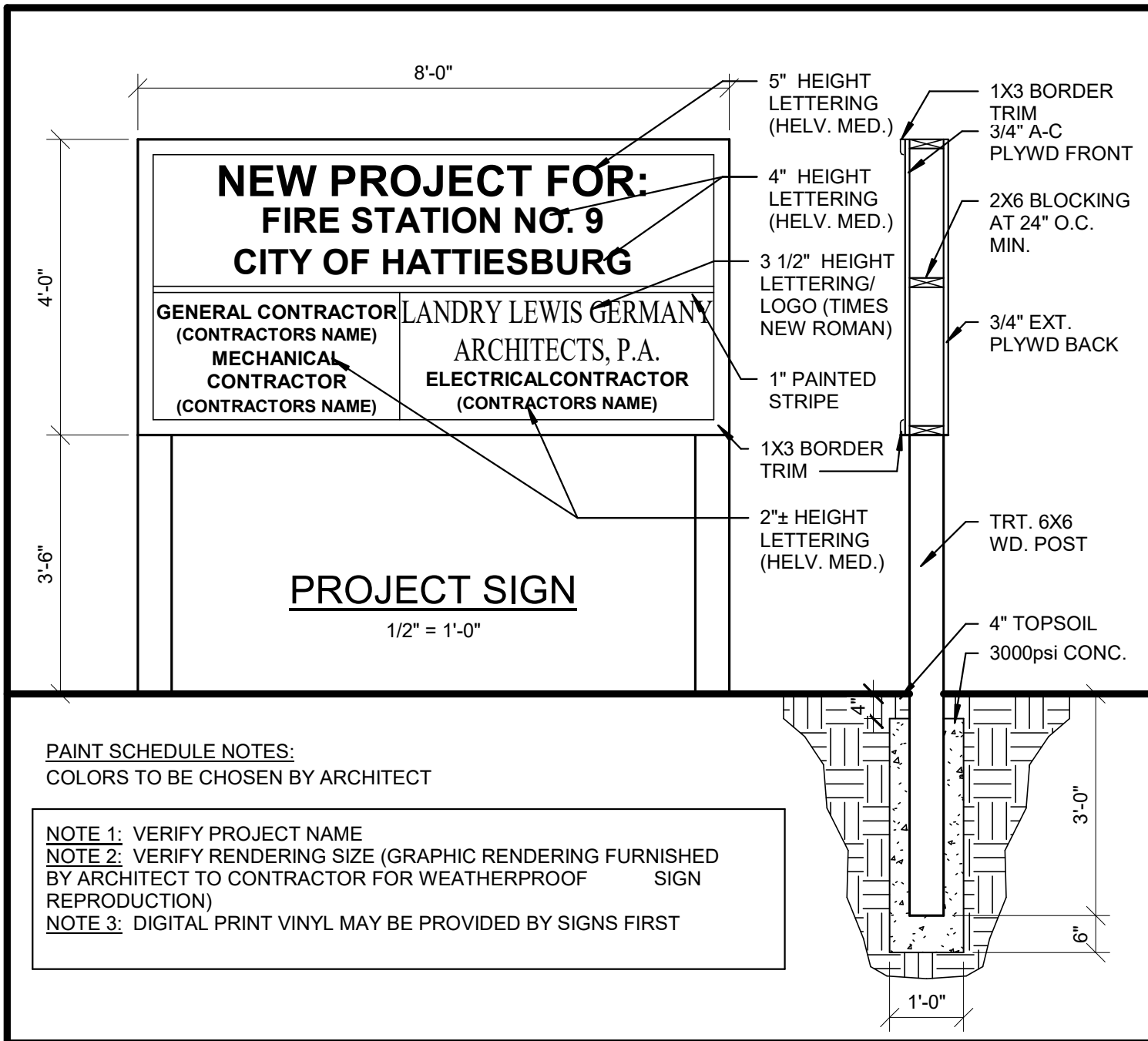
- A. At earliest possible date, secure building against unauthorized entrance at times when personnel are not working. Provide secure temporary enclosures at ground floor and other locations of possible entry, with locked entrances.
- B. The general contractor shall be responsible for the complete water tightness of the building and maintaining the building in a dry condition until acceptance. The general contractor shall be responsible for any damage from water, as well as for damage, collapse or failure of any part of the building caused by excess water undermining or creating pressures on the structure. Each contractor shall be responsible for damages caused by their subcontractors.

2.5 TEMPORARY SUPPORT FACILITIES:

- A. The types of temporary support facilities required include, but not by way of limitation, field offices, storage sheds, fabrication sheds, sanitary facilities, drinking water, first aid facilities, telephones, thermometer, project identification signs, clean-up facilities, waste disposal service, rodent/pest control and similar miscellaneous general services, all as may be reasonably required for proficient performance of the work and accommodation of personnel at the site including Owner's and Architect's personnel. Discontinue and remove temporary support facilities, and make incidental similar use of permanent work of the project, only when and in manner authorized by Architect; and, if not otherwise indicated, immediately before time of substantial completion. Locate temporary support facilities for convenience of users, and for minimum interference with construction activities.
- B. Material Storage: The contractor and each subcontractor shall make suitable provisions for his own office and for the storage of his materials and provide such temporary weatherproof sheds as may be necessary for the protection of his materials. The foregoing structures and equipment shall remain the property of such contractor and upon completion of the work the structures shall be removed from the site.
- C. Sanitary Facilities: At general contractor's option, provide either piped (wet) toilet facilities or self-contained toilet units of type acceptable to governing authorities, adequate (at all stages of construction) for use of personnel at project site. Provide separate facilities for male and female personnel when both sexes are working (in any capacity) at project site.

- D. Drinking Water: General contractor shall provide dispenser-type, cold drinking water units; adequate in number and locations for personnel at project site. Furnish paper cups and waste receptacles.
- E. Project Identification Sign: Provide project identification sign complying with sketch/data sheet included at end of this section. Engage an experienced sign painter to paint graphics on sign as indicated. Construct sign of treated wood framing and posts, and 3/4" plywood panels of exterior type Grade B-C sanded 2 sides.
- F. Other Signs: All other signs to be placed on the site by any contractor or subcontractor must be approved by the Architect as to size, quality, type and location.
- G. Repair of Damaged Items: The contractor who installed the temporary facilities is responsible for maintaining said facilities; however, misuse, damage or destruction of another contractor's or subcontractor's facilities shall be paid for by the contractor whose employees were responsible for said loss or damage. If responsible party is unknown, the cost to correct or replace shall be prorated to all contractors and subcontractors on the job at the time of such damage.

END OF SECTION



SECTION 01 77 00 - PROJECT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF REQUIREMENTS:

- A. Definitions: Closeout is hereby defined to include general requirements near end of Contract Time in preparation for final acceptance, final payment, normal termination of contract, occupancy by Owner and similar actions evidencing completion of the work. Specific requirements for individual units of work are specified in sections of Divisions 2 through 16. Time of closeout is directly related to "Substantial Completion"; and therefore, may be either a single time period for entire work which have been certified as substantially complete at different dates. That time variation (if any) shall be applicable to other provisions of this section.
- B. Final payment will not be approved until all close-out documentation have been received.

1.3 SUBSTANTIAL COMPLETION:

- A. The contractor shall have completed the following:
 - 1. Deliver tools, spare parts, extra stocks of materials, and similar physical items to Owner.
 - 2. Make final change-over of locks and transmit keys to Owner and advise Owner's personnel of change-over in security provisions.
 - 3. Complete start-up testing of systems, and instructions of Owner's operating/maintenance personnel. Discontinue (or change over) and remove from project site temporary facilities and services along with construction tools and facilities, mock-ups, and similar elements.
- B. Inspection Procedures: Upon receipt of contractor's request, Architect will either proceed with inspection or advise contractor of prerequisites not fulfilled. Following initial inspection, Architect will either prepare certificate of substantial completion, or advise contractor of work which must be performed prior to issuance of certificate; and repeat inspection when requested and assured that work has been substantially completed. Results of completed inspection will form initial "punch-list" for final acceptance.

1.4 FINAL ACCEPTANCE:

- A. General: Prior to requesting Architect's final inspection for certification of final acceptance and final payment as required by General Conditions, complete the following and list known exceptions (if any) in request:

- B. Submit final payment request with final releases and supporting documentation not previously submitted and accepted, include certificates of insurance for products and completed operations where required.

1.5 FORM OF CLOSE-OUT DOCUMENTS:

- A. Contractor shall submit all required documents in one initial complete package. Partial submittals will be returned to the Contractor.
- B. Prior to Final Payment the Contractor shall provide the closeout documents in DUPLICATE in the following format: (Unless otherwise noted)
- C. All closeout documents must be provided in two binders. (Operation and Maintenance Manuals may be in a separate binder if necessary)
 - 1. Each item shall be tabbed.
 - 2. Each item shall be numbered with the item number listed below.
 - 3. Package shall include all as-built drawings and specifications, operation manuals, maintenance manuals and all items listed below.

1.6 REQUIRED CLOSE-OUT DOUCMENTS:

- A. Submit copies of original Contract, Bonds, Certificate of Insurance and all Change Orders. (Two required - photo copies acceptable)
- B. Final Request for Payment, A.I.A. Document G702. (Three originals required)
- C. Consent of Surety for Final Payment, A.I.A. Document G707, completed in full by bonding company with Power of Attorney. (Two originals required- notarized)
- D. Release of Liens and Certification All Bills Are Paid, A.I.A. Document G706. (Two originals required - notarized)
- E. Contractor's Affidavit of Release of Liens, A.I.A. Document G706A. (Two originals required - notarized)
- F. Notarized letter with the following wording: (Two originals required - notarized)
 - 1. "We hereby certify that all bills for labor and materials incorporated into the above captioned project under our contract, have been paid and that the Owner is released from any and all claims and/or damages under this contract."
- G. Notarized Statement Stating:
 - 1. Project has been constructed in accordance with contract documents. (Two originals required - notarized)

H. Guarantee of Work:

1. Sworn statement that all work is guaranteed against defects in materials and workmanship for one year from date of owner's acceptance, except where specified for longer periods. (Two originals required - notarized)
2. All guarantees and warranties shall be obtained in the Owner's name.
3. Word the Guarantee as follows: (All four paragraphs)

"We hereby guarantee all work performed by us on the above captioned project to be free from defective materials and workmanship for a period of one year or such longer period of time as may be called for in the contract documents for such portions of the work.

Within the guaranty period, if repairs or changes are requested in connection with guaranteed work which, in the opinion of the Owner, are rendered necessary as a result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract, the Contractor shall promptly, upon receipt of notice from and without expense to the Owner, place in satisfactory condition in every particular, all such guaranteed work, correct all defects therein and make good all damages to the building, site, equipment or contents thereof which, in the opinion of the Owner, is the result of the use of materials, equipment or workmanship which are inferior, defective or not in accordance with the terms of the contract; and make good any work or materials or the equipment and contents of said buildings or site disturbed in fulfilling any such guaranty.

If after notice, the Contractor fails to proceed promptly to comply with the terms of the guaranty, the Owner may have the defects corrected and the Contractor and his Sureties shall be liable for all expense incurred.

All special guarantees applicable to definite parts of the work stipulated in the project manual or other papers forming part of the contract shall be subject to the terms of this paragraph during the first year of the life of such special guaranty."

I. As Built Record Drawings:

1. Maintain one complete set of contract document drawings for recording substantial deviations from the work originally shown. The mechanical and electrical contractors shall maintain a separate set of documents at all times, throughout the project. If items are discovered which are uncharted or unknown, record such item and location for future referenced by the owner. Locate deviation by dimension and or scale for site and building work from known, visible and obvious point of reference. Note all items changed by addendum and change orders.
2. The Contractor shall keep in reserve one complete set of plans for use as the "As Built Drawings". All deviations from the original plans, shall be flagged with a "cloud" and noted and dimensioned if necessary. Each drawing shall be noted as "As Built Drawing"

3. In addition, the Contractor shall scan the "As Built Drawings" to disc in PDF format and provide one disc to the Architect for transmittal to the owner.
- J. As Built Record Specifications
1. Maintain one copy of specifications, including addenda, change orders and similar modifications issued in printed form during construction, and mark-up variations (of substance) in actual work in comparison with text of specifications and modification as issued. Give particular attention to substitutions, selection of options, and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable. Upon completion of mark-up, submit to Architect for Owner's records.
- K. Record Product Data (Shop Drawings, Brochures, Submittals, etc.):
1. Maintain two copies of each product data submittal, and mark-up significant variations in actual work in comparison with submitted information, include both variations in product as delivered to site, and variations from manufacturer's instructions and recommendations for installation. Give particular attention to concealed products and portions of the work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up of record drawings and specifications. Upon completion of mark-up, submit complete set to Architect for Owner's records.
- L. Maintenance Manuals:
1. Organize maintenance-and-operating manual information into suitable sets of manageable size, and bind into individual binders properly identified and indexed (thumb-tabbed), include emergency instructions, spare parts listing, copies of warranties, wiring diagrams, recommended "turn-around" cycles, inspection procedures, shop drawings, product data, and similar applicable information. Bind each manual of each set in a heavy-duty 2", three-ring vinyl-covered binder, and include pocket folders for folded sheet information. Mark identification on both front and spine of each binder.
- M. Roofing Guarantees Manufacturer's guarantees. (Two originals required)
- N. Roofing Guarantee-Service:
1. Service Guarantee, copies at end of Section. (Two originals required)
- O. Permits, Licenses and Certificates
1. For the Owner's records, submit copies of building and other permits, licenses, certifications, city/county inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work. (Two required - photo copies acceptable)
- P. Termite Treatment Warranty for five (5) years from date of treatment. (Two originals required)

- Q. Door Guarantee (Two originals required)
- R. Store Front System and Aluminum Entrance Doors for two (2) years. (Two originals required)
- S. Warranty on Insulating Glass Units for ten (10) years. (Two originals required)
- T. Maintenance instructions for resilient floor covering. (Two required - photo copies acceptable)
- U. Maintenance instructions for ceramic tile flooring. (Two required - photo copies acceptable)
- V. Maintenance instructions for carpet flooring. (Two required - photo copies acceptable)
- W. Notarized letter with the following wording: (Two originals required)

"We hereby certify that all material incorporated in this project are non-asbestos containing materials".

- X. Listing of all required materials (List of stock materials to be left with the Owner). Carpet, tile, ceiling, shingles etc. When and where signed and received by whom, with owner. (Two required - photo copies acceptable)

PART 2 - PRODUCTS (not applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES:

- A. General Operating/Maintenance Instructions: Arrange for each installer of work requiring continuing maintenance or operation to meet with Owner's personnel at project site to provide basic instruction needed for proper operation and maintenance of entire work, include instructions by manufacturer's representatives where installers are not expert in the required procedures. Review maintenance manuals, record documentation, tools, spare parts and materials, lubricants, fuels, identification system, control sequences, hazards, cleaning and similar procedures and facilities. For operational equipment, demonstrate start-up, shut-down, emergency operations, noise and vibration adjustments, safety, economy/efficiency adjustments, energy effectiveness, and similar operations. Review maintenance and operations in relation with applicable warranties, guarantee from manufacturers and serviced guarantee, agreements to maintain, bonds, and similar continuing commitments.

3.2 FINAL CLEANING:

- A. General: Special cleaning for specific units of work is specified in sections of Divisions 2 through 16. General cleaning during progress of work is specified in General Conditions and as temporary services in "Temporary Facilities" section of this Division. Provide final cleaning of the work at time indicated consisting of cleaning each surface or unit of work to normal "clean" condition expected for a first-class building cleaning and maintenance program. Comply with manufacturer's instructions for cleaning operations. The following are examples, but not by way of limitation, of cleaning levels required:

1. Remove labels which are not required as permanent labels.
2. Clean transparent materials, including mirrors and window/door glass to a polished condition removing substances which are noticeable as vision-obscuring materials. Replace broken glass and damaged transparent materials.
3. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of dust, stains, films and similar noticeable distracting substances. Except as otherwise indicated, avoid disturbance of natural weathering of exterior surfaces. Restore reflective surfaces to original reflective condition.
4. Wipe surfaces of mechanical and electrical equipment clean, and similar equipment; remove excess lubrication and other substances.
5. Remove debris and surface dust from limited-access spaces including roofs, plenums, shafts, trenches, manholes, attics and similar spaces.
6. Clean concrete floors in non-occupied spaces broom clean.
7. Vacuum clean carpeted surfaces and similar soft surfaces.
8. Clean plumbing fixtures to a sanitary condition, free of stains including those resulting from water exposure.
9. Clean food service equipment to a condition of sanitation ready and acceptable for intended food service use.
10. Clean light fixtures and lamps so as to function with full efficiency.
11. Clean project site (yard and grounds), including landscape development areas of litter and foreign substances. Sweep paved areas to a broom-clean condition; remove stains, petro-chemical spills and other foreign deposits. Rake ground which are neither planted nor paved to a smooth, even-textured surface.
12. Pest Control: Engage an experienced exterminator to make a final inspection of project and to rid project of rodents, insects, and other pests.
13. Removal of Protection: Except as otherwise indicated or requested by Architect, remove temporary protection devices and facilities which were installed during course of the work to protect previously completed work during remainder of construction period.
14. Compliances: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at site, or bury debris or excess materials on Owner's property, or discharge volatile or other harmful or dangerous materials into drainage systems; remove waste materials from site and dispose of in a lawful manner.
15. Where extra materials of value remaining after completion of associated work have become Owner's property, dispose of these to Owner's best advantage as directed.

END OF SECTION

SECTION 02 30 00 - SOIL INVESTIGATION DATA

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Soil Investigation: A report has been prepared. This report was obtained only for use by the Architect in design and is not a part of the contract documents.
- B. Examination: A copy of this report has been included herein and is available for contractor's information only and is not a warranty of subsurface conditions.
- C. Additional Investigation:
 - 1. Contractor should visit the site and acquaint himself with conditions.
- D. Prior to bidding, the contractor may make his own investigations to satisfy himself with site and subsurface conditions.

END OF SECTION



Geotechnical Engineering Report

Fire Station #9
Hattiesburg, Forrest County, Mississippi

October 18, 2019
Terracon Project No. E4195029

Prepared for:
City of Hattiesburg
Hattiesburg, Mississippi

Prepared by:
Terracon Consultants, Inc.
Biloxi, Mississippi



October 18, 2019

City of Hattiesburg
5211 Old Highway 11
Hattiesburg, Mississippi 39402



Attn: Shane Germany, AIA, CSI
P: (601) 271 7711
E: shane@llgarch.com

Re: Geotechnical Engineering Report
Fire Station #9
Highway 49 at Irby Road
Hattiesburg, Forrest County, Mississippi
Terracon Project No. E4195029

Dear Mr. Germany:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PE4195029 dated June 26, 2019. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, and pavements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

Terracon Consultants, Inc.

Nicholas K. Leber, P.E.
Senior Staff Engineer

Jeffrey W. Williams, P.E.
Senior Engineer



REPORT TOPICS

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Note: This report was originally delivered in a web-based format. **Orange Bold** text in the report indicates a referenced section heading. The PDF version also includes hyperlinks which direct the reader to that section and clicking on the **GeoReport** logo will bring you back to this page. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report
Fire Station #9
Highway 49 at Irby Road
Hattiesburg, Forrest County, Mississippi
Terracon Project No. E4195029
October 18, 2019

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Fire Station #9 to be located on Highway 49 at Irby Road in Hattiesburg, Forrest County, Mississippi. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Pavement design and construction
- Foundation design and construction
- Floor slab design and construction
- Seismic site classification per IBC

The geotechnical engineering Scope of Services for this project included the advancement of 8 test borings to depths ranging from approximately 10 to 20 feet below existing site grades.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	The project site is located at Highway 49 at Irby Road in Hattiesburg, Forrest County, Mississippi (approximately 31.400° N, -89.387° W) See Site Location
Existing Improvements	Undeveloped lot
Current Ground Cover	Undeveloped lot, scattered trees and manicured grass

Geotechnical Engineering Report

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi

October 18, 2019 ■ Terracon Project No. E4195029



Item	Description
Existing Topography	The site generally slopes down from the perimeter of the site towards the ditch traversing the site from east to west with a maximum elevation change of about 3 to 4 feet.
Geology	The site is located within the surface outcrop of the Miocene age Hattiesburg-Pascagoula formation. This formation is present throughout the southern quarter of Mississippi and is underlain by the Miocene age Catahoula formation and overlain by the Pleistocene age Citronelle formation. The Hattiesburg-Pascagoula formation is generally characterized as a gray homogenous marine clay deposit occurring at thicknesses of 150 feet or more. The formation may also contain localized areas of sandy clay or sand layers, lenses or beds. In some areas, these sandy deposits within the formation can have a thickness of 40 or 50 feet. Additionally, these sands may also become indurated into siltstone and/or sandstone deposits. The weathered clays found within the upper oxidized portion of the surface outcrop of the Hattiesburg-Pascagoula formation typically reveal moderate amounts of expansion and contraction due to changes in moisture content.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	Shane Germany via email
Project Description	Construct a new fire station building with associated parking and drive areas
Proposed Structure	The project includes a single-story building with a footprint of about 7,800 square feet. The building will be slab-on-grade (non-basement).
Building Construction	Unknown at the time of the report
Finished Floor Elevation	Expected to be at Elev. 191.5 feet
Assumed Maximum Loads	■ Columns: 100 kips ■ Walls: 3 kips per linear foot (klf) ■ Slabs: 100 pounds per square foot (psf)
Grading/Slopes	We expect up to 2 to 3 feet of fill will be required to achieve final grades

Geotechnical Engineering Report

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi

October 18, 2019 ■ Terracon Project No. E4195029



Item	Description
Pavements	It is our understanding that rigid (concrete) pavement sections will be used. We understand that current plans are to utilize 8-inch-thick concrete pavement in heavy duty firetruck access areas and 5-inch-thick concrete pavement in automobile and light truck parking areas. Anticipated traffic is as follows: ■ Autos/light trucks: < 500 vehicles per day ■ Firetrucks: 4 vehicles per day ■ Tractor-trailer trucks: < 1 vehicle per week The pavement design period is 20 years.
Estimated Start of Construction	Spring 2020

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation, foundation, floor slab, and pavement options. Conditions encountered at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

Groundwater was not observed in the borings while augering or for the short duration that the borings were allowed to remain open. Due to the low permeability of the soils encountered in the borings, a relatively long period of time may be necessary for the groundwater level to develop and stabilize in a borehole in these materials. Long term observations in piezometers or observation wells sealed from the influence of surface water are often required to define the field or in-situ groundwater level in materials of this type.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may differ than indicated on the boring logs. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

GEOTECHNICAL OVERVIEW

As noted in our **Exploration Results** and **GeoModel**, the borings encountered generally competent lean clays (CL) and silty clays (CL-ML). These materials will form the subgrade for the proposed foundations, floor slabs, and pavements. These materials appear to be suitable for the placement of structures or fill soils. The **Shallow Foundations** section addresses support of the building bearing on native soils or engineered fill. The **Floor Slabs** section addresses slab-on-grade support of the building. The planned rigid pavement system is feasible for this site. The **Pavements** section addresses the design of pavement systems. The **General Comments** section provides an understanding of the report limitations.

The near surface soils appeared to be relatively stable at the time of our investigation. However, depending on weather conditions immediately preceding earthwork operations, the soil conditions could improve or worsen. It should also be noted that high silt content soils (CL-ML) were encountered directly beneath the ground surface in some of our borings. The medium stiff silty clays (CL-ML) encountered directly beneath the ground surface in Borings B-05, B-06, and B-08 will likely need to be mitigated. These silty soils are highly susceptible to instability when wet. We expect that mitigation will be necessary to a depth of at least 2 feet in these areas due to the presence of the medium stiff soils. Therefore, we recommend that during earthwork operations care is taken to limit the amount of surface water allowed to be introduced to the near surface soils. We recommend that the specifications require the contractor to maintain the area in a relatively dry condition. Adequate surface drainage will also be required to minimize the amount of surface water entering the area. If unstable soils are found to be present during construction, then these soils will need to be mitigated. Mitigation should consist of over-excavating the unstable soils to a stable subgrade. The excavation should be backfilled with engineered fill as specified in **Fill Material Types** and **Fill Compaction Requirements**.

EARTHWORK

Earthwork is anticipated to include clearing and grubbing, excavations, and fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

Site Preparation

Prior to placing fill, existing vegetation and root mat should be removed. Complete stripping of the topsoil should be performed in the proposed building and parking/driveway areas. No root balls from the trees should be left in the ground after the site clearing process. The root balls should be excavated such that the roots remaining in the ground are smaller than ½-inch in diameter. The

Geotechnical Engineering Report

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi

October 18, 2019 ■ Terracon Project No. E4195029



voids left behind by the removal of the root balls should be replaced with engineered fill as outlined in this report.

The subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proofrolling should be performed under the direction of the Geotechnical Engineer. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Mitigation might include processing to remove excess moisture, overexcavation and backfilling, chemical stabilization, or modification with geotextile reinforcement. Should mitigation of wet and pumping soils be required, our office should be notified so that appropriate mitigation can be prescribed by the project geotechnical engineer.

Fill Material Types

Fill required to achieve design grade should be classified as engineered fill. Earthen materials used for engineered fill should meet the following material property requirements:

Soil Type ¹	USCS Classification	Acceptable Parameters (for Engineered Fill)
Low Plasticity Cohesive	CL	$10 \leq PI \leq 25$ $LL \leq 45$
Granular	SC	$10 \leq PI \leq 25$ $LL \leq 45$
On-Site Soils ²	CL, CL-ML	$4 \leq PI \leq 25$ $LL \leq 45$

1. Engineered fill should consist of approved materials free of organic matter and debris. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site.
2. High silt content soils (CL-ML) are extremely sensitive to variations in moisture content and can lose strength rapidly with increases in moisture. It should be noted that the moisture content of the silt must be closely controlled in order to achieve the desired degree of compaction. Drying of soils excavated from deeper cut areas of the site should be anticipated prior to use as engineered fill.

Fill Compaction Requirements

Engineered fill should meet the following compaction requirements.

Item	Engineered Fill
Maximum Lift Thickness	9 inches or less in loose thickness when heavy, self-propelled compaction equipment is used 4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used
Minimum Compaction Requirements ¹	98% of the material's standard Proctor maximum dry density (ASTM D 698), with stability present
Moisture Content Range ¹	Cohesive: Within -2% to +2% percent of optimum moisture content as determined by the standard Proctor test at the time of placement and compaction. Granular: Workable moisture levels

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).

Utility Trench Backfill

All trench excavations should be made with sufficient working space to permit construction including backfill placement and compaction. If utility trenches are backfilled with relatively clean granular material, they should be capped with at least 18 inches of cohesive fill in non-pavement areas to reduce the infiltration and conveyance of surface water through the trench backfill.

Grading and Drainage

All grades must provide effective drainage away from the building during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. The roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

Earthwork Construction Considerations

The near-surface soils are sensitive to increases in moisture content and have a tendency to lose strength and stability as the moisture content increases or as a result of construction traffic. We suggest earthwork construction take place during generally dryer months of the year. Wet season earthwork has an increased risk that may require additional mitigation measures beyond that which would be expected during the drier summer and fall months.

Shallow excavations for the proposed structure are anticipated to be accomplished with conventional construction equipment. Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of foundations, floor slabs, and pavements. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The earthwork efforts should be monitored under the direction of the Geotechnical Engineer. Monitoring should include documentation of adequate removal of vegetation and topsoil, proofrolling, and mitigation of areas delineated by the proofroll to require mitigation.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. One density and water content test should be performed for every 50 linear feet of compacted utility trench backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. If unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

Design Parameters – Compressive Loads

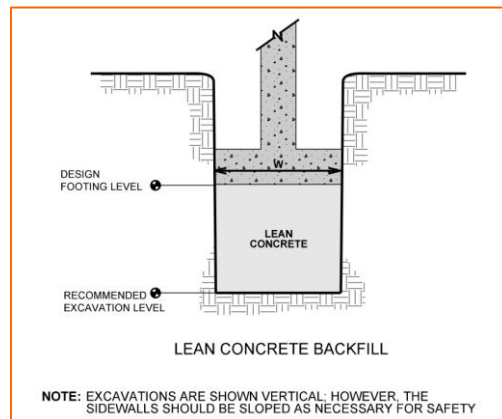
Item	Description
Maximum Net Allowable Bearing pressure ^{1, 2}	2,000 psf
Required Bearing Stratum ³	Stiff or better native soils or engineered fill. Bearing stratum should be verified by Terracon.
Minimum Foundation Dimensions	Columns: 24 inches Continuous: 18 inches
Ultimate Passive Resistance ⁴ (equivalent fluid pressures)	250 pcf
Ultimate Coefficient of Sliding Friction ⁵	0.32
Minimum Embedment below Finished Grade ⁶	18 inches
Estimated Total Settlement from Structural Loads ²	Less than about 1 inch
Estimated Differential Settlement ^{2, 7}	About ½ of total settlement

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. An appropriate factor of safety has been applied. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Unsuitable or soft soils should be over-excavated and replaced per the recommendations presented in the **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted engineered fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are as measured over a span of 50 feet.

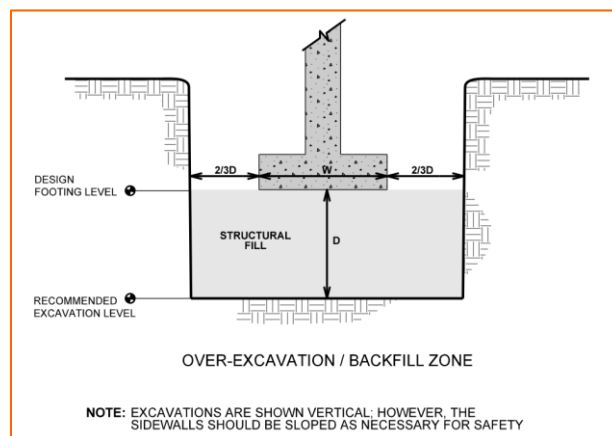
Foundation Construction Considerations

As noted in **Earthwork**, the footing excavations should be evaluated under the direction of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

If unsuitable bearing soils are encountered at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. This is illustrated on the sketch below.



Over-excavation for engineered fill placement below footings should be conducted as shown below. The over-excavation should be backfilled up to the footing base elevation, with engineered fill placed, as recommended in the **Earthwork** section.



SEISMIC CONSIDERATIONS

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties encountered at the site and as described on the exploration logs and results, it is our professional opinion that the **Seismic Site Classification is D**. Subsurface explorations at this site were extended to a maximum depth of 20 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

FLOOR SLABS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Floor Slab Design Parameters

Item	Description
Floor Slab Support	Minimum 6 inches of crushed aggregate compacted to at least 98% of ASTM D 698 ^{1, 2}
Estimated Modulus of Subgrade Reaction ¹	100 pounds per square inch per inch (psi/in) for point loads

1. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.
2. Other design considerations such as cold temperatures and condensation development could warrant more extensive design provisions.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut control joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations refer to the ACI Design Manual. Joints or cracks should be sealed with a water-proof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Mitigation measures, as noted within **Earthwork**, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams and/or post-tensioned elements.

Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed and engineered fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should approve the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

Pavement Design Parameters

Design of Portland Cement Concrete (PCC) pavements are based upon American Concrete Institute (ACI) 330; Guide for Design and Construction of Concrete Parking Lots. A modulus of subgrade reaction of 100 pci was used for the PCC pavement designs. The values were empirically derived based upon our experience with the subgrade soils and our understanding of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**. A modulus of rupture of 600 psi was used for pavement concrete.

Pavement Section Thicknesses

We understand that the following thicknesses are planned for fire truck parking/drive lanes and automobile parking areas. We concur that these thicknesses are appropriate for the traffic conditions as noted **Project Description** section of this report. Our recommendations for the dumpster pad thickness are also provided.

Portland Cement Concrete (PCC) Design			
Layer	Minimum Thickness (inches)		
	Portland Cement Concrete (PCC) ²	Aggregate Base ³	Total Thickness
Fire Truck Parking/Drive Lanes	8	4	12
Automobile Parking	5	4	9
Dumpster Pad	8	4	12

1. See the “**ACI Traffic Categories for Portland Cement Concrete (PCC) Pavements**” table above for more specifics regarding traffic categories.
2. All materials should meet the current Mississippi Department of Transportation (MDOT) Standard Specifications for Highway and Bridge Construction, 2017 edition.
 - Concrete Pavement - MDOT Portland Cement Concrete Type C: Division 500
3. Aggregate base course should consist of a MDOT Size No. 610 crushed stone. Aggregate base course should be compacted to 100 percent of its maximum dry density as determined by ASTM D-698, Standard Proctor Test.

Concrete for rigid pavements should have a minimum 28-day compressive strength of 4,000 psi and be placed with a maximum slump of 4 inches. Although not required for structural support, a minimum 4-inch thick base course layer is recommended to help reduce potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer.

Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its “green” state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. This is especially applicable for islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils. The civil design for the pavements with these conditions should include features to restrict or collect and discharge excess water from the islands. Examples of features are edge drains connected to the storm water collection system, longitudinal subdrains, or other suitable outlets and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

An adequate number of longitudinal and transverse control joints should be placed in the rigid pavement in accordance with ACI and/or AASHTO requirements. Expansion (isolation) joints must be full depth and should only be used to isolate fixed objects abutting or within the paved area.

PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325. PCC pavements should be provided with mechanically reinforced joints (doweled or keyed) in accordance with ACI 330.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g., crack and joint sealing and patching). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
- Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client, and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

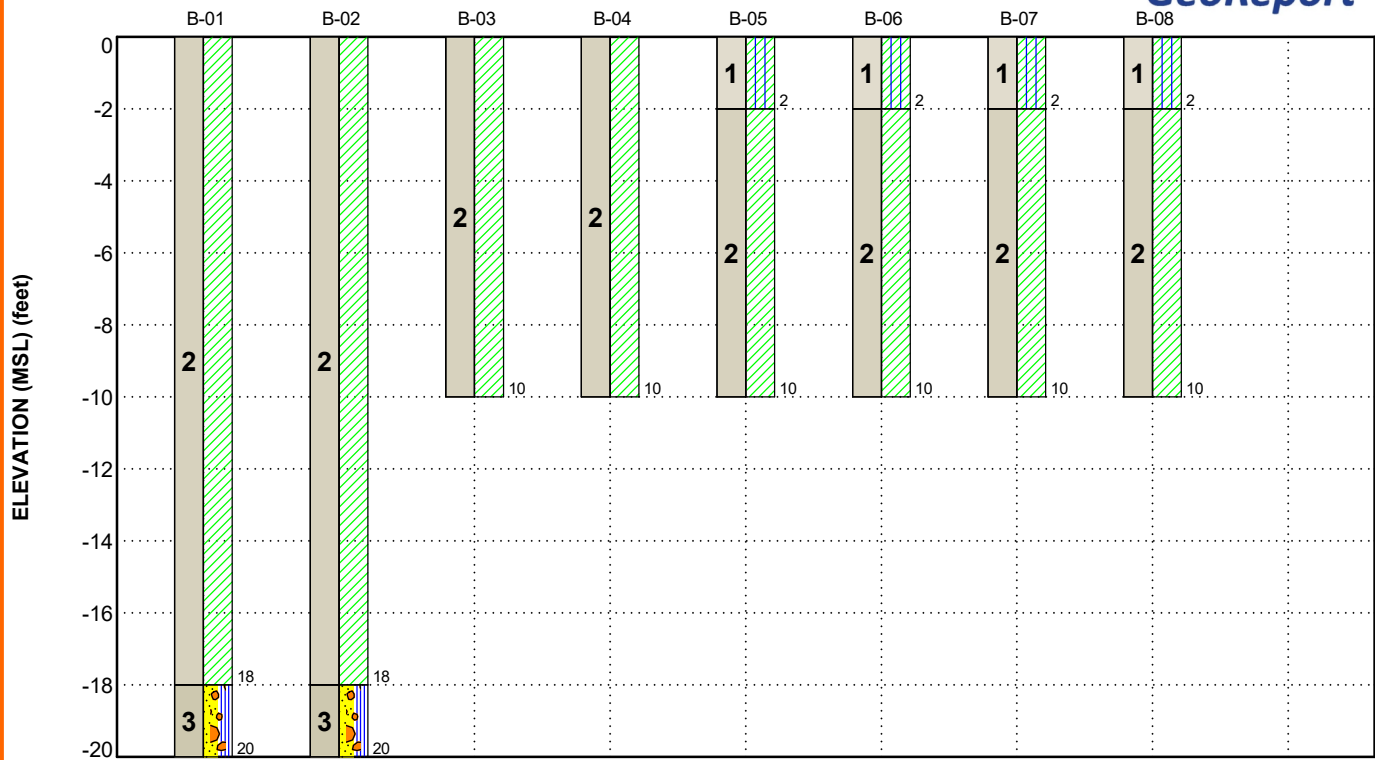
FIGURES

Contents:

GeoModel

GEOMODEL

Fire Station #9 ■ Hattiesburg, MS
Terracon Project No. E4195029



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

Model Layer	Layer Name	General Description
1	Silty Soils	Silty Clay (CL-ML)
2	Lean Clays	Lean Clay (CL)
3	Sands	Poorly Graded Sand with Silt and Gravel (SP-SM)

LEGEND

- Lean Clay
- Poorly-graded Sand with Silt and Gravel
- Silty Clay

NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Planned Location
2	20	Planned building area
6	10	Planned parking/driveway areas

Boring Layout: Unless otherwise noted, Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ± 10 feet).

Subsurface Exploration Procedures: We advanced the borings with a tractor-mounted rotary drill rig using continuous flight augers (solid stem). In the thin-walled tube sampling procedure, a thin-walled, seamless steel tube with a sharp cutting edge was pushed hydraulically into the soil to obtain a relatively undisturbed sample. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes and in accordance with Mississippi State Regulations, all borings were backfilled with auger cuttings after their completion.

The sampling depths, hand penetrometer readings, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Geotechnical Engineering Report

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi

October 18, 2019 ■ Terracon Project No. E4195029



Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. The laboratory testing for this project included the following:

- Water content
- Unit dry weight
- Atterberg limits
- Unconfined compressive strength

The laboratory testing program often included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan

Exploration Plan

Note: All attachments are one page unless noted above.

SITE LOCATION

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi
October 18, 2019 ■ Terracon Project No. E4195029

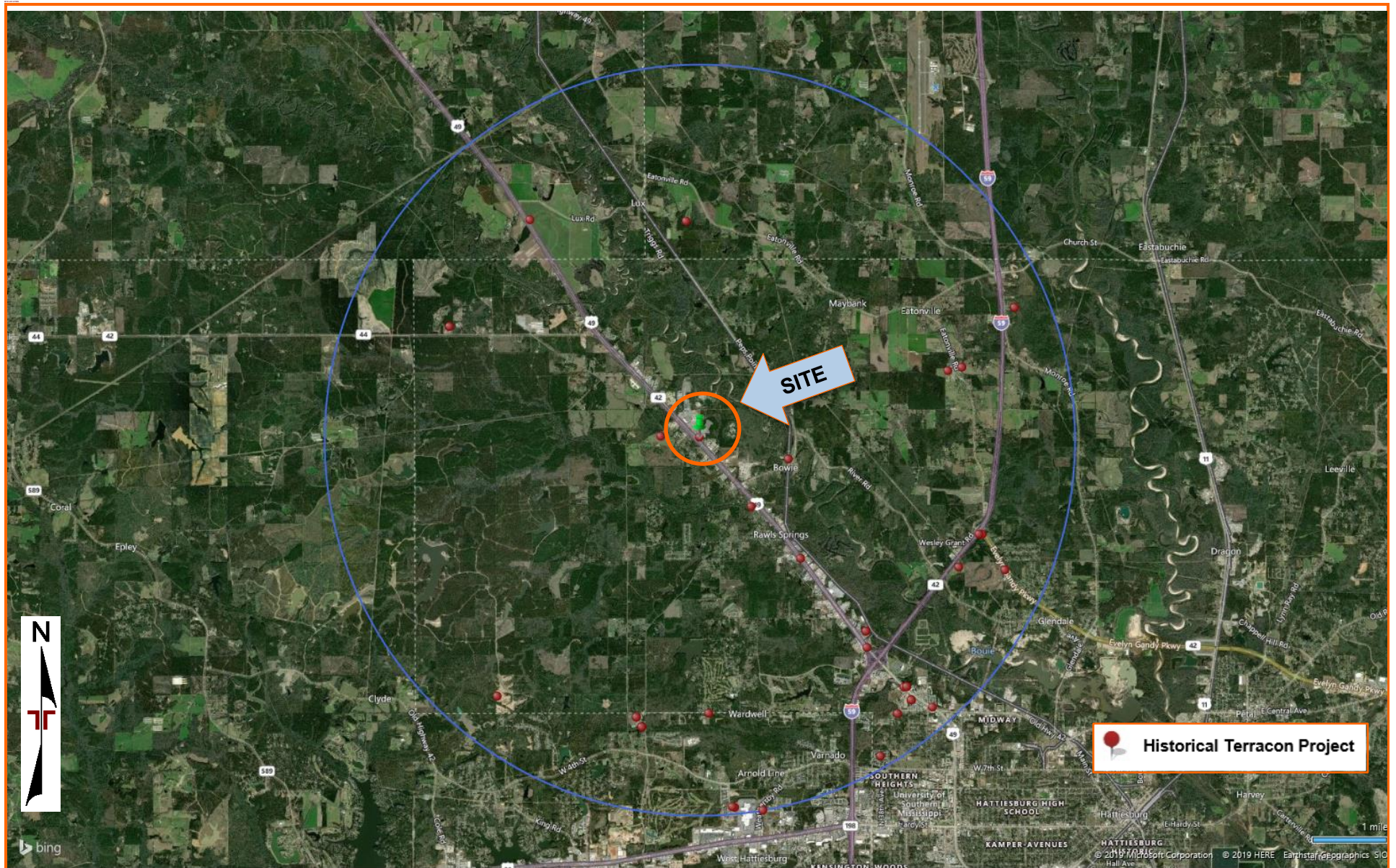


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION PLAN

Fire Station #9 ■ Hattiesburg, Forrest County, Mississippi

October 18, 2019 ■ Terracon Project No. E4195029



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

MAP PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Boring Logs (B-01 through B-08)

Note: All attachments are one page unless noted above.

Page 1 of 1

**CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS**

[illegible]

Hammer Type: Automatic

Project No.: E4195029

Page 1 of 1

**CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS**

[illegible]

Hammer Type: Automatic

Project No.: E4195029

BORING LOG NO. B-03

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PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.4003° Longitude: -89.3872°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI
2		LEAN CLAY (CL) , light brown and light gray, stiff to very stiff				1.50 (HP)				13		29-20-9
						4.00 (HP)				16		
			5			4.50 (HP)				18		
						4.50 (HP)				20		47-17-30
						3.50 (HP)				19		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Boring Completed: 09-24-2019

Drill Rig: Tractor

Driller: J. Bradshaw

Project No.: E4195029

BORING LOG NO. B-04

Page 1 of 1

PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.4002° Longitude: -89.3868°	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			
2		LEAN CLAY (CL) , light brown and light gray, stiff to very stiff				1.50 (HP)				10		
						3.50 (HP)				17		
			5			4.25 (HP)				15		
						4.25 (HP)				24		
						4.25 (HP)				17		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

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Notes:

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Boring Completed: 09-24-2019

Drill Rig: Tractor

Driller: J. Bradshaw

Project No.: E4195029

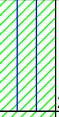
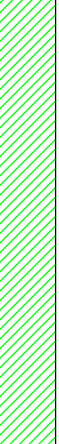
BORING LOG NO. B-05

Page 1 of 1

PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.4001° Longitude: -89.387° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			LL-PL-PI
1		SILTY CLAY (CL-ML) , light brown and light gray, medium stiff to stiff 2.0				1.25 (HP)				14		26-22-4
2		LEAN CLAY (CL) , light brown and light gray, stiff to very stiff 10.0	5			3.50 (HP)				17		
						3.00 (HP)				15		
						2.00 (HP)				17		26-15-11
						1.50 (HP)				20		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Boring Completed: 09-24-2019

Drill Rig: Tractor

Driller: J. Bradshaw

Project No.: E4195029

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL E4195029 FIRE STATION #9 - GPJ TERRACON_DATATEMPLATE.GDT 10/17/19

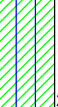
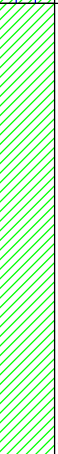
BORING LOG NO. B-06

Page 1 of 1

PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.3997° Longitude: -89.3867° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			
1		SILTY CLAY (CL-ML) , light brown and light gray, medium stiff to stiff 2.0				2.50 (HP)				18		24-20-4
2		LEAN CLAY (CL) , light brown and light gray, medium stiff to stiff - stiff to very stiff below 4' 10.0	5			0.75 (HP)				18		
						3.50 (HP)				19		
						4.00 (HP)				15		
						2.00 (HP)				15		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Boring Completed: 09-24-2019

Drill Rig: Tractor

Driller: J. Bradshaw

Project No.: E4195029

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL E4195029 FIRE STATION #9 - GPJ TERRACON_DATATEMPLATE.GDT 10/17/19

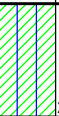
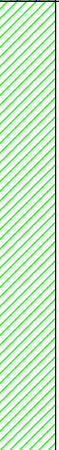
BORING LOG NO. B-07

Page 1 of 1

PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.3994° Longitude: -89.3867° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			
1		SILTY CLAY (CL-ML) , light brown and light gray, stiff to very stiff 2.0				1.75 (HP)				14		
2		LEAN CLAY (CL) , light brown and light gray, stiff to very stiff 10.0	5			3.00 (HP)				15		
						4.00 (HP)				17		
						3.00 (HP)				11		
						1.50 (HP)				14		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

See [Supporting Information](#) for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Drill Rig: Tractor

Project No.: E4195029

Boring Completed: 09-24-2019

Driller: J. Bradshaw

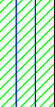
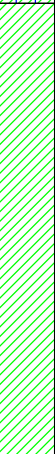
BORING LOG NO. B-08

Page 1 of 1

PROJECT: Fire Station #9

CLIENT: Landry Lewis Germany Architects, P.A.
Hattiesburg, MS

SITE: Highway 49 at Irby Road
Hattiesburg, MS

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 31.3993° Longitude: -89.3867° DEPTH	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	STRENGTH TEST			WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI
							TEST TYPE	COMPRESSIVE STRENGTH (tsf)	STRAIN (%)			
1		SILTY CLAY (CL-ML) , light brown and light gray, medium stiff to stiff 2.0				1.00 (HP)				8		
2		LEAN CLAY (CL) , light brown and light gray, stiff to very stiff 10.0	5			3.00 (HP)				17		
						4.00 (HP)				16		
						2.50 (HP)				15		
						2.50 (HP)				15		
		Boring Terminated at 10 Feet	10									

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Solid-Flight Auger: 0' - 10'

See [Exploration and Testing Procedures](#) for a description of field and laboratory procedures used and additional data (If any).

Notes:

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See [Supporting Information](#) for explanation of symbols and abbreviations.

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
285 Gulfwater Dr
Biloxi, MS

Boring Started: 09-24-2019

Boring Completed: 09-24-2019

Drill Rig: Tractor

Driller: J. Bradshaw

Project No.: E4195029

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL E4195029 FIRE STATION #9 - GPJ TERRACON_DATATEMPLATE.GDT 10/17/19

SUPPORTING INFORMATION

Contents:

General Notes

Unified Soil Classification System

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS

SAMPLING			WATER LEVEL		Water Initially Encountered	FIELD TESTS	(HP)	Hand Penetrometer	
	Auger	Split Spoon			Water Level After a Specified Period of Time		(T)	Torvane	
					Water Level After a Specified Period of Time		(b/f)	Standard Penetration Test (blows per foot)	
	Shelby Tube	Macro Core		Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.			(PID)	Photo-Ionization Detector	
							(OVA)	Organic Vapor Analyzer	
	Ring Sampler	Rock Core							
									
	Grab Sample	No Recovery							

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification is based on the Unified Soil Classification System. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; their principal descriptors are: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are principally described as clays if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse-grained soils are defined on the basis of their in-place relative density and fine-grained soils on the basis of their consistency.

LOCATION AND ELEVATION NOTES

Unless otherwise noted, Latitude and Longitude are approximately determined using a hand-held GPS device. The accuracy of such devices is variable. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS	RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance Includes gravels, sands and silts.			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance		
	Descriptive Term (Density)	Standard Penetration or N-Value Blows/Ft.	Ring Sampler Blows/Ft.	Descriptive Term (Consistency)	Unconfined Compressive Strength, Qu, tsf	Standard Penetration or N-Value Blows/Ft.
	Very Loose	0 - 3	0 - 6	Very Soft	less than 0.25	0 - 1
	Loose	4 - 9	7 - 18	Soft	0.25 to 0.50	2 - 4
	Medium Dense	10 - 29	19 - 58	Medium-Stiff	0.50 to 1.00	4 - 8
	Dense	30 - 50	59 - 98	Stiff	1.00 to 2.00	8 - 15
	Very Dense	> 50	≥ 99	Very Stiff	2.00 to 4.00	15 - 30
				Hard	> 4.00	> 30

RELATIVE PROPORTIONS OF SAND AND GRAVEL

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 15
With	15 - 29
Modifier	> 30

GRAIN SIZE TERMINOLOGY

<u>Major Component of Sample</u>	<u>Particle Size</u>
Boulders	Over 12 in. (300 mm)
Cobbles	12 in. to 3 in. (300mm to 75mm)
Gravel	3 in. to #4 sieve (75mm to 4.75 mm)
Sand	#4 to #200 sieve (4.75mm to 0.075mm)
Silt or Clay	Passing #200 sieve (0.075mm)

RELATIVE PROPORTIONS OF FINES

<u>Descriptive Term(s) of other constituents</u>	<u>Percent of Dry Weight</u>
Trace	< 5
With	5 - 12
Modifier	> 12

PLASTICITY DESCRIPTION

<u>Term</u>	<u>Plasticity Index</u>
Non-plastic	0
Low	1 - 10
Medium	11 - 30
High	> 30

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests ^A					Soil Classification	
					Group Symbol	Group Name ^B
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	Gravels: More than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels: Less than 5% fines ^C	Cu ≥ 4 and 1 ≤ Cc ≤ 3 ^E	GW	Well-graded gravel ^F	
			Cu < 4 and/or [Cc<1 or Cc>3.0] ^E	GP	Poorly graded gravel ^F	
		Gravels with Fines: More than 12% fines ^C	Fines classify as ML or MH	GM	Silty gravel ^{F, G, H}	
			Fines classify as CL or CH	GC	Clayey gravel ^{F, G, H}	
	Sands: 50% or more of coarse fraction passes No. 4 sieve	Clean Sands: Less than 5% fines ^D	Cu ≥ 6 and 1 ≤ Cc ≤ 3 ^E	SW	Well-graded sand ^I	
			Cu < 6 and/or [Cc<1 or Cc>3.0] ^E	SP	Poorly graded sand ^I	
		Sands with Fines: More than 12% fines ^D	Fines classify as ML or MH	SM	Silty sand ^{G, H, I}	
			Fines classify as CL or CH	SC	Clayey sand ^{G, H, I}	
Fine-Grained Soils: 50% or more passes the No. 200 sieve	Silts and Clays: Liquid limit less than 50	Inorganic:	PI > 7 and plots on or above “A”	CL	Lean clay ^{K, L, M}	
			PI < 4 or plots below “A” line ^J	ML	Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay ^{K, L, M, N}
			Liquid limit - not dried			Organic silt ^{K, L, M, O}
	Silts and Clays: Liquid limit 50 or more	Inorganic:	PI plots on or above “A” line	CH	Fat clay ^{K, L, M}	
			PI plots below “A” line	MH	Elastic Silt ^{K, L, M}	
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay ^{K, L, M, P}
			Liquid limit - not dried			Organic silt ^{K, L, M, Q}
Highly organic soils:	Primarily organic matter, dark in color, and organic odor			PT	Peat	

^A Based on the material passing the 3-inch (75-mm) sieve.

^B If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^C Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

^D Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

$$^E Cu = D_{60}/D_{10} \quad Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$$

^F If soil contains $\geq 15\%$ sand, add "with sand" to group name.

^G If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

^H If fines are organic, add "with organic fines" to group name.

^I If soil contains $\geq 15\%$ gravel, add "with gravel" to group name.

^J If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

^K If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

^L If soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

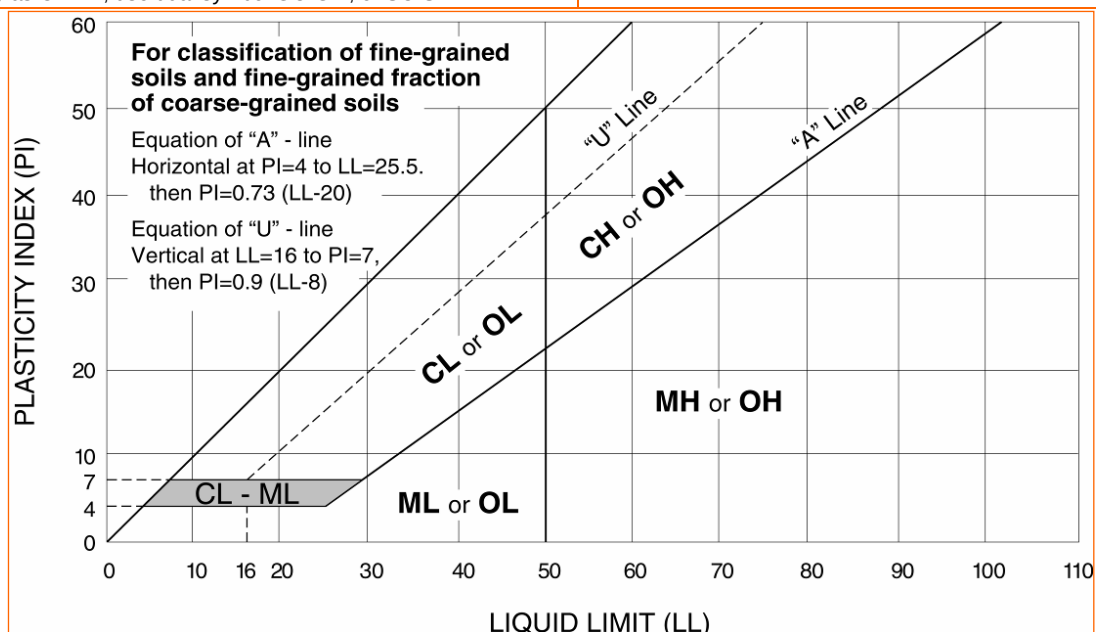
^M If soil contains $\geq 30\%$ plus No. 200, predominantly gravel, add "gravelly" to group name.

^N $PI \geq 4$ and plots on or above "A" line.

^O $PI < 4$ or plots below "A" line.

^P PI plots on or above "A" line.

^Q PI plots below "A" line.



03 1000 CONCRETE FORMING AND ACCESSORIESPART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 03 3523 - Exposed Aggregate Concrete Finishing.
- D. Section 04 2001 - Masonry Veneer: Spacing for veneer anchor reglets recessed in concrete.
- E. Section 04 2731 - Reinforced Unit Masonry: Reinforcement for engineered masonry.
- F. Section 05 1200 - Structural Steel: Placement of embedded steel anchors and plates in cast-in-place concrete.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; 2010.
- B. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute; 2010.
- C. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute; 2011.
- D. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute; 2004.
- E. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- F. PS 1 - Structural Plywood; 2009.

1.04 QUALITY ASSURANCE

- A. Designer Qualifications: Design formwork under direct supervision of a Professional Structural Engineer experienced in design of concrete formwork and licensed in the State in which the Project is located.

PART 2 PRODUCTS

2.01 FORMWORK - GENERAL

- A. Provide concrete forms, accessories, shoring, and bracing as required to accomplish cast-in-place concrete work.
- B. Design and construct to provide resultant concrete that conforms to design with respect to shape, lines, and dimensions.
- C. Chamfer outside corners of beams, joists, columns, and walls.
- D. Comply with relevant portions of ACI 347, ACI 301, and ACI 318.
- E. Use the following form types:
 - 1. Site fabricated plywood.

2.02 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.
- B. Softwood Plywood: PS 1, C Grade, Group 2.

2.03 REMOVABLE PREFABRICATED FORMS

- A. Preformed Steel Forms: Minimum 16 gage matched, tight fitting, stiffened to support weight of concrete without deflection detrimental to tolerances and appearance of finished surfaces.
- B. Tubular Column Type: Round, spirally wound laminated fiber material, surface treated with release agent, non-reusable, of sizes indicated.

2.04 FORMWORK ACCESSORIES

- A. Form Ties: Removable type, galvanized metal, fixed length, cone type, with waterproofing washer, 3/4 inch back break dimension, free of defects that could leave holes larger than 1 inch in concrete surface.
- B. Form Release Agent: Capable of releasing forms from hardened concrete without staining or discoloring concrete or forming bugholes and other surface defects, compatible with concrete and form materials, and not requiring removal for satisfactory bonding of coatings to be applied.
 - 1. Composition: Colorless reactive, mineral oil-based, soy-based, or vegetable-oil based compound.
 - 2. Do not use materials containing diesel oil or petroleum-based compounds.
 - 3. VOC Content: None; water-based.
 - 4. Products:
 - a. SpecChem, LLC; Bio Strip WB (water-based): www.specchemllc.com.
 - b. W.R. Meadows, Inc; Duogard: www.wrmeadows.com.
- C. Filler Strips for Chamfered Corners: Rigid wood or plastic type.
- D. Dovetail Anchor Slot: Galvanized steel, 22 gage thick, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- E. Flashing Reglets: Galvanized steel, 22 gage thick, longest possible lengths, with alignment splines for joints, foam filled, release tape sealed slots, anchors for securing to concrete formwork.
- F. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.
- G. Embedded Anchor Shapes, Plates, Angles and Bars: As specified in Section 05 1200.
- H. Waterstops: Preformed Volclay R'x. strips., moisture expanding.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

3.02 EARTH FORMS

- A. Hand trim sides and bottom of earth forms. Remove loose soil prior to placing concrete.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members that are not indicated on drawings.

- F. Coordinate this section with other sections of work that require attachment of components to formwork.
- G. If formwork is placed after reinforcement, resulting in insufficient concrete cover over reinforcement, request instructions from Perkins and Williamson Architecture, PLLC before proceeding.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings that are affected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in passing through concrete work.
- B. Locate and set in place items that will be cast directly into concrete.
- C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other work.
- D. Position recessed anchor slots for brick veneer masonry anchors to spacing and intervals specified in Section 04 2001.
- E. Install accessories in accordance with manufacturer's instructions, so they are straight, level, and plumb. Ensure items are not disturbed during concrete placement.
- F. Install waterstops in accordance with manufacturer's instructions, so they are continuous without displacing reinforcement.
- G. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain.
- H. Close temporary openings with tight fitting panels, flush with inside face of forms, and neatly fitted so joints will not be apparent in exposed concrete surfaces.

3.06 FORM CLEANING

- A. Clean forms as erection proceeds, to remove foreign matter within forms.
- B. Clean formed cavities of debris prior to placing concrete.
 - 1. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
 - 2. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 117, unless otherwise indicated.

3.08 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and to verify that supports, fastenings, wedges, ties, and items are secure.
- B. Do not reuse wood formwork more than 3 times for concrete surfaces to be exposed to view. Do not patch formwork.

3.09 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

- C. Forms for foundations may be removed 24 hours after pouring, providing that concrete has cured enough not to be damaged by stripping operations.

END OF SECTION

03 2000 CONCRETE FORMING AND ACCESSORIESPART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel for cast-in-place concrete.
- B. Supports and accessories for steel reinforcement.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories.
- B. Section 03 3000 - Cast-in-Place Concrete.
- C. Section 04 2000 - Unit Masonry: Reinforcement for masonry.
- D. Section 04 2731 - Reinforced Unit Masonry: Reinforcement for engineered masonry.

1.03 REFERENCE STANDARDS

- A. ACI 301 - Specifications for Structural Concrete for Buildings; American Concrete Institute International; 2010.
- B. ACI 318 - Building Code Requirements For Structural Concrete and Commentary; American Concrete Institute International; 2011.
- C. ACI SP-66 - ACI Detailing Manual; American Concrete Institute International; 2004.
- D. ASTM A184 - Standard Specification for Welded Deformed Steel Bar Mats for Concrete Reinforcement; 2006 (Reapproved 2011).
- E. ASTM A615 - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2013.
- F. ASTM A996 - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement; 2009b.
- G. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2013.
- H. CRSI (DA4) - Manual of Standard Practice; Concrete Reinforcing Steel Institute; 2009.
- I. CRSI (P1) - Placing Reinforcing Bars; Concrete Reinforcing Steel Institute; 2011.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings: Comply with requirements of ACI SP-66. Include bar schedules, shapes of bent bars, spacing of bars, and location of splices.

1.06 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301.
- B. Provide The architect with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615 Grade 60 (60,000 psi) .
 - 1. Plain billet-steel bars.
 - 2. Unfinished.
- B. Steel Welded Wire Reinforcement: ASTM A1064, plain type.
 - 1. Flat Sheets.

2. Mesh Size: 6 x 6 , as indicated on drawings.
- C. Reinforcement Accessories:
 1. Tie Wire: Annealed, minimum 16 gage .
 2. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for adequate support of reinforcement during concrete placement.

2.02 FABRICATION

- A. Fabricate concrete reinforcing in accordance with CRSI (DA4) - Manual of Standard Practice.
- B. Welding of reinforcement is not permitted.
- C. Locate reinforcing splices not indicated on drawings at point of minimum stress.
 1. Review locations of splices with The architect.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Do not displace or damage vapor barrier.
- C. Accommodate placement of formed openings.
- D. Maintain concrete cover around reinforcing as follows:
 1. Elevated formed Beams: 1-1/2 inch
 2. Elevated formed Slabs and Joists: 3/4 inch .
 3. Column Ties: 1-1/2 inch .
 4. Walls and gradebeams exposed to earth: 3 inch .
 5. Footings and Concrete Formed Against Earth: 3 inch .
- E. Conform to applicable code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 4000, will inspect installed reinforcement for conformance to contract documents before concrete placement.

END OF SECTION

03 3000 CAST IN PLACE CONCRETEPART 1 GENERAL

1.01 SECTION INCLUDES

- A. Concrete formwork.
- B. Elevated concrete slabs.
- C. Floors and slabs on grade.
- D. Concrete gradebeams.
- E. Concrete reinforcement.
- F. Joint devices associated with concrete work.
- G. Miscellaneous concrete elements, including equipment pads, light pole bases, flagpole bases, thrust blocks, and manholes.
- H. Concrete curing.

1.02 RELATED REQUIREMENTS

- A. Section 03 1000 - Concrete Forming and Accessories: Forms and accessories for formwork.
- B. Section 03 2000 - Concrete Reinforcing.
- C. Section 03 3511 - Concrete Floor Finishes: Densifiers, hardeners, applied coatings, and polishing.
- D. Section 07 9513 - Expansion Joint Cover Assemblies.
- E. Section 06 0573 - Wood Treatment: Field-applied termiticide and mildicide for concrete surfaces.
- F. Section 07 9005 - Joint Sealers: Sealants for saw cut joints and isolation joints in slabs.
- G. Section 32 1313 - Concrete Paving: Sidewalks, curbs and gutters.

1.03 REFERENCE STANDARDS

- A. ACI 117 - Standard Specifications for Tolerances for Concrete Construction and Materials; American Concrete Institute International; 2010.
- B. ACI 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete; American Concrete Institute International; 1991 (Reapproved 2002).
- D. ACI 301 - Specifications for Structural Concrete; American Concrete Institute International; 2010.
- E. ACI 302.1R - Guide for Concrete Floor and Slab Construction; American Concrete Institute International; 2004 (Errata 2007).
- F. ACI 304R - Guide for Measuring, Mixing, Transporting, and Placing Concrete; American Concrete Institute International; 2000.
- G. ACI 305R - Hot Weather Concreting; American Concrete Institute International; 2010.
- H. ACI 306R - Cold Weather Concreting; American Concrete Institute International; 2010.
- I. ACI 308R - Guide to Curing Concrete; American Concrete Institute International; 2001 (Reapproved 2008).
- J. ACI 318 - Building Code Requirements for Structural Concrete and Commentary; American Concrete Institute International; 2011.
- K. ACI 347 - Guide to Formwork for Concrete; American Concrete Institute International; 2004.

- L. ASTM A615 - Standard Specification for Deformed and Plain Carbon Billet-Steel Bars for Concrete Reinforcement; 2013.
- M. ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2013.
- N. ASTM C33 - Standard Specification for Concrete Aggregates; 2013.
- O. ASTM C39 - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2012a.
- P. ASTM C94 - Standard Specification for Ready-Mixed Concrete; 2013.
- Q. ASTM C143 - Standard Test Method for Slump of Hydraulic-Cement Concrete; 2012.
- R. ASTM C150 - Standard Specification for Portland Cement; 2012.
- S. ASTM C171 - Standard Specification for Sheet Materials for Curing Concrete; 2007.
- T. ASTM C173 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method; 2012.
- U. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete; 2010a.
- V. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete; 2011.
- W. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete; 2013.
- X. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete; 2012.
- Y. ASTM C685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing; 2011.
- Z. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types); 2004 (Reapproved 2013).
- AA. ASTM D1752 - Standard Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction; 2004a (Reapproved 2013).
- AB. ASTM D2103 - Standard Specification for Polyethylene Film and Sheeting; 2010.
- AC. ASTM E154 - Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover; 2008a (Reapproved 2013).
- AD. ASTM E1643 - Standard Practice for Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs; 2011.
- AE. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs; 2011.
- AF. COE CRD-C 48 - Method of Test for Water Permeability of Concrete; 1992.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Submit manufacturers' data on manufactured products showing compliance with specified requirements and installation instructions.
 - 1. For curing compounds, provide data on method of removal in the event of incompatibility with floor covering adhesives.
- C. Mix Design: Submit proposed concrete mix design.
 - 1. Provide mix designs for each strength class of concrete required by contract documents. Submit separate design mixes for differing air entrainment levels and water reducer dosages.
- D. Samples: Submit product data for underslab vapor retarder to be used.

- E. Project Record Documents: Accurately record actual locations of embedded utilities and components that will be concealed from view upon completion of concrete work.

1.05 QUALITY ASSURANCE

- A. Perform work of this section in accordance with ACI 301 and ACI 318.
- B. Follow recommendations of ACI 305R when concreting during hot weather.
- C. Follow recommendations of ACI 306R when concreting during cold weather.

1.06 MOCK-UP

- A. Construct and erect mock-up panel for architectural concrete surfaces indicated to receive special treatment or finish as result of formwork.
 - 1. Panel Size: Sufficient to illustrate full range of treatment.
 - 2. Panel Size: 6 x 6 feet .
 - 3. Number of Panels: 2.
- B. If requested by The architect, cast concrete against mock-up panel. Obtain acceptance of resulting surface finish prior to erecting formwork.
- C. Accepted mock-up panel is considered basis of quality for the finished work. Keep mock-up exposed to view for duration of concrete work.
- D. Mock-up may remain as part of the Work.

1.07 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Moisture Emission Reducing Curing and Sealing Compound: Provide warranty to cost of flooring delamination failures for 10 years.
 - 1. Include cost of repair or removal of failed flooring, remediation with a moisture vapor impermeable surface coating, and replacement of flooring with comparable flooring system.

PART 2 PRODUCTS

2.01 FORMWORK

- A. Comply with requirements of Section 03 1000.
- B. Formwork Design and Construction: Comply with guidelines of ACI 347 to provide formwork that will produce concrete complying with tolerances of ACI 117.
- C. Form Materials: Contractor's choice of standard products with sufficient strength to withstand hydrostatic head without distortion in excess of permitted tolerances.

2.02 REINFORCEMENT

- A. Comply with requirements of Section 03 2000.

2.03 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type I - Normal Portland type.
 - 1. Acquire all cement for entire project from same source.
- B. Fine and Coarse Aggregates: ASTM C 33.
 - 1. Acquire all aggregates for entire project from same source.
- C. Fly Ash: ASTM C618, Class C .
- D. Water: Clean and not detrimental to concrete.

2.04 ADMIXTURES

- A. Do not use chemicals that will result in soluble chloride ions in excess of 0.1 percent by weight of cement.
- B. Air Entrainment Admixture: ASTM C260.
- C. High Range Water Reducing and Retarding Admixture: ASTM C494 Type G.

- D. High Range Water Reducing Admixture: ASTM C494 Type F.
- E. Water Reducing and Accelerating Admixture: ASTM C494 Type E.
- F. Water Reducing and Retarding Admixture: ASTM C494 Type D.
- G. Accelerating Admixture: ASTM C494 Type C.
- H. Retarding Admixture: ASTM C494 Type B.
- I. Water Reducing Admixture: ASTM C494

2.05 ACCESSORY MATERIALS

- A. Underslab Vapor Retarder: Multi-layer, fabric-, cord-, grid-, or aluminum-reinforced polyethylene or equivalent, complying with ASTM E1745, Class A; stated by manufacturer as suitable for installation in contact with soil or granular fill under concrete slabs. The use of single ply polyethylene is prohibited.
 - 1. Accessory Products: Vapor retarder manufacturer's recommended tape, adhesive, mastic, prefabricated boots, etc., for sealing seams and penetrations in vapor retarder.
 - 2. Products:
 - a. Insulation Solutions, Inc; Viper VaporCheck II 15-mil (Class A): www.insulationsolutions.com.
 - b. Stego Industries, LLC; Stego Wrap Vapor Barrier 15-mil (Class A): www.stegoindustries.com.
 - c. W.R. Meadows, Inc.; PERMINATOR Class A - 15 mils : www.wrmeadows.com.
- B. Non-Shrink Cementitious Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents.
 - 1. ASTM C1107; Grade A, B, or C.
 - 2. Minimum Compressive Strength at 48 Hours: 2,400 psi .
 - 3. Minimum Compressive Strength at 28 Days: 5,000 psi .
 - 7. Flowable Products:
 - a. Five Star Products, Inc; Five Star Fluid Grout 100: www.fivestarproducts.com.
 - b. L&M Construction Chemicals, Inc.; Duragrout: www.lmcc.com.
 - c. ProSpec, an Oldcastle brand; C-1107 Construction Grout: www.prospec.com.
 - d. The QUIKRETE Companies; QUIKRETE® Exterior Use Anchoring Cement: www.quikrete.com.
 - e. SpecChem, LLC; SC Precision Grout: www.specchemllc.com.
 - f. SpecChem, LLC; SpecRock: www.specchemllc.com.
 - g. W. R. Meadows, Inc.; 588-10K, 1428 HP, or CG-86: www.wrmeadows.com.
 - h. W. R. Meadows, Inc.; Speed-E-Roc: www.wrmeadows.com.
- C. Non-Shrink Epoxy Grout: Moisture-insensitive, two-part; consisting of epoxy resin, non-metallic aggregate, and activator.
 - 1. Composition: High solids content material exhibiting positive expansion when tested in accordance with ASTM C827/C827M.
 - 2. Minimum Compressive Strength at 7 days, ASTM D695: 12,000 pounds per square inch .
 - 3. Products:
 - a. Five Star Products, Inc; Five Star DP Epoxy Grout: www.fivestarproducts.com.
 - b. Five Star Products, Inc; Five Star HP Epoxy Grout: www.fivestarproducts.com.
 - c. SpecChem, LLC; SpecPoxo Grout: www.specchemllc.com.
 - d. W.R. Meadows, Inc.; REZI-WELD 3/2: www.wrmeadows.com.

2.06 BONDING AND JOINTING PRODUCTS

- A. Latex Bonding Agent: Non-redispersable acrylic latex, complying with ASTM C1059 Type II.
 - 1. Products:
 - a. SpecChem, LLC; Strong Bond Acrylic Bonder: www.specchemllc.com.
 - b. W.R. Meadows, Inc.; ACRY-LOK-: www.wrmeadows.com.

- B. Epoxy Bonding System: Complying with ASTM C881 and of Type required for specific application.
1. Products:
 - a. Adhesives Technology Corporation; Crackbond SLV302, Crackbond LR321, Crackbond LR321 G, Crackbond LR321 LPL, Ultrabond 2100 LPL, Ultrabond 2100, Ultrabond 1, Ultrabond 2, Ultrabond 4CC, Ultrabond HS200, Miracle Bond 1350 or Miracle Bond 1450: www.atcepoxy.com.
 - b. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000, or SpecPoxy 3000FS: www.specchemllc.com.
 - c. W.R. Meadows, Inc.; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000, or Rezi-Weld 1000 State: www.wrmeadows.com.
- C. Waterstops: Bentonite and butyl rubber, complying with NSF 61 and NSF 372.
1. Volclay R'X'.
- D. Reglets: Formed steel sheet, galvanized, with temporary filler to prevent concrete intrusion during placement.
1. Size: As indicated on drawings.
 2. Size: 1/2 inch throat, 1/2 inch deep.
- E. Slab Isolation Joint Filler: 1/2 inch thick, height equal to slab thickness, with removable top section that will form 1/2 inch deep sealant pocket after removal.
1. Material: Closed-cell, non-absorbent, compressible polyethylene or polymer foam in sheet form.
- F. Slab Construction Joint Devices: Combination keyed joint form and screed, galvanized steel, with minimum 1 inch diameter holes for conduit or rebars to pass through at 6 inches on center; ribbed steel stakes for setting.
1. Provide removable plastic cap strip that forms wedge-shaped joint for sealant installation.
 2. Height: To suit slab thickness.
 3. These devices must be removed before making second pour.
- G. Sealant and Primer: As specified in Section 07 9005.

2.07 CURING MATERIALS

- A. Evaporation Reducer: Liquid thin-film-forming compound that reduces rapid moisture loss caused by high temperature, low humidity, and high winds; intended for application immediately after concrete placement.
1. Products:
 - a. SpecChem, LLC; SpecFilm Concentrate or SpecFilm RTU: www.specchemllc.com.
 - b. W.R. Meadows, Inc; Evapre or Evapre-RTU: www.wrmeadows.com.
- B. Curing Compound, Naturally Dissipating: Clear, water-based, liquid membrane-forming compound, that dissipates within 3 to 5 weeks; complying with ASTM C309.
1. Provide product containing fugitive red dye.
 2. Products:
 - a. SpecChem, LLC; SpecRez: www.specchemllc.com.
 - b. W.R. Meadows, Inc.; 1100-Clear: www.wrmeadows.com.
- C. Curing and Sealing Compound, Moisture Emission Reducing: Liquid, membrane-forming, clear sealer, for application to newly placed concrete; capable of providing adequate bond for flooring adhesives, initially and over the long term; with sufficient moisture vapor impermeability to prevent deterioration of flooring adhesives due to moisture emission.
1. Use this product to cure and seal all slabs to receive adhesively applied flooring or roofing.
 2. Comply with ASTM C309 and ASTM C1315 Type I Class A.
 3. Solids Content: 25 percent, minimum.
 4. Products:
 - a. Floor Seal Technology, Inc; VaporSeal 309 System: www.floorseal.com.

- D. Moisture-Retaining Sheet: ASTM C171.
 - 1. Curing paper, regular.
 - 2. Polyethylene film, clear, minimum nominal thickness of 0.0040 in. .
 - 3. White-burlap-polyethylene sheet, weighing not less than 10 oz/per linear yd, 40 inches wide .
- E. Polyethylene Film: ASTM D2103, 4 mil thick, clear.
- F. Water: Potable, not detrimental to concrete.

2.08 CONCRETE MIX DESIGN

- A. Proportioning Normal Weight Concrete: Comply with ACI 211.1 recommendations.
 - 1. Replace up to 20% of Portland cement by weight with fly ash.
- B. Concrete Strength: Establish required average strength for each type of concrete on the basis of field experience or trial mixtures, as specified in ACI 301.
 - 1. For trial mixtures method, employ independent testing agency acceptable to The architect for preparing and reporting proposed mix designs.
- C. Admixtures: Add acceptable admixtures as recommended in ACI 211.1 and at rates recommended or required by manufacturer.
- D. Normal Weight Concrete:
 - 1. Compressive Strength, - see drawings.
 - 2. Fly Ash Content: Maximum 20 percent of cementitious materials by weight.
 - 3. Total Air Content: 4 percent, for sidewalks and exterior paving. No air entraining admixtures for other uses of concrete.
 - 4. Maximum Slump: see drawings.
 - 5. Maximum Aggregate Size: see drawings.

2.09 MIXING

- A. Transit Mixers: Comply with ASTM C94.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels, and dimensions before proceeding with work of this section.

3.02 PREPARATION

- A. Formwork: Comply with requirements of ACI 301. Design and fabricate forms to support all applied loads until concrete is cured, and for easy removal without damage to concrete.
- B. Verify that forms are clean and free of rust before applying release agent.
- C. Coordinate placement of embedded items with erection of concrete formwork and placement of form accessories.
- D. Interior Slabs on Grade: Install vapor retarder under interior slabs on grade. Lap joints minimum 6 inches . Seal joints, seams and penetrations watertight with manufacturer's recommended products and follow manufacturer's written instructions. Repair damaged vapor retarder before covering.
 - 1. Vapor Retarder Over Granular Fill: Install compactible granular fill before placing vapor retarder as shown on the drawings.

3.03 INSTALLING REINFORCEMENT AND OTHER EMBEDDED ITEMS

- A. Fabricate and handle epoxy-coated reinforcing in accordance with ASTM D3963.
- B. Comply with requirements of ACI 301. Clean reinforcement of loose rust and mill scale, and accurately position, support, and secure in place to achieve not less than minimum concrete coverage required for protection.
- C. Install welded wire reinforcement in maximum possible lengths, and offset end laps in both directions. Splice laps with tie wire.

- D. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with concrete placement.

3.04 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304R.
- B. Place concrete for floor slabs in accordance with ACI 302.1R.
- C. Notify The architect not less than 24 hours prior to commencement of placement operations.
- D. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- E. Ensure reinforcement, inserts, waterstops, embedded parts, and formed construction joint devices will not be disturbed during concrete placement.
- F. Place concrete continuously without construction (cold) joints wherever possible; where construction joints are necessary, before next placement prepare joint surface by removing laitance and exposing the sand and sound surface mortar, by sandblasting or high-pressure water jetting.
- G. Finish floors level and flat, unless otherwise indicated, within the tolerances specified below.

3.05 SLAB JOINTING

- A. Locate joints as indicated on the drawings.
- B. Anchor joint fillers and devices to prevent movement during concrete placement.
- C. Isolation Joints: Use preformed joint filler with removable top section for joint sealant, total height equal to thickness of slab, set flush with top of slab.
 - 1. Install wherever necessary to separate slab from other building members, including columns, walls, equipment foundations, footings, stairs, manholes, sumps, and drains.
- D. Saw Cut Contraction Joints: Saw cut joints before concrete begins to cool, within 4 to 12 hours after placing; use 3/16 inch thick blade and cut at least 1 inch deep but not less than one quarter (1/4) the depth of the slab.
- E. Construction Joints: Where not otherwise indicated, use metal combination screed and key form, with removable top section for joint sealant. Do not leave these devices in the slab, remove before second pour.

3.07 FLOOR FLATNESS AND LEVELNESS TOLERANCES

- A. An independent testing agency, as specified in Section 01 4000, will inspect finished slabs for conformance to specified tolerances.
- B. Maximum Variation of Surface Flatness:
- C. Minimum F(F) Floor Flatness and F(L) Floor Levelness Values:
 - 1. Exposed to View and Foot Traffic: F(F) of 20; F(L) of 15, on-grade only.
 - 2. Under Carpeting: F(F) of 25; F(L) of 20, on-grade only.
 - 3. Under Thin Resilient Flooring and Thinset Tile: F(F) of 35; F(L) of 25, on-grade only.
- D. Measure F(F) and F(L) in accordance with ASTM E1155, within 48 hours after slab installation; report both composite overall values and local values for each measured section.
- E. Correct the slab surface if composite overall value is less than specified and if local value is less than two-thirds of specified value or less than F(F) 13/F(L) 10.
- F. Correct defects by grinding or by removal and replacement of the defective work. Areas requiring corrective work will be identified. Re-measure corrected areas by the same process.

3.08 CONCRETE FINISHING

- A. Repair surface defects, including tie holes, immediately after removing formwork.
- B. Unexposed Form Finish: Rub down or chip off fins or other raised areas 1/4 inch or more in height.

- C. Exposed Form Finish: Rub down or chip off and smooth fins or other raised areas 1/4 inch or more in height. Provide finish as follows:
 - 1. Smooth Rubbed Finish: Wet concrete and rub with carborundum brick or other abrasive, not more than 24 hours after form removal.
 - 2. Grout Cleaned Finish: Wet areas to be cleaned and apply grout mixture by brush or spray; scrub immediately to remove excess grout. After drying, rub vigorously with clean burlap, and keep moist for 36 hours.
 - 3. Cork Floated Finish: Immediately after form removal, apply grout with trowel or firm rubber float; compress grout with low-speed grinder, and apply final texture with cork float.
- D. Concrete Slabs: Finish to requirements of ACI 302.1R, and as follows:
 - 1. Surfaces to Receive Thick Floor Coverings: "Wood float" as described in ACI 302.1R; thick floor coverings include quarry tile, ceramic tile, and terrazzo with full bed setting system.
 - 2. Surfaces to Receive Thin Floor Coverings: "Steel trowel" as described in ACI 302.1R; thin floor coverings include carpeting, resilient flooring, seamless flooring, thin set quarry tile, and thin set ceramic tile.
 - 3. Decorative Exposed Surfaces: "Steel trowel" as described in ACI 302.1R; use steel-reinforced plastic trowel blades instead of steel blades to avoid black-burnish marks; decorative exposed surfaces include surfaces to be stained or dyed, pigmented concrete, surfaces to be polished, and all other slab surfaces.
 - a. Steel-Reinforced Plastic Trowel Blade Manufacturer: Wagman Metal Products, Inc: www.wagmanmetal.com.
 - 4. Other Surfaces to Be Left Exposed: "Steel trowel" as described in ACI 302.1R, minimizing burnish marks and other appearance defects.
 - a. Chemical Hardener: After slab has cured, apply water-diluted hardener in three coats per manufacturer's instructions, allowing 24 hours between coats.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1:100 nominal.

3.09 CURING AND PROTECTION

- A. Comply with requirements of ACI 308R. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
 - 1. Normal concrete: Not less than 7 days.
- C. Formed Surfaces: Cure by moist curing with forms in place for full curing period.
- D. Surfaces Not in Contact with Forms:
 - 1. Slabs and Floors To Receive Adhesive-Applied Flooring: Curing compounds and other surface coatings are usually considered unacceptable by flooring and adhesive manufacturers. If such materials must be used, either obtain the approval of the flooring and adhesive manufacturers prior to use or remove the surface coating after curing to flooring manufacturer's satisfaction.
 - 2. Initial Curing: Start as soon as free water has disappeared and before surface is dry. Keep continuously moist for not less than three days by water ponding, water-fog spray, or saturated burlap.
 - a. Ponding: Maintain 100 percent coverage of water over floor slab areas, continuously for 4 days.
 - b. Spraying: Spray water over floor slab areas and maintain wet.
 - c. Saturated Burlap: Saturate burlap-polyethylene and place burlap-side down over floor slab areas, lapping ends and sides; maintain in place.
 - 3. Final Curing: Begin after initial curing but before surface is dry.
 - a. Moisture-Retaining Sheet: Lap strips not less than 3 inches and seal with waterproof tape or adhesive; secure at edges.

- b. Curing Compound: Apply in two coats at right angles, using application rate recommended by manufacturer.

3.10 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.
- B. Provide free access to concrete operations at project site and cooperate with appointed firm.
- C. Tests of concrete and concrete materials may be performed at any time to ensure conformance with specified requirements.
- D. Compressive Strength Tests: ASTM C39. For each test, mold and cure six 4" diameter concrete test cylinders. Obtain test samples for every 100 cu yd or less of each class of concrete placed. Test 2 cylinders at 7 days, 3 cylinders at 28 days.
- F. Take one additional test cylinder during cold weather concreting, cured on job site under same conditions as concrete it represents.
- G. Perform one slump test for each set of test cylinders taken, following procedures of ASTM C143.

3.11 DEFECTIVE CONCRETE

- A. Test Results: The testing agency shall report test results in writing to The architect and To Be Determined within 24 hours of test.
- B. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- C. Repair or replacement of defective concrete will be determined by the The architect. The cost of additional testing shall be borne by the Contractor when defective concrete is identified.
- D. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of The architect for each individual area.

3.12 PROTECTION

- A. Do not permit traffic over unprotected concrete floor surface until fully cured.

3.13 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Exposed Portico Structure: air entrained, smooth rubbed finish.

END OF SECTION

SECTION 04 20 00 - BRICK AND CONCRETE MASONRY UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of each type of masonry work is indicated on drawings and schedule.
 - 1. CMU Cavity Walls.
 - 2. Interior CMU Partitions.

1.3 QUALITY ASSURANCE:

- A. Unit Masonry Standard: Comply with ACI 530.1/ASCE 6 "Specifications for Masonry Structures", except as otherwise indicated.
- B. Revise ACI 530.1/ASCE 6 to exclude Sections 1.4 and 1.7; Parts 2.1.2, 3.1.2, and 4.1.2; and Articles 1.5.1.2, 1.5.1.3, 2.1.1.1, 2.1.1.2, and 2.3.3.9 and to modify Articles 2.1.1.4 by deleting requirements for installing vent pipes and conduits built into masonry.
- C. Fire Performance Characteristics: Where fire-resistance ratings are indicated for unit masonry work, provide materials and construction which are identical to those of assemblies whose fire endurance has been determined by testing in compliance with ASTM E 119 by a recognized testing and inspecting organization or by another means as acceptable to authority having jurisdiction.

1.4 SUBMITTALS:

- A. Samples: Submit, for verification purposes, samples of each exposed masonry unit and colored masonry mortar, if any, include in each set of samples the full range of exposed colors and textures to be expected in completed work.

1.5 JOB CONDITIONS:

- A. Protection of Work: During erection, cover top of walls with heavy waterproof sheeting at end of each days' work. Cover partially completed structures when work is not in progress.
- B. Extend cover a minimum of twenty-four inches down both sides and hold cover securely in place.

- C. Do not apply loads for at least three days after building masonry walls or columns.
- D. Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry. Protect base of walls from rain-splashed mud and mortar splatter by means of covering spread on ground and over wall surface.
- E. Protect sills, ledges and projections from droppings of mortar.
- F. Cold Weather Protection:
 - 1. Do not lay masonry units which are wet or frozen.
 - 2. Do not lay masonry units when masonry bed is frozen.
 - 3. Do not lay masonry units when temperature is freezing or expected to drop below freezing.
 - 4. Remove all masonry determined to be damaged by freezing conditions.

PART 2 - PRODUCTS

2.1 MASONRY UNITS, GENERAL:

- A. Manufacturer: Obtain masonry units from one manufacturer of uniform texture and color for each kind required for each continuous area and visually related areas.
- B. Masonry Unit Characteristics: Provide units complying with standards referenced and requirements indicated.

2.2 CONCRETE MASONRY UNITS:

- A. Size: Manufacturer's standard units with nominal face dimensions of 16" long x 8" (15-5/8" x 7 5/8" actual), unless otherwise indicated.
- B. Special Shapes: Provide where required for lintels, corners, jambs, sash, control joints, headers, bonding and other special conditions.
- C. Weight Classification: Lightweight units unless otherwise indicated. (Less than 105 lb. per cu. ft., oven dry weight of concrete).
- D. Cure units by atmospheric drying for not less than 30 days before installation to comply with ASTM C 90, Type II. Grade "S" for above grade and grade "N" for below grade.

2.3 MASONRY ACCESSORIES:

- A. Horizontal Joint Reinforcing and Ties for Masonry:

1. Provide welded wire units prefabricated in straight lengths of not less than 10' with matching corner ("L") and intersecting ("T") units. Fabricate from cold-drawn steel wire complying with ASTM A82 with deformed continuous side rods and plain cross-rods into units with widths of approximately 2" less than nominal width of walls and partitions as required to position side rods for full embedment in mortar coverage of not less than 5/8" of joint faces exposed to exterior and not less than 1/2" elsewhere.
 - B. Provide the additional following type of joint reinforcing unless otherwise indicated.
 - a. CMU Single Wythe Walls Interior: Dur-O-Wall 3/16" Truss type for proper size of CMU spaced 16" o.c. vertically.
 - b. Wire Finish: Provide manufacturer's standard mill galvanized finish except as otherwise indicated.
 - C. Anchors and Ties:
 1. Anchors from Concrete Masonry Units to Steel Columns (Interior):
 - a. 16" o.c. vertically Dur-O-Wall 3017 1-1/4" wide by 3-1/16" deep length as required, minimum, 8"
 - D. Flashings for Masonry:
 1. Provide concealed flashings as follows:
 2. Virgin polyvinyl chloride with plasticizers and other modifiers, formed into uniform flexible sheets not less than twenty-mils thick and black in color, unless otherwise indicated.
 3. Insect Screen: Wire cloth shall be 18x14 mesh .011 bronze.
- 2.4 MORTAR MATERIALS:
- A. Do not lower the freezing point of mortar by use of admixtures or anti-freeze agents.
 - B. Do not use calcium chloride in mortar or grout.
 - C. Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification for types of mortar required, unless otherwise indicated.
 1. Limit cementitious materials in mortar to portland cement-lime.
 2. Use Type M mortar for masonry below grade and in contact with earth, and where indicated.
 3. Use Type S mortar for reinforced masonry and where indicated.
 4. Use Type N mortar for exterior, above grade loadbearing and non-loadbearing walls; for interior loadbearing walls; and for other applications where another type is not indicated.
 5. Mortar Color CMU:
 - a. Natural

PART 3 - PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL:

- A. Thickness: Build masonry construction to the full thickness shown, except, build single-wythe walls (if any) to the actual thickness of the masonry units using units of nominal thickness shown or specified.
- B. Build chases and recesses as shown and as required for the work of other trades. Provide not less than 8" of masonry between chase or recess and jamb of openings, and between adjacent chases and recesses.
- C. Cut masonry units with motor-driven saw designed to cut masonry with clean sharp, unchipped edges. Cut units as required to provide pattern shown and to fit adjoining work neatly. Use full units without cutting wherever possible. Use dry cutting saws to cut concrete masonry units.
- D. Wet clay brick which have ASTM C 67 initial rates of absorption (suction) of more than 30 grams per 30 sq. in. per minute. Use wetting methods which ensure that units are nearly saturated but surface dry when laid.
- E. Do not wet concrete masonry units.
- F. Bond Coursing:
 - 1. Layout walls in advance for accurate spacing of surface bond patterns, with uniform joint widths and to properly locate openings, movement-type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations.
 - 2. Lay-up walls plumb and with courses level, accurately spaced and coordinated with other work.
 - 3. Pattern Bond for load bearing walls: Lay exposed masonry in running bond vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe bonded by lapping not less than 2". Bond and unlock each course of each wythe at corners, unless otherwise shown.
 - 4. Pattern Bond CMU –
 - a. Running
- G. Stopping and Resuming Work:
 - 1. Rack back one-half masonry unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if specified to be wetted), and remove loose masonry units and mortar prior to laying fresh masonry.
- H. Built-In Work:
 - 1. As the work progresses, build-in items specified under this and other sections of these specifications. Fill in solidly with masonry around built-in items.

2. Fill space between hollow metal frames and masonry solidly with mortar.

I. Fire Rated Walls:

1. Seal wall to deck above and all penetrations with grout.

J. Non-Loading Interior Partition Walls: Build full height of story to underside of deck above, unless otherwise indicated.

1. Grout around all penetrations in masonry.
2. Grout top of wall to deck.

3.2 MORTAR BEDDING AND JOINTING:

- A. Lay brick with completely filled bed, head and collar joints; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.
- B. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course.
- C. Remove masonry units disturbed after laying; clean and relay in fresh mortar. Do not pound corners at jambs to fit stretcher units which have been set in position. If adjustments are required, remove unit, clean off mortar, and reset in fresh mortar.
- D. Joints: Maintain joint widths shown, except for minor variations required to maintain bond alignment. If not otherwise indicated, lay walls with 3/8" joints. Cut joints flush for masonry walls which are to be concealed or to be covered by other materials. Tool exposed joints slightly concave using a jointer larger than joint thickness. Rake out mortar in preparation for application of caulking or sealants where shown.
- E. Flush Joints: Cut joints flush for masonry walls which are to be concealed or to be covered by other materials.
 1. "V" Joints:
 - a. CMU

3.3 HORIZONTAL JOINT REINFORCING:

- A. Provide continuous horizontal joint reinforcing as shown and specified. Fully embed longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls and 1/2" at other locations. Lap reinforcement a minimum of 6". Do not bridge control and expansion joints with reinforcing, unless otherwise indicated. Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bed units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

- B. Reinforce masonry openings greater than 1'0" wide with horizontal joint reinforcing placed in two horizontal joints approximately 8" apart, both immediately above lintels and below sill. Extend reinforcing a minimum of 2'0" beyond jambs of the opening, bridging control joints where provided.

3.4 ANCHORING MASONRY WORK:

- A. Provide anchoring devices of the type indicated. If not indicated, provide standard type for facing and back-up involved.
- B. Anchor masonry to structural members where masonry abuts or faces such members to comply with the following:
 - 1. Provide an open space not less than 1" in width between masonry and structural member, unless otherwise shown. Keep open space free of mortar or other rigid materials.
 - 2. Anchor masonry to structural members with metal ties embedded in masonry joints and attached to structure. Provide anchors with flexible tie sections, unless otherwise indicated.

3.5 LINTELS:

- A. Install loose lintels of steel and other materials where shown.
- B. Provide lintels where shown and wherever openings of more than 1'0" are shown without structural steel lintels. Provide steel lintels in accordance with the following schedule when not indicated on structural drawings.
- C. Lintels at 4" brick or CMU Veneer:
 - 1. up to 4'0" opening - L 3-1/2" x 3-1/2" x 5/16"
 - 2. up to 7'0" opening - L 5" x 3-1/2" x 5/16"
 - 3. up to 10'0" opening - L 6" x 4" x 3/8"
- D. Provide minimum bearing 8" at each jamb, unless otherwise indicated.
- E. Provide masonry lintels where shown and wherever openings of more than 1'0" are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Thoroughly cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.
- F. Provide minimum bearing 8" at each jamb, unless otherwise indicated.

3.6 FLASHING OF MASONRY WORK:

- A. Provide concealed flashings in masonry work at, or above, all shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water to the

exterior. Prepare masonry surfaces smooth and free from projections which could puncture flashing. Place through-wall flashing on bed of mortar and cover with mortar. Seal penetrations in flashing with mastic before covering with mortar.

- B. Extend flashings the full length of lintels and shelf angles and minimum of 4" into masonry each end. Extend flashing from a line 1/2" in from exterior face of outer wythe of masonry, through the outer wythe, turned up a minimum of 4", and through the inner wythe to within 1/2" of the interior face of the wall in exposed work. Where interior surface of inner wythe is concealed by furring, carry flashing completely through the inner wythe and turn up approximately 2". At heads and sills turn up ends not less than 2" to form a pan.
- C. Provide weeps of open head joints and bronze insect screen in the same course of masonry bedded in the flashing, space at 4'0" o.c.
- D. Weep Hole Screens: Cut screen and fold to provide a "C" shape wedge which will space the width and height of the head joint at each weep hole.
- E. Install reglets and nailers for flashing and other related work where shown to be built into masonry work.

3.7 REPAIR, POINTING AND CLEANING:

- A. Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- B. Pointing: During the tooling of joints, enlarge any voids or holes except weep holes, and completely fill with mortar. Point-up all joints at corners, openings and adjacent work to provide a neat, uniform appearance, properly prepared for application of caulking or sealant compounds.
- C. Clean exposed brick masonry surfaces by the bucket and brush hand cleaning method or by high pressure water method. Comply with requirements of BIA Technical Notes No. 20, "Cleaning Brick Masonry".
- D. Use commercial cleaning agents in accordance with brick manufacturer's instructions.
- E. Clean exposed CMU masonry by dry brushing at the end of each day's work and after final pointing to remove mortar spots and droppings. Comply with recommendations in NCMA TEK Bulletin No. 28.
- F. Masonry Sealer:
 - 1. Apply a "wet on wet" application of Weather Seal in accordance with manufacturers recommendations. Follow all manufacturers recommendations.

END OF SECTION

05 1200 STRUCTURAL STEEL FRAMINGPART 1 GENERAL

1.01 SECTION INCLUDES

- A. Structural steel framing members, support members, suspension cables, sag rods, and struts.
- B. Base plates, and expansion joint plates.
- C. Grouting under base plates.

1.02 RELATED REQUIREMENTS

- A. Section 05 2100 - Steel Joist Framing.
- B. Section 05 3100 - Steel Decking: Support framing for small openings in deck.
- C. Section 05 5000 - Metal Fabrications: Steel fabrications affecting structural steel work.
- D. Section 06 0573 - Wood Treatment: Field-applied termiticide and mildicide for wood.
- E. Section 07 8100 - Applied Fireproofing: Fireproof protection to framing and metal deck systems.

1.03 REFERENCE STANDARDS

- A. AISC (MAN) - Steel Construction Manual; American Institute of Steel Construction, Inc.; 2011.
- B. AISC S303 - Code of Standard Practice for Steel Buildings and Bridges; American Institute of Steel Construction, Inc.; 2005.
- C. AISC S348 - Specification for Structural Joints Using ASTM A325 or A490 Bolts; 2004.
- D. ASTM A1 - Standard Specification for Carbon Steel Tee Rails; 2000 (Reapproved 2010)
- E. ASTM A36 - Standard Specification for Carbon Structural Steel; 2012.
- F. ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless; 2012.
- G. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold Finished; 2013.
- H. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2013.
- I. ASTM A153 - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- J. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2012.
- K. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2010.
- L. ASTM A500 - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- M. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.
- N. ASTM A563 - Standard Specification for Carbon and Alloy Steel Nuts; 2007a.
- M. ASTM A992 - Standard Specification for Structural Steel Shapes; 2011.
- N. ASTM C1107 - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2013.
- O. ASTM E94 - Standard Guide for Radiographic Examination; 2004 (Reapproved 2010).
- P. ASTM E164 - Standard Practice for Ultrasonic Contact Examination of Weldments; 2013.
- Q. ASTM F436 - Standard Specification for Hardened Steel Washers; 2011.

- R. ASTM F959 - Standard Specification for Compressible-Washer-Type Direct Tension Indicators for Use with Structural Fasteners; 2013.
- S. ASTM F1554 - Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength; 2007a.
- T. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2012.
- U. AWS D1.1 - Structural Welding Code - Steel; American Welding Society; 2010.
- V. SSPC-Paint 15 - Steel Joist Shop Primer; Society for Protective Coatings; 1999 (Ed. 2004).
- W. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).
- X. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 - 1. Indicate profiles, sizes, spacing, locations of structural members, openings, attachments, and fasteners.
 - 2. Connections not detailed.
 - 3. Indicate welded connections with AWS A2.4 welding symbols. Indicate net weld lengths.
- C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

- A. Fabricate structural steel members in accordance with AISC "Steel Construction Manual."
- B. Comply with Section 10 of AISC "Code of Standard Practice for Steel Buildings and Bridges" for architecturally exposed structural steel.
- C. Fabricator: Company specializing in performing the work of this section with minimum 5 years of documented experience.
- D. Erector: Company specializing in performing the work of this section with minimum 5 years of documented experience.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Steel Angles and Plates: ASTM A36.
- B. Steel W Shapes and Tees: ASTM A992.
- C. Rolled Steel Structural Shapes: ASTM A992.
- D. Steel Shapes, Plates, and Bars: ASTM A36
- E. Cold-Formed Structural Tubing: ASTM A500, Grade B.
- F. Hot-Formed Structural Tubing: ASTM A501, seamless or welded.
- G. Pipe: ASTM A53, Grade B, Finish black.
- H. High-Strength Structural Bolts, Nuts, and Washers: ASTM A325, Type 1, medium carbon.
- I. Unheaded Anchor Rods: ASTM F1554, Grade 36, plain, with matching ASTM A563 nuts and ASTM F436 Type 1 washers.
- J. Load Indicator Washers: Provide washers complying with ASTM F959 at all connections requiring high-strength bolts.
- K. Welding Materials: AWS D1.1; type required for materials being welded.
- L. Grout: Non-shrink, non-metallic aggregate type, complying with ASTM C1107 and capable of developing a minimum compressive strength of 5,000 psi at 28 days.

- M. Shop and Touch-Up Primer: Fabricator's standard.
- N. Touch-Up Primer for Galvanized Surfaces: Fabricator's standard.

2.02 FABRICATION

- A. Shop fabricate to greatest extent possible.
- B. Continuously seal joined members by continuous welds. Grind exposed welds smooth.
- C. Fabricate connections for bolt, nut, and washer connectors.

2.03 FINISH

- A. Prepare structural component surfaces in accordance with SSPC PS 14.
- B. Shop prime structural steel members. Do not prime surfaces that will be fireproofed, field welded, in contact with concrete, or high strength bolted.
- C. Galvanize structural steel members as noted to comply with ASTM A123. Provide minimum 1.7 oz/sq ft galvanized coating.

2.04 SOURCE QUALITY CONTROL

- A. Welded Connections: Visually inspect all shop-welded connections and test at least 5 percent of welds using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E94.
 - 2. Ultrasonic testing performed in accordance with ASTM E164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E165.
 - 4. Magnetic particle inspection performed in accordance with ASTM E709.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that conditions are appropriate for erection of structural steel and that the work may properly proceed.

3.02 ERECTION

- A. Erect structural steel in compliance with AISC "Code of Standard Practice for Steel Buildings and Bridges".
- B. Allow for erection loads, and provide sufficient temporary bracing to maintain structure in safe condition, plumb, and in true alignment until completion of erection and installation of permanent bracing.
- C. Field weld components indicated on shop drawings.
- D. Use carbon steel bolts only for temporary bracing during construction, unless otherwise specifically permitted on drawings. Install high-strength bolts in accordance with AISC "Specification for Structural Joints Using ASTM A325 or A490 Bolts".
- E. Do not field cut or alter structural members without approval of The architect.
- F. After erection, prime welds, abrasions, and surfaces not shop primed, except surfaces to be in contact with concrete.
- G. Grout solidly between column plates and bearing surfaces, complying with manufacturer's instructions for nonshrink grout. Trowel grouted surfaces smooth, splaying neatly to 45 degrees.

3.03 TOLERANCES

- A. Maximum Variation From Plumb: 1/4 inch per story, non-cumulative.
- B. Maximum Offset From True Alignment: 1/4 inch

3.04 FIELD QUALITY CONTROL

- A. An independent testing agency will perform field quality control tests, as specified in Section 01 4000.

- B. High-Strength Bolts: Verify that all bolts are in place, tightened, and are of the correct diameter and type.
- C. Welded Connections: Visually inspect all field-welded connections. Test any suspect connection using one of the following:
 - 1. Radiographic testing performed in accordance with ASTM E94.
 - 2. Ultrasonic testing performed in accordance with ASTM E164.
 - 3. Liquid penetrant inspection performed in accordance with ASTM E165.
 - 4. Magnetic particle inspection performed in accordance with ASTM E709.

END OF SECTION

05 1210 STEEL JOIST AND TRUSSESPART 1 GENERAL

- A. Furnish and install steel joists as shown on the drawings and accessories & bridging specified herein which is required by the Steel Joist Institute..

1.2 REFERENCES

- A. Steel Joist Institute (SJI) "Standard Specifications, Load Tables and Weight Tables".
- B. AWS D1.1 "Structural Welding Code".

1.3 PERFORMANCE REQUIREMENTS

- A. Steel fabrication and erection shall be done in compliance with SJI specifications.

1.4 QUALITY ASSURANCE

- A. All structural steel shall be checked by Architect's representative.
- B. Provide certification that welders to be employed in work are AWS certified. Conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies. Inspect and test during erection of structural steel for compliance with AWS D1.1.
- C. Correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as may be necessary to reconfirm any non-compliance of original work, and as may be necessary to show compliance of corrected work.
- D. Provide joists fabricated in compliance with the following, and as herein specified.
 - 1. Steel Joist Institute (SJI) "Standard Specifications, Load Tables and Weight Tables".

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's specifications and installation instructions for each type of joist and accessories. Include manufacturer's certification that joists comply with SJI "Specifications".
- B. Shop Drawings: Submit detailed drawings showing layout of joist units, special connections, jointing and accessories. Include mark, number, type, location and spacing of joists and bridging.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store materials in a location and manner to keep mud, oil, and rust from contaminating product.
- B. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports.

- C. Deliver, store and handle steel joists as recommended in SJI "Specifications". Handle and store joists in a manner to avoid deforming members and to avoid excessive stresses.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Steel: Comply with SJI "Specifications".
- B. Steel Prime Paint: Comply with SJI "Specifications", except asphalt type paint not permitted.

2.2 FABRICATION

- A. General: Fabricate steel joists in accordance with SJI "Specifications".
- B. Extended Ends: Provide extended ends on joists complying with manufacturer's standards and requirements of applicable SJI "Specifications" and load tables.
- C. Ceiling Extensions: Provide ceiling extensions in areas having ceilings attached directly to joist bottom chord. Provide either an extended bottom chord element or a separate unit, to suit manufacturer's standards, of sufficient strength to support ceiling construction. Extend ends to within 1/2" of finished wall surface unless otherwise indicated.
- D. Bridging: Provide diagonal X-bridging for "open web" joists, number of rows and location complying with SJI "Specifications".

2.2 FINISHES

- A. Apply one shop coat of primer paint to steel joists and accessories, by spray, dipping, or other method to provide a continuous dry paint film thickness of not less than 0.50 mil. Do not paint any joists which will receive a sprayed-on fireproofing coating.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Visually determine that Project is ready to begin the work of this Section; beginning of work indicates acceptance of conditions. Notify Architect in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to the Architect.

3.2 INSTALLATION

- A. Place and secure steel joists in accordance with SJI "Specifications", final shop drawings, and as herein specified.
- B. Placing Joists: Do not start placement of steel joists until supporting work is in place and secured. Place joists on supporting work, adjust and align in accurate locations and spacing before permanently fastening.
- C. Bridging: Install bridging simultaneously with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords where terminating at walls or beams.

- D. Field weld joists to supporting steel framework in accordance with SJI "Specifications" for type of joists used. Coordinate welding sequence and procedure with placing of joists.
- 3.4 TOLERANCES
- A. Will be as per SJI recommendations.
- 3.5 ADJUSTING
- A. Adjust members as necessary to be compatible with final product. Notify Architect before substantially altering any member.
- 3.6 CLEANING
- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting.

END OF SECTION

05 3100 STEEL DECKINGPART 1 GENERAL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Roof deck.
- B. Metal form deck.

1.02 RELATED REQUIREMENTS

- A. Section 03 2000 - Concrete Reinforcing.
- B. Section 03 3000 - Cast-in-Place Concrete: Concrete topping over metal deck.
- C. Section 05 1200 - Structural Steel: Placement of embedded steel anchors for bearing plates in cast-in-place concrete.
- D. Section 05 5000 - Metal Fabrications: Steel angle concrete stops at deck edges.
- E. Section 07 8100 - Applied Fireproofing: Spray applied fireproofing.

1.03 REFERENCE STANDARDS

- A. ASTM A36 - Standard Specification for Carbon Structural Steel; 2012.
- B. ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished; 2013.
- C. ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2013.
- D. ASTM A653 - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- E. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2013.
- F. ASTM E384 - Standard Test Method for Knoop and Vickers Hardness of Materials; 2011e1.
- G. AWS D1.1 - Structural Welding Code - Steel; American Welding Society; 2010.
- H. AWS D1.3 - Structural Welding Code - Sheet Steel; American Welding Society; 2008.
- I. FM DS 1-28 - Wind Design; 2007.
- J. FM DS 1-29 - Roof Deck Securement and Above-Deck Roof Components; Factory Mutual System; 2006.
- K. FM P7825 - Approval Guide; Factory Mutual Research Corporation; current edition.
- L. IAS AC172 - Accreditation Criteria for Fabricator Inspection Programs for Structural Steel; International Accreditation Service, Inc.; 2011.
- M. ICC-ES AC43 - Acceptance Criteria for Steel Deck Roof and Floor Systems; ICC Evaluation Service, Inc.; 2010 (R2013).
- N. ITS (DIR) - Directory of Listed Products; Intertek Testing Services NA, Inc.; current edition.
- O. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- P. SDI (DM) - Publication No.31, Design Manual for Composite Decks, Form Decks, Roof Decks; Steel Deck Institute; 2007.
- Q. SSPC-Paint 15 - Steel Joist Shop Primer; The Society for Protective Coatings; 1999 (Ed. 2004).
- R. UL (FRD) - Fire Resistance Directory; Underwriters Laboratories Inc.; current edition.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittals procedures.
- B. Shop Drawings: Indicate deck plan, support locations, projections, openings, reinforcement, pertinent details, and accessories.
- C. Welders Certificates: Certify welders employed on the Work, verifying AWS qualification within the previous 12 months.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this Section with minimum 5 years of experience.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Cut plastic wrap to encourage ventilation.
- B. Separate sheets and store deck on dry wood sleepers; slope for positive drainage.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Steel Deck: equal to, but not limited to
Nucor-Vulcraft Group; www.vulcraft.com.

2.02 STEEL DECK

- A. Roof Deck: Non-composite type, fluted steel sheet:
 - 1. Galvanized Steel Sheet: ASTM A653, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
See drawings for size and gauge
 - 2. Side Joints: lapped, screwed or welded
 - 3. End Joints: Lapped, welded.
- B. Metal Form Deck: Corrugated sheet steel, :
 - 1. Galvanized Steel Sheet: ASTM A653, Structural Steel (SS) Grade 33/230, with G90/Z275 galvanized coating.
 - a. Grade as required to meet performance criteria.
 - 2. See drawings for size and gauge.

2.03 ACCESSORY MATERIALS

- A. Bearing Plates and Angles: ASTM A36 steel, unfinished.
- B. Welding Materials: AWS D1.1.
- C. Fasteners: Galvanized hardened steel, self tapping.
- D. Mechanical Fasteners: Steel; hex washer head, self-drilling, self-tapping.
 - 1. Design Requirements for Sidelap Connections: Provide number and type of fasteners that comply with the applicable requirements of SDI design method for roof deck and floor deck applications and ICC-ES AC43.
 - 2. Fasteners for Steel Roof Decks Protected with Waterproofing Membrane: ASTM B 633, SC1, Type III zinc electroplate.
 - 3. Products:
 - a. ITW Commercial Construction North America; ITW CCNA-Buildex Tek's Select Series; : www.ITWBuildex.com.
- E. Weld Washers: Mild steel, uncoated, 3/4 inch outside diameter, 1/8 inch thick.
- F. Touch-Up Primer for Galvanized Surfaces: SSPC-Paint 20.

2.04 FABRICATED DECK ACCESSORIES

- A. Sheet Metal Deck Accessories: Metal closure strips, wet concrete stops, and cover plates, 22 gage thick sheet steel; of profile and size as indicated; finished same as deck.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions prior to beginning work.

3.02 INSTALLATION

- A. Erect metal deck in accordance with SDI Design Manual and manufacturer's instructions. Align and level.
- B. On concrete and masonry surfaces provide minimum 4 inch bearing.
- C. On steel supports provide minimum 1-1/2 inch bearing.
- D. Fasten deck to steel support members at ends and intermediate supports at 12 inches on center maximum, parallel with the deck flute and at each transverse flute using methods specified.
 - 1. Welding: Use fusion welds through weld washers.
 - 2. Self tapping screws
- E. Screw side laps of floor deck at 12" o.c. max between supporting members.
- F. Drive mechanical sidelap connectors completely through adjacent lapped sheets; positively engage adjacent sheets with minimum three-thread penetration.
- G. Weld deck in accordance with AWS D1.3.
- H. At deck openings from 6 inches to 18 inches in size, provide 2 x 2 x 1/4 inch steel angle reinforcement. Place angles perpendicular to flutes; extend minimum two flutes beyond each side of opening and fusion weld to deck at each flute.
- I. Where deck changes direction, install 6 inch minimum wide sheet steel cover plates, of same thickness as deck. Fusion weld 12 inches on center maximum.
- J. At floor edges, install concrete stops upturned to top surface of slab, to contain wet concrete. Provide stops of sufficient strength to remain stationary without distortion.
- K. At openings between deck and walls, columns, and openings, provide sheet steel closures and angle flashings to close openings.
- L. Immediately after welding deck and other metal components in position, coat welds, burned areas, and damaged surface coating, with touch-up primer.

END OF SECTION

SECTION 05 40 00 COLD-FORMED STRUCTURAL WALL FRAMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Furnish and install all cold-formed structural framing studs, tracks, bracing, angles, plates, and related accessories for exterior stud system for brick veneer and windows. This section only applies to exterior studs.

1.3 RELATED WORK SPECIFIED ELSEWHERE

- A. Exterior sheathing per Division 9 "Exterior Sheathing" and interior sheathing per Division 9 "Gypsum Drywall and Metal Studs". (Interior studs)

1.4 SUBMITTALS

- A. The framing contractor shall be responsible for submitting all of the following items:

1. Manufacturers technical literature covering products.
2. Manufacturers certification of product compliance with codes and standards.
3. Connection details.
4. Shop drawings.

1.5 QUALITY ASSURANCE

- A. The structural framing and its installation shall meet the following standards:

1. American Iron and Steel Institute (AISI) "Specification For The Design of Cold-Formed Structural Members", latest edition.
2. American Society for Testing and Materials (ASTM) Standard C-955-Standard Specification for Load Bearing (Traverse and Axial) Steel Studs, Runners (Tracks), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
3. ASTM Standard C-1007-Standard Specification for Installation of Load Bearing (Traverse and Axial) Steel Studs and Related Accessories.
4. Wind Load Criteria: see structural drawings
5. Lateral Deflection Criteria: L/600
6. Exterior wall stud sizes are shown on structural drawings. No substitutions will be allowed.

1.6 DELIVERY STORAGE & HANDLING

- A. Upon delivery, the structural framing materials shall be protected from the elements by storing them in a sheltered area or using protective covers.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable manufacturer shall include, but not limited to:

1. Clark Steel Framing or equal.

2.2 STRUCTURAL PROPERTIES

- A. Structural framing stud, joist and track properties shall be determined by published dimensional and structural properties including, but not limited to, member depth, flange size, lip size, design steel thickness, area, effective l_x , and effective S_x .

2.3 MATERIALS

- A. The cold-formed structural framing shall be manufactured from structural quality steel having minimum yield strength of 33 KSI, for all design thicknesses, or optional 50 KSI for 16GA and heavier members and have minimum protective coating equal to G-60 galvanized finish. The steel shall conform to one of the following ASTM Standards: ASTM A653, A875, A792 or A463.
- B. Structural framing members shall conform to ASTM C955, have engineering properties calculated in conformance with the AISI "Specification For The Design of Cold-Formed Steel Structural Members" and have minimum properties as published by Clark Steel Framing.
- C. All structural framing accessories shall be formed from structural quality steel with minimum yield strength of 33 KSI and have minimum protective coating equal to G-60 galvanized finish.
- D. 6" maximum stud depth.

2.4 FASTENING

- A. Structural framing members shall be properly spaced, plumbed, leveled, squared, fit properly against abutting members and held securely in place until permanently fastened. Wire tying of structural framing members is not permitted.
- B. Fastening of structural framing members shall be accomplished by screws, power actuated fasteners, welding, or a combination of methods. The type, size, and spacing of the fasteners shall be as required by the approved connection details.
- C. Structural framing members may be fastened in a shop or in the field.
- D. Structural framing members having protective coating removed by welding shall have the coating repaired, at the welds, by painting with a zinc rich primer.

PART 3 EXECUTION

3.1 INSPECTION

- A. Inspect supporting substrates and structure for compliance of conditions for installation and performance of the cold-formed structural framing system.

3.2 PREPARATION

- A. Prepare attachment surfaces so that they are plumb, level, and in proper alignment for accepting the cold-formed structural framing system.

3.3 WALL FRAMING

- A. Cold-formed structural framing members may be shop or field fabricated into wall assemblies, prior to erection, or stick built in the field.
- B. The wall framing members shall be sized, spaced and erected in accordance with the structural drawings and approved shop drawings.
- C. The framing members shall have ends squarely cut by shearing or sawing, be installed plumb, square, true in line and securely fastened per the approved connection details.
- D. Fabrication, handling, and erection of wall framing members and assemblies shall be done in a manner to prevent any damage or distortion of the framing.
- E. Cold-formed tracks, when set to adjacent structures, shall have web contact with a uniform and level bearing surface and be securely anchored with fasteners, sized and spaced per the approved connection details.
- F. Bracing of wall framing resisting wind (Traverse) loading only, (non load-bearing), can be accomplished by the attachment of wall sheathing to both sides of the studs. However, during construction, when only the exterior of the studs is sheathed, a minimum 2" wide steel strap, run horizontally on the interior flanges, attached to each stud and spaced at a maximum of 4'-0" throughout the height of the wall is required to brace the wall during construction.
- G. Structural "C" members are not permitted to have splices or cutouts in the flanges.
- H. Framing of wall openings shall include jack studs, headers, cripples, sill plates and jamb studs as per the approved shop drawings.
- I. For wall framing assemblies that will form voids which will not be accessible to the insulation contractor the framing contractor shall be responsible for filling these voids, with suitable insulation, prior to assembly.
- J. Slip connections, allowing for vertical movement of the structure without imposing vertical load on the wall framing, shall be per the approved shop drawings. Allow for 5/8" vertical deflection.

- K. Temporary bracing of wall framing shall be provided as required and removed only after the framing has been secured with permanent support.

END OF SECTION

SECTION 06 10 00 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Definition: Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated. Types of work in this section include rough carpentry for:
 - 1. Wood grounds, nailers, blocking, curbs, cants, sleepers etc.
 - 2. Sheathing.
- B. Finish carpentry is specified in another section within Division 6.

1.3 REFERENCES:

- A. Lumber Standards: Comply with PS 20 and with applicable rules of the respective grading and inspecting agencies for species and products indicated.
- B. Plywood Product Standards: Comply with PS 1 (ANSI A 199.1) or, for products not manufactured under PS 1 provisions, with applicable APA Performance Standard for type of panel indicated.

1.4 SUBMITTALS:

- A. Wood Treatment Data: Submit treatment manufacturer's instructions for proper use of each type of treated material.
- B. Pressure Treatment: For each type specified, include certification by treating plant stating chemicals and process used, net amount of preservative retained and conformance with applicable standards.

1.5 PRODUCT HANDLING:

- A. Delivery and Storage: Keep materials dry at all times. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber and plywood and provide air circulation within stacks.

1.6 JOB CONDITIONS:

- A. Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow proper attachment of other work.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Lumber, General:

1. Factory-mark each piece of lumber with type, grade, mill and grading agency, except omit marking from surfaces to be exposed with transparent finish or without finish.
2. Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20, for moisture content specified for each use.
3. Provide dressed lumber, S4S, unless otherwise indicated.
4. Provide seasoned lumber with 19% maximum moisture content at time of dressing.

B. Miscellaneous Lumber:

1. Provide wood for support or attachment of other work including cant strips, bucks, nails, blocking, furring, grounds, stripping and similar members. Provide lumber of sizes indicated, worked into shapes shown, and as follows:
 - a. Moisture content: 19% maximum for lumber items not specified to receive wood
 - b. preservative treatment.

C. Grade: Construction Grade light framing size lumber of any species or board size lumber as required. Provide construction grade boards (RIS or WCLB) or No. 2 boards (SPIB or WWPA).

D. Dimension Lumber:

1. Southern Pine No. 2 Grade

2.2 PLYWOOD PANELS:

- A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels", Form No. E445.
- B. Trademark: Factory-mark each construction panel with APA trademark evidencing compliance with grade requirements.

- C. Concealed APA Performance-Rated Panels: Where construction panels will be used for the following concealed types of applications, provide APA Performance-Rated Panels complying with requirements indicated for grade designation, span rating, exposure durability classification, edge detail (where applicable) and thickness.
- D. Roof Sheathing: APA RATED SHEATHING.
 - 1. Exposure Durability
 - 2. Classification: EXPOSURE 1.
 - 3. Span Rating: 24/16.
- E. Fascia & Wall Sheathing: APA Rated Sheathing
 - 1. Exposure Durability Classification: EXTERIOR
 - 2. Span Rating: 24 o.c.

2.3 AIR/VAPOR BARRIER:

- A. Air/Vapor Barrier: Spun bonded polyolefin, non-woven, non-perforated, weather barrier is based upon DuPont™ Tyvek® CommercialWrap® D and related assembly components or equal.

Performance Characteristics:

- 1. Air Penetration: 0.001 cfm/ft² at 75 Pa when tested in accordance with ASTM E2178. Type 1 when tested in accordance with ASTM E 1677. ≤0.04 cfm/ft @ 75 Pa when tested in accordance with ASTM E2357.
 - 2. Water Vapor Transmission: 30 perms, when tested in accordance with ASTM E 96, Method B.
 - 3. Water Penetration Resistance: 235 cm when tested in accordance with AATCC Test Method 127.
 - 4. Basis Weight: 2.4 oz/yd², when tested in accordance with TAPPI Test Method T-410.
 - 5. Air Infiltration Resistance: Air infiltration at >750 seconds, when tested in accordance with TAPPI Test Method T-460.
 - 6. Tensile Strength: 33/41 lbs/in., when tested in accordance with ASTM D 822 , Method A.
 - 7. Surface Burning Characteristics: Class A, when tested in accordance with ASTM E 84
 - 8. Flame Spread: 15, Smoke Developed: 25.
- B. Air /Vapor Barrier Accessories
 - 1. Seam Tape 3" DuPont™ Tyvek® Tape as distributed by DuPont.

2. Fasteners:
 - a. Steel Frame Construction - DuPont™ Tyvek® Wrap Cap Screws, 1-5/8 inch rust resistant screw with 2-inch diameter plastic cap fasteners.
 - b. Wood Frame Construction - DuPont™ Tyvek® Wrap Caps: [#4 nails with large 1-inch plastic cap fasteners] [1-inch minimum plastic cap staple with leg length sufficient to achieve a minimum penetration of 5/8-inch into the wood stud].

C. Miscellaneous Materials:

1. Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommending nails.
2. Sleeper Anchors: Provide 16 ga. galvanized mud anchors designed to set in wet concrete.

2.4 WOOD TREATMENT:

A. WOOD-PRESERVATIVE-TREATED LUMBER

1. Preservative Treatment by Pressure Process: AWWA U1; Use Category UC2
 - a. Interior construction (Dry Locations) not in contact with the ground use Category UC1
 - b. Interior construction (Damp Locations) not in contact with the ground use Category UC2
 - c. Exterior construction not in contact with ground use Category UC3B.
 - d. Exterior construction in contact with ground use Category UC4A.
2. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
3. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
4. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or that does not comply with requirements for untreated material.
5. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
6. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each.
7. Application: Treat items indicated on Drawings, and the following:
 - a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

- b. Wood sills, sleepers, blocking and similar concealed members in contact with masonry or concrete.
- c. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
- d. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
- e. Wood floor plates that are installed over concrete slabs-on-grade.

B. FIRE-RETARDANT-TREATED MATERIALS

1. General: Where fire-retardant-treated materials are indicated or specified herein, use materials complying with requirements in this article, that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified as determined by testing identical products per test method indicated by a qualified testing agency.
2. Fire-Retardant-Treated Lumber and Plywood by Pressure Process: Products with a flame spread index of 25 or less when tested according to ASTM E 84, and with no evidence of significant progressive combustion when the test is extended an additional 20 minutes, and with the flame front not extending more than 10.5 feet beyond the centerline of the burners at any time during the test.
3. Use treatment that does not promote corrosion of metal fasteners.
4. Exterior Type: Treated materials shall comply with requirements specified above for fire-retardant-treated lumber and plywood by pressure process after being subjected to accelerated weathering according to ASTM D 2898. Use for exterior locations and where indicated.
5. Interior Type A: Treated materials shall have a moisture content of 28 percent or less when tested according to ASTM D 3201 at 92 percent relative humidity. Use where exterior type is not required.
6. Design Value Adjustment Factors: Treated lumber shall be tested according to ASTM D 5664 and design value adjustment factors shall be calculated according to ASTM D 6841. For enclosed roof framing, framing in attic spaces, and where high temperature fire-retardant treatment is indicated, provide material with adjustment factors of not less than 0.85 modulus of elasticity and 0.75 for extreme fiber in bending for Project's climatological zone.
7. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Kiln-dry plywood after treatment to a maximum moisture content of 15 percent.
8. Identify fire-retardant-treated wood with appropriate classification marking of qualified testing agency.
9. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece.
10. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.

11. Application: Treat items indicated on Drawings, and the following:
 - a. Framing and plywood decking for raised platforms.
 - b. Framing and plywood decking for stages.
 - c. Plywood roof sheathing
 - d. Concealed blocking.
 - e. Framing for non-load-bearing partitions.
 - f. Framing for non-load-bearing exterior walls.
 - g. Roof construction.
 - h. Plywood backing panels.

PART 3 - EXECUTION

3.1 INSTALLATION:

A. General:

1. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangements.
2. Set carpentry work accurately to required levels and lines, with members plumb and true and accurately cut and fitted.
3. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards. Countersink nail heads on exposed carpentry work and fill holes.
4. Use common wire nails, except as otherwise indicated. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; pre-drill as required.

B. Wood Grounds, Nailers, and Blocking:

1. Provide whenever shown and where required for proper support of all items which will be attached to gypsum board. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.
2. Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise show. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.
3. Provide permanent grounds of dressed, preservative treated, key-beveled lumber not less than 1-1/2" wide and of thickness required to bring face of ground to exact thickness of finish material involved. Remove temporary grounds when no longer required.

C. Sheathing:

1. Install sheathing with end joints over supports, and with each piece extending over at least two spaces between supports. Screw to supports at 16" o.c. E.W.

3.2 AIR INFILTRATION BARRIER:

1. Cover wall sheathing with air infiltration barrier to comply with manufacturer's printed directions.
2. Return air barriers in jambs of window and door.

END OF SECTION

SECTION 06 16 13 – INSULATING SHEATHING

PART 1 GENERAL

3.1 SUMMARY

A. Section Includes

1. Section includes insulating wall sheathing with integral water-resistive barrier and air barrier.

3.2 REFERENCES

A. American Society of Mechanical Engineers (ASME): www.asme.org

1. ASME B18.6.1 - Wood Screws (Inch Series)

B. ASTM International (ASTM): www.astm.org

1. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
2. ASTM C1289 - Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
3. ASTM D779 - Test Method for Water Resistance of Paper, Paperboard, and Other Sheet Materials by the Dry Indicator Method
4. ASTM D1621 - Test Method for Compressive Properties Of Rigid Cellular Plastics
5. ASTM D2247 - Practice for Testing Water Resistance of Coatings in 100% Relative Humidity
6. ASTM E96/E 96M - Test Methods for Water Vapor Transmission of Materials
7. ASTM E331 - Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
8. ASTM E2357 - Test Method for Determining Air Leakage of Air Barrier Assemblies
9. ASTM F1667 - Specification for Driven Fasteners: Nails, Spikes, and Staples
10. ASTM G154 - Practice for Operating Fluorescent Light Apparatus for UV Exposure of Nonmetallic Materials

C. US Department of Commerce (DOC): <http://gsi.nist.gov/global/index.cfm/L1-5/12-44/A-355>

1. DOC PS 2 - Performance Standard for Wood-Based Structural Panels

D. International Code Council (ICC): www.iccsafe.org

1. ICC IBC - International Building Code
2. ICC IRC - International Residential Code for One- and Two-Family Dwellings

E. ICC Evaluation Service, Inc. (ICC-ES): www.icc-es.org

1. ICC-ES AC12 - Acceptance Criteria For Foam Plastic Insulation
2. ICC-ES AC38 - Acceptance Criteria for Water-Resistive Barriers
3. ICC-ES AC116 - Acceptance Criteria for Nails and Spikes
4. ICC-ES AC148 - Acceptance Criteria For Flexible Flashing Materials

5. ICC-ES AC201 - Acceptance Criteria for Staples
6. ICC-ES AC269 - Acceptance Criteria for Racking Shear Evaluation of Proprietary Sheathing Materials attached to Light-Frame Wall Construction or Code-Complying Sheathing Attached to Light-Framed Walls with Proprietary Fasteners
7. ICC-ES AC310 - Acceptance Criteria for Water-Resistive Membranes Factory-bonded to Wood-based Structural Sheathing, Used as Water-Resistive Barriers
8. ICC-ES ESR-1539 - Power Driven Staples and Nails for Use in Engineered and Non-Engineered Connections
9. ICC-ES NER-272 - Power Driven Staples and Nails for Use in All Types of Building Construction

3.3 ACTION SUBMITTALS

- A. Evaluation Reports: From ICC-ES, for wood sheathing and seam tape

3.4 INFORMATIONAL SUBMITTALS

- A. Product Certifications: From manufacturer, indicating that sheathing products comply with ICC-ES AC269 and ICC-ES AC310
- B. Certified Wood Certificates: Certificates indicating that manufacturer is currently certified by an SFI- or FSC- accredited certification body, and chain-of-custody certificates indicating that sheathing products comply with forest certification requirements

3.5 CLOSEOUT SUBMITTALS

- A. Warranty: Executed copy of manufacturer special warranties.

3.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Provide wood products from manufacturer certified by SFI, FSC, or comparable sustainable forestry program acceptable to Architect.
- B. Provide wall sheathing products meeting requirements for water-resistive barrier in accordance with ICC-ES AC310.
- C. Provide wall sheathing products meeting requirements of ICC-ES AC269

3.7 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturer's written instructions for protection of sheathing products from weather prior to installation.

3.8 WARRANTY

- A. Special Manufacturer's Warranty: Manufacturer's standard form in which sheathing manufacturer agrees to repair or replace sheathing products that demonstrate deterioration or failure under normal use due to manufacturing defects within warranty period specified, when installed according to manufacturer's instructions.

1. Warranty Period for Sheathing Products: [30] years following date of Substantial Completion.
2. Warranty Conditions: Special warranties exclude deterioration or failure due to structural movement resulting in stresses on sheathing products exceeding manufacturer's written specifications, or due to air or moisture infiltration resulting from cladding failure or mechanical damage.

PART 2 PRODUCTS

3.1 MANUFACTURERS

- A. Basis-of-Design Product: Provide weather barrier sheathing products manufactured by Huber Engineered Woods LLC, Charlotte NC; Phone: (800) 933-9220; Website: www.huberwood.com;

3.2 PERFORMANCE REQUIREMENTS

- A. Fire-Test-Response Characteristics:
 1. Fire-Resistance Ratings: Where indicated, provide assemblies tested for fire resistance per ASTM E119.
- B. Air-Barrier Assembly Air Leakage: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2357.
- C. Air-Barrier Material: Less than 0.04 cfm/sq. ft. at 1.57 lbf/sq. ft. (0.2 L/s x sq. m at 75 Pa), per ASTM E2178.
- D. Water-Vapor Permeance, Facer: Minimum 12 perms (689 ng/Pa x s x sq. m), ASTM E96/E96M.
- E. Weather Exposure: Manufacturer warranty applies for maximum allowable exposure period of 180 days.

3.3 MATERIALS

- A. Single Source Limitations: Provide wall sheathing/weather barrier by a single manufacturer.
- B. Oriented Strand Board: DOC PS 2, made with binder containing no added urea formaldehyde.
- C. Rigid Foam Plastic Insulating Board: Rigid polyisocyanurate foam core complying with ASTM C1289 Type II, Class 2, and ICC-ES AC12, with coated glass fiber facers on both sides, with the following characteristics:
 1. Nominal Density: 2.0 pcf (32 kg/cu. m).
 2. Compressive Strength, ASTM D1621: Not less than 20 psi (150 kPa).
 3. Vapor Permeance, ASTM E96/E96M: Less than 1.0 perm.
 4. Edge Configuration: Square finished.

3.4 COMPOSITE INSULATING WALL SHEATHING

- A. Composite Insulating Wall Sheathing: Oriented-strand-board Exposure 1 sheathing 7/16 inch (11.1 mm) thick, with factory-laminated water-resistive barrier exterior facer, and with rigid foam plastic insulating board laminated to interior face.
 1. Basis-of-Design Product: Provide **Huber Engineered Woods LLC; ZIP System R Sheathing**

2. Span Rating and Performance Category of Sheathing Layer: Not less than 24/16; 7/16 Performance Category
3. Thickness: 1-1/2 inch (38 mm).
4. Thermal Resistivity (R Value): 6.6 deg F x h x sq. ft./Btu x in. at 75 deg F ([25] [46] K x m/W at 24 deg C).
5. Edge Profile: Square edge.
6. Exterior Facer: Medium-density, phenolic-impregnated polymer-modified sheet material meeting requirements for ASTM D779 Grade D weather-resistive barrier in accordance with ICC AC38 and AC310, with fastener spacing symbols on exterior facer for 16-inch (406 mm) on center spacing, with the following characteristics
 - a. Water Resistance of Coatings, ASTM D2247: Pass 14 day exposure test.
 - b. Moisture Vapor Transmission, ASTM E96: Not less than 12 perms.
 - c. Water Penetration, ASTM E331: Pass at 2.86 lbf/sq. ft. (137 Pa).
 - d. Wind Driven Rain, TAS-100: Pass.
 - e. Accelerated Weathering, ASTM G154: Pass

3.5 WALL SHEATHING WITH INTEGRAL WATER-RESISTIVE BARRIER AND AIR BARRIER

- A. Oriented-Strand-Board Wall Sheathing: Exposure 1 sheathing with factory-laminated water-resistive barrier facer with printed fastener location symbols.
1. Basis-of-Design Product: Provide **Huber Engineered Woods LLC; ZIP System Wall Sheathing**.
 2. Span Rating, Panel Grade and Performance Category: Not less than 24/16; Structural 1; 7/16 Performance Category.
 3. Edge Profile: Square edge.
 4. Weather Barrier Facer: Medium-density, phenolic-impregnated sheet material qualifying as a Grade D weather-resistive barrier in accordance with ICC-ES AC38.
 - a. Provide fastener spacing symbols on facer for 16-inch (406 mm) and 24-inch (610 mm) on center spacing.

3.6 FASTENERS

- A. Fasteners, General: Size and type complying with manufacturer's written instructions for Project conditions and requirements of authorities having jurisdiction.
1. Corrosion Resistance: Hot-dip zinc coating, ASTM A153/A153M.
- B. Nails, Brads, and Staples: ICC AC116 and ICC AC201.
- C. Power-Driven Fasteners: ICC-ES-1539 or NER-272.

3.7 SHEATHING JOINT-AND-PENETRATION TREATMENT MATERIAL

- A. Self-Adhering Flexible Flashing Tape: Pressure-sensitive, self-adhering, cold-applied, seam tape consisting of polyolefin film with acrylic adhesive, meeting ICC-ES AC148, and tested as part of an assembly meeting performance requirements.
1. Basis-of-Design Product: Provide **Huber Engineered Woods; ZIP System Stretch Tape**.

2. Thickness: 0.012 inch (0.3 mm).

PART 3 EXECUTION

3.1 EXAMINATION

- A. Examine framing spacing and alignment to determine if work is ready to receive sheathing. Proceed with sheathing work once conditions meet requirements.

3.2 SHEATHING INSTALLATION

- A. Install sheathing panels in accordance with manufacturer's written instructions, requirements of applicable Evaluation Reports, and requirements of authorities having jurisdiction.
- B. Air and Moisture Barrier: Coordinate sheathing installation with flashing and joint sealant sequencing and installation and with adjacent building air and moisture barrier components to provide complete, continuous air- and moisture- barrier.
- C. Do not bridge expansion joints; allow joint spacing equal to spacing of structural supports.
- D. Install panels with laminated facer to exterior. Stagger end joints of adjacent panel runs. Support all panel edges.
 1. Space square-edged panels 0.125 inch (3 mm).
 2. Butt edges of self-spacing edge panels.
- E. Attach sheathing panels securely to substrate with manufacturer-approved fasteners in compliance with the following:
 1. ICC-ES ESR-1539 or ICC-NES NER-272 for power-driven fasteners.
 2. IBC: Table 2304.9.1 Fastening Schedule.
- F. Apply ZIP System Stretch Tape around window and window frames, door frames, radius fenestrations and wall penetrations to form continuous weathertight surface. Apply tape according to manufacturer's written instructions and requirements of IAPMO ER365 applicable to tape application.

END OF SECTION

SECTION 06 20 00 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of each type of architectural woodwork is indicated on drawings and in schedules. Types of architectural woodwork include the following:
 - 1. Exterior woodwork including but not limited to the followings:
 - a. Standing & Running Trim.
 - 2. Interior woodwork including but not limited to the following:
 - a. Window stools and aprons.
 - 3. Architectural cabinets including:
 - a. Architectural wood cabinets.
 - b. Architectural wood cabinets laminate clad.
 - c. Tops.
- B. Wood doors are specified within Division 8.

1.3 QUALITY ASSURANCE:

- A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise indicated.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's product data for each product and process specified as work of this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.
- B. Quality Certification: Submit woodwork Manufacturer's (Fabricator's) certification, stating that fabricated woodwork complies with quality grades and other requirements indicated.
- C. Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large scale details, attachment devices and other components.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.
- B. Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

1.6 PROJECT CONDITIONS:

- A. Conditioning: Woodwork Manufacturer and Installer shall advise Contractor of temperature and humidity requirements for woodwork installation and storage areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas. Woodwork shall not be delivered to job site until Heating and Air Conditioning Systems have been in operation 24 hours per day for seven (7) days.
- B. Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. Require Woodwork Manufacturer to establish optimum moisture content and required temperature and humidity conditions.
- C. Grain Matching: Grain and color of surface veneers shall be similar in appearance and acceptable to the Architect.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates of one of the following:
 - 1. Formica Corp.
 - 2. Nevamar Corp.
 - 3. Ralph Wilson Plastics Co.

2.2 FABRICATION, GENERAL:

- A. Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.
- B. Fabricate woodwork to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.

- C. Ease edges to a 1/16" radius, for corners of cabinets and edges of solid wood (lumber) members less than 1" in nominal thickness, 1/8" radius for edges of rails and similar members over 1" in nominal thickness.
- D. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.
- E. Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures seal edges of cutouts with a water-resistant coating.
- F. Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.

2.3 STANDING AND RUNNING TRIM, AND RAILS:

- A. Quality Standard: Comply with AWI Section 300.
- B. Rout or groove backs of flat trim members, kerf backs of other wide flat members, except for members with ends exposed in finished work.
- C. Assemble casings in plant except where limitations of access to place of installation require field assembly.

2.4 Interior Woodwork for opaque (painted) finish.

- A. Included by not limited to the following:
 - 1. Miscellaneous Trim.
 - 2. Window Stools and Aprons.
- B. Conform to AWI Standards Section 300.
- C. Moisture content 15% or less.
- D. Contractor provide at choice one of the following species:
 - 1. Species - FAS Maple Paint Grade.
 - 2. Species - FAS Poplar Paint Grade.
 - 3. Plywood - Birch Veneer.

2.5 CLOSET AND UTILITY SHELVING:

- A. Quality Standard: Comply with AWI Section 600.
- B. Shelving for Opaque Finish: Comply with the following requirements:
 - 1. Grade: Economy.
 - 2. Shelving Material: Lumber, any closed-grain hardwood listed in referenced woodworking standard or Birch faced veneer core plywood with edging tape.

2.6 CLOSET HARDWARE:

- A. Clothes Poles and Supports
- B. Provide steel pipe or tubing cut to lengths required, with standard wrought steel flanges (one with open top).
 - 1. Size: 1.315" O.D., 0.1333" wall thickness (1").
 - 2. Finish: Galvanized.

2.7 ARCHITECTURAL CABINETS, WOOD:

- A. Quality Standard: Comply with AWI Section 400 and its Division 400A "Wood Cabinets".
- B. Wood Cabinets for Transparent Finish: Comply with the following requirements:
 - 1. Grade: Custom.
 - 2. Type of Cabinet Construction: As indicated.
 - a. Wood Species for Exposed Surfaces: Red Oak plain sawn.
 - 3. Grain Matching: Run and match grain vertically for doors and fixed panels. Horizontally for drawers fronts.
 - a. Wood Species for Semi-Exposed Surfaces: Match species and cut indicated for exposed surfaces.

2.8 CABINET HARDWARE AND ACCESSORY MATERIALS:

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets for the following hardware types:
 - 1. ADJUSTABLE SHELF STANDARDS
 - a. Anti – Tip White for ¾" and 1" thick shelves.
 - 2. DOOR AND DRAWER PULLS
 - a. Stanley 4484 or equal US26D

3. DOOR HINGES
 - a. Hafele 3D, 170 Degree Swing No. 335.06.606 with catch and mounting plate.
4. DRAWER GUIDES
 - a. K and V No. 1284 Length to accommodate cabinets. (White)
5. GROMMETS
 - a. Doug Mockett, color & Sill as selected.
6. LOCKS
 - a. CCL Security Products – 02063 Drawer Lock
 - 1) Finish: 7S Brass
 - 2) Finish: US4 Satin Bright Brass
 - b. Menars - U9945
 - 1) Finish: Stainless Steel

2.9 ARCHITECTURAL CABINET TOPS:

- A. Quality Standard: Comply with AWI Section 400 and its Division 400C.
- B. Type of Top: High Pressure Decorative Laminate:
 1. Grade: Premium.
 2. Laminate Cladding for Horizontal Surface: High pressure decorative laminate complying NEMA LD 3 and as follows:
 3. Thickness: GP-50 (.050 inch).
 4. Colors, Patterns, and Finishes: As indicated in Section 09999 or, if not otherwise indicated, as selected from laminated manufacturer's standard products in the following categories:
 - a. Solid colors.
 - b. Wood grains.
 - c. Patterns.
 5. Edge Treatment: Same as laminate cladding on horizontal surfaces or as otherwise indicated.
 6. Vertical Surfaces other than top edges GP-28 (0.28" thickness).

2.10 FASTENERS AND ANCHORS:

- A. Screws: Select material, type, size and finish required for each use. Comply with FS FF-S0111 for applicable requirements.
- B. Nails: Select material, type, size and finish required for each use. Comply with FS FF-N-105 for applicable requirements.

- C. Provide stainless steel or aluminum nails for exposed exterior woodwork which is to receive transparent finish (if any). Provide any type of non-corrosive nail for other exterior woodwork.
- D. Anchors: Select material, type, size and finish required by each substrate for secure Anchorage. Provide non-ferrous metal or hot- dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion-resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork Anchorage.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
- B. Deliver concrete inserts and similar anchoring devices to be built into substrates, well in advance of time substrates are to be built.
- C. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION:

- A. Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.
- B. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.
- C. Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.
- D. Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners and comply with referenced Quality Standards for Joinery.
- E. Cabinets: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinet with transparent finish.
- F. Tops: Anchor securely to base units and other support systems as indicated.

- G. Wood Storage Shelving: Complete the assembly of units and install in the areas indicated, including hardware and accessories as indicated.

3.3 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION:

- A. Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate and adjust hardware.
- C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up finishes to restore damaged or soiled areas.
- D. Refer to the Division-9 sections for final finishing of installed architectural woodwork.
- E. Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures architectural woodwork being without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 07 21 00 - INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 specification sections apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of insulation work is shown on drawings and indicated by provisions of this section.
- B. Applications of insulation specified in this section include the following:
 - 1. Board-type building insulation.
 - 2. Blanket-type building insulation.

1.3 QUALITY ASSURANCE:

- A. Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by r-values they represent the rate of heat flow through a homogeneous material exactly 1" thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage, and protection during installation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Manufacturers of Extruded Polystyrene Board Insulation:
 - a. Amoco Foam Products Co.
 - b. Dow Chemical U.S.A.
 - c. Minnesota Diversified Products, Inc.
 - d. UC Industries.
 - 2. Manufacturers of Glass Fiber Insulation:
 - a. CertainTeed Corp.
 - b. Knauf Fiber Glass GmbH
 - c. Manville Corp.
 - d. Owens-Corning Fiberglas Corp.

2.2 INSULATING MATERIALS:

- A. General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.
 - 1. Preformed Units: Size to fit applications indicated, selected from manufacturer's standard thicknesses, widths and lengths.
- B. Extruded Polystyrene Board Insulation: Rigid, cellular thermal insulation with closed-cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type indicated; with 5-year aged r-values of 5.4 and 5 at 40 and 75 degrees F(4.4 and 23.9 degrees C), respectively; and as follows:
 - 1. Type IV 1.6 lb./cu. ft. min. density, unless otherwise indicated.
- C. Un-faced Glass Fiber Blanket/Batt Insulation: Thermal insulation produced by combining mineral fibers manufactured from glass with thermosetting resins to comply with ASTM C 665 for Type I.

2.3 AUXILIARY INSULATING MATERIALS:

- A. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer and complying with requirements for fire performance characteristics.
- B. Mechanical Anchors: Type and size as recommended by insulation manufacturer for type of application and condition of substrate.

PART 3 - EXECUTION

3.1 INSPECTION AND PREPARATION:

- A. Require Installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain Installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.
- B. Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.

3.2 INSTALLATION, GENERAL:

- A. Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.
- B. Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.
- C. Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

3.3 INSTALLATION OF GENERAL BUILDING INSULATION:

- A. Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

3.4 PROTECTION:

- A. General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by non-delayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION

SECTION 07 26 16 - UNDER-SLAB VAPOR BARRIER

PART 1 – GENERAL

1.1 SUMMARY

A. Products supplied under this section:

1. Vapor barrier, seam tape, and mastic for installation under concrete slabs.

B. Related sections:

1. Section 03 30 00 Cast in Place Concrete

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):

1. ASTM E 1745-09 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill Under Concrete Slabs.
2. ASTM E 154-99 (2005) Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls, or as Ground Cover.
3. ASTM E 96-05 Standard Test Methods for Water Vapor Transmission of Materials.
4. ASTM F 1249-06 Standard Test Method for Water Vapor Transmission Rate Through Plastic Film and Sheeting Using a Modulated Infrared Sensor.
5. ASTM E 1643-09 Selection, Design, Installation, and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.

B. American Concrete Institute (ACI):

1. ACI 302.2R-06 Guide for Concrete Slabs that Receive Moisture-Sensitive Flooring Materials.

1.3 SUBMITTALS

A. Quality control/assurance:

1. Summary of test results as per paragraph 8.3 of ASTM E 1745.
2. Manufacturer's samples, literature.
3. Manufacturer's installation instructions for placement, seaming and penetration repair instructions.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Vapor barrier must have all of the following qualities:

1. Permeance of less than 0.01 Perms [grains/(ft² · hr · inHg)] as tested in accordance with ASTM E 1745 Section 7.
2. Other performance criteria:
 - a. Strength: ASTM E 1745 Class A.
 - b. Thickness: 15 mils minimum

B. Vapor barrier products:

1. Vapor barriers shall be equal to Stego Wrap Vapor Barrier or prior approved equal.
2. Basis of Design: Stego Wrap Vapor Barrier (15-mil) by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

2.2 ACCESSORIES

A. Seam tape:

1. Stego Tape by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

B. Vapor-proofing mastic:

1. Stego Mastic by Stego Industries LLC, (877) 464-7834 www.stegoindustries.com.

PART 3 – EXECUTION

3.1 PREPARATION

- A. Ensure that base material is approved by Architect and is level and compact material as specified elsewhere.

3.2 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643.
1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete placement.
 2. Lap vapor barrier over footings and/or seal to foundation walls.
 3. Overlap joints 6 inches and seal with manufacturer's tape.
 4. Seal all penetrations (including pipes) per manufacturer's instructions.
 5. No penetration of the vapor barrier is allowed except for reinforcing steel and permanent utilities.
 6. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all sides with tape.

END OF SECTION

SECTION 07 41 13 – METAL ROOF PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section

1.2 DESCRIPTION OF WORK:

- A. The extent of sheet metal work is indicated on the drawings and by provisions of this section.
- B. The types of work specified in this section include the following:
 - 1. Sheet metal roofing.
 - 2. Miscellaneous sheet metal accessories.
- C. Integral masonry flashings are specified as masonry work in sections of Division 4.

1.3 QUALITY ASSURANCE:

- A. Manufacturer/Source: Provide metal roof panel assembly and accessories from a single manufacturer providing fixed-base roll forming, and accredited under IAS AC 472 Part B.
- B. Installer Qualifications: Experienced Installer certified by metal panel manufacturer with minimum of five years' experience with successfully completed projects of a similar nature and scope.
 - 1. Installer's Field Supervisor: Experienced mechanic certified by metal panel manufacturer supervising work on site whenever work is underway.

1.4 SUBMITTALS:

- A. Product Data: Manufacturer's data sheets for specified products.
- B. Shop Drawings: Show layouts of metal panels. Include details of each condition of installation, panel profiles, and attachment to building. Provide details at a minimum scale 1-1/2-inch per foot showing edge conditions, joints, fastener and sealant placement, flashings, openings, penetrations, roof accessories, lightning arresting equipment, and special details. Make distinctions between factory and field assembled work.
 - 1. Indicate points of supporting structure that must coordinate with metal panel system installation.
 - 2. Include data indicating compliance with performance requirements.

3. Include structural data indicating compliance with requirements of authorities having jurisdiction.
- C. Samples for Initial Selection: For each exposed product specified including sealants. Provide representative color charts of manufacturer's full range of colors.

1.5 DELIVERY, STORAGE, AND HANDLING:

- A. Protect products of metal panel system during shipping, handling, and storage to prevent staining, denting, deterioration of components or other damage. Protect panels and trim bundles during shipping.
1. Deliver, unload, store, and erect metal panel system and accessory items without misshaping panels or exposing panels to surface damage from weather or construction operations.
 2. Store in accordance with Manufacturer's written instructions. Provide wood collars for stacking and handling in the field.

1.6 WARRANTY:

- A. Special Weathertightness Warranty: On manufacturer's standard form, in which manufacturer agrees to repair or replace metal panel assemblies that fail to remain weathertight, including leaks, without monetary limitation, within 20 years from date of Substantial Completion.
- B. Special Panel Finish Warranty: On Manufacturer's standard form, in which Manufacturer agrees to repair or replace metal panels that evidence deterioration of factory-applied finish within 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Basis of Design Manufacturer: MBCI Metal Roof and Wall Systems, Division of NCI Group, Inc.; Houston TX. Tel: (877) 713-6224; Email: info@mbci.com; Web: www.mbc.com.
1. Provide basis of design product, or comparable equal product.

2.2 PERFORMANCE REQUIREMENTS

- A. General: Provide metal roof panel system meeting performance requirements as determined by application of specified tests by a qualified testing facility on manufacturer's standard assemblies.

- B. Structural Performance: Provide metal panel assemblies capable of withstanding the effects of indicated loads and stresses within limits and under conditions indicated on the drawings.
- C. Wind Uplift Resistance: Comply with UL 580 for wind-uplift class UL-90.
- D. Thermal Movements: Allow for thermal movements from variations in both ambient and internal temperatures. Accommodate movement of support structure caused by thermal expansion and contraction. Allow for deflection and design for thermal stresses caused by temperature differences from one side of the panel to the other.
- E. Self-Adhering, High-Temperature Underlayment: Cold-applied sheet underlayment minimum 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer for substrate.
 - 1. Products equal to W.R. Grace Ice and Water Shield HT over entire roof area.

2.3 METAL ROOF PANELS:

- A. Mechanically-seamed, Concealed Fastener, Metal Roof Panels: Structural metal roof panel consisting of formed metal sheet with vertical ribs at panel edges, installed by lapping and mechanically interlocking edges of adjacent panels, and attaching panels to supports using concealed clips and fasteners in a weathertight installation.
 - 1. Basis of Design: MBCI, Battenlok HS www.mbc.com/lokseam.html.
 - 2. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50, Coating Class AZ50 (Grade 340, Coating Class AZM150), prepainted by the coil-coating process per ASTM A 755/A 755M.
 - a. Nominal Coated Thickness: 24 gage.
 - b. Panel Surface: Smooth with striations in pan.
 - c. Exterior Finish: Fluoropolymer two-coat system.
 - d. Color: As selected by Architect from manufacturer's standard colors.
 - 3. Panel Width: 16 inches (406 mm).
 - 4. Panel Seam Height: 2 inch (50.8mm).
 - 5. Joint Type: Mechanically seamed.

2.4 METAL ROOF PANEL ACCESSORIES:

- A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in profiles as indicated. Provide required fasteners, closure strips, thermal spacers, splice plates, support plates, and sealants as indicated in manufacturer's written instructions.
- B. Flashing and Trim: Match material, thickness, and finish of metal panel face sheet.

- C. Panel Clips: Two-piece Floating: ASTM C 645, with ASTM A 653/A, G90 (Z180) hot-dip galvanized zinc coating, configured for concealment in panel joints, and identical to clips utilized in tests demonstrating compliance with performance requirements.
- D. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof panel manufacturer. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of factory-applied coating.
- E. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
 - 1. Factory-Applied Seam Sealant: Manufacturer's standard hot-melt type.
 - 2. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
 - 3. Concealed Joint Sealant: Non-curing butyl, AAMA 809.2.

2.5 FABRICATION:

- A. General: Provide factory fabricated and finished metal panels and accessories meeting performance requirements, indicated profiles, and structural requirements.
- B. Fabricate metal panel joints configured to accept factory-applied sealant providing weathertight seal and preventing metal-to-metal contact and minimizing noise resulting from thermal movement.
- C. Form panels in continuous lengths for full length of detailed runs, except where otherwise indicated on approved shop drawings.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's written instructions, approved shop drawings, and project drawings. Form from materials matching metal panel substrate and finish.

2.6 FINISHES:

- A. Finishes, General: Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
- B. Fluoropolymer Two-Coat System: 0.2 – 0.3 mil primer with 0.7 - 0.8 mil 70 percent PVDF fluoropolymer color coat, AAMA 621.
 - 1. Basis of Design: MBCI, Signature 300.
- C. Interior Finish: 0.5 mil total dry film thickness consisting of primer coat and wash coat of manufacturer's standard light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 EXAMINATION:

- A. Examine metal panel system substrate and supports with Installer present. Inspect for erection tolerances and other conditions that would adversely affect installation of metal panel installation.
 - 1. Inspect metal panel support substrate to determine if support components are installed as indicated on approved shop drawings. Confirm presence of acceptable supports at recommended spacing to match installation requirements of metal panels.
 - 2. Panel Support Tolerances: Confirm that panel supports are within tolerances acceptable to metal panel system manufacturer but not greater than the following:
 - a. 1/4 inch (6 mm) in 20 foot (6.1 m) in any direction.

3.2 PREPARATION:

- A. Miscellaneous Supports: Install subframing, girts, furring, and other miscellaneous panel support members according to ASTM C 754 and manufacturer's written instructions.
- B. Self-Adhering Sheet Underlayment: Apply in accordance with underlayment manufacturer's written instructions; apply primer if required. Apply at locations indicated below. Roll laps with roller.
 - 1. Apply over the entire roof surface.
- C. Flashings: Provide flashings as required to complete metal roof panel system. Install in accordance with "Sheet Metal Flashing and Trim" and approved shop drawings.

3.3 METAL PANEL INSTALLATION:

- A. Snap-Joint-Seamed, Standing Seam Metal Roof Panels: Install weathertight metal panel system in accordance with manufacturer's written instructions, approved shop drawings, and project drawings. Install metal roof panels in orientation, sizes, and locations indicated, free of waves, warps, buckles, fastening stresses, and distortions. Anchor panels and other components securely in place. Provide for thermal and structural movement.
- B. Attach panels to supports using clips, screws, fasteners, and sealants recommended by manufacturer and indicated on approved shop drawings.
 - 1. Fasten metal panels to supports with concealed clips at each location indicated on approved shop drawings, with spacing and fasteners recommended by manufacturer.
 - 2. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
 - 3. Provide weatherproof jacks for pipe and conduit penetrating metal panels of types recommended by manufacturer.

4. Dissimilar Materials: Where elements of metal panel system will come into contact with dissimilar materials, treat faces and edges in contact with dissimilar materials as recommended by manufacturer.

3.4 ACCESSORY INSTALLATION:

- A. General: Install metal panel trim, flashing, and accessories using recommended fasteners and joint sealers, with positive anchorage to building, and with weather tight mounting. Provide for thermal expansion. Coordinate installation with flashings and other components.
 1. Install components required for a complete metal panel assembly, including trim, copings, flashings, sealants, closure strips, and similar items.
 2. Comply with details of assemblies utilized to establish compliance with performance requirements and manufacturer's written installation instructions.
 3. Provide concealed fasteners except where noted on approved shop drawings.
 4. Set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently weather resistant.
- B. Joint Sealers: Install joint sealers where indicated and where required for weathertight performance of metal panel assemblies, in accordance with manufacturer's written instructions.
 1. Prepare joints and apply sealants per requirements of Division 07 Section "Joint Sealants."

3.5 CLEANING AND PROTECTION:

- A. Remove temporary protective films immediately in accordance with metal roof panel manufacturer's instructions. Clean finished surfaces as recommended by metal roof panel manufacturer.
- B. Replace damaged panels and accessories that cannot be repaired to the satisfaction of the Architect.

END OF SECTION

SECTION 07 42 13 – FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Section Includes:
 - 1. Exposed-fastener, lap-seam metal wall panels.
 - 2. Concealed-fastener, lap-seam metal wall panels.

1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.
 - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.
 - 2. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.
 - 3. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches
- B. Samples for Initial Selection: For each exposed product specified, including sealants, provide representative color charts of manufacturer's full range of colors.
 - 1. Include Samples of trim and accessories involving color selection.
- C. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:
 - 1. Metal Panels: 12 inches (305 mm) long by actual panel width. Provide color chip verifying color selection.

1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For Installer.

- B. Product Test Reports: For each product, indicating compliance of products with requirements.
- C. Sample Warranties: For standard warranties.

1.5 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For metal panels to include in maintenance manuals.
- B. Manufacturer's Warranty: Executed copy of manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum five years of experience in manufacture of similar products in successful use in similar applications.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver components, metal panels, and other manufactured items so as not to be damaged or deformed. Package metal panels for protection during transportation and handling.
- B. Unload, store, and erect metal panels in a manner to prevent bending, warping, twisting, and surface damage.
- C. Stack metal panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering. Store metal panels to ensure dryness, with positive slope for drainage of water. Do not store metal panels in contact with other materials that might cause staining, denting, or other surface damage.
- D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

- A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed in accordance with manufacturers' written instructions and warranty requirements.

1.9 COORDINATION

- A. Coordinate metal panel installation with rain drainage work, flashing, trim, construction of soffits, and other adjoining work to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing in accordance with ASTM E1592:
 - 1. Wind Loads: As indicated on Drawings.
- B. Air Infiltration: Air leakage of not more than listed below when tested in accordance with ASTM E283:
 - 1. 0.006 cfm/sq. ft (0.03 L/s per sq. m) at 6.24 lbf/sq. ft (300 Pa).
 - 2. 0.0067 cfm/sq. ft (0.033 L/s per sq. m) at 1.57 lbf/sq. ft (75 Pa).
 - 3. 0.000 cfm/sq. ft (0.000 L/s per sq. m) at 6.24 lbf/sq. ft (300 Pa).
 - 4. 0.0003 cfm/sq. ft (0.015 L/s per sq. m) at 6.24 lbf/sq. ft (300 Pa).
 - 5. 0.0003 cfm/sq. ft (0.015 L/s per sq. m) at 12.00 lbf/sq. ft (575 Pa).
 - 6. 0.000 cfm/sq. ft (0.000 L/s per sq. m) at 6.24 lbf/sq. ft (300 Pa).
- C. Water Penetration under Static Pressure: No water penetration when tested in accordance with ASTM standard below at the following test-pressure difference:
 - 1. Test-Pressure Difference: 6.24 lbf/sq. ft. (300 Pa) (per ASTM E331).
 - 2. Test-Pressure Difference: 13.24 lbf/sq. ft. (635 Pa) (per ASTM E331).
 - 3. Test-Pressure Difference: 20.00 lbf/sq. ft. (958 Pa) (per ASTM E331).
 - 4. Test-Pressure Difference: 20.00 lbf/sq. ft. (958 Pa) (per ASTM E331).
 - 5. Test-Pressure Difference: 13.24 lbf/sq. ft. (635 Pa) (per ASTM E331).
- D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
 - 1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces
- E. Fire-Resistance Ratings: Comply with ASTM E119; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Indicate design designations from UL's "Fire Resistance Directory" or from the listings of another qualified testing agency.

2.2 EXPOSED-FASTENER, LAP-SEAM METAL WALL PANELS

- A. General: Provide factory-formed metal panels designed to be field assembled by lapping side edges of adjacent panels and mechanically attaching panels to supports using exposed fasteners inside laps. Include accessories required for weathertight installation.

- B. Source Limitations: Obtain metal roof panel assembly and accessories from a single source with resources to provide fixed base roll forming, and accredited under IAS AC 472 Part B.
- C. Corrugated-Profile, Exposed-Fastener Metal Wall Panels **NOTED IN DRAWINGS AS PRE-FINISHED CORRUGATED METAL PANEL**: Formed with alternating curved ribs spaced at 2.67 inches (68 mm) o.c. across width of panel.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; Corrugated Panel (OMSMBCI) or comparable product by one of the following:
 - a. AEP Span; A BlueScope Steel Company.
 - b. CENTRIA Architectural Systems.
 - c. Exceptional Metals.
 - d. McElroy Metal, Inc.
 - e. Metl-Span.
 - 2. Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation; by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 0.0172 inch (0.44 mm).
 - b. Surface: Smooth finish.
 - c. Exterior Finish: Two-coat fluoropolymer
 - d. Color: As selected by Architect from manufacturer's full range
 - 3. Rib Spacing: 2.625 inches (68 mm)
 - 4. Panel Coverage: 24 inches (610 mm)
 - 5. Panel Height: **0.5 inch (13 mm)**

2.3 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

- A. General: Provide factory-formed metal panels designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
- B. Source Limitations: Obtain metal roof panel assembly and accessories from a single source with resources to provide fixed base roll forming, and accredited under IAS AC 472 Part B.
- C. Flush-Profile, Concealed-Fastener Metal Wall and Soffit Panels **NOTED IN DRAWINGS AS PRE-FINISHED SMOOTH FACED VERTICAL METAL PANEL**: Formed with vertical panel edges and a flat pan between panel edges; with flush joint between panels.
 - 1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; Designer Series Flat (FMSMBCI) or comparable product by one of the following:

- a. CENTRIA Architectural Systems.
 - b. Exceptional Metals.
 - c. MetlSpan.
2. Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A792/A792M, Class AZ50 (Class AZM150) coating designation. Pre-painted by the coil-coating process to comply with ASTM A755/A755M.
 - a. Nominal Thickness: 0.0272 inch (0.69 mm).
 - b. Surface: Smooth finish.
 - c. Exterior Finish: Two-coat fluoropolymer
 - d. Color: As selected by Architect from manufacturer's full range
3. Panel Coverage: 12 inches (305 mm)
4. Panel Height: 1.75 inch (44 mm)

2.4 MISCELLANEOUS MATERIALS

- A. Miscellaneous Metal Sub-framing and Furring: ASTM C645, cold-formed, metallic-coated steel sheet, ASTM A653/A653M, G90 (Z275 hot-dip galvanized) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.
- B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
 1. Closures: Provide closures at eaves and rakes, fabricated of same metal as metal panels.
 2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
 3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or pre-molded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.
- C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, bases, drips, sills, jambs, corners, endwalls, framed openings, rakes, fasciae, parapet caps, soffits, reveals, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.
- D. Panel Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by roof manufacturer designed to withstand design loads. Where exposed fasteners cannot be avoided, supply fasteners with EPDM or neoprene gaskets, with heads matching color of metal panels by means of plastic factory-applied coatings.
- E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape.
2. Joint Sealant: ASTM C920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.
 - a. Concealed Joint Sealants: Non-curing butyl, AAMA 809.2.
 - b. Exposed Joint Sealants: Urethane, single component, ASTM C920.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.5 FABRICATION

- A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.
- B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.
- C. Fabricate metal panel joints with factory-installed sealant or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.
- D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
 1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
 2. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
 3. Conceal fasteners and expansion provisions where possible.
 4. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
 - a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal wall panel manufacturer for application but not less than thickness of metal being secured.

2.6 FINISHES

- A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- C. Steel Panels and Accessories:
 - 1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
 - 2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of the Work.
 - 1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
 - 2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
 - a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.
- B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages in accordance with ASTM C754 and metal panel manufacturer's written recommendations.

3.3 METAL PANEL INSTALLATION

- A. General: Install metal panels in accordance with manufacturer's written instructions in orientation, sizes, and locations indicated. Install panels perpendicular to supports unless otherwise indicated. Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.
 - 1. Shim or otherwise plumb substrates receiving metal panels.
 - 2. Flash and seal metal panels at perimeter of all openings. Fasten with self-tapping screws. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
 - 3. Install screw fasteners in predrilled holes.
 - 4. Locate and space fastenings in uniform vertical and horizontal alignment.
 - 5. Install flashing and trim as metal panel work proceeds.
 - 6. Locate panel splices over, but not attached to, structural supports. Stagger panel splices and end laps to avoid a four-panel lap splice condition.
 - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws. Fasten flashings and trim around openings and similar elements with self-tapping screws.
 - 8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.
- B. Fasteners:
 - 1. Steel Panels: Use stainless-steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.
- C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.
- D. Lap-Seam Metal Panels: Fasten metal panels to supports with fasteners at each lapped joint at location and spacing recommended by manufacturer.
 - 1. Lap ribbed or fluted sheets one full rib. Apply panels and associated items true to line for neat and weathertight enclosure.
 - 2. Provide metal-backed washers under heads of exposed fasteners bearing on weather side of metal panels.
 - 3. Locate and space exposed fasteners in uniform vertical and horizontal alignment. Use proper tools to obtain controlled uniform compression for positive seal without rupture of washer.
 - 4. Install screw fasteners with power tools having controlled torque adjusted to compress washer tightly without damage to washer, screw threads, or panels. Install screws in predrilled holes.
 - 5. Flash and seal panels with weather closures at perimeter of all openings.

E. Watertight Installation:

1. Apply a continuous ribbon of sealant or tape to seal lapped joints of metal panels, using sealant or tape as recommended by manufacturer on side laps of nesting-type panels; and elsewhere as needed to make panels watertight.
2. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
3. At panel splices, nest panels with minimum 4-inch (102-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

F. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

G. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible and set units true to line and level as indicated. Install work with laps, joints, and seams that are permanently watertight.

1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: a qualified testing agency to perform tests and inspections.
- B. Water-Spray Test: After installation, test area of assembly water penetration in accordance with AAMA 501.2.
- C. Manufacturer's Field Service: Engage a factory-authorized service representative to test and inspect completed metal wall panel installation, including accessories.
- D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.
- E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional work with specified requirements.
- F. Prepare test and inspection reports.

3.5 CLEANING AND PROTECTION

- A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.
- B. After metal panel installation, clear weep holes and drainage channels of obstructions, dirt, and sealant.
- C. Replace metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION

SECTION 07 54 23 - FULLY ADHERED TPO ROOFING

PART 1 - GENERAL

1.1 GENERAL NOTES

- A. Preceding job start up, contractor shall decide to his satisfaction that all specifications contained herein are workable.
- B. Contractor will perform all work by competent, trained, and properly equipped personnel in strict accordance with good roofing practices and applicable industry standards.
- C. Contractor will observe all published safety prevention policies and practices relating to application of roofing system and related work. All federal, state, and local codes shall be followed.
- D. Contractor will follow application, safety, etc. information as published in the most current edition of the Firestone ULTRAPLY TPO Roofing System Technical Specification.

1.2 WORK INCLUDED

- A. Work under this section covers the installation of a new fully adhered TPO roofing system. In addition, contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work.

1.3 SECTION INCLUDES

- 1. Substrate preparation.
- 2. Wood nailer installation.
- 3. Membrane installation.
- 4. Membrane flashing installation.

1.4 RELATED SECTIONS

- 1. Section 061000 - Rough Carpentry.
- 2. Section 076200 - Sheet Metal, Flashing and Trim.
- 3. Section 079200 - Joint Sealers.

1.5 DEFINITIONS

- A. American Society for Testing and Materials (ASTM): 1916 Race St., Philadelphia, PA 19103.

1.6 SYSTEM DESCRIPTION

- A. Reinforced TERMOPLASTIC OLEFIN sheet roofing, adhered over acceptable substrate

1.7 SUBMITTALS

- A. Product Data:
- B. Submit copies of the following:
 - 1. Firestone Technical Information Sheets (TIS) for primary products used including roof membrane, splice tape, fasteners, and batten strip.
 - 2. Samples:
 - a. Submit samples of roof membrane.
 - 3. Application Information:
 - 4. Submit copy of Firestone application specification.
 - 5. Submit copy of job related Firestone details including flashings, base tie-ins, roof edges, terminations, expansion joints, penetrations, drains, and any other relevant details.
 - 6. Letter attesting that Firestone currently licenses roofing contractor.
 - 7. Warranty: Submit warranty sample.
 - 8. Pre Installation Notice:
 - a. Submit copy of Firestone Pre Installation Notice (PIN) that has been accepted and approved by Firestone.
 - 9. Drawings:

1.8 QUALIFICATIONS

- A. Manufacturer:
 - 1. Company providing a no dollar limit, single source roof system warranty that is backed by corporate assets in excess of one billion dollars.
 - 2. System supplier must have ISO 9002 certification.
 - 3. Manufacturer must be able to provide the project with the Isocyanurate insulation that is produces in their facilities.

B. Applicator:

1. Shall be a Firestone Red Shield Licensed Contractor.
2. Shall have at least five years experience in installing heat welded system.

1.9 REGULATORY REQUIREMENTS

- A. Conform to applicable local building code requirements.
- B. Underwriters Laboratories, Inc. (UL): Class A Fire Hazard Classification.
- C. Factory Mutual Corporation (FM): Roof Assembly Classification, FM Construction Bulletin 1-28, meeting minimum requirements of FM 1-90, or equivalent testing by a third party testing agency.
- D. All edge securement systems, except gutters, installed and designed in accordance with ANSI/SPRI ES-1.

1.10 QUALITY INSPECTION/OBSERVATION

- A. Inspection by Manufacturer: Provide a final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer.
 1. Technical representative shall not perform any sales functions.
 2. Contractor shall complete any necessary repairs required for issuance of warranty.

1.11 PRE-INSTALLATION CONFERENCE

- A. Before start of roofing work, attend a conference to discuss the proper installation of materials. Attendees shall include all parties directly affecting work of this Section.

1.12 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact and legible.
- B. Store all materials clear of ground and moisture with weather protective covering.
- C. Keep all combustible materials away from ALL ignition sources.

1.13 ENVIRONMENTAL REQUIREMENTS

- A. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice.

- B. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult Firestone Technical Specifications on cold weather application.

1.14 WARRANTY

- A. Red Shield no dollar limit, non-prorated warranty from the manufacturer of the roofing membrane as follows with no exceptions.
 - 1. Warranty coverage: 20-years.
 - 2. Warranty shall be transferable and transfer cannot be at manufacturer's discretion nor require an inspection but shall be transferable upon notification in writing to manufacturer and payment of the standard transfer fee.
 - 3. Warranty coverage to include: roofing membranes, insulation, fasteners, clips, adhesives, accessories, edge metal, system components and architectural metal roofing panels.
 - 4. The warranty shall cover metal finishes, materials, labor and correct and incorrect workmanship on system installation, seaming and/or flashing. Manufacturer cannot exclude unapproved details or workmanship.
 - 5. All roofing systems tie-ins, flashing and terminations must be covered under the Warranty.
 - 6. Warranty will begin upon completion of the project and warranty application procedures and cannot defer warranty coverage to installing contractor for any period of warranty coverage.
- B. Roof system must be inspected at completion of installation. Manufacturer cannot deny coverage for any items not installed in compliance with manufacturer's application requirements and standards after warranty is issued or as a part of terms and conditions of the warranty. The manufacturer's technical field representative/inspector will conduct final inspections. The manufacturer field representative must be a non-sales employee of the roofing system manufacturer who is responsible for field quality control and contractor training.
- C. Roof system manufacturer must be a separate legal entity from the installer of the roofing system.

PART 2 - PRODUCTS

2.1 NAILERS FOR FLANGES AND ROOF ACCESSORIES

- A. Description: Structural Grade No. 2 or better Southern Pine, Douglas Fir or Exterior Grade plywood. All wood shall be pressure treated for rot resistance.
 - 1. Nailer width: Minimum 3-1/2 in. (nominal) wide or as wide as the nailing flange of each roof accessory.

2. Nailer thickness: Thickness of roof insulation.

B. Reference Standards:

1. Southern Pines: PS 20; SPIB Grading Rules.
2. Western Woods: PS 20; WWPA Grading Rules
3. Plywood: PS 1; APA Grade Stamps.
4. Pressure preservative treatment: AWPB LP2.

2.2 MANUFACTURERS - MEMBRANE MATERIALS

- A. Basis of design Firestone fully adhered single-ply membrane system: Reinforced ULTRAPLY TPO sheet completely adhered to an acceptable substrate with Firestone Ultraply bonding. Substrate must be attached to the deck in an appropriate manner as outlined in Firestone's TPO Design Guide.
- B. Approved Equals are acceptable.

2.3 ULTRAPLY TPO SHEET ROOFING AND FLASHING MEMBRANE

- A. Description: Reinforced, ULTRAPLY TPO synthetic single-ply membrane composed of Thermoplastic Polyolefin polymer, and Ethylene Propylene Rubber.
- B. Membrane Type: .060 Reinforced TPO

Testing	Minimum Values	Typical values (SI Units)
Thickness, min, mm (in.)		
Sheet-overall	1.0 (0.039)	0.060± 10%
Coating over scrim	0.015"	0.021"± 10%
Tensile strength, min, MPa (psi)	NA	
Breaking strength, min, kN (lbf)	220 lbf	390 lbf
Elongation, ultimate, min, %	NA	
Elongation at break, min, %	15%	25%
Tensile set, max, %	NA	
Tear strength, min, kN/m (lbf/in.)	NA	
Tearing strength, min, N (lbf)	55 lbf	120 lbf
Brittleness point, max, °C (°F)	-40	Pass
Ozone resistance, no cracks	Pass	Pass
Properties after heat aging: (retained values)		
Tensile strength, % min	NA	
Breaking strength, % min	90%	90%
Elongation, ultimate, % min	NA	
Elongation at break, % min	90%A	90%
Tear strength, % min	NA	
Tearing strength, % min	60% min	>60%

Weight Change (Mass), max %	±1% max	<1%
Linear dimensional change, max, %	±1% max	<1%
Water absorption, max, mass %	±3%	<3%
Factory seam strength, min, kN/m (lbf/in.)	75% of	75% of
Weather resistance:	Sheet strength	Sheet strength
Visual inspection	Pass	Pass
Tensile strength, % min	NA	
Breaking strength, % min	90%	90%
Elongation, Ultimate, % min	NA	
Elongation at break, min, %	90%A	90% ^A
PRFSE, min, %	N/A	

C. Reference Standards:

1. D 412 Test Methods for Vulcanized Rubber and Thermo-plastic Rubbers and Thermoplastic Elastomers--Tension
2. D 471 Test Method for Rubber Property--Effect of Liquids
3. D 573 Test Method for rubber--Deterioration in an Air Oven
4. D 624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers
5. D 751 Test Methods for Coated Fabrics
6. D 1149 Test Method for Rubber Deterioration--Surface Ozone Cracking in a Chamber
7. D 1204 Test Method for linear Dimensional Changes of Non-rigid thermoplastic Sheetting or Film at Elevated Temperature
8. D 1822 Test Method for Tensile-Impact Energy To Break Plastics and Electrical Insulating Materials
9. D 2137 Test Methods for Rubber Property--Brittleness Point of Flexible polymers and Coated Fabrics
10. D 5538 Practice for Thermoplastic Elastomers Terminology and Abbreviations
11. G 155 Practice for Operating Light Exposure Apparatus (Xenon-arc Type) With and Without Water for Exposure of non-metallic Materials
12. G 154 Practice for Operating Light and Water-Exposure Apparatus (Fluorescent UV Condensation Type) for Exposure of Nonmetallic Materials

2.4 ROOF INSULATION COMPONENTS

- A. Description: Roof insulation consisting of closed cell polyisocyanurate foam core and a perforated black glass reinforced mat laminated to the face.
 - 1. Thickness: 2 layers of polyiso to equal R Value of 26
 - 2. Nominal Size: 48 in. x 96 in.
- B. Reference Standards:
 - 1. FS HH-I-1972/Gen.
 - 2. FS HH-I-1973/3.
 - 3. ASTM C 209 - Water Absorption.
 - 4. ASTM E 96 - Water Vapor Transmission of Materials.
 - 5. ASTM D 1621 - Compressive Strength.
 - 6. ASTM D 1622 - Density.
 - 7. ASTM D 2126 - Dimensional Stability.
 - 8. ASTM E 84 - Flame Spread
- C. Product/Producer: ISO 95+ Polyisocyanurate Insulation by Firestone.

2.5 INSULATION ATTACHMENT - PLYWOOD OR METAL DECK AREAS:

- A. Description: Heavy- duty threaded fastener with 3-coat waterborne fluorocarbon polymer coating and drill point tip capable of penetrating 20-gauge steel. Fastener shall meet minimum thread size of .260" and 13 threads per inch. Length shall be sufficient to penetrate deck a minimum of ¾" for steel and 1" for wood and concrete. Structural concrete decks must be pre-drilled with a 7/32" carbide drill bit to a depth ½" deeper than the fastener engagement.
 - 1. Reference Standard: SAE 1022, Heat Treated
 - 2. Product/Producer:
 - a. Heavy- Duty (HD) fasteners by Firestone.

2.6 CEMENTITIOUS WOOD FIBER, GYPSUM, OR CONCRETE AREAS:

- A. Description: Firestone branded foam adhesive in ¾" to 1" wide ribbons at a rate of 12" on center in the field, 6" on center at perimeters and 4" on center at corner areas.
 - 1. Product/Producer:
 - a. Firestone ISO Twin Pack or Firestone ISO Stick Insulation adhesive

2.7 ULTRAPLY TPO SHEET ROOFING SYSTEM COMPONENTS

A. Roof Membrane:

1. Description: .060 ULTRAPLY TPO membrane.

B. ULTRAPLY TPO unsupported Flashing:

1. Description: Non-reinforced, TPO, single-ply flashing composed of Thermoplastic Polyolefin polymer, and Ethylene Propylene Rubber
2. Nominal Thickness: .060 inch

C. UltraPly TPO Bonding Adhesive:

1. Description: Butyl-based, formulated for compatibility with the ULTRAPLY TPO membrane and a wide variety of substrate materials, including masonry, wood, insulation facings.
2. Product/Producer:
 - a. ULTRAPLY TPO Bonding Adhesive by Firestone.

D. Pourable Sealer:

1. Description: 2-Part urethane, 2-color reliable mixing.

E. Seam Plates:

1. Description: Steel with barbs and a Galvalume coating.
2. Reference Standard: Corrosion-resistant to meet FM-4470 criteria.

F. Termination Bar:

1. Description: 1.3" x 0.10" thick aluminum bar with integral caulk ledge.

Product/Producer:

- a. Firestone Termination Bar by Firestone.

G. Membrane Fasteners

1. UltraPly TPO Cut Edge Sealant:
2. Polymeric sealant for use where exposed reinforcement is encountered.
3. Product/Producer:
 - a. Firestone UltraPly TPO Cut Edge Sealant by Firestone

H. Firestone UltraPly TPO General Purpose Sealant:

1. Polymeric one part general purpose sealant

2. Product/Producer:
 - a. Firestone UltraPly TPO General Purpose Sealant by Firestone
 - I. Firestone UltraPly TPO Coated Metal:
 1. Galvanized Steel with Manufacturers bonded TPO Coating.
 2. Product/Producer:
 - a. Firestone UltraPly TPO Coated Metal by Firestone.
 - J. Firestone UltraPly TPO Molded Flashing Accessories:
 1. Unreinforced UltraPly TPO membrane Pre-Molded for a variety of flashing details (i.e.; Pipe Boots, Inside-Outside corners, etc.)
 2. Product/Producer:
 - a. Firestone UltraPly TPO Pre-molded Flashing Accessories by Firestone.
- 2.8 METAL FLASHING
- A. Edge Metal and/or Coping:
 1. Description: Provide prefabricated or shop fabricated 24 gauge Steel with Kynar finish in manufacturers standard colors to be selected by owner. Edge metal must meet FM wind uplift requirements and have ANSI/SPRI ES-1 test approval.
 2. Product/Producer: Firestone Edgeward or shop fabricated out of Firestone Una-Clad metal.
- 2.9 MISCELLANEOUS
- A. Roof Walkway Pads:
 1. Description: Non-reinforced ULTRAPLY TPO Walkway Pads, .130" x 30" x 50' with Patterned traffic bearing surface.
 - B. ULTRAPLY TPO Molded inside corners
 - C. ULTRAPLY TPO Molded outside corners
 - D. ULTRAPLY TPO Molded pipe boots
 - E. ULTRAPLY TPO T-Joint Covers

PART 3 - INSTALLATION

3.1 EXAMINATION

- A. Examine roof deck to determine that it is sufficiently rigid to support roofers and their mechanical equipment and that deflection will no strain or rupture roof components or deform deck.
- B. Verify that surfaces and site conditions are ready to receive work. Correct defects in the substrate before commencing with roofing work.
- C. Examine roof substrate to verify that it is properly sloped to drains.
- D. Start work with sealants and adhesives at 60° - 80° F.
- E. Fumes from adhesive solvents may be drawn into the building during installation through rooftop intakes. Appropriate measures must be taken to assure that fumes from adhesive solvents are not drawn into the building through air intakes.
- F. For reroofing applications only: remove existing roof system components as specified.
- G. The surface must be clean, dry, smooth, and free of sharp edges, fins, loose or foreign materials, oil, grease and other materials that may damage the membrane. All roughened surfaces, which could cause damage, shall be properly repaired before proceeding.
- H. All surface voids of the immediate substrate greater than 1/4" wide must be properly filled with an acceptable insulation or suitable fill material.

3.2 PROTECTION OF OTHER WORK

- A. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- B. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings and from damage related to roofing work.
- C. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trade.

3.3 MATERIAL STORAGE AND HANDLING

- A. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- B. Consult container labels and material Safety Data Sheets (MSDS) for specific safety instructions.
- C. Deliver materials to job site in their original containers as labeled by the manufacturer.

3.4 WOOD NAILER LOCATION AND INSTALLATION

- A. Total wood nailer height shall match the total thickness of insulation being used and shall be installed with a 1/8" gap between each length and at each change of direction.
- B. Wood nailers shall be firmly fastened to the deck. Mechanically fasten wood nailers to resist a force of 200 lbs. Per linear foot.

3.5 ROOF INSULATION APPLICATION: GENERAL

- A. Install only as much insulation as can be covered with the completed roofing system before the end of the day's work or before the onset of inclement weather.
- B. Lay roof insulation in courses parallel to roof edges.
- C. Neatly fit insulation to all penetrations, projections, and nailers. Insulation shall be fit tightly, with gaps not greater than 1/4". All gaps greater than 1/4" shall be filled with acceptable insulation. Under no circumstances shall the roofing membrane be left unsupported over a space greater than 1/4". Tapered insulation shall be installed around roof drains so as to provide proper slope for drainage. Miter roof insulation edges at ridge, valley and other similar non-planar conditions.
- D. When installing multiple layers of insulation, all joints between layers shall be staggered at least 6 in.

3.6 INSULATION ATTACHEMENT

- A. Plywood or Metal Deck Area:
- B. Base Layer: Polyisocyanurate insulation (2")
 - 1. Base Layer Attachment: Loose-laid
- C. Top Layer: Polyisocyanurate Insulation (2.5")
 - 1. Top Layer Attachment: Mechanically Attached
- D. Cementitious Wood Fiber, Gypsum, or Concrete Area:
- E. Base Layer: Polyisocyanurate insulation (2")
 - 1. Base Layer Attachment: Insulation adhesive
- F. Top Layer: Polyisocyanurate Insulation (2.5")
- G. Top Layer Attachment: Insulation adhesive

3.7 INSULATION APPLICATION

3.8 TOP LAYER:

- A. Using the Firestone Heavy Duty and Firestone insulation plate engage fastener through insulation into Metal Deck at the depth and rate specified in the Firestone Technical Information Manual. Or adhere the insulation to the substrate as specified above.

3.9 MEMBRANE PLACEMENT AND ATTACHMENT

- A. Starting at the low point of the roof, place the membrane panels without stretching over the acceptable substrate. Position subsequent membrane sheets in the same manner, overlapping the ends of adjoining sheets a minimum of 3" and side laps a minimum of 6". Install panels to insure that laps shed water.
 - 1. Where UltraPly TPO Membrane has been cut to expose reinforcing membrane, Firestone's UltraPly TPO Cut Edge Sealant or UltraPly TPO General Purpose Sealant must be used to encapsulate exposed edge.
- B. Fully adhere membrane to the substrate.

3.10 MEMBRANE LAP SPLICING

- A. Lap splice areas that have been contaminated must be wiped down with a dry or damp (water only) clean cloth prior to heat welding and allow to completely dry.
- B. All field and flashing splices on the horizontal surface shall be completed using an automatic heat welder that has been designed for hot air welding of thermoplastic Olefin membranes.
- C. Hand held welders are only to be used on vertical welds or where an automatic welder is not practical or cannot be used.
- D. Seams made with the automatic welder shall be a minimum of 1-1/2" wide. Seams made with hand welders shall be a minimum of 2" wide. Use 2" side silicone or silicone coated steel hand rollers to assure proper mating of surfaces as hand heat welding proceeds.
- E. Probe all completed welds using a slotted screwdriver or cotter pin puller type tool to verify seam integrity. Do not probe welds until they have had time to cool to ambient conditions. Any welds found to be insufficiently welded need to be repaired on a daily basis.

3.11 MEMBRANE SECUREMENT

- A. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 1" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
 - 1. Mechanically fasten Firestone Seam Plates with Firestone Fasteners in accordance with Firestone Details.

2. Install UltraPly membrane as flashing.

3.12 FLASHING - PENETRATIONS

A. General:

1. If project is retrofit or Tear-Off remove all existing flashings (i.e., lead, asphalt, mastic, etc.)
2. Flash all penetrations passing through the membrane.
3. The flashing seal must be made directly to the penetration.

B. Pipes, Round Supports, etc.:

1. Flash with Firestone Pre-Molded UltraPly TPO Pipe Flashings where practical
2. Flash using UltraPly TPO unsupported Flashing membrane when Pre-Molded Flashing is not practical.

C. Structural Steel Tubing:

1. Use a field fabricated pipe-flashing detail provided that the minimum corner radius is greater than 1/4" and the longest side of the tube does not exceed 12". When the tube exceeds 12: use a standard curb detail.

D. Roof Drains:

1. If project is Retrofit or Tear-Off remove all existing flashings, drain leads, roofing materials and cement from the existing drain in preparation for membrane Water Block Seal.
2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
3. Taper insulation around the drain to provide a smooth transition from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed Firestone recommendations.
4. Position the UltraPly TPO membrane, then cut a hole for the roof drain to allow 1/2" - 3/4" of membrane extending inside the clamping ring past the drain bolts.
5. Make round holes in the UltraPly TPO membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
6. Place Water Block Seal on top of drain bowl where the clamping ring seats below membrane.
7. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.

E. Pipe Clusters and Unusual Shaped Penetrations:

1. Fabricate penetration pockets to allow a minimum clearance of 1" between the penetration and all sides.
 - a. Secure penetration pockets per Firestone Details.
 - b. Fill penetration pockets with Pourable Sealer, so as to shed water.

F. Hot Pipes:

1. Protect the UltraPly TPO components from direct contact with steam or heat sources when the in-service temperature is in excess of 140° F. In all such cases flash to an intermediate insulated "cool" sleeve per Firestone details.

G. Flexible Penetrations:

1. Provide a weather tight gooseneck set in Water Block Seal and secured to the deck.
2. Flash in accordance with Firestone Details.

H. Scuppers:

1. Remove existing scupper and provide a new welded watertight scupper or clean the existing scupper for reuse.
2. Set welded watertight scupper in Water Block Seal and secure to the structure.
3. Flash in accordance with Firestone Details.

I. Expansion Joints

1. Install as shown on roof drawings in accordance with Firestone details.

3.13 FLASHING - WALLS, PARAPETS, MECHANICAL EQUIPMENT CURBS, SKYLIGHTS, etc.

A. General:

1. Using the longest pieces practical, flash all walls, parapets, curbs, etc., a minimum of 8" high per Firestone Details.
2. Evaluate Substrate:
3. Evaluate the substrate and overlay per Firestone specifications as necessary.
- 4.
5. If project is Retrofit or Tear-Off remove all flashings.
6. Remove excessive asphalt to provide a smooth, sound surface for new flashings.

7. Apply UltraPly TPO Bonding Adhesive at about the same time to both the membrane flashing and the surface to which it is being bonded so as to allow approximately the same drying time. Apply Bonding Adhesive by rolling the adhesive on to the mating surfaces evenly, avoiding globs or puddles.
8. Allow UltraPly TPO Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating. Flash off time will vary depending on ambient air conditions.
9. Roll the flashing into the adhesive evenly and carefully so as to minimize wrinkles.
10. To ensure proper contact, compress the flashing to the substrate with a stiff push broom.
11. Complete the splice between membrane flashing and the main roof sheet by hot air welding. Provide lap splices in accordance with Firestone Details.
12. Provide termination directly to the vertical substrate as shown in Firestone Details.
13. Install UltraPly TPO T-Joint covers at field and flashing splice intersections as required by Firestone.
14. Install intermediate flashing attachment as required by Firestone Specifications and Details.

3.14 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

1. Flash all gravel stops or roof edges using as outlined in Firestone Details.

3.15 TEMPORARY CLOSURE (NOT WARRANTED BY FIRESTONE)

1. Temporary closures, which ensure that moisture does not damage any completed section of the new roofing system, are the responsibility of the roofing contractor. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

3.16 ROOF WALKWAYS

1. Walkways may consist of Firestone UltraPly TPO Walkway material. Heat weld the perimeters of the walkway material to the UltraPly TPO membrane per Firestone specifications.

3.17 SHEET METAL WORK

1. Field inspection and testing will be performed as required by the manufacturer

2. Correct identified defects or irregularities.

3.18 FIELD QUALITY CONTROL

1. Field inspection and testing will be performed as required by the manufacturer.
2. Correct identified defects or irregularities.

3.19 CLEAN-UP

1. Clean all contaminants from building and surrounding areas.
2. Remove trash, debris, equipment from project site and surrounding areas.
3. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.

END OF SECTION

SECTION 07 62 00 - SHEET METAL FLASHING AND TRIM**Error! Bookmark not defined.**

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 SUMMARY:

- A. This Section includes sheet metal flashing and trim in the following categories:
 - 1. Roof Drainage Systems
 - a. Exposed trim, Roof Edge Trim, and fascia.
 - b. Metal flashing
- B. Related Sections: The following Sections contain requirements that relate to this Section:
- C. Division 4 Sections for through-wall flashing and other integral masonry flashings specified as part of masonry work.
- D. Division 7 Section "Roof Accessories" for set-on-type curbs, equipment supports, roof hatches, vents, and other manufactured roof accessory units.
- E. Division 7 Section "Joint Sealants" for elastomeric sealants.
- F. Division 7 Roofing Sections for flashing and roofing accessories installed integral with roofing membrane as part of roofing-system work.

1.3 PERFORMANCE REQUIREMENTS

- A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing.
- B. Fabricate and install flashings at roof edges to comply with recommendations of FM Loss Prevention Data Sheet 1-49 for the following wind zone:
 - 1. Wind Zone 2: Wind pressures of 31 to 45 psf.

1.4 SUBMITTALS

- A. General: Submit each item in this Article according to the Conditions of the Contract and Division 1 Specification Sections.

- B. Product Data including manufacturer's material and finish data, installation instructions, and general recommendations for each specified flashing material and fabricated product.
- C. Shop Drawings of each item specified showing layout, profiles, methods of joining, and anchorage details.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Engage an experienced Installer who has completed sheet metal flashing and trim work similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.
- B. Coordinate Work of this Section with interfacing and adjoining Work for proper sequencing of each installation. Ensure best possible weather resistance, durability of Work, and protection of materials and finishes.

PART 2 - PRODUCTS

2.1 METALS

- A. Note: All metals provided shall be supplied by roofing manufacturer and/or approved by roofing manufacturer for incorporation into the roofing system which allows metal flashing to be included in the roofing membrane guarantee and carry the same guarantee as the roof. Adjustment of material and material thickness listed as follows may require adjustment to obtain requirements for inclusion in the roofing system guarantee. These adjustments shall be made at no additional cost to the owner.
- B. Copper: ASTM B 370; temper H00, cold rolled except where temper 060 is required for forming; not less than 16 oz./sq. ft. (0.55 mm thick), unless otherwise indicated.
- C. Lead Sheet: ASTM B 749, Type L51121, copper-bearing lead sheet, with minimum thickness of 0.0625 inch (1.6 mm) except not less than 0.0937 inch (2.4 mm) thick for applications where burning (welding) is involved.

2.2 CONCEALED THROUGH -WALL SHEET METAL FLASHING

- A. Material: Fabricate from the following metal:
 - 1. Stainless Steel: 0.0156 inch (0.4 mm) thick.
 - 2. Copper: 10 oz. (0.34 mm thick) for fully concealed flashing; 16 oz. (0.55 mm thick) elsewhere.
- B. Fabricate through-wall metal flashing: embedded in masonry as follows:
 - 1. With ribs formed in dovetail pattern at 3-inch (75-mm) intervals along length of flashing to provide a 3-way integral mortar bond and weep-hole drainage.

2. With ribs formed in saw tooth pattern at 3-inch (75 mm) intervals along length of flashing to provide a 3-way integral mortar bond and weep-hole drainage.
- C. Available Products: Subject to compliance with requirements, products that may be incorporated in the Work include, but are not limited to, the following:
- D. Products: Subject to compliance with requirements, provide one of the following:
 1. Cheney Flashing (Dovetail); Cheney Flashing Company, Inc.
 2. Cheney Flashing (Sawtooth); Cheney Flashing Company, Inc.
 3. Keystone Three-Way Interlocking Thru-wall Flashing; Keystone Flashing Co.

2.3 MISCELLANEOUS MATERIALS AND ACCESSORIES

- A. Burning Rod for Lead: Same composition as lead sheet.
- B. Solder: ASTM B 32, Grade Sn50, used with rosin flux.
- C. Fasteners: Same metal as sheet metal flashing or other noncorrosive metal as recommended by sheet metal manufacturer. Match finish of exposed heads with material being fastened.
- D. Asphalt Mastic: SSPC-Paint 12, solvent-type asphalt mastic, nominally free of sulfur and containing no asbestos fibers, compounded for 15-mil dry film thickness per coat.
- E. Mastic Sealant: Polyisobutylene; non-hardening, non-skinning, nondrying, non-migrating sealant.
- F. Elastomeric Sealant: Generic type with requirements for joint sealants as specified in Division 7 Section "Joint Sealants."
- G. Epoxy Seam Sealer: 2-part, noncorrosive, aluminum seam-cementing compound, recommended by aluminum manufacturer for exterior and interior nonmoving joints, including riveted joints.
- H. Adhesives: Type recommended by flashing sheet metal manufacturer for waterproof and weather-resistant seaming and adhesive application of flashing sheet metal.
- I. Paper Slip Sheet: 5-lb./square (0.244 kg/sq. m) red rosin, sized building paper conforming to FS UU-B-790, Type I, Style 1b.
- J. Polyethylene Underlayment: ASTM D 4397, minimum 6-mil- (0.15- mm-) thick black polyethylene film, resistant to decay when tested according to ASTM E 154.
- K. Metal Accessories: Provide sheet metal clips, straps, anchoring devices, and similar accessory units as required for installation of Work, matching or compatible with material being installed; noncorrosive; size and thickness required for performance.
- L. Gutter Screen: ¼-inch (6 mm) hardware cloth installed in sheet metal frames. Fabricate screen and frame of same basic material as gutters and downspouts.

- M. Roofing Cement: ASTM D 4586, Type I, asbestos free, asphalt based.

2.4 FABRICATION, GENERAL

- A. Sheet Metal Fabrication Standard: Fabricate sheet metal flashing and trim to comply with recommendations of SMACNA's "Architectural Sheet Metal Manual" that apply to the design, dimensions, metal, and other characteristics of the item indicated.
- B. Comply with details shown to fabricate sheet metal flashing and trim that fit substrates and result in waterproof and weather-resistant performance once installed. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Form exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems.
- D. Expansion Provisions: Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610 mm) of corner or intersection. Where Lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25mm) deep, filled with mastic sealant (concealed within joints).
- E. Sealed Joints: Form non-expansion, but moveable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards.
- F. Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact with asphalt mastic or other permanent separation as recommended by manufacturer.
- G. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of sheet metal exposed to public view.
- H. Fabricate cleats and attachment devices from same material as sheet metal component being anchored or from compatible, noncorrosive metal recommended by sheet metal manufacturer.
 - 1. Size: As recommended by SMACNA manual or sheet metal manufacturer for application but never less than thickness of metal being secured.

2.5 SHEET METAL FABRICATIONS

- A. General: Fabricate sheet metal items in thickness or weight needed to comply with performance requirements but not less than that listed below for each application and metal.

2.6 COIL-COATED GALVANIZED STEEL SHEET FINISH

- A. High-Performance Organic Coating Finish: Apply the following system by coil-coating process on galvanized steel sheet as recommended by coating manufacturers and applicator.
 - 1. Fluoropolymer 2-Coat Coating System: Manufacturer's standard 2-coat, thermocured system composed of specially formulated inhibitive primer and fluoropolymer color

topcoat containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.

2. Resin Manufacturers: Subject to compliance with requirements, provide fluoropolymer coating systems containing resins produced by one of the following manufacturers:
 - a. Ausimont USA, Inc. (Hylar 5000)
 - b. Elf Atochem North America, Inc. (Kynar 500)
3. Coil-Coated Steel Sheet Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
4. Coil-Coated Steel Sheet Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Atas Aluminum Corporation.
 - b. Copper Sales, Inc.
 - c. MM Systems Corporation.
 - d. Petersen Aluminum Corporation.
 - e. Vincent Metals.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates and conditions under which sheet metal flashing and trim are to be installed and verify that Work may properly commence. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- A. General: Unless otherwise indicated, install sheet metal flashing and trim to comply with performance requirements, manufacture's installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Anchor units of Work securely in place by methods indicated, providing for thermal expansion of metal units; conceal fasteners where possible., and set units true to line and level as indicated. Install Work with laps, joints, and seams that will be permanently watertight and weatherproof.
- B. Install exposed sheet metal Work that is without excessive oil canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
- C. Roof-Edge Flashings: Secure metal flashings at roof edges to meet ANSI/SPRI ES-1 and ANSI
- D. Expansion Provisions: Provide for thermal expansion of exposed sheet metal Work. Space movement joints at maximum of 10 feet (3 m) with no joints allowed within 24 inches (610

mm) of corner or intersection. Where lapped or bayonet-type expansion provisions in Work cannot be used or would not be sufficiently weatherproof and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed with joints).

- E. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter. Pre-tin edges of sheets to be soldered to a width of 1-1/2 inches (38 mm), except where pre-tinned surface would show in finished Work.
 - 1. Do not solder the following metals:
 - a. Aluminum.
 - b. Coil-coated galvanized steel sheet.
 - 2. Pre-tinning is not required for the following metals:
 - a. Lead.
 - 3. Do not use torches for soldering. Heat surfaces to receive solder and flow solder into joint. Fill joint completely. Completely remove flux and spatter from exposed surfaces.
- F. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate elastomeric sealant to comply with SMACNA standards. Fill joint with sealant and form metal to completely conceal sealant.
 - 1. Use joint adhesive for nonmoving joints specified not to be soldered.
- G. Separations: Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces, at locations of contact, with asphalt mastic or other permanent separation as recommended by manufacturer.
 - 1. Underlayment: Where installing stainless steel or aluminum directly on cementitious or wood substrates, install a slip sheet of red-rosin paper and a course of polyethylene underlayment.
 - 2. Bed flanges of Work in a thick coat of roofing cement where required for waterproof performance.
- H. Counter flashings: Coordinate installation of counter flashings with installation of assemblies to be protected by counterflashing. Install counter flashings in reglets or receivers. Secure in a waterproof manner by means of snap-in installation and sealant, lead wedges and sealant, interlocking folded seam, or blind rivets and sealant. Lap counterflashing joints a minimum of 2 inches (50 mm) and bed with sealant.
- I. Roof-Penetration Flashing: Coordinate roof-penetration flashing installation with roofing and installation of items penetrating roof. Install flashing as follows:
 - 1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.
 - 2. Seal and clamp flashing to pipes penetrating roof, other than lead flashing on vent piping.

- J. Install continuous gutter screens on gutters with noncorrosive fasteners, arranged as hinged units to swing open for cleaning gutters.

3.3 CLEANING AND PROTECTION

- A. Clean exposed metal surfaces, removing substances that might cause corrosion of metal or deterioration of finishes.
- B. Provide final protection and maintain conditions that ensure sheet metal flashing and trim Work during construction is without damage or deterioration other than natural weathering at the time of Substantial Completion.

END OF SECTION

SECTION 07 92 00 - JOINT SEALERS

PART 1 - GENERAL

1. RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

2. DESCRIPTION OF WORK:

- A. The extent of each form and type of joint sealer is indicated on drawings and by provisions of this section.
- B. The applications for joint sealers as work of this section include the following:
 - 1. Wall joints (exterior and interior).
 - 2. Horizontal Surfaces.
 - 3. Flashing and coping joints.
- C. Refer to Division 8 sections for glazing requirements not work of this section.
- D. Refer to sections of Divisions 15 and 16 for joint sealers in mechanical and electrical work not work of this section.

4. QUALITY ASSURANCE:

- A. Applicator Qualifications: Contractor and job foreman must have a minimum of five (5) years experience installing sealant.
- B. Compatibility and Adhesion Tests: Contractor shall be responsible for verifying with sealant manufacturer that all sealants to be used are compatible with and will satisfactorily adhere to all substrates. Tests may be conducted in the field or by submission of representative substrate samples to sealant manufacturer's laboratory.
- C. Conduct the following Skin-Over Time/Elastomeric Test: For one-part sealant, a skin-over test and an elastomeric test should be performed once per week and on every new lot of sealant used. The purpose of this test is to check sealant working time and to ensure the sealant cures fully. Any great variation (excessively long times) in the skin-over time may indicate and out-of-life sealant. This test is performed as follows:
 - 1. Spread a 1/16" film of sealant on a sheet of polyethylene (a garbage bag works well).
 - 2. Every few minutes, touch the sealant film lightly with a tool.
 - 3. When the sealant does not adhere to the tool, the sealant has skinned over. Note the time required to reach this point. If a skin has to formed within - 3 hours, do not use this material; contact your Dow Corning Construction Field Specialist or distributor representative.

4. Allow the sealant to cure for 24 hours. After 24 hours, peel the sealant off of the polyethylene sheet. Stretch the sealant slowly to see that it has cured. If the sealant has not cured, contact your Sealant Manufacturer Field Specialist or distributor representative.
 5. Record the results in the Product Quality Control Log book. This testing must be completed and results recorded, retained and available for review upon request. (See "Project Specifications, Documentation and Warranties" for a sample log form and additional information.)
- D. Standard Field Adhesion Hand Pull Test: A field adhesion test is a simple screening procedure that may help detect application problems such as improper cleaning, use of improper primer, poor primer application or improper joint configuration. As a check for adhesion, a simple hand pull test is required at the job site after the sealant is fully cured (usually within 7 to 21 days). Field adhesion testing should be documented using the filed Adhesion Testing Log (see "Project Specifications, Documentation and Warranties"). It is suggested that 10 tests for the first 1000 feet and one test per thousand feet thereafter be submitted or one test per floor per elevation. The hand pull test procedure is as follows:
1. Make a knife cut horizontally from one side of the joint to the other.
 2. Make two vertical cuts (from the horizontal cut) approximately 3" long, at both sides of the joint.
 3. Place a 1" mark on the sealant tab.
 4. Grasp the 2" piece of sealant firmly just beyond the 1" mark and pull at a 90-degree angle.
 5. If dissimilar substrates are being sealed, check the adhesion of sealant to each substrate separately. This is accomplished by extending the vertical cut along one side of the joint, checking adhesion to the opposite side, and then repeating for the other surface.
 6. Pass / fail criteria for each sealant are as follows: If the sealant does not pass according to the guidelines provided, consult your local Field Specialist or distributor representative.
 7. Record the test results in a field adhesion test log.
- E. Repair of Sealant in Adhesion Test Area: Repair the sealant pulled from the test area by applying new sealant to the test area. Assuming good adhesion was obtained, use the same application procedure to repair the areas as was used to originally seal it. Care should be taken to ensure that the original sealant surfaces are clean and that the new sealant is in contact with the original sealant.
- F. Manufacturer: Sealant manufacturer shall have been in the business of producing the specified sealant types for a minimum of ten (10) years.
8. SUBMITTALS:
- A. Literature: Submit one copy of manufacturer's data sheets, standard color charts, installation instructions and field quality control test procedures for each sealant and primer to be used.
 - B. Warranty: Submit one copy of manufacturer's standard twenty (20) year product warranty and contractor's three-year workmanship warranty.

9. WARRANTY:

- A. Upon job completion, provide manufacturer's standard twenty (20) year product weather seal warranty.
- B. Upon job completion, provide contractor's three (3) year workmanship warranty.

10. DELIVERY, STORAGE, AND HANDLING:

- A. Deliver products in original factory packaging bearing identification of product, manufacturer, batch number, and expiration date as applicable. Provide Material Safety Data Sheets for each product.
- B. Store product in a location protected from freezing, damage, construction activity, precipitation and direct sunlight in strict accordance with manufacturer's recommendations.
- C. Condition products to approximately 60 to 70 degrees F for use in accordance with manufacturer's recommendations.

11. PROJECT CONDITIONS:

- A. Do not use products under conditions of precipitation or freezing weather. Use appropriate measures for protection and supplementary heating to ensure proper drying and curing conditions in accordance with manufacturer's recommendations if application during inclement weather occurs.
- B. Ensure substrate is dry.
- C. Protect all adjacent work from contamination due to mixing, handling, and application of sealants.

PART 2 - PRODUCTS

2.1 MATERIALS:

- A. Manufacturer's: Provide products by one of the following:
 - 1. Dow Corning
 - 2. General Electric
 - 3. Sonneborn
- B. Sealant #1: Dow Corning - 791 Silicone Weatherproofing Sealant, for enameled and reflective glass, glass, primed painted steel, fluorocarbon coated aluminum, steel, granite, paint, plastic, paint plastic, Polyester Powder coated Aluminum/steel, silicone, stainless steel, and wood. Color to be selected by Architect.

- C. Sealant #2: Dow Corning - 786 Mildew Resistant Sealant, for porcelain, glazed ceramic tile, mosaic floor tile, cultured marble. (e.g. bath, shower and other high moisture interior applications). Color to be selected by Architect.
- D. Sealant #3: Caulking Compound (for general applications) 1 part Architectural Acrylic Latex.
- E. Primer: Dow Corning - 1200 Prime Coat, primer to be applied to all exterior porous surfaces (i.e. brick). EIFS priming to be recommended by sealant manufacturer.
- F. Sealant #4: Sonneborn Sonolastic NP 1: Single component, non-sag polyurethane with plus or minus 25 percent movement capability for vertical joints.
- G. Sealant #5: Sonneborn Sonolastic SL 1: Single component, self-leveling polyurethane with plus or minus 25 percent movement capability for horizontal joints.
- H. Sealant #6: DAP Dynaflex 230 Premium Elastomeric Sealant ASTM C920 Class 25.
- I. Backer Rod: EIFS requires closed cell polyethylene or Sof-Rod.
- J. Bond Breaker Tape: Pressure sensitive adhesive polyethylene, Teflon, or polyurethane foam tape where required.

PART 3 - EXECUTION

3.1 SEALANTS:

- A. Inspection:
 - 1. Installer must examine substrates, (joint surfaces) and conditions under which joint sealer work is to be performed, and verify that all joint surfaces are clean, sound, free of defects and that dimensions are within sealant manufacturer's size requirements. Commencement of sealant installation shall be evidence that contractor has verified compliance of existing conditions. Do not proceed with joint sealer work until unsatisfactory conditions have been corrected in a manner acceptable to installer.
 - 2. Protect all surroundings from primers and sealant to include, but not be limited to, windows, roofs, walkways, drives, and landscaping.
- B. Joint Preparation:
 - 1. Clean all joint surfaces of contaminants and impurities to the depth at which the new silicone sealant and backer materials are to be installed. This may be accomplished by several methods: Abrading with a wire brush (hand or power), grinding, saw cutting, or solvent cleaning. Follow solvent manufacturer's safe handling recommendations and local, state and federal regulations regarding solvent usage.
 - 2. Blow out all dust, loose particles and other debris using oil free compressed air.
- C. Installation:
 - 1. Solvent clean aluminum and any other non-porous surfaces with recommended solvent using the "Two Cloth Cleaning Method."

2. Apply primer according to manufacturer's instructions.
3. Install backer rod using blunt or rounded tools to assure uniform depth without puncturing or twisting. Closed cell rod shall be a minimum 20% oversized. Install bond breaker tape in shallow joints.
4. Mask or protect adjacent areas that are not to receive sealant.
5. Apply sealant in joints using a pressure gun with nozzle cut to appropriate size. Deposit sealant in a uniform and continuous bead with no gaps or air pockets.
6. Tool joint to required configuration with a blunt instrument as soon as possible after installation, but before sealant begins to skin over. Remove all masking materials immediately after tooling.

D. Locations:

1. These are the general purpose sealants for use of interior and exterior up to 1" in width. One of these sealants shall be used unless otherwise specified herein. The following list is not intended to be inclusive of every condition.
2. At both exterior and interior joints, and recesses formed where frames and subsills of windows, doors, louvers, vents and the like adjoin other materials.
3. Joints or recesses on exterior of building (including locations not specifically shown or specified) where sealing is required to prevent infiltration of water, moisture, insects, and wind through building exterior.
 - a. Masonry joints in which shelf angles occur.
 - b. Exterior face of expansion and control joints in exterior concrete or masonry walls.
 - c. Interior face of expansion joints in exterior masonry walls.
 - d. Interior face of control joints in exterior masonry walls.
 - e. Openings where pipes, conduits and similar items pass through exterior walls.
4. Metal reglets where required and lead caulking rope is not used, and elsewhere where flashing is penetrated by coping dowels.
 - a. Metal-to-metal joints where sealing or caulking is shown or necessary.
 - b. Metal to masonry where sealing or caulking is shown, specified, or necessary.
 - c. Joints occurring between ends of gravel stops, fascias and/or copings and adjacent walls.
 - d. Bottoms of exterior doorway frames.
5. Where sealant is shown on drawings except where sealing compounds for joints in horizontal surfaces and high temperature applications are specifically required.
 - a. Seats of metal thresholds for exterior doors.
 - b. All precast concrete joints.
6. Use Sealant #1 at all exterior vertical surfaces locations.
7. Use Sealant #2 at all interior wet areas.
8. Use Sealant #3 for the following interior applications:
 - a. Opening 1/8" and less between walls and partitions and adjacent shelving, built-in or surface mounted equipment, plumbing, and lighting fixtures.
 - b. Interior locations where small voids between materials require filling for first class workmanship and painting.
9. Use Sealant #4 at all interior conditions not listed for sealants #2 and #3.
10. Use Sealant #5 for all interior horizontal surfaces.
11. Use Sealant #6 for all exterior wood for painted finish.

E. Workmanship:

1. Surface Preparation: Surfaces of joint to receive caulking or sealants shall be clean, dry to the touch, free from frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion.
2. Application: Apply caulking and sealing compounds in strict accordance with manufacturer's printed instructions. Avoid dropping or smearing compound on adjacent surfaces. Fill joints solidly with compound and tool. Finish compound smooth and flush, unless joint is otherwise detailed.
3. Cleaning: After filling and finishing joints, remove masking tape. Fresh compound that has accidentally been smeared on masonry shall be scrapped off immediately and rubbed clean with a solvent as recommended by the sealant manufacturer. Upon completion of application of compound, all remaining smears, stains, and other soiling resulting therefrom shall be removed with solvent or other means recommended by manufacturer of compound and the work left in a clean and neat condition.

F. Cure and Protection:

1. Cure sealants and caulking compounds in compliance with manufacturer's instructions and recommendations to obtain high early bond strength, internal cohesive strength and surface durability. Advise contractor of procedures required for cure and protection of joint sealers during construction period, so that they will be without deterioration or damage (other than normal wear and weathering) at time of substantial completion. Cure and protect sealants in a manner which will minimize increased in modules of elasticity and other accelerated aging effects. Replace or restore sealants which are damaged or deteriorated during construction period.

END OF SECTION

SECTION 081010 – IMPACT HOLLOW METAL DOORS, FRAMES AND HARDWARE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- 1.01.A. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division 1 Specification sections, apply to work of this section

1.02 SUMMARY

1.02.A. Section Includes

- 1. Steel doors and framed for shelters and areas of refuge
- 2. Door Hardware

1.02.B. Related Sections

- 1. Division 09 Sections "Painting" for field painting hollow metal doors and frames

1.03 DEFINITIONS

- 1.03.A. Minimum Thickness: Minimum thickness of base metal without coatings
- 1.03.B. Standard Hollow Metal Work: Hollow metal work fabricated according to ANSI/SDI A250.8.

1.04 SUBMITTALS

- 1.04.A. Product Data: For each type of product indicated. Include construction details, material descriptions, core descriptions, and finishes

1.04.B. Shop Drawings: Include the following

- 1. Elevations of each door design
- 2. Details of doors, including vertical and horizontal edge details and metal thicknesses
- 3. Frame details for each frame type, including dimensioned profiles and metal thicknesses
- 4. Locations of reinforcement and preparations for hardware
- 5. Details of each different wall opening condition
- 6. Details of anchorages, joints, field splices, and connections
- 7. Details of accessories
- 8. Details of moldings, removable stops, and glazing

1.04.C. Informational Submittals

- 1. Schedule: Provide a schedule of hollow metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with door hardware schedule
- 2. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for each type of hollow metal door and frame assembly

1.05 QUALITY ASSURANCE

- 1.05.A. Source Limitations: Obtain hollow metal work from single source from single manufacturer.
- 1.05.B. Door Systems for storm shelters and other areas of refuge shall resist the design wind pressures and missile impact loads as detailed in the National Performance Criteria for Tornado Shelters as published by FEMA
 - 1. Door and frame assemblies shall be tested per FEMA 361
- 1.05.C. Pre-installation Conference: Conduct conference at Project site

1.06 DELIVERY, STORAGE, AND HANDLING

- 1.06.A. Deliver hollow metal work palletized, wrapped, or crated to provide protection during transit and Project-site storage. Do not use non-vented plastic
- 1.06.B. Deliver welded frames with two removable spreader bars across bottom of frames, tack welded to jambs and mullions.
- 1.06.C. Store hollow metal work under cover at Project site. Place in stacks of five units maximum in a vertical position with heads up, spaced by blocking, on minimum 4-inch-high wood blocking. Do not store in a manner that traps excess humidity.
 - 1. Provide minimum 1/4-inch space between each stacked door to permit air circulation

1.07 PROJECT CONDITIONS

- 1.07.A. Field Measurements: Verify actual dimensions of openings by field measurements before fabrication.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- 2.01.A. Manufacturers: Subject to compliance with requirements, provide products by one of the following
 - 1. CECO Door Products
 - 2. Curries Company
 - 3. Steelcraft

2.02 MATERIALS

- 2.02.A. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M, Commercial Steel (CS), Type B; suitable for exposed applications.
- 2.02.B. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M, Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.
- 2.02.C. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B; with minimum G60 or A60 metallic coating.
- 2.02.D. Frame Anchors: ASTM A 591/A 591M, Commercial Steel (CS), 40Z coating designation; mill phosphatized.
 - 1. For anchors built into exterior walls, steel sheet complying with ASTM A 1008/A 1008M or ASTM A 1011/A 1011M, hotdip galvanized according to ASTM A 153/A 153M, Class B.

- 2.02.E. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.
 - 2.02.F. Powder-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow metal frames of type indicated.
 - 2.02.G. Grout: ASTM C 476, except with a maximum slump of 4 inches, as measured according to ASTM C 143/C 143M.
 - 2.02.H. Glazing: Comply with requirements in Division 08 Section "Glazing."
- 2.03 STEEL DOORS, FRAMES FOR SHELTERS AND AREAS OF REFUGE (HIGH IMPACT DOORS AND FRAMES)

2.03.A. FEMA 361 Rated Doors

1. Shelter entry doors and their frames shall resist the design wind pressures for components and cladding as described in section 1 and the Missile Impact loads of Section 2 of the National Performance Criteria for Tornado Shelters Federal Emergency Management Agency Mitigation Directorate, latest edition. Only single opening and paired opening doors, and their frames that can resist calculated design wind pressures and laboratory tested missile impacts are acceptable.
2. Face sheets shall be a minimum 14 gage, commercial quality hot dipped zinc coated steel that complies with ASTM A924 A60.
3. Door faces shall be reinforced by minimum 18 gage vertical steel stiffeners spanning the full thickness of the interior space between door faces. Stiffeners spaced not more than 6" apart, and attached by spot welds not more than 5" apart on centers.
4. Doors shall have continuously welded lock and hinge edges, extending the full height of the door, with edge seams welded, filled, and ground smooth.
5. Doors shall have beveled hinge and lock edges.
6. Tops and bottom of doors shall have a galvanized, inverted steel channel reinforcement not less than 16 gage, extending the full width of the door and welded to the face sheets on 4" centers. Steel closure channel shall be flush with the top of the face sheets of the door. Plastic fillers are NOT acceptable.
7. Hinge reinforcements shall be not less than a 7 gage galvanized steel (3/16") plate 1-1/4" X 9" prepared for 4-1/2 x 4-1/2 x .180 hinges, projection welded to the edge of the door.
8. Door systems, both single doors and paired openings, shall be tested and labeled as complying with the FEMA 361 Design and Construction Guidance for Community Shelters and have available verifiable third party conformance test results.

2.03.B. FEMA 361 Rated Frames:

1. Frames shall be fabricated from 14-gauge hot dipped zinc coated steel that complies with ASTM designations A924 A60.
2. Fabricate frames with machined-mitered and fully welded corners. Face joints shall be seamless and ground smooth to show no joint.
3. Hinge reinforcements shall be not less than a 7 gage galvanized steel (3/16") plate 1-1/4" X 9" prepared for 4-1/2 x 4-1/2 x .180 hinges.

4. Frames shall be mortised, reinforced, drilled and tapped at the factory for tem-plate mortised hardware only, in accordance with approved hardware schedule. Where surface mounted hardware is to be applied, frames shall have reinforcing plates only, all drilling and tapping to be done in the field by others.
5. Frames for shutters to be four sided frames.
6. Frame assembly, both single doors and paired openings, and shutters shall be tested and labeled as complying with the FEMA 361 Design and Construction Guidance for Community Shelters and have available verifiable third party conformance test results.

2.03.C. Anchors

1. Frame anchors for masonry walls shall be of the masonry "T" type, Wire mason-ry type, or Existing Opening type anchor. Provide five wall anchors per jamb, at 4" maximum from each end of door opening height, equally spaced, four wall anchors per head at pairs, 6" maximum from each end of door opening and two wall anchors per head at singles, 6" max from each end of opening width.
2. Dust boxes/mortar guards to be no less than 26 gage.
3. All frames that are to be welded are to have a steel spreader during shipping and handling. Spreader bars are for bracing only and are not be used to size the frame opening.

2.04 FABRICATION

2.04.A. Fabricate hollow metal work to be rigid and free of defects, warp, or buckle. Accu-rately form metal to required sizes and profiles, with minimum radius for thickness of metal. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently facto-ry assembled before shipment.

2.04.B. Tolerances: Fabricate hollow metal work to tolerances indicated in SDI 117.

2.04.C. Hollow Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

1. Welded Frames: Weld flush face joints continuously; grind, fill, dress, and make smooth, flush, and invisible.
2. Provide countersunk, flat- or oval-head exposed screws and bolts for exposed fasteners unless otherwise indicated.
3. Grout Guards: Weld guards to frame at back of hardware mortises in frames to be grouted.
4. Floor Anchors: Weld anchors to bottom of jambs and mullions with at least four spot welds per anchor.
5. Jamb Anchors: Provide number and spacing of anchors as required by manufac-turer for compliance with FEMA 361 requirements for missile impact and wind loading.
6. Door Silencers: Except on weather-stripped doors, drill stops to receive door si-lencers as follows. Keep holes clear during construction.

- 2.04.D. Fabricate concealed stiffeners, edge channels, and hardware reinforcement from either cold- or hot-rolled steel sheet.
- 2.04.E. Hardware Preparation: Factory prepare hollow metal work to receive template mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to the Door Hardware As Follows:

2.05 Manufacturer's Abbreviations

- 2.05.A. MK - McKinney
- 2.05.B. RO - Rockwood
- 2.05.C. SA - Sargent
- 2.05.D. PE - Pemko

1. Required Hardware

a.	6 Hinge	SP3386 4-1/2" x 4-1/2"	US32D MK
b.	1 Multipoint Exit Device	FM8713 ETP	US32D SA
c.	1 Multipoint Exit Device	FM8710 ETP	US32D SA
d.	2 Door Closer	351 PS EN	SA
e.	2 Kickplate	K1050 8" X 2" LDW 4BE CSK	US32D RO
f.	1 Threshold	171AK Pemkote MSES25SS	PE
g.	1 Gasketing	2891AS	PE
h.	2 Sweep	57AV	PE
i.	1 Astragal	18061CNB	PE

2.06 STEEL FINISHES

- 2.06.A. Prime Finish: Apply manufacturer's standard primer immediately after cleaning and pre-treating.
 - 1. Shop Primer: Manufacturer's standard, fast-curing, lead- and chromate-free primer complying with ANSI/SDI A250.10 acceptance criteria; recommended by primer manufacturer for substrate; compatible with substrate and field-applied coatings despite prolonged exposure.

PART 3 EXECUTION

3.01 EXAMINATION

- 3.01.A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.
- 3.01.B. Examine roughing-in for embedded and built-in anchors to verify actual locations before frame installation.
- 3.01.C. For the record, prepare written report, endorsed by Installer, listing conditions detrimental to performance of the Work.
- 3.01.D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION

- 3.02.A. Remove welded-in shipping spreaders installed at factory. Restore exposed finish by grinding, filling, and dressing, as required to make repaired area smooth, flush, and invisible on exposed faces.
- 3.02.B. Prior to installation, adjust and securely brace welded hollow metal frames for squareness, alignment, twist, and plumbness to the following tolerances:
 - 1. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - 2. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - 3. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - 4. Plumbness: Plus or minus 1/16 inch, measured at jambs on a perpendicular line from head to floor.
- 3.02.C. Drill and tap doors and frames to receive non-template, mortised, and surface-mounted door hardware.

3.03 INSTALLATION

- 3.03.A. General: Install hollow metal work plumb, rigid, properly aligned, and securely fastened in place; comply with Drawings and manufacturer's written instructions.
- 3.03.B. Hollow Metal Frames: Install hollow metal frames of size and profile indicated. Comply with ANSI/SDI A250.11.
 - 1. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is complete, remove temporary braces, leaving surfaces smooth and undamaged.
 - a. At fire-protection-rated openings, install frames according to NFPA 80.
 - b. Where frames are fabricated in sections because of shipping or handling limitations, field splice at approved locations by welding face joint continuously; grind, fill, dress, and make splice smooth, flush, and invisible on exposed faces.
 - c. Install door silencers in frames before grouting.
 - d. Remove temporary braces necessary for installation only after frames have been properly set and secured.
 - e. Check plumbness, squareness, and twist of frames as walls are constructed. Shim as necessary to comply with installation tolerances.
 - 2. Floor Anchors: Provide floor anchors for each jamb and mullion that extends to floor, and secure with post-installed expansion anchors.
 - a. Floor anchors may be set with powder-actuated fasteners instead of post-installed expansion anchors if so indicated and approved on Shop Drawings.
 - 3. Concrete Walls: Solidly fill space between frames and concrete with grout. Take precautions, including bracing frames, to ensure that frames are not de-formed or damaged by grout forces.

4. Installation Tolerances: Adjust hollow metal door frames for squareness, alignment, twist, and plumb to the following tolerances:
 - a. Squareness: Plus or minus 1/16 inch, measured at door rabbet on a line 90 degrees from jamb perpendicular to frame head.
 - b. Alignment: Plus or minus 1/16 inch, measured at jambs on a horizontal line parallel to plane of wall.
 - c. Twist: Plus or minus 1/16 inch, measured at opposite face corners of jambs on parallel lines, and perpendicular to plane of wall.
 - d. Plumbness: Plus or minus 1/16 inch, measured at jambs at floor.
5. Hollow Metal Doors: Fit hollow metal doors accurately in frames, within clearances specified below. Shim as necessary.
 - a. Non-Fire-Rated Standard Steel Doors:
 - 1) Jambs and Head: 1/8 inch plus or minus 1/16 inch.
 - 2) Between Edges of Pairs of Doors: 1/8 inch plus or minus 1/16 inch.
 - 3) Between Bottom of Door and Top of Threshold: Maximum 3/8 inch.
 - 4) Between Bottom of Door and Top of Finish Floor (No Threshold): Maximum 3/4 inch.

3.04 ADJUSTING AND CLEANING

- 3.04.A. Final Adjustments: Check and readjust operating hardware items immediately before final inspection. Leave work in complete and proper operating condition. Remove and replace defective work, including hollow metal work that is warped, bowed, or otherwise unacceptable.
- 3.04.B. Remove grout and other bonding material from hollow metal work immediately after installation.
- 3.04.C. Prime-Coat Touchup: Immediately after erection, sand smooth rusted or damaged areas of prime coat and apply touchup of compatible air-drying, rust-inhibitive primer.
- 3.04.D. Metallic-Coated Surfaces: Clean abraded areas and repair with galvanizing repair paint according to manufacturer's written instructions.

END OF SECTION 08100

SECTION 08 11 13 – STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Extent of steel doors and frames is indicated and scheduled on drawings.
- B. Finish hardware is specified elsewhere in Division 8.
- C. Building in of anchors and grouting of frames in masonry construction is specified in Division 4.

1.3 QUALITY ASSURANCE

- A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI 100) and as herein specified.
- B. Fire-Rated Door Assemblies: Where fire rated door assemblies are indicated or required, provide fire rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.
- B. Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at opening, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show Anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings. Indicate coordinate of glazing frames and stops with glass an glazing requirements.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4" high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering steel doors and frames which may be incorporated in the work include; but are not limited to, the following:
- B. Steel doors and frames:
 - 1. Amweld/Div. American Welding & Mfg. Co.
 - 2. Ceco Corp.
 - 3. Curries Mfg., Inc.
 - 4. Dittco Products, Inc.
 - 5. Fenestra Corp.
 - 6. Mesket Industries, Inc.
 - 7. Steelcraft/Div. American Standard Co.
 - 8. Republic Builders Products Corp.
 - 9. Subs. Republic Steel.
 - 10. Amertex Inc.

2.2 MATERIALS

- A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

- B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.
- C. Galvanized Steel Sheets: Zinc coated carbon steel sheets of commercial quality, complying with ASTM A 526, with ASTM A 525, G60 zinc coating, mill phosphatized.
- D. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel.
- E. Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot dip galvanized items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.
- F. Primer: Rust inhibitive enamel or paint, either air drying or baking, suitable as a base for specified finish paints.

2.3 FABRICATION, GENERAL

- A. Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at project site. Comply with SDI 100 requirements as follows:
 - 1. Interior Doors: SDI 100, Grade II, standard, Style 4, 16 gage,
 - a. Kraft honeycomb core.
 - 2. Exterior Doors: SDI 100, Grade III, extra heavy duty, Style 4, 16 gage,
 - a. Polystyrene or Polyisocyanurate core.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units from only cold rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels louvers and moldings from either cold rolled or hot rolled steel (at fabricator's option).
- D. Fabricate exterior doors, panels, and frames from galvanized sheet steel. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16 gage inverted steel channels.
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.
- F. Sound Rating: Unless otherwise indicated, provide acoustical assemblies with sound ratings of STC 33 or better.
- G. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A 115 series specifications for door and frame preparation for hardware.
- H. Reinforce doors and frames to receive surface applied hardware. Drilling and tapping for surface applied finish hardware may be done at project site.

- I. Locate finish hardware as shown on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.

2.4 SHOP PAINTING

- A. Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.
- B. Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.
- C. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

2.5 STANDARD STEEL DOORS

- A. Provide metal doors of types and styles as specified herein and indicated on drawings or schedules.
- B. Door Louvers: Provide sight proof galvanized stationary louvers for interior doors where indicated, constructed of inverted V shaped or Y shaped blades formed of 24 gage cold rolled steel set into 20 gage steel frame.

2.6 STEEL FRAMES

- A. Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.
 1. Fabricate frames with mitered and continuous welded corners.
 2. Form exterior frames of hot dip galvanized steel.
- B. Door Silencers: Except on weather-stripped frames, drill stops to receive three silencers on strike jambs of single swing frames and two silencers on heads of double swing frames.
- C. Plaster Guards: Provide 26 gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts at all locations.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

- B. Placing Frames: Comply with provisions of SDI 105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.
 - 1. Except for frames located at in place concrete or masonry and at drywall installations, place frames prior to construction of enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.
 - 2. In masonry construction, locate three wall anchors per jamb at hinge and strike levels.
 - 3. In wood stud construction, locate three wall anchors per each jamb.
 - 4. Install fire-rated frames in accordance with NFPA Std. No. 80.
 - 5. In metal stud partitions, install at least three wall anchors per jamb at hinge and strike levels. Enclosed steel stud partitions, attach wall anchors to studs with tapping screws.
- C. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in SDI 100. Place fire rated doors with clearances as specified in NFPA Standard No. 80.

3.2 ADJUST AND CLEAN

- A. Prime Coat Touch-Up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch up of compatible air drying primer.
- B. Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION

SECTION 08 14 16 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work specified in this section.

1.2 DESCRIPTION OF WORK:

- A. Extent and location of each type of wood door is shown on drawings and in schedules.
- B. Types of doors required include the following:
- C. Solid core flush wood doors with veneer faces.
- D. Shop finishing of wood doors is included in this section.
- E. Factory fitting to frames (pre-fitting) and factory preparation for hardware (pre-machining) for wood doors is included in this section.

1.3 QUALITY ASSURANCE:

- A. Fire-Rated Wood Doors: Provide wood doors with fire resistance ratings indicated or required to comply with governing regulations and which are identical in materials and type of construction to those used in assemblies which have been tested in compliance with ASTM E 152 and are labeled and listed by a testing and inspection organization acceptable to authority having jurisdiction.
- B. Manufacturer: Obtain doors from a single manufacturer to ensure uniformity in quality of appearance and construction, unless otherwise indicated.

1.4 REFERENCES:

- A. Comply with the applicable requirements of the following standards unless otherwise indicated:
- B. NWWDA - National Wood Window and Door Association". Designations for grade and core construction under types of doors refer to this standard.
- C. SUBMITTALS:
- D. Product Data: Submit door manufacturer's product data, specifications and installation instructions for each type of wood door.

- E. Include details of core and edge construction, trim for openings and louvers (if any) and similar components.
- F. Include finishing specifications for doors to receive factory applied shop finish.
- G. Include certifications as may be required to show compliance with specifications.
- H. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
- I. Samples: Submit samples for the following:
 - 1. Shop-Finished Doors: Submit samples, 1'0" square, showing fully completed shop finish on same veneer and edge construction which will be used on shop finished doors.
- J. Specific Product Warranty: Submit written agreement in door manufacturer's standard form signed by manufacturer, installer and contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show telegraphing of core construction below in face veneers, or do not conform to tolerance limitations of NWMA.
- K. Warranty shall be in effect during following period of time after date of substantial completion.
 - 1. Solid Core Flush Doors:
 - a. Lifetime.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING:

- A. Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with the "On Site Care" recommendations of NWMA pamphlet "Care and Finishing of Wood Doors" and with manufacturer's instructions, and as otherwise indicated.
- B. Package doors at factory prior to shipping using method indicated below:
 - 1. Cartoning.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- 1. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
- 2. Algoma Hardwoods Inc.
- 3. Eggers Hardwood Products Corp.
- 4. Chappell Door Company.
- 5. Weyerhaeuser Company.
- 6. Buell Door Company
- 7. Graham Manufacturing Company

2.2 MATERIALS AND COMPONENTS:

- A. General: Provide wood doors complying with applicable requirements of referenced standards for kinds and types of doors indicated and as specified.
- B. Door Construction: Manufacturer's standard five ply bonded core.
- C. Exposed Surfaces: Provide kind shown or scheduled and as further specified. Provide same exposed surface material on both faces of each door, unless otherwise indicated.

2.3 GENERAL FABRICATION REQUIREMENTS:

- A. Openings: Cut and trim openings through doors and panels as shown. Comply with applicable requirements of referenced standards for kind(s) of doors required.
- B. Light Openings: Factory cut openings. Trim openings for non-fire rated doors with solid wood moldings and fire rated doors with steel frame.

2.4 INTERIOR FLUSH WOOD DOORS:

- A. Solid Core Doors for Transparent Finish:
 - 1. Faces: Plain Sliced Red Oak
 - 2. Veneer Face Assembly - Book
 - 3. Grade: Premium.
 - 4. Core Construction: PC (Particleboard core).
- B. Fire-Rated Solid Core Doors:
 - 1. Faces and NWWDA Grade: Provide faces and grade to match non rated doors in same area of building, unless otherwise indicated.
 - 2. Core Construction: Manufacturer's standard core construction as required to provide fire resistance rating indicated.
 - 3. Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw holding capability and split resistance over edges composed of a single layer of treated lumber.

2.5 SHOP FINISH:

- A. Pre-finish wood doors at factory or finish shop.
- B. All doors scheduled to receive transparent finish shall be "prefinished", at factory.
- C. Comply with recommendations of AWI for factory finishing of doors, including final sanding immediately before application of finishing materials.
- D. Provide finishes complying with door manufacturer's applicable standard finish specifications.
- E. Finish on Doors: Stain from Manufacturers Standard Colors then factory finish.

2.6 PREFITTING AND PREPARATION FOR HARDWARE:

- A. Pre-fit and pre-machine wood doors at factory.
- B. Comply with tolerance requirements of AWI for pre-fitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.
- C. Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Installer must examine door frames and verify that frames are correct type and have been installed as required for proper hanging of corresponding doors and notify contractor in writing of conditions detrimental to proper and timely installation of wood doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to installer.
- B. INSTALLATION:
 - 1. Condition doors to average prevailing humidity in installation area prior to hanging.
 - 2. Hardware: For installation see Division 8 "Builders Hardware" section of these specifications.
 - 3. Manufacturer's Instructions: Install wood doors in accordance with manufacturer's instructions and as shown.
 - a. Install fire rated doors in corresponding fire rated frames in accordance with requirements of NFPA No. 80.
 - 4. Pre-fit Doors: Fit to frames and machine for hardware as required for proper fit and uniform clearance at each edge.
 - 5. Prepare Doors: Fit to frames and prepare for hardware as required for proper fit and uniform clearance at each edge.
 - 6. Clearance:
 - a. For non-rated doors provide clearances of 1/8" at jambs and heads; 1/16" at meeting stiles for pairs of doors; and 1/2" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.
 - b. For fire rated doors, provide clearances complying with NFPA 80.
 - 7. Shop-Finished Doors: Restore finish on edges of shop finished doors before installation, if fitting or machining is required at the job site.
 - 8. Job Site Finished Doors: See painting sections in Division 9 of these specifications for requirements for finishing wood doors.

3.2 ADJUST AND CLEAN:

- A. Operation: Rehang or replace doors which do not swing or operate freely as directed by Architect.
- B. Finished Doors: Refinish or replace doors damaged during installation as directed by Architect.
- C. Protection and Completed Work: Advise contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of work.

END OF SECTION

SECTION 08 36 00 SECTIONAL OVERHEAD DOORS
PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Glazed Aluminum Sectional Overhead Doors
- B. Electric Operators and Controls.
- C. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

- A. Section 003300 - Cast-In-Place Concrete: Prepared opening in concrete. Execution requirements for placement of anchors in concrete wall construction.
- B. Section 042000 – Brick and Concrete Masonry: Prepared opening in masonry. Execution requirements for placement of anchors in masonry wall construction.
- C. Section 055000 - Metal Fabrications: Steel frame and supports.
- D. Section 079200 - Joint Sealers: Perimeter sealant and backup materials.
- E. Section 087100 - Hardware:
- F. Section 099000 - Painting
- G. Section 160000 – Electrical - Raceway and Boxes:
- H. Section 160000 – Electrical - Wiring Connections:

1.3 REFERENCES

- A. [ANSI/DASMA 102](#) - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wiring Connections: Requirements for electrical characteristics.
 - 1. 115 volts, single phase, 60 Hz.
- B. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.
 2. Storage and handling requirements and recommendations.
 3. Installation methods.
- C. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- E. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

1.8 PROJECT CONDITIONS

- A. Pre-Installation Conference: Convene a pre-installation conference just prior to commencement of field operations, to establish procedures to maintain optimum working conditions and to coordinate this work with related and adjacent work.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturer: Overhead Door Corp., 2501 S. State Hwy. 121, Suite 200, Lewisville, TX 75067. ASD. Tel. Toll Free: (800) 275-3290. Phone: (469) 549-7100. Fax: (972) 906-1499. Web Site: www.overheaddoor.com. E-mail: sales@overheaddoor.com.
- B. Or approved equal permitted.

2.2 GLAZED ALUMINUM SECTIONAL OVERHEAD DOORS

A. Glazed Sectional Overhead Doors: 521 Series Aluminum Doors by Overhead Door Corporation.

1. Door Assembly: Stile and rail assembly secured with 1/4 inch (6 mm) diameter through rods.
 - a. Panel Thickness: 1-3/4 inches (44 mm).
 - b. Center Stile Width: 2-11/16 inches (68 mm)
 - c. End Stile Width: 3-5/16 inches (84 mm)
 - d. Intermediate Rail Pair Width: 3-11/16 inches (94 mm).
 - 1) 3-3/4 inches (95 mm).
 - e. Bottom Rail Width:
 - 1) 3-3/4 inches (95 mm).
 - f. Aluminum Panels: 0.050 inch (1.3 mm) thick, aluminum.
 - g. Stiles and Rails: 6063 - T6 aluminum.
 - h. Springs:
 - 1) 50,000 cycles.
 - i. Glazing:
 - 1) 1/2 inch (12.5 mm) Tempered Insulating glass.
2. Finish and Color:
 - a. Powder Coating Finish: Color as selected by Architect from manufacturer's standard colors.
3. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
4. Lock: Interior galvanized single unit.
5. Weatherstripping:
 - a. Flexible bulb-type strip at bottom section.
 - b. Flexible Jamb seals.
 - c. Flexible Header seal.
6. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
7. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
 - a. Entrapment Protection: Required for momentary contact, includes radio control operation.
 - 1) Electric sensing edge monitored to meet UL 325/2010.
 - 2) Photoelectric sensors monitored to meet UL 325/2010.
 - b. Operator Controls:
 - 1) Push-button operated control stations with open, close, and stop buttons.
 - 2) Surface mounting.
 - 3) Both interior and exterior location.
 - c. Special Operation:
 - 1) Radio control operation.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.

- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION

SECTION 08 41 13 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of aluminum entrances and storefronts is shown on drawings and schedules.
- B. Types of aluminum entrances and storefronts required include the following:
 - 1. Exterior entrance doors.
 - 2. Frames for exterior entrances.
 - 3. Storefront type framing system.
- C. Glazing: Refer to "Glass and Glazing" section of Division 8 for glazing requirements for aluminum entrances and storefronts, including doors specified herein to be factory pre-glazed.
- D. Mortise lock cylinders are specified in Division 8 hardware section.

1.3 SYSTEM DESCRIPTION

- A. Performance and Testing:
 - 1. Thermal Movement: Fabricate exterior components from manufacturer's stock systems which have been designed to provide for expansion and contraction resulting from ambient temperature range of 120 degrees F (49 degrees C).
 - 2. Wind Loading: Fabricate exterior components from manufacturer's stock systems which have been tested in accordance with ASTM E 330 to withstand at least the following loadings:
 - a. Uniform pressure of 20 psf inward and 20 psf outward.
 - 3. Weather Resistance: Fabricate exterior storefront components from manufacturer's stock systems which have been tested to demonstrate permanent resistance to leakage's as follows with test pressure differential of 10% of design loading (excluding operable door edges).
 - a. Air infiltration not more than 0.06 cfm per square foot tested in accordance with ASTM E 283.
 - b. Water infiltration no uncontrolled water penetration tested in accordance with ASTM E 331.

1.4 QUALITY ASSURANCE:

- A. Windows, Storefront, and Entrances shall be by one manufacturer.
- B. Drawings are based on one manufacturer's standard aluminum entrance and storefront system. Another standard system of a similar and equivalent nature will be acceptable when differences do not materially detract from design concept or intended performances, as judged solely by Architect.
- C. Field Measurement: Wherever possible, take field measurements prior to preparation of shop drawings and fabrication, to ensure proper fitting of work; however, proceed with fabrication and coordinate installation tolerances as necessary when field measurements might delay work.

1.5 REFERENCES:

- A. Standards: Comply with applicable provisions of "Metal Curtain Wall, Window, Storefront, and Entrance Guide Specifications Manual" by AAMA.

1.6 SUBMITTALS:

- A. Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of aluminum entrances and storefronts required for project, including data that products have been tested and comply with performance requirements.
- B. Shop Drawings: Submit shop drawings for fabrication and installation of aluminum entrances and storefronts, including elevations, detail sections of typical composite members, anchorages, reinforcement, expansion provisions, and glazing.

1.7 SPECIAL PROJECT WARRANTY:

- A. Provide written warranty signed by manufacturer, installer, and contractor, agreeing to replace aluminum entrance doors and storefront which fail in materials or workmanship within two years of acceptance. Failure of materials or workmanship includes excessive leakage or air infiltration, excessive deflections, faulty operation of entrances, deterioration of finish or construction in excess of normal weathering, and defects in hardware, weather-stripping, and other components of the work.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. Kawneer
 - 2. Oldcastle
 - 3. EFCO

2.2 MATERIALS AND ACCESSORIES:

- A. Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate. Major storefront and door extrusions are to be at least 0.125" in thickness.
- B. Fasteners: Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be non-corrosive and compatible with aluminum components.
 - 1. Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.
 - 2. Provide Phillips flat-head machine screws for exposed fasteners.
- C. Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, non-magnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.
- D. Concrete/Masonry Inserts: Cast iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 386.
- E. Bituminous Coatings: Cold-applied asphalt mastic complying with SSPC-PS 12, compounded for 30-mil thickness per coat.
- F. Compression Weather-stripping: Manufacturer's standard replaceable stripping of molded neoprene gaskets complying with ASTM D 200.
- G. Sliding Weather-stripping: Manufacturer's standard replaceable stripping of wool, polypropylene, or nylon woven pile, with nylon fabric and aluminum strip backing, complying with AAMA 701.2.
- H. Glass and Glazing Materials: Provide glass and glazing materials which comply with requirements of "Glass and Glazing" section of these specifications.

2.3 HARDWARE:

- A. References to Styles, Series, Model, References Kawneer.
- B. General: Refer to hardware section of Division 8 for requirements for hardware items other than those indicated herein to be provided by manufacturer of aluminum entrances.
- C. Provide door manufacturer's standard heavy-duty hardware units as shown, scheduled, or required for operation of each door, including the following items (for each door) of sizes, number, and type recommended by manufacturer for service required, finished to match door, unless otherwise indicated.
- D. Continuous Geared Hinge
- E. Overhead Closers: Units complying with ANSI A 156.4 of the following type, grade, functions and features.
 - 1. Type: Concealed, single acting Grade 2.
 - a. Independently hung, concealed arm and track
 - b. Non-hold open.
- F. Panic Device: Manufacturers Standard Concealed Rod at double doors, rim Latch at single doors, color to match door color.
- G. Sweep: Provide adjustable bottom rails sweeps at all exterior doors.
- H. Thresholds: Extruded aluminum in mill finish complete with anchors and clips.

2.4 FABRICATION:

- A. General:
- B. Sizes and Profiles: Required sizes for door and frame units, are shown on drawings. Any variable dimensions are indicated, together with maximum and minimum dimensions required to achieve design requirements and coordination with other work.
 - 1. Frame dimensions shall be $\frac{3}{4}$ " less than the rough opening both vertically and horizontally to allow a $\frac{3}{8}$ " caulked joint around the perimeter opening between the aluminum frame and the adjacent material.
- C. Prefabrication: To greatest extent possible, complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.
- D. Pre-glaze the door and units to greatest extent possible in coordination with installation and hardware requirements.
- E. Do not drill and tap for surface-mounted hardware items until time of installation at project site.

- F. Sequence: Complete cutting, fitting, forming, drilling, and grinding of metal work prior to cleaning, finishing, surface treatment, and application of finishes. Remove arises from cut edges and ease edges and corners to radius of approximately 1/64".
- G. Welding: Comply with AWS recommendations to avoid discoloration; grind exposed welds smooth and restore mechanical finish.
- H. Reinforcing: Structurally reinforce framing system to withstand 120 mph wind zone requirements; separate dissimilar metals with bituminous paint or other separator which will prevent corrosion.
- I. Continuity: Maintain accurate relation of planes and angles with hairline fit of contacting members.
- J. Fasteners: Conceal fasteners wherever possible.
- K. Weather-stripping: For exterior doors, provide compression weather-stripping against fixed stops; at other edges and bottom, provide sliding weather-stripping retained in adjustable strip mortised into door edge.
- L. Storefront Framing System:
- M. General: Inside-outside matched resilient flush-glazed system, with provision for glass replacement.
 - 1. System to be equal to the following Kawneer framing system:
 - a. Trifab VG 451 2" X 4 1/2" for up to 1" infill (FIXED SYSTEM)
 - b. Traco 8470TL 2" X 4 1/2" (OPERABLE SLIDING SYSTEM)
 - c. Subsill - Provide extruded aluminum thermally broken 451T-VG-001 High Performance sub-sill for all sill conditions.
- N. Stile-and-Rail Type Aluminum Doors:
 - 1. Frame: Provide 1 piece tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie-rods or j-bolts, or fabricate with structurally welded joints, at manufacturer's option.
 - 2. Style: Except as otherwise shown or scheduled, provide doors 1-3/4" thick and of indicated style, as described in AAMA publications.
 - a. 350 Medium style (3-1/2" nominal width).
 - 3. Glazing: Fabricate doors to facilitate replacement of glass or panels, without disassembly of door stiles and rails. Provide Snap-On extruded aluminum glazing stops, with exterior stops anchored for non-removal.

2.5 FINISHES:

- A. Anodized Aluminum Finishes: Clear Anodized #14 AA-M10C21A41 / AA-M45C22A41, Architectural Class 1 (.7 mils minimum)

PART 3 - EXECUTION

3.1 INSTALLATION:

- A. Comply with manufacturer's instructions and recommendations for installation of aluminum entrances and storefronts.
- B. Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Anchor securely in place, separating aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.
- C. Drill and tap frames and doors and apply surface-mounted hardware items, complying with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.
- D. Sub-sill: Sub-sill shall extend the entire length of the storefront section. Provide end dams at ends of sub-sill to produce a closed water dam. Caulk dam with silicone joints to totally prevent water escaping at ends.
- E. Set sill members and other members in bed of compound, or with joint fillers or gaskets as shown to provide weathertight construction. Comply with requirements of Division 7 for compounds, fillers, and gaskets.

3.2 ADJUST AND CLEAN:

- A. Adjust operating hardware to function properly without binding, and to provide tight fit at contact points and weather-stripping.
- B. Clean the completed system, inside and out, promptly after erection and installation of glass and sealants. Remove excess glazing and sealant compounds, dirt, and other substances from aluminum surfaces.

END OF SECTION

SECTION 08 44 00 - ALUMINUM CURTAINWALL SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

SUMMARY OF WORK:

Section Includes: Kawneer Architectural Aluminum Curtain Wall Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of curtain wall framing.

Types of Kawneer Aluminum Curtain Wall include:

1600 Wall System^{®1} – 2–1/2" x 6", outside glazed pressure plate format.

RELATED SECTIONS:

Section 08410 Aluminum Storefront

Section 08700 Door Hardware

Section 08800 Glass and Glazing

SYSTEM DESCRIPTION:

Curtain Wall System Performance Requirements:

Wind loads: Provide Curtain Wall system; include anchorage, capable of withstanding wind load design pressures to meet requirements of the International Building Code 2018 Edition.

Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² (0.3 l/s · m²) at a static air pressure differential of 6.24 psf (300 Pa).

Water Resistance, (static): The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a static air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.

Water Resistance, (dynamic): The test specimen shall be tested in accordance with AAMA 501.1. There shall be no leakage at an air pressure differential of 12 psf (575 Pa) as defined in AAMA 501.

Uniform Load: A static air design load of 40 psf (1915 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member at design load. At structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.

Seismic: When tested to AAMA 501.4, system must meet design displacement of 0.010 x the story height and ultimate displacement of 1.5 x the design displacement.

Thermal Transmittance (U-factor): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than: 0.66 BTU/hr/ft² /°F. per AAMA 507.

Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than 66_{frame} and 60_{glass} (clear),
or

Condensation Index (I): when tested to CSA-A440-00, the Condensation Index shall not be less than 68_{frame} and 54_{glass} (clear).

SUBMITTALS:

General: Prepare, review, approve, and submit specified submittals in accordance with “Conditions of the Contract” and Submittals Sections. Product data, shop drawings, samples, and similar submittals are defined in “Conditions of the Contract.”

Quality Assurance/Control Submittals:

Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

WARRANTY:

Manufacturer’s Product Warranty: Submit, for Owner’s acceptance, manufacturer’s warranty for curtain wall system as follows:

Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by Kawneer.

QUALITY ASSURANCE:

Qualifications:

Installer Qualifications: Installer experienced to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.

Manufacturer Qualifications: Manufacturer capable of providing structural calculations, applicable independent product test reports, installation instructions, a review of the application method, customer approval and periodic field service representation during construction.

Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer’s installation instructions, and manufacturer’s warranty requirements.

DELIVERY, STORAGE, HANDLING:

Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle material and components to avoid damage. Protect curtain wall material against damage from elements, construction activities, and other hazards before, during and after curtain wall installation.

PART 2 – PRODUCTS

ACCEPTABLE MANUFACTURER:

Basis of Design Kawneer Company, Inc.
555 Guthridge Court, Technology Park/Atlanta
Norcross, GA 30092
Telephone: 770 449 5555
Fax: 770 734 1560

System equal to: Kawneer Aluminum Curtain Wall

Series: 1600 Wall System^{®1}

Note: Provide applied system where noted on drawings or required for installation.

SUBSTITUTIONS:

General: Refer to Substitutions Section for procedures and submission requirements.

MATERIALS:

Aluminum (Curtain Wall and Components):

Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.

Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.

Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

ACCESSORIES:

Fasteners: Where exposed, shall be Stainless Steel.

Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of a silicone compatible EPDM rubber that provides for silicone adhesion.

Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.

Outrigger Sunshade system as shown on the drawings:
Versoleil Sunshade – Outrigger System for Curtain wall by Kawneer 36” depth, Arch blade options. Color to be selected by Architect from Manufacturer’s Colors.

RELATED MATERIALS:

Sealants: Refer to Joint Treatment (Sealants) Section.

Glass: Refer to Glass and Glazing Section.

FABRICATION:

General:

Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly yet enabling installation and dynamic movement of perimeter seal.

Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.

Prepare components to receive anchor devices. Fabricate anchors.

Arrange fasteners and attachments to conceal from view.

FINISHES:

Anodized Aluminum Finishes: Clear Anodized #14 AA-M10C21A41 / AA-M45C22A41, Architectural Class 1 (.7 mils minimum)

Source Quality Control:

Source Quality: Provide aluminum curtain walls specified herein from a single source.

Building Enclosure System: When aluminum curtain wall are part of a building enclosure system, including entrances, entrance hardware, windows, storefront framing and related products, provide building enclosure system products from a single source manufacturer.

PART 3 – EXECUTION

EXAMINATION:

Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer’s

instructions. Verify openings are sized to receive curtain wall system and sill plate is level in accordance with manufacturer's acceptable tolerances.

Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.

INSTALLATION:

General: Install curtain wall systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.

Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.

Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.

Water Drainage: Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

Related Products Installation Requirements:

Sealants (Perimeter): Refer to Joint Treatment (Sealants) Section.

Glass: Refer to Glass and Glazing Section.

Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual

FIELD QUALITY CONTROL:

Field Tests: Architect shall select curtain wall units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected as part of the contract amount.

Testing: Testing shall be performed per AAMA 503 by a qualified independent testing agency. Testing required under this section shall be included in Base Bid.

Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft², which ever is greater.

Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 8 psf (383 Pa).

Manufacturer's Field Services: Upon request, provide periodic site visit by manufacturer's field service representative.

PROTECTION AND CLEANING:

Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum curtain wall system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.

Cleaning: Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to acceptance. Remove construction debris from project site and legally dispose of debris.

END OF SECTION

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

- A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.
 - 1. Door hardware for steel (hollow metal) doors.
 - 2. Door hardware for aluminum doors.
 - 3. Door hardware for wood doors.
 - 4. Door hardware for other doors indicated.
 - 5. Keyed cylinders as indicated.
- B. Related Sections:
 - 1. Division 6: Rough Carpentry.
 - 2. Division 8: Aluminum Doors and Frames
 - 3. Division 8: Hollow Metal Doors and Frames.
 - 4. Division 8: Wood Doors.
- C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
 - 1. Builders Hardware Manufacturing Association (BHMA)
 - 2. NFPA 101 Life Safety Code
 - 3. NFPA 80 -Fire Doors and Windows
 - 4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
 - 5. UL10C – Positive Pressure Fire Test of Door Assemblies
 - 6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
 - 7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
 - 8. ICC – International Building Code
- D. Intent of Hardware Groups
 - 1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 - 2. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
- E. Allowances
 - 1. Refer to Division 1 for allowance amount and procedures.
- F. Alternates
 - 1. Refer to Division 1 for Alternates and procedures.

1.2 SUBSTITUTIONS:

- A. Comply with Division 1.

1.3 SUBMITTALS:

- A. Comply with Division 1.
- B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.
- C. Product Data: Manufacturer's specifications and technical data including the following:
 - 1. Detailed specification of construction and fabrication.
 - 2. Manufacturer's installation instructions.
 - 3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
 - 4. Submit 6 copies of catalog cuts with hardware schedule.
 - 5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2
- D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.
 - 1. List groups and suffixes in proper sequence.
 - 2. Completely describe door and list architectural door number.
 - 3. Manufacturer, product name, and catalog number.
 - 4. Function, type, and style.
 - 5. Size and finish of each item.
 - 6. Mounting heights.
 - 7. Explanation of abbreviations and symbols used within schedule.
 - 8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.
- E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.
 - 1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.
- F. Samples: (If requested by the Architect)
 - 1. 1 sample of Lever and Rose/Escutcheon design, (pair).
 - 2. 3 samples of metal finishes
- G. Contract Closeout Submittals: Comply with Division 1 including specific requirements indicated.

1. Operating and maintenance manuals: Submit 3 sets containing the following.
 - a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed "Wiring Diagrams" for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 1.

1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years experience in the distribution of commercial hardware.
 - a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
 - b. Hardware Schedule shall be prepared and signed by an AHC.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
 - a. Provide UL listed hardware for labeled and 20 minute openings in conformance with requirements for class of opening scheduled.
 - b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.
6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 1.

1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

- A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.
- B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

- A. Refer to Conditions of the Contract
- B. Manufacturer's Warranty:
 1. Closers: Ten years
 2. Exit Devices: Five Years
 3. Locksets & Cylinders: Three years
 4. All other Hardware: Two years.

1.8 OWNER'S INSTRUCTION:

- A. Instruct Owner's personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

- A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.
 1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
 2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
 3. Delivery, Storage and Protection: Comply with Owner's requirements for delivery, storage and protection of extra service materials.
- B. Maintenance Service: Submit for Owner's consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 1.

<u>Item:</u>	<u>Manufacturer:</u>	<u>Approved:</u>
Hinges	Stanley	Bommer, McKinney
Continuous Hinges	National Guard	Stanley, ABH
Locksets	Best 45H Series	Schlage
Cylinders	Best 1E74, 12E	Sargent
Exit Devices	Precision 2000 Series	Von Duprin 98/99
Closers	Stanley D-4550	Sargent 351
Push/Pull Plates	Trimco	Burns, Rockwood
Protection Plates	Trimco	Burns, Rockwood
Overhead Stops	Rixson	ABH, Glynn-Johnson
Door Stops	Trimco	Burns, Rockwood
Threshold & Gasketing	National Guard	Reese, K.N. Crowder

2.2 MATERIALS:

- A. Hinges: Shall be Five Knuckle Ball bearing hinges
1. Template screw hole locations
 2. Bearings are to be fully hardened.
 3. Bearing shell is to be consistent shape with barrel.
 4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
 5. Equip with easily seated, non-rising pins.
 6. Non Removable Pin screws shall be slotted stainless steel screws.
 7. Hinges shall be full polished, front, back and barrel.
 8. Hinge pin is to be fully plated.
 9. Bearing assembly is to be installed after plating.
 10. Sufficient size to allow 180-degree swing of door
 11. Furnish five knuckles with flush ball bearings
 12. Provide hinge type as listed in schedule.
 13. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
 14. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
 15. UL10C listed for Fire rated doors.
- B. Geared Continuous Hinges:
1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1
 2. Anti-spinning through fastener
 3. UL10C listed for 3 hour Fire rating
 4. Non-handed

5. Lifetime warranty
6. Provide Fire Pins for 3-hour fire ratings
7. Sufficient size to permit door to swing 180 degrees

C. Mortise Type Locks and Latches:

1. Tested and approved by BHMA for ANSI A156.13, Series 1000, Operational Grade 1, Extra-Heavy Duty, Security Grade 2 and be UL10C.
2. Furnish UL or recognized independent laboratory certified mechanical operational testing to 4 million cycles minimum.
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Fit ANSI A115.1 door preparation
5. Functions and design as indicated in the hardware groups
6. Solid, one-piece, 3/4-inch (19mm) throw, anti-friction latchbolt made of self-lubricating stainless steel
7. Deadbolt functions shall have 1 inch (25mm) throw bolt made of hardened stainless steel
8. Latchbolt and Deadbolt are to extend into the case a minimum of 3/8 inch (9.5mm) when fully extended
9. Auxiliary deadlatch to be made of one piece stainless steel, permanently lubricated
10. Provide sufficient curved strike lip to protect door trim
11. Lever handles must be of forged or cast brass, bronze or stainless steel construction and conform to ANSI A117.1. Levers that contain a hollow cavity are not acceptable
12. Lock shall have self-aligning, thru-bolted trim
13. Levers to operate a roller bearing spindle hub mechanism
14. Mortise cylinders of lock shall have a concealed internal setscrew for securing the cylinder to the lockset. The internal setscrew will be accessible only by removing the core, with the control key, from the cylinder body.
15. Spindle to be designed to prevent forced entry from attacking of lever
16. Provide locksets with 7-pin removable and interchangeable core cylinders
17. Each lever to have independent spring mechanism controlling it
18. Core face must be the same finish as the lockset.

D. Exit Devices with Weatherized True Architectural Finish 626W:

1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
2. Exit devices to be tested and certified by UL or by a recognized independent laboratory to meet or exceed the following :
 - A. Mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
 - B. BHMA 156.3 – A156.18 Salt Spray Certified 600 Hours 3 X Standard.
 - C. MIL-STD-810G 509.6 Salt Fog Certified.
 - D. MIL-STD-810G 510.6 Sand & Dust Certified.
 - E. MIL-STD-810G 521.4 Icing/Freezing Rain Certified.
3. Exit devices chassis to be investment cast steel, zinc dichromate.
4. Exit devices to have stainless steel deadlocking 3/4" through latch bolt.
5. Exit devices to be equipped with sound dampening on touchbar.
6. Non-fire rated exit devices to have cylinder dogging.
7. Non-fire rated exit devices to have 1/4" minimum turn hex key dogging.
8. All Exterior components of the exit device including the Active case cover, Touch bar, device channel, slide channel fillers, Vertical rods, latch covers and device end cap, shall

be constructed of a brass base metal then plated in a double dip two step process of satin nickel and chrome.

9. Exit device shall be available with options of WTS Weatherized touch bar switch and WALW Weatherized Exit alarm (hardwired)
10. Additional non-weatherized electrified options are compatible with the 626W. Non-weatherized options are not recommended for harsh environments.
11. Touchpad to be "T" style constructed.
12. Touchbar assembly on wide style exit devices to have a 1/4" clearance to allow for vision frames.
13. All exposed exit device components to be of architectural metals and "true" architectural finishes.
14. Provide strikes as required by application.
15. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
16. The strike is to be black powder coated finish.
17. Exit devices to have field reversible handing.
18. Provide heavy duty vandal resistant lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latchsets.
19. Provide 9001-Quality Management and 14001-Environmental Management.
20. Vertical Latch Assemblies to have gravity operation, no springs.
21. Approved Manufacturers
 - a. The following manufacturers will be approved contingent on meeting or exceeding the above performance criteria:
 - 1) Precision with 626W finish, Manufactured by Precision Hardware, Div. of dormakaba USA

E. Door Closers shall:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified
3. Provide 9001-Quality Management and 14001-Environmental Management.
4. Closer shall have extra-duty arms and knuckles
5. Conform to ANSI 117.1
6. Maximum 2 7/16 inch case projection with non-ferrous cover
7. Separate adjusting valves for closing and latching speed, and backcheck
8. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
9. Full rack and pinion type closer with 1½" minimum bore
10. Mount closers on non-public side of door, unless otherwise noted in specification
11. Closers shall be non-handed, non-sized and multi-sized.

F. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.

1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.
4. Provide dome stops where wall stops are not practical. Provide spacers or carpet riser for floor conditions encountered

G. Over Head Stops: Provide a Surface mounted or concealed overhead when a floor or wall stop cannot be used or when listed in the hardware set.

1. Concealed overhead stops shall be heavy duty bronze or stainless steel.
 2. Surface overhead stops shall be heavy duty bronze or stainless steel.
- H. Push Plates: Provide with four beveled edges ANSI J301, .050 thickness, size as indicated in hardware set. Furnish oval-head countersunk screws to match finish.
- I. Pulls with plates: Provide with four beveled edges ANSI J301, .050 thickness Plates with ANSI J401 Pull as listed in hardware set. Provide proper fasteners for door construction.
- J. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- K. Mop plates: Provide with four beveled edges ANSI J103, 4 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.
- L. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.
- M. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
1. Weatherstrip shall be resilient seal of Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone.
 2. UL10C Positive Pressure rated seal set when required.
- N. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
1. Door seal shall be resilient seal of Neoprene, Polyurethane, Nylon Brush, Silicone.
 2. UL10C Positive Pressure rated seal set when required.
- O. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.
- P. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

2.3 FINISH:

- A. Designations used in Schedule of Finish Hardware - 3.05, and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products
- B. Powder coat door closers to match other hardware, unless otherwise noted.

- C. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

- A. Provide keyed brass construction cores and keys during the construction period. Construction control and operating keys and core shall not be part of the Owner's permanent keying system or furnished in the same keyway (or key section) as the Owner's permanent keying system. Permanent cores and keys (prepared according to the accepted keying schedule) will be furnished to the Owner.
- B. Cylinders, removable and interchangeable core system: Best CORMAX™ Patented 7-pin.
- C. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."
- D. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.
- E. Furnish keys in the following quantities:
 - 1. 1 each Grand Masterkeys
 - 2. 4 each Masterkeys
 - 3. 2 each Change keys each keyed core
 - 4. 15 each Construction masterkeys
 - 5. 1 each Control keys
- F. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.
- G. Keying Schedule: Arrange for a keying meeting, and programming meeting with Architect Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying and programming complies with project requirements. Furnish 3 typed copies of keying and programming schedule to Architect.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
 - 1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

- A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.

1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

- A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- B. Conform to local governing agency security ordinance.
- C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
 1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
- D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

- A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
 1. Check and adjust closers to ensure proper operation.
 2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
 - a. Verify levers are free from binding.
 - b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
 3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

Manufacturer List

<u>Code</u>	<u>Name</u>
AL	American Lock
BE	Best Access Systems
BY	By Others
NA	National Guard
PR	Precision
RX	Rixson
SD	Stanley Door Closers
ST	Stanley
TR	Trimco

Option List

<u>Code</u>	<u>Description</u>
C4	CAM-STANDARD CAM
CD	CYLINDER DOGGING
FL	Fire Exit Hardware
SH	Shrouded w/Cut Resistant Shackle (21B)
SN	Sex Nuts (Pkg. of 4)
CSK	COUNTER SINKING OF KICK and MOP
SRI	Special Rust Inhibitor
VIB	Double Visual Indicator Option
XSPL	21B CUT RESISTANT
P45-110	Spacer Block PA Brkt on Rabbet
SNB (2)	SEX BOLTS (2)
P45HD-110	Spacer Block HD Arm on Rabbet
P45HD-112	Angle Brkt. - Shoe Support HD Arms
B4E-HEAVY-KP	BEVELED 4 EDGES - KICK PLATES

PLATES

Finish List

<u>Code</u>	<u>Description</u>
AL	Aluminum
ZP	Zinc Plated
626	Satin Chromium Plated
630	Satin Stainless Steel
689	Aluminum Painted
626W	Weatherized Satin Chrome
GREY	Grey
US26D	Chromium Plated, Dull
US32D	Stainless Steel, Dull

Hardware Sets**SET #01**

Doors: 100A, 104B, 106D, 114A, 208A

1	Continuous Hinge	HD1100A 83"		NA
1	Exit Device-Classroom	2108 X V4908B CD SNB (2)	626W	PR
1	Rim Cylinder-Exit Trim	12E-72 PATD	626	BE
1	Mortise Cyl.-Dogging	1E-74 PATD C4	626	BE
1	Door Closer	CLD-4550 CS SN	689	SD
1	Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1	Door Sweep	C627 A x LAR		NA
1	Drip Cap	16 A - 4" ODW		NA
1	Gasketing	127 SA x LAR		NA
1	Threshold	896 S x LAR	AL	NA

SET #02

Doors: 108B

1	Continuous Hinge	HD1100A 83"		NA
1	Exit Device-Classroom	2108 X V4908B CD SNB (2)	626W	PR
1	Rim Cylinder-Exit Trim	12E-72 PATD	626	BE
1	Mortise Cyl.-Dogging	1E-74 PATD C4	626	BE
1	Door Closer	CLD-4550 CS SN	689	SD
1	Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1	Door Sweep	C627 A x LAR		NA
1	Perimeter Gaskets	By Alum. Door and Frame Provider		BY
1	Threshold	896 S x LAR	AL	NA

SET #03

Doors: 101A

3	Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1	Exit Device-Passage	FL 2114 X 4914B SNB (2)	626W	PR
1	Door Closer	CLD-4551 CS P45HD-110 P45HD-112 SN	689	SD
1	Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1	Door Sweep	C627 A x LAR		NA
1	Perimeter Gaskets	5075 B x LAR		NA
1	Threshold	896 S x LAR	AL	NA

SET #04

Doors: 105A, 201A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Exit Device-Passage	FL 2114 X 4914B SNB (2)	626W	PR
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Perimeter Gaskets	5075 B x LAR		NA
1 Door Sweep	601 A 36"		NA

SET #05

Doors: 102A

REFER TO SPECIFICATION SECTION 08 10 10 IMPACT HOLLOW METAL DOORS
FRAME
AND HARDWARE

SET #06

Doors: 102B

REFER TO SPECIFICATION SECTION 08 10 10 IMPACT HOLLOW MEATL DOORS
FRAME
AND HARDWARE

SET #07

Doors: 103A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Lockset-Storerm w/ Deadbolt	45H-7TD16H PATD	626	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA

SET #08

Doors: 114B, 208B

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Exit Device-Passage	2114 X 4914B SNB (2)	626W	PR
1 Door Closer	CLD-4551 EDA P45-110 SN	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Perimeter Gaskets	5075 B x LAR		NA
1 Door Sweep	601 A 36"		NA

SET #09

Doors: 108A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Exit Device-Passage	2114 X 4914B SNB (2)	626W	PR
1 Door Closer	CLD-4551 CS P45HD-110 P45HD-112 SN	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Door Sweep	601 A 36"		NA
1 Perimeter Gaskets	5075 B x LAR		NA

SET #10

Doors: 106A, 106B, 106C

3 Hinges	FBF179 4 1/2 X 4 1/2 NRP	US26D	ST
1 Lockset-Dormitory	45H-7T16H PATD	626	BE
1 Overhead Stop	1-336	630	RX
1 Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1 Padlock	21B-722L PATD SH XSPL	626	BE
1 Hasp	A535 Center Hole Hasp 5" w/ Thru Bolts	ZP	AL
1 Perimeter Gaskets	5075 B x LAR		NA

SET #11

Doors: 110A, 112A, 113A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Lockset-Office	45H-7AT16H PATD	626	BE
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA

SET #12

Doors: 115A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Lockset-Storeroom	45H-7D16H PATD	626	BE
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA

SET #13

Doors: 116A, 118A, 111B, 116B, 117A, 118B, 205A, 206A, 207A, 209A, 210A, 211A

3 Hinges	FBF179 4 1/2 X 4 1/2	US26D	ST
1 Privacy Set	45H-0L16H VIB	626	BE
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA
1 Door Sweep	200 NA		NA

SET #14

Doors: 109A, 111A

3 Hinges	FBB179 4 1/2 X 4 1/2	US26D	ST
1 Privacy Set	45H-0L16H VIB	626	BE
1 Door Closer	CLD-4551 STD W/PA BRKT SN	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA

SET #15

Doors: 201B, 202A

3 Hinges	FBB191 4 1/2 X 4 1/2	US32D	ST
1 Privacy Set	45H-0L16H VIB	626	BE
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Wall Bumper	1270CV	626	TR
1 Perimeter Gaskets	5075 B x LAR		NA
1 Threshold	896 S x LAR	AL	NA

SET #16

Doors: 212A

3 Hinges	FBB191 4 1/2 X 4 1/2	US32D	ST
1 Push Plate	1001-3	630	TR
1 Pull Plate	1012-3	630	TR
1 Door Closer	CLD-4551 STD W/PA BRKT SN SRI	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
1 Perimeter Gaskets	5075 B x LAR		NA

SET #17

Doors: 212B, 212C, 212D

3 Hinges	FBB191 4 1/2 X 4 1/2	US32D	ST
1 Privacy Set	45H-0L16H VIB	626	BE
1 Door Closer	CLD-4551 S SN SRI	689	SD
1 Kick Plate	K0050 8" x 2" LDW B4E CSK	630	TR
1 Mop Plate	KM050 4" x 1" LDW B4E CSK	630	TR
3 Door Silencers	1229A	GREY	TR

SET #18

Doors: Room Lockers

24 Padlock	21B-722L PATD	626	BE
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Opening List

<u>Opening</u>	<u>Hdw Set</u>
100A	01
101A	03
102A	05
102B	06
103A	07
104B	01
105A	04
106A	10
106B	10
106C	10
106D	01
108A	09
108B	02
109A	14
110A	11
111A	14
111B	13
112A	11
113A	11
114A	01
114B	08
115A	12
116A	13
116B	13
117A	13
118A	13
118B	13
201A	04
201B	15
202A	15
205A	13
206A	13
207A	13
208A	01
208B	08
209A	13
210A	13
211A	13
212A	16
212B	17
212C	17
212D	17
Lockers	18

END OF SECTION

SECTION 08 81 00 - GLASS AND GLAZING**Error! Bookmark not defined.**

PART 1 - PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Definitions: "Glass" includes prime glass, processed glass, and fabricated glass products. "Glazing" includes glass installation and materials use to install glass. Types of work in this section include glass and glazing for:
 - 1. Window units, not indicated as "pre-glazed."
 - 2. Window wall/store front construction.
 - 3. Entrances and other doors, not indicated as "pre-glazed".
 - 4. "Glass products" is hereby defined to include glazing plastics.

1.3 QUALITY ASSURANCE:

- A. Glass Manufacturer: One of the following for each type/color/pattern of glass:
 - 1. ASG Industries, Inc.
 - 2. C-E Glass Division
 - 3. Ford Glass Company
 - 4. Libbey-Owens-Ford Company
 - 5. PPG Industries, Inc.
- B. Prime Glass Standard: FS DD-G-451.
- C. Safety Glass Standard: CPSC 16 CFR 1201.

1.4 SPECIFIED PRODUCT WARRANTY:

- A. Warranty on Hermetic Seals: Provide insulating glass manufacturer's written warranty, agreeing to, within specified warranty period, furnish FOB project site, replacement units for insulating glass units which have defective hermetic seals (excluding that due to glass breakage); defined to include intrusion of moisture or dirt, internal condensation at temperatures above -20 degrees

F (-31 degrees C), deterioration of internal glass coatings, and other visual evidence of seal failure or performance failure; provided manufacturer's instructions for handling, installation, protection and maintenance have been adhered to during warranty period.

- B. Warranty period is ten years after seal date permanently imprinted on unit, but not less than nine years after date of substantial completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS:

- A. Float/Plate Glass: Type I, Quality q3, clear unless otherwise indicated.
- B. Bronze Glass: PPG Solar Bronze Tinted 1/4" thick.

2.2 PROCESSED GLASS:

- A. Tempered Glass: Provide prime glass of color and type indicated, which has been heat treated to strengthen glass in bending to not less than 4.5 times annealed strength 1/4" thick.
 - 1. Tong Marks: Provide tempered glass produced by manufacturer's special process which eliminates tong marks.
- B. Spandrel Glass: Provide prime 1/4" P.P.G. "Solarcool" bronze spandrelite glass, which has been processed to fuse a permanent ceramic coating on surface two and reflective coating on surface one.
 - 1. Factory Insulation: Laminate 1" thick, 2-lb. density, glass fiber insulation board on inside face of spandrel panel with backing of reinforced aluminum foil.
- C. Mirror Glass: 1/4" quality q2 clear float glass, full silver coating, copper coating and organic coating.

2.3 FABRICATED GLASS UNITS:

- A. Laminated Safety Glass: Laminate two sheets of clear float glass with a 30-mil film of polyvinyl buteral by manufacturer's standard heat-plus-pressure process with dirt, air pockets and foreign substances excluded; 1/4" thick if not otherwise indicated.
- B. Insulating Glass: Provide two sheets of glass as follows, and 1/2" dry air with Class A sealant-type edge construction to maintain a hermetic seal fabricated to provide the following overall performance characteristics:
 - 1. Exterior Glass: P.P.G. Clear "Solar (Bronze) Gray Tinted" float glass, Quality q3, 1/4" thick.
 - 2. Interior Glass: Clear float glass, Quality q3, 1/4" thick.

3. Edge Construction: Twin primary seals of polyisobutylene; tubular aluminum or galvanized steel spacer-bar frame with welded or soldered sealed corners, and filled with desiccant; glass and bar of polysulfide, silicone or hot-melt butyl elastomeric sealant (fabricator's option).

2.4 GLAZING SEALANTS AND COMPONENTS:

- A. General: Provide color of exposed sealant/compound indicated or if not otherwise indicated, as selected by Architect from manufacturer's standard colors, or black if no color is so selected. Comply with manufacturer's recommendations for selection of hardness depending upon the location of each application, conditions at time of installation, and performance requirements as indicated. Select materials and variations or modifications carefully for compatibility with surfaces contacted in the installation.

2.5 SEALANTS: See section 07920 - Joint Sealers.

2.6 GLAZING GASKETS:

- A. Molded Neoprene Glazing Gaskets: Molded or extruded neoprene gaskets of the profile and hardness required for water-tight construction; comply with ASTM D 2000 designation 2BC 415 to 3BC 620, black.

2.7 MISCELLANEOUS GLAZING MATERIALS:

- A. Cleaners, Primers and Sealers: Type recommended by sealant or gasket manufacturer.
- B. Setting Blocks: Neoprene or EPDM, 70-90 durometer hardness with proven compatibility with sealants used.
- C. Spacers: Neoprene or EPDM, 40-50 durometer hardness with proven compatibility with sealants used.
- D. Compressible Filler (Rod): Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, proven to be compatible with sealants used, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

PART 3 - EXECUTION

3.1 STANDARDS AND PERFORMANCE:

- A. Watertight and airtight installation of each glass product is required, except as otherwise shown. Each exterior installation must withstand normal temperature changes, 25-lb. wind loading, impact loading (for operating sash and doors), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glazing materials and other defects in the work.

- B. Protect glass from edge damage during handling and installation, and subsequent operation of glazed components of the work. During installation, discard units with significant edge damage or other imperfections.
- C. Install insulating glass units to comply with recommendations by Sealed Insulating Glass Manufacturers Association, except as otherwise specifically indicated or recommended by glass and sealant manufacturers.

3.2 PREPARATION FOR GLAZING:

- A. Clean glazing channel and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrate. Remove lacquer from metal surfaces where elastomeric sealants are used.

3.3 GLAZING:

- A. Install setting blocks of proper size in sill rabbet located 1/4th of glass width from each corner. Set blocks in thin course of heel-bead compound, if any.
- B. Gasket Glazing: Miter cut and bond ends together at corners where gaskets are used for channel glazing, so that gaskets will not pull away from corners and result in voids or leaks in glazing system.

3.4 CURE, PROTECTION AND CLEANING:

- A. Protect exterior glass from breakage immediately upon installation, by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove non-permanent labels and clean surfaces. Cure sealants for high early strength and durability.
- B. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.
- C. Wash and polish glass on both faces not more than four days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Comply with glass product manufacturer's recommendations for final cleaning.

END OF SECTION

SECTION 09 25 00 - GYPSUM DRYWALL AND METAL STUDS

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Types of work include:

Gypsum drywall including screw-type metal support system.

Gypsum drywall directly applied to solid substrates.

Drywall finishing (joint tape-and-compound treatment).

QUALITY ASSURANCE:

Fire-Resistance Rating: Where gypsum drywall systems with fire-resistance ratings are indicated, provide materials and installations which are identical with those of applicable assemblies tested per ASTM E 119 by fire testing laboratories acceptable to authorities having jurisdiction.

Provide fire-resistance rated assemblies identical to those indicated by reference to GA File No's. in GA "Fire Resistance Design Manual" or to design designations in UL "Fire Resistance Directory" or in listing of other testing and agencies acceptable to authorities having jurisdiction.

Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

Single-Source Responsibility: Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.

SUBMITTALS:

Product Data: Submit manufacturer's product specifications and installation instructions for each gypsum drywall component, including other data as may be required to show compliance with these specifications.

DELIVERY, STORAGE AND HANDLING:

Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

Store materials inside under cover and in manner to keep them dry, protected from weather, direct sunlight, surface contamination, corrosion and damage from construction traffic and other causes. Neatly stack gypsum boards flat to prevent sagging.

Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

PROJECT CONDITIONS:

Environmental Requirements, General: Comply with requirements of referenced gypsum board application standards and recommendations of gypsum board manufacturer, for environmental conditions before, during and after application of gypsum board.

Cold Weather Protection: When ambient outdoor temperatures are below 55 deg F (13 deg C) maintain continuous, uniform, comfortable building working temperatures of not less than 55 deg F (13 deg C) for a minimum period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding adhesives.

Ventilation: Ventilate building spaces as required to remove water in excess of that required for drying of joint treatment material immediately after its application. Avoid drafts during dry, hot weather to prevent too rapid drying.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Metal Support Materials:

Dale Industries, Inc.
Clark Steel Frame
Unimast

Direct Suspension Systems:

Chicago Metallic Corp.
Donn Corporation.
National Rolling Mills Co.
United States Gypsum Co.

Gypsum Board and Related Products:

American Gypsum Co.
Flintkote Products,
Genstar Building Materials Co.
Georgia-Pacific Corp.
Gold Bond Building Products Div.,
National Gypsum Co.
United States Gypsum Co.

METAL SUPPORT MATERIALS:

Ceiling Support Materials and Systems:

General: Size ceiling support components to comply with ASTM C 754 unless indicated otherwise.

Hanger Wire: ASTM A 641, soft, Class 1 galvanized.

Hanger Anchorage Devices: Screws, clips, bolts, cast-in-place concrete inserts or other devices applicable to the indicated method of structural Anchorage for ceiling hangers and whose suitability for use intended has been proven through standard construction practices or by certified test data. Size devices for 3x calculated load supported except size direct pull-out concrete inserts for 5x calculated loads.

Furring Members: ASTM C 645; 0.0179" min. thickness of base metal, hat-shaped.

Direct Suspension Systems: Manufacturer's standard zinc-coated or painted steel system of main tees with 1-1/2" flange, double web design, cross tees with double web design and 1-1/2" flange, and accessories and wall tees designed for concealed support of gypsum drywall ceilings of type equal to "Donn Drywall Suspension System" with maximum deflection of 1/360 of span.

WALL/PARTITION SUPPORT MATERIALS:

Studs: ASTM C 645; 20 ga. thickness of base metal unless otherwise indicated. Each door and window frame jamb reinforced with two 20 ga. studs.

Depth of Section: 3-5/8", except as otherwise indicated.

Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs and for vertical abutment of drywall work at other work.

Furring Members: ASTM C 645; 0.0179" min. thickness of base metal, hat-shaped.

Z-Furring Members: Manufacturer's standard screw-type galvanized steel, zee-shaped furring members; ASTM A 525, G60, 0.0179" min. thickness of base metal; of depth indicated; designed for mechanical attachment of insulation boards or blankets to monolithic concrete and masonry walls.

Fasteners for Furring Members: Type and size recommended by furring manufacturer for the substrate and application indicated.

GYPSUM BOARD:

Gypsum Wallboard: ASTM C 36, of types, edge configuration and thickness indicated below in maximum lengths available to minimize end-to-end butt joints.

Type: Type X throughout unless otherwise noted.

Edges: Tapered and featured (rounded or beveled) for prefilling.

Thickness: 5/8", unless otherwise indicated.

Moisture-Resistant: ASTM C 630, with tapered edges and of type and thickness indicated below in maximum lengths available to minimize end-to-end butt joints.

Type: Type X throughout, unless otherwise indicated.

Thickness: 5/8", unless otherwise indicated.

Location: Where ceramic tile is specified on walls and where referenced as M.R. on drawings.

TRIM ACCESSORIES:

General: Provide manufacturer's standard trim accessories of types indicated for drywall work, formed of galvanized steel unless otherwise indicated, with either knurled and perforated or expanded flanges for nailing or stapling, and beaded for concealment of flanges in joint compound. Provide corner beads, L-type edge trim-beads, U-type edge trim-beads, special L-kerf-type edge trim-beads, and one-piece control joint beads.

JOINT TREATMENT MATERIALS:

General: ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.

Include mold and locations in general where gypsum board abuts dissimilar materials.

Exterior Joint Compound: Special chemical hardening type for exterior application.

Joint Tape: Paper reinforcing tape.

Joint Compound: Ready-mixed vinyl-type for interior use.

Grade: Two separate grades; one specifically for bedding tapes and filling depressions and one for topping and sanding.

Water-Resistant Joint Compound: Special water-resistant type for treatment of joints, fastener heads and cut edges of water-resistant backing board.

Product: Subject to compliance with requirements, provide Sheetrock Brand W/R Compound; United States Gypsum Co.

MISCELLANEOUS MATERIALS:

General: Provide auxiliary materials for gypsum drywall work of the type and grade recommended by the manufacturer of the gypsum board.

Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

Gypsum Board Screws: Comply with ASTM C 646.

Sound Attenuation Blankets: FS HH-I-251, Type I; semi-rigid mineral fiber blanket without membrane, Class 25 flame-spread, thicknesses as indicated.

FIRE RATED PARTITION IDENTIFICATION: 7 inch by 3 3/4 inch sign, with the appropriate wording in white letters on red background; permanent adhesive back for mounting.

___ * ___ Hour Fire Barrier Protect All Openings

___ * ___ Hour Smoke Barrier Protect All Openings

___ * ___ Hour Fire and Smoke Barrier Protect All Openings

*Plans indicate type of wall and hour rating.

Acceptable manufacturers and product:

Metro Reprographics, Inc.

Comparable signage by other services.

Paint stenciled 2 inch high lettering may be provided in lieu of adhesive applied sign. Use an orange fluorescent spray type paint.

PART 3 - EXECUTION

PREPARATION FOR METAL SUPPORT SYSTEMS:

Ceiling Anchorages: Coordinate work with structural ceiling work to ensure that inserts and other structural Anchorage provisions have been installed to receive ceiling hangers.

Furnish concrete inserts, steel deck hanger clips and similar devices to other trades for installation well in advance of time needed for coordination with other work.

INSTALLATION OF METAL SUPPORT SYSTEMS:

General:

Metal Support Installation Standard: Comply with ASTM C 754.

Do not bridge building expansion joints with support system, frame both sides of joints with furring and other support as indicated.

Ceiling Support Suspension Systems:

Secure hangers to structural support by connecting directly to structure where possible, otherwise connect to inserts, clips or other Anchorage devices or fasteners as indicated.

Space main tees 4'0" o.c. and space hangers 4'0" o.c. along runners, except as otherwise shown.

Level main runners to a tolerance of 1/4" in 12'0", measured both lengthwise on each runner and transversely between parallel runners.

Clip cross tees to main tees and to other supports as required.

Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work as required for support of both the drywall construction and other work indicated for support thereon.

Wall/Partition Support Systems:

Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, toilet accessories, furnishings, and similar work to comply with details indicated or if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer, or if not available, of "Gypsum Construction Handbook" published by United States Gypsum Co.

Install runner tracks at floors, ceiling and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated. Space fasteners at 24" o.c., and 2" from each end.

Extend partition stud system through ceilings and elsewhere as indicated on drawings.

Space studs 16" o.c., unless otherwise indicated, and attach with screws to runner tracks.

Frame door openings to comply with details indicated or if not otherwise indicated, to comply with applicable published recommendations of gypsum board manufacturer, or if not available, of "Gypsum Construction Handbook" published by United States Gypsum Co. Attach vertical studs at jambs with screws either directly to frames or to jambs anchor clips on door frames; install runner track section at head and secure to jamb studs.

Extend vertical jamb studs through ceilings and attach to underside of floor or roof structure above, unless otherwise indicated.

Frame openings other than door openings in same manner as required for door openings except only one 20 ga. stud required and install framing below sills of openings to match framing required above door heads.

Space wall furring members 16" o.c., unless otherwise indicated.

Erect sound attenuation blanket vertically between studs and hold in place until gypsum board is installed.

GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

Gypsum Board Application and Finishing Standards: ASTM C 840 and GA 216.

WALLS:

Locate exposed end-butt joints as far from center of walls as possible, and stagger not less than 1'0" in alternate courses of board.

Install wall/partition boards vertically to avoid end-butt joints wherever possible.

Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

Locate edge joints over supports or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

Cover both faces of steel stud partition framing with gypsum board in concealed spaces (above ceiling, etc.), where partitions are to extend to deck above.

Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

CEILINGS:

Locate exposed end-butt joints as far from center of walls and ceilings as possible, and stagger not less than 1'0" in alternate courses of board.

Install ceiling boards in the direction and manner which will minimize the number of end-butt joints, and which will avoid end joints in the central area of each ceiling. Stagger end joints at least 1'0", screws at 12" o.c.

Install exposed gypsum board with face side out. Do not install imperfect, damaged or damp boards. Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

Locate edge joints over supports or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field-cut ends. Do not place tapered edges against cut edges or ends.

Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

Form control joints and expansion joints with space between edges of boards, prepared to receive trim accessories.

Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

METHODS OF GYPSUM DRYWALL APPLICATION:

On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

Single-Layer Application: Install gypsum wallboard.

On ceiling apply gypsum board prior to wall/partition board application to the greatest extent possible.

On partitions/walls apply gypsum board vertically (parallel), unless otherwise indicated, and provide sheet lengths which will minimize end joints.

Double-Layer Application: Install gypsum wallboard for base layer and exposed gypsum board for face layer.

On partitions/walls apply base layer and face layers vertically (parallel) with joints of base layer over supports and face layer joints offset at least 10" with base layer joints.

Single-Layer Fastening Methods: Apply gypsum boards to supports as follows:

Fasten with screws at 16" o.c., in field and 16" o.c. on edges.

Double-Layer Fastening Methods: Apply base layer of gypsum board and face layer to base layer as follows:

Fasten both base layers and face layers separately to supports with screws as follows:

Base layer at 16" o.c. in field and on edges.

Direct-Bonding to Substrate: Where gypsum board is indicated to be directly adhered to a substrate (other than studs, joists, furring members or base layer of gypsum board), comply with gypsum board manufacturer's recommendations and temporarily brace or fasten gypsum board until fastening adhesive has set.

INSTALLATION OF DRYWALL TRIM ACCESSORIES:

General: Use screws to anchor trim accessory flanges trim to the studs.

Install metal corner beads at external corners of drywall work.

Attach corner beads at 16" o.c. with screws on both legs.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Provide type with face flange to receive joint compound. Install L-type trim where work is tightly abutted to other work. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

FINISHING OF DRYWALL:

General: Apply treatment at all gypsum board joints (both directions), flanges of trim accessories, penetrations, fasteners heads, surface defects and elsewhere as required to prepare work for decoration whether decoration is specified or not. Prefill open joints and rounded or beveled edges, if any, using type of compound recommended by manufacturer.

Apply joint tape at joints between gypsum boards, except where a trim accessories are indicated.

Apply joint compound in three coats (not including prefill of openings in base) and sand between last two coats and after last coat.

Water-Resistant Gypsum Board Base: Treat joints and fasteners to comply with directions of water-resistant joint compound manufacturer.

In areas to be tiled, treat fastener heads with water-resistant joint compound. Fill tapered edges in gypsum panels with water-resistant joint compound, embed joint tape firmly and wipe off excess compound; follow immediately with a second coat of water-resistant joint compound over taping coat, being careful not to crown the joint. Fold and embed tape in all interior angles to form true angles.

In areas not to be tiled, treat fastener heads and embed tape as indicated above using water-resistant joint compound but finish with two coats of joint compound used for regular gypsum board work.

Partial Finishing: Omit third coat (if specified) and sanding on concealed drywall work which is indicated for drywall finishing or which requires finishing to achieve fire-resistance rating, sound rating or to act as smoke barrier.

Refer to sections on painting, coatings and wall coverings in Division 9 for decorative finishes to be applied to drywall work.

HI IMPACT RESISTANT GYPSUM BOARD INSTALLATION

Install in accordance with manufacturer recommendations

Provide Control Joints at location in accordance with manufacturers requirements. Fasten panels to substrate in strict accordance with manufacturers requirements.

FIRE RATED IDENTIFICATION

Install on both sides of partitions above suspended ceiling and in concealed spaces. Place one on each 10 linear feet of wall or partition, but not less than 2 in each concealed space. Install additional identification labels as directed by authorities having jurisdiction.

PROTECTION OF WORK:

Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION

SECTION 09 30 13 - CERAMIC TILE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Section 09 30 50 – Tile Setting Materials and Accessories

1.2 DESCRIPTION OF WORK:

- A. Definition: Tile includes ceramic surfacing units made from clay or other ceramic materials.
- B. Extent of tile work is indicated on drawings and schedules.
- C. Types of tile work in this section include the following:
 - 1. Glazed Wall Tile.
 - 2. Porcelain Tile

1.3 QUALITY ASSURANCE:

- A. Source of Materials: Provide materials obtained from one source for each type and color of tile, grout, and setting materials.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials.
- B. Samples for Initial Selection Purposes: Submit manufacturer's color charts consisting of actual tiles or sections of tile showing full range of colors, textures and patterns available for each type of tile indicated, include samples of grout and accessories involving color selection.

1.5 PRODUCT HANDLING:

- A. Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

1.6 CERTIFICATION:

- A. Furnish "Master" grade certificate.

1.7 PROJECT CONDITIONS:

- A. Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.
- B. Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.
- C. Maintain temperatures at not less than 50 deg. F (10 deg. C) in tiled areas during installation and for seven days after completion, unless higher temperatures required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Floor Tile:
 - a. Crossville – Color Blox
 - b. Or approved equal.
 - 2. Glazed Wall Tile:
 - a. American Olean Tile Co. Div.
 - b. Or approved equal.
 - 3. Commercial Portland Cement Grout: Laticrete Perma Color

2.2 FLOOR SETTING MATERIAL

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Laticrete

2.3 FLOOR TILE CLEANERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. Hillyard Chemical Co.
 - 2. L & M Surco Mfg. Co., Inc.

2.4 WALL SETTING MATERIAL:

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

1. Laticrete

2.5 PRODUCTS, GENERAL:

- A. ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types and grades for tile indicated.
- B. ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grounding.
- C. Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.
- D. Colors, Textures and Patterns: For tile and other products requiring selection of colors, surface textures or other appearance characteristics, provide products as selected by Architect from manufacturer's standards.
1. Provide tile trim and accessories which match color and finish of adjoining flat tile.
- E. Mounting: Where factory-mounted tile is required provide back or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.
1. Where tile is indicated for installation on exteriors or in wet areas, do not use back-or edge-mounted tile assemblies unless tile manufacturer specified that this type of mounting is suitable for these kinds of use and has been successfully used on other projects.

2.6 TILE PRODUCTS:

- A. CT-1: Wall Tile: Provide flat tile complying with the following requirements.:
1. Type: American Olean Glazed Ceramic Wall
 2. Series: Bright & Matte
 3. Nominal Facial Dimensions: 6" x 6".
 4. Nominal Thickness: 5/16".
 5. Colors: Group 1, 2.
 6. Face: Plain with cushion edge.
 7. Finish: Bright Glaze or Matte.
- B. CT-2: Wall Tile: Provide flat tile complying with the following requirements.:
1. Type: American Olean Glazed Ceramic Wall
 2. Series: Bright & Matte
 3. Nominal Facial Dimensions: 6" x 6".
 4. Nominal Thickness: 5/16".
 5. Colors: Group 1, 2, 3.
 6. Face: Plain with cushion edge.
 7. Finish: Bright Glaze or Matte.

- C. CT-3: Subway Wall Tile: Provide flat tile complying with the following requirements.:
1. Type: American Olean Glazed Ceramic Wall
 2. Series: Profiles - Bright & Matte
 3. Nominal Facial Dimensions: 3" x 6".
 4. Nominal Thickness: 5/16".
 5. Colors: Group 1, 2, 3.
 6. Face: Plain with cushion edge.
 7. Finish: Bright Glaze or Matte.
- D. CT-4: Subway Wall Tile: Provide flat tile complying with the following requirements.:
1. Type: American Olean Glazed Ceramic Wall
 2. Series: Profiles - Bright & Matte
 3. Nominal Facial Dimensions: 3" x 6".
 4. Nominal Thickness: 5/16".
 5. Colors: Group 1, 2, 3.
 6. Face: Plain with cushion edge.
 7. Finish: Bright Glaze or Matte.
- E. CT-5 "Field": Porcelain Stone Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:
1. Type: Crossville
 2. Series: Color Blox Mosaics.
 3. Nominal Facial Dimensions: 3" x 3" tile.
 4. Nominal Thickness: 1/4".
 5. Face: Unpolished.
 6. Colors: Group 1, 2, 3.
- F. CT-6 "Accent": Porcelain Stone Mosaic Tile: Provide factory-mounted flat tile complying with the following requirements:
1. Type: Crossville
 2. Series: Color Blox Mosaics.
 3. Nominal Facial Dimensions: 3" x 3" tile.
 4. Nominal Thickness: 1/4".
 5. Face: Unpolished.
 6. Colors: Group 1, 2, 3, 4.
- G. Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:
1. Size: As indicated, coordinated with sizes and coursing of adjoining flat tile, where applicable.
 2. Shapes: As follows, selected from manufacturer's standard shapes.
 - a. Thinsit System
 - 1) Coved
 - a) A 3401 at Wall Tile
 - b) S 3419 at Base Only
 - 2) Surface Bullnose
 - a) S-4449 with SN and SM-4449 as job requires.
 - 3) External Corners
 - a) SCL-R-3401 at wall tile / SCL-R-3419

- 4) Internal Corners
 - a) Miter inside corners and caulk with approved sealants.

2.7 SETTING MATERIALS:

- A. Provide setting and grouting materials to comply with ANSI Requirements listed for the TCNA Number as follows:

- 1. Waterproof Thinset Floor Installation: TCNA F122
 - a. Bond Coat: Thinset Portland Cement Mortar - Laticrete #254 Platinum
 - b. Waterproof Membrane – Hydro Ban
 - c. Grout: Portland Cement Grout, Laticrete PermaColor, Group 1, 2, 3.
- 2. Thin Set Wall Installation Dry Area: TCNA W 243
 - a. Bond Coat – Laticrete #15 Premium Mastic
 - b. Gypsum Board - Water Resistant
 - c. Grout: Laticrete Perma Color, Group 1,2,3
 - d. Grout Color: As selected by Architect
- 3. Thin Set Wall Installation Dry Area: TCNA W202
 - a. Bond Coat – Laticrete #15 Premium Mastic
 - b. Grout: Laticrete Perma Color. Group 1, 2, 3.
 - c. Grout Color: As selected by Architect
- 4. Waterproof Thinset Floor Installation: TCNA F122
 - a. Bond Coat: Thinset Portland Cement Mortar - Laticrete #254 Platinum
 - b. Waterproof Membrane – Hydro Ban
 - c. Grout: Portland Cement Grout, Laticrete PermaColor, Group 1, 2, 3.
- 5. Thin Set Wall Installation Wet Area: TCNA B415
 - a. Cement Backer Board on Metal Studs - ½" Diamond Board
 - b. Waterproof Membrane: Hydro Ban
 - c. Bond Coat - Thinset Portland Cement Mortar - Laticrete #255 Organic Adhesive
 - d. Grout: PermaColor
 - e. Grout Color: As selected by Architect

2.8 MISCELLANEOUS MATERIALS:

- A. Tile Cleaner: Stone Tech Stone and Tile Cleaner

PART 3 - EXECUTION

3.1 INSPECTION:

- A. Examine surfaces to receive tile work and conditions under which tile will be installed. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in reference tile installation standard.

3.2 INSTALLATION, GENERAL:

- A. TCNA Installation Guidelines: (Tile Council of North America) TCNA "2014 Handbook for Ceramic, Glass and Stone Tile Installation"; comply with TCNA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.
- B. Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.
- C. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces.
- D. Carefully grind cut edges of tile abutting trim, finish or Built-In items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.
- E. Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are same size. Layout tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.
 - 1. Lay out tile wainscots to next full tile beyond dimensions indicated.
- F. Grout tile to comply with referenced installation standards, using grout materials indicated.
- G. Control Joints: Provide control joints in tile work as recommended by the TCNA Essentials EJ171-01. Coordinate location of joints with architect. Caulk joint with silicone sealant and backer rod as recommended by manufacturer.

3.3 TILE INSTALLATION METHODS:

- A. Install tile to comply with requirements TCNA installation methods related to TCNA Numbers listed previously under SETTING MATERIALS.
- B. Threshold: Install Schluter Anodized Aluminum AETK or AEU at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring.

3.4 CLEANING AND PROTECTION:

- A. Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.
 - 1. Unglazed tile may be cleaned with acid solutions only when permitted by tile and grout manufacturer's printed instructions, but not sooner than fourteen days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.
- B. Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

- C. Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with Kraft paper or other heavy covering during construction period to prevent staining damage and wear.
1. Prohibit foot and wheel traffic from using tiled floors for at least seven days after grouting is completed.
 2. Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

END OF SECTION

SECTION 09 30 50 - TILE SETTING MATERIALS AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Uncoupling membrane.
- B. Waterproofing Membrane.
- C. Floor drain, with integrated bonding flange.
- D. Shower waterproofing: prefabricated substrates, waterproofing membrane, floor drain with integrated bonding flange, and sealant.
- E. Setting materials: adhesives, mortars, grouts, and sealants.

1.2 RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 06 10 00 - Rough Carpentry.
- C. Section 09 29 00 - Gypsum Board.
- D. Section 09 30 00 - Tiling.
- E. Section 09 30 70 - Tile Shower Components and Waterproofing Membrane. Shower trays, curbs, ramps, bench, niche, sealing compound, waterproofing membrane, drainage panels, drainage membrane compatible with floor drains.
- F. Section 22 30 00 - Plumbing Equipment.

1.3 REFERENCES

- A. Tile Council of North America (TCNA) Handbook for Ceramic Tile Installation.
- B. American National Standard Specifications for the installation of ceramic tile A108 / A118 / A136.1.

1.4 SUBMITTALS

- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- C. Verification Samples: For each finish product specified, two samples, minimum size 6 inches (150 mm) long, representing actual product, color, and finish.
- D. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Company specializing in performing the work of this section with minimum five years experience.

- B. Source Limitations for Setting Materials and Accessories: Obtain product of a uniform quality for each application condition from a single manufacturer.
- C. Preinstallation Conference: Conduct conference at the Project site.
 - 1. Convene one week prior to commencing work of this section.
 - 2. Require attendance of installation material manufacturer, tile supplier, tile installer and installers of related work. Review installation procedures and coordination required with related work.
 - 3. Meeting agenda includes but is not limited to:
 - a. Surface preparation.
 - b. Tile and installation material compatibility.
 - c. Edge protection, transition and pre-fabricated movement joint profiles.
 - d. Waterproofing techniques.
 - e. Crack isolation techniques.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Protect materials from exposure to moisture. Do not deliver until after wet work is complete and dry.
- C. Store materials in a dry, warm, ventilated weathertight location.

1.7 PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.8 COORDINATION

- A. Coordinate Work with other operations and installation of floor finish materials to avoid damage to installed materials.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Basis of Design / Acceptable Manufacturer: Schluter Systems, L.P., 194 Pleasant Ridge Road, Plattsburgh, NY 12901-5841. ASD. Tel: (800) 472-4588. Fax (800) 477-9783. E-mail: specassist@schluter.com. Web: www.schluter.com.
- B. Or Approved Equal

2.2 UNCOUPLING MEMBRANE

- A. Schluter-DITRA
 - 1. Description: 1/8 inch (3 mm) thick, orange, high-density polyethylene membrane with a grid structure of 1/2 inch by 1/2 inch (12 mm by 12 mm) square cavities, each cut back in a dovetail configuration, and a polypropylene anchoring fleece laminated to its underside. Conforms to definition for uncoupling membranes in the Tile Council of North America Handbook for Ceramic Tile Installation and is listed by cUPC to meet or exceed the requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).

2.3 WATERPROOFING MEMBRANE

- A. Schluter-KERDI
 - 1. Description: 0.008 inch (0.2 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides, which is listed by cUPC to meet or exceed requirements of the "American national standard specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10 and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467).
- B. Schluter-KERDI-BAND
 - 1. Description: Seams and Corners material 0.004 inch (0.1 mm) thick, orange polyethylene membrane, with polypropylene fleece laminated on both sides.
 - 2. Width:
 - a. Width as required.

2.4 FLOOR DRAIN WITH INTEGRATED BONDING FLANGE

- A. Schluter-KERDI-DRAIN, Plastic:
 - 1. Description: floor drain 11-25/32 inch (300 mm) diameter, trapezoid-perforated, integrated bonding flange with polypropylene fleece thermally laminated to the surface and hubbed connection to 2 inch (50 mm) drain pipe. Grate assembly includes 4 inch by 4 inch (102 mm by 102 mm) square grate, height adjustment collar, and lateral adjustment ring with trapezoid perforations.
 - 2. Drain listed by UPC to meet requirements of "International Association of Plumbing and Mechanical Officials Interim Guide Criteria for Floor Drain with Integrated Bonding Flange" (IGC 195), listed by CSA to meet requirements of the Canadian Standards Association standard, "Floor, Area, and Shower Drains, and Cleanouts for Residential Construction" (CSA B79), and referenced in method B422 and B422C of the Tile Council of North America Handbook for Ceramic Tile Installation.
 - 3. Drain Housing Material:
 - a. PVC.
 - 4. Grate Material and Finish:
 - a. E - Stainless Steel Type 304 = V2A.
 - 5. Nominal Grate Size:
 - a. 4 inch (100 mm) by 4 inch (100 mm) square.
 - 6. Drain Outlet:
 - a. 3 inch (75 mm) outlet or as indicated in Plumbing Drawings & Specifications.
- B. Schluter-KERDI-DRAIN, Stainless Steel:
 - 1. Description: stainless steel floor drain 9-27/32 inch (250 mm) diameter integrated bonding flange with 3 inch (75 mm) no-hub outlet, and grate assembly. Grate assembly includes stainless steel grate, height adjustment collar, and lateral adjustment ring with trapezoid perforations.
 - 2. Drain listed by UPC to meet requirements of "International Association of Plumbing and Mechanical Officials Interim Guide Criteria for Floor Drain with Integrated Bonding Flange" (IGC 195), listed by CSA to meet requirements of the Canadian Standards Association standard, "Floor, Area, and Shower Drains, and Cleanouts for Residential Construction" (CSA B79), Drain detail as referenced in method B422 and B422C of the Tile Council of North America Handbook for Ceramic Tile Installation.
 - 3. Drain Housing Material:
 - a. Stainless Steel.
 - 4. Grate Material and Finish:
 - a. E - Stainless Steel Type 304 = V2A.
 - 5. Nominal Grate Size:
 - a. 4 inch (100 mm) by 4 inch (100 mm) square.

6. Drain Outlet:
 - a. 3 inch (75 mm) outlet or as indicated in Plumbing Drawings & Specifications.

2.5 PREFABRICATED SHOWER COMPONENTS

- A. Schluter-KERDI-SHOWER-T/-TS/-TT
 1. Description: Trapezoid-imprinted, prefabricated, sloped tiled shower tray base, made of lightweight, self-extinguishing (HF-1 rating per UL-94) expanded polystyrene (PS 40), with 12-5/16 inch (313 mm) diameter removable recessed section and bonded Schluter KERDI Membrane 0.008 inch (0.2 mm) thick, which meet or exceed the requirements of the American National Standard Specifications for load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation A118.10, and is listed by cUPC, and is evaluated by ICC-ES (see Report No. ESR-2467). Meeting ANSI A118.10 as detail as referenced in method B422 of the Tile Council of North America Handbook for Ceramic Tile Installation.
- B. Schluter-KERDI-BOARD-SC
 1. Description: Prefabricated waterproof Shower Curb, constructed of rigid extruded polystyrene foam building element panel, with reinforcement material and polypropylene fleece webbing laminated on both sides for thin-set ceramic tile and dimension stone Installations.
 2. Size:
 - a. KBSC 115 150 1220 - 48 inch by 6 inch by 4-1/2 inch (122 cm by 150 mm by 115 mm).

2.6 WATERPROOF BUILDING PANEL FOR CERAMIC AND STONE TILE

- A. Schluter-KERDI-BOARD
 1. Description: Rigid extruded polystyrene foam building element panel, with reinforcement material and polypropylene fleece webbing laminated on both sides for thin-set ceramic tile and dimension stone Installations.
 2. Panel Thickness:
 - a. Thickness as required.
 3. Panel Size:
 - a. 48 inch by 96 inch (122 by 244 cm) or as required.

2.7 SETTING MATERIALS

- A. Schluter-SET Premium Unmodified Thin Set Mortar.
 1. Description: premium unmodified sag-resistant thin-set mortar specifically formulated for use with Schluter membranes and boards. Schluter-SET is suitable for use with ceramic, porcelain, and stone tile, including large and heavy tile, in conjunction with Schluter-Systems' uncoupling and waterproofing membranes. Meets the requirements of ANSI A118.1T.
 2. Color:
 - a. Grey.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Do not begin installation until substrates have been properly prepared.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

- A. Protect installed products until completion of project.
- B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

SECTION 09 51 23- ACOUSTICAL CEILINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of each type of acoustical ceiling is shown and scheduled on drawings. Types of acoustical ceilings specified in this section include the following: Acoustical panel ceilings, exposed suspension.

1.3 QUALITY ASSURANCE:

- A. Installer: Firm with not less than three years of successful experience in installation of acoustical ceilings similar to requirements for this project and which is acceptable to manufacturer of acoustical units as shown by current written statement from manufacturer.
- B. Fire Performance Characteristics: Provide acoustical ceiling components that are identical to those tested for the following fire performance characteristics according to ASTM test method indicated by UL or other testing and inspecting agency acceptable to authorities having jurisdiction. Identify acoustical ceiling components with appropriate marking of applicable testing and inspecting agency.
- C. Surface Burning Characteristics: As follows, tested per ASTM E 84.
- D. Flame Spread: 25 or less.
- E. Smoke Developed: 50 or less.
- F. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by or penetrating through, ceilings, including light fixtures, HVAC equipment.

1.4 SUBMITTALS:

- A. Product Data: Manufacturer's product specifications and installation instructions for each acoustical ceiling material required and for each suspension system including certified laboratory test reports and other data as required to show compliance with these specifications.
- B. Samples: Set of 6" x 4" square samples for each acoustical unit required showing full range of exposed color and texture to be expected in completed work and one set of 12" long samples of each exposed runner and molding.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.
- C. Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

1.6 JOB CONDITIONS:

- A. Space Enclosure: Do not install interior acoustical ceilings until space enclosed and weatherproof, and until wet-work in space completed and nominally dry, and until work above ceilings completed, and until ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

2.1 ACOUSTICAL CEILING UNITS, GENERAL:

- A. Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated which are prepared for mounting method designated and which comply with FS SS-S-118 requirements including those indicated by reference to type, form, pattern, grade (NRC or NIC' as applicable), light reflectance coefficient (LR), edge detail, and joint detail (if any).
- B. Colors, Textures, and Patterns: Provide products as selected by Architect from manufacturer's standard colors, surface textures, and patterns available for acoustical ceiling units and exposed metal suspension system members of quality designated.

2.2 ACOUSTICAL PANELS:

- A. Non-Fire Rated Mineral Composition with Standard Washable Painted Finish: (Indicated on the Drawings as Type 1)
 - 1. Armstrong Fine Fissured #1728: Square edge, white, 24" x 24" x 5/8".
 - 2. Available Products: Subject to compliance with requirements, products which may be incorporated in the work are limited to the following manufacturers:
 - a. Armstrong World Industries, Inc.
 - b. United States Gypsum Co.
 - c. Celotex

- B. Non- Fire Rated Gypsum Ceiling Panels-Gypsum Composition with Vinyl Membrane Faced Overlay: (Indicated on the Drawings as Type 2)
 - 1. United States Gypsum, Co. #3260: Pattern, Stipple; square edge, white, 24" x 24" x 1/2".
 - 2. Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, are limited to the following manufacturers:
 - a. United States Gypsum
 - b. Gold Bond
 - c. Armstrong

2.3 METAL SUSPENSION SYSTEMS, GENERAL:

- A. Standard for Metal Suspension Systems: Provide metal suspension systems of type, structural classification and finish indicated which comply with applicable ASTM C 635 requirements.
- B. Finishes and Colors: Provide manufacturer's standard finish for type of system indicated, unless otherwise required. For exposed suspension members and accessories with painted finish, white.
- C. Attachment Devices: Size for five times design load indicated in ASTM C 635, Table I, Direct Hung.
- D. Concrete Inserts: Inserts formed from hot-dipped galvanized sheet steel and designed for attachment to concrete forms and for embedment in concrete with holes or loops for attachment at hanger wires.
- E. Hanger Wire: Galvanized carbon steel wire, ASTM A 641, soft temper, prestretched, Class 1 coating, sized so that stress at three times hanger design load (ASTM C 635, Table I, Direct Hung), will be less than yield stress of wire, but provide not less than 12 gauge.
- F. Edge Moldings and Trim: Metal manufacturer's standard molding for edges and penetrations of ceiling which fits with type of edge detail and suspension system indicated.
- G. Edge Molding Trim: Metal or extruded plastic provide manufacturer's standard molding for edges, external corners and penetrations of ceiling which fits with type of edge detail and suspension system specified herein.

PART 3 - EXECUTION

3.1 PREPARATION:

- A. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

3.2 INSTALLATION:

- A. General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and industry standards applicable to work.
- B. Install suspension systems to comply with ASTM C 636 with hangers supported only from building structural members. Locate hangers near each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'0". Provide hanger at each corner of lay-in light fixtures when light fixtures exceed normal design weight.
- C. Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.
- D. Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.
- E. Install edge moldings at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.
- F. Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.
- G. Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

3.3 ADJUST AND CLEAN:

- A. Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repair to permanently eliminate evidence of damage.

3.4 EXTRA STOCK:

- A. Deliver stock of maintenance material to Owner. Furnish maintenance material matching products installed, packaged with protective covering for storage and identified with appropriate labels.
- B. Acoustical Ceiling Units: Furnish quantity of full size units equal to 2.0% of amount installed.

END OF SECTION

SECTION 09 65 00 - RESILIENT FLOORING AND BASE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of resilient flooring and accessories is shown on drawings and in schedules.

1.3 QUALITY ASSURANCE:

- A. Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives and sealants and leveling compounds.
- B. Fire Test Performance: Unless otherwise indicated, provide resilient flooring having the following classifications or properties when test in accordance with the standard fire tests referenced below:
 - 1. Flame Spread: Not more than 75 as per ASTM E 84.
 - 2. Smoke Developed: Not more than 450 as per ASTM E 84.
 - 3. Smoke Density: Not more than 450 as per NFPA 258.

1.4 SUBMITTALS:

- A. Product Data: Submit two copies of manufacturer's technical data and installation instructions for each type of resilient flooring and accessory.
- B. Samples: Submit, for verification purposes, samples of each type, color, and pattern of resilient flooring, including accessories, required, indicating full range of color and pattern variation. Provide full-size tile units, 6" x 9" samples of sheet flooring and 2-1/2" long sections of resilient flooring accessories.
 - 1. For initial selection of colors and patterns submit, prior to above, samples in form of actual sections of resilient flooring including accessories showing full range of colors and patterns available for each type of resilient flooring required.
- C. Certification for Fire Test Performance: Submit manufacturer's certification that resilient flooring furnished for areas indicated complies with required fire test performance and has been tested and meets indicated requirements.

- D. Maintenance Instructions: Submit two copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.
- E. Replacement Material: After completion of work, deliver to project site replacement materials from same manufactured lot as materials installed, and as follows:
 - 1. Tile flooring, not less than one box for each fifty boxes or fraction thereof, for each type, size, and color installed.
 - 2. Sheet flooring, not less than one linear yards for each type, pattern, and color installed.

1.5 JOB CONDITIONS:

- A. Maintain minimum temperature of 65 degrees F (18 degrees C) in spaces to receive resilient flooring for at least 40 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55 degrees F (13 degrees C) in areas where work is completed.
- B. Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.
- C. Moisture Test - Concrete Floor:
 - 1. Moisture emissions from concrete substrates at any grade shall not exceed 3.0 pounds per 1000 square feet per 24 hours. An anhydrous calcium chloride 72 hour test unit used properly and weighed within one hour of test will accurately determine the rate of emissions (in pounds per 1000 sq. ft.). Shot-blasted or scarified concrete will yield the most accurate results. When used properly a Delmhorst Moisture Detector (model // BD-8 // DP // with type 2-F 5/16" electrodes) will detect the presence of moisture. A 3% solution of phenolphthalein in alcohol on opened concrete will detect vapor emissions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS:

- A. Manufacturer: Subject to compliance with requirements, provide products as listed.
- B. Other manufactures will be considered upon submittal of written data and specifications showing compliance with the quality, serviceability and warranty of the product specified.
 - 1. Luxury Vinyl Tile (LVT):
 - a. Contractor shall anticipate a multiple of 4 colors used with a maximum of 2 colors in a simple block panel in any room.
 - 1) Mannington – Color Anchor LVT
- C. General:

1. Colors and Patterns (LVT): As selected by Architect from manufacturer's standards.
- D. Luxury Vinyl Tile (LVT)
 1. 18" x 18" tile unless otherwise indicated, and as follows:
 2. Composition – .020 inch mil wear layer, over all thickness - .100 inch
 3. Warranty – 10 year commercial warranty.
- E. Wall Base: Provide rubber wall base complying with FS SS-W-40, Type II, with factory formed outside corners as follows:
 1. Johnsonite - DC Series, Rubber - Color Match System
 2. Height: 4" (Unless otherwise noted)
 3. Thickness: 1/8" gauge.
 4. Style: Standard top-set cove.
 5. Finish: Matte.
- F. Adhesives (LVT):
 1. Waterproof, stabilized type as recommended by flooring manufacturer to suit material and substrate conditions.
 2. Clear thin spread.
- G. Adhesive (Wall Base):
 1. Line White Latex - Type recommended by manufacturer
 2. Corner - Construction adhesive or contact adhesive.
- H. Concrete Slab Primer: Non-staining type as recommended by flooring manufacturer.
- I. Leveling Compound: Latex type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION: NEW CONSTRUCTION

- A. Broom clean or vacuum surfaces to be covered, and inspect subfloor. Start of flooring installation indicates acceptance of subfloor conditions and full responsibility for completed work.
 1. Use leveling compound as recommended by flooring manufacturer for filling small cracks and depressions in subfloors.

2. Perform bond and moisture tests on concrete slabs to determine that concrete surfaces are sufficiently cured and ready to receive flooring.
3. Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

3.2 EXECUTION:

- A. Install flooring using method indicated in strict compliance with manufacturer's recommendations. Extend flooring into toe spaces, door reveals, and into closets and similar openings.
- B. Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.
- C. Install flooring on covers for telephone and electrical ducts, and other such items as occur within finished floor areas. Maintain overall continuity of color and pattern with pieces of flooring installed on these covers. Tightly cement edges to perimeter of floor around covers and to covers.
- D. Tightly cement flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll flooring at perimeter of each covered area to assure adhesion.

3.3 TILE FLOORS:

- A. Lay tile from center marks established with principal walls, discounting minor offsets, so that tile at opposite edges of room are of equal width. Adjust as necessary to avoid use of cut widths less than one-half tile at room perimeters. Lay tile square to room axis, unless otherwise shown.
- B. Match tiles for color and patterns by using tile from cartons in same sequence as manufactured and packages. Cut tile neatly around all fixtures. Broken, cracked, chipped, or deformed tiles are not acceptable.
- C. Lay tile in "checkerboard" fashion with grain reversed in adjacent tiles.
- D. Adhere tile flooring to substrates using full spread of adhesive applied in compliance with flooring manufacturer's directions.

3.4 WALLBASE:

- A. Apply wall base to walls, columns, pilaster, casework and other permanent fixtures in rooms or areas where base is required. Install base in continuous lengths with no 4' lengths, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

- B. On masonry surfaces, or other similar irregular surfaces, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.
- C. Transition Strips:
 - 1. Place resilient strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed. Anchor into floor if necessary.

3.5 CLEANING AND PROTECTION:

- A. Remove any excess adhesive or other surface blemishes, using neutral type cleaners as recommended by flooring manufacturer. Protect installed flooring with corrugated heavy Kraft paper or other covering.
- B. Finishing: After completion of project and just prior to final inspection of work, thoroughly clean floors and accessories.
 - 1. Clean and buff in compliance with flooring manufacturer's instructions.

END OF SECTION

SECTION 09 90 00 - PAINTING

PART 1 - PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to the work specified in this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of painting work is shown on drawings and schedules, and as herein specified.
- B. The work includes the painting or finishing of materials at both the interior and exterior of the building.
- C. Examine other sections of these specifications, as well as the mechanical and electrical specifications for the various other trades, and become familiar with all their provisions regarding painting. All surfaces that are left unpainted by the requirements of other sections or other specifications shall be painted or finished as a part of this section.
- D. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- E. Paint exposed surfaces whether or not colors are designated in "schedules", except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.
- F. Following categories of work are not included as part of field-applied finish work, or are included in other sections of these specifications:
 - 1. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, hollow metal work, and similar items.
 - 2. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer finishing is specified for such items as (but not limited to) metal toilet enclosures, prefabricated partition systems, acoustic materials, architectural woodwork and casework, finished mechanical and electrical equipment including light fixtures, switchgear and distribution cabinets, entrance frames, doors and equipment.
 - 3. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, pipe spaces, duct shafts and above ceilings.

4. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
5. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.
6. Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.3 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical information including paint label analysis and application instructions for each material proposed for use. If paint is to be other than Sherwin-Williams, submit a schedule of paint equivalent to that specified.
- B. Samples: Submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.
- C. On actual wall surfaces and other interior building components, duplicate painted finishes of prepared samples. On at least 100 sq. ft. of surface as directed, provide full-coat finish samples until required sheen, color and texture is obtained; simulate finished lighting conditions for review of in-place work.
- D. Coating Maintenance Manual: Upon conclusion of the project, the Contractor or paint manufacturer/supplier shall furnish a coating maintenance manual, such as Sherwin-Williams "Custodian Project Color and Product Information" report or equal. Manual shall include an Area Summary with finish schedule, Area Detail designating where each product/color/finish was used, product data pages, Material Safety Data Sheets, care and cleaning instructions, touch-up procedures, and color samples of each color and finish used.

1.4 DELIVERY AND STORAGE:

- A. Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:
 1. Name or title of material.
 2. Manufacturer's name.
 3. Thinning instructions.
 4. Application instructions.
 5. Color name and number.

1.5 JOB CONDITIONS:

- A. Do not apply paint in snow, rain, fog or mist; or when relative humidity exceeds 85%; or to damp or wet surfaces; unless otherwise permitted by paint manufacturer's printed instructions.

- B. Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

2.1 COLORS AND FINISHES:

- A. Prior to beginning work, Architect will furnish color chips for surfaces to be painted.
 - 1. Use representative colors when preparing samples for review.
 - 2. Final acceptance of colors will be from samples applied on the job.
- B. Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.
 - 1. Lead content in pigment, if any, is limited to contain not more than 0.5% lead, as lead metal based on the total non-volatile (dry-film) of paint by weight.
 - 2. This limitation is extended to interior surfaces and those exterior surfaces, such as stairs, decks, porches, railings, windows, and doors which are readily accessible to children under seven years of age.
- C. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.2 MATERIAL QUALITY:

- A. Proprietary names used to designate colors or materials are not intended to imply that products of named manufacturers are required to exclusion of equivalent products of other manufacturers except paint for existing building.
- B. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.
- C. Manufacturers:
- D. Provide products from one of the following companies:
 - 1. Sherwin Williams
 - 2. PPG Industries
 - 3. Farrell-Calhoun Paint
 - 4. Benjamin Moore

- E. Mixing required shall be done with a mechanical mixer and materials shall be thoroughly mixed. No materials shall be reduced or changed in any way except as specified. Any material that has partially set will be discarded.
- F. Colors will be selected by the Architect.

2.3 EXTERIOR FINISHES

References below are for Sherwin Williams products.

- A. ALL EXPOSED FERROUS METAL SHALL BE GIVEN:
 - 1. One (1) coat Kem Kromik Rust Inhabitive Primer B50Z Series
 - 2. Two (2) coats Pro Industrial Acrylic Gloss Coating B66-600 Series.
- B. GALVANIZED IRON OR STEEL SHALL BE GIVEN:
 - 1. One (1) coat Galvite B50WZ30.
 - 2. Two (2) coats Pro Industrial Acrylic Gloss Coating B66-600 Series.
- C. EXTERIOR EXPOSED CONCRETE INDICATED TO BE PAINTED SHALL BE GIVEN:
 - 1. One (1) coat Loxon Exterior Masonry Primer A24W8300.
 - 2. Two (2) coats Loxon Self-cleaning Acrylic LX13.
- D. EXTERIOR CONCRETE BLOCK INDICATED TO BE PAINTED SHALL BE GIVEN:
 - 1. One (1) coat Loxon Block Surfacer A24W200.
 - 2. Two (2) coats Loxon Self-cleaning Acrylic LX13.
- E. EXTERIOR WOOD OPAQUE FINISH SHALL BE GIVEN:
 - 1. One (1) coat Exterior Oil Based Wood Primer Y24W8020.
 - 2. Two (2) coats Pro Industrial Acrylic Gloss Coating B66-600 Series.
- F. EXTERIOR WOOD TRANSPARENT FINISH SHALL BE GIVEN:
 - 1. Two (2) coats SuperDeck Exterior Oil-Based Stain: SD4C25
- G. EXTERIOR WOOD WEATHERED FINISH SHALL BE GIVEN:
 - 1. Two (2) coats SuperDeck Exterior Oil-Based Stain: SD4C25

2.4 INTERIOR FINISHES:

- A. GYPSUM BOARD AND PLASTER – NORMAL WEAR:
 - 1. All areas except ceilings noted on Finish Schedule as “PAINT” shall be given:
 - a. One (1) coat Pro-Mar 200 0 VOC Latex Wall Primer B28W2600.
 - b. Two (2) coats Pro-Mar 200 0 VOC Latex Eg-Shell B20-2600 Series
 - 2. For ceilings noted on Finish Schedule as “PAINT” shall be given:
 - a. One (1) coat Pro-Mar 200 0 VOC Latex Wall Primer B28W2600.
 - b. Two (2) coats Pro-Mar 200 0 VOC Latex Flat Wall Paint B30-2600 Series.
- B. GYPSUM BOARD AND PLASTER – FOR WET AREAS:
 - 1. All areas noted on Finish Schedule as "EPOXY-WA" shall be given:
 - a. One (1) coat Pro-Mar 200 0 VOC Latex Wall Primer B28W2600.
 - b. Two (2) coats Pro Industrial Water Based Catalyzed Epoxy B73-360
- C. CONCRETE BLOCK, BRICK AND CONCRETE
 - 1. All areas noted on Finish Schedule as “PAINT” shall be given:
 - a. One (1) coat Block Filler B42W46.
 - b. Two (2) coats Pro-Mar 200 0 VOC Latex Semi-Gloss Enamel B31-2600 Series.
- D. MISCELLANEOUS WOOD, TRIM, DOORS AND CABINETS - TRANSPARENT FINISH:
 - 1. All woodwork indicated to be transparent finish shall be given
 - a. One coat of Sherwin Williams Interior Oil Stain A48 series, color as selected, on exposed faces and then given:
 - b. Two (2) coats Polyurethane Satin A67 Series.
- E. MISCELLANEOUS WOOD TRIM, DOORS AND CABINETS - OPAQUE FINISH:
 - 1. All woodwork to be Opaque Finish shall be given:
 - a. One (1) coat Premium Wall and Wood Primer B28W8111
 - b. Two (2) coats Pro-Mar 200 Acrylic Alkyd Semi-Gloss B34-8250 Series.
- F. INTERIOR METAL:
 - 1. All pipe, rails, electrical panels, access panels, ladders, and all other ferrous metal shall be given:
 - a. One (1) coat Kem Kromik Rust Inhibitive Primer B50Z Series.
 - b. Two (2) coats Pro Industrial Water Based Urethane Alkyd B53 Series
 - 1) B53-1150 Semi Gloss
 - 2. All interior hollow metal doors and frames shall be given:
 - a. One (1) coat Kem Kromik Rust Inhibitive Primer B50Z Series.
 - b. Two (2) coats Pro Industrial Water Based Urethane Alkyd B53 Series
 - 1) B53-1150 Semi Gloss
- G. CONCRETE FLOORS:
 - 1. Floors indicated to be painted shall be prepped as recommended by product manufacturer's recommendations. They shall be given:
 - a. Two (2) coats H & C Colortop Solvent Based Solid Color Concrete Sealer.

PART 3 - PART 3 - EXECUTION

3.1 INSPECTION:

- A. Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been corrected in a manner acceptable to applicator.
- B. Starting of painting work will be construed as applicator's acceptance of surfaces and conditions within any particular area.
- C. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

3.2 SURFACE PREPARATION:

- A. General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.
- B. All caulking shall have a suitable primer applied and two coats of paint to match adjoining surfaces to which caulking is applied.
- C. Where item has been previously shop primed, all surface imperfections and rust spots will be sanded and all abrasions and scratches shall be touched-up with rust-inhibitive primer.
- D. All undercoats of paint and enamel shall be tinted to the approximate shade of the final coat.

E. CEMENTITIOUS MATERIALS

- 1. Prepare cementitious surfaces of concrete and cement plaster to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughing as required to remove glaze.
- 2. Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.
- 3. Suction spots or "hot spots" in cement shall be touched-up before applying the finish coat.
- 4. Voids and air holes in concrete to be painted shall be spackled or filled with plastic patch.
- 5. Clean concrete floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid, and allow to dry before painting.

F. WOOD

1. Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots and apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.
2. Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Both sides of all cabinet doors shall be finished to match the face of the cabinet. Interior of cabinet and inside of wood drawers shall be given one coat of sealer. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.
3. BACK PRIME all wood trim, casings, molding, etc., interior and exterior.
 - a. When transparent finish is required, use spar varnish for backpriming.
4. Tops, bottoms, and cutouts of all doors shall be finished to match the door.
5. Hardwood to be finished shall be sanded smooth and surface cleaned before first coat and between coats with fine sandpaper and shall be wiped with a tack rag after each sanding.

G. FERROUS METALS:

1. Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.
2. Touch-up shop-applied prime coats wherever damaged or bare where required by other sections of these specifications. Clean and touch-up with same type shop primer.

H. GALVANIZED SURFACES

1. Clean free of oil and surface contaminants with non-petroleum based solvent.

3.3 MATERIALS PREPARATION:

- A. Mix and prepare painting materials in accordance with manufacturer's directions.
- B. Store materials not in actual use in tightly covered containers. Maintain containers used in storage, mixing and application of paint in a clean condition, free of foreign materials and residue.
- C. Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

3.4 APPLICATION:

- A. General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied and as follows:
 - 1. Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.
- B. Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
- C. Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.
- D. MINIMUM COATING THICKNESS:
 - 1. Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.
- E. MECHANICAL AND ELECTRICAL WORK:
 - 1. Painting of mechanical and electrical work is limited to those items exposed in mechanical equipment rooms and in occupied spaces.
 - 2. Mechanical items to be painted include, but are not limited to, the following in finished areas:
 - a. Mechanical equipment and supports.
 - b. Accessory items.
 - 3. Electrical items to be painted include, but are not limited to, the following:
 - a. Panels in finished areas.
- F. PRIME COATS
 - 1. Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.
 - 2. Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat to assure a finish coat with no burn-through or other defects due to insufficient sealing.
- G. PIGMENTED (OPAQUE PAINTED) FINISHES:
 - 1. Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

H. TRANSPARENT FINISHES:

1. Apply stain using a blending method to achieve an even and uniform color across varying grains and natural color changes in the wood. Use multiple coats to produce glass-smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

I. COMPLETED WORK:

1. Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

3.5 CLEAN-UP AND PROTECTION:

- A. Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.
- B. Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting as acceptable to Architect.
- C. Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work after completion of painting operations.
- D. At the completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

END OF SECTION

SECTION 10 21 13 – TOILET PARTITIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Extent of toilet partitions work required is indicated on drawings.
- B. Types of toilet partitions required include the following:
 - 1. Plastic laminate, floor supported overhead braced.
- C. Types of screens required include the following:
 - 1. Plastic laminate, wall hung.
- D. Toilet accessories are specified elsewhere in Division 10.

1.3 QUALITY ASSURANCE

- A. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication where possible, to ensure proper fitting of work; however, allow for adjustments within specified tolerances wherever taking of field measurements before fabrication might delay work.
- B. Coordination: Furnish inserts and anchorages which must be built into other work for installation of toilet partitions and related work; coordinate delivery with other work to avoid delay.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's detailed technical data for materials, fabrication, and installation, including catalog cuts of anchors, hardware, fastenings, and accessories.
- B. Shop Drawings: Submit shop drawings for fabrication and erection of toilet partition assemblies not fully described by product drawings, templates, and instructions for installation of anchorage devices built into other work.

PART 2 - PRODUCTS

2.1 AVAILABLE MANUFACTURERS

- A. Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:
 - 1. General Partitions Mfg. Corp.
 - 2. Accurate Partitions
 - 3. Metpar Steel Products Corp.
 - 4. AMPCO.

2.2 MATERIALS

- A. General: Provide materials which have been selected for surface flatness and smoothness. Exposed surfaces which exhibit pitting, seam marks, roller marks, stains, discolorations, telegraphing of core material, or other imperfections on finished units are not acceptable.
- B. Plastic Laminate Partitions
 - a. Plastic Laminate: NEMA Std. LD 3, minimum 0.062" thick, color and pattern as indicated or, if not indicated, as selected by Architect from Formica, Wilsonart or approved equal premium colors.
 - b. Core Material for Plastic Laminate: Manufacturer's standard particleboard or plywood in thickness to provide nominal dimension of 1" minimum for doors, panels, and screens, 1 1/4" for pilasters.
- C. Pilaster Shoes: ASTM A 167, Type 302/304 stainless steel, not less than 3" high and 20 gauge, finished to match hardware.
- D. Brackets: Manufacturer's optional design for attaching panels to walls and pilasters, continuous aluminum.
- E. Hardware and Accessories: Manufacturer's standard design, heavy duty operating hardware and accessories of stainless steel, except door hinge continuous.
- F. Anchorages and Fasteners: Manufacturer's standard exposed fasteners of stainless steel, chromium plated steel or brass finished to match hardware with theft resistant type heads and nuts. For concealed anchors, use hot dip galvanized, cadmium plated, or other rust resistant protective coated steel.

2.3 FABRICATION

- A. General: Furnish standard doors, panels, screens, and pilasters fabricated for partition system, unless otherwise indicated. Furnish units with cutouts, drilled holes, and internal reinforcement to receive partition mounted hardware, accessories, and grab bars, as indicated.

- B. Door Dimensions: Unless otherwise indicated, furnish 24" wide in swinging doors for ordinary toilet stalls and 32" wide (clear opening) out swinging doors at stalls equipped for use by handicapped.
- C. Plastic Laminate Partitions and Screens: Pressure laminate one piece face sheets to core material with no splices or joints, and with edges straight and sealed. Seal exposed core material at cutouts to protect against moisture.
- D. Floor-Supported Partitions: Furnish galvanized steel anchorage devices, complete with threaded rods, lock washers, and leveling adjustment nuts at pilasters to permit structural connection at floor. Furnish shoe at each pilaster to conceal anchorage.
- E. Hardware: Furnish hardware for each compartment in partition system, as follows:
- F. Hinges: Continuous Stainless Steel with backing plate for thru bolt, full height image.
- G. Latch and Keeper: Manufacturer's stainless steel standard surface mounted latch unit designed for easy emergency access with combination rubber faced door strike and keeper.
- H. Coat Hook: Manufacturer's stainless steel standard unit, combination hook and rubber tipped bumper.
- I. Door Pull: Manufacturer's stainless steel standard unit.
- J. Overhead-Braced Partitions: Make provisions for setting and securing continuous extruded aluminum anti grip overhead bracing at top of each pilaster.
- K. Wall-Hung Screens: Furnish panel units in sizes indicated, of same construction and finish as partition system panels.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Comply with manufacturer's recommended procedures and installation sequence. Install partitions rigid, straight, plumb, and level. Provide clearances of not more than 1/2" between pilasters and panels, and not more than 1" between panels and walls. Secure panels to walls with not less than two stirrup brackets attached near top and bottom of panel. Locate wall brackets so that holes for wall anchorages occur in masonry or tile joints. Secure panels to pilasters with not less than two stirrup brackets located to align with stirrup brackets at wall. Secure panels in position with manufacturer's recommended anchoring devices.
- B. Floor-Supported Partitions: Set pilaster units with anchorages having not less than 2" penetration into structural floor, unless otherwise recommended by partition manufacturer. Level, plumb, and tighten installation with devices furnished. Hang doors and adjust so that tops of doors are level with tops of pilasters when doors are in closed position.
- C. Screens: Attach with concealed anchoring devices as recommended by manufacturer to suit supporting wall structure. Set units to provide support and to resist lateral impact.

3.2 ADJUST AND CLEAN

- A. Hardware Adjustment: Adjust and lubricate hardware for proper operation. Set hinges on in swinging doors to hold open approximately 30 deg. from closed position when unlatched. Set hinges on out swinging doors (and entrance swing doors) to return to fully closed position. Clean exposed surfaces of partition systems using materials and methods recommended by manufacturer and provide protection as necessary to prevent damage during remainder of construction period.

END OF SECTION

SECTION 10 28 00 - TOILET ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 QUALITY ASSURANCE:

- A. Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete, built into masonry, or built into stud partitions; coordinate delivery with other work to avoid delay.
- B. Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.

1.3 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.
- B. Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices in other work.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURES:

- A. Manufacturer: Subject to compliance with requirements, provide toilet accessories by one of the following:
 - 1. Bobrick Washroom Equip., Inc.
 - 2. Bradley Corp.
 - 3. A.S.I.

2.2 MATERIALS, GENERAL:

- A. Stainless Steel: AISI Type 302/304 with polished No. 4 finish, 22 gauge minimum, unless otherwise indicated.
- B. Galvanized Steel Mounting Devices: ASTM A 386, hot-dip galvanized after fabrication.
- C. Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

2.3 FABRICATION:

- A. General: Stamped names or labels on exposed faces of toilet accessory units are not permitted, except where otherwise indicated; inobtrusive labels on surfaces not exposed to view are acceptable.
- B. Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Provide concealed anchorage wherever possible.

2.4 TOILET ACCESSORIES:

Toilet accessories models and numbers listed herein are Bradley unless otherwise noted.

- A. Paper Towel Dispensers,
 - 1. Indicated on the drawings as "PTD" - (Type)
 - 2. Provide one at each lavatory and as indicated on drawings:
 - a. Large (LR) Recessed 2447
- B. Toilet Tissue Dispenser:
 - 1. Indicated on the drawings as "TTD" - (Type)
 - 2. Provide one at each water closet.
 - a. Model 5402 Surface
- C. Grab Bars
 - 1. Provide as indicated on drawings as "GB" - (Type).
 - 2. Provide in wall anchor plate 899-015 with appropriate mounting kit at stud walls.
 - 3. Provide front and back anchor plates with appropriate mounting kit at toilet partitions and block walls.
 - a. (42) Straight Type 832-001-2 x 42"
 - b. (36) Straight Type 832-001-2 x 36"
 - c. (18) Straight type 832-001-2 x 18"
- D. Framed Mirrors:
 - 1. Indicated on drawings as "FM".
 - 2. Provide Mirror at each lavatory and as noted or indicated on the drawings.
 - a. 780-2436

- E. Lavatory Shield
 - 1. Indicated on Drawings as "LS"
 - 2. Provide one at each wall mounted lavatory.
 - a. Truebro IPS Corporation
 - b. Model 2018 - For single 20" x 18" (White Only)
- F. Mop and Broom Holder:
 - 1. Indicated on drawings as "MBH" - (length)
 - 2. Provide one in each Janitor Closet.
 - a. (36") Model 9954
- G. Shower Seat:
 - 1. Indicated on drawings as "SS".
 - 2. Provide as indicated on drawings.
 - a. 9591 Hinged
- H. Soap Dish:
 - 1. Indicated on drawings as "SSD" - (Type)
 - 2. Provide one for each shower head and as indicated on drawings.
 - a. (R) Model 9353 Recessed
 - b. (S) Model 9014 Surface

PART 3 - EXECUTION

3.1 GENERAL:

- A. Provide framing members at anchor locations of all surface mounted accessory units.
- B. Provide framing members (studs) at all sides of rough opening dimension for all recessed accessory units.

3.2 INSTALLATION:

- A. Install toilet accessory units in accordance with manufacturer's instructions using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level firmly anchored in locations and at heights indicated.

3.3 ADJUSTING AND CLEANING:

- A. Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.
- B. Clean and polish all exposed surfaces after removing labels and protective coatings.

END OF SECTION

SECTION 10 42 60 - SPECIALITY SIGNAGE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of specialty signs is to provide one (1) three digit number and one (1) nameplate for each new door.

Forms of specialty signs required include the following:

Panel signs.

QUALITY ASSURANCE:

Uniformity of Manufacturer: For each sign form and graphic image process indicated furnish products of a single manufacturer.

SUBMITTALS:

Samples: Submit samples of each sign form and material showing finishes, colors, surface textures and qualities of manufacture and design of each sign component including graphics.

Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs include sign wording and lettering layout.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Provide products by one of the following:

Manufacturers of Panel Signs:

Andco Industries Corp.
ASI Sign Systems Inc.
Best Manufacturing Co.
Mohawk Engraving Co., Inc.
Spanjer Brothers Inc.

Products, Numbers, and Names reference Mohawk Sign Systems, Inc. P. O. Box 966, Schenectady, NY 12301-0966. (518) 370-3433 or FAX (518) 370-3332 or approved equal.

ADA Signage Specification

Restroom Signs: Pictograph

The Gender and Access Symbols shall be used where indicated and be accompanied with the verbal description placed directly below the symbols. The border dimension shall be 6" minimum in height.

Color: To be selected from manufacturer's standard.

Plaque Size: 8" x 8".

Symbol Size: 4" access and gender with 3/4" Gill Sans upper case letters and Grade 2 braille.

Designated as follows:

MEN
WOMEN

Modular Plaque Room Sign:

Design: M-310-B, Size 6" x 6".

Header Panel: Size 3" x 6".

Insert Panel: Size 3" x 6" with two 3/4" x 9" windows.

Room Number 1 1/2" Gill Sans letterstyle.

Room name and text finished as selected by Owner.

Corners rounded.

Colors: Background – As selected by Architect from manufacturer's standard color selections.

Text – As selected by Architect from manufacturer's standard color selections.

Furnish sign for each door (excluding restroom doors).

PART 3: EXECUTION:

CLEANING AND PROTECTION:

At completion of installation, clean soiled sign surfaces in accordance with manufacturer's instructions. Protect units from damage until acceptance by Owner.

END OF SECTION 10 42 60

SECTION 10 44 16 – FIRE EXTINGUISHERS AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK

- A. Definition: "Fire extinguishers" in this section refer to units which can be hand carried as opposed to those which are equipped with wheels or to fixed fire extinguishing systems, unless otherwise indicated.
- B. Type of products in this section include:
 - 1. Fire extinguishers.
 - 2. Fire extinguisher cabinets.
 - 3. Mounting brackets.

1.3 QUALITY ASSURANCE

- A. Provide portable fire extinguishers, cabinets and accessories by one manufacturer, unless otherwise acceptable to Architect.
- B. UL Listed Products: Provide new portable fire extinguishers which are UL listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.
- C. FM Listed Products: Provide new portable fire extinguishers which are approved by Factory Mutual Research Corporation for type, rating, and classification of extinguisher indicated and carry appropriate FM marking.

1.4 SUBMITTALS

- A. Product Data: Submit manufacturer's technical data and installation instructions for all portable fire extinguishers required. For fire extinguisher cabinets include roughing in dimensions, and details showing mounting methods, relationships to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, style and materials. Where color selections by Architects required include color charts showing full range of manufacturer's standard colors and designs available.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:
 - 1. J.L. Industries
 - 2. Larsen's Mfg. Co.
 - 3. Muckle Manufacturing, Division of Technico, Inc.

2.2 FIRE EXTINGUISHERS

- A. General: Provide fire extinguishers for each extinguisher cabinet and other locations indicated in colors and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities.
- B. Abbreviations indicated below to identify extinguisher types related to UL classification and rating system, and not necessarily to type and amount of extinguishing material contained in extinguisher.
- C. Multi-Purpose Dry Chemical Type: All fire extinguishers in cabinets or bracket mounted shall be UL rated 4A-80B:C, 10 lb. nominal capacity, in enameled steel container for Class A, Class B and Class C fires.

2.3 MOUNTING BRACKETS (For locations indicated as FE2)

- A. Provide manufacturer's standard bracket designed to prevent accidental dislodgment of extinguisher of proper size for type and capacity of extinguisher indicated in manufacturer's standard plated finish.
- B. Provide brackets for extinguishers not located in cabinets. (FE-2)
- C. Identify bracket mounted extinguishers with red letter decals spelling "FIRE EXTINGUISHER" applied to wall surface. Letter size, style and location as selected by Architect.

2.4 FIRE EXTINGUISHER CABINETS (For locations indicated as FE1)

- A. General: Provide fire extinguisher cabinets where indicated of suitable size for housing fire extinguishers of types and capacities indicated.
- B. Construction: Manufacturer's standard enameled steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.
- C. Cabinet Type: Suitable for mounting conditions indicated of the following types:

1. Semi-Recessed: Cabinet box (tub) partially recessed in walls of shallow depth. Indicated on drawings as FE 1.
 - a. Larsen 2409-6R Architectural Series (depth required 4" and 2 1/2" projection)
 - 1) Door Style: Full Glass With Larson Lock
- D. Door Hardware: Provide manufacturer's standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated.

2.5 FACTORY FINISHING OF FIRE EXTINGUISHING CABINETS

- A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations except as otherwise indicated. Apply finishes in factory after products are assembled. Protect cabinets with plastic or paper covering, prior to shipment.
- B. Baked Enamel Finish: Immediately after cleaning and pretreatment, apply manufacturer's standard baked enamel coating. Provide manufacturer's standard white color.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install items included in this section in locations and at 54" to top of cabinet, but height of the fire extinguisher above the floor to be no more than 48" to comply with ADA and applicable regulations of governing authorities.
- B. Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.
- C. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.
- D. Where exact location of surface mounted, bracket mounted fire extinguishers is not indicated, locate as directed by Architect.

END OF SECTION

SECTION 105300 - PRE-MANUFACTURED ALUMINUM CANOPY

PART 1: GENERAL

2.01 Description of Work

- 2.01.A. Work in this section includes furnishing and installation of roll-formed aluminum overhead hanger rod style canopies as manufactured by Mapes Industries Inc.
- 2.01.B. Related Items and Considerations
 - 1. Flashing of various designs may be required. Generic flashing supplied by Mapes. Specialty flashing to be supplied by installer.
 - 2. Determine wall construction, make-up and thickness.
 - 3. Ensure adequate wall condition to carry canopy loads where required.
 - 4. Consider water drainage away from canopy where necessary.
 - 5. Any necessary removal or relocation of existing structures, obstructions or materials.

2.02 Quality Assurance

- 2.02.A. Products meeting these specifications established standard of quality required as manufactured by Mapes Industries, Inc. Lincoln, Nebraska 1-888-273-1132.

2.03 Field Measurement

- 2.03.A. Confirm dimensions prior to preparation of shop drawings when possible.
- 2.03.B. If requested, supply manufacturer s standard literature and specifications for canopies.
- 2.03.C. Submit shop drawings showing structural component locations/positions, material dimensions and details of construction and assembly.

2.04 Performance Requirements

- 2.04.A. Canopy must conform to local building codes.
- 2.04.B. PE Stamped calculations are required and must be signed and sealed by an engineer licensed within the state canopy is installed.

2.05 Deliver, Storage, Handling

- 2.05.A. Deliver and store all canopy components in protected areas.

PART 2: PRODUCTS

4.01 Manufacturer

- 4.01.A. Basis of Design: Lumishade by Mapes Canopies or approved equal
 - 1. Mapes Canopies
Lincoln, Nebraska
Phone: 1-888-273-1132.
Fax: 1-877-455-6572.

4.02 Materials

- 4.02.A. Decking shall consist of an interlocking roll-form 2 1/2 W style pan (.040" aluminum).

- 4.02.B. Intermediate framing members shall be extruded aluminum, alloy 6063-T6, in profile and thickness shown in current Mapes brochures.
- 4.02.C. Hanger rods and attachment hardware shall be a standard finish.
- 4.02.D. Fascia shall be standard extruded 8" J style.
- 4.03 Finishes
 - 4.03.A. Finish type shall be 2-Coat Kynar Finish.
- 4.04 Fabrication
 - 4.04.A. All Mapes canopies are shipped in preassembled sections for ease of installation.
 - 4.04.B. All connections shall be mechanically assembled utilizing 3/16 fasteners with a minimum shear stress of 350 lb. Pre-welded or factory-welded connections are not acceptable.
 - 4.04.C. Concealed drainage. Water shall drain from covered surfaces into intermediate trough and be directed to Front Scupper.

PART 3: EXECUTION

- 6.01 Inspection
 - 6.01.A. Confirm that surrounding area is ready for the canopy installation.
 - 6.01.B. Installer shall confirm dimensions and elevations to be as shown on drawings provided by Mapes Industries.
 - 6.01.C. Erection shall be performed by an approved installer and scheduled after all concrete, masonry and roofing in the area is completed
- 6.02 Installation
 - 6.02.A. Installation shall be in strict accordance with manufacturer's shop drawings. Particular attention should be given to protecting the finish during handling and erection.
- 6.03 After installation, entire system shall be left in a clean condition.

END OF SECTION

SECTION 10 95 00 - MISCELLANEOUS SPECIALTIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.
- B. Extent of miscellaneous specialties are items specified herein and/or shown on drawings.

1.2 INSTALLATION:

- A. Installation of each item shall be in accordance with approved shop drawings and with the manufacturer's current printed instructions, except as otherwise specified herein.

1.3 SUBMITTALS:

- A. Submit shop drawings, manufacturer's brochures and color samples for each item to the Architect for approval.
- B. Submit a copy of installation instructions for each item of work with the shop drawings.

1.4 FINISHES:

PART 2 - PRODUCTS

2.1 BUILDING PLAQUE:

- A. One cast bronze plaque shall be manufactured by Matthews or approved equal.
- B. Plaques are to be cast of virgin ingots and shall be free of all pits and gas holes. All letters shall be sharp and hand tooled. Border and raised letter faces shall be satin polished finish and background shall be leatherette texture and oxidized.
- C. Plaque shall be 24" wide x 24" high with single line border design with Roman (Architectural) style letters. Mounting for plaque shall be concealed fastening.
- D. Lettering on plaque shall be equivalent to the following with names verified on the approved rubbing before casting:

- E. (Text below is for bidding purposes only. Text to be revised as required before ordering plaque, approved in writing by the Owner & Architect.)

THIS FACILITY WAS PAID FOR BY THE TAXPAYERS
OF THE CITY OF HATTIESBURG, MISSISSIPPI.

(SIZE OF TEXT ABOVE SHALL NOT BE SMALLER THAN ANY OTHER TEXT ON PLAQUE).

FIRE STATION NO. 9

(DATE TBD)

BOARD OF DIRECTORS

NAME	TITLE
------	-------

NAME	
------	--

NAME	
------	--

NAME	
------	--

NAME	
------	--

NAME	
------	--

NAME	
------	--

NAME	TITLE (2 WORDS)
------	-----------------

NAME	TITLE (2 WORDS)
------	-----------------

ARCHITECT

LANDRY LEWIS GERMANY ARCHITECTS, P.A.

HATTIESBURG, MISSISSIPPI

CONTRACTOR

1 LINE

(to be furnished)

2.2 EXTERIOR SIGNAGE

- A. "STATION 9" Channel Letter Signage: Manufacture & Install (1) set of raceway mounted internally illuminated channel letters with trim-capped acrylic letters with prefinished aluminum sidewalls as shown on the Concept Drawing immediately following this section.
- B. "CITY OF HATTIESBURG" Pan Formed Exterior Signage: Refer to Section 01 21 00 Allowances.
- C. "HATTIESBURG FIRE DEPARTMENT" Pan Formed Exterior Signage: Refer to Section 01 21 00 Allowances.

2.3 MINI BLINDS:

- A. Blind includes 1" horizontal metal head rail, guardian tilter mechanism, tilt wand, and cord lock, valance, color selection from standard colors. Provide blinds by one of the following only:
 - 1. Delmar, Style "Nouvelle"
 - 2. Hunter Douglas, Style "Celebrity"
 - 3. Levelour, Style "Monaco"

2.4 HANDICAP ACCESSIBLE INTERIOR TOILET ROOM SIGNS

- A. Manufacturer: Best Sign Systems
 - 1. Provide 1 toilet room sign for each toilet as follows:
 - 2. Type word and picture.
 - 3. Room Name on Plans:
 - a. MEN - Best Sign No. WP287RB - Wording Men - Pictogram Man
 - b. WOMEN - Best Sign No. WP288RB - Wording Women - Pictogram Woman
 - c. TOILET - Best Sign No. WP268ARB - Wording Restroom - Pictogram Man & Woman
 - 4. All Signs as follows:
 - a. Raised Symbols
 - b. Typestyle: Standard Medium
 - c. Copy: Raised 1/32"
 - d. Copy Height: 5/8" Minimum
 - e. Grade 2 Braille
 - f. Material: "MP" Plastic
 - g. Colors: To be selected from Manufacturers standards.
 - h. Thickness: 1/8"
 - i. Mounting: 1/16" Vinyl Foam Tape
 - j. Size: 6" x 7 3/4"
 - k. Corner/Border Style: "Radius Corner Radius Border"
 - l. All Signs have Wheelchair Pictogram

2.5 APPLIANCES:

- A. Refrigerator & Dishwasher:
 - 1. Refer to Section 01 21 00 Allowances.
- B. Commercial Grade Gas Range.
 - 1. Provide and install one Vulcan Endurance Gas Restaurant Range with 6 open burners and one standard oven equivalent to Vulcan Model No. 36S-6BN.
 - 2. Range shall include the following accessories:
 - a. Extra oven rack with guides
 - b. Leveling casters
 - c. Flanged feet
 - d. Flame safety device w/manual spark ignition for all open top burners
 - e. Hot tops
 - 3. Contractor shall coordinate delivery, installation, and service connection with Mechanical system, hood system, etc. as required for complete & operational use prior to close out.
- C. Ice Maker:
 - 1. Ice-O-Matic model number ICE0250FA5.
- D. Electric Washer & Dryer:
 - 1. Refer to Section 01 21 00 Allowances.

2.6 STAINLESS STEEL CABINETS AND SHELVES

- A. Manufacturer: Advance Tabco or approved equal
 - 1. Provide Stainless Steel Cabinets as follows:
 - a. One each: HK-SS-303M, 30" Wide x 36" Long
 - b. One each: HK-SS-304M, 30" Wide x 48" Long
 - c. Cabinets to be Hinged Door Style Enclosed Base Work Tables:
 - 1) Features: 5" splash is furnished with a 1 5/8" sanitary rolled rim on the front side and 1 5/8" square bend edges on the 2 sides and a 5" splash with a 1" return on the rear side. Hinged doors are constructed as double panel doors with recessed inner panels for extra rigidity. Rear flush panel along the rear of the base unit.
 - 2) Construction: All tig welded. Exposed areas finished to match adjacent surfaces. Entire top is mechanically polished to a satin finish and is sound deadened. Hat section secured to top reinforces and maintains level working surface. Uni-body design sides, back and fixed mid shelf are welded to form a single rigid structure. Legs bolt on to table base.
 - 3) Material: Top is 14 gauge stainless steel type "304" series with galvanized understructure. Body is 18 gauge stainless steel type "430" series. Legs are stainless steel and include 1 1/2" adjustable hex foot.

- 4) Optional accessories shall include Partial Mid-Shelf and 5" Heavy Duty Polyurethane Casters.
2. Provide Stainless Steel Shelves as follows:
 - a. One each: WS-18-36, Wall mounted 18" x 36" Wide, 18 gauge, 18/430 NSF
 - b. One each: WS-18-48, Wall mounted 18" x 48" Wide, 18 gauge, 18/430 NSF
 - c. Shelves to have 1-5/8" bullnose front endge with 1-1/2" rear upturn and turned down ends.

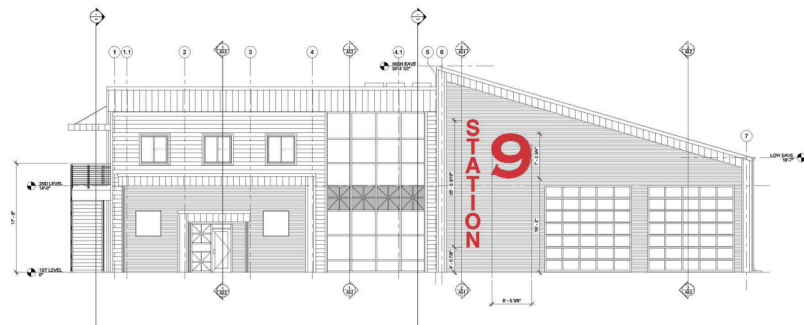
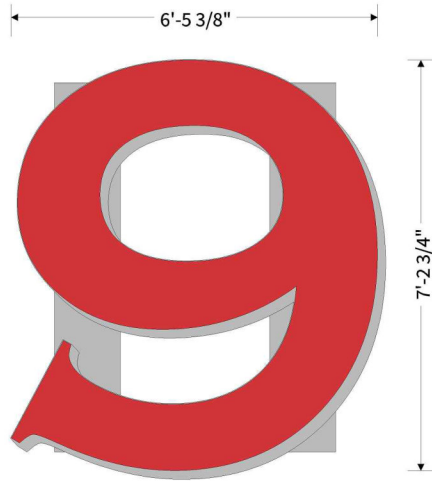
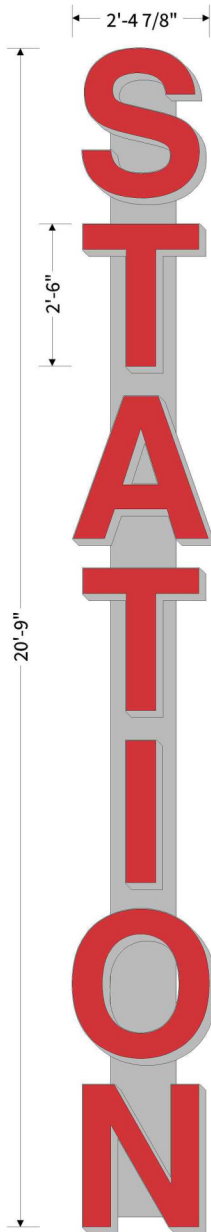
2.7 CORNER GUARDS:

- A. Furnish and install clear corner guards at all gypsum board finished interior partition corners of 90 or 135 degree corners. Manufacturer shall be Inpro Architectural Products or equivalent.
 1. Corner guards shall consist of minimum 1" wings of clear lexan polycarbonate applied with CLEAR peel and stick tape.
 2. Install corner guards minimum 6" from finished floor continuously to a height of no less than 6'-6" above finished floor.

END OF SECTION

CONCEPT DRAWING

SQ FOOTAGE 96.5



Manufacture and install (1) set of raceway mounted internally illuminated channel letters with trimcapped acrylic letters and prefinished aluminum sidewalls.

- 3M SCOTCHCAL TRANSLUCENT GRAPHIC FILM SERIES 3630-33 RED
- METALLIC SILVER (JEWELITE) ■ METALLIC SILVER 358 A3 (SIDEWALLS & RACEWAY)



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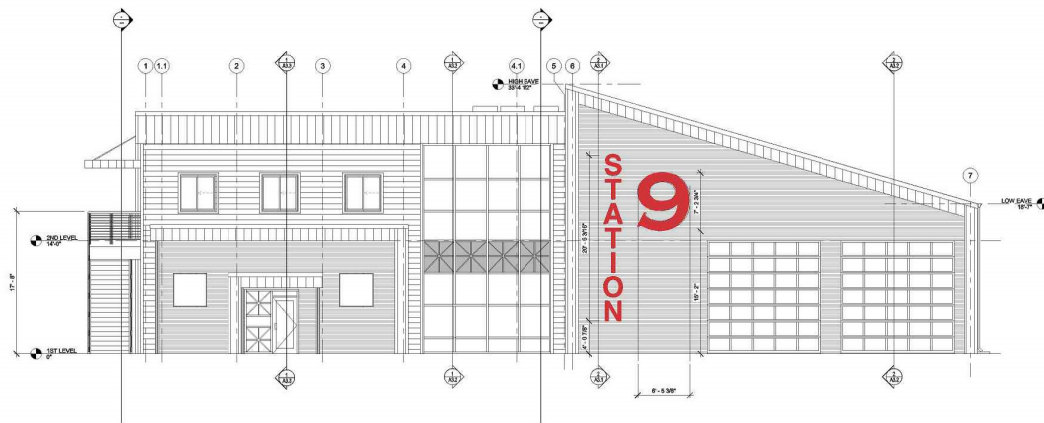
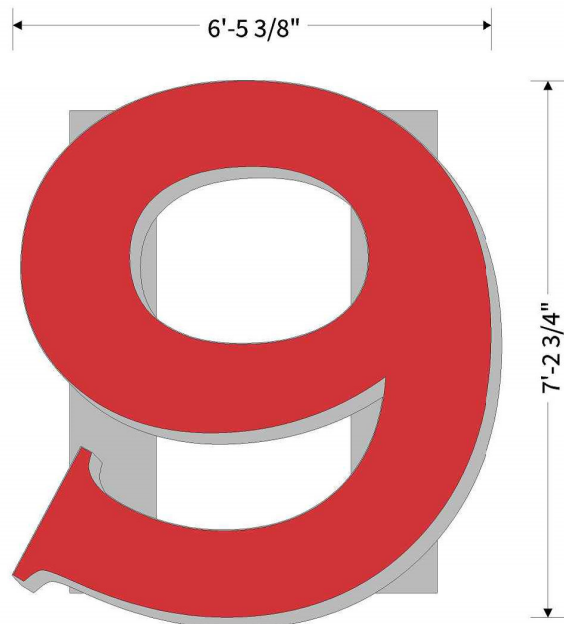
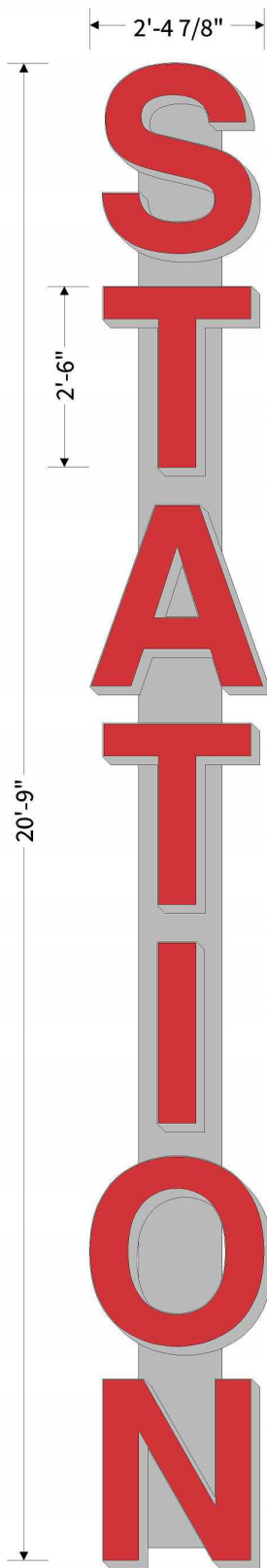
Underwriters
Laboratories



This color sketch is provided as an example of color. There may be some color variation between printed ink and paint. For best color representation, please choose Pantone Matching System * Colors for paint or print.

CHANNEL LETTERS

CUSTOMER: LANDRY, LEWIS, & GERMANY	CUSTOMER # XXX123	DATE: 8/12/2019
LOCATION: HATTIESBURG, MS	PM: B.B. SALES: C.R.	PRIMARY DESIGNER: Trevor Branch
REVISION: NO REVISION		CURRENT DESIGNER:
CUSTOMER APPROVAL:	SIGN HERE	
		APPROVAL DATE:



Manufacture and install (1) set of raceway mounted internally illuminated channel letters with trimcapped acrylic letters and prefinished aluminum sidewalls.

- 3M SCOTCHCAL TRANSLUCENT GRAPHIC FILM SERIES 3630-33 RED
- METALLIC SILVER (JEWELITE) METALLIC SILVER 358 A3 (SIDEWALLS & RACEWAY)

CHANNEL LETTERS

CUSTOMER: LANDRY, LEWIS, & GERMANY

LOCATION: HATTIESBURG, MS

REVISION: NO REVISION

CUSTOMER APPROVAL:

CUSTOMER # XXX123

PM: B.B.

SALES: C.R.

DESIGNER:

DATE: 8/12/2019

PRIMARY DESIGNER: Trevor Burch

CURRENT DESIGNER:

APPROVAL DATE:

SIGN
HERE

SECTION 12 4920 – MANUAL OPERATED ROLLER SHADE

Part I – GENERAL

A. SUMMARY

Section Includes

RB500 Roller Shade

Dual Shades - Screen and Blackout

Related Work includes the following:

Section 06100 Rough Carpentry

Section 08520 Aluminum Windows

Section 079200 "Joint Sealants" for sealing the perimeters of Accessories for light-blocking shades with a sealant.

Section 107113 "Exterior Sun Control Devices" for exterior shade systems.

Section 122200 "Curtains and Drapes" for wired-, radio-, and networked-motor operated soft window coverings.

Section 122509 "Window Treatment Motors, Controls, and Networked Automation Systems" for other motor operators and motor controls.

Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for power cables.

Section 260523 "Control-Voltage Electrical Power Cables" for balanced twisted pair cabling.

Section 260943.16 "Addressable-Luminaire Lighting Controls" for lighting integration into digital shading systems.

Section 260943.23 "Relay-Based Lighting Controls" for lighting integration into digital shading systems.

Section 262726 "Wiring Devices" for accessory electrical wiring devices.

B. REFERENCES

National Fire Protection Association (NFPA) 701

Department of Transportation Motor Vehicle Safety Standard 302 Flammability of Interior Materials

California Administrative Code Title 19

Federal Standard 191 Method 5903 (used by Port Authority of New York and New Jersey for drapery, curtain, and upholstery material)

Boston Fire Department Test BFD IX-1

New York State Uniform Fire Prevention and Building Code

C. SUBMITTALS

Subject under provisions of Section 01330 – Submittal Procedures

Product Data: Manufacturer's data sheets shall be submitted for each product specified, including:

- Preparation instructions and recommendations
- Finishes, material descriptions, dimensions of individual components
- Construction and installation instructions
- Manufacturers recommendations for maintenance and cleaning

Drawings and Diagrams: Product details, installation details, working and assembly drawings shall be supplied as requested

Sample: Responsible contracting officer or agent shall supply one sample shade of each type specified in this contract for approval. Supplied units shall be furnished complete with all required components, mounting and associated hardware, instructions and warranty.

Electric shade motors shall comply with UL standards. Copy of compliance available for submission upon request.

D. QUALITY ASSURANCE

Supplier: Manufacturer, subsidiary, or licensed agent shall be approved to supply the products specified, and to honor any claims against product presented in accordance with warranty.

Installer: Installer or agent shall be qualified to installed specified products by prior experience, demonstrated performance and acceptance of requirements of manufacturer, subsidiary, or licensed agent. Installer shall be responsible for an acceptable installation.

Uniformity: Provide product of only one manufacturer for entire project.

Mock up: Provide one (1) mock-up shade for each roller shade type/assembly specified.

E. DELIVERY, STORAGE, AND HANDLING

Product shall be delivered to site in manufacturer's original packaging.

Product shall be handled and stored to prevent damage to materials, finishes, and perating mechanisms.

F. JOB CONDITIONS

Prior to shade installation, building shall be enclosed.

Interior temperature shall be maintained between 60 degrees Fahrenheit and 90 degrees Fahrenheit during and after installation; relative humidity shall not exceed 80%. Wet work shall be complete and dry.

G. WARRANTY

Provide a limited manufacturer's warranty from date of Substantial Completion covering the following periods.

Lifetime Limited Warranty on all hardware components, fabrics warranted for 5 years by Hunter Douglas, and most fabrics warranted for 10 years by the fabric manufacturer. Specific and custom product warranties available from manufacturer or its authorized agent.

Part II – PRODUCTS

A. ACCEPTABLE MANUFACTURER

Basis of Design Hunter Douglas Architectural Window Coverings – 13915 Danielson Street, Suite 100, Poway, CA 92064; Phone 800.727.8953 x1; Fax 800.205.9819; Website www.hunterdouglasarchitectural.com/windowcoverings; or architect approved equivalent.

Request for substitutions must be approved by architect minimum of 30 days prior to close of bid.

Find a representative: <http://www.hunterdouglasarchitectural.com/contacts/index.jsp#>

MANUAL RB500 ROLLER SHADE

FABRICS: Inherently anti-static, flame retardant, fade and stain resistant, light filtering, room darkening, and blackout fabrics providing 0% to 20% openness, 5 oz/sq. yd to 20.70 oz/sq. yd, containing fiberglass, PVC, polyester, acrylic, vinyl laminates, cotton, and vinyl coatings (based upon fabric choice). *Finish selected by architect from manufacturer's available contract colors.*

Horizontal stabilizing battens are not required, nor will they be accepted.

CONTROL SYSTEMS:

CLUTCH OPERATED: Chain-driven operator capable of lifting up to 20 pounds of weight with a maximum allowable pull force of 10 pounds. Utilization of adjustment-free continuous qualified T304 stainless ball chain with 110 lbs. breaking strength for precise control, smooth operation, and ensures a uniform look. Components must be maintenance-free from adjustments or lubrication for trouble-free lifetime operation.

90 pound breaking strength chains will not be accepted.

Chain anchor device to be compliant with WCMA safety standard A100.1.1-2010 and must prevent the clutch system from moving the roller shade through lowering and raising if not properly installed as specified in ANSI Standard Section 6.5.2.

DUAL ROLLER SHADES: Universal mount steel brackets with 2 separate solar and room darkening blackout roller shades operating independently of each other.

ROLLER TUBE: Circular-shaped aluminum tube extruded from alloy and temper 6063 T-6. Extruded tube to have a .063" wall thickness (2.5" outside diameter to have a 0.79" wall thickness). Heavily reinforced with minimum of six internal ribs and flutes providing additional tensile strength and allows for secure placement of clutch and end plug.

SPRING-LOADED IDLE END: Reinforced idler assembly containing spring loaded end plug with positive locking wheel allowing for up to 7/8" adjustment and provides for a secure installation and removal of shade. Locking tube bearing plug contains minimum 6 ribs and flutes and inserted a minimum of 2 3/8" into roller tube on heavy duty systems.

MOUNTING HARDWARE: Manufacturer's standard or heavy duty bracket constructed of hardened 1/8" thick steel to support full weight of shade with bracket and screw hole covers to provide uniform look. Locking mechanism on bracket adapter provides for a secure installation and removal of the shade.

Cradle-seated hardware without a locking mechanism will not be accepted.

INTEGRATED LEVELING DEVICE: Built into the idle-end bracket (or intermediate bracket of a coupled shade) allowing for the vertical height adjustment of +/- one-half inch direction up or down, allowing the easy leveling of a fabric panel on its mounting surface. This assists to keep the fabric rolling square to the tube, minimizing the chance of the fabric rolling into its hardware causing creases and damage to the ends of the fabric.

Adjusting fabric skewing through means of tape, paper, or cardboard tucked up inside the fabric at the tube is not acceptable.

SURFACE OR CEILING-RECESSED POCKET: Extruded aluminum alloy U-shaped housing for recessed mounting in acoustical tile or drywall ceilings. 5.25" (9" for Dual Shades) x 5.25" profile with removable bottom aluminum closure. Ceiling-recessed pockets include an integrated tile support protrusion of 3/4".

B. FABRICATION

Shade measurements shall be accurate to within +/- 1/8" or as recommended in writing by manufacturer.

FABRICS: Fabric color to be selected by architect

Part III – EXECUTION

Inspection

Subcontractor shall be responsible for inspection on site, approval of mounting surface, installation conditions, and field measurement for this work.

Other interacting trades shall receive drawings of shade systems, dimensions, assembly, and installation methods from subcontractor upon request.

Installation

Installation shall comply with manufacturer's specifications, standard and procedures as detailed on contract drawings

Adequate clearance shall be provided to permit unencumbered operation of shade and hardware.

Clean finish installation of dirt and finger marks. Leave work area clean and free of debris.

Demonstration

Demonstrate operation method and instruct owner's personnel in the proper operation and maintenance of the roller shades.

Schedule

Exterior Windows
Interior Relights

END OF SECTION 12 49 20

13 34 19 STEEL DECKINGPART 1 GENERAL

1.01 SECTION INCLUDES

- A. Manufacturer-engineered, shop-fabricated structural steel building frame.
- B. Insulated Metal wall and roof panels including soffits.
- C. Exterior doors, windows, skylights, overhead doors, and louvers.

1.02 RELATED REQUIREMENTS

- A. Section 01 6116 - Volatile Organic Compound (VOC) Content Restrictions.
- B. Section 05 5000 - Metal Fabrications.
- C. Section 07 9005 - Joint Sealers.
- D. Section 08 1113 - Hollow Metal Doors and Frames.
- E. Section 08 1213 - Hollow Metal Frames.
- F. Section 08 3613 - Sectional Doors.
- G. Section 08 5123 - Steel Windows.
- H. Section 08 5113 - Aluminum Windows.
- I. Section 08 5200 - Wood Windows.
- J. Section 08 5313 - Vinyl Windows.
- K. Section 08 6200 - Unit Skylights.
- L. Section 08 8000 - Glazing.

1.03 REFERENCE STANDARDS

- A. AISC 360 - Specification for Structural Steel Buildings; American Institute of Steel Construction, Inc.; 2010.
- B. ASTM A36/A36M - Standard Specification for Carbon Structural Steel; 2012.
- C. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- D. ASTM A307 - Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength; 2012.
- E. ASTM A325 - Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength; 2010.
- F. ASTM A325M - Standard Specification for Structural Bolts, Steel, Heat Treated 830 MPa Tensile Strength (Metric); 2013.
- G. ASTM A490 - Standard Specification for Structural Bolts, Alloy Steel, Heat Treated, 150 ksi Minimum Tensile Strength; 2012.
- H. ASTM A490M - Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints (Metric); 2012
- I. ASTM A500/A500M - Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes; 2013.
- J. ASTM A501 - Standard Specification for Hot-Formed Welded and Seamless Carbon Steel Structural Tubing; 2007.
- K. ASTM A529/A529M - Standard Specification for High-Strength Carbon-Manganese Steel of Structural Quality; 2005 (Reapproved 2009).

- L. ASTM A572/A572M - Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel; 2012.
- M. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2013.
- N. ASTM A792/A792M - Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dip Process; 2010.
- O. ASTM A992/A992M - Standard Specification for Structural Steel Shapes; 2011.
- P. ASTM C665 - Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing; 2012.
- Q. ASTM C991 - Standard Specification for Flexible Glass Fiber Insulation for Metal Buildings; 2008e1.
- R. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink); 2013.
- S. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials; 2013a.
- T. AWS A2.4 - Standard Symbols for Welding, Brazing, and Nondestructive Examination; American Welding Society; 2012.
- U. AWS D1.1/D1.1M - Structural Welding Code - Steel; American Welding Society; 2010.
- V. IAS AC472 - Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems; 2012.
- W. MBMA (LR) - Low Rise Building Systems Manual; Metal Building Manufacturers Association; 2006.
- X. SSPC-Paint 20 - Zinc-Rich Primers (Type I, "Inorganic," and Type II, "Organic"); Society for Protective Coatings; 2002 (Ed. 2004).
- Y. UL 580 - Standard for Tests for Uplift Resistance of Roof Assemblies; Underwriters Laboratories Inc.; Current Edition, Including All Revisions.

1.04 DESIGN REQUIREMENTS

- A. Installed Thermal Resistance of Wall System: R value of ____ (RSI value of ____).
- B. Installed Thermal Resistance of Roof System: R value of ____ (RSI value of ____).
- C. Design members to withstand dead load, applicable snow load, and design loads due to pressure and suction of wind calculated in accordance with applicable code.
- D. Design members to withstand 20 psf (____ kPa) live load, 20 psf (____ kPa) nominal snow load, and as required by local code or contract documents (whichever is more stringent) positive and negative wind loads.
- E. Design members to withstand UL 580 Uplift Class 60.
- F. Exterior wall and roof system shall withstand imposed loads with maximum allowable deflection L/360 wall and L/360 roof (this includes seismic story drift).
- G. Provide drainage to exterior for water entering or condensation occurring within wall or roof system.
- H. Permit movement of components without buckling, failure of joint seals, undue stress on fasteners or other detrimental effects, when subject to temperature range of 120 degrees F (____ degrees C).
- I. Size and fabricate wall and roof systems free of distortion or defects detrimental to appearance or performance.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Preinstallation Meeting: Convene one week before starting work of this section.

1.06 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on profiles, component dimensions, fasteners.
- C. Shop Drawings: Indicate assembly dimensions, locations of structural members, connections; wall and roof system dimensions, panel layout, general construction details, anchorages and method of anchorage, installation, and _____; framing anchor bolt settings, sizes, and locations from datum, foundation loads; indicate welded connections with AWS A2.4 welding symbols; indicate net weld lengths; provide professional seal and signature.
- D. Samples: Submit two samples of precoated metal panels for each color selected, ____x____ inch (____x____ mm) in size illustrating color and texture of finish.
- E. Manufacturer Qualification Statement: Provide documentation showing metal building manufacturer is accredited under IAS AC472. Include statement that manufacturer designs and fabricates metal building system as integrated components and assemblies, including but not limited to primary structural members, secondary members, joints, roof, and wall cladding components specifically designed to support and transfer loads and properly assembled components form a complete or partial building shell.
- F. Manufacturer's Instructions: Indicate preparation requirements, anchor bolt placement, and _____.
- G. Erection Drawings: Indicate members by label, assembly sequence, and temporary erection bracing.
- H. Project Record Documents: Record actual locations of concealed components and utilities.

1.07 QUALITY ASSURANCE

- A. Design structural components, develop shop drawings, and perform shop and site work under direct supervision of a Professional Structural Engineer experienced in design of this Work.
 - 1. Design Engineer Qualifications: Licensed in the State in which the Project is located.
 - 2. Conform to applicable code for submission of design calculations as required for acquiring permits.
 - 3. Cooperate with regulatory agency or authority and provide data as requested.
- B. Perform work in accordance with AISC 360 - Specification for Structural Steel Buildings.
 - 1. Maintain one copy on site.
- C. Perform welding in accordance with AWS D1.1.
- D. Manufacturer Qualifications: Company specializing in the manufacture of products similar to those required for this project.
 - 1. Not less than 3 years of documented experience
 - 2. Accredited by IAS according to IAS AC472.
- E. Erector Qualifications: Company specializing in performing the work of this section with minimum ____15____ years experience.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a five year period after Date of Substantial Completion.
- C. Provide five year manufacturer warranty for _____.
 - 1. Include coverage for exterior pre-finished surfaces to cover pre-finished color coat against chipping, cracking or crazing, blistering, peeling, chalking, or fading. Include coverage for weather tightness of building enclosure elements after installation.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Metal Buildings:
 - 1. Butler Manufacturing Company; Product ____: www.butlermfg.com/specink.

2. Ceco Building Systems; Product ____: www.cecobuildings.com.
3. Chief Buildings; Product ____: www.chiefbuildings.com.
4. Kirby Building Systems: www.kirbybuildingsystems.com.
5. Metallic Building Company; Product ____: www.metallic.com.
6. VP Buildings; Product ____: www.vp.com.
7. All others must be approved by the Structural Engineer

2.02 METAL BUILDING

- A. Single span rigid frame.
- B. Bay Spacing: as shown on contract documents.
- C. Primary Framing: Rigid frame of rafter beams and columns, canopy beams, and wind bracing.
- D. Secondary Framing: Purlins, and other items detailed.
- E. Wall System: Preformed metal panels of horizontal profile, with sub-girt framing/anchorage assembly, and accessory components.
- F. Roof System: Preformed metal panels oriented parallel to slope, with sub-girt framing/anchorage assembly, insulation, and liner panels, and accessory components.
- G. Roof Slope: As shown on Contract documents

2.03 MATERIALS – FRAMING

- A. Structural Steel Members: ASTM A572/A572M, Grade 50.
- B. Structural Tubing: ASTM A500/A500M, Grade B cold-formed.
- C. Plate or Bar Stock: ASTM A529/A529M, Grade 50.
- D. Anchor Bolts: ASTM A307, galvanized to ASTM A153/A153M.
- E. Bolts, Nuts, and Washers: ASTM A325 (ASTM A325M), Type 1, galvanized to ASTM A153/A153M, Class C.
- F. Welding Materials: Type required for materials being welded.
- G. Primer: SSPC-Paint 20, zinc rich.
- H. Grout: ASTM C1107/C1107M, Non-shrink type, premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents, capable of developing minimum compressive strength of 2400 psi (17 MPa) in two days and 7000 psi (48 MPa) in 28 days.

2.04 MATERIALS - WALLS AND ROOF

- A. Steel Sheet: Hot-dipped galvanized steel sheet, ASTM A653/A653M, SS Grade 33/230, with G90/Z275 coating.
- B. Steel Sheet: ASTM A792/A792M aluminum-zinc alloy coated to AZ50/AZM150.
- C. Insulation: Semi-rigid glass fiber type, unfaced, ASTM E84 flame spread index of 25 or less where exposed, friction fit, ____ inches (____ mm) thick.
- D. Insulation: ASTM C665 Type I; ____ inches (____ mm) thick.
 1. Facing: Sheet vinyl, ____ inch (____ mm) thick, white.
- E. Joint Seal Gaskets: Manufacturer's standard type.
- F. Fasteners: Manufacturer's standard type, galvanized to comply with requirements of ASTM A153/A153M, finish to match adjacent surfaces when exterior exposed.
- G. Bituminous Paint: Asphaltic type.
- H. Sealant: Manufacturer's standard type.
- I. Sealant: _____ as specified in Section 07 9005.
- J. Metal Mesh: Galvanized steel wire, woven.

- K. Roof Curbs: Insulated metal same as roofing, ____ inch (____ mm) thick, designed for imposed equipment loads, anchor fasteners to equipment, counter flashed to metal roof system.
- L. Trim, Closure Pieces, Caps, Flashings, Rain Water Diverter: Same material, thickness and finish as exterior sheets; brake formed to required profiles.

2.05 COMPONENTS

- A. Doors and Frames: Manufacturer's standard.
- B. Doors and Frames: Specified in Section 08 1113.
- C. Frames: Specified in Section 08 1213.
- D. Overhead Doors: Specified in Section 08 3613.
- E. Overhead Door Frame: Formed steel sections braced to building frame specified in Section 05 5000.
- F. Overhead Doors and Frames: Manufacturer's standard.
 - 1. Glass and Glazing: Specified in Section 08 8000.
- G. Windows: Specified in Section 08 5123.
- H. Windows: Manufacturer's standard.
 - 1. Glass and Glazing: Specified in Section 08 8000.
- I. Unit Skylight: Specified in Section 08 6200.
- J. Unit Skylight: Manufacturer's standard.
 - 1. Single Dome: Acrylic plastic, ____ inch (____ mm) thick; clear.
 - 2. Double Dome: Acrylic plastic, ____ inch (____ mm) thick; air seal the space:
 - a. Outer Dome: clear.
 - b. Inner Dome: clear.
 - 3. Nominal Size: ____x____ inches (____x____ mm) single unit.
 - 4. Configuration: Single units.
 - 5. Shape: Convex.
 - 6. Unit Frame: Extruded aluminum thermally broken, integral curb frame and counterflashing, with integral condensation drainage gutter.
 - 7. Support Curb: Aluminum sandwich construction; ____ inch (____ mm) thick, ____ inch (____ mm) high, fibrous glass insulated, with flange for anchorage to roof deck, counter flashed and formed to roofing metal.
- K. Ventilators: Sheet steel, galvanized, rotary design, ____ inch (____ mm) nominal size.
- L. Wall Louvers: _____ type Z blade design, same finish as adjacent material, with steel mesh bird screen and frame, blank sheet metal at unused portions.

2.06 FABRICATION - FRAMING

- A. Fabricate members in accordance with AISC Specification for plate, bar, tube, or rolled structural shapes.
- B. Anchor Bolts: Formed with bent shank, assembled with template for casting into concrete.
- C. Provide framing for skylight openings.

2.07 FABRICATION - WALL AND ROOF PANELS

- A. Siding: Minimum ____ inch (____ mm) metal thickness, ____ profile indicated, ____ inch (____ mm) deep, lapped edges fitted with continuous gaskets.
- B. Roofing: Minimum ____ inch (____ mm) metal thickness, ____ profile, lapped edges fitted with continuous gaskets.
- C. Liner: Minimum ____ inch (____ mm) metal thickness, flat profile indicated, lapped V edges fitted with continuous gaskets.
- D. Soffit Panels: Minimum ____ inch (____ mm) metal thickness, flat profile indicated, perforated for ventilation.

- E. Girts/Purlins: Rolled formed structural shape to receive siding, roofing and liner sheet.
- F. Internal and External Corners: Same material thickness and finish as adjacent material, profile brake formed to required angles. Back brace mitered internal corners with ____ inch (____ mm) thick sheet.
- G. Expansion Joints: Same material and finish as adjacent material where exposed, ____ inch (____ mm) thick, manufacturer's standard brake formed type, of profile to suit system.
- H. Flashings, Closure Pieces, Fascia: Same material and finish as adjacent material, profile to suit system.
- I. Fasteners: To maintain load requirements and weather tight installation, same finish as cladding, non-corrosive type.

2.08 FABRICATION - GUTTERS AND DOWNSPOUTS

- A. Fabricate of same material and finish as roofing metal.
- B. Form gutters and downspouts and scuppers of _____ profile and size indicated to collect and remove water. Fabricate with connection pieces.
- C. Form sections in maximum possible lengths. Hem exposed edges. Allow for expansion at joints.
- D. Fabricate support straps of same material and finish as roofing metal, color as selected.

2.09 FINISHES

- A. Framing Members: Clean, prepare, and shop prime. Do not prime surfaces to be field welded.
- B. Exterior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, _____ color as selected from manufacturer's standard range.
- C. Interior Surfaces of Wall Components and Accessories: Precoated enamel on steel of modified silicone finish, _____ color as selected from manufacturer's standard range.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that foundation, floor slab, mechanical and electrical utilities, and placed anchors are in correct position

3.02 ERECTION - FRAMING

- A. Erect framing in accordance with AISC 360 - Specification for Structural Steel Buildings.
- B. Provide for erection and wind loads. Provide temporary bracing to maintain structure plumb and in alignment until completion of erection and installation of permanent bracing. Locate braced bays as indicated.
- C. Set column base plates with non-shrink grout to achieve full plate bearing.
- D. Do not field cut or alter structural members without approval.
- E. After erection, prime welds, abrasions, and surfaces not shop primed.

3.03 ERECTION - WALL AND ROOF PANELS

- A. Install in accordance with manufacturer's instructions.
- B. Exercise care when cutting prefinished material to ensure cuttings do not remain on finish surface.
- C. Fasten cladding system to structural supports, aligned level and plumb.
- D. Locate end laps over supports. End laps minimum 2 inches (50 mm). Place side laps over bearing.
- E. Provide expansion joints where indicated.
- F. Use concealed fasteners.

- G. Install insulation and vapor retarder utilizing _____ for attachment. Place wire mesh under vapor retarder for support between framing members.
- H. Install sealant and gaskets to prevent weather penetration.

3.04 ERECTION - GUTTERS AND DOWNSPOUTS

- A. Rigidly support and secure components. Join lengths with formed seams sealed watertight. Flash and seal gutters to downspouts.
- B. Apply bituminous paint on surfaces in contact with cementitious materials.
- C. Slope gutters minimum ____ inch/ft (____ mm/m).
- D. Connect downspouts to storm sewer system.
- E. Install splash pans under each downspout.

3.05 ERECTION - SKYLIGHTS

- A. Install in accordance with manufacturer's instructions.
- B. Coordinate with installation of roofing system and related flashings.
- C. Apply bituminous paint on aluminum surfaces of units in contact with dissimilar metals.
- D. Provide weather tight installation.

3.06 INSTALLATION - ACCESSORIES

- A. Install door frames, doors, overhead doors, and windows and glass in accordance with manufacturer's instructions.
- B. Seal wall and roof accessories watertight and weather tight with sealant in accordance with Section 07 9005.

3.07 TOLERANCES

- A. Framing Members: 1/4 inch (6 mm) from level; 1/8 inch (3 mm) from plumb.
- B. Siding and Roofing: 1/8 inch (3 mm) from true position.

END OF SECTION

SECTION 21 13 13
WET PIPE SPRINKLER SYSTEM, FIRE PROTECTION

PART 1 GENERAL

1.1 SYSTEM DESCRIPTION

Design and provide new automatic wet pipe fire extinguishing sprinkler systems for complete fire protection coverage throughout area designated by drawings.

1.2 SPRINKLER SYSTEM DESIGN

Except as modified herein, design automatic wet pipe fire extinguishing sprinkler systems in accordance with the required and advisory provisions of NFPA 13, including all recommendations and advisory portions, which shall be considered mandatory; this includes advisory provisions listed in the appendices of such standard(s), as though the word "shall" had been substituted for the word "should" wherever it appears. Design system by hydraulic calculations for uniform distribution of water over the design area. Hydraulic calculations shall assume the pressure loss for the backflow preventer assembly is the same as the losses indicated on the manufacturer's data sheets. Locate sprinklers in a consistent pattern with ceiling grid, lights, and air supply diffusers. Provide sprinklers and piping system layout. All Devices and equipment for fire protection service shall be UL Fire Prot Dir listed or FM APP GUIDE approved for use in wet pipe sprinkler systems. Provide seismic protection for the sprinkler system. Design and install seismic protection in accordance with the requirements of NFPA 13 section titled "Protection of Piping Against Damage Where Subject to Earthquakes."

1.2.1 Location of Sprinklers

Sprinklers in relation to the ceiling and the spacing of sprinklers shall not exceed that permitted by NFPA 13 for both light and ordinary hazards as appl per the hazards indicated on the contract drawings. Uniformly space sprinklers on the branch piping. Sprinklers shall provide coverage throughout 100 percent of the building. This includes, but is not limited to, telephone rooms, electrical equipment rooms, boiler rooms, switchgear rooms, transformer rooms, and other electrical and mechanical spaces.

1.2.2 Water Distribution

Distribution shall be uniform throughout the area in which the sprinklers will open. Discharge from individual sprinklers in hydraulically most remote area shall be between 100 percent and 120 percent of the specified density.

1.2.3 Density of Application of Water

Size pipe to provide the specified density when the system is discharging the specified total maximum required flow. Application to horizontal surfaces below the sprinklers shall be as indicated on the contract drawings. When not indicated use 0.10 gpm per sq ft for Light Hazard Occupancies, 0.15 gpm per sq ft for Ordinary Hazard Group 1 Occupancies, 0.20

gpm per sq ft for Ordinary Hazard Group 2 Occupancies, 0.30 gpm per sq ft for Extra Hazard Group 1 Occupancies, and 0.40 gpm per sq ft for Extra Hazard Group 2 Occupancies.

1.2.4 Sprinkler Discharge Area

Permissible decreases and required increases from NFPA 13 shall be applied to an initial hydraulically most remote area of 1500 sq ft.

1.2.5 Outside Hose Allowances

Hydraulic calculations shall include a hose allowance of 100 gpm for outside hose streams

1.2.6 Water Supply

Base hydraulic calculations on the water supply data shown obtained from flow test by this contractor on site.

1.3 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Shop Drawings

Shop Drawings;

Prepare 24 by 36 inch detail working drawings of sprinklers and piping. Floor plans shall be drawn to a scale not less than $1/8" = 1'-0"$. Show data essential for proper installation of each system. Show details, plan view, elevations and sections of the systems supply and piping. Show piping schematic of systems supply, devices, valves, pipe and fittings. Show point to point electrical wiring diagrams. Submit drawings signed by a registered fire protection engineer. Provide three copies of the Sprinkler System Shop Drawings, no later than 21 days prior to the start of sprinkler system installation.

Product Data

- Pipe
- Fittings
- Alarm valves
- Valves, including gate, check, and globe
- Water motor alarms
- Sprinklers
- Pipe hangers and supports
- Sprinkler Alarm Switches
- Fire department connections
- Mechanical couplings
- Backflow Prevention Assembly
- Seismic Bracing

Annotate descriptive data to show the specific model, type, and size of each item. Catalog cuts shall also indicate UL Listing/FM Approval and country of manufacture.

Design Data

Hydraulic Calculations

Submit computer program generated hydraulic calculations to substantiate compliance with hydraulic design requirements. Calculations shall be performed by computer using software intended specifically for fire protection system design. Submit name of software program used.

Test Reports

Final Acceptance Test Report

Three copies of the completed Final Acceptance Tests Reports, no later than 7 days after the completion of the Final Acceptance Tests. All items in the Final Acceptance Report shall be signed by the Fire Protection Engineer.

Certificates

Inspection by Fire Protection Engineer

Concurrent with the Final Acceptance Test Report, certification by the Fire Protection Engineer that the sprinkler system is installed in accordance with the contract requirements, including signed approval of the Preliminary and Final Acceptance Test Reports.

Fire Protection Engineer

The name and documentation of certification of the proposed Fire Protection Engineer, no later than 14 days after the Notice to Proceed and prior to the submittal of the sprinkler system drawings and hydraulic calculations.

Sprinkler System Installer

Submit data showing the Sprinkler System Installer has successfully installed systems of the same type and design as specified herein, Data shall include names and locations of at least two installations where the Contractor, or the subcontractor referred to above, has installed such systems. Indicate type and design of each system and certify that each system has performed satisfactorily in the manner intended for not less than 18 months. Provide NICET certification of the system technician. Contractor shall submit data along with submittal of the Fire Protection Engineer Qualifications.

Operation and Maintenance Data

Operating and Maintenance Instructions

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA as supplemented and modified by this specification section.

Provide 6 manuals in accordance with NFPA 13. The manuals shall include the manufacturer's name, model number, parts list, list of parts and tools that should be kept in stock by the owner for routine maintenance including the name of a local supplier, simplified wiring and controls diagrams, troubleshooting guide, and recommended service organization (including address and telephone number) for each item of equipment. Each service organization submitted shall be capable of providing 4 hour on-site response to a service call on an emergency basis.

Closeout Submittals

As-built drawings

As-built shop drawings, at no later than 14 days after completion of the Final Tests. The Sprinkler System Drawings shall be updated to reflect as-built conditions after all related work is completed. Provide electronic drawings in dwg or pdf format.

On-site training

1.4 QUALIFICATIONS

A. Fire Protection Engineer

A Fire Protection Engineer is a registered professional engineer (P.E.) who has passed the fire protection engineering written examination administered by the National Council of Examiners for Engineering and Surveys (NCEES) or a registered P.E. in a related engineering discipline with a minimum of 5 years experience, dedicated to fire protection engineering that can be verified with documentation.

B. Sprinkler System Installer

The Sprinkler System Installer shall be regularly engaged in the installation of the type and complexity of system specified in the Contract documents, and shall have served in a similar capacity for at least three systems that have performed in the manner intended for a period of not less than 6 months. Installation drawings, shop drawings and as-built drawings shall be prepared, by or under the supervision of, an system technician who is experienced with the types of works specified herein, and is currently certified by the National Institute for Certification in Engineering Technologies (NICET) as an engineering technician with minimum Level III certification in Automatic Sprinkler System program or by a fire protection engineer.

1.5 QUALITY ASSURANCE

A. Material and Equipment Qualifications

Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for

sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

B. Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

C. Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

D. Field Fabricated Nameplates

ASTM D709. Provide laminated plastic nameplates for each equipment enclosure, relay, switch, and device; as specified in the technical sections or as indicated on the drawings. Each nameplate inscription shall identify the function and, when applicable, the position. Nameplates shall be melamine plastic, 0.125 inch thick, white with black center core. Surface shall be matte finish. Corners shall be square. Accurately align lettering and engrave into the core. Minimum size of nameplates shall be one by 2.5 inches. Lettering shall be a minimum of 0.25 inch high normal block style.

1.6 ACCESSIBILITY

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

1.7 DELIVERY, STORAGE AND HANDLING

All equipment delivered and placed in storage shall be housed in a manner to preclude any damage from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Additionally, all pipes shall either be capped or plugged until installed.

PART 2 PRODUCTS

2.1 UNDERGROUND PIPING COMPONENTS

A. Pipe

Pipe shall comply with NFPA 24. Minimum pipe size shall be 6 inches.

B. Gate Valve and Indicator Posts

Installation shall comply with NFPA 24. Gate valves for use with indicator post shall conform to UL 262. Indicator posts shall conform to UL 789. Provide each indicator post with one coat of primer and two coats of red enamel paint.

C. Valve Boxes

Except where indicator posts are provided, for each buried valve, provide cast-iron, ductile-iron, or plastic valve box of a suitable size. Plastic boxes shall be constructed of acrylonitrile-butadiene-styrene (ABS) or inorganic fiber-reinforced black polyolefin. Provide cast-iron, ductile-iron, or plastic cover for valve box with the word "WATER" cast on the cover. The minimum box shaft diameter shall be 5.25 inches. Coat cast-iron and ductile-iron boxes with bituminous paint applied to a minimum dry-film thickness of 10 mils. Material selection shall be based on traffic loading.

D. Buried Utility Warning and Identification Tape

Provide detectable aluminum foil plastic backed tape or detectable magnetic plastic tape manufactured specifically for warning and identification of buried piping. Tape shall be detectable by an electronic detection instrument. Provide tape in rolls, 3 inches minimum width, color coded for the utility involved with warning and identification imprinted in bold block letters continuously and repeatedly over the entire tape length. Warning and identification shall read "CAUTION BURIED WATER PIPING BELOW" or similar wording. Use permanent code and letter coloring unaffected by moisture and other substances contained in trench backfill material.

2.2 ABOVEGROUND PIPING COMPONENTS

All components of the aboveground piping shall fully comply with the requirements and recommended practices of NFPA 13 and this specification section. Aboveground piping shall be steel.

A. Steel Pipe

Pipe shall be black steel. Steel piping shall be Schedule 10 or 40 for sizes less than 8 inches and Schedule 30 or 40 for sizes 8 inches or larger. Steel pipe shall be Schedule 40 for sizes less than 3 inches and Schedule 40 for sizes 3 inches or larger. Fittings into which sprinklers, sprinkler riser nipples, or drop nipples are threaded shall be welded, threaded, or grooved-end type. Plain-end fittings with mechanical couplings, fittings that use steel gripping devices to bite into the pipe and segmented welded fittings shall not be permitted. Rubber gasketed grooved-end pipe and fittings with mechanical couplings shall be permitted in pipe sizes 1.5 inches and larger. Fittings, mechanical couplings, and rubber gaskets shall be supplied by the same manufacturer. Steel piping with wall thickness less than Schedule 30 shall not be threaded. Side outlet tees using rubber gasketed fittings shall not be permitted. Sprinkler pipe and fittings shall be metal. Roll grooving of galvanized pipe is prohibited.

B. Grooved Mechanical Joints and Fittings

Grooved couplings, fittings and grooving tools shall be products of the same manufacturer.

C. Flexible Sprinkler Hose

The use of flexible sprinkler hose is permissible.

D. Plastic Pipe and Fittings

Plastic pipe shall not be used.

2.3. Sprinklers

Provide nominal 0.50 inch or 0.53 inch orifice sprinklers. Sprinklers with internal O-rings shall not be used. Sprinklers shall be used in accordance with their listed coverage limitations. Provide recessed for lay in ceilings, pendent and upright for exposed ceilings, and use quick response sprinklers. Sprinklers shall have a brass in shops where exposed for pendant and upright and white polyester for recessed in finished ceilings. Temperature classification shall be ordinary. Sprinklers in high heat areas including attic spaces or in close proximity to unit heaters shall have temperature classification in accordance with NFPA 13. Extended coverage sprinklers shall not be used. Provide corrosion-resistant sprinklers and sprinkler guards as required by NFPA 13. Deflector shall not be more than 3 inches below suspended ceilings. Ceiling plates shall not be more than 0.5 inch deep. Ceiling cups shall not be permitted.

2.4. Valves

Provide valves of types approved for fire service. Valves shall open by counterclockwise rotation. Provide an OS&Y valve beneath each alarm. Check valves shall be clear opening swing-check type with inspection and access cover plate for sizes 8 inches and larger. Each control valve shall be electrically supervised; minimum contact ratings shall be 2.5 amps at 24 volts DC. Provide supervision against valve closure or tampering of valve.

2.5 Pipe Supports

Provide Pipe hangers and supports and Seismic Bracing in accordance with NFPA 13.

2.6 Alarm Valves

Provide variable pressure type alarm check valve, standard trim piping, pressure gauges, bypass, retarding chamber, testing valves, main drain, and other components as required for a fully operational system.

2.7 Water Motor Alarms

Provide alarms of the approved weatherproof and guarded type, to sound locally on the flow of water in each corresponding sprinkler system. Mount alarms on the outside of the outer walls of each building at a location as directed. Provide separate drain piping directly to exterior of building.

2.8 Fire Department Connections

Fire department connection shall have two inlets with individual self-closing clappers, caps with drip drains and chains. Female inlets shall have 2-1/2 inch diameter American National Fire Hose Connection Screw Threads (NH) per NFPA 1963 or shall match threads required by fire department servicing the area.

2.9 Backflow Prevention Assembly

Provide listed double check valve assembly backflow preventer. Each check valve shall have a drain. Backflow prevention assemblies shall have current "Certificate of Approval from the Foundation for Cross-Connection Control and Hydraulic Research, FCCCHR List. Listing of the specific make, model, design, and size in the FCCCHR List shall be acceptable as the required documentation."

2.3 ALARM INITIATING AND SUPERVISORY DEVICES

A. Sprinkler Alarm Switches

Provide vane or pressure type flow switch(es) with circuit opener or closer for the automatic transmittal of an alarm over the facility fire alarm system. Vane type Alarm actuating devices shall have mechanical diaphragm controlled retard device adjustable from 10 to 60 seconds and shall instantly recycle. Flow switches for elevator power shunt shall have no retard feature. Provide properly lettered and approved metal sign to elevator flow switch stating the circuits' voltage, and identify the switch as an "Elevator Power Shunt Flow Switch".

B. Valve Supervisory (Tamper) Switch

Switch shall be suitable for mounting to the type of control valve to be supervised open. The switch shall be tamper resistant and contain one set of SPDT (Form C) contacts arranged to transfer upon removal of the housing cover or closure of the valve of more than two rotations of the valve stem.

2.4 ACCESSORIES

A. Sprinkler Cabinet

Provide metal cabinet with extra sprinklers and sprinkler wrench adjacent to each alarm valve. The number and types of extra sprinklers shall be as specified in NFPA 13.

B. Pipe Escutcheon

Provide split hinge metal plates for piping entering walls, floors, and ceilings in exposed spaces. Provide polished stainless steel plates or chromium-plated finish on copper alloy plates in finished spaces. Provide paint finish on metal plates in unfinished spaces.

PART 3 EXECUTION

3.1 INSPECTION BY FIRE PROTECTION ENGINEER

The Fire Protection Engineer shall inspect the sprinkler system periodically during the installation to assure the sprinkler system is being provided and installed in accordance with the contract requirements and the approved sprinkler system submittal(s). The Fire Protection Engineer shall attend both the preliminary and final tests, and shall sign the test results. After the preliminary testing has been completed, the Fire Protection Engineer, shall certify in writing the system is ready for the final inspections and tests. This report shall document any discrepancies found and what actions will be taken to correct. Any discrepancy noted during the periodic site visits or the preliminary testing shall be brought to the attention of the Contracting Officer in writing, no later than three working days after the discrepancy is discovered.

3.2 UNDERGROUND PIPING INSTALLATION

The methods of fabrication and installation of the underground piping shall fully comply with the requirements and recommended practices of NFPA 13, NFPA 24 and the contract drawings.

3.3 ABOVEGROUND PIPING INSTALLATION

The methods of fabrication and installation of the aboveground piping shall fully comply with the requirements and recommended practices of NFPA 13 and this specification section.

A. Piping in Finished Areas

In areas with suspended or dropped ceilings and in areas with concealed spaces above the ceiling, piping shall be concealed above ceilings. Piping shall be inspected, tested and approved before being concealed. Risers and similar vertical runs of piping in finished areas shall be concealed.

B. Pendent Sprinklers

Where sprinklers are installed below suspended or dropped ceilings, drop nipples shall be cut such that sprinkler ceiling plates or escutcheons are of a uniform depth throughout the finished space. The outlet of the reducing coupling shall not extend more than 1 inch below the underside of the ceiling. Pendent sprinklers in suspended ceilings shall be a minimum of 6 inches from ceiling grids.

C. Pipe Joints

Pipe joints shall conform to NFPA 13, except as modified herein. Welded joints will be permitted, only if welding operations are performed as required by NFPA 13 at the Contractor's fabrication shop, not at the project construction site. Flanged joints shall be provided where indicated or required by NFPA 13. Grooved pipe and fittings shall be prepared in accordance with the manufacturer's latest published specification according to pipe material, wall thickness and size. Grooved couplings, fittings and grooving tools shall be products of the same manufacturer. The diameter of grooves made in the field shall be measured using the method specifically approved by the coupling manufacturer for the intended application. Groove width and dimension of groove from end of pipe shall be measured and recorded for each change in grooving tool setup to verify compliance with coupling manufacturer's tolerances

D. Reducers

Reductions in pipe sizes shall be made with one-piece tapered reducing fittings. Bushings are prohibited.

E. Pipe Penetrations

Cutting structural members for passage of pipes or for pipe-hanger fastenings will not be permitted. Pipes that must penetrate concrete or masonry walls or concrete floors shall be core-drilled and provided with pipe sleeves. Each sleeve shall be Schedule 40 galvanized

steel, ductile iron or cast iron pipe and shall extend through its respective wall or floor and be cut flush with each wall surface. Sleeves shall provide required clearance between the pipe and the sleeve per NFPA 13. The space between the sleeve and the pipe shall be firmly packed with mineral wool insulation. Where pipes penetrate fire walls, fire partitions, or floors, pipes shall be fire stopped in accordance with Section 07 84 00 FIRESTOPPING. In penetrations that are not fire-rated or not a floor penetration, the space between the sleeve and the pipe shall be sealed at both ends with plastic waterproof cement that will dry to a firm but pliable mass or with a mechanically adjustable segmented elastomer seal.

F. Inspector's Test Connection

Provide test connections approximately 6 feet above the floor for each sprinkler system or portion of each sprinkler system equipped with an alarm device. Provide test connection piping to a drain location that can accept full flow where the discharge will be readily visible and where water may be discharged without property damage. Discharge to floor drains, janitor sinks or similar fixtures shall not be permitted. Provide discharge orifice of same size as corresponding sprinkler orifice. The penetration of the exterior wall shall be no greater than 2 feet above finished grade. Variation of elevation shall be asked for in writing with explanation of need.

G. Backflow Preventer Test Connection

Provide downstream of the backflow prevention assembly UL 668 hose valves with 2.5 inch National Standard male hose threads with cap and chain. Provide one valve for each 250 gpm of system demand or fraction thereof. Provide a permanent sign in accordance with paragraph entitled "Identification Signs" which reads, "Test Valve."

H. Drains

Main drain piping shall be provided to discharge at a safe point outside the building or at the location indicated. Auxiliary drains shall be provided as required by NFPA 13.

I. Installation of Fire Department Connection

Connection shall be mounted on grade with a 3' diameter concrete apron a minimum of 3 feet above finished grade.

J. Identification Signs

Signs shall be affixed to each control valve, inspector test valve, main drain, auxiliary drain, test valve, and similar valves as appropriate or as required by NFPA 13. Valve identification signs shall be minimum 6 inches wide by 2 inches high with enamel baked finish on minimum 18 gauge steel or 0.024 inch aluminum with red letters on a white background or white letters on red background. Hydraulic design data nameplates shall be permanently affixed to each sprinkler riser as specified in NFPA 13.

3.4 ELECTRICAL WORK

Except as supplemented and modified herein, electric equipment and wiring shall be in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Alarm signal wiring

connected to the building fire alarm control system shall be in accordance with appropriate Fire Alarm specification.

3.5 PIPE PAINTING AND COLOR CODE MARKING

Paint and color code mark sprinkler piping system as specified in Section 09 90 00 PAINTS AND COATINGS.

3.6 PRELIMINARY TESTS

The system, including the underground water mains, and the aboveground piping and system components, shall be tested to assure that equipment and components function as intended. The underground and aboveground interior piping systems and attached appurtenances subjected to system working pressure shall be tested in accordance with NFPA 13 and NFPA 24.

- A. Underground Piping
- B. Flushing

Underground piping shall be flushed in accordance with NFPA 24.

- C. Hydrostatic Testing

New underground piping shall be hydrostatically tested in accordance with NFPA 24.

- D. Aboveground Piping
- E. Hydrostatic Testing

Aboveground piping shall be hydrostatically tested in accordance with NFPA 13.

- F. Backflow Prevention Assembly Forward Flow Test

Each backflow prevention assembly shall be tested at system flow demand, including all applicable hose streams, as specified in NFPA 13. The Contractor shall provide all equipment and instruments necessary to conduct a complete forward flow test, including 2.5 inch diameter hoses, playpipe nozzles, calibrated pressure gauges, and pitot tube gauge. The Contractor shall provide all necessary supports to safely secure hoses and nozzles during the test. At the system demand flow, the pressure readings and pressure drop (friction) across the assembly shall be recorded. A metal placard shall be provided on the backflow prevention assembly that lists the pressure readings both upstream and downstream of the assembly, total pressure drop, and the system test flow rate determined during the preliminary testing. The pressure drop shall be compared to the manufacturer's data and the readings observed during the final inspections and tests.

3.7 FINAL ACCEPTANCE TEST

Final Acceptance Test shall begin only when the Preliminary Test Report has been approved. Submit request to schedule Final Acceptance Test, no later than 14 days prior to the

proposed start of the tests. Notification shall include a copy of the Contractor's Material & Test Certificates.

The Fire Protection Engineer shall conduct the Final Acceptance Test and shall provide a complete demonstration of the operation of the system. This shall include operation of control valves and flowing of inspector's test connections to verify operation of associated waterflow alarm switches. After operation of control valves has been completed, the main drain test shall be repeated to assure that control valves are in the open position. In addition, the representative shall have available copies of as-built drawings and certificates of tests previously conducted. The installation shall not be considered accepted until identified discrepancies have been corrected and test documentation is properly completed and received. The Contractor shall submit the Final Acceptance Test Report as specified in the Submittals paragraph.

An experienced technician regularly employed by the system installer shall be present during the inspection. The Fire Protection Engineer shall attend the final inspections and tests. At this inspection, repeat any or all of the required tests as directed. Correct defects in work provided by the Contractor, and make additional tests until the systems comply with contract requirements. Furnish appliances, equipment, water, electricity, instruments, connecting devices, and personnel for the tests.

3.8 ON-SITE TRAINING

Submit request to schedule the On-site Training, at least 14 days prior to the start of related training but prior to the final inspections and tests. The sprinkler contractor shall conduct a training course for operating and maintenance personnel as designated by the Contracting Officer. Training shall be provided for a period of 8 hours of normal working time and shall start after the system is functionally complete and after the Final Acceptance Test. The On-Site Training shall cover all of the items contained in the approved Operating and Maintenance Instructions.

-- End of Section --

**SECTION 22 00 00
PLUMBING, GENERAL PURPOSE****PART 1 GENERAL****1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

1.2 SUBMITTALS

- A. Quality Standards: Whenever a material, article or piece of equipment is identified on the Drawings or in the Specifications by reference to manufacturers' or vendors' names, trade names, catalog numbers, or the like, it is so identified for the purpose of establishing a standard of quality and shall not be construed as limiting competition. Any material, article or piece of equipment of other manufacturers or vendors which will perform adequately the duties imposed by the design will be considered equally acceptable provided the material, article, or piece of equipment so proposed is, in the opinion of the Architect, of equal substance, appearance and function. It shall not be purchased or installed by the Contractor without the Architect's written approval. In order that all bidders, manufacturers, and vendors receive fair and equal consideration, the procedures described hereinafter shall be complied with.
- B. Approval of Substitutions: Prior written approval by the Architect/Engineer is required for substitutions for all materials, articles and equipment specified without qualifications or followed by "or prior approved equal". Request for prior approval shall be submitted to the Architect, with copy to Engineer, at least ten (10) days before time of bid opening. Approved substitutions will be included in an addendum to the Specification or in writing at the discretion of the Architect. Request for approval for materials, articles, and equipment qualified with "equal to" or "or equal" shall be submitted within 30 days after award of contract but before purchase. IN CONNECTION WITH THE USE OF ANY ALTERNATE ITEM APPROVED BY THE ARCHITECT, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO SEE THAT SUCH ITEMS MEET ALL REQUIREMENTS, AND THAT ANY ALTERATIONS TO CONNECTING OR ASSOCIATED ITEMS NECESSITATED BY USE OF THE ALTERNATE ITEMS ARE PROPERLY MADE WITHOUT ADDITIONAL COSTS TO THE OWNER. This includes but is not limited to added breakers, fuses, disconnects, wiring, or piping that is not indicated by scheduled equipment. Architect's opinion shall be final on quality of substituted items.
- C. Manufacturer's Brochures and Shop Drawings: As soon as practicable after award of the contract and before starting installation of any materials or equipment, the Contractor shall submit to the Architect for approval six (6) copies of Manufacturer's brochures and shop Drawings giving rating, operating characteristics, wiring diagrams, power requirements, etc., of the material and equipment proposed for installation. A complete electrical connection diagram for each electrically controlled component shall be submitted for approval. The connection diagram shall identify each component and shall

show all interconnected and interlocked components. Automatic temperature control diagrams shall be submitted. All data submitted shall be sufficiently complete to demonstrate conformance with the Specification requirements. Drawings showing all ducts, piping and installation details shall be submitted for approval with Material and Equipment submittal if equipment is different from that indicated on the Drawings. Checking and approval of brochures and shop Drawings by the Architect shall not relieve the Contractor from the responsibility for deviations from the Drawings and Specifications unless he has in writing called the Architect's attention to such deviations at time of submission and secured his written approval, nor shall it relieve him of responsibility for errors or omissions in the shop Drawings. Checking and approval by the Architect is only for general conformance with design intent and contract requirements. It is the Contractor's responsibility to verify the accuracy of dimensions, obtaining field dimensions, by comparison and measurements in the field. Final shop Drawings shall indicate field verified dimensions.

1.3 STANDARD PRODUCTS

Specified materials and equipment shall be standard products of a manufacturer regularly engaged in the manufacture of such products. Specified equipment shall essentially duplicate equipment that has performed satisfactorily at least two years prior to bid opening. Standard products shall have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use shall include applications of equipment and materials under similar circumstances and of similar size. The product shall have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

A. Service Support

The equipment items shall be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations shall be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

B. Manufacturer's Nameplate

Each item of equipment shall have a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 PERFORMANCE REQUIREMENTS

A. Welding

Piping shall be welded in accordance with qualified procedures using performance-qualified welders and welding operators. Welding procedures qualified by others, and

welders and welding operators qualified by another employer, may be accepted as permitted by ASME B31.1.

1.6 PRE-PLAN WORK - SITE CONDITIONS

The Contractor shall become familiar with details of the work, verify dimensions in the field, and advise the Architect of any discrepancy before performing any work.

1.7 ACCESSIBILITY OF EQUIPMENT

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

2.1 Materials

A. Below Ground Waste, Sanitary Sewer:

Polyvinyl Chloride (PVC) pipe and fittings shall be manufactured from PVC compound with a cell class of 12454 per ASTM D-1784 and conform with National Sanitation Foundation (NSF) standard 14. Pipe shall be iron pipe size (IPS) conforming to ASTM D-1785 and ASTM D-2665. Fittings shall conform to ASTM D-2665. All pipe and fittings to be produced by a single manufacturer and to be installed in accordance with manufacturer's recommendations and local code requirements. Solvent cements shall conform to ASTM D-2564; primer shall conform to ASTM F-656.

B. Above Ground Waste, Vent:

1. Polyvinyl Chloride (PVC) pipe and fittings shall be manufactured from PVC compound with a cell class of 12454 per ASTM D-1784 and conform with National Sanitation Foundation (NSF) standard 14. Pipe shall be iron pipe size (IPS) conforming to ASTM D-1785 and ASTM D-2665. Fittings shall conform to ASTM D-2665. All pipe and fittings to be produced by a single manufacturer and to be installed in accordance with manufacturer's recommendations and local code requirements. Solvent cements shall conform to ASTM D-2564; primer shall conform to ASTM F-656.
2. Exterior Cleanouts: Smith 4231 series, Josam Series 56040, Zurn Z1420-27, or approved equal. Set in 15" x 15" x 6" concrete pad.

C. INTERIOR DOMESTIC WATER PIPING:

1. Copper tubing, hard-drawn, Type "L", conforming to ASTM B 88 with cast-brass or wrought-copper sweat joint fittings using ASTM B 32, tin-antimony or Grade Sn96 tin-silver solder, and flux containing not more than 0.2 percent lead; or with ANSI B16.26 flare joint fittings. Piping under concrete slabs shall be copper tubing, soft-drawn, Type "K", conforming to ASTM B 88, without joints.
2. Pipe shall be manufactured from cross-linked polyethylene (PEX) conforming to ASTM F876 & F877. Cold water piping shall be colored

blue and hot water piping shall be colored red. Fittings shall be manufactured from solid brass and conform to ASTM F1807. Pipe and fittings shall be manufactured as a system and be the product of one manufacturer. All pipe and fittings shall be manufactured in the United States. Pipe and fittings shall conform to National Sanitation Foundation (NSF) Standard 61. Installation shall comply with the latest installation instructions published by the manufacturer.

3. Water Hammer Arresters: Permanently sealed mechanical device, pre-charged, threaded connection. ASSE 1010 – 2004 certified. Install as close as possible to quick-closing valve. No access panel shall be required. Unit shall be hard drawn sealed copper body with plastic rings and piston, threaded adapter equal to Sioux Chief 650 series.
4. Ball Valves: Valve shall have two piece forged brass or cast bronze body, blowout proof stem, PTFE seats/seals, chrome plated ball and full port design. Valves sizes 1/4" - 2" shall be pressure rated to 150 WSP/600Wog and conform to MSS-SP 110 and certified to CSA, UL, and FM. Valves Sizes 2 1/2" - 3" shall be pressure rated to 150 WSP/400 WOG and conform to MSS-SP 110. Provide extension through insulation as required. Valve shall be equal to Kitz valve #69.
5. Icemaker/water dispenser wall outlet, ABS body, 1/4 turn brass valve with chrome plated brass ball, 1/2" sweat pipe connection by 1/4", 3/8" compression fitting or 3/4" hose bibb.
6. Water filtration system, 1/2" npt, maximum operating temperature (Celsius) 37.8 Deg. Celsius, maximum operating temperature (Fahrenheit) 100 deg. Pressure range 25-125 psi. Shall be equal to 3M NH3 Series.
7. Pipe Joint Materials: Solder containing lead shall not be used with copper pipe. Joints and gasket materials shall conform to the following:
 - a. Brazing Material: Brazing material shall conform to AWS A5.8/A5.8M, BCuP-5.
 - b. Brazing Flux: Flux shall be in paste or liquid form appropriate for use with brazing material. Flux shall be as follows: lead-free; have a 100 percent flushable residue; contain slightly acidic reagents; contain potassium borides; and contain fluorides.
 - c. Solder Material: Solder metal shall conform to ASTM B32.
 - d. Solder Flux: Flux shall be liquid form, non-corrosive, and conform to ASTM B813, Standard Test 1.
 - e. PTFE Tape: PTFE Tape, for use with Threaded Metal or Plastic Pipe.
 - f. Plastic Solvent Cement for PVC Plastic Pipe: ASTM D2564 and ASTM D2855.

8. Press fittings for Copper Pipe and Tube: Copper press fittings shall conform to the material and sizing requirements of ASME B16.18 or ASME B16.22 and performance criteria of IAPMO PS 117. Sealing elements for copper press fittings shall be EPDM, FKM or HNBR. Sealing elements shall be factory installed or an alternative supplied fitting manufacturer. Sealing element shall be selected based on manufacturer's approved application guidelines.

6. Copper tubing shall conform to ASTM B88, Type K, L or M

D. Miscellaneous Materials: Miscellaneous materials shall conform to the following:

- a. Water Hammer Arrestor: PDI WH 201. Water hammer arrester shall be diaphragm or piston type.
- b. Plumbing Fixture Setting Compound: A preformed flexible ring seal molded from hydrocarbon wax material. The seal material shall be nonvolatile nonasphaltic and contain germicide and provide watertight, gastight, odorproof and verminproof properties.
- c. Icemaker/water dispenser wall outlet, ABS body, ¼ turn brass valve with chrome plated brass ball, ½" sweat pipe connection by ¼", 3/8" compression fitting or ¾" hose bibb threaded connection. Include water hammer arrester on valves and fire-rated box. Unit shall be equal to Sioux Chief # 696R1010MF.

E. COMPRESSED AIR PIPING SYSTEM:

1. Air Compressor: Air Compressor: Air compressor package shall be of the single design, consisting of compressor, motor, and control packages mounted on one (1) tank. Compressor pump shall be of 2-stage design, air cooled, splash lubricated, one piece internally cast cylinder and head assembly, with domed pistons and cylinders, circular cage valves, spring and disc design loadless starting, heavy duty, enclosed filter/silencers, aftercooler, and factory authorized five (5) year warranty.
 - a. Each compressor pump shall produce no less than 12.5 cfm of free air, at a rated pressure of 140 psig, be v-belt driven by electric motor of no less than 5 H.P., and designed to operate on an available power supply of 208 volts, 3 phase, 60 cycle.
 - b. Pump and motor shall be mounted on an ASME National Board coded tank, of not less than 80 gallons capacity. Package shall be equipped with totally enclosed belt guards, ASME safety valve, automatic pressure switches, automatic tank drain, tank pressure gauge, tank service valve, vibration isolators, and shall include magnetic motor starter.
 - c. Additional equipment shall include:
 - a. 1 Automatic Tank Drain

- b. 1 Low Oil Monitors
- c. 4 Tank Vibration Mounts
- d. Complete unit shall be equal to Speedaire (Grainger 1WD82).
- 2. Compressed Air Piping: Schedule 40 black steel pipe conforming to ASTM A 53 or with malleable iron fittings conforming to ANSI B16.3 or forged steel welded type fittings conforming to ASTM A 234. Pipe 2-inch and under shall screw type joints. Pipe 2-inches and larger shall have welded joints conforming to ANSI/AWS D1.1.
- 3. Air Outlets: 3/4" drop with ball valve on vertical, 3" dirt leg with cleanout, and nipple with cap for connection by others. Ball valve to have bronze body, nylon seals, stainless steel ball, and operator handle.

F. NATURAL GAS SYSTEM:

- 1. Service Piping: Schedule 40 black steel pipe conforming to ASTM A 53 or A 120 with forged steel welding type fittings conforming to ASTM A 234, with AWWA C105 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape. Welded joints conforming to AWS D1.1.] [Polyethylene pipe conforming to ASTM D 2513, SDR 11.5, with fittings conforming to ASTM D 2683. Fusion welded joints.] Service Regulator: General service type, diaphragm operated, spring adjusted, for reducing distribution pressure of 20 psig to house pressure of 4 oz., regulator shall be Fisher Series 730C or equal.
- 2. Gas Meter: Large capacity diaphragm type meter with aluminum case shall be pipe mounted. Equipped with combined register-totalizer, water escape hole in housing, and means for sealing against tampering. Capacity shall be as scheduled.
- 3. House Piping: Schedule 40 black steel pipe conforming to ASTM A 53 or A 120 with malleable iron fittings conforming to ANSI B16.3 or forged steel welded type fittings conforming to ASTM A 234. Pipe 2-inch and under shall screw type joints. Pipe 2-1/2 inches and larger shall have welded joints conforming to AWS D1.1. Dirt legs and unions shall be installed at appliance connection point.
- 4. Gas Cocks: Cocks up to 2-inches shall have bronze body, bronze tapered plug, non-lubricated, Teflon packing, threaded ends. Cocks larger than 2-inches shall have cast-iron body and plug, non-lubricated, Teflon packing, flanged ends.
- 5. Flex Connections: UL, AGA, Listed flexible connection shall be allowed at appliance where specifically called out on plumbing plans only but shall never exceed 24" in total length.

G. PROPANE GAS SYSTEM:

- 1. Service Piping: Schedule 40 black steel pipe conforming to ASTM A 53 or A 120 with forged steel welding type fittings conforming to ASTM A 234, with AWWA C105 polyethylene jacket or double layer, half-lapped 10 mil polyethylene tape. Welded joints conforming to AWS D1.1.] [Polyethylene pipe conforming to ASTM D 2513, SDR 11.5, with fittings conforming to ASTM D 2683. Fusion welded joints.] Service Regulator: General service type, diaphragm operated, spring adjusted, for reducing distribution pressure of 20 psig to house pressure of 4 oz., regulator shall be Fisher Series 730C or equal. All Propane service piping shall utilize the same pipe sizing as natural gas piping.

2.2 PIPE HANGERS, INSERTS, AND SUPPORTS

Pipe hangers, inserts, and supports shall conform to MSS SP-58 and MSS SP-69.

2.3 VALVES

Valves shall be provided on supplies to equipment and fixtures. Valves 2-1/2 inches and smaller shall be bronze with threaded bodies for pipe and solder-type connections for tubing. Valves 3 inches and larger shall have flanged iron bodies and bronze trim. Pressure ratings shall be based upon the application.

A. Wall Hydrants (Frostproof)

ASSE 1019 with vacuum-breaker backflow preventer shall have a flange with nozzle and painted aluminum wheel handle. A brass or bronze operating rod shall be provided within a galvanized iron or brass casing of sufficient length to extend through the wall so that the valve is inside the building, and the portion of the hydrant between the outlet and valve is self-draining. A brass or bronze valve with coupling and union elbow having metal-to-metal seat shall be provided. Valve rod and seat washer shall be removable through the face of the hydrant. The hydrant shall have 3/4 inch exposed hose thread on spout.

2.4 FIXTURES

Fixtures shall be water conservation type. No fixture will be accepted that shows cracks, crazes, blisters, thin spots, or other flaws. Fixtures shall be equipped with appurtenances such as traps, faucets, stop valves, and drain fittings. Each fixture and piece of equipment requiring connections to the drainage system, shall be equipped with a trap. Brass expansion or toggle bolts capped with acorn nuts shall be provided for supports, and polished chromium-plated pipe, valves, and fittings shall be provided where exposed to view. Internal parts of flush and/or flushometer valves, lavatory waste drains, shall be copper alloy with all visible surfaces chrome plated.

2.4.1 Flush Valve Water Closets

2. WC-1 , Watercloset: General Description: 1.6 Gal flush, Vitreous china, elongated bowl, siphon jet action, 1-1/2" to spud, quiet flush valve with a vacuum breaker and 1" angle stop, open front white seat with stainless steel self-sustaining check hinge.
 - a. Fixture: Equal to American Standard "MADERA" #2234.015
 - b. Seat: Beneke #527-SS
 - c. Valve, Electronic, Battery Solar: Flush valve shall be of the exposed type, top mount solenoid, lithium battery operated, with a long battery life, and a five (5) year warranty. Flush valve shall be equal to Sloan Optima sensor operated flushometer

model # 8111-1.6 gallon flush.

3. WC-2 , Watercloset for Handicapped: General Description: 1.6 gal flush, Vitreous china, elongated bowl, 18" high, siphon jet action, 1-1/2 top spud, quiet flush valve with vacuum breaker and 1" angle stop, open front white seat with stainless steel self-sustaining check hinge.
 - a. Fixture: Equal to American Standard "MADERA" #3043.102
 - b. Seat: Beneke #527-SS
 - c. Valve, Electronic, Battery Solar: Flush valve shall be of the exposed type, top mount solenoid, lithium battery operated, with a long battery life, and a five (5) year warranty. Flush valve shall be equal to Sloan Optima sensor operated flushometer model # 8111-1.6 gallon flush.

2.4.2 Lavatories

- A.** L-1, Lavatory: Vitreous china lavatory with back and soap depression, 20" x 18", concealed wall hanger, single faucet, self closing handle with aerator, angle supplies with stops and flexible risers and 1-1/4" cast brass adjustable "P" trap with cleanout and waste to wall.

1. Fixture: American Standard "LUCERNE" #0355.021

2. Faucet, Manual: T&S Brass #B0871

3. Faucet, Manual High Deck: T&S Brass B-2867-04

4. Faucet, Battery Sensor: Sloan #EBF-650-BDM

5. Drain: Dearborn Brass #760-1

6. P-Trap: Dearborn Brass #707-1

7. Supply: Brass Craft #OCR1920AZ C

- B.** L-2, Lavatory for Handicapped: Vitreous china lavatory, 20" x 27", concealed arms support, single faucet with aerator and 4" wrist blades, offset grid assembly, angle supplies with stops and flexible risers and 1-1/4" cast brass adjustable "P" trap with cleanout and waste to wall.

1. Fixture: American Standard "Wheelchair Users Lavatory" #9140.013

2. Faucet, Manual ADA: T&S Brass #B0890

3. Faucet, Battery Sensor: Sloan #EBF-650-BDM

4. Drain: Dearborn Brass #760W-1

5. P-Trap: Dearborn Brass #707-1

6. Pipe Insulation: Lav-Guard 102EZ

7. Supply: Brass Craft #OCR1920AZ C

2.4.3 MS-1, Mop Sink:

Mop Service Basin 24x24x10 Molded high density composite basin. Chrome plated service faucet with integral stops, vacuum breaker, pail hook and 3/4" thread on spout with 30" hose/hose bracket and mop hanger.

- a. Fixture: Zurn #Z1996-24
- b. Faucet: Stern-Williams #T-15-VB
- c. Hose/Bracket: Stern-Williams #T-35
- d. Mop Hanger: Stern-Williams #T-40.

2.4.4. UR-1, Urinal: General Description: Vitreous china urinal with integral extended shields, flushing rim, strainer and trap, 3/4" top spud, 2" outlet, wall hanger, and flush valve with angle stop and vacuum breaker.

- a. Fixture: American Standard "ALLBROOK" #6541.132
- b. Battery Sensor Valve: Sloan top mount solenoid flush valve #G2-8186-1.

C. 2.4.5. EWS-1, Emergency Eye Wash Station. EWS-1: Emergency Eyewash: Emergency eye wash fountain with 1/2" I.P.S. Complete outfit shall be equal to Speakman SE-580 with emergency mixing valve equal to Leonard ECO-MIX TA-300-LF.

D. SH-1, Shower: The shower enclosure shall be acrylic and molded from a single sheet so as not to have any joints or seams, shall meet ANSI A117.1 and ANSI A124.2, shall have a backside fire rating of "A" and a flame spread of less than 25, shall be designed to meet ADA, FHA, HUD, BOCA, NAHB, and IPC. The unit shall have outside dimensions of 41-1/4" x 39" x 79-1/2" and inside dimensions 36" x 36" x 74". The enclosure shall be pre-drilled and equipped with the following factory installed accessories: 1" diameter 18 gauge stainless steel curtain rod, self caulking brass drain with chrome strainer, one steel grab bar with 1-1/2" safety statute clearance, 5/8" threshold, fold up seat, hand held shower set (includes: hand set, 60" flex hose, swivel connector, vacuum breaker, brass nipple, lock nut and shower wall outlet), pressure balance valve, 24" slide guide, and Ribbed floor for slip resistance. Also include the following options: white shower curtain, antibacterial, and hooks.

- 1.** Enclosure: Comfort Design model XSS3637BF 3P
- 2.** Faucet/Valve, ADA: Symmons Temptrol Shower System with hand spray # BP-56-300-B30-V-X.

E. SH-2, Shower: Shower enclosure by architect. Single-function showerhead and pressure-balancing control valve. Outfit equal to Kohler "Fairfax" #K-T12014-4-CP shower trim and K-304-K pressure balancing valve.

2.4.6. S-1, Sink: Stainless steel, 18 gauge, 33" x 22" with two 13-1/2" x 16" x 8" compartments, self rimming with single lever faucet, 10" swing spout and aerator, spray hose, 3-1/2" strainer and ground joint waste to wall, angle supplies with stops and flexible risers.

- d. Fixture: Elkay LR-3322

- e. Drain: Elkay LK35
 - f. Faucet: T&S Brass B-2730
 - g. P-Trap: Dearborn Brass #710-1
 - h. Supply: Brass Craft #OCR1920AZ C
- 2.4.9 KS-1, Sink: Stainless steel, 16 gauge, 28" x 20" x12" with one compartment drop in, self rimming with single lever faucet, 12" swing spout and aerator, spray hose, 3-1/2" strainer and ground joint waste to wall, angle supplies with stops and flexible risers.
- a. Fixture: Regency 600DI12812
 - b. Drain: Regency (supplied with sink)
 - c. Faucet: Regency (supplied with sink)
 - d. P-Trap: Dearborn Brass #710-1
 - e. Supply: Brass Craft #OCR1920AZ C
- 2.4.10 FD-1, Floor Drain: Equal to Josam #30003-5A-50 #8803 adaptor, and #88250-10 trap seal primer, Smith #2005-C (3") auxiliary inlet #2696, with automatic trap primer #2699-CP, Zurn #Z415 with type B STRAINER trap primer.
- 2.4.11 FD-2, Floor Drain with Trap Primer: Equal to Josam #30003-5A-50 #8803 adaptor, and #88250-10 trap seal primer, Smith #2005-C (3") auxiliary inlet #2696, with automatic trap primer #2699-CP, Zurn #Z415 with type B STRAINER trap primer.
- 2.4.12 FD-3, Floor Drain: Equal to Josam #30003-E-1, Smith #2005-F37 (3") or Zurn #Z415 with Type I strainer.
- 2.4.13 FS-1, Floor Drain: Equal to Smith 3100-12-4 grate 8-1/2" top with 6" sump.
- 2.4.14 HB-1: Non-Freeze Hose Bibb: Woodford Model 25 or equal, cast brass, vacuum breaker, heavy duty, wall hydrant metal operating wheel, brass working parts, renewable nylon seat, 3/4" NPT hose outlet and T-handle.
- 2.4.15 EDF-1, Electric Drinking:
- Two-level wall mounted water cooler for use by the general public. Cooler shall have a capacity to cool 8 gallons per hour from 80 degrees F. to 50 degrees F. with 90 degrees F. ambient air. Tops shall be 18-8 stainless steel with anti-splash ridge; exterior cabinet finish shall be stainless steel. Motor shall be suitable for 120 volt operation. Provide trap, stops, and waste to wall. Unit shall be Elkay EZSTL8C or approved equal.
- 2.5 PLUMBING SPECIALTIES: Furnish and install the following plumbing specialties:
- 2.5.1 WH-1 &2, Water Heater:

Indoor tankless, wall hung condensing water heater with direct vent, (sealed combustion), direct ignition, stainless steel casing, stainless steel flue collar. Unit shall be have a thermal efficiency rating of 93% minimum with a natural gas input of 11,000 btuh min. and 199,900 btuh maximum and be capable of producing 3.7 gpm of hot water @ 100°F rise. Water heater shall have pump control, temperature lockout features standard. Unit shall have the approval of NSF, CSA, and UPC. Unit shall be equal to Noritz Model N-0199C-DV and shall be set not to exceed 110°F. See mechanical plans for type and routing of intake and exhaust piping. Firestop all penetrations of piping per NFPA. Unit shall have the following safety devices:

- a. Flame Rod
- b. Thermal Fuse
- c. Lightning protection device (ZNR)
- d. Overheat Prevention Device
- e. Freeze Prevention Device
- f. Fan rotation detection
- g. Neutralizer overfill sensor

2.02 Unit shall also have the following accessories:

- a. Isolation Valves (IK-WV-4)
- b. Scaleshield (#SS-HB-1)
- c. Quick-Connect Cable (#QC-1M)
- d. Concentric vent unit with flue and combustion air.

2.5.2 ET-1, Expansion Tank: ASME rated Butyl bladder tank, for hot potable water. Tank shall be 5 gallon, with a max working pressure of 150 psi, max temperature of 240°F and a factory precharge pressure of 40 psi. Butyl Bladder shall be replaceable. Unit shall be equal to ELBI Model # DTS-19.

2.5.3 WMB-1, Washing Machine Connections: Provide flush washing machine supply and drain connections equal to Guy Gray Model B-150.

2.6 MISCELLANEOUS PIPING ITEMS

2.5.1 Escutcheon Plates

Provide one piece or split hinge metal plates for piping entering floors, walls, and ceilings in exposed spaces. Provide chromium-plated on copper alloy plates or polished stainless steel finish in finished spaces. Provide paint finish on plates in unfinished spaces.

2.5.2 Pipe Sleeves

Provide where piping passes entirely through walls, ceilings, roofs, and floors. Sleeves are not required where supply drain, waste, and vent (DWV) piping passes through concrete floor slabs located on grade, except where penetrating a membrane waterproof floor.

2.5.3 Sleeves in Masonry and Concrete

Provide steel pipe sleeves or schedule 40 pvc plastic pipe sleeves. sleeves are not required where drain, waste, and vent (dwv) piping passes through concrete floor slabs located on grade. core drilling of masonry and concrete may be provided in lieu of pipe sleeves when cavities in the core-drilled hole are completely grouted smooth.

2.5.4 Sleeves Not in Masonry and Concrete

Provide 26 gage galvanized steel sheet or PVC plastic pipe sleeves.

2.5.5 Pipe Hangers (Supports)

Provide MSS SP-58 and MSS SP-69, Type 1 with adjustable type steel support rods, except as specified or indicated otherwise. Attach to steel joists with Type 19 or 23 clamps and retaining straps. Attach to Steel W or S beams with Type 21, 28, 29, or 30 clamps. Attach to steel angles and vertical web steel channels with Type 20 clamp with beam clamp channel adapter. Attach to horizontal web steel channel and wood with drilled hole on centerline and double nut and washer. Attach to concrete with Type 18 insert or drilled expansion anchor. Provide Type 40 insulation protection shield for insulated piping.

2.5.6 Cleanouts and Test Tees

Floor cleanouts shall be Smith 4031 series, Josam Series 58000, Zurn Z1425-3, or approved equal. Wall cleanouts shall be Smith 4710, Josam Series 58000, Zurn Z1440-1, or approved equal. Exterior Cleanouts shall be Smith 4231 series, Josam Series 56040, Zurn Z1420-27, or approved equal. Set in 15" x 15" x 6" concrete pad.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Piping located in air plenums shall conform to NFPA 90A requirements. Piping located in shafts that constitute air ducts or that enclose air ducts shall be noncombustible in accordance with NFPA 90A. Installation of plastic pipe where in compliance with NFPA may be installed in accordance with PPFA Fire Man. The plumbing system shall be installed complete with necessary fixtures, fittings, traps, valves, and accessories. otherwise indicated. A ball valve shall be installed on the water main connection.

3.1.1 Water Pipe, Fittings, and Connections

3.1.1.1 Cutting and Repairing

The work shall be carefully laid out in advance, and unnecessary cutting of construction shall be avoided. Damage to building, piping, wiring, or equipment as a result of cutting shall be repaired by mechanics skilled in the trade involved.

3.1.1.2 Protection of Fixtures, Materials, and Equipment

Pipe openings shall be closed with caps or plugs during installation. Fixtures and equipment shall be tightly covered and protected against dirt, water, chemicals, and mechanical injury. Upon completion of the work, the fixtures, materials, and equipment shall be thoroughly cleaned, adjusted, and operated. Safety guards shall be provided for exposed rotating equipment.

3.1.1.3 Mains, Branches, and Runouts

Piping shall be installed as indicated. Pipe shall be accurately cut and worked into place without springing or forcing. Structural portions of the building shall not be weakened. Aboveground piping shall run parallel with the lines of the building, unless otherwise indicated. Branch pipes from service lines may be taken from top, bottom, or side of main, using crossover fittings required by structural or installation conditions. Supply pipes, valves, and fittings shall be kept a sufficient distance from other work and other services to permit not less than 1/2 inch between finished covering on the different services. Bare and insulated water lines shall not bear directly against building structural elements so as to transmit sound to the structure or to prevent flexible movement of the lines. Water pipe shall not be buried in or under floors unless specifically indicated or approved. Changes in pipe sizes shall be made with reducing fittings. Use of bushings will not be permitted except for use in situations in which standard factory fabricated components are furnished to accommodate specific accepted installation practice. Change in direction shall be made with fittings, except that bending of pipe 4 inches and smaller will be permitted, provided a pipe bender is used and wide sweep bends are formed. The center-line radius of bends shall be not less than six diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening, or other malformations will not be acceptable.

3.1.1.4 Commercial-Type Water Hammer Arresters

Commercial-type water hammer arresters shall be provided on hot- and cold-water supplies and shall be located as generally indicated, with precise location and sizing to be in accordance with PDI WH 201. Water hammer arresters, where concealed, shall be accessible by means of access doors or removable panels. Commercial-type water hammer arresters shall conform to ASSE 1010. Vertical capped pipe columns will not be permitted.

3.1.2 Joints

Installation of pipe and fittings shall be made in accordance with the manufacturer's recommendations. Mitering of joints for elbows and notching of straight runs of pipe for tees will not be permitted. Joints shall be made up with fittings of compatible material and made for the specific purpose intended.

3.1.3 Threaded

Threaded joints shall have American Standard taper pipe threads conforming to ASME B1.20.1. Only male pipe threads shall be coated with graphite or with an approved graphite compound, or with an inert filler and oil, or shall have a polytetrafluoroethylene tape applied.

3.1.4 Mechanical Couplings

Mechanical couplings may be used in for aboveground, non-ferrous, domestic hot and cold water systems, in lieu of brazed, soldered, or threaded joints.

3.1.5 Unions and Flanges

Unions, flanges and mechanical couplings shall not be concealed in walls, ceilings, or partitions. Unions shall be used on pipe sizes 2-1/2 inches and smaller; flanges shall be used on pipe sizes 3 inches and larger.

3.1.6 Copper Tube and Pipe

- a. Brazed. Brazed joints shall be made in conformance with AWS B2.2/B2.2M, ASME B16.50, and CDA A4015 with flux and are acceptable for all pipe sizes. Copper to copper joints shall include the use of copper-phosphorus or copper-phosphorus-silver brazing metal without flux. Brazing of dissimilar metals (copper to bronze or brass) shall include the use of flux with either a copper-phosphorus, copper-phosphorus-silver or a silver brazing filler metal.
- b. Soldered. Soldered joints shall be made with flux and are only acceptable for piping 2 inches and smaller. Soldered joints shall conform to ASME B31.5 and CDA A4015. Soldered joints shall not be used in compressed air piping between the air compressor and the receiver.
- c. Press connection. Copper press connections shall be made in **strict** accordance with the manufacturer's installation instructions for manufactured rated size. The joints shall be pressed using the tool(s) approved by the manufacturer **of that joint**. Minimum distance between fittings shall be in accordance with the manufacturer's requirements.

3.1.8 Dissimilar Pipe Materials

Connections between ferrous and non-ferrous copper water pipe shall be made with dielectric unions or flange waterways. Dielectric waterways shall have temperature and pressure rating equal to or greater than that specified for the connecting piping.

Waterways shall have metal connections on both ends suited to match connecting piping. Dielectric waterways shall be internally lined with an insulator specifically designed to prevent current flow between dissimilar metals. Dielectric flanges shall meet the performance requirements described herein for dielectric waterways. Connecting joints between plastic and metallic pipe shall be made with transition fitting for the specific purpose.

3.1.9 Pipe Sleeves and Flashing

Pipe sleeves shall be furnished and set in their proper and permanent location.

3.1.9.1 Sleeve Requirements

Unless indicated otherwise, provide pipe sleeves meeting the following requirements:

Secure sleeves in position and location during construction. Provide sleeves of sufficient length to pass through entire thickness of walls, ceilings, roofs, and floors.

Sleeves shall not be installed in structural members, except where indicated or approved. Rectangular and square openings shall be as detailed. Each sleeve shall extend through its respective floor, or roof, and shall be cut flush with each surface, except for special circumstances. Pipe sleeves passing through floors in wet areas such as mechanical equipment rooms, lavatories, kitchens, and other plumbing fixture areas shall extend a minimum of 4 inches above the finished floor.

Unless otherwise indicated, sleeves shall be of a size to provide a minimum of 1/4 inch clearance between bare pipe or insulation and inside of sleeve or between insulation and inside of sleeve. Sleeves in bearing walls and concrete slab on grade floors shall be steel pipe or cast-iron pipe. Sleeves in nonbearing walls or ceilings may be steel pipe, cast-iron pipe, galvanized sheet metal with lock-type longitudinal seam, or plastic.

Except as otherwise specified, the annular space between pipe and sleeve, or between jacket over insulation and sleeve, shall be fire stopped if in a rated wall. The annular space between pipe and sleeve, between bare insulation and sleeve or between jacket over insulation and sleeve shall not be sealed for interior walls which are not designated as fire rated.

Sleeves through below-grade walls in contact with earth shall be recessed 1/2 inch from wall surfaces on both sides. Annular space between pipe and sleeve shall be filled with backing material and sealants in the joint between the pipe and concrete wall as specified above. Sealant selected for the earth side of the wall shall be compatible with damp proofing/waterproofing materials that are to be applied over the joint sealant. Pipe sleeves in fire-rated walls shall conform to the requirements in Section 07 84 00 FIRESTOPPING.

3.1.9.2 Flashing Requirements

Pipes passing through roof shall be installed through a 16 ounce copper flashing, each within an integral skirt or flange. Flashing shall be suitably formed, and the skirt or flange shall extend not less than 8 inches from the pipe and shall be set over the roof or floor membrane in a solid coating of bituminous cement. The flashing shall extend up the pipe a minimum of 10 inches. For cleanouts, the flashing shall be turned down into the hub and caulked after placing the ferrule. Pipes passing through pitched roofs shall be flashed, using lead or copper flashing, with an adjustable integral flange of adequate size to extend not less than 8 inches from the pipe in all directions and lapped into the roofing to provide a watertight seal. The annular space between the flashing and the bare pipe or between the flashing and the metal-jacket-covered insulation shall be sealed as indicated. Flashing for dry vents shall be turned down into the pipe to form a waterproof joint. Pipes, up to and including 10 inches in diameter, passing through roof or floor waterproofing membrane may be installed through a cast-iron sleeve with caulking recess, anchor lugs, flashing-clamp device, and pressure ring with brass bolts. Flashing shield shall be fitted into the sleeve clamping device. Pipes passing through wall waterproofing membrane shall be sleeved as described above. A waterproofing clamping flange shall be installed.

3.1.9.3 Pipe Penetrations of Slab on Grade Floors

Where pipes, fixture drains, floor drains, cleanouts or similar items penetrate slab on grade floors, except at penetrations of floors with waterproofing membrane as specified in paragraphs Flashing Requirements and Waterproofing, a groove 1/4 to 1/2 inch wide by 1/4 to 3/8 inch deep shall be formed around the pipe, fitting or drain.

3.1.9.4 Pipe Penetrations

Provide sealants for all pipe penetrations. All pipe penetrations shall be sealed to prevent infiltration of air, insects, and vermin.

3.1.10 Fire Seal

Where pipes pass through fire walls, fire-partitions, fire-rated pipe chase walls or floors above grade, a fire seal shall be provided as specified in Section 07 84 00 FIRESTOPPING.

3.1.11 Supports

3.1.11.1 General

Hangers used to support piping 2 inches and larger shall be fabricated to permit adequate adjustment after erection while still supporting the load. Pipe guides and anchors shall be installed to keep pipes in accurate alignment, to direct the expansion movement, and to prevent buckling, swaying, and undue strain. Piping subjected to vertical movement when operating temperatures exceed ambient temperatures shall be supported by variable spring hangers and supports or by constant support hangers. In the support of multiple pipe runs on a common base member, a clip or clamp shall be

used where each pipe crosses the base support member. Spacing of the base support members shall not exceed the hanger and support spacing required for an individual pipe in the multiple pipe run. Threaded sections of rods shall not be formed or bent.

- 3.1.11.2 Pipe Hangers and Supports: Provide MSS SP-58 and MSS SP-69, Type 1 or 6 of adjustable type. Attachments to steel W or S beams shall be with Type 21, 28, 29, or 30 clamps. Attachments to steel angles and channels (with web vertical) shall be with Type 20 clamp with beam clamp channel adaptor. Attachments to steel (with web horizontal) shall be with drilled hole on centerline and double nut and washer. Attachment to concrete shall be with Type 18 insert or drilled hole with expansion anchor. Attachment on roof shall be structural design with mechanically attached foam base, saddle for aligning pipe, and use of 3/8" or 1/2" threaded rod, equal to Roof Top Blox. Hanger rods and attachments shall be full size of the hanger threaded diameter. Provide Type 40 insulation protection shields for insulated piping. Provide steel support rods. Provide nonmetallic, hair felt or plastic piping isolators between copper tubing and the hangers or use copper hangers.

Pipe Hangers and Supports: Support horizontal piping as follows:

PIPE SIZE	MAX HANGER SPACING	HANGER ROD DIAMETER
1/2 TO 1-1/4 INCH	6'-0"	3/8"
1-1/2 TO 2 INCH	8'-0"	3/8"
2-1/2 TO 3 INCH	10'-0"	1/2"
4 TO 6 INCH	12'-0"	5/8"
8 TO 12 INCH	14'-0"	7/8"
PLASTIC - ALL SIZES	4'-0" & AT ELBOWS	3/8"
CAST IRON PIPE	5'-0" & AT JOINTS	5/8"

3.1.11.3 Structural Attachments

Attachment to building structure concrete and masonry shall be by cast-in concrete inserts, built-in anchors, or masonry anchor devices. Inserts and anchors shall be applied with a safety factor not less than 5. Supports shall not be attached to metal decking. Supports shall not be attached to the underside of concrete filled floor or concrete roof decks unless approved by the Architect. Masonry anchors for overhead applications shall be constructed of ferrous materials only.

3.1.11.4 Fixture Supports

Fixture supports for off-the-floor lavatories, urinals, water closets, and other fixtures of similar size, design, and use, shall be of the chair-carrier type. The carrier shall provide the necessary means of mounting the fixture, with a foot or feet to anchor the assembly to the floor slab. Adjustability shall be provided to locate the fixture at the desired height and in proper relation to the wall. Support plates, in lieu of chair carrier, shall be fastened to the wall structure only where it is not possible to anchor a floor-mounted chair carrier to the floor slab.

3.1.11.5 Support for Solid Masonry Construction

Chair carrier shall be anchored to the floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate shall be imbedded in the masonry wall.

3.1.11.6 Support for Concrete-Masonry Wall Construction

Chair carrier shall be anchored to floor slab. Where a floor-anchored chair carrier cannot be used, a suitable wall plate shall be fastened to the concrete wall using through bolts and a back-up plate.

3.1.11.7 Support for Steel Stud Frame Partitions

Chair carrier shall be used. The anchor feet and tubular uprights shall be of the heavy duty design; and feet (bases) shall be steel and welded to a square or rectangular steel tube upright. Wall plates, in lieu of floor-anchored chair carriers, shall be used only if adjoining steel partition studs are suitably reinforced to support a wall plate bolted to these studs.

3.1.12 Access Panels

Access panels shall be provided for concealed valves and controls, or any item requiring inspection or maintenance. Access panels shall be of sufficient size and located so that the concealed items may be serviced, maintained, or replaced.

3.1.13 Sight Drains

Sight drains shall be installed so that the indirect waste will terminate 2 inches above the flood rim of the funnel to provide an acceptable air gap.

3.1.14 Traps

Each trap shall be placed as near the fixture as possible, and no fixture shall be double-trapped. Traps installed on cast-iron soil pipe shall be cast iron. Traps installed on steel pipe or copper tubing shall be recess-drainage pattern, or brass-tube type. Traps installed on plastic pipe may be plastic conforming to ASTM D3311.

3.2 ESCUTCHEONS

Escutcheons shall be provided at finished surfaces where bare or insulated piping, exposed to view, passes through floors, walls, or ceilings, except in boiler, utility, or equipment rooms. Escutcheons shall be fastened securely to pipe or pipe covering and shall be satin-finish, corrosion-resisting steel, polished chromium-plated zinc alloy, or polished chromium-plated copper alloy. Escutcheons shall be either one-piece or split-pattern, held in place by internal spring tension or setscrew.

3.3 INSTALLATION:

- 3.3.1 Install bell and spigot pipe with bell end upstream. Slope pipe in accordance with the requirements of SBCC Standard Plumbing Code.
- 3.3.2 Tracer wire shall be installed for plastic, ductile-iron pipe and fittings.
- 3.3.3 Install specialties in accordance with manufacturer's instructions.
- 3.3.4 Extend cleanouts to finished floor or wall surface. Lubricate threaded cleanout plugs with mixture of graphite and linseed oil. Ensure clearance at cleanout for rodding of drainage system.
- 3.3.5 Install water hammer arresters complete with accessible isolation valve.
- 3.3.6 Install each fixture with chrome plated rigid or flexible supplies with stops, reducers, and escutcheons.
- 3.3.7 Adjust stops or valves for intended water flow rate to fixture without splashing, noise, or overflow.
- 3.3.8 Install water heaters in accordance with manufacturer's instructions and to AGA, NFPA, UL requirements. Coordinate with plumbing piping and related fuel piping, gas venting, electrical work to achieve a satisfactory operating system.
- 3.3.9 There should be a minimum of 30 inches of cover for water mains.
- 3.3.10 While under construction, unattended exposed pipelines must have the ends capped. All materials to be used in construction shall be stored above the ground in a manner that will minimize the possibility of contamination.
- 3.3.11 Install tanks in accordance with manufacturer's instructions.
- 3.3.12 Provide protective systems for all trench excavations in excess of 5 feet in depth as described by OSHA Regulation 1926.652: Requirements for Protective Systems

3.4 TESTS

3.4.1 Plumbing System

The following tests shall be performed on the plumbing system.

3.4.1.1 Waste and Drainage Piping:

The entire drainage and venting system shall have all necessary openings plugged to permit the entire system to be filled with water to the level of the highest vent stack above the roof. The system shall hold this water for 30 minutes without showing a drop greater than 4". Where a portion of the system is to be tested, the test shall be conducted in the same manner as described for the entire system, except that a vertical stack 10 feet above the highest horizontal line to be tested may be installed and filled with water to maintain sufficient pressure or a pump may be used to supply the required

pressure. The pressure shall be maintained for thirty minutes. Contact the A/E representative for test verification.

3.4.1.3 Domestic Water Piping:

Upon completion of the roughing-in and before setting fixtures, the entire hot and cold water piping system shall be tested at a hydrostatic pressure of not less than 100 pounds per square inch gauge, and proved tight at that pressure. Where a portion of the water piping system is to be concealed before completion, this portion shall be tested separately in the same manner as specified for the entire system. Contact the A/E representative for test verification.

End of Section

**SECTION 22 07 19
PLUMBING PIPING INSULATION**

PART 1 GENERAL

Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS applies to work specified in this section.

1.1 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Shop Drawings

Installation Drawings

Product Data

Adhesives

Coatings

Insulating Cement

Insulation Materials

Jacketing

Tape
Certificates

Recycled Materials

Manufacturer's Instructions

Installation Manual

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

Provide noncombustible thermal-insulation system materials, as defined by NFPA 220. Provide adhesives, coatings, sealants, facings, jackets, and thermal-insulation materials, except cellular elastomers, with a flame-spread classification (FSC) of 25 or less, and a smoke-developed classification (SDC) of 50 or less. Determine these maximum values in accordance with ASTM E84 or NFPA 255. Provide coatings and sealants that are nonflammable in their wet state.

Provide adhesives, coatings, and sealants with published or certified temperature ratings suitable for the entire range of working temperatures normal for the surfaces to which they are to be applied.

2.2 COMPONENTS

A. Insulation

Provide insulation with maximum value conductances as tested at any point, not an average. Replace or augment insulation conductance found by testing to exceed the specified maximum by an additional thickness to bring it to the required maximum conductance and a complete finishing system.

B. Mineral Fiber Insulation

Provide mineral fiber insulation conforming to ASTM C592 and suitable for surface temperatures up to 370 degrees F. Provide insulation with a density not less than 4-pound per cubic foot and with thermal conductivity not greater than 0.26 Btu per hour per square foot per degree F at 150 degrees F mean.

For pipe sizes 10-inches and larger, in lieu of fibrous glass pipe insulation, fiber pipe wrap insulation having an insulating efficiency not less than that of the specified thickness of fibrous glass pipe insulation may be provided.

C. Cellular Elastomer Insulation

Provide cellular elastomer insulation conforming to ASTM C534/C534M. Ensure the water vapor permeability does not exceed 0.30 perms per foot per inch per hour per square foot mercury pressure difference for 1-inch thickness of cellular elastomer.

D. Fiberglass Insulation

Conform to ASTM C547. Ensure the apparent thermal conductivity does not exceed 0.54 Btu-inch per hour per square foot per degree F at 200 degrees F mean.

Fiber glass pipe insulation having an insulating efficiency not less than that of the specified thickness of mineral fiber pipe insulation may be provided in lieu of mineral fiber pipe insulation for aboveground piping.

E. Polyisocyanurate Pipe Insulation

Conform to ASTM C591 for polyisocyanurate, minimum density of 1.7 pcf.

F. Pipe Barrel

Ensure pipe barrel insulation is Type II, Molded, Grade A or Type III, Precision V-Groove, Grade A for use at temperatures up to and including 1200 degrees F.

G. Pipe Fittings

Provide molded pipe fitting insulation covering for use at temperatures up to and including 1200 degrees F.

H. Flexible Blankets

Provide flexible blankets and felts for use at temperatures up to and including 350 degrees F minimum with a density of 1 pound per cubic foot. Ensure thermal conductivity is no greater than 0.26 Btu per hour per square foot per degree F at 75 degrees F mean.

I. Adhesives

1. Cloth Adhesives

Provide adhesives conforming to the requirements of ASTM C916, Type I, for adhering, sizing, and finishing lagging cloth, canvas, and open-weave glass cloth with a pigmented polyvinyl acetate emulsion.

2. Vapor-Barrier Material Adhesives

Provide adhesives for attaching laps of vapor-barrier materials and presized glass cloth for attaching insulation to itself, to metal, and to various other substrates, of nonflammable solvent-base, synthetic-rubber type conforming to the requirements of ASTM C916, Type I, for attaching fibrous-glass insulation to metal surfaces.

3. Cellular Elastomer Insulation Adhesive

For cellular elastomer insulation adhesive, provide a solvent cutback chloroprene elastomer conforming to ASTM C916, Type I, and is a type approved by the manufacturer of the cellular elastomer for the intended use.

J. Insulating Cement

1. General Purpose Insulating Cement

Provide general purpose insulating cement, diatomaceous silica or mineral fiber, conforming to ASTM C195. Ensure composite is rated for 1800 degrees F service, with a thermal-conductivity maximum of 0.85 Btu by inch per hour per square foot for each degree F temperature differential at 200 degrees F mean temperature for a 1 inch thickness.

2. Finishing Insulating Cement

Provide finishing insulating cement of a mineral-fiber, hydraulic-setting type conforming to ASTM C449.

K. Caulk

Provide elastomeric joint sealant for caulking specified insulation materials in accordance with ASTM C920, Type S, Grade NS, Class 25, Use A.

L. Corner Angles

Provide a nominal 0.016-inch thick aluminum 1 by 1-inch corner angle piping insulation with factory applied kraft backing. Ensure aluminum conforms to ASTM B209, Alloy 3003.

M. Jacketing

1. Aluminum Jacket

Provide aluminum jackets conforming ASTM B209, Temper H14, minimum thickness of 0.016-inch, with factory-applied polyethylene and kraft paper moisture barrier on the inside surface. Provide smooth surface jackets for jacket outside diameters less than 8-inches. Provide corrugated surface jackets for jacket outside diameters 8-inches and larger. Provide stainless steel bands, minimum width of 0.5-inch. Provide factory prefabricated aluminum covers for insulation on fittings, valves, and flanges. Provide aboveground jackets and bands with factory-applied baked-on semi-gloss brown color conforming to Federal Standard FED-STD-595, "Colors," color chip number 20062.

2. Stainless Steel Jacket

Provide stainless steel jackets conforming to ASTM A167 or ASTM A240/A240M; Type 304, minimum thickness of 0.010 inch, smooth surface with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide stainless steel bands, minimum width of 0.5 inch. Provide factory prefabricated stainless steel covers for insulation on fittings, valves, and flanges.

3. Glass Cloth Jacket

Provide plain-weave glass cloth conforming to ASTM D579, Style 141, weighing not less than 7.23 ounces per square yard before sizing. Factory apply cloth wherever possible.

Provide leno weave glass reinforcing cloth, 26-end and 12-pick thread conservation, with a warp and fill tensile strength of 45 and 30 pounds per inch of width, respectively, and a weight of not less than 1.5 ounces per square yard. At the Contractor's option, Style 191 leno-weave glass cloth conforming to ASTM D579 may be provided.

4. PVC Jacket

Provide 0.010 inch thick, factory-premolded, one-piece fitting polyvinylchloride that is self-extinguishing, high-impact strength, moderate chemical resistance with a permeability rating of 0.01 grain per hour per square foot per inch of mercury pressure difference, determined in accordance with ASTM E96/E96M. Provide manufacturer's standard solvent-weld type vapor-barrier joint adhesive.

Ensure conformance to ASTM C1136 for, Type I, low-vapor transmission, high-puncture resistance vapor barriers.

N. Coatings

1. Outdoor Vapor-Barrier Finishing

For coatings for outdoor vapor-barrier finishing of insulation surfaces, such as fittings and elbows, provide a nonasphaltic, hydrocarbon polymer, solvent-base mastic containing a

blend of nonflammable solvents. Ensure coatings conform to the requirements of ASTM C1136 and ASTM C921.

2. Indoor Vapor-Barrier Finishing

Provide pigmented resin and solvent compound coatings for indoor vapor-barrier finishing of insulation surfaces conforming to ASTM C1136, Type II.

3. Outdoor and Indoor Nonvapor-Barrier Finishing (NBF)

Provide pigmented polymer-emulsion type NBF recommended by the insulation material manufacturer for outdoor and indoor NBF coating of insulation surfaces for the surface to be coated and applied to specified dry-film thickness.

4. Cellular-Elastomer Insulation Coating

Provide a polyvinylchloride lacquer approved by the manufacturer of the cellular elastomer finish coating.

5. Coating Color

Conform to the color code specified for the coating color.

0. Tape

Provide a knitted elastic cloth glass lagging specifically suitable for continuous spiral wrapping of insulated pipe bends and fittings that produces a smooth, tight, wrinkle-free surface. Conform to requirements of SAE AMS 3779, ASTM D579, and ASTM C921 for tape, weighing not less than 10 ounces per square yard.

2.3 MATERIALS

Submit manufacturer's catalog data for the following items:

- a. Adhesives
- b. Coatings
- c. Insulating Cement
- d. Insulation Materials
- e. Jacketing
- f. Tape

Provide compatible materials which do not contribute to corrosion, soften, or otherwise attack surfaces to which applied, in either the wet or dry state. Meet ASTM C795 requirements for materials to be used on stainless steel surfaces. Provide materials that are asbestos free.

PART 3 EXECUTION

3.1 PREPARATION

Clean surfaces free of oil and grease before insulation adhesives or mastics are applied. Provide solvent cleaning required to bring metal surfaces to such condition.

3.2 INSTALLATION OF INSULATION SYSTEMS

Apply materials in conformance with the recommendations of the manufacturer.

Install smooth and continuous contours on exposed work. Smoothly and securely paste down cemented laps, flaps, bands, and tapes. Apply adhesives on a full-coverage basis.

Apply insulation only to system or component surfaces that have been tested and approved.

Install insulation lengths tightly butted against each other at joints. Where lengths are cut, provide smooth and square and without breakage of end surfaces. Where insulation terminates, neatly taper and effectively seal ends, or finish as specified. Direct longitudinal seams of exposed insulation away from normal view.

Submit installation drawings for pipe insulation, conforming with the adhesive manufacturer's written instructions for installation.

A. Hot-Water Piping

Install a mineral fiber insulation with glass cloth jacket, Type T-2, with a thickness of not less than 1". Insulate aboveground pipes, valve bodies, fittings, unions, flanges, and miscellaneous surfaces.

B. Cold-Water Piping

Insulate aboveground pipes, valve bodies, fittings, unions, flanges, and miscellaneous surfaces.

Provide 3/8-inch mineral fiber insulation with glass cloth jacket, Type T-2.

Install a cellular-elastomer insulation conforming to ASTM C534/C534M, with a water-vapor permeability not exceeding 0.1 grain per square foot per hour per inch mercury pressure-differential for 1-inch thickness.

Provide flexible unicellular-elastomeric thermal insulation for cold water piping, Type T-3, with a thickness of [3/8] [1/2] inch. Use expanded, closed-cell pipe insulation only aboveground, not for underground piping.

C. Refrigerant Suction Piping

Install a cellular-elastomer insulation, Type T-3, with a nominal thickness of 3/4-inch. Insulate surfaces, including valve, fittings, unions, and flanges.

3.3 APPLICATION

A. Type T-1, Mineral Fiber with Vapor-Barrier Jacket

Cover piping with mineral-fiber pipe insulation with factory-and field-attached vapor-barrier jacket. Maintain vapor seal. Securely cement jackets, jacket laps, flaps, and bands in place with vapor-barrier adhesive. Provide jacket overlaps not less than 1-1/2 inches and jacketing bands for butt joints 3-inches wide.

Cover exposed-to-view fittings and valve bodies with preformed mineral-fiber pipe-fitting insulation of the same thickness as the pipe-barrel insulation. Temporarily secure fitting insulation in place with light cord ties. Apply a 60-mil coating of white indoor vapor-barrier coating and, while still wet, wrap with glass lagging tape with 50 percent overlap, and smoothly blend into the adjacent jacketing. Apply additional coating as needed and rubber-gloved to smooth fillet or contour coating, then allowed to fully cure before the finish coating is applied. On-the-job fabricated insulation for concealed fittings and special configurations, build up from mineral fiber and a special mastic consisting of a mixture of insulating cement and lagging adhesive diluted with 3 parts water. Where standard vapor-barrier jacketing cannot be used, make the surfaces vapor tight by using coating and glass lagging cloth or tape as previously specified.

In lieu of materials and methods previously specified, fittings may be wrapped with a twine-secured, mineral-wool blanket to the required thickness and covered with premolded polyvinylchloride jackets. Make seams vapor tight with a double bead of manufacturer's standard vapor-barrier adhesive applied in accordance with the manufacturer's instructions. Hold all jacket ends in place with AISI 300 series corrosion-resistant steel straps, 15 mils thick by 1/2-inch wide.

Set pipe insulation into an outdoor vapor-barrier coating for a minimum of 6-inches at maximum 12-foot spacing and the ends of the insulation sealed to the jacketing with the same material to provide an effective vapor-barrier stop.

Do not use staples in applying insulation. Install continuous vapor-barrier materials over all surfaces, including areas inside pipe sleeves, hangers, and other concealments.

Provide piping insulation at hangers consisting of 13-pounds per cubic foot density, fibrous-glass inserts or expanded, rigid, closed-cell, polyvinylchloride. Seal junctions with vapor-barrier jacket where required, glass-cloth mesh tape, and vapor-barrier coating.

Expose white-bleached kraft paper side of the jacketing to view.

Finish exposed-to-view insulation with not less than a 6 dry-film thickness of nonvapor-barrier coating suitable for painting.

B. Type T-2, Mineral Fiber with Glass Cloth Jacket

Cover piping with a mineral-fiber, pipe insulation with factory-attached, presized, white, glass cloth. Securely cement jackets, jacket laps, flaps, and bands in place with vapor-barrier adhesive with jacket overlap not less than 1-1/2 inches and jacketing bands for butt joints 3-inches wide.

Cover exposed-to-view fittings with preformed mineral-fiber fitting insulation of the same thickness as the pipe insulation and temporarily secured in place with light cord ties. Install impregnated glass lagging tape with indoor vapor-barrier on 50 percent overlap basis and the blend tape smoothly into the adjacent jacketing. Apply additional coating as needed, and rubber gloved to a smooth contour. Tape ends of insulation to the pipe at valves 2-inches and smaller. Build up on-the-job fabricated insulation for concealed fittings and special configurations from mineral fiber and a mixture of insulating cement and lagging adhesive, diluted with 3 parts water. Finish surfaces with glass cloth or tape lagging.

Cover all valves 2-1/2 inches and larger and all flanges with preformed insulation of the same thickness as the adjacent insulation.

Finish exposed-to-view insulation with a minimum 6-mil dry-film thickness of nonvapor-barrier coating suitable for painting.

In lieu of materials and methods specified above, fittings may be wrapped with a twine-secured, mineral-wool blanket to the required thickness and covered with premolded polyvinylchloride jackets. Hold all jacket ends in place with AISI 300 series corrosion-resistant steel straps, 15 mils thick by 1/2-inch wide. Provide fitting insulation, thermally equivalent to pipe-barrel insulation to preclude surface temperatures detrimental to polyvinylchloride.

C. Type T-3, Cellular Elastomer

Cover piping-system surfaces with flexible cellular-elastomer sheet or preformed insulation. Maintain vapor seal. Cement insulation into continuous material with a solvent cutback chloroprene adhesive recommended by the manufacturer for the specific purpose. Apply adhesive to both of the surfaces on a 100-percent coverage basis to a minimum thickness of 10 mils wet or approximately 150 square feet per gallon of undiluted adhesive.

Seal insulation on cold water piping to the pipe for a minimum of [6]-inches at maximum intervals of 12-feet to form an effective vapor barrier. At piping supports, ensure insulation is continuous through using outside-carrying type clevis hangers with insulation shield. Install Wood dowel load-bearing inserts between the pipe and insulation shields to prevent insulation compression.

Insulate hot-water, cold-water, and condensate drain pipes to the extent shown with nominal 1/2-inch thick, fire retardant (FR), cellular elastomer, preformed pipe insulation. Seal joints with adhesive.

At pipe hangers or supports where the insulation rests on the pipe hanger strap, cut the insulation with a brass cork borer and a No. 3 superior grade cork inserted. Seal seams with approved adhesive. Insulate sweat fitting with miter-cut pieces of cellular elastomer insulation of the same nominal pipe size and thickness as the insulation on the adjacent piping or tubing. Joint miter-cut pieces with approved adhesive. Slit and snap covers over the fitting, and seal joints with approved adhesive.

Insulate screwed fittings with sleeve-type covers formed from miter-cut pieces of cellular elastomer thermal insulation having an inside diameter large enough to overlap adjacent pipe insulation. Butt pipe insulation against fittings, and overlap not less than 1-inch. Use adhesive to join cover pieces and cement the cover to the pipe insulation.

Finish surfaces exposed to view or ultraviolet light with a 2-mil minimum dry-film thickness application of a polyvinylchloride lacquer recommended by the manufacturer, and applied in not less than two coats.

3.3. Type T-6, Mineral Fiber with Aluminum Jacket

Cover piping with mineral-fiber pipe insulation with factory-attached or field-applied aluminum jacketing.

Cover fittings and valve bodies with preformed mineral-fiber pipe-fitting insulation of the same thickness as the pipe-barrel insulation. Temporarily secure fitting insulation in place with light cord ties. Apply a 60-mil coating of vapor-barrier mastic, and while still tacky, wrap with glass lagging tape.

Apply additional mastic as needed and rubber-gloved to smooth fillets or contours. Build up on-the-job fabricated insulation for special configurations from mineral fiber and a mixture of insulating cement and lagging adhesive diluted with 3 parts water. Only where standard aluminum jacketing cannot be used, make the surfaces vapor-tight by using mastic and glass lagging cloth or tape as specified above with an added finish coat of mastic.

Set pipe insulation into outdoor vapor-barrier coating for a minimum of 6-inches at maximum 12-foot spacing. Seal ends of the insulation to the jacketing with the same material to provide effective vapor barrier stops.

Install continuous vapor barrier over all surfaces, including areas inside pipe sleeves, hangers, and other concealment.

Apply piping insulation to both sides of pipe hangers. Insulate junctions with a special mastic mixture, glass cloth mesh tape, and mastic as previously specified.

Securely cement jacket laps, flaps, and bands in place with aluminum jacket sealant. Provide 6 inch wide minimum jacketing bands for butt joints.

Lap joints, wherever possible, against the weather so that the water runs off the lower edge and in accordance with the pipe drainage pitch. Locate longitudinal laps on horizontal lines 45 degrees below the horizontal centerline and alternately staggered 1-inch. Lap jacketing material a minimum of 2-inches, circumferentially sealed with mastic, and strapped to provide a waterproof covering throughout. Locate straps 8-inches on center and pull up tight to hold jacketing securely in place. Use screws in addition to straps when necessary to obtain a waterproof covering. Place extra straps on each side of supporting devices and at openings. Where flanging access occurs, strap a chamfer sheet to the pipe at jacketing.

Stiffen exposed longitudinal edges of aluminum jacketing by bending a 1-inch hem on one edge.

Provide expansion joints for maximum and minimum dimensional fluctuations.

To prevent corrosion, do not allow the aluminum jacketing to come in direct contact with other types of metal.

At openings in jacket, apply an outdoor vapor-barrier coating for 2-inches in all directions. Apply jacketing while waterproofing is tacky.

Use screws at each corner of each sheet, at fitting jackets, and as necessary for the service. Place Number 7, 3/8-inch long, binding-head aluminum sheet metal screws through the mastic seal.

3.3.4 Type T-9, Cellular Elastomer

Clean pump surfaces with solvent. Apply not less than 1-inch of general purpose insulating cement, mixed with nonvapor-barrier adhesive diluted with 3 parts water, to achieve smooth surface and configuration contours. After all water has been removed, cover surfaces with 1/2-inch thick cellular elastomer insulation attached and joined into a continuous sheet with an outdoor vapor-barrier coating recommended by the insulation manufacturer for the specific purpose. Apply coating to both of the surfaces on a 100-percent coverage basis with a minimum thickness of 10 mils wet, or approximately 150 square feet per gallon of undiluted coating. Blend coating into the adjacent flange insulation and the joint covered with a band of cellular elastomer equal to the flange assembly width. Use same coating to seal insulation to the casing at penetrations and terminations. Insulate pumps in a manner that permits insulation to be removed to repair or replace pumps.

Finish insulation with a 2-mil minimum dry-film application of a polyvinylchloride lacquer coating recommended by the manufacturer and applied in not less than two coats.

3.3.5 Type T-10, Mineral-Fiber Fill

Pack voids surrounding pipe with mineral-fiber fill.

-- End of Section --

**SECTION 23 00 00 AIR SUPPLY
DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS**

PART 1 GENERAL**1.1 SYSTEM DESCRIPTION**

Furnish ductwork, piping offsets, fittings, and accessories as required to provide a complete installation. Coordinate the work of the different trades to avoid interference between piping, equipment, structural, and electrical work. Provide complete, in place, all necessary offsets in piping and ductwork, and all fittings, and other components, required to install the work as indicated and specified.

A. Mechanical Equipment Identification

The number of charts and diagrams shall be equal to or greater than the number of mechanical equipment rooms. Where more than one chart or diagram per space is required, mount these in edge pivoted, swinging leaf, extruded aluminum frame holders which open to 170 degrees.

B. Service Labeling

Identify similar services with different temperatures or pressures. Where pressures could exceed 125 pounds per square inch, gage, include the maximum system pressure in the label. Label and arrow piping in accordance with the following:

- a. Each point of entry and exit of pipe passing through walls.
- b. Each change in direction, i.e., elbows, tees.
- c. In congested or hidden areas and at all access panels at each point required to clarify service or indicated hazard.
- d. In long straight runs, locate labels at distances within eyesight of each other not to exceed 75 feet. All labels shall be visible and legible from the primary service and operating area.

For Bare or Insulated Pipes	
for Outside Diameters of	Lettering
1/2 thru 1-3/8 inch	1/2 inch
1-1/2 thru 2-3/8 inch	3/4 inch
2-1/2 inch and larger	1-1/4 inch

C. Color Coding

Color coding of all piping systems shall be in accordance with MIL-STD-101.

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Product Data

- Metallic Flexible Duct
- Insulated Nonmetallic Flexible Duct Runouts
- Duct Connectors
- Duct Access Doors
- Fire Dampers
- Manual Balancing Dampers
- Diffusers
- Registers and Grilles
- Louvers
- Air-Curtain Fans
- Ceiling Exhaust Fans

Operation and Maintenance Data

- Operation and Maintenance Manuals
- Manual Balancing Dampers
- Ceiling Exhaust Fans

1.3 QUALITY ASSURANCE

Except as otherwise specified, approval of materials and equipment is based on manufacturer's published data.

- a. Where materials and equipment are specified to conform to the standards of the Underwriters Laboratories, the label of or listing with reexamination in UL Bld Mat Dir, and UL 6 is acceptable as sufficient evidence that the items conform to Underwriters Laboratories requirements. In lieu of such label or listing, submit a written certificate from any nationally recognized testing agency, adequately equipped and competent to perform such services, stating that the items have been tested and that the units conform to the specified requirements. Outline methods of testing used by the specified agencies.
- b. Where materials or equipment are specified to be constructed or tested, or both, in accordance with the standards of the ASTM International (ASTM), the ASME International (ASME), or other standards, a manufacturer's certificate of compliance of each item is acceptable as proof of compliance.
- c. Conformance to such agency requirements does not relieve the item from compliance with other requirements of these specifications.

- d. Where products are specified to meet or exceed the specified energy efficiency requirement of FEMP-designated or Energy Star certified product categories, equipment selected shall have as a minimum the efficiency rating identified under "Energy-Efficient Products" at <http://www1.eere.energy.gov/femp/procurement>.

These specifications conform to the efficiency requirements as defined in Public Law PL-109-58, "Energy Policy Act of 2005" for federal procurement of energy-efficient products. Equipment having a lower efficiency than Energy Star or FEMP requirements may be specified if the designer determines the equipment to be more life-cycle cost effective using the life-cycle cost analysis methodology and procedure in 10 CFR 436.

A. Prevention of Corrosion

Protect metallic materials against corrosion. Manufacturer shall provide rust-inhibiting treatment and standard finish for the equipment enclosures. Do not use aluminum in contact with earth, and where connected to dissimilar metal. Protect aluminum by approved fittings, barrier material, or treatment. Ferrous parts such as anchors, bolts, braces, boxes, bodies, clamps, fittings, guards, nuts, pins, rods, shims, thimbles, washers, and miscellaneous parts not of corrosion-resistant steel or nonferrous materials shall be hot-dip galvanized in accordance with ASTM A123/A123M for exterior locations and cadmium-plated in conformance with ASTM B766 for interior locations

B. Asbestos Prohibition

Do not use asbestos and asbestos-containing products.

1.4 DELIVERY, STORAGE, AND HANDLING

Protect stored equipment at the jobsite from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Additionally, cap or plug all pipes until installed.

PART 2 PRODUCTS

2.1 PRODUCT SUSTAINABILITY CRITERIA

For products in this section, where applicable and to extent allowed by performance criteria, provide and document the following:

2.2 STANDARD PRODUCTS

Provide components and equipment that are "standard products" of a manufacturer regularly engaged in the manufacturing of products that are of a similar material, design and workmanship. "Standard products" is defined as being in satisfactory commercial or industrial use for 2 years before bid opening, including applications of components and equipment under similar circumstances and of similar size, satisfactorily completed by a product that is sold on the commercial market through advertisements, manufacturers' catalogs, or brochures. Products having less than a 2-year field service record are acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the

manufacturer's factory tests, can be shown. Provide equipment items that are supported by a service organization.

2.3 STANDARD PRODUCTS

Except for the fabricated duct, plenums and casings specified in paragraphs "Metal Ductwork" and "Plenums and Casings for Field-Fabricated Units", provide components and equipment that are standard products of manufacturers regularly engaged in the manufacturing of products that are of a similar material, design and workmanship. This requirement applies to all equipment, including diffusers, registers, fire dampers, and balancing dampers. All energy consuming HVAC equipment must be Energy Star or Federal Energy management Program (FEMP) designated efficiency in conformance to Section 01 33 29 SUSTAINABILITY REPORTING paragraph ENERGY EFFICIENT EQUIPMENT.

- a. Standard products are defined as components and equipment that have been in satisfactory commercial or industrial use in similar applications of similar size for at least two years before bid opening.
- b. Prior to this two year period, these standard products shall have been sold on the commercial market using advertisements in manufacturers' catalogs or brochures. These manufacturers' catalogs, or brochures shall have been copyrighted documents or have been identified with a manufacturer's document number.
- c. Provide equipment items that are supported by a service organization. In product categories covered by Energy Star or the Federal Energy Management Program, provide equipment that is listed on the Energy Star Qualified Products List or that meets or exceeds the FEMP-designated Efficiency Requirements.

2.4 IDENTIFICATION PLATES

In addition to standard manufacturer's identification plates, provide engraved laminated phenolic identification plates for each piece of mechanical equipment. Identification plates are to designate the function of the equipment. Submit designation with the shop drawings. Identification plates shall be three layers, black-white-black, engraved to show white letters on black background. Letters shall be upper case. Identification plates 1-1/2-inches high and smaller shall be 1/16-inch thick, with engraved lettering 1/8-inch high; identification plates larger than 1-1/2-inches high shall be 1/8-inch thick, with engraved lettering of suitable height. Identification plates 1-1/2-inches high and larger shall have beveled edges. Install identification plates using a compatible adhesive.

2.5 EQUIPMENT GUARDS AND ACCESS

Fully enclose or guard belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts exposed to personnel contact according to OSHA requirements. Properly guard or cover with insulation of a type specified, high temperature equipment and piping exposed to contact by personnel or where it creates a potential fire hazard.

2.6 ELECTRICAL WORK

- a. Provide motors, controllers, integral disconnects, contactors, and controls with their respective pieces of equipment, except controllers indicated as part of motor control centers. Provide electrical equipment, including motors and wiring, as specified in Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Provide manual or automatic control and protective or signal devices required for the operation specified and control wiring required for controls and devices specified, but not shown. For packaged equipment, include manufacturer provided controllers with the required monitors and timed restart.
- b. For single-phase motors, provide high-efficiency type, fractional-horsepower alternating-current motors, including motors that are part of a system, in accordance with NEMA MG 11. Integral size motors shall be the premium efficiency type in accordance with NEMA MG 1.
- c. For polyphase motors, provide squirrel-cage medium induction motors, including motors that are part of a system, and that meet the efficiency ratings for premium efficiency motors in accordance with NEMA MG 1. Select premium efficiency polyphase motors in accordance with NEMA MG 10.
- d. Provide motors in accordance with NEMA MG 1 and of sufficient size to drive the load at the specified capacity without exceeding the nameplate rating of the motor. Provide motors rated for continuous duty with the enclosure specified. Provide motor duty that allows for maximum frequency start-stop operation and minimum encountered interval between start and stop. Provide motor torque capable of accelerating the connected load within 20 seconds with 80 percent of the rated voltage maintained at motor terminals during one starting period. Provide motor starters complete with thermal overload protection and other necessary appurtenances. Fit motor bearings with grease supply fittings and grease relief to outside of the enclosure.
- e. Where two-speed or variable-speed motors are indicated, solid-state variable-speed controllers are allowed to accomplish the same function. Use solid-state variable-speed controllers for motors rated 10 hp or less and adjustable frequency drives for larger motors.

2.7 ANCHOR BOLTS

Provide anchor bolts for equipment placed on concrete equipment pads or on concrete slabs. Bolts to be of the size and number recommended by the equipment manufacturer and located by means of suitable templates. Installation of anchor bolts shall not degrade the surrounding concrete.

2.8 PAINTING

Paint equipment units in accordance with approved equipment manufacturer's standards unless specified otherwise. Field retouch only if approved. Otherwise, return equipment to the factory for refinishing.

2.9 INDOOR AIR QUALITY

Provide equipment and components that comply with the requirements of ASHRAE 62.1 unless more stringent requirements are specified herein.

2.10 DUCT SYSTEMS

A. Metal Ductwork

Provide metal ductwork construction, including all fittings and components, that complies with SMACNA 1966, as supplemented and modified by this specification .

- a. Ductwork shall be constructed meeting the requirements for the duct system static pressure specified in APPENDIX D of Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC.
- b. Provide radius type elbows with a centerline radius of 1.5 times the width or diameter of the duct where space permits. Otherwise, elbows having a minimum radius equal to the width or diameter of the duct or square elbows with factory fabricated turning vanes are allowed.
- c. Provide sealants that conform to fire hazard classification specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS and are suitable for the range of air distribution and ambient temperatures to which it is exposed. Do not use pressure sensitive tape as a sealant.
- d. Make spiral lock seam duct, and flat oval with duct sealant and lock with not less than 3 equally spaced drive screws or other approved methods indicated in SMACNA 1966. Apply the sealant to the exposed male part of the fitting collar so that the sealer is on the inside of the joint and fully protected by the metal of the duct fitting. Apply one brush coat of the sealant over the outside of the joint to at least 2 inch band width covering all screw heads and joint gap. Dents in the male portion of the slip fitting collar are not acceptable. Fabricate outdoor air intake ducts and plenums with watertight soldered or brazed joints and seams.

B. Insulated Nonmetallic Flexible Duct Runouts

Use flexible duct runouts only where indicated. Runout length is indicated on the drawings, and is not to exceed 5 feet. Provide runouts that are preinsulated, factory fabricated, and that comply with NFPA 90A and UL 181. Provide either field or factory applied vapor barrier. Provide not less than 20 ounce glass fabric duct connectors coated on both sides with neoprene. Where coil induction or high velocity units are supplied with vertical air inlets, use a streamlined, vaned and mitered elbow transition piece for connection to the flexible duct or hose. Provide a die-stamped elbow and not a flexible connector as the last elbow to these units other than the vertical air inlet type. Insulated flexible connectors are allowed as runouts.

C. General Service Duct Connectors

Provide a flexible duct connector approximately 6 inches in width where sheet metal connections are made to fans or where ducts of dissimilar metals are connected. For round/oval ducts, secure the flexible material by stainless steel or zinc-coated, iron clinch-type draw bands. For rectangular ducts, install the flexible material locked to metal collars

using normal duct construction methods. Provide a composite connector system that complies with NFPA 701 and is classified as "flame-retardent fabrics" in UL Bld Mat Dir.

D. Duct Access Doors

Provide hinged access doors conforming to SMACNA 1966 in ductwork and plenums where indicated and at all air flow measuring primaries, automatic dampers, fire dampers, coils, thermostats, and other apparatus requiring service and inspection in the duct system. Provide access doors upstream and downstream of air flow measuring primaries and heating and cooling coils. Provide doors that are a minimum 15 by 18 inches, unless otherwise shown. Where duct size does not accommodate this size door, make the doors as large as practicable. Equip doors 24 by 24 inches or larger with fasteners operable from inside and outside the duct. Use insulated type doors in insulated ducts.

E. Fire Dampers

Use 1.5 hour rated fire dampers unless otherwise indicated. Provide fire dampers that conform to the requirements of NFPA 90A and UL 555. Perform the fire damper test as outlined in NFPA 90A. Provide a pressure relief door upstream of the fire damper. If the ductwork connected to the fire damper is to be insulated then provide a factory installed pressure relief damper. Provide automatic operating fire dampers with a dynamic rating suitable for the maximum air velocity and pressure differential to which it is subjected. Provide fire dampers approved for the specific application, and install according to their listing. Equip fire dampers with a steel sleeve or adequately sized frame installed in such a manner that disruption of the attached ductwork, if any, does not impair the operation of the damper. Equip sleeves or frames with perimeter mounting angles attached on both sides of the wall or floor opening. Construct ductwork in fire-rated floor-ceiling or roof-ceiling assembly systems with air ducts that pierce the ceiling of the assemblies in conformance with UL Fire Resistance. Provide [curtain type with damper blades] [in the air stream] [out of the air stream] or [single blade type] or [multi-blade type] fire dampers. Install dampers that do not reduce the duct or the air transfer opening cross-sectional area. Install dampers so that the centerline of the damper depth or thickness is located in the centerline of the wall, partition or floor slab depth or thickness. Unless otherwise indicated, comply with the installation details given in SMACNA 1819 and in manufacturer's instructions for fire dampers. Perform acceptance testing of fire dampers according to paragraph Fire Damper Acceptance Test and NFPA 90A.

F. Manual Balancing Dampers

Furnish manual balancing dampers with accessible operating mechanisms. Use chromium plated operators (with all exposed edges rounded) in finished portions of the building. Provide manual volume control dampers that are operated by locking-type quadrant operators. Install dampers that are 2 gauges heavier than the duct in which installed. Unless otherwise indicated, provide opposed blade type multileaf dampers with maximum blade width of 12 inches. Provide access doors or panels for all concealed damper operators and locking setscrews. Provide stand-off mounting brackets, bases, or adapters not less than the thickness of the insulation when the locking-type quadrant operators for dampers are installed on ducts to be thermally insulated, to provide clearance between the duct surface and the operator. Stand-off mounting items shall be integral with the operator or standard accessory of the damper manufacturer.

- a. Provide stand-off mounting brackets, bases, or adapters not less than the thickness of the insulation when the locking-type quadrant operators for dampers are installed on ducts to be thermally insulated, to provide clearance between the duct surface and the operator. Stand-off mounting items shall be integral with the operator or standard accessory of the damper manufacturer.

Frames

Width	Height	Galvanized Steel Thickness	Length
Maximum 19 inches	Maximum 12 inches	Minimum 20 gauge	Minimum 3 inches
More than 19 inches	Maximum 12 inches	Minimum 16 gauge	Minimum 3 inches

Single Leaf Blades

Width	Height	Galvanized Steel Thickness	Length
Maximum 19 inches	Maximum 12 inches	Minimum 20 gauge	Minimum 3 inches
More than 19 inches	Maximum 12 inches	Minimum 16 gauge	Minimum 3 inches

Blade Axles

To support the blades of round dampers, provide galvanized steel shafts supporting the blade the entire duct diameter frame-to-frame. Axle shafts shall extend through standoff bracket and hand quadrant.

Width	Height	Material	Square Shaft
Maximum 19 inches	Maximum 12 inches	Galvanized Steel	Minimum 3/8 inch
More than 19 inches	Maximum 12 inches	Galvanized Steel	Minimum 1/2 inch

Axle Bearings

Support the shaft on each end at the frames with shaft bearings. Shaft bearings configuration shall be a pressed fit to provide a tight joint between blade shaft and damper frame.

Width	Height	Material
Maximum 19 inches	Maximum 12 inches	solid nylon, or equivalent solid plastic, or oil-impregnated bronze
More than 19 inches	Maximum 12 inches	oil-impregnated bronze

Control Shaft/Hand Quadrant

Provide dampers with accessible locking-type control shaft/hand quadrant operators.

Provide stand-off mounting brackets, bases, or adapters for the locking-type quadrant operators on dampers installed on ducts to be thermally insulated. Stand-off distance shall be a minimum of 2 inches off the metal duct surface. Stand-off mounting items shall be integral with the operator or standard accessory of the damper manufacturer.

Finish

Mill Galvanized

Duct Height Greater than 12 inches

Provide dampers with multi-leaf opposed-type blades.

2.11. Diffusers

Provide diffuser types indicated. Furnish ceiling mounted units with anti-smudge devices, unless the diffuser unit minimizes ceiling smudging through design features. Provide diffusers with air deflectors of the type indicated. Provide air handling troffers or combination light and ceiling diffusers conforming to the requirements of UL Electrical Constructn for the interchangeable use as cooled or heated air supply diffusers or return air units. Install ceiling mounted units with rims tight against ceiling. Provide sponge rubber gaskets between ceiling and surface mounted diffusers for air leakage control. Provide suitable trim for flush mounted diffusers. For connecting the duct to diffuser, provide duct collar that is airtight and does not interfere with volume controller. Provide return or exhaust units that are similar to supply diffusers.

A. Louvered Face Diffusers

Provide adjustable four-way air pattern controls as indicated. Provide diffuser faceplates that do not sag or deflect when operating under design conditions.

B. Registers and Grilles

Provide units that are four-way directional-control type, except provide return and exhaust registers that are fixed horizontal or vertical louver type similar in appearance to the supply register face. Furnish registers with sponge-rubber gasket between flanges and wall or ceiling. Install wall supply registers at least 6 inches below the ceiling unless otherwise indicated. Locate return and exhaust registers 6 inches above the floor unless otherwise indicated. Achieve four-way directional control by a grille face which can be rotated in 4 positions or by adjustment of horizontal and vertical vanes. Provide grilles as specified for registers, without volume control damper.

C. Louvers

Provide louvers for installation in exterior walls that are associated with the air supply and distribution system.

2.12 AIR SYSTEMS EQUIPMENT

A. Fans

Test and rate fans according to AMCA 210. Calculate system effect on air moving devices in accordance with AMCA 201 where installed ductwork differs from that indicated on drawings. Install air moving devices to minimize fan system effect. Where system effect is unavoidable, determine the most effective way to accommodate the inefficiencies caused by system effect on the installed air moving device. The sound power level of the fans shall not exceed 85 dBA when tested according to AMCA 300 and rated in accordance with AMCA 301. Provide all fans with an AMCA seal. Connect fans to the motors either directly or indirectly with V-belt drive. Use V-belt drives designed for not less than 120 percent of the connected driving capacity. Provide variable pitch motor sheaves for 15 hp and below, and fixed pitch as defined by AHRI Guideline D (A fixed-pitch sheave is provided on both the fan shaft and the motor shaft. This is a non-adjustable speed drive.). Select variable pitch sheaves to drive the fan at a speed which can produce the specified capacity when set at the approximate midpoint of the sheave adjustment. When fixed pitch sheaves are furnished, provide a replaceable sheave when needed to achieve system air balance. Provide motors for V-belt drives with adjustable rails or bases. Provide removable metal guards for all exposed V-belt drives, and provide speed-test openings at the center of all rotating shafts. Provide fans with personnel screens or guards on both suction and supply ends, except that the screens need not be provided, unless otherwise indicated, where ducts are connected to the fan. Provide fan and motor assemblies with vibration-isolation supports or mountings as indicated. Use vibration-isolation units that are standard products with published loading ratings. Select each fan to produce the capacity required at the fan static pressure indicated. Provide sound power level as indicated. Obtain the sound power level values according to AMCA 300. Provide standard AMCA arrangement, rotation, and discharge as indicated. Provide power ventilators that conform to UL 705 and have a UL label.

HOOD SYSTEMS:

TYPE I HOOD SYSTEM:

General: The cooking equipment hoods shall be a balanced air canopy of the size indicated on the Drawings. The canopy shall be designed to remove all

cooking odors and grease fumes from the cooking area without impairing the efficiency of the cooking equipment or causing excessive drafts in the work area. Units shall be designed to allow a curtain of outside make-up air to be supplied through the exposed outer perimeters of the canopy. The curtain of make-up air shall trap the cooking fumes and prevent them from escaping into other areas of the kitchen. The system shall comply with NFPA No.96, International Mechanical Code, and be UL 710 listed.

Construction: Exposed surfaces shall be 18 gauge type 302 stainless steel with #4 polished finish. Unexposed surfaces shall be minimum 18 gauge galvanized steel. Hood shall be constructed using standing seam method. Welding shall be Heliarc using same composition filter as base metal. Exposed joints shall be continuously welded, ground and polished to the original finish of the metal. All joints in the hood shall be sealed grease tight. A continuous grease trough shall be provided on the interior perimeter of the hood. The exterior of the canopy shall have stainless or plastic laminated 18 gauge steel panels fastened to a rigid frame. An integral 3-inch air space shall be included to meet NFPA 96 clearance requirements against limited combustible walls. Supply and exhaust collars shall be sized and located as indicated on the drawings.

Filters: Grease filters shall be UL listed, non-clogging, baffle-type, constructed of stainless steel and shall be mounted in stainless steel filter racks, concealed from sight. Filter racks shall be mounted on the back side of hinged access doors. Filters and filter racks shall have the capability to swing down to the operator for inspection and be removable for cleaning without the use of tools.

Grease Trough: All exhaust plenum surfaces and filters shall drain into a full length, sloped grease trough that drains to concealed, recessed, removable grease drawers at each end of hood.

Lights: Vapor proof, 150 watt, incandescent light fixtures shall be provided for every three (3) lineal foot of hood. Fixtures shall be prewired in concealed conduit to a junction box on top of canopy.

Controls: Provide a pre-wired control panel for main power connection, control terminal strip, magnetic motor starters, control transformer and circuit breakers. System shall be manually and heat sensor operated and shall be interlocked with micro switch on fire protection system.

1. Ceiling Exhaust Fans

Provide centrifugal type, direct driven suspended cabinet-type ceiling exhaust fans. Provide fans with acoustically insulated housing. Provide chatter-proof backdraft damper. Provide egg-crate design or louver design integral face grille. Mount fan motors on vibration isolators. Furnish unit with mounting flange for hanging unit from above. Provide U.L. listed fans.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, verify all dimensions in the field, and advise the Contracting Officer of any discrepancy before performing the work.

3.2 INSTALLATION

- a. Install materials and equipment in accordance with the requirements of the contract drawings and approved manufacturer's installation instructions. Accomplish installation by workers skilled in this type of work. Perform installation so that there is no degradation of the designed fire ratings of walls, partitions, ceilings, and floors.
- b. No installation is permitted to block or otherwise impede access to any existing machine or system. Install all hinged doors to swing open a minimum of 120 degrees. Provide an area in front of all access doors that clears a minimum of 3 feet. In front of all access doors to electrical circuits, clear the area the minimum distance to energized circuits as specified in OSHA Standards, part 1910.333.
- c. Except as otherwise indicated, install emergency switches and alarms in conspicuous locations. Mount all indicators, to include gauges, meters, and alarms in order to be easily visible by people in the area.

3.3. Equipment and Installation

Provide frames and supports for tanks, compressors, pumps, valves, air handling units, fans, coils, dampers, and other similar items requiring supports. Floor mount or ceiling hang air handling units as indicated. Anchor and fasten as detailed. Set floor-mounted equipment on not less than 6 inch concrete pads or curbs doweled in place unless otherwise indicated. Make concrete foundations heavy enough to minimize the intensity of the vibrations transmitted to the piping, duct work and the surrounding structure, as recommended in writing by the equipment manufacturer. In lieu of a concrete pad foundation, build a concrete pedestal block with isolators placed between the pedestal block and the floor. Make the concrete foundation or concrete pedestal block a mass not less than three times the weight of the components to be supported. Provide the lines connected to the pump mounted on pedestal blocks with flexible connectors.

3.4 Access Panels

Install access panels for concealed valves, vents, controls, dampers, and items requiring inspection or maintenance of sufficient size, and locate them so that the concealed items are easily serviced and maintained or completely removed and replaced. Provide access panels as specified in Section 05 50 13 MISCELLANEOUS METAL FABRICATIONS.

3.5 Flexible Duct

Install pre-insulated flexible duct in accordance with the latest printed instructions of the manufacturer to ensure a vapor tight joint. Provide hangers, when required to suspend the duct, of the type recommended by the duct manufacturer and set at the intervals recommended.

3.6. Fabric Ductwork

- A. General: provide and install fabric ductwork system per plans. System will be cable suspended with cable, hooks, and turn buckles. Coordinate anchor points with structural/general work. Fabric duct shall be selected for cfm shown on drawings.
- B. Fabric: Fabric shall be filament twill that is UL and FM listed for fire retardant. Ductwork shall have linear holes (sized by factory to throw for even coverage) for air distribution. Ductwork shall be equipped with internal hoops to control "pop" and shall include airflow devices as well internally to minimize movement and noise when fan cycles on. Contractor shall submit color to Architect for selection. Sections shall be zippered to include end cap. Hangers on cable shall be glide type assembly. Fabric shall be similar to Ductsox Verona.

3.7. Metal Ductwork

Install according to SMACNA 1966 unless otherwise indicated. Install duct supports for sheet metal ductwork according to SMACNA 1966, unless otherwise specified. Do not use friction beam clamps indicated in SMACNA 1966. Anchor risers on high velocity ducts in the center of the vertical run to allow ends of riser to move due to thermal expansion. Erect supports on the risers that allow free vertical movement of the duct. Attach supports only to structural framing members and concrete slabs. Do not anchor supports to metal decking unless a means is provided and approved for preventing the anchor from puncturing the metal decking. Where supports are required between structural framing members, provide suitable intermediate metal framing. Where C-clamps are used, provide retainer clips.

3.8 Dust Control

To prevent the accumulation of dust, debris and foreign material during construction, perform temporary dust control protection. Protect the distribution system (supply and return) with temporary seal-offs at all inlets and outlets at the end of each day's work. Keep temporary protection in place until system is ready for startup.

3.9 Insulation

Provide thickness and application of insulation materials for ductwork, piping, and equipment according to Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS. Externally insulate outdoor air intake ducts and plenums [up to the point where the outdoor air reaches the conditioning unit][or][up to the point where the outdoor air mixes with the return air stream].

3.10 Duct Test Holes

Provide holes with closures or threaded holes with plugs in ducts and plenums as indicated or where necessary for the use of pitot tube in balancing the air system. Plug insulated duct at the duct surface, patched over with insulation and then marked to indicate location of test hole if needed for future use.

3.11 EQUIPMENT PADS

Provide equipment pads to the dimensions shown or, if not shown, to conform to the shape of each piece of equipment served with a minimum 3-inch margin around the equipment and supports.

3.12 CUTTING AND PATCHING

Install work in such a manner and at such time that a minimum of cutting and patching of the building structure is required. Make holes in exposed locations, in or through existing floors, by drilling and smooth by sanding. Use of a jackhammer is permitted only where specifically approved. Make holes through masonry walls to accommodate sleeves with an iron pipe masonry core saw.

3.13 CLEANING

Thoroughly clean surfaces of piping and equipment that have become covered with dirt, plaster, or other material during handling and construction before such surfaces are prepared for final finish painting or are enclosed within the building structure. Before final acceptance, clean mechanical equipment, including piping, ducting, and fixtures, and free from dirt, grease, and finger marks.

3.14 PENETRATIONS

Provide sleeves and prepared openings for duct mains, branches, and other penetrating items, and install during the construction of the surface to be penetrated. Cut sleeves flush with each surface. Place sleeves for round duct 15 inches and smaller. Build framed, prepared openings for round duct larger than 15 inches and square, rectangular or oval ducts. Sleeves and framed openings are also required where grilles, registers, and diffusers are installed at the openings. Provide one inch clearance between penetrating and penetrated surfaces except at grilles, registers, and diffusers. Pack spaces between sleeve or opening and duct or duct insulation with mineral fiber conforming with ASTM C553, Type 1, Class B-2.

A. Sleeves

Fabricate sleeves, except as otherwise specified or indicated, from 20 gauge thick mill galvanized sheet metal. Where sleeves are installed in bearing walls or partitions, provide black steel pipe conforming with ASTM A53/A53M, Schedule 20.

B. Framed Prepared Openings

Fabricate framed prepared openings from 20 gauge galvanized steel, unless otherwise indicated.

C. Insulation

Provide duct insulation in accordance with Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS continuous through sleeves and prepared openings except firewall penetrations. Terminate duct insulation at fire dampers and flexible connections. For duct handling air at or below 60 degrees F, provide insulation continuous over the damper collar and retaining angle of fire dampers, which are exposed to unconditioned air.

D. Closure Collars

Provide closure collars of a minimum 4 inches wide, unless otherwise indicated, for exposed ducts and items on each side of penetrated surface, except where equipment is installed. Install collar tight against the surface and fit snugly around the duct or insulation. Grind sharp edges smooth to prevent damage to penetrating surface. Fabricate collars for round ducts 15 inches in diameter or less from 20 gauge galvanized steel. Fabricate collars for square and rectangular ducts, or round ducts with minimum dimension over 15 inches from 18 gauge galvanized steel. Fabricate collars for square and rectangular ducts with a maximum side of 15 inches or less from 20 gauge galvanized steel. Install collars with fasteners a maximum of 6 inches on center. Attach to collars a minimum of 4 fasteners where the opening is 12 inches in diameter or less, and a minimum of 8 fasteners where the opening is 20 inches in diameter or less.

E. Firestopping

Where ducts pass through fire-rated walls, fire partitions, and fire rated chase walls, seal the penetration with fire stopping materials as specified in Section 07 84 00 FIRESTOPPING.

3.15 TESTING, ADJUSTING, AND BALANCING

The requirements for testing, adjusting, and balancing are specified in Section 23 05 93 TESTING, ADJUSTING AND BALANCING FOR HVAC. Begin testing, adjusting, and balancing only when the air supply and distribution, including controls, has been completed, with the exception of performance tests.

3.16 PERFORMANCE TESTS

After testing, adjusting, and balancing is complete as specified, test each system as a whole to see that all items perform as integral parts of the system and temperatures and conditions are evenly controlled throughout the building. Record the testing during the applicable season. Make corrections and adjustments as necessary to produce the conditions indicated or specified. Conduct capacity tests and general operating tests by an experienced engineer. Provide tests that cover a period of not less than 2 days for each system and demonstrate that the entire system is functioning according to the specifications. Make coincidental chart recordings at points indicated on the drawings for the duration of the time period and record the temperature at space thermostats or space sensors, the humidity at space humidistats or space sensors and the ambient temperature and humidity in a shaded and weather protected area.

Submit test reports for the ductwork leak test, and performance tests in booklet form, upon completion of testing. Document phases of tests performed including initial test summary, repairs/adjustments made, and final test results in the reports.

3.17 CLEANING AND ADJUSTING

Inside of air handlers, thoroughly clean ducts, plenums, and casing of debris and blow free of small particles of rubbish and dust and then vacuum clean before installing outlet faces. Wipe equipment clean, with no traces of oil, dust, dirt, or paint spots. Provide temporary filters prior to startup of all fans that are operated during construction, and install new filters after all construction dirt has been removed from the building, and the ducts, plenums,

casings, and other items specified have been vacuum cleaned. Maintain system in this clean condition until final acceptance. Properly lubricate bearings with oil or grease as recommended by the manufacturer. Tighten belts to proper tension. Adjust control valves and other miscellaneous equipment requiring adjustment to setting indicated or directed. Adjust fans to the speed indicated by the manufacturer to meet specified conditions. Maintain all equipment installed under the contract until close out documentation is received, the project is completed and the building has been documented as beneficially occupied.

3.18 OPERATION AND MAINTENANCE

A. Operation and Maintenance Manuals

Submit six manuals at least 2 weeks prior to field training. Submit data complying with the requirements specified in Section 01 78 23 OPERATION AND MAINTENANCE DATA. Submit Data Package 3 for the items/units listed under SD-10 Operation and Maintenance Data

B. Operation And Maintenance Training

Conduct a training course for the members of the operating staff as designated by the Contracting Officer. Make the training period consist of a total of 4 hours of normal working time and start it after all work specified herein is functionally completed and the Performance Tests have been approved. Conduct field instruction that covers all of the items contained in the Operation and Maintenance Manuals as well as demonstrations of routine maintenance operations. Submit the proposed On-site Training schedule concurrently with the Operation and Maintenance Manuals and at least 14 days prior to conducting the training course.

-- End of Section --

SECTION 23 03 00
BASIC MECHANICAL MATERIALS AND METHODS

PART 1 GENERAL

1.1 RELATED REQUIREMENTS

This section applies to all sections of Divisions: 21, FIRE SUPPRESSION; 22, PLUMBING; and 23, HEATING, VENTILATING, AND AIR CONDITIONING of this project specification, unless specified otherwise in the individual section.

1.3 QUALITY ASSURANCE

A. Material and Equipment Qualifications

Provide materials and equipment that are standard products of manufacturers regularly engaged in the manufacture of such products, which are of a similar material, design and workmanship. Standard products must have been in satisfactory commercial or industrial use for 2 years prior to bid opening. The 2-year use must include applications of equipment and materials under similar circumstances and of similar size. The product must have been for sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2 year period.

B. Alternative Qualifications

Products having less than a two-year field service record will be acceptable if a certified record of satisfactory field operation for not less than 6000 hours, exclusive of the manufacturer's factory or laboratory tests, can be shown.

C. Service Support

The equipment items must be supported by service organizations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. These service organizations must be reasonably convenient to the equipment installation and able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.

D. Manufacturer's Nameplate

For each item of equipment, provide a nameplate bearing the manufacturer's name, address, model number, and serial number securely affixed in a conspicuous place; the nameplate of the distributing agent will not be acceptable.

E. Modification of References

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "must" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction", or words of similar meaning, to mean the Contracting Officer.

F. Definitions

For the International Code Council (ICC) Codes referenced in the contract documents, advisory provisions must be considered mandatory, the word "should" is interpreted as "must." Reference to the "code official" must be interpreted to mean the "Contracting Officer." For Navy owned property, references to the "owner" must be interpreted to mean the "Contracting Officer." For leased facilities, references to the "owner" must be interpreted to mean the "lessor." References to the "permit holder" must be interpreted to mean the "Contractor."

G. Administrative Interpretations

For ICC Codes referenced in the contract documents, the provisions of Chapter 1, "Administrator," do not apply. These administrative requirements are covered by the applicable Federal Acquisition Regulations (FAR) included in this contract and by the authority granted to the Officer in Charge of Construction to administer the construction of this project. References in the ICC Codes to sections of Chapter 1, must be applied appropriately by the Contracting Officer as authorized by his administrative cognizance and the FAR.

1.4 DELIVERY, STORAGE, AND HANDLING

Handle, store, and protect equipment and materials to prevent damage before and during installation in accordance with the manufacturer's recommendations, and as approved by the Contracting Officer. Replace damaged or defective items.

1.5 ELECTRICAL REQUIREMENTS

Furnish motors, controllers, disconnects and contactors with their respective pieces of equipment. Motors, controllers, disconnects and contactors must conform to and have electrical connections provided under Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Furnish internal wiring for components of packaged equipment as an integral part of the equipment. Extended voltage range motors will not be permitted. Controllers and contactors shall have a maximum of 120 volt control circuits, and must have auxiliary contacts for use with the controls furnished. When motors and equipment furnished are larger than sizes indicated, the cost of additional electrical service and related work must be included under the section that specified that motor or equipment. Power wiring and conduit for field installed equipment must be provided under and conform to the requirements of Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM.

1.6 ELECTRICAL INSTALLATION REQUIREMENTS

Electrical installations must conform to IEEE C2, NFPA 70, and requirements specified herein.

A. New Work

Provide electrical components of mechanical equipment, such as motors, motor starters, control or push-button stations, float or pressure switches, solenoid valves, integral disconnects, and other devices functioning to control mechanical equipment, as well as control wiring and conduit for circuits rated 100 volts or less, to conform with the requirements

of the section covering the mechanical equipment. Extended voltage range motors are not to be permitted. The interconnecting power wiring and conduit, control wiring rated 120 volts (nominal) and conduit, [the motor control equipment forming a part of motor control centers,] and the electrical power circuits must be provided under Division 26, except internal wiring for components of package equipment must be provided as an integral part of the equipment. When motors and equipment furnished are larger than sizes indicated, provide any required changes to the electrical service as may be necessary and related work as a part of the work for the section specifying that motor or equipment.

B. Modifications to Existing Systems

Where existing mechanical systems and motor-operated equipment require modifications, provide electrical components under Division 26.

C. High Efficiency Motors

D. High Efficiency Single-Phase Motors

Unless otherwise specified, single-phase fractional-horsepower alternating-current motors must be high efficiency types corresponding to the applications listed in NEMA MG 11.

E. High Efficiency Polyphase Motors

Unless otherwise specified, polyphase motors must be selected based on high efficiency characteristics relative to the applications as listed in NEMA MG 10. Additionally, polyphase squirrel-cage medium induction motors with continuous ratings must meet or exceed energy efficient ratings in accordance with Table 12-6C of NEMA MG 1.

F. Three-Phase Motor Protection

Provide controllers for motors rated one 1 horsepower and larger with electronic phase-voltage monitors designed to protect motors from phase-loss, undervoltage, and overvoltage. Provide protection for motors from immediate restart by a time adjustable restart relay.

1.5 ACCESSIBILITY

Install all work so that parts requiring periodic inspection, operation, maintenance, and repair are readily accessible. Install concealed valves, expansion joints, controls, dampers, and equipment requiring access, in locations freely accessible through access doors.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 PAINTING OF NEW EQUIPMENT

New equipment painting must be factory applied or shop applied, and must be as specified herein, and provided under each individual section.

A. Factory Painting Systems

Manufacturer's standard factory painting systems may be provided subject to certification that the factory painting system applied will withstand 125 hours in a salt-spray fog test, except that equipment located outdoors must withstand 500 hours in a salt-spray fog test. Salt-spray fog test must be in accordance with ASTM B117, and for that test the acceptance criteria must be as follows: immediately after completion of the test, the paint must show no signs of blistering, wrinkling, or cracking, and no loss of adhesion; and the specimen must show no signs of rust creepage beyond 0.125 inch on either side of the scratch mark.

The film thickness of the factory painting system applied on the equipment must not be less than the film thickness used on the test specimen. If manufacturer's standard factory painting system is being proposed for use on surfaces subject to temperatures above 120 degrees F, the factory painting system must be designed for the temperature service.

B. Shop Painting Systems for Metal Surfaces

Clean, pretreat, prime and paint metal surfaces; except aluminum surfaces need not be painted. Apply coatings to clean dry surfaces. Clean the surfaces to remove dust, dirt, rust, oil and grease by wire brushing and solvent degreasing prior to application of paint, except metal surfaces subject to temperatures in excess of 120 degrees F must be cleaned to bare metal.

Where more than one coat of paint is specified, apply the second coat after the preceding coat is thoroughly dry. Lightly sand damaged painting and retouch before applying the succeeding coat. Color of finish coat must be aluminum or light gray.

-- End of Section --

SECTION 23 05 93
TESTING, ADJUSTING, AND BALANCING FOR HVAC

PART 1 GENERAL

1.1 DEFINITIONS

- a. AABC: Associated Air Balance Council
- b. COTR: Contracting Officer's Technical Representative
- c. DALT: Duct air leakage test
- d. DALT'd: Duct air leakage tested
- e. HVAC: Heating, ventilating, and air conditioning; or heating, ventilating, and cooling
- f. NEBB: National Environmental Balancing Bureau
- g. Out-of-tolerance data: Pertains only to field acceptance testing of Final DALT or TAB report. When applied to DALT work, this phase means "a leakage rate measured during DALT field acceptance testing which exceeds the leakage rate allowed by SMACNA Leak Test Manual for an indicated duct construction and sealant class." "a leakage rate measured during DALT field acceptance testing which exceeds the leakage rate allowed by Appendix D REQUIREMENTS FOR DUCT AIR LEAK TESTING." When applied to TAB work this phase means "a measurement taken during TAB field acceptance testing which does not fall within the range of plus 5 to minus 5 percent of the original measurement reported on the TAB Report for a specific parameter."
- h. Season of maximum heating load: The time of year when the outdoor temperature at the project site remains within plus or minus 30 degrees Fahrenheit of the project site's winter outdoor design temperature, throughout the period of TAB data recording.
- i. Season of maximum cooling load: The time of year when the outdoor temperature at the project site remains within plus or minus 5 degrees Fahrenheit of the project site's summer outdoor design temperature, throughout the period of TAB data recording.
- j. Sound measurements terminology: Defined in AABC MN-1, NEBB MASV, or SMACNA 1858 (TABB).
- l. TAB: Testing, adjusting, and balancing (of HVAC systems)
- m. TAB'd: HVAC Testing/Adjusting/Balancing procedures performed
- n. TAB Agency: TAB Firm
- o. TAB team field leader: TAB team field leader

p. TAB team supervisor: TAB team engineer

q. TAB team technicians: TAB team assistants

1.1.1 Similar Terms

In some instances, terminology differs between the Contract and the TAB Standard primarily because the intent of this Section is to use the industry standards specified, along with additional requirements listed herein to produce optimal results.

The following table of similar terms is provided for clarification only. Contract requirements take precedent over the corresponding AABC, NEBB, or TABB requirements where differences exist.

SIMILAR TERMS			
Contract Term	AABC Term	NEBB Term	TABB Term
TAB Standard	National Standards for Testing and Balancing Heating, Ventilating, and Air Conditioning Systems	Procedural Standards for Testing, Adjusting and Balancing of Environmental Systems	International Standards for Environmental Systems Balance
TAB Specialist	TAB Engineer	TAB Supervisor	TAB Supervisor
Systems Readiness Check	Construction Phase Inspection	Field Readiness Check & Preliminary Field Procedures	Field Readiness Check & Prelim. Field Procedures

1.2 WORK DESCRIPTION

The work includes duct air leakage testing (DALT) and testing, adjusting, and balancing (TAB) of new heating, ventilating, and cooling (HVAC) air and water.

Perform TAB in accordance with the requirements of the TAB procedural standard recommended by the TAB trade association that approved the TAB Firm's qualifications. Comply with requirements of AABC MN-1, NEBB PROCEDURAL STANDARDS, or SMACNA 1780 (TABB) as supplemented and modified by this specification section. All recommendations and suggested practices contained in the TAB procedural standards are considered mandatory.

Conduct DALT and TAB of the indicated existing systems and equipment and submit the specified DALT and TAB reports for approval. Conduct DALT testing in compliance with the requirements specified in SMACNA 1972 CD, except as supplemented and modified by this section. Conduct DALT and TAB work in accordance with the requirements of this section.

A. Air Distribution Systems

Test, adjust, and balance system[s] (TAB) in compliance with this section. Obtain Contracting Officer's written approval before applying insulation to exterior of air distribution systems as specified under Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

B. Water Distribution Systems

TAB system[s] in compliance with this section. Obtain Contracting Officer's written approval before applying insulation to water distribution systems as specified under Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS. At Contractor's option and with Contracting Officer's written approval, the piping systems may be insulated before systems are TAB'd.

Terminate piping insulation immediately adjacent to each flow control valve, automatic control valve, or device. Seal the ends of pipe insulation and the space between ends of pipe insulation and piping, with waterproof vapor barrier coating.

After completion of work under this section, insulate the flow control valves and devices as specified under Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

C. TAB SCHEMATIC DRAWINGS

Show the following information on TAB Schematic Drawings:

1. A unique number or mark for each piece of equipment or terminal.
2. Air quantities at air terminals.
3. Air quantities and temperatures in air handling unit schedules.
4. Water quantities and temperatures in thermal energy transfer equipment schedules.
5. Water quantities and heads in pump schedules.
6. Water flow measurement fittings and balancing fittings.
7. Ductwork Construction and Leakage Testing Table that defines the DALT test requirements, including each applicable HVAC duct system ID or mark, duct pressure class, duct seal class, and duct leakage test pressure.

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Independent TAB Agency and Personnel Qualifications

TAB Design Review Report

Test Reports

TAB Report

Certificates

Independent TAB Agency and Personnel Qualifications

Instrument Calibration Certificates

TAB Firm

1.4 QUALITY ASSURANCE

1.4.1 Independent TAB Agency and Personnel Qualifications

To secure approval for the proposed agency, submit information certifying that the TAB agency is a first tier subcontractor who is not affiliated with any other company participating in work on this contract, including design, furnishing equipment, or construction. Further, submit the following, for the agency, to Contracting Officer for approval:

a. Independent AABC or NEBB or TABB TAB agency:

TAB agency: AABC registration number and expiration date of current certification; or NEBB certification number and expiration date of current certification; or TABB certification number and expiration date of current certification.

TAB team supervisor: Name and copy of AABC or NEBB or TABB TAB supervisor certificate and expiration date of current certification.

TAB team field leader: Name and documented evidence that the team field leader has satisfactorily performed full-time supervision of TAB work in the field for not less than 3 years immediately preceding this contract's bid opening date.

TAB team field technicians: Names and documented evidence that each field technician has satisfactorily assisted a TAB team field leader in performance of TAB work in the field for not less than one year immediately preceding this contract's bid opening date.

Current certificates: Registrations and certifications are current, and valid for the duration of this contract. Renew Certifications which expire prior to completion of the TAB work, in a timely manner so that there is no lapse in registration or certification. TAB agency or TAB team personnel without a current registration or current certification are not to perform TAB work on this contract.

- b. TAB Team Members: TAB team approved to accomplish work on this contract are full-time employees of the TAB agency. No other personnel is allowed to do TAB work on this contract.
- c. Replacement of TAB team members: Replacement of members may occur if each new member complies with the applicable personnel qualifications and each is approved by the Contracting Officer.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 TAB PROCEDURES

A. TAB Field Work

Test, adjust, and balance the HVAC systems until measured flow rates (air and water flow) are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents.

That is, comply with the the requirements of AABC MN-1 and AABC MN-4, NEBB PROCEDURAL STANDARDS, NEBB MASV, or SMACNA 1780 (TABB) and SMACNA 1858 (TABB), except as supplemented and modified by this section.

Provide instruments and consumables required to accomplish the TAB work. Calibrate and maintain instruments in accordance with manufacturer's written procedures.

Test, adjust, and balance the HVAC systems until measured flow rates (air and water flow) are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents. Conduct TAB work, including measurement accuracy, and sound measurement work in conformance with the AABC MN-1 and AABC MN-4, or NEBB TABES and NEBB MASV, or SMACNA 1780 (used by TABB) and SMACNA 1858 sound measurement procedures, except as supplemented and modified by this section.[The only water flow and air flow reporting which can be deferred until the Season 2 is that data which would be affected in terms of accuracy due to outside ambient conditions.]

B. Preliminary Procedures

Use the approved pre-field engineering report as instructions and procedures for accomplishing TAB field work. TAB engineer is to locate, in the field, test ports required for testing. It is the responsibility of the sheet metal contractor to provide and install test ports as required by the TAB engineer.

3.2 TAB Air Distribution Systems

A. Units With Coils

Report heating and cooling performance capacity tests for hot water, chilled water, DX and steam coils for the purpose of verifying that the coils meet the indicated design capacity. Submit the following data and calculations with the coil test reports:

- a. For units with capacities of 7.5 tons (90,000 Btu) or less, such as fan coil units, duct mounted reheat coils associated with VAV terminal units, and unitary units, such as through-the-wall heat pumps:

Determine the apparent coil capacity by calculations using single point measurement of entering and leaving wet and dry bulb temperatures; submit the calculations with the coil reports.

B. Makeup Air Units

Makeup air unit systems including fans, coils, ducts, plenums, registers, diffusers, grilles, and louvers for supply air, return air, outside air, and mixed air.

C. Exhaust Fans

Exhaust fan systems including fans, ducts, plenums, grilles, and hoods for exhaust air.

3.3 TAB Work on Performance Tests With Seasonal Limitations

A. Performance Tests

Accomplish proportional balancing TAB work on the air distribution systems and water distribution systems, in other words, accomplish adjusting and balancing of the air flows and water flows, any time during the duration of this contract, subject to the limitations specified elsewhere in this section. However, accomplish, within the following seasonal limitations, TAB work on HVAC systems which directly transfer thermal energy. accomplish proportionate balancing TAB work on the air distribution systems and water distribution systems, in other words, accomplish adjusting and balancing of the air flows and water flows, any time during the duration of this contract, subject to the limitations specified elsewhere in this section. However, accomplish, within the following seasonal limitations, TAB work on HVAC systems which directly transfer thermal energy.

B. Ambient Temperatures

On each tab report form used for recording data, record the outdoor and indoor ambient dry bulb temperature range and the outdoor and indoor ambient wet bulb temperature range within which the report form's data was recorded. Record these temperatures at beginning and at the end of data taking.

3.4. Workmanship

Conduct TAB work on the HVAC systems until measured flow rates are within plus or minus 5 percent of the design flow rates as specified or indicated on the contract documents. This TAB work includes adjustment of balancing valves, balancing dampers, and sheaves.

Further, this TAB work includes changing out fan sheaves and pump impellers if required to

obtain air and water flow rates specified or indicated. If, with these adjustments and equipment changes, the specified or indicated design flow rates cannot be attained, contact the Contracting Officer for direction.

3.5. Deficiencies

Strive to meet the intent of this section to maximize the performance of the equipment as designed and installed. However, if deficiencies in equipment design or installation prevent TAB work from being accomplished within the range of design values specified in the paragraph WORKMANSHIP, provide written notice as soon as possible to the Contractor and the engineer describing the deficiency and recommended correction.

Responsibility for correction of installation deficiencies is the Contractor's. If a deficiency is in equipment design, call the TAB team supervisor for technical assistance. Responsibility for reporting design deficiencies to Contractor is the TAB team supervisor's.

-- End of Section --

SECTION 23 07 00
THERMAL INSULATION FOR MECHANICAL SYSTEMS

PART 1 GENERAL**1.1 SYSTEM DESCRIPTION****1.1.1 General**

Provide field-applied insulation and accessories on mechanical systems as specified herein; factory-applied insulation is specified under the piping, duct or equipment to be insulated.

1.1.2 Recycled Materials

Provide thermal insulation containing recycled materials to the extent practicable, provided that the materials meet all other requirements of this section. The minimum recycled material content of the following insulation are:

Rock Wool	75 percent slag of weight
Fiberglass	20-25 percent glass cullet by weight
Rigid Foam	9 percent recovered material

1.2 SUBMITTALS

Product Data

Pipe Insulation Systems
Duct Insulation Systems
Equipment Insulation Systems

1.3 QUALITY ASSURANCE**1.3.1 Installer Qualification**

Qualified installers shall have successfully completed three or more similar type jobs within the last 5 years.

1.4 DELIVERY, STORAGE, AND HANDLING

Materials shall be delivered in the manufacturer's unopened containers. Materials delivered and placed in storage shall be provided with protection from weather, humidity, dirt, dust and other contaminants. The Contracting Officer may reject insulation material and supplies that become dirty, dusty, wet, or contaminated by some other means. Packages or standard containers of insulation, jacket material, cements, adhesives, and coatings delivered for use, and samples required for approval shall have manufacturer's stamp or label attached giving

the name of the manufacturer and brand, and a description of the material, date codes, and approximate shelf life (if applicable). Insulation packages and containers shall be asbestos free.

PART 2 PRODUCTS

2.1 PRODUCT SUSTAINABILITY CRITERIA

For products in this section, where applicable and to extent allowed by performance criteria, provide and document the following:

2.2 STANDARD PRODUCTS

Provide materials which are the standard products of manufacturers regularly engaged in the manufacture of such products and that essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening. Submit a complete list of materials, including manufacturer's descriptive technical literature, performance data, catalog cuts, and installation instructions. The product number, k-value, thickness and furnished accessories including adhesives, sealants and jackets for each mechanical system requiring insulation shall be included. The product data must be copyrighted, have an identifying or publication number, and shall have been published prior to the issuance date of this solicitation.

2.2.1 Insulation System

Provide insulation systems in accordance with the approved MICA National Insulation Standards plates as supplemented by this specification. Provide field-applied insulation for heating, ventilating, and cooling (HVAC) air distribution systems and piping systems that are located within, on, under, and adjacent to buildings; and for plumbing systems. Provide CFC and HCFC free insulation.

2.2.2 Surface Burning Characteristics

Unless otherwise specified, insulation must have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Flame spread, and smoke developed indexes, shall be determined by ASTM E84 or UL 723. Test insulation in the same density and installed thickness as the material to be used in the actual construction. Prepare and mount test specimens according to ASTM E2231.

2.3 MATERIALS

Provide insulation that meets or exceeds the requirements of ASHRAE 90.2. Insulation exterior shall be cleanable, grease resistant, non-flaking and non-peeling. Materials shall be compatible and shall not contribute to corrosion, soften, or otherwise attack surfaces to which applied in either wet or dry state. Materials to be used on stainless steel surfaces shall meet ASTM C795 requirements. Calcium silicate shall not be used on chilled or cold water systems. Materials shall be asbestos free. Provide product recognized under UL 94 (if containing plastic) and listed in FM APP GUIDE.

2.3.1 Adhesives

2.3.1.1 Acoustical Lining Insulation Adhesive

Adhesive shall be a nonflammable, fire-resistant adhesive conforming to ASTM C916, Type I.

2.3.1.2 Mineral Fiber Insulation Cement

Cement shall be in accordance with ASTM C195.

2.3.1.3 Lagging Adhesive

Lagging is the material used for thermal insulation, especially around a cylindrical object. This may include the insulation as well as the cloth/material covering the insulation. To resist mold/mildew, lagging adhesive shall meet ASTM D5590 with 0 growth rating. Lagging adhesives shall be nonflammable and fire-resistant and shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Adhesive shall be MIL-A-3316, Class 1, pigmented white and be suitable for bonding fibrous glass cloth to faced and unfaced fibrous glass insulation board; for bonding cotton brattice cloth to faced and unfaced fibrous glass insulation board; for sealing edges of and bonding glass tape to joints of fibrous glass board; for bonding lagging cloth to thermal insulation; or Class 2 for attaching fibrous glass insulation to metal surfaces. Lagging adhesives shall be applied in strict accordance with the manufacturer's recommendations for pipe and duct insulation.

2.3.1.4 Contact Adhesive

Adhesives may be any of, but not limited to, the neoprene based, rubber based, or elastomeric type that have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. The adhesive shall not adversely affect, initially or in service, the insulation to which it is applied, nor shall it cause any corrosive effect on metal to which it is applied. Any solvent dispersing medium or volatile component of the adhesive shall have no objectionable odor and shall not contain any benzene or carbon tetrachloride. The dried adhesive shall not emit nauseous, irritating, or toxic volatile matters or aerosols when the adhesive is heated to any temperature up to 212 degrees F. The dried adhesive shall be nonflammable and fire resistant. Flexible Elastomeric Adhesive: Comply with MIL-A-24179, Type II, Class I. Provide product listed in FM APP GUIDE.

2.3.2 Caulking

ASTM C920, Type S, Grade NS, Class 25, Use A.

2.3.3 Corner Angles

Nominal 0.016 inch aluminum 1 by 1 inch with factory applied kraft backing. Aluminum shall be ASTM B209, Alloy 3003, 3105, or 5005.

2.3.4 Fittings

Fabricated Fittings are the prefabricated fittings for flexible elastomeric pipe insulation systems in accordance with ASTM C1710. Together with the flexible elastomeric tubes, they provide complete system integrity for retarding heat gain and controlling condensation drip from chilled-water and refrigeration systems. Flexible elastomeric, fabricated fittings provide thermal protection (0.25 k) and condensation resistance (0.05 Water Vapor Transmission factor). For satisfactory performance, properly installed protective vapor retarder/barriers and vapor stops shall be used on high relative humidity and below ambient temperature applications to reduce movement of moisture through or around the insulation to the colder interior surface.

2.3.5 Finishing Cement

ASTM C450: Mineral fiber hydraulic-setting thermal insulating and finishing cement. All cements that may come in contact with Austenitic stainless steel must comply with ASTM C795.

2.3.6 Fibrous Glass Cloth and Glass Tape

Fibrous glass cloth, with 20X20 maximum mesh size, and glass tape shall have maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Tape shall be 4 inch wide rolls. Class 3 tape shall be 4.5 ounces/square yard. Elastomeric Foam Tape: Black vapor-retarder foam tape with acrylic adhesive containing an anti-microbial additive.

2.3.7 Staples

Outward clinching type ASTM A167, Type 304 or 316 stainless steel.

2.3.8 Jackets

2.3.8.1 Aluminum Jackets

Aluminum jackets shall be corrugated, embossed or smooth sheet, 0.016 inch nominal thickness; ASTM B209, Temper H14, Temper H16, Alloy 3003, 5005, or 3105. Corrugated aluminum jacket shall not be used outdoors. Aluminum jacket securing bands shall be Type 304 stainless steel, 0.015 inch thick, 1/2 inch wide for pipe under 12 inch diameter and 3/4 inch wide for pipe over 12 inch and larger diameter. Aluminum jacket circumferential seam bands shall be 2 by 0.016 inch aluminum matching jacket material. Bands for insulation below ground shall be 3/4 by 0.020 inch thick stainless steel, or fiberglass reinforced tape. The jacket may, at the option of the Contractor, be provided with a factory fabricated Pittsburgh or "Z" type longitudinal joint. When the "Z" joint is used, the bands at the circumferential joints shall be designed by the manufacturer to seal the joints and hold the jacket in place.

2.3.8.2 Polyvinyl Chloride (PVC) Jackets

Polyvinyl chloride (PVC) jacket and fitting covers shall have high impact strength, ultraviolet (UV) resistant rating or treatment and moderate chemical resistance with minimum thickness 0.030 inch.

2.3.8.3 Vapor Barrier/Weatherproofing Jacket

Vapor barrier/weatherproofing jacket shall be laminated self-adhesive, greater than 3 plies standard grade, silver, white, black and embossed or greater than 8 ply (minimum 2.9 mils adhesive); with 0.0000 permeability when tested in accordance with ASTM E96/E96M, using the water transmission rate test method; heavy duty, white or natural; and UV resistant. Flexible Elastomeric exterior foam with factory applied, UV Jacket made with a cold weather acrylic adhesive. Construction of laminate designed to provide UV resistance, high puncture, tear resistance and excellent Water Vapor Transmission (WVT) rate.

2.3.8.4 Vapor Barrier/Vapor Retarder

Apply the following criteria to determine which system is required.

- a. On ducts, piping and equipment operating below 100 degrees F or located outside shall be equipped with a vapor barrier.
- b. Ducts, pipes and equipment that are located inside and that always operate above 0 degrees F shall be installed with a vapor retarder where required as stated in paragraph VAPOR RETARDER REQUIRED.

2.3.9 Vapor Retarder Required

ASTM C921, Type I, minimum puncture resistance 50 Beach units on all surfaces except concealed ductwork, where a minimum puncture resistance of 25 Beach units is acceptable. Minimum tensile strength, 35 pounds/inch width. ASTM C921, Type II, minimum puncture resistance 25 Beach units, tensile strength minimum 20 pounds/inch width. Jackets used on insulation exposed in finished areas shall have white finish suitable for painting without sizing. Based on the application, insulation materials that require manufacturer or fabricator applied pipe insulation jackets are cellular glass, when all joints are sealed with a vapor barrier mastic, and mineral fiber. All non-metallic jackets shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Flexible elastomerics require (in addition to vapor barrier skin) vapor retarder jacketing for high relative humidity and below ambient temperature applications.

2.3.9.1 White Vapor Retarder All Service Jacket (ASJ)

ASJ is for use on hot/cold pipes, ducts, or equipment indoors or outdoors if covered by a suitable protective jacket. The product shall meet all physical property and performance requirements of ASTM C1136, Type I, except the burst strength shall be a minimum of 85 psi. ASTM D2863 Limited Oxygen Index (LOI) shall be a minimum of 31.

In addition, neither the outer exposed surface nor the inner-most surface contacting the insulation shall be paper or other moisture-sensitive material. The outer exposed surface shall be white and have an emittance of not less than 0.80. The outer exposed surface shall be paintable.

2.3.9.2 Vapor Retarder/Vapor Barrier Mastic Coatings

2.3.9.2.1 Vapor Barrier

The vapor barrier shall be self adhesive (minimum 2 mils adhesive, 3 mils embossed) greater than 3 plies standard grade, silver, white, black and embossed white jacket for use on hot/cold pipes. Permeability shall be less than 0.02 when tested in accordance with ASTM E96/E96M. Products shall meet UL 723 or ASTM E84 flame and smoke requirements and shall be UV resistant.

2.3.9.2.2 Vapor Retarder

The vapor retarder coating shall be fire and water resistant and appropriately selected for either outdoor or indoor service. Color shall be white. The water vapor permeance of the compound shall be 0.013 perms or less at 43 mils dry film thickness as determined according to procedure B of ASTM E96/E96M utilizing apparatus described in ASTM E96/E96M. The coating shall be nonflammable, fire resistant type. To resist mold/mildew, coating shall meet ASTM D5590 with 0 growth rating. Coating shall meet MIL-PRF-19565 Type II (if selected for indoor service) and be Qualified Products Database listed. All other application and service properties shall be in accordance with ASTM C647.

2.3.9.3 Laminated Film Vapor Retarder

ASTM C1136, Type I, maximum moisture vapor transmission 0.02 perms, minimum puncture resistance 50 Beach units on all surfaces except concealed ductwork; where Type II, maximum moisture vapor transmission 0.02 perms, a minimum puncture resistance of 25 Beach units is acceptable. Vapor retarder shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84. Flexible Elastomeric exterior foam with factory applied UV Jacket. Construction of laminate designed to provide UV resistance, high puncture, tear resistance and an excellent WVT rate.

2.3.9.4 Polyvinylidene Chloride (PVDC) Film Vapor Retarder

The PVDC film vapor retarder shall have a maximum moisture vapor transmission of 0.02 perms, minimum puncture resistance of 150 Beach units, a minimum tensile strength in any direction of 30 lb/inch when tested in accordance with ASTM D882, and a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.3.9.5 Polyvinylidene Chloride Vapor Retarder Adhesive Tape

Requirements must meet the same as specified for Laminated Film Vapor Retarder above.

2.3.9.6 Vapor Barrier/Weather Barrier

The vapor barrier shall be greater than 3 ply self adhesive laminate -white vapor barrier jacket- superior performance (less than 0.0000 permeability when tested in accordance with ASTM E96/E96M). Vapor barrier shall meet UL 723 or ASTM E84 25 flame and 50 smoke requirements; and UV resistant. Minimum burst strength 185 psi in accordance with TAPPI T403 OM. Tensile strength 68 lb/inch width (PSTC-1000). Tape shall be as specified for laminated film vapor barrier above.

2.3.10 Vapor Retarder Not Required

ASTM C921, Type II, Class D, minimum puncture resistance 50 Beach units on all surfaces except ductwork, where Type IV, maximum moisture vapor transmission 0.10, a minimum puncture resistance of 25 Beach units is acceptable. Jacket shall have a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.3.11 Wire

Soft annealed ASTM A580/A580M Type 302, 304 or 316 stainless steel, 16 or 18 gauge.

2.3.12 Insulation Bands

Insulation bands shall be 1/2 inch wide; 26 gauge stainless steel.

2.3.13 Sealants

Sealants shall be chosen from the butyl polymer type, the styrene-butadiene rubber type, or the butyl type of sealants. Sealants shall have a maximum permeance of 0.02 perms based on Procedure B for ASTM E96/E96M, and a maximum flame spread index of 25 and a maximum smoke developed index of 50 when tested in accordance with ASTM E84.

2.4 PIPE INSULATION SYSTEMS

Conform insulation materials to Table 1 and minimum insulation thickness as listed in Table 2 and meet or exceed the requirements of ASHRAE 90.2. Comply with EPA requirements for material with recycled content in accordance with Section 01 33 29 SUSTAINABILITY REPORTING, paragraph RECYCLED CONTENT. Limit pipe insulation materials to those listed herein and meeting the following requirements:

2.4.1 Aboveground Cold Pipeline (-30 to 60 deg. F)

Insulation for outdoor, indoor, exposed or concealed applications, shall be as follows:

2.4.1.1 Flexible Elastomeric Cellular Insulation

Closed-cell, foam- or expanded-rubber materials containing anti-microbial additive, complying with ASTM C534/C534M, Grade 1, Type I or II. Type I, Grade 1 for tubular materials. Type II, Grade 1, for sheet materials. Type I and II shall have vapor retarder/vapor barrier skin on one or both sides of the insulation, and require an additional exterior vapor retarder covering for high relative humidity and below ambient temperature applications.

2.4.1.2 Mineral Fiber Insulation with Integral Wicking Material (MFIWM)

ASTM C547. Install in accordance with manufacturer's instructions. Do not use in applications exposed to outdoor ambient conditions in climatic zones 1 through 4.

2.4.2 Aboveground Hot Pipeline (Above 60 deg. F)

Insulation for outdoor, indoor, exposed or concealed applications shall meet the following requirements. Supply the insulation with manufacturer's recommended factory-applied jacket/vapor barrier.

2.4.2.1 Mineral Fiber

ASTM C547, Types I, II or III, supply the insulation with manufacturer's recommended factory-applied jacket.

2.4.2.2 Flexible Elastomeric Cellular Insulation

Closed-cell, foam- or expanded-rubber materials containing anti-microbial additive, complying with ASTM C534/C534M, Grade 1, Type I or II to 220 degrees F service. Type I for tubular materials. Type II for sheet materials.

2.4.2.3 Phenolic Insulation

ASTM C1126 Type III to 250 degrees F service shall comply with ASTM C795. Supply the insulation with manufacturer's recommended factory-applied jacket/vapor barrier.

2.5 DUCT INSULATION SYSTEMS

2.5.1 Factory Applied Insulation

Provide factory-applied ASTM C534/C534M Grade 1, Type II, flexible elastomeric closed cell insulation according to manufacturer's recommendations for insulation with insulation manufacturer's standard reinforced fire-retardant vapor barrier, with identification of installed thermal resistance (R) value and out-of-package R value].

2.5.1.1 Rigid Insulation

Calculate the minimum thickness in accordance with ASHRAE 90.2.

2.5.1.2 Blanket Insulation

Calculate minimum thickness in accordance with ASHRAE 90.2.

2.5.2 Duct Insulation Jackets

2.5.2.1 All-Purpose Jacket

Provide insulation with insulation manufacturer's standard reinforced fire-retardant jacket with or without integral vapor barrier as required by the service. In exposed locations, provide jacket with a white surface suitable for field painting.

2.5.2.2 Metal Jackets

2.5.2.2.1 Aluminum Jackets

ASTM B209, Temper H14, minimum thickness of 27 gauge (0.016 inch), with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide smooth surface jackets for jacket outside dimension 8 inches and larger. Provide corrugated surface jackets for jacket outside dimension 8 inches and larger. Provide stainless steel bands, minimum width of 1/2 inch.

2.5.2.2.2 Stainless Steel Jackets

ASTM A167 or ASTM A240/A240M; Type 304, minimum thickness of 33 gauge (0.010 inch), smooth surface with factory-applied polyethylene and kraft paper moisture barrier on inside surface. Provide stainless steel bands, minimum width of 1/2 inch.

2.5.2.3 Vapor Barrier/Weatherproofing Jacket

Vapor barrier/weatherproofing jacket shall be laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) less than 0.0000 permeability, (greater than 3 ply, standard grade, silver, white, black and embossed or greater than 8 ply (minimum 2.9 mils adhesive), heavy duty white or natural).

2.5.3 Weatherproof Duct Insulation

Provide ASTM C534/C534M Grade 1, Type II, flexible elastomeric cellular insulation, and weatherproofing as specified in manufacturer's instruction. Multi-ply, Polymeric Blend Laminate Jacketing: Construction of laminate designed to provide UV resistance, high puncture, tear resistance and an excellent WVT rate.

2.6 EQUIPMENT INSULATION SYSTEMS

Insulate equipment and accessories as specified in Tables 5 and 6. In outside locations, provide insulation 1/2 inch thicker than specified. Increase the specified insulation thickness for equipment where necessary to equal the thickness of angles or other structural members to make a smooth, exterior surface. Submit a booklet containing manufacturer's published installation instructions for the insulation systems in coordination with the submitted MICA Insulation Std's plates booklet. Annotate their installation instructions to indicate which product data and which MICA plate are applicable. The instructions must be copyrighted, have an identifying or publication number, and shall have been published prior to the issuance date of this solicitation. A booklet is also required by paragraphs titled: Pipe Insulation Systems and Duct Insulation Systems.

PART 3 EXECUTION

3.1 APPLICATION - GENERAL

Insulation shall only be applied to unheated and uncooled piping and equipment. Flexible elastomeric cellular insulation shall not be compressed at joists, studs, columns, ducts, hangers, etc. The insulation shall not pull apart after a one hour period; any insulation found to pull apart after one hour, shall be replaced.

3.1.1 Installation

Except as otherwise specified, material shall be installed in accordance with the manufacturer's written instructions. Insulation materials shall not be applied until [tests] [tests and heat tracing] specified in other sections of this specification are completed. Material such as rust, scale, dirt and moisture shall be removed from surfaces to receive insulation. Insulation shall be kept clean and dry. Insulation shall not be removed from its shipping containers until the day it is ready to use and shall be returned to like containers or equally protected from dirt and moisture at the end of each workday. Insulation that becomes dirty shall be thoroughly cleaned prior to use. If insulation becomes wet or if cleaning does not restore the surfaces to like new condition, the insulation will be rejected, and shall be immediately removed from the jobsite. Joints shall be staggered on multi layer insulation. Mineral fiber thermal insulating cement shall be mixed with demineralized water when used on stainless steel surfaces. Insulation, jacketing and accessories shall be installed in accordance with MICA Insulation Stds plates except where modified herein or on the drawings.

3.1.2 Firestopping

Where pipes and ducts pass through fire walls, fire partitions, above grade floors, and fire rated chase walls, the penetration shall be sealed with fire stopping materials as specified in Section 07 84 00 FIRESTOPPING. The protection of ducts at point of passage through firewalls must be in accordance with NFPA 90A and/or NFPA 90B. All other penetrations, such as piping, conduit, and wiring, through firewalls must be protected with a material or system of the same hourly rating that is listed by UL, FM, or a NRTL.

3.1.3 Painting and Finishing

Painting shall be as specified in Section 09 90 00 PAINTS AND COATINGS.

3.1.4 Installation of Flexible Elastomeric Cellular Insulation

Install flexible elastomeric cellular insulation with seams and joints sealed with rubberized contact adhesive. Flexible elastomeric cellular insulation shall not be used on surfaces greater than 220 degrees F. Stagger seams when applying multiple layers of insulation. Protect insulation exposed to weather and not shown to have vapor barrier weatherproof jacketing with two coats of UV resistant finish or PVC or metal jacketing as recommended by the manufacturer after the adhesive is dry and cured.

3.1.4.1 Adhesive Application

Apply a brush coating of adhesive to both butt ends to be joined and to both slit surfaces to be sealed. Allow the adhesive to set until dry to touch but tacky under slight pressure before joining the surfaces. Insulation seals at seams and joints shall not be capable of being pulled apart one hour after application. Insulation that can be pulled apart one hour after installation shall be replaced.

3.1.4.2 Adhesive Safety Precautions

Use natural cross-ventilation, local (mechanical) pickup, and/or general area (mechanical) ventilation to prevent an accumulation of solvent vapors, keeping in mind the ventilation pattern must remove any heavier-than-air solvent vapors from lower levels of the workspaces. Gloves and spectacle-type safety glasses are recommended in accordance with safe installation practices.

3.1.5 Welding

No welding shall be done on piping, duct or equipment without written approval of the Contracting Officer. The capacitor discharge welding process may be used for securing metal fasteners to duct.

3.1.6 Pipes/Ducts/Equipment That Require Insulation

Insulation is required on all pipes, ducts, or equipment, except for omitted items as specified.

3.2 PIPE INSULATION SYSTEMS INSTALLATION

Install pipe insulation systems in accordance with the approved MICA Insulation Stds plates as supplemented by the manufacturer's published installation instructions.

3.2.1 Pipe Insulation

3.2.1.1 General

Pipe insulation shall be installed on aboveground hot and cold pipeline systems as specified below to form a continuous thermal retarder/barrier, including straight runs, fittings and appurtenances unless specified otherwise. Installation shall be with full length units of insulation and using a single cut piece to complete a run. Cut pieces or scraps abutting each other shall not be used. Pipe insulation shall be omitted on the following:

- a. Pipe used solely for fire protection.
- b. Chromium plated pipe to plumbing fixtures. However, fixtures for use by the physically handicapped shall have the hot water supply and drain, including the trap, insulated where exposed.
- c. Sanitary drain lines.
- d. Air chambers.
- e. Adjacent insulation.
- f. ASME stamps.
- g. Access plates of fan housings.
- h. Cleanouts or handholes.

3.2.1.2 Pipes Passing Through Walls, Roofs, and Floors

Pipe insulation shall be continuous through the sleeve.

Provide an aluminum jacket or vapor barrier/weatherproofing self adhesive jacket (minimum 2 mils adhesive, 3 mils embossed) less than 0.0000 permeability, greater than 3 ply standard grade, silver, white, black and embossed with factory applied moisture retarder over the insulation wherever penetrations require sealing.

3.2.1.2.1 Penetrate Interior Walls

The aluminum jacket or vapor barrier/weatherproofing - self adhesive jacket (minimum 2 mils adhesive, 3 mils embossed) less than 0.0000 permeability, greater than 3 plies standard grade, silver, white, black and embossed shall extend 2 inches beyond either side of the wall and shall be secured on each end with a band.

3.2.1.2.2 Penetrating Floors

Extend the aluminum jacket from a point below the backup material to a point 10 inches above the floor with one band at the floor and one not more than 1 inch from the end of the aluminum jacket.

3.2.1.2.3 Penetrating Waterproofed Floors

Extend the aluminum jacket from below the backup material to a point 2 inches above the flashing with a band 1 inch from the end of the aluminum jacket.

3.2.1.2.4 Penetrating Exterior Walls

Continue the aluminum jacket required for pipe exposed to weather through the sleeve to a point 2 inches beyond the interior surface of the wall.

3.2.1.2.5 Penetrating Roofs

Insulate pipe as required for interior service to a point flush with the top of the flashing and sealed with flashing sealant. Tightly butt the insulation for exterior application to the top of flashing and interior insulation. Extend the exterior aluminum jacket 2 inches down beyond the end of the insulation to form a counter flashing. Seal the flashing and counter flashing underneath with metal jacketing/flashing sealant.

3.2.1.2.6 Hot Water Pipes Supplying Lavatories or Other Similar Heated Service

Terminate the insulation on the backside of the finished wall. Protect the insulation termination with two coats of vapor barrier coating with a minimum total thickness of 1/16 inch applied with glass tape embedded between coats (if applicable). Extend the coating out onto the insulation 2 inches and seal the end of the insulation. Overlap glass tape seams 1 inch. Caulk the annular space between the pipe and wall penetration with approved fire stop material. Cover the pipe and wall penetration with a properly sized (well fitting) escutcheon plate. The escutcheon plate shall overlap the wall penetration at least 3/8 inches.

3.2.1.2.7 Domestic Cold Water Pipes Supplying Lavatories or Other Similar Cooling Service

Terminate the insulation on the finished side of the wall (i.e., insulation must cover the pipe throughout the wall penetration). Protect the insulation with two coats of weather barrier mastic (breather emulsion type weatherproof mastic impermeable to water and permeable to air) with a minimum total thickness of 1/16 inch. Extend the mastic out onto the insulation 2 inches and shall seal the end of the insulation. The annular space between the outer surface of the pipe insulation and caulk the wall penetration with an approved fire stop material having vapor retarder properties. Cover the pipe and wall penetration with a properly sized (well fitting) escutcheon plate. The escutcheon plate shall overlap the wall penetration by at least 3/8 inches.

3.2.1.3 Pipes Passing Through Hangers

Insulation, whether hot or cold application, shall be continuous through hangers. All horizontal pipes 2 inches and smaller shall be supported on hangers with the addition of a Type 40 protection shield to protect the insulation in accordance with MSS SP-69. Whenever insulation shows signs of being compressed, or when the insulation or jacket shows visible signs of distortion at or near the support shield, insulation inserts as specified below for piping larger than 2 inches shall be installed, or factory insulated hangers (designed with a load bearing core) can be used.

3.2.1.3.1 Horizontal Pipes Larger Than 2 Inches at 60 Degrees F and Above

Supported on hangers in accordance with MSS SP-69, and Section 22 00 00 PLUMBING, GENERAL PURPOSE.

3.2.1.3.2 Horizontal Pipes Larger Than 2 Inches and Below 60 Degrees F

Supported on hangers with the addition of a Type 40 protection shield in accordance with MSS SP-69. An insulation insert of cellular glass, prefabricated insulation pipe hangers, or perlite above 80 degrees F shall be installed above each shield. The insert shall cover not less than the bottom 180-degree arc of the pipe. Inserts shall be the same thickness as the insulation, and shall extend 2 inches on each end beyond the protection shield. When insulation inserts are required in accordance with the above, and the insulation thickness is less than 1 inch, wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the weight of the pipe from crushing the insulation, as an option to installing insulation inserts. The insulation jacket shall be continuous over the wooden dowel, wooden block, or insulation insert.

3.2.1.3.3 Vertical Pipes

Supported with either Type 8 or Type 42 riser clamps with the addition of two Type 40 protection shields in accordance with MSS SP-69 covering the 360-degree arc of the insulation. An insulation insert of cellular glass or calcium silicate shall be installed between each shield and the pipe. The insert shall cover the 360-degree arc of the pipe. Inserts shall be the same thickness as the insulation, and shall extend 2 inches on each end beyond the protection shield. When insulation inserts are required in accordance with the above, and the insulation thickness is less than 1 inch, wooden or cork dowels or blocks may be installed between the pipe and the shield to prevent the hanger from crushing the insulation, as an

option instead of installing insulation inserts. The insulation jacket shall be continuous over the wooden dowel, wooden block, or insulation insert. The vertical weight of the pipe shall be supported with hangers located in a horizontal section of the pipe. When the pipe riser is longer than 30 feet, the weight of the pipe shall be additionally supported with hangers in the vertical run of the pipe that are directly clamped to the pipe, penetrating the pipe insulation. These hangers shall be insulated and the insulation jacket sealed as indicated herein for anchors in a similar service.

3.2.1.3.4 Inserts

Covered with a jacket material of the same appearance and quality as the adjoining pipe insulation jacket, overlap the adjoining pipe jacket 1-1/2 inches, and seal as required for the pipe jacket. The jacket material used to cover inserts in flexible elastomeric cellular insulation shall conform to ASTM C1136, Type 1, and is allowed to be of a different material than the adjoining insulation material.

3.2.1.4 Flexible Elastomeric Cellular Pipe Insulation

Flexible elastomeric cellular pipe insulation shall be tubular form for pipe sizes 6 inches and less. Grade 1, Type II sheet insulation used on pipes larger than 6 inches shall not be stretched around the pipe. On pipes larger than 12 inches, the insulation shall be adhered directly to the pipe on the lower 1/3 of the pipe. Seams shall be staggered when applying multiple layers of insulation. Sweat fittings shall be insulated with miter-cut pieces the same size as on adjacent piping. Screwed fittings shall be insulated with sleeved fitting covers fabricated from miter-cut pieces and shall be overlapped and sealed to the adjacent pipe insulation. Type II requires an additional exterior vapor retarder/barrier covering for high relative humidity and below ambient temperature applications.

3.2.1.5 Pipes in high abuse areas.

In high abuse areas such as janitor closets and traffic areas in equipment rooms, and mechanical rooms, aluminum or flexible laminate cladding (comprised of elastomeric, plastic or metal foil laminate) laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket, - less than 0.0000 permeability; (greater than 3 ply, standard grade, silver, white, black and embossed) aluminum jackets shall be utilized. Pipe insulation to the 6 foot level shall be protected.

3.2.1.6 Pipe Insulation Material and Thickness

Pipe insulation materials must be as listed in Table 1 and must meet or exceed the requirements of[ASHRAE 90.1 - IP][ASHRAE 90.2].

TABLE 1					
Insulation Material for Piping					
Service					
	Material	Specification	Type	Class	VR/VB Req'd

TABLE 1					
Insulation Material for Piping					
Service					
	Material	Specification	Type	Class	VR/VB Req'd
Chilled Water (Supply & Return, Dual Temperature Piping, 40 F nominal)					
	Cellular Glass	ASTM C552	II	2	Yes
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		Yes
	[Mineral Fiber with Wicking Material][Do not use in applications exposed to outdoor ambient conditions in climatic zones 1 through 4.]	[ASTM C547]	[I]		[Yes]
Heating Hot Water Supply & Return, Heated Oil (Max 250 F)					
	Mineral Fiber	ASTM C547	I	1	No
	Calcium Silicate	ASTM C533	I		No
	Cellular Glass	ASTM C552	II	2	No
	Faced Phenolic Foam	ASTM C1126	III		Yes
	Perlite	ASTM C610			No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I	2	No
Cold Domestic Water Piping, Makeup Water & Drinking Fountain Drain Piping					
	Cellular Glass	ASTM C552	II	2	No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Hot Domestic Water Supply & Recirculating Piping (Max 200 F)					
	Mineral Fiber	ASTM C547	I	1	No
	Cellular Glass	ASTM C552	II	2	No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
	Faced Phenolic Foam	ASTM C1126	III		Yes
Refrigerant Suction Piping (35 degrees F nominal)					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
	Cellular Glass	ASTM C552	II	1	Yes

TABLE 1					
Insulation Material for Piping					
Service					
	Material	Specification	Type	Class	VR/VB Req'd
Compressed Air Discharge, 250 Degrees F					
	Cellular Glass	ASTM C552	II		No
	Mineral Fiber	ASTM C547	I	1	No
	Calcium Silicate	ASTM C533	I		No
	Faced Phenolic Foam	ASTM C1126	III		Yes
	Perlite	ASTM C610			No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I	2	No
Exposed Lavatory Drains, Exposed Domestic Water Piping & Drains to Areas for Handicapped Personnel					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Horizontal Roof Drain Leaders (Including Underside of Roof Drain Fittings)					
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
	Faced Phenolic Foam	ASTM C1126	III		Yes
	Cellular Glass	ASTM C552	III		Yes
Condensate Drain Located Inside Building					
	Cellular Glass	ASTM C552	II	2	No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No
Medium Temperature Hot Water, Steam and Condensate (251 to 350 Degrees F)					
	Mineral Fiber	ASTM C547	I	1	No
	Calcium Silicate	ASTM C533	I		No
	Cellular Glass	ASTM C552	I or II		No
	Perlite	ASTM C610			No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I	2	No
	Flexible Elastomeric Cellular	ASTM C534/C534M	I		No

TABLE 1					
Insulation Material for Piping					
Service					
	Material	Specification	Type	Class	VR/VB Req'd
Note: VR/VB = Vapor Retarder/Vapor Barrier					

TABLE 2						
Piping Insulation Thickness (inch) Do not use integral wicking material in Chilled water applications exposed to outdoor ambient conditions in climatic zones 1 through 4.						
Service						
	Material	Tube And Pipe Size (inch)				
		<1	1-<1.5	1.5-<4	4-<8	> or = >8
Chilled Water (Supply & Return, 40 Degrees F nominal)]						
	Cellular Glass	1.5	2	2	2.5	3
	Mineral Fiber with Wicking Material	1	1.5	1.5	2	2
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
Chilled Water (Supply & Return, , 40 Degrees F nominal)						
	Cellular Glass	1.5	1.5	1.5	1.5	2
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
	Mineral Fiber with Wicking Material	1	1.5	1.5	2	2
Heating Hot Water Supply & Return, (Max 250 F)						
	Mineral Fiber	1.5	1.5	2	2	2
	Calcium Silicate	2.5	2.5	3	3	3
	Cellular Glass	2	2.5	3	3	3

	Perlite	2.5	2.5	3	3	3
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
Cold Domestic Water Piping, Makeup Water & Drinking Fountain Drain Piping						
	Cellular Glass	1.5	1.5	1.5	1.5	1.5
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
Hot Domestic Water Supply & Recirculating Piping (Max 200 F)						
	Mineral Fiber	1	1	1	1.5	1.5
	Cellular Glass	1.5	1.5	1.5	2	2
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
Refrigerant Suction Piping (35 degrees F nominal)						
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
	Cellular Glass	1.5	1.5	1.5	1.5	1.5
Compressed Air Discharge, 201 to 250 Degrees F						
	Mineral Fiber	1.5	1.5	2	2	2
		1.5*	2*	2.5*	3*	3.5*
	Calcium Silicate	2.5	3	4	4	4.5
	Cellular Glass	2	2.5	3	3	3
	Perlite	2.5	3	4	4	4.5
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
Exposed Lavatory Drains, Exposed Domestic Water Piping & Drains to Areas for Handicapped Personnel						
	Flexible Elastomeric Cellular	0.5	0.5	0.5	0.5	0.5
Horizontal Roof Drain Leaders (Including Underside of Roof Drain Fittings)						
	Cellular Glass	1.5	1.5	1.5	1.5	1.5
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
	Faced Phenolic Foam	1	1	1	1	1

Condensate Drain Located Inside Building						
	Cellular Glass	1.5	1.5	1.5	1.5	1.5
	Flexible Elastomeric Cellular	1	1	1	N/A	N/A
	Flexible Elastomeric Cellular	1	1	N/A	N/A	N/A

3.2.2 Aboveground Cold Pipelines

The following cold pipelines for minus 30 to plus 60 degrees F, shall be insulated in accordance with Table 2 except those piping listed in subparagraph Pipe Insulation in PART 3 as to be omitted. This includes but is not limited to the following:

- a. Make-up water.
- b. Horizontal and vertical portions of interior roof drains.
- c. Refrigerant suction lines.
- d. Chilled water.
- e. Air conditioner condensate drains.
- g. Exposed lavatory drains and domestic water lines serving plumbing fixtures for handicap persons.

3.2.2.1 Insulation Material and Thickness

Insulation thickness for cold pipelines shall be determined using Table 2.

3.2.2.2 Factory or Field applied Jacket

Insulation shall be covered with a factory applied vapor retarder jacket/vapor barrier or field applied seal welded PVC jacket or greater than 3 ply laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - less than 0.0000 permeability, standard grade, silver, white, black and embossed for use with Mineral Fiber, Cellular Glass, and Phenolic Foam Insulated Pipe. Insulation inside the building, to be protected with an aluminum jacket or greater than 3ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed) product, less than 0.0000 permeability, standard grade, Embossed Silver, White & Black, shall have the insulation and vapor retarder jacket installed as specified herein. The aluminum jacket or greater than 3ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed) product, less than 0.0000 permeability, standard grade, embossed silver, White & Black, shall be installed as specified for piping exposed to weather, except sealing of the laps of the aluminum jacket is not required. In high abuse areas such as janitor closets and traffic areas in equipment rooms, kitchens, and mechanical rooms, aluminum jackets or greater than 3ply vapor barrier/weatherproofing self-adhesive (minimum 2 mils adhesive, 3 mils embossed)

product, less than 0.0000 permeability, standard grade, embossed silver, white & black, shall be provided for pipe insulation to the 6 ft level.

3.2.2.3 Installing Insulation for Straight Runs Hot and Cold Pipe

Apply insulation to the pipe with tight butt joints. Seal all butted joints and ends with joint sealant and seal with a vapor retarder coating, greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape or PVDC adhesive tape.

3.2.2.3.1 Longitudinal Laps of the Jacket Material

Overlap not less than 1-1/2 inches. Provide butt strips 3 inches wide for circumferential joints.

3.2.2.3.2 Laps and Butt Strips

Secure with adhesive and staple on 4 inch centers if not factory self-sealing. If staples are used, seal in accordance with paragraph STAPLES below. Note that staples are not required with cellular glass systems.

3.2.2.3.3 Factory Self-Sealing Lap Systems

May be used when the ambient temperature is between 40 and 120 degrees F during installation. Install the lap system in accordance with manufacturer's recommendations. Use a stapler only if specifically recommended by the manufacturer. Where gaps occur, replace the section or repair the gap by applying adhesive under the lap and then stapling.

3.2.2.3.4 Staples

Coat all staples, including those used to repair factory self-seal lap systems, with a vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape. Coat all seams, except those on factory self-seal systems, with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.

3.2.2.3.5 Breaks and Punctures in the Jacket Material

Patch by wrapping a strip of jacket material around the pipe and secure it with adhesive, staple, and coat with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape. Extend the patch not less than 1-1/2 inches past the break.

3.2.2.3.6 Penetrations Such as Thermometers

Fill the voids in the insulation and seal with vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.

3.2.2.3.7 Flexible Elastomeric Cellular Pipe Insulation

Install by slitting the tubular sections and applying them onto the piping or tubing. Alternately, whenever possible slide un-slit sections over the open ends of piping or tubing. Secure all

seams and butt joints and seal with adhesive. When using self seal products only the butt joints shall be secured with adhesive. Push insulation on the pipe, never pulled. Stretching of insulation may result in open seams and joints. Clean cut all edges. Rough or jagged edges of the insulation are not be permitted. Use proper tools such as sharp knives. Do not stretch Grade 1, Type II sheet insulation around the pipe when used on pipe larger than 6 inches. On pipes larger than 12 inches, adhere sheet insulation directly to the pipe on the lower 1/3 of the pipe.

3.2.2.4 Insulation for Fittings and Accessories

- a. Pipe insulation shall be tightly butted to the insulation of the fittings and accessories. The butted joints and ends shall be sealed with joint sealant and sealed with a vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape.
- b. Precut or preformed insulation shall be placed around all fittings and accessories and shall conform to MICA plates except as modified herein: 5 for anchors; 10, 11, and 13 for fittings; 14 for valves; and 17 for flanges and unions. Insulation shall be the same insulation as the pipe insulation, including same density, thickness, and thermal conductivity. Where precut/preformed is unavailable, rigid preformed pipe insulation sections may be segmented into the shape required. Insulation of the same thickness and conductivity as the adjoining pipe insulation shall be used. If nesting size insulation is used, the insulation shall be overlapped 2 inches or one pipe diameter. Elbows insulated using segments shall conform to MICA Tables 12.20 "Mitered Insulation Elbow". Submit a booklet containing completed MICA Insulation Stds plates detailing each insulating system for each pipe, duct, or equipment insulating system, after approval of materials and prior to applying insulation.
 - (1) The MICA plates shall detail the materials to be installed and the specific insulation application. Submit all MICA plates required showing the entire insulating system, including plates required to show insulation penetrations, vessel bottom and top heads, legs, and skirt insulation as applicable. The MICA plates shall present all variations of insulation systems including locations, materials, vaporproofing, jackets and insulation accessories.
 - (2) If the Contractor elects to submit detailed drawings instead of edited MICA Plates, the detail drawings shall be technically equivalent to the edited MICA Plate submittal.
- c. Upon completion of insulation installation on flanges, unions, valves, anchors, fittings and accessories, terminations, seams, joints and insulation not protected by factory vapor retarder jackets or PVC fitting covers shall be protected with PVDC or greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape or two coats of vapor retarder coating with a minimum total thickness of 1/16 inch, applied with glass tape embedded between coats. Tape seams shall overlap 1 inch. The coating shall extend out onto the adjoining pipe insulation 2 inches. Fabricated insulation with a factory vapor retarder jacket shall be protected with either greater than 3 ply laminate jacket - less than 0.0000 perm adhesive tape, standard grade, silver, white, black and embossed or PVDC adhesive tape or two coats of vapor retarder coating with a minimum thickness of 1/16 inch and with a 2 inch wide glass tape embedded between coats. Where fitting

insulation butts to pipe insulation, the joints shall be sealed with a vapor retarder coating and a 4 inch wide ASJ tape which matches the jacket of the pipe insulation.

- d. Anchors attached directly to the pipe shall be insulated for a sufficient distance to prevent condensation but not less than 6 inches from the insulation surface.
- e. Insulation shall be marked showing the location of unions, strainers, and check valves.

3.2.2.5 Optional PVC Fitting Covers

At the option of the Contractor, premolded, one or two piece PVC fitting covers may be used in lieu of the vapor retarder and embedded glass tape. Factory precut or premolded insulation segments shall be used under the fitting covers for elbows. Insulation segments shall be the same insulation as the pipe insulation including same density, thickness, and thermal conductivity. The covers shall be secured by PVC vapor retarder tape, adhesive, seal welding or with tacks made for securing PVC covers. Seams in the cover, and tacks and laps to adjoining pipe insulation jacket, shall be sealed with vapor retarder tape to ensure that the assembly has a continuous vapor seal.

3.2.3 Aboveground Hot Pipelines

3.2.3.1 General Requirements

All hot pipe lines above 60 degrees F, except those piping listed in subparagraph Pipe Insulation in PART 3 as to be omitted, shall be insulated in accordance with Table 2. This includes but is not limited to the following:

- a. Domestic hot water supply & re-circulating system.
- b. compressed air discharge.
- d. Hot water heating.

Insulation shall be covered, in accordance with manufacturer's recommendations, with a factory applied Type I jacket or field applied aluminum where required or seal welded PVC.

3.2.3.2 Insulation for Fittings and Accessories

Pipe insulation shall be tightly butted to the insulation of the fittings and accessories. The butted joints and ends shall be sealed with joint sealant. Insulation shall be marked showing the location of unions, strainers, check valves and other components that would otherwise be hidden from view by the insulation.

3.2.3.2.1 Precut or Preformed

Place precut or preformed insulation around all fittings and accessories. Insulation shall be the same insulation as the pipe insulation, including same density, thickness, and thermal conductivity.

3.2.3.2.2 Rigid Preformed

Where precut/preformed is unavailable, rigid preformed pipe insulation sections may be segmented into the shape required. Insulation of the same thickness and conductivity as the adjoining pipe insulation shall be used. If nesting size insulation is used, the insulation shall be overlapped 2 inches or one pipe diameter. Elbows insulated using segments shall conform to MICA Tables 12.20 "Mitered Insulation Elbow".

3.2.4 Piping Exposed to Weather

Piping exposed to weather shall be insulated and jacketed as specified for the applicable service inside the building. After this procedure, a laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - less than 0.0000 permeability (greater than 3 ply, standard grade, silver, white, black and embossed aluminum jacket or PVC jacket shall be applied. PVC jacketing requires no factory-applied jacket beneath it, however an all service jacket shall be applied if factory applied jacketing is not furnished. Flexible elastomeric cellular insulation exposed to weather shall be treated in accordance with paragraph INSTALLATION OF FLEXIBLE ELASTOMERIC CELLULAR INSULATION in PART 3.

3.2.4.1 Aluminum Jacket

The jacket for hot piping may be factory applied. The jacket shall overlap not less than 2 inches at longitudinal and circumferential joints and shall be secured with bands at not more than 12 inch centers. Longitudinal joints shall be overlapped down to shed water and located at 4 or 8 o'clock positions. Joints on piping 60 degrees F and below shall be sealed with metal jacketing/flashings sealant while overlapping to prevent moisture penetration. Where jacketing on piping 60 degrees F and below abuts an un-insulated surface, joints shall be caulked to prevent moisture penetration. Joints on piping above 60 degrees F shall be sealed with a moisture retarder.

3.2.4.2 Insulation for Fittings

Flanges, unions, valves, fittings, and accessories shall be insulated and finished as specified for the applicable service. Two coats of breather emulsion type weatherproof mastic (impermeable to water, permeable to air) recommended by the insulation manufacturer shall be applied with glass tape embedded between coats. Tape overlaps shall be not less than 1 inch and the adjoining aluminum jacket not less than 2 inches. Factory preformed aluminum jackets may be used in lieu of the above. Molded PVC fitting covers shall be provided when PVC jackets are used for straight runs of pipe. PVC fitting covers shall have adhesive welded joints and shall be weatherproof laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - less than 0.0000 permeability, (greater than 3 ply, standard grade, silver, white, black and embossed, and UV resistant).

3.2.4.3 PVC Jacket

PVC jacket shall be ultraviolet resistant and adhesive welded weather tight with manufacturer's recommended adhesive. Installation shall include provision for thermal expansion.

3.3 DUCT INSULATION SYSTEMS INSTALLATION

Install duct insulation systems in accordance with the approved MICA Insulation Std's plates as supplemented by the manufacturer's published installation instructions. Duct insulation minimum thickness and insulation level must be as listed in Table 3 and must meet or exceed the requirements of ASHRAE 90.2.

Except for oven hood exhaust duct insulation, corner angles shall be installed on external corners of insulation on ductwork in exposed finished spaces before covering with jacket. Air conditioned spaces shall be defined as those spaces directly supplied with cooled conditioned air (or provided with a cooling device such as a fan-coil unit) and heated conditioned air (or provided with a heating device such as a unit heater, radiator or convector).

3.3.1 Duct Insulation Minimum Thickness

Duct insulation minimum thickness in accordance with Table 4.

Table 4 - Minimum Duct Insulation (inches)	
Cold Air Ducts	2.0
Relief Ducts	1.5
Fresh Air Intake Ducts	1.5
Warm Air Ducts	2.0
Relief Ducts	1.5
Fresh Air Intake Ducts	1.5

3.3.2 Insulation and Vapor Retarder/Vapor Barrier for Cold Air Duct

Insulation and vapor retarder/vapor barrier shall be provided for the following cold air ducts and associated equipment.

- a. Supply ducts.
- b. Return air ducts.
- c. Relief ducts.
- d. Flexible run-outs (field-insulated).
- e. Plenums.
- f. Duct-mounted coil casings.
- g. Coil headers and return bends.

- h. Coil casings.
- i. Fresh air intake ducts.
- j. Filter boxes.
- k. Mixing boxes (field-insulated).
- l. Supply fans (field-insulated).
- m. Site-erected air conditioner casings.
- n. Ducts exposed to weather.
- o. Combustion air intake ducts.

Insulation for rectangular ducts shall be flexible type where concealed, minimum density 3/4 pcf, and rigid type where exposed, minimum density 3 pcf. Insulation for both concealed or exposed round/oval ducts shall be flexible type, minimum density 3/4 pcf or a semi rigid board, minimum density 3 pcf, formed or fabricated to a tight fit, edges beveled and joints tightly butted and staggered. Insulation for all exposed ducts shall be provided with either a white, paint-able, factory-applied Type I jacket or a field applied vapor retarder/vapor barrier jacket coating finish as specified, the total field applied dry film thickness shall be approximately 1/16 inch. Insulation on all concealed duct shall be provided with a factory-applied Type I or II vapor retarder/vapor barrier jacket. Duct insulation shall be continuous through sleeves and prepared openings except firewall penetrations. Duct insulation terminating at fire dampers, shall be continuous over the damper collar and retaining angle of fire dampers, which are exposed to unconditioned air and which may be prone to condensate formation. Duct insulation and vapor retarder/vapor barrier shall cover the collar, neck, and any un-insulated surfaces of diffusers, registers and grills. Vapor retarder/vapor barrier materials shall be applied to form a complete unbroken vapor seal over the insulation. Sheet Metal Duct shall be sealed in accordance with Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEM.

3.3.2.1 Installation on Concealed Duct

- a. For rectangular, oval or round ducts, flexible insulation shall be attached by applying adhesive around the entire perimeter of the duct in 6 inch wide strips on 12 inch centers.
- b. For rectangular and oval ducts, 24 inches and larger insulation shall be additionally secured to bottom of ducts by the use of mechanical fasteners. Fasteners shall be spaced on 16 inch centers and not more than 16 inches from duct corners.
- c. For rectangular, oval and round ducts, mechanical fasteners shall be provided on sides of duct risers for all duct sizes. Fasteners shall be spaced on 16 inch centers and not more than 16 inches from duct corners.
- d. Insulation shall be impaled on the mechanical fasteners (self stick pins) where used and shall be pressed thoroughly into the adhesive. Care shall be taken to ensure vapor

retarder/vapor barrier jacket joints overlap 2 inches. The insulation shall not be compressed to a thickness less than that specified. Insulation shall be carried over standing seams and trapeze-type duct hangers.

- e. Where mechanical fasteners are used, self-locking washers shall be installed and the pin trimmed and bent over.
- f. Jacket overlaps shall be secured with staples and tape as necessary to ensure a secure seal. Staples, tape and seams shall be coated with a brush coat of vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.
- g. Breaks in the jacket material shall be covered with patches of the same material as the vapor retarder jacket. The patches shall extend not less than 2 inches beyond the break or penetration in all directions and shall be secured with tape and staples. Staples and tape joints shall be sealed with a brush coat of vapor retarder coating or PVDC adhesive tape or greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.
- h. At jacket penetrations such as hangers, thermometers, and damper operating rods, voids in the insulation shall be filled and the penetration sealed with a brush coat of vapor retarder coating or PVDC adhesive tape greater than 3 ply laminate (minimum 2 mils adhesive, 3 mils embossed) - less than 0.0000 perm adhesive tape.
- i. Insulation terminations and pin punctures shall be sealed and flashed with a reinforced vapor retarder coating finish or tape with a brush coat of vapor retarder coating.. The coating shall overlap the adjoining insulation and un-insulated surface 2 inches. Pin puncture coatings shall extend 2 inches from the puncture in all directions.
- j. Where insulation standoff brackets occur, insulation shall be extended under the bracket and the jacket terminated at the bracket.

3.3.2.2 Installation on Exposed Duct Work

- a. For rectangular ducts, rigid insulation shall be secured to the duct by mechanical fasteners on all four sides of the duct, spaced not more than 12 inches apart and not more than 3 inches from the edges of the insulation joints. A minimum of two rows of fasteners shall be provided for each side of duct 12 inches and larger. One row shall be provided for each side of duct less than 12 inches. Mechanical fasteners shall be as corrosion resistant as G60 coated galvanized steel, and shall indefinitely sustain a 50 lb tensile dead load test perpendicular to the duct wall.
- b. Form duct insulation with minimum jacket seams. Fasten each piece of rigid insulation to the duct using mechanical fasteners. When the height of projections is less than the insulation thickness, insulation shall be brought up to standing seams, reinforcing, and other vertical projections and shall not be carried over. Vapor retarder/barrier jacket shall be continuous across seams, reinforcing, and projections. When height of projections is greater than the insulation thickness, insulation and jacket shall be carried over. Apply insulation with joints tightly butted. Neatly bevel insulation around name plates and access plates and doors.

- c. Impale insulation on the fasteners; self-locking washers shall be installed and the pin trimmed and bent over.
- d. Seal joints in the insulation jacket with a 4 inch wide strip of tape. Seal taped seams with a brush coat of vapor retarder coating.
- e. Breaks and ribs or standing seam penetrations in the jacket material shall be covered with a patch of the same material as the jacket. Patches shall extend not less than 2 inches beyond the break or penetration and shall be secured with tape and stapled. Staples and joints shall be sealed with a brush coat of vapor retarder coating.
- f. At jacket penetrations such as hangers, thermometers, and damper operating rods, the voids in the insulation shall be filled and the penetrations sealed with a flashing sealant.
- g. Insulation terminations and pin punctures shall be sealed and flashed with a reinforced vapor retarder coating finish. The coating shall overlap the adjoining insulation and un-insulated surface 2 inches. Pin puncture coatings shall extend 2 inches from the puncture in all directions.
- h. Oval and round ducts, flexible type, shall be insulated with factory Type I jacket insulation with minimum density of 3/4 pcf, attached as in accordance with MICA standards.

3.3.3 Insulation for Warm Air Duct

Insulation and vapor barrier shall be provided for the following warm air ducts and associated equipment:

- a. Supply ducts.
- b. Return air ducts.
- c. Relief air ducts
- d. Flexible run-outs (field insulated).
- e. Plenums.
- f. Duct-mounted coil casings.
- g. Coil-headers and return bends.
- h. Coil casings.
- i. Fresh air intake ducts.
- j. Filter boxes.
- k. Mixing boxes.

- l. Supply fans.
- m. Site-erected air conditioner casings.
- n. Ducts exposed to weather.

Insulation for rectangular ducts shall be flexible type where concealed, and rigid type where exposed. Insulation on exposed ducts shall be provided with a white, paint-able, factory-applied Type II jacket, or finished with adhesive finish. Flexible type insulation shall be used for round ducts, with a factory-applied Type II jacket. Insulation on concealed duct shall be provided with a factory-applied Type II jacket. Adhesive finish where indicated to be used shall be accomplished by applying two coats of adhesive with a layer of glass cloth embedded between the coats. The total dry film thickness shall be approximately 1/16 inch. Duct insulation shall be continuous through sleeves and prepared openings. Duct insulation shall terminate at fire dampers and flexible connections.

3.3.3.1 Installation on Concealed Duct

- a. For rectangular, oval and round ducts, insulation shall be attached by applying adhesive around the entire perimeter of the duct in 6 inch wide strips on 12 inch centers.
- b. For rectangular and oval ducts 24 inches and larger, insulation shall be secured to the bottom of ducts by the use of mechanical fasteners. Fasteners shall be spaced on 18 inch centers and not more than 18 inches from duct corner.
- c. For rectangular, oval and round ducts, mechanical fasteners shall be provided on sides of duct risers for all duct sizes. Fasteners shall be spaced on 18 inch centers and not more than 18 inches from duct corners.
- d. The insulation shall be impaled on the mechanical fasteners where used. The insulation shall not be compressed to a thickness less than that specified. Insulation shall be carried over standing seams and trapeze-type hangers.
- e. Self-locking washers shall be installed where mechanical fasteners are used and the pin trimmed and bent over.
- f. Insulation jacket shall overlap not less than 2 inches at joints and the lap shall be secured and stapled on 4 inch centers.

3.3.3.2 Installation on Exposed Duct

- a. For rectangular ducts, the rigid insulation shall be secured to the duct by the use of mechanical fasteners on all four sides of the duct, spaced not more than 16 inches apart and not more than 6 inches from the edges of the insulation joints. A minimum of two rows of fasteners shall be provided for each side of duct 12 inches and larger and a minimum of one row for each side of duct less than 12 inches.
- b. Duct insulation with factory-applied jacket shall be formed with minimum jacket seams, and each piece of rigid insulation shall be fastened to the duct using mechanical fasteners. When the height of projection is less than the insulation thickness, insulation

shall be brought up to standing seams, reinforcing, and other vertical projections and shall not be carried over the projection. Jacket shall be continuous across seams, reinforcing, and projections. Where the height of projections is greater than the insulation thickness, insulation and jacket shall be carried over the projection.

- c. Insulation shall be impaled on the fasteners; self-locking washers shall be installed and pin trimmed and bent over.
- d. Joints on jacketed insulation shall be sealed with a 4 inch wide strip of tape and brushed with vapor retarder coating.
- e. Breaks and penetrations in the jacket material shall be covered with a patch of the same material as the jacket. Patches shall extend not less than 2 inches beyond the break or penetration and shall be secured with adhesive and stapled.
- f. Insulation terminations and pin punctures shall be sealed with tape and brushed with vapor retarder coating.
- g. Oval and round ducts, flexible type, shall be insulated with factory Type I jacket insulation, minimum density of 3/4 pcf attached by staples spaced not more than 16 inches and not more than 6 inches from the degrees of joints. Joints shall be sealed in accordance with item "d." above.

3.3.4 Duct Test Holes

After duct systems have been tested, adjusted, and balanced, breaks in the insulation and jacket shall be repaired in accordance with the applicable section of this specification for the type of duct insulation to be repaired.

3.3.5 Duct Exposed to Weather

3.3.5.1 Installation

Ducts exposed to weather shall be insulated and finished as specified for the applicable service for exposed duct inside the building. After the above is accomplished, the insulation shall then be further finished as detailed in the following subparagraphs.

3.3.5.2 Round Duct

Laminated self-adhesive (minimum 2 mils adhesive, 3 mils embossed) vapor barrier/weatherproofing jacket - Less than 0.0000 permeability, (greater than 3 ply, standard grade, silver, white, black and embossed or greater than 8 ply, heavy duty, white and natural) membrane shall be applied overlapping material by 3 inches no bands or caulking needed - see manufacturer's recommended installation instructions. Aluminum jacket with factory applied moisture retarder shall be applied with the joints lapped not less than 3 inches and secured with bands located at circumferential laps and at not more than 12 inch intervals throughout. Horizontal joints shall lap down to shed water and located at 4 or 8 o'clock position. Joints shall be sealed with metal jacketing sealant to prevent moisture penetration. Where jacketing abuts an un-insulated surface, joints shall be sealed with metal jacketing sealant.

3.3.5.3 Fittings

Fittings and other irregular shapes shall be finished as specified for rectangular ducts.

3.3.5.4 Rectangular Ducts

Two coats of weather barrier mastic reinforced with fabric or mesh for outdoor application shall be applied to the entire surface. Each coat of weatherproof mastic shall be 1/16 inch minimum thickness. The exterior shall be a metal jacketing applied for mechanical abuse and weather protection, and secured with screws or vapor barrier/weatherproofing jacket less than 0.0000 permeability greater than 3 ply, standard grade, silver, white, black, and embossed or greater than 8 ply, heavy duty white and natural. Membrane shall be applied overlapping material by 3 inches. No bands or caulking needed-see manufacturing recommend installation instructions.

3.4 EQUIPMENT INSULATION SYSTEMS INSTALLATION

Install equipment insulation systems in accordance with the approved MICA Insulation Stds plates as supplemented by the manufacturer's published installation instructions.

3.4.1 General

Removable insulation sections shall be provided to cover parts of equipment that must be opened periodically for maintenance including vessel covers, fasteners, flanges and accessories. Equipment insulation shall be omitted on the following:

- a. Hand-holes.
- b. Boiler manholes.
- c. Cleanouts.
- d. ASME stamps.
- e. Manufacturer's nameplates.
- f. Duct Test/Balance Test Holes.

3.4.2 Insulation for Cold Equipment

Cold equipment below 60 degrees F: Insulation shall be furnished on equipment handling media below 60 degrees F including the following:

- a. Pumps.
- b. Refrigeration equipment parts that are not factory insulated.
- c. Drip pans under chilled equipment.

- d. Cold water storage tanks.
- e. Cold and chilled water pumps.
- f. Pneumatic water tanks.
- g. Air handling equipment parts that are not factory insulated.
- h. Expansion and air separation tanks.

3.4.2.1 Insulation Type

Insulation shall be suitable for the temperature encountered. Material and thicknesses shall be as shown in Table 5:

TABLE 5		
Insulation Thickness for Cold Equipment (inches)		
Equipment handling media at indicated temperature		
	Material	Thickness (inches)
35 to 60 degrees F		
	Cellular Glass	1.5
	Flexible Elastomeric Cellular	1
1 to 34 degrees F		
	Cellular Glass	3
	Flexible Elastomeric Cellular	1.5
Minus 30 to 0 degrees F		
	Cellular Glass	3.5
	Flexible Elastomeric Cellular	1.75

3.4.2.2 Pump Insulation

- a. Insulate pumps by forming a box around the pump housing. The box shall be constructed by forming the bottom and sides using joints that do not leave raw ends of insulation exposed. Joints between sides and between sides and bottom shall be joined by adhesive with lap strips for rigid mineral fiber and contact adhesive for flexible

elastomeric cellular insulation. The box shall conform to the requirements of MICA Insulation Stds plate No. 49 when using flexible elastomeric cellular insulation. Joints between top cover and sides shall fit tightly forming a female shiplap joint on the side pieces and a male joint on the top cover, thus making the top cover removable.

- b. Exposed insulation corners shall be protected with corner angles.
- c. Upon completion of installation of the insulation, including removable sections, two coats of vapor retarder coating shall be applied with a layer of glass cloth embedded between the coats. The total dry thickness of the finish shall be 1/16 inch. A parting line shall be provided between the box and the removable sections allowing the removable sections to be removed without disturbing the insulation coating. Flashing sealant shall be applied to parting line, between equipment and removable section insulation, and at all penetrations.

3.4.2.3 Other Equipment

- a. Insulation shall be formed or fabricated to fit the equipment. To ensure a tight fit on round equipment, edges shall be beveled and joints shall be tightly butted and staggered.
- b. Insulation shall be secured in place with bands or wires at intervals as recommended by the manufacturer but not more than 12 inch centers except flexible elastomeric cellular which shall be adhered with contact adhesive. Insulation corners shall be protected under wires and bands with suitable corner angles.
- c. Cellular glass shall be installed in accordance with manufacturer's instructions. Joints and ends shall be sealed with joint sealant, and sealed with a vapor retarder coating.
- d. Insulation on heads of heat exchangers shall be removable. Removable section joints shall be fabricated using a male-female shiplap type joint. The entire surface of the removable section shall be finished by applying two coats of vapor retarder coating with a layer of glass cloth embedded between the coats. The total dry thickness of the finish shall be 1/16 inch.
- e. Exposed insulation corners shall be protected with corner angles.
- f. Insulation on equipment with ribs shall be applied over 6 by 6 inches by 12 gauge welded wire fabric which has been cinched in place, or if approved by the Contracting Officer, spot welded to the equipment over the ribs. Insulation shall be secured to the fabric with J-hooks and 2 by 2 inches washers or shall be securely banded or wired in place on 12 inch centers.

3.4.2.4 Vapor Retarder/Vapor Barrier

Upon completion of installation of insulation, penetrations shall be caulked. Two coats of vapor retarder coating or vapor barrier jacket shall be applied over insulation, including removable sections, with a layer of open mesh synthetic fabric embedded between the coats. The total dry thickness of the finish shall be 1/16 inch. Flashing sealant or vapor barrier tape shall be applied to parting line between equipment and removable section insulation.

3.4.3 Insulation for Hot Equipment

Insulation shall be furnished on equipment handling media above 60 degrees F including the following:

- a. Heat exchangers.
- b. Hot water generators.
- c. Water heaters.
- d. Pumps handling media above 130 degrees F.
- e. Hot water storage tanks.
- f. Air separation tanks.

3.4.3.1 Insulation

Insulation shall be suitable for the temperature encountered. Shell and tube-type heat exchangers shall be insulated for the temperature of the shell medium.

Insulation thickness for hot equipment shall be determined using Table 6:

TABLE 6		
Insulation Thickness for Hot Equipment (inches)		
Equipment handling steam or media at indicated pressure or temperature limit		
	Material	Thickness (inches)
15 psig or 250 degrees F		
	Rigid Mineral Fiber	2
	Flexible Mineral Fiber	2
	Calcium Silicate/Perlite	4
	Cellular Glass	3
	Faced Phenolic Foam	1.5
	Flexible Elastomeric Cellular (<200 F)	1
200psig or 400 degrees F		
	Rigid Mineral Fiber	3
	Flexible Mineral Fiber	3

TABLE 6		
Insulation Thickness for Hot Equipment (inches)		
Equipment handling steam or media at indicated pressure or temperature limit		
	Material	Thickness (inches)
	Calcium Silicate/Perlite	4
	Cellular Glass	4
600 degrees F		
	Rigid Mineral Fiber	5
	Flexible Mineral Fiber	6
	Calcium Silicate/Perlite	6
	Cellular Glass	6
600 degrees F: Thickness necessary to limit the external temperature of the insulation to 120 F. Heat transfer calculations shall be submitted to substantiate insulation and thickness selection.		

3.4.3.2 Insulation of Boiler Stack and Diesel Engine Exhaust Pipe

Inside mechanical Room, bevel insulation neatly around openings and provide sheet metal insulation stop strips around such openings. Apply a skim coat of hydraulic setting cement directly to insulation. Apply a flooding coat of adhesive over hydraulic setting cement, and while still wet, press a layer of glass cloth or tape into adhesive and seal laps and edges with adhesive. Coat glass cloth with adhesive. When dry, apply a finish coat of adhesive at can-consistency so that when dry no glass weave shall be observed. Provide metal jackets for [stacks] [and] [exhaust pipes] that are located above finished floor and spaces outside [boiler house] [mechanical room]. Apply metal jackets directly over insulation and secure with 3/4 inch wide metal bands spaced on 18 inch centers. Do not insulate name plates. Insulation type and thickness shall be in accordance with the following Table 7.

TABLE 7		
Insulation and Thickness for Boiler Stack and Diesel Engine Exhaust Pipe		
Service & Surface Temperature Range (Degrees F)		
	Material	Outside Diameter (Inches)

		0.25 - 1.25	1 - 1.67	3.5-5	6 - 10	> or = 11 - 36
Boiler Stack (Up to 400 degrees F)						
	Mineral Fiber ASTM C585 Class B-3, ASTM C547 Class 1, or ASTM C612 Class 1	N/A	N/A	3	3.5	4
	Calcium Silicate ASTM C533, Type 1	N/A	N/A	3	3.5	4
	Cellular Glass ASTM C552, Type II	1.5	1.5	1.5	2	2.5
Boiler Stack (401 to 600 degrees F)						
	Mineral Fiber ASTM C547 Class 2, ASTM C592 Class 1, or ASTM C612 Class 3	N/A	N/A	4	4	5
	Calcium Silicate ASTM C533, Type I or II	N/A	N/A	4	4	4
	Mineral Fiber/Cellular Glass Composite:					
	Mineral Fiber ASTM C547 Class 2, ASTM C592 Class 1, or ASTM C612 Class 3	1	1	1	1	2
	Cellular Glass ASTM C552, Type II	2	2	2	2	2
Boiler Stack (601 to 800 degrees F)						
	Mineral Fiber ASTM C547 Class 3, ASTM C592 Class 1, or ASTM C612 Class 3	N/A	N/A	4	4	6

TABLE 7						
Insulation and Thickness for Boiler Stack and Diesel Engine Exhaust Pipe						
Service & Surface Temperature Range (Degrees F)						
	Material	Outside Diameter (Inches)				
		0.25 - 1.25	1 - 1.67	3.5-5	6 - 10	> or = 11 - 36
	Calcium Silicate ASTM C533, Type I or II	N/A	N/A	4	4	6
	Mineral Fiber/Cellular Glass Composite:					
	Mineral Fiber ASTM C547 Class 2, ASTM C592 Class 1, or ASTM C612 Class 3	2	2	2	3	3
	Cellular Glass ASTM C552, Type II	2	2	2	2	2
Diesel Engine Exhaust (Up to 700 degrees F)						
	Calcium Silicate ASTM C533, Type I or II	3	3.5	4	4	4
	Cellular Glass ASTM C552, Type II	2.5*	3.5	4	4.5	6

3.4.3.3 Insulation of Pumps

Insulate pumps by forming a box around the pump housing. The box shall be constructed by forming the bottom and sides using joints that do not leave raw ends of insulation exposed. Bottom and sides shall be banded to form a rigid housing that does not rest on the pump. Joints between top cover and sides shall fit tightly. The top cover shall have a joint forming a female shiplap joint on the side pieces and a male joint on the top cover, making the top cover removable. Two coats of Class I adhesive shall be applied over insulation, including removable sections, with a layer of glass cloth embedded between the coats. A parting line

shall be provided between the box and the removable sections allowing the removable sections to be removed without disturbing the insulation coating. The total dry thickness of the finish shall be 1/16 inch. Caulking shall be applied to parting line of the removable sections and penetrations.

3.4.3.4 Other Equipment

- a. Insulation shall be formed or fabricated to fit the equipment. To ensure a tight fit on round equipment, edges shall be beveled and joints shall be tightly butted and staggered.
- b. Insulation shall be secured in place with bands or wires at intervals as recommended by the manufacturer but not greater than 12 inch centers except flexible elastomeric cellular which shall be adhered. Insulation corners shall be protected under wires and bands with suitable corner angles.
- c. On high vibration equipment, cellular glass insulation shall be set in a coating of bedding compound as recommended by the manufacturer, and joints shall be sealed with bedding compound. Mineral fiber joints shall be filled with finishing cement.
- d. Insulation on heads of heat exchangers shall be removable. The removable section joint shall be fabricated using a male-female shiplap type joint. Entire surface of the removable section shall be finished as specified.
- e. Exposed insulation corners shall be protected with corner angles.
- f. On equipment with ribs, such as boiler flue gas connection, draft fans, and fly ash or soot collectors, insulation shall be applied over 6 by 6 inch by 12 gauge welded wire fabric which has been cinched in place, or if approved by the Contracting Officer, spot welded to the equipment over the ribs. Insulation shall be secured to the fabric with J-hooks and 2 by 2 inch washers or shall be securely banded or wired in place on 12 inch (maximum) centers.
- g. On equipment handling media above 600 degrees F, insulation shall be applied in two or more layers with joints staggered.
- h. Upon completion of installation of insulation, penetrations shall be caulked. Two coats of adhesive shall be applied over insulation, including removable sections, with a layer of glass cloth embedded between the coats. The total dry thickness of the finish shall be 1/16 inch. Caulking shall be applied to parting line between equipment and removable section insulation.

3.4.4 Equipment Exposed to Weather

3.4.4.1 Installation

Equipment exposed to weather shall be insulated and finished in accordance with the requirements for ducts exposed to weather in paragraph DUCT INSULATION INSTALLATION.

-- End of Section --

**SECTION 23 23 00
REFRIGERANT PIPING****PART 1 GENERAL****1.1 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AIR-CONDITIONING, HEATING AND REFRIGERATION INSTITUTE (AHRI)

AHRI 710 I-P	(2009) Performance Rating of Liquid-Line Driers
AHRI 720	(2002) Refrigerant Access Valves and Hose Connectors
ANSI/AHRI 750	(2007) Thermostatic Refrigerant Expansion Valves
ANSI/AHRI 760	(2007) Performance Rating of Solenoid Valves for Use With Volatile Refrigerants

**AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-
CONDITIONING ENGINEERS (ASHRAE)**

ANSI/ASHRAE 15 & 34	(2013; Addenda A 2014; ERTA 1 2014; ERTA 2 2015; INT 1 2015; ERTA 3 2015) ANSI/ASHRAE Standard 15-Safety Standard for Refrigeration Systems and ANSI/ASHRAE Standard 34-Designation and Safety Classification of Refrigerants
ASHRAE 17	(2008) Method of Testing Capacity of Thermostatic Refrigerant Expansion Valves

AMERICAN WELDING SOCIETY (AWS)

AWS A5.8/A5.8M	(2011; Amendment 2012) Specification for Filler Metals for Brazing and Braze Welding
AWS BRH	(2007; 5th Ed) Brazing Handbook
AWS D1.1/D1.1M	(2015) Structural Welding Code - Steel
AWS Z49.1	(2012) Safety in Welding and Cutting and Allied Processes

ASME INTERNATIONAL (ASME)

ASME B1.20.1	(2013) Pipe Threads, General Purpose (Inch)
ASME B16.11	(2011) Forged Fittings, Socket-Welding and Threaded
ASME B16.21	(2011) Nonmetallic Flat Gaskets for Pipe Flanges
ASME B16.22	(2013) Standard for Wrought Copper and Copper Alloy Solder Joint Pressure Fittings
ASME B16.26	(2013) Standard for Cast Copper Alloy Fittings for Flared Copper Tubes
ASME B16.3	(2011) Malleable Iron Threaded Fittings, Classes 150 and 300
ASME B16.5	(2013) Pipe Flanges and Flanged Fittings: NPS 1/2 Through NPS 24 Metric/Inch Standard
ASME B16.9	(2012) Standard for Factory-Made Wrought Steel Buttwelding Fittings
ASME B31.1	(2014; INT 1-47) Power Piping
ASME B31.5	(2013) Refrigeration Piping and Heat Transfer Components
ASME B31.9	(2014) Building Services Piping
ASME B40.100	(2013) Pressure Gauges and Gauge Attachments
ASME BPVC SEC IX	(2010) BPVC Section IX-Welding and Brazing Qualifications

ASTM INTERNATIONAL (ASTM)

ASTM A193/A193M	(2015) Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High-Temperature Service and Other Special Purpose Applications
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ASTM A334/A334M	(2004a; R 2010) Standard Specification for Seamless and Welded Carbon and Alloy-Steel Tubes for Low-Temperature Service
ASTM A53/A53M	(2012) Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
ASTM A653/A653M	(2015) Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
ASTM B117	(2011) Standard Practice for Operating Salt Spray (Fog) Apparatus
ASTM B280	(2013) Standard Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service
ASTM B32	(2008; R 2014) Standard Specification for Solder Metal
ASTM B62	(2015) Standard Specification for Composition Bronze or Ounce Metal Castings
ASTM B75/B75M	(2011) Standard Specification for Seamless Copper Tube
ASTM B813	(2010) Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube
ASTM D3308	(2012) PTFE Resin Skived Tape
ASTM D520	(2000; R 2011) Zinc Dust Pigment
ASTM E84	(2015a) Standard Test Method for Surface Burning Characteristics of Building Materials

MANUFACTURERS STANDARDIZATION SOCIETY OF THE VALVE AND
FITTINGS INDUSTRY (MSS)

MSS SP-58	(1993; Reaffirmed 2010) Pipe Hangers and Supports - Materials, Design and Manufacture, Selection, Application, and Installation
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MSS SP-69

(2003; Notice 2012) Pipe Hangers and Supports -
Selection and Application (ANSI Approved
American National Standard)

1.2 SUBMITTALS

Refrigerant Piping System

1.3 QUALITY ASSURANCE

1.3.1 Qualifications

Submit 6 copies of qualified procedures, and list of names and identification symbols of qualified welders and welding operators, prior to non-factory welding operations. Piping shall be welded in accordance with the qualified procedures using performance qualified welders and welding operators.

1.3.2 Contract Drawings

Because of the small scale of the drawings, it is not possible to indicate all offsets, fittings, and accessories that may be required. Carefully investigate the plumbing, fire protection, electrical, structural and finish conditions that would affect the work to be performed and arrange such work accordingly, furnishing required offsets, fittings, and accessories to meet such conditions.

1.4 DELIVERY, STORAGE, AND HANDLING

Protect stored items from the weather, humidity and temperature variations, dirt and dust, or other contaminants. Proper protection and care of all material both before and during installation is the Contractor's responsibility. Replace any materials found to be damaged at the Contractor's expense. During installation, cap piping and similar openings to keep out dirt and other foreign matter.

1.5 MAINTENANCE

1.5.1 General

Submit Data Package 2 plus operation and maintenance data complying with the requirements of Section 01 78 23 OPERATION AND MAINTENANCE DATA and as specified herein.

1.5.2 Extra Materials

Submit spare parts data for each different item of equipment specified, after approval of detail drawings and not later than 1 months prior to the date of beneficial occupancy. The data shall include a complete list of parts and supplies, with current unit prices and source of supply, a recommended spare parts list for 1 year of operation, and a list of the parts recommended by the manufacturer to be replaced on a routine basis.

PART 2 PRODUCTS

2.1 STANDARD COMMERCIAL PRODUCTS

- a. Provide materials and equipment which are standard products of a manufacturer regularly engaged in the manufacturing of such products, that are of a similar material, design and workmanship and that have been in satisfactory commercial or industrial use for 2 years prior to bid opening.
- b. The 2 year use shall include applications of equipment and materials under similar circumstances and of similar size. The 2 years experience shall be satisfactorily completed by a product which has been sold or is offered for sale on the commercial market through advertisements, manufacturer's catalogs, or brochures. Products having less than a 2 year field service record will be acceptable if a certified record of satisfactory field operation, for not less than 6000 hours exclusive of the manufacturer's factory tests, can be shown.
- c. Products shall be supported by a service organization. System components shall be environmentally suitable for the indicated locations. Submit a certified list of qualified permanent service organizations for support of the equipment which includes their addresses and qualifications. The service organizations shall be reasonably convenient to the equipment installation and be able to render satisfactory service to the equipment on a regular and emergency basis during the warranty period of the contract.
- d. Exposed equipment moving parts, parts that produce high operating temperature, parts which may be electrically energized, and parts that may be a hazard to operating personnel shall be insulated, fully enclosed, guarded, or fitted with other types of safety devices. Install safety devices so that proper operation of equipment is not impaired. Welding and cutting safety requirements shall be in accordance with AWS Z49.1.
- e. Manufacturer's standard catalog data, at least [5 weeks] [] prior to the purchase or installation of a particular component, highlighted to show material, size, options, performance charts and curves, etc. in adequate detail to demonstrate compliance with contract requirements. Include in the data manufacturer's recommended installation instructions and procedures. Provide data for the following components as a minimum:

- (1) Piping and Fittings
- (2) Valves
- (3) Piping Accessories
- (4) Pipe Hangers, Inserts, and Supports

2.2 REFRIGERANT PIPING SYSTEM

Refrigerant piping, valves, fittings, and accessories shall be in accordance with ANSI/ASHRAE 15 & 34 and ASME B31.5, except as specified herein. Refrigerant piping, valves, fittings, and accessories shall be compatible with the fluids used and capable of withstanding the pressures and temperatures of the service. Refrigerant piping, valves, and accessories used for refrigerant service shall be cleaned, dehydrated, and sealed (capped or plugged) prior to shipment from the manufacturer's plant.

2.3 PIPE, FITTINGS AND END CONNECTIONS (JOINTS)

2.3.3 Copper Tubing

Copper tubing shall conform to ASTM B280 annealed or hard drawn as required. Copper tubing shall be soft annealed where bending is required and hard drawn where no bending is required. Soft annealed copper tubing shall not be used in sizes larger than 1-3/8 inches. Joints shall be brazed except that joints on lines 7/8 inch and smaller may be flared. Cast copper alloy fittings for flared copper tube shall conform to ASME B16.26 and ASTM B62. Wrought copper and bronze solder-joint pressure fittings shall conform to ASME B16.22 and ASTM B75/B75M. Joints and fittings for brazed joint shall be wrought-copper or forged-brass sweat fittings. Cast sweat-type joints and fittings shall not be allowed for brazed joints. Brass or bronze adapters for brazed tubing may be used for connecting tubing to flanges and to threaded ends of valves and equipment.

2.3.4 Solder

Solder shall conform to ASTM B32, grade Sb5, tin-antimony alloy for service pressures up to 150 psig. Solder flux shall be liquid or paste form, non-corrosive and conform to ASTM B813.

2.3.5 Brazing Filler Metal

Filler metal shall conform to AWS A5.8/A5.8M, Type BAg-5 with AWS Type 3 flux, except Type BCuP-5 or BCuP-6 may be used for brazing copper-to-copper joints.

2.4 VALVES

Valves shall be designed, manufactured, and tested specifically for refrigerant service. Valve bodies shall be of brass, bronze, steel, or ductile iron construction.

Valves 1 inch and smaller shall have brazed or socket welded connections. Valves larger than 1 inch shall have [tongue-and-groove flanged] [butt welded] end connections. Threaded end connections shall not be used, except in pilot pressure or gauge lines where maintenance disassembly is required and welded flanges cannot be used. Internal parts shall be removable for inspection or replacement without applying heat or breaking pipe connections. Valve stems exposed to the atmosphere shall be stainless steel or corrosion resistant metal plated carbon steel. Direction of flow shall be legibly and permanently indicated on the valve body. Control valve inlets shall be fitted with integral or adapted strainer or filter where recommended or required by the manufacturer. Purge, charge and receiver valves shall be of manufacturer's standard configuration.

2.4.1 Refrigerant Stop Valves

Valve shall be the globe or full-port ball type with a back-seating stem especially packed for refrigerant service. Valve packing shall be replaceable under line pressure. Valve shall be provided with a [handwheel] [or] [wrench] operator and a seal cap. Valve shall be the straight or angle pattern design as indicated.

2.4.2 Check Valves

Valve shall be the swing or lift type as required to provide positive shutoff at the differential pressure indicated. Valve shall be provide with resilient seat.

2.4.3 Liquid Solenoid Valves

Valves shall comply with ANSI/AHRI 760 and be suitable for continuous duty with applied voltages 15 percent under and 5 percent over nominal rated voltage at maximum and minimum encountered pressure and temperature service conditions. Valves shall be direct-acting or pilot-operating type, packless, except that packed stem, seal capped, manual lifting provisions shall be furnished. Solenoid coils shall be moisture-proof, UL approved, totally encapsulated or encapsulated and metal jacketed as required. Valves shall have safe working pressure of 400 psi and a maximum operating pressure differential of at least 200 psi at 85 percent rated voltage. Valves shall have an operating pressure differential suitable for the refrigerant used.

2.4.4 Expansion Valves

Valve shall conform to ANSI/AHRI 750 and ASHRAE 17. Valve shall be the diaphragm and spring-loaded type with internal or external equalizers, and bulb and capillary tubing. Valve shall be provided with an external superheat adjustment along with a seal cap. Internal equalizers may be utilized where flowing refrigerant pressure drop between outlet of the valve and inlet to the evaporator coil is negligible and pressure drop across the evaporator is less than the pressure difference corresponding to 2 degrees F of saturated suction temperature at evaporator

conditions. Bulb charge shall be determined by the manufacturer for the application and such that liquid will remain in the bulb at all operating conditions. Gas limited liquid charged valves and other valve devices for limiting evaporator pressure shall not be used without a distributor or discharge tube or effective means to prevent loss of control when bulb becomes warmer than valve body. Pilot-operated valves shall have a characterized plug to provide required modulating control. A de-energized solenoid valve may be used in the pilot line to close the main valve in lieu of a solenoid valve in the main liquid line. An isolatable pressure gauge shall be provided in the pilot line, at the main valve. Automatic pressure reducing or constant pressure regulating expansion valves may be used only where indicated or for constant evaporator loads.

2.4.5 Safety Relief Valves

Valve shall be the two-way type, unless indicated otherwise. Valve shall bear the ASME code symbol. Valve capacity shall be certified by the National Board of Boiler and Pressure Vessel Inspectors. Valve shall be of an automatically reseating design after activation.

2.4.6 Evaporator Pressure Regulators, Direct-Acting

Valve shall include a diaphragm/spring assembly, external pressure adjustment with seal cap, and pressure gauge port. Valve shall maintain a constant inlet pressure by balancing inlet pressure on diaphragm against an adjustable spring load. Pressure drop at system design load shall not exceed the pressure difference corresponding to a 2 degrees F change in saturated refrigerant temperature at evaporator operating suction temperature. Spring shall be selected for indicated maximum allowable suction pressure range.

2.4.7 Refrigerant Access Valves

Refrigerant access valves and hose connections shall be in accordance with AHRI 720.

2.5 PIPING ACCESSORIES

2.5.1 Filter Driers

Driers shall conform to AHRI 710 I-P. Sizes 5/8 inch and larger shall be the full flow, replaceable core type. Sizes 1/2 inch and smaller shall be the sealed type. Cores shall be of suitable desiccant that will not plug, cake, dust, channel, or break down, and shall remove water, acid, and foreign material from the refrigerant. Filter driers shall be constructed so that none of the desiccant will pass into the refrigerant lines. Minimum bursting pressure shall be 1,500 psi.

2.5.2 Sight Glass and Liquid Level Indicator

2.5.2.1 Assembly and Components

Assembly shall be pressure- and temperature-rated and constructed of materials suitable for the service. Glass shall be borosilicate type. Ferrous components subject to condensation shall be electro-galvanized.

2.5.2.2 Gauge Glass

Gauge glass shall include top and bottom isolation valves fitted with automatic checks, and packing followers; red-line or green-line gauge glass; elastomer or polymer packing to suit the service; and gauge glass guard.

2.5.2.3 Bull's-Eye and Inline Sight Glass Reflex Lens

Bull's-eye and inline sight glass reflex lens shall be provided for dead-end liquid service. For pipe line mounting, two plain lenses in one body suitable for backlighted viewing shall be provided.

2.5.2.4 Moisture Indicator

Indicator shall be a self-reversible action, moisture reactive, color changing media. Indicator shall be furnished with full-color-printing tag containing color, moisture and temperature criteria. Unless otherwise indicated, the moisture indicator shall be an integral part of each corresponding sight glass.

2.5.3 Vibration Dampeners

Dampeners shall be of the all-metallic bellows and woven-wire type.

2.5.4 Flexible Pipe Connectors

Connector shall be a composite of interior corrugated phosphor bronze or Type 300 Series stainless steel, as required for fluid service, with exterior reinforcement of bronze, stainless steel or monel wire braid. Assembly shall be constructed with a safety factor of not less than 4 at 300 degrees F. Unless otherwise indicated, the length of a flexible connector shall be as recommended by the manufacturer for the service intended.

2.5.5 Strainers

Strainers used in refrigerant service shall have brass or cast iron body, Y-or angle-pattern, cleanable, not less than 60-mesh noncorroding screen of an area to provide net free area not less than ten times the pipe diameter with pressure rating

compatible with the refrigerant service. Screens shall be stainless steel or monel and reinforced spring-loaded where necessary for bypass-proof construction.

2.5.6 Pressure and Vacuum Gauges

Gauges shall conform to ASME B40.100 and shall be provided with throttling type needle valve or a pulsation dampener and shut-off valve. Gauge shall be a minimum of 3-1/2 inches in diameter with a range from 0 psig to approximately 1.5 times the maximum system working pressure. Each gauge range shall be selected so that at normal operating pressure, the needle is within the middle-third of the range.

2.5.7 Temperature Gauges

Temperature gauges shall be the industrial duty type and be provided for the required temperature range. Gauges shall have Fahrenheit scale in 2 degrees graduations scale (black numbers) on a white face. The pointer shall be adjustable. Rigid stem type temperature gauges shall be provided in thermal wells located within 5 feet of the finished floor. Universal adjustable angle type or remote element type temperature gauges shall be provided in thermal wells located 5 to 7 feet above the finished floor. Remote element type temperature gauges shall be provided in thermal wells located 7 feet above the finished floor.

2.5.1 Stem Cased-Glass

Stem cased-glass case shall be polished stainless steel or cast aluminum, 9 inches long, with clear acrylic lens, and non-mercury filled glass tube with indicating-fluid column.

2.5.7.2 Bimetallic Dial

Bimetallic dial type case shall be not less than 3-1/2 inches, stainless steel, and shall be hermetically sealed with clear acrylic lens. Bimetallic element shall be silicone dampened and unit fitted with external calibrator adjustment. Accuracy shall be one percent of dial range.

2.5.7.3 Liquid-, Solid-, and Vapor-Filled Dial

Liquid-, solid-, and vapor-filled dial type cases shall be not less than 3-1/2 inches, stainless steel or cast aluminum with clear acrylic lens. Fill shall be nonmercury, suitable for encountered cross-ambients, and connecting capillary tubing shall be double-braided bronze.

2.5.7.4 Thermal Well

Thermal well shall be identical size, 1/2 or 3/4 inch NPT connection, brass or stainless steel. Where test wells are indicated, provide captive plug-fitted type 1/2

inch NPT connection suitable for use with either engraved stem or standard separable socket thermometer or thermostat. Mercury shall not be used in thermometers. Extended neck thermal wells shall be of sufficient length to clear insulation thickness by 1 inch.

2.5.8 Pipe Hangers, Inserts, and Supports

Pipe hangers, inserts, guides, and supports shall conform to MSS SP-58.

2.5.9 Escutcheons

Escutcheons shall be chromium-plated iron or chromium-plated brass, either one piece or split pattern, held in place by internal spring tension or set screws.

2.6 FABRICATION

2.6.1 Factory Coating

Unless otherwise specified, equipment and component items, when fabricated from ferrous metal, shall be factory finished with the manufacturer's standard finish, except that items located outside of buildings shall have weather resistant finishes that will withstand [125] [500] hours exposure to the salt spray test specified in ASTM B117 using a 5 percent sodium chloride solution. Immediately after completion of the test, the specimen shall show no signs of blistering, wrinkling, cracking, or loss of adhesion and no sign of rust creepage beyond 1/8 inch on either side of the scratch mark. Cut edges of galvanized surfaces where hot-dip galvanized sheet steel is used shall be coated with a zinc-rich coating conforming to ASTM D520, Type I.

2.6.2 Factory Applied Insulation

[Refrigerant suction lines between the cooler and each compressor [and cold gas inlet connections to gas cooled motors]] [Refrigerant pumps and exposed chilled water lines on absorption chillers] shall be insulated with not less than 3/4 inch thick unicellular plastic foam. Factory insulated items installed outdoors are not required to be fire-rated. As a minimum, factory insulated items installed indoors shall have a flame spread index no higher than 75 and a smoke developed index no higher than 150. Factory insulated items (no jacket) installed indoors and which are located in air plenums, in ceiling spaces, and in attic spaces shall have a flame spread index no higher than 25 and a smoke developed index no higher than 50. Flame spread and smoke developed indexes shall be determined by ASTM E84. Insulation shall be tested in the same density and installed thickness as the material to be used in the actual construction. Material supplied by a manufacturer with a jacket shall be tested as a composite material. Jackets, facings, and adhesives shall have a flame spread index no higher than 25 and a smoke developed index no higher than 50 when tested in accordance with ASTM E84.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming familiar with all details of the work, perform a verification of dimensions in the field. Submit a letter, at least [2] [] weeks prior to beginning construction, including the date the site was visited, conformation of existing conditions, and any discrepancies found before performing any work.

3.2 INSTALLATION

Pipe and fitting installation shall conform to the requirements of ASME B31.1. Cut pipe accurately to measurements established at the jobsite, and work into place without springing or forcing, completely clearing all windows, doors, and other openings. Cutting or other weakening of the building structure to facilitate piping installation are not permitted without written approval. Cut pipe or tubing square, removed by reaming, and permit free expansion and contraction without causing damage to the building structure, pipe, joints, or hangers.

3.2.1 Directional Changes

Make changes in direction with fittings, except that bending of pipe 4 inches and smaller is permitted, provided a pipe bender is used and wide weep bends are formed. Mitering or notching pipe or other similar construction to form elbows or tees is not permitted. The centerline radius of bends shall not be less than 6 diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening, or other malformations will not be accepted.

3.2.2 Functional Requirements

Piping shall be installed 1/2 inch/10 feet of pipe in the direction of flow to ensure adequate oil drainage. Open ends of refrigerant lines or equipment shall be properly capped or plugged during installation to keep moisture, dirt, or other foreign material out of the system. Piping shall remain capped until installation. Equipment piping shall be in accordance with the equipment manufacturer's recommendations and the contract drawings. Equipment and piping arrangements shall fit into space allotted and allow adequate acceptable clearances for installation, replacement, entry, servicing, and maintenance.

3.2.3 Fittings and End Connections

3.2.3.1 Threaded Connections

Make threaded connections with tapered threads and make tight with PTFE tape complying with ASTM D3308 or equivalent thread-joint compound applied to the male threads only. Show not more than three threads after the joint is made.

3.2.3.2 Brazed Connections

Perform brazing in accordance with AWS BRH, except as modified herein. During brazing, fill the pipe and fittings with a pressure regulated inert gas, such as nitrogen, to prevent the formation of scale. Before brazing copper joints, clean both the outside of the tube and the inside of the fitting with a wire fitting brush until the entire joint surface is bright and clean. Do not use brazing flux. Remove surplus brazing material at all joints. Make steel tubing joints in accordance with the manufacturer's recommendations. Paint joints in steel tubing with the same material as the baked-on coating within 8 hours after joints are made. Protect tubing against oxidation during brazing by continuous purging of the inside of the piping using nitrogen. Support piping prior to brazing and do not spring or force.

3.2.3.3 Welded Connections

Welded joints in steel refrigerant piping shall be fusion-welded. Branch connections shall be made with welding tees or forged welding branch outlets. Pipe shall be thoroughly cleaned of all scale and foreign matter before the piping is assembled. During welding the pipe and fittings shall be filled with an inert gas, such as nitrogen, to prevent the formation of scale. Beveling, alignment, heat treatment, and inspection of weld shall conform to ASME B31.1. Weld defects shall be removed and rewelded at no additional cost to the Government. Electrodes shall be stored and dried in accordance with AWS D1.1/D1.1M or as recommended by the manufacturer. Electrodes that have been wetted or that have lost any of their coating shall not be used.

3.2.3.4 Flared Connections

When flared connections are used, a suitable lubricant shall be used between the back of the flare and the nut in order to avoid tearing the flare while tightening the nut.

3.2.3.5 Flanged Connections

When steel refrigerant piping is used, union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment requiring maintenance, such as compressors, coils, chillers, control valves, and other similar items. Flanged joints shall be assembled square end tight with matched flanges, gaskets, and bolts. Gaskets shall be suitable for use with the refrigerants to be handled.

3.2.4 Valves

3.2.4.1 General

Refrigerant stop valves shall be installed on each side of each piece of equipment such as compressors condensers, evaporators, receivers, and other similar items in multiple-unit installation, to provide partial system isolation as required for maintenance or repair. Stop valves shall be installed with stems horizontal unless otherwise indicated. Ball valves shall be installed with stems positioned to facilitate operation and maintenance. Isolating valves for pressure gauges and switches shall be external to thermal insulation. Safety switches shall not be fitted with isolation valves. Filter dryers having access ports may be considered a point of isolation. Purge valves shall be provided at all points of systems where accumulated non condensable gases would prevent proper system operation. Valves shall be furnished to match line size, unless otherwise indicated or approved.

3.2.4.2 Expansion Valves

Expansion valves shall be installed with the thermostatic expansion valve bulb located on top of the suction line when the suction line is less than 2-1/8 inches in diameter and at the 4 o'clock or 8 o'clock position on lines larger than 2-1/8 inches. The bulb shall be securely fastened with two clamps. The bulb shall be insulated. The bulb shall installed in a horizontal portion of the suction line, if possible, with the pigtail on the bottom. If the bulb must be installed in a vertical line, the bulb tubing shall be facing up.

3.2.4.3 Valve Identification

Each system valve, including those which are part of a factory assembly, shall be tagged. Tags shall be in alphanumeric sequence, progressing in direction of fluid flow. Tags shall be embossed, engraved, or stamped plastic or nonferrous metal of various shapes, sized approximately 1-3/8 inch diameter, or equivalent dimension, substantially attached to a component or immediately adjacent thereto. Tags shall be attached with nonferrous, heavy duty, bead or link chain, 14 gauge annealed wire, nylon cable bands or as approved. Tag numbers shall be referenced in Operation and Maintenance Manuals and system diagrams.

3.2.5 Vibration Dampers

Vibration damper shall be provided in the suction and discharge lines on spring mounted compressors. Vibration dampers shall be installed parallel with the shaft of the compressor and shall be anchored firmly at the upstream end on the suction line and the downstream end in the discharge line.

3.2.6 Strainers

Strainers shall be provided immediately ahead of solenoid valves and expansion devices. Strainers may be an integral part of an expansion valve.

3.2.7 Filter Dryer

A liquid line filter dryer shall be provided on each refrigerant circuit located such that all liquid refrigerant passes through a filter dryer. Dryers shall be sized in accordance with the manufacturer's recommendations for the system in which it is installed. Dryers shall be installed such that it can be isolated from the system, the isolated portion of the system evacuated, and the filter dryer replaced. Dryers shall be installed in the horizontal position except replaceable core filter dryers may be installed in the vertical position with the access flange on the bottom.

3.2.8 Sight Glass

A moisture indicating sight glass shall be installed in all refrigerant circuits downstream of all filter dryers and where indicated. Sight glasses shall be full line size.

3.2.9 Discharge Line Oil Separator

Discharge line oil separator shall be provided in the discharge line from each compressor. Oil return line shall be connected to the compressor as recommended by the compressor manufacturer.

3.2.10 Accumulator

Accumulators shall be provided in the suction line to each compressor.

3.2.11 Flexible Pipe Connectors

Connectors shall be installed perpendicular to line of motion being isolated. Piping for equipment with bidirectional motion shall be fitted with two flexible connectors, in perpendicular planes. Reinforced elastomer flexible connectors shall be installed in accordance with manufacturer's instructions. Piping guides and restraints related to flexible connectors shall be provided as required.

3.2.12 Temperature Gauges

Temperature gauges shall be located specifically on, but not limited to the following: [the sensing element of each automatic temperature control device where a thermometer is not an integral part thereof] [the liquid line leaving a receiver] [and] [the suction line at each evaporator or liquid cooler]. Thermal wells for insertion thermometers and thermostats shall extend beyond thermal insulation surface not less than 1 inch.

3.2.13 Pipe Hangers, Inserts, and Supports

Pipe hangers, inserts, and supports shall conform to MSS SP-58, except as modified herein. Pipe hanger types 5, 12, and 26 shall not be used. Hangers used to support

piping 2 inches and larger shall be fabricated to permit adequate adjustment after erection while still supporting the load. Piping subjected to vertical movement, when operating temperatures exceed ambient temperatures, shall be supported by variable spring hangers and supports or by constant support hangers.

3.2.13.1 Hangers

Do not use Type 3 on insulated piping. Type 24 may be used only on trapeze hanger systems or on fabricated frames.

3.2.13.2 Inserts

Secure Type 18 inserts to concrete forms before concrete is placed. Continuous inserts which allow more adjustments may be used if they otherwise meet the requirements for Type 18 inserts.

3.2.13.3 C-Clamps

Torque Type 19 and 23 C-clamps in accordance with MSS SP-69 and have both locknuts and retaining devices, furnished by the manufacturer. Field-fabricated C-clamp bodies or retaining devices are not acceptable.

3.2.13.4 Angle Attachments

Type 20 attachments used on angles and channels shall be furnished with an added malleable-iron heel plate or adapter.

3.2.13.5 Saddles and Shields

Where Type 39 saddle or Type 40 shield are permitted for a particular pipe attachment application, the Type 39 saddle, connected to the pipe, shall be used on all pipe 4 inches and larger when the temperature of the medium is 60 degrees F or higher. Type 40 shields shall be used on all piping less than 4 inches and all piping 4 inches and larger carrying medium less than 60 degrees F. A high density insulation insert of cellular glass shall be used under the Type 40 shield for piping 2 inches and larger.

3.2.13.6 Horizontal Pipe Supports

Horizontal pipe supports shall be spaced as specified in MSS SP-69 and a support shall be installed not over 1 foot from the pipe fitting joint at each change in direction of the piping. Pipe supports shall be spaced not over 5 feet apart at valves. [Pipe hanger loads suspended from steel joist with hanger loads between panel points in excess of 50 pounds shall have the excess hanger loads suspended from panel points.]

3.2.13.7 Vertical Pipe Supports

Vertical pipe shall be supported at each floor, except at slab-on-grade, and at intervals of not more than 15 feet not more than 8 feet from end of risers, and at vent terminations.

3.2.13.8 Pipe Guides

Type 35 guides using, steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides shall be provided where required to allow longitudinal pipe movement. Lateral restraints shall be provided as required. Slide materials shall be suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered.

3.2.13 Pipe Anchors

Anchors shall be provided wherever necessary or indicated to localize expansion or to prevent undue strain on piping. Anchors shall consist of heavy steel collars with lugs and bolts for clamping and attaching anchor braces, unless otherwise indicated. Anchor braces shall be installed in the most effective manner to secure the desired results using turnbuckles where required. Supports, anchors, or stays shall not be attached where they will injure the structure or adjacent construction during installation or by the weight of expansion of the pipeline. Where pipe and conduit penetrations of vapor barrier sealed surfaces occur, these items shall be anchored immediately adjacent to each penetrated surface, to provide essentially zero movement within penetration seal. Detailed drawings of pipe anchors shall be submitted for approval before installation.

3.2.14 Building Surface Penetrations

Sleeves shall not be installed in structural members except where indicated or approved. Sleeves in nonload bearing surfaces shall be galvanized sheet metal, conforming to ASTM A653/A653M, Coating Class G-90, 20 gauge. Sleeves in load bearing surfaces shall be uncoated carbon steel pipe, conforming to ASTM A53/A53M, [Schedule 30] [Schedule 20] [Standard weight]. Sealants shall be applied to moisture and oil-free surfaces and elastomers to not less than 1/2 inch depth. Sleeves shall not be installed in structural members.

3.2.14.1 Waterproof Penetrations

Pipes passing through roof or floor waterproofing membrane shall be installed through a 17 ounce copper sleeve, or a 0.032 inch thick aluminum sleeve, each within an integral skirt or flange. Flashing sleeve shall be suitably formed, and skirt or flange shall extend not less than 8 inches from the pipe and be set over the roof or floor membrane in a troweled coating of bituminous cement. The flashing sleeve shall extend up the pipe a minimum of 2 inches above the roof or floor penetration. The

annular space between the flashing sleeve and the bare pipe or between the flashing sleeve and the metal-jacket-covered insulation shall be sealed as indicated. Penetrations shall be sealed by either one of the following methods.

3.2.14.2 Waterproofing membrane may be installed through a cast iron sleeve with caulking recess, anchor lugs, flashing clamp device, and pressure ring with brass bolts. Waterproofing membrane shall be clamped into place and sealant shall be placed in the caulking recess.

3.2.14. Field Applied Insulation

Field installed insulation shall be as specified in Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS, except as defined differently herein.

3.2.15 Field Painting

Painting required for surfaces not otherwise specified, and finish painting of items only primed at the factory are specified in Section 09 90 00 PAINTS AND COATINGS.

3.3 CLEANING AND ADJUSTING

Clean uncontaminated system(s) by evacuation and purging procedures currently recommended by refrigerant and refrigerant equipment manufacturers, and as specified herein, to remove small amounts of air and moisture. Systems containing moderate amounts of air, moisture, contaminated refrigerant, or any foreign matter shall be considered contaminated systems. Restoring contaminated systems to clean condition including disassembly, component replacement, evacuation, flushing, purging, and re-charging, shall be performed using currently approved refrigerant and refrigeration manufacturer's procedures. Restoring contaminated systems shall be at no additional cost to the Government as determined by the Contracting Officer. Water shall not be used in any procedure or test.

3. EVACUATION TEST

Following satisfactory completion of the pneumatic tests, the pressure shall be relieved and the entire system shall be evacuated to an absolute pressure of 300 micrometers. During evacuation of the system, the ambient temperature shall be higher than 35 degrees F. No more than one system shall be evacuated at one time by one vacuum pump. Once the desired vacuum has been reached, the vacuum line shall be closed and the system shall stand for 1 hour. If the pressure rises over 500 micrometers after the 1 hour period, then the system shall be evacuated again down to 300 micrometers and let set for another 1 hour period. The system shall not be charged until a vacuum of at least 500 micrometers is maintained for a period of 1 hour without the assistance of a vacuum line. If during the testing the pressure continues to rise, check the system for leaks, repair as required, and repeat the

evacuation procedure. During evacuation, pressures shall be recorded by a thermocouple-type, electronic-type, or a calibrated-micrometer type gauge.

3.5.4 System Charging and Startup Test

Following satisfactory completion of the evacuation tests, the system shall be charged with the required amount of refrigerant by raising pressure to normal operating pressure and in accordance with manufacturer's procedures. Following charging, the system shall operate with high-side and low-side pressures and corresponding refrigerant temperatures, at design or improved values. The entire system shall be tested for leaks. Fluorocarbon systems shall be tested with halide torch or electronic leak detectors.

3.5.5 Refrigerant Leakage

If a refrigerant leak is discovered after the system has been charged, the leaking portion of the system shall immediately be isolated from the remainder of the system and the refrigerant pumped into the system receiver or other suitable container. Under no circumstances shall the refrigerant be discharged into the atmosphere.

3.5.6 Contractor's Responsibility

At all times during the installation and testing of the refrigeration system, take steps to prevent the release of refrigerants into the atmosphere. The steps shall include, but not be limited to, procedures which will minimize the release of refrigerants to the atmosphere and the use of refrigerant recovery devices to remove refrigerant from the system and store the refrigerant for reuse or reclaim. At no time shall more than 3 ounces of refrigerant be released to the atmosphere in any one occurrence. Any system leaks within the first year shall be repaired in accordance with the requirements herein at no cost to the OWNER including material, labor, and refrigerant if the leak is the result of defective equipment, material, or installation.

-- End of Section --

SECTION 23 37 13 DIFFUSERS, REGISTERS, AND GRILLES

PART 1 GENERAL

1.1 ADMINISTRATIVE REQUIREMENTS

Section **23 00 00** AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS applies to work specified in this section.

1.2 SUBMITTALS

Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

Product Data

Equipment and Performance Data

Operation and Maintenance Data

PART 2 PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

Certify air diffusion devices having been tested and rated in accordance with [Chapter 19-ASHRAE EQUIP IP HDBK](#), [Chapter 16-ASHRAE FUN IP](#), and ASHRAE 113, where such certification is required.

Submit equipment and performance data for air-diffusion devices consisting of sound data in terms of Noise Criteria (NC) index for the capacity range of the device. Where space or sound data are not specified or indicated, assume NC40.

2.2 COMPONENTS

2.2.1 Air Diffusion Device Construction

Preclude flutter, rattle, or vibration on air-diffusion device construction and mounting. Refer to Section 23 05 48.00 40 VIBRATION AND SEISMIC CONTROLS FOR HVAC PIPING AND EQUIPMENT for vibration isolation considerations. Modify devices and provide accessories necessary for mounting in indicated surface construction.

Select color from manufacturer's standard color chart which indicates the manufacturer's standard color selections and finishes for air-diffusion devices.

Provide supply diffusers with combination damper and equalizing grid. Ensure dampers are extracting-splitter type, except as otherwise indicated.

Ensure air-diffusion device volume and pattern adjustments can be made from the face of the device. Make volume adjustments by tamper-deterring device.

Provide gaskets for supply-terminal air devices mounted in finished surfaces.

Include within the material, equipment, and fixture lists the manufacturer's style or catalog numbers, specification and drawing reference numbers, warranty information, and fabrication site information.

2.2.2 Types of Air Diffusion Devices

2.2.2.1 Type DSA

Provide type DSA supply diffuser, square with four expanding flared members to provide radically diffused discharge air. Arrange flared members to provide a minimum of four air paths which simultaneously diffuse air at **20 to 50 fpm**. Include pattern adjustments horizontal, vertical projection, and an intermediate position or range.

Provide a baked enamel finish.

Provide aluminum construction.

Provide integral extended surface to fit into module of lay-in ceiling.

2.2.2.2 Type GS

Provide type GS supply grill double deflection type with adjustable face bars parallel to short dimension and adjustable rear bars parallel to long dimension.

Provide a baked enamel finish.

Provide aluminum construction.

Provide integral extended surface to fit into module of lay-in ceiling.

2.2.2.3 Type GR

Provide type GR return grills, $\frac{1}{2}$ " egg crate

Provide a baked enamel finish.

Provide integral extended surface to fit into module of lay-in ceiling.

PART 3 EXECUTION

3.1 INSTALLATION

Install equipment as indicated and specified and in accordance with manufacturer's recommendations.

Mount wall-mounted supply registers **6 inches** below ceiling.

Mount wall-mounted return registers **6 inches** above the finished floor.

Submit installation drawings for air-diffusion devices. Indicate on drawings overall physical features, dimensions, ratings, service requirements, and equipment weights.

3.1.1 Operations and Maintenance Manuals

Provide operation and maintenance manuals consistent with manufacturer's standard brochures, schematics, printed instructions, general operating procedures and safety precautions.

-- End of Section --

SECTION 23 54 16
HEATING SYSTEM: GAS-FIRED HEATERS**PART 1 GENERAL****1.1 SUBMITTALS**

Product Data

Operation and Maintenance Data

Operation and Maintenance Instructions

1.3 QUALITY ASSURANCE

Submit detail drawings consisting of illustrations, schedules, performance charts, instructions, brochures, diagrams, and other information to illustrate the requirements and operation of the system. Detail drawings for space heating equipment, controls, associated equipment, and for piping and wiring. Drawings shall show proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of the work including clearances for maintenance and operation.

1.4 DELIVERY, STORAGE, AND HANDLING

Protect all equipment delivered and placed in storage from weather, humidity and temperature variations, dirt and dust, or other contaminants.

1.5 EXTRA MATERIALS

Submit spare parts data for each different item of material and equipment specified, after approval of the detail drawings, and not later than 3 months prior to the date of beneficial occupancy. Include in the data a complete list of parts and supplies, with current unit prices and source of supply.

PART 2 PRODUCTS**2.1 MATERIALS AND EQUIPMENT****2.1.1 General**

Provide materials and equipment which are standard products of a manufacturer regularly engaged in manufacturing of the products and that essentially duplicate equipment that has been in satisfactory use at least 2 years prior to bid opening.

2.1.2 Nameplates

Secure a plate to each major component of equipment containing the manufacturer's name, address, type or style, model or serial number, and catalog number. Also, affix an ENERGY STAR label as applicable.

2.1.3 Equipment Guards

Belts, pulleys, chains, gears, couplings, projecting setscrews, keys, and other rotating parts so located that any person may come in close proximity thereto shall be completely enclosed or guarded. High-temperature equipment and piping so located as to endanger personnel or create a fire hazard shall be guarded or covered with insulation of type specified for service.

2.2 ELECTRICAL WORK

Electrical motor driven equipment shall be provided complete with motors, motor starters, and controls. Motors shall conform to NEMA MG 1. Electrical equipment and wiring shall be in accordance with Section 26 20 00 INTERIOR DISTRIBUTION SYSTEM. Electrical characteristics shall be as specified or indicated. Integral size motors shall be premium efficiency type in accordance with NEMA MG 1. Motor starters shall be provided complete with thermal overload protection and other appurtenances necessary for the motor control specified. Each motor shall be of sufficient size to drive the equipment at the specified capacity without exceeding the nameplate rating of the motor. Manual or automatic control and protective or signal devices required for the operation specified and any control wiring required for controls and devices specified, but not shown, shall be provided.

2.3 HEATERS

Heaters shall be equipped for and adjusted to burn natural gas. Each heater shall be provided with a gas pressure regulator that will satisfactorily limit the main gas burner supply pressure. Heaters shall have an intermittent or interrupted electrically ignited pilot or a direct electric ignition system. Safety controls shall conform to the ANSI standard specified for each heater. Mounting brackets and hardware shall be furnished by the heater manufacturer and shall be factory finished to match the supported equipment.

2.3.1 Unit Heaters

Heaters shall conform to the requirements of ANSI Z83.19/CSA 2.35 and shall be vented type as indicated. Vented heaters shall be vented to the outside atmosphere. Heater style shall be tubular type as indicated. Reflector shape shall be as indicated. Contractor shall review building design with manufacturer and use asymmetrical or cut off reflectors where over heating of adjacent surfaces may occur. Heaters shall be provided with space thermostats which control the unit's burner. Thermostats located in the direct radiation pattern shall be covered with a metal shield.

2.4 THERMOSTATS

Thermostats shall be the adjustable electric or electronic type. Control wiring required to complete the space temperature control system shall be included. Thermostats shall have a 3 degree F differential and a set point range of 40 to 75 degrees F. Thermostats shall be the single stage type. Thermostats shall wire back to a controller to manage vacuum pump and number of units firing.

2.5 VENT PIPING

Vent piping shall conform to the requirements of NFPA 54. Plastic material polyetherimide (PEI) and polyethersulfone (PES) are forbidden to be used for vent piping of combustion gases.

2.6 ELECTRIC AUTOMATIC VENT DAMPERS

Electric automatic vent dampers shall conform to the requirements of ANSI Z21.66/CGA 6.14 and shall be provided in the vents of heaters using indoor air for combustion air.

2.7 INSULATION

Insulation for piping and equipment and application shall be in accordance with Section 23 07 00 THERMAL INSULATION FOR MECHANICAL SYSTEMS.

2.8 FACTORY FINISHES

Equipment and component items, when fabricated from ferrous metal, shall be factory finished with the manufacturer's standard finish.

PART 3 EXECUTION

3.1 EXAMINATION

After becoming thoroughly familiar with all details of the work, verify all dimensions in the field, and advise the Contracting Officer of any discrepancy before performing any work.

3.2 INSTALLATION

install equipment as indicated and in accordance with the recommendations of the equipment manufacturer and the listing agency, except as otherwise specified.

3.2.1 Heating Equipment

Install heaters with clearance to combustibles, complying with minimum distances as determined by CSA Directory, UL FLAMMABLE & COMBUSTIBLE and as indicated on each heater approval and listing plate. Support heaters independently from the building structure, as indicated, but not relying on suspended ceiling systems for support.

3.2.2 Vents

Locate vent dampers, piping and structural penetrations as indicated. Vent damper installation shall conform to ANSI Z21.66/CGA 6.14. Vent pipes, where not connected to a masonry chimney conforming to NFPA 211, shall extend through the roof or an outside wall and shall terminate, in compliance with NFPA 54. Vents passing through waterproof membranes shall be provided with the necessary flashings to obtain waterproof installations.

3.3 TRAINING

Conduct a training course for the maintenance and operating staff. The training period of 8 hours normal working time shall start after the system is functionally complete but before the final acceptance tests. Give the Contracting Officer at least two weeks advance notice of

such training. The training shall include all of the items contained in the approved operation and maintenance instructions as well as demonstrations of routine maintenance operations. Submit 6 complete copies of operating instructions outlining the step-by-step procedures required for system startup, operation and shutdown. The instructions shall include the manufacturer's name, model number, service manual, parts list, and brief description of all equipment and basic operating features. Submit 6 complete copies of maintenance instructions listing routine maintenance, possible breakdowns, repairs and troubleshooting guide. The instructions shall include simplified piping, wiring, and control diagrams for the system as installed.

3.4 TESTING, ADJUSTING, AND BALANCING

Perform testing, adjusting, and balancing as specified in Section 23 05 93 TESTING, ADJUSTING, AND BALANCING OF HVAC SYSTEMS. Submit test reports in booklet form showing all field tests performed to adjust each component and all field tests performed to prove compliance with the specified performance criteria, upon completion and testing of the installed system. Each test report shall indicate the final position of controls.

-- End of Section --

**SECTION 23 81 00
UNITARY AIR CONDITIONING EQUIPMENT****Part I - General****A. Product Specification**

1. Energy Recovery Ventilator (ERV) shall be a packaged unit and shall transfer both heat and humidity using static plate core technology.

B. Quality Assurance

1. The energy recovery cores used in these products shall be third party Certified by AHRI under its Standard 1060 for Energy Recovery Ventilators. AHRI published certifications shall confirm manufacture's published performance for airflow, static pressure, temperature and total effectiveness, purge air (OACF) and exhaust air leakage (EATR). Products that are not currently AHRI Certified will not be accepted.
2. Manufacturer shall be able to provide evidence of independent testing of the core by Underwriters Laboratory (UL), verifying a maximum flame spread index (FSI) of 25 and a maximum smoke developed index (SDI) of 50 thereby meeting NFPA 90A and NFPA 90B requirements for materials in a compartment handling air intended for circulation through a duct system. The method of test shall be UL Standard 723.
3. Unit shall be Listed under UL 1812 Standard for Ducted Air to Air Heat Exchangers.
4. The ERV core shall be warranted to be free of manufacturing defects and to retain its functional characteristics, under circumstances of normal use, for a period of ten years from the date of purchase. The balance-of-unit shall be warranted to be free of manufacturing defects and to retain its functional characteristics, under circumstances of normal use, for a period of two years from the date of purchase.

Part II – Performance**A. Energy Transfer**

The ERV shall be capable of transferring both sensible and latent energy between airstreams. Latent energy transfer shall be accomplished by direct water vapor transfer from one airstream to the other, without exposing transfer media in succeeding cycles directly to the exhaust air and then to the fresh air.

B. Passive Frost Control

The ERV core shall perform without condensing or frosting under normal operating conditions (defined as outside temperatures above -10°F and inside relative humidity below 40%). Occasional more extreme conditions shall not

affect the usual function, performance or durability of the core. No condensate drains will be allowed.

C. Continuous Ventilation

Unit shall have the capacity to operate continuously without the need for bypass, recirculation, pre-heaters or defrost cycles under normal operating conditions.

D. Positive Airstream Separation

Water vapor transfer shall be through molecular transport by hydroscopic resin and shall not be accomplished by "porous plate" mechanisms. Exhaust and fresh airstreams shall travel at all times in separate passages, and airstreams shall not mix.

E. Laminar Flow

Airflow through the ERV core shall be laminar over the products entire operating airflow range, avoiding deposition of particulates on the interior of the energy exchange plate material.

Part III – Product

A. Construction

1. The energy recovery component shall be of fixed-plate cross-flow construction, with no moving parts.
2. No condensate drain pans or drains shall be allowed and unit shall be capable of operating in both winter and summer conditions without generating condensate.
3. The unit case shall be constructed of G90 galvanized, 20-gauge steel, with lapped corners and zinc plated screw fasteners.
4. Access doors shall provide easy access to blowers, ERV cores, and filters. Doors shall have an airtight compression seal using closed cell foam gaskets. Pressure taps, with captive plugs, shall be provided allowing cross-core pressure measurement allowing for accurate airflow measurement.
5. Case walls and doors shall be insulated with 1 inch, 4 pound density, foil/scrim faced, high-density fiberglass board insulation, providing a cleanable surface and eliminating the possibility of exposing the fresh air to glass fibers, and with minimum R-value of 4.3 (hr·ft²·°F/BTU).

6. The ERV cores shall be protected by a MERV-8 rated, 2" nominal, pleated, disposable filter in both airstreams.
7. Unit shall have single-point power connection and a single-point 24 VAC contactor control connection.
8. Direct drive motors shall be EISA-compliant for energy efficiency with open drip proof design and integral thermal protection.
9. Blowers shall be quiet running, forward curve type except for the Model TERV120 which shall be backward incline, motorized impeller type.
10. The unit electrical box shall include a factory installed, non-fused disconnect switch and a 24 VAC, Class II transformer/relay package.

B. Options (Select options based on application requirements)

1. Provide ECM controlled motors allowing for preset speeds or variable speed operation with a 0-10 volt DC control signal. ECM motors are electronically protected.

Part IV – Installation**A. Unit Location**

1. Locate and orient unit to provide the shortest and most straight duct connections. Provide service clearances as indicated on the plans. Locate units distant from sound critical occupancies.
2. Provide a poured concrete equipment pad for all floor mounted units. The pad thickness and floor plan dimensions to be determined based on the unit selected, and site structural considerations.
3. Provide a structurally suitable support for the base of any wall mounted or hung units.

B. Vibration Isolation

1. Provide rubber or spring type isolators appropriately sized for corner weights of the specific unit.
2. Provide flexible duct connections at unit duct flanges.

C. Duct Design

1. All ductwork shall be designed, constructed, supported and sealed in accordance with SMACNA HVAC Duct Construction Standards and pressure classifications.
2. At a minimum all duct runs to the outdoors shall be thermally insulated at levels appropriate to the local climate. A continuous vapor barrier shall also be provided on warm surface of the insulation.

D. Sound Control

1. To control sound radiated from the unit:
 - a. Provide acoustic treatment in mechanical room walls and ceilings.
2. To control sound associated with the two blower outlets:
 - a. Provide straight, gradual transition ductwork for a minimum of 2-1/2 duct diameters downstream from the blower outlet for air velocities of less than 2,500 feet per minute.
 - b. Provide continuous acoustic insulation treatment of the duct until after the first elbow or tee.
 - c. Provide engineered sound attenuation ductwork to meet noise criteria (NC) requirements.

E. Test and Balancing

1. Test and Balancing may not begin until 100% of the installation is complete and fully functional.
2. Follow National Comfort Institute (NCI) air test and balance procedures specific to Heat Recovery Ventilator Balancing Procedure including standard reports to the owner's representative.

-- End of Section --

SECTION 23 82 02
VARIABLE REFRIGERANT FLOW HVAC SYSTEMS (VRF)

Part 1 – General

1.01 SYSTEM DESCRIPTION

- 2 Variable Refrigerant Flow (VRF) HVAC system shall be a direct expansion (DX) Hitachi heat recovery system. The outdoor unit shall consist of one or more frames (modules) connected through common refrigerant piping and control communication wiring. Each system shall have single or multiple, inverter compressor(s). Each system shall be connected to multiple indoor units (ducted, non-ducted or mixed combinations) through a common refrigerant piping network and integrated system controls and communication network.
- 3 Heat recovery systems shall be a three-pipe design with the system ability to heat or cool simultaneously. The outdoor unit shall be an air cooled condensing unit with vertical discharge that uses refrigerant R-410A. The condensing unit may connect an indoor evaporator capacity up to 150% of the condensing unit capacity without any special factory approval. All zones are each capable of operating separately with individual temperature control.
- 4 Each indoor unit shall be controlled individually or as a group. Heat recovery systems shall operate in either the heating or cooling mode and shall support simultaneous heating and cooling mode.
- 5 Two-pipe, heat recovery systems utilizing a lower temperature mixed liquid/gas refrigerant to perform heat recovery are not acceptable due to reduced heating capabilities.

5.01 QUALITY ASSURANCE

The units shall be tested by a Nationally Recognized Testing Laboratory (NRTL) in accordance with ANSI/UL 1995 – Heating and Cooling Equipment and shall bear the listed mark.

All wiring shall be in accordance with the National Electric Code (NEC). The System shall be rated in accordance with Air Conditioning Refrigeration Institute (AHRI) Standard 1230 and bear the AHRI label.

The system shall be manufactured in an ISO 9001 and ISO 14001 facility, in accordance with the standards set by the International Standard Organization (ISO).

The units shall be certified by the Air Conditioning, Heating & Refrigeration Institute.

All units must meet or exceed the 2010 federal minimum efficiency requirements and the proposed ASHRAE 90.1 efficiency requirements for VRF systems.

Efficiency shall be published in accordance with the DOE alternative test procedure, which is based on the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) Standard 1230 and ISO Standard 13256-1.

A. DELIVERY, STORAGE, AND HANDLING

Equipment shall be stored and handled according to the manufacturer's recommendations.

B. Hitachi VRF

Hitachi VRF shall be the Basis of Design. Acceptable standards shall be supplied based upon the Hitachi VRF model specified. At least 10 days prior to the bid date, alternate manufacturers shall request permission to bid, in writing, from the engineer. This request by the contractor to bid an alternate supplier for the basis of design, listed or not listed, shall not relieve the contractor from supplying all materials, options, controls, sequences, efficiencies, and intent of the original specifications written or implied by Hitachi VRF model number or model family or as otherwise specified. The written request and engineers' written response to such request shall be included in all submittal documents for approval.

C. ALT EQUIPMENT BID INSTRUCTION

The contractor shall provide basis of design bid as specified. If the contractor proposes an alternate manufacturer for the basis of designed products they shall provide a separate and complete Bid detailing the proposed alternate products and the associated adjustment of price to support the change from basis of design products. The contractor bids the alternate product with full knowledge that the proposed product may not be acceptable or approved. In no event shall the contractor be entitled to additional compensation to supply such specified products, options or sequences. Any and all additional cost, to any party, because of any product submitted on or supplied other than that of the original specified products shall be the responsibility of the contractor without recourse. It is agreed that any and all disputes regarding any differences between the specified products, options or sequences and that proposed as an alternate shall be arbitrated by the engineer of record. It shall be further agreed by all parties that all decisions of arbitration shall be final and binding. Any product proposed as an alternate shall have been offered, as a VRF product, in the United States for a minimum of (5) years.

D. SUBMITTALS

A complete submittal package shall be compiled, and 10 copies shall be forwarded to the general contractor who shall supply the architect with the submittals for dissemination to all parties. The submittal shall be a collection of documents that represent the technical aspects of each product or collection of products to be used on the project. All performance submissions shall be calculated at the design temperatures; nominal performance data shall not be allowed. The submission and approval of said submittals does not relieve the contractor from supplying all requirements set forth in the specification and drawings. Any substitutions offered by the contractor shall include, as a separate document, any and all differences between the submitted products and the specified products including but not limited to, all dimensions, electrical, control, weights, warranties, country of origin, and a statement from the manufacture that no child labor has been used in the manufacture or assembly of said products, and a copy shall be supplied with the product outdoor unit submittal.

If submittals contain any proposed alternate equipment specifications, calculations, dimensions, electrical specifications, sound specifications or any other mandated submissions which are not accepted, are noted or rejected for any reason, the contractor shall be allowed to correct any deficiency and re-submit a second time. Should there be any issues found on second submission, the contractor will be directed to and agrees to submit on the original specified products and provide the specified products without any additional compensation.

E. INDOOR UNIT SYSTEM

The system shall consist of multiple Hitachi VRF indoor units, branch joints and headers. T-style joints shall not be permitted due to the large pressure differential through these fittings. The sum of connected capacity of all indoor units shall range from 55% to 150% of outdoor rated capacity. Up to 150% shall be possible without any factory approval for all capacities.

F. OUTDOOR UNIT SYSTEM

The Hitachi VRF outdoor unit shall be interconnected to the indoor units with capacities from 6,000 Btu/h to 96,000 Btu/h. Each Hitachi VRF indoor unit or selected group of indoor units shall be capable of operating in any mode independently and be able to provide set temperatures through a wide variety of control options including simplified wired, wired, wireless, central station, computerized controller, LONWorks adapter, or BACnet adapter; a VRF H-Link Smart Gateway (BACnet) – Metasys compatible device that makes JCI VRF viewable from all BACnet IP BMS/BAS systems; a Web interface and automatic point mapping to the BMS; a VRF Cloud Gateway Device – VRF accessed through mobile device (tablet/phone using Android/iOS operating system); and a VRF compatible with Nest thermostat.

G. HEATING DEFROST OPERATION

The outdoor unit shall have the ability to use a continuous heating defrost operation for multi-module system configurations. All components (compressor, controls, etc.) in the Outdoor Unit shall be easily accessible from the front for service/replacement.

PART 2-WARRANTY

A. LIMITED WARRANTY

The units shall be covered by the manufacturer's limited warranty. The compressor shall have a manufacturer's limited warranty for a period of ten (10) years from date of unit installation. The unit's parts shall have a manufacturer's limited warranty for period of (10) years from date of unit installation.

B. Hitachi VRF INSTALLATION

The Hitachi VRF system shall be installed by a Hitachi factory trained contractor. The training should be performed by the manufacturer at a factory service and installation training facility. Extended limited parts and compressor warranty to (10) years from date of unit installation shall be available.

Part 3 – PERFORMANCE

A. PERFORMANCE

The three-phase VRF system performance shall be rated in accordance with AHRI 1230 test conditions.

The VRF system shall be listed in the AHRI directory.

The system efficiency shall meet or exceed the following performance criteria:

System	EER		IEER		COP47		COP17	
	Ducted	Non Ducted	Ducted	Non Ducted	Ducted	Non Ducted	Ducted	Non Ducted
6T:HVAHR072B_2S	12.2	14.9	21.1	26.5	3.54	4.25	2.38	2.60
8T:HVAHR096B_2S	12.4	12.4	22.1	23.9	3.65	3.77	2.36	2.40
10T:HVAHR0120B_2S	12.4	12.7	21.7	24.4	3.55	3.84	2.30	2.37
12T:HVAHR144B_2S	11.2	10.9	21.2	23.9	3.40	3.42	2.15	2.12
14T:HVAHR168B_2S	11.8	11.6	21.4	23.4	3.56	3.65	2.40	2.16
16T:HVAHR192B_2S	11.1	10.6	20.8	21.4	3.38	3.32	2.15	2.05
18T:HVAHR216B_2S	11.2	10.9	20.7	20.9	3.51	3.82	2.29	2.32
20T:HVAHR240B_2S	10.6	11.1	21.0	20.8	3.51	3.67	2.27	2.35
22T:HVAHR264B_2S	10.5	10.0	20.8	21.1	3.56	3.70	2.26	2.26
24T:HVAHR288B_2S	9.9	9.5	20.7	19.4	3.42	3.42	2.24	2.21
26T:HVAHR312B_2S	10.0	9.7	19.5	20.3	3.31	3.37	2.12	2.05
28T:HVAHR336B_2S	9.8	9.5	19.1	20.8	3.32	3.27	2.25	2.31
30T:HVAHR360B_2S	10.2	9.5	19.5	19.8	3.20	3.20	2.18	2.05
32T:HVAHR384B_2S	9.5	9.6	18.6	19.6	3.33	3.37	2.26	2.20
34T:HVAHR408B_2S	9.5	9.5	19.2	19.3	3.37	3.34	2.23	2.08
36T:HVAHR432B_2S	9.6	9.5	19.0	19.5	3.35	3.21	2.19	2.05

B. OPERATING TEMPERATURE RANGES

The operating ranges shall be as follows:

Category	Range (°F)
Cooling Standard Operating Range	23 - 122
Cooling Extended Operating Range	-4 - 122
Heating Operating Range	-13 - 59
Cooling Mode - Indoor Temperature Range (WB)	59 - 73
Heating Mode - Indoor Temperature Range (DB)	59 - 80

If an alternate equipment manufacturer is selected, the mechanical contractor shall provide, at their own risk and cost, all additional material and labor to meet ambient operating conditions and performance.

Part 4 – PRODUCTS**A. REFRIGERANT PIPING**

All refrigerant piping shall be installed in accordance with manufacturer's recommendations. No additional sight glasses or filter/dryers shall be required. All field installed refrigerant piping shall be nitrogenized ACR copper tubing and shall meet ASTM B280. All branch piping joints shall be approved by the manufacturer.

The three-phase VRF heat recovery system shall be capable of the following refrigerant piping lengths:

1. Total system piping length: 3,280 ft.
2. Maximum piping length from refrigerant piping branch to indoor unit: 132 ft.
3. Maximum piping length from first branch to furthest indoor unit: up to 295 ft.
4. Maximum vertical separation from outdoor unit to indoor unit, when outdoor unit is above: 360 ft.
5. Maximum vertical separation from outdoor unit to indoor unit, when outdoor unit is below: 131 ft.

B. DEVELOPMENT GENERATIONS

All three-phase VRF heat recovery outdoor units connected to the same piping system shall be from the same product development generation. Mixing of outdoor units from different development generations in the same piping system is not acceptable. Change-over Boxes and outdoor units in a system must be of the same product development generation.

C. LOW AMBIENT AIR TEMPERATURES

- a. Outdoor Unit shall be capable of continuous compressor operation between the following operating ambient air conditions. Operations outside of these conditions are possible and may involve non-continuous operations.
 - a) Heat recovery System
 - (i) Cooling: 23°F DB to 122°F DB
 - (ii) Accessories from 14°F DB to 122°F DB, <With optional snow hood kit
 - (iii) Accessories from -10°F DB to 122°F DB> With optional damper kit
 - (iv) Heating: -13°F WB to 59°F WB

D. GENERAL FEATURES

- a) The air-conditioning system shall use R410A refrigerant.
- b) The system shall be capable of an automatic refrigerant charge function to ensure the proper amount of refrigerant is installed into the system.
- c) Each system shall consist of one, two, or three air source outdoor unit modules conjoined together in the field to result in the capacity specified elsewhere in these documents.
- d) Multiple frame configurations shall be field piped together using manufacturer-designed and supplied Y-branch kits and field-provided interconnecting pipe to form a common refrigerant circuit.
- e) Refrigerant circuit configuration for Heat Recovery System
 - (i) The refrigerant circuit shall be constructed using field-provided ACR copper, dehydrated, and piped together with manufacturer-supplied Y-branches or headers connected to multiple (ducted, non-ducted or mixed combination indoor units to effectively and efficiently control heating or cooling operation of the VRF system. Other pipe materials shall not be allowed.
- f) Each refrigerant pipe, y-branches, elbows and valves shall be individually insulated with no air gaps. Insulation R-value (thickness) shall not be less than the minimum called for by the local building code, local energy code or as a minimum per manufacture installation requirements. In no case shall the insulation be allowed to be compressed at any point in the system.
- g) The condensing unit will be factory charged with R-410A.
- h) Depending on the size and length of the piping when installed, it may require additional trim charging in the field.
- i) The condensing unit shall include a refrigerant charge volume analyzer that includes an automatic refrigerant assessment system to check whether or not the correct amount of refrigerant charge exists in a given refrigerant cycle.

D. ELECTRICAL

- a) The condensing unit power supply shall be 208/230V or 460V, 3 phase, 60 Hertz per schedule.
- b) The condensing unit shall have an acceptable voltage range of 187-253V or 416-508V.
- c) The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

E. SAFETY

- a) The condensing unit shall include protection devices including a high pressure switch at 4.15 MPa (601psi), over current protection for the inverter and for the PCB, and over heat protection for the inverter and the compressor.

F. ENERGY SAVINGS

- a) The system shall be equipped with power demand limiting control which prevents excessive energy consumption during peak operating conditions and automatically detects electric current flow and prevents the system from using too much energy.

G. 14 INDOOR UNIT TYPES - 73 MODELS

Indoor Unit – 1-Way Cassette

MODEL NUMBER	NOMINAL CAPACITY (TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HIC1006B21S	.50	6,000	6,700
HIC1008B21S	.70	8,000	9,000
HIC1012B21S	1.0	12,000	13,500
HIC1015B21S	1.3	15,000	17,000

A. General

1. The unit shall have the ability to be recessed into the ceiling with a ceiling grill and shall be a 1-way air distribution type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The 1-way cassette shall be equipped with an electronic expansion valve.
5. All sizes of 1-Way Cassettes shall be equipped with a built-in condensate pump with 33.5" lift.
6. The unit shall have an automatic swing louver.
7. The 1-way cassette shall be available with optional energy saving motion and radiant heat sensor for optimized airflow and temperature control.

B. Performance:

1. Each 1-way cassette's performance is based on nominal operating conditions shown in mechanical schedules.

C. Unit Cabinet:

1. The unit cabinet shall be space saving and have the ability to be recessed into a ceiling.
2. The 1-way panel shall be affixed to the bottom of the unit allowing for 1-way airflow.
3. The 1-way cassette (without panel) shall be no larger than 9-1/4" x 35-7/16" x 27-5/16" and weigh no more than 57 lbs.
4. An outside air knockout shall exist to for branch ducting supply air.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The 1-way cassette shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. The standard 1" air filter shall be made of an anti-mold polypropylene that is also a washable type.

F. Sound:

1. The 1-way cassette sound pressure shall range 27 dB(A) to 31 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The 1-way cassette shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

Indoor Unit – 2-Way Cassette

MODEL NUMBER	NOMINAL CAPACITY (TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HIC2018B21S	1.5	18,000	24,000
HIC2024B21S	2.0	24,000	27,000

A. General:

1. The unit shall have the ability to be recessed into the ceiling with a ceiling grill and shall be a 2-way air distribution type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The 2-way cassette shall be equipped with an electronic expansion valve.
5. All sizes of 2-Way Cassettes shall be equipped with a built-in condensate pump with 33.5" lift.
6. The unit shall have an automatic swing or fixed air louver.
7. The 2-way cassette shall be available with optional energy-saving motion and a radiant heat sensor for optimized airflow and temperature control.

B. Performance:

1. Each 2-way cassette's performance is based on nominal operating conditions shown in mechanical schedules.

C. Unit Cabinet:

1. The unit cabinet shall be space saving and have the ability to be recessed into a ceiling.
2. The 2-way panel shall be affixed to the bottom of the unit allowing for 2-way airflow.
3. The 2-way cassette (without panel) shall be no larger than 11-3/4" x 33-7/8" x 24-13/16" and weigh no more than 55 lbs.
4. An outside air knockout shall exist to for branch ducting supply air.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The 2-way cassette shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. The standard 1" air filter shall be made of an anti-mold polypropylene that is also a washable type.

F. Sound:

1. The 2-way cassette sound pressure shall range 33 dB(A) to 34 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The 2-way cassette shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

Indoor Unit – 4-Way Cassette

MODEL NUMBER	NOMINAL CAPACITY (TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HICM008B21S (MINI CASSETTE)	.70	8,000	9,000
HICM012B21S (MINI CASSETTE)	1.0	12,000	13,500
HICM015B21S (MINI CASSETTE)	1.3	15,000	17,000
HICM018B21S (MINI CASSETTE)	1.5	18,000	20,000
HIC4008B21S	.70	8,000	9,000
HIC4012B21S	1.0	12,000	13,500
HIC4015B2S	1.3	15,000	17,000
HIC4018B21S	1.5	18,000	20,000

HIC4024B21S	2.0	24,000	27,000
HIC4030B21S	2.5	30,000	34,000
HIC4036B21S	3.0	36,000	40,000
HIC4036B21S	4.0	48,000	54,000

A. General:

1. The unit shall have the ability to be recessed into the ceiling with a ceiling grill and shall be a 4-way air distribution type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The 4-way cassette shall be equipped with an electronic expansion valve.
5. All sizes of 4-Way Cassettes shall be equipped with a built-in condensate pump with 33.5" lift.
6. The unit shall have an automatic louver control.
7. The 4-way cassette shall be able to be configured for 2-way or 3-way airflow as well.
8. The 4-way cassette shall be available with optional energy-saving motion and radiant heat sensor for optimized airflow and temperature control.

B. Performance:

1. Each 4-way cassette's performance is based on nominal operating conditions shown in mechanical schedules.

C. Unit Cabinet:

1. The unit cabinet shall be space saving and have the ability to be recessed into a ceiling.
2. The 4-way panel shall be affixed to the bottom of the unit allowing for 4-way airflow.
3. The 4-way cassette (without panel) shall be no larger than 11-23/32" x 33-5/64" x 33-5/64" and weigh no more than 57 lbs.
4. An outside air knockout shall exist to for branch ducting supply air.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The 4-way cassette shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. The standard 1" air filter shall be made of an anti-mold polypropylene that is also a washable type.

F. Sound:

1. The 4-way cassette sound pressure shall range 27 dB(A) to 35 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The 4-way cassette shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

Indoor Unit – Wall Mount

MODEL NUMBER	NOMINAL CAPACITY(TONS)	COOLING (BTU/H)	HEATING (BTU/H)
TIWM006B21S	.5	6,000	8,000
TIWM008B21S	.70	8,000	9,000
TIWM1012B21S	1.0	12,000	13,500
TIWM1015B21S	1.3	15,000	17,000
TIWM018B21S	1.5	18,000	20,000
TIWM024B21S	2.0	24,000	27,000
TIWM030B21S	2.5	30,000	34,000

A. General:

1. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
2. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
3. The unit shall have an automatic wide angle louver control.
4. The unit shall have a removable front panel for easy cleaning.
5. The unit shall have an auto-swing function to ensure efficient air distribution and uniform temperature.
6. The unit shall have a built-in wireless sensor.

B. Performance:

1. Each wall mount indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The wall mount indoor unit shall be no larger than 13-1/8" x 45-9/32" x 9-21/32" and weigh no more than 40 lbs.
2. The unit shall be affixed to a separate galvanized steel back plate to secure the unit firmly to the wall.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.

2. The wall mount shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. The standard 1" air filter shall be made of an anti-mold polypropylene that is also a washable type.

F. Sound:

1. The wall mount indoor unit sound pressure shall range 30 dB(A) to 41 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The wall mount indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

H. Piping:

1. Refrigerant and drain piping shall have the ability to be connected at the right, left or rear of the unit for ease of installation.

Indoor Unit – Floor Mount

MODEL NUMBER	NOMINAL CAPACITY(TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HIFC006B21S (CONCEALED)	.5	6,000	6,700
HIFC008B21S (CONCEALED)	.70	8,000	9,000
HIFC012B21S (CONCEALED)	1.0	12,000	13,500
HIFC015B21S (CONCEALED)	1.3	15,000	17,000
HIFE006B21S (EXPOSED)	.5	6,000	6,700
HIFE008B21S (EXPOSED)	.70	8,000	9,000
HIFE012B21S (EXPOSED)	1.0	12,000	13,500
HIFE015B21S (EXPOSED)	1.3	15,000	17,000

A. General:

1. The floor mounted indoor unit shall be a concealed or exposed vertical mounted type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The unit shall have front access for easy service and troubleshooting.

B. Performance:

1. Each floor mount indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be concealed or exposed and distribute air directly to the space.
2. The floor mount indoor unit shall be no larger than 24-13/16" x 55-7/8" x 8-11/16" and weigh no more than 79 lbs.

D. Fan:

1. The floor mount shall consist of three fan speeds including: low (Lo), medium (Me), and high (Hi).

E. Sound:

1. The ducted high static indoor unit sound pressure shall range 29 dB(A) to 36 dB(A) at low speed.

F. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The floor mount indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

Indoor Unit – Ceiling Mount

MODEL NUMBER	NOMINAL CAPACITY(TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HICS015B21S	1.3	15,000	17,000
HICS024B21S	2.0	24,000	27,000
HICS030B21S	2.5	30,000	34,000
HICS036B21S	3.0	36,000	40,000

A. General:

1. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
2. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
3. The unit shall have an automatic wide angle louver control.
4. The unit shall have a removable front panel for easy cleaning.
5. The unit shall have an auto-swing function to ensure efficient air distribution and uniform temperature.
6. The unit shall have a built-in wireless sensor.

B. Performance:

1. Each ceiling mount indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The ceiling mount indoor unit shall be no larger than 9-1/4" x 62-3/16" x 27-3/16" and weigh no more than 90 lbs.
2. The unit shall be affixed to a separate galvanized steel back plate to secure the unit firmly to the wall.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The wall mount shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. The standard 1" air filter shall be made of an anti-mold polypropylene that is also a washable type.

F. Sound:

1. The wall mount indoor unit sound pressure shall range 28 dB(A) to 35 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The wall mount indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

H. Piping:

1. Refrigerant and drain piping shall have the ability to be connected at the right, left or rear of the unit for ease of installation.

Indoor Unit – Ducted High Static

MODEL NUMBER	NOMINAL CAPACITY(TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HIDH015B21S	1.3	15,000	17,000
HIDH018B21S	1.5	18,000	20,000
HIDH024B21S	2.0	24,000	27,000
HIDH024B21S	2.3	28,000	30,000
HIDH030B21S	2.5	30,000	34,000
HIDH036B21S	3.0	36,000	40,000
HIDH048B21S	4.0	48,000	54,000
HIDH054B21S	4.5	54,000	61,400
HIDH072B21S	6.0	72,000	81,000
HIDH096B21S	8.0	96,000	108,000

A. General:

1. The ducted high static indoor unit shall be a built-in ceiling type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. All sizes of Ducted High Static units shall be equipped with a built-in condensate pump with 25" minimum drain lift.
5. The unit shall have bottom access for easy service and troubleshooting.

B. Performance:

1. Each ducted high static indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be ceiling-concealed and ducted to the supply and return openings.
2. The ducted high static indoor unit shall be no larger than 18-3/8" x 51-49-3/16" x 44-1/8" and weigh no more than 258 lbs.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive. (PSC for 72,000 & 96,000 models)
2. The ducted high static indoor unit shall consist of four fan speeds (two fan speeds for 72,000 & 96,000 models).

E. Filter

1. Filter box with high efficiency filters (MERV 13) shall be made available as an option.

F. Sound:

1. The ducted high static indoor unit sound pressure shall range 30 dB(A) to 50 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The ducted high static indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

H. Static Pressure

1. The ducted high static indoor unit shall have adjustable static pressure up to 1.16 in WG.

Indoor Unit – Ducted Medium Static

MODEL NUMBER	NOMINAL CAPACITY(TONS)	COOLING (BTU/H)	HEATING (BTU/H)
HIDM006B21S	0.5	6,000	8,000
HIDM008B21S	0.7	8,000	9,000
HIDM012B21S	1.0	12,000	13,500
HIDM015B21S	1.3	15,000	17,000
HIDM018B21S	1.5	18,000	20,000
HIDM024B21S	2.0	24,000	27,000
HIDM024B21S	2.3	28,000	30,000
HIDM030B21S	2.5	30,000	34,000
HIDM036B21S	3.0	36,000	40,000
HIDM048B21S	4.0	48,000	54,000
HIDM054B21S	4.5	54,000	61,400

A. General:

1. The ducted medium static indoor unit shall be a built-in ceiling type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. All sizes of Ducted Medium Static units shall be equipped with a built-in condensate pump with 25" minimum drain lift.
5. The unit shall have bottom access for easy service and troubleshooting.

B. Performance:

1. Each ducted medium static indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be ceiling-concealed and ducted to the supply and return openings.
2. The ducted medium static indoor unit shall be no larger than 9-13/16" x 55-1/8" x 31-1/2" and weigh no more than 97 lbs.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The ducted medium static indoor unit shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. Filter box with high efficiency filters (MERV 13) shall be made available as an option.

F. EconoFresh (Economizer Option – 30, 36, & 48 MBH Models Only)

1. Bolt on economizer section with return and outside air dampers shall be made available as an option.
2. Inputs for enthalpy and CO2 sensors available to provide outside air depending on humidity or indoor air quality.
3. Remote control switch allows control of the outside air damper to ensure minimum outside airflow is met.

G. Sound:

1. The ducted medium static indoor unit sound pressure shall range 27 dB(A) to 34 dB(A) at low speed.

H. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The ducted medium static indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

I. Static Pressure

1. The ducted medium static indoor unit shall have adjustable static pressure up to .6 in WG.

Indoor Unit – Ducted Slim

MODEL NUMBER	NOMINAL CAPACITY(TONS)	TOTAL COOLING (BTU/H)	HEATING (BTU/H)
HIDS006B21S	0.5	6,000	8,000
HIDS008B21S	0.7	8,000	9,000

HIDS012B21S	1.0	12,000	13,500
HIDS015B21S	1.3	15,000	17,000
HIDS018B21S	1.5	18,000	20,000

A. General:

1. The ducted slim indoor unit shall be a built-in ceiling type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The unit shall have a bottom or horizontal return.
5. All sizes of Ducted Slim Units shall be equipped with a built-in condensate pump with 25" minimum drain lift.
6. The unit shall have bottom access for easy service and troubleshooting.

B. Performance:

1. Each ducted slim indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be ceiling-concealed and ducted to the supply and return openings.
2. The ducted slim indoor unit shall be no larger than 7-9/16" x 46-3/8" x 17-19/32" and weigh no more than 57 lbs.

D. Fan:

1. Unit shall be equipped with a brushless DC fan motor drive.
2. The ducted medium static indoor unit shall consist of four fan speeds including: low (Lo), medium (Me), high (Hi), and high 2 (Hi2).

E. Filter

1. Filter box with high efficiency filters (MERV 13) shall be made available as an option.

F. Sound:

1. The ducted slim indoor unit sound pressure shall range 27 dB(A) to 34 dB(A) at low speed.

G. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The ducted slim indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

H. Static Pressure

1. The ducted medium static indoor unit shall have adjustable static pressure up to .20 in WG.

Indoor Unit – Dedicated Outside Air System (DOAS)

MODEL NUMBER	NOMINAL CAPACITY(TONS)	TOTAL COOLING (BTU/H)	HEATING (BTU/H)
HDOA096B21S	8	96,000	83,600

A. General:

1. The DOAS indoor unit shall be a built-in ceiling type.
2. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory.
3. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.
4. The DOAS unit shall be equipped with a built-in condensate pump with 25" minimum drain lift.
5. The unit shall have bottom access for easy service and troubleshooting.

B. Performance:

1. Each DOAS indoor unit's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be ceiling-concealed and ducted to the supply and return openings.
2. The DOAS unit shall be no larger than 19-1/8" x 50" x 44-1/8" and weigh no more than 247 lbs.

D. Fan:

1. The DOAS unit shall have a nominal air flow of 1,236 CFM.

E. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The ducted high static indoor unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

F. Static Pressure

1. The DOAS unit shall have adjustable static pressure up to 1.24 in WG.

Multi Position Air Handler

MODEL NUMBER	NOMINAL CAPACITY(TONS)	TOTAL COOLING (BTU/H)	HEATING (BTU/H)
18B	1.5	18,000	20,000
24B	2.0	24,000	27,000
30B	2.5	30,000	34,000
36B/36C	3.0	36,000	40,000
48C/48D	4.0	48,000	60,000
60C/60D	5.0	54,000	64,000

A. General:

1. Indoor mounted air-handling unit designed to provide air to a conditioned space as required to meet specified performance requirements for ventilation, heating, cooling, filtration, and air distribution. Unit shall be assembled for draw-through application and shall be arranged to discharge conditioned air up flow, down flow, or side flow as shown on the contract drawings.
2. Unit with a direct-expansion cooling coil shall have the capability to be used in a refrigerant circuit in conjunction with a field-supplied and matched air-cooled condensing unit. The unit shall be factory assembled, piped, and wired, as well as run tested at the factory. The unit and refrigerant pipes will be charged with dehydrated air (nitrogen gas) prior to shipment from the factory.

B. Performance:

1. Each multi position air handler's performance is based on nominal operating conditions shown in the mechanical schedules.

C. Unit Cabinet:

1. The cabinet shall be ducted to the supply and return openings.
2. The unit shall be no larger than 55-1/2" x 24-1/2" x 26-5/8" and weigh no more than 170 lbs.

D. Fan:

1. The unit shall have two fan speeds including: low (Lo) and high (Hi).

E. Filter

1. The unit shall have an integrated internal filter rack for 1" thick standard filter.

F. Electrical:

1. The unit shall be 208-230V, 1 phase, 60 Hertz.
2. The unit shall have an acceptable voltage range of 187-255V.
3. The control circuit between the condensing unit, changeover boxes, and indoor units shall use AWG18-2 type control wire.

G. Static Pressure

1. The unit shall have adjustable static pressure up to .7 in WG.

EconoFresh Economizer

MODEL NUMBER	NOMINAL CAPACITY(TONS)	TOTAL COOLING (BTU/H)	HEATING (BTU/H)
HIDM030B21E	2.5	30,000	34,000
HIDM036B21E	3.0	36,000	40,000
HIDM048B21E	4.0	48,000	54,000

A. General:

1. The EconoFresh unit shall seamlessly integrate with the VRF system and be paired with the ducted medium static unit to provide outside air/free cooling, up to 100%, when the outside conditions are favorable.
2. The EconoFresh unit shall have provisions for input from optional CO2 or enthalpy sensors for control based on indoor air quality or temperature/humidity.
3. The unit shall be equipped with a remote control setting for the outside air damper opening to ensure that minimum outside airflow requirements are met.

Part 5 – CONTROLLERS**A. CIS01-SIMPLIFIED WIRED CONTROLLER**

- On/Off Mode
- Temperature
- Fan Speed
- Louver Angle
- Automatic Reset of Temp.
- Setpoint Temperature
- Setpoint Limit

- Backlit display
- Built-in thermistor
- Controls 1 to 16 indoor units (same settings)
- Error code diagnosis
- Adjustable fan speed
- Louver control
- Small size for discreet applications

B. CCM01- MINI CENTRAL CONTROLLER

- Controls up to 32 groups of indoor units (maximum 160 units)
- Easy-to-use touchscreen interface
- Color-coded graphics for quick reference
- Set up to 10 on/off times per day
- Up to 8 Mini Controllers can be connected to the H-LINK II segment
- External input/output terminals are provided as standard.
- External signals enable the following options:
 - o Central operation/stop
 - o Demand control
- Emergency stop
- Central operation output
- Central alarm output

C. CCL01- LARGE CENTRAL CONTROLLER

- Controls up to 64 groups of indoor units
- (maximum 160 units)
- Easy-to-use touchscreen interface
- Color-coded graphics for quick reference
- Set up to 10 on/off times per day
- Up to 8 Large Controllers can be connected to the H-LINK II segment
- External input/output terminals are provided as standard. External signals enable the following options:
 - Central operation/stop
 - Demand control
 - Emergency stop
 - Central operation output
 - Central alarm output
 - Control Functions
 - Run/Stop

D. CIW01-Wired Zone Controller

- Backlit display
- Built-in thermistor
- Standard wall controller
- Controls temperature, mode, fan speed
- Seven-day timer with multiple set points
- Controls up to 16 indoor units
- Built-in 23-hour timer
- Room name and service company name programmable
- Help menus and error code diagnosis
- Large LCD display permits users to see the operating conditions and settings
- The timer can be set at half-hour intervals
- Monitors the operating conditions in the system, and an alarm is issued if a problem occurs.
- A “self-diagnosis function” checks for problems on:
 - printed boards in indoor and
 - outdoor units
- Temperature range limit
- Individual function lockout. (mode, temperature, fan speed)

E. CIR01 WIRELESS CONTROLLER

- Controls up to 16 indoor units
- Built-in 23-hour timer
 - On/Off
 - Mode
- Temperature
- Fan Speed
- Louver Angle
- On Timer
- Off Timer
- Filter Sign Reset

F. CBN02 VRF Smart Gateway

- Supports up to 64 VRF systems, up to 160 Indoor Units, and up to 200 total Indoor and Outdoor Units
- Integrates with the Metasys and FX building automation systems
- Integrates with third party building automation systems supporting the BACnet IP protocol
- BACnet Gateway (B-GW) device profile
- BACnet IP, (Annex J), BACnet Broadcast Management Device (BBMD)"
- Connects up to 4 Large Central Controllers (CCCL01) simultaneously to the same H-LINK II segment
- Includes a Wi-Fi antenna for access via Laptop, Smartphone, etc.

End of Section

**SECTION 23 31 13
METAL DUCTS****PART 1 GENERAL**

Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS apply to work specified in this section.

1.1 SUBMITTALS**Product Data**

Galvanized Steel Ductwork Materials

Round Sheet Metal Duct Fittings

Turning Vanes

Flexible Connectors

Flexible Duct Materials

Fire Dampers and Wall Collars

Manual Volume Dampers

1.2 RECORD DRAWINGS

Provide record drawings with current factual information. Include deviations from, and amendments to, the drawings and concealed or visible changes in the work, for medium/high pressure ductwork systems. Label drawings "As-Built".

PART 2 PRODUCTS

Include the manufacturer's style or catalog numbers, specification and drawing reference numbers, warranty information, and fabrication site information within material, equipment, and fixture lists.

2.1 SYSTEM DESCRIPTION**2.2 MATERIALS****2.2.1 Galvanized Steel Ductwork Materials**

Provide hot-dip galvanized carbon steel ductwork sheet metal of lock-forming quality, with regular spangle-type zinc coating, conforming to ASTM A924/A924M and ASTM A653/A653M, Designation G90. Treat duct surfaces to be painted by apostatizing.

Conform to ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966 for sheet metal gages and reinforcement thickness.

Low pressure ductwork minimum standards are:

MINIMUM SHEET METAL GAGE

<u>DUCT WIDTH</u> <u>INCHES</u>	<u>GAGE</u>
0 - 12	26
13 - 30	24
31 - 60	22

2.2.2 Brazing Materials

Provide silicon bronze brazing materials conforming to AWS A5.8/A5.8M.

2.2.3 Mill-Rolled Reinforcing And Supporting Materials

Conform to ASTM A36/A36M for mill-rolled structural steel and, wherever in contact with sheet metal ducting galvanize to commercial weight of zinc or coated with materials conforming to ASTM A123/A123M [SSPC Painting Manual].

In lieu of mill-rolled structural steel, submit for approval equivalent strength, proprietary design, rolled-steel structural support systems.

2.3 COMPONENTS

2.3.1 Round Sheet Metal Duct Fittings

Submit offset fitting configurations for approval. Shop fabricate fittings.

2.3.1.1 Fittings Construction

Manufacture as separate fittings, not as tap collars welded or brazed into duct sections.

Provide two-piece type miter elbows for angles less than 31 degrees, three-piece type for angles 31 through 60 degrees, and five-piece type for angles 61 through 90 degrees. Ensure centerline radius of elbows is 1-1/2 times fitting cross section diameter.

Provide conical type crosses, increasers, reducers, reducing tees, and 90-degree tees.

Ensure cutouts in fitting body are equal to branch tap dimension or, where smaller, excess material is flared and rolled into smooth radius nozzle configuration.

2.3.2 Round, High-Pressure, Double-Wall Sheet Metal Ducts

Shop fabricate ducts and fittings.

Construction comprises of an airtight, vapor barrier, outer pressure shell, a 1 inch insulation layer, and a metal inner liner that completely covers the insulation throughout the system.

Provide insulation conforming to NFPA 90A and ASTM C1071 for thermal conductivity in accordance with ASTM D257.

2.3.3 Reinforcement

Support inner liners of both duct and fittings by metal spacers welded in position to maintain spacing and concentricity.

2.3.4 Fittings

Submit offset fitting configurations for approval.

Make divided flow fittings as separate fittings, not tap collars into duct sections, with the following construction requirements:

- a. Sound, airtight, continuous welds at intersection of fitting body and tap
- B. Tap liner securely welded to inner liner, with weld spacing not to exceed 3 inches
- c. Pack insulation around the branch tap area for complete cavity filling.
- d. Carefully fit branch connection to cutout openings in inner liner without spaces for air erosion of insulation and without sharp projections that cause noise and airflow disturbance.

Continuously braze seams in the pressure shell of fittings. Protect galvanized areas that have been damaged by welding with manufacturer's standard corrosion-resistant coating.

Construct two-piece type elbows for angles through 35 degrees, three-piece type for angles 36 through 71 degrees, and five-piece type for angles 72 through 90 degrees.

2.3.5 Turning Vanes

Provide double-wall type turning vanes, commercially manufactured for high-velocity system service.

2.3.6 Dampers

Construct low pressure drop, high-velocity manual volume dampers, and high-velocity fire dampers in accordance with ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966.

2.3.7 Flexible Connectors For Sheet Metal

Use UL listed connectors, 30-ounce per square yard, waterproof, fire-retardant, airtight, woven fibrous-glass cloth, double coated with chloroprene. Clear width, not including clamping section, is 6 to 8 inches.

2.3.9 Duct Hangers

For duct hangers in contact with galvanized duct surfaces, provide galvanized steel painted with inorganic zinc.

2.3.10 Mill-Rolled Reinforcing And Supporting Materials

Provide mill-rolled structural steel conforming to ASTM A36/A36M. Whenever in contact with sheet metal ducting, provide galvanized steel in accordance with ASTM A123/A123M.

In lieu of mill-rolled structural steel, submit equivalent strength, proprietary-design, rolled-steel structural support systems for approval.

2.3.11 Flexible Duct Materials

Ensure flexible duct connectors comply with NFPA 90A, and conform with UL 181, Class 1 material.

Provide wire-reinforced cloth duct consisting of a chloroprene fibrous-glass cloth bonded to and supported by a corrosion-protected spring steel helix. Fabric may be a laminate of metallic film and fibrous glass. Ensure working pressure rating of ducting is not less than three times maximum system pressure, and the temperature range is minus 20 to plus 175 degrees F.

Provide wire-reinforced fibrous-glass duct consisting of a minimum 1 pound/cubic foot density fibrous glass, bonded to and supported by corrosion-protected spring helix. Vapor barriers are a minimum of 4 mil, pigmented polyvinylchloride film. Ensure duct is bendable without damage through 180 degrees with an inside bend radius not greater than two duct diameters. Thermal conductivity is not greater than 0.23 Btu per hour per square foot per degrees F at 75 degrees F mean temperature. Ensure permeance is not greater than 0.10 perm. Working pressure range is from minus 1/2 inchwg to plus 2 inches wg. Working temperature ranges from minus 20 to plus 250 degrees F. Minimum sustained velocity without delamination is 2,400 fpm. Use materials conforming to NFPA 90A.

2.3.12 Manual Volume Dampers

Conform to SMACNA 1966 for volume damper construction.

Equip dampers with an indicating quadrant regulator with a locking feature externally located and easily accessible for adjustment and standoff brackets to allow mounting outside external insulation. Where damper rod lengths exceed 30 inches, provide a regulator at each end of damper shaft.

2.3.12.1 Damper Construction

Provide all damper shafts with two-end bearings.

Ensure splitter damper is 22-gage sheet metal and is 2 gages heavier than duct in which installed]. Hinges are 1/8 inch thick door type.

Provide a full length damper shaft and extend it beyond the damper blade. use a 3/8 inch square shaft for damper lengths up to 20 inches and a 1/2 inch square shaft for damper

lengths 20 inches and larger. Where necessary to prevent damper vibration or slippage, provide adjustable support rods with locking provisions external to duct at damper blade end.

Provide dampers in ducts having a width perpendicular to the axis of the damper that is greater than 12 inches of multiblade type having a substantial frame with blades fabricated of 16-gage metal. Provide blades not exceeding 10 inches in width and 48 inches in length, welded to 1/2 inch diameter shafts. Ensure dampers greater than [48] [] inches in width are made in two or more sections with intermediate mullions, each section being mechanically interlocked with the adjoining section or sections. Provide blades with oil-impregnated sintered bronze bearings and connect so that adjoining blades rotate in opposite directions.

2.3.13 Gravity Backdraft And Relief Dampers

Construct frames of not less than 1-1/2- by 4 inch reinforced 16-gage galvanized carbon steel. Solidly secure frames and mullions in place and seal with elastomer caulking against air bypass.

Provide shaft bearings with oil-impregnated bronze.

Equip counterbalanced dampers with fixed or adjustable counterbalancing weights.

2.3.13.1 Blade Construction

Maximum blade width is 9 inches, and maximum blade length is 36 inches. Blade material is 16-gage galvanized steel alloy aluminum 18-gage AISI 18-8 corrosion-resistant steel. Provide blades with mechanically retained seals and 90-degree limit stops.

Blades linked together for relief service dampers are to open not less than 30 degrees on 0.05 inch wg differential pressure.

2.3.14 Fire Dampers And Wall Collars

Ensure fire damper locations are in accordance with NFPA 90A.

Provide fire dampers in ductwork at firewall barriers.

Construct and label fire dampers in accordance with UL 555 to provide damper and mounting fire-resistance that equals or exceeds fire-resistance of the construction in which installed. For link loads in excess of 20 pounds, provide UL-approved quartzoid links.

Construct wall collars in accordance with UL 555.

PART 3 EXECUTION

3.1 PREPARATION

For sheet metal surfaces to be painted, and surfaces to which adhesives are to be applied, clean surface of oil, grease, and deleterious substances.

Ensure strength is adequate to prevent failure under service pressure or vacuum created by fast closure of duct devices. Provide leaktight, automatic relief devices.

3.1.1 Construction Standards

Provide sheet metal construction in accordance with the recommendations for best practices in ASHRAE EQUIP IP HDBK, Chapter 16, SMACNA 1966, NFPA 90A, and ASHRAE FUN IP, Chapter 32.

Design and fabricate supplementary steel in accordance with AISC 360 and AISC 325.

Where construction methods for certain items are not described in the referenced standards or herein, perform the work in accordance with recommendations for best practice defined in ASHRAE EQUIP IP HDBK.

3.2 INSTALLATION

When furnishing the listing of product installations for medium/high pressure ductwork systems include identification of at least 5 units, similar to those proposed for use, that have been in successful service for a minimum period of 5 years. Include purchaser, address of installation, service organization, and date of installation.

Fabricate airtight and include reinforcements, bracing, supports, framing, gasketing, sealing, and fastening to provide rigid construction and freedom from vibration, airflow-induced motion and noise, and excessive deflection at specified maximum system air pressure and velocity.

Provide offsets and transformations as required to avoid interference with the building construction, piping, or equipment.

Make plenum anchorage provisions, sheet metal joints, and other areas airtight and watertight by caulking mating galvanized steel and concrete surfaces with a two-component elastomer.

3.2.1 Jointing

Enclose dampers located behind architectural intake or exhaust louvers by a rigid sheet metal collar and sealed to building construction with elastomers for complete air tightness.

Provide outside air-intake ducts and plenums made from sheet metal with soldered watertight joints.

3.2.2 Ducts

Wherever ducts pass through firewalls or through walls or floors dividing conditioned spaces from unconditioned spaces, provide a flanged segment in that surface during surface construction.

Where interiors of ducting may be viewed through air diffusion devices, construct the viewed interior with sheet metal and paint flat black.

3.3 APPLICATION

3.3.1 Low Pressure Sheet Metal Ducts

Weld angle iron frames at corners and ends, whenever possible. Rivet or weld angle iron reinforcements to ducts not more than 6 inches on center, with not less than two points of attachment. Spot welding, where used, is 3 inches on center.

Seal standard seam joints with an elastomer compound to comply with SMACNA 1966 Seal Class A, B or C as applicable.

Limit crossbreaking to 4 feet and provide on all ducts 8 inches wide and wider. Provide bead reinforcement in lieu of crossbreaking where panel popping may occur. Where rigid insulation is applied, crossbreaking is not required.

3.3.1.1 Longitudinal Duct Seams

Provide Pittsburgh lock corner seams.

3.3.1.2 Joints and Gaskets

Bolt companion angle flanges together with 1/4 inch diameter bolts and nuts spaced 6 inches on center. Gasket flanged joints with chloroprene full-face gaskets 1/8 inch thick, with Shore A 40 durometer hardness. Use one piece gaskets, dovetailed at joints.

3.3.1.3 Flexible Duct Joints

Between flexible duct without sheet metal collars and round metal ductwork connections make joints by trimming the ends, coating the inside of the flexible duct for a distance equal to depth of insertion with elastomer caulk, and by securing with sheet metal screws or binding with a strap clamp.

3.3.1.4 Square Elbows

Provide single-vane duct turns in accordance with SMACNA 1966, use on ducts 12 inches in width and narrower.

Provide double-vane duct turns in accordance with SMACNA 1966.

3.3.1.5 Radius Elbows

Conform to SMACNA 1966 for radius elbows. Provide an inside radius equal to the width of the duct. Where installation conditions preclude use of standard elbows, the inside radius may be reduced to a minimum of 0.25 times duct width and install turning vanes in accordance with the following schedule.

WIDTH OF ELBOWS INCHES	RADIUS OF TURNING VANES IN PERCENT OF DUCT WIDTH		
	<u>VANE NO. 1</u>	<u>VANE NO. 2</u>	<u>VANE NO. 3</u>
Up to 16	56	--	--

17 to 48	43	73	--
49 and over	37	55	83

Where two elbows are placed together in the same plane in ducts 30 inches wide and larger, continue the guide vanes through both elbows rather than spaced in accordance with above schedule.

3.3.1.6 Outlets, Inlets, And Duct Branches

Install branches, inlets, and outlets so that air turbulence is reduced to a minimum and air volume properly apportioned. Install adjustable splitter dampers at all supply junctions to permit adjustment of the amount of air entering the branch. Wherever an air-diffusion device is shown as being installed on the side, top, or bottom of a duct, and whenever a branch takeoff is not of the splitter type; provide a commercially manufactured 45 degree side-take-off (STO) fitting with manual volume damper to allow adjustment of the air quantity and to provide an even flow of air across the device or duct it services.

Where a duct branch is to handle more than 25 percent of the air handled by the duct main, use a complete 90-degree increasing elbow with an inside radius of 0.75 times branch duct width. Size of the leading end of the increasing elbow within the main duct with the same ratio to the main duct size as the ratio of the related air quantities handled.

Where a duct branch is to handle 25 percent or less of the air handled by the duct main, construct the branch connection with a 45 degree side take-off entry in accordance with SMACNA 1966.

3.3.1.7 Duct Transitions

Where the shape of a duct changes, ensure the angle of the side of the transition piece does not exceed 15 degrees from the straight run of duct connected thereto.

Where equipment is installed in ductwork, ensure the angle of the side of the transition piece from the straight run of duct connected thereto does not exceed 15 degrees on the upstream side of the equipment and 22-1/2 degrees on the downstream side of the equipment.

3.3.1.8 Branch Connections

Construct radius tap-ins in accordance with SMACNA 1966.

3.3.1.9 Access Openings

Construct access door in accordance with SMACNA 1966, except that sliding doors may be used only for special conditions upon prior approval. Provide double-panel type doors.

Install access doors and panels in ductwork [upstream from coils] [upstream and downstream from coils] [adjacent to fire dampers] [at controls or at any item requiring periodic inspection, adjustment, maintenance, or cleaning] [where indicated], and every 20 feet for indoor air quality housekeeping purposes.

Minimum access opening size is 18x18 inches, unless precluded by duct dimensions or otherwise indicated.

Make airtight access doors that leak by adding or replacing hinges and latches or by construction of new doors adequately reinforced, hinged, and latched.

3.3.1.10 Plenum Construction

Provide intake and discharge plenum companion angle joints with the following minimum thickness of materials:

<u>LONGEST ANGLES SIDE INCHES</u>	<u>SHEET METAL USS GAGE ALL SIDES</u>	<u>COMPANION ANGLES INCHES</u>	<u>REINFORCEMENT INCHES, 24 INCHES ON CENTER MAXIMUM</u>
To 48	20	1-1/2 by 1-1/2 by 1/8	1-1/2 by 1-1/2 by 1/8
49 to 84	18	2 by 2 by 1/8	2 by 2 by 3/16
85 to 120	16	2 by 2 by 1/8	2 by 2 by 1/8
121 and larger	14	2 by 2 by 3/16	2 by 2 by 3/16

At the floor line and other points where plenums join masonry construction, bolt panels 12 inches on center to 2- by 2- by 3/16 inch thick hot-dip galvanized steel angle that has been secured to the masonry with masonry anchors and bolts 24 inches on center and caulked tight to the masonry.

Anchor panels to curbing by not less than 2- by 2- by 3/16 inch thick hot-dip galvanized steel angle iron. Concrete curbing includes angle iron nosing with welded studs for the anchoring of panels. Level nosing at curb height within plus or minus 1/16 inch.

Weld and grind miter corners for angle iron and channel iron.

3.3.1.12 Plenum Door Construction

Construct plenum access doors in accordance with SMACNA 1966 except that access doors smaller than man-access doors have door openings framed with angle iron that is one commercial size smaller than the specified panel reinforcement.

Ensure man-access door size conforms to per SMACNA 1966 and paragraph ACCESS OPENINGS. Insulated and uninsulated construction is per SMACNA 1966. Frame door openings with channel iron. Frame doors with angle iron. Size channel iron and angle iron approximately the same size as specified panel reinforcement.

3.3.1.13 Manual Volume Dampers

Provide balancing dampers of the splitter, butterfly, or multilouver type, to balance each respective main and branch duct.

For dampers regulated through ceilings provide a regulator concealed in a box mounted in the ceiling, with a cover finish aesthetically compatible with ceiling surface. Where ceiling is of removable construction, set regulators above the ceiling, and mark the location on ceiling in a manner acceptable to the Contracting Officer.

3.3.1.14 Flexible Connectors For Sheet Metal

Connect air handling equipment, ducts crossing building expansion joints, and fan inlets and outlets to upstream and downstream components by treated woven-cloth connectors.

Install connectors only after system fans are operative, and vibration isolation mountings have been adjusted. When system fans are operating, ensure connectors are free of wrinkle caused by misalignment or fan reaction. Width of surface is curvilinear.

3.3.2 Rectangular Sheet Metal Ducts

3.3.2.1 Medium-Pressure Gages, Joints, And Reinforcement

Ensure minimum sheet metal gages, joints, and reinforcements between joints are in accordance with ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966.

Ensure sheet metal minimum thickness, transverse reinforcement between joints, and joints of ducts are in accordance with the following:

SHEET		REINFORCEMENT ANGLES	
LONGEST SIDE INCHES	METAL GAGE ALL SIDES	COMPANION INCHES	ANGLE INCHES, 24 INCHES ON CENTER MAXIMUM

(BACK TO BACK)

97 to 108	16	2 by 2 by 1/8, two tie rods along angle	Two 2 by 2 by 1/8, two tie rods along angle
109 to 132	16	2 by 2 by 3/16, two tie rods along angle	Two 2 by 2 by 3/16, two tie rods along angle
133 and longer	14	2 by 2 by 3/16, with tie rods every 48 inches	Two 2 by 2 by 3/16, with tie rods every 48 inches

3.3.2. Duct Branch Transition

Where a duct branch handles over 25 percent of the air transported by the duct main, use a complete 90-degree increasing, with an inside radius of 0.75 times duct branch width. Ensure the size of the trailing end of the increasing elbow within the main duct is in the same ratio to the main duct size as the ratio of the relative air quantities handled.

Where a duct branch is to handle 25 percent or less of the air handled by the duct main, provide a branch connection with an inside radius of 0.75 times branch duct width, a minimum arc length of 45 degrees, and an outside radius of 1.75 times duct branch width. Place arc tangent to duct main.

3.3.2.4 Round Sheet Metal Ducts

3.3.2.5 Duct Gages And Reinforcement

Sheet metal minimum thickness, joints, and reinforcement between joints shall be in accordance with ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966.

Provide ducts with supplemental girth angle supports, riveted with [solid rivets 6 inches on center] [tack welded] [brazed] to duct. Locate girth angles as follows:

<u>DIAMETER, INCHES</u>	<u>REINFORCEMENT-MAXIMUM SPACING, INCHES</u>
25 to 36	1-1/4 by 1-1/4, 1/8 thick, 72 inches on center
37 to 50	1-1/4 by 1-1/4, 1/8 thick, 60 inches on center
51 to 60	1-1/2 by 1-1/2, 1/8 thick, 48 inches on center

Bolt heads and nuts shall be hex-shaped, 5/16 inch diameter for ducts up to 50 inch diameter, and 3/8 inch diameter for 51 inch diameter ducts and larger.

[Continuously weld] [Brazed] flanges to duct on outside of duct and intermittently welded with 1 inch welds every 4 inches on inside joint face. Remove excess filler metal from inside face. Protect galvanized areas that have been damaged by welding with manufacturer's standard corrosion-resistant coating.

3.3.3 Duct Joints

Provide duct joints manufactured by machine, with spiral locksets to and including 60 inch diameters, and to dimensional tolerances compatible with fittings provided. Draw band girth joints are not acceptable.

Prepare slip joints by coating the male fitting with elastomer sealing materials, exercising care to prevent mastic from entering fitting bore, leaving only a thin annular mastic line exposed internally. Use sheet metal screws to make assembly rigid, not less than four screws per joint, maximum spacing 6 inches. Do not use pop rivets. Tape and heat seal all joints.

3.3.4 Duct Transitions

Where the shape of a duct changes, ensure the angle of the side of the transition piece does not exceed 15 degrees from the straight run of duct connected thereto.

Where equipment is installed in ductwork, ensure the angle of the side of the transition piece from the straight run of duct connected thereto does not exceed 15 degrees on the upstream side of the equipment and 22-1/2 degrees on the downstream side of the equipment.

3.3.4 Duct Supports

Install duct support in accordance with ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966. Meet the minimum size for duct hangers as specified in ASHRAE EQUIP IP HDBK, Chapter 16, ASHRAE FUN IP, Chapter 32 and SMACNA 1966. Provide two hangers where necessary to eliminate sway. Support attachment to duct surfaces by [solid rivet] [bolt] [welding] 4 inches on center.

Take the following into account in selection of a hanging system:

- a. Location and precedence of work under other sections
- b. Interferences of various piping and electrical conduit
- c. Equipment, and building configuration
- d. Structural and safety factor requirements
- e. Vibration, and imposed loads under normal and abnormal service conditions

Support sizes, configurations, and spacing are given to show the minimal type of supporting components required. If installed loads are excessive for the specified hanger spacing, hangers, and accessories [provide heavier-duty components] [reduce hanger spacing]. After system startup, replace any duct support device which, due to length, configuration, or size, vibrates or causes possible failure of a member, or the condition otherwise be alleviated. Exercise special care to preclude cascade-type failures.

Do not hang ductwork and equipment from roof deck, piping, or other ducts or equipment. Maximum span between any two points is 10 feet, with lesser spans as required by duct assemblies, interferences, and permitted loads imposed.

Where support from metal deck systems is involved, coordinate support requirements with installation of metal deck.

3.3.10.1 Double-wall Ducts

Provide round, double-wall duct supports as recommended by the manufacturer except that minimum hanger ring and strap size is 1-1/2 inches by 1/8 inch.

3.3.10.2 Hangars

Attach hanger rods, angles, and straps to beam clamps. Receive approval from the Contracting Officer for concrete inserts, masonry anchors, and fasteners for the application.

Hardened high-carbon spring-steel fasteners fitted onto beams and miscellaneous structural steel are acceptable upon prior approval of each proposed application and upon field

demonstration of conformance to specification requirements. Make fasteners from steel conforming to AISI Type [1055] [1070], treated and finished in conformance with SAE AMS 2480, Type Z (zinc phosphate base), Class 2 (supplementary treatment). Verify a 72-hour load-carrying capacity by a certified independent laboratory.

Where ductwork system contains heavy equipment, excluding air-diffusion devices and single-leaf dampers, hang such equipment independently of the ductwork by means of rods or angles of sizes adequate to support the load.

Sufficiently cross-brace hangers to eliminate swaying both vertically and laterally.

3.3.10.3 Installation

Ensure hanger spacing gives a 20-to-1 safety factor for supported load.

Maximum load supported by any two fasteners is 100 pounds.

Install hangers on both sides of all duct turns, branch fittings, and transitions.

Friction rod assemblies are not acceptable.

3.3.10.4 Strap-type Hangers

Support rectangular ducts up to 36 inches by strap-type hangers attached at not less than three places to not less than two duct surfaces in different planes.

Perforated strap hangers are not acceptable.

3.3.10.5 Trapeze Hangers

Support rectangular ducting, 36 inches and larger, by trapeze hangers. Support ducts situated in unconditioned areas and required to have insulation with a vapor-sealed facing on trapeze hangers. Space hangers far enough out from the side of the duct to permit the duct insulation to be placed on the duct inside the trapeze. Do not penetrate the vapor-sealed facing with duct hangers.

Where trapeze hangers are used, support the bottom of the duct on angles sized as follows:

<u>WIDTH OF DUCT, INCHES</u>	<u>MINIMUM BOTTOM ANGLE SIZE, INCHES</u>
30 and smaller	1-1/4 by 1-1/4 by 1/8
31 to 48	1-1/2 by 1-1/2 by 1/8
49 to 72	1-1/2 by 1-1/2 by 3/16
73 to 96	2 by 2 by 1/4
97 and wider	3 by 3 by 1/4

3.3.10.6 Purlins

Do not support ducting, when supported from roof purlins, at points greater than one-sixth of the purlin span from the roof truss. Do not exceed 400 pounds load per hanger when support is from a single purlin or 800 pounds when hanger load is applied halfway between purlins by means of auxiliary support steel provided under this section. When support is not halfway between purlins, the allowable hanger load is the product of 400 times the inverse ratio of the longest distance of purlin-to-purlin spacing.

When the hanger load exceeds the above limits, provide reinforcing of purlin(s) or additional support beam(s). When an additional beam is used, have the beam bear on the top chord of the roof trusses, and also bear over the gusset plates of top chord. Stabilize the beam by connection to roof purlin along bottom flange.

Purlins used for supporting fire-protection sprinkler mains, electrical lighting fixtures, electrical power ducts, or cable trays are considered fully loaded. Provide supplemental reinforcing or auxiliary support steel for these purlins.

3.3.11 Flexible Connectors For Steel Metal

Connect air-handling equipment, ducts crossing building expansion joints, and fan inlets and outlets to upstream and downstream components by treated woven-cloth connectors.

Install connectors only after system fans are operative and all vibration isolation mountings have been adjusted. When system fans are operating, ensure connectors are free of wrinkles caused by misalignment or fan reaction. Width of surface is curvilinear.

3.3.12 Insulation Protection Angles

Provide galvanized 20-gage sheet, formed into an angle with a 2 inch exposed long leg with a 3/8 inch stiffening break at outer edge, and with a variable concealed leg, depending upon insulation thickness.

Install angles over all insulation edges terminating by butting against a wall, floor foundation, frame, and similar construction. Fasten angles in place with blind rivets through the protection angle, insulation, and sheet metal duct or plenum. Install angles after final insulation covering has been applied.

3.3.13 Duct Probe Access

Provide holes with neat patches, threaded plugs, or threaded or twist-on caps for air-balancing pitot tube access. Provide extended-neck fittings where probe access area is insulated.

3.3.14 Openings In Roofs And Walls

Building openings are fixed and provide equipment to suit.

3.4 FIELD QUALITY CONTROL

3.4.1 Fire Damper Tests

Perform operational tests on each fire damper in the presence of the Contracting Officer by energizing a fusible link with localized heat. Provide new links and install after successful testing.

3.4.2 Ductwork Leakage Tests

Conduct complete leakage test of new ductwork in accordance with Section 23 05 93 TESTING, ADJUSTING, AND BALANCING FOR HVAC. Perform tests prior to installing ductwork insulation.

3.4.3 Inspection

Inspect ductwork in accordance with SMACNA 1987.

3.5 DUCTWORK CLEANING PROVISIONS

Protect open ducting from construction dust and debris in a manner approved by the Contracting Officer. Clean dirty assembled ducting by subjecting all main and branch interior surfaces to airstreams moving at velocities two times specified working velocities, at static pressures within maximum ratings. This may be accomplished by: filter-equipped portable blowers which remain the Contractor's property; wheel-mounted, compressed-air operated perimeter lances which direct the compressed air and which are pulled in the direction of normal airflow; or other means approved by the Contracting Officer. Use water- and oil- free compressed air for cleaning ducting. After construction is complete, and prior to acceptance of the work, remove construction dust and debris from exterior surfaces. [Clean in conformance with SMACNA 1987.

3.6 OPERATION AND MAINTENANCE

Submit 6 copies of the operation and maintenance manuals 30 calendar days prior to testing the medium/high pressure ductwork systems. Update data and resubmit for final approval no later than 30 calendar days prior to contract completion.

Ensure Operation and Maintenance Manuals are consistent with manufacturer's standard brochures, schematics, printed instructions, general operating procedures and safety precautions.

-- End of Section --

SECTION 26 05 19 - LOW-VOLTAGE ELECTRICAL POWER CONDUCTORS AND CABLES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Single conductor building wire.
- B. Wiring connectors.
- C. Electrical tape.
- D. Heat shrink tubing.
- E. Oxide inhibiting compound.
- F. Wire pulling lubricant.
- G. Cable ties.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0501 - Minor Electrical Demolition: Disconnection, removal, and/or extension of existing electrical conductors and cables.
- C. Section 26 0526 - Grounding and Bonding for Electrical Systems: Additional requirements for grounding conductors and grounding connectors.
- D. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- E. Section 26 2100 - Low-Voltage Electrical Service Entrance: Additional requirements for electrical service conductors.
- F. Section 28 3100 - Fire Detection and Alarm: Fire alarm system conductors and cables.
- G. Section 31 2316 - Excavation.
- H. Section 31 2316.13 - Trenching: Excavating, bedding, and backfilling.
- I. Section 31 2323 - Fill: Bedding and backfilling.

1.03 REFERENCE STANDARDS

- A. ASTM B3 - Standard Specification for Soft or Annealed Copper Wire; 2013.
- B. ASTM B8 - Standard Specification for Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft; 2011.
- C. ASTM B33 - Standard Specification for Tin-Coated Soft or Annealed Copper Wire for Electrical Purposes; 2010 (Reapproved 2014).
- D. ASTM B787/B787M - Standard Specification for 19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation; 2004 (Reapproved 2014).
- E. ASTM D3005 - Standard Specification for Low-Temperature Resistant Vinyl Chloride Plastic Pressure-Sensitive Electrical Insulating Tape; 2010.
- F. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- G. NEMA WC 70 - Nonshielded Power Cable 2000 V or Less for the Distribution of Electrical Energy; 2009.
- H. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.

- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 44 - Thermoset-Insulated Wires and Cables; Current Edition, Including All Revisions.
- K. UL 83 - Thermoplastic-Insulated Wires and Cables; Current Edition, Including All Revisions.
- L. UL 486A-486B - Wire Connectors; Current Edition, Including All Revisions.
- M. UL 486C - Splicing Wire Connectors; Current Edition, Including All Revisions.
- N. UL 486D - Sealed Wire Connector Systems; Current Edition, Including All Revisions.
- O. UL 510 - Polyvinyl Chloride, Polyethylene, and Rubber Insulating Tape; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes of raceways, boxes, and equipment enclosures installed under other sections with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate with electrical equipment installed under other sections to provide terminations suitable for use with the conductors to be installed.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conductors and cables, including detailed information on materials, construction, ratings, listings, and available sizes, configurations, and stranding.
- C. Project Record Documents: Record actual installed circuiting arrangements. Record actual routing for underground circuits.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conductors and cables in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUCTOR AND CABLE APPLICATIONS

- A. Do not use conductors and cables for applications other than as permitted by NFPA 70 and product listing.
- B. Provide single conductor building wire installed in suitable raceway unless otherwise indicated, permitted, or required.
- C. Nonmetallic-sheathed cable is not permitted.
- D. Underground feeder and branch-circuit cable is not permitted.
- E. Service entrance cable is not permitted.
- F. Armored cable is not permitted.
- G. Metal-clad cable is not permitted.

2.02 CONDUCTOR AND CABLE GENERAL REQUIREMENTS

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, etc. as required for a complete operating system.
- D. Comply with NEMA WC 70.
- E. Thermoplastic-Insulated Conductors and Cables: Listed and labeled as complying with UL 83.
- F. Thermoset-Insulated Conductors and Cables: Listed and labeled as complying with UL 44.
- G. Conductors for Grounding and Bonding: Also comply with Section 26 0526.
- H. Conductors and Cables Installed in Cable Tray: Listed and labeled as suitable for cable tray use.
- I. Conductors and Cables Installed Exposed in Spaces Used for Environmental Air (only where specifically permitted): Plenum rated, listed and labeled as suitable for use in return air plenums.
- J. Conductor Material:
 - 1. Provide copper conductors only. Aluminum conductors are not acceptable for this project. Conductor sizes indicated are based on copper.
 - 2. Copper Conductors: Soft drawn annealed, 98 percent conductivity, uncoated copper conductors complying with ASTM B3, ASTM B8, or ASTM B787/B 787M unless otherwise indicated.
 - 3. Tinned Copper Conductors: Comply with ASTM B33.
- K. Minimum Conductor Size:
 - 1. Branch Circuits: 12 AWG.
 - a. Exceptions:
 - 1) 20 A, 120 V circuits longer than 75 feet: 10 AWG, for voltage drop.
 - 2) 20 A, 120 V circuits longer than 150 feet: 8 AWG, for voltage drop.
 - 2. Control Circuits: 14 AWG.
- L. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- M. Conductor Color Coding:
 - 1. Color code conductors as indicated unless otherwise required by the authority having jurisdiction. Maintain consistent color coding throughout project.
 - 2. Color Coding Method: Integrally colored insulation.
 - a. Conductors size 4 AWG and larger may have black insulation color coded using vinyl color coding electrical tape.
 - 3. Color Code:
 - a. 208Y/120 V, 3 Phase, 4 Wire System:
 - 1) Phase A: Black.
 - 2) Phase B: Red.
 - 3) Phase C: Blue.
 - 4) Neutral/Grounded: White.
 - e. Equipment Ground, All Systems: Green.
 - f. Isolated Ground, All Systems: Green with yellow stripe.
 - g. Travelers for 3-Way and 4-Way Switching: Pink.
 - h. For control circuits, comply with manufacturer's recommended color code.

2.03 SINGLE CONDUCTOR BUILDING WIRE

- A. Manufacturers:
 - 1. Copper Building Wire:
 - a. Cerro Wire LLC
 - b. Encore Wire Corporation
 - c. Southwire Company
 - d. General Cable.
 - e. Substitutions: See Section 01 6000 - Product Requirements.
- B. Description: Single conductor insulated wire.
- C. Conductor Stranding:
 - 1. Feeders and Branch Circuits:
 - a. Size 10 AWG and Smaller: Solid.
 - b. Size 8 AWG and Larger: Stranded.
 - 2. Control Circuits: Stranded.
- D. Insulation Voltage Rating: 600 V.
- E. Insulation:
 - 1. Copper Building Wire: Type THHN/THWN or THHN/THWN-2.
 - a. Fixture Wiring Within Luminaires: Type TFFN/TFN for luminaires with labeled maximum temperature of 90 degrees C; Approved suitable type for luminaires with labeled maximum temperature greater than 90 degrees C.

2.04 WIRING CONNECTORS

- A. Description: Wiring connectors appropriate for the application, suitable for use with the conductors to be connected, and listed as complying with UL 486A-486B or UL 486C as applicable.
- B. Connectors for Grounding and Bonding: Comply with Section 26 0526.
- C. Wiring Connectors for Splices and Taps, In Indoor Locations:
 - 1. Copper Conductors Size 8 AWG and Smaller: Use twist-on insulated spring connectors.
 - 2. Copper Conductors Size 6 AWG and Larger: Use mechanical connectors or compression connectors.
- D. Wiring Connectors for Splices and Taps, In Below Grade or Pullbox Locations:
 - 1. Copper Conductors, All Sizes: Use pre-insulated mechanical splices pre-filled with oxide inhibiting compound. UL listed.
 - 2. Suitable for 90 degree C connections at 600 volts. Insulation shall be rubber/vinyl coating, high dielectric.
 - 3. Acceptable Manufacturers: Greaves-USA or approved equal.
- E. Wiring Connectors for Terminations:
 - 1. Provide terminal lugs for connecting conductors to equipment furnished with terminations designed for terminal lugs.
 - 2. Provide compression adapters for connecting conductors to equipment furnished with mechanical lugs when only compression connectors are specified.
 - 3. Where over-sized conductors are larger than the equipment terminations can accommodate, provide connectors suitable for reducing to appropriate size, but not less than required for the rating of the overcurrent protective device.
 - 4. Provide motor pigtail connectors for connecting motor leads in order to facilitate disconnection.

- 5. Copper Conductors Size 8 AWG and Larger: Use mechanical connectors or compression connectors where connectors are required.
- F. Do not use insulation-piercing or insulation-displacement connectors designed for use with conductors without stripping insulation.
- G. Do not use push-in wire connectors as a substitute for twist-on insulated spring connectors.
- H. Twist-on Insulated Spring Connectors: Rated 600 V, 221 degrees F for standard applications and 302 degrees F for high temperature applications; pre-filled with sealant and listed as complying with UL 486D for damp and wet locations.
 - 1. Manufacturers:
 - a. 3M
 - b. Ideal Industries, Inc
 - c. NSI Industries LLC
- I. Mechanical Connectors: Provide bolted type or set-screw type.
 - 1. Manufacturers:
 - a. Burndy
 - b. Ilsco
 - c. Thomas & Betts Corporation
- J. Compression Connectors: Provide circumferential type or hex type crimp configuration.
 - 1. Manufacturers:
 - a. Burndy
 - b. Ilsco
 - c. Thomas & Betts Corporation
- K. Crimped Terminals: Nylon-insulated, with insulation grip and terminal configuration suitable for connection to be made.
 - 1. Manufacturers:
 - a. Burndy
 - b. Ilsco
 - c. Thomas & Betts Corporation

2.05 WIRING ACCESSORIES

- A. Electrical Tape:
 - 1. Manufacturers:
 - a. 3M
 - b. Plymouth Rubber Europa
 - 2. Vinyl Color Coding Electrical Tape: Integrally colored to match color code indicated; listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; suitable for continuous temperature environment up to 221 degrees F.
 - 3. Vinyl Insulating Electrical Tape: Complying with ASTM D3005 and listed as complying with UL 510; minimum thickness of 7 mil; resistant to abrasion, corrosion, and sunlight; conformable for application down to 0 degrees F and suitable for continuous temperature environment up to 221 degrees F.
 - 4. Electrical Filler Tape: Rubber-based insulating moldable putty, minimum thickness of 125 mil; suitable for continuous temperature environment up to 176 degrees F.
 - 5. Varnished Cambric Electrical Tape: Cotton cambric fabric tape, with or without adhesive, oil-primed and coated with high-grade insulating varnish; minimum thickness of 7 mil; suitable for continuous temperature environment up to 221 degrees F.

6. Moisture Sealing Electrical Tape: Insulating mastic compound laminated to flexible, all-weather vinyl backing; minimum thickness of 90 mil.
- B. Oxide Inhibiting Compound: Listed; suitable for use with the conductors or cables to be installed.
 1. Manufacturers:
 - a. Burndy
 - b. Ideal Industries, Inc
 - c. Ilsco
- C. Wire Pulling Lubricant: Listed; suitable for use with the conductors or cables to be installed and suitable for use at the installation temperature.
 1. Manufacturers:
 - a. 3M
 - b. American Polywater Corporation
 - c. Ideal Industries, Inc
- D. Cable Ties: Material and tensile strength rating suitable for application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that interior of building has been protected from weather.
- B. Verify that work likely to damage wire and cable has been completed.
- C. Verify that raceways, boxes, and equipment enclosures are installed and are properly sized to accommodate conductors and cables in accordance with NFPA 70.
- D. Verify that field measurements are as shown on the drawings.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Clean raceways thoroughly to remove foreign materials before installing conductors and cables.

3.03 INSTALLATION

- A. Circuiting Requirements:
 1. Unless dimensioned, circuit routing indicated is diagrammatic.
 2. When circuit destination is indicated and routing is not shown, determine exact routing required.
 3. Arrange circuiting to minimize splices.
 4. Include circuit lengths required to install connected devices within 10 ft of location shown.
 5. Maintain separation of Class 1, Class 2, and Class 3 remote-control, signaling, and power-limited circuits in accordance with NFPA 70.
 6. Maintain separation of wiring for emergency systems in accordance with NFPA 70.
 7. Circuiting Adjustments: Unless otherwise indicated, when branch circuits are shown as separate, combining them together in a single raceway is not permitted.
 8. Common Neutrals: Unless otherwise indicated, sharing of neutral/grounded conductors among up to three single phase branch circuits of different phases installed in the same raceway is not permitted. Provide dedicated neutral/grounded conductor for each individual branch circuit.
- B. Install products in accordance with manufacturer's instructions.
- C. Install conductors and cable in a neat and workmanlike manner in accordance with NECA 1.

- D. Installation in Raceway:
 - 1. Tape ends of conductors and cables to prevent infiltration of moisture and other contaminants.
 - 2. Pull all conductors and cables together into raceway at same time.
 - 3. Do not damage conductors and cables or exceed manufacturer's recommended maximum pulling tension and sidewall pressure.
 - 4. Use suitable wire pulling lubricant where necessary, except when lubricant is not recommended by the manufacturer.
- E. Paralleled Conductors: Install conductors of the same length and terminate in the same manner.
- F. Secure and support conductors and cables in accordance with NFPA 70 using suitable supports and methods approved by the authority having jurisdiction. Provide independent support from building structure. Do not provide support from raceways, piping, ductwork, or other systems.
 - 1. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conductors and cables to lay on ceiling tiles.
- G. Install conductors with a minimum of 12 inches of slack at each outlet.
- H. Where conductors are installed in enclosures for future termination by others, provide a minimum of 5 feet of slack.
- I. Neatly train and bundle conductors inside boxes, wireways, panelboards and other equipment enclosures.
- J. Group or otherwise identify neutral/grounded conductors with associated ungrounded conductors inside enclosures in accordance with NFPA 70.
- K. Make wiring connections using specified wiring connectors.
 - 1. Make splices and taps only in accessible boxes. Do not pull splices into raceways or make splices in conduit bodies or wiring gutters.
 - 2. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors.
 - 3. Do not remove conductor strands to facilitate insertion into connector.
 - 4. Clean contact surfaces on conductors and connectors to suitable remove corrosion, oxides, and other contaminants. Do not use wire brush on plated connector surfaces.
 - 5. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 6. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- L. Insulate splices and taps that are made with uninsulated connectors using methods suitable for the application, with insulation and mechanical strength at least equivalent to unspliced conductors. Apply oxide inhibiting compound on all splices and terminations in damp or wet locations, including handholes of lighting standards.
 - 1. Dry Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.
 - a. For taped connections, first apply adequate amount of rubber splicing electrical tape or electrical filler tape, followed by outer covering of vinyl insulating electrical tape.
 - b. For taped connections likely to require re-entering, including motor leads, first apply varnished cambric electrical tape, followed by adequate amount of rubber splicing electrical tape, followed by outer covering of vinyl insulating electrical tape.
 - 2. Damp Locations: Use insulating covers specifically designed for the connectors, electrical tape, or heat shrink tubing.

- a. For connections with insulating covers, apply outer covering of moisture sealing electrical tape.
 - b. For taped connections, follow same procedure as for dry locations but apply outer covering of moisture sealing electrical tape.
 - 3. Wet Locations: Use pre-insulated mechanical connectors in wet locations including splices or taps in flush grade pullboxes.
 - M. Insulate ends of spare conductors using vinyl insulating electrical tape.
 - N. Field-Applied Color Coding: Where vinyl color coding electrical tape is used in lieu of integrally colored insulation as permitted in Part 2 under "Color Coding", apply half overlapping turns of tape at each termination and at each location conductors are accessible.
 - O. Identify conductors and cables in accordance with Section 26 0553.
 - P. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
 - Q. Unless specifically indicated to be excluded, provide final connections to all equipment and devices, including those furnished by others, as required for a complete operating system.
- 3.04 FIELD QUALITY CONTROL
- A. See Section 01 4000 - Quality Requirements, for additional requirements.
 - B. Inspect and test in accordance with NETA ATS, except Section 4.
 - C. Perform inspections and tests listed in NETA ATS, Section 7.3.2. The insulation resistance test is required for all conductors. The resistance test for parallel conductors listed as optional is not required.
 - 1. Disconnect surge protective devices (SPDs) prior to performing any high potential testing. Replace SPDs damaged by performing high potential testing with SPDs connected.
 - D. Correct deficiencies and replace damaged or defective conductors and cables.

END OF SECTION

SECTION 26 05 26 - GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Grounding and bonding requirements.
- B. Conductors for grounding and bonding.
- C. Connectors for grounding and bonding.
- D. Ground bars.
- E. Ground rod electrodes.

1.2 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Additional requirements for conductors for grounding and bonding, including conductor color coding.
 - 1. Includes oxide inhibiting compound.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- C. Section 26 5600 - Exterior Lighting: Additional grounding and bonding requirements for pole-mounted luminaires.

1.3 REFERENCE STANDARDS

- A. IEEE 81 - IEEE Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Grounding System; 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- C. NEMA GR 1 - Grounding Rod Electrodes and Grounding Rod Electrode Couplings; 2007.
- D. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
- E. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- F. UL 467 - Grounding and Bonding Equipment; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Verify exact locations of underground metal water service pipe entrances to building.
 - 2. For signal reference grids, coordinate the work with access flooring furnished in accordance with Section 09 6900.
 - 3. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install ground rod electrodes until final backfill and compaction is complete.

1.5 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for grounding and bonding system components.

- B. Field quality control test reports.
- C. Project Record Documents: Record actual locations of grounding electrode system components and connections.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.1 GROUNDING AND BONDING REQUIREMENTS

- A. Do not use products for applications other than as permitted by NFPA 70 and product listing.
- B. Unless specifically indicated to be excluded, provide all required components, conductors, connectors, conduit, boxes, fittings, supports, accessories, etc. as necessary for a complete grounding and bonding system.
- C. Where conductor size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.
- D. Grounding System Resistance:
 - 1. Achieve specified grounding system resistance under normally dry conditions unless otherwise approved by Architect. Precipitation within the previous 48 hours does not constitute normally dry conditions.
 - 2. Grounding Electrode System: Not greater than 5 ohms to ground, when tested according to IEEE 81 using "fall-of-potential" method.
 - 3. Between Grounding Electrode System and Major Electrical Equipment Frames, System Neutral, and Derived Neutral Points: Not greater than 0.5 ohms, when tested using "point-to-point" methods.
- E. Grounding Electrode System:
 - 1. Provide connection to required and supplemental grounding electrodes indicated to form grounding electrode system.
 - a. Provide continuous grounding electrode conductors without splice or joint.
 - b. Install grounding electrode conductors in raceway where exposed to physical damage. Bond grounding electrode conductor to metallic raceways at each end with bonding jumper.
 - 2. Metal Underground Water Pipe(s):
 - a. Provide connection to underground metal domestic and fire protection (where present) water service pipe(s) that are in direct contact with earth for at least 10 feet at an accessible location not more than 5 feet from the point of entrance to the building.
 - b. Provide bonding jumper(s) around insulating joints/pipes as required to make pipe electrically continuous.
 - c. Provide bonding jumper around water meter of sufficient length to permit removal of meter without disconnecting jumper.
 - 3. Metal Building or Structure Frame:
 - a. Provide connection to metal building or structure frame effectively grounded in accordance with NFPA 70 at nearest accessible location.
 - 4. Ground Rod Electrode(s):
 - a. Provide single electrode unless otherwise indicated or required.
 - b. Space electrodes not less than 10 feet from each other and any other ground electrode.

5. Provide additional ground electrode(s) as required to achieve specified grounding electrode system resistance.
 6. Ground Bar: Provide ground bar, separate from service equipment enclosure, for common connection point of grounding electrode system bonding jumpers as permitted in NFPA 70. Connect grounding electrode conductor provided for service-supplied system grounding to this ground bar.
 - a. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
 - b. Where ground bar location is not indicated, locate in accessible location as near as possible to service disconnect enclosure.
 - c. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.
- F. Separately Derived System Grounding:
1. Separately derived systems include, but are not limited to:
 - a. Transformers (except autotransformers such as buck-boost transformers).
 - b. Uninterruptible power supplies (UPS), when configured as separately derived systems.
 2. Provide grounding electrode conductor to connect derived system grounded conductor to nearest effectively grounded metal building frame. Unless otherwise indicated, make connection at neutral (grounded) bus in source enclosure.
 3. Provide bonding jumper to connect derived system grounded conductor to nearest metal building frame and nearest metal water piping in the area served by the derived system, where not already used as a grounding electrode for the derived system. Make connection at same location as grounding electrode conductor connection.
 4. Provide system bonding jumper to connect system grounded conductor to equipment ground bus. Make connection at same location as grounding electrode conductor connection. Do not make any other connections between neutral (grounded) conductors and ground on load side of separately derived system disconnect.
 5. Where the source and first disconnecting means are in separate enclosures, provide supply-side bonding jumper between source and first disconnecting means.
- G. Bonding and Equipment Grounding:
1. Provide bonding for equipment grounding conductors, equipment ground busses, metallic equipment enclosures, metallic raceways and boxes, device grounding terminals, and other normally non-current-carrying conductive materials enclosing electrical conductors/equipment or likely to become energized as indicated and in accordance with NFPA 70.
 2. Provide insulated equipment grounding conductor in each feeder and branch circuit raceway. Do not use raceways as sole equipment grounding conductor.
 3. Where circuit conductor sizes are increased for voltage drop, increase size of equipment grounding conductor proportionally in accordance with NFPA 70.
 4. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
 5. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on neutral (grounded) or isolated/insulated ground bus.
 6. Provide bonding jumper across expansion or expansion/deflection fittings provided to accommodate conduit movement.
 7. Provide bonding for interior metal piping systems in accordance with NFPA 70. This includes, but is not limited to:
 - a. Metal water piping where not already effectively bonded to metal underground water pipe used as grounding electrode.

b. Metal gas piping.

H. Isolated Ground System:

1. Where isolated ground receptacles or other isolated ground connections are indicated, provide separate isolated/insulated equipment grounding conductors.
2. Connect isolated/insulated equipment grounding conductors only to separate isolated/insulated equipment ground busses.
3. Connect the isolated/insulated equipment grounding conductors to the solidly bonded equipment ground bus only at the service disconnect or separately derived system disconnect. Do not make any other connections between isolated ground system and normal equipment ground system on the load side of this connection.

I. Communications Systems Grounding and Bonding:

1. Provide intersystem bonding termination at service equipment or metering equipment enclosure and at disconnecting means for any additional buildings or structures in accordance with NFPA 70.
2. Provide bonding jumper in raceway from intersystem bonding termination to each communications room or backboard and provide ground bar for termination.
 - a. Bonding Jumper Size: 6 AWG, unless otherwise indicated or required.
 - b. Raceway Size: 3/4 inch unless otherwise indicated or required.
 - c. Ground Bar Size: 1/4 by 2 by 12 inches unless otherwise indicated or required.
 - d. Ground Bar Mounting Height: 18 inches above finished floor unless otherwise indicated.

J. Pole-Mounted Luminaires: Also comply with Section 26 5600.

2.2 GROUNDING AND BONDING COMPONENTS

A. General Requirements:

1. Provide products listed, classified, and labeled as suitable for the purpose intended.
2. Provide products listed and labeled as complying with UL 467 where applicable.

B. Conductors for Grounding and Bonding, in Addition to Requirements of Section 26 0526:

1. Use insulated copper conductors unless otherwise indicated.

C. Connectors for Grounding and Bonding:

1. Description: Connectors appropriate for the application and suitable for the conductors and items to be connected; listed and labeled as complying with UL 467.
2. Unless otherwise indicated, use exothermic welded connections for underground, concealed and other inaccessible connections.
3. Unless otherwise indicated, use mechanical connectors, compression connectors, or exothermic welded connections for accessible connections.
 - a. Exceptions:
 - 1) Use exothermic welded connections for connections to metal building frame.

D. Ground Bars:

1. Description: Copper rectangular ground bars with mounting brackets and insulators.
2. Size: As indicated.
3. Holes for Connections: As indicated or as required for connections to be made.

E. Ground Rod Electrodes:

1. Comply with NEMA GR 1.
2. Material: Copper-bonded (copper-clad) steel.
3. Size: 3/4 inch diameter by 10 feet length, unless otherwise indicated.

PART 3 EXECUTION**3.1 EXAMINATION**

- A. Verify that work likely to damage grounding and bonding system components has been completed.
- B. Verify that field measurements are as shown on the drawings.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.2 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install grounding and bonding system components in a neat and workmanlike manner in accordance with NECA 1.
- C. Ground Rod Electrodes: Unless otherwise indicated, install ground rod electrodes vertically. Where encountered rock prohibits vertical installation, install at 45 degree angle or bury horizontally in trench at least 30 inches (750 mm) deep in accordance with NFPA 70 or provide ground plates.
 - 1. Outdoor Installations: Unless otherwise indicated, install with top of rod 6 inches below finished grade.
 - 2. Indoor Installations: Unless otherwise indicated, install with 4 inches of top of rod exposed.
- D. Make grounding and bonding connections using specified connectors.
 - 1. Remove appropriate amount of conductor insulation for making connections without cutting, nicking or damaging conductors. Do not remove conductor strands to facilitate insertion into connector.
 - 2. Remove nonconductive paint, enamel, or similar coating at threads, contact points, and contact surfaces.
 - 3. Exothermic Welds: Make connections using molds and weld material suitable for the items to be connected in accordance with manufacturer's recommendations.
 - 4. Mechanical Connectors: Secure connections according to manufacturer's recommended torque settings.
 - 5. Compression Connectors: Secure connections using manufacturer's recommended tools and dies.
- E. Identify grounding and bonding system components in accordance with Section 26 0553.

3.3 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS except Section 4.
- C. Perform inspections and tests listed in NETA ATS, Section 7.13.
- D. Perform ground electrode resistance tests under normally dry conditions. Precipitation within the previous 48 hours does not constitute normally dry conditions.
- E. Investigate and correct deficiencies where measured ground resistances do not comply with specified requirements.
- F. Submit detailed reports indicating inspection and testing results and corrective actions taken.

END OF SECTION

SECTION 26 05 29 - HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Support and attachment components for equipment, conduit, cable, boxes, and other electrical work.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Concrete equipment pads.
- B. Section 05 5000 - Metal Fabrications: Materials and requirements for fabricated metal supports.
- C. Section 26 0534 - Conduit: Additional support and attachment requirements for conduits.
- D. Section 26 0537 - Boxes: Additional support and attachment requirements for boxes.
- E. Section 26 5100 - Interior Lighting: Additional support and attachment requirements for interior luminaires.
- F. Section 26 5600 - Exterior Lighting: Additional support and attachment requirements for exterior luminaires.

1.03 REFERENCE STANDARDS

- A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2015.
- B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware; 2009.
- C. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel; 2013.
- D. MFMA-4 - Metal Framing Standards Publication; 2004.
- E. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 5B - Strut-Type Channel Raceways and Fittings; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.
 - 2. Coordinate the work with other trades to provide additional framing and materials required for installation.
 - 3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.
 - 4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 3000.

1.05 QUALITY ASSURANCE

- A. Comply with NFPA 70.
- B. Comply with applicable building code.

PART 2 PRODUCTS

2.01 SUPPORT AND ATTACHMENT COMPONENTS

- A. General Requirements:
 - 1. Provide all required hangers, supports, anchors, fasteners, fittings, accessories, and hardware as necessary for the complete installation of electrical work.
 - 2. Provide products listed, classified, and labeled as suitable for the purpose intended, where applicable.
 - 3. Where support and attachment component types and sizes are not indicated, select in accordance with manufacturer's application criteria as required for the load to be supported. Include consideration for vibration, equipment operation, and shock loads where applicable.
 - 4. Do not use products for applications other than as permitted by NFPA 70 and product listing.
 - 5. Do not use chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.
 - 6. Steel Components: Use corrosion resistant materials suitable for the environment where installed.
 - a. Indoor Dry Locations: Use zinc-plated steel or approved equivalent unless otherwise indicated.
 - b. Outdoor and Damp or Wet Indoor Locations: Use NEMA 412 stainless steel unless otherwise indicated.
 - c. Zinc-Plated Steel: Electroplated in accordance with ASTM B633.
 - d. Galvanized Steel: Hot-dip galvanized after fabrication in accordance with ASTM A123/A123M or ASTM A153/A153M.
- B. Conduit and Cable Supports: Straps, clamps, etc. suitable for the conduit or cable to be supported.
 - 1. Conduit Straps: One-hole or two-hole type; steel or malleable iron.
 - 2. Conduit Clamps: Bolted type unless otherwise indicated.
- C. Outlet Box Supports: Hangers, brackets, etc. suitable for the boxes to be supported.
- D. Metal Channel (Strut) Framing Systems: Factory-fabricated continuous-slot metal channel (strut) and associated fittings, accessories, and hardware required for field-assembly of supports.
 - 1. Comply with MFMA-4.
 - 2. Channel Material:
 - a. Indoor Dry Locations: Use painted steel, zinc-plated steel, or galvanized steel.
 - b. Outdoor and Damp or Wet Indoor Locations: Use hot dipped galvanized steel.
 - 3. Minimum Channel Thickness: Steel sheet, 12 gage, 0.1046 inch.
 - 4. Minimum Channel Dimensions: 1-5/8 inch width by 13/16 inch height.
- E. Hanger Rods: Threaded zinc-plated steel unless otherwise indicated.
 - 1. Minimum Size, Unless Otherwise Indicated or Required:
 - a. Equipment Supports: 1/2 inch diameter.
 - b. Single Conduit up to 1 inch (27mm) trade size: 1/4 inch diameter.
 - c. Single Conduit larger than 1 inch (27mm) trade size: 3/8 inch diameter.

- d. Trapeze Support for Multiple Conduits: 3/8 inch diameter.
- e. Outlet Boxes: 1/4 inch diameter.
- F. Anchors and Fasteners:
 - 1. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.
 - 2. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.
 - 3. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.
 - 4. Hollow Masonry: Use toggle bolts.
 - 5. Hollow Stud Walls: Use toggle bolts.
 - 6. Steel: Use beam clamps, machine bolts, or welded threaded studs.
 - 7. Sheet Metal: Use sheet metal screws.
 - 8. Plastic and lead anchors are not permitted.
 - 9. Powder-actuated fasteners are not permitted.
 - 10. Hammer-driven anchors and fasteners are not permitted.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that mounting surfaces are ready to receive support and attachment components.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install support and attachment components in a neat and workmanlike manner in accordance with NECA 1.
- C. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
- D. Unless specifically indicated or approved by Architect, do not provide support from suspended ceiling support system or ceiling grid.
- E. Unless specifically indicated or approved by Architect, do not provide support from roof deck.
- F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.
- G. Equipment Support and Attachment:
 - 1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.
 - 2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.
 - 3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.
 - 4. Unless otherwise indicated, mount floor-mounted equipment on properly sized 3 inch high concrete pad constructed in accordance with Section 03 3000.
 - 5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.
- H. Conduit Support and Attachment: Also comply with Section 26 0534.
- I. Box Support and Attachment: Also comply with Section 26 0537.
- J. Interior Luminaire Support and Attachment: Also comply with Section 26 5100.

- K. Exterior Luminaire Support and Attachment: Also comply with Section 26 5600.
- L. Secure fasteners according to manufacturer's recommended torque settings.
- M. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect support and attachment components for damage and defects.
- C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
- D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 26 05 34 – CONDUIT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Galvanized steel rigid metal conduit (RMC).
- B. Flexible metal conduit (FMC).
- C. Liquidtight flexible metal conduit (LFMC).
- D. Electrical metallic tubing (EMT).
- E. Rigid polyvinyl chloride (PVC) conduit.
- F. Liquidtight flexible nonmetallic conduit (LFNC).
- G. Conduit fittings.
- H. Accessories.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
 - 1. Includes additional requirements for fittings for grounding and bonding.
- C. Section 26 0529 - Hangers and Supports for Electrical Systems.
- D. Section 26 0537 - Boxes.
- E. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- F. Section 26 2100 - Low-Voltage Electrical Service Entrance: Additional requirements for electrical service conduits.
- G. Section 27 1005 - Structured Cabling for Voice and Data - Inside-Plant: Additional requirements for communications systems conduits.

1.03 REFERENCE STANDARDS

- A. ANSI C80.1 - American National Standard for Electrical Rigid Steel Conduit (ERSC); 2005.
- B. ANSI C80.3 - American National Standard for Steel Electrical Metallic Tubing (EMT); 2005.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- D. NECA 101 - Standard for Installing Steel Conduits (Rigid, IMC, EMT); 2013.
- E. NECA 111 - Standard for Installing Nonmetallic Raceways (RNC, ENT, LFNC); 2003.
- F. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2012.
- G. NEMA TC 2 - Electrical Polyvinyl Chloride (PVC) Conduit; 2013.
- H. NEMA TC 3 - Polyvinyl Chloride (PVC) Fittings for Use with Rigid PVC Conduit and Tubing; 2015.
- I. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- J. UL 1 - Flexible Metal Conduit; Current Edition, Including All Revisions.
- K. UL 6 - Electrical Rigid Metal Conduit-Steel; Current Edition, Including All Revisions.
- L. UL 360 - Liquid-Tight Flexible Steel Conduit; Current Edition, Including All Revisions.

- M. UL 514B - Conduit, Tubing, and Cable Fittings; Current Edition, Including All Revisions.
- M. UL 651 - Schedule 40, 80, Type EB and A Rigid PVC Conduit and Fittings; Current Edition, Including All Revisions.
- O. UL 797 - Electrical Metallic Tubing-Steel; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate minimum sizes of conduits with the actual conductors to be installed, including adjustments for conductor sizes increased for voltage drop.
 - 2. Coordinate the arrangement of conduits with structural members, ductwork, piping, equipment and other potential conflicts installed under other sections or by others.
 - 3. Verify exact conduit termination locations required for boxes, enclosures, and equipment installed under other sections or by others.
 - 4. Coordinate the work with other trades to provide roof penetrations that preserve the integrity of the roofing system and do not void the roof warranty.
 - 5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Sequencing:
 - 1. Do not begin installation of conductors and cables until installation of conduit is complete between outlet, junction and splicing points.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittals procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for conduits and fittings.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store conduit and fittings in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 CONDUIT APPLICATIONS

- A. Do not use conduit and associated fittings for applications other than as permitted by NFPA 70 and product listing.
- B. Unless otherwise indicated and where not otherwise restricted, use the conduit types indicated for the specified applications. Where more than one listed application applies, comply with the most restrictive requirements. Where conduit type for a particular application is not specified, use galvanized steel rigid metal conduit.
- C. Underground:
 - 1. Under Slab on Grade: Use rigid PVC conduit.
 - 2. Exterior, Direct-Buried: Use rigid PVC conduit.
 - 3. Exterior, Embedded within Concrete: Use rigid PVC conduit.
 - 4. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from underground.
 - 5. Where rigid polyvinyl (PVC) conduit larger than 2 inch (53 mm) trade size is provided, use galvanized steel rigid metal conduit elbows for bends.
- D. Embedded Within Concrete:

1. Within Slab on Grade: Not permitted except where cutting and patching for floor receptacles is shown or required. Use rigid PVC conduit in these instances.
2. Within Concrete Walls Above Ground: Use rigid PVC conduit.
3. Where rigid polyvinyl (PVC) conduit is provided, transition to galvanized steel rigid metal conduit where emerging from concrete.
- E. Concealed within Masonry Walls: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- F. Concealed within Hollow Stud Walls: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- G. Concealed Above Accessible Ceilings: Use galvanized steel rigid metal conduit, intermediate metal conduit (IMC), or electrical metallic tubing (EMT).
- H. Interior, Damp or Wet Locations: Use galvanized steel rigid metal conduit or intermediate metal conduit (IMC).
- I. Exposed, Interior, Not Subject to Physical Damage: Use galvanized steel rigid metal conduit.
- J. Exposed, Interior, Subject to Physical Damage: Use galvanized steel rigid metal conduit.
 1. Locations subject to physical damage include, but are not limited to:
 - a. Where exposed below 8 feet, except within electrical and communication rooms or closets.
- K. Connections to Luminaires Above Accessible Ceilings: Use flexible metal conduit.
 1. Maximum Length: 6 feet.
- L. Connections to Vibrating Equipment:
 1. Dry Locations: Use flexible metal conduit.
 2. Damp, Wet, or Corrosive Locations: Use liquidtight flexible metal conduit.
 3. Maximum Length: 6 feet unless otherwise indicated.
 4. Vibrating equipment includes, but is not limited to:
 - a. Transformers.
 - b. Motors.

2.02 CONDUIT REQUIREMENTS

- A. Electrical Service Conduits: Also comply with Section 26 2100.
- B. Communications Systems Conduits: Also comply with Section 27 1005.
- C. Fittings for Grounding and Bonding: Also comply with Section 26 0526.
- D. Provide all conduit, fittings, supports, and accessories required for a complete raceway system.
- E. Provide products listed, classified, and labeled as suitable for the purpose intended.
- F. Minimum Conduit Size, Unless Otherwise Indicated:
 1. Branch Circuits: 1/2 inch (16 mm) trade size.
 2. Branch Circuit Homeruns: 3/4 inch (21 mm) trade size.
 3. Control Circuits: 1/2 inch (16 mm) trade size.
 4. Flexible Connections to Luminaires: 3/8 inch (12 mm) trade size.
 5. Underground, Interior: 3/4 inch (21 mm) trade size.
 6. Underground, Exterior: 1 inch (27 mm) trade size.
- G. Where conduit size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

2.03 GALVANIZED STEEL RIGID METAL CONDUIT (RMC)

- A. Manufacturers:

1. Allied Tube & Conduit
 2. Republic Conduit
 3. Wheatland Tube Company
- B. Description: NFPA 70, Type RMC galvanized steel rigid metal conduit complying with ANSI C80.1 and listed and labeled as complying with UL 6.
- C. Fittings:
1. Manufacturers:
 - a. Bridgeport Fittings Inc.
 - b. O-Z/Gedney
 - c. Thomas & Betts Corporation: www.tnb.com.
 2. Non-Hazardous Locations: Use fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.
 4. Connectors and Couplings: Use threaded type fittings only. Threadless set screw and compression (gland) type fittings are not permitted.

2.04 FLEXIBLE METAL CONDUIT (FMC)

- A. Manufacturers:
1. AFC Cable Systems, Inc.
 2. Electri-Flex Company
 3. International Metal Hose
- B. Description: NFPA 70, Type FMC standard wall steel flexible metal conduit listed and labeled as complying with UL 1, and listed for use in classified firestop systems to be used.
- C. Fittings:
1. Manufacturers:
 - a. Bridgeport Fittings Inc.
 - b. O-Z/Gedney, a brand of Emerson Industrial Automation
 - c. Thomas & Betts Corporation
 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.

2.05 LIQUIDTIGHT FLEXIBLE METAL CONDUIT (LFMC)

- A. Manufacturers:
1. AFC Cable Systems, Inc
 2. Electri-Flex Company
 3. International Metal Hose
- B. Description: NFPA 70, Type LFMC polyvinyl chloride (PVC) jacketed steel flexible metal conduit listed and labeled as complying with UL 360.
- C. Fittings:
1. Manufacturers:
 - a. Bridgeport Fittings Inc.
 - b. O-Z/Gedney
 - c. Thomas & Betts Corporation

2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.

2.07 ELECTRICAL METALLIC TUBING (EMT)

- A. Manufacturers:
 1. Allied Tube & Conduit
 2. Republic Conduit
 3. Wheatland Tube Company
- B. Description: NFPA 70, Type EMT steel electrical metallic tubing complying with ANSI C80.3 and listed and labeled as complying with UL 797.
- C. Fittings:
 1. Manufacturers:
 - a. Bridgeport Fittings Inc.
 - b. O-Z/Gedney
 - c. Thomas & Betts Corporation
 2. Description: Fittings complying with NEMA FB 1 and listed and labeled as complying with UL 514B.
 3. Material: Use steel or malleable iron.
 - a. Do not use die cast zinc fittings.
 4. Connectors and Couplings: Use compression (gland) or set-screw type.
 - a. Do not use indenter type connectors and couplings.

2.08 RIGID POLYVINYL CHLORIDE (PVC) CONDUIT

- A. Manufacturers:
 1. Cantex Inc.
 2. Carlon
 3. JM Eagle
- B. Description: NFPA 70, Type PVC rigid polyvinyl chloride conduit complying with NEMA TC 2 and listed and labeled as complying with UL 651 ; Schedule 40 unless otherwise indicated, Schedule 80 where subject to physical damage; rated for use with conductors rated 90 degrees C.
- C. Fittings:
 1. Manufacturer: Same as manufacturer of conduit to be connected.
 2. Description: Fittings complying with NEMA TC 3 and listed and labeled as

2.09 ACCESSORIES

- A. Conduit Joint Compound: Corrosion-resistant, electrically conductive; suitable for use with the conduit to be installed.
- B. Solvent Cement for PVC Conduit and Fittings: As recommended by manufacturer of conduit and fittings to be installed.
- C. Pull Strings: Use nylon cord with average breaking strength of not less than 200 pound-force.
- D. Modular Seals for Conduit Penetrations: Rated for minimum of 40 psig; Suitable for the conduits to be installed.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.

- B. Verify that mounting surfaces are ready to receive conduits.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install conduit in a neat and workmanlike manner in accordance with NECA 1.
- C. Install galvanized steel rigid metal conduit (RMC) in accordance with NECA 101.
- D. Install PVC-coated galvanized steel rigid metal conduit (RMC) using only tools approved by the manufacturer.
- E. Install rigid polyvinyl chloride (PVC) conduit in accordance with NECA 111.
- F. Conduit Routing:
 - 1. Unless dimensioned, conduit routing indicated is diagrammatic.
 - 2. When conduit destination is indicated and routing is not shown, determine exact routing required.
 - 3. Conceal all conduits unless specifically indicated to be exposed.
 - 4. Conduits in the following areas may be exposed, unless otherwise indicated:
 - a. Electrical rooms.
 - b. Mechanical equipment rooms.
 - c. Within joists in areas with no ceiling.
 - 5. Unless otherwise approved, do not route conduits exposed:
 - a. Across floors.
 - b. Across roofs.
 - c. Across building exterior surfaces.
 - 6. Conduits installed underground or embedded in concrete may be routed in the shortest possible manner unless otherwise indicated. Route all other conduits parallel or perpendicular to building structure and surfaces, following surface contours where practical.
 - 7. Arrange conduit to maintain adequate headroom, clearances, and access.
 - 8. Arrange conduit to provide no more than the equivalent of four 90 degree bends between pull points.
 - 9. Arrange conduit to provide no more than 150 feet between pull points.
 - 10. Route conduits above water and drain piping where possible.
 - 11. Arrange conduit to prevent moisture traps. Provide drain fittings at low points and at sealing fittings where moisture may collect.
 - 12. Maintain minimum clearance of 6 inches between conduits and piping for other systems.
 - 13. Maintain minimum clearance of 12 inches between conduits and hot surfaces. This includes, but is not limited to:
 - 14. Group parallel conduits in the same area together on a common rack.
- G. Conduit Support:
 - 1. Secure and support conduits in accordance with NFPA 70 and Section 26 0529 using suitable supports and methods approved by the authority having jurisdiction.
 - 2. Provide independent support from building structure. Do not provide support from piping, ductwork, or other systems.
 - 3. Installation Above Suspended Ceilings: Do not provide support from ceiling support system. Do not provide support from ceiling grid or allow conduits to lay on ceiling tiles.
 - 4. Use conduit strap to support single surface-mounted conduit.
 - a. Use clamp back spacer with conduit strap for damp and wet locations to provide space between conduit and mounting surface.

5. Use metal channel (strut) with accessory conduit clamps to support multiple parallel surface-mounted conduits.
 6. Use conduit clamp to support single conduit from beam clamp or threaded rod.
 7. Use trapeze hangers assembled from threaded rods and metal channel (strut) with accessory conduit clamps to support multiple parallel suspended conduits.
 8. Use of spring steel conduit clips for support of conduits is permitted in above accessible ceiling installations for single raceway supports only.
 - a. Support of electrical metallic tubing (EMT) up to 1 inch (27 mm) trade size.
 9. Use of wire for support of conduits is permitted only as follows:
 - a. For suspending conduits supported by spring steel conduit clips (only where specifically indicated or permitted).
 10. Where conduit support intervals specified in NFPA 70 and NECA standards differ, comply with the most stringent requirements.
- H. Connections and Terminations:
1. Use approved zinc-rich paint or conduit joint compound on field-cut threads of galvanized steel conduits prior to making connections.
 2. Where two threaded conduits must be joined and neither can be rotated, use three-piece couplings or split couplings. Do not use running threads.
 3. Use suitable adapters where required to transition from one type of conduit to another.
 4. Provide drip loops for liquidtight flexible conduit connections to prevent drainage of liquid into connectors.
 5. Terminate threaded conduits in boxes and enclosures using threaded hubs or double lock nuts for dry locations and raintight hubs for wet locations.
 6. Where spare conduits stub up through concrete floors and are not terminated in a box or enclosure, provide threaded couplings equipped with threaded plugs set flush with finished floor.
 7. Provide insulating bushings or insulated throats at all conduit terminations to protect conductors.
 8. Secure joints and connections to provide maximum mechanical strength and electrical continuity.
- I. Penetrations:
1. Do not penetrate or otherwise notch or cut structural members, including footings and grade beams, without approval of Structural Engineer.
 2. Make penetrations perpendicular to surfaces unless otherwise indicated.
 3. Provide sleeves for penetrations as indicated or as required to facilitate installation. Set sleeves flush with exposed surfaces unless otherwise indicated or required.
 4. Conceal bends for conduit risers emerging above ground.
 5. Seal interior of conduits entering the building from underground at first accessible point to prevent entry of moisture and gases.
 6. Provide suitable modular seal where conduits penetrate exterior wall below grade.
 7. Where conduits penetrate waterproof membrane, seal as required to maintain integrity of membrane.
 8. Make penetrations for roof-mounted equipment within associated equipment openings and curbs where possible to minimize roofing system penetrations. Where penetrations are necessary, seal as indicated or as required to preserve integrity of roofing system and maintain roof warranty. Include proposed locations of penetrations and methods for sealing with submittals.
 9. Provide metal escutcheon plates for conduit penetrations exposed to public view.

10. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
 - K. Underground Installation:
 1. Provide trenching and backfilling in accordance with Section 31 2316.13.
 2. Minimum Cover, Unless Otherwise Indicated or Required:
 - a. Under Slab on Grade: 12 inches to bottom of slab.
 3. Provide underground warning tape in accordance with Section 26 0553 along entire conduit length for service entrance where not concrete-encased.
 - L. Conduit Movement Provisions: Where conduits are subject to movement, provide expansion and expansion/deflection fittings to prevent damage to enclosed conductors or connected equipment. This includes, but is not limited to:
 1. Where conduits cross structural joints intended for expansion, contraction, or deflection.
 - M. Condensation Prevention: Where conduits cross barriers between areas of potential substantial temperature differential, provide sealing fitting or approved sealing compound at an accessible point near the penetration to prevent condensation. This includes, but is not limited to:
 1. Where conduits pass from outdoors into conditioned interior spaces.
 2. Where conduits pass from unconditioned interior spaces into conditioned interior spaces. The space above a lay-in ceiling system shall be considered as "unconditioned."
 - N. Provide pull string in all empty conduits and in conduits where conductors and cables are to be installed by others. Leave minimum slack of 12 inches at each end.
 - O. Provide grounding and bonding in accordance with Section 26 0526.
 - P. Identify conduits in accordance with Section 26 0553.
- 3.03 FIELD QUALITY CONTROL
- A. See Section 01 4000 - Quality Requirements, for additional requirements.
 - B. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.
 - C. Where coating of PVC-coated galvanized steel rigid metal conduit (RMC) contains cuts or abrasions, repair in accordance with manufacturer's instructions.
 - D. Correct deficiencies and replace damaged or defective conduits.
- 3.04 CLEANING
- A. Clean interior of conduits to remove moisture and foreign matter.
- 3.05 PROTECTION
- A. Immediately after installation of conduit, use suitable manufactured plugs to provide protection from entry of moisture and foreign material and do not remove until ready for installation of conductors.

END OF SECTION

SECTION 26 05 37 - BOXES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Outlet and device boxes up to 100 cubic inches, including those used as junction and pull boxes.
- B. Cabinets and enclosures, including junction and pull boxes larger than 100 cubic inches.
- C. Floor boxes.
- D. Underground boxes/enclosures.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete.
- B. Section 07 84 00 - Firestopping.
- C. Section 08 31 00 - Access Doors and Panels: Panels for maintaining access to concealed boxes.
- D. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- E. Section 26 05 29 - Hangers and Supports for Electrical Systems.
- F. Section 26 05 34 - Conduit:
 - 1. Conduit bodies and other fittings.
 - 2. Additional requirements for locating boxes to limit conduit length and/or number of bends between pulling points.
- G. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- H. Section 26 27 26 - Wiring Devices:
 - 1. Wall plates.
 - 2. Floor box service fittings.
 - 3. Additional requirements for locating boxes for wiring devices.
- I. Section 27 10 05 - Structured Cabling for Voice and Data - Inside-Plant: Additional requirements for communications systems outlet boxes.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- B. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- C. NEMA FB 1 - Fittings, Cast Metal Boxes, and Conduit Bodies for Conduit, Electrical Metallic Tubing, and Cable; 2012.
- D. NEMA OS 1 - Sheet-Steel Outlet Boxes, Device Boxes, Covers, and Box Supports; 2013.
- E. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. SCTE 77 - Specification for Underground Enclosure Integrity; 2013.
- H. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.

- I. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 514A - Metallic Outlet Boxes; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate minimum sizes of boxes with the actual installed arrangement of conductors, clamps, support fittings, and devices, calculated according to NFPA 70.
4. Coordinate minimum sizes of pull boxes with the actual installed arrangement of connected conduits, calculated according to NFPA 70.
5. Coordinate the placement of boxes with millwork, furniture, devices, equipment, etc. installed under other sections or by others.
6. Coordinate the work with other trades to preserve insulation integrity.
7. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted boxes where indicated.
8. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for cabinets and enclosures and floor boxes.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 BOXES

A. General Requirements:

1. Do not use boxes and associated accessories for applications other than as permitted by NFPA 70 and product listing.
2. Provide all boxes, fittings, supports, and accessories required for a complete raceway system and to accommodate devices and equipment to be installed.
3. Provide products listed, classified, and labeled as suitable for the purpose intended.
4. Where box size is not indicated, size to comply with NFPA 70 but not less than applicable minimum size requirements specified.

5. Provide grounding terminals within boxes where equipment grounding conductors terminate.
- B. Outlet and Device Boxes Up to 100 cubic inches, Including Those Used as Junction and Pull Boxes:
 1. Use sheet-steel boxes for dry locations unless otherwise indicated or required.
 2. Use cast iron boxes or cast aluminum boxes, PVC coated, for damp or wet locations unless otherwise indicated or required; furnish with compatible weatherproof gasketed covers.
 3. Use cast iron boxes or cast aluminum boxes when exposed galvanized steel rigid metal conduit is used.
 4. Use suitable concrete type boxes where flush-mounted in concrete.
 5. Use suitable masonry type boxes where flush-mounted in masonry walls.
 6. Use raised covers suitable for the type of wall construction and device configuration where required.
 7. Use shallow boxes where required by the type of wall construction.
 8. Do not use "through-wall" boxes designed for access from both sides of wall.
 9. Sheet-Steel Boxes: Comply with NEMA OS 1, and list and label as complying with UL 514A.
 10. Cast Metal Boxes: Comply with NEMA FB 1, and list and label as complying with UL 514A ; furnish with threaded hubs.
 11. Boxes for Supporting Luminaires and Ceiling Fans: Listed as suitable for the type and weight of load to be supported; furnished with fixture stud to accommodate mounting of luminaire where required.
 12. Boxes for Ganged Devices: Use multi-gang boxes of single-piece construction. Do not use field-connected gangable boxes.
 13. Minimum Box Size, Unless Otherwise Indicated:
 - a. Wiring Devices (Other Than Communications Systems Outlets): 4 inch square by 1-1/2 inch deep (100 by 38 mm) trade size.
 - b. Communications Systems Outlets: Comply with Section 27 10 05.
 - c. Communications Systems Outlets: 4 inch square by 2-1/8 inch (100 by 54 mm) trade size.
 - d. Ceiling Outlets: 4 inch octagonal or square by 1-1/2 inch deep (100 by 38 mm) trade size.
 14. Wall Plates: Comply with Section 26 27 26.
 15. Manufacturers:
 - a. Cooper Crouse-Hinds
 - b. Hubbell Incorporated; Bell Products
 - c. Hubbell Incorporated; RACO Products
 - d. O-Z/Gedney
- C. Cabinets and Enclosures, Including Junction and Pull Boxes Larger Than 100 cubic inches:
 1. Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E, or UL 508A.
 2. NEMA 250 Environment Type, Unless Otherwise Indicated:
 - a. Indoor Clean, Dry Locations: Type 1, painted steel.

- b. Outdoor Locations: Type 3R, painted steel.
- 3. Junction and Pull Boxes Larger Than 100 cubic inches:
 - a. Provide screw-cover or hinged-cover enclosures unless otherwise indicated.
- 4. Finish for Painted Steel Enclosures: Manufacturer's standard grey unless otherwise indicated.
- D. Floor Boxes:
 - 1. Description: Floor boxes compatible with floor box service fittings provided in accordance with Section 26 27 26; with partitions to separate multiple services; furnished with all components, adapters, and trims required for complete installation.
 - 2. Use cast iron floor boxes within slab on grade.
 - 3. Metallic Floor Boxes: Fully adjustable (with integral means for leveling adjustment prior to and after concrete pour).
 - 4. Manufacturer: Same as manufacturer of floor box service fittings.
- E. Underground Boxes/Enclosures:
 - 1. Description: In-ground, open bottom boxes furnished with flush, non-skid covers with legend indicating type of service and stainless steel tamper resistant cover bolts.
 - 2. Size: As indicated on drawings.
 - 3. Provide logo on cover to indicate type of service.
 - 4. Polymer Concrete Underground Boxes/Enclosures: Comply with SCTE 77.
 - a. Manufacturers:
 - b. Combination fiberglass/polymer concrete boxes/enclosures are not acceptable. Use all-polymer concrete boxes/enclosures.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on drawings.
- B. Verify that mounting surfaces are ready to receive boxes.
- C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130 , including mounting heights specified in those standards where mounting heights are not indicated.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Unless otherwise indicated, provide separate boxes for line voltage and low voltage systems.
- E. Flush-mount boxes in finished areas unless specifically indicated to be surface-mounted.
- F. Box Locations:
 - 1. Locate boxes to be accessible. Provide access panels in accordance with Section 08 31 00 as required where approved by the Architect.

2. Unless dimensioned, box locations indicated are approximate.
 3. Locate boxes as required for devices installed under other sections or by others.
 - a. Switches, Receptacles, and Other Wiring Devices: Comply with Section 26 27 26.
 - b. Communications Systems Outlets: Comply with Section 27 10 05.
 4. Locate boxes so that wall plates do not span different building finishes.
 5. Unless otherwise indicated, where multiple outlet boxes are installed at the same location at different mounting heights, install along a common vertical center line.
 6. Do not install flush-mounted boxes on opposite sides of walls back-to-back. Provide minimum 6 inches horizontal separation unless otherwise indicated.
 7. Acoustic-Rated Walls: Do not install flush-mounted boxes on opposite sides of walls back-to-back; provide minimum 24 inches horizontal separation.
 8. Fire Resistance Rated Walls: Install flush-mounted boxes such that the required fire resistance will not be reduced.
 9. Locate junction and pull boxes as indicated, as required to facilitate installation of conductors, and to limit conduit length and/or number of bends between pulling points in accordance with Section 26 05 34.
- G. Box Supports:
1. Secure and support boxes in accordance with NFPA 70 and Section 26 05 29 using suitable supports and methods approved by the authority having jurisdiction.
 2. Provide independent support from building structure except for cast metal boxes (other than boxes used for fixture support) supported by threaded conduit connections in accordance with NFPA 70. Do not provide support from piping, ductwork, or other systems.
 3. Installation Above Suspended Ceilings: Do not provide support from ceiling grid or ceiling support system.
 4. Use far-side support to secure flush-mounted boxes supported from single stud in hollow stud walls. Repair or replace supports for boxes that permit excessive movement.
- H. Install boxes plumb and level.
- I. Flush-Mounted Boxes:
1. Install boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that front edge of box or associated raised cover is not set back from finished surface more than 1/4 inch or does not project beyond finished surface.
 2. Install boxes in combustible materials such as wood so that front edge of box or associated raised cover is flush with finished surface.
 3. Repair rough openings around boxes in noncombustible materials such as concrete, tile, gypsum, plaster, etc. so that there are no gaps or open spaces greater than 1/8 inch at the edge of the box.
- J. Metallic Floor Boxes: Install box level at the proper elevation to be flush with finished floor.
- K. Underground Boxes/Enclosures:
1. Install enclosure on gravel base, minimum 6 inches deep.
 2. Provide cast-in-place concrete collar constructed in accordance with Section 03 30 00, minimum 10 inches wide by 12 inches deep, around enclosures that are not located in concrete areas.

- L. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- M. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 84 00.
- N. Close unused box openings.
- O. Install blank wall plates on junction boxes and on outlet boxes with no devices or equipment installed or designated for future use.
- P. Provide grounding and bonding in accordance with Section 26 05 26.
- Q. Identify boxes in accordance with Section 26 05 53.

3.03 CLEANING

- A. Clean interior of boxes to remove dirt, debris, plaster and other foreign material.

3.04 PROTECTION

- A. Immediately after installation, protect boxes from entry of moisture and foreign material until ready for installation of conductors.

END OF SECTION

SECTION 26 05 53 - IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical identification requirements.
- B. Identification nameplates and labels.
- C. Wire and cable markers.
- D. Voltage markers.
- E. Underground warning tape.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables: Color coding for power conductors and cables 600 V and less; vinyl color coding electrical tape.
- B. Section 27 1005 - Structured Cabling for Voice and Data - Inside-Plant: Identification for communications cabling and devices.

1.03 REFERENCE STANDARDS

- A. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 IDENTIFICATION REQUIREMENTS

- A. Identification for Equipment:
 - 1. Use identification nameplate to identify each piece of electrical distribution and control equipment and associated sections, compartments, and components.
 - a. Panelboards:
 - 1) Identify ampere rating.
 - 2) Identify voltage and phase.
 - 3) Identify power source and circuit number. Include location.
 - 4) Identify main overcurrent protective device. Use identification label for panelboards with a door. For power distribution panelboards without a door, use identification nameplate.
 - 5) Use typewritten circuit directory to identify load(s) served for panelboards with a door. Identify spares and spaces using pencil.
 - 6) For power panelboards without a door, use identification nameplate to identify load(s) served for each branch device. Do not identify spares and spaces.
 - b. Transformers:
 - 1) Identify kVA rating.
 - 2) Identify voltage and phase for primary and secondary.
 - 3) Identify power source and circuit number. Include location when not within sight of equipment.
 - 4) Identify load(s) served. Include location when not within sight of equipment.
 - c. Enclosed switches, circuit breakers, and motor controllers:
 - 1) Identify voltage and phase.

- 2) Identify power source and circuit number. Include location when not within sight of equipment.
 - 3) Identify load(s) served. Include location when not within sight of equipment.
 - d. Time Switches:
 - 1) Identify load(s) served and associated circuits controlled. Include location.
 2. Service Equipment:
 - a. Use identification nameplate to identify each service disconnecting means.
- B. Identification for Conductors and Cables:
 1. Color Coding for Power Conductors 600 V and Less: Comply with Section 26 0519.
 2. Identification for Communications Conductors and Cables: Comply with Section 27 1005.
 3. Use identification nameplate or identification label to identify color code for ungrounded and grounded power conductors inside door or enclosure at each piece of feeder or branch-circuit distribution equipment when premises has feeders or branch circuits served by more than one nominal voltage system.
 4. Use wire and cable markers to identify circuit number or other designation indicated for power, control, and instrumentation conductors and cables at the following locations:
 - a. At each source and load connection.
 - b. Within boxes when more than one circuit is present.
 - c. Within equipment enclosures when conductors and cables enter or leave the enclosure.
- C. Identification for Devices:
 1. Identification for Communications Devices: Comply with Section 27 1005.
 2. Use identification label to identify fire alarm system devices.
 - a. For devices concealed above suspended ceilings, provide additional identification on ceiling tile below device location.

2.02 IDENTIFICATION NAMEPLATES AND LABELS

- A. Identification Nameplates:
 1. Materials:
 - a. Indoor Clean, Dry Locations: Use plastic nameplates.
 - b. Outdoor Locations: Use plastic, stainless steel, or aluminum nameplates suitable for exterior use.
 2. Plastic Nameplates: Two-layer or three-layer laminated acrylic or electrically non-conductive phenolic with beveled edges; minimum thickness of 1/16 inch; engraved text.
 3. Mounting Holes for Mechanical Fasteners: Two, centered on sides for sizes up to 1 inch high; Four, located at corners for larger sizes.
- B. Identification Labels:
 1. Materials: Use self-adhesive laminated plastic labels; UV, chemical, water, heat, and abrasion resistant.
 - a. Use only for indoor locations.
 2. Text: Use factory pre-printed or machine-printed text. Do not use handwritten text unless otherwise indicated.
- C. Format for Equipment Identification:
 1. Minimum Size: 1 inch by 2.5 inches.
 2. Legend:
 - a. System designation where applicable:
 - 1) Emergency Power System: Identify with text "EMERGENCY".
 - 2) Fire Alarm System: Identify with text "FIRE ALARM".

- b. Equipment designation or other approved description.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height:
 - a. System Designation: 1 inch.
 - b. Equipment Designation: 1/2 inch.
 - 5. Color:
 - a. Normal Power System:
 - 1) 208Y/120 V, 3 Phase Equipment: White text on black background.
 - b. Fire Alarm System: White text on red background.
- D. Format for General Information and Operating Instructions:
 - 1. Minimum Size: 1 inch by 2.5 inches.
 - 2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 1/4 inch.
 - 5. Color: Black text on white background unless otherwise indicated.
- E. Format for Caution and Warning Messages:
 - 1. Minimum Size: 2 inches by 4 inches.
 - 2. Legend: Include information or instructions indicated or as required for proper and safe operation and maintenance.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 1/2 inch.
 - 5. Color: Black text on yellow background unless otherwise indicated.
- F. Format for Control Device Identification:
 - 1. Minimum Size: 3/8 inch by 1.5 inches.
 - 2. Legend: Load controlled or other designation indicated.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch.
 - 5. Color: Black text on clear background.
- G. Format for Fire Alarm Device Identification:
 - 1. Minimum Size: 3/8 inch by 1.5 inches.
 - 2. Legend: Designation indicated and device zone or address.
 - 3. Text: All capitalized unless otherwise indicated.
 - 4. Minimum Text Height: 3/16 inch.
 - 5. Color: Red text on white background.

2.03 WIRE AND CABLE MARKERS

- A. Markers for Conductors and Cables: Use wrap-around self-adhesive vinyl cloth, wrap-around self-adhesive vinyl self-laminating, heat-shrink sleeve, plastic sleeve, plastic clip-on, or vinyl split sleeve type markers suitable for the conductor or cable to be identified.
- B. Markers for Conductor and Cable Bundles: Use plastic marker tags secured by nylon cable ties.
- C. Legend: Power source and circuit number or other designation indicated.
- D. Text: Use factory pre-printed or machine-printed text, all capitalized unless otherwise indicated.
 - 1. Do not use handwritten text.
- E. Minimum Text Height: 1/8 inch.

- F. Color: Black text on white background unless otherwise indicated.

2.04 VOLTAGE MARKERS

- A. Minimum Size:
- B. Legend:
- C. Color: Black text on orange background unless otherwise indicated.

2.05 UNDERGROUND WARNING TAPE

- A. Materials: Use foil-backed detectable type polyethylene tape suitable for direct burial, unless otherwise indicated.
- B. Foil-backed Detectable Type Tape: 3 inches wide, with minimum thickness of 5 mil, unless otherwise required for proper detection.
- C. Legend: Type of service, continuously repeated over full length of tape.
- D. Color:
 - 1. Tape for Buried Power Lines: Black text on red background.
 - 2. Tape for Buried Communication, Alarm, and Signal Lines: Black text on orange background.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install identification products to be plainly visible for examination, adjustment, servicing, and maintenance. Unless otherwise indicated, locate products as follows:
 - 1. Surface-Mounted Equipment: Enclosure front.
 - 2. Flush-Mounted Equipment: Inside of equipment door.
 - 3. Free-Standing Equipment: Enclosure front; also enclosure rear for equipment with rear access.
 - 4. Elevated Equipment: Legible from the floor or working platform.
 - 5. Branch Devices: Adjacent to device.
 - 6. Interior Components: Legible from the point of access.
 - 7. Conductors and Cables: Legible from the point of access.
 - 8. Devices: Outside face of cover.
- C. Install identification products centered, level, and parallel with lines of item being identified.
- D. Secure nameplates to exterior surfaces of enclosures using stainless steel screws and to interior surfaces using self-adhesive backing or epoxy cement.
 - 1. Do not use adhesives on exterior surfaces except where substrate cannot be penetrated.
- E. Install self-adhesive labels and markers to achieve maximum adhesion, with no bubbles or wrinkles and edges properly sealed.
- F. Install underground warning tape above buried lines with one tape per trench at 3 inches below finished grade.
- G. Secure rigid signs using stainless steel screws.
- H. Mark all handwritten text, where permitted, to be neat and legible.

END OF SECTION

SECTION 26 09 19 - ENCLOSED CONTACTORS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Lighting contactors.

1.02 RELATED REQUIREMENTS

- A. Section 26 0529 - Hangers and Supports for Electrical Systems.
- B. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- C. Section 26 2813 – Fuses.

1.03 REFERENCE STANDARDS

- A. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2000 (R2005), with errata, 2008.
- B. NEMA ICS 6 - Industrial Control and Systems: Enclosures; 1993 (R2011).
- C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide dimensions, size, voltage ratings and current ratings.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation.
- B. General Electric Company.
- C. Schneider Electric; Square D Products.

2.02 LIGHTING CONTACTORS

- A. Description: NEMA ICS 2, magnetic lighting contactor.
- B. Configuration: Electrically held.
- C. Coil operating voltage: 120 volts, 60 Hertz.
- D. Poles: As required to match circuit configuration and control function.
- E. Contact Rating: Match branch circuit overcurrent protection, considering derating for continuous loads.
- F. Enclosure: NEMA ICS 6, Type 1.

2.03 ACCESSORIES

- A. Auxiliary Contacts: NEMA ICS 2, 2 normally open contacts in addition to seal-in contact.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install enclosed contactors where indicated, in accordance with manufacturer's instructions.
- B. Install enclosed contactors plumb. Provide supports in accordance with Section 26 0529.
- C. Identify enclosed contactors in accordance with Section 26 0553.

3.02 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform applicable inspections and tests listed in NETA ATS, Section 7.16.1.

END OF SECTION

SECTION 26 09 23 - LIGHTING CONTROL DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Occupancy sensors.

1.02 RELATED REQUIREMENTS

- A. Section 26 05 26 - Grounding and Bonding for Electrical Systems.
- B. Section 26 05 37 - Boxes.
- C. Section 26 05 53 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 09 19 - Enclosed Contactors: Lighting contactors.
- E. Section 26 27 26 - Wiring Devices: Devices for manual control of lighting, including wall switches, wall dimmers, and fan speed controllers.
- F. Section 26 51 00 - Interior Lighting.
- G. Section 26 56 00 - Exterior Lighting.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association; 2010.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2014.
- C. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- D. UL 773A - Nonindustrial Photoelectric Switches for Lighting Control; Current Edition, Including All Revisions.
- E. UL 916 - Energy Management Equipment; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of lighting control devices with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate the placement of wall switch occupancy sensors with actual installed door swings.
 - 3. Coordinate the placement of occupancy sensors with millwork, furniture, equipment or other potential obstructions to motion detection coverage installed under other sections or by others.
 - 4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.
- B. Sequencing:
 - 1. Do not install lighting control devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

- B. Product Data: Include ratings, configurations, standard wiring diagrams, dimensions, colors, service condition requirements, and installed features.
 - 1. Occupancy Sensors: Include detailed motion detection coverage range diagrams.
- C. Field Quality Control Reports.
- D. Manufacturer's Installation Instructions: Include application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.
- E. Operation and Maintenance Data: Include detailed information on device programming and setup.
- F. Project Record Documents: Record actual installed locations and settings for lighting control devices.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.07 DELIVERY, STORAGE, AND PROTECTION

- A. Store products in a clean, dry space in original manufacturer's packaging in accordance with manufacturer's written instructions until ready for installation.

1.08 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.09 WARRANTY

- A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.
- B. Provide five year manufacturer warranty for all occupancy sensors.

PART 2 PRODUCTS

2.01 LIGHTING CONTROL DEVICES - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide all required conduit, wiring, connectors, hardware, components, accessories, etc. as required for a complete operating system.

2.02 OCCUPANCY SENSORS

- A. Manufacturers: Wattstopper, Acuity, Lutron, Leviton, LCD
- B. All Occupancy Sensors:
 - 1. Description: Factory-assembled commercial specification grade devices for indoor use capable of sensing both major motion, such as walking, and minor motion, such as small desktop level movements, according to published coverage areas, for automatic control of load indicated.
 - 2. Sensor Technology:
 - a. Passive Infrared/Ultrasonic Dual Technology Occupancy Sensors: Designed to detect occupancy using a combination of both passive infrared and ultrasonic technologies.
 - 3. Provide LED to visually indicate motion detection with separate color LEDs for each sensor type in dual technology units.

4. Operation: Unless otherwise indicated, occupancy sensor to turn load on when occupant presence is detected and to turn load off when no occupant presence is detected during an adjustable turn-off delay time interval.
 5. Dual Technology Occupancy Sensors: Field configurable turn-on and hold-on activation with settings for activation by either or both sensing technologies.
 6. Turn-Off Delay: Field adjustable, with time delay settings up to 30 minutes.
 7. Sensitivity: Field adjustable.
- C. Wall Switch Occupancy Sensors: Factory-assembled wet location listed device suitable for wall or ceiling/eave mounting, with integral swivel for field adjustment of coverage, capable of detecting motion for automatic control of load indicated. Passive Infrared (PIR) designed to detect occupancy by sensing movement of thermal energy between zones. 180 degree coverage, 300 sq. ft. maximum coverage, 150 sq. ft. desktop, automatic (Smart Set) sensitivity adjustment, adjustable time delay, 5 year warranty. Equal to Wattstopper WS-200-W or as indicated on the Drawings.
1. All Wall Switch Occupancy Sensors:
 - a. Description: Occupancy sensors designed for installation in standard wall box at standard wall switch mounting height with a field of view of 180 degrees, integrated manual control capability, and no leakage current to load in off mode.
 - b. Unless otherwise indicated or required to control the load indicated on the drawings, provide line voltage units with self-contained relay.
 - c. Manual-Off Override Control: When used to turn off load while in automatic-on mode, unit to revert back to automatic mode after no occupant presence is detected during the delayed-off time interval.
 2. Passive Infrared/Ultrasonic Dual Technology Wall Switch Occupancy Sensors: Capable of detecting motion within an area of 900 square feet.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that openings for outlet boxes are neatly cut and will be completely covered by devices or wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that branch circuit wiring installation is completed, tested, and ready for connection to lighting control devices.
- F. Verify that the service voltage and ratings of lighting control devices are appropriate for the service voltage and load requirements at the location to be installed.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130, including mounting heights specified in those standards unless otherwise indicated.

- B. Coordinate locations of outlet boxes provided under Section 26 05 37 as required for installation of lighting control devices provided under this section.
 - 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switch Occupancy Sensors: 48 inches above finished floor.
 - 2. Orient outlet boxes for vertical installation of lighting control devices unless otherwise indicated.
 - 3. Locate wall switch occupancy sensors on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
- C. Install lighting control devices in accordance with manufacturer's instructions.
- D. Unless otherwise indicated, connect lighting control device grounding terminal or conductor to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- E. Install lighting control devices plumb and level and held securely in place.
- F. Where required and not furnished with lighting control device, provide wall plate in accordance with Section 26 27 26.
- G. Where applicable, install lighting control devices and associated wall plates to fit completely flush to mounting surface with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 40 00 - Quality Requirements, for additional requirements.
- B. Inspect each lighting control device for damage and defects.
- C. Test occupancy sensors to verify proper operation, including time delays and ambient light thresholds where applicable. Verify optimal coverage for entire room or area. Record test results in written report to be included with submittals.
- D. Test time switches to verify proper operation.
- E. Correct wiring deficiencies and replace damaged or defective lighting control devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust occupancy sensor settings to minimize undesired activations while optimizing energy savings, and to achieve desired function as indicated or as directed by Architect.
- C. Adjust position of directional occupancy sensors and outdoor motion sensors to achieve optimal coverage as required.
- D. Where indicated or as directed by Architect, install factory masking material or adjust integral blinders on passive infrared (PIR) and dual technology occupancy sensor lenses to block undesired motion detection.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

3.07 CLOSEOUT ACTIVITIES

- A. See Section 01 79 00 - Demonstration and Training, for additional requirements.
- B. Demonstration: Demonstrate proper operation of lighting control devices to Architect, and correct deficiencies or make adjustments as directed.

- C. Training: Train Owner's personnel on operation, adjustment, programming, and maintenance of lighting control devices.
1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 2. Provide minimum of two hours of training.
 3. Instructor: Qualified contractor familiar with the project and with sufficient knowledge of the installed lighting control devices.
 4. Location: At project site.

END OF SECTION

SECTION 26 21 00 - LOW-VOLTAGE ELECTRICAL SERVICE ENTRANCE

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 31 2316 – Excavation.
- E. Section 31 2323 - Fill: Bedding and backfilling.

1.02 DEFINITIONS

- A. Service Point: The point of connection between the facilities of the serving utility and the premises wiring as defined in NFPA 70, and as designated by the Utility Company.

1.03 REFERENCE STANDARDS

- A. IEEE C2 - National Electrical Safety Code; 2012.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 QUALITY ASSURANCE

- A. Comply with the following:
 - 1. IEEE C2 (National Electrical Safety Code).
 - 2. NFPA 70 (National Electrical Code).
 - 3. The requirements of the Utility Company.

PART 2 PRODUCTS

2.01 ELECTRICAL SERVICE REQUIREMENTS

- A. Provide new electrical service consisting of all required conduits, conductors, equipment, metering provisions, supports, accessories, etc. as necessary for connection between Utility Company point of supply and service entrance equipment.
- B. Electrical Service Characteristics:
 - 1. Service Type: Underground.
 - 2. Service Voltage: 208Y/120 V, 3 phase, 60 Hz.
- C. Division of Responsibility:
 - 1. Pole-Mounted Utility Transformers:
 - a. Utility Poles: Furnished and installed by Utility Company.
 - b. Transformers: Furnished and installed by Utility Company.
 - c. Transformer Grounding Provisions: Furnished and installed by Utility Company.
 - d. Primary: Furnished and installed by Utility Company.
 - e. Secondary - Underground Service:
 - 1) Conduits: Furnished and installed by Contractor.
 - 2) Conductors: Furnished and installed by the Contractor.
 - 2. Terminations at Service Point: Provided by Utility Company.
 - 3. Metering Provisions:

- a. Meter Bases: Furnished and installed by Contractor per Utility Company requirements.
- b. Metering Transformer Cabinets: Furnished and installed by Contractor per Utility Company requirements.
- c. Metering Transformers: Furnished and installed by Utility Company.
- d. Conduits Between Metering Transformers and Meters: Furnished and installed by Contractor per Utility Company requirements.
- e. Wiring Between Metering Transformers and Meters: Furnished and installed by Utility Company.

D. Products Furnished by Contractor: Comply with Utility Company requirements.

PART 3 EXECUTIONS

3.01 INSTALLATION

- A. Install products in accordance with manufacturer's instructions and Utility Company requirements.
- B. Perform work in a neat and workmanlike manner in accordance with NECA 1.
- C. Arrange equipment to provide minimum clearances and required maintenance access.
- D. Provide required trenching and backfilling in accordance with Section 31 2316 and Section 31 2323.
- E. Provide required support and attachment components in accordance with Section 26 0529.
- F. Provide grounding and bonding for service entrance equipment in accordance with Section 26 0526.
- G. Identify service entrance equipment, including main service disconnect(s) in accordance with Section 26 0553.

END OF SECTION

SECTION 26 2416 - PANELBOARDS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Power distribution panelboards.
- B. Lighting and appliance panelboards.
- C. Overcurrent protective devices for panelboards.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2813 - Fuses: Fuses for fusible switches and spare fuse cabinets.
- E. Section 26 4300 - Surge Protective Devices.

1.03 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Federal Specification; Revision E, 2013.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- C. NECA 407 - Standard for Installing and Maintaining Panelboards; 2009.
- D. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- E. NEMA PB 1 - Panelboards; 2011.
- F. NEMA PB 1.1 - General Instructions for Proper Installation, Operation and Maintenance of Panelboards Rated 600 Volts or Less; 2013.
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
- H. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- J. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- K. UL 67 - Panelboards; Current Edition, Including All Revisions.
- L. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- M. UL 869A - Reference Standard for Service Equipment; Current Edition, Including All Revisions.
- N. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances for electrical equipment required by NFPA 70.
2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
3. Coordinate the work with other trades to provide walls suitable for installation of flush-mounted panelboards where indicated.
4. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
5. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, and other installed components and accessories.
 1. Include characteristic trip curves for each type and rating of overcurrent protective device upon request.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage, main bus ampacity, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.
 1. Include dimensioned plan and elevation views of panelboards and adjacent equipment with all required clearances indicated.
 2. Include wiring diagrams showing all factory and field connections.
- D. Source Quality Control Test Reports: Include reports for tests designated in NEMA PB 1 as routine tests.
- E. Field Quality Control Test Reports.
- F. Project Record Documents: Record actual installed locations of panelboards and actual installed circuiting arrangements.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, inspect, handle, and store panelboards in accordance with manufacturer's instructions and NECA 407.
- B. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- C. Handle carefully in accordance with manufacturer's written instructions to avoid damage to panelboard internal components, enclosure, and finish.

1.08 FIELD CONDITIONS

- A. Electrical System:
 1. Utility Company: Pearl River Valley EPA
 2. Service Voltage; 208Y/120 Volts, 3 phase, 4 wire, 60 Hz.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation
- B. General Electric Company
- C. Schneider Electric; Square D Products
- D. Siemens Industry, Inc.

2.02 PANELBOARDS - GENERAL REQUIREMENTS

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Ambient Temperature:
 - a. Panelboards Containing Circuit Breakers: Between 23 degrees F and 104 degrees F.
- C. Short Circuit Current Rating:
 - 1. Provide panelboards with listed short circuit current rating as indicated on the drawings.
 - 2. Listed series ratings are not acceptable.
- D. Mains: Configure for top or bottom incoming feed as indicated or as required for the installation.
- E. Branch Overcurrent Protective Devices: Replaceable without disturbing adjacent devices.
- F. Bussing: Sized in accordance with UL 67 temperature rise requirements.
 - 1. Provide fully rated neutral bus unless otherwise indicated, with a suitable lug for each feeder or branch circuit requiring a neutral connection.
 - 2. Provide 200 percent rated neutral bus and lugs where indicated, where oversized neutral conductors are provided, or where panelboards are fed from K-rated transformers.
 - 3. Provide solidly bonded equipment ground bus in each panelboard, with a suitable lug for each feeder and branch circuit equipment grounding conductor.
 - 4. Provide separate isolated/insulated ground bus where indicated or where isolated grounding conductors are provided.
- G. Conductor Terminations: Suitable for use with the conductors to be installed.
- H. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Boxes: Galvanized steel unless otherwise indicated.
 - a. Provide wiring gutters sized to accommodate the conductors to be installed.
 - b. Increase gutter space as required where sub-feed lugs, feed-through lugs, gutter taps, or oversized lugs are provided.
 - c. Provide painted steel boxes for surface-mounted panelboards where indicated, finish to match fronts.
 - 3. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - a. Fronts for Surface-Mounted Enclosures: Same dimensions as boxes.
 - b. Fronts for Flush-Mounted Enclosures: Overlap boxes on all sides to conceal rough opening.
 - 4. Lockable Doors: All locks keyed alike unless otherwise indicated.

- I. Future Provisions: Prepare all unused spaces for future installation of devices including bussing, connectors, mounting hardware and all other required provisions.
- J. Surge Protective Devices: Where factory-installed, internally mounted surge protective devices are provided in accordance with Section 26 4300, list and label panelboards as a complete assembly including surge protective device.

2.03 POWER DISTRIBUTION PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, power and feeder distribution type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Products:
 - 1. Eaton Corporation
 - 2. General Electric Company
 - 3. Schneider Electric; Square D Products
 - 4. Siemens Industry, Inc.
- C. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
 - 2. Main and Neutral Lug Type: Mechanical.
- D. Bussing:
 - 1. Phase and Neutral Bus Material: Copper.
 - 2. Ground Bus Material: Copper.
- E. Circuit Breakers:
 - 1. Provide bolt-on type.
 - 2. Provide thermal magnetic circuit breakers unless otherwise indicated.
- F. Enclosures:
 - 1. Provide surface-mounted enclosures unless otherwise indicated.
 - 2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - 3. Provide clear plastic circuit directory holder mounted on inside of door.

2.04 LIGHTING AND APPLIANCE PANELBOARDS

- A. Description: Panelboards complying with NEMA PB 1, lighting and appliance branch circuit type, circuit breaker type, and listed and labeled as complying with UL 67; ratings, configurations and features as indicated on the drawings.
- B. Products:
 - 1. Eaton Corporation
 - 2. General Electric Company
 - 3. Schneider Electric; Square D Products
 - 4. Siemens Industry, Inc.
- C. Conductor Terminations:
 - 1. Main and Neutral Lug Material: Copper, suitable for terminating copper conductors only.
 - 2. Main and Neutral Lug Type: Mechanical.
- D. Bussing:
 - 1. Phase Bus Connections: Arranged for sequential phasing of overcurrent protective devices.
 - 2. Phase and Neutral Bus Material: Copper.
 - 3. Ground Bus Material: Copper.

- E. Circuit Breakers: Thermal magnetic bolt-on type unless otherwise indicated.
- F. Enclosures:
 - 1. Provide surface-mounted or flush-mounted enclosures as indicated.
 - 2. Fronts: Provide door-in-door trim with hinged cover for access to load terminals and wiring gutters, and separate lockable hinged door with concealed hinges for access to overcurrent protective device handles without exposing live parts.
 - 3. Provide clear plastic circuit directory holder mounted on inside of door.

2.05 OVERCURRENT PROTECTIVE DEVICES

- A. Molded Case Circuit Breakers:
 - 1. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489 , and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
 - 2. Interrupting Capacity:
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - 1) 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
 - 3. Conductor Terminations:
 - a. Provide mechanical lugs unless otherwise indicated.
 - b. Provide compression lugs where indicated.
 - c. Lug Material: Copper, suitable for terminating copper conductors only.
 - 4. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
 - 5. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.
 - 6. Do not use tandem circuit breakers.
 - 7. Do not use handle ties in lieu of multi-pole circuit breakers.
 - 8. Provide multi-pole circuit breakers for multi-wire branch circuits as required by NFPA 70.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that the ratings and configurations of the panelboards and associated components are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive panelboards.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install panelboards securely, in a neat and workmanlike manner in accordance with NECA 1 (general workmanship), NECA 407 (panelboards), and NEMA PB 1.1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.

- D. Provide required supports in accordance with Section 26 0529.
- E. Install panelboards plumb.
- F. Install flush-mounted panelboards so that trims fit completely flush to wall with no gaps and rough opening completely covered.
- G. Mount panelboards such that the highest positions of any operating handle for circuit breakers or switches does not exceed 79 inches above the floor or working platform.
- H. Provide minimum of six spare 1 inch trade size conduits out of each flush-mounted panelboard stubbed into accessible space above ceiling and below floor.
- I. Provide grounding and bonding in accordance with Section 26 0526.
 - 1. Terminate branch circuit equipment grounding conductors on solidly bonded equipment ground bus only. Do not terminate on isolated/insulated ground bus.
 - 2. Terminate branch circuit isolated grounding conductors on isolated/insulated ground bus only. Do not terminate on solidly bonded equipment ground bus.
- J. Install all field-installed branch devices, components, and accessories.
- K. Provide fuses complying with Section 26 2813 for fusible switches as indicated.
- L. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- M. Multi-Wire Branch Circuits: Group grounded and ungrounded conductors together in the panelboard as required by NFPA 70.
- N. Set field-adjustable circuit breaker tripping function settings. Obtain circuit breaker manufacturers services to perform a short circuit and coordination study to obtain trip settings of all breaker functions. The Contractor shall obtain the utility padmount transformer characteristics from the Utility and also provide all feeder conductor lengths, motor ratings etc. and provide to the manufacture for an engineered coordination study. Study shall be sealed by an Engineer registered in the State of Mississippi.
- P. Provide filler plates to cover unused spaces in panelboards.
- Q. Provide circuit breaker lock-on devices to prevent unauthorized personnel from de-energizing essential loads where indicated. Also provide for the following:
 - 1. Emergency and night lighting circuits.
 - 2. Fire detection and alarm circuits.
 - 3. Communications equipment circuits.
 - 4. Intrusion detection and access control system circuits.
 - 5. Video surveillance system circuits.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Correct deficiencies and replace damaged or defective panelboards or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.
- B. Adjust alignment of panelboard fronts.

- C. Load Balancing: For each panelboard, rearrange circuits such that the difference between each measured steady state phase load does not exceed 20 percent and adjust circuit directories accordingly. Maintain proper phasing for multi-wire branch circuits.

3.05 CLEANING

- A. Clean dirt and debris from panelboard enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 27 17 - EQUIPMENT WIRING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Electrical connections to equipment.

1.02 RELATED REQUIREMENTS

- A. Section 26 0519 - Low-Voltage Electrical Power Conductors and Cables.
- B. Section 26 0534 - Conduit.
- C. Section 26 0537 - Boxes.
- D. Section 26 2726 - Wiring Devices.
- E. Section 26 2818 - Enclosed Switches.
- F. Section 26 2913 - Enclosed Controllers.

1.03 REFERENCE STANDARDS

- A. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (R 2010).
- B. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2012.
- C. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Obtain and review shop drawings, product data, manufacturer's wiring diagrams, and manufacturer's instructions for equipment furnished under other sections.
 - 2. Determine connection locations and requirements.
- B. Sequencing:
 - 1. Install rough-in of electrical connections before installation of equipment is required.
 - 2. Make electrical connections before required start-up of equipment.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Cords and Caps: NEMA WD 6; match receptacle configuration at outlet provided for equipment.
 - 1. Colors: Conform to NEMA WD 1.
 - 2. Size: Suitable for connected load of equipment, length of cord, and rating of branch circuit overcurrent protection.
- B. Disconnect Switches: As specified in Section 26 2818 and in individual equipment sections.
- C. Wiring Devices: As specified in Section 26 2726.

- D. Flexible Conduit: As specified in Section 26 0534.
- E. Wire and Cable: As specified in Section 26 0519.
- F. Boxes: As specified in Section 26 0537.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that equipment is ready for electrical connection, wiring, and energization.

3.02 ELECTRICAL CONNECTIONS

- A. Make electrical connections in accordance with equipment manufacturer's instructions.
- B. Make conduit connections to equipment using flexible conduit. Use liquidtight flexible conduit with watertight connectors in damp or wet locations.
- C. Connect heat producing equipment using wire and cable with insulation suitable for temperatures encountered.
- D. Provide receptacle outlet to accommodate connection with attachment plug.
- E. Provide cord and cap where field-supplied attachment plug is required.
- F. Install suitable strain-relief clamps and fittings for cord connections at outlet boxes and equipment connection boxes.
- G. Install disconnect switches, controllers, control stations, and control devices to complete equipment wiring requirements.
- H. Install terminal block jumpers to complete equipment wiring requirements.
- I. Install interconnecting conduit and wiring between devices and equipment to complete equipment wiring requirements.

END OF SECTION

SECTION 26 27 26 - WIRING DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Wall switches.
- B. Wall dimmers.
- C. Receptacles.
- D. Wall plates.
- E. Floor box service fittings.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0537 - Boxes.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 0923 - Lighting Control Devices: Devices for automatic control of lighting, including in-wall time switches.
- E. Section 26 2717 - Equipment Wiring: Cords and plugs for equipment.
- F. Section 27 1005 - Structured Cabling for Voice and Data - Inside-Plant: Voice and data jacks.

1.03 REFERENCE STANDARDS

- A. FS W-C-596 - Connector, Electrical, Power, General Specification for; Federal Specification; Revision G, 2001.
- B. FS W-S-896 - Switches, Toggle (Toggle and Lock), Flush-mounted (General Specification); Federal Specification; Revision F, 1999.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- D. NECA 130 - Standard for Installing and Maintaining Wiring Devices; 2010.
- E. NEMA WD 1 - General Color Requirements for Wiring Devices; 1999 (R 2010).
- F. NEMA WD 6 - Wiring Devices - Dimensional Specifications; 2012.
- G. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 20 - General-Use Snap Switches; Current Edition, Including All Revisions.
- I. UL 498 - Attachment Plugs and Receptacles; Current Edition, Including All Revisions.
- J. UL 514D - Cover Plates for Flush-Mounted Wiring Devices; Current Edition, Including All Revisions.
- K. UL 943 - Ground-Fault Circuit-Interrupters; Current Edition, Including All Revisions.
- L. UL 1472 - Solid-State Dimming Controls; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the placement of outlet boxes with millwork, furniture, equipment, etc. installed under other sections or by others.
 - 2. Coordinate wiring device ratings and configurations with the electrical requirements of actual equipment to be installed.

3. Coordinate the placement of outlet boxes for wall switches with actual installed door swings.
4. Coordinate the installation and preparation of uneven surfaces, such as split face block, to provide suitable surface for installation of wiring devices.
5. Coordinate the core drilling of holes for poke-through assemblies with the work covered under other sections.
6. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

B. Sequencing:

1. Do not install wiring devices until final surface finishes and painting are complete.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's catalog information showing dimensions, colors, and configurations.
 1. Wall Dimmers: Include derating information for ganged multiple devices.
- C. Field Quality Control Test Reports.
- D. Operation and Maintenance Data:
 1. Wall Dimmers: Include information on operation and setting of presets.
 2. GFCI Receptacles: Include information on status indicators.
- E. Project Record Documents: Record actual installed locations of wiring devices.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Products: Listed, classified, and labeled as suitable for the purpose intended.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Hubbell Incorporated
- B. Leviton Manufacturing Company, Inc.
- C. Lutron Electronics Company, Inc.
- D. Pass & Seymour
- E. Source Limitations: Where possible, provide products for each type of wiring device produced by a single manufacturer and obtained from a single supplier.
- F. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.

2.02 WIRING DEVICE APPLICATIONS

- A. Provide wiring devices suitable for intended use and with ratings adequate for load served.
- B. For single receptacles installed on an individual branch circuit, provide receptacle with ampere rating not less than that of the branch circuit.
- C. Provide weather resistant GFCI receptacles with specified weatherproof covers for receptacles installed outdoors or in damp or wet locations.

- D. Provide GFCI protection for receptacles installed within 6 feet of sinks.
- E. Provide GFCI protection for receptacles serving electric drinking fountains.
- F. For flush floor service fittings, use tile rings for installations in tile floors.
- G. For flush floor service fittings, use carpet flanges for installations in carpeted floors.

2.03 WIRING DEVICE FINISHES

- A. Provide wiring device finishes as described below unless otherwise indicated.
- B. Wiring Devices, Unless Otherwise Indicated: As selected by the Architect with stainless steel wall plate.
- C. Wiring Devices Installed in Unfinished Spaces: Gray with galvanized steel wall plate.
- D. Wiring Devices Installed in Wet or Damp Locations: White with specified weatherproof cover. IP 66 rating for all outdoor devices.
- E. Isolated Ground Convenience Receptacles: Orange.
- F. Flush Floor Box Service Fittings: Gray wiring devices with aluminum cover and ring/flange.

2.04 WALL SWITCHES

- A. Manufacturers:
 - 1. Hubbell Incorporated
 - 2. Leviton Manufacturing Company, Inc.
 - 3. Pass & Seymour, a brand of Legrand North America, Inc.
- B. Wall Switches - General Requirements: AC only, quiet operating, general-use snap switches with silver alloy contacts, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 20 and where applicable, FS W-S-896; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring and screw actuated binding clamp for back wiring with separate ground terminal screw.
- C. Standard Wall Switches: Commercial specification grade, 20 A, 120/277 V with standard toggle type switch actuator and maintained contacts; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
- D. Pilot Light Wall Switches: Commercial specification grade, 20 A, 120/277 V with red illuminated standard toggle type switch actuator and maintained contacts; illuminated with load on; single pole single throw, double pole single throw, three way, or four way as indicated on the drawings.
- E. Momentary Contact Wall Switches: Industrial specification grade, 20 A, 120/277 V with toggle type three position switch actuator and momentary contacts; single pole double throw, off with switch actuator in center position.

2.05 WALL DIMMERS

- A. Manufacturers:
 - 1. Leviton Manufacturing Company, Inc.
 - 2. Lutron Electronics Company, Inc.
 - 3. Pass & Seymour, a brand of Legrand North America, Inc.
- B. Wall Dimmers - General Requirements: 0-10V control or solid-state with continuous full-range even control following square law dimming curve, integral radio frequency interference filtering, power failure preset memory, air gap switch accessible without removing wall plate, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 1472; types and ratings suitable for load controlled as indicated on the drawings. Coordinate exact type with Luminaire controlled.

- C. Control: Slide control type with separate on/off switch.
- D. Power Rating, Unless Otherwise Indicated or Required to Control the Load Indicated on the Drawings:
- E. Provide accessory wall switches to match dimmer appearance when installed adjacent to each other.

2.06 RECEPTACLES

- A. Manufacturers:
 - 1. Hubbell Incorporated
 - 2. Leviton Manufacturing Company, Inc.
 - 3. Pass & Seymour, a brand of Legrand North America, Inc
 - 4. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Receptacles - General Requirements: Self-grounding, complying with NEMA WD 1 and NEMA WD 6, and listed as complying with UL 498 , and where applicable, FS W-C-596; types as indicated on the drawings.
 - 1. Wiring Provisions: Terminal screws for side wiring or screw actuated binding clamp for back wiring with separate ground terminal screw.
 - 2. NEMA configurations specified are according to NEMA WD 6.
- C. Convenience Receptacles:
 - 1. Standard Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R; single or duplex as indicated on the drawings.
 - 2. Isolated Ground Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, with ground contacts isolated from mounting strap; isolated ground triangle mark on device face; single or duplex as indicated on the drawings.
 - 3. Weather Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R , listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations; single or duplex as indicated on the drawings.
 - 4. Tamper Resistant Convenience Receptacles: Commercial specification grade, 20A, 125V, NEMA 5-20R, listed and labeled as tamper resistant type; single or duplex as indicated on the drawings.
- D. GFCI Receptacles:
 - 1. GFCI Receptacles - General Requirements: Self-testing, with feed-through protection and light to indicate ground fault tripped condition and loss of protection; listed as complying with UL 943, class A.
 - a. Provide test and reset buttons of same color as device.
 - 2. Standard GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R, rectangular decorator style.
 - 3. Weather Resistant GFCI Receptacles: Commercial specification grade, duplex, 20A, 125V, NEMA 5-20R , rectangular decorator style, listed and labeled as weather resistant type complying with UL 498 Supplement SE suitable for installation in damp or wet locations.
- E. Locking Receptacles: Industrial specification grade, configuration as indicated on the drawings.

2.07 WALL PLATES

- A. Manufacturers:

1. Hubbell Incorporated
 2. Leviton Manufacturing Company, Inc.
 3. Lutron Electronics Company, Inc.
 4. Pass & Seymour
 5. Source Limitations: Where wall controls are furnished as part of lighting control system, provide accessory matching receptacles and wallplates by the same manufacturer in locations indicated.
- B. Wall Plates: Comply with UL 514D.
1. Configuration: One piece cover as required for quantity and types of corresponding wiring devices.
 2. Size: Standard
 3. Screws: Metal with slotted heads finished to match wall plate finish.
- C. Stainless Steel Wall Plates: Brushed satin finish, Type 302 stainless steel.
- D. Galvanized Steel Wall Plates: Rounded corners and edges, with corrosion resistant screws.
- E. Weatherproof Covers for Damp Locations: Gasketed, cast aluminum, with self-closing hinged cover and corrosion-resistant screws; listed as suitable for use in wet locations with cover closed.
- F. Weatherproof Covers for Wet Locations: Gasketed, cast aluminum, with hinged lockable cover and corrosion-resistant screws; listed as suitable for use in wet locations while in use with attachment plugs connected and identified as extra-duty type. Use IP 66 covers for devices located below the Base Flood Elevation.

2.08 FLOOR BOX SERVICE FITTINGS

- A. Manufacturers:
1. Hubbell Incorporated
 2. Thomas & Betts Corporation
 3. Wiremol
- B. Description: Service fittings compatible with floor boxes provided under Section 26 0537 with components, adapters, and trims required for complete installation.
- C. Flush Floor Service Fittings:
1. Single Service Flush Convenience Receptacles:
 - a. Cover: Rectangular.
 - b. Configuration: One standard convenience duplex receptacle(s) with duplex flap opening(s).
 2. Dual Service Flush Combination Outlets:
 - a. Cover: Rectangular.
 - b. Configuration:
 - 1) Power: One standard convenience duplex receptacle(s) with duplex flap opening(s). Isolated ground type where noted on the Drawings.
 - 2) Voice and Data Jacks: Provided by the Contractor.
 3. Dual Service Flush Furniture Feed:
 - a. Cover: Rectangular.
 - b. Configuration:
 - 1) Power: One 2-1/8 inch by 3/4 inch combination threaded opening(s).
 - 2) Communications: One 2-1/8 inch by 1 inch combination threaded opening(s).
 4. Accessories:

- a. Tile Rings: Finish to match covers; configuration as required to accommodate specified covers.
- b. Carpet Flanges: Finish to match covers; configuration as required to accommodate specified covers.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings. Coordinate with other trades and vertically and horizontally align all devices including thermostats, fire alarm appliances, etc. Coordinate installation of boxes with millwork.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate devices and conductors in accordance with NFPA 70.
- C. Verify that wall openings are neatly cut and will be completely covered by wall plates.
- D. Verify that final surface finishes are complete, including painting.
- E. Verify that floor boxes are adjusted properly.
- F. Verify that branch circuit wiring installation is completed, tested, and ready for connection to wiring devices.
- G. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1 and, where applicable, NECA 130 , including mounting heights specified in those standards unless otherwise indicated.
- B. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of wiring devices provided under this section.
 1. Mounting Heights: Unless otherwise indicated, as follows:
 - a. Wall Switches: 48 inches above finished floor.
 - b. Wall Dimmers: 48 inches above finished floor.
 - c. Fan Speed Controllers: 48 inches above finished floor.
 - d. Receptacles: 18 inches above finished floor or 6 inches above counter.
 2. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 3. Where multiple receptacles, wall switches, or wall dimmers are installed at the same location and at the same mounting height, gang devices together under a common wall plate.
 4. Locate wall switches on strike side of door with edge of wall plate 3 inches from edge of door frame. Where locations are indicated otherwise, notify Architect to obtain direction prior to proceeding with work.
 5. Locate receptacles for electric drinking fountains concealed behind drinking fountain according to manufacturer's instructions.
- C. Install wiring devices in accordance with manufacturer's instructions.
- D. Install permanent barrier between ganged wiring devices when voltage between adjacent devices exceeds 300 V.
- E. Where required, connect wiring devices using pigtails not less than 6 inches long. Do not connect more than one conductor to wiring device terminals.

- F. Connect wiring devices by wrapping conductor clockwise 3/4 turn around screw terminal and tightening to proper torque specified by the manufacturer. Where present, does not use push-in pressure terminals that do not rely on screw-actuated binding.
- G. Unless otherwise indicated, connect wiring device grounding terminal to branch circuit equipment grounding conductor and to outlet box with bonding jumper.
- H. For isolated ground receptacles, connect wiring device grounding terminal only to identified branch circuit isolated equipment grounding conductor. Do not connect grounding terminal to outlet box or normal branch circuit equipment grounding conductor.
- I. Provide GFCI receptacles with integral GFCI protection at each location indicated. Do not use feed-through wiring to protect downstream devices.
- J. Install wiring devices plumb and level with mounting yoke held rigidly in place.
- K. Install wall switches with OFF position down.
- L. Install wall dimmers to achieve full rating specified and indicated after derating for ganging as instructed by manufacturer.
- M. Do not share neutral conductor on branch circuits utilizing wall dimmers.
- N. Install vertically mounted receptacles with grounding pole on top and horizontally mounted receptacles with grounding pole on left.
- O. Install wall plates to fit completely flush to wall with no gaps and rough opening completely covered without strain on wall plate. Repair or reinstall improperly installed outlet boxes or improperly sized rough openings. Do not use oversized wall plates in lieu of meeting this requirement.
- P. Install blank wall plates on junction boxes and on outlet boxes with no wiring devices installed or designated for future use.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each wiring device for damage and defects.
- C. Operate each wall switch and wall dimmer with circuit energized to verify proper operation.
- D. Test each receptacle to verify operation and proper polarity.
- E. Test each GFCI receptacle for proper tripping operation according to manufacturer's instructions.
- F. Correct wiring deficiencies and replace damaged or defective wiring devices.

3.05 ADJUSTING

- A. Adjust devices and wall plates to be flush and level.
- B. Adjust presets for wall dimmers according to manufacturer's instructions as directed by Architect.

3.06 CLEANING

- A. Clean exposed surfaces to remove dirt, paint, or other foreign material and restore to match original factory finish.

END OF SECTION

SECTION 26 2813 - FUSES

PART 1 GENERAL

1.01 REFERENCE STANDARDS

- A. NEMA FU 1 - Low Voltage Cartridge Fuses; 2012.
- B. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- C. UL 248-1 - Low-Voltage Fuses - Part 1: General Requirements; Current Edition, Including All Revisions.
- D. UL 248-12 - Low-Voltage Fuses - Part 12: Class R Fuses; Current Edition, Including All Revisions.
- E. UL 248-15 - Low-Voltage Fuses - Part 15: Class T Fuses; Current Edition, Including All Revisions.

1.02 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

1.03 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 FUSES

- A. Provide products listed, classified, and labeled as suitable for the purpose intended.
- B. Unless specifically indicated to be excluded, provide fuses for all fusible equipment as required for a complete operating system.
- C. Provide fuses of the same type, rating, and manufacturer within the same switch.
- D. Comply with UL 248-1.
- E. Unless otherwise indicated, provide cartridge type fuses complying with NEMA FU 1, Class and ratings as indicated.
- F. Voltage Rating: Suitable for circuit voltage.
- G. Class R Fuses: Comply with UL 248-12.
- H. Class T Fuses: Comply with UL 248-15.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Do not install fuses until circuits are ready to be energized.
- B. Install fuses with label oriented such that manufacturer, type, and size are easily read.

END OF SECTION

SECTION 26 28 17 - ENCLOSED CIRCUIT BREAKERS

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.

1.02 REFERENCE STANDARDS

- A. FS W-C-375 - Circuit Breakers, Molded Case; Branch Circuit and Service; Federal Specification; Revision E, 2013.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
- F. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
- G. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for circuit breakers, enclosures, and other installed components and accessories.
- C. Shop Drawings: Indicate outline and support point dimensions, voltage and current ratings, short circuit current ratings, conduit entry locations, conductor terminal information, and installed features and accessories.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

PART 2 PRODUCTS

2.01 ENCLOSED CIRCUIT BREAKERS

- A. Description: Units consisting of molded case circuit breakers individually mounted in enclosures.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Altitude: Less than 6,600 feet.
 - 2. Ambient Temperature: Between 23 degrees F and 104 degrees F.
- D. Short Circuit Current Rating:
 - 1. Provide enclosed circuit breakers with listed short circuit current rating as indicated on the drawings.
- E. Conductor Terminations: Suitable for use with the conductors to be installed.
- F. Provide thermal magnetic circuit breakers unless otherwise indicated.

- G. Provide insulated, groundable fully rated solid neutral assembly where a neutral connection is required, with a suitable lug for terminating each neutral conductor.
- H. Provide solidly bonded equipment ground bus in each enclosed circuit breaker, with a suitable lug for terminating each equipment grounding conductor.
- I. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
 - 2. Provide surface-mounted enclosures unless otherwise indicated.
- J. Provide externally operable handle with means for locking in the OFF position.

2.02 MOLDED CASE CIRCUIT BREAKERS

- A. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers listed and labeled as complying with UL 489 , and complying with FS W-C-375 where applicable; ratings, configurations, and features as indicated on the drawings.
- B. Interrupting Capacity:
 - 1. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than:
 - a. 10,000 rms symmetrical amperes at 240 VAC or 208 VAC.
 - 2. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
- C. Conductor Terminations:
 - 1. Provide mechanical lugs unless otherwise indicated.
 - 2. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
- D. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.
- E. Multi-Pole Circuit Breakers: Furnish with common trip for all poles.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install enclosed circuit breakers where indicated, in accordance with manufacturer's instructions.
- B. Install enclosed circuit breakers securely, in a neat and workmanlike manner in accordance with NECA 1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 26 0529.
- E. Install enclosed circuit breakers plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed circuit breakers such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26 0526.

END OF SECTION

SECTION 26 28 18 - ENCLOSED SWITCHES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed safety switches.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2813 - Fuses.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- C. NEMA KS 1 - Heavy Duty Enclosed and Dead-Front Switches (600 Volts Maximum); 2013.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the work with other trades. Avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and within working clearances for electrical equipment required by NFPA 70.
 - 2. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 3. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
 - 4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for enclosed switches and other installed components and accessories.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store in a clean, dry space. Maintain factory wrapping or provide an additional heavy canvas or heavy plastic cover to protect units from dirt, water, construction debris, and traffic.
- B. Handle carefully in accordance with manufacturer's written instructions to avoid damage to enclosed switch internal components, enclosure, and finish.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Eaton Corporation
- B. General Electric Company
- C. Schneider Electric; Square D Products
- D. Siemens Industry, Inc.

2.02 ENCLOSED SAFETY SWITCHES

- A. Description: Quick-make, quick-break enclosed safety switches listed and labeled as complying with UL 98; heavy duty; ratings, configurations, and features as indicated on the drawings.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Unless otherwise indicated, provide products suitable for continuous operation under the following service conditions:
 - 1. Ambient Temperature: Between -22 degrees F and 104 degrees F.
- D. Horsepower Rating: Suitable for connected load.
- E. Voltage Rating: Suitable for circuit voltage.
- F. Provide with switch blade contact position that is visible when the cover is open.
- G. Fuse Clips for Fusible Switches: As required to accept fuses indicated.
- H. Conductor Terminations: Suitable for use with the conductors to be installed.
- I. Provide solidly bonded equipment ground bus in each enclosed safety switch, with a suitable lug for terminating each equipment grounding conductor.
- J. Enclosures: Comply with NEMA 250, and list and label as complying with UL 50 and UL 50E.
 - 1. Environment Type per NEMA 250: As indicated on the drawings. or NEMA 4X Stainless Steel in outdoor locations.
- K. Provide safety interlock to prevent opening the cover with the switch in the ON position with capability of overriding interlock for testing purposes.
- L. Heavy Duty Switches:
 - 1. Comply with NEMA KS 1.
 - 2. Conductor Terminations:
 - a. Lug Material: Aluminum, suitable for terminating aluminum or copper conductors.
 - 3. Provide externally operable handle with means for locking in the OFF position, capable of accepting three padlocks.

PART 3 EXECUTION**3.01 EXAMINATION**

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that the ratings of the enclosed switches are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed safety switches.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install enclosed switches in accordance with manufacturer's instructions.

- B. Install enclosed switches securely, in a neat and workmanlike manner in accordance with NECA 1.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required supports in accordance with Section 26 0529.
- E. Install enclosed switches plumb.
- F. Except where indicated to be mounted adjacent to the equipment they supply, mount enclosed switches such that the highest position of the operating handle does not exceed 79 inches above the floor or working platform.
- G. Provide grounding and bonding in accordance with Section 26 0526.
- H. Provide fuses complying with Section 26 2813 for fusible switches as indicated or as required by equipment manufacturer's recommendations.

3.03 FIELD QUALITY CONTROL

- A. Correct deficiencies and replace damaged or defective enclosed safety switches or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from switch enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 29 13 - ENCLOSED CONTROLLERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Enclosed NEMA motor controllers for low-voltage (600 V and less) applications:
 - 1. Magnetic motor starters.
 - 2. Manual motor starters.
 - 3. Motor-starting switches without overload protection.
- B. Overcurrent protective devices for motor controllers, including overload relays.
- C. Motor control accessories:
 - 1. Auxiliary contacts.
 - 2. Control and timing relays.
 - 3. Control power transformers.
 - 4. Control terminal blocks.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 0529 - Hangers and Supports for Electrical Systems.
- C. Section 26 0553 - Identification for Electrical Systems: Identification products and requirements.
- D. Section 26 2923 - Variable-Frequency Motor Controllers.

1.03 REFERENCE STANDARDS

- A. IEEE C57.13 - IEEE Standard Requirements for Instrument Transformers; Institute of Electrical and Electronic Engineers; 2008.
- B. NECA 1 - Standard for Good Workmanship in Electrical Construction; National Electrical Contractors Association 2010.
- C. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); National Electrical Manufacturers Association; 2014.
- D. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; National Electrical Manufacturers Association; 2000 (R2005), with errata, 2008.
- E. NEMA ICS 5 - Industrial Control and Systems: Control Circuit and Pilot Devices; National Electrical Manufacturers Association; 2000 (R2010).
- F. NEMA ICS 6 - Industrial Control and Systems: Enclosures; National Electrical Manufacturers Association 1993 (R2011).
- G. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; International Electrical Testing Association; 2013 (ANSI/NETA ATS).
- H. NFPA 70 - National Electrical Code; National Fire Protection Association; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- I. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
- J. UL 60947-1 - Low-Voltage Switchgear and Control gear - Part 1: General Rules; Current Edition, Including All Revisions.

- K. UL 60947-4-1 - Low-Voltage Switchgear and Control gear - Part 4-1: Contactors and Motor-Starters - Electromechanical Contactors and Motor-Starters; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate the work with other trades to avoid placement of ductwork, piping, equipment, or other potential obstructions within the dedicated equipment spaces and working clearances required by NFPA 70.
2. Coordinate the work to provide motor controllers and associated overload relays suitable for use with the actual motors to be installed.
3. Coordinate the work to provide motor controllers and associated wiring suitable for interface with control devices to be installed.
4. Coordinate arrangement of electrical equipment with the dimensions and clearance requirements of the actual equipment to be installed.
5. Verify with manufacturer that conductor terminations are suitable for use with the conductors to be installed.
6. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide manufacturer's standard catalog pages and data sheets for motor controllers, enclosures, overcurrent protective devices, and other installed components and accessories.
- C. Project Record Documents: Record actual installed locations of motor controllers and final equipment settings.
- D. Maintenance Data: Include information on replacement parts and recommended maintenance procedures and intervals.
- E. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
 1. See Section 01 6000 - Product Requirements, for additional provisions.
 2. Electronic Trip Circuit Breakers: Provide one portable test set.
 3. Indicating Lights: Two of each different type.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Eaton Corporation
- B. General Electric Company
- C. Schneider Electric; Square D Products
- D. Siemens Industry, Inc.

2.02 ENCLOSED MOTOR CONTROLLERS

- A. Provide enclosed motor controller assemblies consisting of all required components, control power transformers, instrumentation and control wiring, accessories, etc. as necessary for a complete operating system.
- B. Provide products listed, classified, and labeled as suitable for the purpose intended.
- C. Description: Enclosed motor controllers complying with NEMA ICS 2, and listed and labeled as complying with UL 60947-1 and UL 60947-4-1; ratings, configurations and features as indicated on the drawings.

- D. Service Conditions:
1. Provide motor controllers and associated components suitable for operation under the following service conditions without derating:
 - a. Ambient Temperature: Between 32 degrees F and 104 degrees F.
 2. Provide motor controllers and associated components suitable for operation at indicated ratings under the service conditions at the installed location.
- E. Short Circuit Current Rating:
1. Provide motor controllers with listed short circuit current rating not less than the available fault current at the installed location as indicated on the drawings.
- F. Conductor Terminations: Suitable for use with the conductors to be installed.
- G. Enclosures:
1. Comply with NEMA ICS 6.
 2. Environment Type per NEMA 250: NEMA 1 for indoor dry locations..
 3. Finish: Manufacturer's standard unless otherwise indicated.
- H. Instrument Transformers:
1. Comply with IEEE C57.13.
 2. Select suitable ratio, burden, and accuracy as required for connected devices.
 3. Current Transformers: Connect secondaries to shorting terminal blocks.
 4. Potential Transformers: Include primary and secondary fuses with disconnecting means.
- I. Magnetic Motor Starters: Combination type unless otherwise indicated.
1. Combination Magnetic Motor Starters: NEMA ICS 2, Class A combination motor controllers with magnetic contactor(s), externally operable disconnect and overload relay(s).
 2. Configuration: Full-voltage non-reversing unless otherwise indicated.
 3. Disconnects: Circuit breaker type.
 - a. Circuit Breakers: Motor circuit protectors (magnetic-only) unless otherwise indicated or required.
 - b. Provide externally operable handle with means for locking in the OFF position. Provide safety interlock to prevent opening the cover with the disconnect switch in the ON position with capability of overriding interlock for testing purposes.
 - c. Provide auxiliary interlock for disconnection of external control power sources where applicable.
 4. Overload Relays: Bimetallic thermal type unless otherwise indicated.
 5. Pilot Devices Required:
 - a. Furnish local pilot devices for each unit as specified below unless otherwise indicated on drawings.
 - b. Single-Speed, Non-Reversing Starters :
 - 1) Selector Switches: HAND/OFF/AUTO.
 - 2) Indicating Lights: Red ON, Green OFF.
- J. Manual Motor Starters:
1. Description: NEMA ICS 2, Class A manually-operated motor controllers with overload relay(s).
 2. Configuration: Non-reversing unless otherwise indicated.
 3. Fractional-Horsepower Manual Motor Starters:
 - a. Furnish with toggle operator.
 - b. Overload Relays: Bimetallic or melting alloy thermal type.
 4. Integral-Horsepower Manual Motor Starters:
 - a. Furnish with toggle or pushbutton operator.

- b. Overload Relays: Bimetallic or melting alloy thermal type.
- K. Motor-Starting Switches: Horsepower-rated switches without overload protection; toggle operator.

2.03 OVERCURRENT PROTECTIVE DEVICES

A. Overload Relays:

1. Provide overload relays and, where applicable, associated current elements/heaters, selected according to actual installed motor nameplate data, in accordance with manufacturer's recommendations and NFPA 70; include consideration for motor service factor and ambient temperature correction, where applicable.
2. Inverse-Time Trip Class Rating: Class 20 unless otherwise indicated or required.
3. Trip-free operation.
4. Visible trip indication.
5. Resettable.
 - a. Employ manual reset unless otherwise indicated.
 - b. Do not employ automatic reset with two-wire control.
6. Solid-State Overload Relays:
 - a. Adjustable full load current.
 - b. Phase loss protection.
 - c. Phase imbalance protection.
 - d. Ambient temperature insensitive.
 - e. Thermal memory.
 - f. Trip test function.

B. Circuit Breakers:

1. Interrupting Capacity (not applicable to motor circuit protectors):
 - a. Provide circuit breakers with interrupting capacity as required to provide the short circuit current rating indicated, but not less than specified minimum requirements.
 - b. Fully Rated Systems: Provide circuit breakers with interrupting capacity not less than the short circuit current rating indicated.
2. Molded Case Circuit Breakers:
 - a. Description: Quick-make, quick-break, over center toggle, trip-free, trip-indicating circuit breakers; listed and labeled as complying with UL 489; ratings, configurations, and features as indicated on the drawings.
 - 1) Provide thermal magnetic circuit breakers unless otherwise indicated.
 - b. Thermal Magnetic Circuit Breakers: For each pole, furnish thermal inverse time tripping element for overload protection and magnetic instantaneous tripping element for short circuit protection.

2.04 MOTOR CONTROL ACCESSORIES

A. Auxiliary Contacts:

1. Comply with NEMA ICS 5.
2. Provide number and type of contacts indicated or required to perform necessary functions, including holding (seal-in) circuit and interlocking, plus one normally open (NO) and one normally closed (NC) spare contact for each magnetic motor starter, minimum.

B. Pilot Devices:

1. Comply with NEMA ICS 5; heavy-duty type.
2. Pushbuttons: Unless otherwise indicated, provide momentary, non-illuminated type with flush button operator; normally open or normally closed as indicated or as required.

3. Selector Switches: Unless otherwise indicated, provide maintained, non-illuminated type with knob operator; number of switch positions as indicated or as required.
 4. Indicating Lights: Push-to-test type unless otherwise indicated.
 5. Provide LED lamp source for indicating lights and illuminated devices.
- C. Control Power Transformers:
1. Size to accommodate burden of contactor coil(s) and all connected auxiliary devices, plus 25 VA spare capacity.
 2. Include primary and secondary fuses.
- D. Control Terminal Blocks: Include 25 percent spare terminals.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that ratings of enclosed motor controllers are consistent with the indicated requirements.
- C. Verify that mounting surfaces are ready to receive enclosed motor controllers.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's instructions.
- B. Install motor controllers in accordance with NECA 1 (general workmanship).
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide required support and attachment components in accordance with Section 26 0529.
- E. Install enclosed motor controllers plumb and level.
- F. Provide grounding and bonding in accordance with Section 26 0526.
- G. Install all field-installed devices, components, and accessories.
- H. Where accessories are not self-powered, provide control power source as indicated or as required to complete installation.
- I. Set field-adjustable motor controllers and associated components according to installed motor requirements, in accordance with manufacturer's recommendations and NFPA 70.
- J. Identify enclosed motor controllers in accordance with Section 26 0553.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Motor Starters: Perform inspections and tests listed in NETA ATS, Section 7.16.1.1. Tests listed as optional are []
 1. Verify motor-running protection.
 2. Perform insulation-resistance tests on all control wiring with respect to ground.
- D. Molded Case Circuit Breakers: Perform inspections and tests listed in NETA ATS, Section 7.6.1.1 for circuit breakers larger than 60 amperes. Tests listed as optional are not required.
- E. Correct deficiencies and replace damaged or defective enclosed motor controllers or associated components.

3.04 ADJUSTING

- A. Adjust tightness of mechanical and electrical connections to manufacturer's recommended torque settings.

3.05 CLEANING

- A. Clean dirt and debris from motor controller enclosures and components according to manufacturer's instructions.
- B. Repair scratched or marred exterior surfaces to match original factory finish.

3.06 CLOSEOUT ACTIVITIES

- A. See Section 01 7800 - Closeout Submittals, for closeout submittals.
- B. See Section 01 7900 - Demonstration and Training, for additional requirements.
- C. Demonstration: Demonstrate proper operation of motor controllers to Owner, and correct deficiencies or make adjustments as directed.
- D. Training: Train Owner's personnel on operation, adjustment, and maintenance of enclosed motor controllers and associated devices.
 - 1. Use operation and maintenance manual as training reference, supplemented with additional training materials as required.
 - 2. Provide minimum of two hours of training.
 - 3. Instructor: Manufacturer's authorized representative.
 - 4. Location: At project site.

3.07 PROTECTION

- A. Protect installed enclosed motor controllers from subsequent construction operations.

END OF SECTION

SECTION 26 32 14 - EMERGENCY GENERATION SYSTEM

PART 1 - GENERAL

1.01 SECTION INCLUDES:

- A. Packaged engine generator system.
- B. Remote Annunciator
- C. Automatic transfer switch.
- D. Accessories

1.02 SYSTEM DESCRIPTION:

- A. Engine generator system to provide source of emergency and standby power.
- B. System Capacity: 60 kW, 75 kVA at sea level, and ambient temperature between 30 and 110 degrees F standby rating using engine-mounted radiator.
- C. Operation: In accordance with ANSI/NFPA 99.
- D. Emissions: The generator set shall meet the latest EPA emission regulations.

1.03 Codes and Standards

- A. The generator set shall be listed to UL 2200 or submitted to an independent third party certification process to verify compliance as installed. The generator set shall conform to the requirements of the following codes and standards:
- B. EN50082-2, Electromagnetic Compatibility-Generic Immunity Requirements, Part 2: Industrial.
- C. EN55011, Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific and Medical Equipment.
- D. IEC8528 part 4, Control Systems for Generator Sets.
- E. IEC Std 61000-2 and 61000-3 for susceptibility, 61000-6 radiated and conducted electromagnetic emissions.
- F. IEEE446 Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
- G. NFPA 70, National Electrical Code, Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
- H. NFPA 99, Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit. Component level type tests will not substitute for this requirement

1.04 SUBMITTALS:

- A. Submit shop drawings and product data under provisions of Section 16000.
- B. Submit shop drawings showing plan and elevation views with overall and interconnection point dimensions, fuel consumption rate curves at various loads, ventilation and combustion air requirements, and electrical diagrams including schematic and interconnection diagrams.

- C. Submit product data showing dimensions, weights, ratings, interconnection points, and internal wiring diagrams for engine, generator, control panel, battery, battery rack, battery charger, exhaust silencer, vibration isolators, and remote annunciator.
- D. Submit manufacturer's installation instructions under provisions of Section 16000.

1.05 OPERATION AND MAINTENANCE DATA:

- A. Submit operation and maintenance data under provisions of Section 16000.
- B. Include instructions for normal operation, routine maintenance requirements, service manuals for engine, oil sampling and analysis for engine wear, and emergency maintenance procedures.

1.06 QUALIFICATIONS:

- A. Manufacturer: Company specializing in packaged engine generator system with minimum three years documented experience.
- B. Supplier: Authorized distributor of engine generator manufacturer with service facilities within 150 miles of project site.

PART 2 - PRODUCTS

2.01 MANUFACTURERS:

- A. Generac
- B. Kohler
- C. Caterpillar

2.02 ENGINE/GENERATOR:

- A. Type: Water-cooled inline or V-type, four stroke cycle, natural gas internal combustion engine.
- B. Rating: Sufficient to operate at 10 percent overload for one hour at specified elevation and ambient limits.
- C. Fuel System: Natural Gas
- D. Engine Speed: 1800 rpm.
- E. Governor: Electronic, iso-synchronous type to maintain engine speed within 0.5 percent, steady state, and 5 percent, no load to full load, with recovery to steady state within 2 seconds following sudden load changes.
- F. Safety Devices: Engine shutdown on high water temperature, low oil pressure, overspeed, and engine overcrank. Limits shall be as selected by manufacturer.
- G. Engine Starting: DC starting system with positive engagement, number and voltage of starter motors in accordance with manufacturer's instructions. Include remote starting control circuit, with MANUAL-OFF-REMOTE selector switch on engine-generator control panel.
- H. Engine Jacket Heater: Thermal circulation type water heater with integral thermostatic control, sized to maintain engine jacket water at 90 degrees F, and suitable for operation on 120 volts AC.
- I. Radiator: Radiator using glycol coolant, with blower type fan, sized to maintain safe engine temperature in ambient temperature of 110 degrees F.
- J. Engine Accessories: Lube oil filter, intake air filter, lube oil cooler, gear-driven water pump. Include fuel pressure gage, water temperature gage, and lube oil pressure gage on engine-generator

control panel.

- K. Mounting: Provide unit with suitable spring-type vibration isolators and mount on structural steel base.
- L. Alternator: The alternator shall be a 4-pole; revolving field design with temperature compensated solid state voltage regulator and brushless rotating rectifier exciter system. No brushes shall be allowed. The stator shall be directly connected to the engine flywheel housing, and the rotor shall be driven through a driving flange to insure permanent alignment. The insulation system shall be Class H as defined by NEMA MN1-1.66. The three-phase, broad range alternator shall be 12-lead, reconnectable. Unit shall be connected to deliver proper system voltage.
- M. Rating: 60 kW, 75 kVA, at 0.8 power factor, 208 volts, 3 phase, 4 wire, 60 Hz at 1800 rpm.
- N. Insulation: ANSI/NEMA MG 1, Class F.
- O. Temperature Rise: 130 degrees C standby.
- P. Enclosure: ANSI/NEMA MG 1; open drip proof.
- Q. Voltage Regulation: Include generator-mounted volts per Hertz exciter-regulator to match engine and generator characteristics, with voltage regulation +/- one percent from no load to full load. Include manual controls to adjust voltage drop +/- 5 percent voltage level, and voltage gain.
- R. A permanent magnet generator (PMG) or current boost system shall be included to provide a reliable source of excitation power for optimum motor starting and short circuit performance. The PMG and controller shall be capable of sustaining and regulating current supplied to a single phase fault at approximately 300% rated current for not more than ten seconds.

2.03 ACCESSORIES:

- A. Exhaust Silencer: Critical type silencer, with muffler companion flanges and flexible stainless steel exhaust fitting, suitable for horizontal orientation, sized in accordance with engine manufacturer's instructions.
- B. Batteries: Heavy duty, diesel starting type lead-acid storage batteries, 37 ampere-hours, 630 CCA, minimum capacity. Match battery voltage to starting system. Include necessary cables and clamps.
- C. Battery Tray: Plastic coated metal or wooden tray treated for electrolyte resistance, constructed to contain spillage of electrolyte.
- D. Battery Charger: Current limiting type designed to float at 2.17 volts per cell and equalize at 2.33 volts per cell. Include overload protection, full wave rectifier, DC voltmeter and ammeter, and 120 volts AC fused input. Mount within housing
- E. Line Circuit Breaker: NEMA AB 1 molded case circuit breaker on generator output with integral thermal and instantaneous magnetic trip in each pole; sized in accordance with ANSI/NFPA 70. Include battery-voltage operated shunt trip, connection to open circuit breaker on engine failure. Mount unit in enclosure to meet ANSI/NEMA 250, Type 1 requirements.
- F. Engine-Generator Control Panel: ANSI/NEMA 250, Type 1 generator mounted control panel enclosure with engine and generator controls and indicators as follows:
 - 1. Frequency Meter: 45-65 Hz range, 3-1/2 inch dial.
 - 2. AC Output Voltmeter: 3-1/2 inch dial, 2 percent accuracy, with phase selector switch.
 - 3. AC Output Ammeter: 3-1/2 inch dial, 2 percent accuracy, with phase selector switch.
 - 4. Output voltage adjustment.
 - 5. Push-to-test indicator lamps, one each for low oil pressure, high water temperature, overspeed, and overcrank.
 - 6. Engine start/stop selector switch.
 - 7. Engine running time meter.
 - 8. Oil pressure gauge.

9. Water pressure gauge.
10. Auxiliary Relay: 3PDT, operates when engine runs, with contact terminals prewired to terminal strip.
11. Remote Alarm Contacts: Pre-wire SPCT contacts to terminal strip for remote alarm functions required by ANSI/NFPA 99.
12. Input terminal and relay for system shutdown via remote switch.

2.04 SOUND ATTENUATED WEATHER ENCLOSURE

- A. All enclosures are to be constructed from high strength, galvanized steel with factory certified 150 MPH wind rating.
- B. The enclosure shall be finish coated with powder baked paint for superior finish, durability and appearance. Enclosures will be finished in the manufacturer's standard color.
- C. The enclosures must allow the generator set to operate at full load in an ambient of 40°C - 45°C with no additional de-rating of the electrical output.
- D. Enclosures must be equipped with sufficient side and end doors to allow access for operation, inspection, and service of the unit and all options. Minimum requirements are two doors per side. When the generator set controller faces the rear of the generator set, an additional rear facing door is required. Access to the controller and main line circuit breaker must meet the requirements of the National Electric Code.
- E. Doors must be hinged with stainless steel hinges and hardware and be removable.
- F. Doors must be equipped with lockable latches. Locks must be keyed alike.
- G. The enclosure roof must be pitched to prevent accumulation of water.
- H. A duct between the radiator and air outlet must be provided to prevent re-circulation of hot air.
- I. The complete exhaust system shall be internal to the enclosure. The enclosure shall be equipped with an auxiliary sound attenuation kit at the radiator end to reduce sound decibel levels. Maximum sound level approximately twenty three feet from enclosure shall not exceed 74 dBA (Level 2).

2.05 AUTOMATIC TRANSFER SWITCH:

- A. Description: NEMA ICS 2
- B. Configuration: Electrically-operated, mechanically-held transfer switch. Provide manual operator.
- C. Ratings: NEMA ICS 2; as follows:
 1. Voltage: 208 volts, 3 phase, 4 wire, 60 Hz.
 2. Switched Poles: 3.
 3. Load Inrush Rating: Combination load.
 4. Continuous Rating: 400 amperes.
- D. Sequence of Operation:
 1. Initiate Time Delay to Start Alternate Source Engine Generator: Upon initiation by normal source monitor.
 2. Time Delay to Start Alternate Source Engine Generator: 0 to 3 seconds, non-adjustable.
 3. Initiate Transfer Load to Alternate Source: Upon initiation by normal source monitor and permission by alternate source monitor.
 4. Time Delay Before Transfer to Alternate Power Source: 0 to 60 seconds, adjustable.
 5. Initiate Retransfer Load to Normal Source: Upon permission by normal source monitor.
 6. Time Delay Before Transfer to Normal Power: 0 to 30 minutes adjustable; bypass time delay

- in event of alternate source failure.
7. Time Delay Before Engine Shut Down: 0 to 10 minutes, adjustable, of unloaded operation.
 8. Engine Exerciser: Start engine every 7 days; run for 30 minutes before shutting down. Bypass exerciser control if normal source fails during exercising period.
 9. Remote Shut-Down Switch: Manual activation of the remote shut-down switch shall cause the generator to shut down per manufacturer's standard method via transfer switch control.
- E. Enclosure: ICS 6; Type 1.
- F. Remote Engine Annunciator Panel: ANSI/NFPA 99; include engine run and low fuel indicator lights and remote start/stop switch; flush mounted panel with manufacturer's standard color painted finish.
- G. Accessories:
1. Indicating Lights: Mount in cover of enclosure to indicate NORMAL SOURCE AVAILABLE, ALTERNATE SOURCE AVAILABLE, SWITCH POSITION.
 2. Test Switch: Mount in cover of enclosure to simulate failure of normal source.
 3. Return to Normal Switch: Mount in cover of enclosure to initiate manual transfer from alternate to normal source.
 4. Transfer Switch Auxiliary Contacts: 1 normally open; 1 normally closed.
 5. Full phase protection.

PART 3 - EXECUTION

3.01 EXAMINATION:

- A. Verify that surfaces are ready to receive work and field dimensions are as shown on Drawings.
- B. Verify that required utilities are available in proper location and ready for use.
- C. Beginning of installation means installer accepts existing conditions.

3.02 INSTALLATION:

- A. Install in accordance with manufacturer's instructions.
- B. Install piping systems in full compliance with EPA and other regulatory standards. Coordinate size and rough-in requirements with Architect and mechanical contractor.

3.03 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed.
- B. Provide full load test 60 kW resistive bank for 2 hours minimum. Simulate power failure including operation of transfer switch, automatic starting cycle, and automatic shutdown, and return to normal.
- C. During test, record the following at 20 minute intervals:
 1. Kilowatts
 2. Amperes
 3. Voltage
 4. Coolant temperature
 5. Frequency
 6. Oil pressure
- D. Test alarm and shutdown circuits by simulating conditions.

3.04 MANUFACTURER'S FIELD SERVICES:

- A. Prepare, start, test, and adjust systems.
- B. Provide systems demonstration.
- C. Describe loads connected to emergency system and restrictions for future load additions.
- D. Simulate power outage by interrupting normal source, activation of the remote generator shut-down switch and demonstrate that system operates to provide emergency power.
- E. Adjust generator output voltage and engine speed.
- F. Clean engine and generator surfaces. Replace oil filters.
- G. Provide emissions data to the Mississippi Department of Environmental Quality. Obtain permit for the generators operation if required in Governments name. Coordinate with Architect.

3.05 WARRANTY:

- A. Provide a full one year warranty on all generator system components. Warranty shall include parts and labor and travel time. **The full one year warranty period shall begin upon acceptance of the system by the Owner.**

END OF SECTION

SECTION 26 43 00 - SURGE PROTECTIVE DEVICES

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Surge protective devices for service entrance locations.
- B. Surge protective devices for distribution locations.
- C. Surge protective devices for branch panelboard locations.

1.02 RELATED REQUIREMENTS

- A. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- B. Section 26 2416 - Panelboards.

1.03 REFERENCE STANDARDS

- A. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- B. NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2014.
- C. NETA ATS - Acceptance Testing Specifications for Electrical Power Equipment and Systems; 2013.
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. UL 1283 - Standard for Electromagnetic Interference Filters; Current Edition, Including All Revisions.
- F. UL 1449 - Standard for Surge Protective Devices; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Product Data: Include detailed component information, voltage, surge current ratings, repetitive surge current capacity, voltage protection rating (VPR) for all protection modes, maximum continuous operating voltage (MCOV), nominal discharge current (I-n), short circuit current rating (SCCR), connection means including any required external overcurrent protection, enclosure ratings, outline and support point dimensions, weight, service condition requirements, and installed features.
- C. Certificates: Manufacturer's documentation of listing for compliance with the following standards:
- D. Operation and Maintenance Data: Include information on status indicators and recommended maintenance procedures and intervals.
- E. Warranty: Submit sample of manufacturer's warranty and documentation of final executed warranty completed in Owner's name and registered with manufacturer.

1.05 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.
- B. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
- C. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 DELIVERY, STORAGE, AND PROTECTION

- A. Store in a clean, dry space in accordance with manufacturer's written instructions.

1.07 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Manufacturer's Warranty: Provide minimum five year warranty covering repair or replacement of surge protective devices showing evidence of failure due to defective materials or workmanship.

PART 2 PRODUCTS**2.01 MANUFACTURERS**

- A. Basis of Design: Square D.
- B. Factory-installed, Internally Mounted Surge Protective Devices:
 - 1. Same as manufacturer of equipment containing surge protective device, to provide a complete listed assembly including SPD.
- C. Source Limitations: Furnish surge protective devices produced by a single manufacturer and obtained from a single supplier.

2.02 SURGE PROTECTIVE DEVICES - GENERAL REQUIREMENTS

- A. Description: Factory-assembled surge protective devices (SPDs) for 60 Hz service; listed, classified, and labeled as suitable for the purpose intended; system voltage as indicated on the drawings.
- B. Protected Modes:
 - 1. Wye Systems: L-N, L-G, N-G, L-L.
- C. UL 1449 Voltage Protection Ratings (VPRs):
 - 1. Equivalent to basis of design.
- D. UL 1449 Maximum Continuous Operating Voltage (MCOV): Not less than 115% of nominal system voltage.
- E. Enclosure Environment Type per NEMA 250: Unless otherwise indicated, as specified for the following installation locations:
- F. Equipment Containing Factory-installed, Internally Mounted SPDs: Listed and labeled as a complete assembly including SPD.
 - 1. Panelboards: See Section 26 2416.

2.03 SURGE PROTECTIVE DEVICES FOR SERVICE ENTRANCE LOCATIONS

- A. Unless otherwise indicated, provide factory-installed, internally mounted SPDs.
- B. List and label as complying with UL 1449, Type 1 when connected on line side of service disconnect overcurrent device and Type 1 or 2 when connected on load side of service disconnect overcurrent device.
- C. Provide SPDs utilizing field-replaceable modular or non-modular protection circuits.
- D. Surge Current Rating: Not less than 120 kA per mode/240 kA per phase.
- E. UL 1449 Nominal Discharge Current (I-n): 20 kA.
- F. UL 1449 Short Circuit Current Rating (SCCR): Not less than the available fault current at the installed location as indicated on the drawings.

- G. Diagnostics:
 - 1. Protection Status Monitoring: Provide indicator lights to report the protection for each phase.
 - 2. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.
- H. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch or not direct bus connected.

2.04 SURGE PROTECTIVE DEVICES FOR DISTRIBUTION LOCATIONS

- A. Unless otherwise indicated, provide field-installed, externally mounted or factory-installed, internally mounted SPDs.
- B. List and label as complying with UL 1449, Type 1 or Type 2.
- C. Provide SPDs utilizing field-replaceable modular or non-modular protection circuits.
- D. Surge Current Rating: Not less than 80 kA per mode/160 kA per phase.
- E. UL 1449 Nominal Discharge Current (I-n): 20 kA.
- F. UL 1449 Short Circuit Current Rating (SCCR): Not less than the available fault current at the installed location as indicated on the drawings.
- G. EMI/RFI Filtering: Provide EMI/RFI filter to attenuate electrical noise; listed as complying with UL 1283 for Type 2 SPDs (UL 1283 listing not available for Type 1 SPDs).
- H. Diagnostics:
 - 1. Protection Status Monitoring: Provide indicator lights to report the protection status for each phase.
 - 2. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.
 - 3. Surge Counter: Provide surge event counter with manual reset button, surge count retention upon power loss, and six digit LCD display that indicates quantity of surge events.
- I. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch or not direct bus connected.

2.05 SURGE PROTECTIVE DEVICES FOR BRANCH PANELBOARD LOCATIONS

- A. Unless otherwise indicated, provide field-installed, externally mounted or factory-installed, internally mounted SPDs.
- B. List and label as complying with UL 1449, Type 1 or Type 2.
- C. Provide SPDs utilizing field-replaceable modular or non-modular protection circuits.
- D. Surge Current Rating: Not less than 60 kA per mode/120 kA per phase.
- E. UL 1449 Nominal Discharge Current (I-n): 20 kA.
- F. UL 1449 Short Circuit Current Rating (SCCR): Not less than the available fault current at the installed location as indicated on the drawings.
- G. Diagnostics:
 - 1. Protection Status Monitoring: Provide indicator lights to report the protection status .
 - 2. Alarm Notification: Provide indicator light and audible alarm to report alarm condition. Provide button to manually silence audible alarm.
 - 3. Surge Counter: Provide surge event counter with manual reset button, surge count retention upon power loss, and six digit LCD display that indicates quantity of surge events.

- H. Provide surge rated integral disconnect switch for SPDs not connected to a dedicated circuit breaker or fused switch or not direct bus connected.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that the service voltage and configuration marked on the SPD are consistent with the service voltage and configuration at the location to be installed.
- C. Verify system grounding and bonding is in accordance with Section 26 0526, including bonding of neutral and ground for service entrance and separately derived systems where applicable. Do not energize SPD until deficiencies have been corrected.
- D. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

- A. Perform work in a neat and workmanlike manner in accordance with NECA 1.
- B. Install SPD in accordance with manufacturer's instructions.
- C. Arrange equipment to provide minimum clearances in accordance with manufacturer's instructions and NFPA 70.
- D. Provide conductors with minimum ampacity as indicated on the drawings, as required by NFPA 70, and not less than manufacturer's recommended minimum conductor size.
- E. Install conductors between SPD and equipment terminations as short and straight as possible, not exceeding manufacturer's recommended maximum conductor length. Breaker locations may be reasonably rearranged in order to provide leads as short and straight as possible. Twist conductors together to reduce inductance.
- F. Do not energize SPD until bonding of neutral and ground for service entrance and separately derived systems is complete in accordance with Section 26 0526 where applicable. Replace SPDs damaged by improper or missing neutral-ground bond.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect and test in accordance with NETA ATS, except Section 4.
- C. Perform inspections and tests listed in NETA ATS Section 7.19.1.

3.04 CLEANING

- A. Repair scratched or marred exterior surfaces to match original factory finish.

END OF SECTION

SECTION 26 51 00 - INTERIOR LIGHTING

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Interior luminaires.
- B. Emergency lighting units.
- C. Exit signs.
- D. Ballasts and drivers.
- E. Luminaire accessories.

1.2 RELATED REQUIREMENTS

- A. Section 26 0537 - Boxes.
- B. Section 26 0918 - Remote Control Switching Devices: Remote controls for lighting, including network lighting controls, programmable relay panels, and remote control switching relays.
- C. Section 26 0923 - Lighting Control Devices: Automatic controls for lighting including occupancy sensors, outdoor motion sensors, time switches, outdoor photo controls, and daylighting controls.
- D. Section 26 2726 - Wiring Devices: Manual wall switches and wall dimmers.
- E. Section 26 5600 - Exterior Lighting.
- F. Section 27 5129 - Area of Refuge/Rescue Assistance Systems: Area of refuge/rescue assistance signage.

1.3 REFERENCE STANDARDS

- A. IES LM-79 - Approved Method: Electrical and Photometric Measurements of Solid-State Lighting Products; Illuminating Engineering Society; 2008.
- B. IES LM-80 - Approved Method: Measuring Luminous Flux and Color Maintenance of LED Packages, Arrays, and Modules; Illuminating Engineering Society; 2015.
- C. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- D. NECA/IESNA 500 - Standard for Installing Indoor Commercial Lighting Systems; 2006.
- E. NEMA LE 4 - Recessed Luminaires, Ceiling Compatibility; 2012.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. NFPA 101 - Life Safety Code; 2015.
- H. UL 924 - Emergency Lighting and Power Equipment; Current Edition, Including All Revisions.
- I. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- J. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate the installation of luminaires with mounting surfaces installed under other sections or by others. Coordinate the work with placement of supports, anchors, etc.

required for mounting. Coordinate compatibility of luminaires and associated trims with mounting surfaces at installed locations.

2. Coordinate the placement of luminaires with structural members, ductwork, piping, equipment, diffusers, fire suppression system components, and other potential conflicts installed under other sections or by others.
3. Coordinate the placement of exit signs with furniture, equipment, signage or other potential obstructions to visibility installed under other sections or by others.
4. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.5 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:
 1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
 2. Provide photometric calculations where luminaires are proposed for substitution upon request.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, installed accessories, and ceiling compatibility; include model number nomenclature clearly marked with all proposed features.

1.6 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.7 DELIVERY, STORAGE, AND PROTECTION

- A. Receive, handle, and store products according to NECA/IESNA 500 (commercial lighting) and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.

1.8 FIELD CONDITIONS

- A. Maintain field conditions within manufacturer's required service conditions during and after installation.

1.9 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Provide five-year manufacturer warranty for all LED luminaires, including drivers.

PART 2 PRODUCTS

2.1 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.
- B. Substitutions: See Section 01 6000 - Product Requirements, except where individual luminaire types are designated with substitutions not permitted.

2.2 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.

- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.
- E. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, supports, trims, accessories, etc. as necessary for a complete operating system.
- F. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- G. Recessed Luminaires:
 - 1. Ceiling Compatibility: Comply with NEMA LE 4.
 - 2. Luminaires Recessed in Insulated Ceilings: Listed and labeled as IC-rated, suitable for direct contact with insulation and combustible materials.
 - 3. Luminaires Recessed in Sloped Ceilings: Provide suitable sloped ceiling adapters.
- H. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.
- I. Track Lighting Systems: Provide track compatible with specified track heads, with all connectors, power feed fittings, dead ends, hangers and canopies as necessary to complete installation.
- J. Luminaires Mounted in Continuous Rows: Provide quantity of units required for length indicated, with all accessories required for joining and aligning.

2.3 EMERGENCY LIGHTING UNITS

- A. Description: Emergency lighting units complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
- B. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
- C. Battery: As Scheduled on the Drawings.
 - 1. Size battery to supply all connected lamps, including emergency remote heads where indicated.
- D. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
- E. Provide low-voltage disconnect to prevent battery damage from deep discharge.
- F. Accessories:
 - 1. Provide compatible accessory mounting brackets where indicated or required to complete installation.

2.4 EXIT SIGNS

- A. Description: Internally illuminated exit signs with LEDs unless otherwise indicated; complying with NFPA 101 and all applicable state and local codes, and listed and labeled as complying with UL 924.
 - 1. Number of Faces: Single or double as indicated or as required for the installed location.
 - 2. Directional Arrows: As indicated or as required for the installed location.
- B. Self-Powered Exit Signs:
 - 1. Operation: Upon interruption of normal power source or brownout condition exceeding 20 percent voltage drop from nominal, solid-state control automatically switches connected lamps to integral battery power for minimum of 90 minutes of rated emergency illumination, and automatically recharges battery upon restoration of normal power source.
 - 2. Battery: Sealed maintenance-free nickel cadmium unless otherwise indicated.
 - 3. Diagnostics: Provide power status indicator light and accessible integral test switch to manually activate emergency operation.
 - 4. Provide low-voltage disconnect to prevent battery damage from deep discharge.

2.5 BALLASTS AND DRIVERS

- A. Dimmable LED Drivers:
 - 1. Dimming Range: Continuous dimming from 100 percent to five percent relative light output unless dimming capability to lower level is indicated, without flicker.
 - 2. Control Compatibility: Fully compatible with the dimming controls to be installed.

2.6 ACCESSORIES

- A. Stems for Suspended Luminaires: Steel tubing, minimum 1/2" size, factory finished to match luminaire or field-painted as directed.
- B. Threaded Rods for Suspended Luminaires: Zinc-plated steel, minimum 1/4" size, field-painted as directed.
- C. Provide accessory plaster frames for luminaires recessed in plaster ceilings.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.2 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.3 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA 500 (commercial lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Suspended Ceiling Mounted Luminaires:
 - 1. Do not use ceiling tiles to bear weight of luminaires.
 - 2. Do not use ceiling support system to bear weight of luminaires unless ceiling support system is certified as suitable to do so.
 - 3. Secure surface-mounted and recessed luminaires to ceiling support channels or framing members or to building structure.
 - 4. Secure pendant-mounted luminaires to building structure.
 - 5. Secure lay-in luminaires to ceiling support channels using listed safety clips at four corners.
 - 6. In addition to ceiling support wires, provide two galvanized steel safety wire(s) , minimum 12 gage, connected from opposing corners of each recessed luminaire to building structure.
 - 7. See appropriate Division 9 section where suspended grid ceiling is specified for additional requirements.
- F. Recessed Luminaires:
 - 1. Install trims tight to mounting surface with no visible light leakage.
 - 2. Non-IC Rated Luminaires: Maintain required separation from insulation and combustible materials according to listing.
 - 3. Luminaires Recessed in Fire-Rated Ceilings: Install using accessories and firestopping materials to meet regulatory requirements for fire rating.
- G. Suspended Luminaires:
 - 1. Unless otherwise indicated, specified mounting heights are to bottom of luminaire.
 - 2. Install using the suspension method indicated, with support lengths and accessories as required for specified mounting height.
 - 3. Provide minimum of two supports for each luminaire equal to or exceeding 4 feet in length, with no more than 4 feet between supports.
 - 4. Install canopies tight to mounting surface.
 - 5. Unless otherwise indicated, support pendants from swivel hangers.
- H. Wall-Mounted Luminaires: Unless otherwise indicated, specified mounting heights are to center of luminaire.
- I. Install accessories furnished with each luminaire.
- J. Bond products and metal accessories to branch circuit equipment grounding conductor.
- K. Emergency Lighting Units:
 - 1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
 - 2. Install lock-on device on branch circuit breaker serving units.
- L. Exit Signs:

1. Unless otherwise indicated, connect unit to unswitched power from same circuit feeding normal lighting in same room or area. Bypass local switches, contactors, or other lighting controls.
 2. Install lock-on device on branch circuit breaker serving units.
- M. Lamp Burn-In: Operate lamps at full output for prescribed period per manufacturer's recommendations prior to use with any dimming controls. Replace lamps that fail prematurely due to improper lamp burn-in.

3.4 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Inspect each product for damage and defects.
- C. Operate each luminaire after installation and connection to verify proper operation.
- D. Test emergency lighting units to verify proper operation upon loss of normal power supply.
- E. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.

3.5 ADJUSTING

- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
- B. Aim and position adjustable emergency lighting unit lamps to achieve optimum illumination of egress path as required or as directed by Architect or authority having jurisdiction.
- C. Exit Signs with Field-Selectable Directional Arrows: Set as indicated or as required to properly designate egress path as directed by Architect or authority having jurisdiction.

3.6 CLEANING

- A. Clean surfaces according to NECA 500 (commercial lighting) and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.

3.7 PROTECTION

- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 26 56 00 - EXTERIOR LIGHTING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Exterior luminaires.
- B. Lamps
- C. Poles and accessories.
- D. Luminaire accessories.

1.02 RELATED REQUIREMENTS

- A. Section 03 3000 - Cast-in-Place Concrete: Materials and installation requirements for concrete bases for poles.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
- C. Section 26 0537 - Boxes.
- D. Section 26 0923 - Lighting Control Devices: Automatic controls for lighting including outdoor motion sensors, time switches, and outdoor photo controls.
- E. Section 26 2726 - Wiring Devices: Receptacles for installation in poles.
- F. Section 26 2813 - Fuses.
- G. Section 26 5100 - Interior Lighting.

1.03 REFERENCE STANDARDS

- A. 47 CFR 15 - Radio Frequency Devices; current edition.
- B. IEEE C2 - National Electrical Safety Code; 2012.
- C. IEEE C62.41.2 - Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Cor 1, 2012).
- D. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2010.
- E. NECA/IESNA 501 - Standard for Installing Exterior Lighting Systems; 2006.
- F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- G. UL 1598 - Luminaires; Current Edition, Including All Revisions.
- H. UL 8750 - Light Emitting Diode (LED) Equipment for Use in Lighting Products; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate placement of poles and associated foundations with utilities, curbs, sidewalks, trees, walls, fences, striping, etc. installed under other sections or by others. Coordinate elevation to obtain specified foundation height.
 - 2. Notify Architect of any conflicts or deviations from the contract documents to obtain direction prior to proceeding with work.

1.05 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements, for submittal procedures.
- B. Shop Drawings:

1. Indicate dimensions and components for each luminaire that is not a standard product of the manufacturer.
2. Provide photometric calculations where luminaires are proposed for substitution upon request.
- C. Product Data: Provide manufacturer's standard catalog pages and data sheets including detailed information on luminaire construction, dimensions, ratings, finishes, mounting requirements, listings, service conditions, photometric performance, weight, effective projected area (EPA), and installed accessories; include model number nomenclature clearly marked with all proposed features.
 1. LED Luminaires:
 - a. Include estimated useful life, calculated based on IES LM-80 test data.
 - b. Include IES LM-79 test report upon request.
 2. Provide electronic files of photometric data certified by a National Voluntary Laboratory Accreditation Program (NVLAP) lab or independent testing agency in IESNA LM-63 standard format upon request.
 3. Lamps: Include rated life and initial and mean lumen output.
 4. Poles: Include information on maximum supported effective projected area (EPA) and weight for the design wind speed.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and starting of product.
- E. Operation and Maintenance Data: Instructions for each product including information on replacement parts.
- F. Project Record Documents: Record actual connections and locations of pole foundations, luminaires, and any pull or junction boxes.

1.06 QUALITY ASSURANCE

- A. Conform to requirements of NFPA 70.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Receive, handle, and store products according to NECA/IESNA 501 and manufacturer's written instructions.
- B. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- C. Receive, handle, and store wood poles in accordance with ANSI O5.1.

PART 2 PRODUCTS

2.01 LUMINAIRE TYPES

- A. Furnish products as indicated in luminaire schedule included on the drawings.

2.02 LUMINAIRES

- A. Provide products that comply with requirements of NFPA 70.
- B. Provide products that are listed and labeled as complying with UL 1598, where applicable.
- C. Provide products listed, classified, and labeled as suitable for the purpose intended.
- D. Provide products complying with Federal Energy Management Program (FEMP) requirements.
- E. Unless otherwise indicated, provide complete luminaires including lamp(s) and all sockets, ballasts, reflectors, lenses, housings and other components required to position, energize and protect the lamp and distribute the light.

- F. Unless specifically indicated to be excluded, provide all required conduit, boxes, wiring, connectors, hardware, poles, foundations, supports, trims, accessories, etc. as necessary for a complete operating system.
- G. Provide products suitable to withstand normal handling, installation, and service without any damage, distortion, corrosion, fading, discoloring, etc.
- H. Provide luminaires listed and labeled as suitable for wet locations unless otherwise indicated.
- I. LED Luminaires:
 - 1. Components: UL 8750 recognized or listed as applicable.
 - 2. Tested in accordance with IES LM-79 and IES LM-80.
 - 3. LED Estimated Useful Life: Minimum of 50,000 hours at 70 percent lumen maintenance, calculated based on IES LM-80 test data.

2.03 POLES

- A. All Poles:
 - 1. Provide poles and associated support components suitable for the luminaire(s) and associated supports and accessories to be installed.
 - 2. Material: Steel, unless otherwise indicated.
 - 3. Shape: Square straight, unless otherwise indicated.
 - 4. Finish: Match luminaire finish, unless otherwise indicated.
 - 5. Mounting: Install on concrete foundation, height as indicated on the drawings, unless otherwise indicated.
- B. Metal Poles: Provide ground lug, accessible from handhole.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that field measurements are as shown on the drawings.
- B. Verify that outlet boxes are installed in proper locations and at proper mounting heights and are properly sized to accommodate conductors in accordance with NFPA 70.
- C. Verify that suitable support frames are installed where required.
- D. Verify that branch circuit wiring installation is completed, tested, and ready for connection to luminaires.
- E. Verify that conditions are satisfactory for installation prior to starting work.

3.02 PREPARATION

- A. Provide extension rings to bring outlet boxes flush with finished surface.
- B. Clean dirt, debris, plaster, and other foreign materials from outlet boxes.

3.03 INSTALLATION

- A. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of luminaires provided under this section.
- B. Install products according to manufacturer's instructions.
- C. Install luminaires securely, in a neat and workmanlike manner, as specified in NECA 1 (general workmanship) and NECA/IESNA 501 (exterior lighting).
- D. Install luminaires plumb and square and aligned with building lines and with adjacent luminaires.
- E. Pole-Mounted Luminaires:
 - 1. Foundation-Mounted Poles:

- a. Provide cast-in-place concrete foundations for poles as indicated, in accordance with Section 03 3000.
 - 1) Install anchor bolts plumb per template furnished by pole manufacturer.
 - 2) Position conduits to enter pole shaft.
 - b. Install foundations plumb.
 - c. Install poles plumb, using leveling nuts or shims as required to adjust to plumb.
 - d. Tighten anchor bolt nuts to manufacturer's recommended torque.
 - e. Install non-shrink grout between pole anchor base and concrete foundation, leaving small channel for condensation drainage.
 - f. Install anchor base covers or anchor bolt covers as indicated.
 - 2. Grounding:
 - a. Bond luminaires, metal accessories, metal poles, and foundation reinforcement to branch circuit equipment grounding conductor.
 - b. Provide supplementary ground rod electrode as specified in Section 26 0526 at each pole bonded to grounding system as indicated.
 - 3. Install separate service conductors, 12 AWG copper, from each luminaire down to handhole for connection to branch circuit conductors.
 - 4. Install non-breakaway in-line fuse holders and fuses complying with Section 26 2813 in pole handhole for each ungrounded conductor.
 - F. Install accessories furnished with each luminaire.
 - G. Bond products and metal accessories to branch circuit equipment grounding conductor.
 - H. Install lamps in each luminaire.
- 3.04 FIELD QUALITY CONTROL
- A. See Section 01 4000 - Quality Requirements, for additional requirements.
 - B. Inspect each product for damage and defects.
 - C. Operate each luminaire after installation and connection to verify proper operation.
 - D. Correct wiring deficiencies and repair or replace damaged or defective products. Repair or replace excessively noisy ballasts as determined by Architect.
- 3.05 ADJUSTING
- A. Aim and position adjustable luminaires to achieve desired illumination as indicated or as directed by Architect. Secure locking fittings in place.
 - B. Luminaires with Field-Rotatable Optics: Position optics according to manufacturer's instructions to achieve lighting distribution as indicated or as directed by Architect.
- 3.06 CLEANING
- A. Clean surfaces according to NECA/IESNA 501 and manufacturer's instructions to remove dirt, fingerprints, paint, or other foreign material and restore finishes to match original factory finish.
- 3.07 PROTECTION
- A. Protect installed luminaires from subsequent construction operations.

END OF SECTION

SECTION 27 10 05 - STRUCTURED CABLING FOR VOICE AND DATA – INSIDE PLANT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Communications pathways.
- B. Copper cable and terminations.
- C. Communications equipment room fittings.
- D. Communications outlets.
- E. Communications grounding and bonding.
- F. Communications identification.

1.02 RELATED REQUIREMENTS

- A. Section 07 8400 - Firestopping.
- B. Section 26 0526 - Grounding and Bonding for Electrical Systems.
 - 1. Includes intersystem bonding termination.
 - 2. Includes bonding jumpers for bonding of communications systems and electrical system grounding.
- C. Section 26 0534 - Conduit.
- D. Section 26 0537 - Boxes.
- F. Section 26 0553 - Identification for Electrical Systems: Identification products.
- G. Section 26 2726 - Wiring Devices.

1.03 REFERENCE STANDARDS

- A. EIA/ECA-310 - Cabinets, Racks, Panels, and Associated Equipment; Electronic Industries Alliance/Electrical Components Association; Revision E, 2005.
- B. ICEA S-90-661 - Category 6 Individually Unshielded Twisted Pair Indoor Cables (With or Without An Overall Shield) For Use in General Purpose and LAN Communications Wiring Systems Technical Requirements; Insulated Cable Engineers Association; 2012. (ANSI/ICEA S-90-661)
- C. NECA/BICSI 568 - Standard for Installing Building Telecommunications Cabling; National Electrical Contractors Association; 2006. (ANSI/NECA/BICSI 568)
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. TIA-568-C.1 - Commercial Building Telecommunications Cabling Standard; Telecommunications Industry Association; Rev C, 2009 (with Addenda; 2012).
- F. TIA-568-C.2 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted Pair Cabling Components; Telecommunications Industry Association; Rev C, 2009.
- G. TIA-569-C - Telecommunications Pathways and Spaces; Telecommunications Industry Association; Rev C, 2012 (with Addenda; 2013).
- H. TIA-606-B - Administration Standard for the Telecommunications Infrastructure; Telecommunications Industry Association; Rev B, 2012.
- H. TIA-607-B - Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises; Telecommunications Industry Association; Rev B, 2012 (with Addenda; 2013).
- I. UL 444 - Communications Cables; Current Edition, Including All Revisions.

- J. UL 514C - Nonmetallic Outlet Boxes, Flush-Device Boxes, and Covers; Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordination:
 - 1. Coordinate requirements for service entrance and entrance facilities with Communications Service Provider.
 - 2. Coordinate the work with other trades to avoid placement of other utilities or obstructions within the spaces dedicated for communications equipment.
 - 3. Coordinate arrangement of communications equipment with the dimensions and clearance requirements of the actual equipment to be installed.
 - 4. Notify Architect of any conflicts with or deviations from the contract documents. Obtain direction before proceeding with work.
- B. Arrange for Communications Service Provider to provide service.
- C. Preinstallation Meeting: Convene one week prior to commencing work of this section to review service requirements and details with Communications Service Provider representative.

1.05 SUBMITTALS

- A. Product Data: Provide manufacturer's standard catalog pages and data sheets for each product.
- B. Shop Drawings: Show compliance with requirements on isometric schematic diagram of network layout, showing cable routings, telecommunication closets, rack and enclosure layouts and locations, service entrance, and grounding, prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
- C. Provide evidence of qualifications for designer and installer.
- D. Manufacturer's Installation Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, installation, and operation of product.
- E. Test Plan: Complete and detailed plan, with list of test equipment, procedures for inspection and testing, and intended test date; submit at least 60 days prior to intended test date.
- F. Field Test Reports: Provide written test results for all voice/data cables to the Architect within 30 days of test. Tests shall be performed by the RCIT on site and bare his signature.
- G. Project Record Documents: Prepared and approved by BICSI Registered Communications Distribution Designer (RCDD).
 - 1. Record actual locations of outlet boxes and distribution frames.
 - 2. Show as-installed color coding, pair assignment, polarization, and cross-connect layout.
 - 3. Identify distribution frames and equipment rooms by room number on contract drawings.
- H. Operation and Maintenance Data: List of all components with part numbers, sources of supply, and operation and maintenance instructions; include copy of project record documents.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: At least 3 years experience manufacturing products of the type specified.
- B. Installer Qualifications: A company having at least 3 years experience in the installation and testing of the type of system specified, and:
 - 1. Employing a BICSI Registered Communications Distribution Designer (RCDD).
 - 2. Supervisors and installers factory certified by manufacturers of products to be installed.
 - 3. Employing BICSI Registered Cabling Installation Technicians (RCIT) for supervision of all work.

- C. Products: Listed, classified, and labeled as suitable for the purpose intended.
- D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.
- E. The RCIT shall be present on Site during all voice/data cable installation, terminations and related raceway installation. The RCIT shall provide written documentation that all aspects of the installation are in compliance with the Reference Standards.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened packaging until ready for installation.
- B. Keep stored products clean and dry.

1.08 WARRANTY

- A. See Section 01 7800 - Closeout Submittals, for additional warranty requirements.
- B. Correct defective Work within a 2-year period after Date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Cabling and Equipment:
 - 1. 3M Communications Technologies
 - 2. Siemon Company
 - 3. TE Connectivity

2.02 SYSTEM DESCRIPTION

- A. Provide a complete permanent system of cabling and pathways for voice and data communications, including cables, conduits and wireways, pull wires, support structures, enclosures and cabinets, and outlets.
 - 1. Comply with TIA-568 (cabling) and TIA-569 (pathways), latest editions (commercial standards).
 - 2. Provide fixed cables and pathways that comply with NFPA 70 and TIA-607 and are UL listed or third party independent testing laboratory certified.
 - 3. Provide connection devices that are rated for operation under conditions of 32 to 140 degrees F at relative humidity of 0 to 95 percent, noncondensing.
 - 4. In this project, the term plenum is defined as return air spaces above ceilings, inside ducts, under raised floors, and other air-handling spaces.
- B. System Description:
 - 1. Building Entrance Cable: By others.
 - 2. Offices and Work Areas: Provide voice/data outlets and cabling as detailed on the Drawings in each work area.
- C. Main Distribution Frame: Centrally located support structure for terminating horizontal cables that extend to telecommunications outlets, functioning as point of presence to external service provider. Coordinate with Owner's IT Contractor for connection to Gateway. Provide all materials, equipment, cables etc. to connect Surveillance system equipment into the Owner Furnished and Installed IT network for a complete operational system.
- F. Cabling to Outlets: Specified horizontal cabling, wired in star topology to distribution frame located at center hub of star; also referred to as "links".

2.03 PATHWAYS

- A. Conduit: As specified in Section 26 0534

- B. Underground Service Entrance: Rigid polyvinyl chloride (PVC) conduit, Schedule 40.

2.04 COPPER CABLE AND TERMINATIONS

A. Copper Horizontal Cable:

1. Description: 100 ohm, balanced twisted pair cable complying with TIA-568 and listed and labeled as complying with UL 444.
2. Cable Type - Data: TIA-568 Category 6 UTP (unshielded twisted pair); 23 AWG. Plenum Rated.
3. Cable Capacity: 4-pair.
4. Cable Applications:
 - a. Riser Applications: Use listed NFPA 70, Type CMP plenum cable.
 - b. General Purpose Applications: Use listed NFPA 70, Type CMP plenum cable.
5. Cable Jacket Color - Data: Blue

- B. Copper Cable Terminations: Insulation displacement connection (IDC) type using appropriate tool; use screw connections only where specifically indicated.

- C. Jacks and Connectors: Modular RJ-45, non-keyed, terminated with 110-style insulation displacement connectors (IDC); high impact thermoplastic housing; suitable for and complying with same standard as specified horizontal cable; UL 1863 listed.

1. Performance: 500 mating cycles.
2. Voice and Data Jacks: 8-position modular jack, color-coded for both T568A and T568B wiring configurations.

D. Copper Patch Cords:

1. Description: Category 6, Factory-fabricated 4-pair cable assemblies with 8-position modular connectors terminated at each end.
2. Patch Cords for Patch Panels:
 - a. Quantity: One for each pair of patch panel ports.
 - b. Length: 3 feet.

2.05 COMMUNICATIONS EQUIPMENT ROOM FITTINGS

A. Copper Cross-Connection Equipment:

1. Connector Blocks for Category 3 Cabling: Type 66 insulation displacement connectors; capacity sufficient for cables to be terminated plus 25 percent spare.
2. Patch Panels for Copper Cabling: Sized to fit EIA/ECA-310 standard 19 inch wide equipment racks; 0.09 inch thick aluminum; cabling terminated on Type 110 insulation displacement connectors; printed circuit board interface.
 - a. Jacks: Non-keyed RJ-45, suitable for and complying with same standard as cable to be terminated; maximum 24 ports per standard width panel.
 - b. Capacity: Provide ports sufficient for cables to be terminated plus 25 percent spare.
 - c. Labels: Factory installed laminated plastic nameplates above each port, numbered consecutively; comply with TIA-606.
 - d. Provide incoming cable strain relief and routing guides on back of panel.

- B. Backboards: Interior grade plywood without voids, 3/4 inch thick; UL-labeled fire-retardant.

1. Do not paint over UL label.

- C. Equipment Racks and Cabinets: EIA/ECA-310 standard 19 inch wide component racks.

1. Equipment Cabinet: Chatsworth 15053-703 with 12639-001 hardware kit, vertical cable management accessory, ground terminal lug and two fixed shelves. Provide 72" rack mounted power strip rated 20 amps at 120 volts with receptacles mounted on 6" centers.

2.06 COMMUNICATIONS OUTLETS

- A. Outlet Boxes: Comply with Section 26 0537.
 - 1. Minimum Size, Unless Otherwise Indicated:
 - a. Voice Only Outlets: 4 inch by 2 inch by 2-1/8 inch deep (100 by 50 by 54 mm) trade size.
 - b. Data or Combination Voice/Data Outlets: 4 inch square by 2-1/8 inch deep (100 by 54 mm) trade size.
- B. Wall Plates:
 - 1. Comply with system design standards and UL 514C.
 - 2. Accepts modular jacks/inserts.
 - 3. Capacity:
 - a. Data or Combination Voice/Data Outlets: as detailed on the Drawings.
 - 4. Wall Plate Material/Finish - Flush-Mounted Outlets: Match wiring device and wall plate finishes specified in Section 26 2726.
 - 5. Wall Plate Material/Finish - Flush-Mounted Outlets: Type 302 stainless steel.

2.07 GROUNDING AND BONDING COMPONENTS

- A. Comply with TIA-607.
- B. Comply with Section 26 0526.

2.08 IDENTIFICATION PRODUCTS

- A. Comply with TIA-606.
- B. Comply with Section 26 0553.

2.09 SOURCE QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Factory test cables according to TIA-568.

PART 3 EXECUTION

3.01 INSTALLATION - GENERAL

- A. Comply with latest editions and addenda of TIA-568 (cabling), TIA-569 (pathways), TIA-607 (grounding and bonding), NECA/BICSI 568, NFPA 70, and SYSTEM DESIGN as specified in PART 2.
- B. Comply with Communication Service Provider requirements.
- C. Grounding and Bonding: Perform in accordance with TIA-607 and NFPA 70.
- D. Install firestopping to preserve fire resistance rating of partitions and other elements, using materials and methods specified in Section 07 8400.
- E. Segregate each system cable on separate patch panels. Secure and Public wireless access point cables shall also be terminated on separate patch panels.

3.02 INSTALLATION OF PATHWAYS

- A. Install pathways with the following minimum clearances:
 - 1. 48 inches from motors, generators, frequency converters, transformers, x-ray equipment, and uninterruptible power systems.
 - 2. 12 inches from power conduits and cables and panelboards.
 - 3. 5 inches from fluorescent and high frequency lighting fixtures.

4. 6 inches from flues, hot water pipes, and steam pipes.
- B. Conduit, in Addition to Requirements of Section 26 0534:
 1. Arrange conduit to provide no more than the equivalent of two 90 degree bend(s) between pull points.
 2. Conduit Bends: Inside radius not less than 10 times conduit internal diameter.
 3. Minimum Cover - Underground Service Entrance: Comply with NFPA 70 and Communications Service Provider requirements.
- C. Outlet Boxes:
 1. Coordinate locations of outlet boxes provided under Section 26 0537 as required for installation of telecommunications outlets provided under this section.
 - a. Mounting Heights: Unless otherwise indicated, as follows:
 - 1) Telephone and Data Outlets: 18 inches above finished floor.
 - b. Orient outlet boxes for vertical installation of wiring devices unless otherwise indicated.
 - c. Provide minimum of 24 inches horizontal separation between flush mounted outlet boxes installed on opposite sides of fire rated walls.
 - d. Unless otherwise indicated, provide separate outlet boxes for line voltage and low voltage devices.

3.03 INSTALLATION OF EQUIPMENT AND CABLING

- A. Cabling:
 1. Do not bend cable at radius less than manufacturer's recommended bend radius; for unshielded twisted pair use bend radius of not less than 4 times cable diameter.
 2. Do not over-cinch or crush cables.
 3. Do not exceed manufacturer's recommended cable pull tension.
 4. When installing in conduit, use only lubricants approved by cable manufacturer and do not chafe or damage outer jacket.
 5. Use suitable J-hooks supported from structure to home run cables from conduit termination to patch panel.
- B. Service Loops (Slack or Excess Length): Provide the following minimum extra length of cable, looped neatly:
 1. At Distribution Frames: 120 inches.
 2. At Outlets - Copper: 12 inches.
- C. Copper Cabling:
 1. Category 6 and Above: Maintain cable geometry; do not untwist more than 1/2 inch from point of termination.
 2. For 4-pair cables in conduit, do not exceed 25 pounds pull tension.
 3. Use T568B wiring configuration.
- D. Wall-Mounted Racks and Enclosures:
 1. Install to plywood backboards only, unless otherwise indicated.
 2. Mount so height of topmost panel does not exceed 78 inches above floor.
- E. Identification:
 1. Use wire and cable markers to identify cables at each end.
 2. Use manufacturer-furnished label inserts, identification labels, or engraved wallplate to identify each jack at communications outlets with unique identifier.
 3. Use identification nameplate to identify cross-connection equipment, equipment racks, and cabinets.

3.04 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements, for additional requirements.
- B. Comply with inspection and testing requirements of specified installation standards.
- C. Visual Inspection:
 - 1. Inspect cable jackets for certification markings.
 - 2. Inspect cable terminations for color coded labels of proper type.
 - 3. Inspect outlet plates and patch panels for complete labels.
- D. Testing - Copper Cabling and Associated Equipment:
 - 1. Test backbone cables after termination but before cross-connection.
 - 2. Test backbone cables for DC loop resistance, shorts, opens, intermittent faults, and polarity between connectors and between conductors and shield, if cable has overall shield.
 - 3. Test operation of shorting bars in connection blocks.
 - 4. Category 6 and Above Backbone: Perform near end cross talk (NEXT) and attenuation tests.
 - 5. Category 6 and Above Links: Perform tests for wire map, length, attenuation, NEXT, and propagation delay.
- E. Final Testing: After all work is complete, including installation of telecommunications outlets, and telephone dial tone service is active, test each voice jack for dial tone.

END OF SECTION

SECTION 28 46 00 - FIRE DETECTION AND ALARM

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Fire alarm system design and installation, including all components, wiring, and conduit.
- B. Transmitters for communication with supervising station.
- C. Maintenance of fire alarm system under contract for specified warranty period.

1.02 RELATED REQUIREMENTS

- A. Section 07 84 00 - Firestopping: Materials and methods for work to be performed by this installer.
- B. Section 08 71 00 - Door Hardware: Electrically operated locks and door holder devices to be monitored and released by fire alarm system.
- C. Section 14 24 00 - Hydraulic Elevators: Elevator systems monitored and controlled by fire alarm system.
- D. Section 21 13 00 - Fire-Suppression Sprinkler Systems: Supervisory, alarm, and actuating devices installed in sprinkler system.
- E. Section 23 33 00 - Air Duct Accessories: Smoke dampers monitored and controlled by fire alarm system.

1.03 REFERENCE STANDARDS

- A. 36 CFR 1191 - Americans with Disabilities Act (ADA) Accessibility Guidelines for Buildings and Facilities; Architectural Barriers Act (ABA) Accessibility Guidelines; current edition.
- B. ADA Standards - Americans with Disabilities Act (ADA) Standards for Accessible Design; 2010.
- C. IEEE C62.41.2 - IEEE Recommended Practice on Characterization of Surges in Low-Voltage (1000 V and less) AC Power Circuits; 2002 (Corrigendum 2012).
- D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- E. NFPA 72 - National Fire Alarm and Signaling Code; 2016.
- F. NFPA 76 - Standard for the Fire Protection of Telecommunications Facilities; 2016.
- G. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
- H. UL 268 - Standard for Smoke Detectors for Fire Alarm Systems; Current Edition, Including All Revisions.

1.04 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Drawings must be prepared using AutoCAD Release 11 or higher.
 - 1. Owner or the Architect will provide floor plan drawings for Contractor's use; verify all dimensions on Owner-provided drawings.
- C. Evidence of designer qualifications.
- D. Design Documents: Submit all information required for plan review and permitting by authorities having jurisdiction, including but not limited to floor plans, riser diagrams, and description of operation:

1. Copy (if any) of list of data required by authority having jurisdiction.
 2. NFPA 72 "Record of Completion", filled out to the extent known at the time.
 3. Clear and concise description of operation, with input/output matrix similar to that shown in NFPA 72 Appendix A-7-5-2.2(9), and complete listing of software required.
 4. System zone boundaries and interfaces to fire safety systems.
 5. Location of all components, circuits, and raceways; mark components with identifiers used in control unit programming.
 6. Circuit layouts; number, size, and type of raceways and conductors; conduit fill calculations; spare capacity calculations; notification appliance circuit voltage drop calculations.
 7. List of all devices on each signaling line circuit, with spare capacity indicated.
 8. Manufacturer's detailed data sheet for each component, including wiring diagrams, installation instructions, and circuit length limitations.
 9. Description of power supplies; if secondary power is by battery include calculations demonstrating adequate battery power.
 10. Certification by either the manufacturer of the control unit or by the manufacturer of each other component that the components are compatible with the control unit.
 11. Certification by the manufacturer of the control unit that the system design complies with the contract documents.
 12. Certification by Contractor that the system design complies with the contract documents.
- E. Evidence of installer qualifications.
- F. Evidence of instructor qualifications; training lesson plan outline.
- G. Evidence of maintenance contractor qualifications, if different from installer.
- H. Inspection and Test Reports:
1. Submit inspection and test plan prior to closeout demonstration.
 2. Submit documentation of satisfactory inspections and tests.
 3. Submit NFPA 72 "Inspection and Test Form," filled out.
- I. Operating and Maintenance Data: See Section 01 78 00 for additional requirements; revise and resubmit until acceptable; have one set available during closeout demonstration:
1. Complete set of specified design documents, as approved by authority having jurisdiction.
 2. Provide additional printed set of project record documents and closeout documents, bound or filed in same manuals.
 3. Contact information for firm that will be providing contract maintenance and trouble call-back service.
 4. List of recommended spare parts, tools, and instruments for testing.
 5. Replacement parts list with current prices, and source of supply.
 6. Detailed troubleshooting guide and large scale input/output matrix.
 7. Preventive maintenance, inspection, and testing schedule complying with NFPA 72; provide printed copy and computer format acceptable to Owner.
 8. Detailed but easy to read explanation of procedures to be taken by non-technical administrative personnel in the event of system trouble, when routine testing is being conducted, for fire drills, and when entering into contracts for remodeling.
- J. Project Record Documents: See Section 01 78 00 for additional requirements; have one set available during closeout demonstration:
1. Complete set of floor plans showing actual installed locations of components, conduit, and zones.
 2. "As installed" wiring and schematic diagrams, with final terminal identifications.

3. "As programmed" operating sequences, including control events by device, updated input/output chart, and voice messages by event.
- K. Closeout Documents:
1. Certification by manufacturer that the system has been installed in compliance with manufacturer's installation requirements, is complete, and is in satisfactory operating condition.
 2. NFPA 72 "Record of Completion", filled out completely and signed by installer and authorized representative of authority having jurisdiction.
 3. Certificate of Occupancy.
 4. Maintenance contract.
 5. Report on training results.
- L. Maintenance Materials, Tools, and Software: Furnish the following for Owner's use in maintenance of project.
1. Furnish spare parts of same manufacturer and model as those installed; deliver in original packaging, labeled in same manner as in operating and maintenance data and place in spare parts cabinet.
 2. In addition to the items in quantities indicated in PART 2, furnish the following:
 - a. All tools, software, and documentation necessary to modify the fire alarm system using Owner's personnel; minimum modification capability to include addition and deletion of devices, circuits, and zones, and changes to system description, operation, and evacuation and instructional messages.
 - b. One copy, on CD-ROM, of all software not resident in read-only-memory.
 - c. Extra Fuses: Two for each installed fuse; store inside applicable control cabinet.

1.05 QUALITY ASSURANCE

- A. Designer Qualifications: NICET Level III or IV (3 or 4) certified fire alarm technician or registered fire protection engineer, employed by fire alarm control panel manufacturer, Contractor, or installer.
- B. Installer Qualifications: Firm with minimum 3 years documented experience installing fire alarm systems of the specified type and providing contract maintenance service as a regular part of their business.
1. Authorized representative of control unit manufacturer; submit manufacturer's certification that installer is authorized; include name and title of manufacturer's representative making certification.
 2. Installer Personnel: At least 2 years of experience installing fire alarm systems.
 3. Supervisor: NICET level III or IV (3 or 4) certified fire alarm technician; furnish name and address.
- C. Maintenance Contractor Qualifications: Same entity as installer or different entity with specified qualifications.
- D. Instructor Qualifications: Experienced in technical instruction, understanding fire alarm theory, and able to provide the required training; trained by fire alarm control unit manufacturer.
- E. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.06 WARRANTY

- A. Provide control panel manufacturer's warranty that system components other than wire and conduit are free from defects and will remain so for 1 year after date of Substantial Completion.

- B. Provide installer's warranty that the installation is free from defects and will remain so for 1 year after date of Substantial Completion.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Fire Alarm Control Units and Accessories - Basis of Design: Edwards Systems Technology.
- B. Fire Alarm Control Units and Accessories - Other Acceptable Manufacturers:
 - 1. Honeywell Security & Fire Solutions/Notifier
 - 2. Siemens Building Technologies, Inc
 - 3. Provide control units made by the same manufacturer.
- C. Initiating Devices and Notification Appliances:
 - 1. Same manufacturer as control units.

2.02 FIRE ALARM SYSTEM

- A. Fire Alarm System: Provide a new automatic fire detection and alarm system:
 - 1. Provide all components necessary, regardless of whether shown in the contract documents or not.
 - 2. Protected Premises: Entire building shown on drawings.
 - 3. Comply with the following; where requirements conflict, order of precedence of requirements is as listed:
 - a. ADA Standards.
 - b. Applicable local codes.
 - c. The contract documents (drawings and specifications).
 - d. NFPA 101.
 - e. NFPA 72; where the word "should" is used consider that provision mandatory; where conflicts between requirements require deviation from NFPA 72, identify deviations clearly on design documents.
 - 4. General Evacuation Zones: Each smoke zone is considered a general evacuation zone unless otherwise indicated, with alarm notification in all zones on the same floor, on the floor above, and the floor below.
 - 5. Hearing Impaired Occupants: Provide visible notification devices in all public areas.
 - 6. Fire Alarm Control Unit: New, located at as indicated on the Drawings.
 - 7. Combined Systems: Do not combine fire alarm system with other non-fire systems.
- B. Supervising Stations and Fire Department Connections:
 - 1. On-Premises Supervising Station: None.
 - 2. Remote Supervising Station: The Contractor is, responsible for coordinating with the Owner to obtain leased telephone lines from the Local Provider to connect to a Monitoring Company and arrange and assure the Contract with the Monitoring Company is in place prior to final system check..
 - 3. Means of Transmission to Remote Supervising Station: Leased telephone lines.
- C. Circuits:
 - 1. Initiating Device Circuits (IDC): Class B, Style A.
 - 2. Signaling Line Circuits (SLC) Within Single Building: Class B, Style 0.5.
 - 3. Notification Appliance Circuits (NAC): Class B, Style W.
- D. Spare Capacity:
 - 1. Initiating Device Circuits: Minimum 25 percent spare capacity.
 - 2. Notification Appliance Circuits: Minimum 25 percent spare capacity.
 - 3. Fire Alarm Control Units: Capable of handling all circuits utilized to capacity without requiring additional components other than plug-in control modules.

E. Power Sources:

1. Primary: Dedicated branch circuits of the facility power distribution system.
2. Secondary: Storage batteries.
3. Capacity: Sufficient to operate entire system for period specified by NFPA 72.
4. Each Computer System: Provide uninterruptible power supply (UPS).

2.03 FIRE SAFETY SYSTEMS INTERFACES

A. Supervision: Provide supervisory signals in accordance with NFPA 72 for the following:

1. Sprinkler water control valves.
2. Elevator shut-down control circuits.

B. Alarm: Provide alarm initiation in accordance with NFPA 72 for the following:

1. Sprinkler water flow.
2. Elevator lobby, elevator hoistway, and elevator machine room smoke detectors.
3. Duct smoke detectors.

D. HVAC:

1. Duct Smoke Detectors: Close dampers indicated; shut down air handlers indicated.

E. Doors:

1. Electromagnetic Door Locks on Egress Doors: Unlock upon activation of any alarm initiating device or suppression system in smoke zone that doors serve as egress from. Refer to Section 08 71 00.

2.04 COMPONENTS

A. General:

1. Provide flush mounted units where installed in finish areas; in unfinished areas, surface mounted unit are acceptable.
2. Provide legible, permanent labels for each control device, using identification used in operation and maintenance data.

B. Fire Alarm Control Units: Analog, addressable type; listed, classified, and labeled as suitable for the purpose intended.

C. Addressable Fire Alarm Control Unit - Basis of Design: Edwards Systems Technology.

D. Remote Annunciators: Locate per the Authority Having Jurisdiction's direction..

E. Initiating Devices:

1. Addressable Systems:
 - a. Addressable Devices: Individually identifiable by addressable fire alarm control unit.
 - b. Provide suitable addressable interface modules as indicated or as required for connection to conventional (non-addressable) devices and other components that provide a dry closure output.
2. Manual Pull Stations: Double Action, addressable, red with white lettering.
 - a. Provide 1 extra.
3. Smoke Detectors: Combination photoelectric/thermal at 135 degrees. White finish, red lettering.
 - a. Provide 2 extra.
4. Duct Smoke Detectors: Photoelectric, with sampling tube in enclosure. Weather proof as required.
 - a. Provide 1 extra.
5. Heat Detectors: 135 degree. Coordinate rate-of rise with fire protection sprinkler head in the elevator machine room per NPFA.
 - a. Provide 1 extra.

- 6. Addressable Interface Devices: As required.
- F. Notification Appliances:
 - 1. Strobes: White with Red lettering. The fire alarm contractor shall determine the candela levels for each device based on room area and ceiling height.
- G. Circuit Conductors: Copper or optical fiber; provide 200 feet (60 m) extra; color code and label.
- H. Surge Protection: In accordance with IEEE C62.41.2 category B combination waveform and NFPA 70; except for optical fiber conductors.
 - 1. Equipment Connected to Alternating Current Circuits: Maximum let through voltage of 350 V(ac), line-to-neutral, and 350 V(ac), line-to-line; do not use fuses.
 - 2. Signaling Line Circuits: Provide surge protection at each point where circuit exits or enters a building, rated to protect applicable equipment.
- I. Locks and Keys: Deliver keys to Owner.
 - 1. Provide the same standard lock and key for each key operated switch and lockable panel and cabinet; provide 2 keys of each type
- J. Instruction Charts: Printed instruction chart for operators, showing steps to be taken when a signal is received (normal, alarm, supervisory, and trouble); easily readable from normal operator's station.
 - 1. Frame: Stainless steel or aluminum with polycarbonate or glass cover.
 - 2. Provide one for each control unit where operations are to be performed.
 - 3. Obtain approval of Owner prior to mounting; mount in location acceptable to Owner.
 - 4. Provide extra copy with operation and maintenance data submittal.
- K. Storage Cabinet for Spare Parts and Tools: Steel with baked enamel finish, size appropriate to quantity of parts and tools.
 - 1. Padlock eye and hasp for lock furnished by Owner.
 - 2. Locate as directed by Owner.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in accordance with applicable codes, NFPA 72, NFPA 70, and the contract documents.
- B. Conceal all wiring, conduit, boxes, and supports where installed in finished areas.
- C. Obtain Owner's approval of locations of devices, before installation.
- D. Install instruction cards and labels.

3.02 INSPECTION AND TESTING FOR COMPLETION

- A. Notify Owner 7 days prior to beginning completion inspections and tests.
- B. Notify authorities having jurisdiction and comply with their requirements for scheduling inspections and tests and for observation by their personnel.
- C. Provide the services of the installer's supervisor or person with equivalent qualifications to supervise inspection and testing, correction, and adjustments.
- D. Prepare for testing by ensuring that all work is complete and correct; perform preliminary tests as required.
- E. Provide all tools, software, and supplies required to accomplish inspection and testing.
- F. Perform inspection and testing in accordance with NFPA 72 and requirements of local authorities; document each inspection and test.

- G. Correct defective work, adjust for proper operation, and retest until entire system complies with contract documents.
- H. Diagnostic Period: After successful completion of inspections and tests, Operate system in normal mode for at least 30 without any system or equipment malfunctions.
 - 1. Record all system operations and malfunctions.
 - 2. If a malfunction occurs, start diagnostic period over after correction of malfunction.
 - 3. Owner will provide attendant operator personnel during diagnostic period; schedule training to allow Owner personnel to perform normal duties.
 - 4. At end of successful diagnostic period, fill out and submit NFPA 72 "Inspection and Testing Form."

3.03 OWNER PERSONNEL INSTRUCTION

- A. Provide the following instruction to designated Owner personnel:
 - 1. Hands-On Instruction: On-site, using operational system.
- B. Administrative: One-hour session(s) covering issues necessary for non-technical administrative staff; classroom:
 - 1. Initial Training: 1 session pre-closeout.
- C. Basic Operation: One-hour sessions for attendant personnel, security officers, and engineering staff; combination of classroom and hands-on:
 - 1. Initial Training: 1 session pre-closeout.
- D. Furnish the services of instructors and teaching aids; have copies of operation and maintenance data available during instruction.
- E. Provide means of evaluation of trainees suitable to type of training given; report results to Owner.

3.04 CLOSEOUT

- A. Closeout Demonstration: Demonstrate proper operation of all functions to Owner.
 - 1. Be prepared to conduct any of the required tests.
 - 2. Have at least one copy of operation and maintenance data, preliminary copy of project record drawings, input/output matrix, and operator instruction chart(s) available during demonstration.
 - 3. Have authorized technical representative of control unit manufacturer present during demonstration.
 - 4. Demonstration may be combined with inspection and testing required by authority having jurisdiction; notify authority having jurisdiction in time to schedule demonstration.
 - 5. Repeat demonstration until successful.
- B. Occupancy of the project will not occur prior to Substantial Completion.
- C. Substantial Completion of the project cannot be achieved until inspection and testing is successful and:
 - 1. Approved operating and maintenance data has been delivered.
 - 2. Spare parts, extra materials, and tools have been delivered.
 - 3. All aspects of operation have been demonstrated to Owner.
 - 4. Final acceptance of the fire alarm system has been given by authorities having jurisdiction.
 - 5. Occupancy permit has been granted.
 - 6. Specified pre-closeout instruction is complete.

3.05 MAINTENANCE

- A. Provide to Owner, at no extra cost, a written maintenance contract for entire manufacturer's warranty period, to include the work described below.
- B. Perform routine inspection, testing, and preventive maintenance required by NFPA 72, including:
 - 1. Maintenance of fire safety interface and supervisory devices connected to fire alarm system.
 - 2. Repairs required, unless due to improper use, accidents, or negligence beyond the control of the maintenance contractor.
 - 3. Record keeping required by NFPA 72 and authorities having jurisdiction.
- C. Provide trouble call-back service upon notification by Owner:
 - 1. Provide on-site response within 2 hours of notification.
 - 2. Include allowance for call-back service during normal working hours at no extra cost to Owner.
 - 3. Owner will pay for call-back service outside of normal working hours on an hourly basis, based on actual time spent at site and not including travel time; include hourly rate and definition of normal working hours in maintenance contract.
- D. Provide a complete description of preventive maintenance, systematic examination, adjustment, cleaning, inspection, and testing, with a detailed schedule.
- E. Maintain a log at each fire alarm control unit, listing the date and time of each inspection and call-back visit, the condition of the system, nature of the trouble, correction performed, and parts replaced. Submit duplicate of each log entry to Owner's representative upon completion of site visit.
- F. Comply with Owner's requirements for access to facility and security.

END OF SECTION

SECTION 32 31 13 - CHAIN LINK FENCING AND GATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

1.2 DESCRIPTION OF WORK:

- A. Extent of chain link fences and gates in indicated on drawings.

1.3 QUALITY ASSURANCE:

- A. Provide chain link fences and gates as complete units controlled by a single source including necessary erection accessories, fittings and fastenings.

1.4 SUBMITTALS:

- A. Product Data: Submit manufacturer's technical data, and installation instructions for fencing, gates and accessories.

PART 2 - PRODUCTS

2.1 GENERAL:

- A. Dimensions indicated for pipe are outside dimensions.
- B. Manufacturer: Provide products by one of the following or equal.

- 1. Fencing and Fabric:
 - a. Security Fabricators, Inc. or Equal.
 - b. American Fence Corporation.
 - c. Anchor Fence Inc.
 - d. BWF Fence Systems.
 - e. Cyclone Fence Division of USX Corporation.

2.2 STEEL FABRIC:

- A. Fabric: 9 gauge hot dipped galvanized wires, 2" mesh, with top salvages knuckled for fabric 60" and under, and both top and bottom salvages twisted and barbed for fabric over 60" high.

1. Furnish one-piece fabric widths for fencing up to 12' high.

2.3 FRAMING AND ACCESSORIES:

- A. Framework, General: ASTM A-53 galvanized.
- B. Fittings and Accessories: Galvanized.
- C. Line Posts: Space 10' o.c. maximum, unless otherwise indicated, of following minimum sizes and weights.
 1. Up to 8' fabric height 2-1/2" OD steel pipe.
 2. Over 8' fabric height 3-1/2" OD steel pipe.
- D. Terminal Post: Fence height up to 6' – 3" O.D. Fence height over 6' 4" O.D.
- E. Gate Posts: Furnish posts for supporting single gate leaf, or one leaf of a double gate installation, for nominal gate widths as follows:

<u>Leaf Width</u>	<u>Gate Post</u>
Up to 6'	3" OD
Over 6' to 13'	3.000" OD
Over 13' to 18'	4.000" OD
Over 18	6.5/8" OD

- F. Top Rail: Manufacturer's longest lengths with expansion type couplings, approximately 6" long, for each joint. Provide means for attaching top rail securely to each gate corner, pull and end post.
 1. 1-5/8" OD pipe.
- G. Tie Wires: 9 gage aluminum, minimum.
- H. Tension or Stretcher Bars: Hot-dip galvanized steel with minimum length 2 inches less than full height of fabric, minimum cross-section of 3/16 inch by 3/4 inch and minimum 1.2 oz. zinc coating per sq. ft. of surface area. Provide one bar for each gate and end post, and two for each corner and pull post, except where fabric is integrally woven into post.
- I. Tension Bands: Minimum 14 gage (0.074 inch) thick.
- J. Tension and Brace Bands: Minimum 12 gage (0.105 inch) thick.
- K. Bottom Rail: Same material as top rail. Provide manufacturer's standard galvanized steel or cast iron or cast aluminum cap for each end.
- L. Post tops: Provide weather tight closure cap with loop to receive tension wire or toprail: one cap for each post.

2.4 GATES

- A. Fabrication: Fabricate perimeter frames of gates from metal and finish to match fence framework. Assemble gate frames by welding. Provide horizontal and vertical members to ensure proper gate operation and attachment of fabric, hardware, and accessories. Space frame members maximum of 8 feet apart unless otherwise indicated.
- B. Provide same fabric as for fence unless otherwise indicated. Install fabric with tension bars and bands at vertical edges and at top and bottom edges.
- C. Install diagonal cross-bracing consisting of 3/8-inch diameter adjustable-length truss rods on gates to ensure frame rigidity without sag or twist.
- D. Swing Gates: Comply with ASTM F 900.
 - 1. Up to 6 feet High and 8 feet Wide: Fabricate perimeter frames of maximum 1.660-inch OD Type I or II steel pipe or 1.50-inch square galvanized steel tubing weighing 1.90 lb. per sq. ft.
 - 2. Gate Hardware: Provide hardware and accessories for each gate, galvanized per ASTM A 153, and in accordance with the following:
 - 3. Hinges: Size and material to suit gate size, non-lift-off type, offset to permit 180-degree gate opening. Provide 1-1/2 pair of hinges for each leaf over 6-foot nominal height.
 - 4. Latch: Forked type or plunger-bar type to permit operation from either side of gate, with padlock eye as integral part of latch

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install fence in compliance with ASTM F 567. Do not begin installation and erection before final grading is completed, unless otherwise permitted.
- B. Setting Post: Center and align posts in holes 3 inches above bottom of excavation. Space maximum 10 feet o.c., unless otherwise indicated. Check each post for vertical and top alignment and hold in position during placement and finishing operations.
- C. Top Rails: Run rail continuously through line post caps.
- D. Bottom Rails: Provide bottom rails where indicated. Install in one piece between posts and flush with post on fabric side, using rail ends and special offset fitting where necessary.

- E. Fabric: Leave approximately 2 inches between finish grade and bottom salvage unless otherwise indicated. Pull fabric unit taut and tie to posts, rails and tension wires. Install fabric on security side of fence and anchor to framework so that fabric remains in tension after pulling force is released.
- F. Tension or Stretcher Bars: Thread through or clamp to fabric 4 inches o.c., and secure to end, corner, pull, and gate posts with tension bands spaced not over 15 inches o.c.
- G. Tie Wires: Use U-shaped wire of proper length to secure fabric firmly to posts and rails with ends twisted at least 2 full turns. Bend ends of wire to minimize hazard to persons or clothing.
 - 1. Maximum Spacing: Tie fabric to line posts 12 inches o.c. and to rails and braces 24 inches o.c.
- H. Fasteners: Install nuts for tension bands and hardware bolts on side of fence opposite fabric side. Peen ends of bolts or score threads to prevent removal of nuts.
- I. Gates: Install gates plumb, level, and secure for full opening without interference. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

END OF SECTION

CIVIL SPECIFICATIONS



State of Mississippi
Mississippi Department of Environmental Quality
(MDEQ) Office of Pollution Control (OPC)
Environmental Permits Division (EPD)



SMALL CONSTRUCTION STORM WATER GENERAL PERMIT

FOR LAND DISTURBING ACTIVITIES OF ONE (1) TO LESS THAN FIVE (5) ACRES

TO DISCHARGE STORM WATER AND ALLOWABLE NON-STORM WATER FROM REGULATED CONSTRUCTION ACTIVITIES IN ACCORDANCE WITH THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

THIS CERTIFIES THAT

FACILITIES OR PROJECTS ISSUED A CERTIFICATE OF PERMIT COVERAGE UNDER THIS PERMIT ARE GRANTED PERMISSION TO DISCHARGE STORM AND/OR ALLOWABLE NON-STORM WATER FROM REGULATED CONSTRUCTION ACTIVITIES INTO STATE WATERS

in accordance with effluent limitations, inspection requirements and other conditions set forth in herein. This permit is issued in accordance with the provisions of the Mississippi Water Pollution Control Law (Section 49-17-1 et seq., Mississippi Code of 1972), and the regulations and standards adopted and promulgated thereunder, and under authority granted pursuant to Section 402(b) of the Federal Water Pollution Control Act.

Mississippi Environmental Quality Permit Board

Kristal Rudolph
Authorized Signature

Mississippi Department of Environmental Quality

Issued: MAY 20 2019

Expires: APR 30 2024

Permit No. MSR15

AI 35524

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ACT1 (Small Construction) Introduction:

Narrative Requirements:

Condition No.	Condition
T-1	INTRODUCTION: The Small Construction General Permit (SCGP) authorizes storm water discharges from construction activities disturbing one (1) acre to less than five (5) acres, or less than one acre if part of a "larger common plan of development or sale," where the total acreage is based on cumulative planned disturbance of less than 5 acres. Construction activities and construction activities part of a "larger common plan of development or sale" disturbing five acres or greater are regulated under the Large Construction General Permit. Storm water discharges that enter waters of the state or storm water conveyance systems leading to waters of the state are subject to regulation and compliance with the conditions set forth in this permit. This permit also authorizes storm water discharges from any other construction activity designated by the Executive Director based on the potential for contribution to an excursion of a water quality standard or for significant contribution of pollutants to waters of the state. Upon issuance by the Permit Board on Environmental Quality, this permit will replace the previous Small Construction General Permit which expired on March 31, 2018. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, and original purpose of the facility (for example, the maintenance of existing ditches, channels, or other similar storm water conveyances, as well as routine grading of existing dirt roads, asphalt overlays of existing roads, re-clearing of vegetation in a right-of-way, and other similar maintenance activities).

ACT2 (Small Construction) Permit Applicability and Coverage:**Narrative Requirements:**

Condition No.	Condition
T-1	PERMIT AREA: The Small Construction General Permit covers all areas of the State of Mississippi. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-2	COVERED DISCHARGES: (1) Discharges composed entirely of stormwater and allowable non-stormwater identified in T-5 of this ACT from small construction activities including clearing, grading, excavating and other land disturbing activities equal to or greater than one (1) acre and less than five (5) acres. These discharges are designated as small construction activities under the National Pollutant Discharge Elimination System (NPDES) stormwater program and are covered under this permit. Small construction activities disturbing less than one (1) acre are designated if: (A) The project is part of a larger common plan of development or sale with a cumulative planned disturbance of equal to or greater than one (1) acre and less than five (5) acres (for example, individual or commercial lots that are part of a subdivision or a commercial development that initially impacts less than one (1) acre but will ultimately exceed the one (1) acre threshold, or (B) The Executive Director of the Mississippi Department of Environmental Quality (MDEQ) designates the construction activity based on the potential for contribution to a violation of a water quality standard or for significant contribution of pollutants to waters of the State. [11 Miss. Admin. Code Pt. 6, Ch. 1.] (2) A project is eligible for coverage under this general permit for discharges of pollutants of concern to water bodies for which there is a Total Maximum Daily Load (TMDL) established or approved by the Environmental Protection Agency (EPA) if measures and controls are incorporated that are consistent with the assumptions and requirements of such TMDL. To be eligible for coverage under this general permit, the project must incorporate in the Storm Water Pollution Prevention Plan (SWPPP) and/or effluent limitation any conditions applicable to any discharge(s) necessary for consistency with the assumptions and requirements of such TMDL. If, after coverage issuance, a specific wasteload allocation is established that would apply to the project's discharge, the project must implement steps necessary to meet that allocation within three (3) months from the final TMDL approval date. MDEQ's approved TMDL list may be found at the link listed in paragraph (3) below. In addition, "Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (Three Volumes)" identifies specific controls that may be used to address consistency with any applicable TMDLs. The manual can be found at our website, https://www.mdeq.ms.gov/water/surface-water/nonpoint-source-pollution-program/erosion-and-sediment-control-manual/

ACT2 (continued):**Narrative Requirements:**

Condition No.	Condition
T-3	(3) A project is eligible for coverage under this general permit for discharges of storm water to impaired water bodies on MDEQ's 303(d) list, provided best management practices (BMPs) are employed that prohibit further impairment of the designated and/or existing beneficial uses in the receiving water body. To be eligible for coverage under this general permit, the owner/operator must indicate on the SCNOI that the project discharges to a 303(d) listed receiving water and incorporate appropriate BMPs in its SWPPP. MDEQ's 303(d) list of impaired water bodies may be found on MDEQ's website, www.mdeq.ms.gov
T-4	ALLOWABLE NON-STORM WATER DISCHARGES: Owner or operators are authorized for the following non-storm water discharges. Except for flows from firefighting activities, sources of non-storm water below that are combined with storm water discharges associated with construction activity must be identified in the Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge. A. Discharges from fire-fighting activities B. Fire hydrant flushings C. Water used to control dust D. Potable water sources including water line flushings E. Routine external building wash down that does not use detergents F. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless totally removed) and where detergents are not used G. Uncontaminated air conditioning or compressor condensate H. Uncontaminated ground water or spring water I. Foundation or footing drains where flows are not contaminated with process materials such as solvents J. Landscape irrigation K. Water used to wash vehicles, wheel wash water, and other wash waters where detergents are not used. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-5	PROHIBITED NON-STORM WATER DISCHARGES: A. Wastewater from washout of concrete (unless managed by an appropriate control) B. Wastewater from washout and cleanup of stucco, paint, form release oils, curing compounds and other construction materials C. Fuels, oils, or other pollutants used in vehicle and equipment operation and maintenance D. Soaps or solvents used in vehicle and equipment washing E. Wastewater from sanitary facilities, including portable toilets F. Dewatering activities, including discharges from dewatering of trenches and excavations unless managed by BMPs. [11 Miss. Admin. Code Pt. 6, Ch. 1.].

ACT2 (continued):

Narrative Requirements:

Condition No.	Condition
T-6	THIS PERMIT DOES NOT AUTHORIZE: (1) Discharges associated with construction activity that disturb five (5) or more acres that are covered under the Large Construction General Permit or that have been covered under an individual permit in accordance with ACT3, S-2 of this permit. (2) Discharges from construction sites that the Executive Director determines will cause, or have reasonable potential to cause or contribute to, violations of water quality standards. Where such determinations have been made, the Mississippi Environmental Quality Permit Board (Permit Board) will contact the owner or operator. The Permit Board may determine that an individual permit application is necessary in accordance with ACT3, S-2 of this permit. However, the Permit Board may authorize coverage under this permit after appropriate controls and implementation procedures, designed to bring the discharges into compliance with water quality standards, have been included in the Storm Water Pollution Prevention Plan. (3) Discharges to impaired receiving waters, unless the SWPPP specifically identifies Best Management Practices (BMPs) which ensure storm water will not cause or contribute to non-attainment of a water quality standard. In cases where the Permit Board becomes aware of potential impairment due to small construction activities, the Permit Board will require the submittal of the SWPPP in order to ascertain whether the selected BMPs are sufficient to comply with requirements of this permit or any other requirements of the Permit Board. (4) Activities that will affect waters of the state, including wetlands, without obtaining the necessary U.S. Army Corps of Engineers' (COE) individual Section 404 permit or coverage under a COE nationwide or general permit. If a Small Construction Notice of Intent (SCNOI) is requested by the Permit Board, appropriate COE documentation must be included. [11 Miss. Admin. Code Pt. 6, Ch. 1.] (5) Discharges that originate from the site after construction activities have been completed and the site has undergone final stabilization. (6) Discharges of hazardous substances or oil resulting from an on-site spill. (7) Discharges or discharge-related activities that are likely to jeopardize the continued existence of any species that is listed as endangered or threatened under the Endangered Species Act (ESA) or result in the adverse modification or destruction of habitat that is designated as critical under the ESA. Coverage under this permit is available only if the regulated entity's storm water discharges, allowable non-storm water discharges, and discharge-related activities are not likely to jeopardize the continued existence of any species that is listed as endangered or threatened ("listed") under the ESA or result in the adverse modification or destruction of habitat that is designated as critical under the ESA ("critical habitat"). Submission of a signed SCNOI, or County Utility Authority approval, if applicable, will be deemed to constitute the regulated entity's certification of eligibility. [40 CFR 122.49]

ACT3 (Small Construction) Obtaining Coverage:

Submittal/Action Requirements:

Condition No.	Condition
S-1	HOW TO OBTAIN AUTHORIZATION: (1) If a Small Construction Notice of Intent (SCNOI) has not been requested by the Permit Board (SCNOI not submitted to MDEQ), Owners or operators are authorized to discharge storm water or allowable non-storm water associated with small construction activity under the terms and conditions of this permit upon commencement of small construction land disturbing activities (i.e., Construction may begin after the completion of the SCNOI and the development and implementation of the required Storm Water Pollution Prevention Plan (SWPPP)). (2) If a Small Construction Notice of Intent (SCNOI) has been requested by the Permit Board (SCNOI submitted to MDEQ), Owners or operators are authorized to discharge storm water or allowable non-storm water only after staff review and receipt of written notification of approval of coverage by the Permit Board Staff. Beginning December 21, 2020, applicants must submit the NOI electronically as required by 40 CFR 127.16 when requested by the Permit Board. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
S-2	REQUIRING AN INDIVIDUAL PERMIT: Upon receipt of a SCNOI, the Permit Board may require an alternate permit. The Permit Board may require any owner or operator of land disturbing activities of equal to or greater than one (1) acre and less than five (5) acres to apply for and obtain an individual NPDES permit. Any interested person may petition the Permit Board to take action under this paragraph. The Permit Board may require any small construction owner or operator to apply for an individual NPDES permit only if the owner or operator has been notified in writing. This notice shall include reasons for this decision, an application form and a filing deadline. The Permit Board may grant additional time upon request. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT4 (Small Construction) Small Construction Notice of Intent:**Submittal/Action Requirements:**

Condition No.	Condition
S-1	SMALL CONSTRUCTION NOTICE OF INTENT (SCNOI): Prior to the commencement of small construction activity, the owner or operator must complete a Small Construction Notice of Intent (SCNOI) provided at the end of this permit. The SCNOI and SWPPP described in ACT5 shall be submitted to the Mississippi Department of Environmental Quality (MDEQ) only upon request from MDEQ. However, the SCNOI and SWPPP must be maintained at the permitted site or locally available in case inspector review is necessary. Failure to complete a SCNOI prior to the commencement of construction activity or to submit a SCNOI when requested is a violation of State regulations. The SCNOI shall be retained by the owner or operator as required by ACT8, R-1 of this permit. Attachments to the SCNOI must include: A Storm Water Pollution Prevention Plan (SWPPP) and a U.S. Geological Survey quadrangle map or copy (only if required to be submitted to MDEQ) showing site location. The owner(s) of the property and the operator(s) associated with the regulated construction activity on the property have joint and severable responsibility for compliance with the permit. Notwithstanding any permit condition to the contrary, the coverage recipient and any person who causes pollution of waters of the state or places waste in a location where they are likely to cause pollution, shall remain responsible under applicable federal and state laws and regulations, and applicable permits. The SCNOI shall be signed in accordance with the provisions of ACT11, T-4 of this permit. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT4 (continued):

Narrative Requirements:

Condition No.	Condition
T-1	WHERE TO SUBMIT THE SMALL CONSTRUCTION NOTICE OF INTENT (SCNOI), IF REQUESTED: If requested, complete and appropriately signed SCNOI forms must be submitted to: Chief, Environmental Permits Division MS Dept. of Environmental Quality, Office of Pollution Control P.O. Box 2261 Jackson, Mississippi 39225. [11 Miss. Admin. Code Pt. 6, Ch. 1.] For priority or overnight deliveries, the physical address is: 515 East Amite Street Jackson, Mississippi 39201 Beginning December 21, 2020, applicants must submit the NOI electronically as required by 40 CFR 127.16 when requested by the Permit Board. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT5 (Small Construction) Storm Water Pollution Prevention Plan (SWPPP) Development and Content:

Submittal/Action Requirements:

Condition No.	Condition
S-1	SWPPP DEVELOPMENT: A site-specific SWPPP shall be developed requiring the design, installation, implementation and maintenance of effective pollution prevention measures by each owner or operator subject to this permit. A SWPPP shall be prepared in accordance with sound engineering practices and shall identify potential sources of pollution, which may reasonably be expected to affect the quality of storm water discharges associated with construction activity. The SWPPP shall describe and ensure the implementation of specific best management practices for the project site, which will reduce pollutants in storm water discharges and assure compliance with the terms and conditions of this permit. (1) The SWPPP shall be retained at the permitted site or locally available. A copy of the SWPPP must be made available to the MDEQ or MS4 inspectors for review at the time of an on-site inspection. (2) BMPs shall be in place upon commencement of construction. (3) The Executive Director of MDEQ or designee will notify the owner or operator whenever he/she becomes aware that the SWPPP does not meet the minimum requirements of this permit. After notification, the owner or operator shall amend the SWPPP, implement the changes and certify in writing to the Executive Director that the requested changes have been made. Unless otherwise provided by the Executive Director, the requested changes shall be made within 15 days. (4) The owner or operator shall amend the SWPPP and implement the changes before there is a change in construction, operation, or maintenance, which may potentially affect the discharge of pollutants to waters of the state. (5) The owner or operator shall amend the SWPPP and implement the necessary changes within 15 days if the SWPPP proves to be ineffective in controlling storm water pollutants including, but not limited to, significant sediment leaving the site and non-functioning BMPs.

ACT5 (continued):**Narrative Requirements:**

Condition No.	Condition
T-1	SWPPP CONTENT: Owner or Operator: The SWPPP shall identify the "owner or operator" as defined in ACT12 of this permit. The operator's name, complete mailing address, email address, and telephone number(s) shall be identified on the plan. [11 Miss. Admin. Code Pt. 6, Ch. 1.] Erosion and Sediment Controls and Soil Stabilization Requirements: The SWPPP shall list and describe site-specific controls appropriate for the construction activities as well as the procedures for implementing such controls. Controls shall be designed to retain sediment on-site and to minimize the discharge of pollutants. If any of the below controls cannot be implemented on the project site, the SWPPP must include written justification as to why site-specific constraints and/or costs make the control(s) infeasible. At a minimum, such controls must be designed, installed and maintained to: (1) Control storm water volume and velocity within the site to minimize soil erosion; (2) Control storm water discharges, including both peak flow rates and total storm water volume, to minimize channel and stream bank erosion and scour in the immediate vicinity of discharge points; (3) Minimize the amount of soil exposed during construction activity; (4) Minimize the disturbance of steep slopes.

ACT5 (continued):**Narrative Requirements:**

Condition No.	Condition
T-2	SWPPP CONTENT (continued): (5) Minimize sediment discharges from the site. The design, installation and maintenance of erosion and sediment controls must address factors such as the amount, frequency, intensity and duration of precipitation, the nature of resulting storm water runoff, and soil characteristics, including the range of soil particle sizes expected to be present on the site; (6) Provide and maintain a 50-foot undisturbed natural buffer around waters of the United States; or provide and maintain an undisturbed natural buffer that is less than 50 feet and is supplemented by additional erosion and sediment controls which in combination achieves the sediment load reduction equivalent to a 50-foot undisturbed natural buffer. Direct storm water to vegetated areas and maximize storm water infiltration to reduce pollutant discharges, unless infeasible; (7) Minimize soil compaction and, unless infeasible, preserve topsoil; (8) Direct storm water to vegetated areas, brush barriers, silt fences, hay bales, etc. to aid in the filtration, infiltration, velocity reduction and diffusion of the discharge; (9) Transport runoff down steep slopes through lined channels or piping; (10) Minimize the amount of cut and fill, and soil compaction; and (11) Minimize off-site vehicle tracking of sediments.

At a minimum, the controls must be in accordance with the standards set forth in the most current edition of the “Erosion Control, Sediment Control and Stormwater Management on Construction Sites and Urban Areas (Three Volumes),” or other recognized manuals of design as appropriate for Mississippi. The planning and design manual can be obtained by calling 601/961-5171 or may be found electronically on the MDEQ website, <https://www.mdeq.ms.gov/water/surface-water/nonpoint-source-pollution-program/erosion-and-sediment-control-manual/>.

Narrative Requirements:

Condition No.	Condition
T-3	SWPPP CONTENT (continued): The number and type of BMPs included in the SWPPP must reflect the specific conditions of the construction site. An effective SWPPP includes a combination of BMPs that are designed to work together. A combination of BMPs is listed below and must be included as minimum components of a SWPPP. (1) Vegetative Practices shall be designed to preserve existing vegetation where feasible and initiate vegetative stabilization measures after land disturbing activities. Such practices may include, but are not limited to, temporary seeding, permanent seeding, mulching, sod stabilization, vegetative buffer strips, tree protection and topsoil preservation. Soil stabilization-vegetative stabilization measures must be initiated whenever any clearing, grading, excavating or other land disturbing activities have temporarily or permanently ceased on any portion of the site and will not resume for a period of fourteen (14) days or more. The appropriate temporary or permanent vegetative practices shall be implemented immediately. For the purpose of this permit, "immediately" is interpreted to mean no later than the next work day. The following specific practices must be included, unless infeasible (see Definitions). If any of the following practices are deemed infeasible, written justification must be included in the SWPPP. (A) Buffer zones (see Definitions) shall be maintained between land disturbing activities and water bodies. (B) Topsoil should be stockpiled and used in areas that will be re-vegetated. When final grade is reached it should be distributed to a minimum depth of 2 inches on 3:1 slopes and 4 inches on flatter slopes. (C) Heavy equipment use in areas to be re-vegetated should be avoided. If compaction cannot be avoided, the top 4 inches of the soil bed should be tilled before re-vegetation. Any necessary fertilizer or other soil amendments should be added during the tilling process. (2) Structural practices shall divert flows from exposed soils, store flows or otherwise limit runoff from exposed areas. Such practices may include, but are not limited to, construction entrance/exit, silt fences, earth dikes, brush barriers, drainage swales, check dams, subsurface drains, pipe slope drains, level spreaders, drain inlet protection, outlet protection, detention/retention basins, sediment traps, temporary sediment basins or equivalent sediment controls. If a sedimentation basin is used, must be installed before initial site grading and utilize outlet structures that withdraw water from the surface and that are designed for a minimum 2-year, 24-hour storm event.

Narrative Requirements:

Condition No.	Condition
T-3	SWPPP CONTENT (continued): The following specific practices must be included, unless infeasible (see Definitions). If any of the following practices are deemed infeasible, written justification must be included in the SWPPP. (A) Steep Slopes (see Definitions) that cannot be avoided must have, at a minimum, silt fences or equivalent sediment controls for all down slope boundaries (and for those side slope boundaries deemed appropriate by individual site conditions), unless a sediment basin providing storage for a calculated volume of runoff from a 2-year, 24-hour storm or 3,600 cubic feet of storage per acre drained is provided. (B) Construction entrances/exits (see Definitions) shall be installed wherever traffic will be leaving a construction site and moving directly onto a paved public road. (C) Storm Drain Inlets-Inlets that could receive storm water from construction activities shall be protected by surrounding or covering with a filter material until final stabilization has been achieved. (D) Perimeter Controls-Natural areas shall be maintained and supplemented with silt fence and fiber rolls around project perimeter. If not feasible to maintain natural areas, a silt fence or similar controls, such as fiber rolls, are sufficient. (E) Phasing- Schedule or sequence construction activities so as to concentrate work in certain areas so as to minimize the amount of soil that is exposed at one time.

Narrative Requirements:

Condition No.	Condition
T-4	SWPPP CONTENT (continued): (3) Facilities discharging into impaired receiving waters (i.e., receiving stream segments which are listed on MDEQ's 303(d) List of Impaired Waters or segments for which a Total Daily Maximum Load (TMDL) has been approved) must identify the pollutant of concern(s) for the receiving stream in the SWPPP. If applicable, the SWPPP shall describe how the selected BMPs will ensure that discharges from the site will not cause or contribute to exceedance of the water quality standards in the receiving stream. (4) A description of any post-construction control measures. Post-construction control measures should be installed, as necessary, to control pollutants in storm water after construction is complete. These controls include, but are not limited to, one or more of the following: on-site infiltration of runoff, flow attenuation using open vegetated swales, exfiltration trenches and natural depressions, constructed wetlands and retention/detention structures. Where needed, velocity dissipation devices shall be placed at detention or retention pond outfalls and along the outfall channel to provide for a non-erosive flow. (5) Proposed responsible parties (original coverage recipient or new owner or operator) shall be identified for individual lots or out-parcels that are part of a larger common plan of development or sale. If permit responsibility is retained by the original coverage recipient, a narrative description of sediment and erosion controls for subdivision lots is acceptable. Out-parcels in commercial developments must be included in the scaled site map referenced below.

Narrative Requirements:

Condition No.	Condition
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T-5 Housekeeping Practices:

The owner or operator shall design, install, implement and maintain practices appropriate to prevent pollutants from entering storm water from construction sites because of poor housekeeping. These practices must be listed in the SWPPP and located on the site map.

The owner or operator shall designate and report in the SWPPP areas for equipment maintenance and repair and concrete chute wash off; provide waste receptacles and regular collection of waste; provide adequately maintained sanitary facilities; provide protected storage areas for chemicals, paints, solvents, fertilizers, pesticides, herbicides, detergents and other potentially toxic materials; and implement spill and leak prevention practices and response procedures if spills and leaks do occur; minimize the exposure of building materials, building products, construction wastes, trash and landscape materials. These areas and specific potential pollutants shall be addressed in the SWPPP and located on the scaled site map.

The owner or operator shall provide a description of procedures for:

- (A) Sweeping or removal of sediment and other debris that has been tracked from the site or deposited from the site onto streets and other paved surfaces;
- (B) Removal of sediment or other pollutants that have accumulated in or near any sediment control measures, storm water conveyance channels, storm drain inlets, or water course conveyance within the construction site, and;
- (C) Removal of accumulated sediment that has been trapped by sediment control measures at the site, in accordance with applicable maintenance requirements covered under this permit.

The owner or operator shall also provide a description of the procedures for handling and disposing of wastes generated at the site, including, but not limited to, clearing and demolition debris, sediment removed from the site, construction and domestic waste, hazardous or toxic waste, and sanitary waste. [11 Miss. Admin. Code Pt. 6, R. 1]

Narrative Requirements:

Condition No.	Condition
T-6	Prepare Scaled Site Map(s): If the construction project is a linear construction project (e.g., pipeline, road, etc.), a scaled site map is not required, however standard diagrams (e.g., cross sections showing dimensions and labeled components) of erosion and sediment controls to be used must be submitted. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-7	The owner or operator of a non-linear construction project shall prepare a scaled site map showing: (1) Boundaries of property and proposed construction activities, noting any phasing of construction activities, (2) Original and proposed contours (if feasible), with steep slopes (see Definitions) identified, (3) North arrow, (4) Drainage pattern arrows and storm water outfalls, (5) Location of sensitive areas, such as wetlands, perennial streams and adjacent receiving water bodies, (6) Natural buffer zones (7) Location of any storm drain inlets and any receiving MS4, (8) All erosion and sediment controls (vegetative and structural), (9) Any post-construction control measures, and (10) Location of housekeeping practices.

Narrative Requirements:

Condition No.	Condition
T-8	Implementation Sequence: The SWPPP shall outline an implementation sequence (including any phasing of construction activities), which coordinates the timing of all major land-disturbing activities together with the necessary erosion and sedimentation control measures planned for the project.
T-9	Implementation of Controls: The SWPPP shall require the owner or operator, in disturbing an area, to implement controls as needed to prevent erosion and adverse impacts to waters of the State. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

Narrative Requirements:

Condition No.	Condition
T-10	Maintenance and Weekly Inspections: The SWPPP shall describe procedures to maintain vegetation, erosion and sediment controls and other protective measures. Procedures shall provide that all controls and outfalls/discharge points are inspected weekly for a minimum of four inspections per month in accordance with ACT6, S-4. Any poorly functioning erosion controls or sediment controls, non-compliant discharges, or any other deficiencies observed during the inspections required under this permit shall be corrected as soon as possible, but not to exceed 24 hours of the inspection unless prevented by unsafe weather conditions as documented on the inspection form. In the event of an unanticipated breach of a sediment basin/pond temporary containment measures shall be taken within 24 hours after the inspection. Permanent corrective measures shall be implemented within five (5) days of the inspection; however, if permanent corrective measures cannot be implemented within the timeframes provided herein the owner or operator shall contact MDEQ. [11 Miss. Admin. Code Pt. 6, R. 1]
T-11	Non-Storm Water Discharge Management: The SWPPP must identify all allowable sources of non-storm water discharges listed in ACT2, T-5, except for flows from actual firefighting activities, which are combined with storm water discharges associated with large construction activity. Non-storm water discharges should be eliminated or reduced to the extent feasible. Wash waters must be treated in a sediment basin or alternate control that provides equivalent or better treatment prior to discharge. The SWPPP must identify and ensure the implementation of appropriate Best Management Practices (BMPs) for the non-storm water component of the discharge.
T-12	Final Stabilization: The SWPPP shall describe procedures to achieve final stabilization (See Definitions) of all disturbed areas of the project site.
T-13	Example Storm Water Pollution Prevention Plans (SWPPPPs): Example SWPPPPs are included in the Mississippi Storm Water Pollution Prevention Plan Guidance Manual for Construction Activities as well as the MDEQ Registration Form for Individual Residential Lots. The Mississippi Storm Water Pollution Prevention Plan Guidance Manual for Construction Activities is also available online at our website, https://www.mdeq.ms.gov/water/surface-water/nonpoint-source-pollution-program/erosion-and-sediment-control-manual/ US EPA also lists example SWPPPPs on their website at: https://www.epa.gov/npdes/developing-stormwater-pollution-prevention-plan-swpppp

ACT6 (Small Construction) Implementation and Inspection Requirements:

Submittal/Action Requirements:

Condition No.	Condition
S-1	SWPPP IMPLEMENTATION REQUIREMENTS: The coverage recipient shall: (1) Implement the site-specific SWPPP and retain a copy of the SWPPP at the permitted site. In cases where there is no office or shelter to maintain documents onsite, the SWPPP can be kept locally available (i.e., able to be produced within an hour of being requested by a state or local inspector). Failure to implement the SWPPP is a violation of permit requirements. A copy of the SWPPP must be made available to state or local inspectors for review at the time of an on-site inspection. (2) Implement the following pre-construction activities: (A) Mark off areas of "disturbance", "no disturbance" (i.e. buffer zone), and "sensitive areas" (i.e., delineate and clearly flag or mark off areas such as steep slopes, wetlands, perennial streams and adjacent water bodies, or other sensitive areas), (B) Preserve native topsoil on the site to the extent feasible, and (C) Limit construction stream crossings to the minimum necessary to provide access for the construction project. (3) Ensure that appropriate Best Management Practices (BMPs) are in place upon commencement of construction. (4) Amend the SWPPP whenever there is a change in design, construction, operation, or maintenance which may potentially affect the discharge of pollutants to waters of the State; or the SWPPP proves to be ineffective in controlling storm water pollutants. The amended SWPPP shall be submitted within thirty (30) days of amendment. (5) Amend the SWPPP if notified at any time by the Executive Director of the MDEQ that the SWPPP does not meet the minimum requirements. Coverage recipient shall certify in writing to the Executive Director that the requested changes have been made. Unless otherwise provided, the requested changes shall be made within fifteen (15) days.

Submittal/Action Requirements:

Condition No.	Condition
S-2	SWPPP IMPLEMENTATION REQUIREMENTS (continued): (6) Install needed erosion controls even if they may be located in the way of subsequent activities, such as utility installation, grading or construction. It shall not be an acceptable defense that controls were not installed because subsequent activities would require their replacement or cause their destruction. (7) Install additional and/or alternative erosion and sediment controls when existing controls prove to be ineffective in preventing sediment from leaving the site. (8) Comply with applicable State or local waste disposal, sanitary sewer or septic system regulations. (9) Erosion and sediment controls shall be maintained at all times. Except for sediment basins, all accumulated sediment shall be removed from structural controls when sediment deposits reach one-third to one-half the height of the control. For sediment basins, accumulated sediment shall be removed when the capacity has been reduced by 50%. All removed sediment deposits shall be properly disposed. Non-functioning controls shall be repaired, replaced or supplemented with functional controls within twenty-four (24) hours of discovery or as soon as field conditions allow. (10) If, after coverage issuance, a specific wasteload allocation is established that would apply to the facility's discharge, the facility must implement steps necessary to meet that allocation.
S-3	SWPPP COMPLIANCE WITH LOCAL STORM WATER ORDINANCES: (1) In addition to the requirements of this permit, the SWPPP shall be in compliance with all local storm water ordinances. (2) When storm water discharges into a Municipal Separate Storm Sewer System (MS4), the owner or operator must make the SWPPP available to the municipal authority upon request.

Submittal/Action Requirements:

Condition No.	Condition
S-4	INSPECTION REQUIREMENTS: Inspection of all receiving streams (if feasible), outfalls, erosion and sediment controls and other SWPPP requirements shall be performed during permit coverage using a copy of the form provided in the general permit by qualified personnel (see Definitions). (1) after rain events that produce a discharge and at least weekly for a minimum of four inspections per month; and (2) As often as is necessary to ensure that appropriate erosion and sediment controls have been properly constructed and maintained and to determine if additional or alternative control measures are required. Before conducting the site inspection, the inspector should review Chapter 4, Inspector's Checklist and Troubleshooting Chart found in MDEQ's Field Manual for Erosion and Sediment Control on Construction Sites in Mississippi, available online at our website, https://www.mdeq.ms.gov/permits/environmental-permits-division/types-of-general-permits/ MDEQ strongly recommends that coverage recipients perform a "walk through" inspection of the construction site daily to ensure controls are in place and will function properly. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT7 (Small Construction) Limitation Requirements:

Limitation Requirements:

Condition No.	Parameter	Condition
L-1		NON-NUMERIC LIMITATIONS: Storm water discharges shall be free from: (1) Debris, oil, scum, and other floating materials other than in trace amounts, (2) Eroded soils and other materials that will settle to form objectionable deposits in receiving waters, (3) Suspended solids, turbidity and color at levels inconsistent with the receiving waters, 4) Chemicals in concentrations that would cause violation of State Water Quality Criteria in the receiving waters. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT8 (Small Construction) Record Keeping:

Record-Keeping Requirements:

Condition No.	Condition
R-1	RETENTION OF RECORDS: All records, reports, forms and information resulting from activities required by this permit shall be retained for a period of at least three (3) years from the date that the document(s) was generated. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
R-2	DOCUMENTATION OF INSPECTIONS: All inspections required by ACT6, S-4 of this permit must be documented on the Inspection and Certification Form provided at end of this permit. The form must be certified according to the signatory requirements outlined in ACT11, T-4, T-5 and T-6 of this permit. Documentation must include the day and time the inspection was performed, who performed the inspection, any deficiencies noted, and corrective action needed. Documentation of all inspections must be kept with the SWPPP. Inspections must continue until such time that planned construction activities have been completed, land disturbing activities have ceased and disturbed areas have been stabilized with no significant erosion occurring. To satisfy this requirement for linear projects, inspections may be conducted at representative locations for portions of the project that have been completed and stabilized.

ACT9 (Small Construction) Termination of Permit Coverage:

Submittal/Action Requirements:

Condition No.	Condition
S-1	TERMINATION OF PERMIT REQUIREMENTS: (1) If a SCNOI has not been requested by the Permit Board (SCNOI not submitted to MDEQ). Upon successful completion of all permanent erosion and sediment controls, inspections and reporting requirements are no longer required. The owner or operator must record the date of completion of all permanent erosion and sediment controls on the final inspection report. (2) If a SCNOI has been requested by the Permit Board (SCNOI submitted to MDEQ). Upon successful completion of all permanent erosion and sediment controls for a small construction project a written notification of such shall be submitted to the MDEQ. Permit requirements remain in effect until such time the coverage recipient receives written notice of coverage termination from MDEQ.

ACT10 (Small Construction) Standard Requirements Applicable to All Water Permits:

Narrative Requirements:

Condition No.	Condition
T-1	DUTY TO COMPLY: The coverage recipient must comply with all conditions of this permit. Any permit noncompliance constitutes a violation and is grounds for enforcement action; for coverage termination, revocation and reissuance, or modifications; or denial of a renewal application. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-2	DUTY TO MITIGATE: The owner or operator shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which is likely to adversely affect human health or the environment. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-3	DUTY TO PROVIDE INFORMATION: The owner or operator shall furnish to the Permit Board, within a reasonable time, any relevant information which the Permit Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The owner or operator shall also furnish to the Permit Board, upon request, copies of records required to be kept by this permit.

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-4	SIGNATORY REQUIREMENTS: All SCNOIs and Requests for Recoverage shall be signed as follows: (1) For a corporation by a responsible corporate officer. For this permit, a responsible corporate officer means: (A) a president, secretary, treasurer, or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or (B) The manager of one or more manufacturing, production or operating facilities, provided, the manager is authorized to make management decisions which govern the operation of the regulated facility including having the explicit or implicit duty of making major capital investments, and initiating and directing other comprehensive measures to assure long term environmental compliance with environmental laws and regulations; the manager can ensure that the necessary systems are established or actions taken to gather complete and accurate information for permit application requirements; and where authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures; Note: MDEQ does not require specific assignments or delegations of authority to responsible corporate officers identified in paragraph (1)(A) above. The Department will presume that these responsible corporate officers have the requisite authority to sign permit applications unless the corporation has notified the Permit Board to the contrary. Corporate procedures governing authority to sign permit applications may provide for assignment or delegation to applicable corporate positions under paragraph (1)(B) above rather than to specific individuals. (2) For a partnership or sole proprietorship by a general partner or the proprietor, respectively; or. [11 Miss. Admin. Code Pt. 6, Ch. 1.] (3) For a municipal, State, Federal, or other public agency by either a principal executive officer or ranking elected official. For purposes of this section, a principal executive officer of a Federal agency includes: a) the chief executive officer of the agency, or b) a senior executive officer having responsibility for the overall operations of a principal geographic unit of the agency. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT10 (continued):**Narrative Requirements:**

Condition No.	Condition
T-5	DULY AUTHORIZED REPRESENTATIVE: All SWPPPs, reports required by this permit, certifications and other information requested by the Permit Board shall be signed by a person described in ACT 11, T-4 above, or by a duly authorized representative of that person. A person is a duly authorized representative when: (1) The authorization is made in writing and submitted to the Permit Board by a person described in ACT 11, T-4 above. (2) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated activity, such as: manager, operator of a well or well field, superintendent, person of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may be either a specified individual or position).
T-6	CHANGES IN AUTHORIZATION: If an authorization is no longer accurate because a different individual or position has permit responsibility, a new authorization satisfying the requirements of ACT 11 T-4, T-5 and T-6 must be submitted to the Permit Board prior to or together with any reports, information or applications signed by the representative. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-7	CERTIFICATION: Any person signing documents under this section shall make the following certification: "I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations." [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-8	OIL AND HAZARDOUS SUBSTANCE LIABILITY: Nothing in this permit shall relieve the owner or operator from responsibilities, liabilities, or penalties under Section 311 of the CWA.
T-9	PROPERTY RIGHTS: The issuance of this permit does not convey any property rights of any sort, nor any exclusive privileges, nor does it authorize any injury to private property nor any invasion of personal rights, nor any infringement of Federal, State or local laws or regulations.

ACT10 (continued):**Narrative Requirements:**

Condition No.	Condition
T-10	SEVERABILITY: The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit shall not be affected thereby.
T-11	TRANSFERS: Coverage under this permit is not transferable to any person except after notice to and approval by the Permit Board. The Permit Board may require the coverage recipient to obtain another NPDES permit. Transfer of coverage requests shall be submitted to the Permit Board using the form provided at the end of this permit.
T-12	PROPER OPERATION AND MAINTENANCE: The owner or operator shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the owner or operator to achieve compliance with the conditions of this permit, including the Storm Water Pollution Prevention Plan. Proper operation and maintenance includes adequate laboratory controls with appropriate quality assurance procedures and requires the operation of backup or auxiliary facilities when necessary to achieve compliance with permit conditions. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-13	BYPASS PROHIBITION: Bypass (see 40 CFR 122.41(m)) is prohibited and enforcement action may be taken against an owner or operator for a bypass, unless: a) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage; b) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if the owner or operator should, in the exercise of reasonable engineering judgment, have installed adequate backup equipment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and c) The owner or operator submitted notices per ACT 11, T-17 and/or T-18.

ACT10 (continued):**Narrative Requirements:**

Condition No.	Condition
T-14	UPSET CONDITIONS: An upset is an exceptional incident in which there is unintentional and temporary noncompliance. An upset (see 40 CFR 122.41(n)) constitutes an affirmative defense to an action brought for noncompliance with technology-based permit limitations if a coverage recipient shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence, that: 1) An upset occurred and the coverage recipient can identify the specific cause(s) of the upset, 2) The permitted facility was at the time being properly operated, 3) The coverage recipient submitted notices per ACT 11, T-17 and/or T-18 and 4) The coverage recipient took remedial measures as required under ACT 11, T-2. In any enforcement proceeding, the coverage recipient has the burden of proof that an upset occurred. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
T-15	RELEASE REPORTING: Releases into the environment of hazardous substances, oil, and pollutants or contaminants, which pose a threat to applicable water quality standards or causes a film, sheen or discoloration of State waters, shall be reported to the: - Mississippi Emergency Management Agency (601) 933-6362 or (800) 222-6362; or - National Response Center (800) 424-8802. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-16	NONCOMPLIANCE REPORTING: (1) Anticipated Noncompliance. The owner or operator shall give at least 10 days advance notice, if possible, before any planned noncompliance with permit requirements. Giving notice of planned or anticipated noncompliance does not immunize the owner or operator from enforcement for that noncompliance. (2) Unanticipated Noncompliance. The owner or operator shall notify the MDEQ orally within 24 hours from the time he or she becomes aware of unanticipated noncompliance. A written report shall be provided to the MDEQ within five (5) working days of the time he or she becomes aware of the circumstances. The report shall describe the cause, the exact dates and times, steps taken or planned to reduce, eliminate, or prevent reoccurrence and, if the noncompliance has not ceased, the anticipated time for correction.

ACT10 (continued):**Narrative Requirements:**

Condition No.	Condition
T-17	INSPECTION AND ENTRY: The owner or operator shall allow the Permit Board staff or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to: (1) enter upon the owner's or operator's premises where a regulated activity is located or conducted or where records must be kept under the conditions of this permit; (2) have access to and copy at reasonable times any records that must be kept under the conditions of this permit; and (3) inspect at reasonable times any facilities or equipment. (4) Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-18	PERMIT ACTIONS: This permit may be modified, revoked and reissued, or terminated for cause. A request by the owner or operator for permit or coverage modification, revocation and reissuance, or termination, or a certification of planned changes or anticipated noncompliance does not stay any permit condition. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-19	REOPENER CLAUSE: If there is evidence indicating potential or realized impacts on water quality due to construction activities covered by this permit, the owner or operator may be required to obtain an individual permit or an alternative general permit in accordance with ACT 3, S-2 or the permit may be modified to include different limitations and/or requirements. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-20	PERMIT MODIFICATION: Permit modification or revocation will be conducted according to 40 CFR 122.62, 122.63, 122.64 and 124.5. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT10 (continued):

Narrative Requirements:

Condition No.	Condition
T-21	CIVIL AND CRIMINAL LIABILITY: (1) Any person who violates a term, condition or schedule of compliance contained within this permit or the Mississippi Air and Water Pollution Control Law is subject to the actions defined by the Mississippi Air and Water Pollution Control Law. (2) Except as provided in permit conditions on "Bypassing" and "Upsets", nothing in this permit shall be construed to relieve the coverage recipient from civil or criminal penalties for noncompliance. (3) It shall not be the defense of the coverage recipient in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT11 (Small Construction) Definitions:**Narrative Requirements:**

Condition No.	Condition
T-1	BEST MANAGEMENT PRACTICES (BMPs) means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the discharge of pollutants to waters of the United States. BMPs also include treatment requirements, operating procedures, and practice to control plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-2	BUFFER ZONE, as used in this permit, means a strip of dense undisturbed perennial vegetation, either original or reestablished, that borders perennial streams and rivers, ponds, lakes, wetlands, etc. Buffer zones are established for the purposes of slowing water runoff, enhancing water infiltration, and minimizing the risk of any potential nutrients or pollutants from leaving the upland area and reaching surface waters. Buffer zones are most effective when storm water runoff is flowing into and through the buffer zone as shallow sheet flow, rather than in concentrated form such as in channels, gullies, or wet weather conveyances. Therefore, it is critical that the design of any development include management practices, to the maximum extent practical, that will result in storm water runoff flowing into and through the buffer zone as shallow sheet flow.
T-3	CFR means the Code of Federal Regulations.
T-4	COMMENCEMENT OF CONSTRUCTION ACTIVITIES means the initial disturbance of soils associated with clearing, grading, grubbing, or excavating activities or other construction-related activities. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-5	COMPACTION means the process by which the soil grains are rearranged to decrease void space and bring the grains into closer contact with one another and thereby increase the weight of solid material per cubic foot.
T-6	CONSTRUCTION ACTIVITY as used in this permit, includes construction activity as defined in 40 CFR part 122.26(b)(14)(x). This includes a disturbance to the land that results in the change in topography, existing soil cover (both vegetative and non-vegetative), or the existing topography that may result in accelerated storm water runoff, leading to soil erosion and movement of sediment into surface waters or drainage systems. Examples of construction activity may include clearing, grading, grubbing, filling and excavating. Construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the site. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-7	CONSTRUCTION ENTRANCE/EXIT is a stone-base pad designed to provide a buffer area where mud-and caked-soil can be removed from the tires of vehicles to avoid transporting it onto public roads. This practice applies anywhere traffic will be leaving a mining site and moving directly onto a paved public road or street.
T-8	CONTROL MEASURE as used in this permit, refers to any Best Management Practice or other method used to prevent or reduce the discharge of pollutants to waters of the State. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-9	CLEAN WATER ACT (CWA) refers to the Federal Water Pollution Control Act, 33 U.S.C. section 1251 et seq.

ACT11 (continued):**Narrative Requirements:**

Condition No.	Condition
T-10	DISCHARGE OF STORM WATER ASSOCIATED WITH SMALL CONSTRUCTION ACTIVITY as used in this permit, refers to a discharge of pollutants in storm water runoff from areas where soil disturbing activities (e.g., clearing, grading, or excavation), construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck washout, fueling), or other industrial storm water directly related to the construction process (e.g., concrete) are located.
T-11	EXECUTIVE DIRECTOR means the Executive Director of the Department of Environmental Quality. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-12	FACILITY OR ACTIVITY means any NPDES "point source" or any other facility or activity (including land or appurtenances thereto) that is subject to regulation under the NPDES program. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-13	FINAL STABILIZATION means all soil disturbing activities at the site have been completed, and that a uniform perennial vegetative cover with a density of at least 70% for the area has been established or equivalent measures have been employed.
T-14	HIGHLY ERODIBLE SOILS can be identified in the State of Mississippi's County Soil Surveys developed by the National Resources Conservation Service (NRCS).
T-15	INFEASIBLE means not technologically possible, or not economically practicable, and achievable in light of best industry practices.
T-16	LARGE CONSTRUCTION ACTIVITY includes clearing, grading, grubbing, and excavating resulting in a land disturbance that will disturb equal to or greater than five (5) acres of land or will disturb less than five (5) acres of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than five (5) acres. Large construction activity is covered by the Large Construction General Permit. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-17	LARGER COMMON PLAN OF DEVELOPMENT OR SALE means a contiguous area where multiple separate and distinct construction activities are occurring under one plan. The plan in a common plan of development or sale is broadly defined as any announcement or piece of documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating that construction activities may occur on a specific plot. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT11 (continued):**Narrative Requirements:**

Condition No.	Condition
T-18	LINEAR PROJECT includes the construction of roads, bridges, conduits, substructures, pipelines, sewer lines, towers, poles, cables, wires, connectors, switching, regulating and transforming equipment and associated ancillary facilities in a long, narrow area. [11 Miss. Admin. Code Pt. 6, R. 1]
T-19	MUNICIPAL SEPARATE STORM SEWER SYSTEM (MS4) means a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains): (i) Owned or operated by a State, city, town, borough, county, parish, district, association, or other public body (created by or pursuant to State law) having jurisdiction over disposal of sewage, industrial wastes, storm water, or other wastes, including special districts under State law such as a sewer district, flood control district or drainage district, or similar entity, or an Indian tribe or an authorized Indian tribal organization, or a designated and approved management agency under section 208 of the CWA that discharges to waters of the United States, (ii) Designed or used for collecting or conveying storm water, (iii) Which is not a combined sewer, and (iv) Which is not part of a Publicly Owned Treatment Works (POTW).
T-20	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) means the National Pollutant Discharge Elimination System, which is a program administered under the authority of the Clean Water Act that prohibits the discharge of pollutants into waters of the United States unless a special permit is issued. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-21	OWNER OR OPERATOR for the purpose of this permit and in the context of storm water associated with construction activity, means any party associated with a construction project that meets either of the following two criteria: (1) The party has operational control over construction plans and specifications, including the ability to make modifications to those plans and specifications; or (2) The party has day to day operational control of those activities at a project which are necessary to ensure compliance with a storm water pollution prevention plan for the site or other permit conditions (e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions). This definition is provided to inform coverage recipients of MDEQ's interpretation of how the regulatory definitions of "owner or operator" and "facility or activity" are applied to discharges of storm water associated with construction activity. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-22	PERMIT BOARD means the Mississippi Environmental Quality Permit Board established pursuant to Miss. Code Ann. 49-17-28.
T-23	POLLUTANT is defined at 40 CFR 122.2. A partial listing from this definition includes: dredged spoil, solid waste, sewage, garbage, sewage sludge, chemical wastes, biological materials, heat, wrecked or discarded equipment, rock, sand, sediment, silt, cellar dirt, and industrial or municipal waste.

ACT11 (continued):**Narrative Requirements:**

Condition No.	Condition
T-24	QUALIFIED PERSONNEL means a person knowledgeable in the principles and practice of erosion and sediment controls who possesses the skills to assess conditions at the construction site that could impact storm water quality and to assess the effectiveness of any sediment and erosion control measures selected to control the quality of storm water discharges from the construction activity.
T-25	SCNOI is an acronym for Small Construction Notice of Intent. A Notice of Intent is the mechanism used to apply for coverage under a general permit.
T-26	SMALL CONSTRUCTION ACTIVITY is defined at 40 CFR 122.26(b)(15) and incorporated here by reference. A small construction activity includes clearing, grading, grubbing, and excavating resulting in a land disturbance that will disturb equal to or greater than one (1) acre and less than five (5) acres of land or will disturb less than one (1) acre of total land area but is part of a larger common plan of development or sale that will ultimately disturb equal to or greater than one (1) acre and less than five (5) acres. Small construction activity does not include routine maintenance that is performed to maintain the original line and grade, hydraulic capacity, or original purpose of the facility. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-27	STATE LAW means The Mississippi Air and Water Pollution Control Law, specifically, Miss. Code Ann 49-17-1 through 49-17-43, and any subsequent amendments. [11 Miss. Admin. Code Pt. 6, R. 1].
T-28	STEEP SLOPES, as used in this permit, means slopes or grades steeper than (3:1).
T-29	STORM WATER ASSOCIATED WITH CONSTRUCTION ACTIVITY as used in this permit, refers to a discharge of pollutants in storm water from areas where soil disturbing activities (e.g., clearing, grading, grubbing, or excavation), construction materials or equipment storage or maintenance (e.g., stock piles, borrow area, concrete truck chute wash down, fueling) are located.
T-30	STORM WATER means rainfall runoff, snowmelt runoff, and surface runoff. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-31	STORM WATER POLLUTION PREVENTION PLAN (SWPPP) means a plan that includes site map(s), an identification of construction/contractor activities that could cause pollutants in the storm water, and a description of measures or practices to control these pollutants. [11 Miss. Admin. Code Pt. 6, Ch. 1.]
T-32	SUCCESSFUL COMPLETION OF ALL PERMANENT EROSION AND SEDIMENT CONTROLS means when land disturbing construction activities have been completed and disturbed areas have been stabilized with no significant erosion occurring. [11 Miss. Admin. Code Pt. 6, Ch. 1.]

ACT11 (continued):**Narrative Requirements:**

Condition No.	Condition
T-33	TEMPORARY STABILIZATION means practices such as seeding, mulching and erosion control blankets or mats that are used to stabilize exposed areas in which construction activity has been temporarily suspended. [11 Miss. Admin. Code Pt. 6, R. 1]
T-34	TOPSOIL means the top layer of undisturbed soil, consisting of a high percentage of organic matter, which is conducive to plant growth.
T-35	TOTAL MAXIMUM DAILY LOAD (TMDL) means the maximum daily amount of a pollutant that can enter a water body so that the water body will meet and continue to meet state water quality standards.
T-36	TURBIDITY is an expression of the optical property that causes light to be scattered and absorbed rather than transmitted with no change in direction of flux level through the sample caused by suspended and colloidal matter such as clay, silt, finely divided organic and inorganic matter and plankton and other microscopic organisms.
T-37	UPSET means an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the coverage recipient. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation. [11 Miss. Admin. Code Pt. 6, R. 1]
T-38	WATERS OF THE STATE means all waters within the jurisdiction of this State, including all streams, lakes, ponds, wetlands, impounding reservoirs, marshes, watercourses, waterways, wells, springs, irrigation systems, drainage systems, and all other bodies or accumulations of water, surface and underground, natural or artificial, situated wholly or partly within or bordering upon the State, and such coastal waters as are within the jurisdiction of the State, except lakes, ponds, or other surface waters which are wholly landlocked and privately owned, and which are not regulated under the Federal Clean Water Act (33 U.S.C.1251 et seq.).
T-39	11 Miss. Admin. Code Pt. 6, Ch. 1. means the Mississippi Commission on Environmental Quality National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification.

Submit only upon request from MDEQ



SMALL CONSTRUCTION NOTICE OF INTENT (SCNOI)

GENERAL NPDES PERMIT MSR15 ____ (Number to be assigned by MDEQ if submitted)

Prior to the commencement of small construction activity (see Small Construction General Permit ACT11, T-17), the owner or operator of a small construction project must complete this form and develop a Storm Water Pollution Prevention Plan (SWPPP) as required by ACT5 of Mississippi's Small Construction General Permit. **This SCNOI and SWPPP shall be submitted to the Mississippi Department of Environmental Quality (MDEQ) only upon request from MDEQ; however, the SCNOI and SWPPP must be maintained at the permitted site or locally available in case inspector review is necessary.** Attachments with this SCNOI must include: a USGS quad map or copy showing site location (only if required to be submitted to MDEQ) and a Storm Water Pollution Prevention Plan (SWPPP). All questions must be answered – answer "NA" if the question is not applicable.

PROJECT INFORMATION

OWNER CONTACT PERSON:

OWNER COMPANY NAME:

OWNER STREET (P.O. BOX):

OWNER CITY:

STATE: _____ ZIP: _____

OWNER PHONE # (INCLUDE AREA CODE):

OPERATOR (if different from owner) CONTACT PERSON:

OPERATOR COMPANY:

OPERATOR STREET (P.O. BOX):

OPERATOR _____ CITY: _____

STATE: _____ ZIP: _____

OPERATORPHONE # (INCLUDE AREA CODE):

PROJECT NAME: _____

DESCRIPTION OF CONSTRUCTION ACTIVITY: _____

ACREAGE DISTURBED (to be covered by this permit, area must be less than five (5) acres): _____

PHYSICAL SITE ADDRESS (If not available, indicate the nearest named road. For linear projects, indicate the beginning of the project and identify all counties the project traverses.):

STREET: _____

CITY: _____ COUNTY: _____ ZIP: _____

NEAREST NAMED RECEIVING STREAM: _____

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature¹

Date Signed

Printed Name

Title

¹This application shall be signed according to the Small Construction General Permit, ACT10, T-4.

If requested, please submit this form to:

Chief, Environmental Permits Division
MDEQ, Office of Pollution Control
P.O. Box 2261
Jackson, Mississippi 39225

SECTION 01 5713 - TEMPORARY EROSION & SEDIMENTATION CONTROL

1.1 GENERAL

1.1.0 SECTION INCLUDES:

- A. Prevention of erosion due to construction activities.
- B. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- C. Restoration of areas eroded due to insufficient preventive measures.
- D. Performance bond.
- E. Compensation of **Pearl River Central School District** for fines levied by authorities having jurisdiction due to non-compliance by the general contractor.

1.1.1 RELATED DOCUMENTS: Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work specified in this section.

- A. Site Clearing – Section 31 1000
- B. Site Earthwork – Section 31 0000 (Site Work)
- C. Storm Water Pollution Prevention Plan (SWPPP) – Sheet Project Plans
- D. MDEQ Small Construction Notice of Intention (SCNOI) – Section 00 0102.

1.1.2 PERFORMANCE REQUIREMENTS:

- A. Comply with all requirements of U.S. Environmental Protection Agency for erosion and sedimentation control, as specified for the National Pollutant Discharge Elimination System (NPDES), Phases I and II, under requirements for the 2012 Construction General Permit (CGP), whether the project is required by law to comply or not.
- B. Also comply with all more stringent requirements of State of Mississippi Department of Environmental Quality Small Construction Notice of Intent.
- C. Best Management Practices Standard: Federal Highway Administration Best Management Practices for Erosion and Sediment Control.
- D. Utilize the Storm Water Pollution Prevention Plan provided on the Erosion Control sheet of the Project Plans and add additional measures as necessary to insure sediment does not leave the project site. Submit periodic inspection reports as required.
- G. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
 - 2. ***Pearl River Central School District will withhold payment equivalent to all fines resulting from non-compliance with applicable regulations.***
- H. Timing: Put preventive measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.

- I. Storm Water Runoff: Control increased storm water runoff due to disturbance of surface cover due to construction activities for this project.
 - 1. Prevent runoff into storm and sanitary sewer systems, including open drainage channels, in excess of actual capacity or amount allowed by authorities having jurisdiction, whichever is less.
 - 2. Anticipate runoff volume due to the most extreme short term and 24-hour rainfall events that might occur in 25 years.
 - J. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas **(including areas outside of project limits)** at no cost to Pearl River Central School District.
 - K. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements **(including areas outside of project limits)**, restore eroded areas at no cost to Pearl River Central School District.
 - L. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Pearl River Central School District; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventive measures, pump dry and remove deposited sediment after each storm.
 - M. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Pearl River Central School District; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - N. Open Water: Prevent standing water that could become stagnant.
 - O. Maintenance: Maintain temporary preventive measures until permanent measures have been established.
 - P. ***Sod areas with slopes exceeding 3:1, slopes and bottom of all detention ponds, and the inverts/slopes of all drainage swales/ditches. Also sod areas as necessary to control erosion until lawn is established and/or as indicated on construction plans.***
- 1.1.4 SPECIAL PROJECT WARRANTY: Warrant temporary lawns through the duration of the project until such time that permanent erosion control measures are installed.

1.2 SUBMITTALS

- A. See submittal process required by Architect.
- B. Storm Water Pollution Prevention Plan (SWPPP)
 - 1. Submit any anticipated revisions to the SWPPP provided within 2 weeks after Notice to Proceed.
 - 2. Submit any anticipated revisions to the SWPPP provided not less than 30 days prior to anticipated start of clearing, grading, or other work involving disturbance of ground surface cover.
 - 3. Any anticipated revisions to the provided SWPPP should include:
 - a. Site plan identifying soils and vegetation, existing erosion problems, and areas vulnerable to erosion due to topography, soils, vegetation, or drainage.
 - b. Measurements of existing turbidity of waterways.
 - c. Site plan showing grading; new improvements; temporary roads, traffic accesses, and other temporary construction; and proposed preventive measures.
 - d. Where extensive areas of soil will be disturbed, include storm water flow and volume calculations, soil loss predictions, and proposed preventive measures.
 - e. Schedule of temporary preventive measures, in relation to ground disturbing activities.
 - f. Other information required by law.
 - g. Format required by law is acceptable, provided any additional information specified is also included.
 - 4. Obtain the approval of the Plan by authorities having jurisdiction.
 - 5. Obtain the approval of the Plan by Pearl River Central School District.
- D. Certificate: Mill certificate for silt fence fabric attesting that fabric and factory seams comply with specified requirements, signed by legally authorized official of manufacturer; indicate actual minimum average roll values; identify fabric by roll identification numbers.
- E. Inspection Reports: Submit report of each inspection; identify each preventive measure, indicate condition, and specify maintenance or repair required and accomplished.
- F. Maintenance Instructions: Contractor shall continue to inspect and maintain temporary measures after issuance of Substantial Completion until Final Acceptance of the project is awarded.

1.3 PRODUCTS

1.2.1 TOPSOIL:

- A. Stripped topsoil will be stockpiled for re-use in landscape work. If quantity of stockpiled topsoil is insufficient, provide additional topsoil as required to complete landscape work.
- B. Provide, where required, new topsoil which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds and other litter and without roots, stumps, gravel, and other extraneous or toxic matter harmful to plant growth.
 - 1. Obtain topsoil from local sources or from areas having similar soil characteristics to

that found at project site. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in a depth of not less than 4"; do not obtain from bogs or marshes.

2. ***Any topsoil that contains weeds and miscellaneous vegetation may be rejected by the Engineer or Owner.*** Contractor shall ensure topsoil utilized from off-site locations is free of vegetation that may inhibit landscaping or lawn.

C. Contractor shall provide topsoil for the entire project site at a depth of not less than 4". Additional topsoil beyond what exists on the project site may be necessary and shall be included in the lump sum bid item. In the event that excess topsoil remains after all landscaping work is complete, the contractor shall haul off all remaining topsoil.

1.2.2 SOIL AMENDMENTS:

- A. Lime: Natural limestone containing not less than 85% of total carbonates, ground so that not less than 90% passes a 10-mesh sieve and not less than 50% passes a 100 mesh sieve. Lime used by farms in the vicinity is acceptable.
- B. Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:
 1. For lawns, provide fertilizer with equal percentages of nitrogen, phosphoric acid and potassium, and which will provide not less than 1 3/4 lbs. of actual nitrogen per 1000 sq. ft. of lawn area. Provide nitrogen in a form that will be available to lawn during initial period of growth.

1.2.3 GRASS MATERIALS:

- A. Grass Seed:
 1. Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified.
 2. "Seeding Schedule" is attached at end of this section.
- B. Sod: Provide strongly rooted sod, not less than 2 years old and free of weeds and undesirable native grasses. Provide only sod capable of growth and development when planted (viable, not dormant). Provide sod composed of the following:
 1. Centipedegrass (*Eremochloa ophiuroides*).

1.2.4 SOIL EROSION NETTING: A flexible matting, of very open construction, designed to act as a reinforcing matrix for vegetative roots.

1.2.5 MULCH: Use one of the following:

1. Straw or hay.

2. Wood waste, chips, or bark.
 3. Erosion control matting or netting.
- 1.2.6 BALES: Air dry, rectangular straw bales.
1. Cross Section: 14 by 18 inches (350 by 450 mm), minimum.
 2. Bindings: Wire or string, around long dimension.
- 1.2.7 Bale Stakes: One of the following, minimum 3 feet (1 m) long:
1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot (1.98 kg per linear m).
 2. Wood, 2 by 2 inches (50 by 50 mm) in cross section.
- 1.2.8 Silt Fence Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
1. Average Opening Size: 30 U.S. Std. Sieve (0.600 mm), maximum, when tested in accordance with ASTM D4751.
 2. Permittivity: 0.05 sec^{-1} , minimum, when tested in accordance with ASTM D4491.
 3. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D4355 after 500 hours exposure.
 4. Tensile Strength: 100 lb-f (450 N), minimum, in cross-machine direction; 124 lb-f (550 N), minimum, in machine direction; when tested in accordance with ASTM D4632.
 5. Elongation: 15 to 30 percent, when tested in accordance with ASTM D4632.
 6. Tear Strength: 55 lb-f (245 N), minimum, when tested in accordance with ASTM D4533.
 7. Color: Manufacturer's standard, with embedment and fastener lines preprinted.
- 1.2.9 Silt Fence Posts: One of the following, minimum 5 feet (1500 mm) long:
1. Steel U- or T-section, with minimum mass of 1.33 lb per linear foot (1.98 kg per linear m).
 2. Softwood, 4 by 4 inches (100 by 100 mm) in cross section.
 3. Hardwood, 2 by 2 inches (50 by 50 mm) in cross section.

1.3 EXECUTION

1.3.1 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

1.3.2 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.

1.3.3 SCOPE OF PREVENTIVE MEASURES

- A. Construction Entrances: Traffic-bearing aggregate surface.
 1. Width: As required; 20 feet (7 m), minimum.
 2. Length: 50 feet (16 m), minimum.
 3. Install in locations as necessary to prevent tracking of mud onto right-of-way.

4. See section 1.4 for installation requirements.
- B. Linear Sediment Barriers: Made of silt fences.
 1. Provide linear sediment barriers:
 - a. Along downhill perimeter edge of disturbed areas, including soil stockpiles.
 - b. Along the top of the slope or top bank of drainage channels and swales that traverse disturbed areas.
 - c. Along the toe of cut slopes and fill slopes.
 - d. Perpendicular to flow across the bottom of existing and new drainage channels and swales that traverse disturbed areas or carry runoff from disturbed areas; space at maximum of 200 feet (60 m) apart.
 - e. Across the entrances to culverts that receive runoff from disturbed areas.
 2. Space sediment barriers with the following maximum slope length upslope from barrier:
 - a. Slope of Less Than 2 Percent: 100 feet (30 m)..
 - b. Slope Between 2 and 5 Percent: 75 feet (23 m).
 - c. Slope Between 5 and 10 Percent: 50 feet (15 m).
 - d. Slope Between 10 and 20 Percent: 25 feet (7.5 m).
 - e. Slope Over 20 Percent: 15 feet (4.5 m).
- D. Storm Drain Curb Inlet Sediment Trap: As detailed on drawings.
- E. Storm Drain Drop Inlet Sediment Traps: As detailed on drawings.
- F. Temporary Splash Pads: Stone aggregate over filter fabric; size to suit application; provide at downspout outlets and storm water outlets.
- G. Soil Stockpiles: Install silt fence around the perimeter of the stock pile and protect the stockpile using one of the following measures:
 1. Cover with polyethylene film, secured by placing soil on outer edges.
 2. Cover with mulch at least 4 inches (100 mm) thickness of pine needles, sawdust, bark, wood chips, or shredded leaves, or 6 inches (150 mm) of straw or hay.
- H. Mulching: Use only for areas that may be subjected to erosion for less than 6 months.
 1. Wood Waste: Use only on slopes 3:1 or flatter; no anchoring required.
- I. Temporary Seeding: Use where temporary vegetated cover is required and/or as required to comply with the Storm Water Pollution Prevention Plan (SWPPP) and Small Construction Notice of Intent (SNCOI).

1.4 INSTALLATION

- A. Traffic-Bearing Aggregate Surface (Construction Entrance):
 1. Excavate minimum of 6 inches (150 mm).
 2. Place geotextile fabric full width and length, with minimum 12 inch (300 mm) overlap at joints.
 3. Place and compact at least 12 inches (150 mm) of 1.5 to 3.5 inch (40 to 90 mm) diameter stone.
- B. Silt Fences:
 1. Store and handle fabric in accordance with ASTM D4873.
 2. Where slope gradient is less than 3:1 or barriers will be in place less than 6 months, use nominal 16 inch (405 mm) high barriers with minimum 36 inch (905 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 4 inches (100 mm) in ground.

3. Where slope gradient is steeper than 3:1 or barriers will be in place over 6 months, use nominal 28 inch (710 mm) high barriers, minimum 48 inch (1220 mm) long posts spaced at 6 feet (1830 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 4. Where slope gradient is steeper than 3:1 and vertical height of slope between barriers is more than 20 feet (6 m), use nominal 32 inch (810 mm) high barriers with woven wire reinforcement and steel posts spaced at 4 feet (1220 mm) maximum, with fabric embedded at least 6 inches (150 mm) in ground.
 5. Install with top of fabric at nominal height and embedment as specified.
 6. Embed bottom of fabric in a trench on the upslope side of fence, with 2 inches (50 mm) of fabric laid flat on bottom of trench facing upslope; backfill trench and compact.
 7. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches (460 mm), with extra post.
 8. Fasten fabric to wood posts using one of the following:
 - a. Four 3/4 inch (19 mm) diameter, 1 inch (25 mm) long, 14 gage nails.
 - b. Five 17-gage staples with 3/4 inch (19 mm) wide crown and 1/2 inch (12 mm) legs.
 9. Fasten fabric to steel posts using wire, nylon cord, or integral pockets.
 10. Wherever runoff will flow around end of barrier or over the top, provide temporary splash pad or other outlet protection; at such outlets in the run of the barrier, make barrier not more than 12 inches (300 mm) high with post spacing not more than 4 feet (1220 mm).
- C. Straw Bale Rows:
1. Install bales in continuous rows with ends butting tightly, with one bale at each end of row turned uphill.
 2. Install bales so that bindings are not in contact with the ground.
 3. Embed bales at least 4 inches (100 mm) in the ground.
 4. Anchor bales with at least two stakes per bale, driven at least 18 inches (450 mm) into the ground; drive first stake in each bale toward the previously placed bale to force bales together.
 5. Fill gaps between ends of bales with loose straw wedged tightly.
 6. Place soil excavated for trench against bales on the upslope side of the row, compacted.
- D. Mulching Over Large Areas:
1. Dry Straw and Hay: Apply 2-1/2 tons per acre; anchor using dull disc harrow or emulsified asphalt applied using same spraying machine at 100 gallons of water per ton of mulch.
 2. Wood Waste: Apply 6 to 9 tons per acre.
 3. Asphalt: Apply at 1200 gallons per acre.
 4. Erosion Control Matting: Comply with manufacturer's instructions.
- E. Mulching Over Small and Medium Areas:
1. Dry Straw and Hay: Apply 4 to 6 inches depth.
 2. Wood Waste: Apply 2 to 3 inches depth.
 3. Pine Needles: Apply 2 to 3 inches depth.
 4. Asphalt: Apply 1/4 gallon per square yard.
 5. Erosion Control Matting: Comply with manufacturer's instructions.
- F. Temporary Seeding:
1. When hydraulic seeder is used, seedbed preparation is not required.

2. When surface soil has been sealed by rainfall or consists of smooth undisturbed cut slopes, and conventional or manual seeding is to be used, prepare seedbed by scarifying sufficiently to allow seed to lodge and germinate.
3. If temporary mulching was used on planting area but not removed, apply nitrogen fertilizer at 1 pound per 1000 sq ft.
4. On soils of very low fertility, apply 13-13-13 fertilizer at rate of 12 to 16 pounds per 1000 sq ft.
5. Incorporate fertilizer into soil before seeding.
6. Apply seed uniformly; if using drill or cultipacker seeders place seed 1/2 to 1 inch deep.
7. Irrigate as required to thoroughly wet soil to depth that will ensure germination, without causing runoff or erosion. It is the responsibility of the contractor to provide temporary irrigation equipment/labor as necessary to establish/maintain temporary erosion control measures.
8. Repeat irrigation as required until grass is established.
9. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.
10. Sow seed using a spreader or seeding machine. Do not seed when wind velocity exceeds 5 miles per hour. Distribute seed evenly over entire area by sowing equal quantity in 2 directions at right angles to each other.
11. Sow not less than the quantity of seed specified or scheduled.
12. Rake seed lightly into top 1/8" of soil, roll lightly, and water with a fine spray.
13. Lay sod within 24 hours from time of stripping. Do not plant dormant sod or if ground is frozen.
14. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod strips; do not overlap. Stagger strips to offset joints in adjacent courses. Work from boards to avoid damage to subgrade or sod. Tamp or roll lightly to ensure contact with subgrade. Work sifted soil into minor cracks between pieces of sod; remove excess to avoid smothering of adjacent grass.
15. Anchor sod on slopes with wood pegs to prevent slippage.
16. Water sod thoroughly with a fine spray immediately after planting.

SEEDING SCHEDULE:

Date	Seed Type	Min % Pure Lbs. Live Seed	Lbs. Seed Per Acre
March – September	Centipede (<i>Eremochloa ophiuroides</i>) (Hulled)	97	44
September – March	Same as above but unhulled	97	44
	Plus Ryegrass <i>Lolium Multiflorum</i>	97	76

1.5 MAINTENANCE

- A. Inspect preventive measures weekly, within 24 hours after the end of any storm that produces 0.5 inches (13 mm) or more rainfall at the project site, and daily during prolonged rainfall.
- B. Repair deficiencies immediately.
- C. Silt Fences:
 1. Promptly replace fabric that deteriorates.
 2. Remove silt deposits that exceed one-third of the height of the fence.

3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- D. Straw Bale and/or Wattle Rows:
 1. Promptly replace bales/wattles that fall apart or otherwise deteriorate unless need has passed.
 2. Remove silt deposits that exceed one-half of the height of the bales/wattles.
 3. Repair bale/wattle rows that are undercut by runoff or otherwise damaged, whether by runoff or other causes.
- E. Clean out temporary sediment control structures weekly and relocate soil on site.
- F. Place sediment in appropriate locations on site; do not remove from site.
- G. ***Maintain lawns by watering, fertilizing, weeding, mowing, trimming, and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn, free of eroded or bare areas until such time that Final Acceptance is made.***

1.5 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Engineer.
- B. Clean out temporary sediment control structures that are to remain as permanent measures.
- C. Where removal of temporary measures would leave exposed soil, shape surface to an acceptable grade and finish to match adjacent ground surfaces.

1.6 INSPECTION AND ACCEPTANCE:

- A. When landscape work is completed, including maintenance, Engineer will, upon request, make an inspection to determine acceptability, but not prior to date of substantial completion of project.
- B. Where inspected landscape work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by Engineer and found to be acceptable.

1.7 PAYMENT

All temporary erosion control items shall be paid for as part of the lump sum contract amount. Erosion Control payment shall be made on a percentage basis as the project progresses.

END OF SECTION

SECTION 01 7123 - CONSTRUCTION LAYOUT AND SURVEYING

1.01 SCOPE:

- A. This section includes lay out of the site by a Professional Surveyor.

1.02 LAYOUT OF WORK:

- A. ***Layout of the work shall be the responsibility of the Contractor and shall be performed by a Professional Surveyor and/or Engineer registered in the State of Mississippi.*** The Project Engineer shall furnish the Contractor with an autocad file (after execution of the Electronic Disclosure) along with a list of bench marks and reference points within the construction area.
- B. Items requiring staking by Professional Surveyor.
 - a. Building corners and finish floor elevation
 - b. Storm drainage inlets
 - c. Sewer manholes
 - d. ADA compliant routes (sidewalks and other hard surface areas)
 - e. ADA compliant parking
- C. Contractor shall provide written documentation from the Professional Surveyor that the finish floor elevation in the "As-Built" condition matches the design construction plans.

1.03 PAYMENT

- A. All site layout including fees from Professional Engineer and/or Professional Surveyor shall be included in the lump sum base bid item and shall be full compensation for furnishing all labor and equipment necessary to perform the work.

END OF SECTION

SECTION 31 0000 - EARTHWORK (SITE WORK)

PART 1 - GENERAL

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this section.
- B. *Earthwork included in this section is for site earthwork only (5' outside of building). See structural earthwork specification for earthwork within building footprint.***

DESCRIPTION OF WORK:

- A. Extent of earthwork is indicated on drawings and described herein.
1. Site grading to elevations indicated on drawings is included as part of this work.
 2. Preparation of subgrade for walks, and pavements is included as part of this work.
 3. Soil compaction and control is included as a part of this work.
- B. Excavation of Mechanical/Electrical Work: Refer to applicable sections for excavation required in conjunction with underground mechanical and electrical utilities, backfilling of excavated trenches shall be in accordance with this section.
- C. Definition: "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal or relocation of materials removed.

QUALITY ASSURANCE:

- A. Codes and Standards: Perform excavation work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Testing and Inspection Service: ***The CONTRACTOR shall employ a testing laboratory to perform soil testing during earthwork operations. Copies of all test results shall be provided to the Engineer for review.***

JOB CONDITIONS:

- A. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

Contractor shall utilize the Mississippi 811 system for location of existing utilities prior to commencement of any earthwork operations. Utilities as shown on the plans are a result of the Mississippi 811 system. The design professional assumes no responsibility for the accuracy of the location of utilities as shown on the plans. The contractor shall have utilities located and marked to his satisfaction prior to commencing work.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Demolish and completely remove from site existing underground utilities indicated to be removed.

Coordinate with utility companies for shut-off of services if lines are active.

B. Use of Explosives: The use of explosives is not permitted.

C. Protection of Persons and Property: Barricade open excavations occurring as part of this work.

Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 – PRODUCTS (Outside of Building Pad – See Structural for Interior of Building Pad)

SOIL MATERIALS:

A. Clean Free Sand Fill shall be "River Sand" or approved equal.

B. Select Fill (Borrow Excavation): Borrow excavation shall be composed of a natural or manufactured mixture of sand, silt, and clay or combinations of sand, silt, clay, gravel or stone. The material shall have satisfactory cementing qualities, shall be reasonably free of vegetable matter or other deleterious substances that cannot be classed as serviceable, and shall be such that when properly compacted will form a dense mass. When rock or stone is used in the borrow soil, it shall be so graded and manipulated that the soil will contain no appreciable interstices.

Borrow excavation is divided into classes, each class conforming to the requirements set-out in the following table:

Class	1	2	3	4	5	6	7	8	9	10
Percent Passing No. 200 Sieve (Max.)	25	35	10	35	35	35	100	100	100	100
Fraction Passing No. 40 Sieve - Liquid Limit (Max.)	--	40	--	45	40	45	40	55	40	55
Plasticity Index, (Max.)	6	10	np	10	20	25	10	10	20	--

When the project contains a numerical designation after the class number, it shall be understood to indicate the requirement that the material shall have a minimum PI of not less than that indicated by the numerical designation. For example, Class 9-6 requires Class 9 material having a minimum PI of 6; or a Class 9-10 requires Class 9 material having a minimum PI of 10, etc.

When a minimum PI is specified, the maximum plasticity index and the maximum liquid limit, as indicated in the table, will be raised the numerical designation for minimum PI, except that in the case of Class 8 and Class 10 the maximum liquid limit shall remain as indicated in the table above.

C. Washed Gravel shall be graded clean, washed pea gravel.

D. Select on Site Material shall be non-organic material of the optimum moisture content that will allow the prescribed compaction and approved for use outside of building area by testing laboratory. No material removed as unsuitable bearing material shall be approved as select on-site material.

E. Backfill and Fill Materials: Satisfactory soil must be one of the above materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter.

PART 3 - EXECUTION

EXCAVATION:

A. Earth Excavation includes excavation of pavements and other obstructions visible on ground surface; underground structures, utilities and other items indicated to be demolished and removed; together with earth and other materials encountered that are not classified as rock or unauthorized excavation.

B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of Engineer. ***Unauthorized excavation, as well as remedial work directed by Engineer, shall be at the contractor's expense.***

Under footings (site work), foundation bases (site work), or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom without altering required top elevation.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Engineer.

C. Additional Excavation: Where excavation has reached required subgrade elevations, notify Engineer who will make an inspection of conditions.

If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Engineer.

Removal of unsuitable material and its replacement as directed will be paid on basis of contract conditions relative to changes in work.

D. Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

E. Shoring and Bracing: Provide materials for shoring and bracing in good serviceable condition.

Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction. ***It will be the responsibility of the Contractor to ensure compliance with all regulatory agencies regarding trenching and shoring operations.***

Maintain shoring and bracing in excavations regardless of time period excavations will be open. Carry down shoring and bracing as excavation progresses.

F. Dewatering: Prevent surface water from flowing into excavations and from flooding project site, surrounding area and existing building.

G. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rain water and water removed from excavations to collecting or run-off areas. ***Do not use trench excavations as temporary drainage ditches.***

H. Material Storage: Stockpile satisfactory excavated materials where directed, until required for backfill or fill. Place, grade and shape stockpiles for proper drainage.

Locate and retain soil materials away from edge of excavations. Do not store within drip line of trees indicated to remain.

Dispose of excess soil material and waste materials as herein specified.

I. Excavation for Structures: Conform to elevations and dimensions shown within a tolerance of plus or minus 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for inspection. All structure excavation shall be as indicated on plan sheets.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

J. Excavation for Pavements: Cut surface under pavements to comply with elevations and grades as shown on plans.

K. Excavation for Trenches: Dig trenches to the uniform width required for particular item to be installed, sufficiently wide to provide ample working room. Provide 6" to 9" clearance on both sides of pipe or conduit.

Excavate trenches to depth indicated or required. Carry depth of trenches for piping to establish indicated flow lines and invert elevations. Beyond building perimeter, keep bottoms of trenches sufficiently below finish grade to avoid freezing.

Except as otherwise indicated, excavate for exterior water-bearing piping (water, steam, condensate, drainage) so top of piping is not less than 3'0" below finished grade.

Grade bottoms of trenches as indicated, including notching under pipe bells to provide solid bearing for entire body of pipe.

Backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing. ***Density tests along trench are required along the entire length with frequency as indicated on project plans.***

Concrete is specified in Division 32.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

COMPACTION:

A. General: Control soil compaction during construction providing minimum percentage of density specified for each area classification indicated below.

B. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density.

1. Structures (site related), Steps, and Pavements: Compact 9" loose lifts for all layers of backfill or fill material at 98% standard proctor (ASTM D-698) within 3% of optimum moisture.
2. Lawn or Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material (12" lift thickness max) at 90% maximum density.
3. Walkways: Compact top 6" of subgrade and each layer of backfill (9" lift thickness max) or fill material at 95% maximum density.

C. Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material, to prevent free water appearing on surface during or subsequent to compaction operations. ***Moisture control will be included in bid items. No separate payment will be established for moisture control.***

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

D. Along Utility/Drainage Trenches: Contractor shall perform density testing at not less than one density test for each 100 feet of utility/drainage piping in areas beneath paving for each lift of earthwork/subgrade (including crushed stone). In the event that a section of utility main/drainage pipe is less than 100 feet in length, density testing shall be performed between bends/fittings and/or drainage structures. Density testing is not required in areas outside of paving unless specified otherwise on the construction plans.

BACKFILL AND FILL:

A. General: Place acceptable soil material in layers in required subgrade elevations, for each area classification listed below.

B. Outside Building Area: Use select on-site material or select fill (borrow excavation – contractor furnished) against foundation walls, under grassed areas, trenches, and piping areas not indicated to be paved shall have a minimum of 4" of topsoil.

C. Under Walks and Pavement: Use select on-site material to backfill except directly below paving (sidewalk or parking) which shall be as indicated on project plans. Cut existing grade as necessary to install subgrade as indicated on project plans.

D. Inside Building Area: For areas requiring fill within building boundaries, see applicable Structural Specifications or Structural Plan sheets.

E. Backfill excavations as promptly as work permits, but not until completion of the following:

1. Acceptance of construction below finish grade including, where applicable, dampproofing and waterproofing.
2. Inspection, testing, approval, and recording locations of underground utilities.
3. Removal of concrete formwork.
4. Removal of shoring and bracing, and backfilling of voids with satisfactory materials.
5. Removal of trash and debris.
6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

F. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Plow, strip, or break-up sloped surfaces steeper than one vertical to four horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

G. Placement and Compaction: Place backfill and fill materials in layers not more than 12" outside building in loose depth for material compacted by heavy compaction equipment (sheeps foot or steel wheel vibratory roller) and not more than 6" in loose depth for material compacted by hand-operated tampers.

Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

Place backfill and fill materials evenly adjacent to structures, piping or conduit to required elevations. Take care to prevent wedging action of backfill against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

GRADING:

A. General: Uniformly grade areas within limits of grading under this section, including adjacent transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

Finish surfaces free from irregular surface changes, and as follows:

1. Lawn or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below required subgrade elevations.
2. Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below required sub-grade elevation.
3. Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface

not more than 1/2" above or below required subgrade elevation.

C. Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

If in opinion of Engineer based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense.

FIELD QUALITY CONTROL:

A. Quality Control Testing During Construction: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed.

1. ***Paved Areas Subgrade: Make at least one field density test of subgrade for every 2000 sq. ft. of paved area but in no case less than three tests. In each compacted fill layer, make one field density test for every 2,000 sq. ft. of overlaying paved area, but in no case less than three tests.***
2. Foundation Wall Backfill: Take at least two field density tests at locations and elevations as directed.

MAINTENANCE:

A. Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to specified tolerances.

B. Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density prior to further construction.

C. Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

DISPOSAL OF EXCESS AND WASTE MATERIALS:

A. Removal from Owner's Property: Remove waste materials, including unacceptable and acceptable excavated material, trash and debris, and dispose of it off Owner's property.

END OF SECTION

SECTION 31 1000 - SITE CLEARING

PART 1 - GENERALRELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Specification sections, apply to work of this section.

SCOPE:

A. The work required under this section consists of clearing and grubbing of area within construction limits and related items to complete the work as indicated on the drawings and described in the specifications.

DESCRIPTION OF WORK:

A. Site clearing work includes, but is not limited to:

1. Protection of existing trees.
2. Removal of trees and other vegetation.
3. Topsoil stripping.
4. Clearing and grubbing.
5. Removing above-grade improvements.
6. Removing below-grade improvements.

JOB CONDITIONS:

A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks, and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.

B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.

Protect improvements on adjoining properties and on Owner's property.

Restore damaged improvements to their original condition, as acceptable to parties having jurisdiction.

C. Salvageable Improvements: Carefully remove items indicated to be salvaged, and store on Owner's premises where indicated or directed.

PART 2 - EXECUTION**SITE CLEARING:**

A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions interfering with installation of new construction. Remove such items elsewhere on site or premises as specifically indicated. Removal includes digging out stumps and roots.

Carefully and cleanly cut roots and branches of trees indicated to be left standing, where such roots and branches obstruct new construction.

B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4". Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2" in diameter, and without weeds, roots, and other objectionable material.

Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.

Remove heavy growths of grass from areas before stripping.

Where trees are indicated to be left standing, stop topsoil stripping a sufficient distance to prevent damage to main root system.

Stockpile topsoil in storage piles. Construct storage piles to freely drain surface water. Cover storage piles if required to prevent wind-blown dust.

C. Dispose of unsuitable or excess topsoil same as waste material, herein specified.

D. Clearing and Grubbing: Clear site of trees, shrubs and other vegetation, except for those indicated to be left standing.

Completely remove stumps, roots, and other debris protruding through ground surface or within building lines.

Use only hand methods for grubbing inside drip line of trees indicated to be left standing.

Fill depressions caused by clearing and grubbing operations with satisfactory soil material, unless further excavation or earthwork is indicated.

See earthwork specification for backfill requirements.

E. Removal of Improvements: Remove existing above-grade and below-grade improvements necessary to permit construction, and other work as indicated including but not limited to pipe, sidewalks, paving, foundations, buildings, walls, etc.

Abandonment or removal of certain underground pipe or conduits may be shown on mechanical or electrical drawings, and is included under work of those sections. Removal of abandoned underground piping or conduit interfering with construction is included under this section.

DISPOSAL OF WASTE MATERIALS:

A. Burning on Owner's Property: Burning is permitted only if approved by the Owner and/or Engineer. It will be the sole responsibility of the Contractor to obtain all necessary permits prior to burning. Copies of all necessary permits shall be provided to the Owner and/or Engineer prior to commencing burning operations. Compliance with all regulations necessary for burning operations are the sole responsibility of the Contractor. Contractor shall at a minimum comply with **11 Miss. Admin. Code Pt. 2, Ch.1.**

B. Removal from Owner's Property: ***Remove waste materials, unsuitable soils, and excess topsoil*** from Owner's property and dispose of off site in legal manner.

END OF SECTION

SECTION 32 1200 - HOT MIX BITUMINOUS PAVEMENT

DESCRIPTION:

- A. This work shall consist of constructing new asphalt parking lots and entrance drives consisting of multiple lifts of hot bituminous asphalt pavement with a minimum total thickness as specified on the project plans in accordance with the requirements of the plans and specifications and as directed by the Engineer.

MATERIAL REQUIREMENTS:

- A. The materials used in this work and their use shall conform to the requirements of Sections 401, 403, 407, 700, 702, and 703 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition unless said standard specifications conflict with notes on plans, in which case the notes on plans shall overrule.

MIX DESIGN:

- A. **NO WORK SHALL BE STARTED UNTIL THE CONTRACTOR HAS SUBMITTED A JOB MIX FORMULA SATISFACTORY TO THE ENGINEER BASED UPON RECENT TESTS OF MATERIALS TO BE USED IN THE MIX.**

CONSTRUCTION REQUIREMENTS:

- A. Applicable Standards: All construction shall meet the requirements of the above mentioned sections of the Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition. (Note density requirements on pages 4-17 thru 4-19).
- B. Perform all trenching work and curb installation after the site has been graded to subbase elevation and prior to compaction of the subbase.
- C. **The contractor shall provide a copy of all tonnage tickets to the engineer for verification of asphalt tonnage as compared to theoretical tonnage for the required thickness. If at the completion of the paving, if the tonnage tickets do NOT equal or exceed the theoretical tonnage it will be the responsibility of the contractor to core the asphalt at locations determined by the engineer (at contractor's cost) and determine what locations the thickness does not meet the minimum requirement. It will be the responsibility of the contractor to ensure the required thickness of asphalt is met. If any areas of paving do NOT meet the required thickness it will be the responsibility of the contractor to remove and replace said areas at no cost to the owner. Financial credit to the owner for the asphalt quantity below the theoretical will not be accepted as an alternative to replacing areas not meeting minimum thickness requirements.**

- D. The contractor will be responsible for all asphalt testing. One density test shall be performed for every 200 sq. yd. of asphalt for each lift. Price of testing shall be included in the lump sum bid price. Copies of all test results shall be submitted to the engineer for approval. Any areas not meeting the minimum density requirements shall be removed and replaced at no additional cost to the owner.

PAYMENT:

- A. Payment for all hot mix asphalt shall be included in the lump sum bid price and shall be adjusted per the "PAYMENT SCHEDULE FOR COMPACTION OF 93.0 PERCENT OF MAXIMUM DENSITY" as found on page 4-19 of the Mississippi Standard Specifications for State Aid Road and Bridge Construction, 2004 Edition. The lump sum price shall be adjusted based on the density test results for each 200 sq. yd. lot.

END OF SECTION

SECTION 32 1300 - CAST IN PLACE CONCRETE PAVING AND EXTERIOR SLABS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this section.
- B. Related Specifications:
 - a. Section 32 1313.50 – Concrete Formwork - Paving
 - b. Section 32 1313.51 – Concrete Reinforcement - Paving
- D. Non-Decorative Concrete Paving Submittals:
 - A. Refer to architectural submittal procedures.
 - B. Product Data: Submit manufacturer's product data with application and installation instructions for proprietary materials and items, admixtures, patching compounds, curing compounds, and others as requested by Engineer.
 - C. Submit for review detailed shop drawings showing layout, sizes, arrangements, bar supports, etc., for reinforcing steel, all reinforcing for grade beams, walls, etc. shall be shown in elevations so as to indicate bar lengths, locations of splices, etc.
 - D. ***Submit layout of construction joints for Engineer review if different from that on project plans.***
 - E. Samples: Submit samples of materials as specified and as otherwise requested by Engineer, including names, sources and descriptions.

1.2 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:
 - American Concrete Institute (ACI):
 - ACI 301 "Specifications for Structural Concrete for Buildings".
 - ACI 318 "Building Code Requirements for Reinforced Concrete".

ACI 318 "Building Code Requirements for Reinforced Concrete".

ACI 315 "Manual of Standard Practice for Detaining Reinforced Concrete Structures".

ACI 347 "Recommended Practice for Concrete Formwork".

American Society for Testing & Materials (ASTM):

ASTM A 615 "Deformed and Plain Billet Steel Bar for Concrete Reinforcement".

ASTM A 185 "Welded Steel Wire Fabric for Concrete Reinforcement".

ASTM C 33 "Concrete Aggregates".

ASTM C 94 "Ready-Mixed Concrete".

ASTM C 150 "Portland Cement".

ASTM C 260 "Air-Entraining Admixtures".

ASTM C 309 "Liquid Membrane Forming Compounds for Curing Concrete".

ASTM C 494 "Chemical Admixture for Concrete".

1.3 CONCRETE TESTING:

- A. The contractor shall furnish all concrete mix designs to the Engineer for review. ***Concrete placement will not be allowed until the mix design has been approved.***
- B. Materials and installed work may require testing and retesting, as directed by the Engineer at anytime during progress of work. Allow free access to material during progress of work. Allow free access to material stockpiles and facilities. Tests, including retesting of rejected materials and installed work, shall be done at Contractor's expense.
- C. ***The contractor shall employ at his expense a testing laboratory acceptable to the Engineer to perform material evaluation, design concrete mixes, take test specimens in the field, and perform all applicable test.*** All field technicians shall have taken and successfully passed the ACI approved course as specified by ACI C94.
- D. The testing laboratory providing quality control has total authority and responsibility for the concrete exiting the truck. Any alteration of the concrete in the truck including addition of water, admixtures, or any other product will be allowed only at the discretion of the testing laboratory.
- E. The quality control laboratory has total authority of rejection of concrete prior to placement for duration of time since departure from batch plant, or any inconsistency or deviation from standards set forth herein.

- F. Compression Test Specimens: ASTM C31; one set is defined as 4 standard cylinders for each compressive strength test, unless otherwise indicated or directed. Mold and store cylinders for laboratory cured test specimens except field-cure one test specimen.
- G. Compressive Strength Tests: ASTM C39; a minimum of one set as follows or fraction thereof, of each concrete class placed in any one day. 1 specimen tested at 7 days, 1 specimen tested at 28 days Test Field cured specimen at 28 days, 1 cylinder held as a test back up cylinder at 56 days or as directed by Engineer.
- Retaining Walls: 1 set for each 25 cubic yards
Concrete Paving: 1 set for each 25 cubic yards
Concrete Walks: Not Required
Concrete Curb Gutters: Not Required
- H. Manholes, Catch Basins, Junction Boxes, Fence Post, Light Pole Supports, Headwalls:
Not Required
- I. Slump: ASTM C143; one test for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- J. Air Content: ASTM C173, volumetric method for normal weight for each concrete load at point of discharge; and one test for each set of compressive strength test specimens.
- K. Concrete Temperature: Test hourly when air temperature is 40 degrees F and below; and when 80 degrees and above; and each time a set of compression test specimens made.
- L. When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protection and curing in-place concrete.
- M. Test results will be reported in writing to Engineer and Contractor on same day that tests are made. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placements, name of concrete testing service, concrete type and class design mix identification, locations of concrete batch in structure shall be described so that it is easily determined where and to what extent it is in the project. Design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of test results shall be considered satisfactory if they equal 70% of the 28 day design requirements at a 7 day break.
- N. Additional Tests: The testing service will make additional test of in-place concrete when test results indicate specified concrete strength and other characteristics have not been attained in the structure, as directed by Engineer. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

1.4 CEMENT MIXES

- A. Ready-Mix Concrete: Comply with requirements of ANSI/ASTM C94, and as herein specified. Concrete Design mix is to be established to provide concrete of ten percent (10%) higher strength than the specified job strength.
- B. Design mixes to provide required strength concrete with the following properties:

4,000 psi 28-day compressive strength.
W/C ratio, 0.40 maximum.
- C. Proportions shall be made by weight and shall be uniformly and accurately controlled and inspected by the testing laboratory. During hot weather or under conditions contributing to rapid setting of concrete a shorter mixing time than specified in ANSI/ASTM C 94 may be required.

PART 2 – PRODUCTS

2.1.1 NON-DECORATIVE CONCRETE MATERIALS:

- A. Portland Cement: ANSI/ASTM C 150, Type I.
- B. Use one brand of cement throughout project, unless otherwise acceptable to Engineer.
- C. Aggregates: ANSI/ASTM C 33, maximum size one inch (1").
- D. Water: Potable, clean free of oil, alkali, or other deleterious substances.
- E. Air-Entraining Admixture: ANSI/ASTM C260.

2.2.1 NON-DECORATIVE CONCRETE RELATED MATERIALS:

- A. Moisture Barrier: Provide moisture barrier cover over prepared base material where indicated. Use only materials which are resistant to decay when tested in accordance with ANSI/ASTM E 154, as follows:
 - 1. Polyethylene sheet not less than 6 mils thick.
- B. Non-Shrink Grout: CRD-C 588, factory pre-mixed grout.
- C. Products: Subject to compliance with requirements, provide one of the following:

Type D, Non-metallic

"Masterflow 713"; Master Builders.

"Sonogrout"; Sonneborn-Contech.

"Euco-NS"; Euclid Chemical Co.

"Five-Star Grout"; U.S. Grout Co.

"Duragrout"; L & M Const. Chemical Co.

- D. Curing Hardener, Sealer: Acrylic base compound equal to Sonneborne's Gray Kure-N-Seal. Use this material for curing and sealing of exposed finished concrete floors as noted in Finish Schedule as "Concrete (Sealed)".
- E. Moisture-Retaining Cover: One of the following, complying with ANSI/ASTM C 171.
Polyethylene film. 6 Mil
- F. Bonding Compound: Polyvinyl acetate, rewettable type.
Products: Subject to compliance with requirements, provide one of the following:
"Weldcrete"; Larson Products.
"Everbond"; L & M Construction Chemicals.
"EucoWeld"; Euclid Chemical Co.
"Daraweld C"; W.R. Grace.
"Sonocrete"; Sonneborn-Contech.
- G. Admixtures:
1. Use accelerating admixture in concrete slabs placed at ambient temperatures below 50 degrees F.
2. Use Air-entraining admixture in exterior exposed concrete, unless otherwise indicated. Add air-entraining admixture at manufacturer's prescribed rate.
3. Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.
- H. Slump Limit: Proportion and design mixes to result in concrete slump at point of placement as follows:
Ramp and Sloping Surfaces: Not more than 3".
Reinforced Foundation Systems: Not less than 3" and not more than 4".
Building Slab: refer to structural concrete specification.
Other Concrete: Not less than 4" and not more than 5".
- I. If fly ash is used, not more than 20% of the cement, by weight, may be replaced by fly ash. Fly ash to be ASTM C-618, Class C.
- J. Calcium chloride shall not be used.
- K. When air temperature is between 85 and 90 degrees F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature is above 90 degrees F reduce mixing and delivery time to 60 minutes.

- L. In cold weather, concrete operation may be assisted by using hot water or by preheating the aggregates prior to mixing operation or a combination thereof to insure that concrete is maintained at a temperature of 40 degrees or more.
- M. All concrete design mixes shall have the mix number indicated on the submittal to the Architect. The delivery ticket left at the job site shall also bear the design mix number.
- N. Refer to drawings for compressive strength requirements.

PART 3 - EXECUTION

3.1 PREPARATION OF FORM SURFACES:

- A. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.
- B. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

3.2 CONCRETE PLACEMENT:

- A. Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used.
- B. Coordinate the installation of joint materials and moisture barriers with placement of forms and reinforcing steel.
- C. General: Comply with ACI 304, and as herein specified.
- D. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.
- E. Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.
- F. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, roding or tamping.
- G. Use equipment and procedures for consolidation of concrete in accordance with ACI recommended practices.

- H. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.
- I. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation within limits of construction joints until the placing of a panel or section is completed.
- J. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.
- K. Bring slab surfaces to correct level with straightedge and strike off. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.
- L. Maintain reinforcing in proper position during concrete placement operations.
- M. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

*When air temperature has fallen to or is expected to fall below 40 degrees F.
(4 degrees C), do not place concrete.*

- N. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
- O. Do not use calcium chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.
- P. Hot Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305.
- Q. Wet forms thoroughly before placing concrete.
- R. Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.
- S. If the testing laboratory technician, at the job site, determines that water is to be added to a load of concrete, the drum shall be turned 60 to 80 revolutions at 12 to 15 revolutions per minute after the water has been added. The slump is then to be rechecked.

3.3 FINISH OF FORMED SURFACES:

- A. Rough Form Finish: For formed concrete surfaces not exposed-to-view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

- B. Smooth Form Finish: For formed concrete surfaces exposed-to-view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, dampproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.
- C. Moistened concrete surfaces and rub with Carborundum brick or other abrasive until a uniform color and texture is produced. Do not apply cement grout other than that created by the rubbing process.
- D. Rubbed Concrete: Provide rubbed finish to concrete surfaces which are in view in interior and exterior locations, or as indicated on the plans.
- E. Combine one part Portland cement to 1-1/2 parts fine sand by volume, and mix with water to consistency of thick paint. Use of proprietary additives may be used at contractor's option. Blend standard Portland cement and white Portland cement, amounts determined by trial patches, so that final color of dry grout will closely match adjacent surfaces.
- F. Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Keep damp by fog spray for at least 36 hours after rubbing.
- F. Related Uniformed Surfaces: At tops of walls, horizontal offsets surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces, unless otherwise indicated.

3.4 MONOLITHIC SLAB FINISHES:

- A. Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, or sand-bed terrazzo, and as otherwise indicated.
- B. After screening, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane to a tolerance not exceeding 1/4" in 10' when tested with a 10' straightedge. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.
- C. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, paint or other thin film finish coating system.
- D. After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a surface plane tolerance not exceeding 1/8" in 10' when tested with a 10' straightedge.

- E. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated.
- F. Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Engineer before application.

3.5 CONCRETE CURING AND PROTECTION:

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than seven days.
- C. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least seven days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.
- D. Provide moisture-cover curing as follows:
- E. Cover concrete surfaces with moisture-retaining cover for curing concrete placed in widest practicable width with sides and ends lapped at least 3" and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
- F. Curing Formed Surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by using curing compound.

3.6 MATERIALS:

- A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects. Use flexible spring steel forms or laminated boards to form radius bends as required. Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.
- B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric.
 - 1. Concrete Paving (5") -----6 x 6 W2.9 x W2.9 (1 Layer)
 - 2. Heavy-Duty Concrete Paving (7") -----6 x 6 W2.9 x W2.9 (2 Layers)
 - 3. Heavy-Duty Concrete Paving (8") -----6 x 6 W2.9 x W2.9 (2 Layers)
- C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 60.
- D. Concrete Materials: Comply with requirements of applicable Division 32 sections for concrete materials, admixtures, bonding materials, curing materials, and others as required.

- E. Expansion Joint Material: to be asphalt impregnated 2" thick meeting ASTM-D-1751.
- F. Expansion Joint Cap: Greenstreak #941 plastic cap for 2" joints.
- G. Joint Sealant: Sonneborn Sonolastic SL-2 Sealant or Dow Corning 890 Silicone. Color shall be concrete.
- H. Curing and Sealing Compound: Conform to TT-C-800, with 30% solids content minimum.
- I. Epoxy Resin Grout: FS MMM-G-650.

3.7 JOINTS:

- A. ***All joints shall be installed as shown on the Joint Layout in the project plans unless otherwise directed by the Engineer. If contractor desires to install joints different than as shown on project plans, a drawing showing all joints with dimensions shall be submitted to the engineer for review. No concrete shall be placed until joint layout has been approved if different than project plans.***
- B. ***All joints (construction, control, and expansion) shall be sealed using joint sealant.***
- C. General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.
- D. Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.
- E. Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated. Extend joint fillers full-width and depth of joint, and not more than 2" or less than 1" below finished surface. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Install expansion joint cap on premolded expansion joint material and protect until concrete has been placed on each side. Protect top edge of joint filler cap during concrete placement. Remove protection after concrete has been placed on both sides of joint.
- F. Expansion Joint Sealers: Remove plastic cap and provide joint sealant in all expansion joints and comply with manufacturers instructions.

3.8 MISCELLANEOUS CONCRETE ITEMS:

- A. Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.
- B. All areas under concrete floor slab shall have moisture barrier with joints lapped at least 12". Take care to lay material smooth and even, and avoid tearing or puncturing. Seal tightly at all expansion joints and spaces around pipes, conduits and other penetrations using coal, tar, pitch, or asphalt mastic.
- C. The general contractor is to VERIFY the sizes and locations of all required floor and roof openings, equipment supports, etc. with the various subcontractors. Any conditions which require revisions or additions to the structural framing are to be brought to the attention of the architect and structural engineer prior to any construction. Any cost for the required changes will be borne by the general contractor.
- D. Reinforced Masonry: Provide pea gravel aggregate in concrete grout for reinforced masonry lintels and bond beams where indicated on drawings and as scheduled. Allow 6" slump. Maintain accurate location of reinforcing steel during concrete placement.

3.9 CONCRETE SURFACE REPAIRS:

- A. ***If the Engineer determines that the installed concrete paving does not meet the specifications it will be the responsibility of the Contractor to drill test cores where directed by Engineer at the Contractor's expense. The Contractor will also be responsible for payment of testing by a certified testing laboratory to ensure all concrete paving is per the specifications. In the event that the concrete paving does not comply with the specifications after testing, the Contractor shall remove all areas not complying with specifications and replace at no additional cost to the Owner.***
- B. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Engineer.
- C. Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than one inch (1"). Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.
- D. For exposed-to-view surfaces, blend white Portland cement and standard Portland cement so that, when dry, patching mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

- E. Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Engineer. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.
- F. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete to the satisfaction of the Engineer.
- G. Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface planes to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.
- H. Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such, include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.
- I. Correct high areas in unformed surfaces by grinding, after concrete has cured at least fourteen days.
- J. Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Proprietary patching and floor leveling compounds may be used when acceptable to Engineer.
- K. Repair defective areas, except random cracks and single holes not exceeding one inch (1") diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in same manner as adjacent concrete.
- L. Repair isolated random cracks and single holes not over one inch (1") in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part Portland cement to 2-1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than seventy-two (72) hours.
- M. Use epoxy-based mortar for structural repairs, where directed by Engineer.
- N. Repair methods not specified above may be used, subject to acceptance of Engineer.

END OF SECTION

SECTION 32 1313.50 - CONCRETE FORMWORK – PAVING

PART 1 - GENERALRELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this section.

DESCRIPTION OF WORK:

Formwork for cast-in-place concrete with shoring, bracing and anchorage (this specification excludes concrete formwork related to building formwork). Form accessories and stripping forms.

QUALITY ASSURANCE:

Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings".

ACI 347 R-14 "Recommended Practice for Concrete Formwork".

PS 1 "Construction and Industrial Plywood"

Design, engineer, and construct formwork, shoring, and bracing to meet design and code requirements, so that resultant concrete conforms to required shapes, lines and dimensions.

The design and engineering of the formwork, as well as its construction, shall be the responsibility of the General Contractor and in accordance with ACI 301 and ACI 347.

Design formwork for loads, lateral pressures, and allowable stresses outlined in Section 102 and 103 of ACI-347 R-14. Recommended Practices for Concrete Formwork and wind loads so specified by the governing building code.

Forms shall conform to the shapes, lines, and dimensions of the members as called for on the plans, and shall be constructed as to ensure that the concrete surfaces will conform to the tolerances of ACI-347, Section 203.1.

PART 2 - PRODUCTSFORM MATERIALS:

Lumber: Southern Yellow Pine species; #2 S4S grade with grade stamp clearly visible. Use only on unexposed surfaces.

Form for Exposed Finish Concrete: Unless otherwise indicated, construct formwork for exposed concrete surfaces with plywood, metal, metal-framed plywood faced or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces. Furnish in largest practicable sizes to minimize

number of joints and to conform to joint system shown on drawings. Provide form material with sufficient thickness to withstand pressure of newly-placed concrete without bow or deflection. Use plywood complying with U.S. Product Standard PS-1 "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

FORMWORK ACCESSORIES:

Form Ties: Removable and Snap-off metal of fixed or adjustable length; 1-1/2 inch break back dimension; free of defects that will leave holes no larger than one inch diameter in concrete surface. Use removable ties for exposed finish surface only.

Form Release Agent: Colorless material which will not stain concrete, absorb moisture; or impair natural bonding.

Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Size as required; of strength and character to maintain formwork in place while placing concrete.

PART 3 - EXECUTION

FORMS: Construct forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent leakage of cement paste.

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

Chamfer exposed corners and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

Form Ties: Factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflection, and to prevent spalling concrete surfaces upon removal.

Unless otherwise indicated, provide ties so portion remaining within concrete after removal is at least 1-1/2" inside concrete.

Unless otherwise shown, provide form ties which will not leave holes larger than 1" diameter in concrete surface.

Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items. Accurately place and securely support items built into forms.

Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retighten forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

INSTALLATION OF EMBEDDED ITEMS:

General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions and directions provided by suppliers of items to be attached thereto.

Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

PREPARATION OF FORM SURFACES: Coat contact surfaces of forms with a form-coating compound before reinforcement is placed. Thin form-coating compounds only with thinning agent of type, and in amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

REMOVAL OF FORMS: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F. (10 degrees C.) for twenty-four hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than fourteen days and until concrete has attained design minimum compressive strength at twenty-eight (28) days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members.

RE-USE OF FORMS: Clean and repair surfaces of forms to be reused in work. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Engineer.

END OF SECTION

SECTION 32 1313.51 - CONCRETE REINFORCEMENT – PAVING

PART 1 - GENERALRELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections apply to work specified in this section.

DESCRIPTION OF WORK:

Reinforcing steel bars, welded steel wire fabric for cast-in-place concrete.

Support chairs, bolsters, bar supports, spacers, and other devices for supporting reinforcements.

QUALITY ASSURANCE:

Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings".

ACI 315 "Details and Detailing of Concrete for Reinforcing.

ANSI/ASTM A185 - "Welded Steel Wire Fabric for Concrete Reinforcement".

ASTM A615 - "Deformed and Plain Billet-Steel Bars for Concrete Reinforcement".

CRSI - "Manual of Practice".

CRSI 63 - "Recommended Practice for Placing Reinforcing Bars".

CRSI 65 - "Recommended Practice for Placing Bar Supports, Specifications and Nomenclature".

SUBMITTALS:

Shop Drawings; Reinforcement: Submit shop drawings for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, splicing, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement include special reinforcement required and openings through concrete structures.

Submit an electronic (pdf) or five (5) copies of shop drawings to the Engineer that show approval of the Contractor (electronic is preferred method). The Contractor and/or steel fabricator is urged to contact the Structural Engineer to resolve any questions that might arise during preparation of the shop drawings. If it is apparent to the Engineer that the Contractor has not thoroughly checked the shop drawings prior to submittal, the Contractor will be notified to resubmit a set that has been properly checked and the previous submittal will be abandoned. Only complete sets of shop drawings will be reviewed unless an agreement to check partial submittals is obtained prior to the first submittal. Do not fabricate any material until approval of the Engineer has been obtained.

PRODUCT HANDLING: Deliver reinforcing to project site in bundles marked with metal gages indicating contents of bundle keyed to fabrication schedule. Handle and store materials to prevent contamination and deterioration.

PART 2 - PRODUCTS

REINFORCING MATERIALS:

Reinforcing Steel: ASTM A615, Grade 60 billet-steel deformed bars, uncoated finish.

Steel Wire: ANSI/ASTM A 82, plain, cold-drawn, steel.

Welded Wire Fabric: ANSI/ASTM A 185, welded steel wire fabric.

Tie Wire: Minimum 18 gage annealed type.

Supports for Reinforcement: Provide supports for reinforcement including bolsters, chairs, spacers and other devices for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI recommendations, unless otherwise acceptable. All bolsters, chairs, etc. to be plastic tipped.

Other Supports: Concrete bricks may be used in bottom of ground supported grade beams to support reinforcing steel.

FABRICATION:

Fabricate in accordance with ACI 315.

Locate reinforcing Splices not indicated on Drawings at points of minimum stress. Indicate location of splices on shop drawings.

PART 3 - EXECUTION

PLACING REINFORCEMENT: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required. Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces. Install vertical dowel steel before placing concrete. Provide template to assure proper location and alignment.

END OF SECTION

SECTION 32 1600 – CONCRETE CURBS, GUTTERS, AND WALKS

PART 1 - GENERALRELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work specified in this section.

DESCRIPTION OF WORK:

A. Extent of work is shown on drawings, including walks and ramps.

B. Prepared subbase is specified in “Section 31 0000 – Site Earthwork”.

C. Concrete and related materials are specified in “Section 32 1300 – Cast in Place Concrete Paving and Exterior Slabs”.

QUALITY ASSURANCE:

A. Codes and Standards: Comply with local governing regulations if more stringent than herein specified. Joint Sealers to be installed by approved applicator.

JOB CONDITIONS:

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required to maintain indicated parking areas during construction.

Utilize flagmen, barricades, warning signs and warning lights as required.

PART 2 - PRODUCTSMATERIALS:

A. Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.

Use flexible spring steel forms or laminated boards to form radius bends as required.

Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

B. Welded Wire Mesh: Welded plain cold-drawn steel wire fabric.

Sidewalks and Ramps-----6x6 10/10 W.W.M.

C. Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 40.

D. Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 40. Cut bars to 2'0" length with ends square and free of burrs.

E. Concrete Materials: Comply with requirements of applicable sections for concrete materials, admixtures, bonding materials, curing materials, and others as required.

F. Expansion Joint Material: to be asphalt impregnated 1/2" thick meeting ASTM-D-1751.

G. Expansion Joint Cap: Greenstreak #941 plastic cap for 1/2" joints.

H. Joint Sealant: Dow Corning 890 Silicone (Self Leveling) or Sonneborn Sonolastic SL-2 Sealant. Color shall be concrete. ***All expansion and construction joints shall be sealed using joint sealant.***

I. Curing and Sealing Compound: Conform to TT-C-800, with 30% solids content minimum.

J. Epoxy Resin Grout: FS MMM-G-650.

CONCRETE MIX, DESIGN AND TESTING:

A. Comply with requirements of applicable sections for concrete mix design, sampling and testing, and quality control, and as herein specified.

B. Design mix to product normal-weight concrete consisting of Portland cement, aggregate, water-reducing or high-range water-reducing admixture (super-plasticizer), air-entraining admixture and water to produce the following properties:

1. Compressive Strength: 3,000 psi, minimum at 28 days.
2. Slump Range: 8" for concrete containing HRWR admixture (super-plasticizer); 4" for other concrete.
3. Air Content: 5% to 8%.

PART 3 - EXECUTION

SURFACE PREPARATION:

A. Remove loose material from compacted subbase surface immediately before placing concrete.

FORM CONSTRUCTION:

A. Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.

B. Check completed formwork for grade and alignment to following tolerances:

1. Top of forms not more than 1/8" in 10'.
2. Vertical face on longitudinal axis, not more than 1/4" in 10'.

- C. Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.

REINFORCEMENT:

- A. Locate, place and support reinforcement as specified in “Section 32 1313.51 – Concrete Formwork – Paving”, unless otherwise indicated.

CONCRETE PLACEMENT:

A. General: Comply with requirements of sections for mixing and placing concrete, and as herein specified. Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices. Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2-hour, place a construction joint.

B. Curbs and Gutters: Automatic machine may be used for curb and gutter placement at contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results which meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete.

JOINTS:

A. General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

B. Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.

C. Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated. Locate expansion joints at 20' o.c., each direction for each pavement lane, unless otherwise indicated. Use load transfer-slip dowel devices 2'0" long, installed so that one end of each dowel bar is free to move. Extend joint fillers full-width and depth of joint, and not less than 1/2" or more than 1" below finished surface. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together. Install expansion joint cap on premolded expansion joint material and protect until concrete has been placed on each side. Protect top edge of joint filler cap during concrete placement. Remove protection after concrete has been placed on both sides of joint.

D. Joint Sealers: Remove plastic cap and provide joint sealant in all expansion joints and comply with manufacturers instructions.

CONCRETE FINISHING:

- A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
- B. After floating, test surface for trueness with a 10' straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
- C. Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2" radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
- D. After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
 - 1. Broom finish, on all sidewalks, and curb and gutters by drawing a fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to Engineer.
 - 2. Do not remove forms for twenty-four hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects as directed by Engineer.

CURING:

- A. Protect and cure finished concrete walks, complying with applicable requirements of Division 32 sections. Use curing and sealing compound or approved moist-curing methods.

REPAIRS AND PROTECTIONS:

- A. Repair or replace broken or defective concrete as directed by Engineer.
- B. Drill test cores where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with Portland cement concrete bonded to pavement with epoxy resin grout.
- C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least fourteen days after placement. When construction traffic is permitted, maintain concrete work as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Sweep concrete and wash free of stains, discolorations, dirt and other foreign material just prior to final inspection.

E. If the Engineer determines that the installed concrete does not meet the specifications it will be the responsibility of the Contractor to drill test cores where directed by Engineer at the Contractor's expense. The Contractor will also be responsible for payment of testing by a certified testing laboratory to ensure all concrete is per the specifications. In the event that the concrete does not comply with the specifications after testing, the Contractor shall remove and replace all areas not complying with specifications and replace at no additional cost to the Owner.

END OF SECTION

SECTION 37 1723 - PAVEMENT MARKINGS

PART 1 - GENERAL:

- A. This work shall consist of furnishing and applying paint on the completed parking lot surface and roadways in reasonably close conformity with these specifications and the details shown on the plans or established.

PART 2 - MATERIALS:

- A. Paint: Paint used for traffic markings (parking lot striping) shall be yellow, water-based latex traffic zone paint. Paint used for Handicap markings shall be installed in accordance with the guidelines of the American with Disabilities Act and shall be blue in color. Such paint, its components, composition, inspection, testing, certifications, acceptance or rejection shall be in accordance with the manufacturer's recommendations and/or warranties. ***No paint, however, shall be approved for use on this project until certification is given that the particular product proposed will bond properly to the surface and that no discoloration will occur to the paint.***

PART 3 - CONSTRUCTION REQUIREMENTS:

- A. The work shall be performed to meet all applicable requirements of Section 619 of the Mississippi Standard Specifications for Road and Bridge Construction, 2004 Edition of the Mississippi State Highway Department.

END OF SECTION

SECTION 33 1100 -WATER UTILITY PIPING (SITE WORK)

1.0 GENERAL

- A. This work shall consist of furnishing all labor, materials, and installation for water utility piping on the exterior of the building. See Project Plans for additional details regarding installation requirements..

2.0 CONSTRUCTION REQUIREMENTS

- A. Trench Excavation: (Main Line) The pipe shall be laid in open cuts or trenches, except as hereinafter provided for, which shall be so excavated as to provide at least six inches (6") clearance between the side of the pipe and the sides of the trenches or the shoring materials. For service line excavation, width of trench for service shall in no case be greater than twelve inches (12").
- B. The trench shall be so excavated that its sides will be as nearly vertical as possible. If it should appear necessary to slope the sides of the trench, such sloping shall be first approved by the Engineer and shall not unnecessarily increase the width and amount of paving or other surfacing to be replaced where such trenches are within street right-of-way.
- C. The bottom of all trenches shall be carefully shaped, graded and aligned in accordance with the instructions of the Engineer and to his complete satisfaction before any pipe is placed. The trench shall be shaped or cut under and around all joints to provide adequate room for making the joint and to provide uniform and continuous contact and support throughout the entire length of each joint of pipe. Care shall be used to drain, pump, or bail out all water and to avoid loosening or working up the bottom of the trench unnecessarily by excessive tramping or otherwise.
- D. The Contractor shall exercise diligence to see that the excavation is not carried below the grades established or directed by the Engineer. However, in the event this should occur, the bottom of the trench shall be filled back to grade with approved material and thoroughly compacted in a manner satisfactory to the Engineer, without extra compensation to the Contractor.
- E. On each street the pipe line shall be kept at a uniform distance from the center-line of the street, in straight or easy curved lines, as directed by the Engineer.
- F. Material excavated shall be deposited so as to interfere the least practicable with public traffic and convenience of adjacent residents. A berm at least two (2) feet in width shall be left along side of the trench to allow for free passage of the men engaged on the work.
- G. Extreme care shall be exercised to avoid disturbance of any gas, sewer, or drain pipe, culvert, bridge, or other facility which may be encountered. Any such facility which may be molested in any way, either unavoidably, or otherwise shall be replaced in exactly the same condition as when found, without additional compensation.

- H. At no time shall the excavation of trenches proceed greatly in advance of the completed pipe line nor shall excessive lengths of trench be left unfilled in the rear thereof. The Engineer shall have the right to specifically limit, as he deems advisable, the distance to which the trench may be opened. (See paragraph on "Backfilling".)
- I. The trench shall, however, proceed far enough ahead of pipe laying to discover any obstruction which may cause the alignment, as deviations from a straight line, of more than one-foot in twenty-five (25) feet will not be permitted.
- J. The depth of cover over the pipe shall, in general, not be less than three (3) feet at any point and the intention and effort will be to maintain this depth of cover as nearly uniform as possible. ***The Contractor shall ensure at least three (3) feet of cover exists between the proposed utility piping (main or service) and the proposed paving regardless of the depth of the existing grade. If additional items are necessary to ensure depths as stated, contractor shall include said items in the bid price.***
- K. Number 12 Copper Tracer Wire shall be installed on all PVC and Ductile Iron pipe (main and services) to assist in future location of the water main. Cost of this tracer wire shall be included as part of the water main unit price. No extra allowance will be made for this wire. Detectable marking tape should also be installed on all new PVC water mains to aid in future location. The tape should be blue in color.
- L. All material from the excavations shall be loaded onto trucks and hauled off site as the trench excavation is proceeding. The Contractor will not be allowed to store excavated material on site.
- M. Sheeting and Bracing: The Contractor shall furnish and properly place such sheeting and bracing as may be required to support the sides of the trench, to protect the workmen and pipe or adjacent structures from possible injury. Such sheeting and bracing may be removed as the trench is backfilled or may be left in place where necessary to prevent caving or damage, but where left in place it shall not extend within one foot (1') of the surface. In no case will extra compensation be allowed for furnishing, placing or removing such sheeting and bracing. The cost of all sheeting and bracing, whether left in place or removed shall be included in the unit prices bid for installing the pipe. ***The Contractor will be solely responsible for ensuring compliance with all regulatory agencies regarding sheeting and bracing.***
- N. Pipe Laying: Pipe, Specials and Fittings shall be carefully laid to the line and grade established or directed by the Engineer. Each length of pipe when placed shall have a uniform bearing for the entire length of pipe. The inside of all pipe and the outside at all joints shall be thoroughly cleaned before they are placed, and the inside of all pipes shall be kept clean and free of all obstructions and foreign matter until the work is completed and accepted.
- O. ***Where pipe laying is stopped at the end of the day, or for any cause, the end of the pipe shall be securely closed to prevent the entrance of water, mud, or obstructions.***

- P. All pipe shall be carefully lowered into the trench so as not to damage the pipe or coating.
- Q. Where pipes must be cut to bring valves, hydrants, or other connections to the required location, this work shall be done by the Contractor without extra compensation and in a manner satisfactory to the Engineer.
- R. Setting Fittings, Valves, Hydrants, Etc.: All fittings, valves, and valve boxes, hydrants, and other appurtenances are to be set at the points indicated on the Plans, or as directed by the Engineer and omission to do so shall be corrected by the Contractor without extra cost to the Owner.
- S. Hydrants shall be set on a stone or concrete base at least fifteen (15) inches square and four (4) inches thick. They shall stand erect and the proper length shall stand above the ground, extension sections being added if and as required.
- T. Beneath and around each hydrant, and extending at least above the drip, shall be placed an adequate amount of bricks, rocks or coarse gravel. If the extension sections are added, the quantity of bricks, rocks or coarse gravel shall be proportionately increased. The ground shall be securely tamped up to the surface around each hydrant and smoothed over the same as for trenching.
- U. Hydrants, valves and fittings (bends, tees, plugs, and caps) shall be mechanically restrained to prevent the possibility of blowing off under pressure.
- V. Over each valve, a valve box shall be properly and firmly set so that its cover will be flush with the surface of the ground, or roadway, as the case may be.
- W. Testing: Each section of new work (mains and service lines) shall be tested under a hydrostatic pressure of 125 lbs. per square inch. Where practical, such tests should be conducted between line valves or plugs spaced not over fifteen hundred (1500') feet apart. Such tests shall be made before backfilling at joints, except where otherwise required by necessity or public convenience. ***The duration of the test shall be twenty-four (24 hrs.) hours unless otherwise directed by the Engineer.*** All visible leaks at exposed joints, and all leaks evident on the surface, where joints are covered, shall be eliminated, regardless of the total leakage shown by the tests. No pipe installation will be accepted if the leakage is greater than that determined by the following formula:

$$L = \frac{S * D * P^{1/2}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipe tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge: (all in accordance with AWWA Standard C600-82). Lines which fail to meet tests shall be removed, if necessary or repaired and re-tested until compliance with test requirements is effected.

The Contractor shall meter the volume of water necessary to restore the pressure in the PVC main (or service line) to 125 p.s.i. and report that volume to the engineer in gallons for verification of leakage. All items necessary to meter the volume of water in gallons shall be included in the bid items.

These tests are to be made at the Contractor's expense, and he shall provide all necessary fittings and appliances therefore.

- X. Backfilling: A sand material as approved by the Engineer shall be used for bedding in and around the pipe. This material shall be thoroughly tamped with such special tools as the Engineer may direct so as to form an even and compact bed. In all cases, however, the joints shall be left uncovered until the line has been tested as hereinbefore provided, unless the Engineer shall direct otherwise.

After the line has been tested and the Engineer has pronounced the joints satisfactory and all records of location of line and fittings have been recorded, the trench shall be filled around and over the joints as above provided. In areas outside of existing or proposed paving, the remainder of the trench may be backfilled with select on-site soil deemed suitable for reuse by the Engineer. In areas beneath existing or proposed paving, the remainder of the trench shall be backfilled with select fill (borrow excavation – contractor furnished) consisting of a PI between 8 and 12 with a LL not more than 25. Note that the entire trench shall be backfilled with contractor provided fill material meeting the specifications in said areas beneath existing or proposed paving. The contractor shall perform density testing at not less than one density test for each 100 feet of utility/drainage piping in areas beneath paving for each lift of earthwork/subgrade (including crushed stone). In the event that a section of utility main/drainage pipe is less than 100 feet in length, density testing shall be performed between bends/fittings and/or drainage structures. See earthwork specification for details on density requirements and testing procedures.

All surplus earth resulting from trenching or other excavation shall be removed and disposed of as directed by the Engineer as the work progresses.

After the above operations are completed, a backfilling gang shall be sent as often as necessary over the area in which work has been done under this contract, and the work areas shall be leveled up and cleared of objectionable material and rubbish; and the streets, sidewalks, gutters, crossings, driveways and other property, left in as good condition as when found by the Contractor, insofar as practicable.

- Y. Cleaning and Sterilizing: Before each section of work is placed in service, it shall be thoroughly flushed out to remove any dirt or other foreign material from inside the lines; and the inside of the lines shall be sterilized by pumping into and through them a solution of such amount and such manner as to meet the requirements of the State Board of Health. As a minimum, a 50 mg/l dosage of chlorine for 24 hours will be required. Other methods of cleaning and sterilizing may be used if approved by the Engineer. Disposal of highly chlorinated water from disinfection of the water lines may require a permit from the DEQ/Office of Pollution Control. Water being collected for testing should not have a chlorine residual higher than normally maintained in the water system. No chlorine should be present as a result of disinfection.

After completion of all work in designated sections of the distribution system, at least two samples of chlorine-free water shall be taken by the certified operator of the public water system for which the connection is made or a representative of the Mississippi State Department of Health, which shall be submitted to the State Board of Health for examination to determine if the system is free from organisms of the Coli-Aerogenous group. If such samples are not negative for organisms of the Coli-Aerogenous group, the system shall be disinfected and re-disinfected in a manner meeting the requirements of the State Board of Health until the system is freed of contamination.

- Z. Service Lines: All service lines shall comply with sections 1.1.E and 1.1.G. Service lines will be provided with corporation stops at the main and with curb stops at the street right-of-way line.

Service lines shall be laid to the line and grade established or directed by the Engineer, but shall in no case be less than eighteen (18") inches below the surface of the finished grade for sizes less than 2" with 2" and greater sizes a minimum of (36") inches below the finish grade surface.

3.0 MATERIALS

A. Pipe, Fittings, and Joints:

1. Ductile Iron Pipe: All ductile iron pipe used in the work shall be manufactured in accordance with ANSI Standard A21.51 (AWWA C151, A21.52 and Federal Specifications WW-P-421d. The pipe shall be new having push-on joints conforming to ANSI A21.11 (AWWA C111) of latest revisions and manufactured for a minimum of 200 psi working pressure. ***ALL DUCTILE IRON PIPING SHALL UTILIZE FIELD LOK GASKETS (AT ALL JOINTS) AS MANUFACTURED BY US PIPE (OR APPROVED EQUAL).***

Submittals required on all field lok gaskets if other than specified. All pipe shall be furnished in 16 or 18 feet nominal laying lengths.

All ductile iron fittings shall be new fittings conforming to ANSI A21.10 (AWWA C110). The fittings shall have push-on joints conforming to ANSI A21.11 (AWWA C111). Pipes and fittings shall be cement lined and tar coated in accordance with the requirements of ANSI A21.4 and A21.5 respectively.

2. Concrete Pressure Pipe: All concrete pressure pipe furnished under this specification shall be prestressed concrete cylinder pipe, designed and manufactured in accordance with the latest revision of "AWWA Standard C301 for Prestressed Concrete Pressure Pipe, Steel Cylinder Type, for Water and Other Liquids" as manufactured by Price Brothers Company of Hattiesburg, Mississippi.

The pipe shall be furnished complete with gaskets, diaphragms, and lubricant as required for proper installation and completion of the line. Fittings shall be as described in AWWA C301. Outlets or other connections built into prestressed pipe sections shall be suitably reinforced. Long radius curves or small angular changes in the pipeline can be formed by deflecting joints of straight pipe or by using pipe sections with one end beveled not more than 4 1/2 degrees to the axis of the pipe. Flange outlets with blind flange covers shall be furnished

complete with flange gasket, nuts, and bolts. The pipe supplier shall furnish all accessories needed when restrained joints are required.

The pipe supplier shall provide to the Engineer shop drawings of the specials and fittings and shall make available a pipe schedule indicating sequence of installation of pipe, fittings, specials, and the elevations and stationing of the line at key points such as outlets, bends, and changes in grade.

In the case of railroad crossings, the water main installation should conform to all requirements of the railroad company. In general, the carrier pipe should have mechanical joints while the casing pipe should be steel with welded joints. Permits have been obtained by the Owner and are available for review at the Engineer's office.

3. Polyvinyl Chloride (PVC) Plastic Pipe and Fittings (Size 3" and smaller):
 - a. Specifications: Plastic pipe and fittings shall be National Sanitation Foundation approved, Type I, Grade I, PVC in accordance with ASTM Specification D-1784. All pipe shall be suitable for use at hydrostatic pressures of 200 P.S.I. or greater at 73°F, and shall meet the requirements of ASTM D2241 IPS Gasket Pipe made to SDR 21 dimensions. Marking and testing shall be in accordance with above specifications.
 - b. PVC fittings, adapters, flanges, etc., shall be manufactured and/or supplied by the same manufacturer as that of the pipe and shall be standard weight Schedule 40, Type I, PVC or heavier suitable for working pressures as great or greater than that of the pipe and/or accessories with which they are used. All fittings shall be furnished and assembled with rubber ring gasket bells by the pipe manufacturer. Marking and testing shall be in a similar manner to that specified for PVC pipe.
4. Polyvinyl Chloride (PVC C-900) Plastic Pipe and Fittings (Size 4" thru 12"):
 - a. Specifications: PVC pipe shall meet the requirements of AWWA C-900 "Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 in. through 12 in. for Water", and shall be furnished in cast-iron pipe equivalent outside diameters with rubber-gasketed separate couplings as listed in that standard. **All C-900 pipe shall be suitable for use at a hydrostatic pressure of at least 200 P.S.I. and shall be DR 18.**
 - b. PVC fittings, adapters, flanges, etc. shall be manufactured and/or supplied by the same manufacturer as that of the pipe and shall be suitable for working pressures as great or greater than that of the pipe and/or accessories with which they are used.
5. Payment:
 - a. Pipe: Payment for all pvc water mains (domestic, fire protection, irrigation, etc.) including all necessary fittings, valves, etc. shall be included in the contract lump sum price.
- B. Gate Valves and Boxes:
 1. Specifications: All gate valves shall be of cast iron body, bronze or brass mounted, double-disc, parallel seat type made strictly in accordance with the specifications of the American Water Works Association C500 (200 lbs. working pressure, 350 lbs.

hydrostatic test). Valves furnished shall be AWWA Gate Valves, as manufactured by Mueller Company or approved equal. Valve boxes shall be either two-piece or three-piece, sliding type, cast iron valve boxes with plug type lids marked "WATER". The bell end of the lower section of all valve boxes shall be of sufficiently large diameter to fit over the stuffing box of the valve with which it is to be installed. Valve box shall be as manufactured by Mueller Company or approved equal and shall be suitable for use with valves installed on water lines having a nominal thirty-six (36") inch depth of cover over the pipe but capable of adjustment to such additional depth as conditions may require.

2. Payment: Payment for all valves and boxes shall be included in the lump sum bid price.

C. Mechanical Restraints:

1. Mechanical restraint devices shall be used at pipe joints near bends, tees, wyes and valves. Such devices must conform to manufacturer's recommendations for the type of pipe, fittings, and valve materials used.
2. Restraint devices for mechanical joint fittings and appurtenances conforming to either ANSI/AWWA C111/A21.11 or ANSI/AWWA C153/A21.53, shall conform to the following:

C.2.A Design

- a. Restraint devices for nominal pipe sizes 3 inch through 48 inch shall consist of multiple gripping wedges incorporated into a follower gland meeting the applicable requirements of ANSI/AWWA C110/A21.10.
- b. The devices shall have a working pressure rating of 350 psi for 3-16 inch and 250 psi for 18-48 inch. Ratings are for water pressure and must include a minimum safety factor of 2 to 1 in all sizes.

C.2.B Material

- a. Gland body, wedges and wedge actuating components shall be cast from grade 65-45-12 ductile iron material in accordance with ASTM A536.
- b. Ductile iron gripping wedges shall be heat treated within a range of 370 to 470 BHN.
- c. Three (3) test bars shall be incrementally poured per production shift as per Underwriter's Laboratory (U.L.) specifications and ASTM A536. Testing for tensile, yield and elongation shall be done in accordance with ASTM E8.
- d. Chemical and nodularity tests shall be performed as recommended by the Ductile Iron Society, on a per ladle basis.

C.2.C Traceability

- a. An identification number consisting of year, day, plant and shift (YYDDD)(plant designation)(Shift number), shall be cast into each gland body.
- b. All physical and chemical test results shall be recorded such that they can be accessed via the identification number on the casting. These Material Traceability Records (MTR's) are to be made available, in hard copy, to the purchaser that requests such documentation and submits his gland body identification number.
- c. Production pieces that are too small to accommodate individual numbering, such as fasteners and wedges, shall be controlled in segregate inventory until such time as all quality control

tests are passed. These component parts may then be released to a general inventory for final assembly and packaging.

- d. All components shall be manufactured and assembled in the United States. The purchaser shall, with reasonable notice, have the right to plant visitation at his/her expense.

C.2.D Installation

- a. Mechanical joint restraint shall require conventional tools and installation procedures per AWWA C600, while retaining full mechanical joint deflection during assembly as well as allowing joint deflection after assembly.
- b. Proper actuation of the gripping wedges shall be ensured with torque limiting twist off nuts.

C.2.E Approvals

- a. Restraint devices shall be Listed by Underwriters Laboratories (3" through 24" inch size) and Approved by Factory Mutual (3" through 12" inch size).
- b. Mechanical joint restraint shall be Megalug Series 1100 produced by EBAA Iron Inc. or approved equal.

C.2.F Coating System

- a. Coating for restraint devices shall consist of the following:
- b. All wedge assemblies and related parts shall be processed through a phosphate wash, rinse and drying operation prior to coating application. The coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.
- c. All casting bodies shall be surface pretreated with a phosphate wash, rinse and sealer before drying. The coating shall be electrostatically applied and heat cured. The coating shall be a polyester based powder to provide corrosion, impact and UV resistance.
- d. The coating system shall be MEGA-BOND by EBAA Iron, Inc. or approved equal. Requests for approved equal must submit coating material and process details for review prior to bid.

4.0 SEPARATION OF WATER AND SEWER MAINS

- A. Horizontal Separation: Water main shall be laid at least 10 feet, horizontally, from any existing sewer main (or service line). Should local conditions prevent a lateral separation of 10 feet, the water main may be laid closer than 10 feet to the sewer main if it is laid in a separate trench.
- B. Vertical Separation: A minimum of 18 inches shall be maintained below the bottom of the water main and the top of the sewer. The water main shall be constructed with push-on or mechanical joint ductile iron pipe or prestressed concrete cylinder pipe for a distance of 10 feet on each side of the sewer. One full length of water main shall be centered over the sewer so that both joints will be as far from the sewer as possible.

END OF SECTION

SECTION 33 3000 - SANITARY SEWERAGE SYSTEM (SITE WORK)

2.01 PVC SEWER PIPE INSTALLATION:

- A. All pipe shall be inspected upon arrival. If any portion of a shipment is found to be defective in diameter or thickness, or found to be contaminated with fuel exhaust or any hydrocarbon material, the entire shipment shall be rejected and removed from the Project at no cost to the OWNER. Each section of pipe shall again be thoroughly inspected immediately prior to lowering it into the trench to insure that the interior is clean and to check for joint scratches, chipped ends, and imperfect gasket seats. Any and all defective pipe or fittings shall be rejected and removed from the job site. Any defective pipe or fitting discovered after the pipe is laid shall be removed and replaced with a satisfactory pipe or fitting without additional charge.
- B. Handling - Pipe, fittings, manhole sections and accessories shall be loaded and unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall such materials be dropped. Pipe handled on skidways shall not be skidded or rolled against other pipe.
- C. Care shall be taken to protect PVC pipe from prolonged exposure to direct sunlight (ultraviolet rays).
- D. Excavated and Construction Materials - All excavated material and all construction materials used in prosecution of the work shall be deposited so as not to endanger the work, create unnecessary annoyance to the public, or interfere with natural drainage courses. During the progress of the work, all material piles shall be kept trimmed up and maintained in a neat, workmanlike manner.
- E. Excavation and Backfilling for Sewer Pipe and Structures: Excavate in open cut all substances encountered to depth shown on drawings except where installation of cased sewer pipe is called for, if any.
 - 1. In areas outside of existing or proposed paving, the remainder of the trench may be backfilled with select on-site soil deemed suitable for reuse by the Engineer. In areas beneath existing or proposed paving, the remainder of the trench shall be backfilled with select fill (borrow excavation – contractor furnished) consisting of a PI between 8 and 12 with a LL not more than 25.
 - 2. Dispose of surplus material, if any, on a free-haul-off basis.
 - 3. Maintain excavation to within plan depths.
 - 4. Backfill any excess cuts below plan grade with washed gravel bedding, without expense to the Owner.
 - 5. Maintain area adjacent to excavation in such a way as to avoid drainage of surface water into excavation.

6. Maintain "dry" trench and excavation by pumping, bailing, draining, or well pointing.
- F. Noise, Dust and Odor Control - The CONTRACTOR's construction activities shall be conducted so as to eliminate all unnecessary noise, dust and odors. The use of oil or other material that may cause tracking for dust control shall not be permitted.
- G. Installation shall be in accordance with ASTM D 2321.
- H. The pipe manufacturer shall provide installation instructions and literature to the CONTRACTOR so that he will be aware of the manufacturer's recommended procedure and practice for installing the pipe and fittings. Copies of these instructions and other literature shall also be provided to the OWNER and ENGINEER. This instruction shall be included at no additional cost to the OWNER. The CONTRACTOR shall install all pipe and fittings according to the manufacturer's recommendations. The ENGINEER will not make recommendations or approve installation methods. Any failures of materials resulting from installation techniques (recommended by manufacturer or not) as well as labor associated with removal and replacement of failed materials will be the sole responsibility of the CONTRACTOR. The OWNER will not pay additional costs for failures of materials which result from installation procedures (regardless of whether or not the CONTRACTOR follows the manufacturer's installation guidelines).
- I. Before laying the pipe out of the downstream manhole, any obstructions upstream of the manhole that may necessitate changing the line or grade of the pipeline shall be uncovered. The CONTRACTOR shall verify alignment, elevations, and grades prior to proceeding. The CONTRACTOR will be responsible for any necessary relaying and/or relocating of the pipe if the pipe is laid before verifying locations and elevations of known potential obstructions.
- J. Pipe Trenches: Excavate trench to width of 6" minimum clearance and 9" maximum clearance each side of barrel of pipe.
1. Curve rounded trench bottom so that an arc equal to one fourth of outside of circumference of pipe rests on undisturbed material and/or bedding.
 2. Cut bell holes accurately to size.
 3. Safeguard all underground cables, lines, pipes, and conduits in excavation.
 4. Perform hand excavation adjacent to existing lines and services .
 5. Assume all responsibility for damages to persons property arising from disruption of underground features.
 6. If interference between sewer and existing facility is encountered, notify Engineer so that provisions can be made for adjustment in a timely manner.
 7. Conform to Engineer's instruction on adjustment of sewer line or otherwise.

K. Bedding: Class "B" bedding will be standard for this project, unless special bedding is authorized.

1. Replace any unstable soil encountered at plan depth with Class "B" bedding material upon authorization of Engineer.
2. Class B bedding shall consist of a 2 inch cushion of sand shaped with a template to a concave saddle in compacted or natural earth to such a depth that 15 percent of the height of the pipe rests on the sand cushion below the adjacent ground line.

L. Trench Support - Unsupported open cut for sewers will not be permitted where trenching may cause unnecessary damage to street pavement, trees, structures, poles, utilities, or other private or public property or where safety dictates. During the progress of the work, whenever and wherever it is necessary, the CONTRACTOR shall, at his expense, support the sides of the excavation by adequate and suitable sheeting, shoring, bracing, or other approved means. Such trench support material and equipment shall remain in place until backfilling operations have progressed to the point where the supports may be withdrawn without endangering persons or property. Sheeting shall be left in place only if so directed on the Plans. In such cases, the CONTRACTOR shall cut off the sheeting at the depth indicated on the Plans and remove the upper portion. If all the sheeting is to be removed, it shall be removed without causing damage to the pipe. No sheeting, shoring, or bracing will be paid for by the OWNER unless left in place according to the Plans or on written order of the ENGINEER.

M. Alignment and Grade - A laser shall be used for horizontal and vertical control of the sewer. Line and grade stakes shall be placed at 25 feet and 50 feet from the downstream manhole and then placed at every 100 foot station to the next manhole and used to verify alignment and grade. The laser unit shall be set up in such a manner that the alignment of the beam is through the pipe directly on the centerline of the pipe or outside the pipe directly above and parallel to the centerline of the pipe. If solvent-welded joints are used (or if chemical vapors from other sources are present in the pipe) and the laser unit is set up to aim through the pipe, a blower shall be used to provide positive continuous air circulation within the pipe to minimize deflection of the laser beam. A target shall be established on line and grade at each line and grade stake to check the setting of the laser beam as construction progresses. Also, the alignment of the pipe shall be checked at each line and grade stake by measuring horizontally from the stake to the centerline of the pipe, and the grade shall be checked with a level instrument and a grade pole set on the invert of the pipe. The CONTRACTOR shall ensure that the grade pole is vertically plumb when checking pipe grade.

N. Pipe Laying - The laying of sewer pipe on the prepared bed in finished trenches shall commence at the lowest point with the spigot ends pointing in the direction of flow.

All pipe shall be laid with ends abutting and true to line and grade as shown on the Plans.

Pipe sections shall be carefully fitted, matched and aligned so that they will form a sewer with a smooth and uniform invert when laid in the trench. In no case will the supporting of pipes on blocks be permitted.

O. No backfilling (except for securing pipe in place) over pipe will be allowed until the ENGINEER has had an opportunity to make an inspection of the joints, alignment and grade, in the section laid, but such inspection shall not relieve the CONTRACTOR of further liability in case of defective joints, misalignment caused by backfilling and other such deficiencies that are noted later.

P. Backfilling: Backfill with material free from clods and rubble.

1. Backfill evenly and tamp layers not to exceed 6" in thickness until two feet of cover exists over pipe. Backfill shall achieve 98% Standard Proctor Density.

2. Backfill remainder of trench and adjacent to sewer structure in 9" layers (use 4" layers if utilizing hand operated tamping equipment), using mechanical tamping equipment on each and every layer to achieve a Standard Proctor Density of 98% or greater. All unsuitable material from trench shall be loaded into trucks and hauled off-site. ***In areas beneath existing or proposed paving, backfill material shall consist solely of a select fill material (borrow excavation – contractor furnished) meeting a Class 9-12 material as specified in the "Earthwork" specification. In areas outside of existing or proposed paving, the contractor may utilize on-site soils if deemed suitable for reuse by the Engineer.***

3. Flooding and/or jetting is prohibited.

4. Special compaction is required where new or replacement paving is scheduled.

5. Compaction tests shall be performed on each and all layers by a certified testing lab.

Compaction tests shall be performed at no more than 400 feet apart or between manholes (whichever comes first) on sewer main lines and no more than 100 feet apart on sewer service lines if under paving (compaction tests not required on sewer service lines outside of paving areas). All compaction tests shall be paid for by the contractor at no expense to the owner.

Q. Care should be taken to prevent flotation of the pipe in the event the trench should flood as well as when placing bedding material around the pipe.

R. Dewatering - Should water be encountered, the CONTRACTOR shall furnish and operate suitable pumping equipment of such capacity adequate to dewater the trench. The trench shall be sufficiently dewatered so that the laying and joining of the pipe is not performed in water. The CONTRACTOR shall convey all trench water to a natural drainage channel or storm sewer without causing any property damage.

- S. The interior of the pipe shall be clean and dry as the work progresses. Whenever pipe laying operations are not in progress, the exposed end of the pipe shall be sealed with a plug or bulkhead fitted into the pipe bell, so as to exclude earth, water, or other material. During excavation and backfilling, the exposed end of the pipe should be blocked to prevent excavated material or backfill material from entering the pipe. A watertight plug or bulkhead shall also be installed and maintained in the most downstream manhole of the project throughout construction to prevent dirt, rocks, muddy water, or other debris from entering the existing sewer system. This plug or bulkhead shall not be removed until all the sewer has been installed, cleaned, tested, and accepted, unless directed otherwise by the ENGINEER.
- T. If a length of pipe is cut to fit in a line, it shall be cut according to the manufacturers recommendations to leave a smooth end at right angles to the longitudinal axis of the pipe.
- U. No fittings (except service wyes and repair couplings) shall be allowed in gravity sewers. Open ends of wyes shall be plugged or sealed until service laterals are installed.
- V. Pipe Joints - Preparatory to making pipe joints, all joint surfaces shall be cleaned of all dirt, dust, and foreign matter and shall be dry, smooth and free of imperfections before placing jointing materials (ie. gaskets, lubricants, primers, adhesives, etc.). Gaskets, lubricants, primers, adhesives, or other jointing materials shall be used as recommended by the pipe or joint manufacturer's specifications. Generally, lubricants, primers and adhesives shall be placed on both the bell and spigot portions of the joint. The pipe shall then be placed, fitted, joined, and adjusted in such a workmanlike manner as to obtain the degree of water tightness required. In the event that pipe previously laid is disturbed due to any cause, it shall be removed and relaid.
- W. Joints that show leakage will not be accepted. If after backfilling and inspection, any joints are found to be allowing groundwater to enter the sewer, such joints shall be sealed by the CONTRACTOR at no cost to the OWNER.
- X. Protection of Trees - Special care shall be taken to avoid damage to trees and their root system. Machine excavation shall not be used when, in the opinion of the ENGINEER, it would endanger the trees. In general, where the trench falls within the limits of the limb spread, headers are required across the trench to protect the tree. The operation of all equipment, particularly when employing booms; the storage of materials; and the deposition of excavation shall be conducted in a manner that will not injure trees, trunks, branches or their roots unless such trees are designated on the Plans for removal.

2.02 PVC PLASTIC GRAVITY SEWER PIPE AND FITTINGS:

- A. Solid wall PVC sewer pipe through 15" diameter shall be ASTM D3034. Solid wall PVC sewer pipe 18" diameter and larger shall be ASTM F679, Type I. Both types of solid wall PVC sewer pipe shall have ASTM D 3212 integral bell and spigot rubber gasketed joints. Pipe shall be SDR 26 for sizes up to 15 inch for all depths. Pipe shall be ASTM F679 PS 115 for sizes 18 inch and greater for all depths. Gasketed fittings shall conform to the same specifications and be supplied with the pipe.
- B. All pipe shall be suitable for use as a gravity sewer conduit. Provisions must be made for contraction and expansion at each joint with a rubber ring. The bell shall consist of an integral wall section with a solid cross section rubber ring factory assembled, securely locked in place to prevent displacement. Pipe shall be supplied in lengths ten feet or greater. All pipe spigots shall have a "Home" mark to facilitate joint closure.
- C. A manufacturer's certificate that the PVC material and pipe was manufactured and tested in accordance with the appropriate ASTM specification shall be furnished to the ENGINEER prior to installation of the pipe.
- D. Pipe intended to be straight shall have a maximum deviation from straightness of 1/16 inch per linear foot when measured in accordance with ASTM D2122.
- E. All pipe and fittings will be inspected by the ENGINEER or his authorized representative immediately prior to installation and all rejected pieces must be completely removed from the project. Pipe acceptable to the ENGINEER shall be substituted for rejected pieces at the CONTRACTOR's expense. No repaired pipe or fittings will be allowed; undamaged lengths of straight pipe may be salvaged by neatly sawing off the damaged portion of the pipe.
- F. Pipe must be delivered to the job site by means which will adequately support it and not subject it to undue stresses. In particular, the load shall be so supported that the bottom rows of pipe are not damaged by crushing. Pipe shall be unloaded carefully and strung or stored as close to the final point of placement as a practical. Pipe must not be exposed to the direct rays of the sun for an extended period of time. If pipe is not to be installed shortly after delivery to the job site, it must be stored in shaded location and strung as needed.
- G. All PVC pipe shall be tested for deflection after backfilling is completed.
- H. Fittings: The fittings shall be made of PVC plastic having a cell classification of 12454-B, 12454-C, or 13343-C as defined in Specification D 1784.

- I. Pipe Marking: Each standard and random length of pipe in compliance with this standard shall be clearly marked per the following example at intervals of 1.5 m (5 feet) or less

(also applicable to ASTM F679 Gravity Sewer Pipe):

- a. Manufacturer's Name or Trademark.
 - b. Nominal pipe size.
 - c. The legend "Type PSM SDR 26 PVC Sewer Pipe"
 - d. UNI-B-4 or ASTM D 3034.
- J. Workmanship: The pipe and fittings shall be homogenous throughout and free from visible cracks, holes, foreign inclusions or other injurious defects. The pipe, shall be as uniform as commercially practical in color, capacity, density and other physical properties.

2.03 PIPE JOINTS

PVC sewer pipe joints shall be elastomerically gasketed conforming to ASTM D3212 integral bell and spigot type. The CONTRACTOR shall furnish evidence of satisfactory performance of the joint for previous installations.

- A. Each size joint shall be qualified to have no leakage under various test conditions in conformance with ASTM Specification D 3213, joints for drain and sewer plastic pipes using flexible elastomeric seals. The joint shall provide a positive seal against infiltration or exfiltration. All surfaces of the joint upon which the gasket may bear shall be smooth and free of such imperfections, fractures, or cracks that could adversely affect sealability. Joints shall comply with ASTM D 3212.
- B. Test Specimens - The ENGINEER or his authorized representative may initially and periodically select random sewer pipe for test purposes. The tests shall be performed on lot less than two specimens and not more than 1 percent of the total pipe length of each size and joint type required for the project.

2.04 PRESSURE SEWER PIPE AND FITTINGS

A. General

In all areas where ductile iron pipe is not specifically shown, force mains and/or pump lines may be either Class 50 or 51 ductile iron or 200 psi SDR 21 PVC pipe.

B. Ductile Iron Pipe

Pipe shall be centrifugally cast, manufactured in accordance with the ANSI Specification A21.51, of Ductile Cast Iron, Grade 6-42-10, for the required operating pressures as shown on the Plans plus surge allowance of 100 psi, for five feet maximum cover for laying condition "B". Each pipe shall be hydrostatically tested, before shipment, to a minimum of 500 psi. Minimum nominal metal thickness shall be:

<u>Size</u>	3"	4"	6"	8"	10"
Class 50			0.25	0.27	0.29
Class 51	0.25	0.26			

Joints shall be push-on joint incorporating a single molded rubber ring gasket, Type II, per Federal Specifications WW-P-42lb such as "Fastite", "Tyton" or "Super Bell-Tite" unless otherwise indicated on the Plans or hereinafter in these Specifications. Pipe shall be in nominal 16', 18', or 20' lengths.

Pipe shall be furnished tar coated outside and the manufacturer's standard "Enameline" inside to comply with ANSI Specification A21.4.

C. Cast or Ductile Iron Fittings

All fittings for ductile iron pipe shall be Class 250 mechanical joint cast iron conforming to ANSI Specifications A21.10 and A21.11 or ductile iron conforming to ANSI Specification A21.51, and shall meet the current requirements for the manufacturer's standards. Fittings shown on the Plans are intended to convey the general configuration, but the contractor shall furnish all fittings required.

Each fitting shall be certified by the manufacturer to have been tested and to have met the requirements of the governing standard specifications.

All fittings shall be furnished tar coated outside and the manufacturer's standard "Enameline" inside to comply with ANSI Specification A21.4.

D. Polyvinyl Chloride Pipe

- (1) Polyvinyl Chloride pipe for force mains shall be made from Type 1, Grade 1 or 2, Polyvinyl Chloride plastic as defined in ASTM Specification D 1784, "Specifications for Rigid Poly (Vinyl Chloride) Compounds.

- (2) Physical Properties

The pipe shall conform to Commercial Standard CS-256-63 or ASTM Specification D 2241-80 "Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR and Class T)" as it applies to Type I, Grade 1 or 2 Polyvinyl Chloride plastic pipe, SDR 21, water pressure rating of 200 psi at 23° C (72.4° F).

- (3) Joints

The joints for pipe 1-1/2 inch in diameter and larger shall be push-on (bell and spigot) joints designed so that the pipe and fittings may be connected on the job without the use of solvent cement or any special equipment. The push-on joint shall be a single rubber gasket joint designed to be assembled by the positioning of a continuous, molded, rubber ring gasket in an annular recess in the pipe or fitting socket and the

forcing of the plain end of the entering pipe into the socket, thereby compressing the gasket radially to the pipe to form a positive seal. The gasket and the annular recess shall be so designed and shaped that the gasket is locked in place against displacements the joint is assembled. Details of the joint design and assembly shall be in accordance with the joint manufacturer's standard practice. The joints shall be designed so as to provide for the thermal expansion or contraction experienced with the total temperature change of at least 75° F in each joint per length of pipe. Joints shall comply with ASTM-D3139.

Joints for fittings shall be of the push-on type as described above unless otherwise noted or directed by the Engineer. Solvent welded type joints shall be allowed on certain types of valves, fittings and piping connections 3-inch and smaller in diameter. Generally solvent weld joints shall be limited to certain assemblies that can be pre-assembled in the shop and then installed together as a unit in the field. Examples include the ball valve and clean-out tee that form a unit in a Type A or B valve and clean-out assembly, the ball and check valve assembly that form a unit in a house service junction box, etc. Solvent cement joints shall be formed by deep-socket couplings integrally cast on the ends of the fittings or valves. Solvent cement shall conform to ASTM D-2564.

(4) Lubricant

Lubricant furnished for lubricating joints shall be non-toxic, shall not support the growth of bacteria, shall have no deteriorating effects on the gasket or pipe material, and shall not impart color, taste or odor to water. The lubricant containers shall be labeled with the manufacturer's name.

(5) Gasket

Gaskets shall meet all applicable requirements of ANSI Standard A21.11 and/or ASTM F477-76.

Gasket dimensions shall be in accordance with the manufacturer's standard design dimensions and tolerances. The gasket shall be of such size and shape as to provide an adequate compressive force against the spigot and after assembly to effect a positive seal under all conditions of joint and gasket tolerances. The trade name or trademark, size, mold number, gasket manufacturer's mark and year of manufacture shall be molded in the rubber on the back of gaskets.

Gaskets shall be vulcanized natural or vulcanized synthetic rubber. No reclaimed rubber shall be used. When two hardnesses of rubber are included in a gasket, the soft and hard portions shall be integrally molded and joined in a strong vulcanized bond. They shall be free of porous areas, foreign material and visible defects.

(6) Pipe Lengths

The pipe shall be furnished in nominal lengths of 20 feet. The pipe shall be supported at least every 10 feet of its length during all handling, and special care shall be taken to avoid placing undue stress on the pipe during handling, and any actions that may damage the bell or spigot ends of the pipe shall be avoided.

(7) Fittings

Fittings to be installed in conjunction with the low pressure force main (pumped sewer lines) shall be of the same material and quality as the pipe and have joints as described in this Section. The fittings shall be designed to withstand the same pressures required for the pipe. The supplier shall be capable of supplying fittings with combinations of spigot (plain) end and bell.

The pipe supplier shall be capable of supplying special pieces for use in connection PVC pipe to cast or ductile iron pipe.

(8) Marking of Pipe

As a minimum, the pipe shall have the following data applied to each piece:

1. Nominal Size
2. Type of Material
3. SDR or Class (color coded)
4. Manufacturer
5. NSF (National Safety Foundation seal of approval)
6. Quality Control Code

2.05 SEWER SERVICE CONNECTIONS, WYES, AND RISERS:

- A. New service connection fittings and lines shall be six (6) inch diameter as supplied by the manufacturer of the gravity sewer pipe unless required otherwise by ENGINEER. All fittings located on the lateral shall be incidental and not be a separate pay item. Laterals shall be PVC or ABS according to ASTM D3034 or ASTM D2751, respectively, unless otherwise shown. Minimum wall thickness shall be SDR 35 for installations less than 16 feet in depth, and SDR 26 for installations from 16 to 25 feet in depth.
- B. Minimum slope for lateral service lines shall be one percent (1.0%). All specifications for gravity sewer lines and appurtenances shall apply to lateral service lines.
- C. Service laterals to be extended from main sewers over twelve feet (12') in depth where the property being served does not require the full depth, may be brought up to grade in the manner described for riser pipe. Service laterals from main sewers less than 12

feet in depth will be extended on a straight uniform grade from the main to the point of terminus. Depths of service laterals at the point of termination will be shown on the Plans or supplied by the ENGINEER. All sanitary sewer laterals shall be installed at least four feet (4') below the existing or proposed basement floor elevation at the point of connection to the sewer main. Service laterals shall be extended to the right-of-way line or easement line, as applicable, unless otherwise shown on the plans or directed by the ENGINEER. Laterals shall not exceed a depth of twelve feet (12') below finish grade at the end of the lateral at the right-of-way or easement line unless specifically authorized by the ENGINEER.

D. WYE BRANCHES:

1. Location: In general, wye branches shall be placed in the main sewer opposite each lot or property to which a house service may be extended.
2. Existing Sewers: Where a wye branch is to be installed in an existing sewer, the CONTRACTOR will be permitted to tap the sewer pipe and install the wye as directed by the ENGINEER. Wyes shall only be installed on the type of pipe for which they were designed. Wyes shall be approved by the ENGINEER.
3. Wyes shall be of the same material, strength, and joint as the sewer main pipe.
4. Where the wye branch is not designed for use with ABS or PVC service pipe, appropriate adapters shall be used to connect the lateral to the wye branch.

E. RISER PIPE:

Where the cover on the wye branch is in excess of twelve feet below average ground surface, a 45 degree bend and sufficient riser pipe (also installed at a 45 degree slope) shall be added to terminate at a depth of twelve feet below the ground surface, provided the property being served will not require additional depth.

F. CLOSURES:

1. Where no riser pipe or lateral is installed with the wye branches, the outlet of each wye branch shall be securely sealed with a restrained water tight closure that can be later removed without damage to the outlet.
2. ABS or PVC: All closures at the ends of ABS or PVC wye branches, risers or service laterals shall be made by installing a length of ABS or PVC pipe to the wye branch, riser or service lateral and solvent cementing an ABS or PVC cap to the spigot

end. A sufficient length of pipe should be installed to permit removal of the closure and extending the line in the future. Mechanical plugs shall not be permitted.

3. All closures shall be capable of passing the sewer leakage test(s).

G. WYE POLES:

1. A wye pole shall be placed at the end of each wye branch, riser, or house service, as the case may be, extending to a point 6 inches below the end of the pipe to hold it firmly in position during backfilling. If the wye pole is pulled out, bent, or broken, the CONTRACTOR shall, at no cost to the OWNER, replace or straighten the pole. The wye pole shall be adjacent to the end of the pipe but not above it or against it.

2. Material: Wye poles shall be not less than a standard 2 x 4 and shall extend a minimum of 3 feet above the finished grade. The material used for wye poles shall be in good condition and shall be straight, sound and free from large or loose knots.

2.06 AIR RELEASE VALVES AND PITS:

A. Automatic sewage type air release valves and pits shall be installed on the force main at all high points in the lines as shown on the Plans. The exact location of air release valves shall be determined in the field by the ENGINEER.

B. Air release valves shall be the short version of Apco Model 400, Crispin 520, or equal. Valves shall be 2-inch inlet diameter and shall be fitted with proper size of orifices. The body and cover shall be of cast iron, the trim shall be brass and the float shall be of stainless steel. The valves shall be suitable for use in lines having a maximum water pressure of 200 psi. The valve shall be supplied with backwash accessories.

C. Pits shall be pre-cast or built in place, complete with frame and cover, connecting galvanized steel piping, cutoffs, blowoffs and all accessories. Submittals shall be reviewed by the ENGINEER prior to placement in the field.

2.07 PRECAST CONCRETE MANHOLES:

A. Precast concrete manholes shall consist of reinforced riser sections, an eccentric cone or flat slab top section, and a base section, all conforming with details as shown on the Plans.

B. Precast reinforced concrete sections shall meet the requirements of the latest edition of ASTM Designation C-478, and shall not have more than two (2) holes for the purpose of handling.

C. Joints for precast sections shall be concrete pipe type and shall be sealed with

preformed joint compound or rubber gaskets. Preformed joint compound shall meet Federal Specification SS-S00210(210-A) and AASHTO Specification M-198; rubber gaskets shall meet ASTM Designation C-443.

- D. Manhole steps shall be coated corrosion resistant PS-2 steps as manufactured by M.A. Industries, Inc., Peachtree City, Georgia, "Surefoot" rubber encased steps as manufactured by Oliver Tire and Rubber Co., or approved equal.
- E. Manhole frames and covers shall meet the requirement of ASTM Designation A-48 for "Gray Iron Castings, Class 25".
- F. Flexible manhole pipe connectors shall be Kor-N-Seal as manufactured by NPC Systems, Inc.; Press Wedge II as manufactured by Press-Seal Gasket Corporation, or approved equal and shall meet ASTM Designation C-923.

2.08 PRECAST PUMPING STATIONS OR WET WELLS:

- A. Precast concrete pumping stations or wet wells shall consist of reinforced riser sections, a flat slab top section, and a bottom, either poured at the job site by the Contractor or precast by the Manufacturer, all conforming with details as shown on the Plans.
- B. Precast reinforced concrete sections shall meet the requirements of the latest edition of ASTM Designation C-478, and shall not have more than two (2) holes for the purpose of handling.
- C. Joints for precast sections shall be concrete pipe type and shall be sealed with preformed joint compound or rubber gaskets. Preformed joint compound shall meet Federal Specification SS-S00210 (210-A) and AASHTO Specification M-198; rubber gaskets shall meet ASTM Designation C-443.

2.09 LINING FOR PUMPING STATIONS AND MANHOLES:

- A. General:
 - 1. All interior barrel and joint surface areas, which will be exposed to sewer liquids and gases, shall be prepared, coated, and cured as necessary to complete the installation of a coal tar epoxy lining in each concrete pipe section and manhole section, at the concrete pipe manufacturer's plant.
 - 2. Waterproofing of manholes shall be performed using Xypex Crystalline Concrete Waterproofing **ONLY**. No other methods or equals shall be used for lining concrete manholes and pumping stations. See Appendix "A" for specifications on Xypex Crystalline Concrete Water Proofing.
- B. Surface Preparation: All precast concrete units shall be prepared for lining by removing all laitance, form oil, and other loose, foreign, or deleterious materials which would adversely affect the bond of the lining compound to the pipe surface. Specifically, surface preparation shall consist of sandblasting and cleaning the barrel of the pipe and the joint surface areas on which coatings will be applied.

Under no circumstances shall the lining be applied on "Green" concrete. All surfaces to be coated shall be essentially free of voids, cracks, inclusions or other structural defects. Any such defects shall be corrected by bagging or brushing the wet formed concrete and/or cement grouting the cured section. All grouting must be allowed to thoroughly cure before any coating is applied. The surfaces shall not be extremely rough or deeply textured nor shall they bear exposed aggregate. All mortar fins, concrete splatter and other protrusions shall be removed by appropriate means. Prior to applying specified coatings, the concrete surface shall be clean and properly prepared as specified herein and shall be dry to the extent that the surfaces to be coated are visibly dry and the concrete contains no greater than ten percent (10%) moisture as determined by measurement with a suitable moisture meter.

1. Surfaces to be coated shall be clean and dry. All grease, oil, dirt, salts and other foreign matter shall be removed by steam or detergent cleaning. Any such areas shall be allowed to thoroughly dry before any further surface preparation is performed. All surfaces to be coated shall be uniformly brush sandblasted to the extent that all loose or unsound concrete and laitance are removed. All necessary precautions shall be employed to avoid excessive sandblasting so that a uniformly blasted concrete surface is produced that is clean and lightly etched. All blasted concrete surfaces shall be patched with an epoxy structural paste adhesive, if required, and have the prime coat applied within eight (8) hours and before surface contamination or moisture absorption can occur. In order to avoid damaging previously applied coatings, work shall be scheduled such that complete concrete units are sandblasted and coated.

C. Application:

1. The pipe surface areas to be lined shall be blown off with air to remove all sand, dust and other loose materials immediately prior to application of the lining compound. The lining compound shall not be applied when the ambient temperature is below 40°F. The compound shall not be applied under adverse atmospheric conditions that will cause detrimental blistering, pinholing, or porosity of the film.
2. The coating shall be applied by the airless spray method, in three (3) coats, consisting of a primer, four (4) mils minimum dry film thickness, followed by two (2) coats each with a minimum dry film thickness of ten (10) mils, for a total minimum dry film thickness of twenty-four (24) mils.
3. The complete coating system shall be free of excessive runs, sags, drips, cracks, crazing, alligatoring, blisters, inclusions, excessive or deficient film thickness, voids, pinholes or other holidays, damaged area or any other defects. Any such deficiencies shall be corrected by removal and recoating. Depending upon air circulation and relative humidity conditions, the coating system should be cured sufficiently hard so that the pipe can be handled with minimal damage.

- D. Surface Testing, Film Testing and Inspection: Surface temperature shall be determined with an appropriate dial thermometer. Pipe moisture content shall be determined by an appropriate moisture meter to assure proper condition of the surface before applying coatings. The primer and finish coats shall be inspected for continuity, pinholes, bore areas and holidays, with a non-destructive field-calibrated sparking holiday detector. Dry film thickness shall be determined with a non-destructive dry film gauge. All instruments shall be as recommended by the coating supplier.
- E. Touch-Up and Repair: Excessive runs, sags, dips, cracks, crazing, alligating, blisters and inclusions shall be completely removed by suitable scraping, chipping, or grinding. Loose or poorly bonded coating and improperly cured coating shall be completely removed to a sound substrate by grinding or sandblasting. Excessive film thickness shall be reduced to below 24.0 mils by grinding or sandblasting. All deficient areas shall be wiped free of all surface contamination using clean rags soaked in specified thinner and the cleaned areas shall be allowed to dry. The deficient area shall then be thoroughly abraded and the abrasion shall be "feathered" out slightly beyond the perimeter of the affected area. Small areas may be abraded by hand or power tool sanding using medium grit garnet or sandpaper. Extensive areas may be abraded by uniform brush sandblasting. All necessary precautions shall be employed, including temporary shielding where required, to protect adjacent coatings from damage during sandblasting operations. All abraded areas shall be thoroughly swept clean and the specified coating applied the same day and before contamination can occur. The prepared areas shall then be primed and finish coated as specified, except that all coating may be applied unthinned and by brush. All coating shall be "feathered" out to the edge of the abraded area. The pipe shall be visually inspected at the job site before installation.

2.10 SEPARATION OF WATER AND SEWER MAINS:

- A. Horizontal and Vertical Separation: Sewers shall be laid at least 10 feet horizontally from any existing or proposed water main. The distance shall be measured edge to edge. In cases where it is not practical to maintain a 10 foot separation, the appropriate reviewing agency may allow deviation on a case-by-case basis, if supported by data from the design engineer. Such deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on one side of the sewer and at an elevation so the bottom of the water main is at least 18 inches (460 mm) above the top of the sewer.

If it is impossible to obtain proper horizontal and vertical separation as described above, both the water main and sewer must be constructed of slip-on or mechanical joint pipe complying with public water supply design standards of the agency and be pressure tested to 150 psi (1034 kPa) to assure watertightness before backfilling.

- B. Crossings: Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches (460 mm) between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper horizontal and vertical separation as stipulated above, one of the following methods must be specified:

1. The sewer shall be designed and constructed of PVC pipe and equal to water pipe, and shall be pressure tested at 150 psi (1034 kPa) to assure water tightness prior to backfilling.
2. Either the water main or the sewer line may be encased in a watertight carrier pipe which extends 10 feet (3 m) on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the regulatory agency for use in water main construction.

2.11 TESTING:

A. GRAVITY SEWER TESTING – LEAKAGE (SEWER MAINS):

All completed piping shall be tested as specified herein by low-pressure air test, exfiltration, or infiltration test after backfilling to test for leaks. The maximum leakage allowance for all sanitary sewers shall be 50 gallons per inch diameter per mile of pipe per 24 hours. If the level of the current prevailing groundwater is two feet (2') or more above the top of the sewer pipe, an infiltration test will be required. At the request of the ENGINEER, a low-pressure air test or exfiltration test will be performed instead of or in addition to an infiltration test if the ground water level is uncertain. Labor, equipment and supplies required for all tests shall be furnished by the CONTRACTOR. The CONTRACTOR shall flush and clean the sewer line to the satisfaction of the OWNER prior to testing. The ENGINEER shall witness and approve all leakage tests. In the event that the CONTRACTOR performs any test without witness by the ENGINEER, the CONTRACTOR will be required to test the section again at no cost to the OWNER. The CONTRACTOR and ENGINEER shall sign all test reports. Note that only four sections (approximately 1,200 - 1,600 feet) of sewer will be permitted to remain untested at any time.

1. Low Pressure Air Test:

After backfilling, the air test shall be conducted between two consecutive manholes. Low pressure air tests shall be in accordance with ASTM C 924, except as specified otherwise herein. All pipe outlets must be plugged in the section being tested with suitable test plugs. One of the plugs used at a manhole must be tapped and equipped for an air inlet connection for filling the line from the air compressor.

Air shall be supplied slowly to the test section until the internal pressure reaches approximately 4 pounds per square inch (psi). At least 2 minutes shall be allowed for the air pressure to stabilize. When the pressure has stabilized and is at or above 3.5 psi, the air supply shall be disconnected and timing shall begin. Timing shall continue until the pressure has dropped 1.0 psi. If the time elapsed before the pressure drops 1.0 psi is greater than the specified minimum holding time, the section shall be considered to have passed the test. If the time is less than the specified minimum holding time, the section shall be considered to have failed and must be repaired or replaced.

Minimum Holding Time shall be calculated from the following equation:

Holding Time (minutes) = $0.00037 \times D^2 \times L / Q$
where D = Pipe Diameter (inches)

L = Length of Pipe Tested (feet)

Q = Allowable Air Loss (ft³/min) from Table B.2.

An air pressure correction is necessary when the current prevailing groundwater is above the invert of the sewer line being tested. Under this condition, the air test pressure shall be increased 0.433 psi for each foot the groundwater level is above the invert of the pipe. All gauge pressures shall be increased by this amount. If the current prevailing groundwater is more than 27 inches above the invert of the pipe, the infiltration or exfiltration test should be used as required above. Thus, internal air pressures should never exceed 5.0 psi.

Table B.1. Minimum Holding Time for Low Pressure Air Test	
Nominal Pipe Size, in.	Time per 100 ft.
6	42 seconds

8	1 minute-12 seconds
10	1 minute-30 seconds
12	1 minute-48 seconds
15	2 minutes-6 seconds
18	2 minutes-24 seconds
21	3 minutes
24	3 minutes-36 seconds
27	4 minutes-12 seconds
30	4 minutes-48 seconds
33	5 minutes-24 seconds
36	6 minutes

Table B.2. Allowable Air Loss for Low Pressure Air Test	
Nominal Pipe Size, in.	Air Loss (Q), ft³/min
6 and 8	2
10	2.5
12	3
15	4
18	5
21	5.5
24	6
27	6.5
30	7
33	7.5
36	8

42	9
48	10
54	11
60	12
66	13
72	14

2. Infiltration Test:

The CONTRACTOR may elect to use an infiltration test when the level of the current prevailing groundwater is two feet (2') or more above the top of the sewer pipe, including all service laterals, at the highest point of the section being tested. The inlet end(s) of the upstream manhole shall be securely sealed. The downstream sewer shall be completed and open to allow the sewer to drain. The ENGINEER shall approve the length of sewer to be tested at one time. The ENGINEER may require that each manhole span be tested separately. The amount of infiltration shall be measured by means of a weir located in the downstream manhole. The test head shall be maintained for a period of at least 24 hours before the weir measurement is made. Infiltration shall not exceed 50 gallons per inch diameter per mile of pipe per 24 hours. This infiltration test may not be performed until the sewer line and manholes are completed and all known leaks are repaired. The CONTRACTOR will be required to correct all conditions that permit visible infiltration and may be required to relay sections with such conditions that cannot be corrected, even though infiltration is within allowable limits.

3. Exfiltration Test:

When the exfiltration test is selected, the inlet ends of the upstream and downstream manholes shall be sealed with watertight plugs or bulkheads, and the sewer along with the upstream manhole shall be filled with water until the elevation of the water in the upstream manhole is: 1) two feet (2') higher than the top of the sewer pipe, including all service laterals, at the highest point of the section being tested, or 2) two feet (2') above the level of the current prevailing groundwater, whichever is the higher elevation. The test level shall be clearly marked in the upstream manhole. The entire length of section to be tested shall be filled and maintained full of water for a period of at least 24 hours prior to the start of the test. If the water level in the upper manhole drops during this 24 hour period, the level shall be raised to the test level mark prior to start of the test.

Exfiltration will be determined by measuring the amount of water required to maintain the marked water level for a period of 1 hour from the start of the test. The allowable leakage of 50 gallons per inch diameter per mile of pipe per 24 hours is based on a maximum difference in elevation of 8 feet between the water level in the upstream manhole and the invert of the pipe being tested in the lower manhole or the current prevailing groundwater level, whichever is higher. If this difference in elevation exceeds 8 feet, the allowable leakage shall be increased 5 percent for each 1 foot in excess of 8 feet. All observed leaks shall be corrected even if exfiltration is within the allowable limits.

4. Smoke Testing:

Smoke testing may be used only to locate leaks and in no case shall be considered conclusive. In all cases the smoke test shall be accompanied by an air test, exfiltration test or infiltration test. The ENGINEER may order a smoke test if another leakage test fails and the source of the leak cannot be determined by other means. Smoke testing may only be performed where ground water is low and the conduit is properly sealed. Smoke shall be blown into a sealed section of sewer under pressure, and the CONTRACTOR and ENGINEER shall observe for any smoke appearing on top of the ground indicating the presence of leaks. The ENGINEER may require that the CONTRACTOR excavate the sewer to determine the source of any smoke appearing during a smoke test. All leaks or breaks discovered by the smoke tests shall be repaired and/or corrected by the CONTRACTOR at his own expense in a manner acceptable to the ENGINEER. Equipment and supplies required for smoke tests shall be furnished by the CONTRACTOR. Smoke tests may be performed by the CONTRACTOR at any time during construction at his option; however, any such tests shall not supplant the final tests of the completed work.

B. SEWER FORCE MAIN TESTING - LEAKAGE:

As a minimum, all sewer force mains shall be tested in accordance with the Hydrostatic Testing Requirements of AWWA C600.

1. All force mains shall be given a hydrostatic test of at least 1.5 times the shutoff head of the connected pumps or 150 psi, whichever is greater. Loss of water pressure during test shall not exceed 5 psi in a 2 hour period.
2. Where practicable, pipelines shall be tested between line valves or plugs in lengths of not more than 1500 feet.

3. The pipe shall be slowly filled with water and the specified test pressure shall be applied by means of a pump connected to the pipe in a manner satisfactory to the ENGINEER. The pump, pipe connection, and all necessary apparatus except the gauges shall be furnished by the CONTRACTOR. The ENGINEER will furnish the gauges for the test, but the CONTRACTOR shall furnish all necessary assistance for conducting the test. Before applying the specified test pressure, all air shall be expelled from the pipe. If permanent air vents are not located at all high points, the CONTRACTOR shall install corporation cocks at such points so the air can be expelled as the line is filled with water. After all the air has been expelled, the corporation cocks shall be closed and the test pressure applied.
4. Duration of test shall not be less than two hours.
5. The test pressure shall not exceed the rated pressure of the valves in the pipeline.
6. Where leaks are visible at exposed joints and/or evident on the surface where joints are covered, the CONTRACTOR shall repair the joints, retighten the bolts, relay the pipe, or replace the pipe until the leak is eliminated--regardless of total leakage as shown by the hydrostatic test. Polyethylene encasement damaged from repairs must also be properly repaired or replaced to the satisfaction of the ENGINEER.
7. All pipe, fittings and other materials found to be defective under test shall be removed and replaced at the CONTRACTOR's expense.
8. Lines which fail to meet test shall be repaired and retested as necessary until test requirements are complied with.
9. The OWNER will provide water for testing the force mains; however, the CONTRACTOR will be responsible for piping or hauling the water if necessary. The CONTRACTOR shall not operate any valves on existing water mains. This shall be done by the OWNER.
10. No pipe installation will be accepted if the leakage is greater than that determined by the formula:

$$L = \frac{SD(P)^{1/2}}{133,200}$$

in which L is the allowable leakage, in gallons per hour; S is the length of pipeline tested, in feet; D is the nominal diameter of the pipe, in inches; and P is the average test pressure during the leakage test, in pounds per square inch gauge. Allowable leakage at various pressures and pipe sizes are shown in the Table below (from

AWWA C600 - Table 6A):

Allowable Leakage Per 1,000 Feet of Pipeline* - gph

Avg. Test Pressure psi	3	4	6	8	10	12	14	16
250	0.36	0.47	0.71	0.95	1.19	1.42	1.66	1.90
225	0.34	0.45	0.68	0.90	1.13	1.35	1.58	1.80
200	0.32	0.43	0.64	0.85	1.06	1.28	1.48	1.70
175	0.30	0.40	0.59	0.80	0.99	1.19	1.39	1.59
150	0.28	0.37	0.55	0.74	0.92	1.10	1.29	1.47
125	0.25	0.34	0.50	0.67	0.84	1.01	1.18	1.34
100	0.23	0.30	0.45	0.60	0.75	0.90	1.05	1.20

Avg. Test Pressure psi	18	20	24	30	36	42	48	54
250	2.14	2.37	2.85	3.56	4.27	4.99	5.70	6.41
225	2.03	2.25	2.70	3.38	4.05	4.73	5.41	6.03
200	1.91	2.12	2.55	3.19	3.82	4.46	5.09	5.73
175	1.79	1.98	2.38	2.98	3.58	4.17	4.77	5.36
150	1.66	1.84	2.21	2.76	3.31	3.86	4.41	4.97
125	1.51	1.68	2.01	2.52	3.02	3.53	4.03	4.53
100	1.35	1.50	1.80	2.25	2.70	3.15	3.60	4.05

*If the pipeline under test contains sections of various diameters, the allowable leakage will be the sum of the computed leakage for each size.

C. TEST FOR DEFLECTION:

After the pipe has been laid and backfilled, the Engineer shall require appropriate deflection testing. This test is conducted by pulling a pointed mandrel through the pipe as described in Appendix "A." The Engineer shall designate the method of testing to be used.

Upon completion of backfill the maximum allowable deflection shall not exceed 5% of the pipe's base inside diameter in accordance with Appendix X2 of ASTM Specification D3034 and F679.

The base inside diameter of the pipe shall be determined in accordance with Appendix Section X1 of ASTM Specification D3034 and F679. Testing shall be conducted on a manhole to manhole basis or in total, as specified. To ensure accurate measurement, it is important that the line to be tested is completely water flushed. This test will not be run for at least thirty (30) days after the trench has been backfilled. If the trench was dewatered, the water table will be permitted to recover to at least three- fourths of its previous depth above the pipe before this thirty (30) day period starts.

- D. TEST REJECTION: Should the results of any test fail to meet the criteria established in these specifications, the Contractor shall, at Contractor's expense, locate and repair the rejected section and retest until it is within specified allowance.
- E. ALIGNMENT: Sewers shall be laid with straight alignment between manholes. Straight alignment shall be checked by either using a laser beam or lamping.

2.12 PUMPING AND BYPASSING:

- A. Flow through existing sanitary sewers and manholes shall not be interrupted, except as follows. Flow may be interrupted long enough to reconfigure inverts in existing manholes or to core drill existing manholes, as necessary. Flow may also be interrupted to connect an existing sewer into a new sewer and to plug the outlet to be abandoned in the manhole. All situations requiring interruption of flows shall be carefully coordinated with the OWNER and ENGINEER at least three working days in advance. Anytime the flow through existing sanitary sewers or manholes is interrupted, the CONTRACTOR shall provide bypass pumping of the sewage to a truck or downstream manhole, as approved by the OWNER. Under no circumstances should sewage be allowed to surcharge new or existing sewers or manholes or to flow onto or into the ground. Length of bypass pumping shall be minimized as much as possible.
- C. When pumping and bypassing is required, the CONTRACTOR shall supply the pumps, conduits, and other equipment to divert the flow of sewage around the sewer(s) or manhole(s) in which work is to be performed. The bypass system shall be of sufficient capacity to handle the same capacity as the sewer being bypassed, unless otherwise approved in writing by the ENGINEER. Pumps used for bypassing shall be capable of passing at least a 3" solid sphere, and bypass piping shall have a minimum size of 4" diameter. The CONTRACTOR will be responsible for furnishing the necessary labor and supervision to set up and operate the pumping and bypassing system. If pumping is required on a 24-hour basis, engines shall be equipped in a

manner to keep noise to a minimum, and a spare back-up pump will be required. A spare back-up pump may be required at other locations or times as indicated in the construction documents. All fuel tanks for pump or generator motors shall be filled by the CONTRACTOR prior to leaving the job site if bypass pumping must continue. The CONTRACTOR will not suspend work for more than 24 hours during operation of a bypassing system, unless otherwise permitted by the ENGINEER.

2.13 MEASUREMENT AND PAYMENT:

- A. Payment for all items of work required for installation of sanitary sewerage system (main or service) shall be included in the lump sum bid item.

END OF SECTION

SECTION 33 4000 - STORM DRAINAGE UTILITIES

PART 1 - GENERALRELATED DOCUMENTS:

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

A. Extent of sewer collection system work is shown on drawings.

B. Sewer collection system work includes, but is not limited to, the following:

1. Storm sewer conduits.
2. Catch basins, frames and gratings.
3. Junction Boxes
4. Curb Inlets and Covers

C. Excavation and backfilling for storm sewer collection system is specified in "Section 31 0000 – Site Earthwork".

D. Comply with the requirements of applicable sections for excavation and backfilling required in connection with storm sewer collection system work.

E. Refer to applicable Division 32 sections for concrete work related to storm sewer collection systems.

PART 2 - PRODUCTSCONDUIT MATERIALS:

A. General: Furnish ells, tees, reducing tees, wyes, couplings, increasers, crosses, transitions and end caps of same type and class of material as conduit, or of material having equal or superior physical and chemical properties as acceptable to the Engineer.

B. Reinforced Concrete Pipe: ANSI/ASTM C 76, with modified tongue-and-groove compression gasket joints complying with ANSI/ASTM C 443.

C. High Density Polyethylene (HDPE): Material in accordance with ASTM F 405 or ASTM F 667. "High density polyethylene pipe shall be **SMOOTH LINED** and meet the requirements of AASHTO M294 Type S.

D. Corrugated Poly Vinyl Chloride (CPVC):

PIPE: PVC corrugated pipe with a **SMOOTH INTERIOR** shall conform to the requirements of ASTM Designation F 949 (latest revision). The pipe and fittings shall be homogeneous throughout and free from visible crack, holes, foreign inclusions or other injurious defects. Minimum pipe stiffness when measured in accordance with ASTM Test Method D 2412 shall be 46 psi. The pipe shall be made of PVC compound having a minimum cell classification of 12454 as defined in ASTM Specification D 1784.

FITTINGS: All fittings for PVC corrugated sewer pipe with a smooth interior shall conform to ASTM F 949 (latest revision) Section 5.2.3. To insure compatibility, the pipe manufacturer shall provide all fittings.

JOINTS:

All joints shall be made with integrally formed bell and spigot gasketed connections. All gaskets shall be a single gasket that has two sealing surfaces and indexes two corrugation valleys to ensure water tightness and prevent rolling during installation. Manufacturer shall provide documentation showing no leakage when gasketed pipe joints are tested in accordance with ASTM Test Method D3212. Elastomeric seals (gaskets) shall meet the requirements of ASTM Designation F477.

INSTALLATION:

PVC corrugated pipe shall be installed in strict accordance with ASTM D2321. Class I material shall be used in the bedding, haunch zone and initial backfill zone to an elevation 6" over the top of the pipe.

MANUFACTURER:

All CPVC pipe shall be manufactured by Contech Construction Products Inc. or approved equal.

METAL ACCESSORIES:

- A. Catch Basin Frames and Gratings: Grey cast iron, heavy-duty.
- B. Curb Inlet Manhole Covers: Grey cast iron, heavy-duty.

PART 3 - EXECUTION**INSTALLATION OF CONDUIT:**

- A. **General:** Install conduit in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated. Inspect conduit before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site. Lay conduit beginning at low point of a system, true to grades and alignment indicated with unbroken continuity of invert. Place groove end of concrete conduit facing upstream. Install bituminous plastic cement in accordance with manufacturer's recommendations.

- B. Concrete Pipe: Install in accordance with applicable provisions of American Concrete Pipe Association "Concrete Pipe Field Manual", unless otherwise indicated.
- C. Cleaning Conduit: Clear interior of conduit of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.
 - 1. Place plugs in ends of uncompleted conduit at end of day, or whenever work stops.
 - 2. Flush lines between catch basins if required to remove collected debris.
- D. Joint Adapters: Make joints between cast iron pipe and other types of pipe with standard manufactured cast iron adapters and fittings.
- E. Roof Drain Connections: Contractor shall utilize adapters as necessary to connect the proposed building drains to the proposed site piping (including CPVC and HDPE) as shown on the construction plans.
- F. Closing Abandoned Utilities: Close open ends of abandoned underground utilities which are indicated to remain in place. Provide sufficiently strong closures to withstand hydro-static or earth pressure which may result after ends of abandoned utilities have been closed.
- G. Interior Inspection: Inspect conduit to determine whether line displacement or other damage has occurred.
 - 1. Make inspections after lines between manholes, or manhole locations have been installed and approximately two feet of backfill is in place and at completion of project.
 - 2. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, correct such defects to satisfaction of Engineer.

UNDERGROUND STRUCTURES:

A. Catch Basins, Junction Boxes, Curb Inlets: Construct concrete catch basins to the sizes and shapes indicated. ***Precast catch basins, junction boxes, curb inlets, etc. are acceptable; however, all precast drainage structures shall utilize cast in place tops. No precast tops will be allowed.***

- 1. Use concrete which will attain a 28-day compressive strength of not less than 3500 psi.
- 2. Set cast iron frames and gratings to elevations indicated.

TAP CONNECTIONS:

A. Make connections to existing conduits and underground structures, so that finished work will conform as nearly as practicable to requirements specified for new work.

B. Use commercially manufactured wyes for branch connections. Field cutting into conduit will not be permitted unless authorized by the Engineer. Spring wyes into existing line and encase entire wye, plus 6" overlap, with not less than 6" of 3,000 psi 28-day compressive strength concrete.

C. Branch connections made from side into existing 12" to 21" conduit shall have a wye sprung into the existing line, and entire wye encased with not less than 6" of 3000 psi 28-day compressive strength concrete.

BACKFILLING:

A. General: Conduct backfill operations of open-cut trenches closely following laying, jointing and bedding of pipe, and after initial inspection and testing are completed.

END OF SECTION



AIA Document G706™ – 1994

Contractor's Affidavit of Payment of Debts and Claims

PROJECT: (Name and address)

Fire Station No. 9

City of Hattiesburg

Hattiesburg, MS

City of Hattiesburg

200 Forrest Street

TO OWNER: (Name and address)
Hattiesburg, MS 39401

ARCHITECT'S PROJECT NUMBER: CN 19-3707

CONTRACT FOR: General Construction

CONTRACT DATED: February 11, 2020

OWNER: ☐

ARCHITECT: ☐

CONTRACTOR: ☐

SURETY: ☐

OTHER: ☐

STATE OF: Mississippi

COUNTY OF: Forrest

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all known indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

SUPPORTING DOCUMENTS ATTACHED HERETO:

- Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required. AIA Document G707, Consent of Surety, may be used for this purpose

Indicate Attachment ☒ Yes ☐ No

The following supporting documents should be attached hereto if required by the Owner:

- Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
- Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
- Contractor's Affidavit of Release of Liens (AIA Document G706A).

CONTRACTOR: (Name and address)

Hanco Corporation

P.O. Box 17678

Hattiesburg, MS 39404-7678

BY:

(Signature of authorized representative)

Chris Hudson/President

(Printed name and title)

Subscribed and sworn to before me on this date

April 30, 2021

Notary Public:

My Commission Expires:

April 29, 2022





May 20, 2021

Re: Fire Station No. 9
Hattiesburg, Mississippi
CN 18-3707

City of Hattiesburg
P.O. Box 1898
Hattiesburg, Mississippi 39403

Attn: Lamar Rutland

Dear Mr. Rutland:

Enclosed please find the following close-out documentation on the above referenced project:

1. AIA Document G702 Application and Certificate for Payment Number Sixteen (16) final in the amount of \$59,846.08.
2. Copy of Contract, Insurance and change orders.
3. AIA Document G707 Consent of Surety to Final Payment.
4. AIA Document G706 Contractor's Affidavit of Payment of Debts and Claims
5. AIA Document G706A Contractor's Affidavit of Release of Liens
6. Certification all bills for labor and materials have been paid.
7. Project Accordance
8. Non-Asbestos Certification
9. Contractor's Guarantee of Work
10. Contractor's Guarantee
11. Termite Warranty
12. Metal Building Warranty
13. Roof Warranty
14. Joint Sealers Warranty
15. Doors and Hardware Warranty
16. Overhead Door Warranty
17. Storefront and Glazing Warranty
18. Floor Warranty & O/M
19. Manual Roller Shade Warranty

20. 2 – Record Project Manuals
21. 2 – Plumbing and Mechanical O & M
22. 2 – HVAC O & M
23. 2 – Fire Sprinkler O & M
24. 2 – Electrical, Fire Alarm, Generator O & M
25. 2 – As-Built Drawings
26. 1 Thumb Drive – Electrical

If you have any questions please feel free to contact the office.

Respectfully,



Nancy Templeton
Office Manager

/nat
enclosure



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Acknowledge receipt of closing documents for the C. E. Roy Pathway project, approve final acceptance of the project and approve payment of final pay application to the contractor.
File Number: 2021-833
Minute Book #

Summary

Acknowledge receipt of closing documents for the C. E. Roy Pathway project, approve final acceptance of the project and approve payment of final pay application to the contractor.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.

June 7, 2021
N-S Project No. 15947.001

Lamar Rutland, P.E.
Director of Engineering
City of Hattiesburg
P.O. Box 1898
Hattiesburg, MS 39403-1898

REFERENCE: CONTRACTORS FINAL ESTIMATE
CITY OF HATTIESBURG
C.E. ROY PATHWAY

Dear Mr. Rutland:

Enclosed are three (3) originals of the Contractor's Final Estimate along with Final Close-Out Documents for the referenced project. I have reviewed the Contractor's Final Estimate and find the pay application to be in order. I, therefore, recommend payment to the contractor Gulf South Construction, LLC, in the amount of \$8,773.17 for work completed.

Please call me at 545-1565 if you have any questions or need additional information.

Sincerely,

NEEL-SCHAFFER, INC.



Geoffrey Crosby, P.E.
Senior Project Manager

Enclosures

APPLICATION AND CERTIFICATION FOR PAYMENT

OWNER: City of Hattiesburg
200 Forrest Street
Hattiesburg, Ms. 39401

PROJECT:

APPLICATION: Final

Distribution to

CONTRACTOR: Gulf South Construction LLC
P.O. Box 16105
Hattiesburg, Ms. 39404

VIA ARCHITECT: Neel-Schaffer, Inc.
704 Hardy St.
Hattiesburg, Ms. 39401

APP. DATE: 6/4/2021
PERIOD FROM: 12/31/2021
PERIOD TO: 6/4/2021

☐ OWNER
☐ ARCHITECT
☐ ENGINEER
☐ CONTRACTOR

CONTRACT FOR: C.E. Roy Pathway

PROJECT NOS:

CONTRACT DATE: 9/28/2020

CONTRACTOR'S APPLICATION FOR PAYMENT

Application is made for payment, as shown below, in connection with the Contract Continuation Sheet, G703, is attached.

1 ORIGINAL CONTRACT SUM		\$178,118.73
2 Net Change By Change Order		
3 CONTRACT SUM TO DATE		\$178,118.73
4 TOTAL COMPLETED AND STORED TO DATE		\$175,462.43
5 RETAINAGE:	0.00%	
a. 5.00% of Completed Work		\$0.00
b. 5.00% of Stored Material		
TOTAL RETAINAGE		\$0.00
6 TOTAL EARNED LESS RETAINAGE		\$175,462.43
7 LESS PREVIOUS CERTIFICATES FOR PAYMENT		\$166,689.26
8 CURRENT PAYMENT DUE		\$8,773.17
9 BALANCE TO FINISH, INCLUDING RETAINAGE		\$2,656.30

CHANGE ORDER SUMMARY	ADDITIONS	DEDUCTION
Total changes approved in previous months by Owner		
Total approval this Month		
TOTALS	\$0.00	\$0.00
NET CHANGES by Change Order		

The undersigned Contractor certifies that to the best of the Contractor's knowledge, information and belief the Work covered by this Application for Payment has been completed in accordance with the Contract Documents, that all amounts have been paid by the contractor for Work which previous Certificates for payment were issued and payments received from the Owner, and that current payment shown herein is now due.

CONTRACTOR: Gulf South Construction LLC

By:

Date: 6/4/2021

State of:

Mississippi

County of: Lamar

Subscribed and sworn to before me this

4th

day of: June 2021

The above personally appeared before me the undersigned notary public and provided satisfactory evidence of identification to be the person who signed this document in my presence and swore or affirmed to me that the Contract Documents and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

NOTARY PUBLIC
ID No. 117098
Commission Expires
Jul 20, 2024

Notary Public:

My Commission expires: 7/20/24

ARCHITECT/ENGINEER'S CERTIFICATE FOR PAYMENT

In accordance with the Contract Documents, based on on-site observations and the data comprising the application, the Architect/Engineer certifies to the Owner that to the best of the A/E's knowledge, information and belief the Work has progressed as indicated, the quality of the Work is in accordance with the Contract Documents and the Contractor is entitled to payment of the AMOUNT CERTIFIED.

AMOUNT CERTIFIED \$8,773.17

(Attached explanation if amount certified differs from the amount applied. Initial all figures on this Application and on the Continuation Sheet that are changed to conform with the amount certified.)

ARCHITECT/ENGINEER:

By:

Date: 06/07/2021

This Certificate is not negotiable. The AMOUNT CERTIFIED is payable only to the Contractor named herein. Issuance, payment and acceptance of payment are without prejudice to and rights of the Owner or Contractor under this Contract.

CONTINUATION SHEET

AIA DOCUMENT G703

AIA Document G702, APPLICATION AND CERTIFICATION FOR PAYMENT, containing

Contractor's signed certification is attached.

In tabulations below, amounts are stated to the nearest dollar.

Use Column I on Contracts where variable retainage for line items may apply.

APPLICATION NO: Final

APPLICATION DATE: 01/04/21

PERIOD TO: 06/04/21

PROJECT NAME: C.E. Roy Pathway

A	B	C	D	E	F	G	H	I	
Item No.	Description of Work	Scheduled Value	Work Completed		Materials Presently Stored	Total Completed And Stored to Date	% (G/C)	Balance To Finish	Retainage
			Previous	This Period					
			Application						
202-B	Removal of Pavement, All Types and Depths	\$895.00	\$895.00		\$0.00	\$895.00	100.00%	\$0.00	\$0.00
202-B	Removal of Concrete Curb	\$612.00	\$612.00		\$0.00	\$612.00	100.00%	\$0.00	\$0.00
203-EX	Borrow, FM, Class B9, AH	\$3,225.00	\$516.00		\$0.00	\$516.00	16.00%	\$2,709.00	\$0.00
203-G	Excess Excavation, FM, AH	\$1,740.00	\$1,160.00		\$0.00	\$1,160.00	66.67%	\$580.00	\$0.00
211-A	Topsoil from Right of Way	\$8,280.00	\$8,280.00		\$0.00	\$8,280.00	100.00%	\$0.00	\$0.00
216-B	Solid Sodding, Centipede	\$5,640.00	\$5,640.00		\$0.00	\$5,640.00	100.00%	\$0.00	\$0.00
234-A	Temporary Silt Fence	\$4,650.00	\$465.00		\$0.00	\$465.00	10.00%	\$4,185.00	\$0.00
237-A	Wattles, 12"	\$660.00	\$264.00		\$0.00	\$264.00	40.00%	\$396.00	\$0.00
246-A	Sandbags	\$1,445.00	\$144.50		\$0.00	\$144.50	10.00%	\$1,300.50	\$0.00
603-CE	29"x18" RCAP, Class III	\$799.60	\$799.60		\$0.00	\$799.60	100.00%	\$0.00	\$0.00
603-CF	29"x18" RCAP End Sections, Class III	\$2,202.00	\$2,202.00		\$0.00	\$2,202.00	100.00%	\$0.00	\$0.00
608-A	Concrete Sidewalk, Without Reinforcement, 5" Thickness	\$68,750.00	\$70,937.50		\$0.00	\$70,937.50	103.18%	-\$2,187.50	\$0.00
609-B	Concrete Curb Header	\$2,278.25	\$4,451.35		\$0.00	\$4,451.35	195.38%	-\$2,173.10	\$0.00
618-A	Maintenance of Traffic	\$16,862.00	\$16,862.00		\$0.00	\$16,862.00	100.00%	\$0.00	\$0.00
620-A	Mobilization	\$17,640.00	\$17,640.00		\$0.00	\$17,640.00	100.00%	\$0.00	\$0.00
626-H	Thermoplastic Legend, White, Xing, 8" Height	\$2,078.00	\$2,078.00		\$0.00	\$2,078.00	100.00%	\$0.00	\$0.00
626-H	Thermoplastic Legend, White, Bike Symbol, 8" Height	\$2,078.00	\$2,078.00		\$0.00	\$2,078.00	100.00%	\$0.00	\$0.00
626-H	Thermoplastic Legend, White, Road, 4' Height	\$3,174.00	\$9,860.10		\$0.00	\$9,860.10	310.65%	-\$6,686.10	\$0.00
628-F	Cold Plastic Legend, White, Road, 4' Height	\$2,594.00	\$2,594.00		\$0.00	\$2,594.00	100.00%	\$0.00	\$0.00
628-F	Cold Plastic Legend, White, Xing, 4' Height	\$2,594.00	\$2,594.00		\$0.00	\$2,594.00	100.00%	\$0.00	\$0.00
628-F	Cold Plastic Legend, White, 6" Equivalent	\$2,760.00	\$0.00		\$0.00	\$0.00	0.00%	\$2,760.00	\$0.00
630-A	Standard Roadside Signs, Sheet Aluminum, 0.080" Thickness	\$5,633.05	\$5,633.05		\$0.00	\$5,633.05	100.00%	\$0.00	\$0.00
630-C	Steel U- Section Posts, 3.0 to 3.5 Lb/Ft	\$2,618.00	\$2,618.00		\$0.00	\$2,618.00	100.00%	\$0.00	\$0.00
211-C	Topsoil for Plant Holes, Contractor Furnished	\$1,695.00	\$1,695.00		\$0.00	\$1,695.00	100.00%	\$0.00	\$0.00
219-A	Watering	\$1,000.00	\$0.00		\$0.00	\$0.00	0.00%	\$1,000.00	\$0.00
230-A	Shrub Planting, Parsons Juniper	\$757.50	\$757.50		\$0.00	\$757.50	100.00%	\$0.00	\$0.00
230-A	Shrub Planting, Loropetalum "Purple Diamond"	\$1,446.70	\$1,446.70		\$0.00	\$1,446.70	100.00%	\$0.00	\$0.00
230-A	Shrub Planting, Glossy Abelia "Kaleidoscope"	\$593.75	\$593.75		\$0.00	\$593.75	100.00%	\$0.00	\$0.00
230-B	Tree Planting, Teddy Bear Magnolia	\$5,637.30	\$5,637.30		\$0.00	\$5,637.30	100.00%	\$0.00	\$0.00
230-B	Tree Planting, Nellie R Stevens Holly	\$3,323.00	\$3,323.00		\$0.00	\$3,323.00	100.00%	\$0.00	\$0.00
230-B	Tree Planting, Crape Myrtle "Muskogee"	\$1,637.40	\$1,637.40		\$0.00	\$1,637.40	100.00%	\$0.00	\$0.00
230-D	Bed Preparation	\$1,092.00	\$1,092.00		\$0.00	\$1,092.00	100.00%	\$0.00	\$0.00
232-A	Fertilizer for Woody Plant Material, Tablet, 21 Gram	\$207.68	\$207.68		\$0.00	\$207.68	100.00%	\$0.00	\$0.00
232-A	Tree Bark Mulch, Type III	\$475.00	\$475.00		\$0.00	\$475.00	100.00%	\$0.00	\$0.00
232-A	Tree Bark Mulch, Type IV	\$772.50	\$0.00		\$0.00	\$0.00	0.00%	\$772.50	\$0.00
907-258-PP	Herbicide Treatment, Per Plans	\$273.00	\$273.00		\$0.00	\$273.00	100.00%	\$0.00	\$0.00
	GRAND TOTALS	\$178,118.73	\$175,462.43	\$0.00	\$0.00	\$175,462.43	98.51%	\$2,656.30	\$0.00

**CONTRACTOR'S AFFIDAVIT OF
PAYMENT OF DEBTS AND CLAIMS**

Document G706

OWNER
ARCHITECT
CONTRACTOR
SURETY
OTHER

TO OWNER: City of Hattiesburg
(name and address) 200 Forrest St.
Hattiesburg, Ms. 39401

A/E PROJECT NO.:

PROJECT: C.E. Roy Pathway
(name and address) City of Hattiesburg

CONTRACT FOR: C.E. Roy Pathway
City of Hattiesburg

CONTRACT DATED: September 28, 2020

STATE OF: Mississippi
COUNTY OF: Lamar

The undersigned hereby certifies that, except as listed below, payment has been made in full and all obligations have otherwise been satisfied for all materials and equipment furnished, for all work, labor, and services performed, and for all know indebtedness and claims against the Contractor for damages arising in any manner in connection with the performance of the Contract referenced above for which the Owner or the Owner's property might in any way be held responsible or encumbered.

EXCEPTIONS:

Final application for payment and retainage.

SUPPORTING DOCUMENTS ATTACHED HERETO:

1. Consent of Surety to Final Payment. Whenever Surety is involved, Consent of Surety is required.

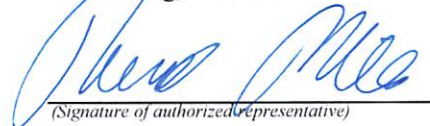
Indicate attachment: ☒ yes ☐ no

The following supporting documents should be attached hereto if required by the Owner:

1. Contractor's Release or Waiver of Liens, conditional upon receipt of final payment.
2. Separate Releases or Waivers of Liens from Subcontractors and material and equipment suppliers, to the extent required by the Owner, accompanied by a list thereof.
3. Contractor's Affidavit of Release of Liens.

CONTRACTOR: Gulf South Construction LLC
P.O. Box 16105
Hattiesburg, MS 39404

BY:


(Signature of authorized representative)

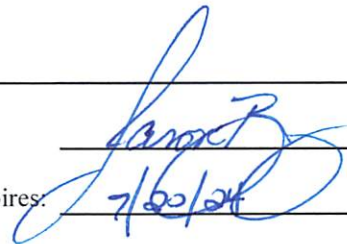
Russell Miller President
(Printed name and title)

Subscribed and sworn to before me on this date: 6/7/21



Notary Public:

My Commission Expires:


7/20/24

June 7, 2021

City of Hattiesburg
200 Forrest St.
Hattiesburg, Ms. 39401

Warranty for C.E. Roy Pathway, City of Hattiesburg, Mississippi

We hereby warranty that the construction of C.E. Roy Pathway has been done in strict accordance with the drawings and specifications and that the work installed will fulfill the requirements of those specifications. We agree to repair or replace or cause to be repaired or replaced any or all of the work which may prove to be defective in workmanship or material together with any adjacent work which required repair or replacement because of our defective work within a period of one year from December 12, 2020 to December 12, 2021. End of year punch list will be included in this warranty. Ordinary wear and tear and unusual abuse or neglect will not be under this warranty.



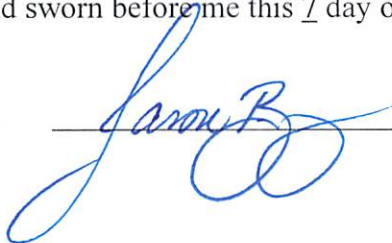
Russell Miller
President

State of Mississippi

County of Lamar

Subscribed and sworn before me this 7 day of June, 2021

Notary Public



**AIA**[®]**Document G707™ – 1994****Consent Of Surety to Final Payment**

Bond # 602-124350-4

PROJECT: *(Name and address)*
 C.E. Roy Pathway -- City of Hattiesburg,
 Mississippi

ARCHITECT'S PROJECT NUMBER:**OWNER:** ☐**CONTRACT FOR:** Construction**ARCHITECT:** ☐

TO OWNER: *(Name and address)*
 City of Hattiesburg
 P.O. Box 1898
 Hattiesburg, MS 39401

CONTRACT DATED:**CONTRACTOR:** ☐**SURETY:** ☐**OTHER:** ☐

In accordance with the provisions of the Contract between the Owner and the Contractor as indicated above, the
(Insert name and address of Surety)

United States Fire Insurance Company
 305 Madison Avenue
 Morristown, NJ 07962

, SURETY,

on bond of

(Insert name and address of Contractor)

Gulf South Construction, LLC
 P.O. Box 16105
 Hattiesburg, MS 39404

, CONTRACTOR,

hereby approves of the final payment to the Contractor, and agrees that final payment to the Contractor shall not relieve the Surety
 of any of its obligations to

(Insert name and address of Owner)

City of Hattiesburg
 P.O. Box 1898
 Hattiesburg, MS 39401

, OWNER,

as set forth in said Surety's bond.

IN WITNESS WHEREOF, the Surety has hereunto set its hand on this date: **June 4th, 2021***(Insert in writing the month followed by the numeric date and year.)***United States Fire Insurance Company***(Surety)**(Signature of authorized representative)***Kimberly B. Barhum, Attorney-in-Fact***(Printed name and title)*

Attest:

(Seal):

**POWER OF ATTORNEY
UNITED STATES FIRE INSURANCE COMPANY
PRINCIPAL OFFICE - MORRISTOWN, NEW JERSEY**

82632448121

KNOW ALL MEN BY THESE PRESENTS: That United States Fire Insurance Company, a corporation duly organized and existing under the laws of the state of Delaware, has made, constituted and appointed, and does hereby make, constitute and appoint:

*Jim E. Brashler, Troy P. Wagener, Patrick Mason, Dewey B. Mason, Kathleen Scarborough, Susan Skrmetta, Lisa Butler, Joseph Beattie,
Andrew P. Underwood, James Eley Brashler, Leslie R. Anderson, Debbie L. Dunaway, Kimberly B. Barham, David R. Fortenberry*

each, its true and lawful Attorney(s)-In-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver: Any and all bonds and undertakings of surety and other documents that the ordinary course of surety business may require, and to bind United States Fire Insurance Company thereby as fully and to the same extent as if such bonds or undertakings had been duly executed and acknowledged by the regularly elected officers of United States Fire Insurance Company at its principal office, in amounts or penalties not exceeding: Seven Million, Five Hundred Thousand Dollars (\$7,500,000).

This Power of Attorney limits the act of those named therein to the bonds and undertakings specifically named therein, and they have no authority to bind United States Fire Insurance Company except in the manner and to the extent therein stated.

This Power of Attorney revokes all previous Powers of Attorney issued on behalf of the Attorneys-In-Fact named above and expires on January 31, 2022.

This Power of Attorney is granted pursuant to Article IV of the By-Laws of United States Fire Insurance Company as now in full force and effect, and consistent with Article III thereof, which Articles provide, in pertinent part:

Article IV, Execution of Instruments - Except as the Board of Directors may authorize by resolution, the Chairman of the Board, President, any Vice-President, any Assistant Vice President, the Secretary, or any Assistant Secretary shall have power on behalf of the Corporation:

(a) to execute, affix the corporate seal manually or by facsimile to, acknowledge, verify and deliver any contracts, obligations, instruments and documents whatsoever in connection with its business including, without limiting the foregoing, any bonds, guarantees, undertakings, recognizances, powers of attorney or revocations of any powers of attorney, stipulations, policies of insurance, deeds, leases, mortgages, releases, satisfactions and agency agreements;

(b) to appoint, in writing, one or more persons for any or all of the purposes mentioned in the preceding paragraph (a), including affixing the seal of the Corporation.

Article III, Officers, Section 3.11, Facsimile Signatures. The signature of any officer authorized by the Corporation to sign any bonds, guarantees, undertakings, recognizances, stipulations, powers of attorney or revocations of any powers of attorney and policies of insurance issued by the Corporation may be printed, facsimile, lithographed or otherwise produced. In addition, if and as authorized by the Board of Directors, dividend warrants or checks, or other numerous instruments similar to one another in form, may be signed by the facsimile signature or signatures, lithographed or otherwise produced, of such officer or officers of the Corporation as from time to time may be authorized to sign such instruments on behalf of the Corporation. The Corporation may continue to use for the purposes herein stated the facsimile signature of any person or persons who shall have been such officer or officers of the Corporation, notwithstanding the fact that he may have ceased to be such at the time when such instruments shall be issued.

IN WITNESS WHEREOF, United States Fire Insurance Company has caused these presents to be signed and attested by its appropriate officer and its corporate seal hereunto affixed this 22nd day of August 2019.

UNITED STATES FIRE INSURANCE COMPANY



Anthony R. Slimowicz

Anthony R. Slimowicz, President

State of Pennsylvania)
County of Philadelphia)

On this 22nd day of August 2019, before me, a Notary public of the State of Pennsylvania, came the above named officer of United States Fire Insurance Company, to me personally known to be the individual and officer described herein, and acknowledged that he executed the foregoing instrument and affixed the seal of United States Fire Insurance Company thereto by the authority of his office.

Commonwealth of Pennsylvania - Notary Seal
Tamara Watkins, Notary Public
Philadelphia County
My commission expires August 22, 2023
Commission number 1348843

Tamara Watkins

Tamara Watkins

(Notary Public)

I, the undersigned officer of United States Fire Insurance Company, a Delaware corporation, do hereby certify that the original Power of Attorney of which the foregoing is a full, true and correct copy is still in force and effect and has not been revoked.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the corporate seal of United States Fire Insurance Company on the 4th day of June 2021

UNITED STATES FIRE INSURANCE COMPANY



Al Wright

Al Wright, Senior Vice President



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Andrew Ellard, Director

cc: Armendia Esters, Division Manager/MPO

Date: Tuesday, June 22, 2021

Re: Acknowledge the public comment period and two (2) publications providing notification of the same for the City of Hattiesburg's 2021-2023 Disadvantaged Business Enterprise (DBE) Program Goals and the new DBE Program Plan.
File Number: 2021-407
Minute Book #

Summary

Acknowledge a Public Comment Period for the City of Hattiesburg's 2021-2023 Disadvantaged Business Enterprise (DBE) Program Goals and the new DBE Program Plan in accordance with regulations of the U.S. Department of Transportation (DOT) 49 CFR Part 26

The City of Hattiesburg is accepting comments on the DBE goals document and the new DBE Program Plan from June 10, 2021 until July 12, 2021.

Date of Publication: June 10, 2021

PUBLISH Once (1) in the Legal Section of The Hattiesburg Post and Clarion Ledger: June 10, 2021

Recommendation Statement

I recommend the acknowledgement of a Public Comment Period for the City of Hattiesburg's 2021-2023 Disadvantaged Business Enterprise (DBE) Program Goals and the new DBE Program Plan.

Please place this on the June 22, 2021 City Council meeting for consideration.

NOTICE OF PUBLIC COMMENT
CITY OF HATTIESBURG
DEPARTMENT OF URBAN DEVELOPMENT
DISADVANTAGED BUSINESS ENTERPRISE (DBE)
TRIENNIAL GOAL FOR FISCAL YEAR 2021-2023

The City of Hattiesburg, in accordance with 49 CFR PART 26.45 (f) of the U.S. Department of Transportation (DOT), has proposed a goal of **1.2%** for Disadvantaged Business Enterprise (DBE) participation for Fiscal Years 2021-2023.

The methodology used to calculate the goal consists of counting the number of DBE firms contained in the official, available DBE directory and dividing this number by the total number of available firms in relevant NAICS codes. This resulted in a base figure of **.8%**.

The City of Hattiesburg will accept comments on the goal document. The document is available for inspection and comments from the public for 30 days following the date of this notice from June 10, 2021 through July 12, 2021 during normal business hours at the Metropolitan Planning Organization (MPO) office located at 200 Forrest St. Hattiesburg, MS 39401.

The document is also available for review and comment on the internet at <http://www.hattiesburgms.com/mpo/>. Individuals who do not have the use of a computer are encouraged to visit their local public library for access to the World Wide Web. If preferred, you may call the MPO at (601) 554-1008 to request a copy of the goal document.

Written comments about the goal document should be directed to:

Armendia Esters, MPO Division Manager
200 Forrest St.
Hattiesburg, MS 39401
(601) 554-1008

To ensure compliance with the Americans with Disabilities Act (ADA), persons with disabilities that require aids or services to participate can contact the MPO office at (601) 554-1008; or email mpo@hattiesburgms.com to make arrangements.

Written comments should be directed to the MPO, at the above address or emailed to mpo@hattiesburgms.com and must be received by July 12, 2021.

PUBLISH Once (1) in the Legal Section of *The Hattiesburg Post* and *Clarion Ledger*: June 10, 2021

City of
Hattiesburg
Disadvantage Business Enterprise (DBE)
2021-2023 DBE
Goal

OVERALL GOAL

The City of Hattiesburg’s overall goal for fiscal year 2021-2023 is as follows: 1.2% of federal financial assistance will be expended in Department of Transportation (DOT) assisted contracts. This is exclusive of FTA funds to be used for the purchase of transit vehicles.

In accordance with Section 26.45 (f) the City of Hattiesburg shall submit its overall goal to DOT on August 1 of each year. In establishing the overall goal every three years, the City of Hattiesburg shall consult with minority, women and general contractor groups as well as other community organizations in an effort to obtain information concerning the availability of disadvantaged and non-disadvantaged businesses, the effects of discrimination on opportunities for DBEs, and the City of Hattiesburg’s efforts to establish a level playing field for the participation of DBEs (Attachment 1). The City of Hattiesburg will publish a notice on its website of the proposed overall goals, informing the public that the proposed goal and its rationale are available for inspection during normal business hours at its principal office for 30 days following the date of the notice and inform the public that the City of Hattiesburg will accept comments on the goals. Normally, this notice will be issued by June 1 triennially. The notice will include addresses to which comments may be sent and addresses (including offices and websites) where the proposal may be reviewed. The City of Hattiesburg’s overall goal submission to DOT will include a summary of information and comments received during this public participation process and responses. The City of Hattiesburg will also conduct consultation with interested parties in accordance with 49 CFR Part 26.45 – How do recipients set overall goals?

Complete details of our overall goals and methodology can be found on our

website: Link: www.hattiesburgms.com/mpo

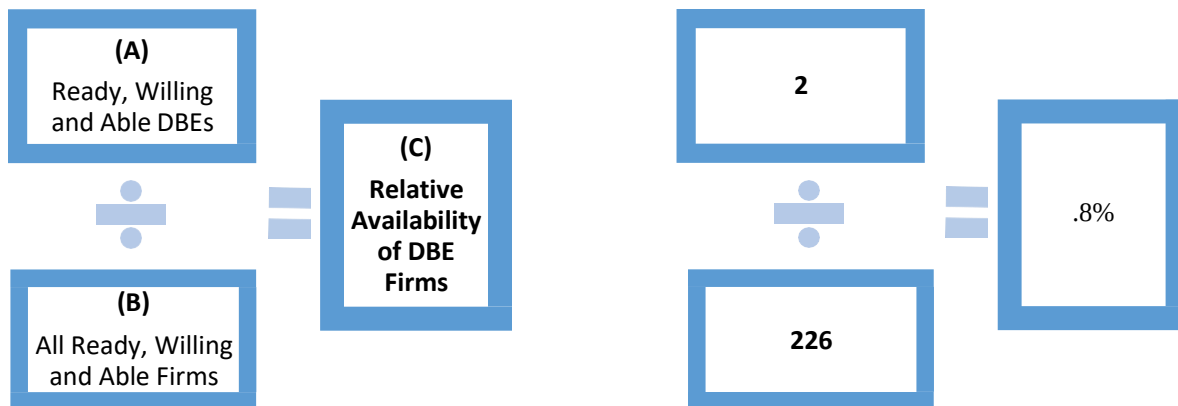
(Attachment 5)

STEP 1: GOAL-SETTING METHODOLOGY

The method used to establish the relative availability of DBEs is to determine the portion or percentage of “Ready, Willing, and Able DBEs” that exist among the population of “ALL Ready, Willing, and Able Firms.”

Ready, Willing, Able DBEs (A) / ALL Ready, Willing, Able Firms (B) = Relative Availability of DBE Firms (C)

For the City of Hattiesburg, firms and DBEs within Forrest and Lamar Counties were identified as the most relevant for the purpose of this calculation. See Attachment 2 for a detailed accounting of the number of DBEs and total firms used.



Dividing for the quotient, we arrive at a Relative DBE Availability of .8%, which is also referred to as the Step One Base Figure and has herein been established as the City's DBE goal.

Adjustments and Weighting

After calculating the base figure of relative availability of DBEs, all available evidence was considered to determine whether any adjustment to the figure was needed in order to arrive at the overall goal. The City of Hattiesburg chose to adjust the base figure particularly given the limited number of identifiable DBEs specifically available in the Hattiesburg area. This challenge will be addressed through additional outreach opportunities described herein, with particular emphasis on supporting the continuing development of local firms through the new City of Hattiesburg's Emerging Business Enterprise program (EBE).

No weighting was applied because the majority of our sub-recipients are incurring routine cost spending on such things as fuel/oil, vehicle maintenance/repair, and/or tires. Because of those routine cost, vendor spending will vary significantly within a program year. It would be very difficult to single a specific cost category.

Data Sources

Data sources for Ready, Willing, and Able DBEs included DBE directories at the Mississippi Department of Transportation (MDOT) as well as the Mississippi Development Authority (MDA), which were both specifically reviewed for North American Industry Classification System (NAICS) codes most applicable to DOT/FTA funded work in the City of Hattiesburg. Ultimately, MDOT figures were relied upon as the number of DBEs within that directory in relevant NAICS codes were generally higher.

The data for All Ready, Willing, and Able firms was derived from the U.S. Census Bureau County Business Pattern for Forrest and Lamar Counties, Mississippi.

In order to ensure that the calculation for a DBE goal not under-represent DBE firms in the area, this calculation has used the above referenced DBE directories to identify all DBE firms in specified NAICS codes within the State of Mississippi, but have used the U.S. Census figures to identify total firms only in the Forrest County and Lamar County area. Specifically, County Business Patterns for the related NAICS codes from the 2019 tables were used, as those were the most recently published tables.

The City of Hattiesburg maintains a directory with its Hub City Transit Division and with the Metropolitan Planning Organization (MPO) of firms identified within this calculation as DBEs and will periodically add

to the list any firms in other NAICS codes that identify themselves as DBEs, which may have opportunity for incidental business with those divisions. This is not a list of firms certified by the City of Hattiesburg, but rather only a reference to the firms identified in the original sources of data.

The Mississippi Department of Transportation data source can be accessed at:

https://aashtoreports.mdot.ms.gov/trnsreportspublic/Reports/cr_brk.aspx

The U.S. Census Bureau data source can be accessed at:

<https://www.census.gov/programs-surveys/cbp/data/tables.html>

STEP 2: DBE GOAL METHODOLOGY

The City of Hattiesburg has considered the following for Step 2: DBE Goal Methodology.

- Past participation (volume of work DBEs have performed in recent years)
- Evidence from recent disparity studies conducted in the market area (*Attachments 3 & 4*)
- Statistical Disparities in the ability of DBEs to get financing, bonding, and insurance
- Data on employment, self-employment, education and training, union apprenticeship programs; and
- Any other data that helps to better measure the percentage of work that DBEs would be likely to obtain in the absence of discrimination

BREAKOUT OF ESTIMATED RACE-NEUTRAL AND RACE-CONSCIOUS PARTICIPATION

It is anticipated that the City of Hattiesburg will meet its overall goal by using race-neutral means of facilitating DBE participation. The City of Hattiesburg will attempt to use the following race neutral means to increase DBE participation.

1. Arrange solicitations, times for the presentation of bids, quantities, specifications, and delivery schedules in ways that facilitate DBEs and other small businesses
2. Provide periodic technical assistance and other education and outreach
3. Carry out information and communications programs on contracting procedures and specific contract opportunities.

The City of Hattiesburg has DBE history for its transit services which has been a beneficial starting point for achieving the stated goal. In addition, opportunities have been made available by the City for DBE participation within the professional design categories that are associated with recent infrastructure projects and corridor plans. The City will continue to promote the use of contract goals where applicable to help ensure reasonable effort is made to achieve goals.

MEANS TO MEET OVERALL GOALS

In addition to the efforts outlined above (arrangement of solicitations and specifications, technical assistance and outreach, and information/communication programs), the City of Hattiesburg will further attempt to increase DBE participation and DBE representation by providing programs in partnership with other agencies geared toward small business development.

Because of the lack of DBE firms and because of the procurement requirements germane to the City of Hattiesburg, the City of Hattiesburg will ensure that the DBE program continues to be tailored to overcome the effects of discrimination.

The City of Hattiesburg will make an effort to collect data as a result of this program, will review performance data including race-neutral and race-conscious means and their effectiveness, and will participate in outreach meetings with both DBEs and non DBEs willing to participate in transit programs.

If you require additional information, please contact me at (601) 554-1008.

Sincerely,
Armendia Esters
MPO Division
Department of Urban
Development

Attachment 1

The City of Hattiesburg, in partnership with the Mississippi Development Authority, will present a Model Contractor Development Program Workshop designed to teach small contractors, minorities, and women the business practices that would improve their company operations and increase the bonding capacity for minorities, women, and small businesses. Though the focus of the event will be the education and development of small businesses interested in contracting opportunities, it will also be an opportunity for the City of Hattiesburg to gain insight on the status of disadvantaged and non-disadvantaged businesses in the Hattiesburg area. Holding these events on at least an annual basis will better enable the city to keep an understanding of the changing dynamics of the small business environment and will increase the likelihood of participation and new DBE identification.

Topics at workshops may include Business Planning, Management, Finance, Bonding and Insurance, Accounting, Estimating and Bidding, Project Management, and others that may be determined useful. Presenters may include representatives in construction & development, bankers, accountants, engineering firms and architects, suppliers, and government agency representatives. Workshops will also provide resources and contact information to enable participants to follow-up for more individualized concerns on the topics covered.

The City of Hattiesburg anticipates co-hosting a virtual workshop in the fall of 2021.

Attachment 2

FYs 2021-2023 PUBLIC TRANSIT DIVISION Disadvantaged Business Enterprises (DBE) Goal Methodology

Goal Calculation

- A. Identify Ready, Willing and Able DBEs by NAICS Codes based on available directories in the Hattiesburg area, consisting of Forrest and Lamar Counties, this was only 2 total firms.

- B. Identify ALL Ready, Willing and Able firms by NAICS codes based on available census data in the Hattiesburg area, consisting of Forrest and Lamar Counties, this was 226 total firms.

NAICS Code	INDUSTRY DESCRIPTION	Total Firms		DBE Firms		FY 2019-2021
		Forrest County	Lamar County	Forrest County	Lamar County	ANTICIPATED FUNDS
23622	Commercial, Institutional & Industrial Building Construction	8	11	0	0	\$3,045,000
4231	Motor Vehicle and Motor Vehicle Parts/Suppliers	8	5	0	0	\$63,000
441310	Automotive Parts & Accessories Stores	14	11	0	0	\$187,000
485	Transit & Ground Passenger Transportation	5	3	0	0	\$252,000
5111	Newspaper, Periodical, Book and Directory Publishers	4	3	0	0	\$3,000
524	Insurance Carriers & Related Activities	36	43	0	0	\$183,000
5413	Architectural, Engineering & Related Services	22	19	0	1	\$725,000
611310	Colleges, Universities & Professional Schools	0	0	0	0	\$1,000
6242	Community Food & Housing, and Emergency & Other Relief Services	8	0	0	0	\$1,000
711	Performing Arts, Spectator Sports & Related Industries	0	4	1	0	\$1,000
81111	Automotive Mechanical & Electrical Repair & Maintenance	14	8	0	0	\$400,000
	TOTALS	119	107	0	0	
	Grand Totals	226		2		

Attachment 2

- C. Dividing for relative availability of DBE firms (the base figure) and the goal established herein, we arrive at 0.8%. ($2/226 = .008$ or .8%)
- D. Regarding the use of shortened NAICS codes: In many instances, Hub City Transit uses less than 6-digit NAICS codes for several reasons. Using shorter NAICS codes serves to cast a wider net among closely related industries – some of which may be overlooked if all codes were narrowed down to codes of six or more digits. Additionally, even using the abbreviated codes, the number of identified businesses is still relatively small. And among that population of businesses, the number of DBE firms is exponentially smaller. To narrow each of the NAICS codes down to 6 or more digits could virtually eliminate any representing DBEs. The intent was to take a broader look at all firms in hopes of capturing more potential DBEs, whose services may actually drift among more than one (more narrowed) NAICS code.

Attachment 3

United States Census Bureau
QuickFacts
Hattiesburg, Mississippi

<https://www.census.gov/quickfacts/fact/table/hattiesburgcitymississippi/PST045218>

POPULATION

Population estimates, July 1, 2010, (V2019)	45,863
Population estimates, April 1, 2010 (V2019)	45,758
Population, percent change - April 1, 2010 (estimates base) to July 1, 2018 (V2019)	0.2%

RACE AND HISPANIC ORIGIN

White alone	43.1%
Black or African American alone	53.0%
American Indian and Alaska Native alone	0.2%
Asian alone	1.1%
Native Hawaiian and Other Pacific Islander alone	0.1%
Two or More Races	2.3%
Hispanic or Latino	3.2%
White alone, not Hispanic or Latino	40.6%

EDUCATION

High school graduate or higher, percent of persons age 25+, 2015-2019	87.5%
Bachelor's degree or higher, percent of persons age 25 years+, 2015-2019	32.6%

HEALTH

With a disability, under age 65 years, percent, 2015-2019	14.5%
Persons without health insurance, under age 65 years	17.5%

ECONOMY

In civilian labor force, total, percent of population age 16 years+, 2015-2019	62.9%
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INCOME AND POVERTY

Median household income (in 2019 dollars), 2015-2019	\$34,735
Per capita income in past 12 months (in 2019 dollars), 2015-2019	\$21,673
Persons in poverty, percent	32.5%

BUSINESSES

All firms, 2012	4,811
Men-owned firms, 2012	2,334
Women-owned firms, 2012	1,863
Minority-owned firms, 2012	1,641
Nonminority-owned firms, 2012	2,634
Veteran-owned firms, 2012	571
Nonveteran-owned firms, 2012	3,740

Attachment 4

This attachment is an except from the 2019 Analysis of Impediments to Fair Housing Choice

**Market Area Disparity Studies
City of Hattiesburg
2019 Analysis of Impediments to Fair Housing Choice
January 16, 2021**

<http://www.hattiesburgms.com/wp-content/uploads/2019-Analysis-of-Impediments-Final-1-16-2020.pdf>

Section IV. Fair Housing Analysis

D. Racially and Ethnically Concentrated Areas of Poverty (pages 43-46)

Racially or ethnically concentrated areas of poverty (R/ECAPs) are Census tracts with relatively high concentrations of non-white residents living in poverty. Formally, an area is designated an R/ECAP if two conditions are satisfied: first, the non-white population, whether Hispanic or non-Hispanic, must account for at least 50 percent of the Census tract population. Second, the poverty rate in that Census must exceed a certain threshold, at 40 percent.

R/ECAPs over Time

The change in R/CAPs in Hattiesburg city are shown in the following three maps. Map IV.1 shows the R/CAPs in 2000. Map IV.2 shows the R/ECAPs in Hattiesburg city in 2010, and Map IV.3 shows the R/CAPs in 2016.

*Please see link at top of page for full document with maps.

E. Disparities in Access to Opportunity (pages 47-59)

Areas of opportunity are physical places, areas within communities that provide things one needs to thrive, including quality employment, well performing schools, affordable housing, efficient public transportation, safe streets, essential services, adequate parks, and full-service grocery stores. Areas lacking opportunity, then, have the opposite of these attributes. Disparities in access to opportunity inspects whether a select group, or certain groups, have lower or higher levels of access to these community assets. HUD expresses several of these community assets through the use of an index value, with 100 representing total access by all members of the community, and zero representing no access.

The HUD opportunity indices are access to Low Poverty areas; access to School Proficiency; characterization of the Labor Market Engagement; residence in relation to Jobs Proximity; Low Transportation Costs; Transit Trips Index; and a characterization of where you live by an Environmental Health indicator. For each of these a more formal definition is as follows:

Attachment 4

- Low Poverty - A measure of the degree of poverty in a neighborhood, at the Census Tract level.
- School Proficiency - School-level data on the performance of 4th grade students on state exams to describe which neighborhoods have high-performing elementary schools nearby and which are near lower performing schools.
- Jobs Proximity - Quantifies the accessibility of a given residential neighborhood as a function of its distance to all job locations within a Core Based Statistical Area (CBSA)
- Labor Market Engagement - Provides a summary description of the relative intensity of labor market engagement and human capital in a neighborhood
- Low Transportation Cost – Estimates of transportation costs for a family that meets the following description: a 3-person single-parent family with income at 50% of the median income for renters for the region
- Transit Trips - Trips taken by a family that meets the following description: a 3-person single parent family with income at 50% of the median income for renters
- Environmental Health - summarizes potential exposure to harmful toxins at a neighborhood level

All the indices are presented in Diagram IV.8. The disparities in access to opportunity are shown in the differences between the various racial and ethnic groups in the diagram. For example, if white households have a distinctly higher index rating than black households then black households have a disproportionate access.

*Please see link at top of page for full document with charts and maps.

Attachment 5

**NOTICE OF PUBLIC COMMENT
CITY OF HATTIESBURG
DEPARTMENT OF URBAN DEVELOPMENT
DISADVANTAGED BUSINESS ENTERPRISE (DBE)
TRIENNIAL GOAL FOR FISCAL YEAR 2021-2023**

The City of Hattiesburg, in accordance with 49 CFR PART 26.45 (f) of the U.S. Department of Transportation (DOT), has proposed a goal of **1.2%** for Disadvantaged Business Enterprise (DBE) participation for Fiscal Years 2021-2023. The methodology used to calculate the goal consists of counting the number of DBE firms contained in the official, available DBE directory and dividing this number by the total number of available firms in relevant NAICS codes. This resulted in a base figure of **.8%**.

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Written comments should be directed to the MPO, at the above address or emailed to mpo@hattiesburgms.com and must be received by July 12, 2021.

PUBLISH Once (1) in the Legal Section of *The Hattiesburg Post* and *Clarion Ledger*: June 10, 2021

Attachment 6

Strategies For Achievement of DBE Goals

The City of Hattiesburg knows from experience that public awareness is an essential element of any Strategy to maximize DBE participation on major projects. Our goal, from pre-construction through completion, will be to keep all lines of communication open with local businesses and the community-at-large to raise awareness about project opportunities. The City of Hattiesburg has already been active in the communicating with the subcontracting community with regard to the opportunities available on future Projects. We have attended the Department's DBE workshop and have contacted out many DBE certified forms. DBE response and interest will be tracked and a significant effort will be made to ensure that they remain interested in the opportunity.

While we have implemented a significant outreach strategy for the preparation of this proposal, we realize that this is an on-going effort. We will continue the public awareness after award to ensure that DBE's are aware of additional opportunities available to them with major subcontractors. This will further expand opportunities for DBE's and help our major subcontractors meet their DBE goals.

The City of Hattiesburg will develop the following communication tools: a website; Business Opportunity Workshops; and targeted outreach to business and community organizations. We have utilized many of these methods already, and will continue to utilize them throughout the life of future Projects.

Website

The City of Hattiesburg will utilize the Project website to enhance advertisement of contracting and procurement opportunities to DBE firms. We will also share information on the Project team's involvement in local community events to help gain a positive focus for the Project in the community.

Information on the website will include:

- Contact information for critical City of Hattiesburg staff responsible for overseeing DBE participation;
- Invitations to all public meetings, with special emphasis on those relevant to the DBE community;
- Bidders/proposers pre-qualification criteria/requirements and DBE required commitments;
- Access to technical assistance resources, such as small business loan programs, bonding assistance programs and other business development programs;
- Profiles of DBE subcontractors who are working on the Project and how they became involved; and
- Links to other related Web sites of interest.

The website will provide an interactive resource where contractors can report their interest in the Project and provide information on their qualifications. The website will be promoted through mailings, emails and newsletters distributed to DBEs, business and DBE advocacy groups, religious and community organizations, and the news media.

Attachment 6

DBE DATABASE MANAGEMENT: Keeping Track of Potential Subcontractors

The City of Hattiesburg will utilize the Mississippi Department of Transportation (DOT) database of DBE firms in Southern Mississippi. Thanks to our work on projects throughout the Hattiesburg area, we have developed database of local businesses—and, as a result, the capability to identify available businesses to perform the work. The City of Hattiesburg will employ a number of qualified DBE sub consultants, preferably local to the Project area, to supplement our engineering, and project management efforts.

Through the Mississippi Development Authority, the Mississippi Department of Transportation has a relational database of local DBE consulting firms known to the city and/or listed in the qualified directories of the Department and other local public transit operators.

CAPACITY-BUILDING: Helping DBE Firms Succeed and Grow

Through training, mentor-protégé relationships and technical assistance referrals, City of Hattiesburg will help build the capacity of these firms to succeed, both on projects in the future. Strategies that the City of Hattiesburg will offer to assist DBE firms include:

Educational Seminars

City of Hattiesburg will offer educational seminars for participating DBE subcontractors to strengthen their business management capacity in areas from project management and scheduling to estimating. Among the educational offerings for DBE firms will be workshops on how to successfully do business with City of Hattiesburg on future Projects. In these sessions, participants will learn what it takes to compete successfully for opportunities future Projects. Other workshops will cover such topics as: construction contracting and requirements; professional services contract award process and requirements; bonding and insurance requirements; prequalification, bidding and invoicing; and financing/access to capital.

Bonding Capacity

In addition to offering training and support in both technical and administrative areas, City of Hattiesburg will facilitate access to independent bonding lines by developing a program that includes overviews of insurance, bonding and selected banks which will allow qualified subcontractors to take the next step and become prime contractors. This step will increase control within the DBE community and offer a more meaningful participation within the business community without being tied to a specified project or contractor.

TRACKING AND REPORTING: Documenting our Progress

City of Hattiesburg will implement a system for tracking and reporting progress toward the Department's goals for DBE participation. We know from experience that an effective tracking and reporting system requires active participation on the part of all members of the construction team, including project managers, subcontractors and other stakeholders. We also understand the importance of keeping the Department fully informed about DBE participation on a regular basis.

Attachment 6

DBE Participation Reporting

Our DBELO will be responsible for coordinating the compilation of DBE participation reports. The primary goal of this reporting will be to track the dollar amounts awarded to prime contractors, and to summarize DBE participation in both dollar and percentage terms. These reports will be used to keep all stakeholders informed of the level of DBE involvement in future Projects and to demonstrate compliance with the performance. In addition to tracking the level of DBE participation in future Projects, City of Hattiesburg will maintain records of all outreach efforts to local, small and disadvantaged business, including: organizations contacted to identify DBEs; source lists and other data used to identify DBEs; lists of solicitations and responses; and records of participation in workshops.

The City of Hattiesburg will use, these reports can prove particularly useful in identifying broader contracting trends as well as opportunities for stepped-up outreach to local, small and disadvantaged businesses. As a result, all reports will be shared with Mississippi Department of Transportation. The goal: to stimulate a collaborative effort to identify and respond to opportunities to maximize DBE involvement in future Projects.

Our DBE Strategy for achievement of goals DBELO will prepare monthly, annual and final reports on DBE participation for the Project. This report will include all aspects of the implementation of the City of Hattiesburg DBE Program. In addition, at the conclusion of the Project, City of Hattiesburg will prep a final report on DBE participation, reflecting final contract amounts and payments.

Post-Award DBE Contract Monitoring

The City of Hattiesburg DBELO will lead the City's efforts to monitor DBE contracts once they have been awarded. Contract compliance monitoring will include, but will not be limited to:

- Establishing and maintaining the integrity of contract compliance files and incorporating contract compliance DBE records into the master contract file. The City's DBE DBELO staff will work with the City of Hattiesburg Administration to make sure that contract memoranda, decision memoranda, and correspondence to and from prime contractors and DBE contractors are routinely reviewed, analyzed, responded to, noted in the computerized database, and properly filed in the contract file.
- Making sure that all DBE firms awarded contracts have appropriate DBE certification. The City will make sure that all firms projected to satisfy DBE goal requirements secure appropriate certification approval. The DBELO will routinely review the current certification status of the submitting firms to make sure that only certified firms participate on contracts as the identified DBE firm. This individual will implement corrective action, as required, to make sure that the selected team members are apprised of the certification status of DBE firms participating on contracts.
- Making sure that appropriate DBE utilization plans have been submitted, reviewed, and approved. DBE compliance staff will review original DBE utilization plans and the monitor the continued utilization of DBE firms. In addition, site/field monitoring staff will notify the DBELO of all contractors, suppliers, and consultants providing service, on a routine basis or upon request, to facilitate complete capture of all contract participation.

Attachment 6

- In the event projected DBE firms are denied certification, contract DBELO staff will make sure that appropriate requests for replacement/substitution are secured. Mississippi Department of Transportation will routinely review, update, and approve all modifications to DBE utilization strategy. The DBELO will review DBE participation opportunities as a result of all change orders or modifications to contracts and evaluate their impact on the DBE utilization plan; this information will be relayed to the appropriate parties to make sure that we are aware of the status of DBE firms participating on contracts.
- Making sure that appropriate periodic DBE progress reports have been submitted and reviewed and that payments to DBEs have been verified and approved. The City of Hattiesburg will make sure that periodic DBE progress reports are submitted by service firms, contractors, and suppliers, as required. Such reports will be reviewed on a monthly basis to make sure that DBE firms are being meaningfully employed in a manner that is consistent with the submitted DBE utilization plan. Site/ field monitoring staff will take direction from the DBELO to facilitate the timely submission of all forms. The City of Hattiesburg will review the periodic reports to make sure that DBEs are performing on the Project and are receiving payment for their services. The DBELO will prepare and distribute communication procedures and reports to make sure that the City Board are aware of the status of DBE firms participating on specific contracts.
- Implementing corrective actions as required to maintain compliance. The DBELO will implement corrective actions, as required, to make sure that all interested parties are aware of the status of firms participating on contracts. These actions will be reviewed with the appropriate City of Hattiesburg DBELO staff.

NOTICE OF PUBLIC COMMENT
CITY OF HATTIESBURG
DEPARTMENT OF URBAN DEVELOPMENT
NEW PROGRAM PLAN FOR
DISADVANTAGED BUSINESS ENTERPRISES (DBE)

The City of Hattiesburg, in accordance with 49 CFR PART 26.45 (f) of the U.S. Department of Transportation (DOT), has established a Disadvantaged Business Enterprise (DBE) Program. The Program Plan, which outlines both the policies and procedures for executing the DBE program, has been updated to reflect current federal guidance, the new DBE Triennial Participation Goal, and the new managing department for the program (the Department of Urban Development).

The City of Hattiesburg will accept comments on the Program Plan draft. The Program Plan is available for inspection and comments from the public for 30 days following the date of this notice from June 10, 2021 through July 12, 2021 during normal business hours at the Metropolitan Planning Organization (MPO) office located at 200 Forrest St. Hattiesburg, MS 39401.

The Program Plan is also available for review and comment on the internet at <http://www.hattiesburgms.com/mpo/>. Individuals who do not have the use of a computer are encouraged to visit their local public library for access to the World Wide Web. If preferred, you may call the MPO at (601) 554-1008 to request a copy of the Program Plan.

Written comments about the new DBE Program Plan should be directed to:

Armendia Esters, MPO Division Manager
200 Forrest St.
Hattiesburg, MS 39401
(601) 554-1008

To ensure compliance with the Americans with Disabilities Act (ADA), persons with disabilities that require aids or services to participate can contact the MPO office at (601) 554-1008; or email mpo@hattiesburgms.com to make arrangements.

Written comments should be directed to the MPO, at the above address or emailed to mpo@hattiesburgms.com and must be received by July 12, 2021.

PUBLISH Once (1) in the Legal Section of *The Hattiesburg Post* and *Clarion Ledger*: June 10, 2021



Department of Urban Development

P.O. Box 1898

Hattiesburg, Mississippi 39403-1898

www.hattiesburgms.com

July 2021

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**DEPARTMENT OF URBAN DEVELOPMENT
HUB CITY TRANSIT DIVISION**

**DBE PROGRAM
POLICY STATEMENT**

Section 26.1, 26.23 Objectives/Policy Statements

The City of Hattiesburg has established a Disadvantaged Business Enterprise (DBE) program in accordance with regulations of the U.S. Department of Transportation (DOT), 49 CFR Part 26. The City of Hattiesburg [Recipient] has received Federal financial assistance from the Department of Transportation, and as a condition of receiving this assistance, the City of Hattiesburg has signed an assurance that it will comply with 49 CFR Part 26.

It is the policy of the City of Hattiesburg to ensure that DBEs are defined in part 26, have an equal opportunity to receive and participate in DOT-assisted contracts. It is also our policy:

1. To ensure nondiscrimination in the award and administration of DOT – assisted contracts;
2. To create a level playing field on which DBEs can compete fairly for DOT-assisted contracts;
3. To ensure that the DBE Program is narrowly tailored in accordance with applicable law;
4. To ensure that only firms that fully meet 49 CFR Part 26 eligibility standards are permitted to participate as DBEs;
5. To help remove barriers to the participation of DBEs in DOT assisted contracts;
6. To assist the development of firms that can compete successfully in the market place outside the DBE Program.

The Director of the Department of Urban Development has been delegated as the DBE Liaison Officer. In that capacity, the Director is responsible for implementing all aspects of the DBE program. Implementation of the DBE program is accorded the same priority as compliance with all other legal obligations incurred by the City of Hattiesburg in its financial assistance agreements with the Department of Transportation.

The City of Hattiesburg has disseminated this policy statement to the City Council and all of the components of our organization. We have distributed this statement to DBE and non-DBE business communities that perform work for us on DOT-assisted contracts. The DBE Policy Statement is posted on the City of Hattiesburg website and has been mailed to certified DBE business organizations located within the Hattiesburg Urbanized Area and the surrounding counties of Forrest, Lamar, Jones, Marion and Perry.

Mayor, City of Hattiesburg

Date

Attest:

(S E A L)

City Clerk, Hattiesburg, Mississippi

GENERAL REQUIREMENTS

Section 26.1 Objectives

The objectives are found in the policy statement on the first page of this program.

Section 26.3 Applicability

The City of Hattiesburg is the recipient of federal-aid highway funds authorized under Titles I and V of the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), Pub. L. 102-240, 105 Stat. 1914, Titles I, III, and V of the Transportation Equity Act for the 21st Century (TEA-21, Pub. L. 105-178, 112 Stat. 107).

The City of Hattiesburg is the recipient of federal transit fund authorized by Titles I, III, V and VI of ISTEA, Pub. L. 102-240 or by Federal transit laws in Title 49, U.S. Code, or Titles I, II, and V of the Teas-21, Pub. L. 105-178.

Sections 26.5 Definitions

The City of Hattiesburg will adopt, as a part of this document the definitions contained in 49 CFR § 26.5 for this program (see "Definitions of Terms" section of this document).

Section 26.7 Non-discrimination Requirements

The City of Hattiesburg will never exclude any person from participation in, deny any person the benefits of, or otherwise discriminate against anyone in connection with the award and performance of any contract covered by 49 CFR Part 26 on the basis of race, color, sex, or national origin.

In administering its DBE program, the City of Hattiesburg will not, directly or through contractual or other arrangements, use criteria or methods of administration that have the effect of defeating or substantially impairing accomplishment of the objectives of the DBE program with respect to individuals of a particular race, color, sex, or national origin.

Section 26.11 Record Keeping Requirements

Reporting to DOT: 26.11(b)

City of Hattiesburg shall report DBE participation to DOT as follows:

City of Hattiesburg shall report DBE participation on a semi-annual basis, using DOT Form 4630. These reports shall reflect payments actually made to DBE's on DOT-assisted contracts.

Bidders List: 26.11(c)

City of Hattiesburg does not maintain a bidders list.

The City of Hattiesburg shall collect this information in the following ways:

1. All contracts shall require prime bidders to report the names/addresses, and other pertinent information of all firms that gave quotes to them for any subcontracted work.
2. Require all prime bidders to request that firms quoting on subcontracts to report information on their firm directly to the City of Hattiesburg.
3. Any other method deemed to be sound and accurate at the time of the bid.

Section 26.13 Federal Financial Assistance Agreement

City of Hattiesburg has signed the following assurances, applicable to all DOT-assisted contracts and their administration:

Assurance: 26.13(a)

City of Hattiesburg shall not discriminate on the basis of race, color, national origin, or sex in the award and performance of any DOT assisted contract or in the administration of its DBE Program or the requirements of 49 CFR part 26.

City of Hattiesburg shall take all necessary and reasonable steps under 49 CFR Part 26 to ensure nondiscrimination in the award and administration of DOT assisted contracts. The City of Hattiesburg's DBE Program, as required by 49 CFR part 26 and as approved by DOT, is incorporated by reference in this agreement. Implementation of this program is a legal obligation and failure to carry out its terms shall be treated as a violation of this agreement. Upon notification to the City of Hattiesburg of its failure to carry out its approved program, the Department may impose sanction as provided for under Part 26 and may, in appropriate cases, refer the matter for enforcement under 18 U.S.C. 1001 and/or the Program Fraud Civil Remedies Act of 1986 (31 U.S.C. 3801 et seq.).

This language (verbatim) will appear in financial assistance agreements with sub recipients.

Contract Assurance: 26.13b

City of Hattiesburg will ensure that the following clause is placed in every DOT-assisted contract and subcontract:

The contractor, sub-recipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR part 26 in the award and administration of DOT assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy, as the recipient deems appropriate.

This language (verbatim) will appear in financial assistance agreements with sub recipients.

SUBPART B – ADMINISTRATIVE REQUIREMENTS

Section 26.21 DBE Program Updates

Since the City of Hattiesburg has received a grant of \$250,000 or more in FTA planning, capital, and/or operating assistance in a federal fiscal year the City of Hattiesburg will continue to carry out this program until all funds from DOT financial assistance have been expended. The City of Hattiesburg will provide to DOT updates representing significant changes in the program.

Section 26.23 Policy Statement

The Policy Statement is elaborated on the third page of this program.

Section 26.25 DBE Liaison Officer (DBELO)

The City of Hattiesburg has designated the following individual as the DBE Liaison Officer:

*Andrew Ellard, Director
Urban Development
The City of Hattiesburg
P.O. Box 1898
Hattiesburg, MS 39403-1898
(Phone) 601-545-4609 (Fax) 601-544-0392
(Email) mpo@hattiesburgms.com*

In that capacity, the DBELO is responsible for implementing all aspects of the DBE program and ensuring that the City of Hattiesburg complies with all provision of 49 CFR Part 26. The DBELO has direct, independent access to the City of Hattiesburg's Office of the Mayor concerning DBE program matters. An organization chart displaying the DBELO's position in the organization is found in **Attachment #1** to this program.

The DBELO is responsible for developing, implementing and monitoring the DBE program, in coordination with other appropriate officials. The DBELO has a staff of one (1) (the MPO Division Manager) to be to assist in the administration of the program. The duties and responsibilities include the following:

1. Gathers and reports statistical data and other information as required by DOT.
2. Reviews third party contracts and purchasing requisitions for compliance with this program.
3. Works with all departments to set overall annual goals.
4. Ensures that bid notices and requests for proposals are available to DBEs in a timely manner.
5. Identifies contracts and procurements so that DBE goals are included in solicitations
6. Analyzes the City of Hattiesburg's progress toward attainment and identifies ways to improve progress.
7. Participates in pre-bid meetings.
8. Advises the governing body on DBE matters and achievement.
9. Plans and participates in DBE training seminars.
10. Provides outreach to DBEs and community organizations to advise them of opportunities.

Section 26.27 DBE Financial Institutions

It is the policy of the City of Hattiesburg's to investigate the full extent of services offered by financial institutions owned and controlled by socially and economically disadvantaged individuals in the community, to make reasonable efforts to use these institutions, and to encourage prime contractors on DOT-assisted contract to make use of these institutions. The City of Hattiesburg's has made phone calls to all financial institutions within the City of Hattiesburg's in an effort to identify and use such institutions. We will also re-evaluate the availability of DBE financial institutions every three years. To date we have identified there are no institutions in the local area and based on this search there are no DBE owned banks in the State of Mississippi.

Section 26.29 Prompt Payment Mechanisms

The City of Hattiesburg will include the following clause in each DOT-assisted prime contract:

Prompt Payment: 26.29(a): The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 30 days from the receipt of each payment the prime contract receives from the City of Hattiesburg.

Retainage: 26.29(b): The prime contractor agrees further to return retainage payments to each subcontractor within 30 days after the subcontractor's work is satisfactorily completed. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the City of Hattiesburg. This clause applies to both DBE and non-DBE subcontracts.

Monitoring and Enforcement: 26.29(d): The City of Hattiesburg recognizes that prompt payment requirements are an important race-neutral mechanism that can benefit both DBEs and non-DBEs. The City of Hattiesburg will require that the following clause be included in each U.S. DOT-assisted prime contract:

"The prime contractor agrees to pay each subcontractor under this prime contract for satisfactory performance of its contract no later than 15 days from the receipt of each payment the prime contractor receives from the City of Hattiesburg. The City of Hattiesburg does not hold retainage on the Prime Contractor and therefore the Prime Contractor may not withhold retainage on the subcontractors. Any delay or postponement of payment from the above referenced time frame may occur only for good cause following written approval of the City of Hattiesburg. This request for delay or postponement should be made to the City of Hattiesburg's, Department of Federal and State Programs prior to the 15-day deadline for making prompt payments to the subcontractor(s). This clause applies to both DBE and non-DBE subcontractors. Failure to comply with the prompt payment requirement will result in the prime contractor's monthly estimates being withheld until the requirements of prompt payment have been fulfilled."

Section 26.31 Directory

The City of Hattiesburg participates in the State of Mississippi's Disadvantaged Business Enterprises Unified Certification Program. Under this program, the Mississippi Department of Transportation (MDOT) maintains a directory identifying all firms eligible to participate as DBEs. The directory lists the firm's name, address, phone number, date of the most recent certification, and the type of work the firm has been certified to perform as a DBE. MDOT revises the Directory annually.

The City of Hattiesburg makes the Directory available as follows:

1. A link on the City of Hattiesburg website under the Department of Federal and State Program Metropolitan Planning Organization.

2. A copy is kept in the Office of the Department of Federal and State Programs office located at 200 Forrest Street, Hattiesburg, MS 39401 and the Hattiesburg-Petal-Forrest-Lamar Metropolitan Planning Organization, 308 Newman Street, Hattiesburg, MS 39401 at all times.

The Directory may be found in **Attachment #2** of this program document.

Section 26.33 Over Concentration

The City of Hattiesburg has not identified that over concentration exists in the types of work that DBEs perform.

Section 26.35 Business Development Programs

The City of Hattiesburg established the Emerging Business Enterprise (EBE) Program on the 22nd day of December, 2020.

The City of Hattiesburg is facing a regional and local shortage of certified ready, willing, and able underutilized business enterprises (UBE). The current relative availability of socially and economically disadvantaged business enterprises across all relevant industries within a 90-mile radius of the city of Hattiesburg is only 1.7%.

The efforts to set and achieve meaningful and significant participation from UBEs for future contracts resulted in the discovery that it is necessary to create a less cumbersome local registration process to provide increased and immediate opportunities for eligible minority firms, and thereby increase the pool of ready, willing and able socially and economically disadvantaged business enterprises within our relevant markets.

The City of Hattiesburg has enacted measures and adopted rules and regulations to create the Emerging Business Enterprise (EBE) Program.

The city shall grant provisional EBE designation to local minority businesses identified as African American, Hispanic American, Native American, Asian-Pacific American, Subcontinent Asian American, Female Armed Forces Veteran, LGBTQ+, or Disabled and businesses which are certified by the Mississippi Department of Transportation's Unified Certification Program for Disadvantaged Business Enterprise ("DBE"), the Mississippi Development Authority's Minority and Women-owned Business Enterprise ("MBE/WBE") Program, the U.S. Small Business Administration's 8(a) Program, and other federal – or state – recognized minority certification programs as deemed eligible by the appropriate staff or committee;

- Such provisional designation shall entitle a business to be considered a valid EBE by the City of Hattiesburg, with all the rights associated with such designation.
- Such programs will be inclusive of a registration program; EBE list publication; EBE bid notifications; and contractor reporting of EBE utilization within applications to bid, requests for proposals, or requests for qualifications.

It is the City of Hattiesburg's policy to practice nondiscrimination based on social and economic disadvantage, race, color, gender, sexual orientation, disability, and national origin in the award and performance of contracts.

The City of Hattiesburg is committed to providing opportunities to local businesses owned and controlled by socially and economically disadvantaged persons and is charged with ensuring their meaningful participation in the contraction activities of the city that involve public spending or private projects utilizing public funding.

Section 26.37 Monitoring and Enforcement Mechanisms

The City of Hattiesburg shall take the following monitoring and enforcement mechanisms to ensure compliance with 49 CFR Part 26.

1. The City of Hattiesburg shall bring to the attention of the Department of Transportation any false, fraudulent, or dishonest conduct in connection with the program, so that DOT can take the steps (e.g., referral to the Department of Justice for criminal prosecution, referral to the DOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules) provided in 26.109.
2. The City of Hattiesburg shall consider similar action under our own legal authorities, including responsibility determinations in future contracts. **Attachment #3** lists the regulation, provisions, and contract remedies available to The City of Hattiesburg in the events of non-compliance with the DBE regulation by a participant in our procurement activities.
3. The City of Hattiesburg shall monitor, enforce, and verify that work committed to DBEs at contract award is actually performed by the DBEs.
4. The City of Hattiesburg shall keep a running tally of actual payments to DBE firms for work committed to them at the time of contract award.

Section 26.39 Small Business Participation

The City of Hattiesburg will incorporate the following non-discriminatory element to its DBE program, in order to facilitate competition on DOT-assisted projects by small business concerns (both DBEs and non-DBE small businesses) and to ensure that the maximum feasible portion of the City of Hattiesburg's overall DBE goal is met by using race-neutral means, The City of Hattiesburg will establish SBE participation goals on its federally funded contracts. Prime contractors may use DBE and/or SBE firms in order to satisfy these SBE goals. The City of Hattiesburg will ensure as a part of the larger DBE program, including elements that:

1. Require bidders on large contracts to identify and/or provide specific subcontracts appropriate for small business participation;
2. Include letting prime contract of a size that small businesses can reasonably compete for and perform, provide outreach, technical assistance and training opportunities for small businesses through various partnerships. The City of Hattiesburg advertises contracting opportunities through various outlets, including local newspapers, minority-based publications and trade publications as well as on its website.

The City's small business program is an active part of the city's DBE program, but does not replace or act as a substitute for other critical elements of the city's DBE program, including use of contract goals (as appropriate), good faith efforts evaluations, etc.]

SUBPART C – GOALS, GOOD FAITH EFFORTS, AND COUNTING

Section 26.43 Set-asides or Quotas

The City of Hattiesburg does not use quotas in any way in the administration of this DBE program.

Section 26.45 Overall Goals

A description of the methodology to calculate the overall goal and the goal calculations can be found in **Attachment #4** to this program. This section of the program will be updated every three years.

Amount of Goal

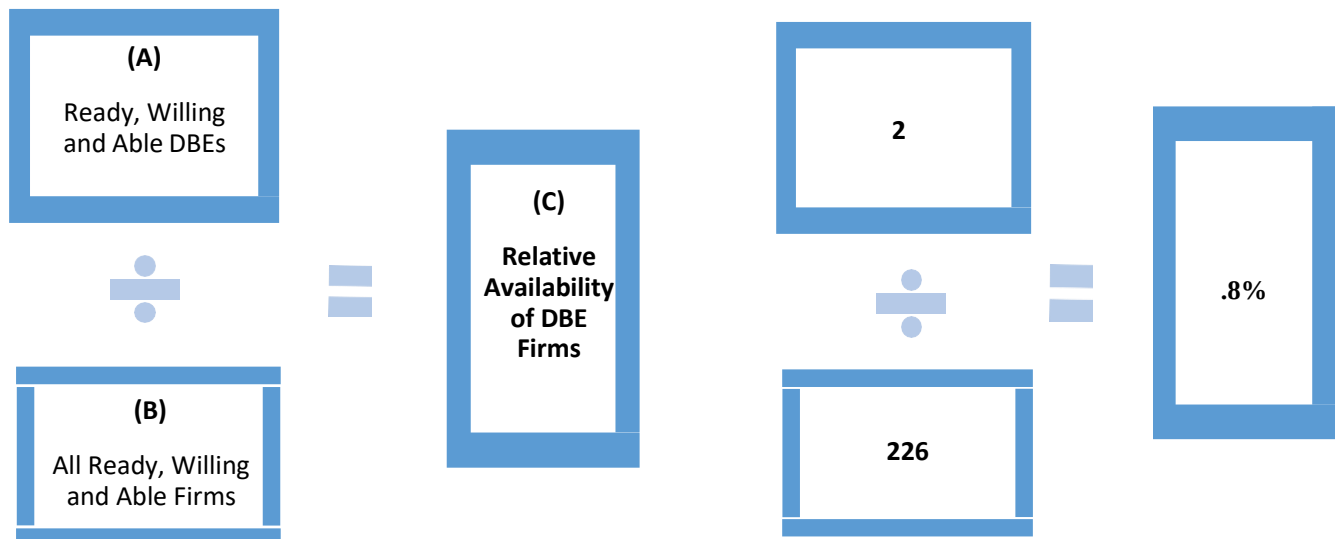
1. The City of Hattiesburg’s overall goal for the following time period 2021-2022 is the following: 1.2% of the Federal financial assistance we will expend in DOT-assisted contracts.

Methodology

The method used to establish the relative availability of DBEs is to determine the portion or percentage of “Ready, Willing, and Able DBEs” that exist among the population of “ALL Ready, Willing, and Able Firms.”

Ready, Willing, Able DBEs (A) / ALL Ready, Willing, Able Firms (B) = Relative Availability of DBE Firms (C)

For the City of Hattiesburg, firms and DBEs within Forrest and Lamar Counties were identified as the most relevant for the purpose of this calculation. See **Attachment 2** for a detailed accounting of the number of DBEs and total firms used.



Dividing for the quotient, we arrive at a Relative DBE Availability of .8%, which is also referred to as the Step One Base Figure and has herein been established as the City’s DBE goal.

Adjustments and Weighting

After calculating the base figure of relative availability of DBEs, all available evidence was considered to determine whether any adjustment to the figure was needed in order to arrive at the overall goal. The City of Hattiesburg chose to adjust the base figure particularly given the limited number of identifiable DBEs specifically available in the Hattiesburg area. This challenge will be addressed through additional outreach opportunities described herein, with particular emphasis on supporting the continuing development of local firms through the new City of Hattiesburg's Emerging Business Enterprise Program (EBE).

No weighting was applied because the majority of our sub-recipients are incurring routine cost spending on such things as fuel/oil, vehicle maintenance/repair, and/or tires. Because of those routine cost, vendor spending will vary significantly within a program year. It would be very difficult to single a specific cost category.

Data Sources

Data sources for Ready, Willing, and Able DBEs included DBE directories at the Mississippi Department of Transportation (MDOT) as well as the Mississippi Development Authority (MDA), which were both specifically reviewed for North American Industry Classification System (NAICS) codes most applicable to DOT/FTA funded work in the City of Hattiesburg. Ultimately, MDOT figures were relied upon as the number of DBEs within that directory in relevant NAICS codes were generally higher.

The data for All Ready, Willing, and Able firms was derived from the U.S. Census Bureau County Business Pattern for Forrest and Lamar Counties, Mississippi.

In order to ensure that the calculation for a DBE goal not under-represent DBE firms in the area, this calculation has used the above referenced DBE directories to identify all DBE firms in specified NAICS codes within the State of Mississippi, but have used the U.S. Census figures to identify total firms only in the Forrest County and Lamar County area. Specifically, County Business Patterns for the related NAICS codes from the 2019 tables were used, as those were the most recently published tables.

The City of Hattiesburg maintains a directory with its Hub City Transit Division and with the Metropolitan Planning Organization (MPO) of firms identified within this calculation as DBEs and will periodically add to the list any firms in other NAICS codes that identify themselves as DBEs, which may have opportunity for incidental business with those divisions. This is not a list of firms certified by the City of Hattiesburg, but rather only a reference to the firms identified in the original sources of data.

The Mississippi Department of Transportation data source can be accessed at:

https://aashtoreports.mdot.ms.gov/trnsreportspublic/Reports/cr_brk.aspx

The U.S. Census Bureau data source can be accessed at:

<https://www.census.gov/programs-surveys/cbp/data/tables.html>

In accordance with Section 26.45(f) The City of Hattiesburg shall submit its overall goal to DOT on August 1 of each year. Before establishing the overall goal each year, The City of Hattiesburg shall consult with the minority, women and general contractor groups as well as other community organizations in an effort to obtain information concerning the availability of disadvantaged and non-disadvantaged businesses, the effects of discrimination on opportunities for DBEs, and the City of Hattiesburg efforts to establish a level playing field for the participation of DBEs.

Following this consultation, the City of Hattiesburg will publish a notice in two newspapers in circulation in the City of Hattiesburg area and in the region (The Hattiesburg Post and the Clarion Ledger) and on its website of the proposed overall goals, informing the public that the proposed goal and its rationale are available for inspection during normal business hours at its principal office for 30 days following the date of the notice, and inform the public that the City of Hattiesburg and DOT will accept comments on the goals for 45 days from the date of the notice. Normally, this notice will be issued by June 1 of each year. The notice will include addresses to which comments may be sent and addresses (including offices and websites) where the proposal may be reviewed. The City of Hattiesburg's overall goal submission to DOT will include a summary of information and comments received during this public participation process and our responses.

The City of Hattiesburg will begin using its overall goal on August 1 for the year of triennial cycle, unless it has received other instructions from DOT. If the city establishes a goal on a project basis, we will begin using our goal by the time of the first solicitation for a DOT-assisted contract for the project.

Section 26.47 Goal Setting and Accountability

If the awards and commitments shown on the City of Hattiesburg's Uniform Report of Awards or Commitments and Payments at the end of any fiscal year are less than the overall applicable to that fiscal year, we will:

1. Analyze in detail the reason for the difference between the overall goal and the actual awards/commitments;
2. Establish specific steps and milestones to correct the problems identified in the analysis; and
3. Submit the plan to FTA within 90 days of the end of the affected fiscal year. The City of Hattiesburg is not required but will still perform the analysis, establish and implement a corrective action plan, and maintain information/records regarding the analysis and efforts made.

Section 26.49 Transit Vehicle Manufacturers Goals

The City of Hattiesburg will require each transit vehicle manufacturer, as a condition of being authorized to bid or propose on FTA-assisted transit vehicle procurements, to certify that it has complied with the requirements of this section. Alternatively, the City of Hattiesburg may, at its discretion and with FTA approval, establish project-specific goals for DBE participation in the procurement of transit vehicles in lieu of the transit vehicle manufacturer complying with this element of the program.

Section 26.51 Meeting Overall Goals/Contract Goals

Breakout of Estimated Race-Neutral & Race-Conscious Participation

The breakout of estimated race-neutral and race-conscious participation can be found in Attachment #5 to this program. This section of the program will be updated when the goal calculation is updated.

The City of Hattiesburg will meet the maximum feasible portion of its overall goal by using race-neutral means of facilitating DBE participation. The City of Hattiesburg will attempt to use the following race neutral means to increase DBE participation:

1. Arrange solicitations, times for the presentation of bids, quantities, specifications, and delivery schedules in ways that facilitate DBE's and other small businesses;
2. Providing technical assistance and other services;

3. Carrying out information and communications programs on contracting procedures and specific contract opportunities;

We estimate that, in meeting our goal, we obtain half from race-neutral and half through race-conscious measures. The City of Hattiesburg has DBE history for its transit services. Therefore, the City will establish contract goals to meet any portion of its overall goal that it does not project being able to meet using race-neutral means.

The following is a summary of the basis of our estimated breakout of race-neutral and race-conscious including the use of outside directories, census data and other related facts to determine relative availability.

MEANS TO MEET OVERALL GOALS

The City of Hattiesburg will meet the maximum feasible portion of its overall goal by using race-neutral means of facilitating DBE participation.

The City of Hattiesburg will attempt to use the following race-neutral means to increase DBE participation:

Arrange solicitations, times for presentation of bids, quantities, specifications and delivery schedules in ways that facilitate DBE's and other small business participation.

- Provide technical assistance and other services;
- Provide services to help DBE's and other small businesses improve long-term development, increase opportunities to participate in a variety of kind of work;
- Carrying out information and communications programs on contracting procedures and specific contract opportunities;
- The City of Hattiesburg established a contract goal to meet any portion of its overall goal does not project being able to meet using race-neutral means.

We estimate that, in meeting our overall goal of 1.2%, we will obtain 1.0% from race neutral and .2% through race conscious measures. Because of the lack of DBE firms and because of the procurement requirements germane to the City of Hattiesburg, the City of Hattiesburg will ensure that the DBE program continues to be tailored to overcome the effects of discrimination.

The following is a summary of the basis of our estimated breakout of race-neutral and race-conscious DBE participation:

The City of Hattiesburg will establish goals to determine race-neutral and race-conscious including the use of outside directories, census data and other related facts to determine relative availability.

The City of Hattiesburg will make an effort to collect data as a result of this program, will review performance data including race-neutral and race-conscious means and their effectiveness, and will participate in outreach meetings with both DBE's and non DBE's willing to participated in transit programs.

Contract Goals

The City of Hattiesburg shall use contract goals to meet any portion of the overall goal that City of Hattiesburg does not project being able to meet using race-neutral means. Contract goals are established so that, over the period to which the overall goal applies, they will cumulatively result in meeting any portion of City of Hattiesburg's overall goal that is not projected to be met through the use of race-neutral means. City of Hattiesburg shall establish contract goals only on those DOT-assisted contracts that have subcontracting possibilities. City of Hattiesburg need not establish a contract goal on every such contract, and the size of contract goals will be adapted to the circumstances of each such contract (e.g., type and location of work, availability of DBEs to perform the particular type of work.) We will express our contract goals as a percentage of the total amount of a DOT-assisted contract.

Section 26.53 Good Faith Efforts Procedures

Demonstration of good faith efforts (26.53(a) & (c). The obligation of the bidder/offeror is to make good faith efforts. The bidder/offeror can demonstrate that it has done so either by meeting the contract goal or documenting good faith efforts. Examples of good faith efforts are found in Appendix A to Part 26. The Transit Administrator is responsible for determining whether a bidder/offeror who has not met the contract goal has documented sufficient good faith efforts to be regarded as responsible.

The City of Hattiesburg shall ensure that all information is complete and accurate and adequately documents the bidder/offer's good faith efforts before it commits to the performance of the contract by the bidder/offeror.
Information to be submitted (26.53(b))

The City of Hattiesburg treats bidder/offers' compliance with good faith efforts' requirements as a matter of responsibility.

Each solicitation for which a contract goal has been established shall require the bidders/offerors to submit the following information:

1. The names and addresses of DBE firms that will participate in the contract;
2. A description of the work that each DBE will perform;
3. The dollar amount of the participation of each DBE firm participating;
4. Written and signed documentation of commitment to use a DBE subcontractor whose participation it submits to meet a contract goal;
5. Written and signed confirmation from the DBE that it is participating in the contract as provided in the prime contractor's commitment and
6. If the contract goal is not met, evidence of good faith efforts.

Administrative reconsideration (26.53(d))

Within 10 days of being informed by the City of Hattiesburg that it is not responsible because it has not documented sufficient good faith efforts, a bidder/offeror may request administrative reconsideration. Bidder/offerors should make this request in writing to the City of Hattiesburg:

*Andrew Ellard, Director
Urban Development
The City of Hattiesburg
P.O. Box 1898
Hattiesburg, MS 39403-1898
(Phone) 601-545-4609 (Fax) 601-544-0392
(Email) mpo@hattiesburgms.com*

The Director of Urban Development will not have played any role in the original determination that the bidder/offeror did not document sufficient good faith efforts. As part of this reconsideration, the bidder/offeror will have the opportunity to provide written documentation or argument concerning the issue of whether it met the goal or made adequate good faith efforts to do so. The bidder/offeror will have the opportunity to meet in person with the MPO Division Manager to discuss the issue of whether it met the goal or made adequate good faith efforts to do so. The MPO Division Manager shall send the bidder/offeror a written decision on reconsideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. The result of the reconsideration process is not administratively appealable to the Department of Transportation.

Good Faith Efforts when a DBE is replaced on a contract (26.53(f))

The City of Hattiesburg shall require a contractor to make good faith efforts to replace a DBE that is terminated or has otherwise failed to complete its work on a contract with another certified DBE, to the extent needed to meet the contract goal. The City of Hattiesburg shall require the prime contractor to notify the DBE Liaison Officer immediately of the DBE's inability or unwillingness to perform and provide reasonable documentation. In this situation, the city will require the prime contractor to obtain its prior approval of the substitute DBE and to provide copies of new or amended subcontracts, or documentation of good faith efforts.

If the contractor fails or refuses to comply in the time specified, the City of Hattiesburg shall issue an order stopping all or part of payment/work until satisfactory action has been taken. If the contractor still fails to comply, the City of Hattiesburg may proceed with a breach of contract action pursuant to the terms of the contract and the laws of the State of Mississippi.

Sample Bid Specification:

The requirements of 49 CFR Part 26, Regulations of the U.S. Department of Transportation, apply to this contract. It is the policy of the City of Hattiesburg to practice nondiscrimination based on race, color, sex, or national origin in the award or performance of this contract. All firms qualifying under this solicitation are encouraged to submit bids/proposals. Award of this contract will be conditioned upon satisfying the requirements of this bid specification. These requirements apply to all bidders/offerors, including those who qualify as a DBE. A DBE contract goal of 1% percent has been established for this contract. The bidder/offeror shall make good faith efforts, as defined in Appendix A, 49 CFR Part 26 (Attachment 1), to meet the contract goal for DBE participation in the performance of this contract.

The bidder/offeror will be required to submit the following information: (1) the names and addresses of DBE firms that will participate in the contract; (2) a description of the work that each DBE firm will perform; (3) the dollar amount of the participation of each DBE firm participating; (4) Written documentation of the bidder/offeror's commitment to use a DBE subcontractor whose participation it submits to meet the contract goal; (5) Written confirmation from the DBE that it is participating in the contract as provided in the commitment made under (4); and (5) if the contract goal is not met, evidence of good faith efforts. This prime Contractor obligation can be met by completing Form 1 and Form 2 as found in **Attachment #6**.

Section 26.55 Counting DBE Participation

The City of Hattiesburg shall count DBE participation toward overall and contract goals as provided in 49 CFR 26.55.

SUBPART D – CERTIFICATION STANDARDS

Section 26.61 – 26.73 Certification Process

The City of Hattiesburg is a member of a Unified Certification Program (UCP) administered by the Mississippi Department of Transportation (MDOT) and will rely upon their certification procedures.

SUBPART E – CERTIFICATION PROCEDURES

Section 26.81 Unified Certification Programs

The City of Hattiesburg is a member of a Unified Certification Program (UCP) administered by the Mississippi Department of Transportation (MDOT). The UCP will meet all of the requirements of this section. This UCP can be found at **Attachment #8**.

Section 26.83 Procedures for Certification Decisions

Re-certifications 26.83(a) & (c) the City of Hattiesburg was not required to have a DBE program under former part 23 and therefore is not required to participate in any re-certifications. For firms that the City has certified or reviewed and found eligible under part 26, we will again review their eligibility every three (3) years. These reviews will include the following components:

1. Completion of new application, including Financial Statement(s)
2. Review of application and components "No Change" Affidavits and Notices of Change (26.83(j)) the City shall require all DBEs to inform it, in a written affidavit, of any change in its circumstances affecting its ability to meet size, disadvantaged status, ownership or control criteria of 49 CFR Part 26 or of any material changes in the information provided with the city's application for certification.

The City shall also require all owners of all DBEs the City has certified to submit, on the anniversary date of their certification, a "no change" affidavit meeting the requirements of 26.83(j). The test of this affidavit is the following:

I swear (or affirm) that there have been no changes in the circumstances of [name of DBE firm] affecting its ability to meet the size, disadvantaged status, ownership, or control requirements of 49 CFR part 26. There have been no material changes in the information provided with [name of DBE]'s application for certification, except for any changes about which you have provided written notice to the City under 26.83(j). [Name of firm] meets Small Business Administration (SBA) criteria for being a small business concern and its average annual gross receipts (as defined by SBA rules) over the firm's previous three fiscal years do not exceed \$16.6 million. The City shall require DBEs to submit with this affidavit documentation of the firm's size and gross receipts. The City shall notify all currently certified DBE firms of these obligations by mail on an annual basis. This notification will inform DBEs that to submit the "no change" affidavit, their owners must swear or affirm that they meet all regulatory requirements of part 26, including personal net worth. Likewise, if a firm's owner knows or should know that he or she, or the firm, fails to meet a part 26 eligibility requirement (e.g. personal net worth), the obligation to submit a notice of change applies.

Section 26.85 Denials of Initial Requests for Certification

If the City of Hattiesburg denies a firm's application or decertifies it, it may not reapply until 12 months have passed from the date of the denial.

Section 26.87 Removal of a DBE's Eligibility

In the event that the City of Hattiesburg proposes to remove a DBE's certification, it will follow procedures consistent with 26.87. **Attachment #9** to this program sets forth these procedures in detail. To ensure separation of functions in a de-certification, the City has determined that the Director of Urban Development will serve as the decision-maker in de-certification proceedings. The City has established an administrative "firewall" to ensure that the Director of Urban Development will not have participated in any way in the de-certification proceeding against the firm (including in the decision to initiate such a proceeding).

Section 26.89 Certification Appeals

Any firm or complainant may appeal the City of Hattiesburg decisions in certification matters to DOT. Such appeals may be sent to:

*U.S. Department of Transportation
Office of Civil Rights Certification Appeals Branch
1200 New Jersey Ave. SE
West Building, 7th Floor
Washington, D.C. 20590*

The City shall promptly implement any DOT certification appeal decisions affecting the eligibility of DBEs for our DOT-assisted contracting (e.g., certify a firm if DOT has determined that our denial of its application was erroneous).

SUBPART F – COMPLIANCE AND ENFORCEMENT

Section 26.109 Information, Confidentiality, Cooperation

The City of Hattiesburg shall safeguard from disclosure to third parties any information that may reasonably be regarded as confidential business information, consistent with Federal, state, and local law. Notwithstanding any contrary provisions of state or local law, the City of Hattiesburg shall not release personal financial information submitted in response to the personal net worth requirement to a third party (other than DOT) without the written consent of the submitter.

Monitoring Payments to DBEs

The City of Hattiesburg shall require prime contractors to maintain records and documents of payments to DBEs for three years following the performance of the contract. These records shall be made available for inspection upon request by any authorized representative of the City or DOT. This reporting requirement also extends to any certified DBE subcontractor. The City shall perform interim audits of contract payments to DBEs. The audit will review payments to DBE subcontractors to ensure that the actual amount paid to DBE subcontractors equals or exceeds the dollar amounts stated in the schedule of DBE participation.

ATTACHMENTS

Attachment 1 Organizational Chart

Attachment 2 DBE Directory

Attachment 3 Monitoring and Enforcement Mechanisms

Attachment 4 Overall Goal Calculation

Attachment 5 Breakout of Estimated Race-Neutral & Race-Conscious Participation

Attachment 6 Form 1 & 2 for Demonstration of Good Faith Efforts

Attachment 7 Certification Application Forms

Attachment 8 Unified Certification Program

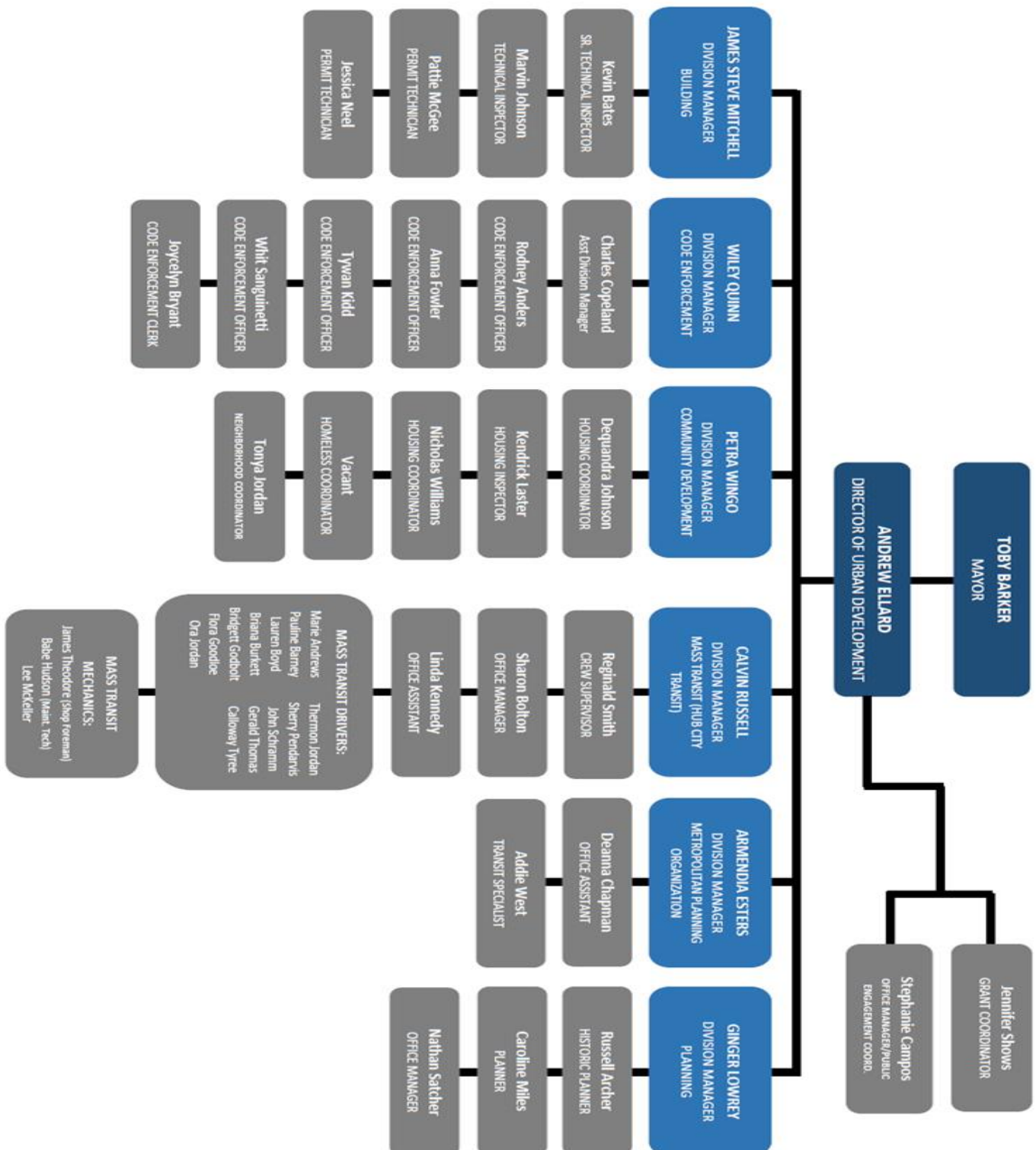
Attachment 9 Procedures for Removal of DBE's Eligibility

Attachment 10 Regulations: 49 CFR part 26

Attachment 11 DBE Definitions

ATTACHMENT (1)

Department of Urban Development Organizational Chart



ATTACHMENT (2)

DBE DIRECTORY

https://mdot.ms.gov/bidsystem_data/bidderspdf/DBE%20Listing.pdf

The City of Hattiesburg maintains a directory identifying all firms eligible to participate as DBEs. The directory lists the firm's name, address, phone number, date of most recent certification, and the type of work the firm has been certified to perform as DBE. We will use the Directory of the State of Mississippi Department of Transportation List of Certified DBE Contractors. The Directory will be made available at the City of Hattiesburg City Clerk's Desk.

ATTACHMENT (3)

Monitoring and Enforcement Mechanisms

In addition, the federal government has available several enforcement mechanisms that it may apply to firms participating in the DBE program, including, but not limited to, the following:

1. Suspension or debarment proceedings pursuant to 49 CFR part 26
2. Enforcement action pursuant to 49 CFR part 31
3. Prosecution pursuant to 18 USC 1001.

We will bring to the attention of the Department of Transportation any false, fraudulent, or dishonest conduct in connection with the program, so that DOT can take the steps (e.g., referral to the Department of Justice for criminal prosecution, referral to the DOT Inspector General, action under suspension and debarment or Program Fraud and Civil Penalties rules) provided in 26.109. We also will consider similar action under our own legal authorities, including responsibilities determinations in future contracts.

ATTACHMENT (4)

Section 26.45: Overall Goal Calculation

Amount of Goal

1. The City of Hattiesburg's overall goal for the following time period 2021-2023 is the following: 1.2% of the Federal financial assistance we will expend in DOT-assisted contracts.

Methodology used to Calculate Overall Goal

The methodology used to calculate the relative availability of DBE's is a percentage figure calculated by dividing the number of representing available DBE's by a number of businesses representing all firms.

The data source to determine the base figure for relative DBE's was calculated as follows:

$$\text{Base Figure} = \frac{\text{Ready, Willing and Able DBE's} \quad 2}{\text{All firms ready, willing and able} \quad 226} = .8\%$$

The data source or demonstrated evidence used to derive the numerator was the Mississippi Contract Procurement Center located in Biloxi, Mississippi for Small Businesses and the Mississippi Department of Transportation Web Page Site for Disadvantage Business Enterprise (DBE's).

The data source or demonstrated evidence used to derive the denominator was the U.S. Census Bureau County Business Pattern for Forrest County, Mississippi. The City established its goals based on a methodology that takes into account several factors contained in 49 CFR 26.45. These factors include: use of other DBE directories, Census Bureau data, use of alternative methods, adjusting for demonstrated evidence of local market conditions. Data to support this methodology was obtained from available DBE directories.

When we divided the numerator by the denominator we arrived at the base figure for our overall goal and that number was 1.0%. After calculating a base figure of the relative availability of DBE's evidence was examined to determine what adjustment was needed to the base figure in order to arrive at the overall goal. In order to reflect as accurately as possible the DBE participation, we have no adjustments to our base figure of 1.2%.

The reason we chose not to adjust our figure using this data was that it reflected the number of qualified/certified businesses that met the standards of DBE certification. The "relative availability" of DBE's in Hattiesburg contracting areas is estimated at 1.0%. This figure was derived by comparing the number of certified DBE's in Standard Industrial Classification (SIC) Codes with the total number of small businesses in the SIC code that are thought to be ready, willing and able to bid on contracts and subcontracts. Some SIC codes do little transit work. In doing so, the City has determined because of the limited number of DBE firms, it is necessary for the City not to adjust the base figure.

Attachment 5

BREAKOUT OF ESTIMATED RACE-NEUTRAL AND RACE-CONSCIOUS PARTICIPATION

The City of Hattiesburg will meet the maximum feasible portion of its overall goal by using race-neutral means of facilitating DBE participation. The City of Hattiesburg will attempt to use the following race neutral means to increase DBE participation:

- Arrange solicitations, times for the presentation of bids, quantities, specifications, and delivery schedules in ways that facilitate DBE's and other small businesses;
- Providing technical assistance and other services;
- Carrying out information and communications programs on contracting procedures and specific contract opportunities;

We estimate that, in meeting our overall goal of 1.2%, we obtain 1.0% from race-neutral and .2% through race-conscious measures. The City of Hattiesburg has DBE history for its transit services. Therefore, the City will establish contract goals to meet any portion of its overall goal that it does not project being able to meet using race-neutral means.

The following is a summary of the basis of our estimated breakout of race-neutral and race-conscious including the use of outside directories, census data and other related facts to determine relative availability.

MEANS TO MEET OVERALL GOALS

The City of Hattiesburg will meet the maximum feasible portion of its overall goal by using race-neutral means of facilitating DBE participation.

The City of Hattiesburg will attempt to use the following race-neutral means to increase DBE participation:

Arrange solicitations, times for presentation of bids, quantities, specifications and delivery schedules in ways that facilitate DBE's and other small business participation.

- Provide technical assistance and other services;
- Provide services to help DBE's and other small businesses improve long-term development, increase opportunities to participate in a variety of kind of work;
- Carrying out information and communications programs on contracting procedures and specific contract opportunities;
- The City of Hattiesburg established a contract goal to meet any portion of its overall goal does not project being able to meet using race-neutral means.

We estimate that, in meeting our overall goal of 1.2%, we will obtain .2% from race neutral and 1.0% through race conscious measures. Because of the lack of DBE firms and because of the procurement requirements germane to the City of Hattiesburg, the City of Hattiesburg will ensure that the DBE program continues to be tailored to overcome the effects of discrimination.

The following is a summary of the basis of our estimated breakout of race-neutral and race-conscious DBE participation:

The City of Hattiesburg will establish goals to determine race-neutral and race-conscious including the use of outside directories, census data and other related facts to determine relative availability.

The City of Hattiesburg will make an effort to collect data as a result of this program, will review performance data including race-neutral and race-conscious means and their effectiveness, and will participate in outreach meetings with both DBE's and non DBE's willing to participated in transit programs.

Attachment 6

Form 1 for Demonstration of Good Faith Efforts

[Forms 1 and 2 should be provided as part of the solicitation documents.]

FORM 1: DISADVANTAGED BUSINESS ENTERPRISE (DBE) UTILIZATION

The undersigned bidder/offeror has satisfied the requirements of the bid specification in the following manner (please check the appropriate space):

_____ The bidder/offeror is committed to a minimum of _____ % DBE utilization on this contract.

_____ The bidder/offeror (if unable to meet the DBE goal of _____%) is committed to a minimum of _____ % DBE utilization on this contract and submits documentation demonstrating good faith efforts.

Name of bidder/offeror's firm: _____

State Registration No. _____

By _____
(Signature)

Title

Attachment 6

Forms 2 for Demonstration of Good Faith Efforts

FORM 2: LETTER OF INTENT

Name of bidder/offeror's firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Name of DBE firm: _____

Address: _____

City: _____ State: _____ Zip: _____

Telephone: _____

Description of work to be performed by DBE firm:

The bidder/offeror is committed to utilizing the above-named DBE firm for the work described above. The estimated dollar value of this work is \$ _____.

Affirmation

The above-named DBE firm affirms that it will perform the portion of the contract for the estimated dollar value as stated above.

By _____
(Signature) (Title)

If the bidder/offeror does not receive award of the prime contract, any and all representations in this Letter of Intent and Affirmation shall be null and void.

(Submit this page for each DBE subcontractor.)

Attachment 7
Certification Application Forms

This application can be obtained from the Mississippi Department of Transportation Website.
<https://mdot.ms.gov/documents/Civil%20Rights/Programs/DBE/DBE%20Certification%20Application.pdf>

Attachment 8
Unified Certification Program

<https://mdot.ms.gov/documents/Civil%20Rights/Programs/DBE/MS%20Unified%20Certification%20Program%20Letter.pdf>

Attachment 9
Procedures for Removal of DBE's Eligibility

The procedure for removal of DBE's Eligibility can be obtained from the Mississippi Department of Transportation website listed below:

<https://mdot.ms.gov/documents/Civil%20Rights/Manuals/DBE/DBE%20Program%20Manual.pdf>

Any person may file a written complaint alleging that a currently certified firm is ineligible. The complaint must specify the reasons why the firm is ineligible. The complaint will be investigated by the certifying agency. The records on the firm will be reviewed along with any information or supporting documentation provided by the complainant. The confidentiality of the complainant's identity will be protected as provided in paragraph 26.109(b). Additional information may be requested from the firm to properly investigate the complaint.

If there is a reasonable cause to believe the firm is ineligible, the reviewing agency must provide written notice to the firm setting forth the reasons for the recommendation to find the firm ineligible. All statements of reasons for findings on the issue of reasonable cause must specifically reference the evidence in the record on which each reason is based.

If, based on notification by the firm of a change in its circumstances or other information that comes to the certifying agency's attention, it is determined that there is reasonable cause to believe that a currently certified firm is ineligible, written notice must be provided to the firm that the agency proposes to find the firm ineligible setting forth the reasons for the determination.

When the firm is notified there is reasonable cause to remove its eligibility, the firm must be given the opportunity for an informal hearing. The firm must follow the Appeal Process as outlined in the next section of this document.

Appeal Process

A DBE whose eligibility is removed by a recipient may make a written request to appeal that decision within 30 days of the letter of removal. Upon receipt of the request for an appeal, the denying agency must contact MDOT to schedule a hearing. In order to maintain consistency, MDOT will be responsible for scheduling the hearings and for all administrative costs associated with holding the hearing. The removing agency will be responsible for providing legal representation, expert witness testimony and the production of records at its own costs. Full cooperation with the hearing officer is also required.

At the conclusion of the hearing, an official transcript will be provided to the parties. The hearing officer will render a decision within seven (7) days. The recommendation will be forwarded to the parties. Either party may file written objections within ten (10) days of receipt of the hearing officer's report. A copy must be provided to the opposing party by certified mail. The opposing party may submit a written response to objections within seven (7) days. The denying agency may refer the matter back to the hearing officer for consideration of the objections and responses. The hearing officer shall consider these objections and submit a supplementary report and recommendation to the denying agency within five (5) days after such referral. The denying agency will render a decision within fourteen (14) days after the expiration of the time for submissions from the opposing party and the hearing officer.

The opposing party may appeal an adverse determination by the denying agency as provided under CFR part 26, subpart E pursuant to 49 CFR Section 26.89 to the United States Department of Transportation. A letter must be sent to the Department within 90 days of the date of the denying agency's final decision, containing information and arguments concerning why the denying agency's decision should be reversed. The firm which is removed from certification will not be eligible to reapply to be certified for a minimum of 12 months from the date it was removed.

Attachment 10**Regulations: 49 CFR Part 26**

The regulations may be reviewed on the Mississippi Department of Transportation Website listed below:

[49 CFR §26 Participation By Disadvantaged Business Enterprises In Department Of Transportation Financial Assistance Programs - Code of Federal Regulations \(ecfr.io\)](#)

Attachment 11

Definitions of Terms

49 CFR §26.5.

Affirmative Action means taking specific steps to eliminate discrimination and its effects, to ensure nondiscriminatory results and practices in the future, and to involve disadvantaged business enterprises fully in contracts and programs funded by the Department.

Alaska Native means a citizen of the United States who is a person of one-fourth degree or more Alaskan Indian (including Tsimshian Indians not enrolled in the Metlaktia Indian Community), Eskimo, or Aleut blood, or a combination of those bloodlines. The term includes, in the absence of proof of a minimum blood quantum, any citizen whom a Native village or Native group regards as an Alaska Native if their father or mothered is regarded as an Alaska Native.

Alaska Native Corporation (ANC) means any Regional Corporation, Village Corporation, Urban Corporation or Group Corporation organized under the laws of the State of Alaska in accordance with the Alaska Native Claims Settlement Act, as amended (43 U.S.C 1601, et seq.)

Applicant means one who submits an application, request, or plan to be approved by a Department official or by a primary recipient as a condition to eligibility for DOT financial assistance.

Application means such an application, request or plan.

Compliance means that a recipient has correctly implemented the requirements of this part.

Contract means a legally binding relationship obligating a seller to furnish supplies or services (including, but not limited to, construction and professional services) and the buyer to pay for them.

Contractor means one who participates, through a contract or subcontract (at any tier), in a DOT-assisted highway, transit, or airport program.

Department or DOT means the U.S. Department of Transportation, including the Office of the Secretary, the Federal Highway Administration (FHWA), the Federal Transit Administration (FTA), and the Federal Aviation Administration (FAA).

Disadvantaged Business Enterprise or DBE means a for-profit small business concern-

- (1) That is at least 51 percent owned by one or more individuals who are both socially and economically disadvantaged or, in the case of a corporation, in which 51 percent of the stock is owned by one or more such individuals; and
- (2) Whose management and daily business operations are controlled by one or more of the socially and economically disadvantaged individuals who own it.

DOT-assisted contract means any contract between a recipient and a contractor (at any tier) funded in whole or in part with DOT financial assistance, including letters of credit or loan guarantees, except a contract solely for the purchase of land.

Good faith efforts mean efforts to achieve a DBE goal or other requirement of this part which, by their scope, intensity, and appropriateness to the objective, can reasonably be expected to fulfill the program requirement.

Immediate family member means father, mother, husband, wife, son, daughter, brother, sister, grandmother, grandfather, grandson, granddaughter, mother-in-law, or father-in-law.

Indian tribe means any Indian tribe, band, nation, or other organized group or community of Indians, including any ANC, which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians, or is recognized as such by the State in which the tribe, band, nation, group, or community resides. See definition of “tribally-owned concern” in this section.

Joint venture means an association of a DBE firm and one or more other firms to carry out a single, for-profit business enterprise, for which the parties combine their property, capital, efforts, skills and knowledge, and in which the DBE is responsible for a distinct, clearly defined portion of the work of the contract and whose share in the capital contribution, control, management, risks, and profits of the joint venture are commensurate with its ownership interest.

Native Hawaiian means any individual whose ancestors were natives, prior to 1778, of the area, which now comprises the State of Hawaii.

Native Hawaiian Organization means any community service organization serving Native Hawaiians in the State of Hawaii, which is a not-for-profit organization, chartered by the State of Hawaii, is controlled by Native Hawaiians, and whose business activities will principally benefit such Native Hawaiians.

Noncompliance means that a recipient has not correctly implemented the requirements of this part.

Operating Administration or OA means any of the following parts of DOT: the Federal Aviation Administration (FAA), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA). The “Administrator” of an operating administration includes his or her designees.

Personal net worth means the net value of the assets of an individual remaining after total liabilities are deducted. An individual’s personal net worth does not include: The individual’s ownership interest in an applicant or participating DBE firm; or the individual’s equity in his or her primary place of residence. An individual’s personal net worth includes only his or her own share of assets held jointly or as community property with the individual’s spouse.

Primary Industry Classification means the four-digit Standard Industrial Classification (SIC) code designation, which best describes the primary business of a firm. The SIC code designations are described in the Standard Industry Classification Manual. As the North American Industrial Classification System (NAICS) replaces the SIC system, references to SIC codes and the SIC Manual are deemed to refer to the NAICS manual and applicable codes. The SIC Manual and the NAICS Manual are available through the National Technical Information Service (NTIS) of the U.S. Department of Commerce (Springfield, VA, 22261). NTIS also makes materials available through its website (www.ntis.gov/naics).

Primary recipient means a recipient that receives DOT financial assistance and passes some or all of it to another recipient.

Principal place of business means the business location where the individuals who manage the firm's day-to-day operations spend most working hours where top management's business records are kept. If the offices from which management is directed and where business records are kept are in different locations, the recipient will determine the principal place of business for DBE program purposes.

Program means any undertaking on a recipient's part to use DOT financial assistance, authorized by the laws to which this part applies.

Race-conscious measure or program is one that is focused specifically on assisting only DBEs, including women-owned DBEs.

Race-neutral measure or program is one that is, or can be, used to assist all small businesses. For the purposes of this part, race-neutral includes gender-neutrality.

Recipient is any entity, public or private, to which DOT financial assistance is extended, whether directly or through another recipient, through the programs of the FAA, FHWA, or FTA, or who has applied for such assistance.

Secretary means the Secretary of Transportation or his/her designee.

Set-aside means a contracting practice restricting eligibility for the competitive award of a contract solely to DBE firms.

Small Business Administration or SBA means the United States Small Business Administration.

Small Business concern means, with respect to firms seeking to participate as DBEs in DOT assisted contracts, a small business concern as defined pursuant to section 3 of the Small Business Act and Small Business Administration regulations implementing it (13 CFR Part 121) that also does not exceed the cap on Average annual gross receipts specified in §26.65(b).

Socially and economically disadvantaged individual means any individual who is a citizen (or lawfully admitted permanent resident) of the United States and who is –

(1) Any individual who a recipient finds to be a socially and economically disadvantaged individual on a case-by case basis.

(2) Any individual in the following groups, members of which are rebuttably presumed to be socially and economically disadvantaged:

1. "Black Americans," which includes persons having origins in any of the Black racial groups of Africa;
2. "Hispanic Americans," which includes persons of Mexican, Puerto Rican, Cuban, Dominican, Central or South American, or other Spanish or Portuguese culture or origin, regardless of race;
3. "Native Americans," which includes persons who are American Indians, Eskimos, Aleuts, or Native Hawaiians;
4. "Asian-Pacific Americans," which includes persons whose origins are from Japan, China, Taiwan, Korea, Burma (Myanmar), Vietnam, Laos, Cambodia (Kampuchea), Thailand, Malaysia, Indonesia, the Philippines, Brunei, Samoa, Guam, the U.S. Trust Territories of the Pacific Islands (Republic of Palau), the Commonwealth of the Northern Marianas Islands, Macao, Fiji, Tonga, Kiribati, Juvalu, Nauru, Federated States of Micronesia, or Hong Kong;
5. "Subcontinent Asian Americans," which includes persons whose origins are from India, Pakistan, Bangladesh, Bhutan, the Maldives Islands, Nepal or Sri Lanka;
6. Women;
7. Any additional groups whose members are designated as socially and economically disadvantaged by the SBA, at such time as the SBA designation becomes effective.

Tribally owned concerns mean any concern at least 51 percent owned by an Indian tribe as defined in this section.

You refer to a recipient, unless as statement in the text of this part or the context requires otherwise (i.e. “You must do XYZ” means that recipients must do XYZ).

Public Participation

The City of Hattiesburg published the DBE goal information and a draft of the new Program Plan in these publications:

The Hattiesburg Post & the Clarion Ledger (6/10/2021)

The City of Hattiesburg website (www.hattiesburgms.com)

The City of Hattiesburg held a public comment period from June 10, 2021 to July 12, 2021

The City of Hattiesburg received comments from these individuals or organizations:

Summaries of these comments are as follows:

The City of Hattiesburg responses to these comments are:



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Acknowledge bids received May 13, 2021 for the Water Plant #1 Rehabilitation project and reject all bids due to bids being priced outside of funding amounts.
File Number: 2021-830
Minute Book #

Summary

Acknowledge bids received May 13, 2021 for the Water Plant #1 Rehabilitation project and reject all bids.

Recommendation Statement

I recommend approval of this item.

Please place this on the June 22, 2021 City Council meeting for consideration.



Engineering Progress

June 1, 2021

City of Hattiesburg
P.O. Box 1898
Hattiesburg, MS 39403-898

Attn: Lamar Rutland, P.E.

Re: Water Plant #1 Rehabilitation
1273-W015
Comprehensive Water and Sewer Investment Project

Dear Lamar,

I have certified the enclosed bid tabulation that represents all bids which were received and opened at 10:00 a.m. on May 13, 2021 for the above referenced project.

A total of two (2) bids were received with a low bid from Hemphill Construction Co., Inc. in the amount of \$1,673,580.00. The Engineers Opinion of Probable Costs included in the Facilities Plan was \$976,911.71 with contingencies of 10%.

I am recommending to reject these bids on the following basis:

- 1.) The total bid price is 56% above the Engineers Opinion of Probable Costs.
- 2.) The project is priced outside of the funding amount anticipated for construction.

Attached please find one (1) copy of the certified bid tabulation for the bids received, which details the basis for the rejection.

Sincerely,

Nicholas M. Connolly, P.E., P.L.S.
Project Engineer

/sm
Enclosure

RECEIVED
6/3/21

OPINION OF PROBABLE COSTS

Shows, Dearman & Waits Inc.Consulting Engineers
301 Second Avenue
Hattiesburg, MS 39401
Phone: (601) 544-1821Client: **City of Hattiesburg**Date: **October 2, 2020**Project No.: **1273-W015**Project: **Water Plant #1 Rehabilitation**

PHASE 1						
ITEM NO.	ITEM	UNIT	QTY	UNIT PRICE	EXTENSION	
GENERAL						
1	Mobilization	LS	1	\$ 12,500.00	\$	12,500.00
2	Testing	LS	1	\$ 37,286.71	\$	37,286.71
Subtotal General						\$ 49,786.71
1930's AERATOR						
3	Roofing	SF	3,015	\$ 14.00	\$	42,210.00
Subtotal 1930's Aerator						\$ 42,210.00
1990's AERATOR						
4	Lime Feeder	EA	1	\$ 75,000.00	\$	75,000.00
5	Lime Feeder Rehab	LS	1	\$ 47,500.00	\$	47,500.00
6	Fluoride Feeder	LS	1	\$ 62,500.00	\$	62,500.00
7	Fluoride Feeder Rehab	LS	1	\$ 37,500.00	\$	37,500.00
Subtotal 1990's Aerator						\$ 222,500.00
RAPID MIX TANK						
8	Demolish Existing Rapid Mix Tank	LS	1	\$ 32,500.00	\$	32,500.00
9	Structural Concrete	CY	32	\$ 1,200.00	\$	38,400.00
10	Reinforcement	LB	12,700	\$ 2.00	\$	25,400.00
11	Structural Steel	LB	1,550	\$ 2.00	\$	3,100.00
12	Aluminum Grating	LB	850	\$ 21.00	\$	17,850.00
13	Aluminum Handrail	LF	64	\$ 270.00	\$	17,280.00
14	Manhole Steps	EA	16	\$ 80.00	\$	1,280.00
15	20" Ductile Iron Pipe	LF	30	\$ 815.00	\$	24,450.00
16	20" 90° Bends	EA	2	\$ 4,700.00	\$	9,400.00
Subtotal Rapid Mix Tank						\$ 169,660.00
FILTER BUILDING						
17	Filter Media Replacement	LS	1	\$ 306,000.00	\$	306,000.00
18	Air Scour Piping Repainting	LS	1	\$ 9,200.00	\$	9,200.00
19	Basement Exhaust Fan	EA	1	\$ 25,000.00	\$	25,000.00
20	Roofing Lower Roof	SF	5,923	\$ 16.00	\$	94,768.00
21	Roofing Upper Roof	SF	1,290	\$ 16.00	\$	20,640.00
22	Replace spiral staircase	LS	1	\$ 16,000.00	\$	16,000.00
Subtotal Filter Building						\$ 471,608.00
CHEMICAL BUILDING						
23	Roofing	SF	1,113	\$ 19.00	\$	21,147.00
Subtotal Chemical Building						\$ 21,147.00
Projected Construction Costs						\$ 976,911.71
Construction Contingency (10.0%)						\$ 97,691.17
Design Engineering Costs (9.0%)						\$ 87,922.05
Construction Engineering Costs (7.0%)						\$ 68,383.82
TOTAL						\$ 1,230,908.75

BID TAB

May 13, 2021

Project: Water Plant #1 Rehabilitation - Phase I
City of Hattiesburg

Project No. 1273-W015

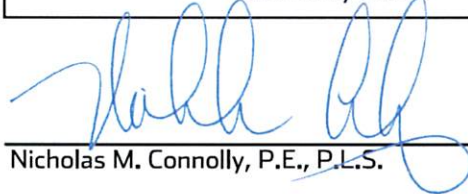
Hemphill Construction Co., Inc
P.O. Drawer 879
Florence, MS 39073

Mitchell Contracting, Inc
P.O. Box 16
Madisonville, LA 70447

BASE BID

Item No.	Item Description	Quantity	Unit	Unit Price	Amount	Unit Price	Amount
1	Existing Rapid Mix Tank Demolition	1	LS	\$23,400.00	\$23,400.00	\$52,500.00	\$52,500.00
2	Demolish Alum Storage Area	1	LS	\$12,200.00	\$12,200.00	\$30,000.00	\$30,000.00
3	New Rapid Mix Tank	1	LS	\$201,000.00	\$201,000.00	\$185,000.00	\$185,000.00
4	Yard Piping	1	LS	\$131,100.00	\$131,100.00	\$265,000.00	\$265,000.00
5	Lime Feed System and Appurtenances	1	EA	\$55,000.00	\$55,000.00	\$50,000.00	\$50,000.00
6	Flouride Feed System and Appurtenances	1	LS	\$49,600.00	\$49,600.00	\$40,000.00	\$40,000.00
7	Filter Rehabilitation including Air Scour Piping and Appurtenances	6	EA	\$115,000.00	\$690,000.00	\$90,000.00	\$540,000.00
8	Spiral Staircase	1	LS	\$9,580.00	\$9,580.00	\$24,500.00	\$24,500.00
9	Exhaust Fan and Piping to Vent	1	LS	\$68,700.00	\$68,700.00	\$36,500.00	\$36,500.00
10	Re-roof Lower Plant Building	1	LS	\$160,000.00	\$160,000.00	\$150,000.00	\$150,000.00
11	Re-roof Main Building	1	LS	\$170,000.00	\$170,000.00	\$225,000.00	\$225,000.00
12	Re-roof Chemical Building	1	LS	\$29,000.00	\$29,000.00	\$95,000.00	\$95,000.00
13	Re-roof 1930's Aerator Building	1	LS	\$74,000.00	\$74,000.00	\$95,000.00	\$95,000.00
Bid Total:					\$1,673,580.00		\$1,788,500.00

This is to certify that I have checked the tabulation of the bids received by the City of Hattiesburg on May 13th, 2021, and that said tabulation is true and correct to the best of my belief.


Nicholas M. Connolly, P.E., P.L.S.

Comments:

*Mathematical Correction



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Peggy Sealy, Assistant Chief of Police

cc:

Date: Tuesday, June 22, 2021

Re: Authorize submission of a grant application to the U.S. Department of Justice, Bureau of Justice Assistance for the 2021 Bulletproof Vest Partnership Grant in the amount of \$31,200.00 to purchase bulletproof vests for the Hattiesburg Police Department. The grant reimbursement to the city will provide \$15,600.00 (50%) of the cost of the vests.
File Number: 2021-820
Minute Book #

Summary

2021 Bulletproof Vest Partnership Grant

Recommendation Statement

I recommend authorization of submission of a grant application to the U.S. Department of Justice, Bureau of Justice Assistance for the 2021 Bulletproof Vest Partnership Grant in the amount of \$31,200.00 to purchase bulletproof vests for the Hattiesburg Police Department. The grant reimbursement to the city will provide \$15,600.00 (50%) of the cost of the vests.

Please place this on the June 22, 2021 City Council meeting for consideration.

SUBMIT APPLICATION



Application Profile



Application



NIJ Approved Vests



Submit Application

You have successfully submitted your application for funding for BVP approval.

The approval process may take several weeks from the application closing date. A confirmation email has been sent to chamilton@hattiesburgms.com. An email approval advisory will also be sent to chamilton@hattiesburgms.com when the program approvals are completed. Additionally, you may check the status of your application by selecting option , 'Application History', in the Jurisdiction's Handbook. Thank you for your continued patience.

For your reference, the summary data for your Application for Funding is listed below.

SUCCESSFUL SUBMISSION

Jurisdiction:	HATTIESBURG CITY
Application Id:	21028305
Status/Submission Date:	Sent for BVP Approval : 06/11/21

APPLICATION FOR FUNDING

Quantity	Extended Cost	Tax, S&H	Total Cost
39	\$31,200.00	\$0.00	\$31,200.00
Maximum Allowable Funding from BVP:			\$15,600.00

* Important: You can click on the 'Print Screen' button below to keep a copy for your records.

PRINT SCREEN



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Andrew Ellard, Director

cc: Kermas Eaton, City Clerk

Date: Tuesday, June 22, 2021

Re: Approve and authorize issuance of manual checks for CDBG-CV Program Claims per attached Memorandum. {Entitlement CDBG-CV}
File Number: 2021-838
Minute Book #

Summary

Approve and authorize issuance of manual checks for CDBG-CV Program Claims per attached Memorandum. {Entitlement CDBG-CV}

Recommendation Statement

I recommend issuance of manual checks for CDBG-CV Program Claims per attached Memorandum

Please place this on the June 22, 2021 City Council meeting for consideration.

MEMORANDUM

TO: City of Hattiesburg Council Members

FROM: Andrew Ellard, Director
Department of Urban Development

DATE: June 22, 2021

SUBJECT: Authorize issuance of manual checks for CDBG-CV Program claims

The following request for payment is being submitted for approval during the City Council's June 22, 2021 meeting. Please authorize and approve issuance of manual checks for the claims listed below:

Recipient: Hattiesburg Clinic
Activity: COVID-19 Free Testing
Program: CDBG-CV
Project Site: 303 E. 5th Street (C. E. Roy Community Center)
Amount Requested: \$7,792.23
Purpose of Request: Reimbursement (March 2021)

Recipient: Hattiesburg Clinic
Activity: COVID-19 Free Testing
Program: CDBG-CV
Project Site: 303 E. 5th Street (C. E. Roy Community Center)
Amount Requested: \$16,334.20
Purpose of Request: Reimbursement (November 2020)

Hattiesburg Clinic
 415 South 28th Avenue
 Hattiesburg, MS 39401

Reimbursement Request
 Community Based Covid 19 Testing Outreach Project
 March 2021

	Hours	Payroll	Benefits	Total
Personnel costs-				
Site coordinator	10.17	495.13	123.78	618.92
Lab technician	72.22	1,169.93	292.48	1,462.41
Reception/Check-in	134.13	1,703.65	425.91	2,129.56
Medical assistant			-	-
Registered nurse	0.18	3.43	0.86	4.29
Courier			-	-
Nurse Practitioner			-	-
Physician	0.13	19.20	0.28	19.48
	216.83	3,391.34	843.31	4,234.66

Supplies 5,353.19

Contracted Housekeeping 1,520.00

	<u># of studies</u>	
Reference laboratory testing	115	8,050.00

Grand total \$ 19,157.85

Insurance Collections \$ (11,365.62)

Total Reimbursement Request \$ 7,792.23

6/1/21
 [Signature]

Hattiesburg Clinic
415 South 28th Avenue
Hattiesburg, MS 39401

RECEIVED
3/20/21
Jm

Reimbursement Request
Community Based Covid 19 Testing Outreach Project
November 2020

	Hours	Payroll	Benefits	Total
Personnel costs-				
Site coordinator	34.03	1,628.35	407.09	2,035.44
Lab technician	98.07	1,859.71	464.93	2,324.64
Reception/Check-in	133.90	1,789.53	447.38	2,236.92
Medical assistant	14.78	292.91	73.23	366.13
Registered nurse	7.37	178.91	44.73	223.64
Courier	-	-	-	-
Nurse Practitioner	-	-	-	-
Physician	2.37	340.80	4.94	345.74
	290.52	6,090.21	1,442.29	7,532.51

Supplies 1,377.51

Contracted Housekeeping 2,080.00

	<u># of studies</u>	
Reference laboratory testing	436	30,520.00

Total Expenses \$ 41,510.02

Insurance Collections \$ (25,175.82)

Total Reimbursement Request \$ 16,334.20



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Andrew Ellard, Director

cc: Kermas Eaton, City Clerk

Date: Tuesday, June 22, 2021

Re: Approve and authorize issuance of manual checks for CDBG Program Claims per attached Memorandum. {Entitlement CDBG}
File Number: 2021-840
Minute Book #

Summary

Approve and authorize issuance of manual checks for CDBG Program Claims per attached Memorandum. {Entitlement CDBG}

Recommendation Statement

I recommend issuance of manual checks for CDBG Program Claims per attached Memorandum

Please place this on the June 22, 2021 City Council meeting for consideration.

MEMORANDUM

TO: City of Hattiesburg Council Members

FROM: Andrew Ellard, Director
Department of Urban Development

DATE: June 22, 2021

SUBJECT: Authorize issuance of manual checks for CDBG Program claims

The following request for payment is being submitted for approval during the City Council's June 22, 2021 meeting. Please authorize and approve issuance of manual checks for the claims listed below:

Recipient: Helen O'Neal
Activity: Housing Rehabilitation
Program: CDBG
Project Site: 303 J.C. Killingsworth Drive
Amount Requested: \$900.00
Purpose of Request: Temporary relocation assistance (6/28/21 – 7/27/21)

Recipient: Lisa Means
Activity: Housing Rehabilitation
Program: CDBG
Project Site: 515 Columbia Street
Amount Requested: \$900.00
Purpose of Request: Temporary relocation assistance (6/5/21 – 7/4/21)



Memorandum

To: Mayor Toby Barker and Members of City Council

From: Lamar Rutland

cc:

Date: Tuesday, June 22, 2021

Re: Approve Plans and Specifications for the Hall Avenue Infrastructure Improvements Project and authorize advertisement for bids.
File Number: 2021-818
Minute Book #

Summary

Approve Plans and Specifications for the Hall Avenue Infrastructure Improvements Project and authorize advertisement for bids.

Recommendation Statement

I recommend approval of this project.

Please place this on the June 22, 2021 City Council meeting for consideration.

SPECIFICATIONS AND CONTRACT DOCUMENTS

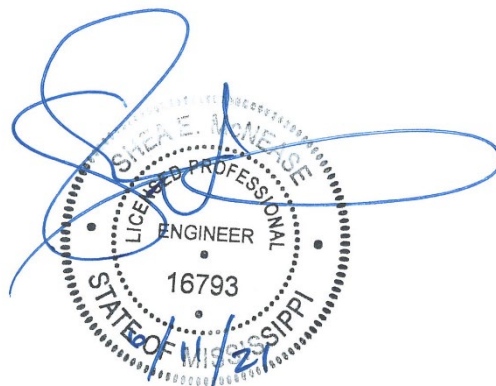
FOR

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS

FOR THE

CITY OF HATTIESBURG

JUNE, 2021

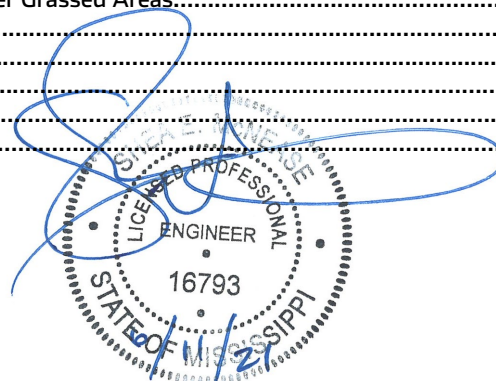


PREPARED BY:

SHOWS, DEARMAN & WAITS, INC.
CONSULTING ENGINEERS

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ADVERTISEMENT FOR BIDS:

NOTICE is hereby given that the City Clerk of the City of **Hattiesburg**, MISSISSIPPI, will receive sealed bids until **10:00 AM** on **August 5, 2021** in the City Clerk's Office in the City Hall of said City for furnishing the City's requirements for the following:

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

Official bid documents can be downloaded from www.sd-wprojects.com. Electronic bids can be submitted at www.sd-wprojects.com. For any questions relating to the electronic bidding process, please call Plan House at 662-407-0193. All bids must be accompanied by bid security equal to 5% of the amount of the bid, in the form of a certified check, cashier's check or a bid bond written by a company properly licensed in Mississippi.

Each BID must be received sealed and marked EXACTLY as follows:

BID: HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

No bid may be withdrawn for a period of sixty (60) days. The lowest and best proposal received will be accepted, subject to the provisions of Section 31-7-13 of the Mississippi Code of 1972, Annotated and Amended, and other applicable State law; but the Board reserves the right to reject any or all proposals received and to waive informalities.

PUBLISHED by Order of the Council on the 22 day of June A.D., 2021.

CITY OF HATTIESBURG, MISSISSIPPI

BY: _____
Kermas Eaton, City Clerk

Publish on June 30 and July 7
City of Hattiesburg
Return PROOF to SDW, Inc.
301 Second Avenue
Hattiesburg, MS 39401

INFORMATION FOR BIDDERS

BIDS will be received by City of Hattiesburg, MS herein called the "OWNER", at City Hall until 10:00 AM on August 5, 2021, and then at said office publicly opened and read aloud.

Each BID must be submitted in sealed envelope, addressed to the City Clerk of said City. Each sealed envelope containing a BID must be plainly marked on the outside as BID for **Hall Avenue Infrastructure Improvements, Hattiesburg, Mississippi** and the envelope should bear on the outside the BIDDER'S name, address, and license number if applicable. If forwarded by mail, the sealed BID shall be included in a delivery package addressed to the Owner at 200 Forrest Street, Hattiesburg, MS 39401.

All BIDS must be made on the required BID form. All blank spaces for BID prices must be filled in, in ink or typewritten, and the BID form must be completed and executed when submitted. Only one copy of the BID form is required.

The OWNER may waive any informalities or minor defects or reject any and all BIDS. Any BID may be withdrawn prior to the above scheduled time for the opening of BIDS or authorized postponement thereof. Any BID received after the time and date specified shall not be considered. No BIDDER may withdraw a BID within 60 days after the actual date of the opening thereof. Should there be reasons why the contract cannot be awarded within the specified period; the time may be extended by mutual agreement between the OWNER and the BIDDER.

BIDDERS must satisfy themselves of the accuracy of the estimated quantities in the BID Schedule by examination of the site and a review of the drawings and specifications including ADDENDA. After BIDS have been submitted, the BIDDER shall not assert that there was a misunderstanding concerning the quantities of WORK or of the nature of the WORK to be done.

The OWNER shall provide to BIDDERS prior to BIDDING, all information which is pertinent to, and delineates and describes, the land owned and rights-of-way acquired or to be acquired.

The CONTRACT DOCUMENTS contain the provisions required for the construction of the PROJECT. Information obtained from an officer, agent, or employee of the OWNER or any other person shall not affect the risks or obligations assumed by the CONTRACTOR or relieve him from fulfilling any of the conditions of the contract.

Each BID must be accompanied by a BID BOND payable to the OWNER for five percent (5%) of the total amount of the BID. As soon as the BID prices have been compared, the OWNER will return the BONDS of all except the three lowest responsive, responsible BIDDERS upon request of the BIDDER. When the Agreement is executed the BONDS of

the two remaining unsuccessful BIDDERS will be returned upon request of the BIDDER. The BID BOND of the successful BIDDER will be retained until the PAYMENT BOND and PERFORMANCE BOND have been executed and approved, after which it will be returned upon request of the BIDDER. A certified check may be used in lieu of a BID BOND.

A PERFORMANCE BOND and a PAYMENT BOND, each in the amount of 100 percent (100%) of the CONTRACT PRICE, with a corporate surety approved by the OWNER, will be required for the faithful performance of the contract.

Attorneys-in-fact who sign BID BONDS or PAYMENT BONDS and PERFORMANCE BONDS must file with each BOND a certified and effective dates copy of their Power of Attorney.

The party to whom the contract is awarded will be required to execute the Agreement and obtain the PERFORMANCE BOND and PAYMENT BOND within ten (10) calendar days from the date when NOTICE OF AWARD shall be accompanied by the necessary Agreement and BOND forms. In case of failure of the BIDDER to execute the Agreement, the OWNER may consider the BIDDER in default, in which case the BID BOND accompanying the proposal shall become the property of the OWNER.

The OWNER within thirty (30) days of receipt of acceptable PERFORMANCE BOND, PAYMENT BOND and Agreement signed by the party to whom the Agreement was awarded, shall sign the Agreement and return to such party an executed duplicate of the Agreement. Should the OWNER not execute the Agreement within such period, the BIDDER may by WRITTEN NOTICE withdraw the signed Agreement. Such notice of withdrawal shall be effective upon receipt of the notice by the OWNER.

The NOTICE TO PROCEED shall be issued within thirty (30) days of the execution of the Agreement by the OWNER. Should there be reasons why the NOTICE TO PROCEED cannot be issued within such period; the time may be extended by mutual agreement between the OWNER and CONTRACTOR. If the NOTICE TO PROCEED has not been issued within the thirty (30) day period or within the period mutually agreed upon, the CONTRACTOR may terminate the Agreement without further liability on the part of either party.

The OWNER may make such investigations as deemed necessary to determine the ability of the BIDDER to perform the WORK, and the BIDDER shall furnish to the OWNER all such information and data for this purpose as the OWNER may request. The OWNER reserves the right to reject any BID if the evidence submitted by, or investigation of, such BIDDER fails to satisfy the OWNER that such BIDDER is properly qualified to carry out the obligations of the Agreement and to complete the WORK contemplated therein.

The contract time stipulated, will be strictly enforced, if the CONTRACTOR fails to complete the work within the time stipulated, a deduction will be made of \$750 a day from the money due the CONTRACTOR not as a penalty but as liquidated damages. The

CONTRACTOR and the CONTRACTOR'S sureties shall be liable for all liquidated damages in excess of money due the CONTRACTOR.

A conditional or qualified BID will not be accepted.

Award will be made to the lowest and best responsive and responsible BIDDER.

All applicable Laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the PROJECT shall apply to the contract throughout.

Each BIDDER is responsible for inspecting the site and for reading and being thoroughly familiar with the CONTRACT DOCUMENTS. The failure or omission of any BIDDER to do any of the foregoing shall in no way relieve any BIDDER from any obligation in respect to his BID.

FURTHER, the BIDDER agrees to abide by the requirements under Executive Order No. 11246, as amended, including specifically the provisions of the equal opportunity clause.

The BIDDER shall supply the names and addresses of major material SUPPLIERS and SUBCONTRACTORS when required to do so by the OWNER.

The ENGINEER is SHOWS, DEARMAN & WAITS, INC. The address of the ENGINEER is 301 2nd Avenue, HATTIESBURG, MISSISSIPPI.

PROPOSAL FORM

I (we) agree to begin work within (10) calendar days after the issuance of Notice to Proceed, and to complete the work within 180 calendar days thereafter.

It is understood that the quantities of work listed for unit prices bid are approximate, and are intended to merely indicate the general scope of the various items entering into the complete work and for comparison of bids. It is further understood and agreed that the Owner may increase or decrease the quantities listed in the Proposal and that no change in the unit prices proposed shall be occasioned thereby.

The undersigned further agrees that the unit and lump sum prices quoted include all items of work required or necessary for the accomplishment of the projected work and that these items include all work indicated on the Plans and Specifications for which no specific pay items have been established.

The undersigned certifies that the bid prices contained herein have been carefully checked and are submitted as correct and final.

If within sixty (60) days the scheduled closing time for receipt of bids, this Proposal is accepted, the undersigned will execute a formal contract within ten (10) days after official notification thereof, will deliver a surety bond for the faithful performance of this contract, and will complete the work within the time specified from the date of execution of the contract.

Respectfully Submitted,

Authorized by:

ADDRESS

PROPOSAL

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS

Item	Description	Unit	Quantity	Unit Price	Extension
Sewer Pipe Items					
1	8" SDR 26 PVC Sewer Pipe (0'- 6')	LF	2096		
2	8" SDR 26 PVC Sewer Pipe (6'- 8')	LF	430		
3	8" SDR 26 PVC Sewer Pipe (8'- 10')	LF	162		
4	8" SDR 26 PVC Sewer Pipe (10'- 12')	LF	71		
5	8" SDR 26 PVC Sewer Pipe (12'- 14')	LF	85		
6	8" DI Sewer Pipe (0'-6')	LF	880		
7	Removal of Existing Sewer Line	LF	375		
8	Abandonment of Existing Sewer Line (All Sizes)	LF	254		
9	Tracer Wire System for Sewer	LS	1		
Sewer Manhole Items					
10	48" Precast Concrete Sewer Manhole (0' - 6')	EA	12		
11	48" Precast Concrete Sewer Manhole (6' - 8')	EA	4		
12	48" Precast Concrete Sewer Manhole (12' - 14')	EA	1		
13	Demolition and Removal of Existing Manholes (All Types)	EA	8		
14	Abandonment of Existing Manhole	EA	2		
15	Drop Manhole Assembly (All Depths)	EA	1		
Sewer Service Items					
16	4" Sanitary Sewer Service Cleanout	EA	53		

17	4" SDR 26 PVC Pipe Sanitary Sewer Service (Incl Fittings) (All Depths)	LF	570		
18	6" SDR 26 PVC Pipe Sanitary Sewer Service (Incl Fittings) (All Depths)	LF	1250		
19	6" DI Pipe for Sanitary Sewer Service (Incl Fittings) (All Depths)	LF	390		
20	8"x8"x6" PVC Service Tee	EA	40		
21	8"x8"x6" DI Service Tee	EA	11		
	Water Pipe Items				
22	2" & Under 150 PSI PVC Water Pipe for Connections (Open Cut)	LF	80		
23	4" Class 350 Ductile Iron Water Pipe (Open Cut)	LF	20		
24	6" Class 350 Ductile Iron Water Pipe (Open Cut)	LF	2400		
25	8" 200 PSI, DR11, HDPE (Directional Bore) (Incl. adapter fittings)	LF	380		
26	Tracer Wire System for Water	LS	1		
	Water Connection Items				
27	Cut and Cap Existing Lines	Each	10		
28	Connection: Prop 6" to Exist 2" (Hot Tap w/ Valve & other fittings)	Each	3		
29	Connection: Prop 6" to Exist 4" (Coupling & other fittings)	Each	1		
30	Connection: Prop 6" to Exist 6" (Coupling & other fittings)	Each	2		
31	Connection: Prop 6" to Exist 6" (Hot Tap w/ Valve & other fittings)	Each	2		
32	Connection: Prop 6" to Exist 10" (Hot Tap w/ Valve & other fittings)	Each	1		
33	Connection: Prop 6" to Prop 6" (6"x6"x6" Tee & other fittings)	Each	5		

	Water Valve Items				
34	6" Gate Valve	Each	10		
	Water Fire Protection Items				
35	3 Way Fire Hydrant w/ Appurtenances (Incl. Tee, Valve, Hydrant, Brass Tag, Pipe, & other fittings)	Each	3		
36	Removal of Existing Fire Hydrant	Each	1		
	Water Service Items				
37	Residential Service Tap (All Sizes) (Incl: Open Cut Service Tubing, Tapping Saddle, Corp Stop, etc)	Each	23		
38	Reconnection of Water Service - Residential Service Tap (All Sizes) (Incl: Open Cut Service Tubing, Tapping Saddle, Corp Stop, etc)	Each	7		
39	Residential Service Tubing (Open Cut) (All Sizes)	LF	225		
40	Residential Service Tubing (Bored) (All Sizes)	LF	665		
41	Remove and Reset Water Meter	Each	22		
	Miscellaneous Construction Items				
42	Crushed Aggregate (Size 610)	Ton	1305		
43	Select Fill Material (Class 9, Group C), LVM	CY	4570		
44	Concrete Pavement Repair - Driveways (All Depths)	SY	155		
45	9.5mm Hot Mix Asphalt	Ton	265		
46	19mm Hot Mix Asphalt	Ton	355		
47	Concrete Sidewalk Repair (All Depths)	SY	110		
48	Concrete Curb & Gutter (Match Existing Type)	LF	535		

49	Class "B" Concrete, Minor Structures – For Pipe Collars	CY	2		
50	Concrete Conflict Box CB-1 – Per Plans	LS	1		
51	Concrete Conflict Box CB-1 – Per Plans	LS	1		
52	Concrete Box Culvert Modification	LS	1		
53	12" Reinforced Concrete Pipe (Class III) (Rubber Gaskets)	LF	16		
54	15" Reinforced Concrete Pipe (Class III) (Rubber Gaskets)	LF	112		
55	Removal of Existing Pipe Cross Drains (All Sizes and Depths)	LF	64		
56	Remove, Salvage and Reset Existing Chain Link Fence	LF	12		
57	6" Yellow Traffic Stripe – Paint – Hall Ave	LF	1550		
58	Legend White Traffic Marking (6" Equivalent) – Paint – Hall Ave	LF	265		
59	6" Yellow Thermoplastic Detail Traffic Stripe	LF	1		
60	Legend White Thermoplastic Traffic Marking (6" Equivalent)	LF	60		
61	Solid Sod (Incl. Sod, Top Soil, Fertilizer, Watering, etc.)	SY	1710		
62	Landscape Restoration (Inc. Top Soil, Plants, Mulch, Watering, etc.)	SF	100		
63	Clearing and Grubbing	LS	1		
64	Temporary Erosion Control	LS	1		
65	Maintenance of Traffic	LS	1		
66	Mobilization	LS	1		
			BID TOTAL:		

Base Bid Respectfully Submitted, Name of Firm or Bidder: _____

BID BOND

KNOW ALL MEN BY THESE PRESENTS: that we, the under signed, _____
Principal, and _____ as Surety, are hereby held and firmly bound
unto the City of Hattiesburg as Owner in the penal sum of 5% (Five Percent) for
payment of which, well and truly to be made, we hereby jointly and severally bind
ourselves, successors and assigns.

Signed, this _____ day of _____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to
a certain BID, attached hereto and hereby made a part hereof to enter into a contract in
writing, for the following project:

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

NOW, THEREFORE,

(a) If said BID shall be rejected, or

(b) If said BID shall be accepted and the Principal shall execute and deliver a contract in
the Form of Contract attached hereto (properly completed in accordance with said BID)
and shall furnish a BOND for his faithful performance of said contract, and for the
payment of all persons performing labor or furnishing materials in connection therewith,
and shall in all other respects perform the agreement created by the acceptance of said
BID, then this obligation shall be void, otherwise the same shall remain in force and
effect; it being expressly understood and agreed that the liability of the Surety for any
and all claims hereunder shall, in no event, exceed the penal amount of this obligation as
herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said
Surety and its BOND shall be in no way impaired or affected by any extension of the time
within which the OWNER may accept such BID; and said Surety does hereby waive notice
of any such extension.

IN WITNESS WHEREOF, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year set forth above.

PRINCIPAL

SURETY

BY: _____

IMPORTANT: Surety companies executing BONDS must appear on the Treasure Department's most current line (Circular 570 as amended) and be authorized to transact business in the State where the project is located.

CONTRACT AGREEMENT

THIS AGREEMENT made and entered into this ____ day of _____, 20____ by and between _____ hereinafter called the CONTRACTOR, the City of Hattiesburg hereinafter called the OWNER, Witnesseth that the CONTRACTOR and the OWNER, for the consideration hereafter named and agrees as follows.

ARTICLE 1: SCOPE OF WORK

The CONTRACTOR agrees to furnish all tools, labor, equipment, materials, and supplies required to be furnished, and perform all work required under and in accordance with the plans entitled:

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

which are on file at the office of the OWNER, and the Specifications, Proposals, General and Special Conditions, attached hereto and made a part hereof as fully as though copied herein, under the direct supervision and to the entire satisfaction of the OWNER and in accordance with the Laws of the State of Mississippi.

ARTICLE 2: THE CONTRACT SUM

It is further agreed and understood by and between the parties hereunto that the OWNER agrees to pay and the CONTRACTOR agrees to accept full and final compensation for all work done under this agreement, the lump sum amount adjusted for variation of quantities at the unit prices named in the Proposal, which is hereto attached, such payment to be made in lawful money of the United States, at the time and in the manner hereinafter set forth.

ARTICLE 3: TIME OF COMPLETION

The CONTRACTOR agrees, for the consideration above expressed, to begin and complete the work within the time specified in the Proposal. If the CONTRACTOR fails to complete the work in the time specified, he shall pay the OWNER as **liquidated damages**, ascertained and agreed, and not in the nature of a penalty, the sum of \$ for each day delayed, which shall be deducted from the final amount to be paid under the contract; provided that the extension of time with the waiver of liquidation damages may be granted as provided for in the Specifications.

ARTICLE 4: PROGRESS PAYMENTS

The OWNER agrees to make progress payments during the construction as provided herein as follows:

The CONTRACTOR will on or before the tenth (10th) day of each month make an estimate of the value of the work done, based on contract prices, and submit to the ENGINEER, along with an affidavit by the CONTRACTOR that progress payments theretofore received from OWNER have discharged in full all the CONTRACTOR's obligations stated in prior progress payments. ENGINEER will recommend partial payment to the OWNER within a reasonable time of receipt of CONTRACTOR's estimate based on the ENGINEER's estimated quantities.

The OWNER agrees to pay the CONTRACTOR one hundred percent (100%) of the value of the work done each month, less retainage in accordance with MS Code of 1972 Section 31-5-33 until final acceptance of the work has been made. If defective and/or materials are discovered or reasonable doubt arises to the integrity of any part of the work for which partial payment has been allowed, a deduction from subsequent estimates in the amount equal to the work in question will be made until the defects have been remedied or the cause for doubt removed.

ARTICLE 5: ACCEPTANCE AND FINAL PAYMENT

Upon receipt of written notice that the work is ready for final acceptance and inspection, the ENGINEER shall promptly make such inspection, and when he finds the work acceptable under the contract, and the contract fully performed, he shall promptly issue a final certificate, over his own signature, stating that the work provided for in this Contract has been completed and is accepted by him under the terms and conditions thereof. Then, the entire balance shall be due the CONTRACTOR within forty-five (45) days the date of said final acceptance and receipt of the closeout documents required per the Supplement to General Conditions and recommendation of the same to the OWNER.

Before issuance of final certificate, the CONTRACTOR shall submit evidence satisfactory to the ENGINEER that all payrolls, materials, bills, and other indebtedness connected with the work have been paid.

The making and acceptance of the final payment shall constitute a waiver of all claims by the OWNER, other than those arising from unsettled liens, from faulty work or materials appearing within one (1) year after payment, or claims previously made and still unsettled.

If, after the work has been substantially completed, full completion thereof is materially delayed through no fault of the CONTRACTOR, and the ENGINEER, so certifies, the OWNER shall, upon certificate of the ENGINEER and without terminating the Contract, make payment of the balance due for that portion of the work fully completed and

accepted. Such payment shall be made under the terms and conditions governing final payment, except that it shall not constitute a waiver of claims.

ARTICLE 6: THE PERFORMANCE BOND

The CONTRACTOR agrees to furnish a bond, with an approved surety thereon guaranteeing the performance of this contract, in no less than one hundred percent (100%) of the amount of the Contract. Said Bond shall be conditioned on full and complete performance of the Contract, and for the payment of all labor and materials for a period of one (1) year after completion. The Surety on said Bond shall be a surety company of financial resources satisfactory to the OWNER and authorized to do business in the State of Mississippi.

ARTICLE 7 INSURANCE

The CONTRACTOR agrees to also carry public liability insurance, property damage insurance, and workman's compensation insurance in amounts as required by the specifications.

WITNESSETH: that for and in consideration of the payments and agreements hereinafter mentioned:

1. The CONTRACTOR will commence and complete the construction of the project specified herein.
2. The CONTRACTOR will furnish all of the material, supplies, tools, equipment, labor, and other services necessary for the construction and completion of the project described herein.
3. The CONTRACTOR will commence the work required by the "Contract Documents" and complete the project on or before the completion date unless the period for completion is extended otherwise by the "Contract Documents."
4. The CONTRACTOR agrees to perform all of the work described in the "Contract Documents" and comply with the terms therein for the sum as shown in the bid schedule.
5. The term "Contract Documents" means and includes the following:

Advertisement for Bids	Notice of Award
Instructions to Bidders	Notice to Proceed
Bid	Change Order
Bid Bond	General Conditions
Contract Agreement	Supplemental General Conditions
Payment Bond	Technical Specifications

6. The OWNER will pay to the CONTRACTOR in the manner and at such times as set forth in the "General Conditions" such amounts as required by the "Contract Documents."
7. This "Contract Agreement" shall be binding upon all parties hereto and their respective heirs, executors, administrators, successors, and assigns.

OWNERS:

SEAL

City of Hattiesburg

Authorized by:

ATTEST _____

(Printed Name & Title)

CONTRACTOR:

SEAL

ATTEST _____

IMPORTANT NOTE: Surety companies executing bonds must appear on the US Treasury Department's most current list (Circular 570, as amended) and be authorized to transact business in the state where the project is located.

PAYMENT AND PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: THAT WE, the Undersigned _____
(hereinafter called the Principal), a corporation, partnership or individual duly
unauthorized by law to do business as a construction contractor in the State of
Mississippi, and _____ of _____
(herein called the Surety), a corporation duly authorized to do surety business under the
laws of the State of Mississippi, are held and firmly bound unto the City of Hattiesburg
, MS (hereinafter called the Obligee), a Municipality existing under the laws of the State
of Mississippi, in the penal sum of _____
Dollars (_____) lawful money of the United States, for the payment of which
well and truly to be made, the said Principal and the said Surety do hereby bind
ourselves, our heirs, executors, administrators and assigns, jointly and severally, by
these presents, as follows:

The Condition of this obligation is such that; whereas Principal by an instrument
in writing attached hereto and bearing date of _____
has agreed with said Obligee to do all work necessary and to furnish labor, materials,
tools, supplies and services to construct **HALL AVENUE INFRASTRUCTURE**
IMPROVEMENTS, HATTIESBURG, MISSISSIPPI as shown on Plans and specified
thereby in the Specifications, Proposal and other Contract Documents hereto attached.

NOW THEREFORE, if said Principal shall well and truly in good, sufficient and
workmanlike manner, and to the satisfaction of Obligee perform and complete the work
required, and shall defend, indemnify and save harmless said Obligee against all
damages, claims, demands, expense and charge of every kind (including claims of patent
infringement) arising out of injury or damage to persons or property by reason or arising
from any act, omission or neglect of said Principal, his agent, servants or employees with
relation to said work; and shall pay all cost, charges, rentals and expenses for labor,
material, supplies and equipment and deliver the said improvement to Obligee completed
and ready for occupancy or operation, and free from all liens, encumbrances or claims for
labor, material or otherwise; and shall pay all other expenses lawfully chargeable to
Obligee by reason of any default or neglect of the said Principal in the relation of said
agreement and said work, then this obligation shall be void, otherwise to remain in full
force and effect.

PROVIDED FURTHER, that the said surety for value received hereby stipulates
and agrees that no charge, extension of time, alteration or addition to the terms of the
Contract, or the work to be performed thereunder, or the Specifications accompanying
the same, shall in any way affect its obligation on this bond and does hereby waive notice
of any change, extension of time, alteration or addition to the terms of the Contract, or to
the work, or to the Specifications.

PROVIDED FURTHER, that if Principal, or his, or its subcontractor or

subcontractors fail to duly pay for any labor, materials, team hire, sustenance provisions or any other supplies or materials used or consumed by such Principal or his, their or its subcontractors in performance of the work contracted to be done, the Surety will pay the same in any amount not exceeding the sum specified in the bond, together with interest as provided by law.

IN WITNESS THEREOF: Said Principal and Surety have hereunto set their hands and seals at _____ this _____ day of _____, 20__.

(SEAL)

WITNESSES:

PRINCIPAL

ADDRESS

Name of person executing for Principal

TITLE

SURETY

ADDRESS

WITNESSES:

Name of person executing for Surety

TITLE

GENERAL CONDITIONS

ARTICLE 1 - DEFINITIONS

Wherever used in these General Conditions or in the other Contract Documents, the following terms shall have the meaning indicated which shall be applicable to both the singular and plural thereof.

ACCEPTANCE: By the OWNER of the Work as being fully complete in accordance with the Contract Documents.

AGREEMENT: The written agreement between the OWNER and the CONTRACTOR covering the Work to be performed: The Contract Documents are attached to and made a part of the Agreement. Also designated as the Contract.

ADDENDA: Written or graphic instruments issued prior to the execution of the Agreement which modify or interpret the Contract Documents, Drawings and Specifications, by addition, deletions, clarifications or corrections.

APPLICATION FOR PAYMENT: The form furnished by the ENGINEER which is to be used by the CONTRACTOR in requesting progress payments and an affidavit of the CONTRACTOR that progress payments theretofore received from the OWNER on account of the WORK have been applied by the CONTRACTOR to discharge in full all of the CONTRACTOR'S obligations stated in prior Applications for Payment.

APPROVAL: Accept as satisfactory.

BID: The offer or proposal of the Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

BIDDER: Any person, firm or corporation submitting a Bid for the Work.

BONDS: Bid, performance and payment bonds and other instruments of security furnished by the CONTRACTOR and his surety in accordance with the Contract Documents and in accordance with the law of the place of the project.

CHANGE ORDER: A written order to the CONTRACTOR signed by the OWNER authorizing an addition, deletion or revision in the Work, or an adjustment in the Contract Price or the Contract Time issued after execution of the Agreement.

CONTRACT DOCUMENTS: The Agreement, Addenda, Instruction's to Bidders, CONTRACTOR'S BID, the Bonds, the Notice of Award, these General Conditions,

the Supplementary conditions, Special Conditions, Technical Conditions, the Specifications, Drawings and Modifications, and Notice to Proceed.

CONTRACT PRICE: The total moneys payable to the CONTRACTOR under the Contract Documents.

CONTRACT TIME: The number of calendar days stated in the Agreement for the completion of the Work.

CONTRACTING OFFICER: The OWNER (Grantee) - The individual who is authorized to sign the contract documents on behalf of the OWNER'S governing body.

CONTRACTOR: The person, firm or corporation with whom the OWNER has executed the Agreement.

DAY: A calendar day of twenty-four hours measured from midnight to the next midnight.

DRAWINGS: The drawings which show the character and scope of the Work to be performed and which have been prepared or approved by the ENGINEER and are referred to in the Contract Documents.

ENGINEER: The person, firm or corporation named as such in the Contract Documents.

FIELD ORDER: A written order issued by the ENGINEER which clarifies or interprets the Contract Documents in accordance with Paragraph 9.3 or orders minor changes in the Work in accordance with paragraph 10.2.

HE, HIS, AND HIM: These are several pronouns that shall represent both male and female genders.

MODIFICATION: (a) A written amendment of the Contract Documents signed by both parties, (b) a Change Order (c) a written clarification or interpretation issued by the ENGINEER in accordance with paragraph 9.3 or (d) a written order for a minor change or alteration in the Work issued by the ENGINEER pursuant to paragraph 10.2. A modification may only be issued after execution of the Agreement.

NOTICE OF AWARD: The written notice by OWNER to the apparent successful Bidder stating that upon compliance with the conditions precedent to be fulfilled by him within the time specified, OWNER will execute and deliver the Agreement to him.

NOTICE TO PROCEED: A written notice given by OWNER to CONTRACTOR (with a copy to ENGINEER) fixing the date on which the Contract Time will commence to run and on which CONTRACTOR shall start to perform his obligations under the Contract Documents.

OWNER: A public body or authority, corporation, association, partnership, or individual for whom the Work is to be performed.

PROJECT: The entire construction to be performed as provided in the Contract Documents.

CONSTRUCTION OBSERVER, RESIDENT INSPECTOR, CONSTRUCTION INSPECTOR, PROJECT REPRESENTATIVE: An authorized representative of the ENGINEER assigned to observe the Work performed and materials furnished by the CONTRACTOR or such other person as may be appointed by the OWNER as his representative. The CONTRACTOR shall be notified in writing of the identity of this representative.

SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the CONTRACTOR, a Subcontractor, manufacturer, supplier or distributor and which illustrate the equipment, material or some portion of the Work and as required by the Contract Documents.

SAMPLES: Physical examples which illustrate materials, equipment or workmanship and establish standards by which the Work will be judged.

SPECIFICATIONS: Those portions of the Contract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work.

SUBCONTRACTOR: An individual, firm or corporation having a direct contract with CONTRACTOR or with any other Subcontractor for the performance of a part of the Work at the site.

SUBSTANTIAL COMPLETION: Substantial completion may be granted for all or portions of the work prior to final completion and stopping of contract time. Substantial completion is defined as the date when the construction is sufficiently completed in accordance with the contract documents so that the project or specified part of the project can be utilized for the purpose for which it was intended. The contract provides that the retainer may be reduced for that portion of the work which substantial completion is granted, but the granting of substantial completion will not stop contract time or liquidated damages.

SUPPLEMENTARY GENERAL CONDITIONS: Federal and State conditions in effect at time of submission of Bid in addition to those Supplementary General

Conditions attached here to.

SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

SPECIAL CONDITIONS: When included as a part of the Contract Documents, Special Conditions refer only to the Work under this Contract.

SURETY: The corporate body which is bound with the CONTRACTOR and which engages to be responsible for the CONTRACTOR and his acceptable performance of the Work.

WORK: Any and all obligations, duties and responsibilities necessary to the successful completion of the Project assigned to or undertaken by CONTRACTOR under the Contract Documents, including all labor, materials, equipment and other incidentals, and the furnishing thereof.

WRITTEN NOTICE: The term "Notice" as used herein shall mean and include all written notices, demands, instructions, claims, approvals, and disapprovals required to obtain compliance with Contract requirements. Written notice shall be deemed to have been duly served if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or to an authorized representative of such individual, firm or corporation, or if delivered at or sent by registered mail to the last business address known to him who gives the notice. Unless otherwise stated in writing, any notice to or demand upon the OWNER under this Contract shall be delivered to the OWNER through the ENGINEER.

ARTICLE 2 - PRELIMINARY MATTERS:

AWARD:

2.2 The award of the Contract, if it is awarded, will be to the lowest and best responsible, responsive Bidder. No Notice of Award will be given until the OWNER has concluded such investigations as he deems necessary to establish the responsibility, qualifications, and financial ability of the Bidders to do the Work in accordance with the Contract Documents to the satisfaction of the OWNER within the time prescribed. The OWNER reserves the right to reject the BID of any Bidder who does not pass such investigation to the OWNER'S satisfaction. In analyzing Bids, the OWNER may take into consideration alternates and unit prices, if requested by the Bid Form. If the Contract is awarded, the OWNER will issue the NOTICE of AWARD and give the successful Bidder a contract for execution within sixty (60) days after the opening of Bids.

EXECUTION OF AGREEMENT:

2.3 At least three counterparts of the Agreement and such other Contract Documents will be executed and delivered by CONTRACTOR to the ENGINEER within 10 days of receipt from the OWNER.

FORFEITURE OF BID SECURITY:

2.4 Failure of the successful Bidder to execute and deliver the Agreement and deliver the required Bonds as stipulated in paragraph 2.3 shall be just cause for the OWNER to annul the Notice of Award and declare the Bid and any security therefore forfeited.

The quantities appearing in the bid schedule are approximate and have been prepared for comparison of bids. The OWNER does not guarantee or assume any responsibility that quantities shown on the plans will not vary during actual construction of the contract. The CONTRACTOR further acknowledges the possibility of variation of quantities, shall be precluded from claiming in the construction of the project, and the CONTRACTOR shall not claim deception or misunderstanding because of any variation in quantities, location, character of work, or any other condition. Payment will be made only for actual quantities of work performed and accepted.

The OWNER makes no guarantees regarding the character or extent of water levels, soil, rock, utilities, or any other subsurface condition the BIDDER may encounter during work. The OWNER requires BIDDERS to make their own evaluation of subsurface soil conditions and to determine how these conditions may affect methods of construction.

CONTRACTOR'S PRE-BID REPRESENTATIONS:

2.1 CONTRACTOR represents that he has familiarized himself with, and assumes full responsibility for having familiarized himself with, the nature and extent of the Contract Documents, Work, Locality, and local conditions and will obey all federal, state, and local laws, ordinances, rules and regulations that may in any manner affect performance of the Work, and represents that he has correlated his study and observations with the requirements of the Contract Documents. CONTRACTOR also represents that he has studied all surveys and investigation reports of subsurface and latent physical conditions referred to in the Specifications and made such additional surveys and investigations as he deems necessary for the performance of the Work at the Contract Price in accordance with the requirements of the Contract Documents and that he has correlated the results of all such data with the requirements of the Contract Documents.

COMMENCEMENT OF CONTRACT TIME:

2.5 The Contract Time will commence to run in accordance with the Notice to Proceed.

STARTING THE PROJECT:

2.6 CONTRACTOR shall start to perform his obligations under the Contract Documents on the date when the Contract Time commences to run. No Work shall be done at the site prior to the date on which the Contract Time commences to run, except with the written consent of the OWNER.

BEFORE STARTING CONSTRUCTION:

2.7 Before undertaking each part of the Work, CONTRACTOR shall carefully study and compare the Contract Documents and check and verify pertinent figures shown thereon and all applicable field measurements. He shall at once report in writing to ENGINEER any conflict, error or discrepancy which he may discover; however, he shall not be liable to OWNER or ENGINEER for his failure to discover any conflict, error or discrepancy in the Drawings or Specifications. CONTRACTOR shall pot-hole existing utilities to ascertain exact location throughout the entire project. CONTRACTOR shall notify the ENGINEER any such locations of utilities which will prevent the work from being performed as designed, any work performed in which conflicts with an existing utility shall be remedied by the CONTRACTOR at his sole expense.

SCHEDULE OF COMPLETION:

2.8 Within ten (10) days after delivery of the Notice to Proceed by OWNER to CONTRACTOR, CONTRACTOR shall submit to ENGINEER an estimated progress schedule with earnings indicating the starting and completion dates of the various stages of the Work, and a preliminary schedule of Shop Drawing submissions. (See paragraphs 6.22 through 6.26.) The ENGINEER shall review and return this schedule or require revisions thereto within 14 days of its submittal. If there is more than one CONTRACTOR involved in a project, the responsibility for coordinating the Work of all CONTRACTORS shall be as provided in the Special Conditions.

2.9 At a time deemed appropriate by the OWNER to but before starting the Work at the site, a preconstruction conference may be held to review the above schedules, to establish procedures for handling shop drawings and other submissions and for processing Applications for Payment, and to establish a working understanding between the parties as to the project. Present at the conference will be the OWNER or his representative, ENGINEER, Resident Project

Representatives, CONTRACTOR and his Superintendent.

QUALIFICATION OF SUBCONTRACTORS MATERIALMEN AND SUPPLIERS:

2.10 Within ten (10) working days after bid opening, the CONTRACTOR will (if required) submit to the OWNER and the ENGINEER, for acceptance, a list of the names of Subcontractors and such other persons and organizations (including those who are to furnish principal items of material or equipment) proposed for those portions of the Work as to which the identity of the Subcontractors and other person and organizations must be submitted as specified in the Contract Documents. Within thirty (30) working days after receiving the list, the ENGINEER will notify the CONTRACTOR in writing if either the OWNER or the ENGINEER, after due investigation, has reasonable objection to any Subcontractor, person or organization on such list. The failure of the OWNER or the ENGINEER to make objection to any Subcontractor, person or organization on the list within thirty days of receipt shall constitute an acceptance of such Subcontractor, person or organization. Acceptance of any such Subcontractor, person or organization shall not constitute a waiver of any right of the OWNER or the ENGINEER to reject defective Work, material or equipment, or Work, material or equipment not in conformance with the requirements of the Contract Documents.

ARTICLE 3 - CORRELATION, INTERPRETATION AND INTENT OF CONTRACT DOCUMENTS:

3.1 It is the intent of the Specifications and Drawings to describe a complete Project to be constructed in accordance with the Contract Documents. The Contract Documents comprise the entire Agreement between the OWNER and the CONTRACTOR. They may be altered only by a Modification.

3.2 The Contract Documents are complementary; what is called for by one is as binding as if called for by all. If CONTRACTOR finds a conflict, error or discrepancy in the Contract Documents, he shall call it to the ENGINEER'S attention in writing at once and before proceeding with the Work affected thereby; however, he shall not be liable to OWNER or ENGINEER for his failure to discover any conflict, error or discrepancy in the Specifications or Drawings. The various Contract Documents shall be given precedence, in case of conflict, error or discrepancy, as follows: Agreement Modifications, Addenda, Special Conditions, and Instruction's to Bidders, General Conditions, Technical Specifications and Drawings. If the requirements of one are more stringent than the other, the more stringent requirements shall apply.

3.3 The words "furnish", "furnish and install", "install", and "provide" or words with similar meaning shall be interpreted, unless otherwise specifically stated, to mean "furnish and install complete in place and ready for service."

3.4 Miscellaneous items and accessories which are not specifically mentioned, but which are essential to produce a complete and properly operating installation, or usable structure or plant providing the indicated function, shall be furnished and installed without change in the Contract Price. Such miscellaneous items and accessories shall be of the same quality standards including material, style, finish, strength, class, weight and other applicable characteristics, as specified for the major component of which the miscellaneous item or accessory is an essential part, and shall be approved by the ENGINEER before installation. The above requirement is not intended to include major components not covered by or inferable from the Drawings and Specifications.

3.5 The Work of all trades under this Contract shall be coordinated by the CONTRACTOR in such a manner as to obtain the best workmanship possible for the entire Project, and all components of Work shall be installed or erected in accordance with the best practices of the particular trade.

3.6 Manufacturer's literature, when referenced, shall be dated and numbered and is intended to establish the minimum requirements acceptable. Whenever reference is given to codes or standard specifications or other data published by regulating agencies or accepted organizations, including but not limited to National Electrical Code, applicable State Building Code, Federal Specifications, ASTM Specifications, various institute specifications, and the like, it shall be understood that such reference is to the latest edition including addenda in effect on the date of Bid.

3.7 Brand names where used in the Technical Specifications, are intended to denote the standard of quality required for the particular material or product. The use of a brand name item is to set a standard of quality and is not intended to restrict the Contractor from offering an equal item from other source(s) of supply. The term "equal" or "equivalent" when used in connection with brand names, shall be interpreted to mean a material or product that is similar and equal in type, quality, size, capacity, composition, finish, color and other applicable characteristics to the material or product specified by trade name, and that is for the same use and capable of performing the same function, in the opinion of the ENGINEER, as the material or product so specified. Proposed equivalent items must be approved by ENGINEER before they are purchased or incorporated in the Work.

ARTICLE 4 - AVAILABILITY OF LANDS; SUBSURFACE CONDITIONS; REFERENCE POINTS:

Availability of Lands

4.1 The OWNER will furnish, as indicated in Contract Documents, the lands upon

which the Work is to be done, rights-of-way for access thereto, and such other lands which are designated for use of the CONTRACTOR. Easements for permanent structures or permanent changes in existing facilities will be obtained and paid for by the OWNER, unless otherwise specified in the Contract Documents. Other access to such lands or rights-of-way for the CONTRACTOR'S convenience shall be the responsibility of the CONTRACTOR. The CONTRACTOR will provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

4.2 The OWNER will, upon request, furnish to the BIDDERS copies of all available boundary surveys.

Subsurface Conditions:

4.3 The CONTRACTOR acknowledges that he has investigated prior to bidding and satisfied himself as to the conditions affecting the Work, including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides, water tables or similar physical conditions at the site, the conformation and conditions of the grounds, the character of equipment and facilities needed preliminary to and during prosecution of the Work. The CONTRACTOR further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done on behalf of the OWNER on the site or any contiguous site, as well as from information presented by the Drawings and Specifications made a part of this Contract, or any other information made available to him prior to receipt of Bids. Any failure by the CONTRACTOR to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully performing the Work. Any additional information necessary to ascertain subsurface soil conditions, including test holes and soil borings, not provided by the OWNER shall be undertaken by the BIDDER prior to bidding at his cost. Such exploration shall be adequate to satisfy the BIDDER of the materials expected to be encountered on the project. The OWNER assumes no responsibility for any conclusions or interpretations made by the CONTRACTOR on the basis of the information made available by the OWNER.

Differing Site Conditions

4.4 (a) The CONTRACTOR shall promptly, and before such conditions are disturbed, notify the OWNER in writing of: (1) subsurface or latent physical conditions at the site differing materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, differing materially from those ordinarily encountered and generally recognized as inherent

in work of the character provided for in this contract. The OWNER shall promptly investigate the conditions, and if he finds that such conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the time required for, performance of any part of the work under this contract, whether or not changed as a result of such conditions, an equitable adjustment shall be made and the contract modified in writing accordingly.

(b) No claim of the CONTRACTOR under this clause shall be allowed unless the CONTRACTOR has given the notice required in (a) above.

(c) No claim by the CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

ARTICLE 5 - BONDS AND INSURANCE:

Performance and Payment Bonds:

5.1 The contractor's attention is directed to the Information for Bidders and Supplement to General Conditions.

Contractor's Liability Insurance:

5.2 The CONTRACTOR shall provide the OWNER with insurance certificates certifying that all required insurance is in force; and such insurance certificates shall include provisions that the insurance shall not be canceled, allowed to expire or be materially changed without giving the OWNER advance notice by registered mail.

5.3 The CONTRACTOR agrees that if any part of the Work under the contract is sublet, he will require the Subcontractor(s) to carry insurance as required, and that he will require the Subcontractor(s) to furnish to him insurance certificates similar to those required by the OWNER in 5.1 and 5.2 above.

5.4 The CONTRACTOR agrees to add ENGINEER to insurance policy as additional insured.

Owner's Liability Insurance

5.4 The OWNER will be responsible for purchasing and maintaining his own liability insurance and, at his option, may purchase and maintain such insurance as will protect him against claims which may arise from operations under the Contract Documents.

Fire and Extended Coverage Insurance (Builders' Risk):

5.5 The CONTRACTOR shall maintain, as applicable, in an Insurance Company or

Insurance Companies acceptable to the OWNER, Fire, Extended Coverage and Vandalism & Malicious Mischief Insurance on buildings and structures, while in the course of construction, including foundations, additions, attachments and all permanent fixtures belonging to and constituting a part of said buildings or structures. The policy or policies shall also cover machinery, if the cost of machinery is included in the Contract. The amount of insurance should at all times be at least equal to the actual cash value of the insured property. The policy shall be in the name of the OWNER and the CONTRACTOR, as their interests may appear, and shall also cover the interests of all Subcontractors performing work.

5.6 The CONTRACTOR shall provide the OWNER with satisfactory evidence certifying that the foregoing insurance is in force; and such evidence shall include provisions that the insurance shall not be canceled, allowed to expire or be materially changed without giving the OWNER advance notice by registered mail.

Cancellation and Re-Insurance:

5.7 If any insurance should be canceled or changed by the insurance company or should any insurance expire during the period of this Contract, the CONTRACTOR shall be responsible for securing other acceptable insurance to provide the coverage specified in this section to maintain continuous coverage during the life of this Contract.

ARTICLE 6 - CONTRACTOR'S RESPONSIBILITIES:

Supervision and Superintendence:

6.1 The CONTRACTOR will supervise and direct the Work. He will be solely responsible for the means, methods, techniques, safety, sequences and procedures of construction. The CONTRACTOR will employ and maintain on the Work a qualified supervisor or superintendent who shall have been designated in writing by the CONTRACTOR as the CONTRACTOR'S representative at the site. The supervisor shall have full authority to act on behalf of the CONTRACTOR and all communications given to the supervisor shall be as binding as if given to the CONTRACTOR. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the Work. (Copies of written communications given to the Superintendent shall be mailed to the Contractor's home or office.)

Labor, Materials and Equipment:

6.2 The CONTRACTOR will provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. He will at all times maintain good discipline and order at the site.

6.3 The CONTRACTOR will furnish all materials, equipment, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, local telephone, water and sanitary facilities and all other facilities and incidentals necessary for the execution, testing, initial operation and completion of the Work.

6.4 All materials and equipment will be new, except as otherwise provided in the Contract Documents. When special makes or grades of material which are normally packaged by the supplier or manufacturer are specified or approved, such materials shall be delivered to the site in their original packages or container with seals unbroken and labels intact.

6.5 All materials and equipment shall be applied, handled, installed, connected, erected, used, cleaned and conditioned in accordance with the instructions of the applicable manufacturer, fabricator or processors and industry standards, except as otherwise provided in the Contract Documents.

Materials, Equipment, Products and Substitutions:

6.6 Materials, equipment and products incorporated in the Work must be approved for use before being purchased by the CONTRACTOR. The CONTRACTOR shall submit to the ENGINEER a list of proposed materials, equipment or products, together with such samples as may be necessary for him to determine their acceptability and obtain his approval, within ninety (90) calendar days after award of Contract. No request for payment for "or equal" equipment will be approved until this list has been received and approved by the ENGINEER.

6.6.1 Whenever a material, article or piece of equipment is identified on the drawings or Specifications by reference to brand names or catalogue number, it shall be understood that this is referenced for the purpose of defining the performance or other salient requirements and that other products of equal capacities, quality and function shall be considered. The CONTRACTOR may recommend the substitution of a material, article, or piece of equipment of equal substance and function for those referred to in the Contract Documents by reference to brand names or catalog number, and if, in the opinion of the ENGINEER, such material, article, or piece of equipment is of equal substance and function to that specified, the ENGINEER may approve its substitution and use by the CONTRACTOR. Incidental charges or extra component parts required to accommodate the substitute will be made by the CONTRACTOR without a change in the Contract Price, or Contract Time.

6.6.2 No substitute shall be ordered or installed without the written approval of the ENGINEER who shall be the judge of equality.

6.6.3 Delay caused by obtaining approvals for substitute materials will not be considered justifiable grounds for an extension of construction time.

6.6.4 Should any work or materials, equipment or products not conform to requirements of the Drawings and Specifications or become damaged during the process of the Work, such Work or materials shall be removed and replaced, together with any work disarranged by such alterations, at any time before completion and acceptance of the Project. All such work shall be done at the expense of the CONTRACTOR. (See paragraph 7.10)

6.6.5 No materials or supplies for the Work shall be purchased by the CONTRACTOR or by any Subcontractor subject to any chattel mortgage or under a conditional sale or other agreement by which an interest is retained by the Seller. The CONTRACTOR warrants that he has good title to all materials and supplies used by him in the Work.

Concerning Subcontractors:

6.7 The CONTRACTOR will not employ any Subcontractor, other person or organization of the types referred to in paragraph 2.10 (whether initially or as a substitute) against whom the OWNER or the ENGINEER may have reasonable objection, nor will the CONTRACTOR be required to employ any Subcontractor against whom he has reasonable objection. The CONTRACTOR will not make any substitution for any Subcontractor who has been accepted by the OWNER and the ENGINEER, unless the ENGINEER determines that there is good cause for doing so.

6.8 The CONTRACTOR shall be fully responsible for all acts and omissions of his Subcontractors and of persons and organizations directly or indirectly employed by them and of persons and organizations for whose acts any of them may be liable to the same extent that he is responsible for the acts and omissions of persons directly employed by him. Nothing in the Contract Documents shall create any contractual relationship between OWNER or ENGINEER and any Subcontractor or other person or organization having a direct contract with CONTRACTOR, nor shall it create any obligation on the part of OWNER or ENGINEER to pay or to see to the payment of any moneys due any Subcontractor or other person or organization, except as may otherwise be required by law. OWNER or ENGINEER may furnish to any Subcontractor or other person or organization, to the extent practicable, evidence of amounts paid to CONTRACTOR on account of specific Work done in accordance with the schedule of values.

6.9 The divisions and sections of the Specifications and the identifications of any drawings shall not control the CONTRACTOR in dividing the work among Subcontractors or delineating the Work to be performed by any specific trade.

6.10 The CONTRACTOR agrees to bind specifically every Subcontractor to the applicable terms and conditions of the Contract Documents for the benefit of the OWNER.

6.11 All Work performed for the CONTRACTOR by a Subcontractor shall be pursuant to an appropriate agreement between the CONTRACTOR and the Subcontractor.

6.12 The CONTRACTOR shall be responsible for the coordination of the trades, Subcontractors and material men engaged upon his Work.

6.12.1 The CONTRACTOR shall cause appropriate provisions to be inserted in all subcontracts relative to the Work to bind Subcontractors to the CONTRACTOR by the terms of these General Conditions and other Contract Documents insofar as applicable to the Work of Subcontractors, and to give the CONTRACTOR the same power as regards terminating any subcontract that the OWNER may exercise over the CONTRACTOR under any provisions of the Contract Documents.

6.12.2 The OWNER or ENGINEER will not undertake to settle any differences between the CONTRACTOR and his Subcontractors or between Subcontractors.

6.12.3 If in the opinion of the ENGINEER, any Subcontractor on the project proves to be incompetent or otherwise unsatisfactory, he shall be replaced if and when directed in writing.

Patent Fees and Royalties:

6.13 The CONTRACTOR will pay all license fees and royalties and assume all costs incident to the use of any invention, design, process or device which is the subject of patent rights or copyrights held by others. He will indemnify and hold harmless the OWNER and ENGINEER and anyone directly or indirectly employed by either of them from and against all claims, damages, losses, and expenses (including attorneys' fees) arising out of any infringement of such rights during or after completion of the Work, and shall defend all such claims in connection with any alleged infringement of such rights.

6.14 The CONTRACTOR shall be responsible for determining the application of patent rights and royalties on materials, appliances, articles or systems prior to bidding. However, he shall not be responsible for such determination on systems which do not involve purchase by him of materials, appliances, and articles.

Permits:

6.15 The CONTRACTOR will secure and pay for all construction permits and licenses and will pay all governmental charges and inspection fees necessary for the prosecution of the Work, which are applicable at the time of his Bid. When such charges are normally made by the OWNER, there will be no charges to the CONTRACTOR. The OWNER shall assist the CONTRACTOR, when necessary, in

obtaining such permits and licenses. The CONTRACTOR will also pay all public utility charges.

Laws and Regulations:

6.16 The CONTRACTOR will give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If the CONTRACTOR observes that the Specifications or Drawings are at variance therewith, he will give the ENGINEER prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If the CONTRACTOR performs any Work knowing it to be contrary to such laws, ordinances, rules and regulations, and without such notice to the ENGINEER, he will bear all costs arising wherefrom; however, it shall not be his primary responsibility to make certain that the Drawings and Specifications are in accordance with such laws, ordinances, rules and regulations.

Taxes:

6.17 Cost of all sales and other taxes for which the CONTRACTOR is liable under the Contract shall be included in the Contract Price stated by the CONTRACTOR.

Record Drawings:

6.18 The CONTRACTOR will keep one record copy of all Specifications, Drawings, Addenda, Modifications, and Shop Drawings at the site in good order and annotated to show all changes made during the construction process. These shall be available to the Engineer and shall be delivered to him for the OWNER upon completion of the Project. It shall be used for this purpose only.

Safety and Protection:

6.19 The CONTRACTOR will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to:

6.19.1 All employees on the work and other persons who may be affected thereby.

6.19.2 All the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site.

6.19.3 Other property at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.

6.20 The CONTRACTOR will designate a responsible member of his organization at the site whose duty shall be the prevention of accidents. This person shall be the CONTRACTOR'S superintendent unless otherwise designated in writing by the CONTRACTOR to the OWNER.

Emergencies:

6.21 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, the CONTRACTOR, without special instruction or authorization from the ENGINEER or OWNER, is obligated to act, at his discretion, to prevent threatened damage, injury or loss. He will give the ENGINEER prompt written notice of any significant changes in the Work or deviations from the Contract Documents caused thereby, and a Change Order shall be issued covering the changes and deviations involved. If the CONTRACTOR believes that additional work done by him in an emergency which arose from causes beyond his control entitles him to an increase in the Contract Price or an extension of the Contract Time, he may make a claim therefore as provided in Articles 11 & 12.

Shop Drawing and Samples:

6.22 After checking and verifying all field measurements, the CONTRACTOR will submit to the ENGINEER for review, in accordance with the accepted schedule of Shop Drawing submissions (see paragraph 2.9) three (3) copies (or at the ENGINEER'S option, one reproducible copy) of all Shop Drawings, which shall have been checked by and stamped with the approval of the CONTRACTOR. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, materials of construction and the like to enable the ENGINEER to review the information as required.

6.23 The CONTRACTOR will also submit to the ENGINEER for review, with such promptness as to cause no delay in Work, all samples required by the Contract Documents. All samples will have been checked by and stamped with the approval of the CONTRACTOR, identified clearly as to material, manufacturer, any pertinent catalog numbers and the use for which intended.

6.24 At the time of each submission, the CONTRACTOR will in writing call the ENGINEER'S attention to any deviations that the Shop Drawings or sample may have from the requirements of the Contract Documents.

6.25 The ENGINEER will review with reasonable promptness Shop Drawings and samples, but his review shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contract Documents. The review of a separate item as such will not indicate review of the assembly in which the item functions. The CONTRACTOR will make any corrections required by the ENGINEER and will return the required number of

corrected copies of Shop Drawings and resubmit new samples until the review is satisfactory to the ENGINEER. The CONTRACTOR shall direct specific attention in writing or on resubmitted Shop Drawings to revisions other than the corrections called for by the ENGINEER on previous submissions. The CONTRACTOR'S stamp of approval on any Shop Drawings or sample shall constitute a representative to the OWNER and the ENGINEER that the CONTRACTOR has either determined and verified all quantities, dimensions, field construction criteria, materials, catalogue numbers and similar data or he assumes full responsibility for doing so, and that he has reviewed or coordinated each Shop Drawings or sample with the requirements of the Work and the Contract Documents.

6.26 No Work requiring a Shop Drawing or sample submission shall be commenced until the submission has been reviewed by the ENGINEER. A copy of each Shop Drawing and each approved sample shall be kept in good order by the CONTRACTOR at the site and shall be available to the ENGINEER.

6.27 The ENGINEER'S review of Shop Drawings or samples shall not relieve the CONTRACTOR from his responsibility for any deviations from the requirements of the Contract Documents unless the CONTRACTOR has in writing called the ENGINEER'S attention to such deviation at the time of submission and the ENGINEER has given written approval to the specific deviation, nor shall any review by the ENGINEER relieve the CONTRACTOR from responsibility for errors or omission in the Shop Drawings.

Cleaning Up:

6.28 The CONTRACTOR shall clean up behind the Work as much as is reasonably possible as the Work progresses. Upon completion of the Work, and before acceptance of and final payment for the Project by the OWNER, the CONTRACTOR shall remove all his surplus and discarded materials excavated material and rubbish from the roadways, sidewalks, parking areas, lawns and all adjacent property; shall clean his portion of Work involved in any building under this Contract, so that no further cleaning by the OWNER is necessary prior to his occupancy; shall restore all property, both public and private, which has been disturbed or damaged during the prosecution of the Work; and shall leave the whole in a neat and presentable condition.

6.29 Clean-up operations shall consistently be carried on by the CONTRACTOR at all times to keep the premises free from accumulation of waste materials and rubbish. Upon completion of the Work he shall remove all rubbish, tools, scaffolding, surplus materials, etc., and shall leave his work "broom clean", or its equivalent, unless more exactly specified elsewhere in the Contract. The CONTRACTOR shall do the cleaning for all trades upon completion of the Work.

6.30 General. In case of dispute, the OWNER may remove the rubbish and charge

the cost to the CONTRACTOR as the ENGINEER shall determine to be just.

Public Convenience and Safety:

6.31 The CONTRACTOR shall, at all times, conduct the Work in such a manner as to insure the least practicable obstruction to public travel. The convenience of the general public and of the residents along and adjacent to the area of the Work shall be provided for in a satisfactory manner, consistent with the operation and local conditions. "Street Closed" signs shall be placed immediately adjacent to the Work, in a conspicuous position at such locations as traffic demands in accordance with the MUTCD. At any time that streets are required to be closed, the CONTRACTOR shall notify law enforcement agencies, fire departments, and parties operating emergency vehicles before the street is closed and again as soon as it is opened. Access to fire hydrants and other fire extinguishing equipment shall be provided and maintained at all times. The CONTRACTOR shall keep the portion of the project being used by the public in satisfactory condition. It may become necessary for the CONTRACTOR to sweep the roadway surface to completely remove debris.

Sanitary Provisions:

6.32 The CONTRACTOR shall furnish necessary toilet conveniences, secluded from public observation, for use of all personnel on the Work, whether or not in his employ. They shall be kept in a clean and sanitary condition and shall comply with the requirements and regulations of the Public Authorities having jurisdiction. He shall commit no public nuisance. Temporary sanitary facilities shall be removed upon completion of the Work and the premises shall be left clean.

Indemnification:

6.33 The CONTRACTOR will indemnify and hold harmless the OWNER and the ENGINEER and their agents and employees from and against all claims, damages, losses, and expenses including attorneys' fees arising out of or resulting from the performance of the Work, provided that any such claim, damage, loss, or expense (a) is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than Work itself) including the loss of use resulting wherefrom and (b) is caused in whole or in part by any negligent act or omission of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

6.34 In any and all claims against the OWNER or the ENGINEER or any of their agents or employees, by any employee of the CONTRACTOR, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, the indemnification obligation under paragraph 6.33 shall not be limited in any way by any limitation on the amount or type of damages,

compensation or benefits payable by or for the CONTRACTOR or any Subcontractor under workmen's compensation acts, disability benefit acts or other employee benefit acts.

6.35 The obligations of the CONTRACTOR under paragraph 6.33 shall not extend to the liability of the Engineer's negligent acts, errors or omissions or those of his employees or agents.

Responsibility for Connecting to Existing Work:

6.36 It shall be the express responsibility of the CONTRACTOR to connect his Work to each part of the existing work or work previously installed as required by the Drawings and Specifications to provide a complete installation.

Work in Street, Highway and Other Rights-of-Way:

6.37 Excavation, grading, fill, storm drainage, paving and any other construction or installations in rights-of-way of streets, highways, public carrier lines, utility lines (either aerial, surface or subsurface), etc., shall be done in accordance with requirements of the Contract Documents. The CONTRACTOR will be responsible for obtaining all permits necessary for the work. Upon completion of the Work, CONTRACTOR shall present to ENGINEER certificates, in triplicate, from the proper authorities stating that the Work has been done in accordance with their requirements.

6.37.1 The OWNER will cooperate with the CONTRACTOR in obtaining action from any utilities or public authorities involved in the above requirements.

6.37.2 The ENGINEER shall be responsible for obtaining elevations of curbs and gutters, pavement, storm drainage structures, and other such items which must be established by governmental departments as soon as grading operations are begun on the site and, in any case, sufficiently early in the construction period to prevent any adverse effect on the Project.

Cooperation with Governmental Departments, Public Utilities, Etc:

6.38 The OWNER shall be responsible for making all necessary arrangements with governmental departments, public utilities, public carriers, service companies and corporations owning or controlling roadways, railways, water, sewer, gas, electrical, telephone, and telegraph facilities such as pavements, tracks, piping, wires, cables, conduits, poles, guys, etc., including incidental structure connected therewith, that are encountered in the work in order that such items may be properly shored, supported and protected, or the CONTRACTOR may relocate them if he so desires. The CONTRACTOR shall give all proper notices, shall comply with requirements of such parties in the performance of his Work, shall permit entrance of such parties

on the Project in order that they may perform their necessary work, and shall pay all charges and fees made by such parties for this work.

6.38.1 The CONTRACTOR'S attention is called to the fact that there may be delays on the Project due to work to be done by governmental departments, public utilities, and others in repairing or moving poles, conduits, etc. The CONTRACTOR shall cooperate with the above parties, in every way possible, so that the construction can be completed in the least possible time.

6.38.2 The CONTRACTOR shall have made himself familiar with all codes, laws, ordinances and regulations which in any manner affect those engaged or employed in the Work, or materials and equipment used in or upon the Work, or in any way affect the conduct of the Work, and no plea of misunderstanding will be considered on account of his ignorance thereof.

Use of Premises:

6.39 CONTRACTOR shall confine his apparatus, storage of materials, and operations of his workmen to limits indicated by law, ordinances, permits, and directions of ENGINEER and OWNER, and shall not unnecessarily encumber any part of site.

6.39.1 CONTRACTOR shall not overload or permit any part of any structure to be loaded with such weight as will endanger its safety, nor shall he subject any part of the Work to stresses or pressures that will endanger it.

6.39.2 CONTRACTOR shall enforce OWNER'S instructions in connection with signs, advertisements, fires and smoking.

6.39.3 CONTRACTOR shall arrange and cooperate with OWNER in routing and parking of automobiles of his employees, subcontractors and other personnel and in routing material delivery trucks and other vehicles to the Project Site.

Protection of Existing Property Improvements:

6.40 Any existing surface or subsurface improvements, such as pavements, curbs, sidewalks, pipes or utilities, footings or structures (including portions thereof), trees, and shrubbery not indicated on the Drawings or noted in the Specifications as being removed or altered shall be protected from damage during construction of the Project. Any such improvements damaged during construction of the Project shall be restored to a condition equal to that existing at time of award of Contract.

Temporary Heat:

6.41 The General CONTRACTOR shall provide heat, fuel and services as necessary to protect all work and materials, within all habitable areas of permanent building construction, for all contracts against injury from dampness and cold until final acceptance of all work and materials for the Project, unless building is fully occupied by the OWNER prior to such acceptance, in which case the OWNER shall assume all expenses of heating from date of full occupancy. In areas outside those covered above, each prime contractor shall be responsible for providing such temporary heat, fuel and services as required to protect his work or shall make all necessary arrangements with the General CONTRACTOR for providing such temporary heat, fuel and services. Unless otherwise specifically permitted by Special Conditions, the permanent heating system shall not be used to provide temporary heat. CONTRACTOR'S proposed methods of heating shall be submitted for approval.

ARTICLE 7 - WORK BY OTHERS:

7.1 The OWNER may perform additional work related to the Project by himself, or he may let other direct contracts therefore which shall contain General Conditions similar to these. The CONTRACTOR will afford the other contractors who are parties to such direct contracts (or the OWNER, if he is performing the additional work himself), reasonable opportunity for the introduction and storage of materials and equipment and the execution of work, and shall properly connect and coordinate his Work with theirs.

7.2 If any part of the CONTRACTOR'S work depends for proper execution or results upon the work of any such other CONTRACTOR (or the OWNER), the CONTRACTOR will promptly report to the ENGINEER in writing any defects or deficiencies in such work that render it unsuitable for such proper execution and results.

7.3 The CONTRACTOR will do all cutting, fitting, and patching of his Work that may be required to make its several parts come together properly and fit it to receive or be received by such other work. The CONTRACTOR will not endanger any work of others by cutting, excavating or otherwise altering their work and will only cut or alter their work with the written consent of the ENGINEER and of the other contractors whose work will be affected.

7.4 If the performance of additional work by other contractors or the OWNER is not noted in the Contract Documents prior to the execution of the Contract, written notice thereof shall be given to the CONTRACTOR prior to starting any such additional work. If the CONTRACTOR believes that the performance of such additional work by the OWNER or others involves him in additional expense or entitles him to an extension of the Contract Time, he may make a claim therefore as provide in Articles 11 and 12.

7.5 Where practicable, the CONTRACTOR shall build around the work of other separate contractors or shall leave chases, slots and holes as required to receive and to conceal within the general construction work the work of such other separate contractors as directed by them. Where such chases, slots, etc., are impracticable, the work shall require specific approval of the ENGINEER.

7.6 Necessary chases, slots and holes not built or left by the CONTRACTOR shall be cut by the separate contractor requiring such alterations after approval of the CONTRACTOR. The CONTRACTOR shall do all patching and finishing of his Work where cut by other contractors at the expense of such other contractors.

7.7 Cooperation is required in the use of site facilities and in the detailed execution of the Work. Each contractor shall coordinate his operations with those of the other contractors for the best interest of the Work in order to prevent delay in the execution thereof.

7.8 Each contractor shall keep himself informed of the progress of the work of other contractors. Should lack of progress or defective workmanship on the part of other contractors interfere with his operations, the CONTRACTOR shall notify the ENGINEER immediately. Lack of such notice to the ENGINEER will be construed as acceptance by the CONTRACTOR of the status of the work of other contractors as being satisfactory for proper coordination of his own work.

7.9 Each contractor shall give notices of the progress of his work so as to allow other contractors adequate opportunity to properly direct and coordinate their work. The CONTRACTOR shall give notices of the progress of his Work so that work of other contractors, when required to be concealed, may be placed before the general construction Work. All such notices shall be submitted to the ENGINEER with copies to other prime contractors on the Project sufficiently ahead of job progress to permit adequate time for the other prime contractors to coordinate their work.

7.10 The cost of extra work resulting from lack of notices, untimely notices, failure to respond to notices, defective work or lack of coordination shall be borne by the CONTRACTOR responsible for such lack of notices, etc.

ARTICLE 8 - OWNER'S RESPONSIBILITIES:

8.1 The OWNER will issue all communications to the CONTRACTOR through the ENGINEER.

8.2 In case of termination of the employment of the ENGINEER, the OWNER will appoint an engineer against whom the CONTRACTOR makes no reasonable objection, whose status under the Contract Documents shall be that of the former ENGINEER. Any dispute in connection with such appointment shall be subject to

arbitration, if mutually agreeable.

8.3 The OWNER will furnish the data required of him under the Contract Documents promptly and shall make payments to the CONTRACTOR promptly after they are due as provided in Article 14.

8.4 OWNER'S duties in respect of providing lands and easements and providing engineering surveys to establish reference points are set forth in paragraphs 4.1, 4.4 and the Special Conditions. Paragraphs 4.2 and 4.3 refer to OWNER'S identifying and making available to CONTRACTOR copies of surveys and investigation reports of subsurface and latent physical conditions at the site or otherwise affecting performance of the Work which have been relied upon by ENGINEER in preparing the Drawings and Specifications.

8.5 The OWNER'S responsibilities in respect of liability and property insurance are set forth in paragraph 5.4.

8.6 In addition to his rights to request changes in the Work in accordance with Article 10, the OWNER (especially in certain instances as provided in paragraph 10.4) will be obligated to execute Change Orders.

8.7 In connection with the OWNER'S right to stop Work or suspend Work; see paragraph 15.1. Paragraph 15.3 deals with the OWNER'S right to terminate services of the CONTRACTOR under certain circumstances.

8.8 The OWNER shall have the right to take possession of and use any completed or partially completed portions of the Work, notwithstanding the fact that the time for completing the entire Work or any portion thereof may not have expired; but such taking possession and use shall not be deemed an acceptance of any Work not completed in accordance with the Contract Documents. If such prior use increases the cost of or delays the Work, the CONTRACTOR shall be entitled to such extra compensation or extension of time or both, except by prior agreement, as the ENGINEER may determine. See paragraph 14.11.

ARTICLE 9 - ENGINEER'S STATUS DURING CONSTRUCTION:

Owner's Representative:

9.1 The ENGINEER shall be the OWNER'S representative during the construction period. The duties and responsibilities and the limitations of authority of the ENGINEER as the OWNER'S representative during construction are set forth in Articles 1 through 17 of these General Conditions and shall not be extended without written consent of the OWNER and the ENGINEER.

9.1.1 The ENGINEER'S decision, in matters relating to aesthetics shall be final, if

within the terms of the Contract Documents.

9.1.2 Except as may be otherwise provided in this contract all claims, counter-claims, disputes and other matters in question between the OWNER and the CONTRACTOR arising out of or relating to this agreement or the breach thereof will be decided by arbitration if the parties hereto mutually agree, or in a court of competent jurisdiction within the State in which the OWNER is located.

Visits to Site:

9.2 The ENGINEER will make periodic visits to the site to observe the progress and quality of the executed Work and to determine, in general, if the Work is proceeding in accordance with the Contract Documents. He will not be required to make continuous on-site observations to check the quality or quantity of the Work. His efforts will be directed toward ascertaining on behalf of the OWNER that the completed Project will conform to the requirements of the Contract Documents. On the basis of his on-site observations as an experienced and qualified design professional, he will keep the OWNER informed of the progress of the Work and will endeavor to guard the OWNER against defects and deficiencies in the Work of contractors.

Clarifications and Interpretations:

9.3 The ENGINEER will issue with reasonable promptness such written clarification or interpretations of the Contract Documents (in the form of Drawings or otherwise) as he may determine necessary, which shall be consistent with or reasonably inferable from the overall intent of the Contract Documents. If the Contractor believes that a written clarification and interpretation entitles him to an increase in the Contract Price or extension of Contract Time, he may make a claim therefore as provided in Articles 11 and 12.

Measurement of Quantities:

9.4 All Work completed under the Contract will be measured by the CONTRACTOR according to the United States Standard Measures. All linear surface measurements will be made horizontally or vertically as required by the item measured.

Rejecting Defective Work:

9.5 The ENGINEER will have authority to disapprove or reject Work which is "defective" (which term is hereinafter used to describe Work that is unsatisfactory, faulty or defective, or does not meet the requirements of any inspection, test or approval or has been damaged prior to final acceptance). He will also have authority to require special inspection or testing of the Work whether or not the

Work is fabricated, installed or completed.

Shop Drawings, Change Orders and Payments:

9.6 In connection with the ENGINEER'S responsibility as to Shop Drawings and samples, see paragraphs 6.22 through 6.27, inclusive.

9.7 In connection with the ENGINEER'S responsibility for Change Orders; see Articles 10, 11, and 12.

9.8 In connection with the ENGINEER'S responsibilities in respect of Application for Payment, etc., see Article 14.

Resident Project Representative:

9.9 The OWNER or the ENGINEER will provide on-site representation sufficient to guarantee that construction is in general compliance with the construction drawings and the contract specifications.

Decisions on Disagreements:

9.10 The ENGINEER will be the initial interpreter of the terms and conditions of the Contract Documents and the judge of the performance hereunder. In his capacity as interpreter and judge, he will exercise his best efforts to insure faithful performance by both the OWNER and the CONTRACTOR. He will not show partiality to either and shall not be liable for the result of any interpretation or decision rendered in good faith. Claims, disputes and other matters relating to the execution and progress of the Work or the interpretation of or performance under the Contract Documents shall be referred initially to the ENGINEER for decision; which he shall render in writing within a reasonable time.

9.11 Either the OWNER or the CONTRACTOR, if the other agrees, may request legal action with respect to any such claim, dispute or other matter that has been referred to the ENGINEER, except any which have been waived by the making or acceptance of final payment as provided in paragraph 14.11, such legal action to be in accordance with Article 16. However, no request for legal action of any such claim, dispute or other matter shall be made until the earlier of (a) the date on which the ENGINEER has rendered his decision or (b) the tenth day after the parties have presented their evidence to the ENGINEER if he has not rendered his written decision before that date. No request for legal action shall be made later than thirty (30) days after the date on which the ENGINEER rendered his written decision in respect of the claim, dispute or other matter as to which legal action is sought; and the failure to request legal action within said thirty (30) days period shall result in the ENGINEER'S decision being final and binding upon the OWNER and the CONTRACTOR. If the ENGINEER renders a decision after legal proceedings have

been initiated, such decision may be entered as evidence but shall not supersede the legal proceedings, except where the decision is acceptable to the parties concerned.

Limitations on Engineer's Responsibilities:

9.12 Neither the ENGINEER'S authority to act under this Article 9 nor any decision made by him in good faith either to exercise or not exercise such authority shall give rise to any duty or responsibility of the ENGINEER to the CONTRACTOR, any Subcontractor, any of their agents or employees or any other person performing any of the Work.

9.13 The ENGINEER will not be responsible for the construction means, methods, techniques, sequences or procedures, or the safety precautions and programs incident thereto, and he will not be responsible for the CONTRACTOR's failure to perform the Work in accordance with the Contract Documents.

9.14 The ENGINEER will not be responsible for the acts or omissions of the CONTRACTOR, or any Subcontractors, or any of his or their agents or employees, or any other person performing any of the Work.

ARTICLE 10 - CHANGES IN THE WORK:

10.1 Without invalidating the Agreement, the OWNER may, at any time or from time to time, order additions, deletions or revisions in the Work; these will be authorized by Change Orders. Upon receipt of a Change Order, the CONTRACTOR will proceed with the Work involved. All such Work shall be executed under the applicable conditions of the Contract Documents. If any Change Order causes an increase or decrease in the Contract Price or an extension or shortening of the Contract Time, an equitable adjustment will be made as provided in Article 11 or Article 12. A Change Order signed by the CONTRACTOR indicates his agreement therewith.

10.2 The ENGINEER may authorize minor changes or alterations in the Work not involving extra cost and not inconsistent with the overall intent of the Contract Documents. These may be accomplished by a Field Order. If the CONTRACTOR believes that any minor change or alteration authorized by the ENGINEER entitles him to an increase in the Contract Price or extension of Contract Time, he may make a claim therefore as provided in Articles 11 and 12.

10.3 Additional Work performed by the CONTRACTOR without authorization of a Change Order will not entitle him to an increase in the Contract Price or an extension of the Contract Time, except in the case of an emergency as provided in paragraph 6.21 and except as provided in paragraph 10.2.

10.4 The OWNER will execute appropriate Change Orders prepared by the ENGINEER covering changes in the Work to be performed as provided in paragraph 4.4, and Work performed in an emergency as provided in paragraph 6.21 and any other claim of the CONTRACTOR for a change in the Contract Time or the Contract Price which is approved by the ENGINEER.

10.5 It is the CONTRACTOR'S responsibility to notify his surety of any changes affecting the general scope of the Work or change in the Contract Price and the amount of the applicable bonds shall be adjusted accordingly. The CONTRACTOR will furnish proof of such adjustment to the OWNER.

ARTICLE 11 - CHANGE OF CONTRACT PRICE:

11.1 The Contract Price constitutes the total compensation payable to the CONTRACTOR for performing the Work. All duties, responsibilities and obligations assigned to or undertaken by the CONTRACTOR shall be at his expense without changing the Contract Price.

11.2 (a) The OWNER may, at any time, without notice to the sureties, by written order designated or indicated to be a change order, make any change in the Work within the general scope of the contract, including but not limited to changes:

- (1) In the specifications (including drawings and designs);
- (2) In the method or manner of performance of the work;
- (3) In the Owner-furnished facilities, equipment, materials, services, or site; or
- (4) Directing acceleration in the performance of the work.

(b) Any other written order or an oral order (which terms as used in this paragraph (b) shall include direction, instruction, interpretation or determination) from the OWNER, which causes any such change, shall be treated as a change order under this clause, provided that the CONTRACTOR gives the OWNER written notice stating the date, circumstances, and source of the order and that the CONTRACTOR regards the order as a change order.

(c) Except as herein provided, no order, statement, or conduct of the OWNER shall be treated as a change under this clause or entitle the Contractor to an equitable adjustment hereunder.

(d) If any change under this clause causes an increase or decrease in the CONTRACTOR'S cost of, or the time required for, the performance of any part of the work under this contract, whether or not changed by any order, an equitable adjustment shall be made and the contract modified in writing accordingly: PROVIDED, HOWEVER, that except for claims based on defective specifications, no claim for any change under (b) above shall be allowed for any costs incurred more than 20 days before the CONTRACTOR gives written notice as therein required.

And provided further, that in the case of defective specifications for which the OWNER is responsible, the equitable adjustment shall include any increased cost reasonably incurred by the CONTRACTOR in attempting to comply with such defective specifications.

(e) If the CONTRACTOR intends to assert a claim for an equitable adjustment under this clause, he must, within 30 days after receipt of a written change order under (a) above or the furnishing of a written notice under (b) above, submit to the OWNER a written statement setting forth the general nature and monetary extent of such claim, unless this period is extended by the OWNER. The statement of claim hereunder may be included in the notice under (b) above.

(f) No claim by the CONTRACTOR for an equitable adjustment hereunder shall be allowed if asserted after final payment under this contract.

11.3 The value of any Work covered by a Change Order or of any claim for an increase or decrease in the Contract Price shall be determined in one of the following ways:

11.3.1 Where the Work involved is covered by unit prices contained in the Contract Documents by application of unit prices to the quantities of the items involved.

11.3.2 By negotiated lump sum.

11.3.3 The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the work plus a fixed amount to be agreed upon to cover the cost of general overhead and profit to be negotiated.

11.4 The term Cost of the Work means the sum of all costs necessarily incurred and paid by the CONTRACTOR in the proper performance of the Work. Except as otherwise maybe agreed to in writing by OWNER, such costs shall be in amounts no higher than those prevailing in the locality of the Project, shall include only the following items and shall not include any of the costs itemized in paragraph 11.5:

11.4.1 Payroll costs for employees in the direct employ of CONTRACTOR in the performance of the Work under schedules of job classifications agreed upon by OWNER and CONTRACTOR. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to salaries and wages plus the costs of fringe benefits which shall include social security contributions, unemployment, excise and payroll taxes, workmen's compensation, health and retirement benefits, bonuses, sick leave, vacation and holiday pay applicable thereto. Such employees shall include superintendents and foremen at the site. The expenses of performing work after regular working hours, on Sunday or legal holidays shall be included in the above to the extent authorized by OWNER.

11.4.2 Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and manufacturer's field services required in connection therewith. All cash discounts shall accrue to CONTRACTOR unless OWNER deposits funds with CONTRACTOR with which to make payments, in which case the cash discounts shall accrue to OWNER. All trade discounts, rebates and refunds, and all returns from sale of surplus materials and equipment shall accrue to OWNER, and CONTRACTOR shall make provisions so that they may be obtained.

11.4.3 Payments made by CONTRACTOR to the Subcontractors for Work performed by Subcontractors. If required by OWNER, CONTRACTOR shall obtain competitive bids from Subcontractors acceptable to him and shall deliver such Bids to OWNER who will then determine with the advice of ENGINEER, which Bids will be accepted. If a subcontract provides that the Subcontractor is to be paid on the basis of Cost of Work plus a Fee, the cost of the Work shall be determined in accordance with paragraphs 11.4 and 11.5.

11.4.4 Costs of special consultants (including but not limited to, engineers, architects, testing laboratories, surveyors, lawyers and accountants) employed for services specifically related to the Work.

11.4.5 Supplemental costs including the following:

11.4.5.1 The proportion of necessary transportation, travelling and subsistence expenses of CONTRACTOR'S employees incurred in discharge of duties connected with the Work.

11.4.5.2 Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office and temporary facilities at the site and hand tools not owned by the workmen, which are consumed in the performance of the Work, and cost less market value of such items used but not consumed which remain the property of CONTRACTOR.

11.4.5.3 Rentals of all construction equipment and machinery and the parts thereof whether rented from CONTRACTOR or other in accordance with rental agreements approved by OWNER with the advice of ENGINEER, and the cost of transportation, loading, unloading, installation, dismantling and removal thereof--all in accordance with terms of said rental agreements. The rental of any such equipment, machinery or parts shall end when the use thereof is no longer necessary for the Work.

11.4.5.4 Sales, use or similar taxes related to the Work, and for which CONTRACTOR is liable imposed by any governmental authority.

11.4.5.5 Deposits lost for causes other than CONTRACTOR'S negligence, royalty

payments and fees for permits and licenses. Costs for permits and licenses must be shown as a separate item.

11.4.5.6 Losses, damages and expenses, not compensated by insurance or otherwise, sustained by CONTRACTOR in connection with the execution of, and to, the Work, provided they have resulted from causes other than the negligence of CONTRACTOR, any Subcontractors, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of OWNER. No such losses, damages and expenses shall be included in the Cost of Work for the purpose of determining CONTRACTOR'S fee. If however, any such loss or damage requires reconstruction and CONTRACTOR is placed in charge thereof, he shall be paid for his services a fee proportionate to that stated in paragraph 11.6.2.

11.4.5.7 The cost of utilities, fuel and sanitary facilities at the site.

11.4.5.8 Minor expenses such as telegrams, long distance telephone calls, telephone service at the site, expressage and similar petty cash items in connection with the Work.

11.4.5.9 Cost of premiums for additional Bonds and Insurance required because of changes in the Work.

11.5 The term cost of the Work shall not include any of the following:

11.5.1 Payroll costs and other compensation of CONTRACTOR'S officers, executives, principals, (of partnership and sole proprietorships), general managers, engineers, architects, estimators, lawyers, auditors, accountants, purchasing and contracting agents, expeditors, timekeepers, clerks and other personnel employed by CONTRACTOR whether at the site or in his principal or a branch office for general administration of the Work and not specifically included in the schedule referred to in subparagraph 11.4.1 -- all of which are to be considered administrative costs covered by the CONTRACTOR'S Fee.

11.5.2 Expenses of CONTRACTOR'S principal and branch offices other than his office at the site.

11.5.3 Any part of CONTRACTOR'S capital expenses, including interest on CONTRACTOR'S capital employed for the Work and charges against CONTRACTOR'S for delinquent payments.

11.5.4 Cost of premiums for all bonds and for all insurance policies whether or not CONTRACTOR is required by the Contract Documents to purchase and maintain the same (except as otherwise provide in subparagraph 11.4.5.9.)

11.5.5 Costs due to the negligence of CONTRACTOR, any Subcontractors, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable including but not limited to, the correction of defective work, disposal of materials or equipment wrongly supplied and making good any damage to property.

11.5.6 Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in paragraph 11.4.

11.6 The CONTRACTOR'S Fee which shall be allowed to CONTRACTOR for his overhead and profit shall be determined as follows;

11.6.1 A mutually acceptable firm fixed price; or if none can be agreed upon,

11.6.2 A mutually acceptable fixed fee based on the estimate of the various portions of the Cost of the Work.

11.7 The amount of credit to be allowed by CONTRACTOR to OWNER for any such change which results in a net decrease in cost will be the amount of the actual net decrease. When both additions and credits are involved in any one change, the net shall be computed to include overhead and profit, identified separately, for both additions and credits.

11.8 Whenever the cost of any Work is to be determined pursuant to paragraphs 11.4 and 11.5, CONTRACTOR will submit in form prescribed by ENGINEER an itemized cost breakdown together with supporting data.

11.9 Allowances: It is understood that the CONTRACTOR has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be done by such material men, suppliers, or Subcontractors and for such sums within the limit of the allowances as the ENGINEER may approve. Upon final payment, the Contract Price shall be adjusted as required and an appropriate Change Order issued. The CONTRACTOR agrees that the original Contract Price includes such sums as he deems proper for costs and profit on account of cash allowances. No demand for additional cost or profit in connection therewith will be allowed.

11.9.1 These allowances shall cover the cost to the CONTRACTOR less any applicable trade discount, of the materials and equipment required by the allowance delivered at the site, and all applicable taxes.

11.9.2 The CONTRACTOR'S costs for unloading and handling on site, labor, installation costs, overhead, profit and other expenses contemplated for the original

allowance shall be included in the Contract Price and not in the allowance.

11.9.3 Whenever the cost, as described in 11.9.1 above, is more than or less than the allowance, the Contract Price shall be adjusted accordingly by Change Order. The amount of the Change Order will recognize changes, if any, in handling costs on the site, labor, installation costs, overhead, profit and other expenses, except that whenever unit price allowances are stipulated for brick, the Change Order will not include any cost as described in 11.5 above.

ARTICLE 12 - CHANGE OF THE CONTRACT TIME:

12.1 The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to OWNER and ENGINEER within ten days of the occurrence of the event giving rise to the claim. Notice of the extent of the claim with supporting data shall be delivered within forty-five days of such occurrence unless ENGINEER allows an additional period of time to ascertain more accurate data. All claims for adjustment in the Contract Time shall be determined by ENGINEER if OWNER and CONTRACTOR cannot otherwise agree. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order.

12.2 The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of CONTRACTOR if he makes a claim therefore as provided in paragraph 12.1. Such delays shall include, but not be restricted to, acts or neglect by any separate contractor employed by OWNER, fires, floods, labor disputes, epidemics, or acts of God.

12.3 All time limits stated in the Contract Documents are of the essence of the Agreement. The provisions of the Article 12 shall not exclude recovery for damages (including compensation for additional professional services) for delay by either parties.

12.4 No claim for delay shall be allowed because of failure to furnish Drawings until two weeks after demand for such drawings and not then unless such claim be reasonable.

12.5 This article does not exclude the recovery of damages for delay by either party under other provisions in the Contract Documents.

ARTICLE 13 - GUARANTY:

13.1 The CONTRACTOR shall guarantee all materials and equipment furnished and Work performed for a period of one (1) year from the date of SUBSTANTIAL COMPLETION. The CONTRACTOR warrants and guarantees for a period of one (1) year from the date of SUBSTANTIAL COMPLETION of the system that the

completed system is free from all defects due to faulty materials or workmanship and the CONTRACTOR shall promptly make such corrections as may be necessary by reason of such defects including the repairs of any damage to other parts of the system resulting from such defects. The OWNER will give notice of observed defects with reasonable promptness. In the event that the CONTRACTOR should fail to make such repairs or adjustments, in the Work that may be made necessary by such defects, the OWNER may do so and charge the CONTRACTOR the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

ARTICLE 14 - PAYMENTS AND COMPLETION:

Payments to Contractors:

14.1 At least ten (10) days before each progress payment falls due (but not more often than once a month), the CONTRACTOR will submit to the ENGINEER a partial payment estimate filled out and signed by the CONTRACTOR covering the WORK performed during the period covered by the partial payment estimate and supported by such data as the ENGINEER may reasonably require. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at or near the site, the partial payment estimate shall also be accompanied by such supporting data, satisfactory to the OWNER. The ENGINEER will, within ten (10) days after receipt of each partial payment estimate, either indicate in writing his approval of payment and present the partial payment estimate to the OWNER, or revise the partial payment estimate provides the same to the CONTRACTOR indicating in writing his reasons for refusing or revising payment. In the latter case, the CONTRACTOR may make the necessary corrections and resubmit the partial payment estimate. The OWNER will, within forty-five (45) days of presentation to him of an approved partial payment estimate, pay the CONTRACTOR a progress payment on the basis of the approved partial payment estimate. The OWNER may retain a portion of the amount otherwise due the CONTRACTOR. Except as State law otherwise provides, the amount the OWNER retains shall be limited to the following:

14.1.1 Withholding of not more than 5 percent of the payment claimed until work is 50 percent complete;

14.1.2 When Work is 50 percent complete, reduction of the withholding to 2.5 percent of the dollar value of all Work satisfactorily completed to date, provided that the CONTRACTOR is making satisfactory progress and there is no specific cause for greater withholding and the same is requested by the CONTRACTOR in writing;

14.1.3 When the Work is substantially complete (operational or beneficial occupancy), the withheld amount shall be further reduced below 5 percent to only

that amount necessary to assure completion.

14.1.4 The OWNER may reinstate up to 5 percent withholding if the OWNER determines, at its discretion, that the CONTRACTOR is not making satisfactory progress or there is other specific cause for such withholding.

Contractor's Warranty of Title:

14.2 The CONTRACTOR warrants and guarantees that title to all work, materials and equipment covered by an Application for Payment, whether incorporated in the Project or not, will have passed to the OWNER prior to the making of the Application for payment, free and clear of all liens, claims, security interests and encumbrances (hereafter in these General Conditions referred to as "Liens") and that no work, materials or equipment covered by an Application for Payment will have been acquired by the CONTRACTOR or by any other person performing the Work at the Site or furnishing materials and equipment for the Project, subject to an agreement under which an interest therein or encumbrance thereon is retained by the seller or otherwise imposed by the CONTRACTOR or such other person.

Approval of Payments:

14.3 The ENGINEER'S approval of any payment requested in an Application for Payment shall constitute a representation by him to the OWNER, based on the ENGINEER'S on-site observations of the Work in progress as an experienced and qualified design professional and on his review of the Application of Payment and the supporting data, that the Work has progressed to the point indicated; That, to the best of his knowledge, information and belief, the quality of the Work is in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents and any qualifications stated in his approval), and that the CONTRACTOR is entitled to payment of the amount approved. However, by approving any such payment, the ENGINEER shall not thereby be deemed to have represented that he made exhaustive or continuous on-site observations to check the quality or the quantity of the Work, or that he has reviewed the means, methods, techniques, sequences, and procedures of construction or that he has made any examination to ascertain how or for what purpose the CONTRACTOR has used the moneys paid or to be paid to him on account of the Contract Price, or that title to any Work, materials, or equipment has passed to the OWNER free and clear of any Liens.

14.4 The CONTRACTOR shall make the following certification on each request for payment:

"I hereby certify that the labor and materials listed on this request for payment has been used in the construction of this work or that all materials included in this request for payment and not yet incorporated into the construction are now on the

site or stored at an approved location; and payment received from the last request for payment has been used to make payments to all first tier subcontractors and suppliers except as listed below."

14.5 The ENGINEER'S approval of final payment shall constitute an additional representation by him to the OWNER that the conditions precedent to the CONTRACTOR'S being entitled to final payment as set forth in paragraph 14.11 have been fulfilled.

14.6 The ENGINEER may refuse to approve the whole or any part of any payment if, in his opinion, he is unable to make such representations to the OWNER. He may also refuse to approve any such payment, because of subsequently discovered evidence or the results of subsequent inspections or tests nullify any such payment previously approved, to such extent as may be necessary in his opinion to protect the OWNER from loss because:

14.6.1 The Work is defective, reasonable doubt exists to the integrity, or completed Work has been damaged requiring correction or replacement,

14.6.2 The Work for which payment is request cannot be verified,

14.6.3 Claims or Liens have been filed or there is reasonable evidence indicating the probable filing thereof,

14.6.4 The Contract Price has been reduced because of Modifications,

14.6.5 The OWNER has been required to correct defective Work or complete the Work in accordance with paragraph 13.1,

14.6.6. Of unsatisfactory prosecution of the Work, including failure to clean up as required by paragraphs 6.29 and 6.30,

14.6.7. Of persistent failure to cooperate with other contractors on the Project and persistent failure to carry out the Work in accordance with the Contract Documents,

14.6.8. Of liquidated damages payable by the CONTRACTOR or,

14.6.9. Of any other violation of, or failure to comply with, the provisions of the Contract Documents.

14.7 Prior to Substantial Completion, the OWNER, with the approval of the ENGINEER and with the concurrence of the CONTRACTOR, may use any completed or substantially completed portions of the Work. Such use shall not constitute and acceptance of such portions of the Work.

14.8 The OWNER shall have the right to enter the premises for the purpose of doing work not covered by the Contract Documents. This provision shall not be construed as relieving the CONTRACTOR of the sole responsibility for the care and protection of the Work, or restoration of any damaged Work, except such as may be caused by agents or employees of the OWNER.

14.9 Upon completion and acceptance of the Work, the ENGINEER shall issue a certificate attached to the final payment request that the Work has been accepted by him under the conditions of the Contract Documents. The entire balance found to be due the CONTRACTOR, including the retained percentages, but except such sums as may be lawfully retained by the OWNER, shall be paid to the CONTRACTOR within forty-five (45) days of completion and acceptance of the Work.

14.10 The CONTRACTOR will indemnify and save the OWNER or the OWNER'S agents harmless from all claims growing out of the lawful demands of Subcontractors, laborers, workmen, mechanics, material men, and furnishers of machinery and parts thereof, equipment, tools, and all supplies, incurred in the furtherance of the performance of the Work. The CONTRACTOR shall, at the OWNER'S request, furnish satisfactory evidence that all obligations of nature designated above have been paid, discharged, or waived. If the CONTRACTOR fails to do so the OWNER may, after having notified the CONTRACTOR, either pay unpaid bills or withhold from the CONTRACTOR'S unpaid compensation a sum of money deemed reasonably sufficient to pay any and all such lawful claims until satisfactory evidence is furnished that all liabilities have been fully discharged whereupon payment to the CONTRACTOR shall be resumed, in accordance with the terms of the Contract Documents, but in no event shall the provisions of this sentence be construed to impose any obligations upon the OWNER to either the CONTRACTOR, any payment so made by the OWNER shall be considered as a payment made under the Contract Documents by the OWNER to the CONTRACTOR and the OWNER shall not be liable to the CONTRACTOR for any such payments made in good faith.

Acceptance of Final Payment as Release:

14.11 When all items of work are completed to the satisfaction of the ENGINEER and the ENGINEER has been advised by the CONTRACTOR that a final inspection is desired, time will be suspended until final inspection is conducted and for an additional 14 calendar days after the CONTRACTOR has been notified in writing of the results of the inspection. If after the end of the 14-day suspension all necessary items of work have not been completed, time changes will resume. If the specified completion date had not been reached at the time the CONTRACTOR called for a final inspection, the calendar day difference between the specified completion date and the date the CONTRACTOR called for a final inspection will be added after the 14-day period before starting liquidated damages. If a project is on liquidated

damages at the time a final inspection is scheduled, liquidated damages will be suspended until the final inspection is conducted and for seven (7) calendar days after the CONTRACTOR has been notified in writing of the results of the inspection. If after the end of the 7-day suspension all necessary items of work have not been completed, liquidated damages will resume. When final inspection has been made by the ENGINEER and all items of work have been completed, the daily time charge will cease.

14.12 The acceptance by the CONTRACTOR of final payment shall be and shall operate as a release to the OWNER of all claims and liability to the CONTRACTOR other than claims in stated amounts as may be specifically excepted by the CONTRACTOR for all things done or furnished in connection with this Work and for every act and neglect of the OWNER and others relating to or arising out of this Work. Any payment however, final or otherwise, shall not release the CONTRACTOR or his sureties from any obligations under the Contract Documents or the Performance Bond and Payment Bonds.

ARTICLE 15 - SUSPENSION OF WORK AND TERMINATION:

Owner May Suspend Work:

15.1 The OWNER may, at any time and without cause, suspend the Work or any portion thereof for a period of not more than ninety days by notice in writing to the CONTRACTOR and the ENGINEER which shall fix the date on which Work shall be resumed. The CONTRACTOR will be allowed an increase in the Contract Price or an extension of the Contract Time, or both, directly attributable to any suspension if he makes a claim therefore as provided in Articles 11 and 12.

Work During Inclement Weather:

15.2 No Work shall be done under these Specifications except by permission of the OWNER when the weather is unfit for good and careful work to be performed. Should the severity of the weather continue, the CONTRACTOR, upon the direction of the OWNER, shall suspend all work until instructed to resume operations by the OWNER and the Contract Time shall be extended to cover the duration of the order. Work damaged during periods of suspension due to inclement weather shall be repaired and/or replaced by the CONTRACTOR. Any compensation for repairs or replacements shall be subject to approval of the OWNER.

Owner May Terminate:

15.3 If the CONTRACTOR is adjudged bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the CONTRACTOR or for any of his property; or if he files a petition to take advantage of any debtor's act, or to reorganize under the bankruptcy or

similar laws, or if he repeatedly fails to supply sufficient skilled workmen or suitable materials or equipment, or if he repeatedly fails to make prompt payments to Subcontractors or for labor, materials or equipment or he disregards laws, ordinances, rules regulations or orders of any public body having jurisdiction, or if he disregards the authority of the ENGINEER, or if he otherwise violates any provision of the Contract Documents, then the OWNER may without prejudice to any other right or remedy and after giving the CONTRACTOR and his surety seven days written notice, terminate the services of the CONTRACTOR and take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the CONTRACTOR, and finish the Work by whatever method he may deem expedient. In such case the CONTRACTOR shall not be entitled to receive any further payment until the Work is finished. If the unpaid balance of the Contract Price exceeds the direct and indirect costs of completing the Project, including compensation for additional professional services, such excess shall be paid to the CONTRACTOR. If such costs exceed such unpaid balance, the CONTRACTOR or the Surety will pay the difference to the OWNER. Such costs incurred by the OWNER will be determined by the ENGINEER and incorporated in a Change Order.

15.4 Where the CONTRACTOR'S services have been so terminated by the OWNER, said terminations shall not affect any rights of the OWNER against the CONTRACTOR then existing or which may thereafter accrue. Any retention or payment of moneys by the OWNER due the CONTRACTOR will not release the CONTRACTOR from liability.

15.5 Upon seven days written notice to the CONTRACTOR and the ENGINEER, the OWNER may, without cause and without prejudice to any other right or remedy, elect to abandon the Project and terminate the Agreement. In such case, the CONTRACTOR shall be paid for all Work executed and any expense sustained plus a reasonable profit.

Removal of Equipment:

15.6 In the case of termination of this Contract before completion, for any cause whatever, the CONTRACTOR if notified to do so by the OWNER, shall promptly remove any part or all of his equipment and supplies from the property of the OWNER. Should the CONTRACTOR not remove such equipment and supplies, the OWNER shall have the right to remove them at the expense of the CONTRACTOR. Equipment and supplies shall not be construed to include such items for which the CONTRACTOR has been paid in whole or in part.

Contractor May Stop Work or Terminate:

15.7 If, through no act or fault of the CONTRACTOR, the Work is suspended for a period of more than ninety (90) days by the OWNER or under an order of court or

other public authority, or the ENGINEER fails to act on any Application for Payment within sixty (60) days after it is submitted, or the OWNER fails to pay the CONTRACTOR any sum approved by the ENGINEER or awarded by court ruling within forty-five (45) days of its approval and presentation, then the CONTRACTOR may, upon seven (7) days written notice to the OWNER and the ENGINEER, and if the OWNER or ENGINEER fails to reasonable respond in writing, terminate the Agreement and recover from the OWNER payment for all Work executed and any expense sustained plus a reasonable profit. In addition and in lieu of terminating the Agreement, if the ENGINEER has failed to act on an Application for Payment or the OWNER has failed to make any payment as aforesaid, the CONTRACTOR may upon seven (7) days notice to the OWNER and the ENGINEER stop the Work until he has been paid all amounts then due.

Owner Furnished Equipment:

15.8 In case the OWNER furnishes equipment to the CONTRACTOR to install, but fails to deliver it to the CONTRACTOR as required and in case such failure causes the CONTRACTOR additional expense or need for extension of time, the CONTRACTOR may make such claims upon the OWNER and obtain adjustments as provided herein.

Liquidated Damages:

15.9 If the CONTRACTOR shall fail to complete the work within the contract time, or extension of time granted by the OWNER, then the CONTRACTOR will pay to the OWNER the amount for liquidated damages as specified in the Contract Documents for each calendar day that the CONTRACTOR shall be in default after the time stipulated in the Contract Documents.

ARTICLE 16 - DISPUTE SETTLEMENT:

16.1 All claims, disputes and other matters in question arising out of, or relating to, this Agreement or the breach thereof except for claims which have been waived by the making or acceptance of final payment as provided by paragraph 14.11, shall be decided in a court of competent jurisdiction.

ARTICLE 17 - MISCELLANEOUS:

17.1 Whenever any provision of the Contract Documents requires the giving of written notice it shall be deemed to have been validly given if delivered in person to the individual or to a member of the firm or to an officer of the corporation for whom it is intended, or if delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to him who gives the notice.

17.2 If the OWNER fails to make payment forty-five (45) days after payment is

due, in addition to other remedies available to the CONTRACTOR, there shall be added to each such progress payment, interest at 1% per month commencing on the first day after said payment is due and continuing until the payment is received by the CONTRACTOR.

17.3 All Specifications, Drawings and copies thereof furnished by the ENGINEER shall remain his property. They shall not be used on another Project, and, with the exception of those sets which have been signed in connection with the execution of the Agreement, shall be returned to him on request upon completion of the Project.

17.4 The duties and obligations imposed by these General Conditions, and the rights and remedies available hereunder, and, in particular but without limitation, the warranties, guarantees and obligations imposed upon CONTRACTOR by paragraphs 6.36 and 14.3 and the rights and remedies available to OWNER and ENGINEER there under, shall be in addition to, and shall not be construed in any way as a limitation of, any rights and remedies available by law, by special guarantee or by other provisions of the CONTRACT DOCUMENTS.

17.5 Should the OWNER or the CONTRACTOR suffer injury or damage to its person or property because of any error, omission or act of the other or of any of his employee or agents or others for whose acts he is legally liable, claim shall be made in writing to the other party within a reasonable time of the first observance of such injury or damage.

17.6 The CONTRACT DOCUMENTS shall be governed by the law of the place of the Project.

Progress Charts and Requirements for Overtime Work

17.7 The CONTRACTOR shall within 5 days or within such time as determined by the OWNER after date of commencement of work prepare and submit to the OWNER for approval a practicable schedule, showing the order in which the CONTRACTOR proposes to carry on the work, the date on which he will start the several salient features (including procurement of materials, plans and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time. The CONTRACTOR shall enter on the chart the actual progress at such intervals as directed by the OWNER and shall immediately deliver to the OWNER three (3) copies thereof. If the CONTRACTOR fails to submit a progress schedule within the time herein prescribed, the owner may withhold approval of progress payment estimates until such time as the CONTRACTOR submits the required progress schedule.

17.8 If, in the opinion of the OWNER, the CONTRACTOR falls behind the progress schedule, the CONTRACTOR shall take such steps as may be necessary to improve

his progress and the OWNER may require him to increase the number of shifts, or overtime operations, days of work, or the amount of construction plant, or update the progress schedule to reflect increased production for meeting the completion date, or all of them, and to submit for approval such supplementary schedule or schedules in chart form as may be deemed necessary to demonstrate the manner in which the agreed rate of progress will be regained, all without additional cost to the OWNER.

17.9 Failure of the CONTRACTOR to comply with the requirements of the OWNER under this provision shall be grounds for determination by the OWNER that the CONTRACTOR is not prosecuting the work with such diligence as will insure completion within the time specified. Upon such determination the OWNER may terminate the CONTRACTOR'S right to proceed with the work or any separable part thereof in accordance with the clause of the contract entitled, "Termination for Default-Damages for Delay - Time Extensions.

17.10 Should the Contractor fail to complete the work within the specified time, or within any extra time allowed under these specifications, a sum of money, determined by the following schedule, shall be deducted from any funds due the Contractor, the Owner shall have the right recover the said sum or sums from the Contractor or from the surety, or from both. The amounts of these deductions are to cover the liquidated damages to the Owner incurred by additional or other expenses due to the failure of the Contractor to complete the work or any part of the work within the time specified, and such deductions are not to be considered penalties.

17.11 The damages indicated above shall be considered as liquidated damages for the loss to the OWNER on account of the expense due to the employment of Engineers and their assistants and to any others expenses incurred after the expiration of the Contract time as determined by the ENGINEER in section 14.11

17.12 Work requiring the presence or services of the ENGINEER, based-solely on the opinion of the ENGINEER, will not be permitted on Sunday or holidays observed by the State unless the ENGINEER determines that an emergency or necessity exists. Work on these days solely to complete the project within the contract time will not be considered a necessity or emergency.

17.13 The ENGINEER will prepare and submit to the CONTRACTOR one (1) preliminary punch list of items that do not meet the contract requirements after the final inspection and one (1) final punch list immediately before final completion and final payment.

SUPPLEMENTAL GENERAL CONDITIONS

ARTICLE 1 - SPECIAL CONDITIONS

SCOPE AND INTENT

Special conditions shall prevail over General Conditions in case of conflict. The Contractor shall furnish all labor, materials, equipment (including fuel), tools, appliances, transportation and perform all operations in connection with the construction of, alterations to, or repair of, the building, including utilities, complete, in strict accordance with the specifications and the plans governing the construction of, alterations to, or repair of, the project.

EXAMINATION OF PREMISES

Before submitting a proposal for his work, each bidder shall be held responsible to have examined the site and satisfied himself as to the conditions under which work is to be performed.

PERMITS, TAXES, AND ORDINANCES

The Contractor shall pay for all required permits, give legal notices, and pay taxes and assessments levied in connection with this contract. Building regulations shall be strictly adhered to and the contractor shall be responsible for knowledge thereof.

INSURANCES, ETC.

In addition to the requirements of the General Conditions, insurance coverage specified herein constitutes the minimum requirements and said requirements shall in no way lessen or limit the liability of the **CONTRACTOR** under the terms of the Contract. The **CONTRACTOR** shall procure and maintain at his own expense any additional kinds and amounts of insurance that, in his own judgment, may be necessary for his proper protection in the prosecution of the Work.

The **CONTRACTOR** shall carry insurance as prescribed herein and all policies shall be with companies satisfactory to the **OWNER**.

If a part of this Contract is sublet, the **CONTRACTOR** shall require each Subcontractor to carry insurance of the same kinds and in like amounts as carried by the **CONTRACTOR**. Certificates of insurance shall state that 30 days written notice will be given to the **OWNER** before the policy is canceled or changed. No **CONTRACTOR** or Subcontractor will be allowed to start any construction work on this Contract until certificates of all insurance required herein are filed and approved by the **OWNER**. The certificates shall show the type, amount, class of operations covered, effective dates and the dates of expiration of policies.

The **CONTRACTOR** shall secure and maintain in effect for the period of the Contract and pay all premiums for the following kinds and amounts of insurance.

A. Workers' Compensation and Employer's Liability Insurance

This insurance shall protect the **CONTRACTOR** against all claims under applicable State Worker's Compensation Laws. The **CONTRACTOR** shall also be protected and shall cause each Subcontractor to be protected against claims for injury, disease, or death of employees which, for any reason, may not fall within the provisions of a Worker's Compensation Law. The liability limits shall not be less than the required statutory limits for Worker's Compensation and Employer's Liability or the amount of ONE HUNDRED THOUSAND DOLLARS (\$100,000.00) for each person whichever is more. This policy shall include an all states endorsement.

B. **CONTRACTOR'S** Comprehensive Public Liability and Property Damage Insurance, covering all operations in connection with the performance of this Contract in amounts not less than the following:

Bodily injury liability in the amount of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for each person and ONE MILLION DOLLARS (\$1,000,000) for each accident and property damage liability in the amount of TWO HUNDRED FIFTY THOUSAND DOLLARS (\$250,000) for all damages arising out of the injury or destruction of property in any one accident and subject to that limit per accident a total for aggregate limit of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for all damages arising out of injury to or destruction of property during the policy period.

The Comprehensive Public Liability and Property Damage policies carried by both the **CONTRACTOR** and the Subcontractors shall contain an endorsement to include the coverage of the following hazards:

- a. Explosion, collapse, and underground property damage to include any damage or destruction of property below the surface of the ground, such as wires, conduits, pipes, mains, sewers, etc., caused by the **CONTRACTOR'S** operations.
- b. The collapse of and structural injury to any building, structure or property on or adjacent to the **OWNER'S** premises or right-of-way caused by the **CONTRACTOR'S** operations in the removal of other buildings, structures, or supports, or by excavation below the surface of the ground.
- c. Contractual Liability Coverage for the Hold Harmless segments of the Contract Documents.

C. **CONTRACTOR'S Contingent or Protective Liability and Property Damage:**

In case part of this Contract is sublet, the **CONTRACTOR** shall secure contingent or protective liability and property damage insurance to protect him from any and all claims arising from the operation of his Subcontractors in the execution of Work included in the Contract. In no case shall the amount of such protection be less than the limits of \$500,000/\$1,000,000 for Public Liability Insurance and \$500,000/\$1,000,000 for Property Damage Insurance. The coverage in each case shall be acceptable to the **OWNER**.

D. **Automotive Public Liability and Property Damage**

The **CONTRACTOR** shall maintain automobile public liability insurance in the amount of not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for injury to one person and ONE MILLION DOLLARS (\$1,000,000) for one accident; and automobile property damage insurance in the amount of not less than FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for one accident to protect him from any and all claims arising from the use of the following:

- a. **CONTRACTOR'S** own automobiles and trucks.
- b. Hired automobiles and trucks.
- c. Automobiles and trucks owned by Subcontractors.

The aforementioned is to cover use of automobiles and trucks on and off the site of the Project.

E. **OWNER'S Protective Liability Policy**

The **CONTRACTOR** shall maintain **OWNER'S** Protective Liability Insurance with the **OWNER** as the named insured, and the **ENGINEER**, and their servants, agents and employees as additional insureds in amounts not less than the following:

- a. Bodily Injury in the amount of ONE MILLION DOLLARS (\$1,000,000) for each person and ONE MILLION DOLLARS (\$1,000,000) for each accident and property damage liability in the amount of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) for all damages arising out of an injury or destruction of property in any one accident and subject to that limit per accident a total (or aggregate) limit of ONE MILLION DOLLARS (\$1,000,000) for all damages arising out of injury to or destruction of property during the policy period.

CLEANING UP

The CONTRACTOR shall, at all times, keep the premises free from accumulations of waste materials and at the completion of the work, be shall remove all his rubbish, tools, temporary buildings, etc. from and about the site and shall leave his work “broom” clean unless more exactly specified elsewhere. All glass shall be washed and left free from stains of any nature.

SPECIAL INSTRUCTIONS

LIMITATIONS

During construction, care is to be taken to prevent damage to the work in place. As soon as work is completed, all work is to be thoroughly cleaned. Before completion, all damaged work is to be repaired and left in perfect condition. The CONTRACTOR will be responsible for all clean up of the premises. All trash, etc. will be hauled away from the site, and the site left in a clean and neat condition. Alcoholic beverages of any type will not be permitted on job site.

PRODUCT/MATERIALS SUBSTITUTION

CONTRACTOR will submit prior to starting work on project any changes to materials specified. CONTRACTOR will submit all specification data, company name, and supplier of material that he wishes to substitute. All material will be evaluated. CONTRACTOR will be given approval/disapproval by OWNER. No substitutes will be taken into consideration after work has begun, no substitutes will be allowed if CONTRACTOR does not submit specification data within time allowed.

INSPECTION

All work covered by these specifications shall be subject to inspection by OWNER or his authorized representative. CONTRACTOR will coordinate with OWNER for inspections as required during construction, and furnish to the OWNER in writing a project schedule prior to mobilization of work at the job site.

SPECIFICATIONS AND DRAWINGS ARE RECIPROCAL

The specifications and drawings are intended mutually to explain each other and anything which is referred to in the specifications and not shown on the drawings shall be considered as being shown and mentioned and referred to in both of these documents. Such work shall be done and performed accordingly. Any drawing attached to this specification form is an integral part thereof and where such drawings, if any, differ from these specifications, the specifications shall govern.

AS-BUILT DRAWINGS

Occasionally, during the course of construction, modifications and changes may occur due to site conditions, unforeseen circumstances and problems encountered. This may result in a modification of construction as originally depicted on drawings. Contractor will furnish the OWNER a marked-up set of prints in red line of all changes and/or modifications that pertain to this contract. Drawings will be labeled. "AS-BUILT DRAWINGS".

GUARANTEES, WARRANTIES AND BONDS

1. All work will be guaranteed by the CONTRACTOR for a period of one (1) year from the date of substantial completion.
2. Wording for the notarized guarantee shall be as follows:
"We hereby guarantee all work performed by us on the above captioned project to be free from defective materials and workmanship for a period of one (1) year, or such longer period of time as may be called for in the Contract Documents for such portions of the work."
3. Guarantee Compliance:
Except as otherwise specified, all work shall be guaranteed by the CONTRACTOR and through him each sub-contractor against defects resulting from the use of inferior materials, equipment or workmanship for one (1) year from the date of substantial completion of the Contract. In case of work performed by his sub-contractors, the CONTRACTOR shall secure warranties from said sub-contractors and deliver copies of the same to the OWNER upon completion of the work. If, within any guarantee period, repairs or changes are required in connection with guaranteed work which, in the OWNER'S opinion, are rendered necessary as the result of use of materials, equipment or workmanship which are inferior, defective or not in accordance with terms of the Contract: CONTRACTOR shall promptly upon receipt of OWNER'S written notice, and without expense of the OWNER;
 - a. Place in satisfactory condition in every particular all such guaranteed work, correct all defects therein.
 - b. Make good all damage to the building, site, equipment or building contents which in the OWNER'S opinion is the result of the use of materials, equipment or workmanship which are inferior, defective, or not in accordance with terms of the Contract.
 - c. Make good any work or material or the equipment and contents of building or site disturbed in fulfilling such guarantee.

In any case where fulfilling the requirements of the Contract, or any guarantee embraced in or required thereby, the CONTRACTOR disturbs any work guaranteed under another's Contract, he shall restore such disturbed work to condition satisfactory to the OWNER and guarantee such restored work to the same extent as it was guaranteed under such other contract. If the CONTRACTOR, after notice, fails to proceed promptly to comply with terms of the guarantee, the OWNER may have the defects corrected and the CONTRACTOR

and his surety shall be liable for all expense incurred. All special guarantees applicable to definite parts of the work that may be stipulated in the specification or other Contract Documents shall be subject to the terms of this Specification Section during the first year of the life of such special guarantees. All guarantees and warranties shall be obtained in the OWNER'S name and evidence thereof shall be promptly delivered to the OWNER'S Representative for transfer to the OWNER.

CLOSE-OUT DOCUMENTS

In general documents for close out, to be submitted by the CONTRACTOR to the OWNER, prior to final payment, shall be; but not limited to the following:

1. APPLICATION FOR PAYMENT: AIA Document G-702
2. CERTIFICATE OF SUBSTANTIAL COMPLETION: AIA Document G-704
3. CONTRACTOR'S AFFIDAVIT OF PAYMENT OF DEBTS AND CLAIMS:
AIA Documents G-706 and G-706A: The Contractor shall furnish these AIA Documents complete with attached notarized full release of liens, damages, and a guarantee that all materials and labor are paid in accordance with Contract Documents with the following wording:
"WE HEREBY CERTIFY THAT ALL BILLS FOR LABOR AND MATERIALS INCORPORATED INTO THE ABOVE CAPTIONED PROJECT UNDER OUR CONTRACT HAVE BEEN PAID AND THAT THE OWNER IS RELEASED FROM ANY AND ALL CLAIMS AND/OR DAMAGES UNDER THIS CONTRACT."
4. CONSENT OF SURETY COMPANY TO FINAL PAYMENT: AIA Document G-707
To be completed in full by the Bonding Company.
5. CONTRACTOR'S NOTARIZED STATEMENT:
Notarized statement that project has been constructed in accordance with Contract Documents.
6. CONTRACTOR'S NOTARIZED STATEMENT OF GUARANTEE/S:
All work will be guaranteed by the Contractor for a period of one (1) year from the date of substantial completion. Wording will be as follows:
"WE HEREBY GUARANTEE ALL WORK PERFORMED BY US ON ABOVE CAPTIONED PROJECT TO BE FREE FROM DEFECTIVE MATERIALS AND WORKMANSHIP FOR A PERIOD OF ONE (1) YEAR, OR SUCH LONGER PERIOD OF TIME AS MAY BE CALLED FOR IN THE CONTRACT DOCUMENTS FOR SUCH PORTIONS OF THE WORK."
In the case of work performed by his sub-contractors, the Contractor shall secure warranties from said sub-contractors and deliver copies of same to the Owner upon completion of work.
7. OPERATING AND MAINTENANCE MANUALS:
All manufacturer's operating instructions and maintenance manuals will be compiled in a tabbed and labeled 3-ring binder. (Furnish Owner with two (2) sets).
8. FORM W-9, PAYER'S REQUEST FOR TAXPAYER IDENTIFICATION NUMBER AND CERTIFICATION (IRS):
Form W-9 is to be completed by non-corporation contractors. Non-applicable if Contractor's firm is Incorporated.
9. FINAL CLEANING:
At close out time clean and re-clean entire work to normal level for "FIRST CLASS" maintenance/cleaning

MEASUREMENT AND PAYMENT

Measurement and payment for the following bid items shall be as described and shall include all material equipment, labor and testing to install and make operational a complete sewer system as detailed on the contract drawings and in these specifications.

SEWER MAIN (SDR-26), HDPE, DUCTILE IRON, OR OTHER

Payment for all sewer mains will be per linear foot for various diameter pipe measured from centerline of manhole to centerline of manhole in relation to the diameter of the pipe and the depth of cut as shown in the individual bid items. The item shall be paid per linear foot.

REMOVAL OF EXISTING SEWER LINE

Payment for removal of existing sewer line shall be as indicated on the construction plans. The item shall include all labor, materials and equipment necessary to complete the item. The item shall be paid per linear foot.

ABANDONMENT OF EXISTING SEWER LINE

Payment for abandonment of existing sewer line shall be as indicated on the construction plans. The item shall include all labor, materials and equipment necessary to complete the item. The item shall be paid per linear foot.

TRACER WIRE SYSTEM FOR WATER/SEWER

Installation requirements for tracer wire shall be as indicated on the construction plans. The item shall include all labor, materials and equipment necessary to provide a complete tracer system for the sewer infrastructure with proper grounding and connection points as shown in the plans and specifications. Grounding and hook-up locations shall be absorbed in the price of the tracer wire. The item shall be paid per linear foot.

MANHOLES

Payment for manholes will be per each and depth of manhole in appropriate depth bracket measured from lid of manhole to downstream invert. Depth shall be based on individual bid items.

DEMOLITION AND REMOVAL OF EXISTING MANHOLE

Payment for demolition and removal of existing manhole shall be as indicated on the construction plans. The item shall include the removal of the manhole frame and lid assembly with storage and delivery to City of Hattiesburg, demolition of the remainder of the manhole as indicated on the construction plans removal of the manhole as indicated. The item shall include all labor, equipment and materials necessary to demolish and remove an existing manhole. Bypass pumping shall be an absorbed portion of this item should it be necessary for the removal. The item shall be paid per each.

ABANDONMENT OF EXISTING MANHOLE

Payment for abandonment of existing manhole shall be as indicated on the construction plans. The item shall include all labor, materials and equipment necessary to complete the

item. The item shall be paid per each.

DROP MANHOLE ASSEMBLY

Payment for drop manhole assembly shall include furnishing and installing all hardware required to assemble a drop as detailed in the plans and specifications. Payment shall be per each.

SANITARY SEWER SERVICE CLEANOUT

Payment for sewer cleanout will be per each to include all labor, materials and equipment at the bid size. Price shall reflect each necessary cleanout as determined by the ENGINEER to provide sanitary sewer service to project area.

SANITARY SEWER SERVICE

Payment for sanitary sewer service will be per linear foot for various diameter pipe. Item shall include PVC pipe, fittings, and other items necessary for a functioning service. Item shall include all labor, equipment and materials necessary to install all equipment. The item shall be per linear foot.

SANITARY SEWER SERVICE TEE

Payment for sanitary sewer service tee will be per each at the bid size and type. Price shall include all labor, materials and equipment necessary to install sanitary sewer service tee based on plans and specifications.

DUCTILE IRON, PVC and HDPE WATER SYSTEMS

Payment for item shall include furnishing and installing all pipe, trenching, compaction of required bedding and backfill excavation, disposal of excess excavated material sheeting, shoring, bracing, dewatering, testing, fittings, reducers, flushing the system and related items not specifically covered under other pay items. The contract price shall be determined by the measured distance of pipe installed and accepted per linear foot.

CONNECTION ITEMS

Payment for connection items shall include installation of reducers, fittings, valve boxes, trenching, excavation, compaction of backfill, blocking, disposal of excess excavated material, sheeting, shoring bracing, dewatering, testing, flushing and related items not specifically covered under other pay items as depicted on the construction plans. Pay shall be determined per each.

GATE VALVES

Payment for installation of gate valves shall include furnishing gate valves, valve boxes, trenching, excavating, compaction of backfill, disposal of excess excavated material, sheeting, shoring, bracing, dewatering, testing, flushing and related items not specifically covered under other pay items as depicted on the construction plans. Pay shall be determined per each.

FIRE HYDRANT WITH APPURTENANCES

Payment for installation of fire hydrant with appurtenance shall include furnishing fire hydrant, gate valve, valve box, piping, trenching, excavating, compaction of backfill, blocking, disposal of excess excavated material, sheeting, shoring, bracing, dewatering, testing, flushing and related items not specifically covered under other pay items. Pay shall be determined per each to include fire hydrant, tees, gate valve, valve box, pipe and other miscellaneous items as required to provide an operational hydrant. Pay shall be determined per each.

REMOVAL OF EXISTING FIRE HYDRANT

Payment for removal of fire hydrant shall include capping/plugging existing service line and removal of the hydrant. Item shall be paid per each.

SERVICE TAP

Payment for service tap shall include all fittings, tubing, tapping saddle, corporation stop, materials, labor and equipment to provide a new water service. Item shall be paid per each.

SERVICE TUBING

Payment for installation of service tubing shall include furnishing and installing service tubing as directed by the ENGINEER. Item shall include all boring, trenching, excavating, compaction of backfill, disposal of excess excavated material etc. to install service tubing as directed. Payment shall be per linear foot measured from each connection point.

RESIDENTIAL METER

Payment for residential meter shall include all components, labor and equipment for a fully operational water meter. Meter shall meet the requirements of the plans and specifications and function fully within the existing system. Item shall include meter, box and any necessary fittings and shall be paid per each.

CRUSHED AGGREGATE

Payment for crushed aggregate shall include furnishing and installing material as specified in the plans and specifications. Crushed aggregate shall be installed as a base material for the pavement repairs. Crushed aggregate may be used for a temporary riding surface and will be the surface of Camp Street throughout the life of the project. Temporary riding surface will be removed prior to pavement repairs and moved to another location as directed by the engineer at no additional cost to the project. Payment shall be per ton from certified scales.

SELECT FILL MATERIAL

Payment for select fill material will be based on loose vehicular measurement. Haul vehicles shall be measured and volumes calculated. It shall be the discretion of ENGINEER as to the overall percentage full of haul material and that determination shall be final. Item shall include material, haul, placement and testing necessary to meet the plans and specifications.

CONCRETE PAVEMENT REPAIR

Payment for concrete pavement repair shall include furnishing and installing concrete pavement as specified in the plans and specifications. Item shall include forming, material, haul, placement, finishing and testing necessary to meet the plans and specifications. Payment shall be per square yard.

CONCRETE

Payment for concrete shall include furnishing and installing concrete with specified class as specified in the plans and specifications. Item shall include forming, material, haul, placement compaction and testing necessary to meet the plans and specifications. Item shall include reinforcing steel, grates, etc. as necessary and required. Payment shall be per cubic yard.

HOT MIX ASPHALT

Payment for hot mix asphalt shall include furnishing and installing asphalt pavement as specified in the plans and specifications. Item shall include material, haul, placement compaction and testing necessary to meet the plans and specifications. Payment shall be per ton.

CONCRETE SIDEWALK REPAIR

Payment for concrete sidewalk repair shall include furnishing and installing sidewalk to match removed concrete sidewalk. Item shall include saw cutting, forming, material, haul, placement, compaction and testing necessary to meet the plans and specifications. Item shall not be used for damage to sidewalk as a result of poor construction methods or neglect from the contractor. Payment shall be per square yard.

CONCRETE CURB AND GUTTER

Payment for concrete curb and gutter shall include removal, grading, forming, materials, placement, compaction and testing necessary to match existing curb and gutter. Item shall be paid per linear foot.

CONCRETE DITCH REPAIR

Payment for concrete ditch repair shall include removal, grading, forming, materials, placement, compaction and testing necessary to match existing paved ditch. Item shall be paid per square yard.

CLASS "B" CONCRETE, MINOR STRUCTURES

Payment for Class "B" Concrete, Minor Structures shall include grading, forming, materials, placement, compaction and testing necessary to complete the construction as defined in the plans and specification and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, 2017 edition. Item shall be paid per cubic yard.

REINFORCING STEEL

Payment for reinforcing steel shall include grading, forming, materials, tying, spacing and testing necessary to complete the construction as defined in the plans and specification and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, 2017 edition. Item shall be paid per pound.

INLET GRATINGS

Payment for inlet gratings shall include casting, materials, installation and testing necessary to complete the construction as defined in the plans and specification and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, 2017 edition. Item shall be paid per pound.

INLET CASTINGS

Payment for inlet castings shall include casting, materials, installation and testing necessary to complete the construction as defined in the plans and specification and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, 2017 edition. Item shall be paid per pound.

DRAINAGE PIPE

Payment for all drainage pipe will be per linear foot for various diameter pipe and material type measured from end of pipe to end of pipe installed in relation to the diameter of the pipe.

REMOVAL OF EXISTING PIPE CROSS DRAINS

Payment for removal of existing pipe cross drains shall include removal of all pipe materials from project site. Item shall be as authorized by the engineer. Item shall be paid per linear foot.

REMOVAL OF EXISTING CORRUGATED HDPE PIPE AND RESET

Payment for removal of existing corrugated HDPE pipe and reset shall include removal of all pipe materials, storing materials, and installation of materials in a new location as directed by the ENGINEER. Item shall be paid per linear foot.

REMOVAL, SALVAGE, AND RESET EXISTING FENCE

Payment for removal, salvage, and reset of existing fence shall include removal of all fence materials, storing materials, and installation of materials in a new location as directed by the ENGINEER. Item shall be paid per linear foot.

6" YELLOW THERMOPLASTIC DETAIL TRAFFIC STRIPE

Payment for 6" Yellow Thermoplastic Detail Stripe shall include materials, labor, and equipment for the installation of striping at locations directed by the ENGINEER and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, latest edition. Item shall be paid per linear foot.

LEGEND WHITE THERMOPLASTIC TRAFFIC MARKING

Payment for Legend White Thermoplastic Traffic Marking shall include materials, labor, and equipment for the installation of striping at locations directed by the ENGINEER and in accordance with the Mississippi Standard Specifications for Road and Bridge Construction, latest edition. Item shall be paid per linear foot.

SOLID SOD

Payment for solid sod shall include furnishing and installing sod, fertilizer, lime and other components required to establish permanent grassing matching existing conditions. Solid Sod shall include final grading prior to installation of sod materials. The unit measurement shall be per square yard.

LANDSCAPE RESTORATION

Payment for Landscape Restoration shall include furnishing and installing of top soil, mulch, plants, fertilizer, watering, final grading and other components required to re-establish landscaping to matching existing conditions. The unit measurement shall be per square foot.

CLEARING AND GRUBBING

Payment for clearing and grubbing shall include removal of all items within the required limits of construction necessary to complete the project based on the construction plans and specifications. Payment shall include off site removal of all items removed during clearing and grubbing. Item shall include all materials, labor and equipment necessary to meet the plans and specifications. Payment shall be per acre.

TEMPORARY EROSION CONTROL

Payment for Temporary Erosion Control shall include furnishing, installing and maintaining hay bales or silt fence as required by current Mississippi Department of Environmental Quality standards. Hay bales and silt fence shall be installed and maintained to prevent erosion under or excess siltation within 24 hours of a rain event. The unit measurement shall be lump sum and includes any required maintenance.

MAINTENANCE OF TRAFFIC

Payment for maintenance of traffic will be lump sum. Item shall include all materials, labor and equipment to maintain traffic based on the current MUTCD or as required by the ENGINEER.

MOBILIZATION

Payment for mobilization shall enable contractor to assemble materials, equipment, etc. on site, to prepare for construction. The unit measurement shall be lump sum. Mobilization shall be paid 50 percent at 5 percent of construction complete and 100 percent at 25 percent of construction complete.

SANITARY SEWERAGE SYSTEMS

1.0 GENERAL

This item shall consist of furnishing all of the necessary materials, supervision, labor, tools, equipment and incidentals, and the installation of various types and sizes of sewer pipe and related items in accordance with the Contract Drawings and Specifications, as stated in the Proposal.

2.0 APPLICABLE PUBLICATIONS

The following publications form a part of this Specifications and where referred to by basic designation only, are applicable to the extent indicated. The latest editions of the publications referenced shall apply to the work.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 139/139M Electric-Fusion (Arc) Welded Steel Pipe (HPS 4 inch and over).
- A 252 Welded and Seamless Steel Pipe Piles.
- C 31/C 31M Making and Curing Concrete Compressive and Flexural Strength Test Specimens in the Field.
- C 33 Specifications for Concrete Aggregate
- C 39/C 39M Compressive Strength of Cylindrical Concrete Specimens.
- D 1248 Polyethylene Plastics Extrusion Materials for Wire and Cable
- D 1784 Rigid Poly(Vinyl Chloride)(PVC) Compounds and Chlorinated Poly (Vinyl Chloride)(CPVC) Compounds.
- D 2412 Determination of External Loading Characteristics of Plastic Pipe by Parallel Plate Loading.
- D 2922 Density of Soil and Soil Aggregate in place by Nuclear Methods (Shallow Depths).
- D 3034 Specifications for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
- D 3212 Joints for Drain and Sewer Plastic Pipes using Flexible Elastomeric Seals.
- F 477 Specifications for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

F 794 Poly (Vinyl Chloride)(PVC) Profile Gravity Sewer Pipe and Fittings Based on Controlled Inside Diameter.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

A21.10 Ductile Iron Fittings, 3 inch through 48 inch for Water and other Liquids.

A21.11 Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

A21.50 Ductile Iron Pipe, Design Requirements

A21.51 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-lined Molds, for Water or other Liquids.

AMERICAN WATER WORKS ASSOCIATION (AWWA)

C 104 Cement-Mortar Lining for Ductile Iron Pipe and Fittings for Water and Other Liquids.

C 106 Cast Iron Pipe Centrifugally Cast in Metal Molds, for water and other Liquids.

C 110 Ductile Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids.

C 111 Rubber Gasket Joints for Ductile Iron Pressure Pipe and Fittings.

C 151 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or other Liquids.

AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS (AASHTO)

T-88 Particle Size Analysis of Soils.

T-89 Determining the Liquid Limit of Soils.

T-90 Determining the Plastic Limit and Plasticity Index of Soils.

T-99 Moisture Density Relations of Soils Using a 5.5 lb. Rammer and 12 inch Drop.

T-191 Density of Soil In-Place by the Sand-Cone Method.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Standard Specifications for Road and Bridge Construction Current Edition.

3.0 SUBMITTALS

The following submittals shall be required for the respective materials used in the work. All submittals shall be submitted through the Contractor to the Engineer and bear on the submittal a certification from the Contractor the submittal is in conformance with the specifications.

3.1 Ductile Iron Pipe: The following submittals shall be required for ductile iron pipe systems utilized on the project. The Contractor shall furnish manufacturer's certificates certifying that the pipe and fittings conform to the requirements as specified hereinafter under Article 4.0, Materials. In addition, the submittals shall include the following:

A. Joints: The following shall be required for ductile iron joints.

1. Drawings or Manufacturer's Catalogue data indicating dimensions and tolerance.
2. Gaskets shall be tested in accordance with the respective standards as indicated in ANSI 21.11 and results shall be included in the submittals. Test shall be for similar materials on the gaskets and be not more than one year old.
3. Mechanical Joints: Should the Contractor elect to use mechanical joints in lieu of push-on joints, manufacturer's data shall be submitted in accordance with the "Special Requirements for the Mechanical Joint" as stated in ANSI 21.11 (AWWA C 111).

B. Ductile Iron Pipe Submittal Shall Include the Results of:

1. Tension Test
2. Impact Test
3. Low Temperature Impact Test

Sampling procedure shall be as indicated in ANSI 21.51.

3.2 PVC Pipe: The Contractor shall submit manufacturer's certificate which certifies the pipe and fittings conform to the requirements as specified hereinafter under Article 4.0, Materials. In addition, the Contractor shall submit the following:

A. PVC Piping: PVC Pipe shall be sampled, tested, and inspected in accordance with the provisions of ASTM D3034. Copies of test results shall be attached. Test results shall be similar material and not be more than one year old from the date of material delivery.

B. Joints: The following submittals shall be required for PVC joints.

1. Certificate with test results for joints for compliance to ASTM D 3212. Gaskets shall conform to ASTM F 477. Test results shall be for similar material and not be more than one year old.

4.0 MATERIALS

4.1 Gravity Sewer Pipe: Where the type of gravity sewer piping is not indicated on the plans, the Contractor shall furnish polyvinyl chloride (PVC) pipe.

The Contractor shall be restricted to furnishing the exact type of pipe material where indicated on the Contract Drawings.

The Contractor shall be limited to the use of only one type of pipe (so selected by the Contractor and indicated on the Proposal Form) and shall not change the type of gravity sewer pipe except as follows:

1. Where indicated on the plans, or
2. If permitted in writing by the Engineer.

A. **Ductile Iron Pipe:** Ductile iron shall be designed in accordance with the latest revision of ANSI/AWWA C150/A21.50 for a minimum 50psi.

Ductile Iron Pipe shall be manufactured in accordance with the latest revision of ANSI/AWWA C151/A21.51. Each pipe shall be subjected to a hydrostatic pressure test of at least 500 psi at the point of manufacture.

Pipe shall be standard asphaltic coating on the exterior. Pipe shall also have 40 mils of Protecto 401 Ceramic Epoxy on the interior per "Standard Specification for Lining Ductile Iron Pipe for Sewer Service".

The class or nominal thickness, net weight without lining, and casting period shall be clearly marked on each length of pipe. Additionally, the manufacturer's mark, country where cast, year in which the pipe was produced, and the letters "DI" or "Ductile" shall be cast or stamped on the pipe.

All pipe shall be furnished with Push-On Type Joints, such as Tyton or Fastite. Joints shall be in accordance with ANSI/AWWA C111/A21.11, of latest revision, and be furnished complete with all necessary accessories.

Fittings shall be ductile iron. Fittings shall conform to the latest revision of either ANSI/AWWA C600.

B. **PVC Pipe:** PVC gravity sewer pipe and fittings shall conform to the requirements of ASTM D 3034 with an SDR of 26 and a minimum stiffness of 46 lb./in. - in and 115 lb./in. - in, respectively. Joints for sewer pipe shall be either push-up or mechanical conforming to the requirements of ASTM 3212. Gaskets for sewer pipe shall conform to the requirements of ASTM F 477.

Approved adaptors shall be used for making connections between PVC pipe and

concrete manholes. Pipe connections to new manholes shall be made using a flexible synthetic rubber boot mechanically clamped to the manhole and to the pipe to provide a watertight seal.

C. Service Laterals: Service laterals for local services shall consist of fittings, pipe lengths, and connections of 6 inch or 4 inch pipe. The fittings, pipe lengths and plugs shall be of the same material as the run pipe unless otherwise indicated on the Contract Drawings. The modified sewer tees shall be an integral part of the run pipe. The remainder of the branch shall consist of standard fittings (elbows, reducers, and lengths of pipe) in accordance with the manufacturer's standard products and as specified. Pipe lengths and joint connections shall meet the specified requirements for the type materials used.

4.2 Casing Pipe: Steel pipe utilized as casing at locations shown on the Contract Drawings shall be new round piling pipe conforming to the requirements of ASTM A 252 or A 139. Casing diameter shall be adequate to allow pushing of the specified diameter of sewer pipe or force main and make proper connections at the ends. Minimum Wall Thickness for steel casing is 0.25 inch. (Hwy) and 0.28 inch (RR). Contractor shall verify the I.D. of the casing pipe is adequate for the carrier pipe prior to installation.

4.3 Wash Gravel Bedding Material: Select Granular material for pipe bedding shall be coarse concrete aggregate. The coarse concrete aggregate shall conform to the gradation sizing Number 467 specified in Table 2 of ASTM Standard Specification C-33. (See Following Table:)

SIZE NO. 467

<u>Nominal Size</u> <u>(Sieves w/Square Openings)</u>	<u>Percent Passing by Weight</u>
2"	100
1 - ½"	95 - 100
¾"	35 - 70
⅜"	10 - 30
No. 4	0 - 5

4.4 Stabilization Material: Stabilization Material shall be a pit run mixture of sand and gravel. The sand shall be hard, sharp and durable particles. All gravel shall pass a 1 - ½" sieve.

4.5 Clay Gravel Material: Clay Gravel Material shall meet MDOT Specifications, Group

4.6 Concrete: Concrete shall be in accordance with the requirements of Technical Specifications - CONCRETE

4.7 Select Fill Material: General : The select material shall be composed of a natural or artificial mixture of sand, silt, clay or soil binder or other material of satisfactory cementing value. The sand shall be hard, sharp, and durable particles, preferably siliceous. The binder shall be a grade of clay or other material having satisfactory cementing qualities and shall be homogenous in

character, free from vegetable matter, clay balls or other deleterious substances that cannot be classed as serviceable base material. Material shall meet the Standard Specifications for Road and Bridge Construction, Latest Edition for Class 9 Group C and modified to consist of a P.I of between 5 and 15.

4.8 Backfill: All other backfill shall consist of excavated material removed from the trench unless otherwise directed by the Engineer. CONTRACTOR shall separate poor and acceptable material during excavation. Failure to separate material shall require CONTRACTOR to furnish acceptable backfill at no additional cost to the project. Unacceptable material shall be disposed of off-site at the Contractor's expense.

5.0 CONSTRUCTION:

5.1 Earthwork:

A. Site Preparation: Topsoil shall be stripped and stockpiled in accordance with Technical Specifications - Restoration of Roads, Driveways, Fences, Lawns, and other Grassed Areas.

All vegetation such as brush, heavy sod, heavy growth of grass, decayed vegetative matter, rubbish and any other unsuitable material within the area of trenching shall be stripped or otherwise removed before the trenching is started, and in no case shall such objectionable material be allowed in the trench.

Stripping operation shall be to a depth of not less than 6 inches in all cases.

Where possible, Contractor shall remove turf in sections, keep damp, and replace upon completion of backfilling.

B. Asphalt or Concrete Removal: Before trenching operations begin, the existing asphalt or concrete pavement shall be scored or cut to a proper depth to give a straight vertical edge when removed. The asphalt or concrete shall be disposed of offsite by the Contractor at his expense. While removing the asphalt or concrete in the trench line, never shall the adjacent asphalt be raised or pulled from its base.

C. Trenching: The Contractor shall determine all requirements for trench dimensions, alignment, and grades. The trench shall be excavated in conformance with all federal, state and local regulations for the protection of the workmen. Shoring, sheeting and/or a moveable form shall be used as required to provide earth stability during the laying operations.

The final excavation of the trench for the pipe installation shall be as indicated on the Plans. Minor variations in horizontal (within the permanent easement) or vertical alignment during construction shall be made during construction (with the Engineer's approval) to facilitate ease of installation and operation (due to potential conflicts; i.e., utility conflict) at no additional cost to the Owner except for additional piping, if any. The trench from the top of the pipe down to the bottom of the bedding shall be of a consistent width as indicated on the plans. Should

the excavated width of the trench be larger than the design width, the Engineer may direct that a higher type or class of bedding be used; or other adjustments be made to increase the load carrying capacity of the pipe. In the event trench width is wider than allowed on the plans, Contractor shall absorb the cost of additional wash gravel bedding based on neat line quantity calculations.

The Contractor shall not excavate more trench in advance of pipe laying than is necessary to perform the work efficiently. No more than 100 feet of open trench shall be allowed unless approved by the Engineer.

Excavated material shall be placed in a manner that will not obstruct sidewalks, driveways, or other structures. Excavated material shall not be placed so as to surcharge the walls and jeopardize trench stability.

If adequate area is not available on the construction site, the Contractor will be required to stockpile material off site. Owner shall not bear any additional expense.

Ledge Rock, boulders and large stones shall be removed to provide a minimum clearance of 4 inches (10 cm) below and on each side of all pipes.

It is the intention of these specification that there shall be a minimum interruption to traffic and all traffic control shall be in accordance with the MUTCD.

D. Disposal: The Contractor shall satisfactorily dispose of all excess earth from excavations either in approved (by the Engineer) areas within the construction limits or away from the project in disposal sites obtained by the Contractor.

The Contractor will be permitted to mound excess earth over the trench to a maximum depth of 12 inches above the original ground surface or finished grade where the trench is located in unimproved property. Wasting of excess excavated material will not be permitted within any road ROW. All material within the construction limits shall be placed so that natural drainage is maintained and the surface shall be graded to a smooth and uniform appearance. The disposal of waste and excess excavating materials, including hauling, handling, grading, and surfacing shall be subsidiary obligation of the contractor and no separate payment will be made. Therefore, the cost of such work shall be included in the Contract Unit Price for installation of sewer pipe.

E. Dewatering: The site shall be kept free of surface water at all times. The Contractor shall install drainage ditches and dikes and shall perform all pumping and other work necessary to divert or remove rainfall and other accumulations of surface water from the excavations. The diversion and removal of surface water shall be performed in a manner that will prevent the accumulation of water behind temporary structures or at any other locations within the construction area where it may be detrimental. The Contractor shall provide, install, and operate sufficient trenches, sumps, pumps, hoses, piping, well points, deep wells, etc., necessary to depress and maintain the ground water level at least one foot below the base of the excavation during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained a minimum of one foot below the lowest excavation subgrade

made until the structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures.

Where groundwater is encountered, the Contractor shall make the effort necessary to secure a dry trench bottom before laying pipe. In sandy and in other suitable type soils, dewatering shall be done by well pointing. If, in the opinion of the Engineer, the Contractor has failed to obtain an absolutely dry trench bottom by insufficient use of all known methods of trench dewatering, the Engineer may order the Contractor to excavate below grade and place not less than 6 inches of graded crushed stone fill material over the trench bottom to form trench drains to suitably located sumps and to remove the water by bailing or pumping. The graded crushed stone fill material shall be placed at the Contractor's own expense and shall be of such depth that there shall be not water in bell holes at the time of coupling pipe. All costs of equipment, labor, and materials required for dewatering shall be included in the pipe laying operation.

F. Bedding: The Contractor shall satisfactorily shape the trench area (to specified line, grade and cross section) to receive bedding material. The bottom of the trench shall be undisturbed soil. Should the Contractor over excavate the trench without direction from the Engineer, the trench shall be brought up to grade with wash gravel bedding and compacted to at least 90% of maximum laboratory density as measured by AASHTO T 99. Such additional work and materials for over excavation, without direction of the Engineer, shall be at the expense of the Contractor.

Holes for the bells shall be provided at each joint in the subgrade or in the granular fill bedding material as required. The holes shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the material. The Contractor shall install the proper bedding for the respective type of pipe and depth of installation as shown in the details and schedules on the plans. When depths vary in a particular manhole run, the Contractor shall change bedding systems in accordance with the depth installation requirements.

1. Stabilization Materials: When the subgrade is found to be unstable or to include ashes, refuse, organic material, or other unsuitable material, the Engineer may direct that the subgrade be over excavated to remove such material. The depths of over excavation shall be as directed by the Engineer. Stabilization material shall be placed into the over excavated area of the trench and shall be paid for in accordance with these specifications. Stabilization shall be compacted to at least 90% of maximum laboratory density in six inch lifts.

2. Bedding Materials: As detailed in the plans, bedding material shall be placed to the specified depth below the pipe and tamped to a minimum of 90% of maximum laboratory density as determined in accordance with AASHTO T 99. Following placement of pipe, additional bedding material shall be placed and consolidated under the haunches of the pipe. Special tools shall be required to work the material into place and leave no voids beneath the pipe. The bedding material shall be tamped along the spring line (or along the top of the bedding material as indicated) of the pipe to sufficiently compact the material insofar as practical.

The Engineer may direct additional moisture be added to the bedding material to aid in

the compaction effort. Mechanical tampers may be employed to aid the process. Depending on the particular bedding required, additional bedding shall be added and tamped to a minimum of 90% of maximum laboratory density, with AASHTO T-99.

3. Select Backfill: Select backfill shall be placed in 6 inch lifts and tamped to a minimum laboratory density with AASHTO T-99. Overall depth of the select backfill shall be as directed by the Engineer.

4. Normal Condition Bedding: Under normal conditions the trench bottom shall be undisturbed earth shaped to the specified line, grade, and cross section with proper bell holes at each joint to ensure that pipe barrel lies flat on trench bottom. The bedding material will be selected native materials excavated from the trench and placed in two lifts. The first lift being placed up to the spring line of the pipe and extending out to the trench walls and hand tamped to a minimum of 90% of maximum laboratory density. Special care shall be used in placing and tamping bedding to insure no voids under the haunches of the pipe. The second lift shall extend to approximately 6" above pipe (Material permitting) and hand tamped to 90% density.

5. Backfilling: Upon completion of placement of select material the excavated materials shall be immediately placed back into the trench. Specific requirements are:

- a Backfill requirements for road crossings, parking lots, driveways, and sidewalks shall be in accordance with Technical Specifications - RESTORATION OF ROADS, DRIVEWAYS, FENCES, LAWNS, AND OTHER GRASSED AREAS.
- b. Backfill requirements for unimproved areas (pastures, wooded areas) shall consist of placement and shaping of the soil in such a manner as to allow maximum natural consolidation. No compaction of the general backfill in the unimproved areas will be required, except that caused by conventional shaping equipment.
- c. No debris shall be used as backfill which has a volume in excess of one-half of one cubic foot or a weight excess of 75 pounds.

6. Sheeting Removal: Wooden sheeting or other thick sheeting or shoring members which have been driven or otherwise placed along the trench walls to an elevation below the spring line of the pipe shall be cut off at the spring line or higher and left in place.

7. Grading and Grassing: Final grading and grassing shall be in accordance with Technical Specifications - RESTORATION OF ROADS, DRIVEWAYS, FENCES, LAWNS, AND OTHER GRASSED AREAS.

5.2 PIPE HANDLING AND STORAGE: Pipe shall be handled, staked, and stored in accordance with manufacturer's printed literature. The Contractor shall provide security as required to prevent damage by vandals. PVC pipe shall be shaded from sunlight for extended lengths of time. Pipe damaged during storage and handling shall be rejected.

5.3 PIPE LAYING: Pipe laying shall proceed upgrade with the spigot ends of the bell-and-spigot pipe and tongue ends of the tongue and groove pipe jointing in the direction of flow. Each pipe shall be laid true to line and grade and in such a manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line. As the work progresses, the interior of the sewer shall be cleared of all dirt and superfluous materials of every description. Where cleaning after laying is difficult because of small pipe size, a suitable swab or drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work. At times when work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no trench water, earth, or other substance will enter the pipe or fittings.

Pipe laying shall be performed in such a manner that no foreign material enters the pipe. The Engineer may require that before lowering pipe, heavy canvas bags be placed over each end, and left in place until joints are ready to be made. If water is in the trench, the seals shall remain in place until the trench is pumped completely dry. If conditions are unsuitable, no pipe shall be laid until satisfactory laying conditions are obtained in accordance with the above specified requirements.

The Contractor shall utilize a commercial grade laser beam specifically manufactured to aid in maintaining grade and alignment of pipelines during installation. The primary unit shall be mounted on a heavy duty base and firmly anchored in the downstream manhole of the reach under construction. The maximum distance shall not exceed four hundred feet (400') per set-up without the approval of the Engineer.

Each joint of pipe shall be installed using an approved target to align the pipe with the projected laser beam. The methods and procedures shall be in strict accordance with the manufacturer's recommendations and instructions. Proper ventilation shall be maintained at all times. Care shall be exercised in order to prevent bumping or misalignment of the projected beam. Sewer lines shall be laid such that the installed variation of invert elevations when compared with the construction plans does not exceed 0.05 feet. Sewer lines in which said variation exceeds 0.05 feet may be rejected. Sewer pipe shall be visually inspected for alignment by lamping, televising or by other appropriate means to determine alignment.

Whenever a movable steel box is used in place of sheeting, the Contractor shall take care to prevent the pipe from moving when the steel box is moved.

5.4 PIPE JOINTING: Piping shall be jointed in accordance with the manufacturer's printed recommendations. Gaskets shall be firmly set within the bells and grooves as required. The manufacturer's recommended lubricant or an approved equal shall be applied for slip type joints.

A. PVC Pipe Joint Construction: The bell and spigot ends of PVC sewer pipe shall be cleaned of all foreign material that could interfere with proper assembly of the joints. The spigot

ends shall be cleaned one inch (1") beyond the joint assembly reference mark.

The spigot end of the pipe shall be thoroughly lubricated in accordance with the manufacturer's recommendations. The coating should be the equivalent of a brush coat of enamel paint and maybe applied by hand, cloth, pad sponge or glove.

The lubricated spigot end shall be inserted into the bell keeping the pipe length in proper alignment. The bell shall be braced while the spigot end is pushed in under the rubber ring, so that previously competed joints in the line will not be closed up. The spigot end shall be pushed into the bell until the reference mark is flush with the end of the bell. Pipe shall be pushed by use of a bar or other means approved by the Engineer. Hydraulic excavators, backhoes, or other machinery shall not be used to push slip-joint pipe together.

Generally, the installation and jointing of PVC Pipe shall conform to the requirement so the latest edition of ASTM D-2321, "Underground Installation of Flexible Thermoplastic Sewer Pipe".

Any pipe cuts shall be of neat line. Pipe shall have bevel edges according to the manufacturer's recommendations.

B. Ductile Iron Pipe Joint Construction: The installation and jointing of ductile iron pipe and shall generally conform to the applicable provisions of AWWA Standard Specifications C-600 for pipe laying.

Where mechanical joint pipe is used, the surfaces which come in contact with the gasket shall be thoroughly brushed with a wire brush just prior to assembly. The gasket should be brushed with soapy water prior to installation to remove loose dirt and to lubricate gasket as it is forced into its retaining space.

When tightening bolts, it is essential that the gland be brought up toward the pipe flange evenly. The bolts should be partially tightened; the bottom bolt first; then the top; next the bolts on either side; and last , the remaining bolts. Overstressing of bolts to compensate for poor installation will not be permitted. Bolt torque shall be in accordance with manufacturer's specifications.

All joints of whatever type shall be completely water tight after being subjected to the required tests.

C. Jointing Dissimilar Pipes: Suitable adaptor couplings are required for connecting dissimilar pipes. The couplings shall be approved by the Engineer before installation.

5.5 STREAM CROSSING: Ductile iron pipe Class 50 shall be used as shown on the Drawings. Granular fill, concrete, and concrete collars shall be placed or constructed as shown on the contract drawings.

5.6 SERVICE LATERALS (LINES): Modified sewer tees shall be installed on the run pipe at the appropriate field locations. Service lines of the sizes specified shall be laid to a uniform grade so that the customer being served can be tied-in using good construction practices. All tamping and backfilling operations shall be performed the same as on main line pipe. Removable plugs shall be securely installed in pipe ends and a 2" x 2" treated post extending 12" above the ground line shall mark the pipe end location if the lateral is not connected to an existing sewer. For service laterals in which a connection to an existing service is required, the Contractor shall make the connection. Contractor shall verify the location of all service laterals within the project area prior to construction.

5.7 BORINGS: Borings shall be accomplished in accordance with Mississippi Standard Specifications for Road and Bridge Construction or Railway Standards. The contractor shall provide all necessary sheeting, bracing, cribbing, supports and appurtenances to insure the proper line and grade throughout the entire length of the crossing.

A. Casing Pipe: Casing Pipe shall be installed as indicated on the Contract Drawings. Joints shall be completely welded to provide structural integrity and shall be water tight.

B. Carrier Pipe: Carrier pipe may be any of the allowed options of piping. However, the piping and joints shall be capable of withstanding the stress exerted by pushing the pipe within the casing.

C. Carrier Pipe Supports: Supports for the carrier pipe shall be as recommended by the manufacturer for such installation. Supports shall be spaced to adequately support the piping under surcharged sewage conditions.

D. Casing Seal: The annulus between the casing and carrier pipe shall be sealed at each end with a quick setting grout.

5.8 RELATION TO WATER MAINS:

A. Water mains shall be laid at least 10 feet horizontally and 18 inches vertically from any sanitary sewer or manhole. The bottom of the water line shall be a minimum of 18 inches from the top of the sewer line.

5.9 CONTINUATION OF SERVICE

The existing wastewater system shall remain in operation during the duration of the project until such time it is no longer needed. Should removal of facilities from operation become necessary, a plan which will avoid or minimize pollution effects on any receiving stream and provide alternate service for wastewater facilities shall be reviewed and approved in advance by the Mississippi Department of Environmental Quality and shall be adhered to during construction.

Where shown on the plans or directed by the Engineer, new sewers shall be connected to existing sewers either by constructing a manhole over an existing line (doghouse) or by coring through the wall of an existing manhole.

6.0 TESTING

6.1 Ductile Iron Pipe:

A. Field Inspection: The Engineer shall perform visual inspection of the material prior to placement by the Contractor. The Engineer may make non-destructive tests to determine the soundness of the pipe. The Contractor shall assist the Engineer in handling and moving the pipe as required.

B. Material Test: Material test shall be conducted during the manufacturing process and the results shall be included as part of the submittals. No other material test shall be required.

6.2 PVC PIPING: Material test shall be conducted during the manufacturing process and the results shall be included as part of the submittal. No other material test shall be required.

6.3 STEEL CASING PIPE: Material test shall be included as part the submittal. No other material test shall be required.

6.4 BEDDING MATERIAL AND STABILIZATION MATERIAL: Test for gradation and test for material passing the No. 40 sieve shall be as follows:

Gradation	- AASHTO T 88
Liquid Limit	- AASHTO T 89
Plasticity Index	- AASHTO T 90

One set of each test listed above will be required for every 500 cubic yards or major fraction thereof.

6.5 COMPACTION TESTS: Compaction tests shall be performed in accordance with AASHTO T191 and ASTM D 2922. Maximum compaction shall be determined in accordance with AASHTO T99.

CONTRACTOR shall establish a compaction method or pattern which results in the proper density for the material utilized in the backfill operation. CONTRACTOR shall verify the compaction method by testing each lift for density in the first run of pipe to be laid. Upon satisfactory performance and approval of the ENGINEER the established compaction method shall be used for compaction of each lift of similar material.

The CONTRACTOR shall provide additional density testing to verify the compaction effort; twice in random locations as selected by the ENGINEER every 1,500 linear feet of pipe, if there is a

change in material, or if in the sole opinion of the ENGINEER the compaction effort is not yielding the proper results.

(Number of Compaction Tests)

AASHTO T-99	
AASHTO T-191	or
ASTM D 2922	
Select Backfill Material OR Stabilization Material	1
One per 100 CY	
Bedding Material	2
One per 600 LF	
Tamped Backfill	2
One per 600 LF	

6.6 INFILTRATION/EXFILTRATION/LAMP TEST: The Contractor shall provide all plugs, water supply, measuring devices, and all other equipment, material, labor and supervision to measure the infiltration and exfiltration tests as specified below. The Contractor shall perform the test in the presence of the Engineer. All gravity sewer pipe shall be tested in accordance with the following applicable requirements.

A. Infiltration Test: The infiltration test shall be conducted between adjacent manholes. The outlet pipe on the downstream manhole shall be plugged and tested for water tightness to the satisfaction of the Engineer. The accumulated depth of water in the downstream manhole shall be read at 12 hour intervals for two (2) days and the infiltration rate calculated from the data obtained. Any section exceeding an infiltration rate of 200 gallons/day/inch diameter/mile shall be relayed at the Contractor's expense. This means that the Contractor shall locate and repair leaks as necessary to pass the infiltration test. Infiltration test shall be utilized only when ground water is above pipe.

B. Low Pressure Air Test: Air test shall be conducted in strict accordance with the manufacturer's instructions, including all recommended safety precautions. Equipment used for air testing shall be specifically designed for such and include a monitoring gauge with 0 to 5 psi with a minimum division of 0.1 psi and an accuracy of no less than 0.05 psi

1. Air testing shall be conducted for completed gravity sewer mains
2. After an internal pressure of 4.0 psi is obtained, allow at least 2 minutes for pressure to stabilize, adding only the amount of air necessary to maintain pressure. After stabilization period, adjust the pressure to 3.5 psi and valve off air supply.

3. Determine the minimum pressure holding time allowed for pressure to drop from 3.5 psi to 3.0 psi as shown on the table below.

Minimum Holding Time for Low Pressure Air Test

Nominal Pipe Size (inches)	Time per 100 ft.
6	42 sec.
8	1 min. - 12 sec.
10	1 min. - 30 sec.
12	1 min. - 48 sec.
15	2 min. - 6 sec.
18	2 min. - 24 sec.
21	3 min.
24	3 min. - 36 sec.
27	4 min. - 12 sec.
30	4 min. - 48 sec.
33	5 min. - 24 sec.
36	6 min.

C. Visual Test: Gravity sewer lines will be lamped and shall show a true line between manholes without defects in conditions, grade, or alignment. Any defective lines shall be subject to a closed-circuit television inspection performed at the Contractor's expense.

6.7 DEFLECTION TESTS: 100% of the PVC gravity sewer mains shall be tested 30 days after the final backfill has been in place by the following method:

Use a "Go-, no-go" mandrel which is sized to such dimensions that it will not "go" when encountering a deflection greater than 5%. The instructions for its use are as follows:

A. Completely flush the line making sure the pipe is clean of any mud or debris that would hinder the passage of the mandrel.

B. During the final flushing of the line, attach a floating block or ball to the end of the mandrel, pull rope and float the rope through the line. (A nylon ski rope is recommended)

C. After the rope is threaded through the line, connect the pull rope to the mandrel and place the mandrel in the entrance of the pipe.

D. Connect a retrieval rope to the back of the mandrel to pull it back if necessary.

E. By hand, remove all the slack in the pull rope and place a tape marker on the top at the end of the pipe where the mandrel will exit, determining the location of the mandrel in the line.

F. By hand, draw mandrel through the sewer lines. If any irregularities or obstructions are encountered in the line, they shall be corrected by the Contractor.

G. If a section with excessive deflection is found, locate it; dig down and uncover the pipe; if any damaged pipe is found, replace it; if pipe is not damaged, realign and thoroughly tamping and initial backfill; replace remainder of backfill.

H. Re-test this section for deflection after 30 days from initial testing.

STANDARD SPECIFICATION
FOR LINING DUCTILE IRON PIPE
FOR SEWER SERVICE

1.0 Condition of Ductile Iron Prior to Surface Preparation

All ductile pipe and fittings shall be delivered to the application facility without asphalt, cement lining, or any other lining on the interior surface. Because removal of old linings may not be possible, the intent of this specification is that the entire interior of the ductile iron pipe and fittings shall not have been lined with any substance prior to the application of the specified lining material and no coating shall have been applied to the first six inches of the exterior of the spigot ends.

2.0 Lining Material

The Standard of Quality is Protecto 401 Ceramic Epoxy. The material shall be an amine cured novalac epoxy containing at least 20% by volume of ceramic quartz pigment. Any request for substitution must be accompanied by a successful history of lining pipe and fittings for sewer service, a test report verifying the following properties, and a certification of the test results.

A permeability rating of 0.00 when tested according to Method A of ASTM E-96-66, Procedure A with a test duration of 30 days.

The following test must be run on coupons from factory lined ductile iron pipe:

ASTM B-117 Salt Spray (scribed panel) - Results to equal 0.0 undercutting after two years.

ASTM G-95 Cathodic Disbondment 1.5 volts @ 77°F. Results to equal no more than 0.5mm undercutting after 30 days.

Immersion Testing rated using ASTM D-714-87.

20% Sulfuric Acid - No effect after two years.

140°F 25% Sodium Hydroxide - No effect after two years.

160°F Distilled Water - No effect after two years.

120°F Tap Water (scribed panel) - 0.0 undercutting after two years with no effect.

An abrasion resistance of no more than 3 mils (.075mm) loss after one million cycles using European Standard EN 598: 1994 Section 7.8 Abrasion Resistance.

3.0 Application

Applicator

The lining shall be applied by a certified firm with a successful history of applying linings to the interior of ductile iron pipe and fittings.

Surface Preparation

Prior to abrasive blasting, the entire area to receive the protective compound shall be inspected for oil, grease, etc. Any areas with oil, grease, or any substance which can be removed by solvent, shall be solvent cleaned to remove those substances. After the surface has been made free of grease, oil or other substances, all areas to receive the protective compounds shall be abrasive blasted using sand or grit abrasive media. The entire surface to be lined shall be struck with the blast media so that all rust, loose oxides, etc., are removed from the surface. Only slight stains and tightly adhering oxide may be left on the surface. Any area where rust reappears before lining must be reblasted.

Lining

After the surface preparation and within 8 hours of surface preparation, the interior of the pipe shall receive 40 mils nominal dry film thickness of Protecto 401. No lining shall take place when the substrate or ambient temperature is below 40 degrees Fahrenheit. The surface also must be dry and dust free. If flange pipe or fittings are included in the project, the lining shall not be used on the face of the flange.

Coating of Bell Sockets and Spigot Ends

Due to the tolerances involved, the gasket area and spigot end up to 6 inches back from the end of the spigot end must be coated with 6 mils nominal, 10 mils maximum using Protecto Joint Compound. The Joint Compound shall be applied by brush to ensure coverage. Care should be taken that the Joint Compound is smooth without excess buildup in the gasket seat or on the spigot ends. Coating of the gasket seat and spigot ends shall be done after the application of the lining.

Number of Coats

The number of coats of lining material applied shall be as recommended by the lining manufacturer. However, in no case shall this material be applied above the dry thickness per coat recommended by the lining manufacturer in printed literature. The maximum or minimum time between coats shall be that time recommended by the lining material manufacturer. **To prevent delamination between coats, no material shall be used for lining which is not indefinitely recoatable with itself without roughening of the surface.**

Touch-Up & Repair

Protecto Joint Compound shall be used for touch-up or repair in accordance with manufacturer's recommendations.

4.0 Inspection and certification

Inspection

All ductile iron pipe and fitting linings shall be checked for thickness using a magnetic film thickness gauge. The thickness testing shall be done using the method outlined in SSPC-PA-2 Film Thickness Rating.

The interior lining of all pipe barrels and fittings shall be tested for pinholes with a nondestructive 2,500 volt test. Any pinholes found shall be repaired prior to shipment.

Each pipe joint and fitting shall be marked with the date of application of the lining system along with its numerical sequence of application on that date and records maintained by the applicator of his work.

Certification

The pipe or fitting manufacturer must supply a certificate attesting to the fact that the applicator met the requirements of this specification, and that the material used was as specified.

5.0 Handling

Protecto 401 lined pipe and fittings must be handled only from the outside of the pipe and fittings. No forks, chains, straps, hooks, etc. shall be placed inside the pipe and fittings for lifting, positioning, or laying. The pipe shall not be dropped or unloaded by rolling. Care should be taken not to let the pipe strike sharp objects while swinging or being off loaded. Ductile iron pipe should never be placed on grade by use of hydraulic pressure from an excavator bucket or by banging with heavy hammers.

MANHOLES

1.0 GENERAL:

This item shall consist of furnishing all materials, labor, supervision, tools, equipment and incidentals for the construction of standard manholes, in accordance with the Contract Drawings and Specifications. Included in the work are structural excavation, backfill, and disposal of excess material.

2.0 APPLICABLE DOCUMENTS:

The following publications form a part of this specification and where referred to by basic designation only, are applicable to the extent indicated. The latest editions of the publications referenced shall apply to the work.

American Society for Testing and Materials (ASTM)

A 48/A48M	Standard Specification for Gray Iron Casting
C 39/C39M	Standard Specification for Test for Compressive Strength of Cylindrical Concrete Specimens
C 443	Standard Specification for Joints for Circular Concrete Pipe and Manholes Using Rubber Gaskets
C 478	Standard Specification for Precast Reinforced Concrete Manhole Sections
C 497	Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile
C 2922	Density of Soil and Soil Aggregate in Place by the Nuclear Method (Shallow Depths)

American Association of State Highway and Transportation Officials (AASHTO):

M-198 Standard Specifications for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.

T-99 Standard Method of Test for the Moisture-Density Relations of Soils Using a (2.5kg) Rammer and (305 mm) Drop.

T-191 Standard Method of Test for Density of Soil In-Place by the Sand-Cone Method.

3.0 SUBMITTALS

The following tests or data shall be submitted to the Engineer from the Contractor for approval prior to incorporation into the work:

3.1 Certificates: The Contractor shall furnish certificates from supplier certifying the products conform to the required specifications included herein for the following items:

- 3.1.1. Flexible Plastic Gaskets
- 3.1.2. Precast Manhole Bases
- 3.1.3. Precast Manhole Riser Sections
- 3.1.4. Manhole Steps
- 3.1.5. Manhole Frames and Covers (ASTM A 48)
- 3.1.6. Epoxy Grout

3.2 Catalogue Cuts or Brochures: The Contractor shall also submit catalogue cuts or product brochures providing descriptive data, recommended application and use, and installation procedure for the following items:

- 3.2.1. Manhole Frames and Covers
- 3.2.2. Epoxy Grouts
- 3.2.3. Manhole Steps

4.0 MATERIALS

4.1 Manhole Riser Sections: Manhole riser sections shall be precast reinforced sections conforming to ASTM C 478 and as shown on the Contract Drawings.

4.2 Joints: Joints for precast riser sections shall be concrete pipe type flexible plastic gaskets. Joint material shall be pre-formed conforming the requirements of AASHTO M-198. Installation shall be in accordance with manufacturer's recommendations.

4.3 Concrete Manhole Bases: Concrete manhole bases shall be precast or cast-in-place as follows:

4.3.1 Cast-In-Place Manhole Bases and Box Type Bases (if used): Concrete and reinforcing steel shall conform to the requirements of Technical Specifications - CONCRETE.

4.3.2 Precast Concrete Bases: Precast concrete bases shall conform to the requirements of ASTM 478 with reinforcing steel (size and spacing as indicated on the plans).

4.4 Manhole Steps: Manhole steps shall be plastic coated corrosion resistant with a minimum

design load of 300 pounds and shall be installed as shown on the Contract Drawings.

4.5 Cement Grout: Cement grout shall be high strength, non-metallic conforming to Corps of Engineers CRD-C-588. The grout shall be V-3 by W. R. Meadows, Inc., Masterflow 713 by Master Builders or equal.

4.6 Manhole Frame and Covers: Manhole frame and covers shall conform to ASTM A 48 as well as to the following requirements. All frame and covers shall be new when installed for the project and shall meet AASHTO H-20 loading condition.

4.6.1 Standard Manhole Cover and Frame - shall be as manufactured by Dews Foundry, Jackson Standard, Model DF-25 (7) or Vulcan Foundry, Model V-1115, 420 Pounds, marked "CITY OF HATTIESBURG SEWER", domestic origin, or equal.

4.6.2 Water Tight Manhole Cover and Frame - shall be as manufactured by Vulcan Foundry, Model V2357, or Dews Foundry, Model DF-25(7)W.T., 410 pounds with neoprene gasket, four 5/8 inch stainless steel bolts recessed into cover. Cover labeled "CITY OF HATTIESBURG SEWER", domestic origin, or approved equal.

4.7 Epoxy Grout: Epoxy Grout shall be high strength non-metallic, non-shrinking. The grout shall be as by EMBECO, Inc., SEAL-COAT or approved equal.

4.8 Drop Manholes: Concrete for drop manholes shall conform to the requirements of Technical Specifications - CONCRETE. Pipe and fittings shall be the same material and size as the incoming gravity sewer.

4.9 Flexible Connection: At all sewer connections to manholes, provide gasket flexible watertight connection that allows for differential settlement of the pipe and manhole wall. Bands, clamps and other metal accessories shall be of Series 304 stainless steel.

4.10 All manholes: All manholes shall be lined inside with a twenty (20) mil dry film thickness of an acceptable coal tar epoxy system.

5.0 CONSTRUCTION

5.1 Earthwork

5.1.1 General: Excavation shall be to the extent required to allow proper construction of the manhole. Shoring and sheeting shall be utilized where required by Federal, State and local codes and regulations for safe working conditions. In addition, shoring and sheeting shall be required to protect the integrity of adjacent structures or prevent adverse effects on surrounding areas. Dewatering shall be employed to the extent required to allow dry working conditions.

5.1.2 General Excavation: The Contractor shall "lay back" or employ shoring and sheeting as required to assure stability of the excavation. Material shall be stockpiled so as not to surcharge adjoining pipe trenches. Topsoil shall be separated so as to allow the maximum reuse in grassing operations.

5.1.3 Structural Excavation: The area immediately beneath the manhole bases shall be graded and compacted. Compaction shall be to 96% of maximum laboratory density as determined by AASHTO T 99. Should unsuitable material be encountered, the Engineer may direct that the area be over excavated and filled with stabilization material. Specification for stabilization material and payment for such shall be in accordance with Technical Specifications.

5.1.4 Backfilling: Backfill material shall consist of select backfill in accordance with Technical Specifications. Backfilling shall be uniformly placed around the structure in 10-inch layers and be compacted to 90% of maximum density to full depth in unimproved areas. Backfill in paved areas and within five feet to any edge of pavement shall be compacted to 95% of maximum laboratory density in 6-inch layers to the subgrade line. Refer to Technical Specifications.

5.1.5 Salvage: Manhole frames and covers removed during excavation shall remain the property of the Owner and shall be delivered to a location designated by the Owner. All other items removed shall be disposed of by the CONTRACTOR at his expense.

5.2 Riser Installation: Precast concrete riser sections shall be installed plumb and in accordance with the details shown on the Contract Drawings. Joints shall be installed in accordance with manufacturer's recommendations.

The manhole invert channels shall be formed in the bases, smooth and semi-circular in shape conforming to the inside of the adjacent sewer section. Changes in the direction of flow shall be made with a smooth curve of as large a radius as the size of the manhole will permit. Changes in size and grade of the channels shall be formed directly in the concrete of the manhole base. The joint between the base and riser section shall be sealed with epoxy grout. Clean pea gravel shall be used as the epoxy grout filler.

Standard manhole cut-outs and lifting holes shall be sealed with epoxy grout.

5.3 Cast-In-Place Concrete: Bases, flat tops, and drop manhole risers shall be constructed in accordance with Technical specifications - CONCRETE.

5.4 Manhole Steps: Manhole steps shall be installed during the manufacturing of the riser or cone sections. Risers and cones shall be joined so the steps are vertically aligned.

5.5 Manhole Frame and Covers: Manhole frame and covers shall be set and grouted in place

with cement grout. For manholes located in roads or streets, the manhole cover shall be flush with pavement or surface course.

6.0 TESTING

6.1 General: The Contractor shall conduct (and bear the cost of) all testing (Laboratory Approved by the Owner) as directed by the Engineer and furnish results of such tests prior to incorporating the material into the work. All testing is subsidiary to Manhole Payment Items.

6.1.1 Cast-In-Place Concrete Items: The concrete quality testing for manhole bases, drop manholes, and valve boxes shall be tested in accordance with Technical specifications - CONCRETE.

6.1.2 Manhole Risers and Precast Concrete Bases: Manhole risers and precast concrete bases shall be tested for concrete compressive strength. If the place of manufacture is local and reasonably available to the Engineer, Paragraph (a) shall be followed for testing requirements. Should the place of manufacture not be available, Paragraph (b) shall apply.

The contractor shall prepare (in the presence of the Engineer) standard rodded concrete cylinder or cylinders compacted and cured in a similar manner to the manhole sections. Concrete for such cylinders shall be typical fresh concrete mix drawn from the actual casting operation of a riser or base. Cylinders shall be tested in accordance with ASTM C 39. The average compressive strength shall be equal to or greater than the specified design strength (4000 psi). Not more than 10% of the cylinders shall fall below the design strength (4000 psi). In no case shall any cylinder tested fall below 3200 psi. Number of such cylinder tests shall be as follows:

6.1.2.1 One set of cylinders for each day's run castings or

6.1.2.2 One set of cylinders for each 200 linear feet of riser sections manufactured.

6.1.2.3 One set of cylinders per 20 bases or flat tops manufactured.

The Engineer may require additional tests should compressive test results fail.

6.1.3 Earthwork Test: Maximum laboratory density shall be measured in accordance with AASHTO T-99. Field densities shall be determined in accordance with AASHTO T-191 or ASTM D 2992. Standard proctors and field densities shall be performed in accordance with the following schedule.

Standard proctor tests shall be required for earthwork associated with manhole construction. At least two (2) field density tests shall be conducted for earth work associated with each manhole construction.

6.1.4 Inspection for Watertightness: All manholes shall be inspected for watertightness prior to placing into service.

RESTORATION OF ROADS, DRIVEWAYS, FENCES

LAWNS AND OTHER GRASSED AREAS

1.0 GENERAL

The work under this item of work shall consist of furnishing all necessary materials, labor, supervision, tools, equipment and incidentals for the restoration of roads, driveways, fences, lawns and other grassed areas so as to provide satisfactory repair to all damage caused by general construction work. It is the intent of this Specifications to restore all such features to the general conditions that existed prior to construction activity insofar as practical. It is not the intention of this Specification that trees, which must be cut and removed, be restored. The Contractor is expected to be familiar with the overall area and be satisfied as to the materials required and level of effort needed to accomplish such restoration in accordance with this Specification.

2.0 APPLICABLE PUBLICATIONS

The following publications form a part of this specification and where referred to by basic designation only, are applicable to the extent indicated. The latest editions of the publications referenced shall apply to the work:

American Association of State Highway and Transportation Officials (AASHTO).

- T 99 Standard Method of Test for the Moisture Density Relations of Soils Using a 5.5 lg. (2.5 kg) Rammer and a 12-inch (305 mm) Drop.
- T 167 Compressive Strength of Bituminous Mixture
- T 191 Standard Method of Test for Density of Soil In-Place by the Sand-Cone Method
- T 230 Determining Degree of Pavement Compaction of Bituminous Aggregate Mixtures

American Society for Testing and Materials (ASTM)

- D 2922 Density of Soil and Soil Aggregate in Place by the Nuclear Method (Shallow Depths)

Mississippi Department of Transportation (MDOT)

Standard Specifications for Road and Bridge Construction, Current Edition.

Manual on Uniform Traffic Control Devices for Streets and Highways (MUTCD)

3.0 SUBMITTALS

3.1 Mix Designs: Design mix will be provided by Contractor and approved by Engineer prior to production of asphalt.

4.0 MATERIALS

4.1 Subbase and Base Courses: Subbase and base courses under paved areas shall be as specified in MDOT Specification Section 301.

4.2 Prime Coat: Prime coat shall consist of Grade MC-30 or Grade MS-70 in accordance with the applicable requirements of MDOT Specification Section 702.

4.3 Bituminous Pavement: Bituminous Pavement for roadway and parking areas, wearing and binder courses, shall consist of a mix in accordance with MDOT Specifications Section 403. Materials shall conform to the following subsection of MDOT Specifications Sections 702 and 703.

A. **Hot Mix Asphalt All Sizes:** Mississippi Standard Specifications for Road and Bridge Construction, Latest Edition

B. **Topsoil:** Topsoil shall be in accordance with Technical Specifications – SEEDING AND SODDING.

C. **Seeding and Sodding:** Seeding and sodding operations shall be in accordance with Technical Specifications - SEEDING AND SODDING.

5.0 CONSTRUCTION

5.1 Maintenance of Traffic: Prior to limiting or restricting traffic on any street or road, the Contractor shall obtain permission from the Engineer. Through or local traffic shall at all times be accommodated by the use of temporary approaches, crossings or detours (if allowed by the Engineer). Satisfactory (to the Property Owner) ingress and egress to any public or private property shall be properly maintained. Proper barricades, signs and detour signs shall be provided by the Contractor to adequately warn motorists of obstructions ahead. Lighted (flashing) barricades shall be used at night.

Flagmen shall be provided to direct traffic around equipment and for one way movement of

traffic around equipment and for one way movement of vehicles. The Contractor may have to stop construction and restore full traffic during certain rush hours.

The Contractor shall at all times (unless otherwise permitted in writing by the Engineer) maintain open one lane to traffic during construction operations and restore roadways to two-way traffic during non-construction hours. All traffic shall be maintained in accordance with the MUTCD, current Edition.

5.2 Repair of Asphalt/Concrete Streets/Driveways/Parking Lots:

A. Removal and Earthwork: The existing asphalt pavement shall be uniformly saw cut on straight lines and the material shall be removed. Other methods of cutting the existing asphalt surface which will result in a uniform straightedge similar to a sawed cut may be acceptable. Upon completion of the pipe laying, select backfill shall be placed in the excavation in maximum 8-inch lifts and compacted to at least 90% of maximum laboratory density to within one foot of the top subgrade and to 95% of maximum laboratory density in the upper one foot of the subgrade.

Maximum density of typical select backfill material shall be determined in accordance with AASHTO T 191 or ASTM D 2922. Portable mechanical tampers or vibratory compactors shall be used in the trenches. Rollers may be used at street level. Existing base and asphalt surfaces which become undermined during construction shall be removed until firm undisturbed subgrade is reached.

A. Select Fill: Class 9, Group "C" Modified for a PI of between 5 and 15 as per latest Edition of Mississippi standard specifications for Road and Bridge construction

B. Asphalt Repair: Temporary Asphalt repair shall be made using 3" thickness of 825 crushed stone.

C. Concrete Repair: Concrete repair shall be made using 3,000 psi concrete meeting Technical Specifications - CONCRETE

D. Prime Coat: Prime coat shall be applied to exposed existing base material prior to overlay with asphaltic base course in accordance with MDOT Specification Section 408.

F. Tack Coat: Tack coat shall be applied to existing or new asphaltic wearing course and asphaltic base, or concrete which is to require asphalt wearing course.

G. Asphalt Wearing Course: Placement and compaction of the bituminous pavement shall be in accordance with MDOT Specification Section 403.03.

E. Utilities: All utility covers excavated during removal of streets, driveways, parking lots shall be restored to finished grade.

5.3 Driveways and Sidewalks: Driveways and sidewalks shall be repaired in similar manner to the original construction. Asphalt drives shall be saw cut where required and repaired in accordance with Paragraph (b) of this Specification. Concrete drives shall be saw cut or removed to the next joint. The minimum thickness for concrete driveway repair is 7 inches and for sidewalks is 4 inches.

Concrete surfaces shall be properly tooled and receive a broom finish. Installation (if required) of new driveway drainage culvert shall be made only at the direction of the Engineer. The Contractor shall take all reasonable precautions to allow for reuse of existing drainage culverts.

5.4 Repair to Gravel Roads: Gravel roads shall be backfilled and compacted in accordance with Paragraph (B) of this Specification. The final surface shall consist of 12-inch in-place compacted clay gravel. Compaction shall be to 100% of maximum laboratory density in accordance with AASHTO T99.

5.5 Repair to Lawns:

A. General: The Contractor shall exercise extreme care to minimize damage to improved lawns. Trees and shrubs within the limits of work shall be removed only for essential construction requirements. Any shrubs, which are removed or damaged, shall be replaced by satisfactory (to the Property Owner) planting by the contractor. Any grass seed areas, roads, streets, driveways, culverts, fences, water lines, metal boxes or other items (excluding trees unavoidably cut) which are damaged by the Contractor, shall be satisfactorily restored by Contractor. Acceptance of improved lawn repairs shall be based on the firm establishment of live stand of grasses and live growth of any replanted and acceptable shrubs. The Contractor shall water and fertilize such areas until healthy growth of grass (and shrubs, if applicable) are attained.

B. Grading: The surface areas shall receive finish grading so the finish topsoil surface (after settlement) will meet the existing contour grade of the area prior to construction. The natural drainage during and after construction shall not be altered so as to cause adverse effects to adjoining properties.

C. Topsoil: The Contractor shall strip topsoil and sod and stockpile for later use. Upon completion of trenching over the area. Additional topsoil shall be furnished if required (at no additional cost) to provide a uniform thickness of 3 inches. Lime at a rate of 1 - ½ tons per acre and fertilizer (13-13-13) at a rate of 800 pounds per acre shall be applied as needed to further establish grass growth.

D. Grassing: Grass seed, sprigs, or sod similar to the existing lawn grasses shall be planted in accordance with the supplier's recommendations. Winter cover grasses such as rye grass shall be applied (in addition to planting the permanent grasses) if seeding, sprigging, or sodding is done at a time of year when the permanent grasses will not actively grow. The type (s) of permanent grasses shall be the same as the grass (es) in the damaged lawns. If the lawn repairs are accomplished between September 1 and March 1, the Contractor shall continue the restoration

work during the next period of March 15 and April 5 and mow the grass and continue the restoration until satisfactory growth of the permanent grass (es) is obtained. Such additional restoration work shall include the 1 - ½ tons of lime per acre, application of 13-13-13 fertilizer at a rate of 800 pounds per acre and replanting and watering permanent grass as necessary to obtain satisfactory (to Engineer) growth. No time will be charged against the Contract Time for any such additional restoration work.

Sodding: Sodding shall be in accordance with Technical Specifications: - Seeding and Sodding

5.6 Erosion Control: During all phases of construction, the Contractor shall adequately protect all work from adverse erosion. Soil shall not be allowed to flow off the limits of work area. The Contractor shall employ the use of ditch checks, matting, temporary grass cover, blankets, or other measures to control erosion. The Contractor shall be responsible to correct damage caused by erosion. During the construction of this project, all work areas will be strictly monitored. All trench lines will be kept in excellent condition, all streets and drives will receive careful maintenance, keeping potholes and settled areas filled in. Dust control is essential and will also be strictly monitored.

5.7 General Grassing of Unimproved Areas

A. General: The Contractor shall seed and establish grass growth in all disturbed areas in unimproved areas (to include pastures and roadsides). Acceptance of the grass cover shall be based upon the firm establishment of a live stand of grass. The contractor shall water such grass if natural rainfall fails to adequately provide moisture. On slopes and other areas subject to erosion, grassing shall be accomplished as soon as practical (within 48 hours unless weather is prohibiting) after finish grading operations.

B. Grading: The surface area shall receive finish grading so the finish topsoil surface (after settlement) will meet the existing contour grade of the area prior to construction. The natural drainage during and after construction shall not be altered so as to cause adverse effects to adjoining properties.

C. Topsoil: The Contractor shall remove existing topsoil and stockpile for later use. Upon completion of backfilling (to establish contours as before construction), the topsoil shall be uniformly spread back over the area. The Engineer may require additional topsoil be furnished by the Contractor at no expense to the project, if in the opinion of the Engineer, adequate provisions and efforts were not made by the Contractor to stockpile and re-use existing topsoil material.

D. Fertilizer and Agricultural Limestone: The Contractor shall uniformly apply 800 lbs. per acre of 13-13-13 fertilizer and also apply two (2) tons per acre of agricultural limestone to the area to be seeded. The fertilizer and limestone shall be tilled into the soil to a depth of four (4) inches.

E. Mulch Cover: Erosion prone areas such as steep slopes and highway shoulders shall receive a layer of loose straw mulch or equivalent at the rate of one and one-half (1-1/2) tons per acre. The mulch cover shall be established by the application of an emulsified asphalt or by "crimping" parts of the material into the soil.

5.8 Miscellaneous Items: Items such as fences, gates, paved ditches, and other items shall be replaced or repaired as required for restoration. Should additional fencing material be required, new post and new wire of similar size, type and gauge shall be provided and installed.

5.9 General Care: Reasonable care shall be taken during construction to avoid damage to vegetation. Ornamental shrubbery and tree branches shall be temporarily tied back, where appropriate, to minimize damage. Trees, which do not have to be removed in the opinion of the Engineer, and which receive damage to branches shall be trimmed of those branches to improve the appearance of the tree. Tree trunks receiving damage from equipment shall be treated with a tree dressing.

6.0 TESTING

6.1 General: All sampling and testing shall be accomplished by the testing laboratory approved by the Owner and employed by the Contractor to perform such services. Results shall be immediately forwarded to the Engineer by the Contractor.

6.2 Earthwork: Earthwork directly involved with road and street repair shall be tested as follows:

A. Moisture Density Relationship (Standard Proctors): Two tests of sampled native material shall be required. Tests shall be in accordance with AASHTO T 99.

B. Field Density: A minimum of two and a maximum of four field density tests shall be required. Density tests shall be in accordance with AASHTO T 191 or ASTM D 2922.

C. Topsoil: Two pH tests and two organic content tests (wet combustion method) will be required.

SEEDING AND SODDING

1.0 DESCRIPTION

This item consists of furnishing all labor, supervision, materials, tools, incidentals and equipment and performing all work for topsoiling, tilling, fertilizing, seeding, watering, and otherwise establishing, protecting and maintaining seeded and sodded areas as required by the Contract Drawings and these specifications, and including repair, refertilizing and reseeding as required until final inspection and acceptance of the project.

2.0 SUBMITTALS

Certificates for fertilizer, limestone, seed.

3.0 MATERIAL

3.1 Topsoil: Topsoil shall be the surface layer of soil that is stockpiled by the Contractor during stripping and/or excavation on the site. The topsoil shall be free of subsoil, clay, lumps, stones, brush or seed. Topsoil shall have a pH value of not less than 4.5 nor more than 8.0.

3.2 Lime: Lime shall be ground limestone containing not less than 80% of total carbonates and shall be ground to such fineness that 80% will pass through a No. 10 mesh sieve and 40% will pass through a No. 40 mesh sieve.

3.3 Fertilizer: Fertilizer shall be water soluble commercial carriers of available plant food elements or combinations thereof, as stated herein and shall conform to the applicable state fertilizer laws. They shall be uniform in composition, dry, and free flowing materials in condition for application by suitable equipment. The fertilizer shall be delivered in standard bags or other convenient standard containers, each fully labeled with manufacturer's guaranteed analysis. Any fertilizer shall contain not less than the percentages by weight of the ingredients set out as follows: (1) Nitrogen, 13% (2) Phosphorous P O, 13%, (3) Potash K C, 13%. Invoices for fertilizer will show the kind and have analysis furnished.

3.4 Seed: Seeds with a minimum pure live seed content of 90% shall be used. They shall be of the best grade and of known vitality, purity, and germination and shall be delivered in containers bearing seed tags as required by law showing percentages of germination content and purity of seed as well as percentages of weed seed content.

All seeds shall be free of wild onion, Canadian thistle, Johnson grass, crab grass or other seeds of noxious weeds. All seeds shall be furnished in standard containers, or as acceptable to the Engineer. Seed which has become wet, moldy or otherwise damaged in transit or storage will not be acceptable.

Purity, Germination and Planting Schedule

Spring and Summer Seeding (March 1 to September 1)

<u>Name</u>	<u>Percent Purity</u>	<u>Percent Germination</u>	<u>Mix (Dry Wt. Lbs.) Per Acre</u>
Hulled Bermuda	95	90	20
Pensacola Bahia	95	90	30

TOTAL 50
Fall and Winter Seeding (September 1 to March 1)

<u>Name</u>	<u>Percent Purity</u>	<u>Percent Germination</u>	<u>Mix (Dry Wt. Lbs.) Per Acre</u>
Unhulled Bermuda	95	90	20
Pensacola Bahia	95	90	30
Rye	95	85	15
Crimson Clover	95	85	8

TOTAL 73

Seeding in Existing Lawns: Grass seeds for existing lawns shall be the same as the existing grass.

3.5 Leguminous Inoculants: Inoculation media containing live nitrogen-fixing bacteria shall be supplied with all legume seed. The inoculants shall be standard, pure culture of nitrogen-fixing bacteria. Each kind of legume will require a cultural bacteria that is adapted to that particular kind of seed. The bacteria shall be supplied in convenient containers of a proper size to treat the amount of seed to be planted. The legume seeds shall be treated according to the directions, and before the expiration date for use of the media shown on the container.

3.6 Soil for Repairs: For fills or areas to be repaired, soil shall be topsoil of a least equal quality to that which exists in areas adjacent to the area to be repaired.

3.7 Water: Water shall be free from oil, acid, alkali, salt, and other substances harmful to growth of grass, and shall be from a source accepted prior to use.

3.8 Solid Sod: Bermuda or Carpet Grass and shall be native to the locality of the work and shall, when placed be live, fresh, growing grass with at least two and one-half (2 ½) inches of soil adhering firmly to the roots. The sod shall be reasonably free from obnoxious weeds or other

grasses, and shall not contain any matter deleterious to its growth; or which might affect its subsistence or hardness when transplanted. The sod shall be in blocks at least 3" x 8", and free from ragged edges.

4.0 INSPECTION AND TESTS

4.1 Fertilizer and Limestones: Duplicate copies of material invoices shall be furnished to the Engineer. Invoices shall show quantities and grade of fertilizer, quantity of limestone, percentages of calcium carbonate and magnesium carbonate, as applicable, and the percentages of limestone that pass the No. 40 and the No. 10 mesh sieves. Samples of each lot of fertilizer and limestone shall be furnished for testing. Upon completion of project a final check of total quantities of fertilizer and limestone used will be made against total area treated, and if minimum rates of application have not been met, additional quantities of these materials to make up minimum application specified shall be distributed.

4.2 Seed: Contractor shall furnish to the Engineer duplicate signed copies of statement(s) from vendor(s), certifying that each container of seed delivered is labeled in accordance with Federal Seed Act and is at least equal to requirements specified therein. This certification shall be obtained from vendor and shall be furnished before application.

5.0. PREPARATION OF GROUND SURFACE

5.1 General: Equipment, in good operating condition, shall be used for the proper preparation of the ground and for handling and placing all materials. Equipment shall be acceptable before work is started.

5.2 Topsoiling: Topsoil shall be obtained from job site stockpiles formed during stripping and/or excavation operations and shall be free from subsoil, clay lumps, stones, brush, grasses or weeds, excess acids or alkali, or any other material to subsequent, smooth, grading, planting, and maintenance operations.

The topsoil shall be evenly spread on tilled areas to a uniform depth of at least 3 inches after compaction. Spreading shall be performed so that seeding can proceed with a minimum of soil preparation or tilling. After preplanting fertilization is completed, the topsoil shall be compacted by rolling with a cultipacker or by other approved means.

Rehabilitation of the stockpile areas shall include returning the area to near pre-construction conditions, including seeding of the area to re-establish the growth of grass.

5.3 Grading: Previously established grades shall be maintained on the areas to be treated in a true and even condition; necessary repairs shall be made to previously graded areas by means of graders or other approved equipment.

5.4 Tillage: After the areas required to be treated have been brought to the grades shown, the

soil shall be tilled to a depth of at least 4 inches by plowing, disking, harrowing, or other acceptable operations until the condition of the soil is acceptable. The work shall be performed only during period when beneficial results are likely to be obtained. When drought, excessive moisture, or other unsatisfactory conditions prevail, the work shall be stopped when directed. Undulations or irregularities in the surface shall be leveled before the next specified operation.

6.0 APPLICATION OF FERTILIZER AND LIMESTONE

6.1 Preplanting fertilization of areas to be seeded: Fertilizer shall be distributed uniformly at a rate of 800 pounds per acre over areas to be seeded and shall be mixed into the soil to a depth of at least 4 inches by disking, harrowing, or other acceptable methods. Application of fertilizer may be part of the operation specified in Section 5.4: TILLAGE of this specifications.

6.2 Liming: Immediately following or simultaneously with incorporation of fertilizer, limestone shall be distributed uniformly at a rate of 4000 pounds per acre, and shall be mixed into the soil to a depth of at least 4 inches by disking , harrowing, or other acceptable methods. Application of limestone along with fertilizer may be part of the operation specified in Section 5.4: TILLAGE of this specifications.

6.3 Leveling: Surface irregularities resulting from tillage, fertilizing, liming, or other operations shall be leveled before seeding.

6.4 Postplanting fertilization: From 40 to 60 days after seeding, ammonium nitrate or its nitrogen equivalent shall be applied uniformly at a rate of 225 pounds per acre over areas seeded. Fertilizer shall be applied when grass blades are dry to minimize burning. The planted area shall be watered to thoroughly moisten the upper 6 inches of the soil surface after the fertilizer is applied.

7.0 PLANTING SEED

7.1 General : A satisfactory method of sowing shall be employed, using approved mechanical power-drawn drills or seeders, or other approved methods. When drills are used, markers or other means shall be provided to insure that the successive seeded strips will overlap or be separated by a space no greater than 6 inches. When delays in operations extend the work beyond the most favorable planting season for species designated or when conditions are such by reason of drought, high winds, excessive moisture, or other factors that satisfactory results are not likely to be obtained, work shall be halted as directed and resumed only when conditions are favorable or when approved alternate or corrective measure and procedures have been effected. If inspection during or after seeding operations indicates that strips wider than 6 inches have been left unplanted or other areas skipped, additional seed shall be sown.

7.2 Broadcast Seeding: Seeding shall be broadcast either by hand or with acceptable seeding equipment, in combination with fertilizer, or with other acceptable sowing equipment. Seed shall be distributed uniformly over designated areas. Half of the seed shall be sown with sower moving

at right angles to first sowing. Seed shall be covered to an average depth of 1/4 inches by brush harrow, spiketooth harrow, chain harrow, cultipacker, hand rake with wood tines, or other approved device. Seed shall not be broadcast during windy weather.

7.3 Drill Seeding: Drill seeding shall be accomplished with approved equipment with drills set not more than 6 inches apart. Seed shall be sown uniformly over designated areas to average depth of 1/4 inch.

7.4 Sodding: All solid sod shall be procured areas where the soil is fertile and contains a high percentage of loamy topsoil, and from areas that have been grazed or mowed sufficiently to form a dense turf.

Mechanical devices, such as sod cutter, may be used for cutting the sod into strips or blocks. Care shall be exercised at all times to retain the native soil on the roots of the sod during the process of excavating, hauling and planting.

The solid sod blocks shall be transplanted within 24 hours from the time of cutting, unless they are stacked, to their destination in a manner satisfactory to the Engineer. All solid sod in stacks shall be kept moist and protected from exposure to the air and sun, and from freezing. In no event shall more than two (2) days elapse between the cutting and planting of the solid sod.

Solid sod shall be planted during the period between March 1st and December 15th, unless written permission is given by the Engineer to extend the planting season. The solid sod shall be placed on the prepared surface with the edges in close contact. All cracks between blocks of solid sod shall be closed with small pieces of fresh sod, and all cracks too small for sod shall be filled by a light dressing of topsoil. The entire sodded area shall then be compacted and watered to the satisfaction of the Engineer. Rollers, hand tamps or other approved equipment may be used for compacting.

Surfaces of solid sodding which, in the opinion of the Engineer, may slide due to the height and slope of the surface or nature of the soil, shall, upon direction of the Engineer, be "pegged" with wooden pegs driven through the sod blocks into firm earth, sufficiently close to hold the sod in place.

8.0 MAINTENANCE

Seeded areas shall be maintained until all work or designated portions thereof have been completed and accepted. Tall grass and weeds that tend to impede the desired grass species shall be mowed, and any damage resulting from these operations shall be repaired at the Contractor's expense.

9.0 ESTABLISHMENT OF GROWTH

9.1 General : The Contractor shall be responsible for proper care of seeded areas while grass is becoming established for three (3) months after completion of treatment on the entire project, unless desired cover is established in a shorter period of time and the Owner shortens responsibility period. The Contractor shall be responsible for providing a satisfactory stand of grass. A satisfactory stand of grass is determined as a cover of living grass in which gaps larger than 12 inches square do not occur as determined by an acceptance inspection made at the end of the maintenance period. Maintenance work shall be performed at the Contractor's expense.

9.2 Mowing: Seeded and sodded areas shall be mowed with acceptable mowing equipment to a height of about 4 inches when average height of grass becomes about 8 inches. When amount of cut grass is heavy, grass shall be removed to prevent destruction of underlying turf. If weeds or other undesirable vegetation threatens to impede the growth of planted species, such vegetation shall be mowed, or in case of excessive growth, shall be uprooted, raked and removed from area.

9.3 Refertilizing: The Contractor will determine areas needing refertilization at least 15 days before application is required. Fertilization shall be distributed on designated area during periods when grass is dry. 13-13-13 grade fertilizer shall be applied uniformly at a rate of 800 pounds per acre. Fertilizer conforming to physical condition, packaging and marking as specified herein before shall be provided.

9.4 Reseeding: The Contractor will determine areas requiring reseeding at least 15 days before period specified for reseeding. Seed specified hereinbefore shall be drilled at rates hereinbefore specified, in a manner that will cause minimum disturbance to existing stand of grass, and at an angle of not less than 15 degrees from direction of previously seeded rows.

CONCRETE

1.0 GENERAL

- A. This item shall consist of furnishing all materials, labor, supervision, tools, equipment and incidentals and performing all forms of work; furnishing and placing reinforcement, inserts and anchors; mixing, placing, curbing, and furnishing of portland cement concrete.
- B. The work includes, but is not necessarily limited to manholes, pumping stations, lift stations, driveways, and minor concrete work.

2.0 APPLICABLE DOCUMENTS

The following publications form a part of this Specification and where referred to by basic designation only, are applicable to the extent indicated. The latest editions of the publication referenced shall apply to the work.

A. American Society for Testing and Materials (ASTM):

- A 615 Billet Steel for Concrete Reinforcement
- C 31 Making and Curing Concrete Compressive and Flexural Strength Test Specimens in the Field
- C 33 Concrete Aggregates
- C-39 Compressive Strength of Molded Concrete Cylinders
- C 143 Slump of Portland Cement Concrete
- C 150 Portland Cement

B. Mississippi Department of Transportation (MDOT):

Standard Specifications for Road and Bridge Construction, Latest Edition.

3.0 SUBMITTALS:

The following data shall be submitted to the Engineer for review prior to incorporation into the work:

- A. Letter from the manufacturer certifying the concrete mix conforms to the requirements for Class B concrete as defined in Section 804 of the MDOT Standard Specifications for Road and Bridge Construction.

B. Letter of certificate from the manufacturer certifying that the reinforcing steel conforms to the herein specified requirements.

4.0 MATERIALS:

A. General: The concrete shall be ready-mix concrete manufactured by a plant for delivery to the site of the work in a plastic state. The Contractor may batch the concrete at the work site by use of portable mixers providing the following requirements are met:

1. Facilities shall be provided to properly weight, proportion and control the components of the concrete mix.

2. The mixer(s) shall be of such capacity so as to allow the complete placement of the plastic concrete mix prior to the initial set of any portion of the particular concrete pour.

B. Concrete Mix: The concrete materials and mix design, shall conform to the requirements for Class B concrete Section 804, MDOT Standard Specifications for Road and Bridge Construction. The compressive strength of the concrete shall be a minimum of 3000 psi at 28 days, or earlier. Type I Portland Cement shall be used in the mix, except where otherwise specified or permitted. Prior to producing any concrete for cast-in-place construction on the project, the Contractor shall submit to the Engineer the proposed mix design and shall obtain Engineer's approval of the mix design.

C. Reinforcing Steel - shall be new stock, deformed bars conforming to ASTM A 615, Grade 40 or Grade 60.

D. Curing Material - shall consist of wetted burlap, wetted cotton mats, plastic sheeting, or an approved liquid membrane material which will satisfactorily keep the new concrete in a moist condition for at least seven (7) days.

5.0 CONSTRUCTION:

A. Weather Limitations: Concrete shall be placed when the atmospheric temperature is a Minimum of thirty-five (35) degrees F. and rising. Newly placed concrete shall be protected from cold temperatures for at least four (4) days at a temperature of not less than forty (40) degrees F.

B. Forms: Forms shall be securely anchored in place and properly aligned. Wood forms shall be oiled prior to placement of fresh concrete mix.

C. Reinforcement: Reinforcing bars shall be securely mounted by the use of chairs or other approved methods so as to not become displaced during placement of concrete mix. The positioning of reinforcing by working the bars into the newly placed concrete mix shall not be allowed.

D. Placement: The plastic concrete mix shall be worked (and vibrated if required) into the formwork. The mix shall be consolidated so as to remove all voids and finished to form a true and level surface.

E. Curing: The hardened concrete shall be kept moist by the use of curing materials for a minimum of seven (7) days.

F. Slump Requirements: The following slump requirement shall apply:
Class B Concrete 2-4 Inches

G. Chamfered Corners: All exposed corners shall be chamfered one (1) inch or as indicated.

H. Finish:

1. All surfaces shall be "floated" to provide a uniform and level surface. Defects (honeycombs, ties, etc.) shall be repaired. No rubbing shall be required.

2. Sidewalks, driveways and other surfaces subject to pedestrian traffic shall be floated as noted in paragraph 1 above and shall receive a "broom" finish.

6.0 TESTING

The following test shall be required:

A. Slump: The Contractor shall test the concrete mix for conformance to the slump requirements as required. Test shall be in accordance with ASTM C 143.

B. Compressive Strength: The Contractor shall sample the concrete mix and prepare test cylinders for conformance to the compressive strength requirements. The Contractor shall transport the cylinders to the testing laboratory (employed by the Contractor) and have the cylinders tested in accordance with ASTM C 31 and C 39. The results of such test shall be forwarded to the Engineer. Test shall be performed at the following schedule.

One test per 15 cubic yards or major fraction thereof. A minimum of one test for each day of mixing shall be performed.

DUCTILE IRON WATER SYSTEMS

1.0 GENERAL

This item shall consist of furnishing all of the necessary materials, supervision, labor, tools, equipment and incidentals, and the installation of various types and sizes of water pipe and related items in accordance with the Contract Drawings and Specifications, as stated in the Proposal.

2.0 APPLICABLE PUBLICATIONS

The following publications form a part of these Specifications and where referred to by basic designation only, are applicable to the extent indicated. The latest editions of the publications referenced shall apply to the work.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- A 139 Electric-Fusion (Arc) welded steel pipe (sizes 4 inch and over).
- A 252 Welded and Seamless steel pipe piles.
- C 31 Making and Curing Concrete Compressive and Flexural Strength Test Specimens in the Field.
- C 33 Concrete Aggregates
- C 39 Test for Compressive Strength of Cylindrical Concrete Specimens.
- D 2922 Density of Soil Aggregate in place by the clear Method (shallow depths).

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

- 21.10 Gray Iron and Ductile Iron Fittings, 3 inch through 48 inch for Water and other Liquids.
- 21.11 Rubber Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe and Fittings.
- 21.50 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-line Molds, for Water or other Liquids.

AMERICAN WATER WORKS ASSOCIATION (AWWA)

- C 104 Cement-Mortar Lining for Cast Iron Pipe and Fittings for Water and Other Liquids.
- C 106 Cast Iron Pipe Centrifugally Cast in Metal Molds, for water and other Liquids.

C 110 Gray Iron and Ductile Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids.

C 111 Rubber Gasket Joints for Cast Iron and Ductile Iron Pressure Pipe and Fittings.

C 150 Ductile Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or other Liquids.

AMERICAN ASSOCIATION OF STATE HIGHWAY & TRANSPORTATION OFFICIALS (AASHTO)

T-88 Particle Size Analysis of Soils.

T-89 Determining the Liquid Limit of Soils.

T-90 Determining the Plastic Limit and Plasticity Index of Soils.

T-99 Moisture Density Relations of Soils Using a 5.5 lb. Rammer and 12 inch Drop.

T-191 Density of Soil In-Place by the Sand-Cone Method.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION

Standard Specifications for Road and Bridge Construction, Latest Edition.

3.0 SUBMITTALS

The following submittals shall be required for the respective materials used in the work. All submittals shall be submitted through the Contractor to the Engineer.

3.1 Ductile Iron Pipe: The following submittals shall be required for ductile iron pipe systems utilized on the project. The Contractor shall furnish manufacturer's certificates certifying that the pipe and fittings conform to the requirements as Specified hereinafter under Article 4.0, Materials. In addition, the submittals shall include the following:

A. **Joints:** The following shall be required for ductile iron joints.

1. Drawings or Manufacturer's Catalogue data indicating dimensions and tolerance.
2. Gaskets shall be tested in accordance with the respective standards as indicated in ANSI 21.11 and results shall be included in the submittals. Test shall be for similar materials on the gaskets and be not more than one year old.
3. **Mechanical Joints:** Should the Contractor elect to use mechanical joints in lieu of push-on joints, manufacturer's data shall be submitted in accordance with the "Special Requirements for the Mechanical Joint" as stated in ANSI 21.11 (AWWA C 111).

B. Ductile Iron Pipe Submittal Shall Include the Results of:

1. Tension Test
2. Impact Test
3. Low Temperature Impact Test

Sampling procedure shall be as indicated in ANSI 21.51.

4.0 MATERIALS

WATER SYSTEM:

A. Ductile Iron Pipe: Ductile iron pipe shall be designed in accordance with the latest revision of ANSI/AWWA C 151/A21.51), rated working pressure of 350 psi plus a 100 psi surge allowance; a 2 to 1 safety factor on the sum of working pressure plus surge pressure in Type 3 Laying condition with a depth of cover as required per plans.

Pipe shall have standard asphaltic coating on the exterior. Pipe also shall have a cement mortar lining on the interior in accordance with the latest revision of ANSI/AWWA C104/A21.4. If corrosion protection is required, polyethylene encasement shall be installed prior to the pipes installation in accordance with ANSI/AWWA C105/A21.5-88.

All non-restrained pipe shall be furnished with push-on type joints such as "Fastite", or equal. Joints shall be in accordance with the latest revision of ANSI/AWWA C111/A21.11 and shall be furnished complete with all necessary accessories.

Where restrained joint pipe is required, "Fast Grip", "Flex-Ring", or "Field Flex-Ring" or approved equal shall be used. The length of restrained pipe shall be as tabulated or noted on the plans.

Ductile iron fittings shall conform to the latest revisions of either ANSI/AWWA C110/A21.10 or ANSI/AWWA C153/A21.53. Fittings, linings, and coatings shall be as specified for the pipe above.

All pipe, fittings and accessories shall be installed and tested in accordance with the latest revision of AWWA C600. Newly installed ductile iron water mains shall be disinfected in accordance with the latest revision of AWWA C651 prior to placing in service.

B. Gate Valves: Where indicated on the Plans or directed by the ENGINEER, the CONTRACTOR shall furnish and install gate valves as hereinafter specified.

All gate valves shall be cast iron mechanical joint, M.J., Mueller A-2380-20, equivalent or better.

All gate valves shall be furnished with O-ring packing and 2" square operating nut, AWWA 200lb., for cast iron water main.

Valve boxes shall be cast iron top and bottom. Extension pieces shall be provided as required.

All valves will be set at a perfect 90 degree angle from level pipe, (perpendicular) so as to be easily accessible through properly set valve box as per specifications above.

The CONTRACTOR shall furnish and install either a two-piece or three-piece, slip type, cast iron valve box over each gate valve. Valve boxes will be set over valve operating nut, centered so as to be easily accessible with a valve operating wrench or key. They will be set to correspond with the finished grade of street, lot, or easement. No dirt will be left in box; box will not rest directly on valve body.

C. Fittings, Valves and Hydrants, Etc.: All fittings, valves and valve boxes, hydrants, and other appurtenances are to be set at the points indicated on the plans, or as directed by the ENGINEER, and omission to do so shall be corrected by the CONTRACTOR without extra cost to the OWNER.

All fittings shall either be Ductile Iron Compact (ANSI/AWWA C153/A21.53) or Cast Iron (ANSI/AWWA-C110/A21-10) and shall have mechanical joint ends and mechanical joint restraints (Series 1120) and shall be incorporated in the design of the follower gland and shall include a restraining mechanism which, when actuated, imparts multiple wedging action against the pipe, increasing its resistance as the pressure increases. Flexibility of the joint shall be maintained after burial. Glands shall be manufactured of ductile iron conforming to ASTM A 536-80. Restraining devices shall be of ductile iron heat treated to a minimum hardness of 370 BHN. Dimensions of the gland shall be such that it can be used with the standardized mechanical joint bell and tee-head bolts conforming to ANSI/AWWA A21.11 and ANSI/AWWA C153/A21.53 of latest revision. Twist-off nuts shall be used to insure proper actuating of the restraining devices.

The mechanical joint restraint device shall have a working pressure of a least 250 psi with a minimum safety factor of 2:1 and shall be EBAA Iron., MEGALUG or equal.

To improve the sealing capacity, the gaskets for all mechanical joints conforming to the requirements of ANSI/AWWA C110/A/21.10, C111/A21.11, or C153/A21.53 shall be of a design that causes the gasket to deflect approximately 30% during assembly of the mechanical joint. The gasket material shall conform to the requirements of ANSI/AWWA C111/A21.11, Section 1-6.4 of the latest revision. Mechanical joint gaskets shall be EBAA Iron's EBAA Seal-Improved Mechanical Joint Gasket or approved equal.

Fittings (bends, tees, plus, and caps) shall be securely braced by mechanical joint restraints, as indicated on the Plans, to prevent the possibility of blowing off under pressure. And a full length of pipe shall be installed on each end of the fitting. Then cut pieces can be installed beyond the full lengths of pipe.

D. Plugs and Caps: Where indicated on the Plans, or as directed by the ENGINEER, the CONTRACTOR shall install plugs for anticipated future extensions by placing a branch fitting

(tee or cross) in the line and plugging the unused branch or branches. In general, such plugs will be located at street intersections where present plans provided lines running in only two or three directions from the intersections and where, in the opinion of the ENGINEER, a connection may be required for future extension. Where "dead end" lines are installed, the ends of such lines shall be plugged or capped as required.

For the various hot taps required according to the plans, and up to 12 inches, the JCM 432, stainless Tapping Sleeve, or approved equal, shall be required. The CONTRACTOR shall furnish all materials for these various taps.

E. Casing Pipe: Steel pipe utilized as casing at locations shown on the Contract Drawings shall be new round piling pipe conforming to the requirements of ASTM A 252 or A 139. Casing diameter shall be adequate to allow pushing of the specified diameter of water pipe and make proper connections at the ends. Minimum Wall Thickness for steel casing is 0.25 inch.

F. Stabilization Material: Stabilization Material shall be a pit run mixture of sand and gravel. The sand shall be hard, sharp and durable particles. All gravel shall pass a 1" sieve.

G. Wash Gravel Bedding Material: Select Granular material for pipe bedding shall be coarse concrete aggregate. The coarse concrete aggregate shall conform to the gradation sizing Number 467 specified in Table 2 of ASTM Standard Specification C-33. (See Following Table)

H. Meter: Water meter shall be Badger "Radio Read" and all fittings shall be Ford brand consistent with current City Standards.

I. Polyethylene Pipe: Shall be in accordance with AWWA C906, ASTM D3035, PE4710, C200 (DR11), with ductile iron outside diameter (DIOD)

J. Fittings for Polyethylene Pipe: Shall be in accordance with AWWA C906, AWWA D3035, molded and manufactured to comply with ASTM F714. AWWA C906, AWWA M55, ASTM D3261 for butt fusion fittings ANSI Class 150 or as necessary to provide minimum pressure rating.

K. Joints and Jointing Materials

a. Mechanical Joint: DIOD Mechanical joint adapter and gaskets for mechanical joints for joint connections between pipe and metal fittings, valves, and other accessories, AWWA C111/A21.11.

b. Butt Fusion: Jointing is to comply with ASTM D2657, Butt Fusion. No offset in alignment between adjacent pipe joints of fittings is permitted.

SIZE NO. 467

<u>Nominal Size</u> <u>(Sieves w/Square Openings)</u>	<u>Percent Passing by Weight</u>
2"	100
1 1/2"	95 - 100
3/4"	35 - 70
3/8"	10 - 30
No. 4	0 - 5

H. Select Backfill: General: The select material shall be composed of a natural or artificial mixture of sand, silt, clay or soil binder or other material of satisfactory cementing value. The sand shall be hard, sharp, and durable particles, preferably siliceous. The binder shall be a grade of clay or other material having satisfactory cementing qualities and shall be homogenous in character, free from vegetable matter, clay balls or other deleterious substances that cannot be classed as serviceable base material.

Gradation: Any coarse aggregate contained in the material shall pass the one and one-half (1-1/2), sieve and not more than thirty-five percent (35%) shall be retained in the Number 10 sieve. The plasticity index (P.I.) shall not exceed 12, nor shall the liquid limit exceed 30.

The composite selected sand-clay material passing the Number 10 sieve shall conform to the following minimum and maximum gradation limits:

<u>Sieve</u>	<u>Percent Passing by Weight</u>
Number 40	40 - 85
Number 60	30 - 70
Number 270	8 - 30
Silt (.05 to .005 mm)	3 - 15
Clay (Passing .005 mm)	3 - 15

I. Backfill: All other backfill shall consist of excavated material removed from the trench.

5.0 CONSTRUCTION:

Earthwork:

A. Site Preparation: Topsoil shall be stripped and stockpiled in accordance with Technical Specifications - Restoration of Roads, Driveways, Fences, Lawns, and other Grassed Areas and Excavation, Trenching and Backfilling.

All vegetation such as brush, heavy sod, heavy growth of grass, decayed vegetative matter, rubbish and any other unsuitable material within the area of trenching shall be stripped or otherwise removed before the trenching is started, and in no case shall such objectionable material be allowed in the trench.

Stripping operation shall be to a depth of not less than 6 inches in all cases.

B. Asphalt or Concrete Removal: Before trenching operations begin, the existing asphalt or concrete pavement shall be scored or cut to a proper depth to give a straight vertical edge when removed. The asphalt or concrete shall be disposed of offsite by the Contractor. While removing the asphalt or concrete in the trench line, never shall the adjacent asphalt be raised or pulled from its base.

C. Trenching: The Contractor shall determine all requirements for trench dimensions, alignment, and grades. The trench shall be excavated in conformance with all federal, state and local regulations for the protection of the workmen. Shoring, sheeting and/or a moveable form shall be used as required to provide earth stability during the laying operations.

The final excavation of the trench for the pipe installation shall be as indicated on the Plans. Minor variations in horizontal (within the permanent easement) or vertical alignment during construction shall be made during construction (with the Engineer's approval) to facilitate ease of installation and operation (due to potential conflicts; i.e., utility conflict) at no additional cost to the Owner except for additional piping, if any. The trench from the top of the pipe down to the bottom of the bedding shall be of a consistent width as indicated on the plans. Should the excavated width of the trench be larger than the design width, the Engineer may direct that a higher type or class of bedding be used; or other adjustments be made to increase the load carrying capacity of the pipe.

The Contractor shall not excavate more trench in advance of pipe laying than is necessary to perform the work efficiently. No more than 100 feet of open trench shall be allowed unless approved by the Engineer.

Excavated material shall be placed in a manner that will not obstruct sidewalks, driveways, or other structures. Excavated material shall not be placed so as to surcharge the walls and jeopardize trench stability.

D. Disposal: The Contractor shall satisfactorily dispose of all excess earth from excavations either in approved (by the Engineer) areas within the construction limits or away from the project in disposal sites obtained by the Contractor.

The Contractor will be permitted to mound excess earth over the trench to a maximum depth of 12 inches above the original ground surface or finished grade where the trench is located in unimproved property. Wasting of excess excavated material will not be permitted within any road ROW. All material within the construction limits shall be placed so that natural drainage is maintained and the surface shall be graded to a smooth and uniform appearance. The disposal of waste and excess excavating materials, including hauling, handling, grading, and surfacing shall be subsidiary obligation of the contractor and no separate payment will be made. Therefore, the cost of such work shall be included in the Contract Unit Price for installation of water pipe.

E. Dewatering: The site shall be kept free of surface water at all times. The Contractor shall

install drainage ditches and dikes and shall perform all pumping and other work necessary to divert or remove rainfall and other accumulations of surface water from the excavations. The diversion and removal of surface water performed in a manner that will prevent the accumulation of water behind temporary structures or at any other locations within the construction area where it may be detrimental. The Contractor shall provide, install, and operate sufficient trenches, sumps, pumps, hoses, piping, well points, deep wells, etc., necessary to depress and maintain the ground water level at least one foot below the base of the excavation during all stages of construction operations. The ground water table shall be lowered in advance of excavation and maintained a minimum of one foot below the lowest excavation subgrade made until the structure has sufficient strength and weight to withstand horizontal and vertical soil and water pressures.

Where groundwater is encountered, the Contractor shall make the effort necessary to secure a dry trench bottom before laying pipe. In sandy and in other suitable type soils, dewatering shall be done by well pointing. If, in the opinion of the Engineer, the Contractor has failed to obtain an absolutely dry trench bottom by insufficient use of all known methods of trench dewatering, the Engineer may order the Contractor to excavate below grade and place not less than 6 inches of graded crushed stone fill material over the trench bottom to form trench drains to suitably located sumps and to remove the water by bailing or pumping. The graded crushed stone fill material shall be placed at the Contractor's own expense and shall be of such depth that there shall be not water in bell holes at the time of coupling pipe. All costs of equipment, labor, and materials required for dewatering shall be included in the bid price.

F. Bedding: The Contractor shall satisfactorily shape the trench area (to specified line, grade and cross section) to receive bedding material. The bottom of the trench shall be undisturbed soil. Should the Contractor over excavate the trench without direction from the Engineer, the trench shall be brought up to grade with select backfill and compacted to at least 90% of maximum laboratory density as measured by AASHTO T 99. Such additional work and materials for over excavation without direction of the Engineer shall be at the expense of the Contractor.

Holes for the bells shall be provided at each joint in the sub-grade or in the granular fill bedding material as required. The holes shall be no larger than necessary for joint assembly and assurance that the pipe barrel will lie flat on the material. The Contractor shall install the proper bedding for the respective type of pipe and depth of installation as shown in the details and schedules on the plans. When depths vary in a particular manhole run, the Contractor shall change bedding systems in accordance with the depth installation requirements.

1. Stabilization Materials: When the sub-grade is found to be unstable or to include ashes, refuse, organic material, or other unsuitable material, the Engineer may direct that the sub-grade be over excavated to remove such material. The depths of over excavation shall be as directed by the Engineer. Stabilization material shall be placed into the over excavated area of the trench and shall be paid for in accordance with these specifications. Stabilization shall be compacted to at least 90% of maximum laboratory density in six inch lifts.

2. Bedding Materials: As detailed in the plans, bedding material shall be placed to the specified depth below the pipe and tamped to a minimum of 90% of maximum laboratory density

as determined in accordance with AASHTO T 99. Following placement of pipe, additional bedding material shall be placed and consolidated under the haunches of the pipe. Special tools shall be required to work the material into place and leave no voids beneath the pipe. The bedding material shall be tamped along the spring line (or along the top of the bedding material as indicated) of the pipe to sufficiently compact the material insofar as practical.

The Engineer may direct additional moisture be added to the bedding material to aid in the compaction effort. Mechanical tampers may be employed to aid the process. Depending on the particular bedding required, additional bedding shall be added and tamped to minimum of 90% of maximum laboratory density, with AASHTO T-99.

3. Select Backfill: Select backfill shall be placed in 6 inch lifts and tamped to a minimum laboratory density with AASHTO T-99. Overall depth of the select backfill shall be as directed by the Engineer.

4. Normal Condition Bedding: Under normal conditions the trench bottom shall be undisturbed earth shaped to the specified line, grad, and cross section with proper bell holes at each joint to insure the pipe barrel lies flat on trench bottom. The bedding material will be selected native materials excavated from the trench and placed in two lifts. The first lift being placed up to the spring line of the pipe and extending out to the trench walls and hand tamped to a minimum of 90% of maximum laboratory density. Special care shall be used in placing and tamping bedding to insure no voids under the haunches of the pipe. The second lift shall extend to approximately 6" above pipe (Material permitting) and hand tamped to 90% density.

5. Backfilling: Upon completion of placement of select material the excavated materials shall be immediately placed back into the trench. Specific requirements are:

a. Backfill requirements for road crossings, parking lots, driveways, and sidewalks shall be in accordance with Technical Specifications - RESTORATION OF ROADS, DRIVEWAYS, FENCES, LAWNS AND OTHER GRASSED AREAS AND EXCAVATION, TRENCHING AND BACKFILLING.

b. Backfill requirements for unimproved areas (pastures, wooded areas) shall consist of placement and shaping of the soil in such a manner as to allow maximum natural consolidation. No compaction of the general backfill in the unimproved areas will be required, except that caused by conventional shaping equipment.

c. No debris shall be used as backfill which has a volume in excess of one-half of one cubic foot or a weight excess of 75 pounds.

6. Sheeting Removal: Wooden sheeting or other thick sheeting or shoring members which have been driven or otherwise placed along the trench walls to an elevation below the spring line of the pipe shall be cut off at the spring line or higher and left in place.

7. Grading and Grassing: Final grading and grassing shall be in accordance with Technical Specifications - RESTORATION OF ROADS, DRIVEWAYS, FENCES, LAWNS, AND

OTHER GRASSED AREAS AND EXCAVATION, TRENCHING AND BACKFILLING.

F. PIPE HANDLING AND STORAGE: Pipe shall be handled, staked, and stored in accordance with manufacturer's printed literature. The Contractor shall provide security as required to prevent damage by vandals. PVC pipe shall be shaded from sunlight for extended lengths of time. Pipe damaged during storage and handling shall be rejected.

G. PIPE LAYING: Each pipe shall be laid true to line and grade and in such manner as to form a close concentric joint with the adjoining pipe and to prevent sudden offsets of the flow line. As the work progresses, the interior of the water shall be cleared of all dirt and superfluous materials of every description. Where cleaning after laying is difficult because of small pipe size, a suitable swab or drag shall be kept in the pipe and pulled forward past each joint immediately after the jointing has been completed. Trenches shall be kept free of water and pipe shall not be laid when the condition of the trench or the weather is unsuitable for such work. At times when work is not in progress, open ends of pipe and fittings shall be securely and satisfactorily closed so that no trench water, earth, or other substance will enter the pipe or fittings. The minimum depth of water mains shall be 30 inches below finished grade to the top of the water main.

Pipe laying shall be performed in such a manner that no foreign material enters the pipe. The Engineer may require that before lowering pipe, heavy canvas bags be placed over each end, and left in place until joints are ready to be made. If water is in the trench, the seals shall remain in place until the trench is pumped completely dry. If conditions are unsuitable, no pipe shall be laid until satisfactory laying conditions are obtained in accordance with the above specified requirements.

H. PIPE JOINTING: Piping shall be jointed in accordance with the manufacturer's printed recommendations. Gaskets shall be firmly set within the bells and grooves as required. The manufacturer's recommended lubricant or an approved equal shall be applied for slip type joints.

Ductile Iron Pipe Joint Construction: The installation and jointing of ductile iron pipe shall generally conform to the applicable provisions of AWWA Standard Specifications C-600 for pipe laying.

Where mechanical joint pipe is used, the surfaces which come in contact with the gasket shall be thoroughly brushed with a wire brush just prior to assembly. The gasket should be brushed with soapy water prior to installation to remove loose dirt and to lubricate gasket as it is forced into its retaining space. When tightening bolts, it is essential that the gland be brought up toward the pipe flange evenly. The bolts should be partially tightened; the bottom bolt first, then the top; next the bolts on either side; and last, the remaining bolts. Overstressing of bolts to compensate for poor installation will not be permitted. Bolt torque shall be in accordance with manufacturer's specifications.

All joints of whatever type shall be completely water tight after being subjected to the required tests.

I. BORINGS: Borings shall be accomplished in accordance with Mississippi Department of Transportation Standards. The contractor shall provide all necessary sheeting, bracing, cribbing, supports and appurtenances to insure the proper line and grade throughout the entire length of the crossing.

1. Casing Pipe: Casing Pipe shall be installed as indicated on the Contract Drawings. Joints shall be completely welded to provide structural integrity and shall be watertight.

2. Carrier Pipe: Carrier pipe may be any of the allowed options of piping. However, the piping and joints shall be capable of withstanding the stress exerted by pushing the pipe within the casing.

3. Carrier Pipe Supports: Supports for the carrier pipe shall be as recommended by the manufacturer for such installation. Supports shall be spaced to adequately support the piping under all conditions.

4. Casing Seal: The annulus between the casing and carrier pipe shall be sealed at each end by installing WMSON Type U end seals, as manufactured by T.D. Williamson, Inc. Tulsa, Oklahoma, or equal, in accordance with the instructions of the manufacturer of the seals.

J. Separation of Water and Sewer Mains:

1. Water mains shall be laid at least 10 feet horizontally and 18 inches vertically from any sanitary sewer or manhole. The bottom of the water line shall be a minimum of 18 inches from the top of the sewer line.

K. INCIDENTAL CONCRETE:

1. GENERAL: The following specifications shall apply to any and all items of incidental work with Portland Cement with or without reinforcement, including such items as concrete piers to support cast iron pipe above ground, erosion control bulkheads or structures, cradles and encasement, blocking and the like.

All concrete used in the construction of this project shall comply with the requirements herein specified for its particular class and kind.

2. MATERIALS: All materials used in this work shall consist of (a) Portland Cement, (b) Sand, (c) Gravel, and (d) Clean Water.

(a) The cement used shall be domestic manufacture, either "Standard" or "high Early Strength" Portland Cement, which shall meet all the requirements of the current A.S.T.M. Specifications for the type used at the time it is incorporated in the work.

(b) The fine aggregate shall consist of clean, sharp sand, well graded from coarse to fine, consisting of hard, durable particles, free from coarse to fine, consisting of hard, durable particles, free from silt, salt or organic matter. It shall meet all the requirements of the ASTM

Specifications C33, Paragraph 1, 2 and 3, and ASTM C-40.

(c) The coarse aggregate used shall consist of clean washed gravel, free from particles of wood or lumps of clay. Not more than 10% shall pass the No. 4 sieve, and it shall conform with the requirements of ASTM Specifications C33, Paragraph 5 to 8 inclusive.

(d) The water used for mixing concrete shall be clear, free from oil, salt, strong acid, alkali organic matter, and shall be approved by the Engineer.

(e) Reinforcing steel shall conform to the requirements of the "Standard Specifications for Billet-Steel Concrete Reinforcing Bars" of intermediate grade (Serial Designation: A 15-39) or the Standard Specifications for Rail-Steel Concrete Reinforcement Bars (Serial Designation; A-16-35) of the American Society for Testing Materials.

3. CONSTRUCTION METHODS:

All concrete materials shall be as handled and stored that they will not become damaged after delivery at the site. The cement shall be thoroughly protected from the weather, and the sand and gravel, shall be so stored that they will not become intermixed, and so as to prevent the admixture with either of any foreign materials. Reinforcing steel shall be so stored that it will not come in contact with the ground, shall be protected from the weather, and shall be clean and free from rust when incorporated in the work.

Concrete materials shall be mixed in the proportions and in a manner that will produce concrete of the class and strength specified to its use.

Unless indicated otherwise, all concrete shall be Class A which shall have a crushing strength of not less than 3,000 pounds per square inch at 28 days, as determined by the Standard Methods for testing concrete materials.

Class B concrete, which shall have a crushing strength of not less than 2,500 pounds per square inch at 28 days, and shall be used for erosion control bulkheads and blocking pipelines at bends to prevent blowing off under pressure.

Class C concrete, which shall have a crushing strength of not less than 2,000 pounds per square inch at 28 days, shall be used for cradles and encasement and may be used for backfill below grade.

After concrete has been properly mixed, it shall be deposited in the forms in reasonably uniform layers and in such manner as to prevent segregation of the aggregates. It shall be thoroughly spaded or puddled while being placed to insure maximum density and prevent honey-combing.

No concrete shall be deposited when the air temperature is less than 40 degrees F. No material shall be deposited on a frozen sub-grade, nor shall any frozen moisture or material be incorporated into the mixture.

No concrete shall be placed in water, nor shall water be permitted to rise on it or to run over it within a period of 24 hours after it has been placed.

Unsatisfactory concrete, resulting from failure to observe the above requirements or otherwise, shall be removed and replaced as directed by the Engineer.

4. COMPENSATION:

Payment for all concrete, except as may be elsewhere herein provided, shall be included in the prices bid for the construction units with which it is placed and no separate or extra compensation will be allowed directly therefore.

6.0 TESTING

DUCTILE IRON PIPE:

A. Field Inspection: The Engineer shall perform visual inspection of the material prior to placement by the Contractor. The Engineer may make non-destructive tests to determine the soundness of the pipe. The Contractor shall assist the Engineer in handling and moving the pipe as required.

B. Material Test: Material test shall be conducted during the manufacturing process and the results shall be included as part of the submittals. No other material test shall be required.

STEEL CASING PIPE: Material test shall be included as part of the submittal. No other material test shall be required.

COMPACTION TESTS: Compaction tests shall be performed in accordance with AASHTO T191 and ASTM D 2922. Maximum compaction shall be determined in accordance with AASHTO T99.

CONTRACTOR shall establish a compaction method or pattern which results in the proper density for the material utilized in the backfill operation. CONTRACTOR shall verify the compaction method by testing each lift for density in the first run of pipe to be laid. Upon satisfactory performance and approval of the ENGINEER the established compaction method shall be used for compaction of each lift of similar material.

The CONTRACTOR shall provide additional density testing to verify the compaction effort; twice in random locations as selected by the ENGINEER every 1,500 linear feet of pipe, if there is a change in material, or if in the sole opinion of the ENGINEER the compaction effort is not yielding the proper results.

(Number of Compaction Tests)

AASHTO T-99 Select Backfill Material OR Stabilization Material	AASHTO T-191 or ASTM D 2922	
	1	One per 100 CY
Bedding Material	2	One per 600 LF
Tamped Backfill	2	One per 600 LF

HYDROSTATIC TESTING:

The completed system shall be tested as herein stated. The pipe shall be filled with water and all air exhausted. Each section shall be tested under a hydrostatic pressure of 150 pounds per square inch and shall not show leakage exceeding 10 gallons per inch of diameter per mile of pipe per 24 hours when so tested. Whatever shall be measured into a container and refilled to the pre-test level. The pressure shall be maintained for 4 hours by pumping as necessary, and if the pipe has been backfilled, a 24-hour test is required.

All visible leaks at exposed joints and all leaks evident on the surface where joints are covered shall be repaired, and leakage eliminated, regardless of total leakage shown by the tests. Lines which fail to meet tests shall be removed, if necessary, or repaired and retested until compliance with these test requirements is affected.

These tests are to be made at the Contractor's expense, and he is to provide all necessary fittings, equipment, appliances, and any other necessary items to conduct the tests in a manner satisfactory to the Engineer. All costs incidental to conducting these tests are to be included in the prices bid for the various items of construction as no separate or extra compensation is to be allowed therefore.

CLEANING AND DISINFECTION:

Before each section of work is placed in service, it shall be thoroughly flushed to remove any dirt or other foreign material from inside the lines; and the inside of the lines shall be disinfected by pumping into and through them as solution of chlorine of 50mg/l for 24 hours in such manner as to meet the requirements of the State Board of Health.

At least two (2) samples of chlorine free water, taken from each section shall be submitted to the State Board of Health for examination to determine if the system is free from organisms of the

Coli-Aerogenes group. If such samples are not negative from organisms of the Coli-Aerogenes group, the system shall be disinfected and re-disinfected in a manner meeting the requirements of the State Board of Health, until the system is freed of contamination.

All water mains will be flushed, chlorinated and re-chlorinated until two (2) consecutive negative water samples are obtained by the Local Health Department or a representative of the water systems certified as an operator by the Mississippi Department of Health.

The CONTRACTOR shall be responsible for the conduct of all of the above defined activities, and any and all costs incident thereto shall be included in the prices bid for the various items of construction as no separate or extra compensation is to be allowed therefore.

EXISTING DRINKING WATER FACILITIES

The Contractor is required to keep existing drinking water facilities in operation during construction. Should the Contractor require that existing facilities be taken out of operation, a plan to provide for alternative service shall be reviewed and approved in advance by the Health Department and shall be adhered to during construction.

FIRE HYDRANT

1.0 General

Fire hydrants shall comply in all respects with AWWA Standard C-502, latest revision, and shall be M & H or approved equal. Fire hydrants shall be of the compression type with the main valve opening against the pressure and closing with the pressure. The main valve opening shall be 4-1/2", 5-1/4", or 6-1/4" in diameter. Fire hydrant shall be of a dry barrel, dry top design. The main valve on the hydrant shall remain closed should the hydrant nozzle section be broken off by a traffic accident. The nozzle section shall consist of two (2) hose nozzles and one (1) pumper nozzle or other, as specified.

2.0 Rating

Fire hydrants shall be rated at 150 psi water working pressure, tested at 300 pounds hydrostatic for structural soundness in the following manner: 300 pounds hydrostatic test supplied from the inlet side, first with the main valve closed for the testing of the valve seat; second, with the main valve open for testing of the drain valves and the hydrant barrel. Testing is to be completed in accordance with AWWA C-502.

3.0 End Configurations

Hydrants shall be connected to the main by a 4", 6", or 8" mechanical joint, flange shoe, A.C., or hub shoe. Mechanical joint shoes, A.C., and hub shoes shall be fitted with strapping lugs.

4.0 Design

- 4.1 The main valve seat of the hydrant shall be made of rubber and be supported by a one-piece bronze top plate and drain valve mechanism and bottom plate. The bottom stem threads of the main valve rod shall be fitted with a cast iron cap nut (epoxy coated, optional) suitable for sealing the threads from the water. Drain valves shall be faced with rubber.
- 4.2 Changes in size or shape of the waterway shall be accomplished by means of easy curves. Exclusive of the main valve opening, the net area of the waterway of the barrel and the foot piece at the smallest part shall not be less than one hundred twenty percent (120%) of that of the net opening of the main valve.
- 4.3 Hose and steamer nozzles shall be threaded and screwed into the nozzle section and then pinned to prevent turning.
- 4.4 The hydrant shall be so designed that when it is in place, no excavation will be required to remove the main valve and moveable parts of the drain valve. Further, the hydrants shall be of the type that can be extended without excavating. Hydrants shall be so designed that, in the event of accident or breaking of the hydrant above or near grade level, the main valve will remain closed. The main

valve rod shall be made in two parts and fitted with breakable feature at the ground line flange.

- 4.5** The ground line connection between nozzle section and the barrel shall incorporate the use of eight (8) breakable bolts. This connection shall be so designed that the nozzle section can be rotated in increments of forty-five (45) degrees. The ground line connection between the barrel and nozzle section shall be gasketed to provide a seal.
- 4.6** The operating threads of the hydrant shall be so designed as to avoid the working of any iron or steel parts against either iron or steel. The operating stem and operating nut threads shall be square or acme type.
- 4.7** The operating thread shall be grease lubricated at the factory. Access shall be provided to field lubricate the operating mechanism.
- 4.8** The operating thread shall be sealed from water at all items when the valve is either in the opened or closed position. The operating rod shall be bronze sheathed where it passes through the double “O” ring seal plate.
- 4.9** The bonnet shall be weather proof.
- 4.10** The operating nut shall be of bronze and a self-lubricating, anti-friction thrust bearing shall be provided to reduce operating torque.
- 4.11** Hydrants shall be of the dry type and hydrant shoe shall have two positive acting non-corrodible drain valves that shall drain the hydrant completely by opening when the main valve is closed and close tightly in accordance with AWWA C-500 requirements when the valve is open. The main valve assembly shall be seated in the hydrant (with a bronze-to-bronze interface as an option) to facilitate removal of the main valve should maintenance be required. The nozzle section shall consist of two 2” hose nozzles to the specified thread designation (NST or other, as specified) and one pumper nozzle 4-1/2” in diameter to the specified thread designation (NST or other, as specified) or other combination of nozzle outlets including independent hose gate valves as specified.
- 4.12** Two “O” ring seals shall be utilized where the main hydrant rod passes through the seal plate.
- 4.13** Hydrant standpipe shall be ductile or cast iron and single piece for all bury depths.
- 4.14** All like parts of hydrants of the same size and model produced by the same manufacturer shall be interchangeable.
- 4.15** Hydrant shall open by turning to the left.

- 4.16** Threads or hose and streamer nozzles shall be national standard unless otherwise specified.
- 4.17** Auxiliary shut-off (isolation) gate valves, when required, shall be of the same manufacture as the hydrant.
- 4.18** The inside of all hydrants shall be coated in accordance with AWWA standards and federal specification TT-C-494A or equal except for bronze and machined surfaces. Exterior of hydrant shall be painted fire hydrant yellow (or as specified). (The wetted surface of the hydrant shoe shall be epoxy coated to prevent corrosion of the waterway, optional.)

5.0 **Markings**

Hydrant shall be marked with the name of the manufacturer, size of valve opening, and the year of manufacture, all in accordance with AWWA C-502.

Sewer/Water Utility – Trace Wire Specification

1.0 General

All trace wire shall have HDPE insulation intended for direct bury, color coated per APWA standard for the specific utility being marked. THHN is prohibited from use in the tracer wire system.

All trace wire, test stations and accessories shall be supplied by a single manufacturer and domestically made in the USA.

All tracer wire and accessories shall be installed per plan details and per manufacturers recommended installation methods. All wire and connectors shall be rated for direct bury applications.

2.0 Materials

Copper Clad Steel (CCS) Trace Wire

Open Trench – 12 Gauge Copper Clad Steel with a Break Load of 452 pounds

Directional Drilling - 12 Gauge Copper Clad Steel with a Break Load of 1,150 pounds

Connectors

2-Way Splice Connector with Strain Relief

3-Way Connector

Termination/Access/Test Stations

Non-Roadway: Equal to Copperhead LD14TP

Concrete / Driveway: Equal to Copperhead CD14TP

Roadway: Equal to Copperhead RB14TP

Fire Hydrant: Equal to Copperhead T2-FLPKG

Grounding

Magnesium Anode: Equal to Copperhead ANO-12

3.0 Testing

All new trace wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, engineer and facility owner as applicable, prior to acceptance of ownership.

This verification shall be performed upon completion of rough grading and again prior to final acceptance of the project. Continuity testing in lieu of actual line tracing shall not be accepted.

4.0 Connectors

All mainline trace wires must be interconnected in intersections, at mainline tees and mainline crosses. At tees, the three wires shall be joined using a single 3-way lockable connector.

Connectors shall be dielectric silicon filled to seal out moisture and corrosion, and shall be installed in a manner so as to prevent any uninsulated wire exposure.

Non-locking friction fit, twist on or taped connectors are prohibited.

5.0 Termination/Access/Test Stations

All trace wire termination points must utilize an approved tracer wire access box, specifically manufactured for this purpose or as detailed on the plans

All grade level/in-ground access boxes shall be appropriately identified with “sewer” or “water” cast into the cap and be color coded (blue – water / green – sewer).

Test stations at dead ends shall be two-terminal.

Test stations in between dead ends shall be single terminal.

A minimum of 2 ft. of excess/slack wire is required in all trace wire access boxes after meeting final elevation.

Grounding anode wire shall be connected to the identified (or bottom) terminal on all access boxes.

Hydrants – Trace wire must terminate at an approved above-ground trace wire access box, properly affixed to the hydrant grade flange.

6.0 Grounding

Trace wire must be properly grounded at all dead ends/stubs.

Grounding of trace wire shall be achieved by use of a drive-in magnesium grounding anode rod with a minimum of 20ft of #12 red HDPE insulated copper clad steel wire connected to anode specifically manufactured for this purpose, and buried at the same elevation as the utility. Where the anode wire will be connected to a trace wire access box, a minimum of 2 ft. of excess/slack wire is required after meeting final elevation.

7.0 Sanitary Sewer System

A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point.

Lay mainline trace wire continuously, by-passing around the outside of manholes/structures on the North or East side.

Trace wire on all sanitary service laterals must terminate at the cleanout and located directly above the service lateral at the edge of road right of way as detailed in the plans.

8.0 Water System

A mainline trace wire must be installed, with all service lateral trace wires properly connected to the mainline trace wire, to ensure full tracing/locating capabilities from a single connection point.

Lay mainline trace wire continuously, by-passing around the outside of valves and fittings on the North or East side.

Trace wire on all water service laterals must terminate at an approved trace wire access box color coded blue and located directly above the service lateral at the edge of road right of way.

Above-ground tracer wire access boxes will be installed on all fire hydrants.

All conductive and non-conductive service lines shall include tracer wire.

9.0 Installation

Trace wire systems must be installed as a single continuous wire, except where using approved connectors. No looping or coiling of wire is allowed.

Trace wire shall be installed at the bottom half of the pipe and secured (taped/tied) at 5' intervals.

Trace wire on all service laterals/stubs must terminate directly above the utility, at the edge of the road right-of-way, but out of the roadway.

At all mainline dead-ends, trace wire shall go to ground using an approved connection to a drive-in magnesium grounding anode rod, buried at the same depth as the trace wire.

Mainline trace wire shall not be connected to existing conductive pipes. Treat as a mainline dead-end, ground using an approved waterproof connection to a grounding anode buried at the same depth as the trace wire.

All service lateral trace wires shall be a single wire, connected to the mainline trace wire using a mainline to lateral 3-way connector, installed without cutting/splicing the mainline trace wire.

In occurrences where an existing trace wire is encountered on an existing utility that is being extended or tied into, the new trace wire and existing trace wire shall be connected using approved splice connectors, and shall be properly grounded at the splice location as specified.

Trace wire on all water service laterals must terminate at an approved trace wire access box color coded blue and located directly above the service lateral at the edge of road right of way.

Above-ground tracer wire access boxes will be installed on all fire hydrants.

All conductive and non-conductive service lines shall include tracer wire.

ADVERTISEMENT FOR BIDS:

NOTICE is hereby given that the City Clerk of the City of **Hattiesburg**, MISSISSIPPI, will receive sealed bids until **10:00 AM** on **August 5, 2021** in the City Clerk's Office in the City Hall of said City for furnishing the City's requirements for the following:

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

Official bid documents can be downloaded from www.sd-wprojects.com. Electronic bids can be submitted at www.sd-wprojects.com. For any questions relating to the electronic bidding process, please call Plan House at 662-407-0193. All bids must be accompanied by bid security equal to 5% of the amount of the bid, in the form of a certified check, cashier's check or a bid bond written by a company properly licensed in Mississippi.

Each BID must be received sealed and marked EXACTLY as follows:

BID: HALL AVENUE INFRASTRUCTURE IMPROVEMENTS HATTIESBURG, MISSISSIPPI

No bid may be withdrawn for a period of sixty (60) days. The lowest and best proposal received will be accepted, subject to the provisions of Section 31-7-13 of the Mississippi Code of 1972, Annotated and Amended, and other applicable State law; but the Board reserves the right to reject any or all proposals received and to waive informalities.

PUBLISHED by Order of the Council on the 22 day of June A.D., 2021.

CITY OF HATTIESBURG, MISSISSIPPI

BY: _____
Kermas Eaton, City Clerk

Publish on June 30 and July 7
City of Hattiesburg
Return PROOF to SDW, Inc.
301 Second Avenue
Hattiesburg, MS 39401

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1	CVR	COVER SHEET
2	VM	VICINITY MAP
3	KEY1	LEGEND, ABBREVIATIONS & SHEET KEY
4	GN1	GENERAL NOTES
5	PSM1	PROJECT SCOPE MAP
6	PSM2	SEWER SYSTEM MAP
7	PSM3	WATER SYSTEM MAP
8	PnP1	HALL AVENUE STA 10+80 - STA 17+40
9	PnP2	HALL AVENUE STA 17+40 - STA 24+00
10	PnP3	HALL AVENUE STA 27+40 - STA 34+00
11	PnP4	HALL AVENUE STA 34+00 - STA 40+60
12	PnP5	HALL AVENUE STA 40+60 - STA 47+00
13	PnP6	JOHN STREET STA 11+00 - STA 16+00
14	PnP7	DABBS STREET STA 9+00 - STA 15+60
15	PnP8	RONIE STREET STA 9+00 - STA 15+60
16	PnP9	ARNOLD STREET STA 10+20 - STA 13+60
17	PnP10	WALNUT STREET STA 10+00 - STA 15+60
18	PnP11	COURT STREET STA 10+00 - STA 13+00
19	PnP12	BAY STREET STA 10+00 - STA 13+00
20	WPln1	HALL AVENUE - WATER PLAN
21	WPln2	HALL AVENUE - WATER PLAN
22	WPln3	DABBS & RONIE STREET - WATER PLAN
23	SSD1	SEWER INSTALLATION DETAILS
24	SSD2	SEWER INSTALLATION DETAILS
25	SSD3	CONFLICT BOX DETAILS
26	SSD4	CONFLICT AT BOX CULVERT
27	ABN1	SEWER ABANDONMENT DETAILS
28	WTRD1	WATER INSTALLATION DETAILS
29	WTRD2	WATER INSTALLATION DETAILS
30	TWD1	TRACER WIRE DETAILS
31	PRD1	PAVEMENT REPAIR DETAILS
32	VS1	VEGETATION SCHEDULE
6101	ECD-1	TYPICAL TEMPORARY EROSION/SEDIMENT CONTROL APPLICATIONS
6102	ECD-2	DETAILS OF SEDIMENT BARRIER APPLICATIONS
6103	ECD-3	DETAILS OF SILT FENCE INSTALLATION
6104	ECD-4	DITCH CHECK STRUCTURES, TYPICAL APPLICATIONS AND DETAILS
6106	ECD-6	DETAILS OF EROSION CONTROL WATTLE DITCH CHECK
6111	ECD-11	TYPICAL APPLICATIONS AND DETAILS FOR INLET CONSTRUCTION
6113	ECD-13	INLET PROTECTION DETAILS OF WATTLES
6115	ECD-15	INLET PROTECTION DETAILS OF SANDBAGS
6351	TCP-1	TRAFFIC CONTROL PLAN WITH FLAGGER (ONE-LANE CLOSURE OF TWO-WAY TRAFFIC)
6358	TCP-8	HIGHWAY SIGN AND BARRICADE DETAILS FOR CONSTRUCTION PROJECTS
6419	SD-1	DRIVEWAYS, CURB & GUTTER, & SIDEWALK
6501	PI-1	PIPE CULVERT INSTALLATION
6502	PI-2	FLEXIBLE PIPE CULVERT INSTALLATION
6503	PC-1	CONCRETE PIPE COLLAR
6506	JB-2	JUNCTION BOX TYPE 2 FOR TRAFFIC LOAD

CONSTRUCTION PLANS

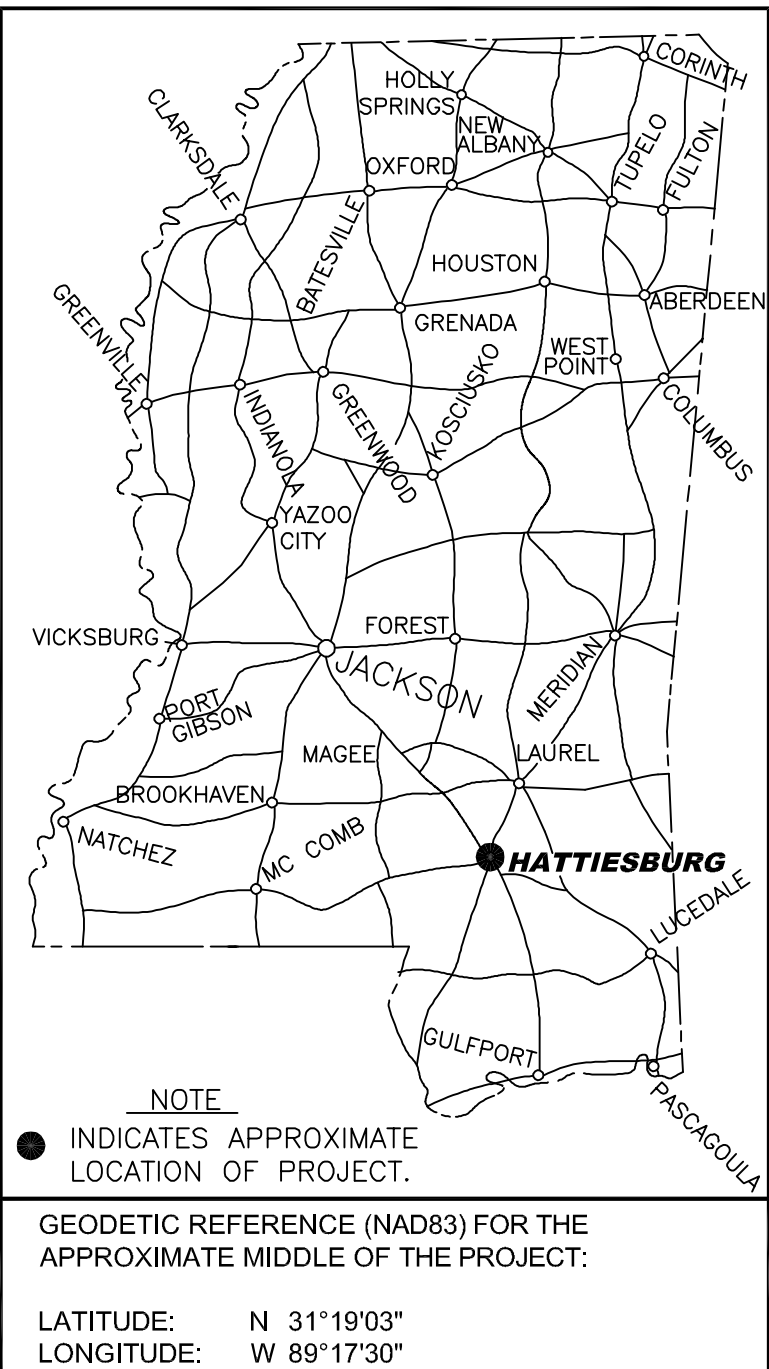
FOR

HALL AVENUE
INFRASTRUCTURE IMPROVEMENTS

FOR THE

CITY OF HATTIESBURG

FORREST COUNTY
MISSISSIPPI



PUBLIC UTILITIES

CABLE
COMCAST
2100 LINCOLN ROAD
HATTIESBURG, MS 39402
(601) 264-1188

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TRAFFIC
CITY OF HATTIESBURG
TRAFFIC DEPT.
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GAS
SPIRE INC.
315 MAIN STREET
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TELEPAK DBA CSPIRE FIBER
1018 HIGHLAND COLONY PKWY
SUITE 420
RIDGELAND, MS 39157

SEWER
CITY OF HATTIESBURG
WATER & SEWER DEPT.
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POWER
MISSISSIPPI POWER, CO.
6356 U.S. HIGHWAY 49
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MAYOR

Toby Barker

COUNCIL PERSONS

Carter Carroll, President
Mary Dryden, Vice President
Jeffrey George
Deborah Denard Delgado
Nicholas Brown

DIRECTOR OF ENGINEERING

Lamar Rutland, PE

PREPARED BY:



301 Second Ave. | Hattiesburg, MS 39401 | (p) 601.544.1821 | (f) 601.544.0501 | sd-w.com

Working No. CVR
Sheet No. 1
Drawing No.: 12213



Know what's below.
Call before you dig.

SPECIAL UTILITY NOTES:

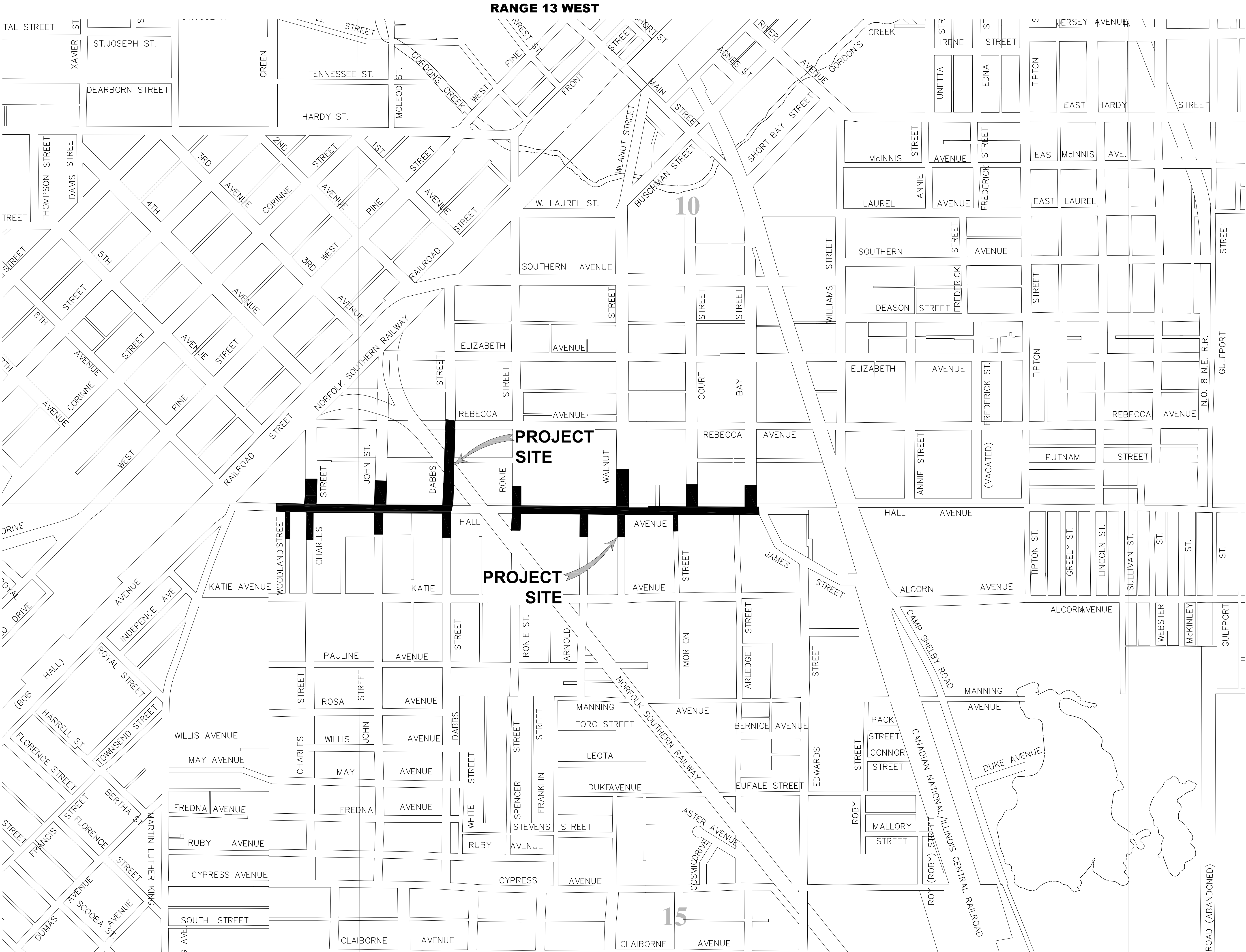
- UTILITY LOCATION REQUESTS WERE SUBMITTED TO MISSISSIPPI 811 (FORMERLY MISSISSIPPI ONE CALL) DURING THE FIELD DATA COLLECTION PHASE FOR THE DESIGN OF THIS PROJECT. ALL UTILITIES THAT LOCATED DURING THE FIELD DATA COLLECTION ARE SHOWN ON THESE PLANS. ALL CONFLICTS WITH EXISTING UTILITIES ENCOUNTERED DURING CONSTRUCTION SHALL BE COORDINATED WITH THE UTILITY OWNER, THE ENGINEER AND THE PROJECT OWNER PRIOR TO INSTALLATION OF THE PROPOSED WATER SYSTEM. (NO SEPARATE PAY FOR COORDINATION)
- THE CONTRACTOR SHALL DOCUMENT THE EXISTENCE OF ANY MISSING AND/OR OVERLAPPING UNDERGROUND UTILITIES AND STORM DRAINAGE NOT SHOWN ON THESE CONSTRUCTION DRAWINGS.

MISSISSIPPI 811 TICKETS	
TICKET No.	DESCRIPTION
21031710300581	HALL AVENUE
21031710390613	BAY STREET
21031711060710	WALNUT STREET
21031710420632	COURT STREET

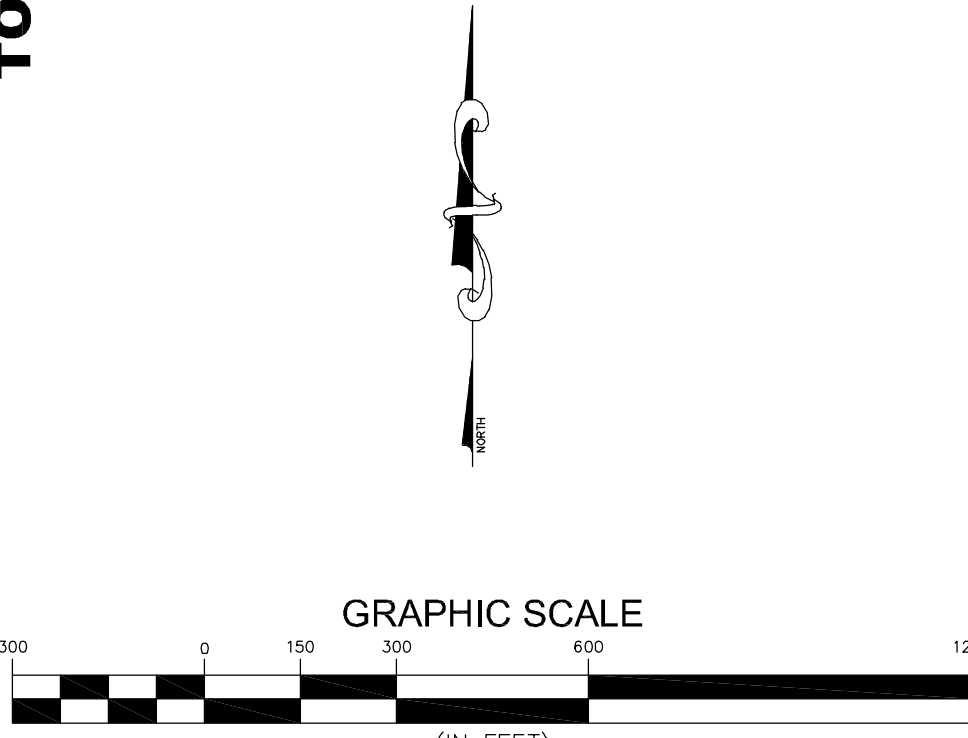
JUNE 2021

NO.	DATE	DESCRIPTION	BY

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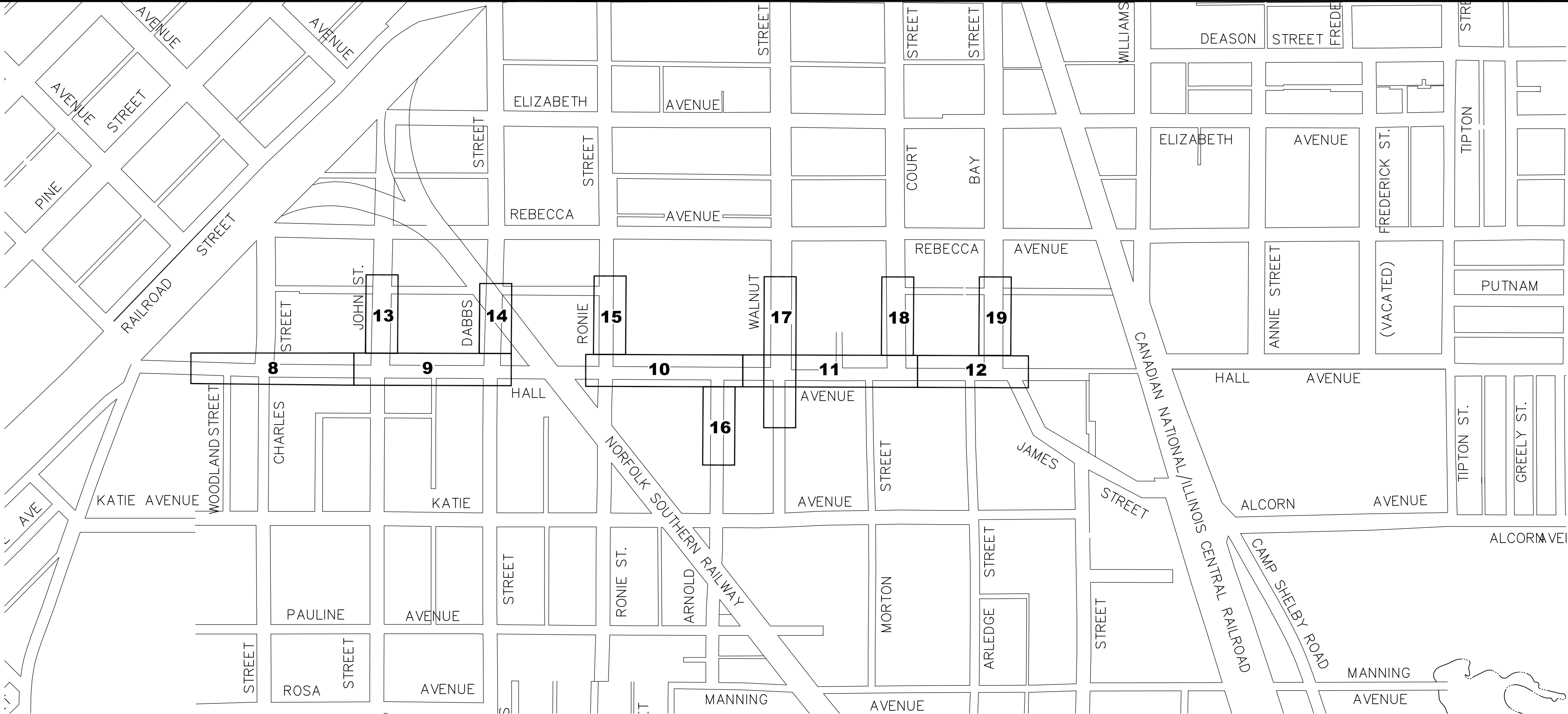


TOWNSHIP 4 NORTH



NO.	DATE	DESCRIPTION	BY
VICINITY MAP			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
sdw Engineering Progress 301 Second Ave., Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
Drawn by: RES\SLS		Checked by: SEM	Scale: AS NOTED
Date: 06-11-2021		Working No. VM	
Drawing No.: 12213		Sheet No. 2	

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SANITARY SEWER PLAN - SHEET KEY



WATER PLAN - SHEET KEY

ABBREVIATION LEGEND:

- ABND - ABANDONED
- APPURT - APPURTENANCES
- ASPH - ASPHALT
- BLDG - BUILDING
- CONST - CENTERLINE CONSTRUCTION
- CONC - CONCRETE
- CON. - CONNECTION
- CONT'D - CONTINUED
- CMP - CORRUGATED METAL PIPE
- OPP - CORRUGATED PLASTIC PIPE
- DIA - DIAMETER
- DR - DIAMETER RATIO
- DRV - DRIVE
- DI - DUCTILE IRON PIPE
- DS FL - DOWNSTREAM FLOW LINE
- E - EAST
- EXIST - EXISTING
- FES - FLARED END SECTION
- FL - FLOW LINE
- GRVL - GRAVEL
- HDPE - HIGH DENSITY POLYETHYLENE PIPE
- HYD - HYDRANT
- INCL - INCLUDING
- INV - INVERT
- LT - LEFT
- LF - LINEAR FEET
- MH - MANHOLE
- MIN - MINIMUM
- N - NORTH
- NIC - NOT IN CONTRACT
- No. - NUMBER
- PRKG - PARKING
- PVC - POLYVINYL CHLORIDE PIPE
- RCAP - REINFORCED CONCRETE ARCHED PIPE
- RCP - REINFORCED CONCRETE PIPE
- REQ'D - REQUIRED
- RT - RIGHT
- ROW - RIGHT OF WAY
- SAN - SANITARY
- STA - STATION
- SWR - SEWER
- S - SOUTH
- TYP - TYPICAL
- US FL - UPSTREAM FLOW LINE
- VAR - VARIABLE
- W - WEST
- W/ - WITH

SYMBOL LEGEND:

- AIR CONDITIONER
- FENCE
- FIBER OPTIC PEDESTAL
- FIBER OPTIC PULL BOX
- FIRE HYDRANT
- FLOWER
- GAS INDICATOR POST
- GAS LINE
- GAS METER
- GAS VALVE
- GATE POST
- GENERATOR
- GROUND LANDSCAPE LIGHT
- HOSE BIBB
- IRRIGATION CONTROL VALVE
- LIGHT ON UTILITY POLE
- LIGHT ON DECORATIVE POLE
- MAILBOX
- METAL PIPE
- OVERHEAD UTILITY LINES
- OVERHEAD UTILITY LINES
- POLE GUY WIRE
- PROPERTY LINE
- SAN SWR CLEAN-OUT
- SAN SWR FORCE MAIN
- SAN SWR LINE
- SAN SWR MANHOLE
- SIGN
- SIGNAL
- STORM DRAIN MANHOLE
- TELEPHONE MANHOLE
- TELEPHONE PEDESTAL
- TREE LINE
- TREE OAK
- TREE CEDAR
- TREE PINE
- TREE SYCAMORE
- TREE CRAPE MYRTLE
- TREE MAPLE
- TREE BRADFORD PEAR
- TREE MAGNOLIA
- UNDERGROUND FIBER OPTIC LINE
- UNDERGROUND POWER LINE
- UNDERGROUND TELEPHONE LINE
- UTILITY METER ON POLE
- UTILITY POLE
- UTILITY PULL-BOX
- UTILITY SERVICE POLE
- WATER LINE
- WATER METER
- WATER TEST WELL
- WATER VALVE

NOTE

ALL ITEMS SHOWN HERE ARE EXISTING ON THE GROUND OR UNDERGROUND.

NO.	DATE	DESCRIPTION	BY
LEGEND, ABBREVIATIONS & SHEET KEY			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
 Engineering Progress			
301 Second Ave., Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
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Date: 06-11-2021		Working No. KEY1	
Drawing No.: 12213		Sheet No. 3	

GENERAL NOTES

1.

ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL CODES.
2.

THE CONTRACTOR SHALL KEEP A SET OF CONSTRUCTION PLANS OF THE PROJECT ON THE JOB SITE SHOWING THE ACCURATE MEASUREMENTS AND ELEVATIONS OF THE "AS-BUILT" SYSTEM. THIS DATA WILL BE COLLECTED AND PUT ON THE DRAWINGS DAILY.
3.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR COMPLETING THE ENTIRE PROJECT.
4.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MDOT, CITY OF HATTIESBURG AND/OR FORREST COUNTY FEES AND PERMITS ASSOCIATED WITH CONSTRUCTION.
5.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION STAKING AND THE LOCATION OF THE PROJECT. CONTROL COORDINATE SYSTEM AND ELEVATION CONTROL ARE SHOWN ON THE PLAN SHEETS.
6.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR HIS OWN SUB-SURFACE SOIL INVESTIGATIONS.
7.

CONTRACTOR SHALL BE RESPONSIBLE FOR THE VERIFICATION OF ALL EXISTING TOPOGRAPHIC DATA AND ALL OTHER SITE CONDITIONS PRIOR TO THE BEGINNING OF CONSTRUCTION. ANY CONFLICT SHALL BE COORDINATED WITH THE CONTRACTOR, OWNER AND ENGINEER/ARCHITECT. THE ENGINEER CANNOT AND DOES NOT WARRANT THAT THIS INFORMATION IS COMPLETE OR ACCURATE.
8.

THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION AND PROTECTION OF ALL UTILITIES WITHIN THE WORK AREA.
9.

ALL UNDERGROUND UTILITIES, FOR THE ENTIRE PROJECT, SHALL BE LOCATED BY THE CONTRACTOR AND UTILITY OWNERS PRIOR TO THE CONSTRUCTION OF THE PROJECT. ANY CONFLICTS SHALL BE COORDINATED BETWEEN CONTRACTOR, UTILITY OWNER AND ENGINEER.
10.

ALL CULVERT CROSS DRAINS AND SIDE DRAINS SHALL BE PROTECTED. ALL DRAINS AND DRAINAGE STRUCTURES INSIDE THE PROJECT AREA ON THESE PLANS SHALL BE CLEANED OF ALL FOREIGN MATTER, INCLUDING SILT, PRIOR TO COMPLETION OF THE PROJECT. REMOVAL AND REPLACEMENT, IF REQUIRED, SHALL BE PAID AS NOTED.
- 10.1.

ANY EXISTING CROSS DRAINS SHOWN TO BE REMOVED AND REPLACED SHALL BE REPLACED WITH NEW RCP AND SHALL BE INSTALLED AT THE SAME GRADE AS THE EXISTING CROSS DRAIN, UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE GRADES OF THE REPLACED PIPE ARE CORRECT AND TO INSURE PROPER FLOW.
- 10.2.

ANY EXISTING SIDE DRAINS THAT CONFLICT WITH CONSTRUCTION SHALL BE REMOVED AND REPLACED WITH NEW CORRUGATED HDPE PIPE AND SHALL BE INSTALLED AT THE SAME GRADE AS THE EXISTING SIDE DRAIN, UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSURING THAT THE GRADES OF THE REPLACED PIPE ARE CORRECT AND TO INSURE PROPER FLOW.
- 10.3.

IF THE EXISTING DRAIN PIPES ARE CONNECTED TO INLETS, HEADWALLS OR ANY OTHER DRAINAGE STRUCTURES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONNECTION TO THOSE STRUCTURES, UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER. CONCRETE PIPE COLLARS SHALL BE USED AS WARRANTED, AS APPROVED BY THE ENGINEER. SOME INLETS MAY BE NOTED FOR REPLACEMENT ON THE PLANS AND SHALL BE REPLACED AS DETAILED.
- 10.4.

ANY EXISTING DRAINS THAT SHOWN TO BE REMOVED AND RESET SHALL BE REMOVED, SALVAGED AND RESET PER NEW PIPE INSTALLATION DETAILS CONTAINED HEREIN. ANY DAMAGE TO THE SALVAGED PIPE SHALL BE REPLACED AT NO ADDITIONAL COST TO THE PROJECT.
- 10.5.

THE CONTRACTOR SHALL TAKE CARE NOT TO DAMAGE THE EXISTING STORM DRAINAGE STRUCTURES DURING THE CONSTRUCTION PROCESS. ANY DAMAGE, OTHER THAN THAT NOTED ABOVE, SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- 10.6.

ABSOLUTELY NO NEW CORRUGATED METAL PIPE SHALL BE INSTALLED ON THIS PROJECT.
11.

THE COST OF CLEARING AND GRUBBING/REMOVAL AND DISPOSAL OF CLEARING AND GRUBBING MATERIAL SHALL BE PAID LUMP SUM, UNLESS OTHERWISE NOTED. THE CONTRACTOR SHALL BE FAMILIAR WITH THE EXTENT OF CLEARING REQUIRED PRIOR TO BIDDING. OFFSITE DISPOSAL AREAS ARE TO BE FURNISHED BY THE CONTRACTOR.
12.

PROPER MAINTENANCE OF STREETS, INCLUDING DUST CONTROL, SHALL BE STRICTLY ADHERED TO.
13.

MAINTENANCE OF TRAFFIC SHALL BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION).
14.

THE CONTRACTOR SHALL PROVIDE PROPER TRAFFIC CONTROL SIGNS AND FLAGGERS TO MAINTAIN ONE LANE TRAFFIC DURING CONSTRUCTION, WHERE LANE CLOSURES ARE NEEDED, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. SEE SHEET No. 6351 FOR TYPICAL LANE CLOSURE DETAILS. ANY ROAD CLOSURES SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL BY THE OWNER PRIOR TO IMPLEMENTATION.
15.

ALL DISTURBED UNPAVED AREAS SHALL BE RESTORED AS FOLLOWS:
- 15.1.

GRASSED AREAS SHALL RECEIVE SOLID SOD WHICH SHALL BE FERTILIZED AND WATERED AS PER THE VEGETATION SCHEDULE. PERMANENT ESTABLISHMENT OF GRASS GROWTH SHALL BE A REQUIREMENT BEFORE FINAL COMPLETION.
- 15.2.

ALL LANDSCAPED AREAS SHALL BE RESTORED IN KIND AND SHALL INCLUDE TOP SOIL (4" DEPTH MIN), WATERING, FERTILIZER AND MULCH, IF PRESENT (IN KIND), AS PER THE VEGETATION SCHEDULE. CONTRACTOR SHALL MATCH SPECIES AND SIZE AS CLOSE AS POSSIBLE. SUBSTITUTIONS SHALL BE ALLOWED ONLY BY WRITTEN APPROVAL FROM THE ENGINEER AND COORDINATION WITH THE AFFECTED PROPERTY OWNER.
16.

ALL EXISTING MAILBOXES, STREET SIGNS, FENCES, AND OTHER STRUCTURES LOCATED WITHIN THE CONSTRUCTION LIMITS SHALL BE REMOVED, SALVAGED AND RESET AS DICTATED BY CONSTRUCTION ACTIVITIES. (NO SEPARATE PAY, UNLESS OTHERWISE NOTED OR DIRECTED BY THE ENGINEER). ALL ITEMS (INCLUDING REMOVAL OF OBSTRUCTIONS, REMOVAL AND RESET AND/OR REPLACEMENT OF STORM DRAIN STRUCTURES, ETC.) FOR WHICH NO PAY ITEM IS ESTABLISHED, SHALL BE INCLUDED IN THE COST OF THE PIPE LAYING OPERATION. (NO SEPARATE PAY).
17.

PAVED ROADS SHALL BE OPEN CUT AND REPAIRED AS DETAILED. CASING SHALL BE USED ONLY WHERE NOTED ON THE PLANS.
18.

ALL GRAVEL ROADS AND GRAVEL DRIVEWAYS SHALL BE OPEN CUT WITHOUT CASING, UNLESS OTHERMSE NOTED, AND REPLACED IN KIND.
19.

ALL PAVED DRIVEWAYS SHALL BE OPEN CUT WITHOUT CASING AND REPAIRED IN KIND, UNLESS OTHERWISE NOTED.
20.

CONTRACTOR SHALL PROVIDE ACCESS TO ALL BUSINESSES AND RESIDENCES AT ALL TIMES DURING CONSTRUCTION. THE CONTRACTOR SHALL COORDINATE ALL DRIVEWAY CUTS AND EXCAVATION WITH THE OWNERS OF SAID DRIVEWAYS.
21.

ANY DAMAGE TO PAVED ROADS OR DRIVEWAYS, WHICH ARE OUTSIDE OF THE PROJECT LIMITS, SHALL BE REPAIRED IN KIND, AT THE CONTRACTOR'S EXPENSE.
22.

ALL TRENCHES IN PAVED AREAS SHALL BE REPAIRED AS DETAILED. CRUSHED AGGREGATE SHALL ALSO BE INSTALLED AND USED FOR A TEMPORARY SURFACE UNTIL SUCH TIME THAT THE PROJECT OWNER DECIDES TO ALLOW INSTALLATION OF PAVEMENT (SEE DETAILS). ALL CRUSHED AGGREGATE SHALL BE SIZE 610. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL OF EXISTING PAVEMENT AND OR CRUSHED AGGREGATE PRIOR TO PLACEMENT OF PAVEMENT IN PATCHED AREAS TO MAKE A SMOOTH JOINT WITH THE EXISTING PAVEMENT. SAW CUT TO FULL DEPTH OF EXISTING PAVEMENT SHALL BE REQUIRED ON ALL PAVEMENT REPAIR, UNLESS OTHERWISE DIRECTED. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING SURFACE IN AN ACCEPTABLE CONDITION UNTIL SUCH TIME AS FINAL PAVEMENT IS INSTALLED.
23.

PRIOR TO THE BEGINNING OF ANY EXCAVATION, ALL EXISTING PAVEMENT SHALL BE SCORED OR SAW CUT TO A DEPTH SUCH THAT A STRAIGHT AND UNIFORM VERTICAL EDGE IS ESTABLISHED PRIOR TO REMOVAL OF SAID PAVEMENT FROM THE PROJECT. IF VERTICAL EDGE IS DISTURBED, THEN A SECOND CUT SHALL BE REQUIRED PRIOR TO ASPHALT OR CONCRETE PATCHING. ALL ASPHALT OR CONCRETE SHALL BE REMOVED FROM THE PROJECT SITE PRIOR TO EXCAVATION PROCEDURES. (NO SEPARATE PAY FOR SAW CUTTING, DEBRIS REMOVAL, PAVEMENT REMOVAL AND DISPOSAL)
24.

ALL ROAD BORES SHALL BE IN ACCORDANCE TO THE DETAILS.
25.

ALL SELECT FILL MATERIAL SHALL MEET THE SPECIFICATIONS FOR CLASS 9, GROUP C AND MODIFIED TO CONSIST OF A PLASTICITY INDEX (PI) BETWEEN 5 AND 15. THE SELECT FILL MATERIAL SHALL BE INSTALLED AS DETAILED & AT THE DIRECTION OF THE ENGINEER OR HIS REPRESENTATIVE.
26.

WORK FOR THIS PROJECT REQUIRES EXCAVATION IN THE IMMEDIATE VICINITY OF TRAFFIC AND ADJACENT PROPERTIES. THEREFORE, THE RISK OF A FAILURE OCCURRING DURING THE EXCAVATION REQUIRES THAT EXTREME CAUTION BE EXERCISED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PLACING WHAT BRACING, SHORING OR GROUND SUPPORT SYSTEM THAT IS DEEMED NECESSARY TO PREVENT A FAILURE AND PROTECT THE PERSONS WORKING NEAR THE EXCAVATION, THE PUBLIC THAT MAY BE ABOVE THE EXCAVATION, OR ANY STRUCTURE ADJACENT TO THE EXCAVATION. ALL COSTS FOR ANY PROTECTIVE MEASURES INCLUDING THE MATERIALS AND LABOR FOR DESIGNING, DRAWING AND CONSTRUCTING THE FACILITY SHALL BE INCLUDED IN THE BID PRICE FOR CONTRACT ITEMS.
27.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING BRACING, SHORING OR ANY GROUND SUPPORT SYSTEM REQUIRED TO PREVENT A FAILURE FROM OCCURRING DURING EXCAVATION. ALL COST FOR ANY PROTECTIVE MEASURES, INCLUDING THE MATERIALS AND LABOR FOR DESIGNING AND CONSTRUCTING THE SUPPORT SYSTEM, SHALL BE INCLUDED IN THE BID PRICE FOR CONTRACT ITEMS.
28.

THE EROSION CONTROL DEVICES SHALL BE REQUIRED AS DIRECTED BY THE ENGINEER. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO INSURE THAT SILT DOES NOT LEAVE THE CONSTRUCTION SITE OR CONTAMINATE WATERS OF THE U.S. DURING CONSTRUCTION. THE CONTRACTOR SHALL MAINTAIN THE PLAN DURING CONSTRUCTION UNTIL PERMANENT GRASS IS ESTABLISHED OR THE DISTURBED SURFACE IS PAVED.

29.

THE CONTRACTOR SHALL ADHERE TO ALL MISSISSIPPI DEPARTMENT OF ENVIRONMENTAL QUALITY REQUIREMENTS FOR EROSION CONTROL AND ANY OTHER PERTINENT GUIDELINES.
30.

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MATERIAL TESTING BY AN INDEPENDENT LABORATORY APPROVED BY THE ENGINEER AND/OR OWNER.
31.

MATERIAL SUBMITTALS SHALL BE MADE TO OWNER THROUGH THE ENGINEER PRIOR TO USE FOR APPROVAL.
32.

ALL WATER AND SEWER SYSTEMS, INCLUDING SERVICES, INSTALLED ON THIS PROJECT SHALL REQUIRE A TRACER WIRE SYSTEM.
33.

THE CONTRACTOR SHALL HAVE A COMPETENT AND EXPERIENCED SUPERINTENDENT ON SITE AT ALL TIMES. THE SUPERINTENDENT SHALL NOT OPERATE EQUIPMENT WHILE ON THE PROJECT SITE. WORK ON THE PROJECT SHALL STOP IF THE ASSIGNED PROJECT SUPERINTENDENT IS NOT ON SITE.
34.

MANHOLE LIDS, FIRE HYDRANTS & VALVES NOTED FOR REMOVAL IN THESE PLANS, SHALL BE SALVAGED FOR THE OWNER. ALL SALVAGED ITEMS SHALL BE CLEANED BY POWER WASHING. SAID ITEMS SHALL BE STACKED AND SECURED ON PALLETS. SAID ITEMS SHALL BECOME THE PROPERTY OF THE OWNER AND DELIVERED TO A SITE DETERMINED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF SAID ITEMS PRIOR TO DELIVERY TO THE OWNER AND FOR REPLACEMENT, IN KIND, FOR ANY MISSING ITEMS. (NO SEPARATE PAY)
35.

ALL MATERIALS FOR THE PROJECT SHALL BE A PRODUCT OF THE U.S.A.
36.

LANDSCAPING AND GRASSING RESTORATION SHALL BE OMITTED WHERE NOTED ON PLANS, DUE TO FUTURE PROJECTS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER.
37.

ROADWAY MARKINGS RESTORATION ALONG HALL AVENUE SHALL BE PAINT ONLY DUE TO FUTURE PROJECTS, UNLESS OTHERWISE DIRECTED BY THE ENGINEER. ALL OTHER MARKINGS SHALL BE THERMOPLASTIC.
38.

THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF ALL EXISTING UTILITIES AND STRUCTURES NOTED ON THE PLANS. ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
39.

ALL EXISTING UTILITIES SHALL BE PROTECTED AND DEPTH SHALL BE VERIFIED PRIOR TO ANY EXCAVATION. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
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51.

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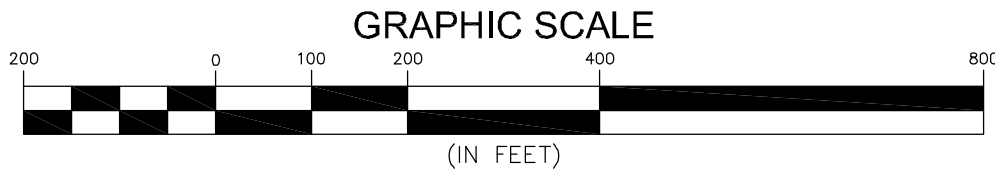
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- LEGEND:**
- SEWER MAIN & SERVICES REPLACEMENT
 - WATER & SEWER MAINS & SERVICES REPLACEMENT
 - WATER SERVICE REPLACEMENT
 - WATER MAIN & SERVICES REPLACEMENT

NO.	DATE	DESCRIPTION	BY
PROJECT SCOPE MAP			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
HATTIESBURG, MISSISSIPPI			
 Engineering Progress			
301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
Drawn by: RES\SLS		Checked by: SEM	Scale: AS NOTED
Date: 06-11-2021		Working No. PSM1	
Drawing No.: 12213		Sheet No. 5	

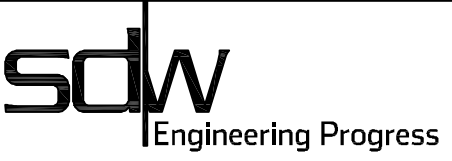


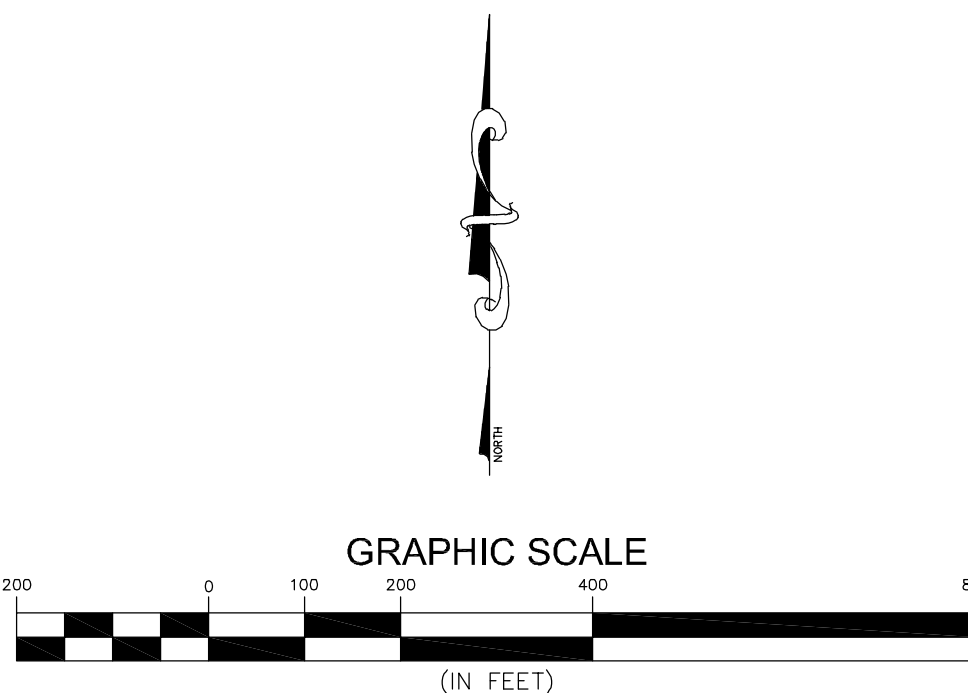
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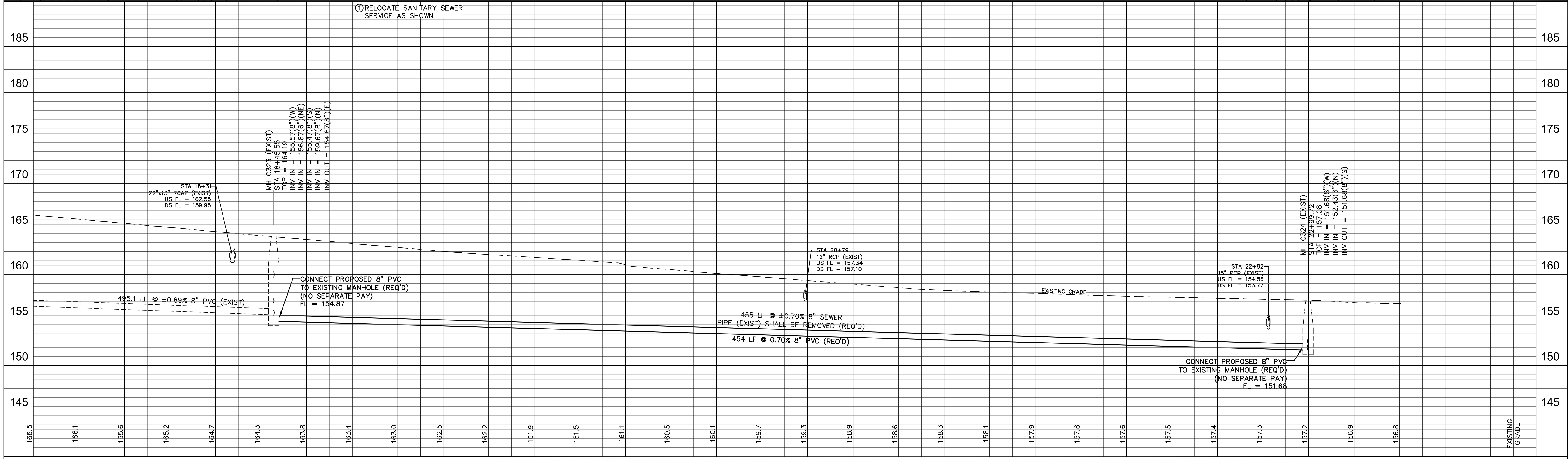
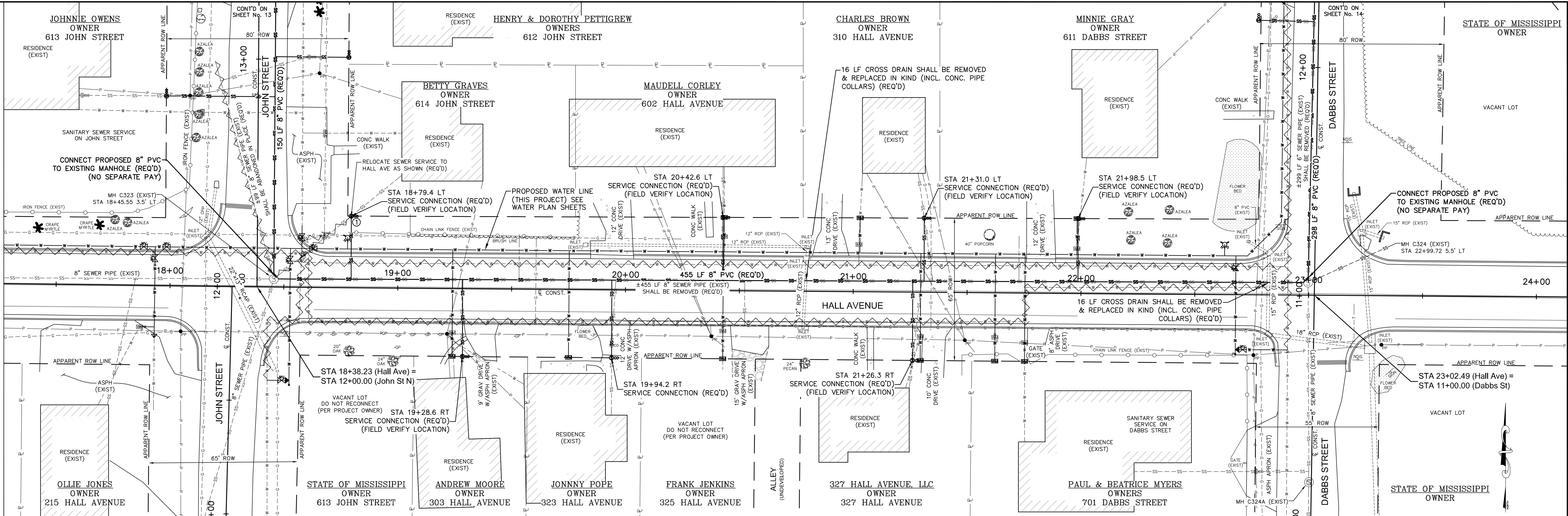
ABBREVIATION LEGEND:

- ABND - ABANDONED
- EX - EXISTING
- FH - FIRE HYDRANT
- GV - GATE VALVE
- RMV - REMOVED
- TP - THIS PROJECT

NO.	DATE	DESCRIPTION	BY
WATER SYSTEM MAP			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
			
301 Second Ave., Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
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Date: 06-11-2021		Working No. PSM3	
Drawing No.: 12213		Sheet No. 7	



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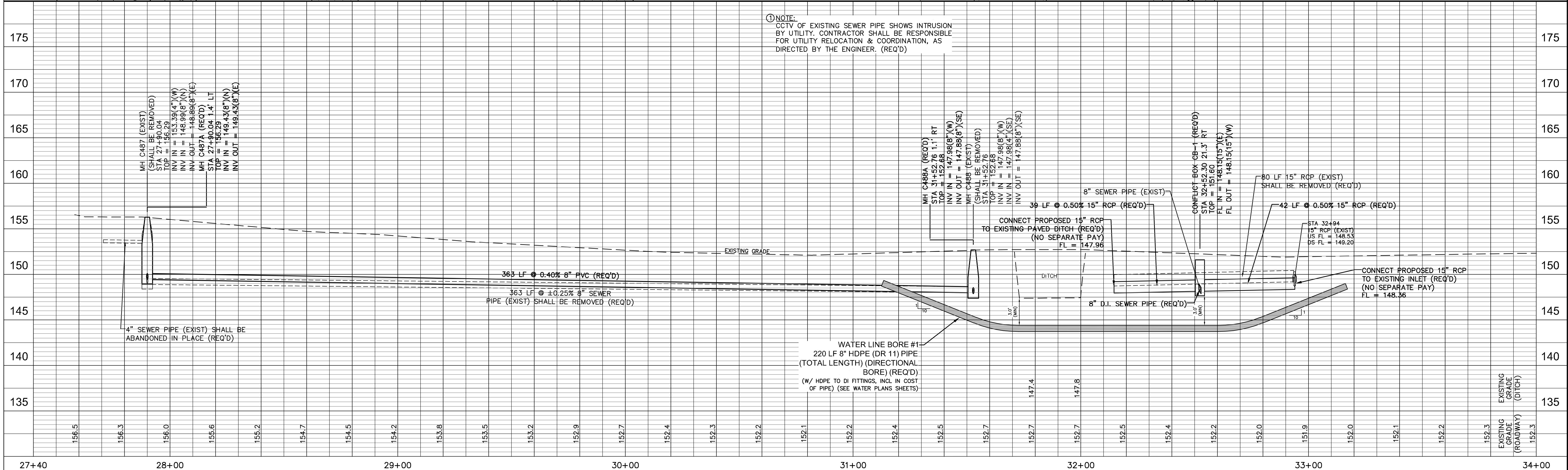
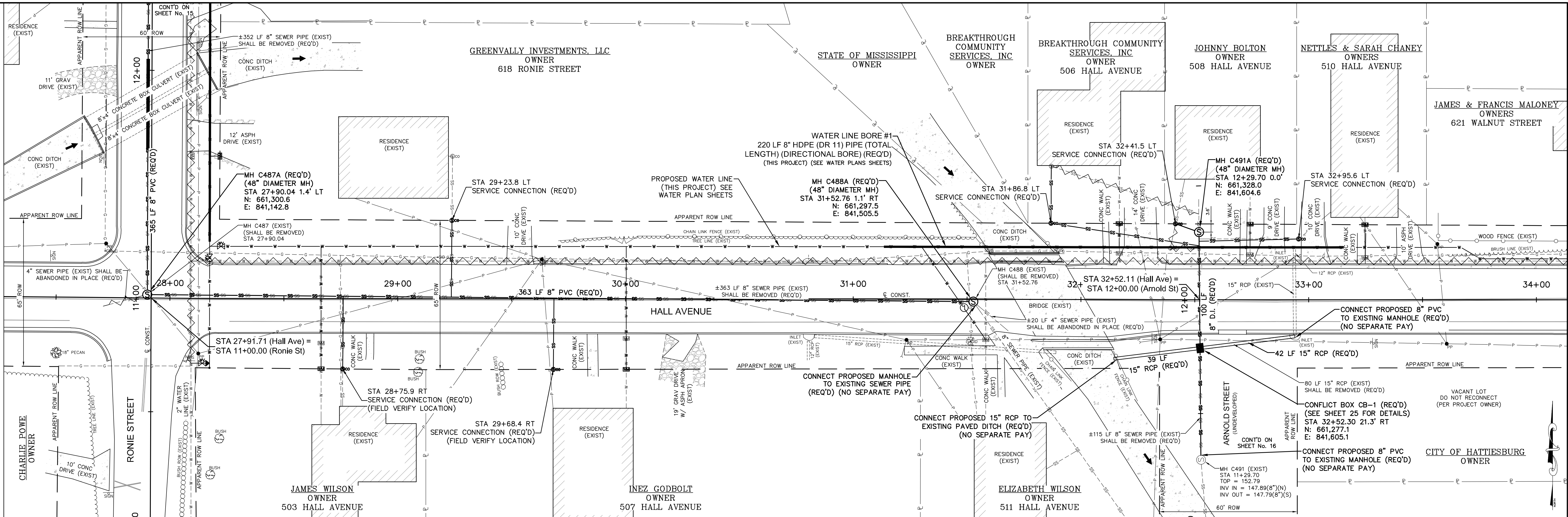


HALL AVENUE STA 17+40 - STA 24+00

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

			DRAWN BY: RES/SLS	 sdw Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com	DRAWING NO. 12213
			DATE: 06-11-2021		WORKING NO. <u>PnP2</u>
			CHECKED BY: SEM		SHEET No. <u>9</u>
DATE	REVISION	BY	SCALE: 1"=20' H, 1"=5' V		

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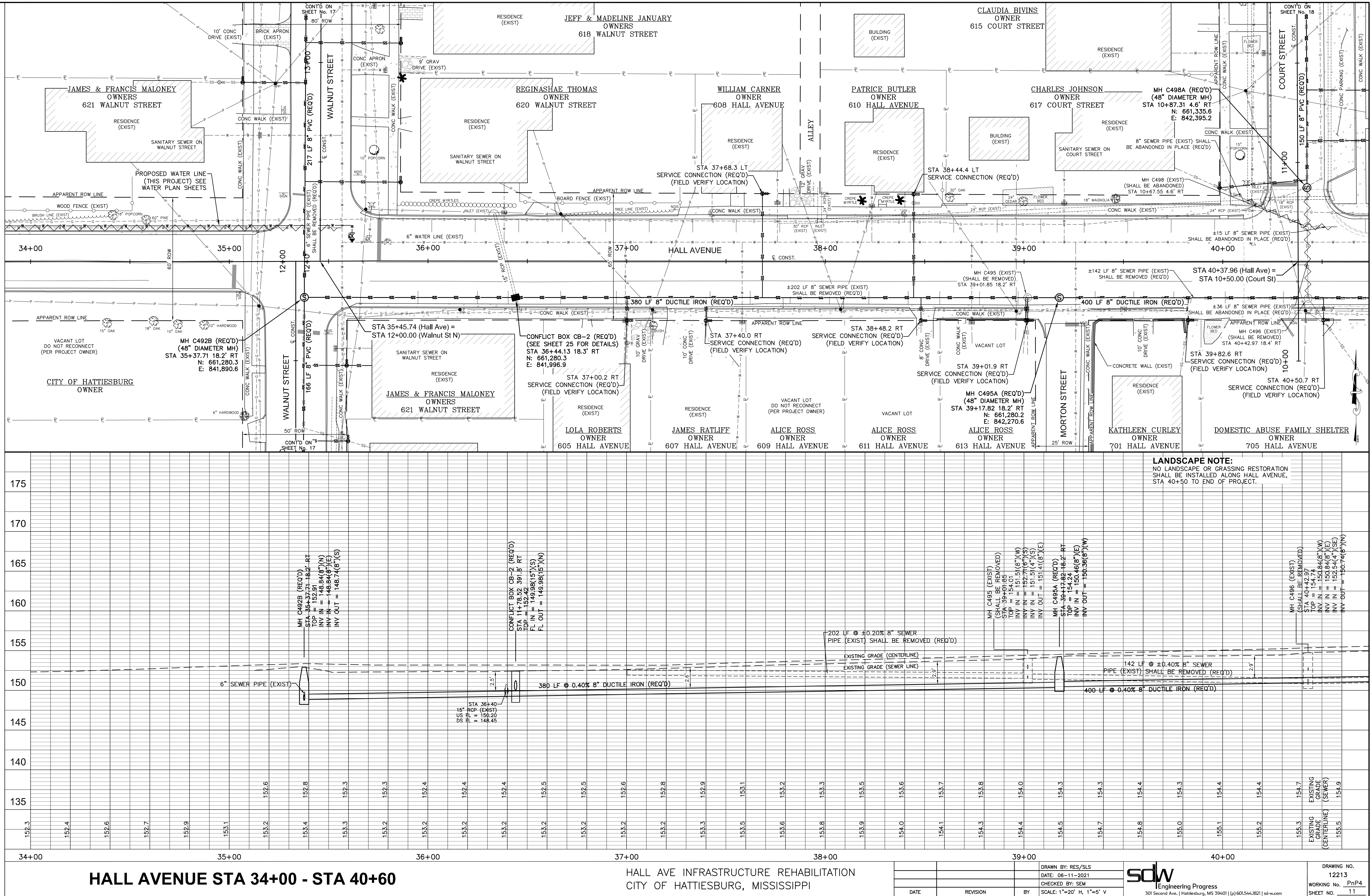


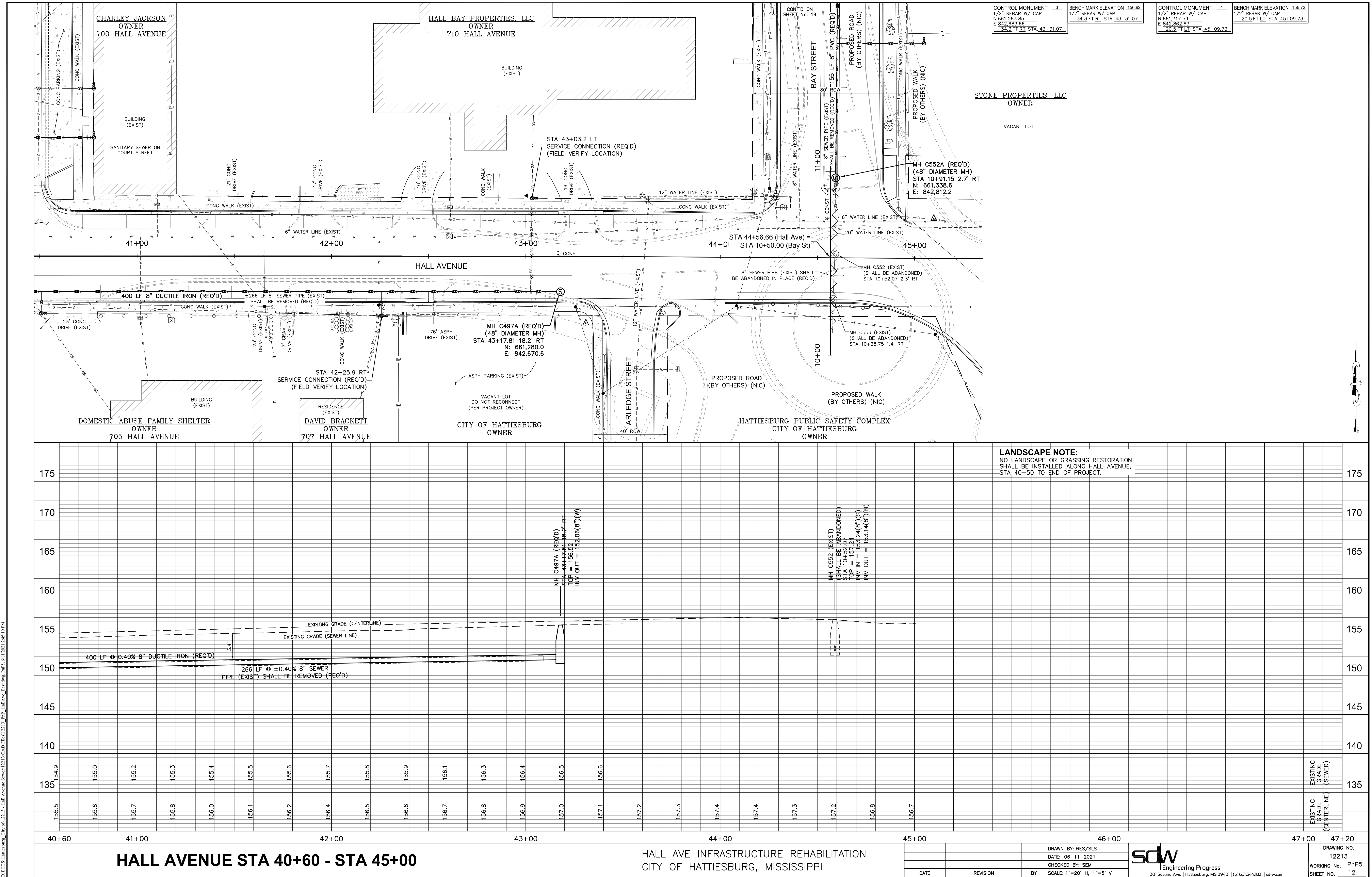
HALL AVENUE STA 27+40 - STA 34+00

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

DATE		REVISION	BY	DRAWN BY: RES/SLS DATE: 06-11-2021 CHECKED BY: SEM SCALE: 1"=20' H, 1"=5' V	sdw Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com	DRAWING No. 12213 WORKING No. Pn13 SHEET No. 10

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CONTROL MONUMENT	3	BENCH MARK ELEVATION	156.92	CONTROL MONUMENT	4	BENCH MARK ELEVATION	156.72
1/2" REBAR W/ CAP		1/2" REBAR W/ CAP		1/2" REBAR W/ CAP		1/2" REBAR W/ CAP	
N 661,263.85		N 661,317.59		N 661,317.59		N 661,317.59	
E 842,683.66		E 842,683.66		E 842,682.63		E 842,682.63	
34.3 FT RT STA. 43+31.07		34.3 FT RT STA. 43+31.07		20.5 FT LT STA. 45+09.73		20.5 FT LT STA. 45+09.73	

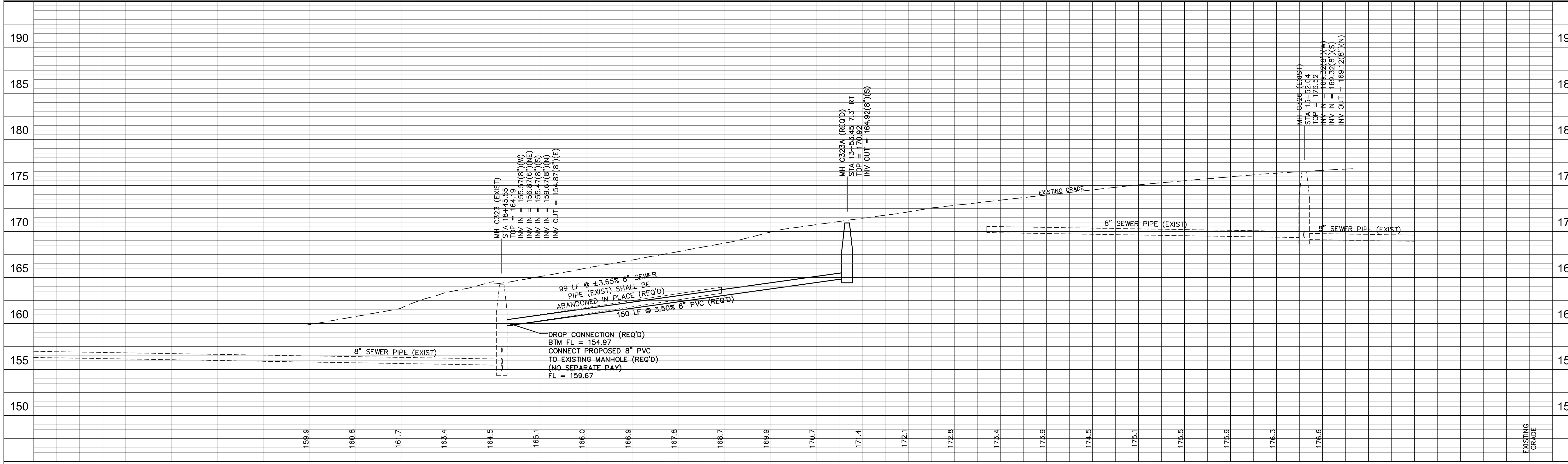
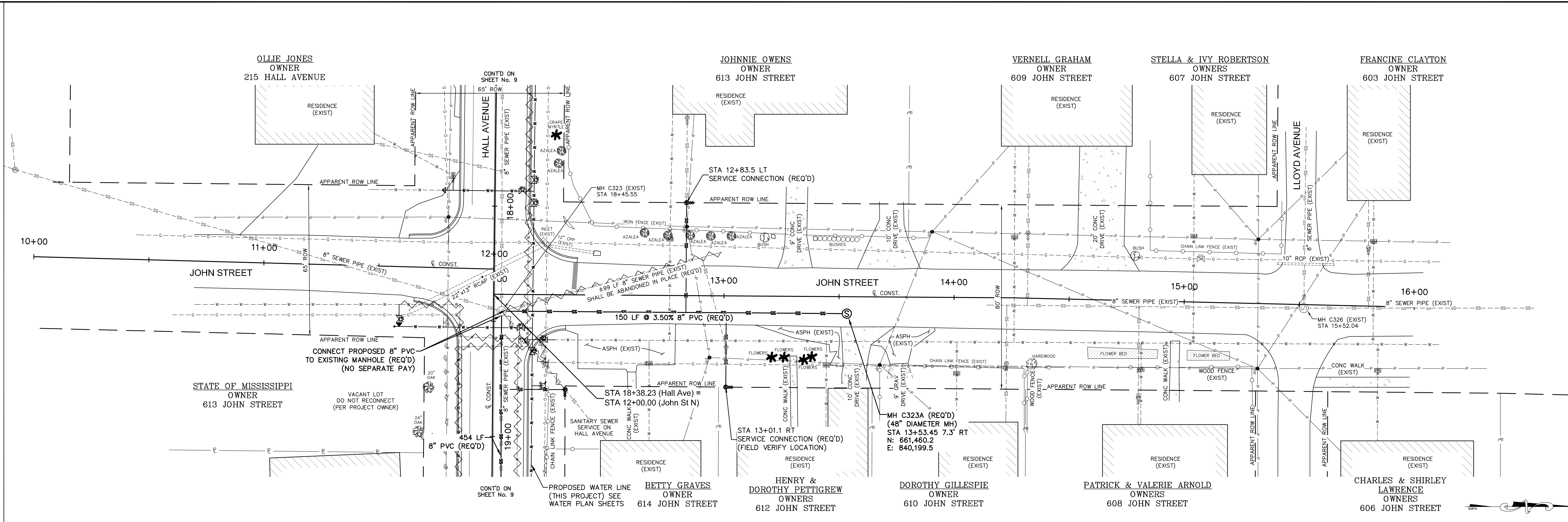
LANDSCAPE NOTE:
NO LANDSCAPE OR GRASSING RESTORATION SHALL BE INSTALLED ALONG HALL AVENUE, STA 40+50 TO END OF PROJECT.

HALL AVENUE STA 40+60 - STA 45+00

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

			DRAWN BY: RES/SLS	 Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com	DRAWING NO. 12213
			DATE: 06-11-2021		WORKING NO. <u>PnP5</u> SHEET NO. <u>12</u>
			CHECKED BY: SEM		
DATE	REVISION	BY	SCALE: 1"=20' H, 1"=5' V		

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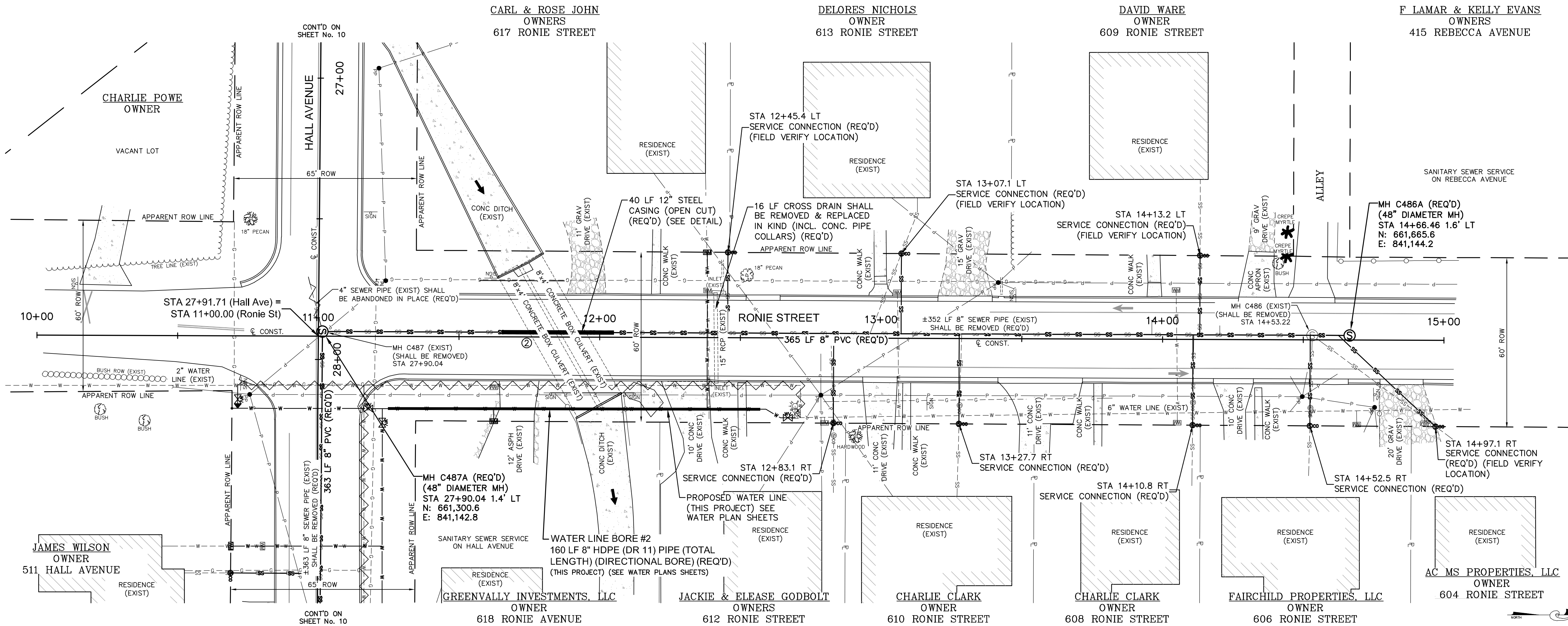
JOHN STREET STA 11+00 - STA 16+00

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

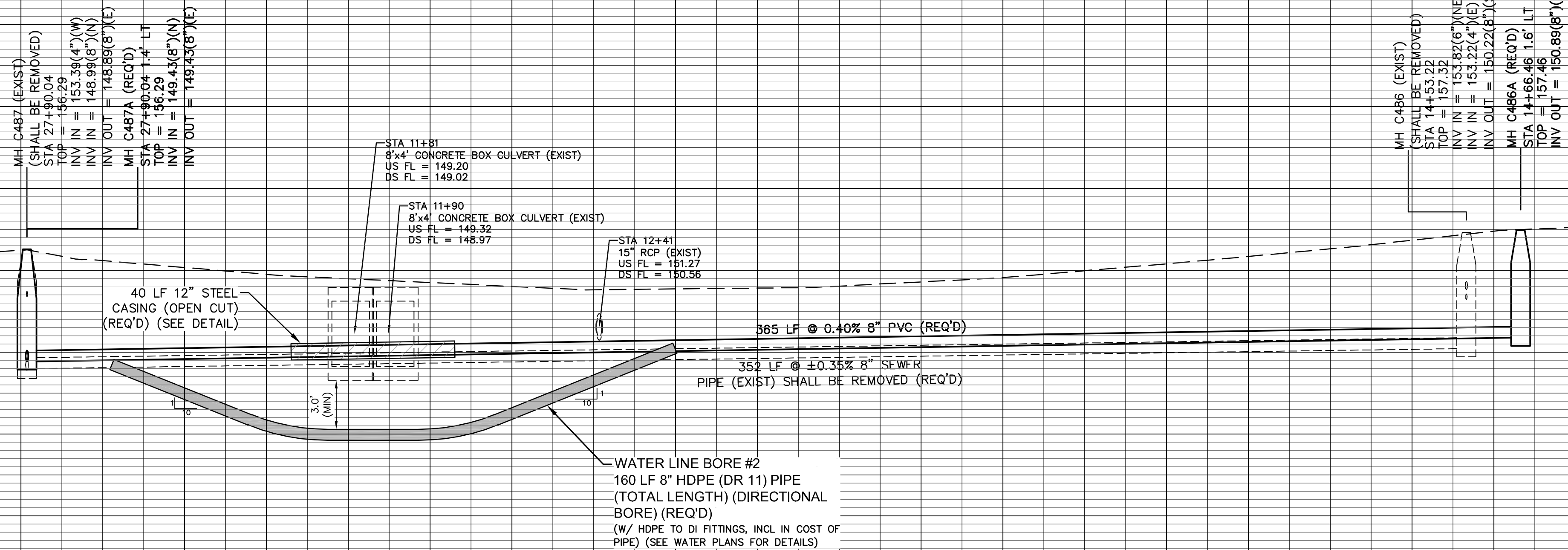
DATE		REVISION	BY	DRAWN BY: RES/SLS DATE: 06-11-2021 CHECKED BY: SEM SCALE: 1"=20' H, 1"=5' V	 Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com	DRAWING NO. 12213 WORKING No. PnP6 SHEET NO. 13

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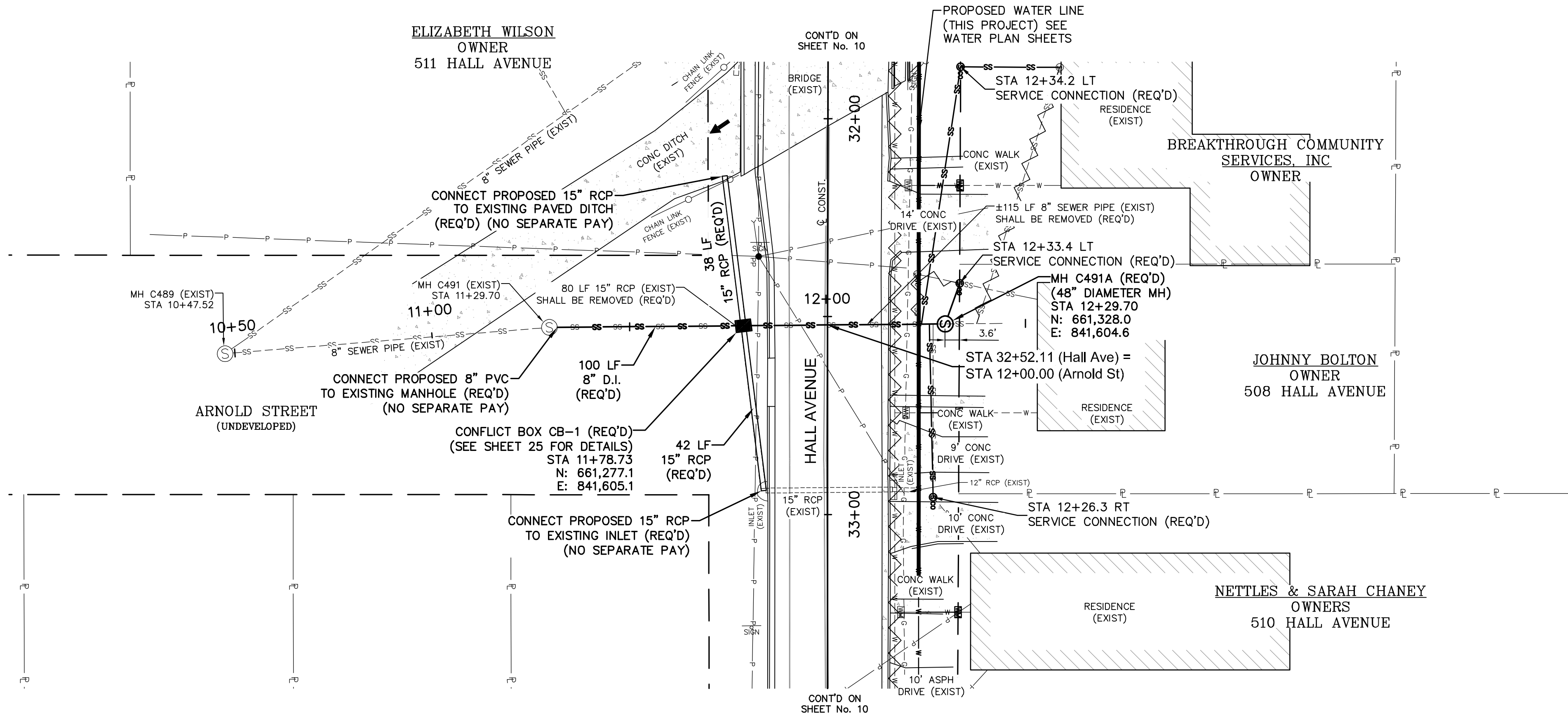
NOTE:
CONTRACTOR SHALL REMOVE EXIST SANITARY SEWER PIPE FROM BOX CULVERT. CONTRACTOR SHALL INSTALL NEW STEEL CASING THROUGH BOX CULVERT AS DETAILED & REPAIR AS NECESSARY & DIRECTED BY THE ENGINEER. (REQ'D)



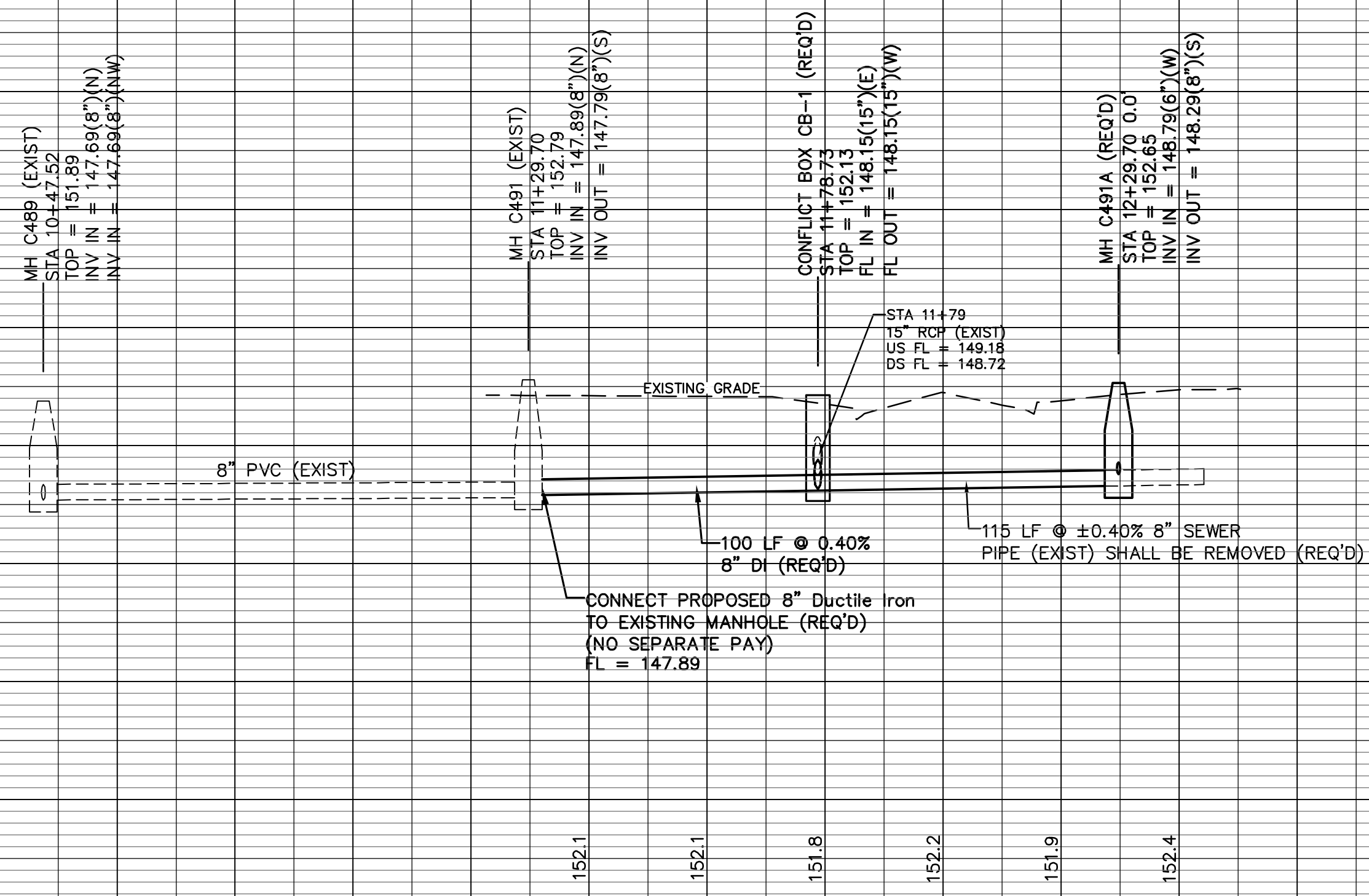
RONIE STREET STA 9+00 - STA 15+60

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

DRAWN BY: RES/SLS DATE: 06-11-2021			sdw Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com	DRAWING NO. 12213 WORKING No. PnPB SHEET NO. 15
DATE	REVISION	BY		



- NOTE:
① COORDINATE WITH SHEET 10 FOR PROPOSED STORM PIPE PROFILE
② RELOCATE SANITARY SEWER SERVICES AS SHOWN



ARNOLD STREET STA 10+20 - STA 13+60

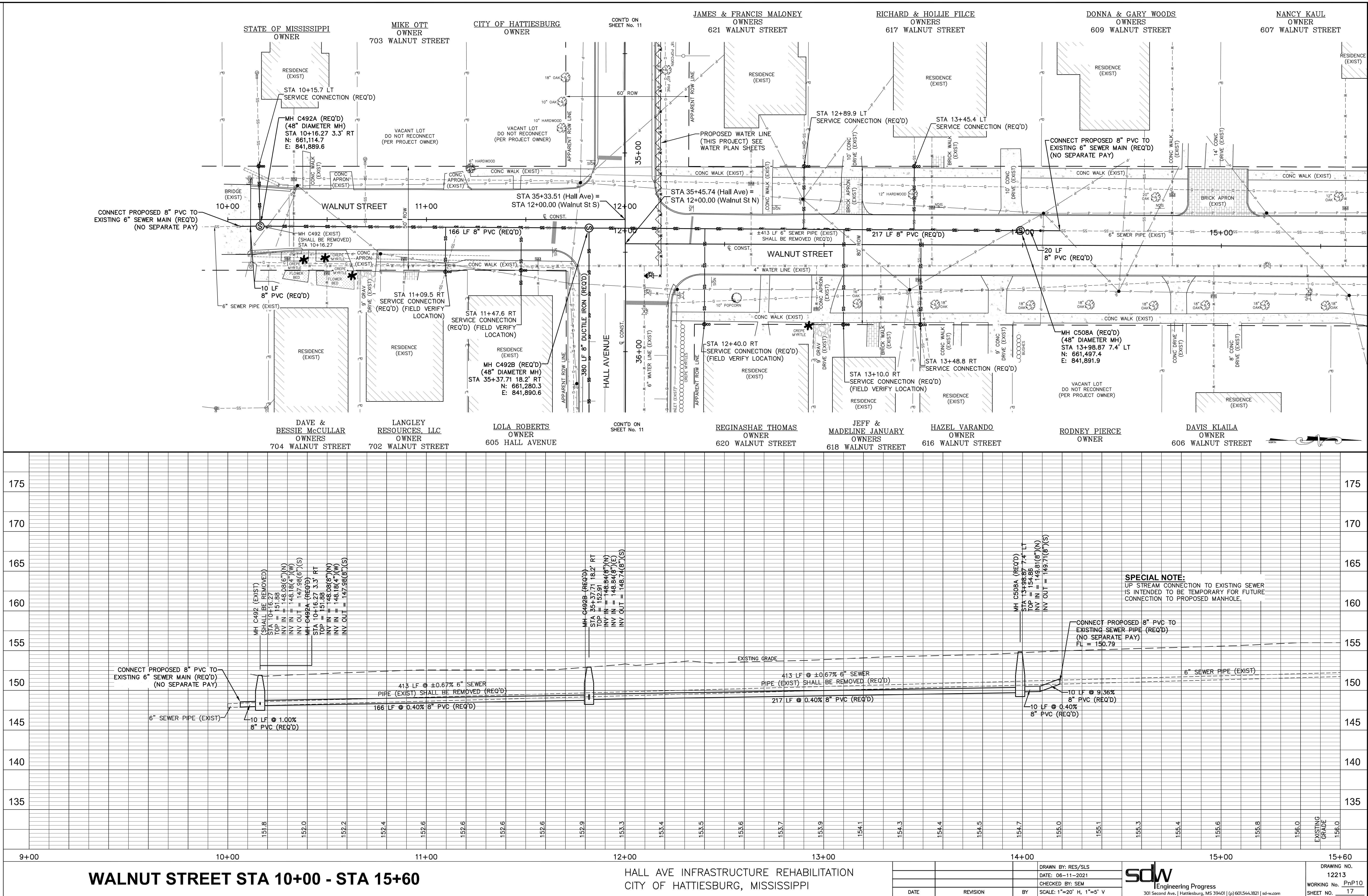
HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

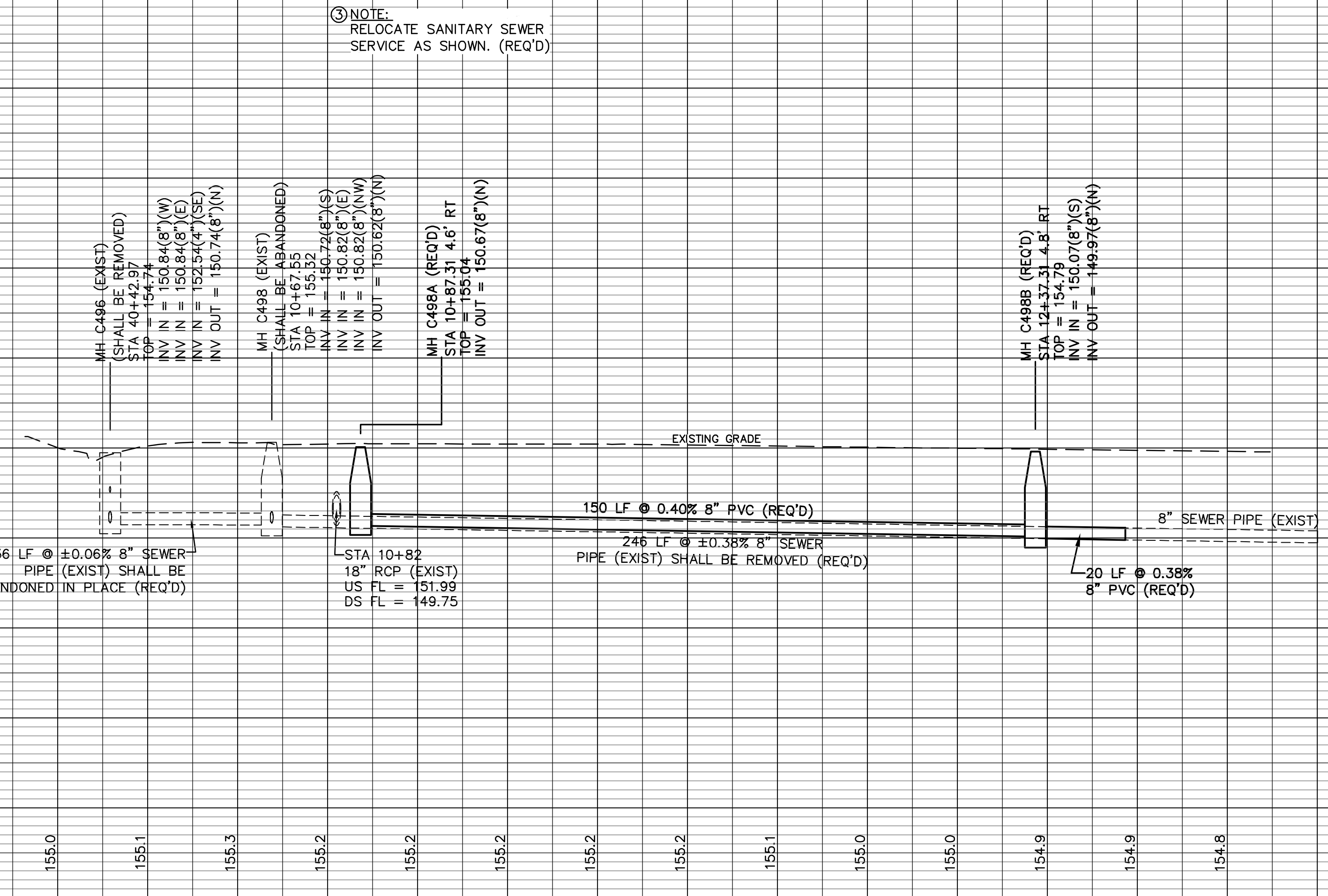
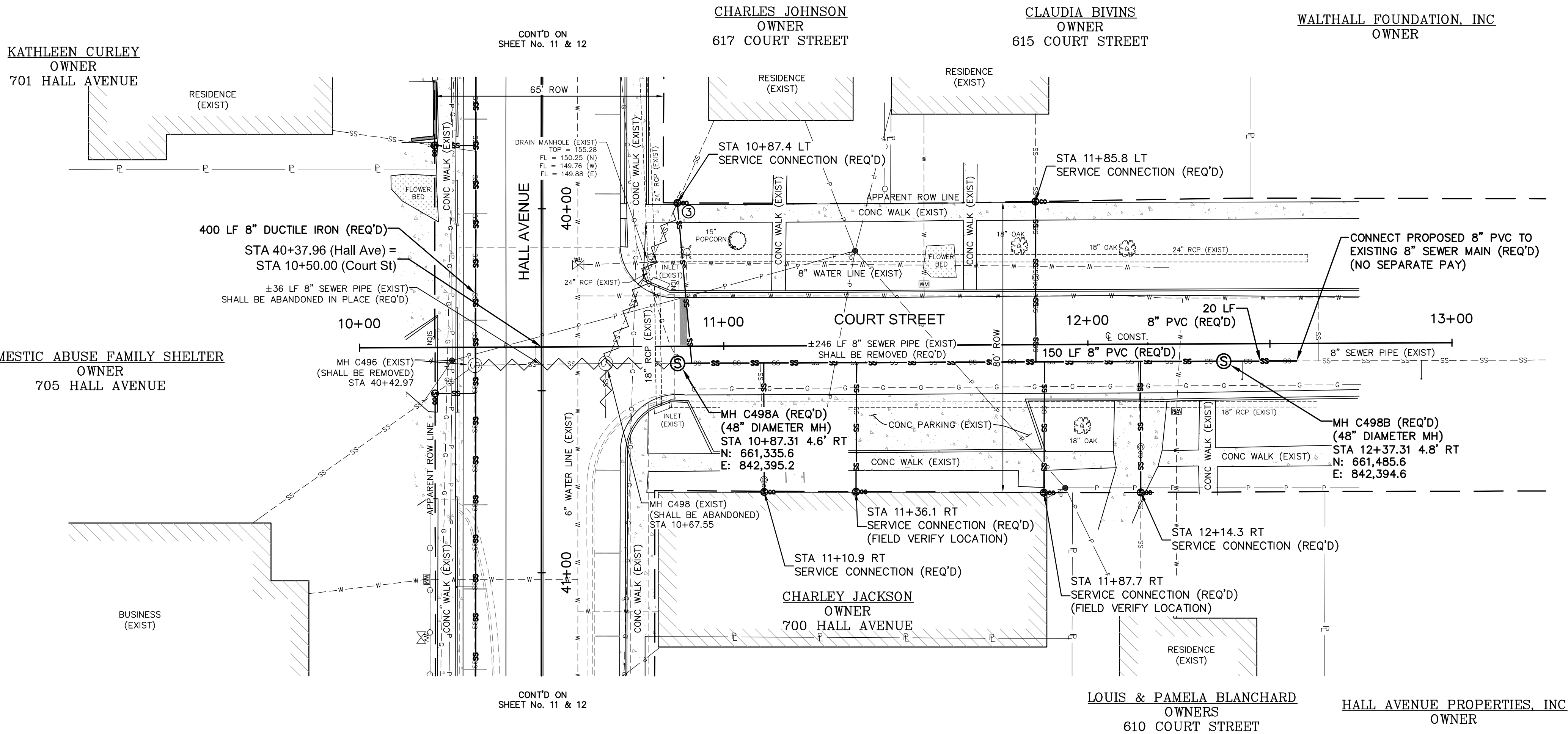
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			DATE: 06-11-2021
			CHECKED BY: SEM
DATE	REVISION	BY	SCALE: 1"=20' H, 1"=5' V

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301 Second Ave. | Hattiesburg, MS 39401 | (p) 601.544.1821 | sd-w.com

DRAWING NO.	12213
WORKING No.	PnPg
SHEET NO.	16

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COURT STREET STA 10+00 - STA 13+00

HALL AVE INFRASTRUCTURE REHABILITATION
CITY OF HATTIESBURG, MISSISSIPPI

DATE	REVISION	BY

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DRAWN BY: RES/SLS

DATE: 06-11-2021

CHECKED BY: SEM

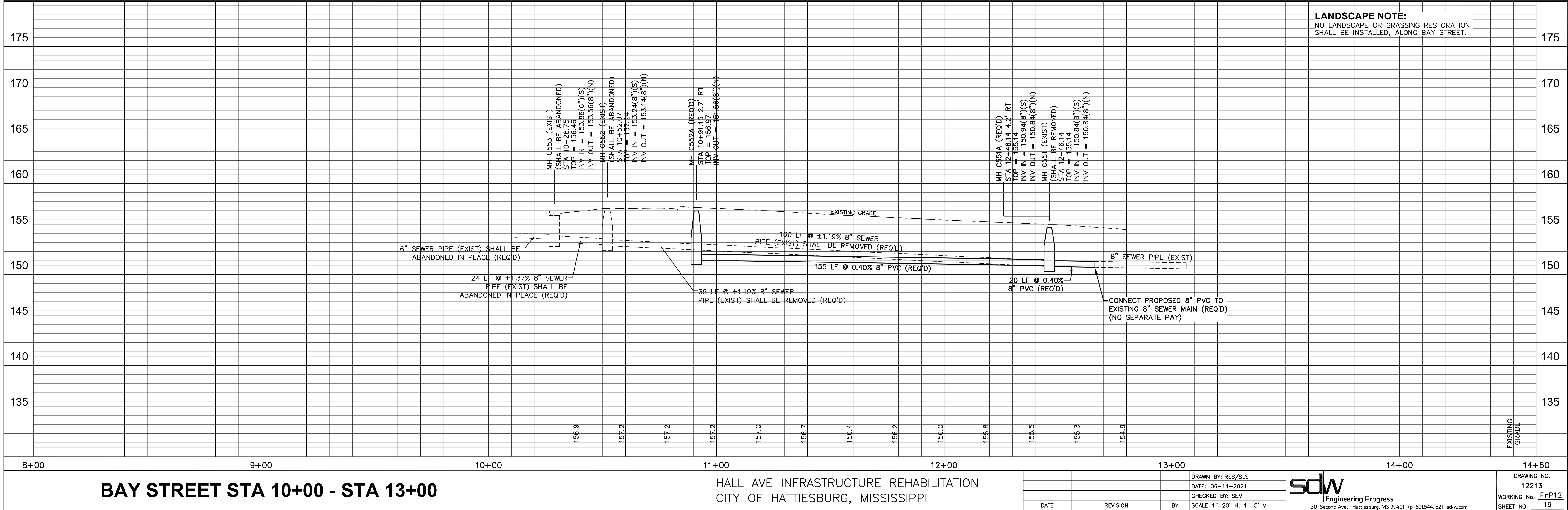
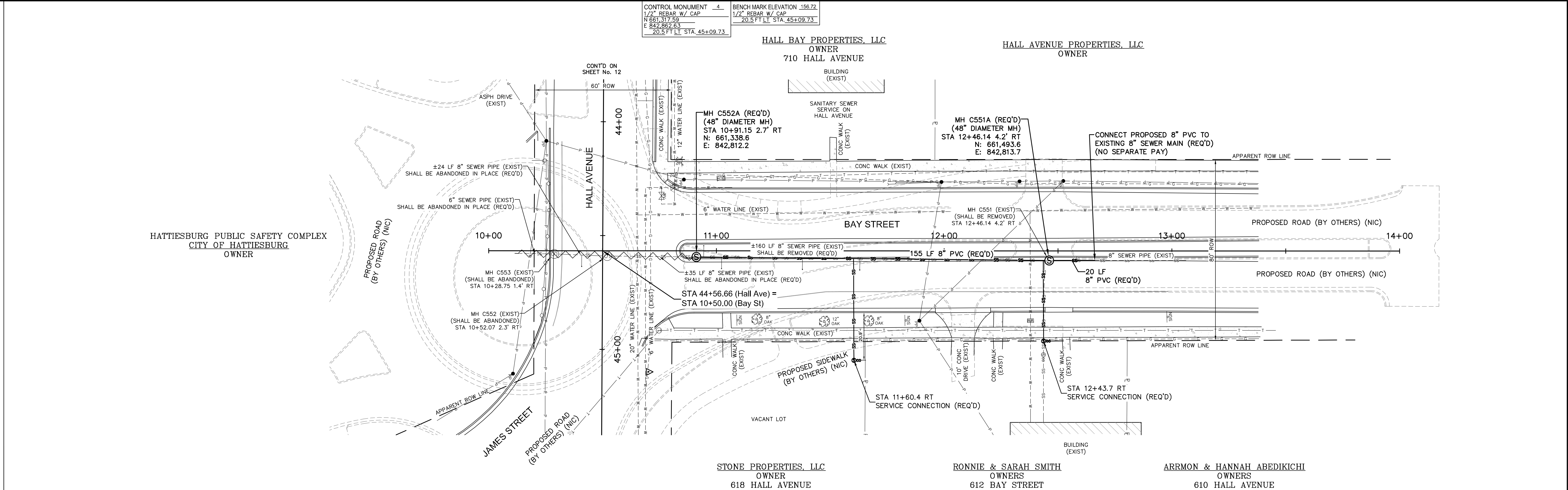
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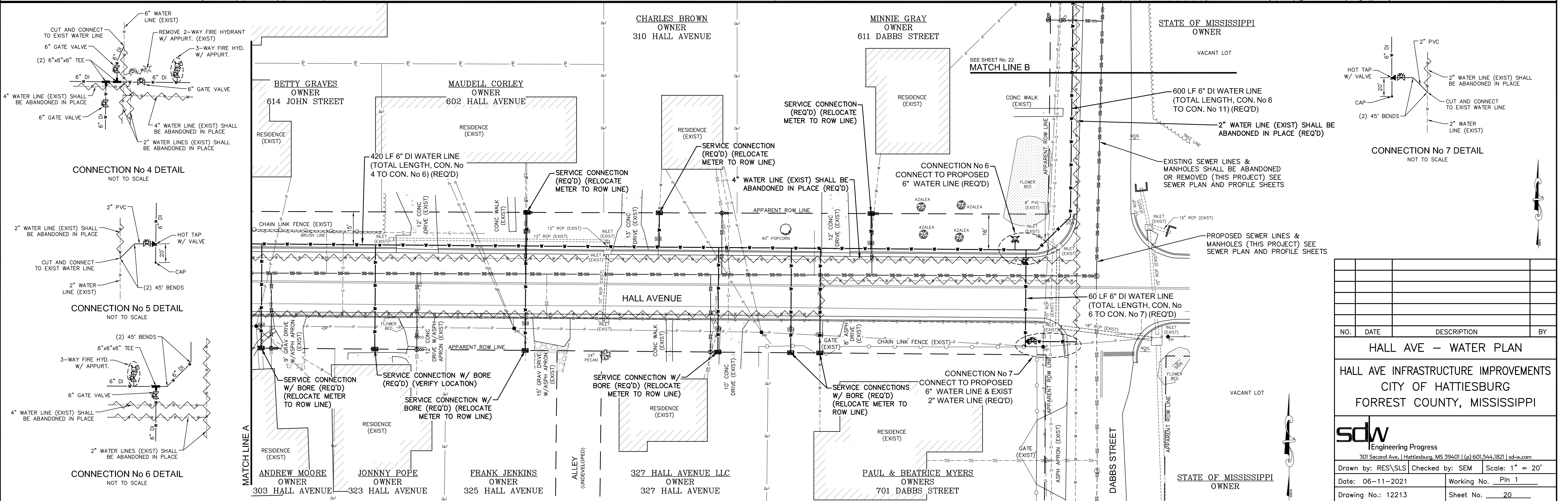
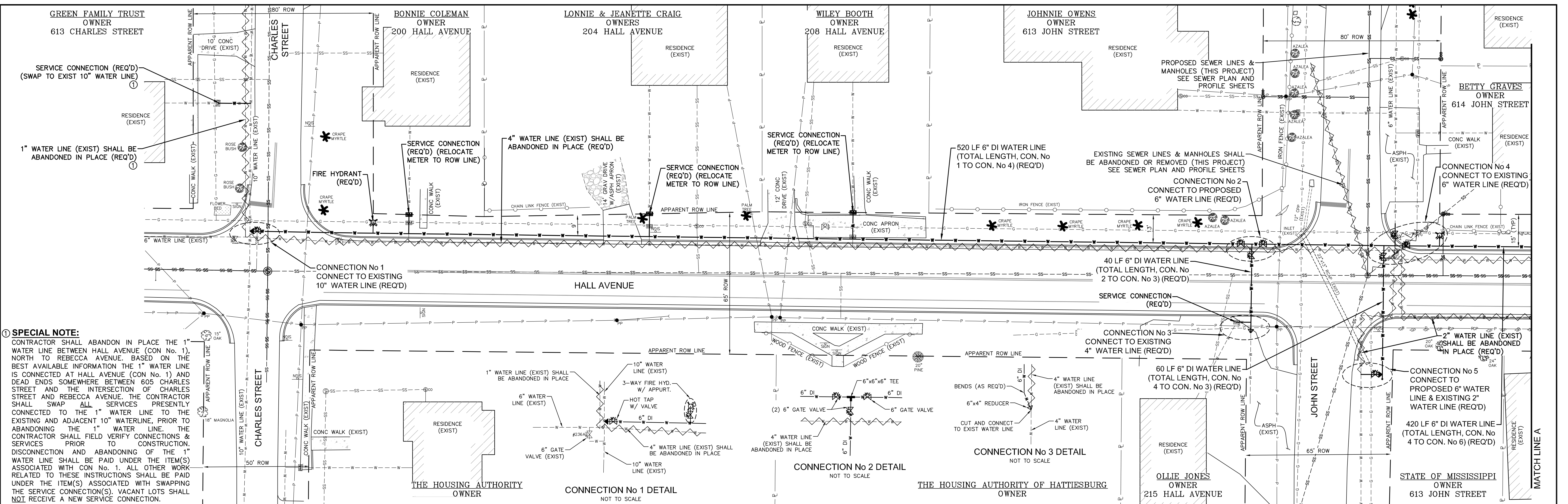
DRAWING NO. 12213

WORKING No. PnP11

SHEET NO. 18

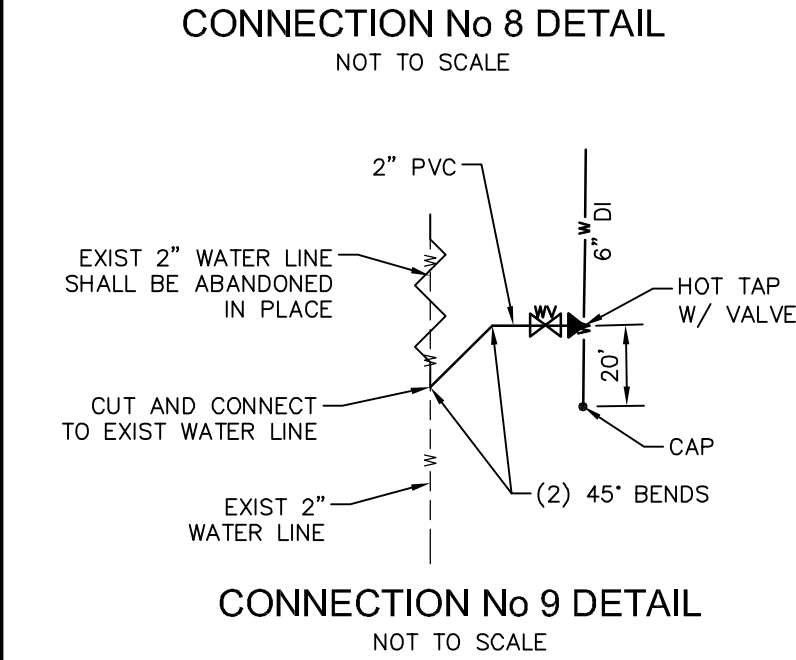
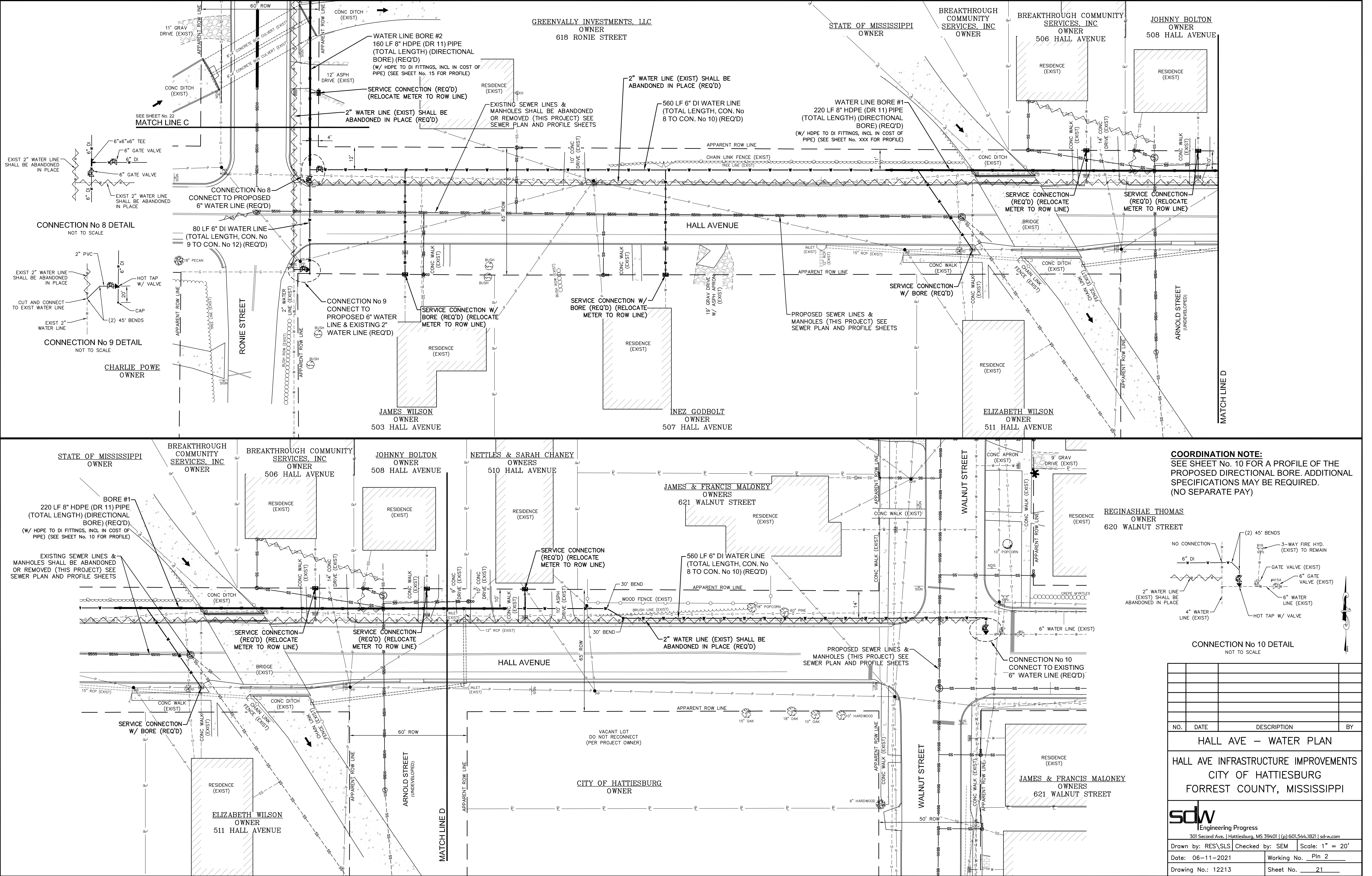
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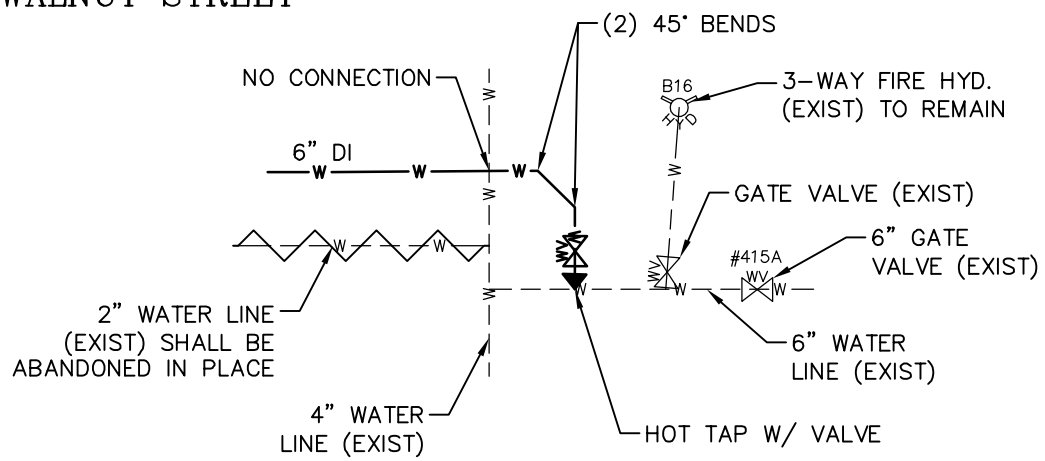


NO.	DATE	DESCRIPTION			BY
HALL AVE – WATER PLAN					
HALL AVE INFRASTRUCTURE IMPROVEMENTS					
CITY OF HATTIESBURG					
FORREST COUNTY, MISSISSIPPI					
 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sdw.com					
Drawn by: RES\SLS		Checked by: SEM		Scale: 1" = 20'	
Date: 06-11-2021		Working No.		Pin 1	
Drawing No.: 12213		Sheet No.		20	

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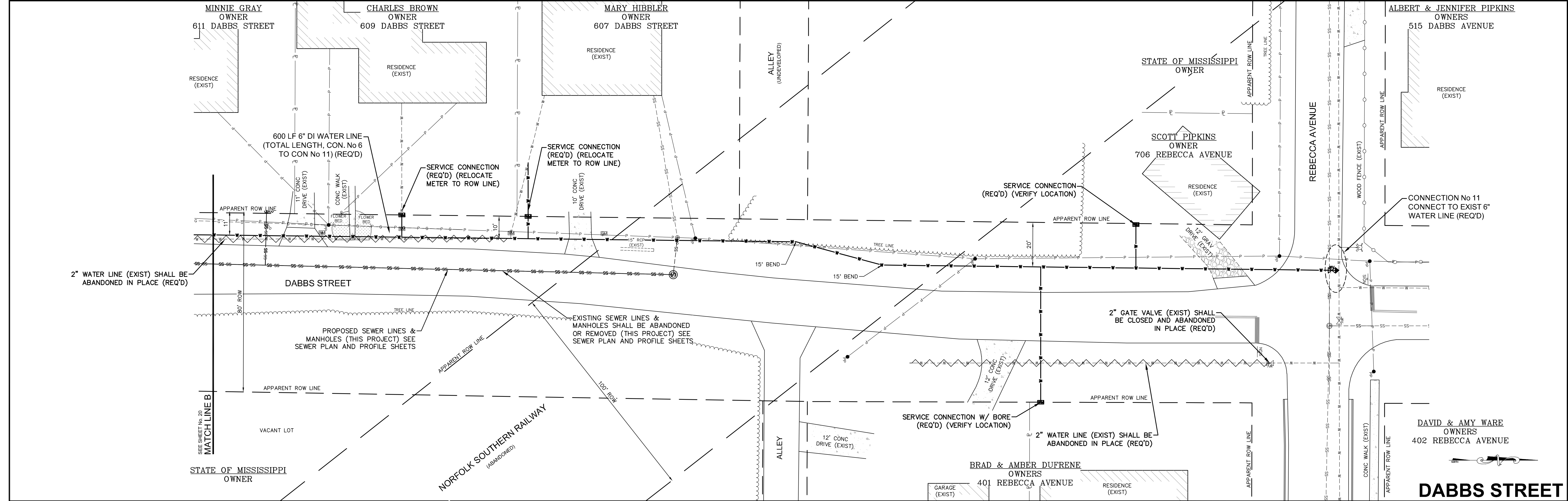


COORDINATION NOTE:
SEE SHEET No. 10 FOR A PROFILE OF THE PROPOSED DIRECTIONAL BORE. ADDITIONAL SPECIFICATIONS MAY BE REQUIRED. (NO SEPARATE PAY)



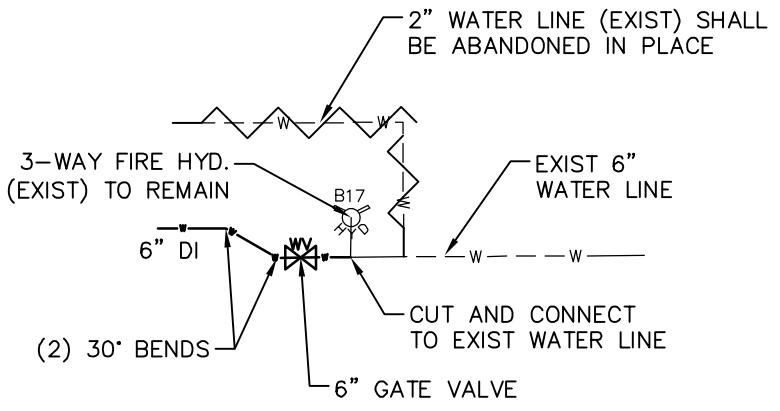
CONNECTION No 10 DETAIL
NOT TO SCALE

HALL AVE – WATER PLAN			
HALL AVE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com			
Drawn by: RES/SLS	Checked by: SEM	Scale: 1" = 20'	
Date: 06-11-2021	Working No. Pln 2		
Drawing No.: 12213	Sheet No. 21		



DABBS STREET
RONIE STREET

COORDINATION NOTE:
SEE SHEET No. 15 FOR A PROFILE OF THE PROPOSED DIRECTIONAL BORE. ADDITIONAL SPECIFICATIONS MAY BE REQUIRED. (NO SEPARATE PAY)



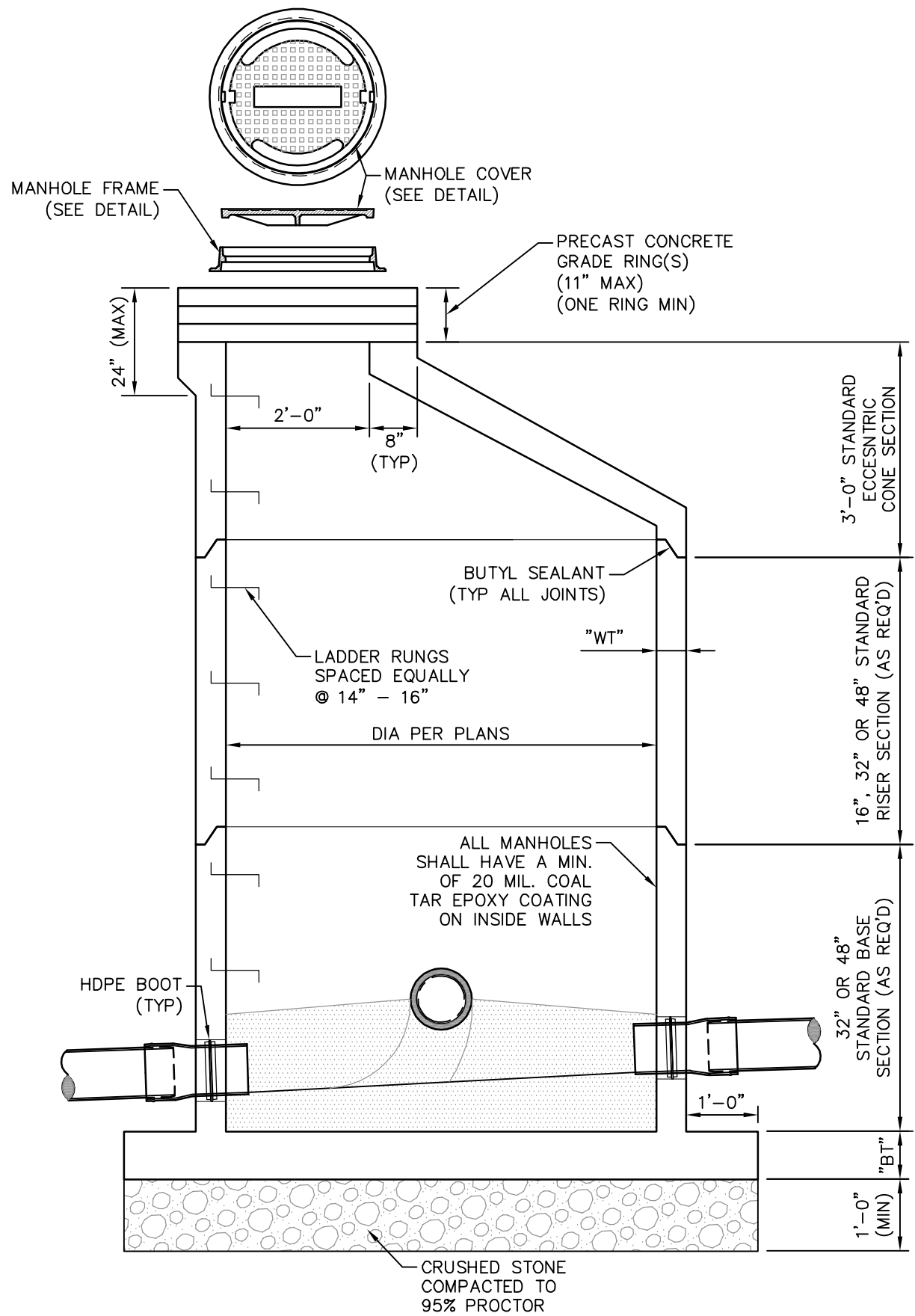
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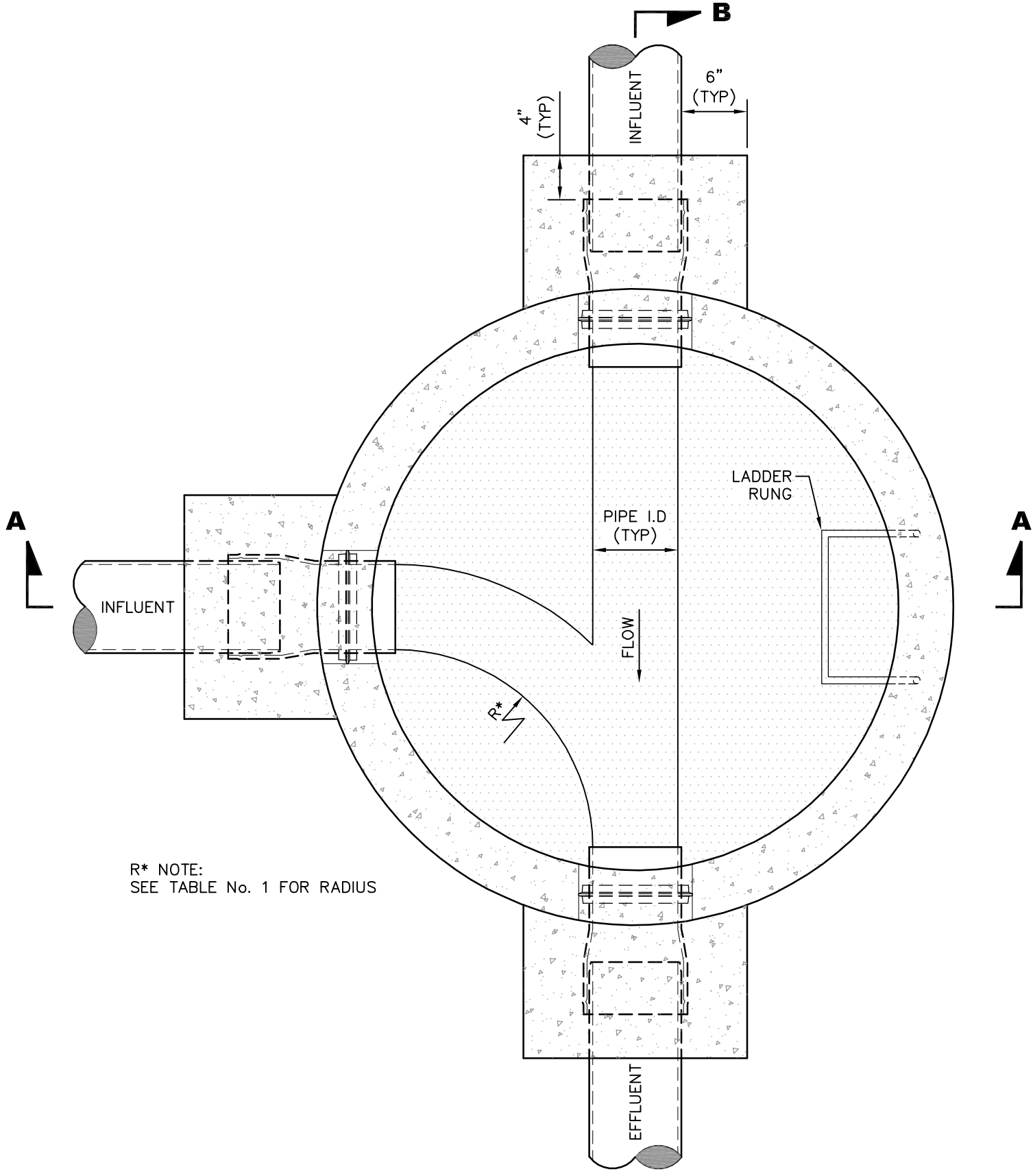
NO.	DATE	DESCRIPTION	BY
DABBS & RONIE STREETS – WATER PLAN			
HALL AVE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
 Engineering Progress			
301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 sd-w.com			
Drawn by: RES/SLS		Checked by: SEM	Scale: 1" = 20'
Date: 06-11-2021		Working No. Pln 3	
Drawing No.: 12213		Sheet No. 22	

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CONCRETE WALL THICKNESS TABLE		
MANHOLE DIA (INCHES)	(WT) MINIMUM WALL THICKNESS (INCHES)	(BT) MINIMUM BASE THICKNESS (INCHES)
48	5	6
60	6	8
72	7	8
96	8	8



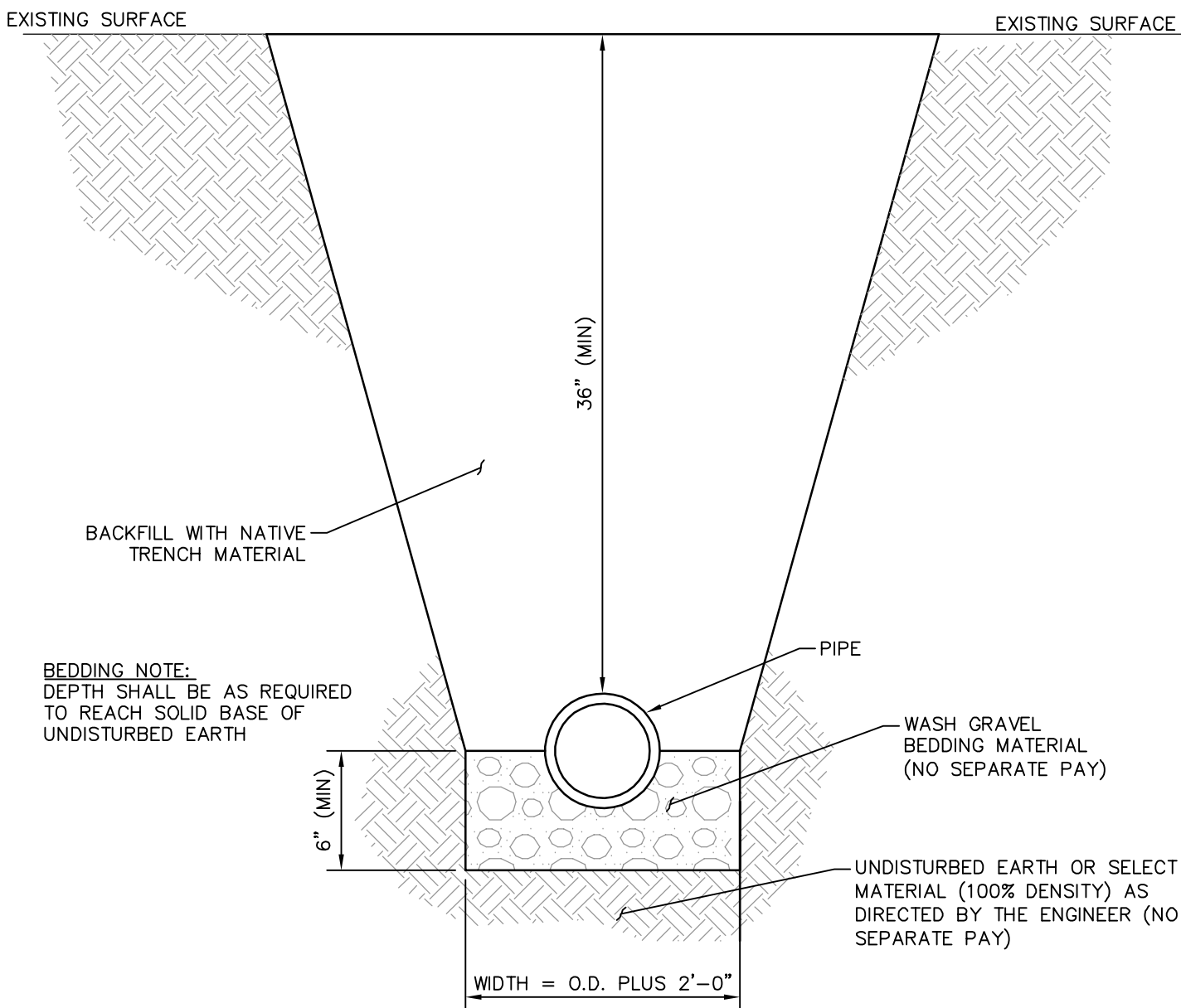
TYPICAL MANHOLE SECTION



STANDARD PRECAST CONCRETE MANHOLE - PLAN VIEW

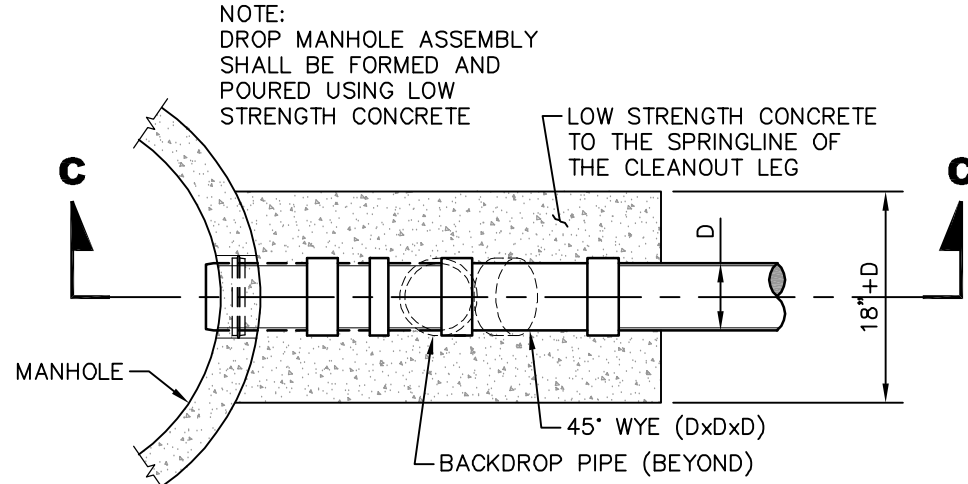
SHOWN WITH 48" Ø MANHOLE, LARGER DIAMETER MANHOLES MAY BE SIMILAR DESIGN, IF APPROVED BY THE ENGINEER. SHOWN WITH PVC PIPE.

TABLE NO. 1 GOVERNING DIMENSIONS FOR MANHOLES			
PIPE SIZE	ANGLE	MIN. BASE Ø	"R"*
8" - 12"	0° - 90°	48"	18"
15"	0° - 60°	60"	22"
15"	60° - 90°	60"	22"
18"	0° - 90°	60"	27"
18"	60° - 90°	60"	22"
21"	0° - 90°	60"	31"
21"	60° - 90°	60"	28"
24"	0° - 45°	72"	36"
24"	45° - 90°	72"	27"
30"	0° - 60°	72"	45"
30"	60° - 90°	72"	32"
36"	0° - 30°	84"	54"

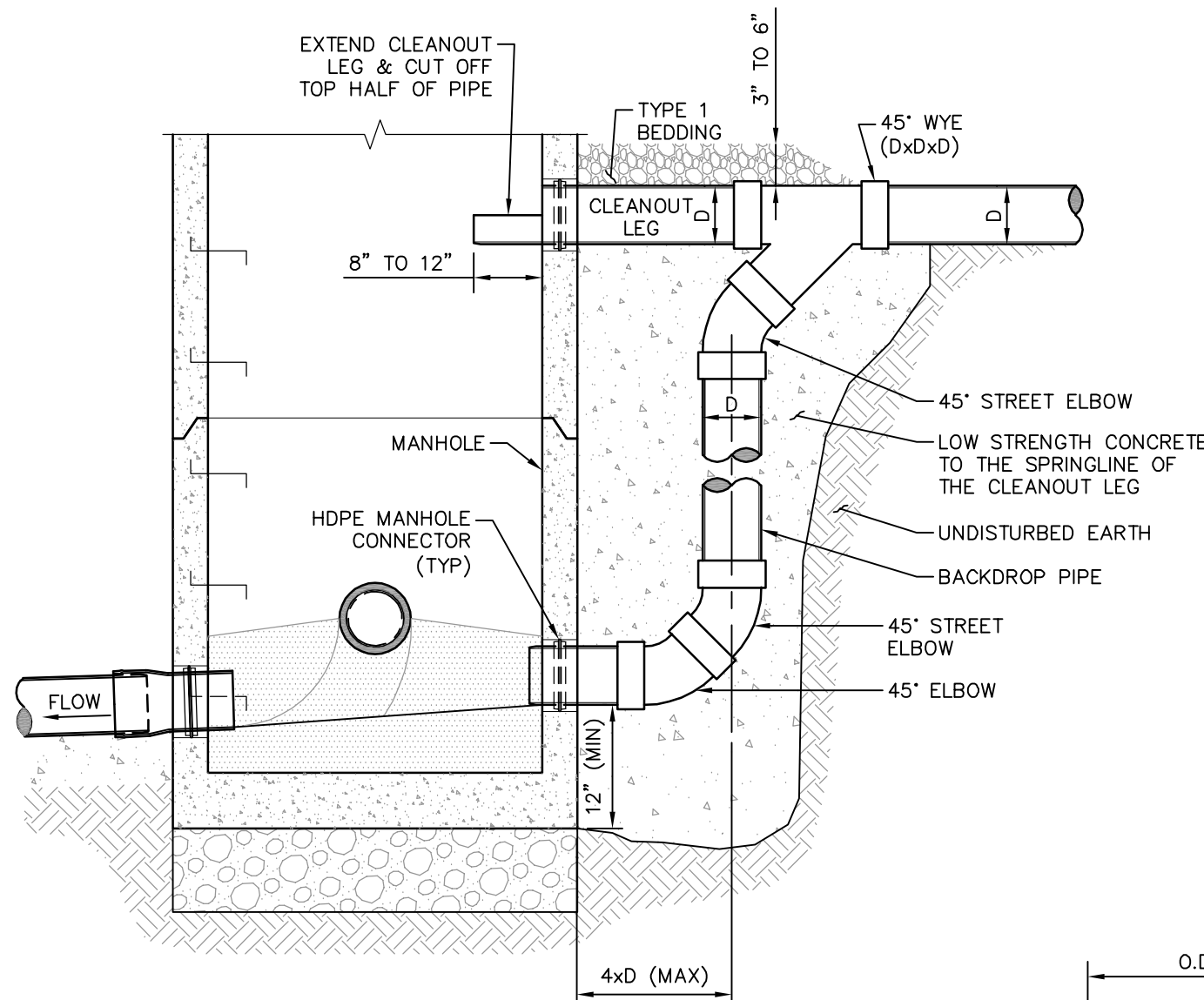


TYPICAL TRENCH IN NON-PAVED AREAS DETAIL

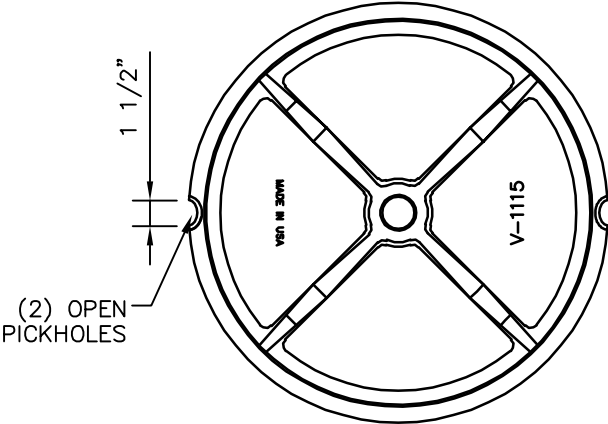
NOTE: TRENCH WIDTHS SHALL BE MINIMIZED BY THE CONTRACTOR TO ONLY NECESSARY FOR CONSTRUCTION AS DETERMINED BY THE ENGINEER.



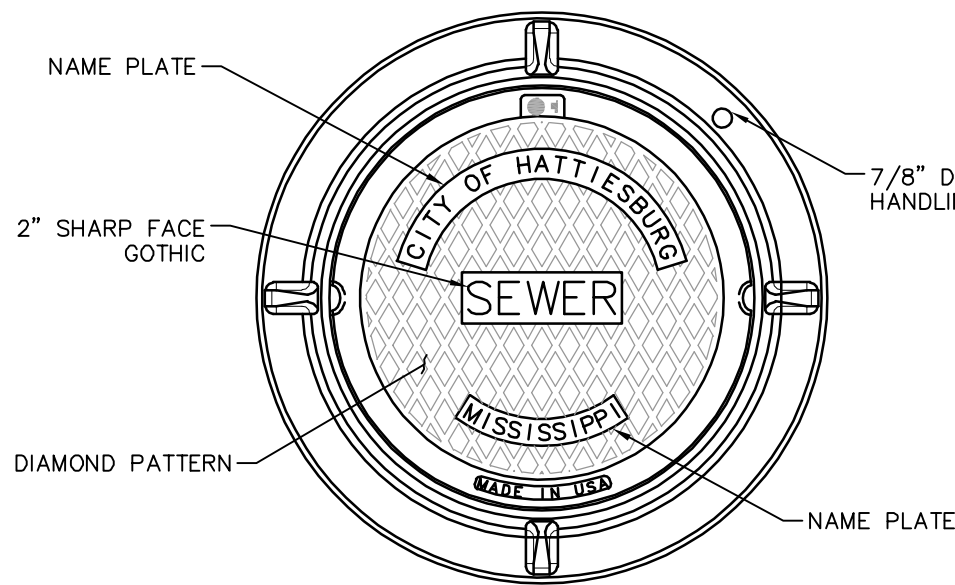
EXTERIOR DROP CLEANOUT MANHOLE ASSEMBLY - PLAN VIEW



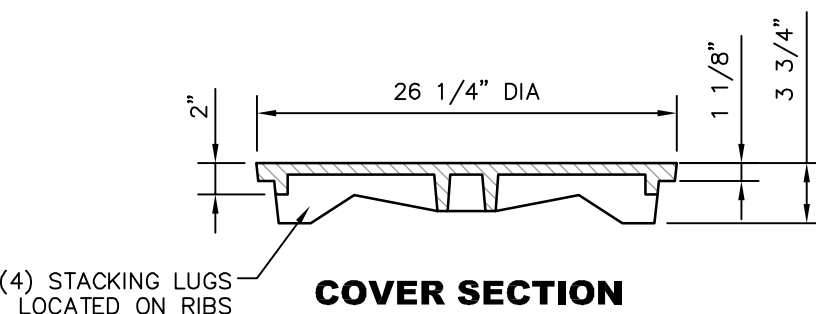
DETAIL "B" TYPICAL EXTERIOR DROP CLEANOUT ASSEMBLY ELEVATION



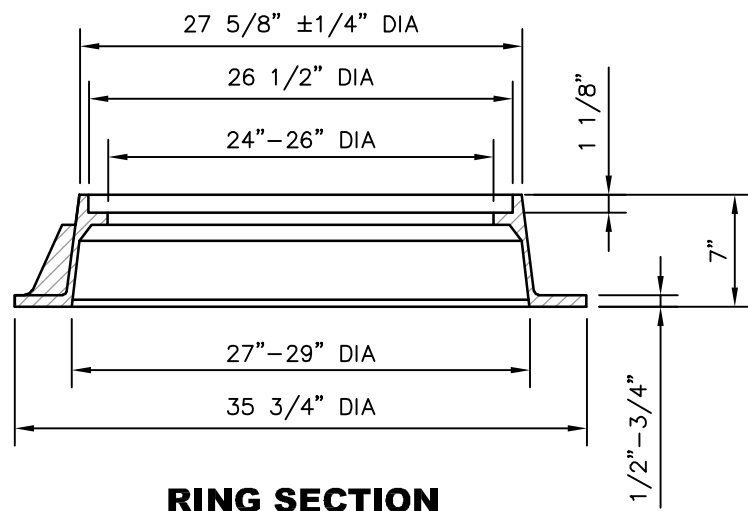
INVERTED PLAN COVER



PLAN WITH FRAME



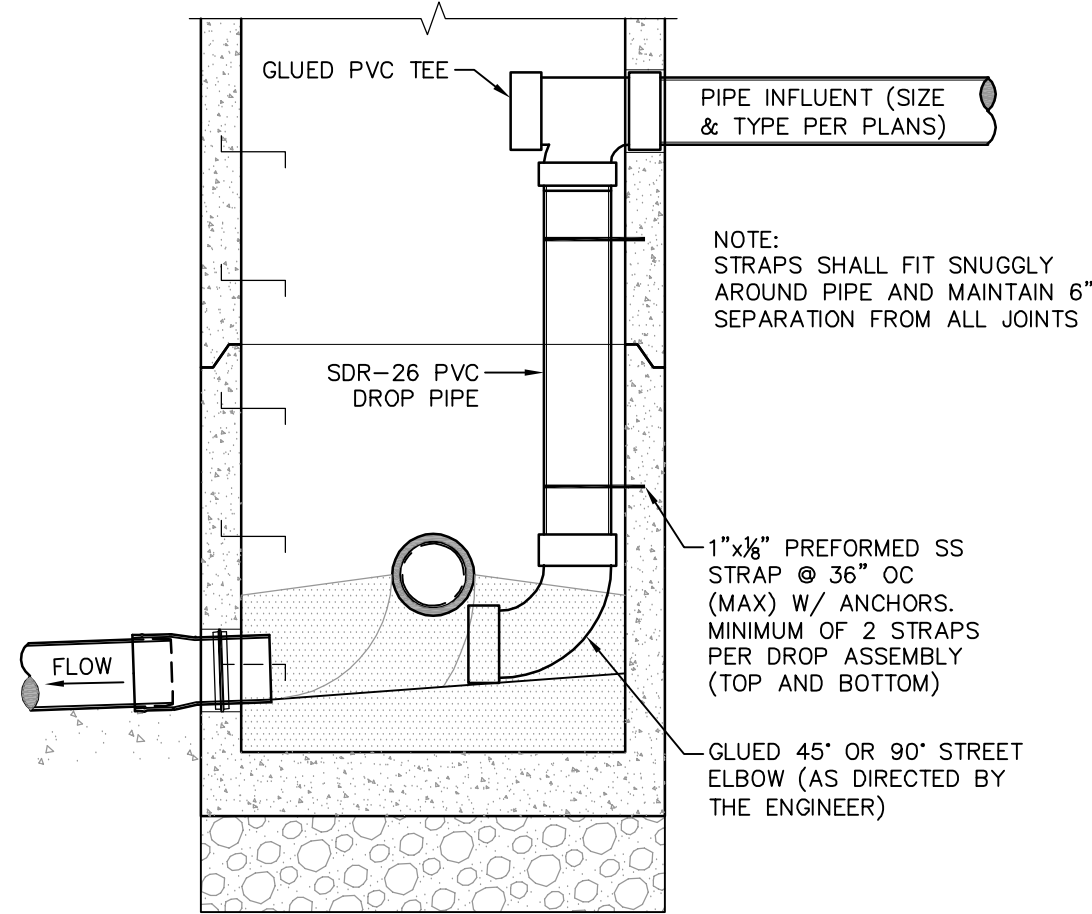
COVER SECTION



RING SECTION

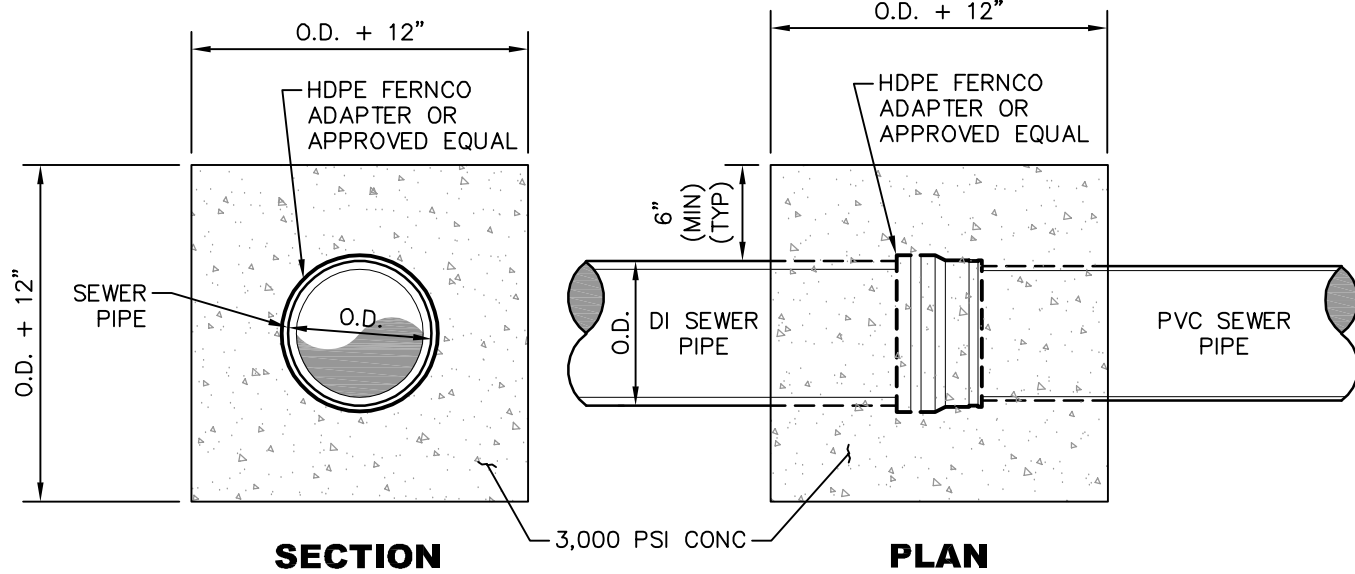
HEAVY DUTY COVER & FRAME V-1115 OR USF 370 WITH OUT HOLES ONLY
HEAVY DUTY WATERTIGHT COVER & FRAME V-2115-3 AGS WITH OUT HOLES, WITH GASKET & BOLTS ONLY

MANHOLE COVER DETAILS

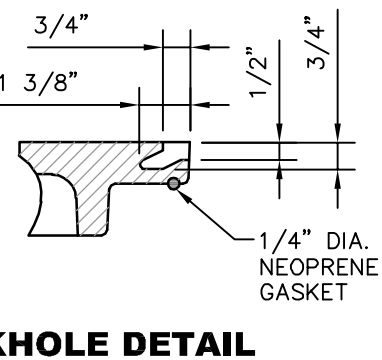


DETAIL "A" TYPICAL INTERIOR DROP CLEANOUT ASSEMBLY ELEVATION

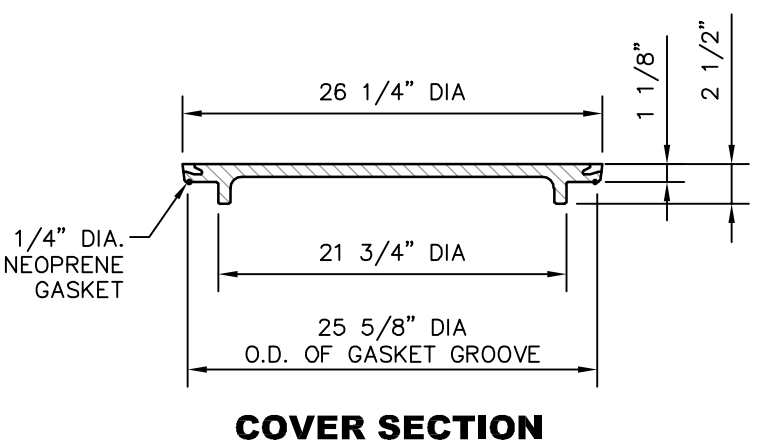
DROP CLEANOUT NOTES:
1. USE DETAIL "A" SHOWN ABOVE, ONLY WHERE A SINGLE 8" DROP ASSEMBLY CONNECTION INSIDE A 48" DIA. MANHOLE IS REQUIRED. FOR MULTIPLE DROP CONNECTIONS INSIDE A 48" MANHOLE USE DETAIL "B", SHOWN AT LEFT. FOR MULTIPLE DROP CONNECTION ASSEMBLIES IN LARGER DIAMETER MANHOLES THE DROP CONNECTIONS SHALL BE INSTALLED AS DIRECTED BY THE ENGINEER.
2. ALL HARDWARE SHALL BE STAINLESS STEEL.
3. ALL APPURTENANCES REQUIRED FOR A COMPLETE DROP CONNECTION ASSEMBLY SHALL BE INCLUDED IN THE BID PRICE.



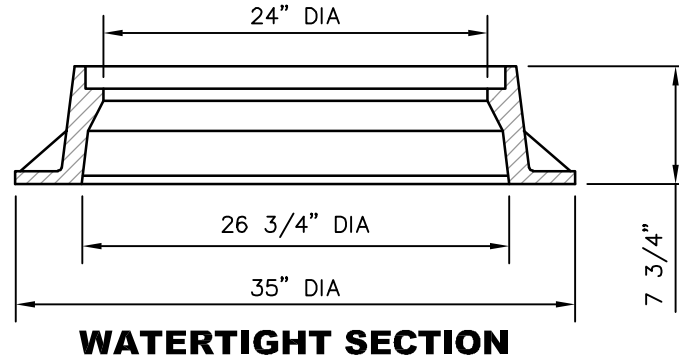
TYPICAL PVC SEWER PIPE TO SAME SIZE DUCTILE IRON SEWER PIPE CONNECTION



PICKHOLE DETAIL



COVER SECTION

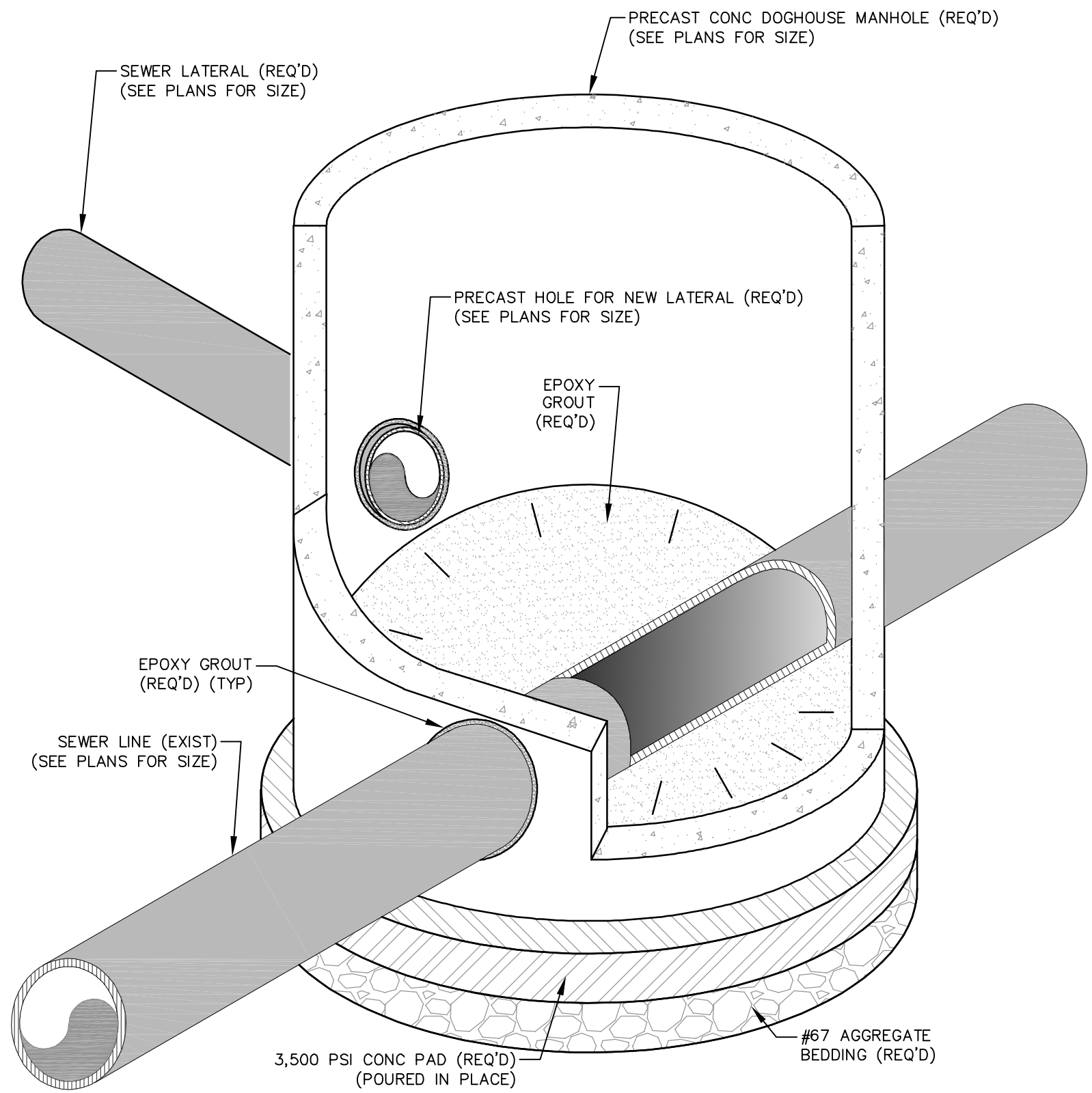


WATERTIGHT SECTION

GENERAL NOTES:

1. ALL MANHOLES SHALL BE STANDARD PRECAST WITH EXTENDED BASES, UNLESS OTHERWISE DIRECTED. FLEXIBLE INLET AND OUTLET CONNECTION BOOTS REQUIRED ON ALL PIPES AND FORCE MAINS.
2. ALL ELEMENTS SHALL CONFORM TO PRECAST MANHOLE SPECIFICATION. A.S.T.M. C-478 LATEST REVISION.
3. PRECAST CONCRETE RINGS SHALL BE USED TO BRING MANHOLE FRAME AND COVER TO GRADE USE (11" MAX. RISE).
4. MANHOLES IN PAVED AREAS SHALL BE FURNISHED WITH ADJUSTING RINGS.

NO.	DATE	DESCRIPTION	BY
SEWER INSTALLATION DETAILS			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS CITY OF HATTIESBURG FORREST COUNTY, MISSISSIPPI			
sdw Engineering Progress 301 Second Ave. Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
Drawn by:	RES/SLS	Checked by:	SEM
Date:	05-21-2021	Working No.:	SSD1
Drawing No.:	12213	Sheet No.:	23

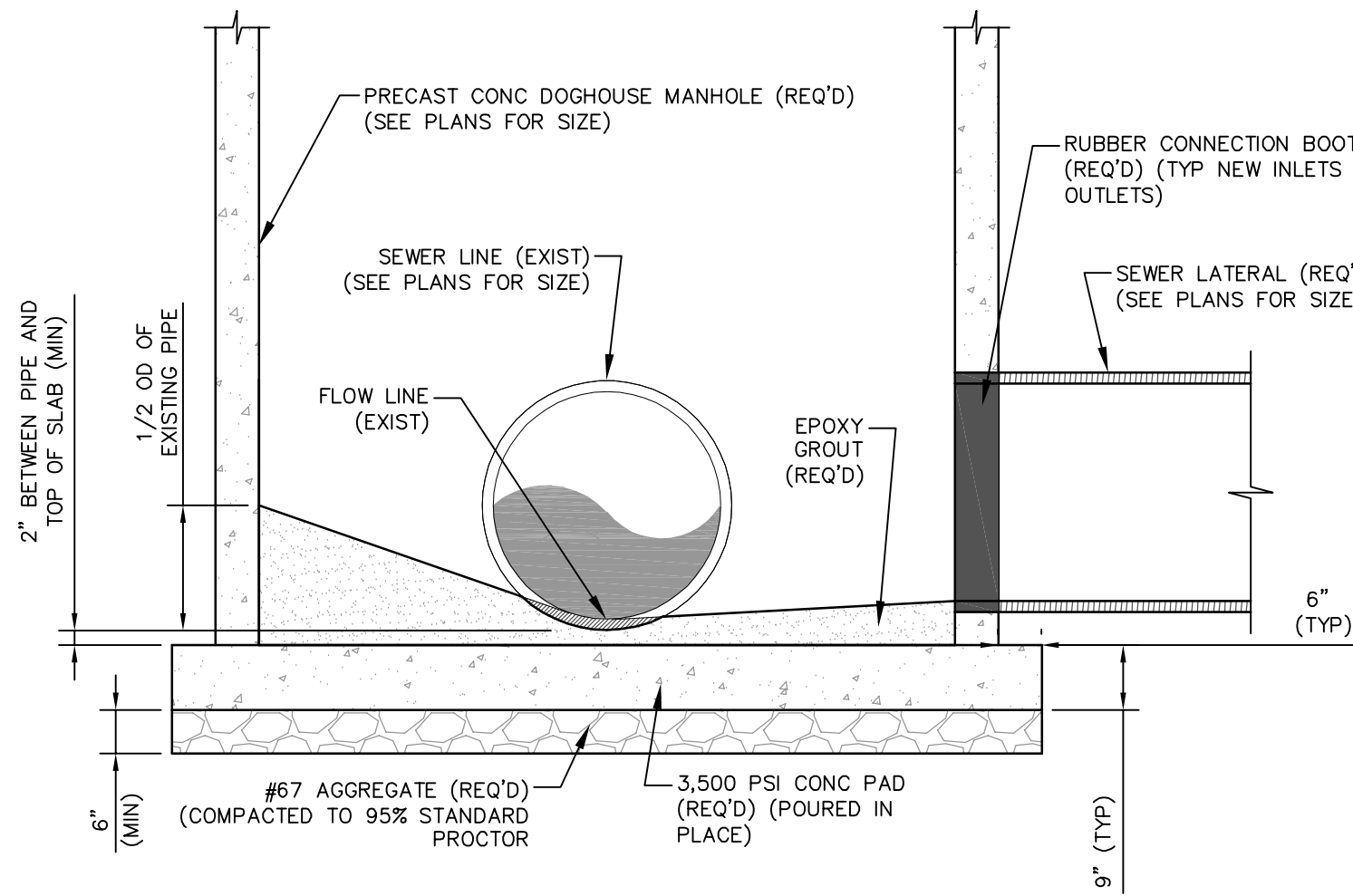


ISOMETRIC VIEW

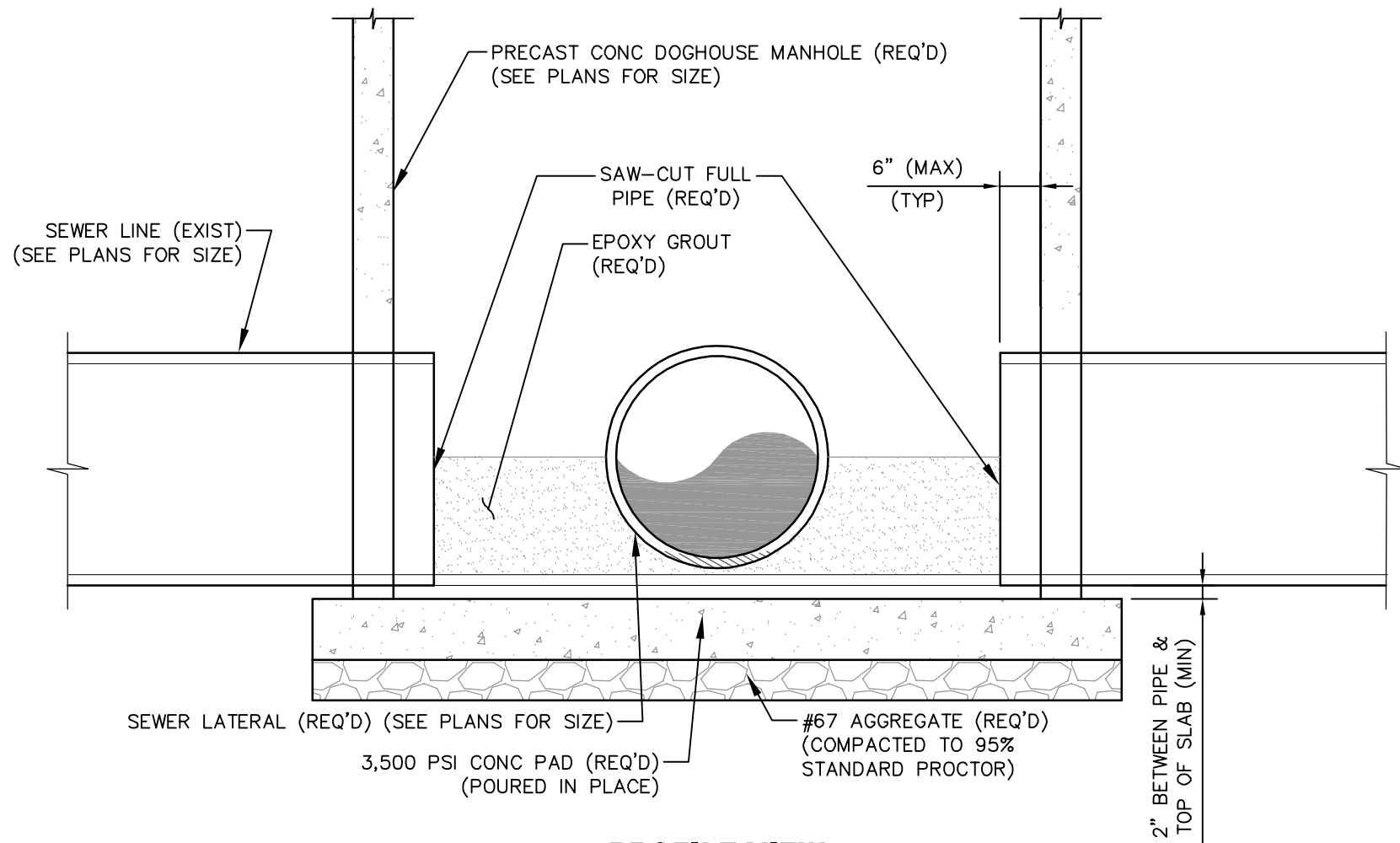
DOGHOUSE MANHOLE NOTES:

1. FLOW SHALL BE MAINTAINED DURING CONSTRUCTION.
2. THIS DETAIL SHALL BE USED WHEN A LATERAL NECESSITATES CONSTRUCTION OF A NEW MANHOLE.
3. CONCRETE MANHOLE PAD SHALL BE POURED IN PLACE AND SHALL BE POURED UPON A #67 AGGREGATE BEDDING.
4. AGGREGATE BEDDING SHALL HAVE A MINIMUM DEPTH OF 6" AND SHALL BE COMPACTED TO 95% STANDARD PROCTOR PRIOR TO CONSTRUCTION OF CONCRETE PAD.
5. ALL PARTS OF THE DOGHOUSE MANHOLE CONSTRUCTION, CONCRETE PAD, AGGREGATE BASE, GROUT, ETC., SHALL BE PAID UNDER DOGHOUSE' MANHOLE ITEM.

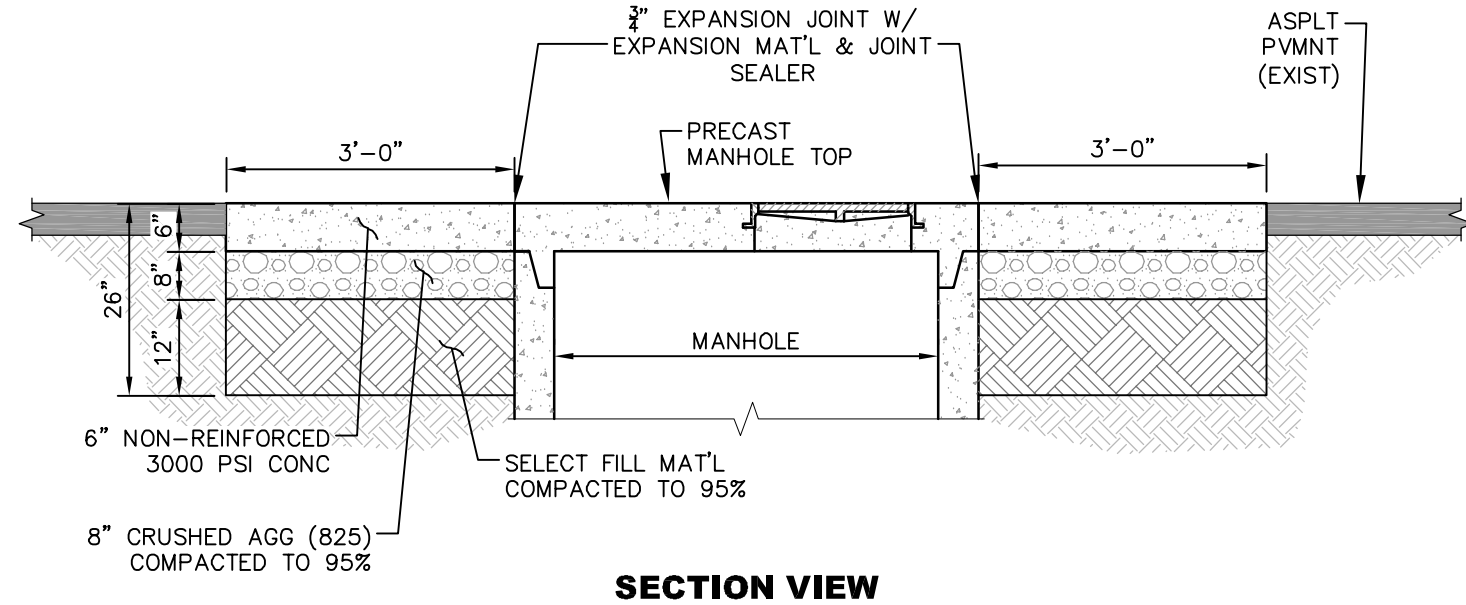
DOGHOUSE MANHOLE DETAIL



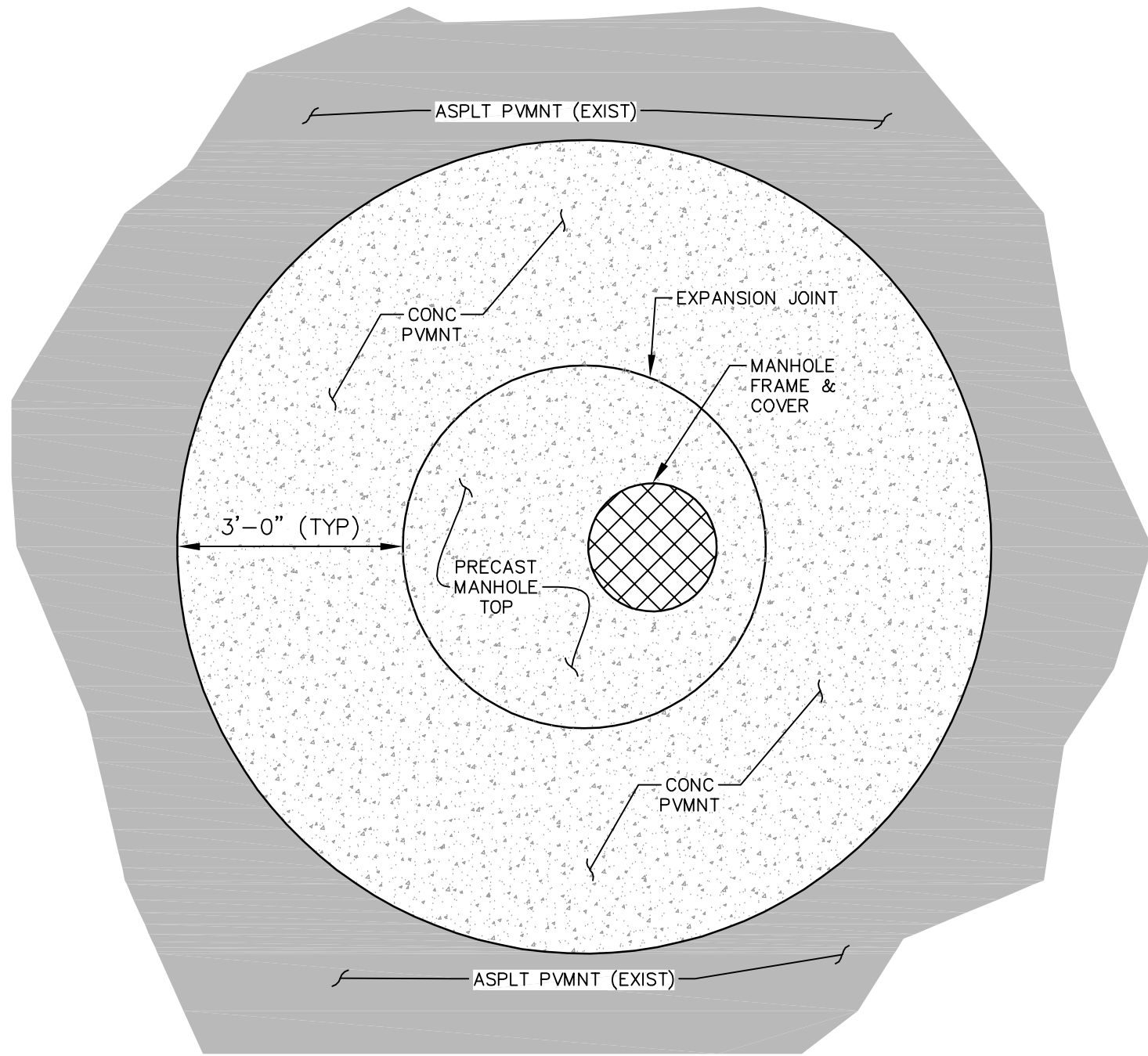
SECTION VIEW



PROFILE VIEW

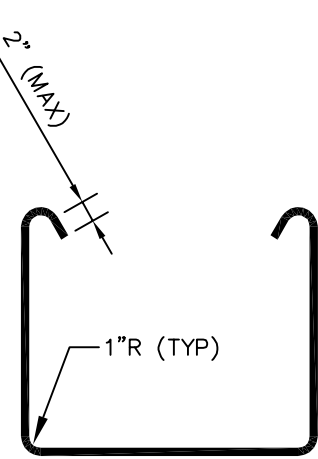


SECTION VIEW

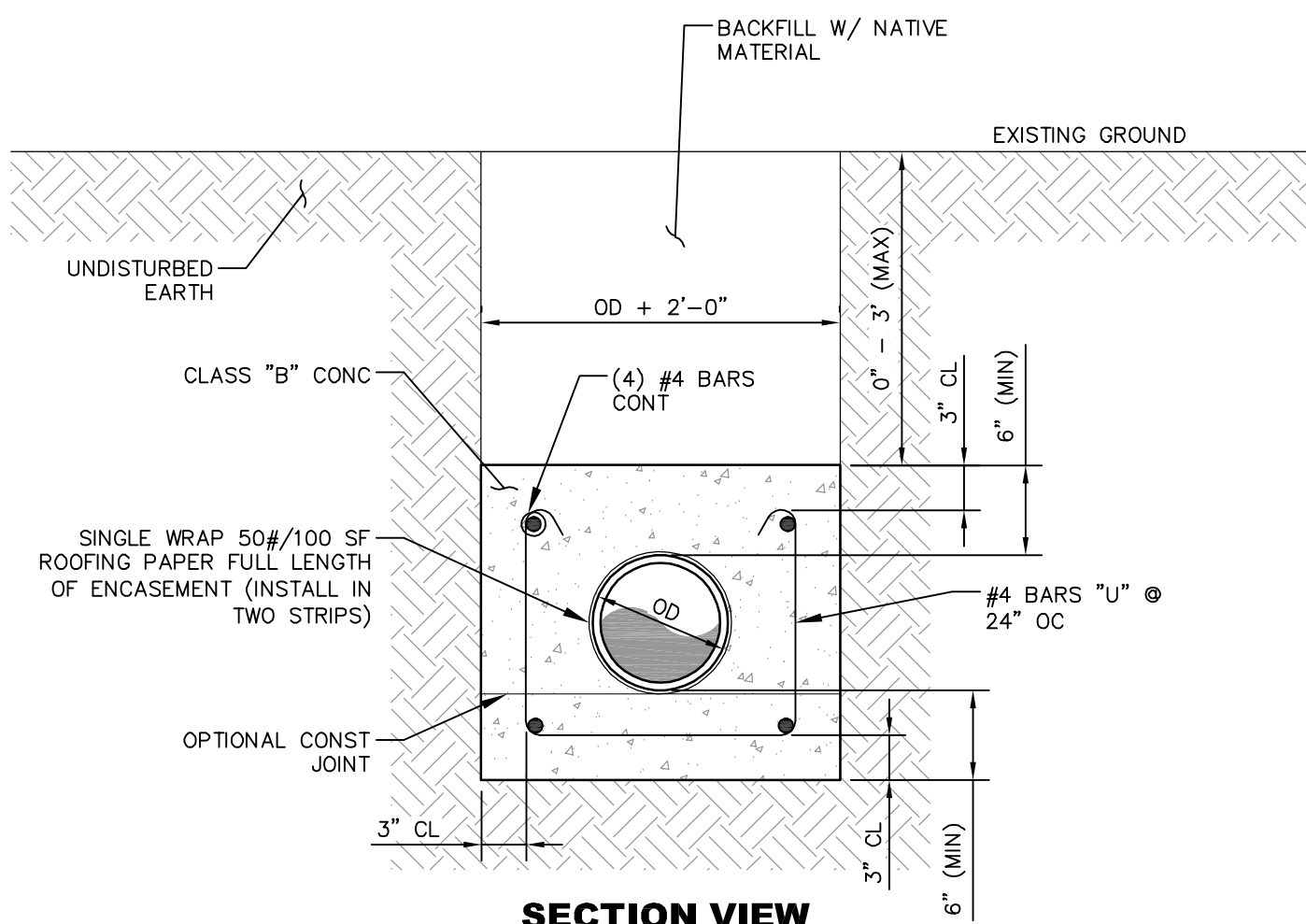


PLAN VIEW

TYPICAL ADDITIONAL PAVING DETAIL @ FLAT TOP MANHOLE

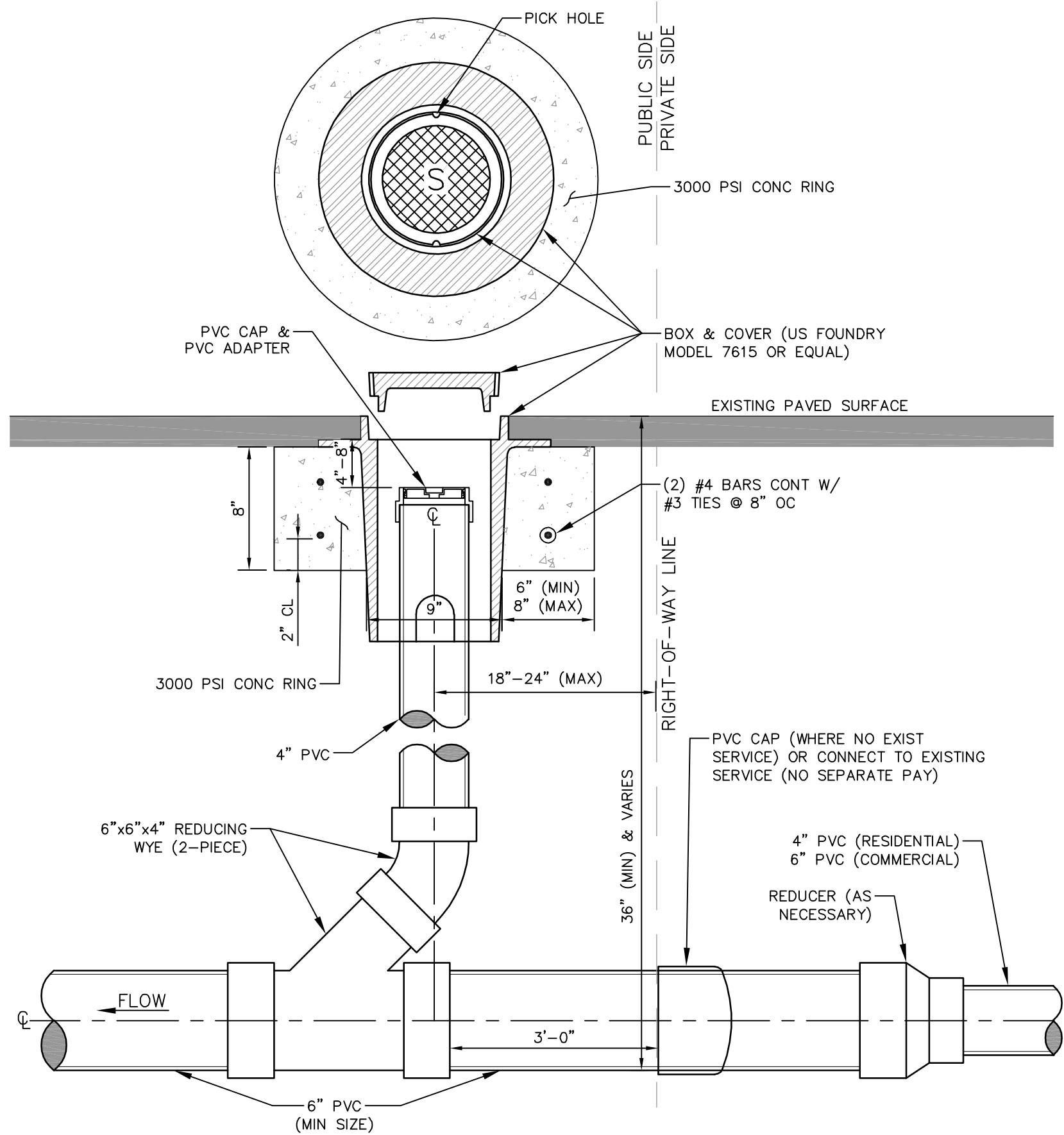


BAR "U" DETAIL



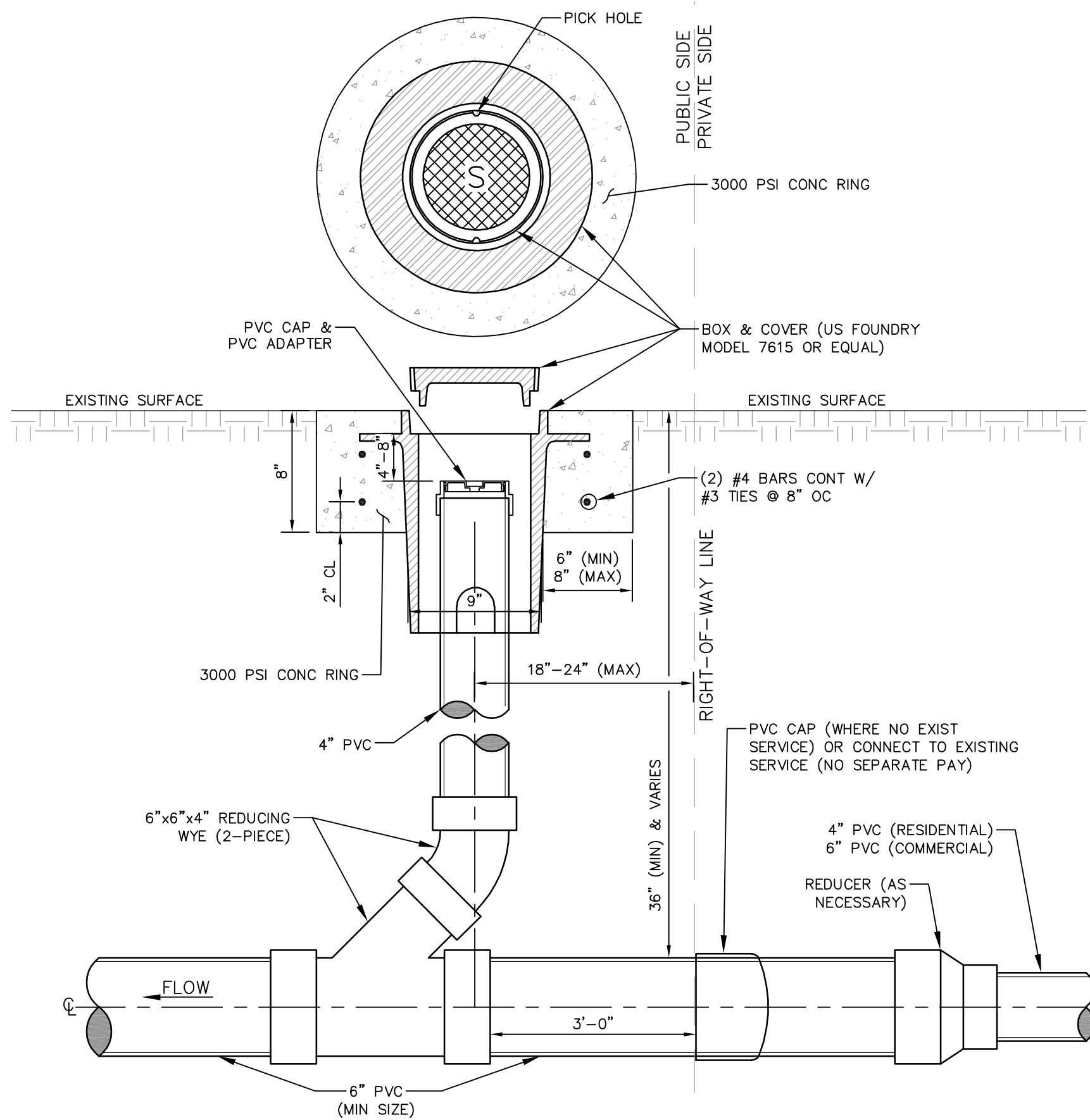
SECTION VIEW

CONCRETE ENCASEMENT FOR LOW COVER DETAIL



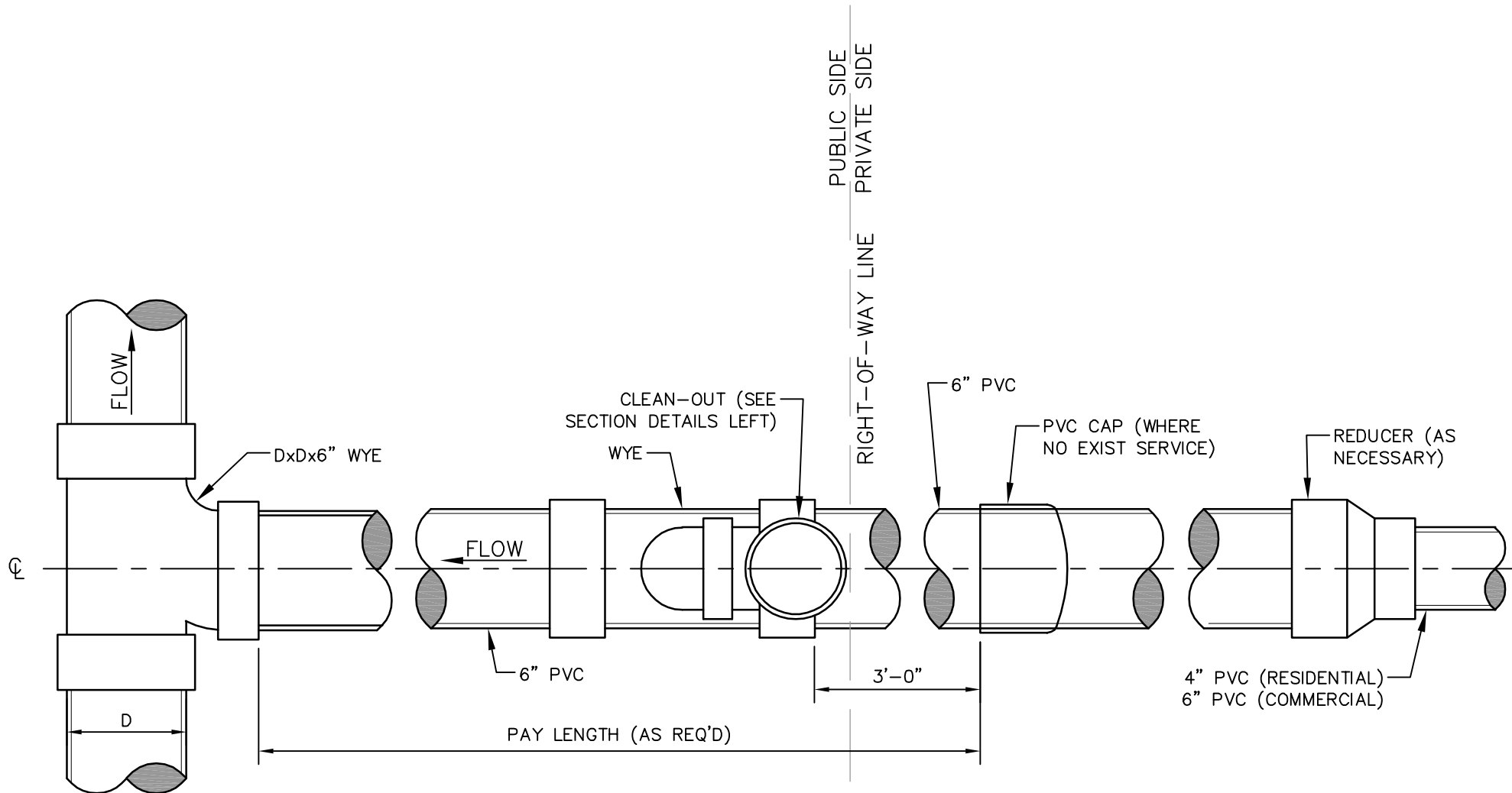
SANITARY SEWER CLEANOUT DETAIL - SECTION VIEW

FOR PAVED AREA



SANITARY SEWER CLEANOUT DETAIL - SECTION VIEW

FOR NON-PAVED AREA



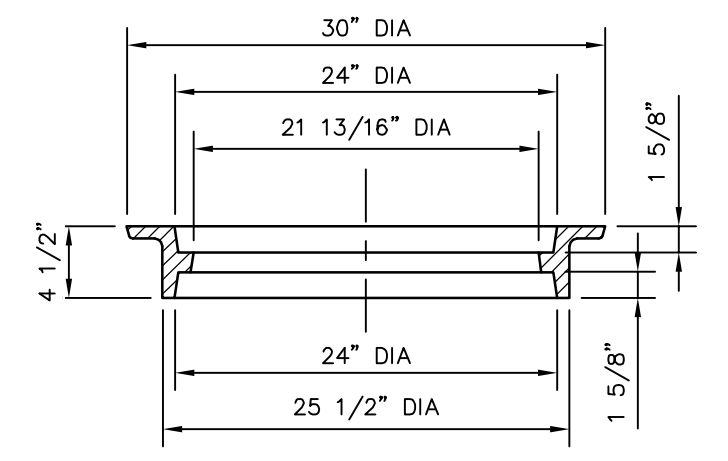
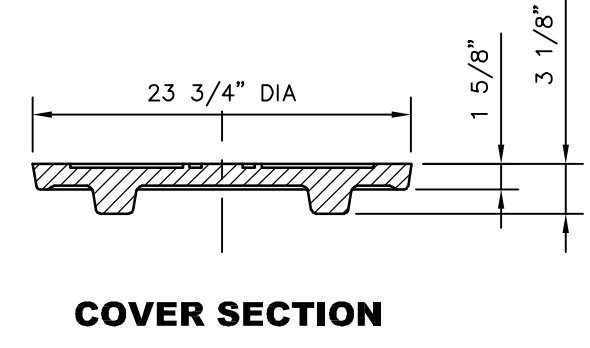
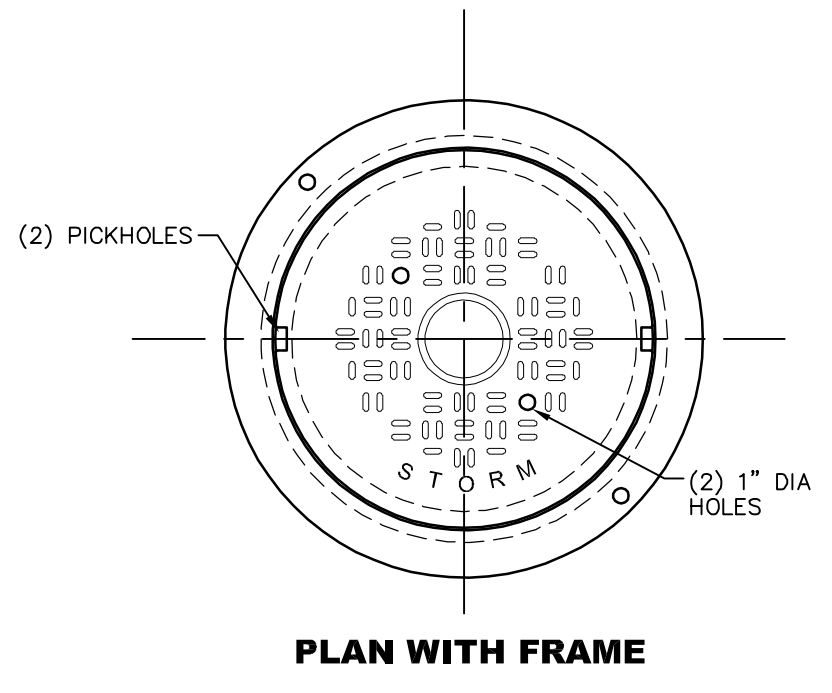
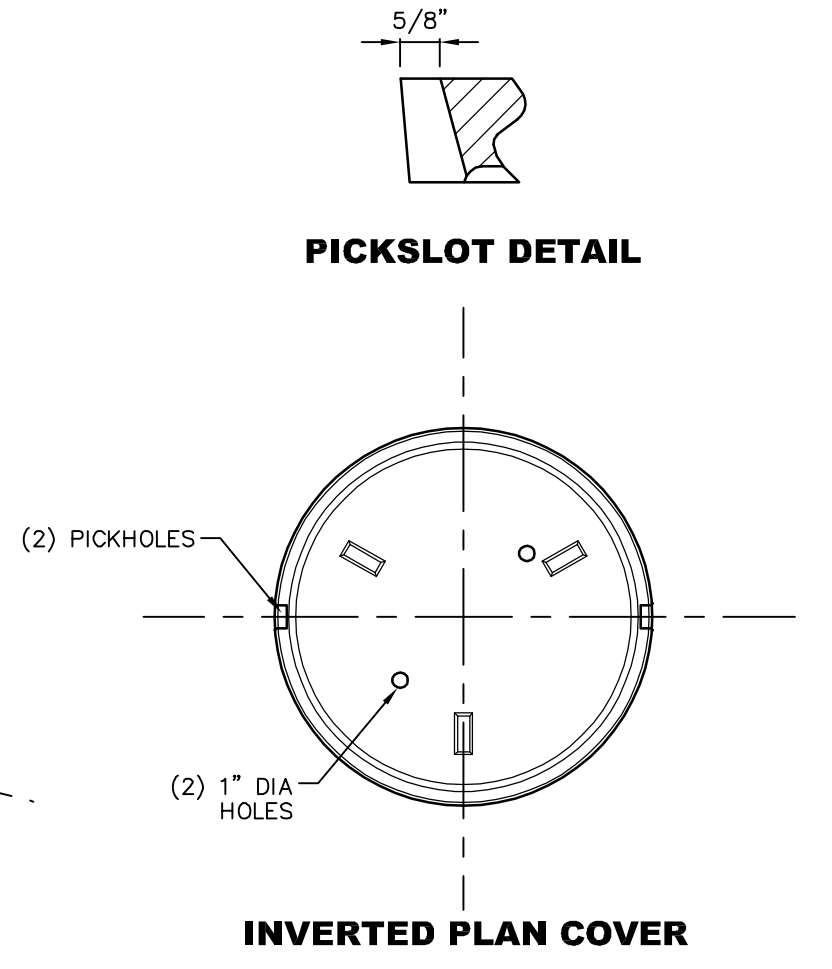
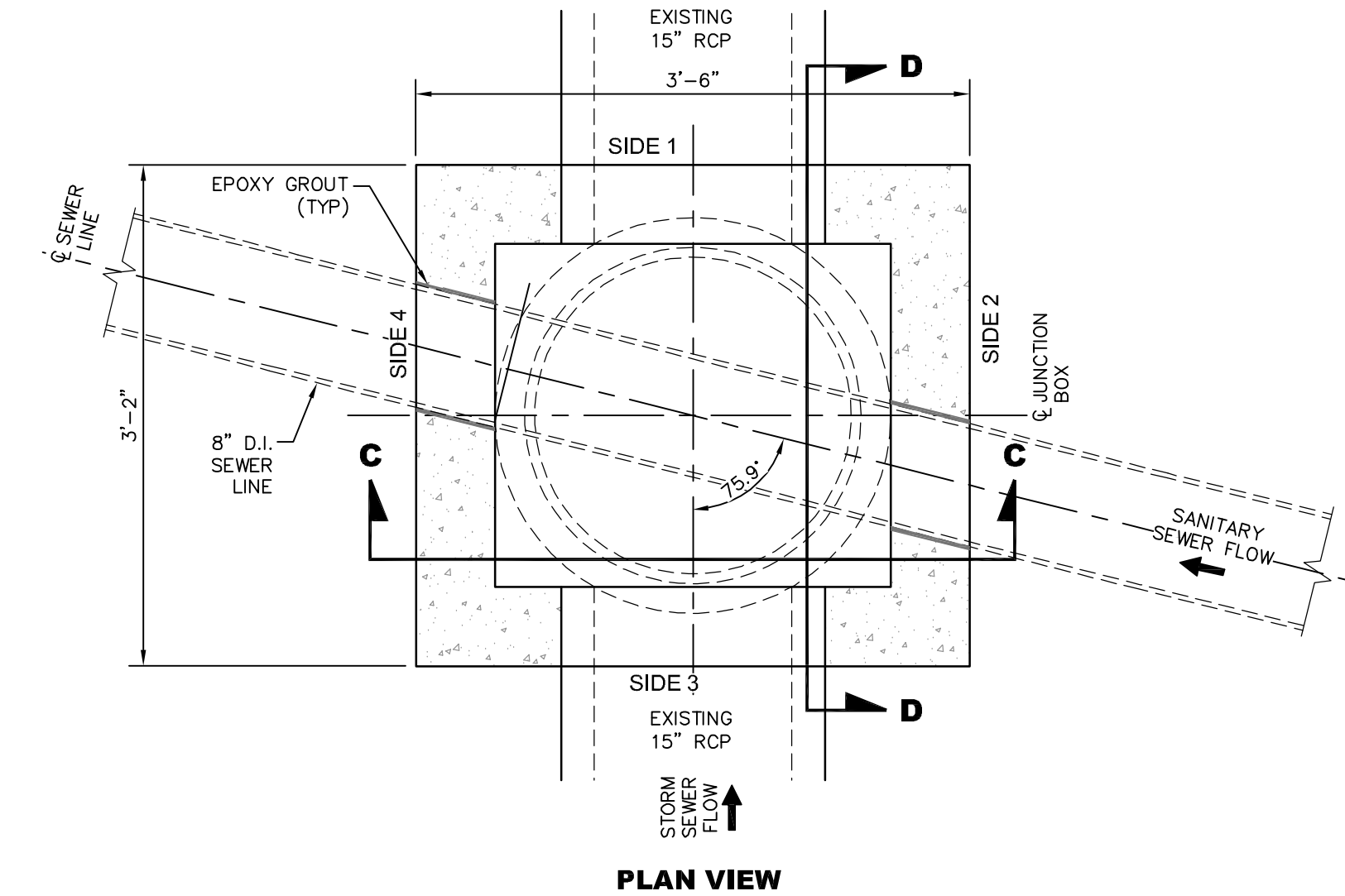
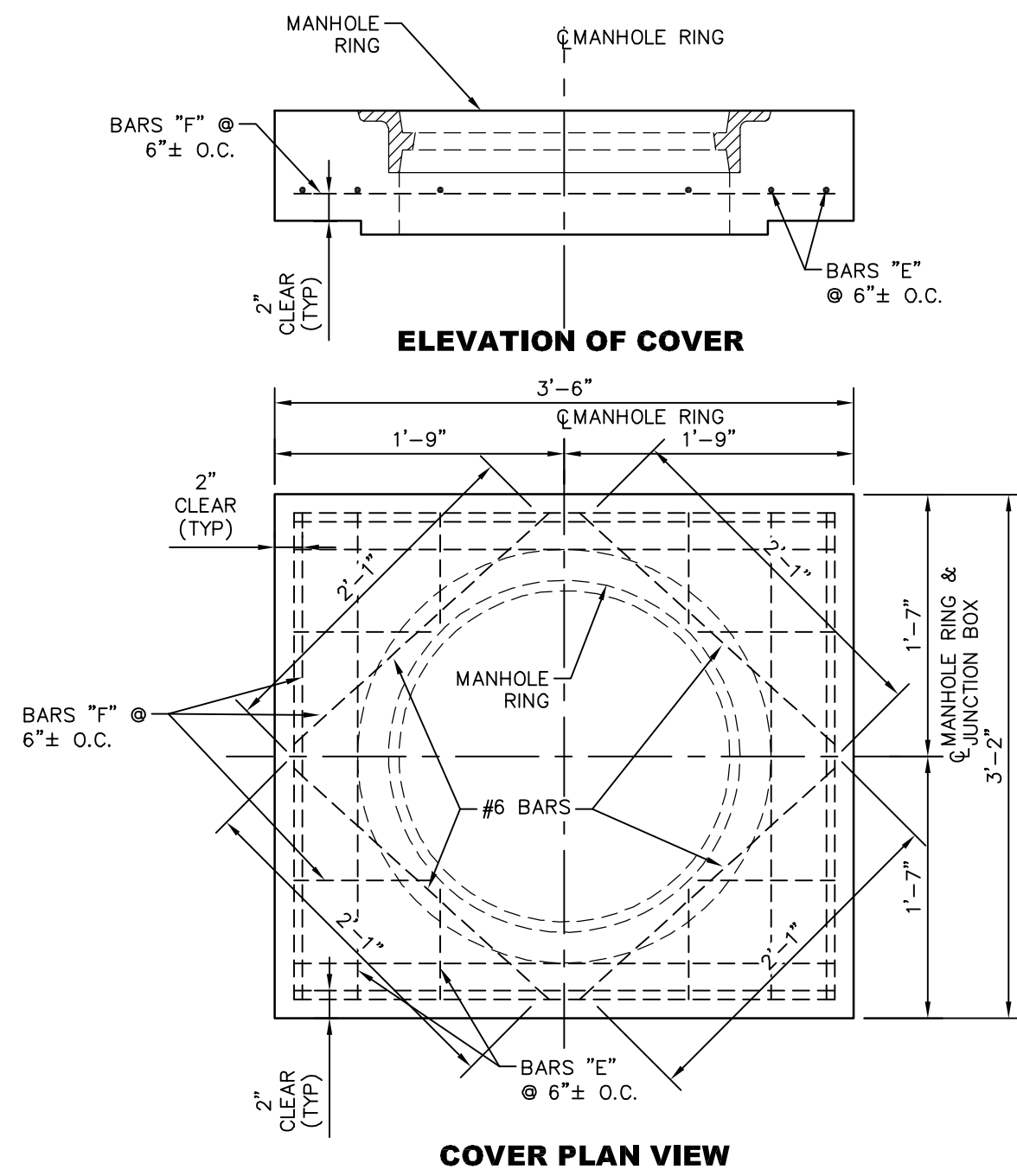
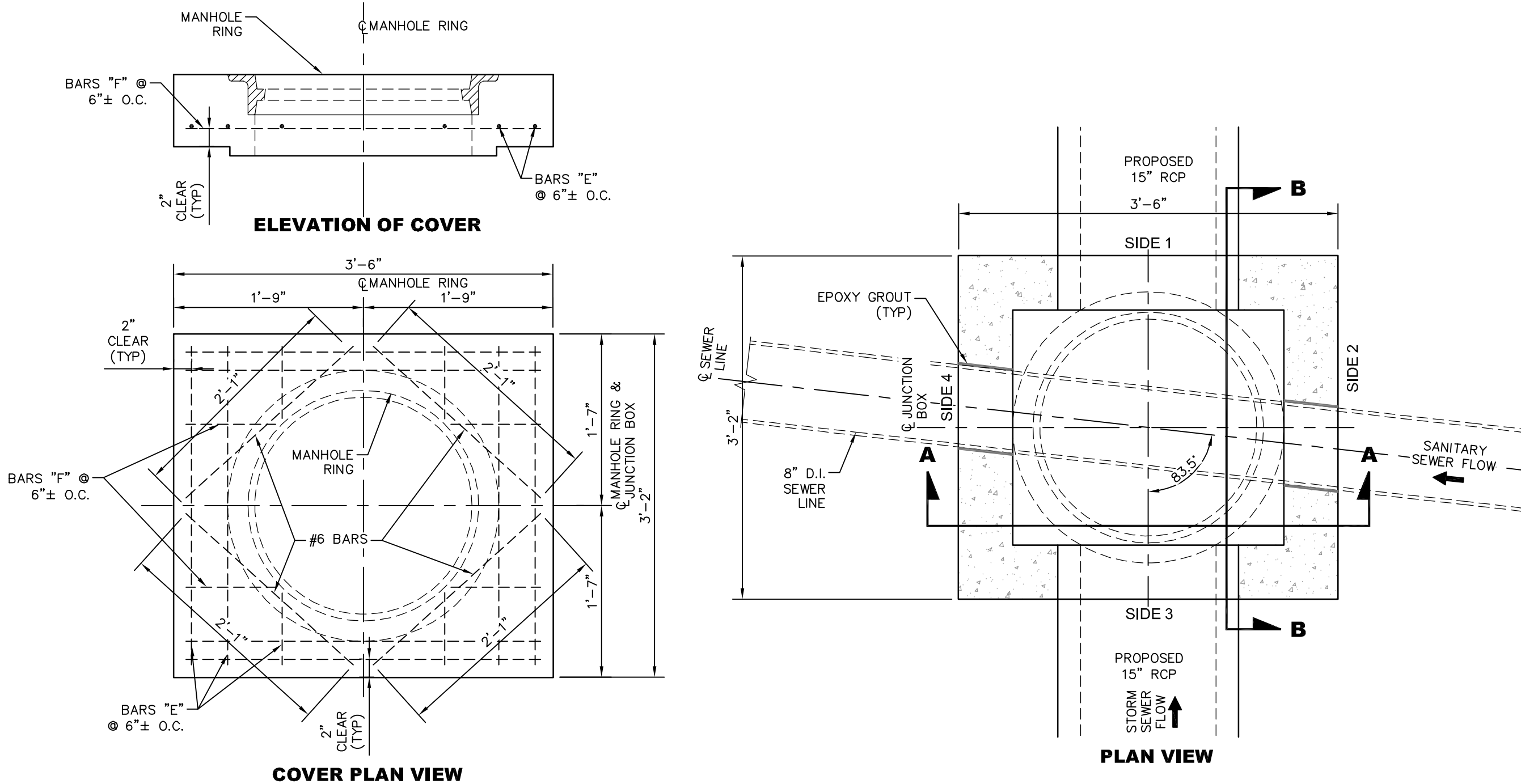
SERVICE CONNECTION - PLAN VIEW

CLEANOUT NOTE:

CLEANOUTS SHALL BE PLACED AT ALL BENDS IN SERVICE LINES OVER 22.5' AND ALL CHANGES IN GRADE. CLEANOUTS SHALL BE PLACED AT ROW LINES AS DETAILED.

NO.	DATE	DESCRIPTION	BY
SEWER INSTALLATION DETAILS			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
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Date:	05-21-2021	Working No.:	SSD2
Drawing No.:	12213	Sheet No.:	24

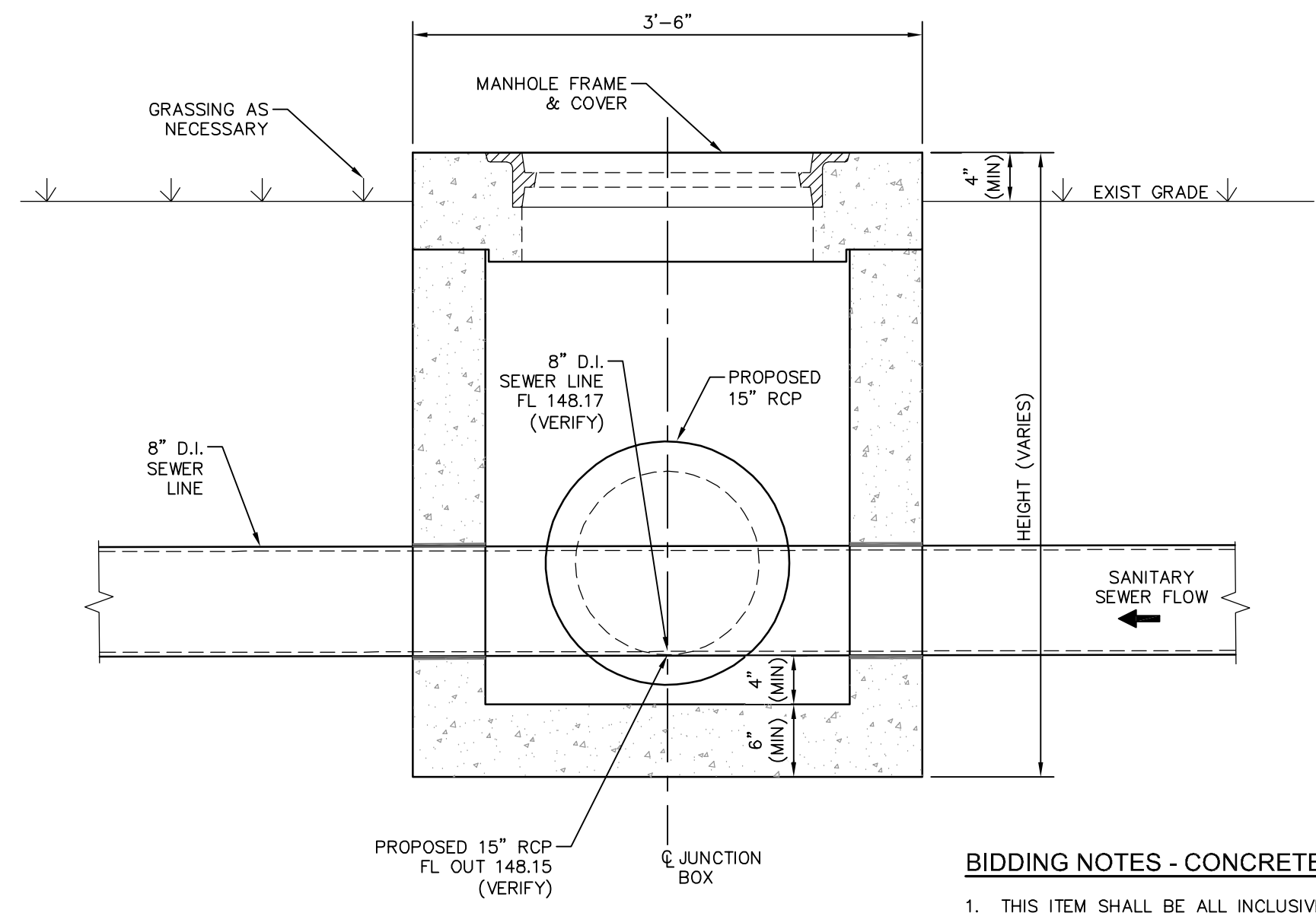
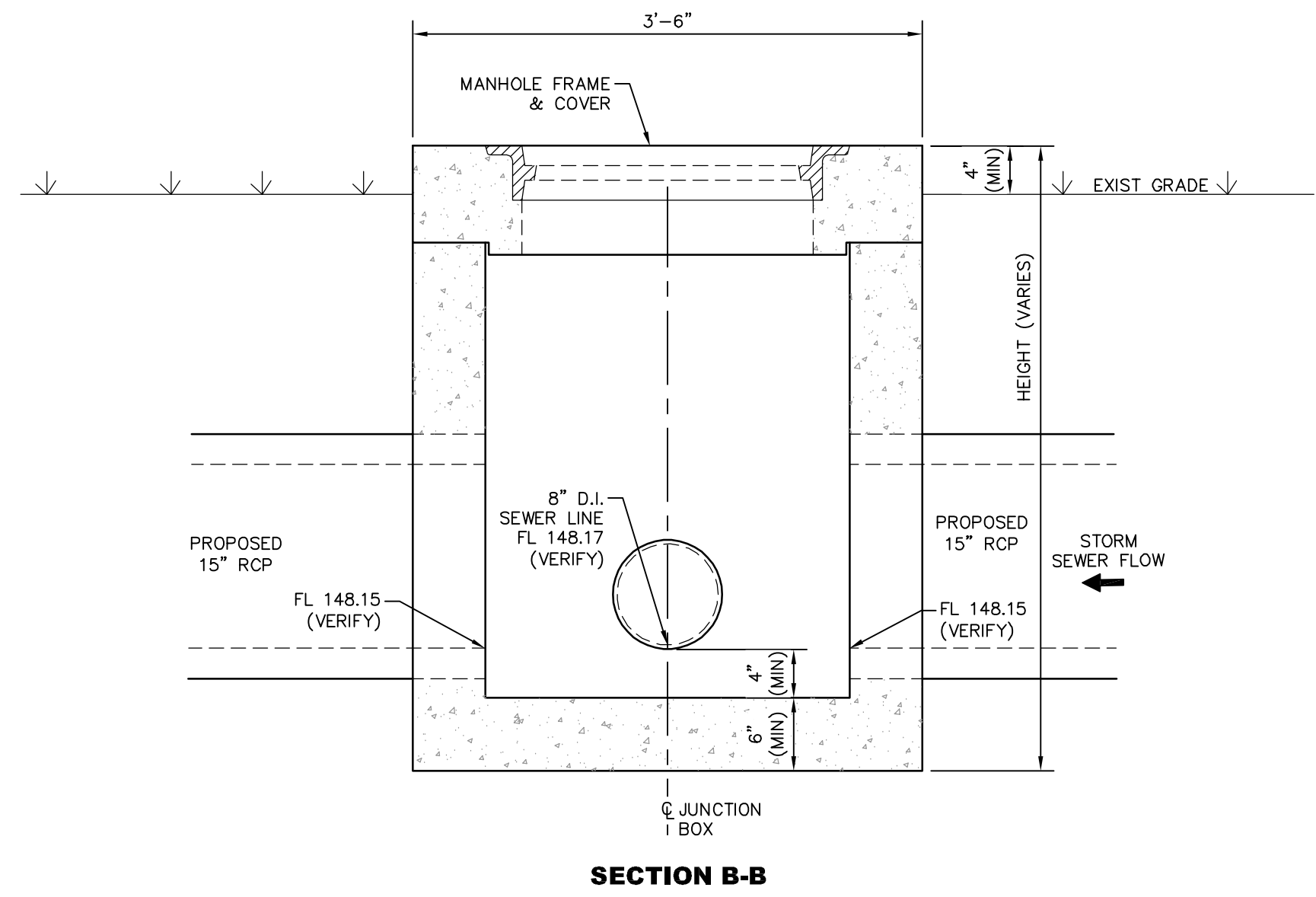
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HEAVY DUTY COVER & FRAME V1866 OR DF-221F OR APPROVED EQUAL

MANHOLE COVER DETAILS

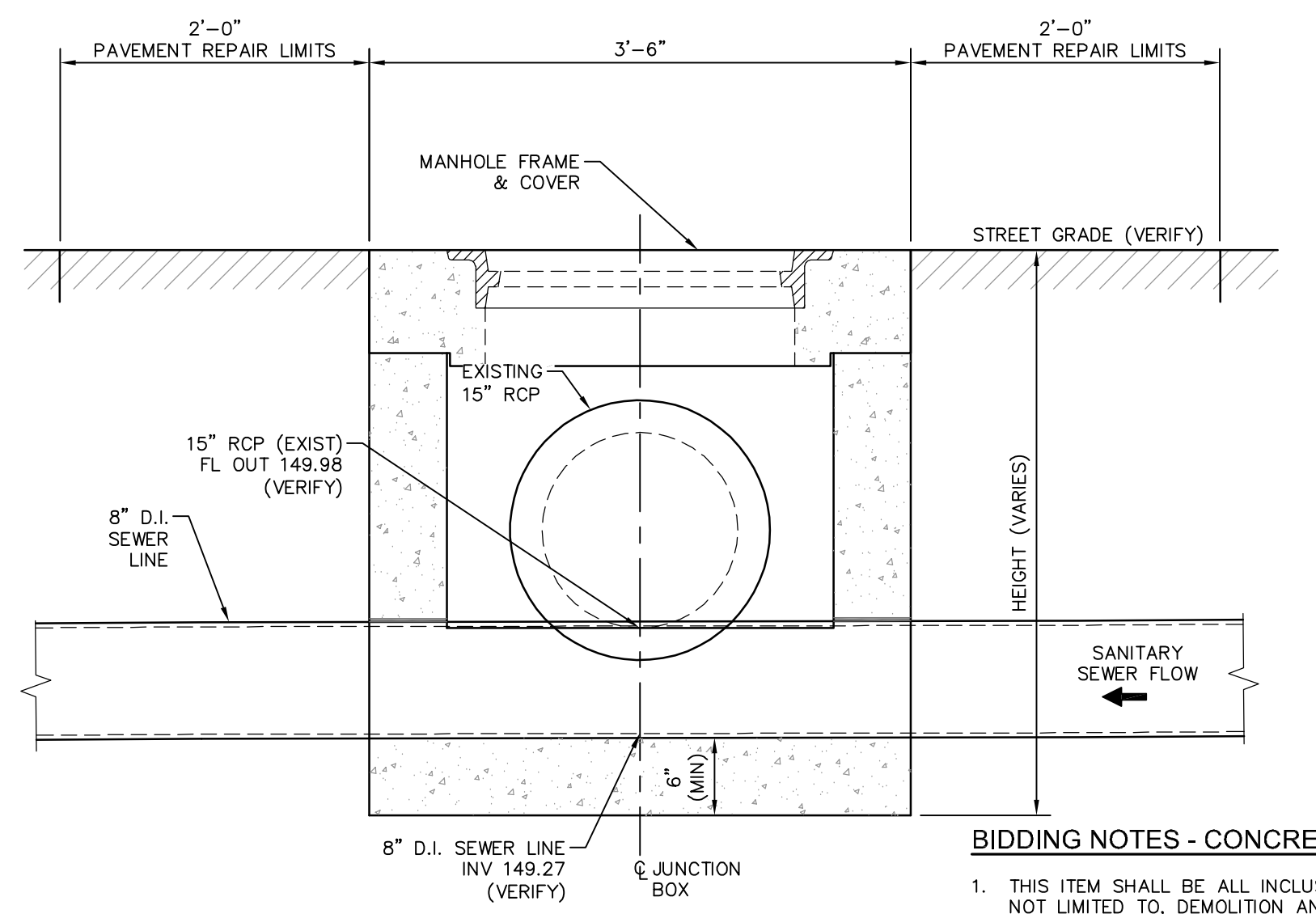
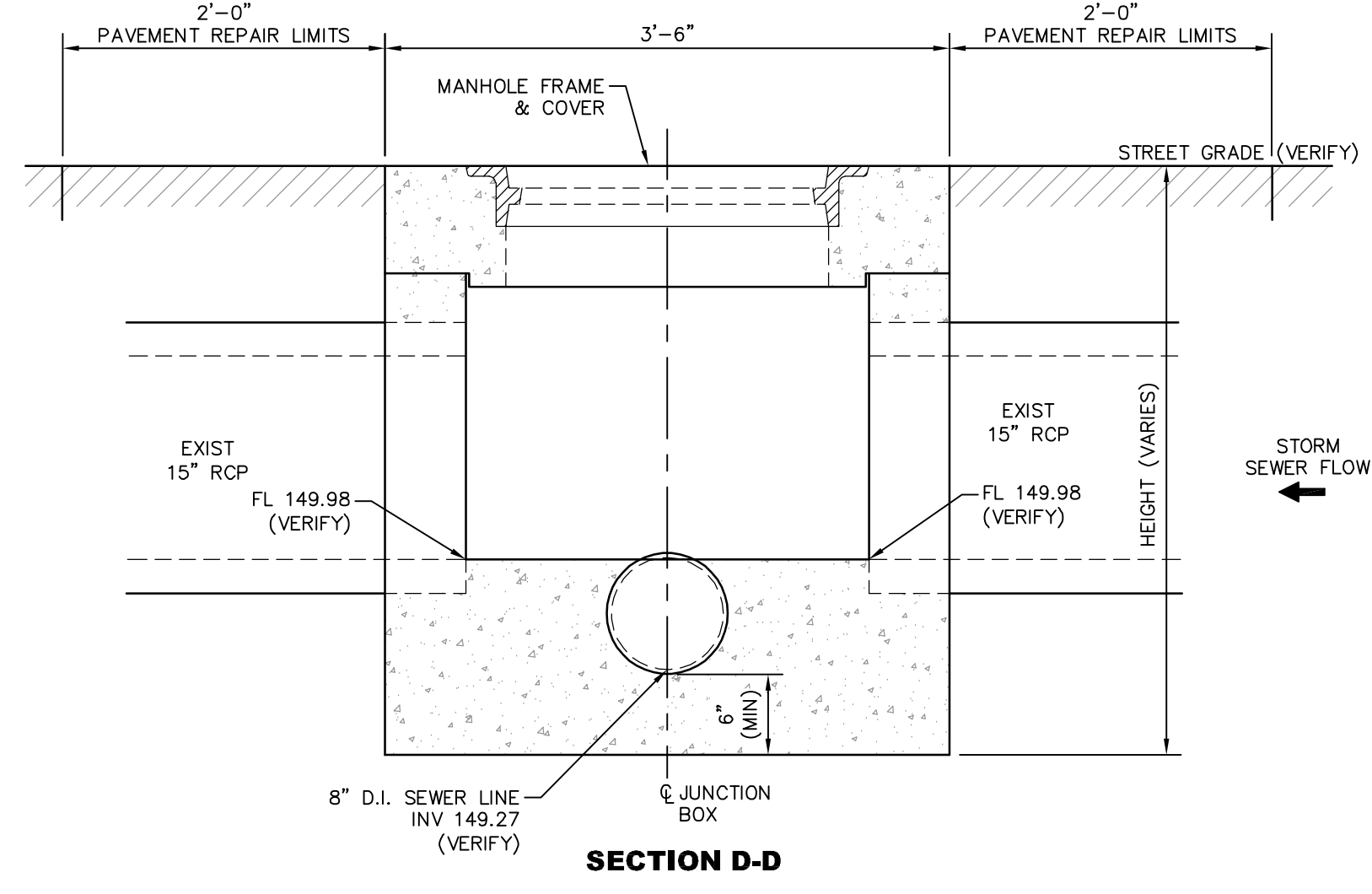
NO.	DATE	DESCRIPTION	BY
CONFLICT BOX DETAILS			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
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Date:	05-27-2021	Working No.:	SSD3
Drawing No.:	12213	Sheet No.:	25



CONFLICT BOX CB-1 DETAILS
SCALE: 1" = 1'-0"

BIDDING NOTES - CONCRETE CONFLICT BOX CB-1

1. THIS ITEM SHALL BE ALL INCLUSIVE AND SHALL INCLUDE, BUT NOT LIMITED TO, CONCRETE, REINFORCEMENT, FRAME, LID, GROUT, EXCAVATION, BEDDING MATERIAL, BACKFILL, ANY FIELD ADJUSTMENTS NECESSARY, ANY FIELD COORDINATION NECESSARY, ETC, AS SHOWN HERE IN COORDINATION WITH MDOT DETAIL JB-2. THIS ITEM SHALL BE CONSTRUCTED WITH THE APPROVAL OF AND AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL BE PAID UNDER "CONCRETE CONFLICT BOX CB-1".
2. GRASSING, SANITARY SEWER PIPE AND STORM SEWER PIPE SHALL BE PAID UNDER THE APPROPRIATE ITEMS.



CONFLICT BOX CB-2 DETAILS
SCALE: 1" = 1'-0"

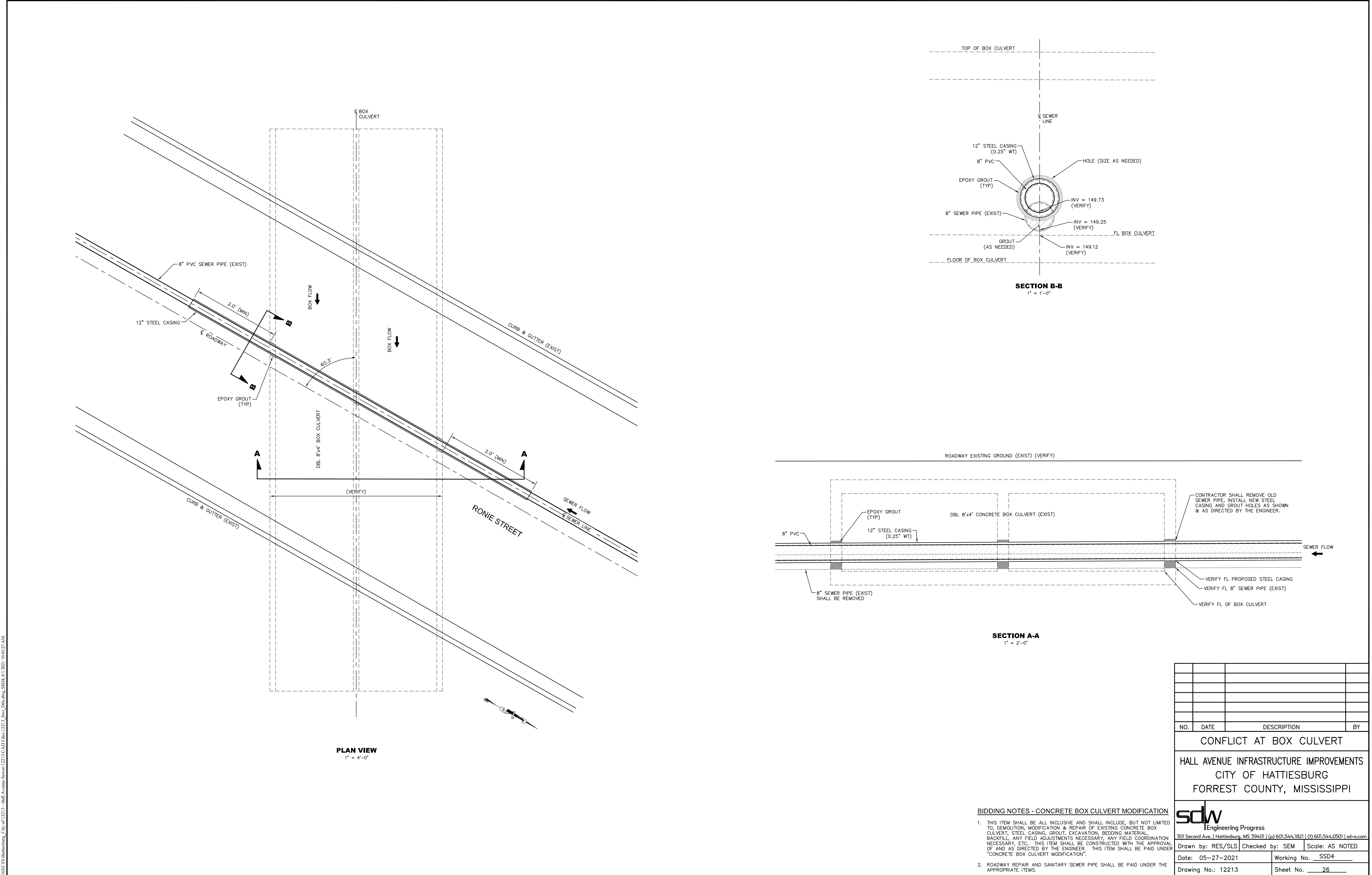
BIDDING NOTES - CONCRETE CONFLICT BOX CB-2

1. THIS ITEM SHALL BE ALL INCLUSIVE AND SHALL INCLUDE, BUT NOT LIMITED TO, DEMOLITION AND MODIFICATION OF EXISTING STORM SEWER PIPE, CONCRETE, REINFORCEMENT, FRAME, LID, GROUT, EXCAVATION, BEDDING MATERIAL, BACKFILL, ANY FIELD ADJUSTMENTS NECESSARY, ANY FIELD COORDINATION NECESSARY, ETC, AS SHOWN HERE IN COORDINATION WITH MDOT DETAIL JB-2. THIS ITEM SHALL BE CONSTRUCTED WITH THE APPROVAL OF AND AS DIRECTED BY THE ENGINEER. THIS ITEM SHALL BE PAID UNDER "CONCRETE CONFLICT BOX CB-2".
2. ROADWAY REPAIR AND SANITARY SEWER PIPE SHALL BE PAID UNDER THE APPROPRIATE ITEMS.

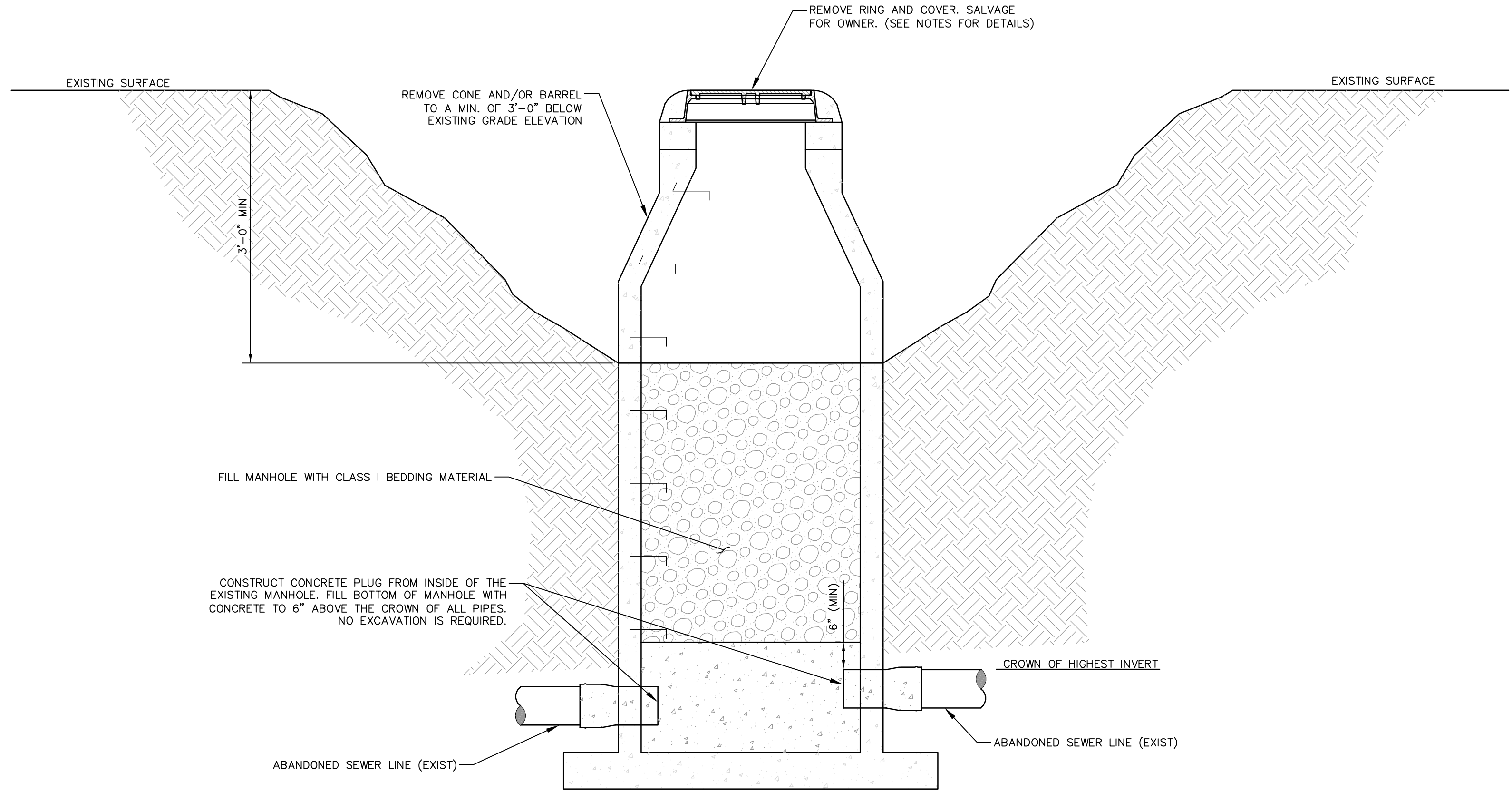
GENERAL NOTES:

1. THIS DETAIL IS BASED ON MDOT JB-2 STANDARD DETAIL. THIS DETAIL IS INTENDED TO SHOW MODIFICATIONS OF SAID DETAIL. ALL OTHER ASPECTS OF THE DETAIL INCLUDING REINFORCING, DIMENSIONS, ETC. SHALL BE USED PER ORIGINAL DETAIL.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR APPROVAL BY ENGINEER, PRIOR TO CONSTRUCTION.
3. PRECAST BOXES AND LIDS SHALL NOT BE ALLOWED.

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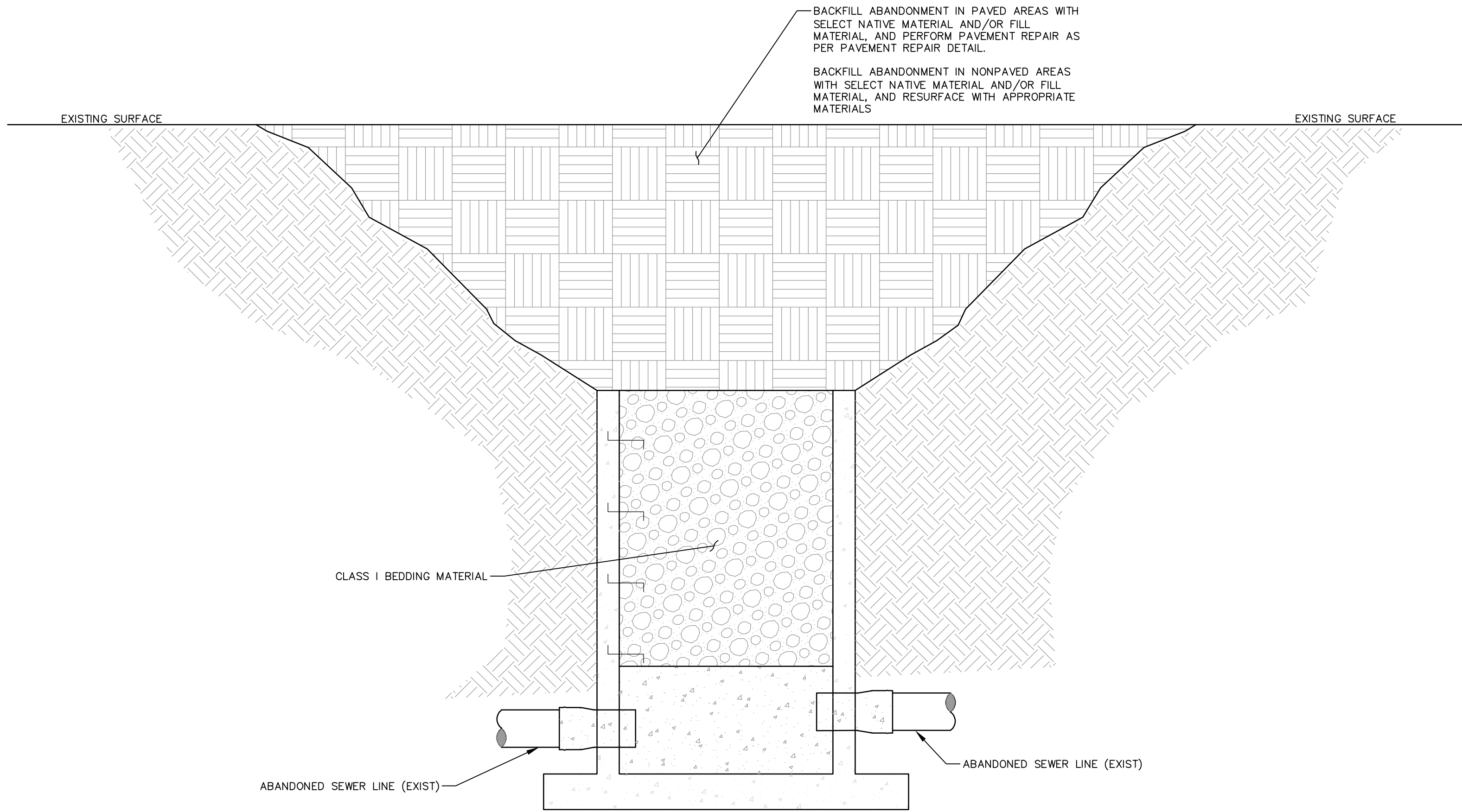
NO.	DATE	DESCRIPTION	BY
CONFLICT AT BOX CULVERT			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
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Date: 05-27-2021		Working No. <u>SSD4</u>	
Drawing No.: 12213		Sheet No. <u>26</u>	



EXISTING MANHOLE ABANDONMENT DETAIL
NOT TO SCALE

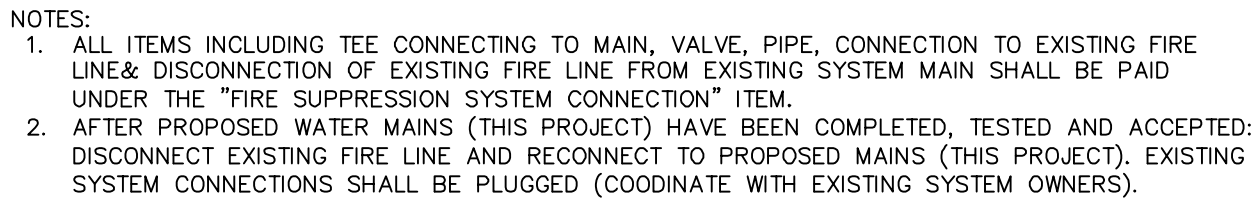
SPECIAL SEWER ABANDONMENT / REMOVAL NOTES:

- ALL EXISTING MANHOLES NOTED TO BE REMOVED SHALL BE REMOVED ENTIRELY. REMOVED ITEMS SHALL BE DISPOSED OF APPROPRIATELY.
- ALL EXISTING MANHOLES NOTED TO BE ABANDONED, SHALL BE PAID FOR PER EACH AND SHALL BE MODIFIED AS FOLLOWS:
 - REMOVE AND DISPOSE OF SANITARY WASTE.
 - REMOVE COVER, FRAME AND THE TOP 36" OF MANHOLE STRUCTURE. DISPOSE OF REMOVED OBJECTS APPROPRIATELY.
 - FILL BOTTOM OF MANHOLE WITH CONCRETE, MINIMUM 6" ABOVE THE CROWN OF ALL PIPES.
 - FILL THE MANHOLE WITH CLASS I BEDDING MATERIAL.
 - BACKFILL WITH NATIVE SOIL MATERIAL AND/OR FILL MATERIAL (CL B9) AND COMPACT. GRADE TO DRAIN AS REQUIRED. GRASS DISTURBED AREA OR REPAIR PAVEMENT AREAS.
- ALL EXISTING SEWER PIPES NOTED TO BE REMOVED, SHALL BE REMOVED ENTIRELY. (NO SEPARATE PAY)
- ALL EXISTING SEWER PIPES NOTED TO BE ABANDONED SHALL BE PAID FOR BY LINEAR FOOT AND SHALL BE MODIFIED AS FOLLOWS:
 - REMOVE AND DISPOSE OF SANITARY WASTE.
 - FILL THE PIPE WITH FLOWABLE FILL.
 - PLUG ENDS.
- WHERE ABANDONED SEWER PIPES AND/OR MANHOLES CONFLICT WITH THE NEW CONSTRUCTION, THE EXISTING PIPE OR MANHOLE SHALL BE REMOVED, UNLESS NOTED OTHERWISE OR DIRECTED BY THE ENGINEER.
- MANHOLE RINGS AND COVERS NOTED FOR REMOVAL IN THESE PLANS, SHALL BE SALVAGED FOR THE OWNER. ALL ITEMS SALVAGED ITEMS SHALL BE CLEANED BY POWER WASHING. SAID ITEMS SHALL BE STACKED AND SECURED ON PALLETS. SAID ITEMS SHALL BECOME THE PROPERTY OF THE OWNER AND DELIVERED TO A SITE DETERMINED BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SECURITY OF SAID ITEMS PRIOR TO DELIVERY TO THE OWNER AND FOR REPLACEMENT IN KIND FOR ANY MISSING ITEMS. (NO SEPARATE PAY)

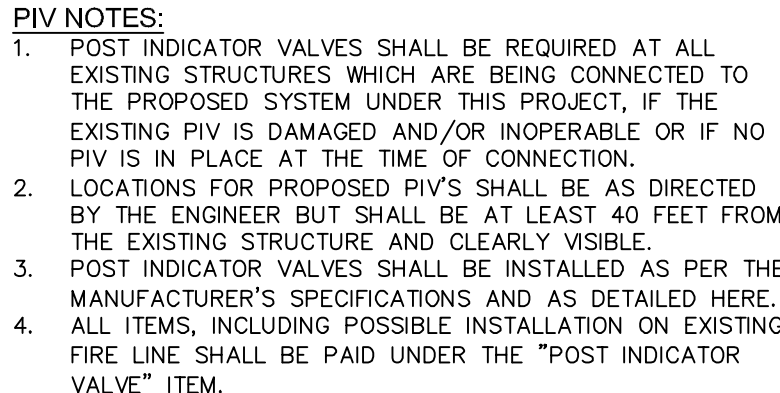


EXISTING MANHOLE ABANDONMENT COMPLETE DETAIL
NOT TO SCALE

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SEWER ABANDONMENT DETAILS			
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Date: 05-21-2021		Working No. ABN1	
Drawing No.: 12213		Sheet No. 27	



**FIRE SUPPRESSION SYSTEM
CONNECTION DETAIL**
(UNPAVED AREA)



POST INDICATOR VALVE DETAIL



WATER INSTALLATION DETAILS

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS
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FORREST COUNTY, MISSISSIPPI

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Date: 05-21-2021	Working No. <u>WTRD1</u>	
Drawing No.: 12213	Sheet No. <u>28</u>	

OBSTRUCTION CROSSING DETAIL

BORED ROADWAY CROSSING & WATER LINE PARALLELING

HDPE DIRECTIONAL BORE ROADWAY CROSSING & WATER LINE PARALLELING

OPEN CUT DRY CHANNEL CROSSING DETAIL (NON-PAVED)

DIRECTIONAL BORE CHANNEL CROSSING DETAIL

(LEFT HALF SHOWN, RIGHT HALF SIMILAR)

TYPICAL TRENCH DETAIL

PRESSURE REDUCING VALVE WITH BYPASS DETAIL

NOTE:
ALL ITEMS SHOWN IN DETAIL ARE INCLUDED
IN PRESSURE REDUCING VALVE BID ITEM.

HEAVY DUTY COVER & FRAME V-1115 OR USF
370 WITH OUT HOLES ONLY

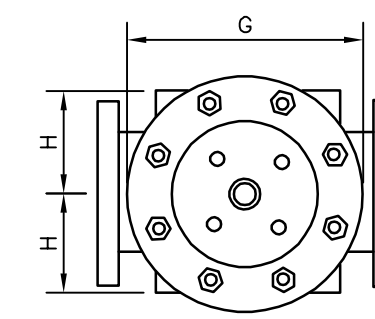
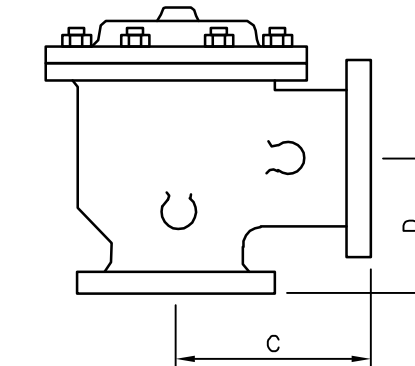
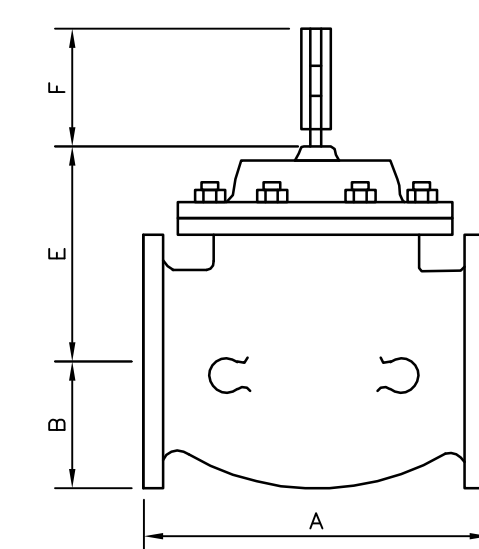
HEAVY DUTY WATERTIGHT COVER & FRAME
V-2115-3 AGS WITH OUT HOLES, WITH GASKE
& BOLTS ONLY

PRESSURE REDUCING VALVE DETAIL

CARRIER PIPE SUPPORT IN STEEL ENCASEMENT ISOMETRIC DETAIL

THRUST BLOCKING DETAILS

PRESSURE VALVE DIMENSIONS (INCHES)					
DIM	ANSI CLASS	VALVE SIZE (INCHES)			
		3	4	6	8
A	SE	1½	—	—	—
	150	10½	13½	17½	25½
	300	11½	14½	18½	26½
B	SE	2½	—	—	—
	150	3¾	4	5½	6¾
	300	4¾	5	6¾	7¾
C	SE	5½ ₁₆	—	—	—
	150	6	7½	10	13½ ₁₆
	300	6¾	7½ ₁₆	10½	13½ ₁₆
D	SE	5½	—	—	—
	150	4	5½ ₁₆	6	8½
	300	4¾	5¾	6½	9
E	ALL	7	8	10	11½
F	ALL	3¾	3¾	3¾	6½
G	ALL	7½ ₁₆	10	14	21
H	ALL	11	12	13	14



NO	DATE	DESCRIPTION	BY

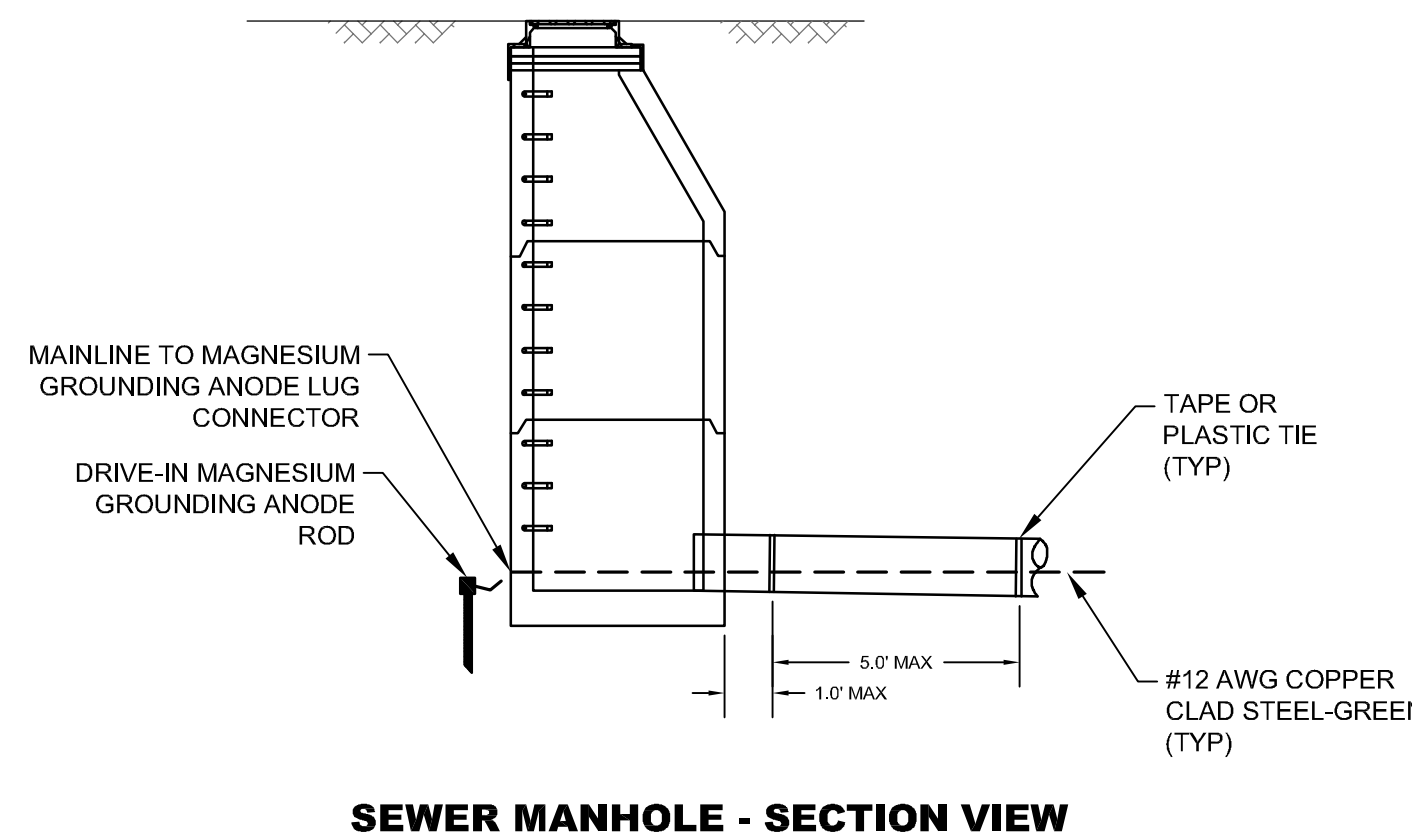
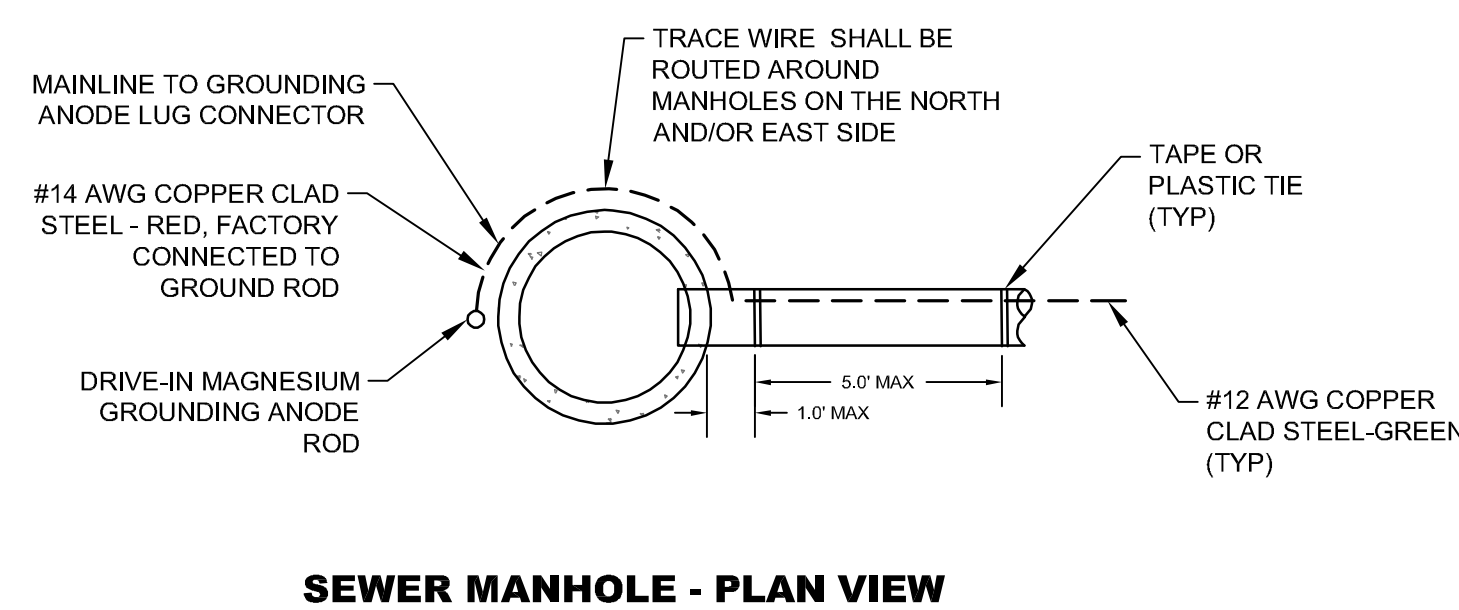
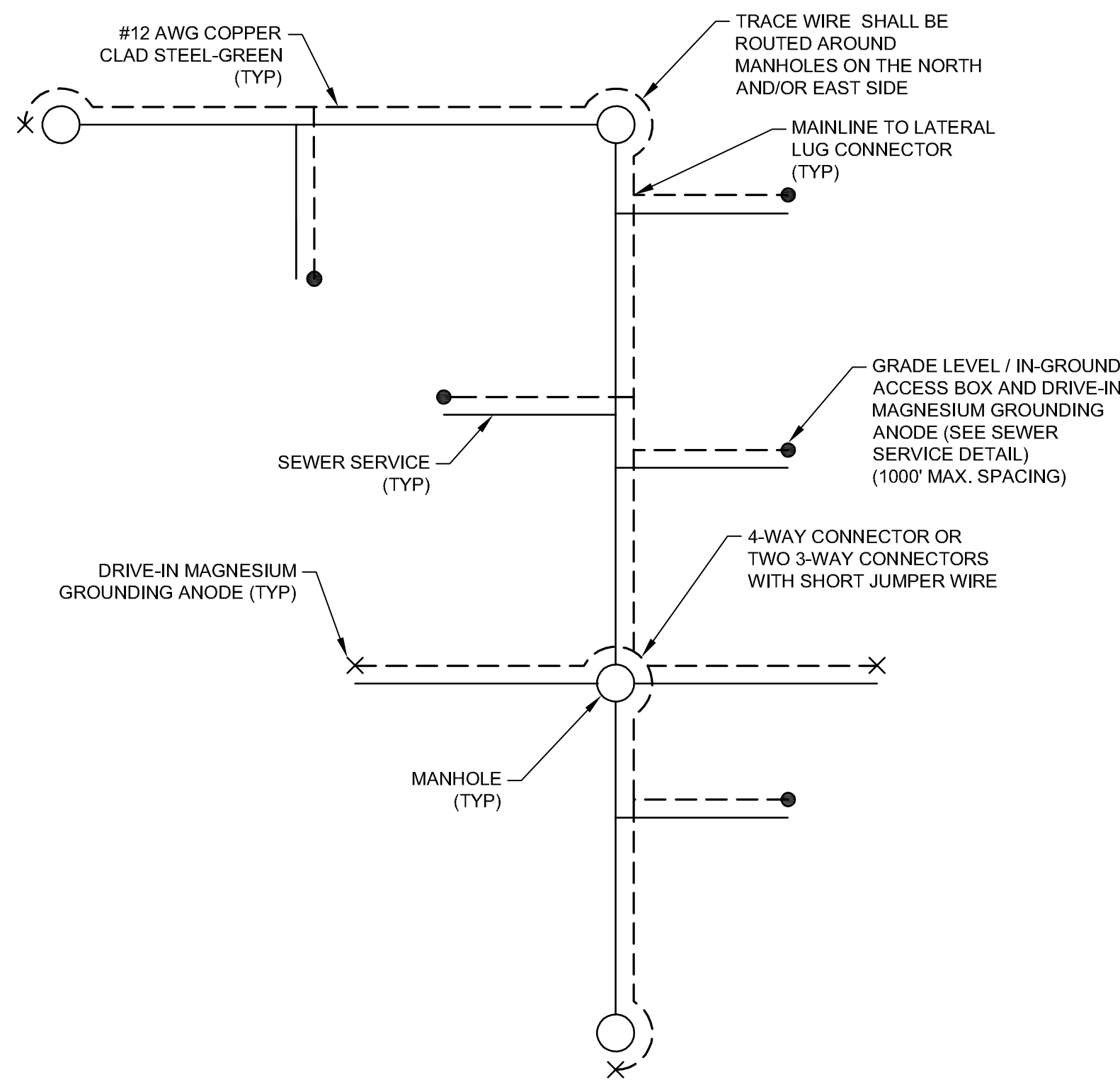
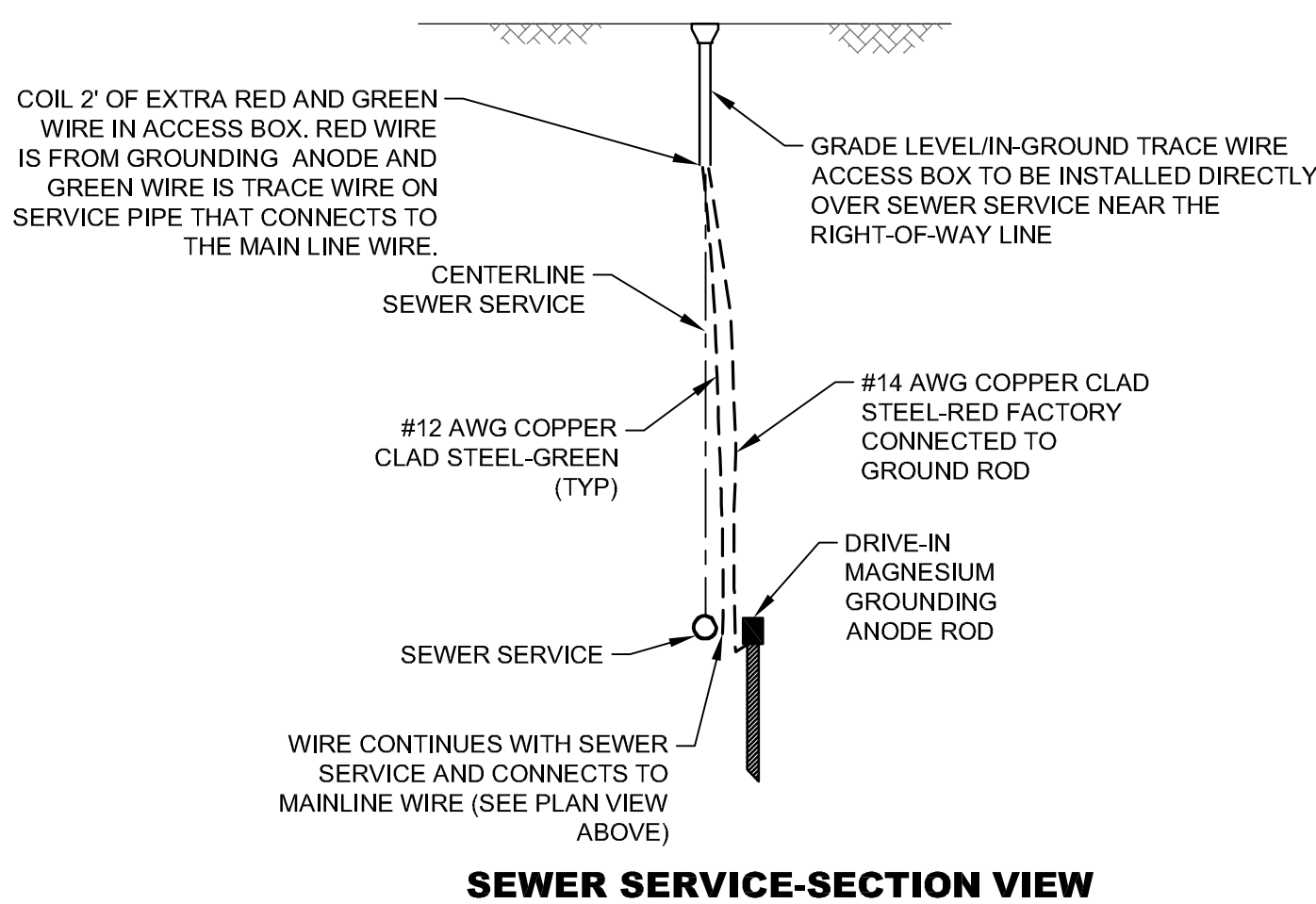
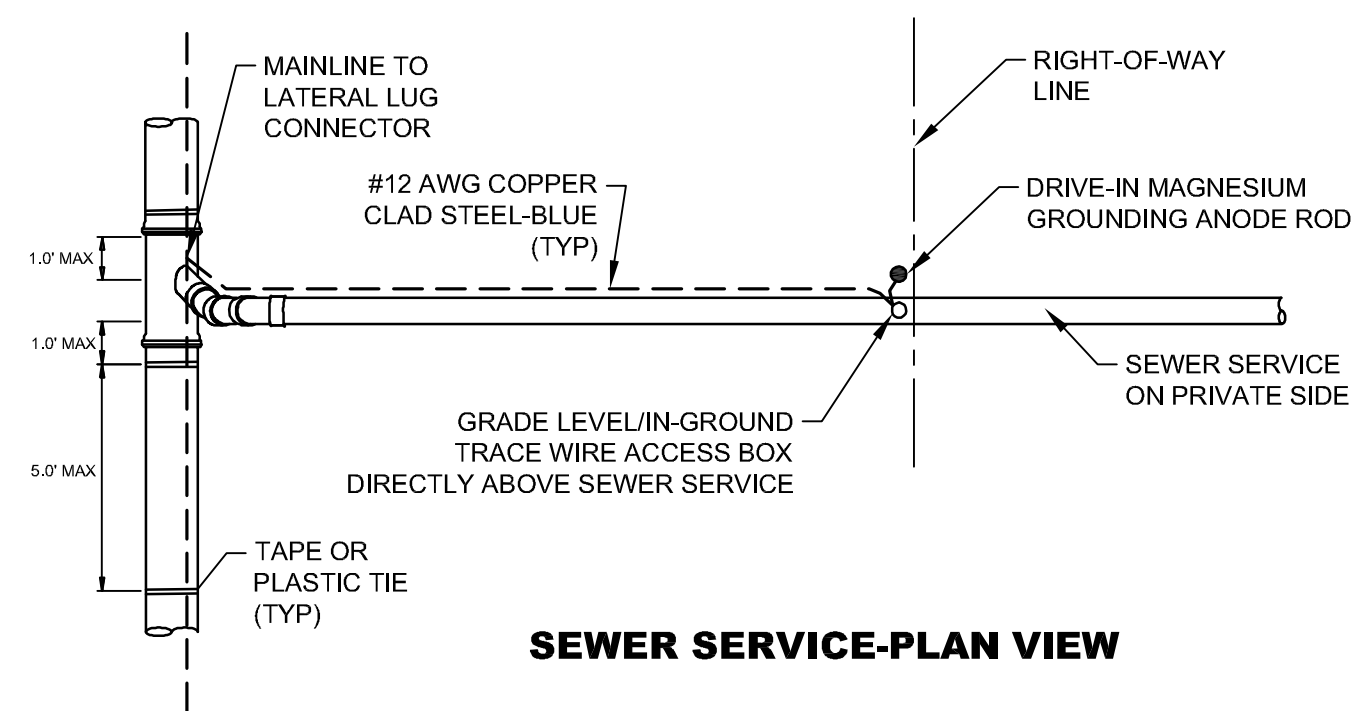
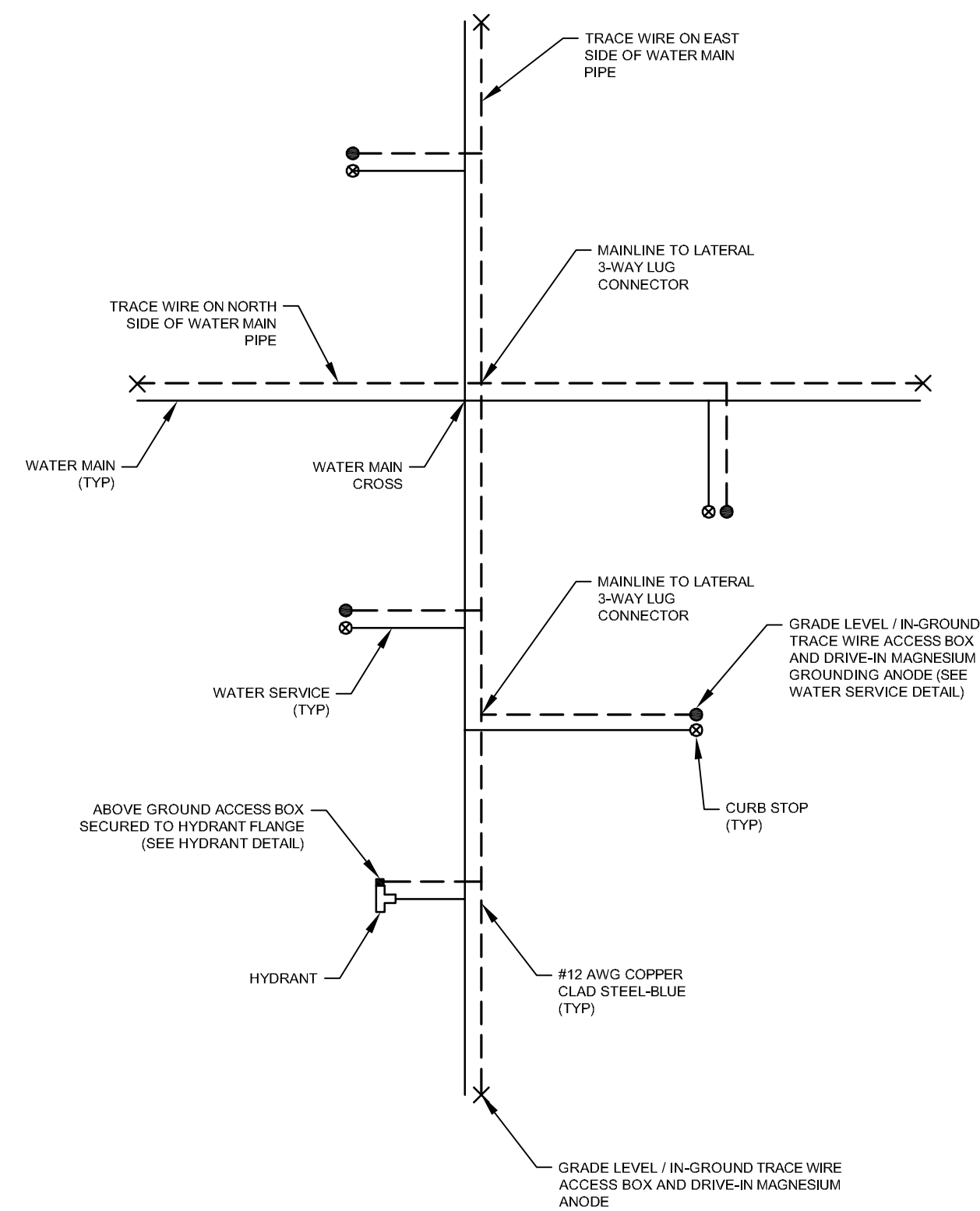
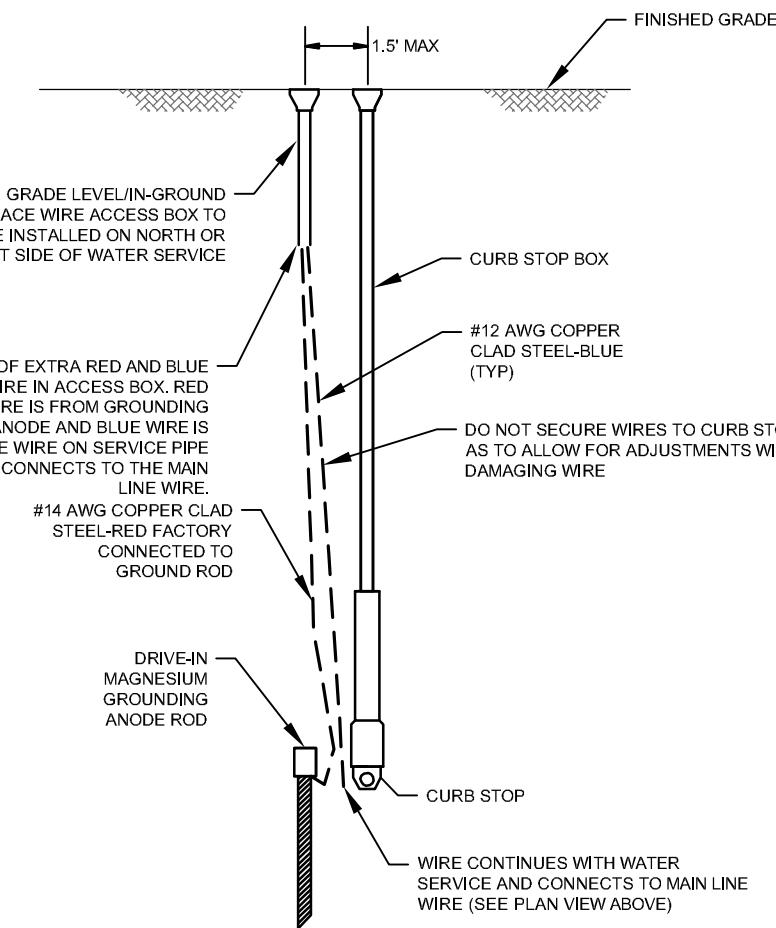
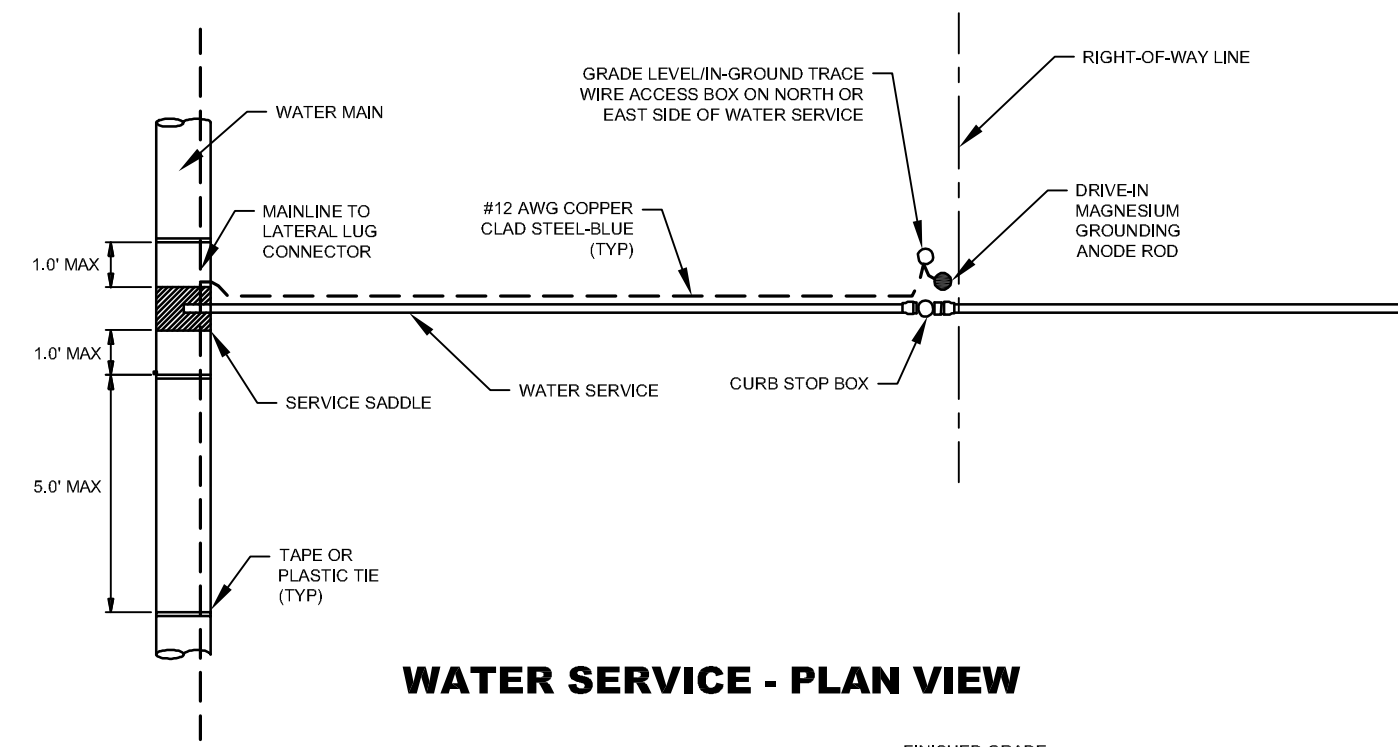
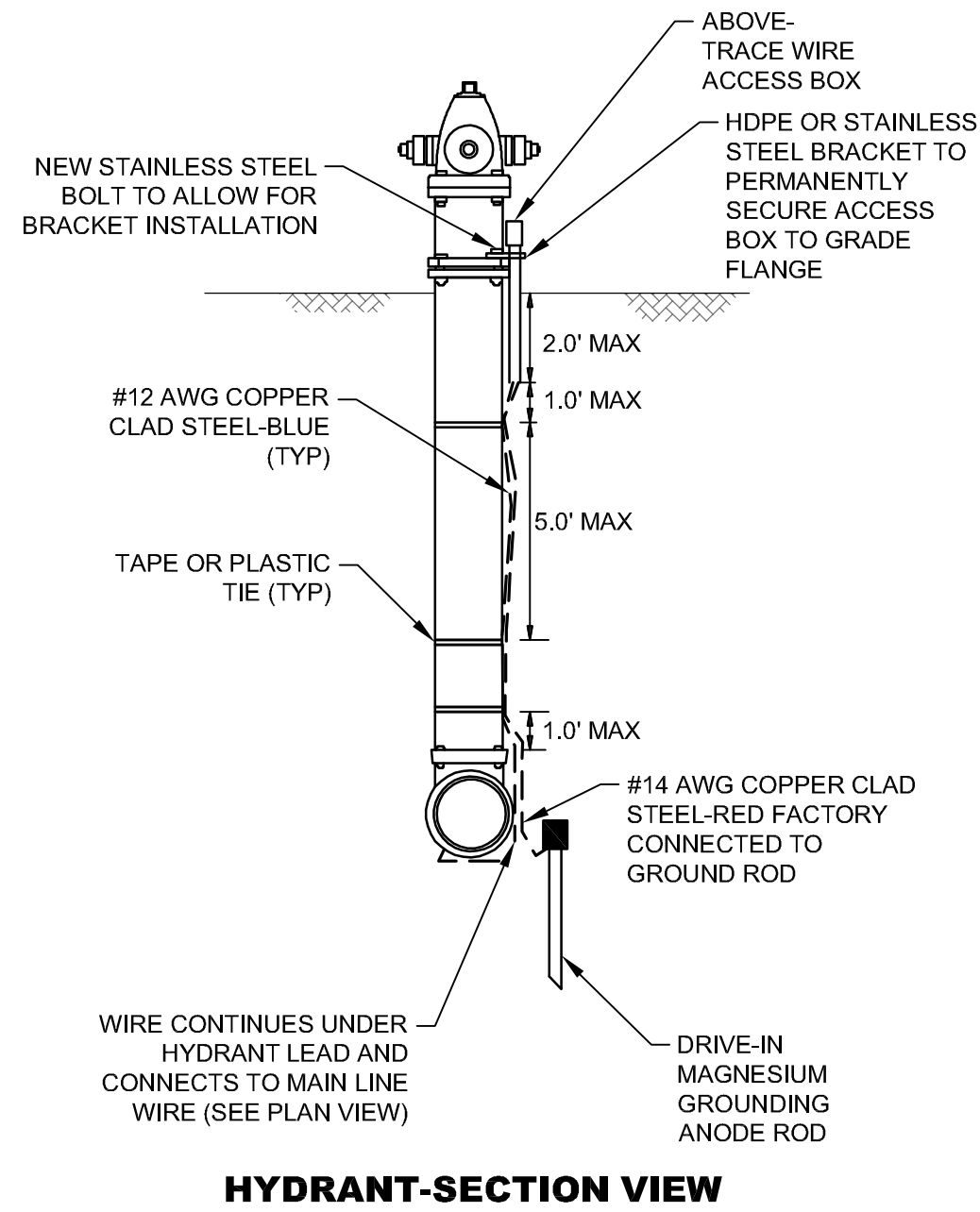
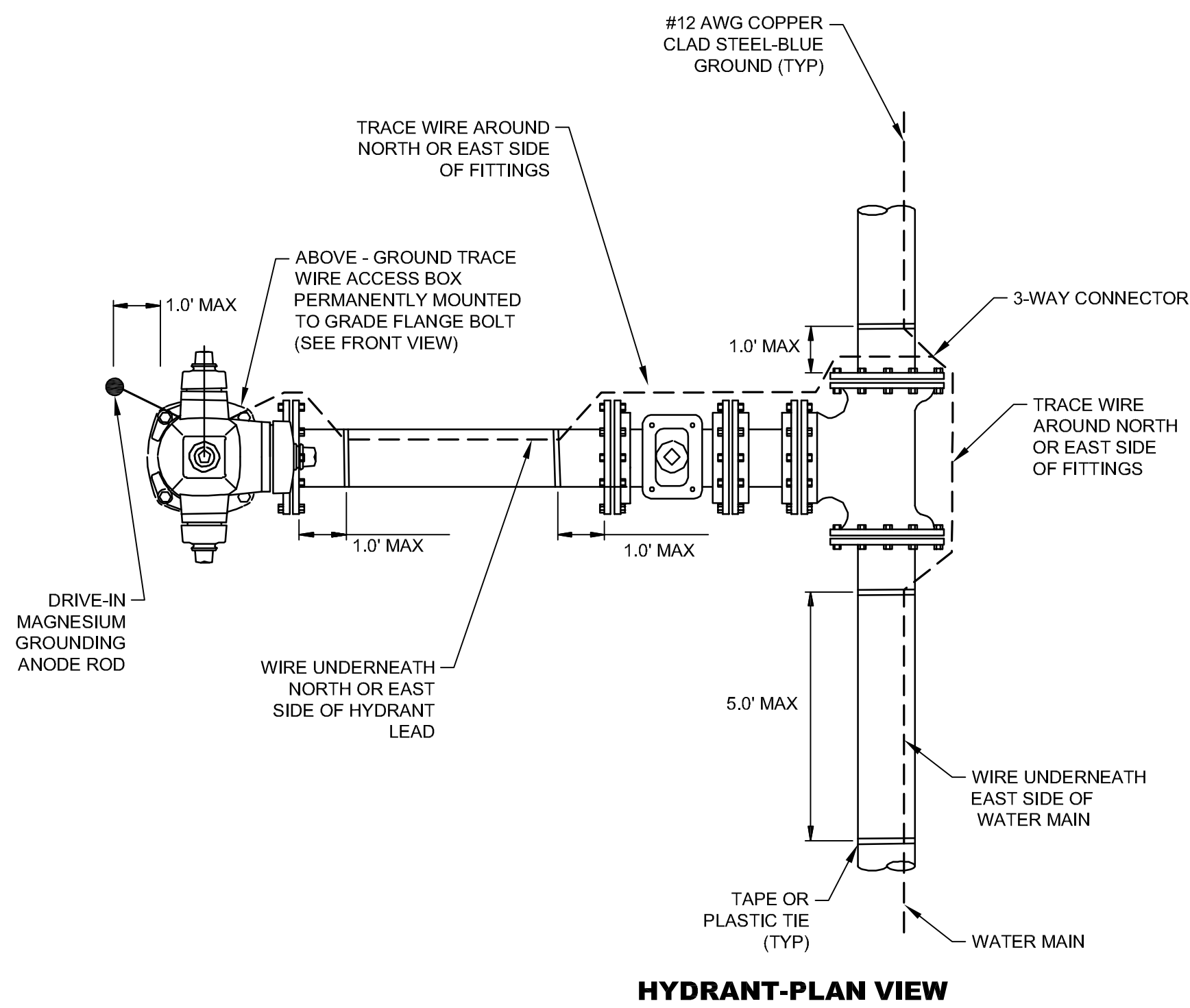
WATER INSTALLATION DETAILS

HALL AVENUE INFRASTRUCTURE IMPROVEMENTS
CITY OF HATTIESBURG
FORREST COUNTY, MISSISSIPPI

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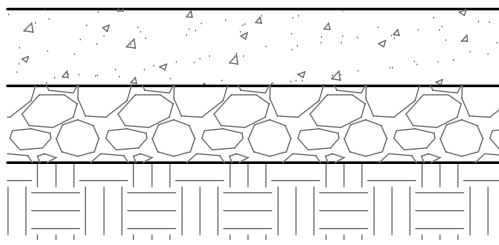
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Date: 05-21-2021	Working No. <u>WTRD2</u>	
Drawing No.: 12213	Sheet No. <u>29</u>	

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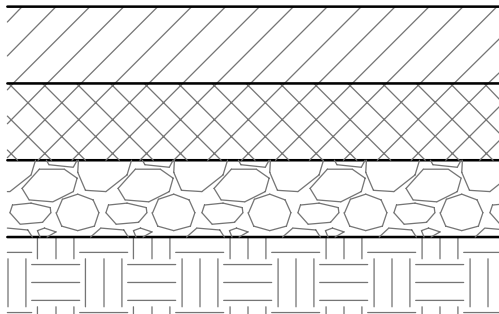


NOTE:
WIRE SHOWN AWAY FROM PIPE FOR CLARITY. WIRE SHALL BE INSTALLED ON THE BOTTOM SIDE OF THE PIPE BELOW THE SPRING LINE. THE WIRE SHALL BE FASTENED TO THE PIPE WITH TAPE OR PLASTIC TIES AT 5' INTERVALS.

NO.	DATE	DESCRIPTION	BY
TRACER WIRE DETAILS			
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Date:	05-21-2021	Scale:	NONE
Drawing No.:	12213	Working No.:	TWD1
		Sheet No.:	30



TYPICAL CONCRETE PAVEMENT REPAIR

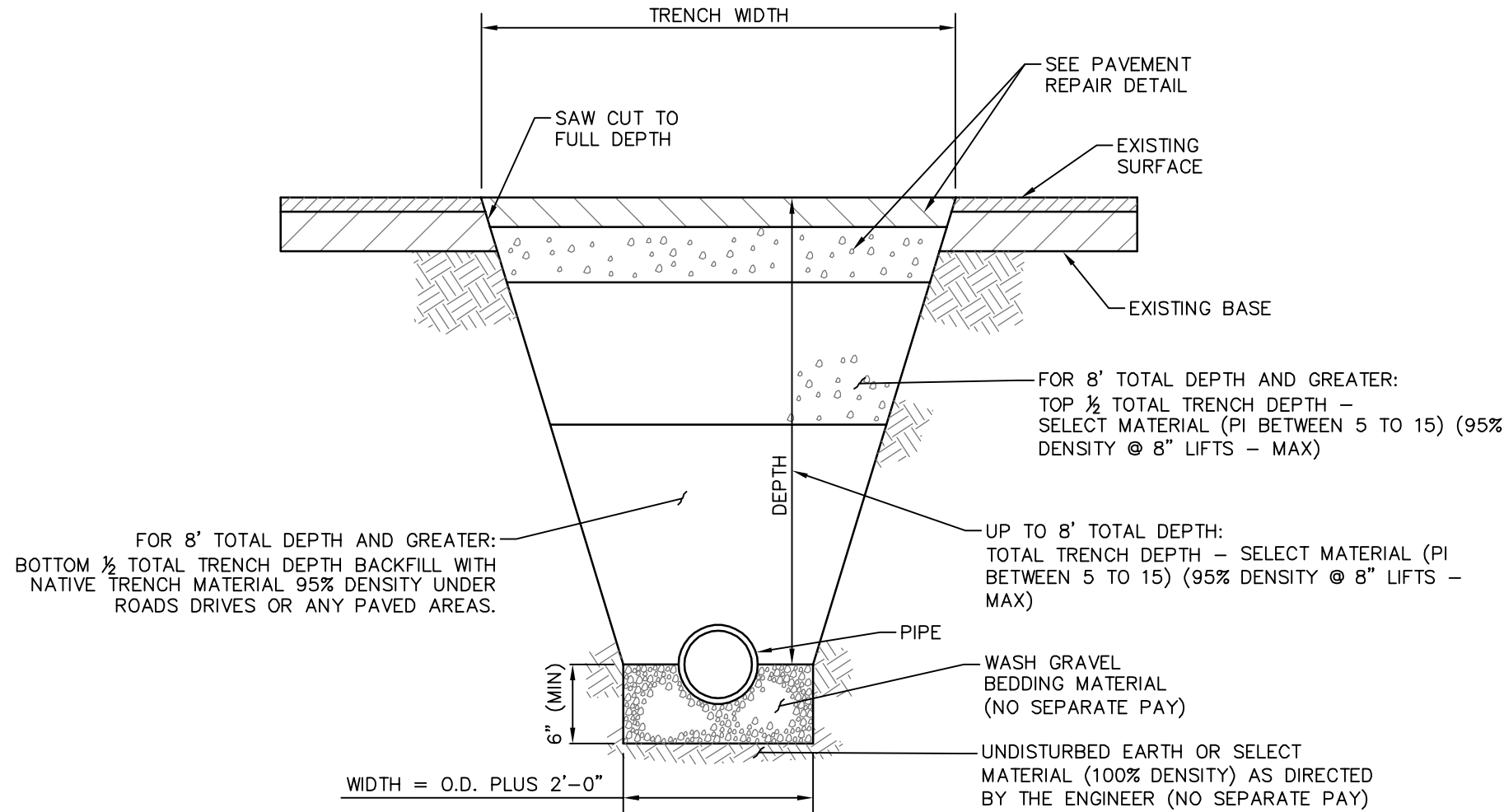


TYPICAL ASPHALT PAVEMENT REPAIR

- TEMPORARY: 6" CRUSHED AGGREGATE (SIZE 610) (REMOVE PRIOR TO PAVING)
- PERMANENT: 6" 3000 PSI CONCRETE W/ FIBER GLASS REINFORCEMENT
- 6" CRUSHED AGGREGATE (SIZE 610) COMPACTED TO 95%
- EXISTING SUBGRADE AND/OR FILL MATERIAL COMPACTED TO 95%

PAVEMENT REPAIR NOTES:
1. TEMPORARY CRUSHED AGGREGATE REMOVED DURING PAVING SHALL BECOME THE PROPERTY OF THE CONTRACTOR.
2. TRENCHES SHALL HAVE A TEMPORARY SURFACE OF CRUSHED AGGREGATE (SIZE 610) TEMPORARY SURFACE INSTALLED FOR A PERIOD OF TIME TO BE DETERMINED BY THE ENGINEER AND REMOVED PRIOR TO PAVING (NO SEPARATE PAY)

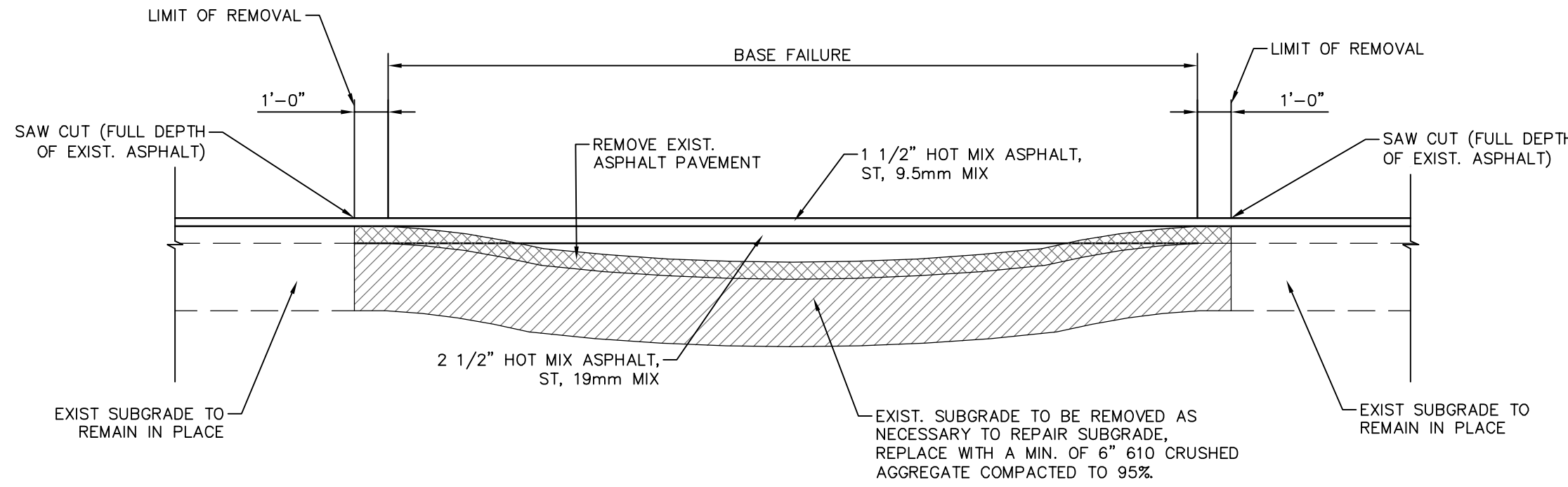
- PERMANENT: 1 1/2" HOT MIX ASPHALT, 9.5 mm, ST OVERLAY
- TEMPORARY: 2" CRUSHED AGGREGATE (SIZE 610) (REMOVED PRIOR TO PAVING)
- PERMANENT: 2" HOT MIX ASPHALT, 19 mm, ST
- 6" CRUSHED AGGREGATE (SIZE 610) COMPACTED TO 95%
- EXISTING SUBGRADE AND/OR FILL MATERIAL COMPACTED TO 95%



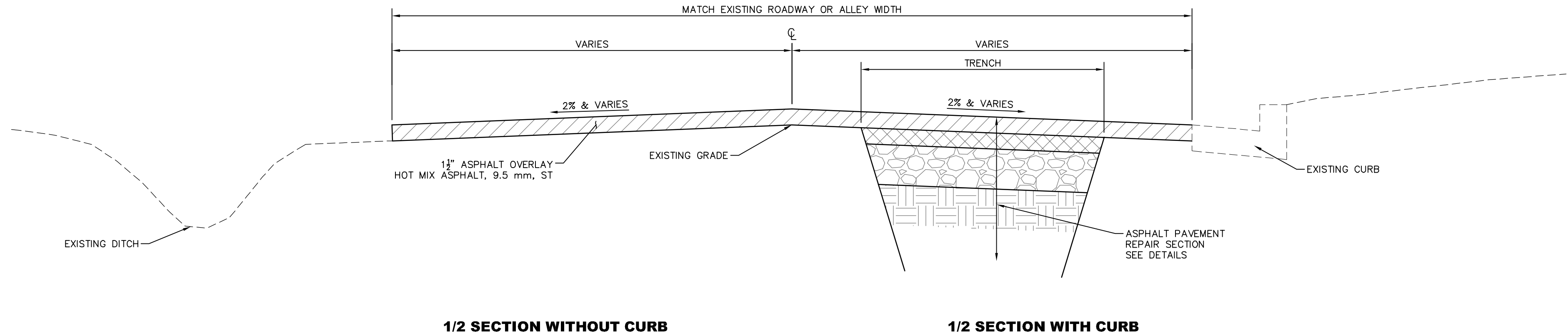
TYPICAL TRENCH IN ROADWAY DETAIL

NOTE: TRENCH WIDTHS SHALL BE MINIMIZED BY THE CONTRACTOR TO ONLY THE WIDTH NECESSARY FOR CONSTRUCTION AS DETERMINED BY THE ENGINEER.

BEDDING NOTE:
DEPTH SHALL BE AS REQUIRED TO REACH SOLID BASE OF UNDISTURBED EARTH



TYPICAL ASPHALT BASE REPAIR DETAIL



TYPICAL ROADWAY REPAIR SECTION

NO.	DATE	DESCRIPTION	BY
PAVEMENT REPAIR DETAILS			
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Date: 05-21-2021		Working No. PRD1	
Drawing No.: 12213		Sheet No. 31	

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VEGETATION SCHEDULE						
EROSION CONTROL ITEMS		SEASONAL APPLICATIONS - DATES & RATES				REQUIREMENTS
		SPRING & SUMMER		FALL & WINTER		
	ITEMS	RATES	DATES	RATES	DATES	
	TOPSOIL FOR SLOPE TREATMENT (LVM)	4" THICK	MARCH 1 TO SEPTEMBER 1	4" THICK	SEPTEMBER 1 TO MARCH 1	TOPSOIL REQUIRED ON SLOPES DETERMINED BY THE ENGINEER DURING CONSTRUCTION
	STANDARD GROUND PREPARATION	PER SQ. FT.	MARCH 1 TO SEPTEMBER 1	PER SQ. FT.	SEPTEMBER 1 TO MARCH 1	GROUND PREPARATION REQUIRED ON AREAS TO RECEIVE SOLID SODDING OR SEEDING, AS APPLICABLE
	AGRICULTURAL LIMESTONE	3 TONS / ACRE	MARCH 1 TO SEPTEMBER 1	3 TONS / ACRE	SEPTEMBER 1 TO MARCH 1	LIMESTONE SHALL BE MECHANICALLY SPREAD UNIFORMLY AND INCORPORATED INTO THE SOIL PRIOR TO PLANTING
	COMBINATION FERTILIZER (13–13–13)	1000 LBS / ACRE	MARCH 1 TO SEPTEMBER 1	1000 LBS / ACRE	SEPTEMBER 1 TO MARCH 1	FERTILIZER SHALL BE MECHANICALLY SPREAD UNIFORMLY AND INCORPORATED INTO THE SOIL PRIOR TO PLANTING
	SUPER PHOSPHATE	0.5 TON / ACRE (EST)	MARCH 1 TO SEPTEMBER 1			SUPER PHOSPHATE (FOR BID ITEM PURPOSES)
	SEEDING (BERMUDA GRASS)	20 LBS / ACRE	MARCH 1 TO SEPTEMBER 1	20 LBS / ACRE	SEPTEMBER 1 TO MARCH 1	SEED REQUIRED ON DISTURBED AREAS. UNHULLED SEED MAY BE REQUIRED DURING THE DORMANT SEASON AS DIRECTED
	SEEDING (TALL FESCUE)			15 LBS / ACRE	AUGUST 15 TO MARCH 15	SEED REQUIRED IN DISTURBED AREAS
	SEEDING (CRIMSON CLOVER)			20 LBS / ACRE	AUGUST 15 TO MARCH 15	SEED REQUIRED ON DISTURBED AREA
	VEGETATIVE MATERIAL FOR MULCH	2 TONS / ACRE (EST)	MARCH 1 TO SEPTEMBER 1	2 TONS / ACRE (EST)	SEPTEMBER 1 TO MARCH 1	THE ENGINEER WILL DESIGNATE THE RATES OF APPLICABLE (SEE SUBSECTION 215–03.3)
	SOLID SODDING	PER SQ. YD.	MARCH 1 TO SEPTEMBER 1	PER SQ. YD.	SEPTEMBER 1 TO MARCH 1	SOLID SOD REQUIRED ON AREAS SPECIFIED IN THE CONTRACT OR BY THE ENGINEER
	WATERING	20 GAL / S.Y. (EST)	MARCH 1 TO SEPTEMBER 1	20 GAL. / S.Y. (EST)	SEPTEMBER 1 TO MARCH 1	TO BE USED AS DIRECTED IN THE PLANTING AND ESTABLISHING OF SOLID SOD
	INSECT PEST CONTROL	PER ACRE		PER ACRE		SEE SECTION 220
TEMPORARY EROSION CONTROL ITEMS						
	LIGHT GROUND PREPARATION	PER SQ. YD.		PER SQ. YD.		APPROXIMATELY HALF SQ.YD. STANDARD GROUND PREPARATION
	COMBINATION FERTILIZER (13–13–13)	0.25 TONS/ ACRE		0.25 TONS/ ACRE		QUANTITY BASED ON LIGHT GROUND PREPARATION
	SEEDING (BROWN TOP MILLET)	20 LBS / ACRE	APRIL 1 TO AUGUST 31			QUANTITY BASED ON LIGHT GROUND PREPARATION
	SEEDING (RYE GRASS)			25 LBS / ACRE	SEPTEMBER 1 TO MARCH 31	QUANTITY BASED ON LIGHT GROUND PREPARATION
	SEEDING (OATS)			90 LBS / ACRE	SEPTEMBER 1 TO DECEMBER 15	QUANTITY BASED ON LIGHT GROUND PREPARATION
	VEGETATIVE MATERIAL FOR MULCH	1 TON / ACRE (EST)		1 TON / ACRE (EST)		QUANTITY BASED ON LIGHT GROUND PREPARATION

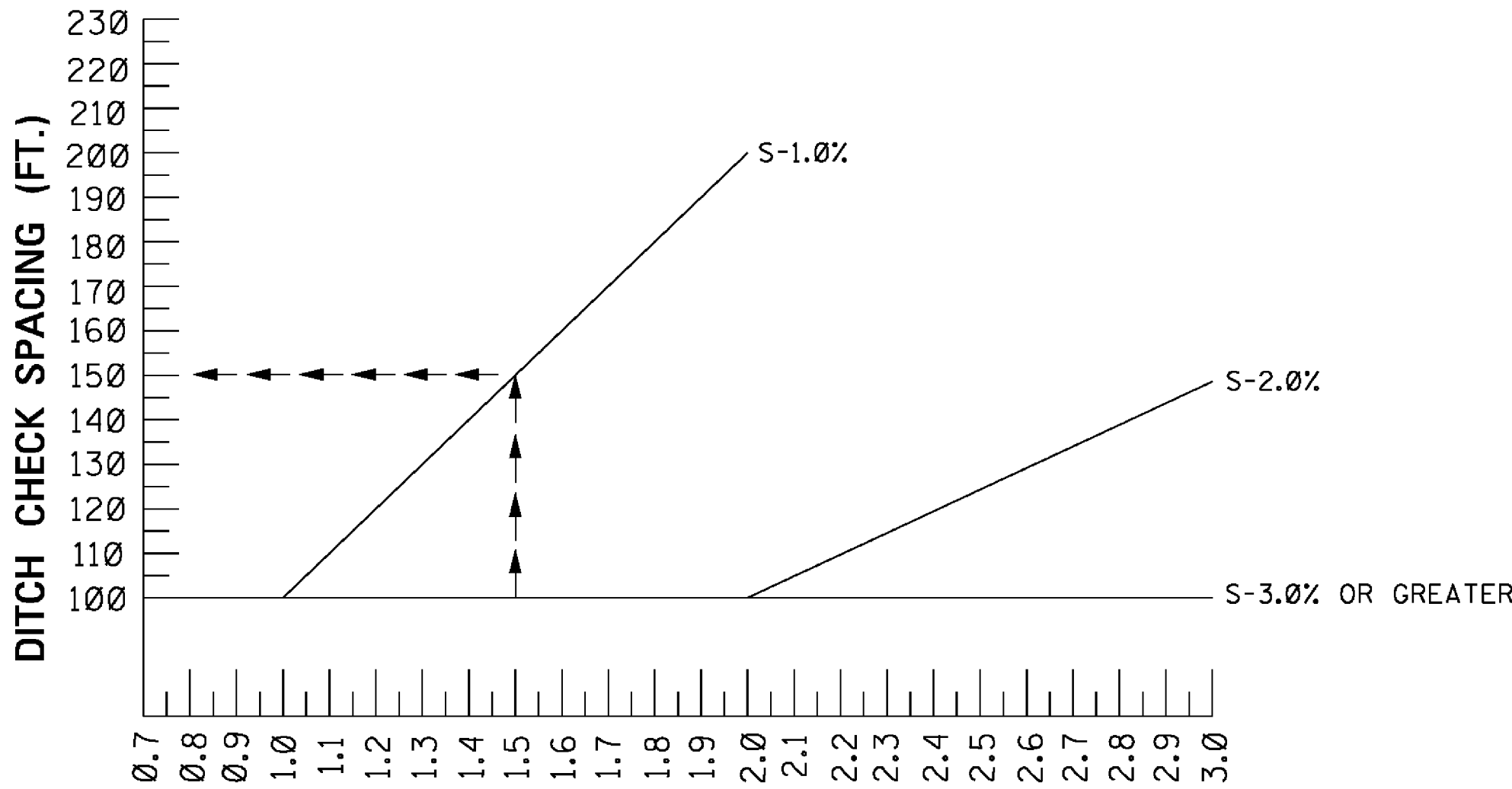
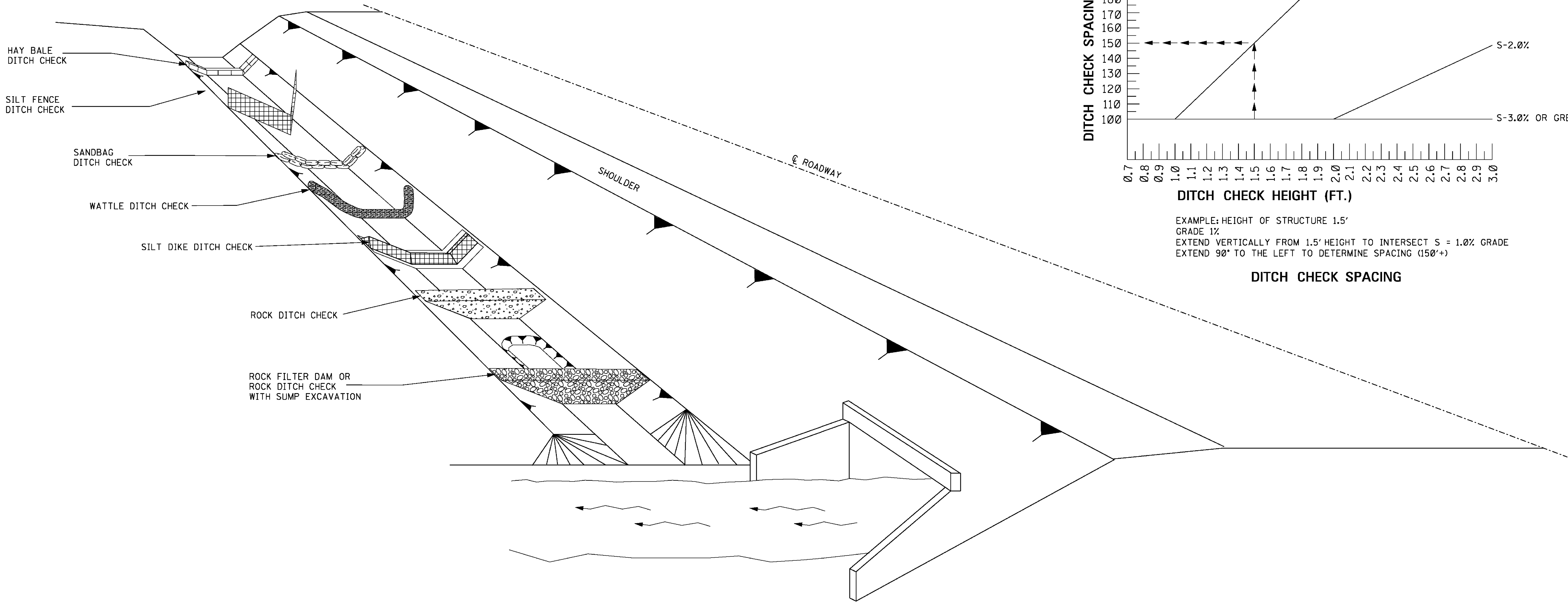
- ① ALL AREAS THAT HAVE BEEN VEGETATED, UNDER THIS CONTRACT, FOR AT LEAST (60) SIXTY DAYS, SHALL RECEIVE ADDITIONAL APPLICATION(S) OF FERTILIZER(S) OF THE TYPE(S) AND RATE(S) OF APPLICATIONS AS DETERMINED BY SOIL TEST OR AS DIRECTED DURING THE GROWING SEASONS THE CONTRACT IS IN FORCE. GROUND PREPARATION WILL NOT BE REQUIRED FOR THE ADDITIONAL APPLICATIONS.
- ② PROPOSAL QUANTITIES ESTIMATED ON THE BASIS THAT 100% OF THE ACREAGE WILL BE SEEDDED.
- ③ PROPOSAL QUANTITIES ESTIMATED ON THE BASIS THAT 50% OF THE ACREAGE WILL BE SEEDDED.
- ④ QUANTITY ESTIMATED ON THE BASIS THAT 50% OF THE ACREAGE VEGETATED MAY REQUIRED TREATMENT.
- ⑤ THIS ITEM MAY BE OMITTED ON AREAS SELECTED BY THE ENGINEER.
- ⑥ BAHIAGRASS WILL NOT BE PERMITTED AS A MULCH MATERIAL.
- ⑦ PROPOSAL QUANTITIES ESTIMATED ON THE BASIS THAT 75% OF THE ACREAGE SEEDDED MAY REQUIRE TOPSOIL

TEMPORARY EROSION CONTROL ITEMS REQUIRED FOR DETOURS

ITEM	RATE	SEASONAL LIMITATIONS
STANDARD GROUND PREPARATION	---	---
COMBINATION FERTILIZER (13-13-13)	500 LBS/ACRE	---
SEEDING (BERMUDA GRASS)	10 LBS/ACRE	---
SEEDING (TALL FESCUE)	20 LBS/ACRE	AUGUST 15 TO MARCH 15
VEGETATIVE MATERIAL FOR MULCH	2 LBS/ACRE	---

NOTE: ALL VEGETATION ON THIS PROJECT SHALL BE PAID FOR UNDER AS OUTLINED IN THE BID PROPOSAL. ITEMS SHALL BE APPLIED USING THE RATES OF APPLICATION AS SHOWN ON THIS SHEET AND WILL NOT BE MEASURED FOR SEPARATE PAYMENT.

NO.	DATE	DESCRIPTION	BY
VEGETATION SCHEDULE			
HALL AVENUE INFRASTRUCTURE IMPROVEMENTS			
CITY OF HATTIESBURG			
FORREST COUNTY, MISSISSIPPI			
sdw Engineering Progress 301 Second Ave, Hattiesburg, MS 39401 (p) 601.544.1821 (f) 601.544.0501 sd-w.com			
Drawn by:	SLS	Checked by:	SEM Scale: NONE
Date:	05-21-2021	Working No.	VS1
Drawing No.:	12213	Sheet No.	32



EXAMPLE: HEIGHT OF STRUCTURE 1.5'
GRADE 1%
EXTEND VERTICALLY FROM 1.5' HEIGHT TO INTERSECT S = 1.0% GRADE
EXTEND 90° TO THE LEFT TO DETERMINE SPACING (150'+)

DITCH CHECK SPACING

GENERAL NOTES:

1.

THE DITCH CHECK PERSPECTIVE ILLUSTRATES A TOOL BOX OF TEMPORARY PRACTICES THAT MAY BE USED. DITCH CHECKS ARE INSTALLED TO CONTROL RUNOFF VELOCITY AND THUS REDUCE EROSION AND PROVIDE FOR TRAPPING OF SEDIMENTS.
2.

SELECTION OF THE APPROPRIATE DITCH CHECK SHOULD BE A FUNCTION OF CONSTRUCTION PHASE, DRAINAGE AREA, DITCH GRADIENT, SOIL TYPE, ECONOMY AND SAFETY.
3.

DITCH CHECKS CAN BE REMOVED FOR MAINTENANCE AND/OR REPLACEMENT BUT MUST REMAIN IN PLACE UNTIL UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED. MAINTENANCE INCLUDES REMOVAL OF SEDIMENT BEGINNING WHEN SEDIMENT ACCUMULATION REACHES 1/3 THE CAPACITY OR HEIGHT OF THE STRUCTURE AND NEVER ALLOWING FOR SEDIMENT TO ACCUMULATE MORE THAN 1/2 THE VOLUME OR HEIGHT OF THE DITCH CHECK STRUCTURE.
4.

HAY BALES SHOULD BE USED TO INTERCEPT LOW VOLUME FLOWS IN LOW TO MODERATE GRADIENT DITCHES.
5.

SILT FENCE DITCH CHECKS SHOULD BE USED WHERE IT HAS BEEN DETERMINED THAT HAY BALE CHECKS ARE INADEQUATE. SILT FENCE DITCH CHECKS SHOULD BE USED TO INTERCEPT LOW VOLUME FLOWS IN LOW TO MODERATE GRADIENT DITCHES.
6.

SANDBAG DITCH CHECKS SHOULD BE USED FOR VELOCITY REDUCTION AND MINIMAL SEDIMENT TRAPPING IN CONCRETE PAVED DITCHES OR IN DITCHES THAT HAVE ROCK BOTTOMS.
7.

WATTLE DITCH CHECKS CAN BE USED FOR VELOCITY REDUCTION AND CONTROL OF SEDIMENT TRANSPORT UNDER LOW TO MEDIUM FLOW CONDITIONS.
8.

SILT DIKES CAN BE USED IN DITCHES WITH CONCENTRATED FLOWS WITHIN THE CLEAR ZONE WHERE RIPRAP CAN NOT BE USED. AS CONSTRUCTION PROGRESSES.
9.

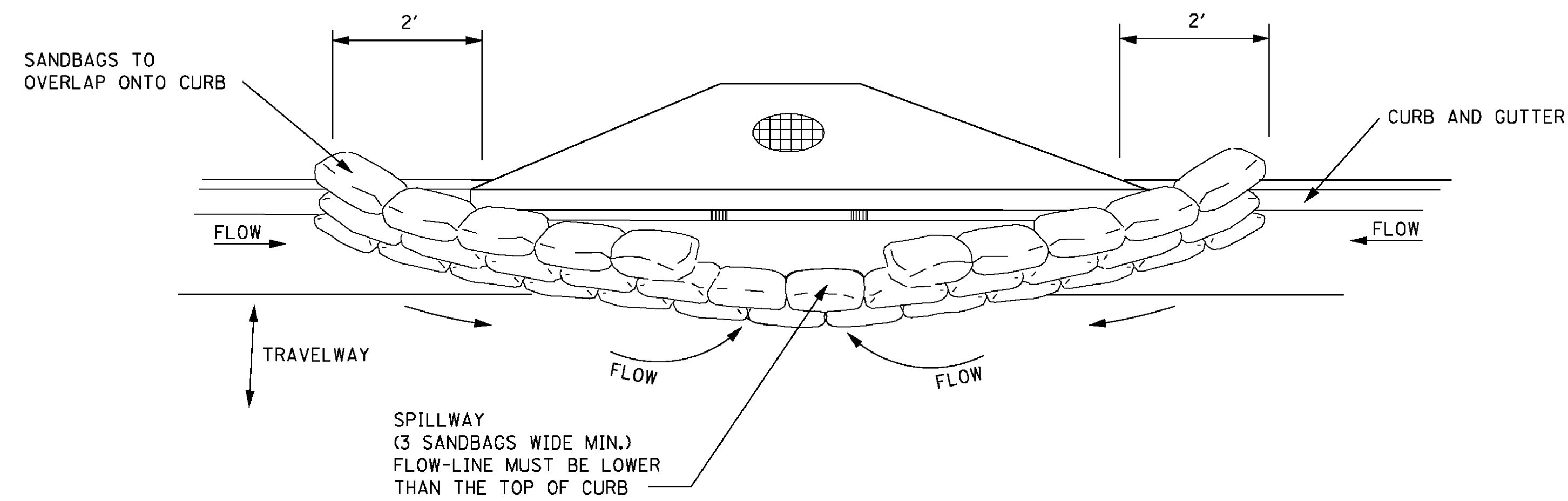
ROCK DITCH CHECKS WITH SUMP EXCAVATION CAN BE PLACED IN DITCHES TO ASSURE ON-SITE SEDIMENT TRAPPING REQUIREMENTS ARE MET. DITCH CHECK WITH SUMP EXCAVATION IS USED WHEN DITCHES RECEIVE DRAINAGE FROM CUT OR FILL SLOPES OR OTHER CRITICAL AREAS WHERE SOIL EROSION IS EXPECTED. DRAINAGE AREA FOR A TEMPORARY SEDIMENT TRAP SHOULD BE LIMITED TO 3 ACRES. THEY CAN BE USED IN SERIES TO INCREASE ON-SITE SEDIMENT TRAPPING EFFICIENCY.
10.

DITCH CHECKS, IN NO CASE, SHALL BE PLACED IN LIVE STREAMS.
11.

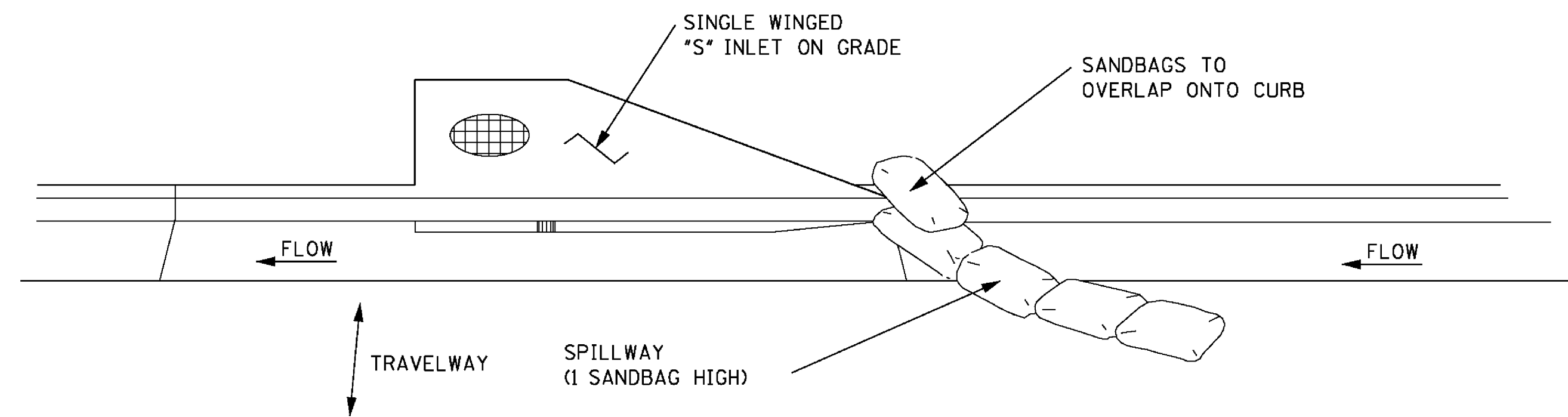
CONFIGURATION AND SPACING MAY BE ADJUSTED IF APPROVED BY THE ENGINEER TO ACCOMMODATE TRAVELWAY SAFETY, WATER FLOW, OR SOIL AND INSTALLATION CHALLENGES.

					BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN	
					REVISION	DITCH CHECK STRUCTURES, TYPICAL APPLICATIONS AND DETAILS	
					DATE	ISSUE DATE: AUGUST 01, 2017	
						WORKING NUMBER ECD-4	SHEET NUMBER 6104

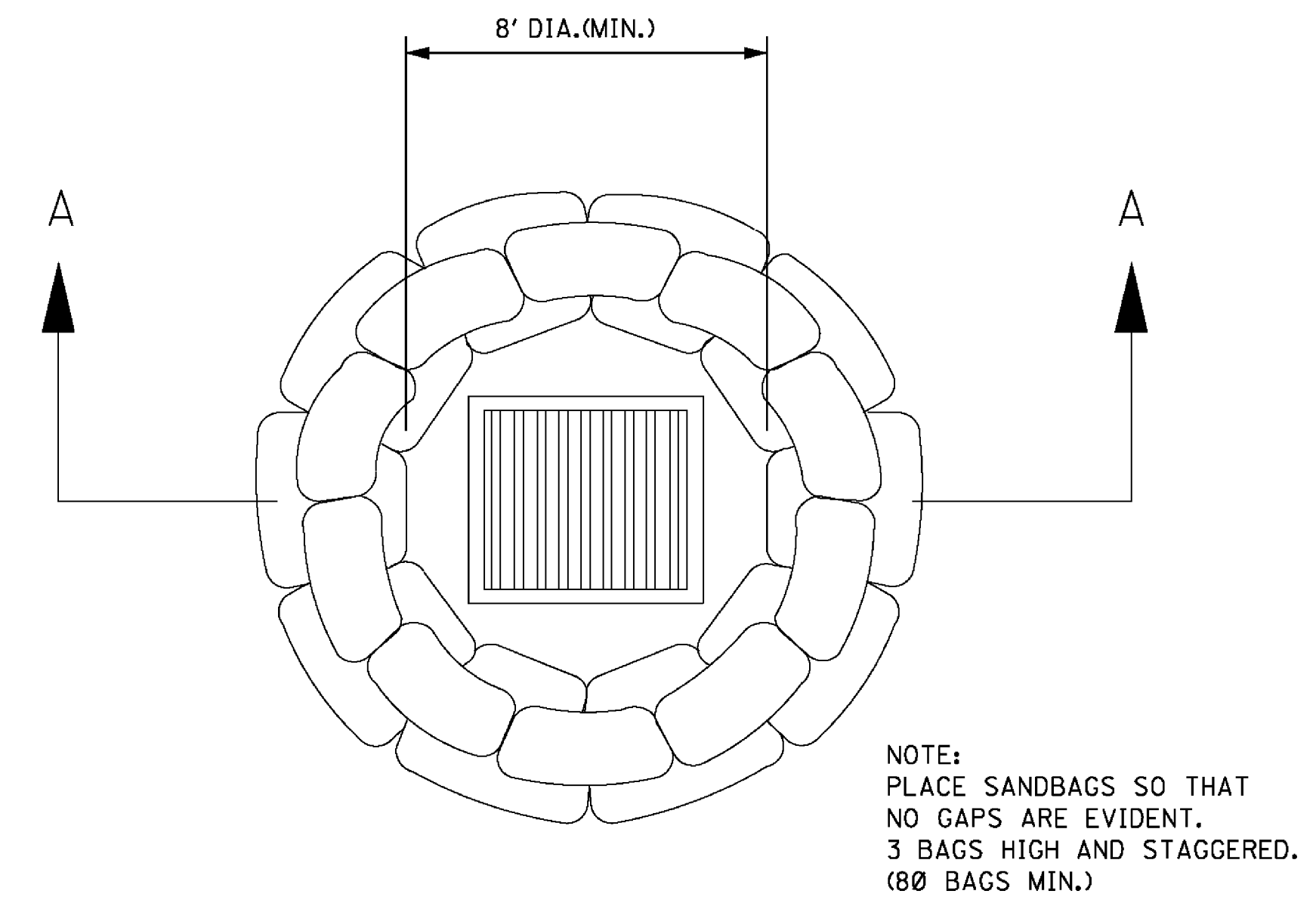
STATE	PROJECT NO.
MISS.	



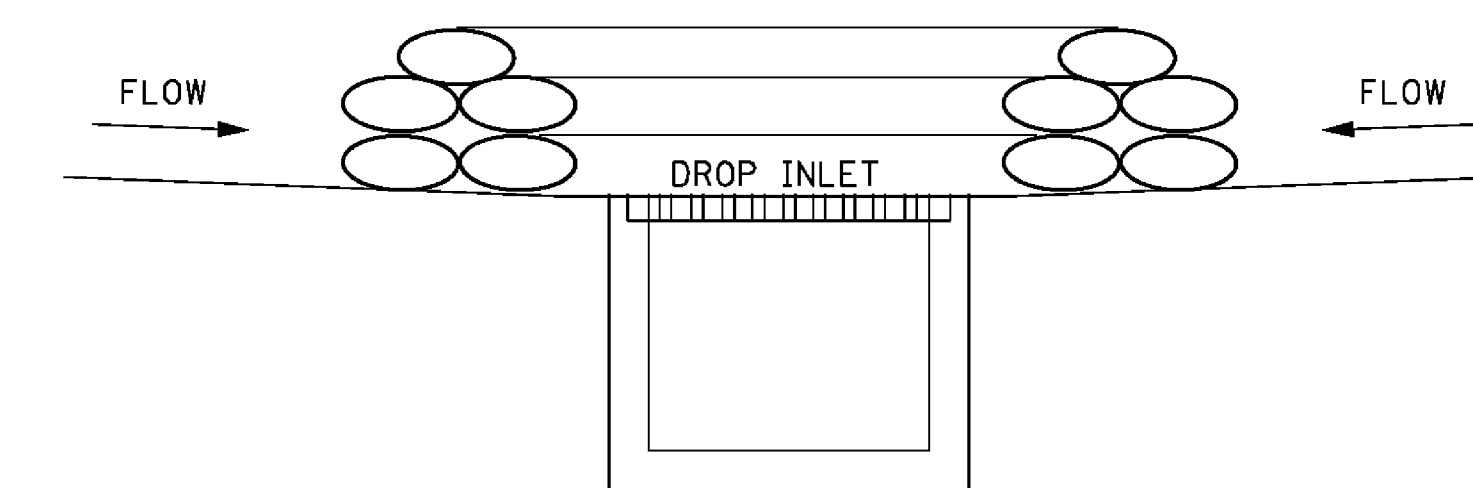
TYPICAL (SANDBAG) PROTECTION FOR INLET IN SAG



TYPICAL (SANDBAG) PROTECTION FOR INLET ON GRADE



DROP INLET
PLAN VIEW

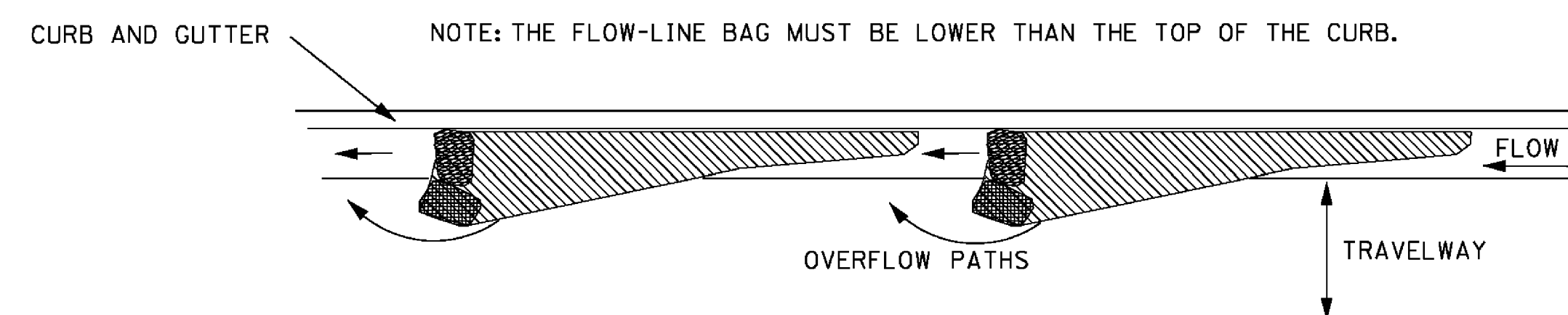


SECTION A-A

SANDBAG BARRIER

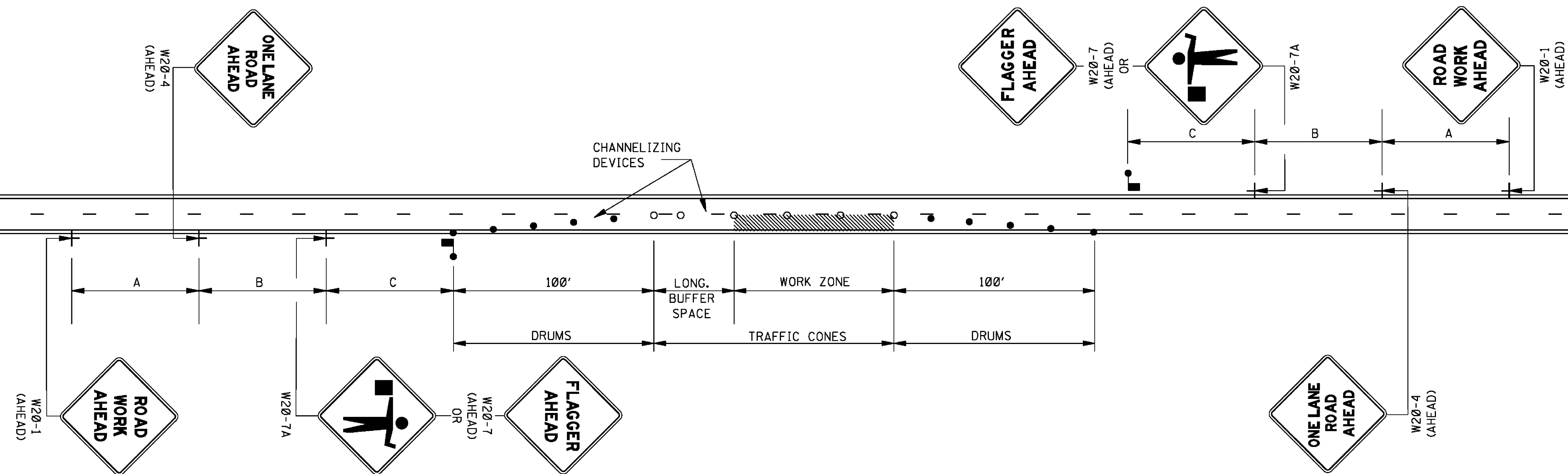
CURB INLET PROTECTION NOTES:

1. THIS CURB INLET PROTECTION METHOD CAN BE USED DURING ANY STAGE OF BASE AND PAVEMENT CONSTRUCTION.
2. BAG HEIGHT AND NUMBER OF BAGS SHOULD BE BASED ON CURB HEIGHT AND USE OF TRAVELWAY.
3. SEDIMENT SHOULD BE CONTROLLED PRIOR TO ENTERING GUTTER. GUTTER CHECKS AND INLET PROTECTION ARE FOR SECONDARY CONTROL.
4. REMOVE ACCUMULATED SEDIMENT AFTER EVERY RAINFALL. SWEEP SEDIMENT FROM HARD SURFACES AND DISPOSE OF APPROPRIATELY AWAY FROM INLETS AND/OR WATER BODIES.
5. IF DENUDEED AREAS EXIST BEHIND THE INLET, A SEDIMENT BARRIER SHOULD BE INSTALLED AROUND ITS PERIMETER TO CONTROL SEDIMENT.



CURB AND GUTTER SEDIMENT CONTAINMENT SYSTEM

[illegible]



LEGEND

- FLAGGER
- RETROREFLECTIVE FREE-STANDING PLASTIC DRUMS
- TRAFFIC CONES (28" HEIGHT MINIMUM)

GENERAL NOTES:

1. THE LOCATION OF CHANNELIZING DEVICES AND THE WORK AREA LAYOUT SHALL BE BASED ON THE CRITERIA IN THE FOLLOWING TABLE. FLAGGER STATIONS SHALL BE LOCATED SUCH THAT APPROACHING VEHICLES WILL HAVE SUFFICIENT DISTANCE TO STOP. VALUES IN STOPPING SIGHT DISTANCE COLUMN MAY BE USED AS A MINIMUM FOR THIS DISTANCE.

POSTED SPEED AND/OR DESIGN SPEED	MAXIMUM CHANNELIZING DEVICE SPACING (ft)		LONGITUDINAL BUFFER SPACE (ft)	STOPPING SIGHT DISTANCE
	TAPER	ALONG LANE LINE & WORK ZONE		
mph				
25	20	50	55	155
30	20	60	85	200
35	20	70	120	250
40	20	80	170	305
45	20	90	220	360
50	20	100	280	425
55	20	110	335	495
60	20	120	415	570
65	20	130	485	645

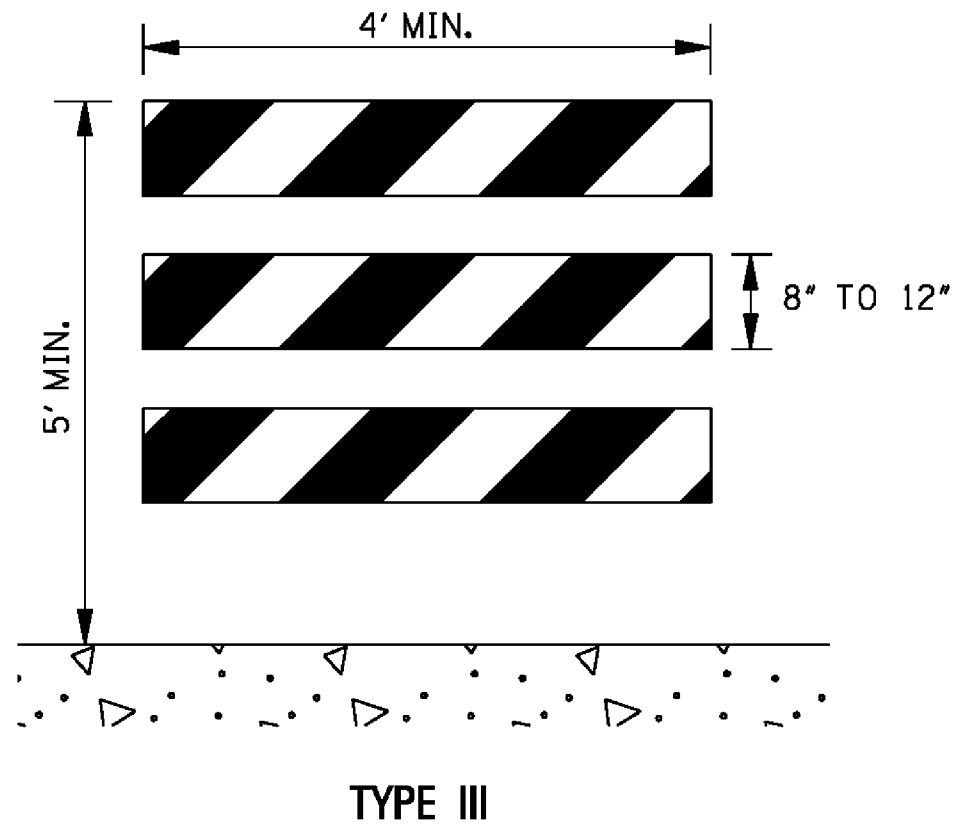
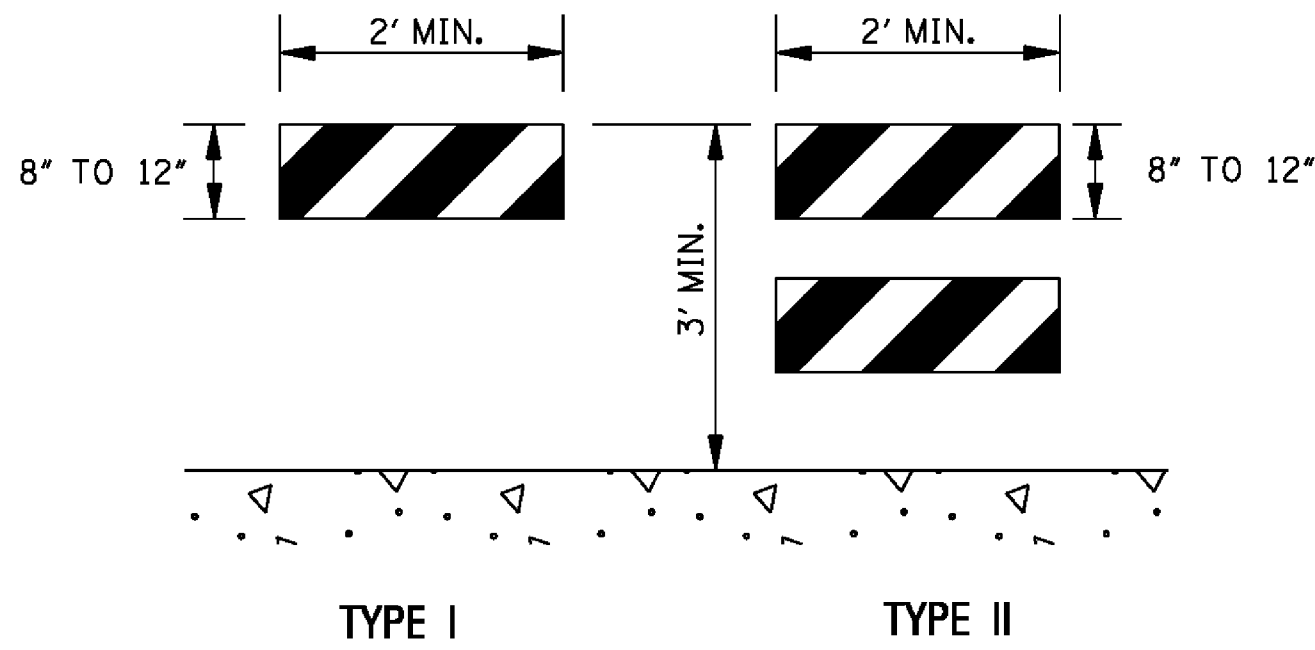
† NOTE: BUFFER SPACE MAY BE ADJUSTED AS NEEDED ACCORDING TO ROADWAY GEOMETRY TO MEET SIGHT DISTANCE REQUIREMENTS, AS DIRECTED BY THE ENGINEER.

2. ALL CHANNELIZING DEVICES SHALL BE A MINIMUM OF 28" IN HEIGHT.
3. DIAMOND SHAPED TRAFFIC CONTROL SIGNS SHALL BE A MINIMUM OF 36" x 36" AND BLACK COPY ON FLUORESCENT ORANGE SHEETING.
4. WHEN WORK ZONE IS NO LONGER NEEDED, ALL SIGNS SHALL BE COVERED OR REMOVED AND ALL CHANNELIZING DEVICES SHALL BE MOVED TO THE SHOULDER EDGE.
5. ADDITIONAL FLAGGERS MAY BE NEEDED AS DIRECTED BY THE ENGINEER.
6. WHEN WORK IS REQUIRED AT NIGHT, FLAGGER STATIONS SHALL BE ILLUMINATED.
7. CHANNELIZING DEVICE TYPES FOR:
 - A. APPROACH AND EXIT TAPERS- RETROREFLECTIVE PLASTIC DRUMS
 - B. ALONG LANE LINE AND WORK ZONE- TRAFFIC CONES (28" HEIGHT)
8. ALL TRAFFIC CONTROL ITEMS SHOWN ON THIS SHEET WILL NOT BE MEASURED FOR SEPARATE PAYMENT. THIS WORK SHALL BE INCLUDED IN THE PRICE BID FOR MAINTENANCE OF TRAFFIC.

DISTANCE BETWEEN SIGNS

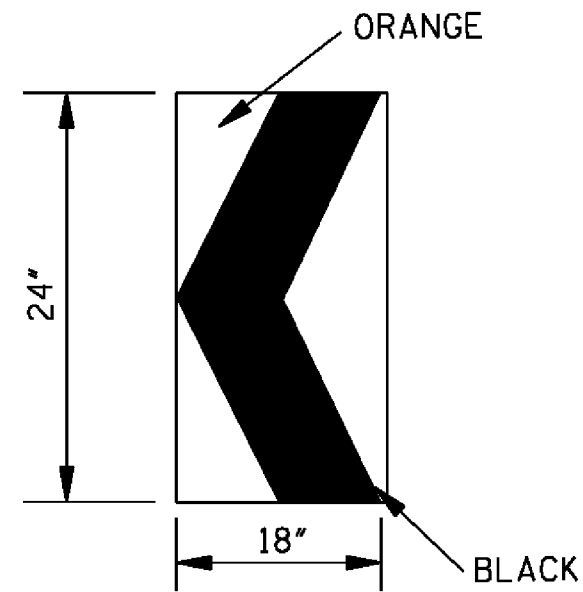
ROAD TYPE	A	B	C
URBAN (35 MPH OR LESS)	100 FT.	100 FT.	100 FT.
URBAN (40 - 70 MPH)	350 FT.	350 FT.	350 FT.
RURAL	500 FT.	500 FT.	500 FT.
EXPRESSWAY / FREEWAY	1000 FT.	1500 FT.	2640 FT.

[illegible]



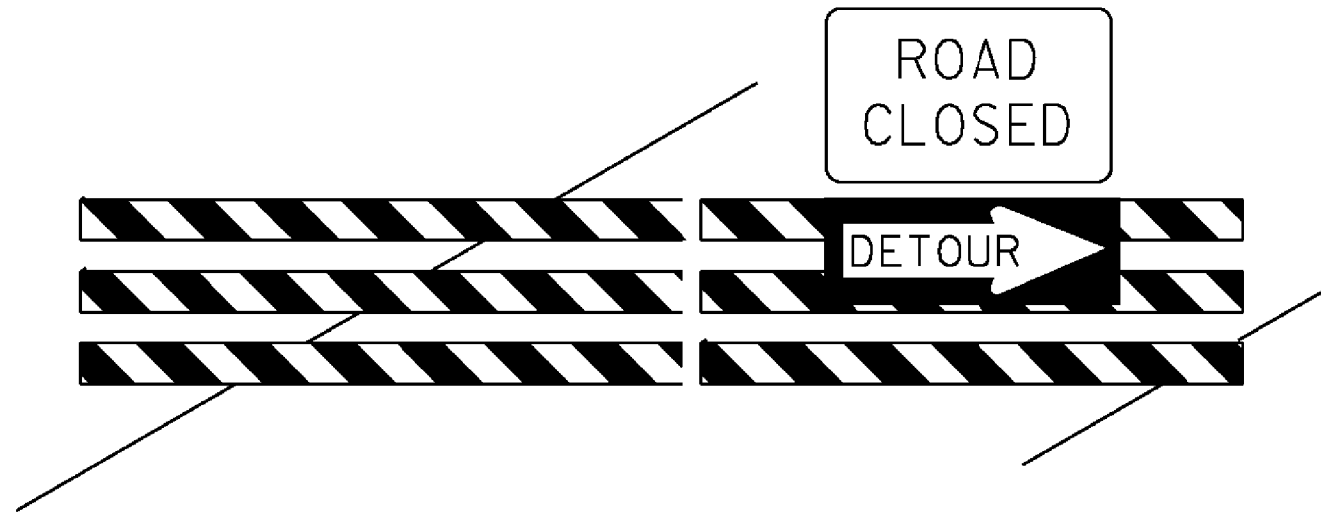
STANDARD BARRICADES

1. THE MARKING FOR BARRICADE RAILS SHALL BE ORANGE AND WHITE (SLOPING DOWNWARD AT AN ANGLE OF 45° IN THE DIRECTION TRAFFIC IS TO PASS).
2. RAIL STRIPE SHOULD BE 6 INCHES, EXCEPT THAT 4-INCH WIDE STRIPES MAY BE USED IF RAIL LENGTHS ARE LESS THAN 36 INCHES.
3. DO NOT PLACE SANDBAGS OR OTHER DEVICES TO PROVIDE MASS ON THE BOTTOM RAIL THAT WILL BLOCK VIEW OR RAIL FACE.
4. FOR ADDITIONAL INFORMATION OR DETAILS, SEE MUTCD, LATEST EDITION.
5. BARRICADES ARE CLASSIFIED BY FHWA AS CATEGORY II WORK ZONE DEVICES WHICH REQUIRE CRASHWORTHINESS ACCEPTANCE LETTERS. TO DATE, 2-IN. THICK TIMBER RAILS HAVE NOT BEEN SUCCESSFULLY CRASH TESTED. A LIST OF CRASHWORTHY BARRICADES AND OTHER CATAGORY II DEVICES CAN BE FOUND ON FHWA'S WEBSITE:
http://safety.fhwa.dot.gov/roadway_dept/policy_guide/road_hardware/cat2.cfm



CHEVRON SIGN DETAIL

1. A CHEVRON SIGN CONSISTS OF A BLACK CHEVRON TYPE MARKING ON AN ORANGE BACKGROUND AND SHALL POINT IN THE DIRECTION OF TRAFFIC FLOW.
2. THE CHEVRON SIGN SHALL BE MOUNTED ON CRASHWORTHY SUPPORT.
3. CHEVRON SIGNS MAY BE USED TO SUPPLEMENT OTHER STANDARD DEVICES WHERE ONE OR MORE LANES ARE CLOSED FOR CONSTRUCTION OR MAINTENANCE. THEY SHOULD BE PLACED APPROXIMATELY 2'-0" BEHIND THE LANE TRANSITION STRIPE.

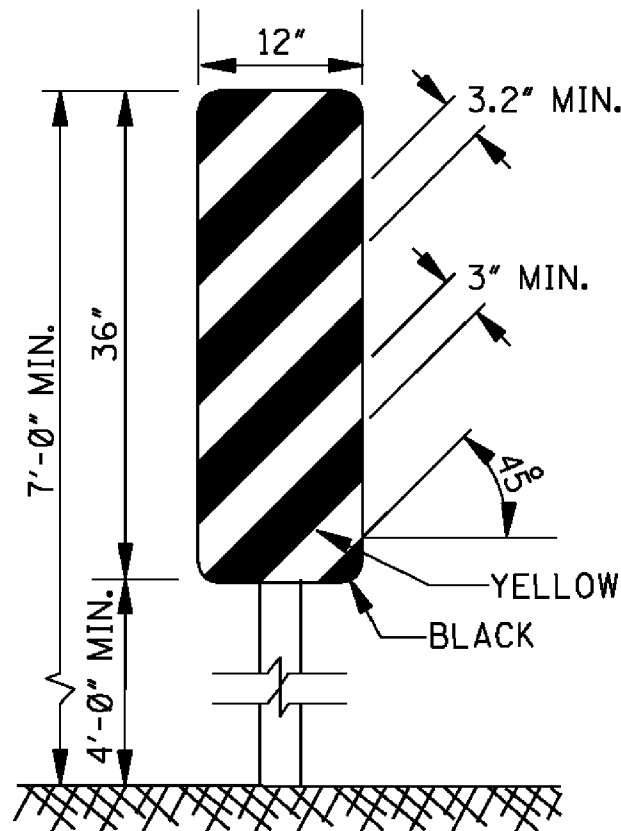


BARRICADE CLOSING A ROAD

BARRICADE CHARACTERISTICS

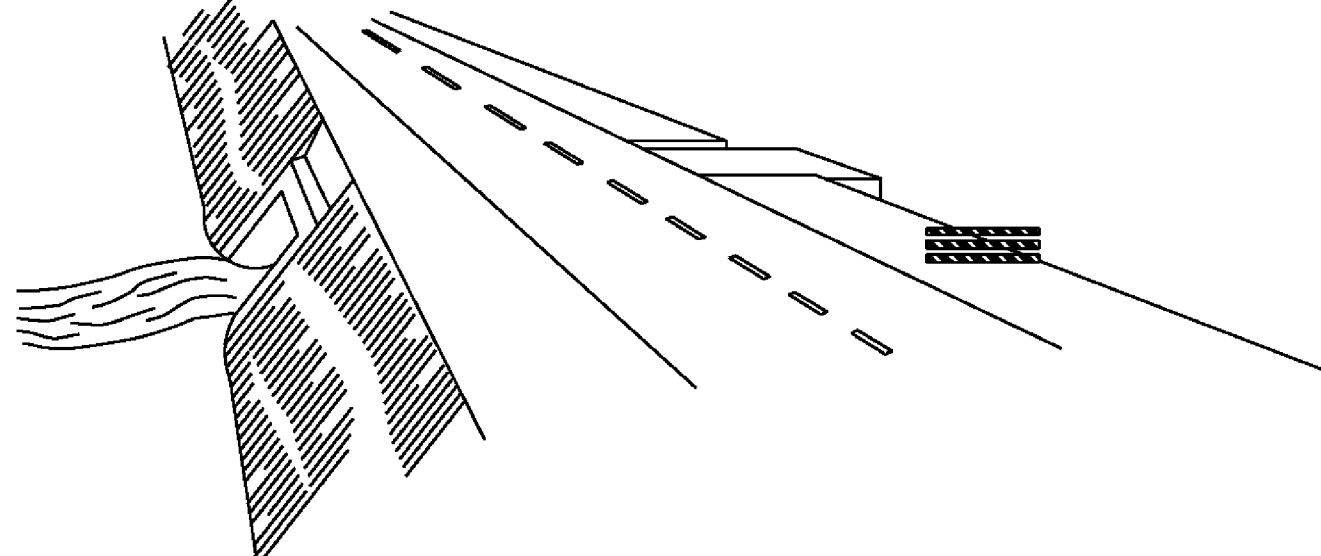
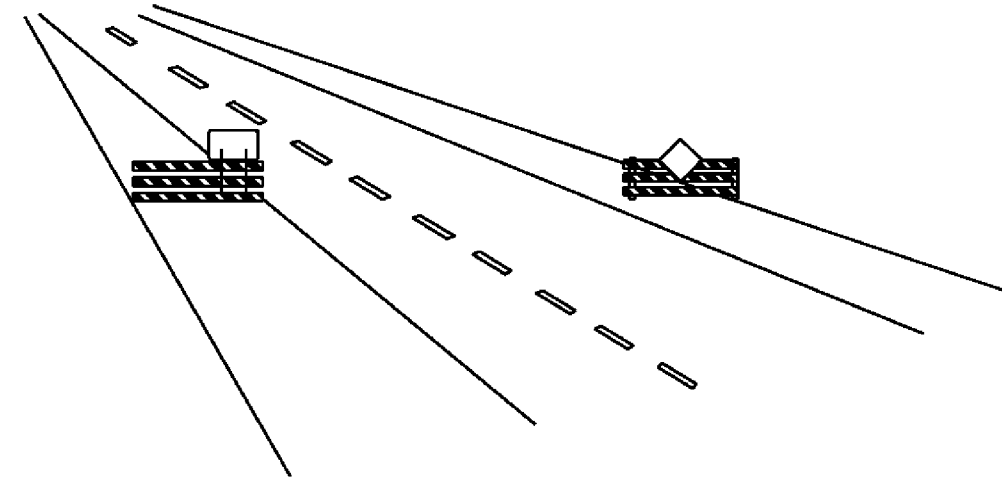
	I	II	III
WIDTH OF RAIL **	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.	8" MIN. - 12" MAX.
LENGTH OF RAIL**	24" MIN.	24" MIN.	48" MIN.
WIDTH OF STRIPE *	6"	6"	6"
HEIGHT	36" MIN.	36" MIN.	60" MIN.
NUMBER OF RETROREFLECTORIZED RAIL FACES	2 (ONE EACH DIRECTION)	4 (TWO EACH DIRECTION)	3 IF FACING TRAFFIC IN ONE DIRECTION 6 IF FACING TRAFFIC IN TWO DIRECTIONS

- * 1. FOR RAILS LESS THAN 36" LONG, 4" WIDE STRIPES MAY BE USED.
- ** 2. BARRICADES INTENDED FOR USE ON EXPRESSWAYS, FREEWAYS AND OTHER HIGH SPEED ROADWAYS, SHALL HAVE A MINIMUM OF 270 in² OF REFLECTIVE AREA FACING TRAFFIC.



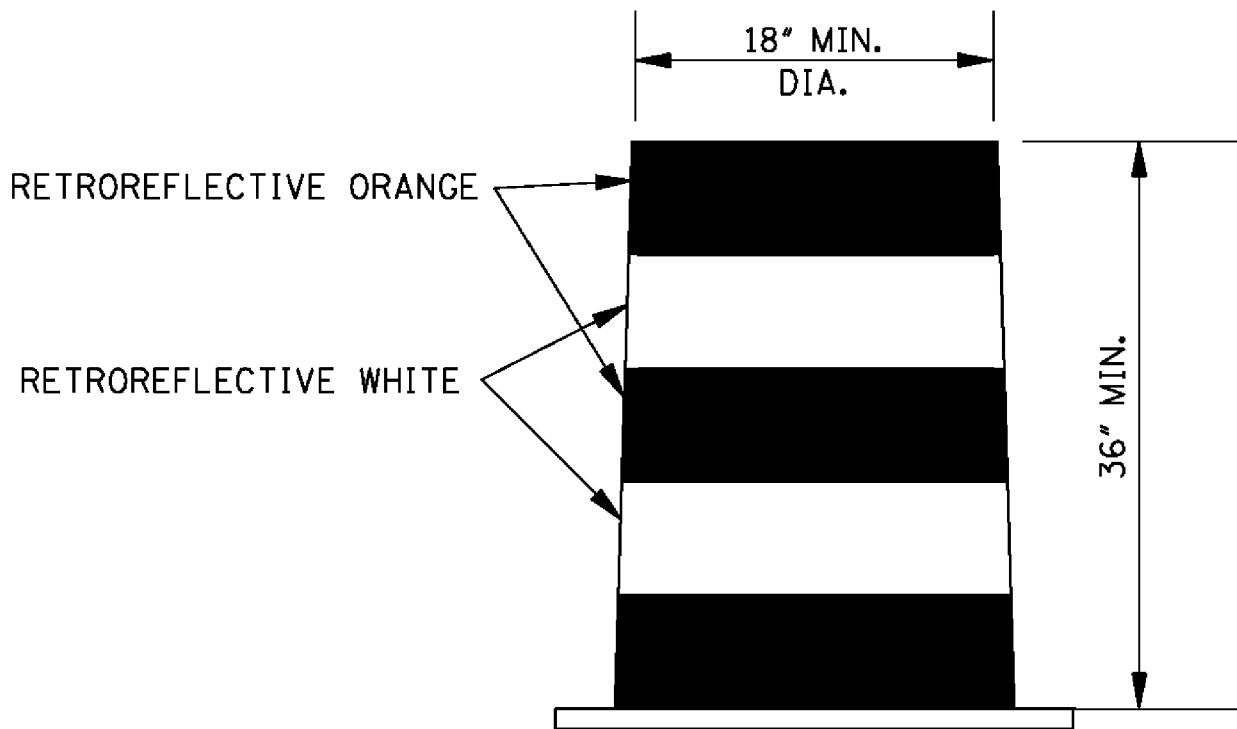
TYPE 3 OBJECT MARKER (OM-3R)

1. TYPE 3 OBJECT MARKERS SHALL BE USED AT ALL EXPOSED BRIDGE ABUTMENTS AND AT OTHER LOCATIONS AS DEEMED NECESSARY BY THE ENGINEER.
2. THE OM-3R IS SHOWN. THE OM-3L IS SIMILAR EXCEPT THE STRIPES SLOPE DOWNWARD FROM THE UPPER LEFT SIDE TO THE LOWER RIGHT SIDE AND SHALL BE PLACED ON THE LEFT SIDE OF THE OBJECT.
3. THE INSIDE EDGE OF THE MARKER SHALL BE IN LINE WITH THE INNER EDGE OF THE OBSTRUCTION.



WING BARRICADES

1. WING BARRICADES ARE TYPE III BARRICADES ERECTED ON THE SHOULDER ON ONE OR BOTH SIDES OF THE PAVEMENT TO GIVE THE SENSATION OF A NARROWING OR RESTRICTED ROADWAY. WING BARRICADES MAY BE USED AS A MOUNTING FOR THE ADVANCE WARNING SIGNS OR FLASHERS.
2. WING BARRICADES SHOULD BE USED:
A. IN ADVANCE OF A CONSTRUCTION PROJECT EVEN WHEN NO PART OF THE ROADWAY IS ACTUALLY CLOSED.
B. IN ADVANCE OF ALL BRIDGE OR CULVERT WIDENING OPERATIONS.



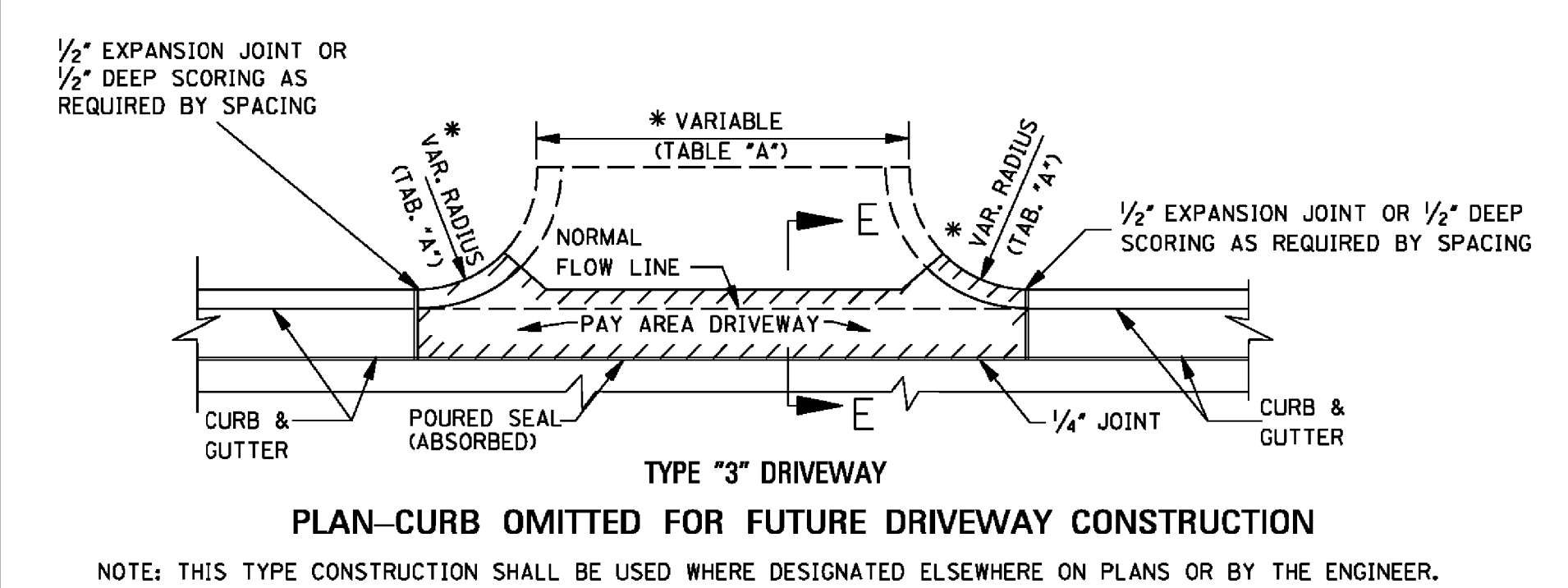
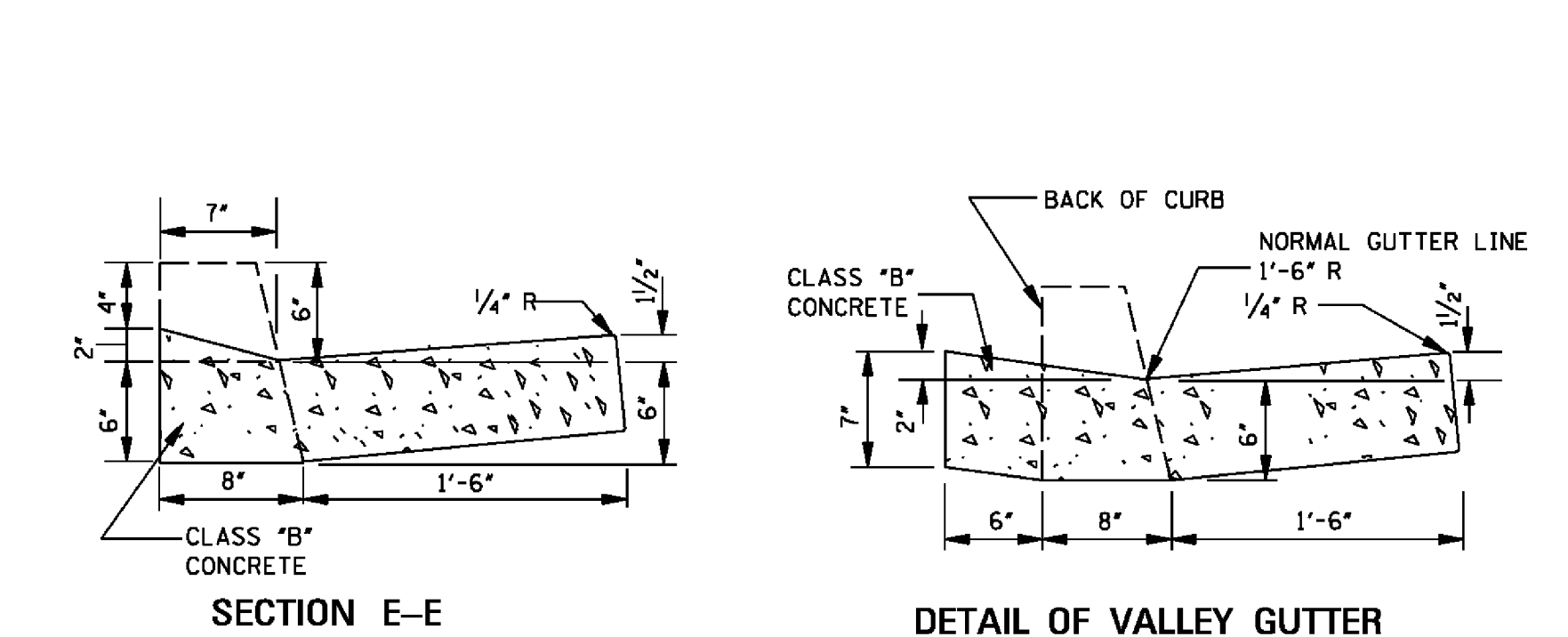
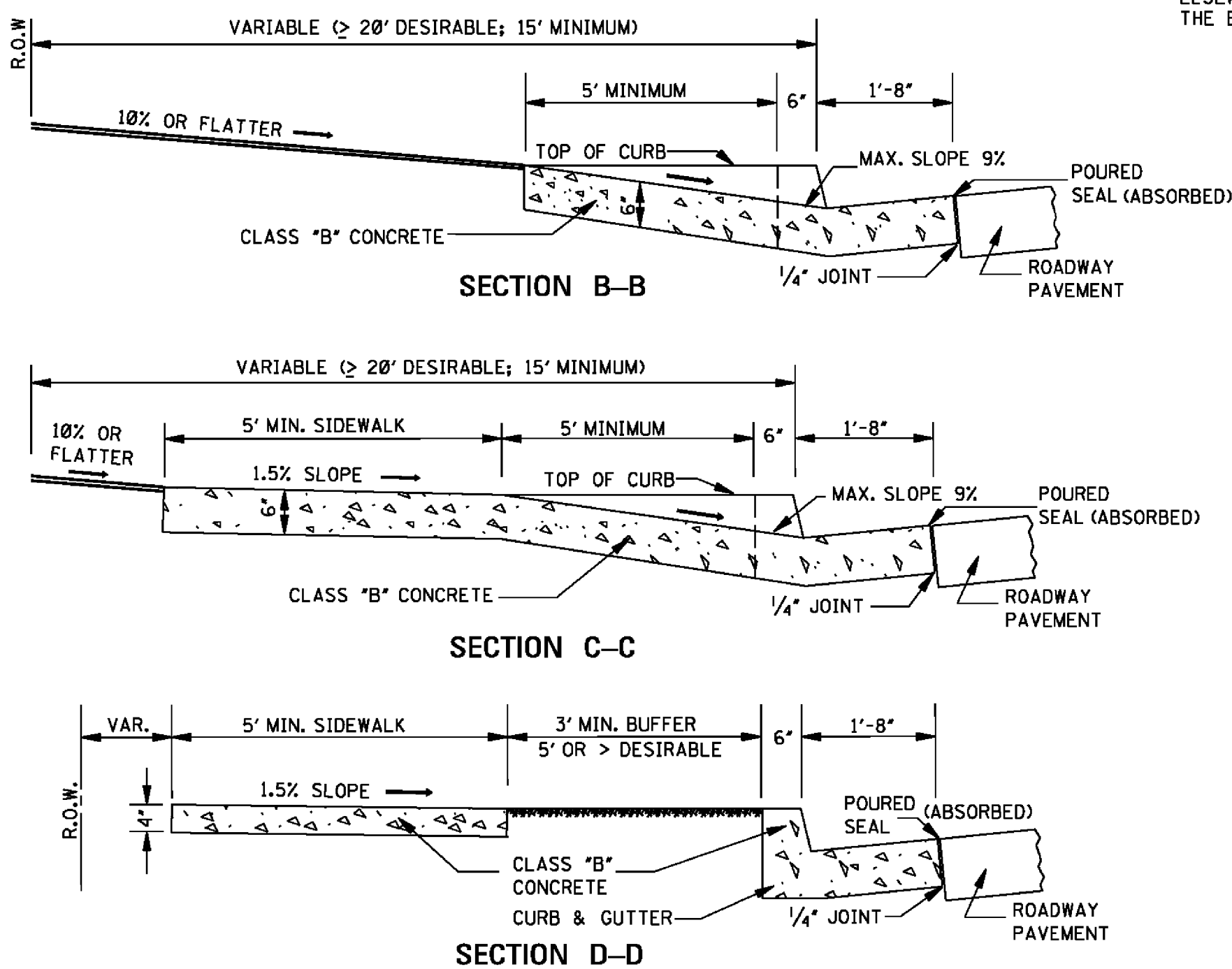
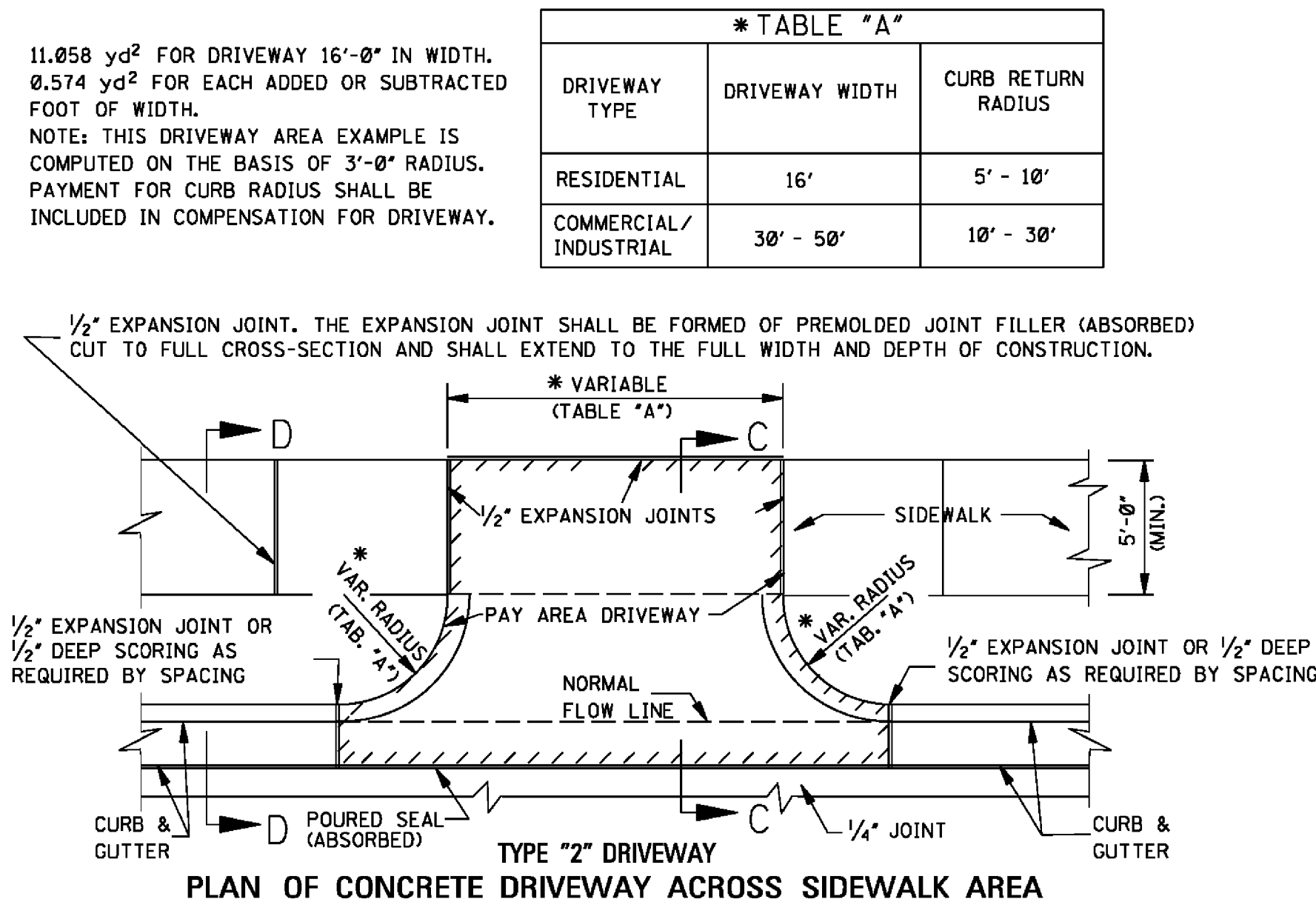
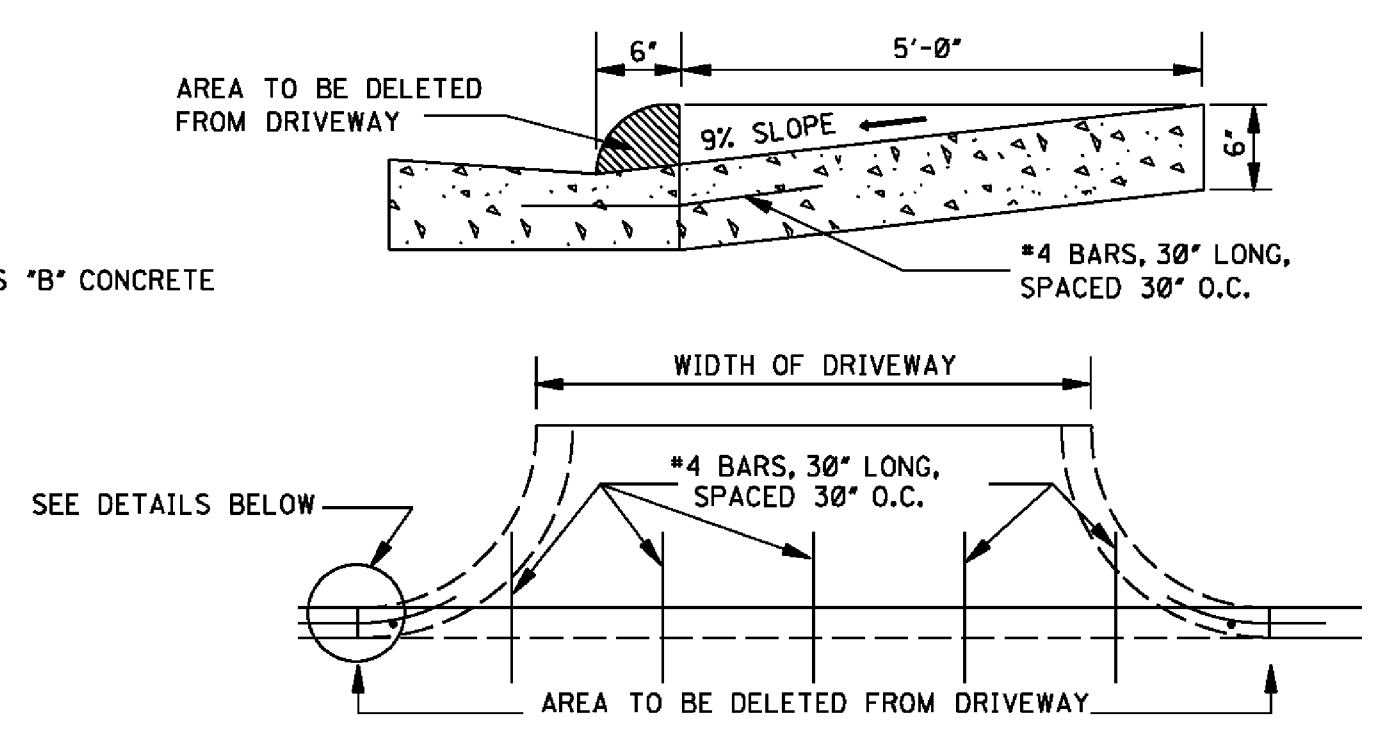
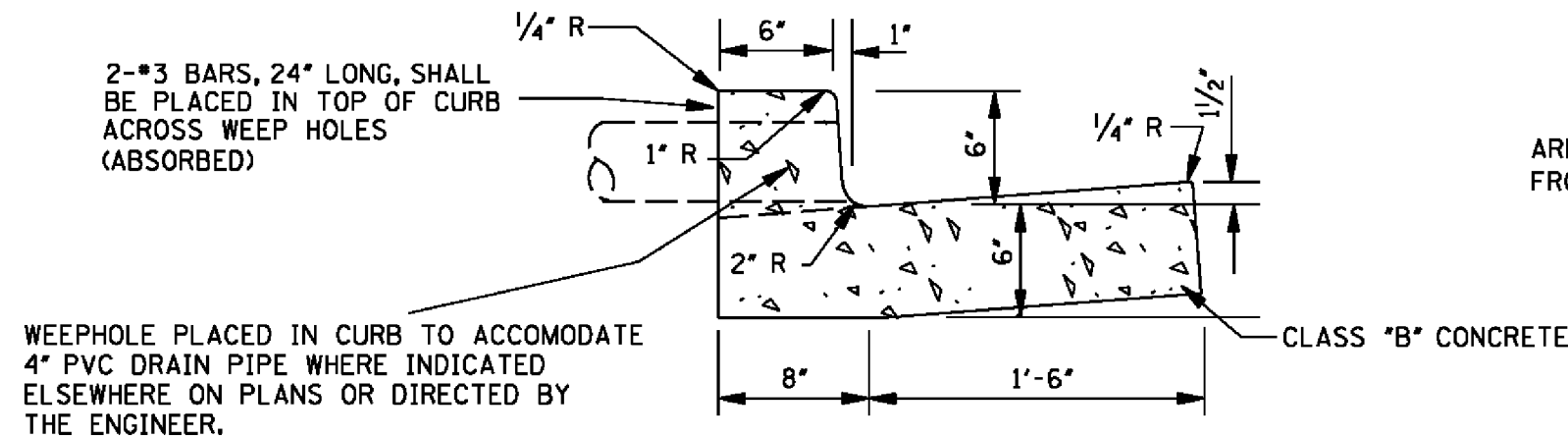
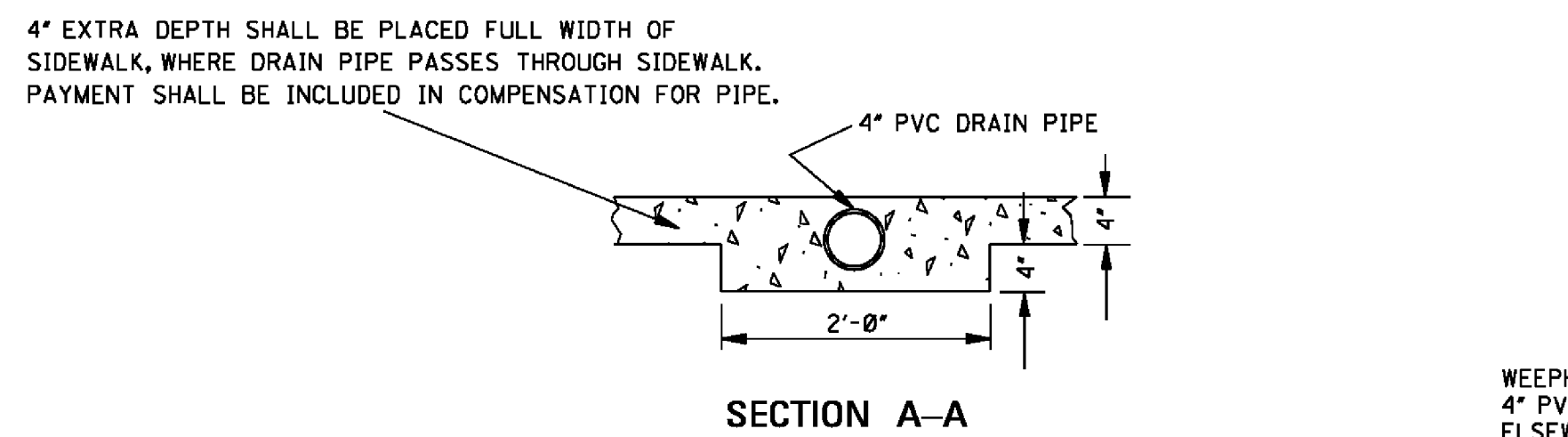
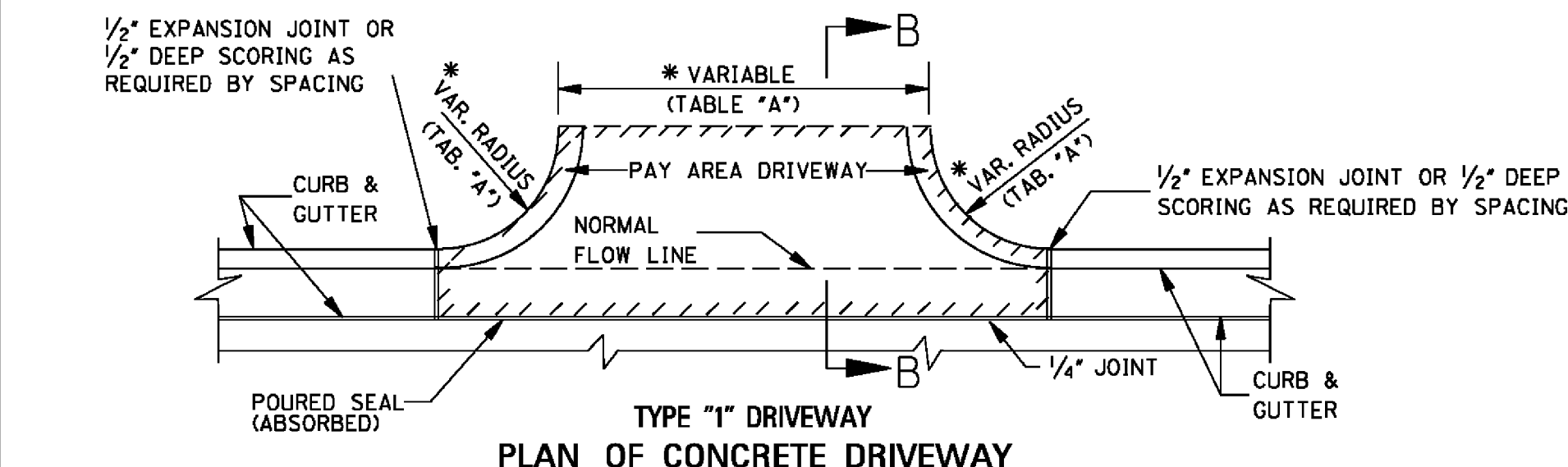
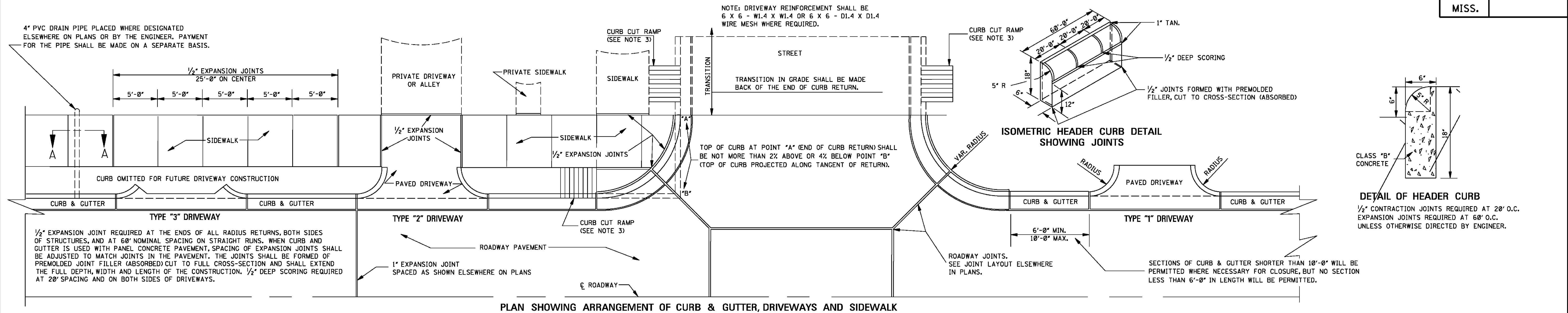
PLASTIC DRUM STRIPING DETAIL

1. PLASTIC DRUMS SHALL BE ON END AND USED AS AN EXPEDIENT METHOD FOR TRAFFIC CHANNELIZATION. THE COLOR AND MARKING OF DRUMS SHALL BE CONSISTENT WITH MARKING STANDARDS FOR BARRICADE. THE PREDOMINANT COLOR ON DRUMS SHALL BE ORANGE WITH FOUR (4) RETROREFLECTIVE, HORIZONTAL, CIRCUMFERENTIAL STRIPES (2 ORANGE & 2 WHITE) 6" WIDE.
2. DRUMS SHOULD NEVER BE PLACED IN THE ROADWAY WITHOUT WARNING SIGNS.
3. WHERE PRACTICAL PLASTIC DRUMS SHOULD BE PLACED NO CLOSER THAN 3'-0" FROM THE EDGE OF TRAVELED LANE.

				BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN
				REVISION	
				DATE	
				ISSUE DATE:	AUGUST 01, 2017
				WORKING NUMBER	TCP-8
				SHEET NUMBER	6358



WORKING NUMBER
TCP-8
SHEET NUMBER
6358



GENERAL NOTES:

- TRAVERSE CONTRACTION JOINTS ARE REQUIRED AT 20' ON CENTER FOR ALL CONCRETE DRIVEWAYS THAT EXTEND PAST THE END OF THE CURB RETURN. A 1/2" WIDE EXPANSION JOINT IS REQUIRED AT THE END OF THE CURB RETURN AND AT 60' ON CENTER THROUGHOUT THE LENGTH OF THE DRIVEWAY. A LONGITUDINAL CONTRACTION JOINT IS REQUIRED FOR ALL DRIVEWAYS EXCEEDING 20' IN WIDTH.
- SEE WK. NOS. CR-1, CR-2, CR-3 & CR-4 FOR DETAILS OF CURB-CUT RAMPS.
- MAXIMUM 2% CROSS-SLOPE ON SIDEWALKS.

MISSISSIPPI DEPARTMENT OF TRANSPORTATION
ROADWAY DESIGN DIVISION
STANDARD PLAN

**DRIVEWAYS,
CURB & GUTTER,
& SIDEWALK**

MDOT

WORKING NUMBER
SD-1

SHEET NUMBER
6419

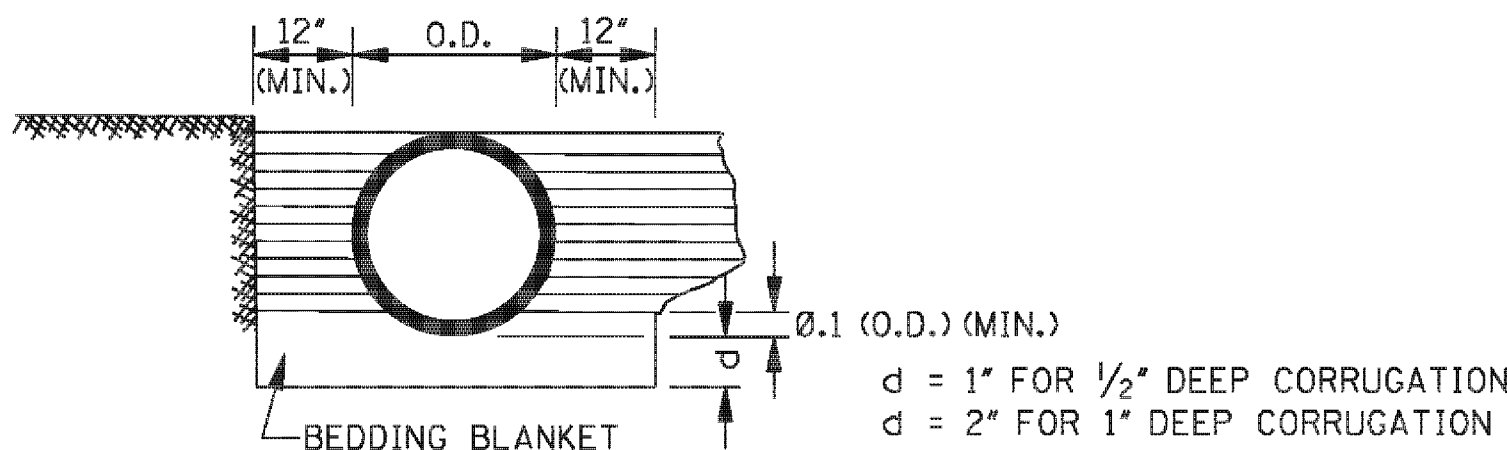
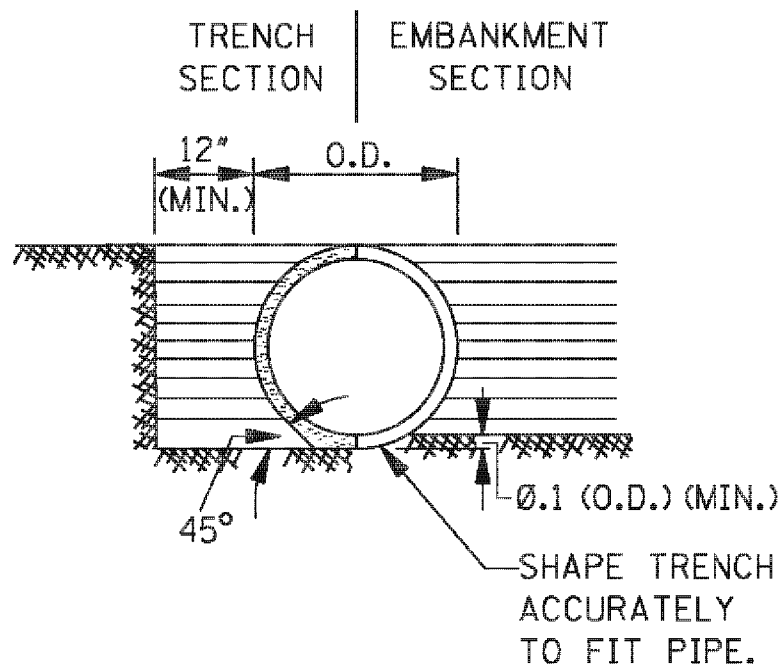
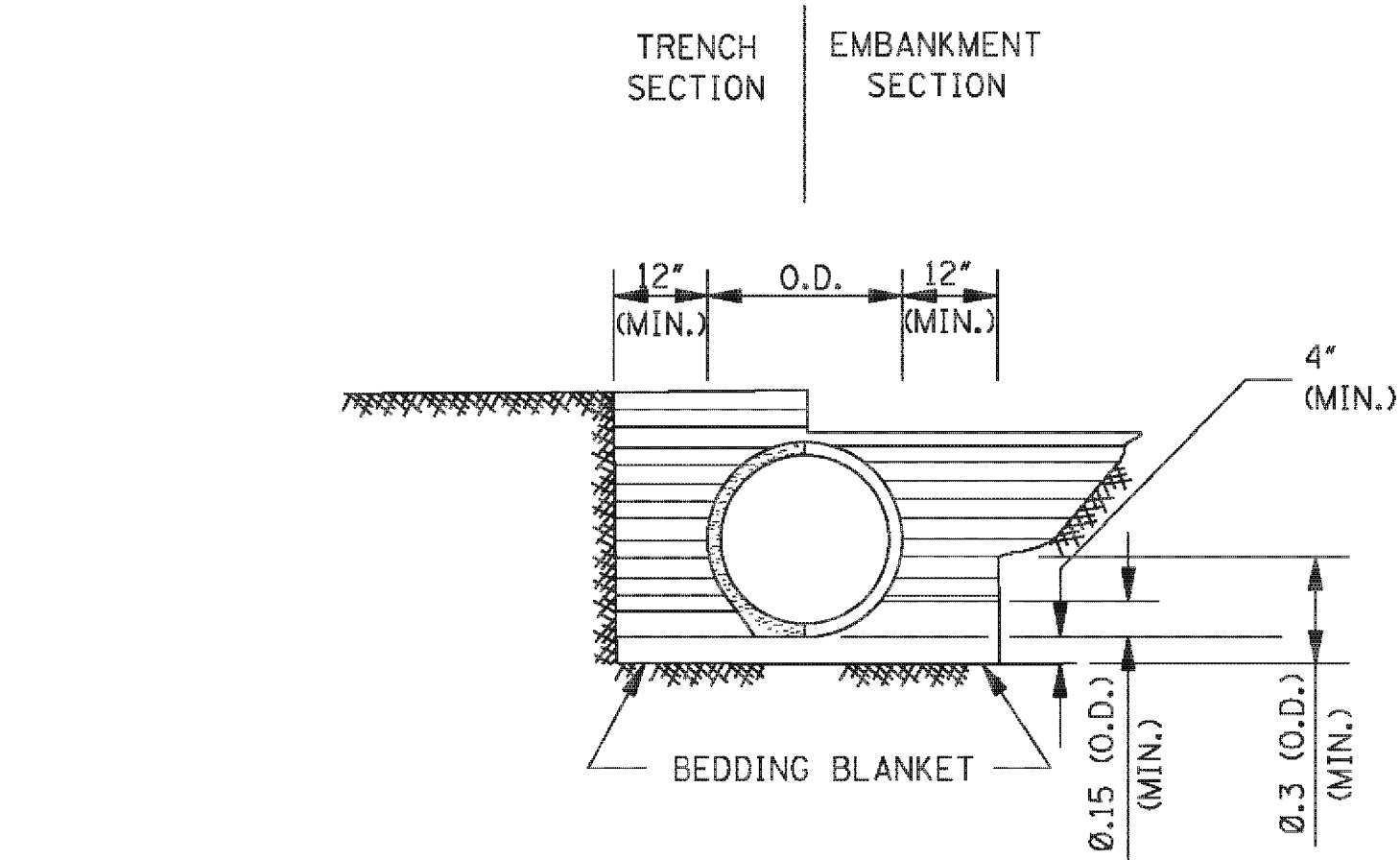
ISSUE DATE: AUGUST 01, 2017

STATE	PROJECT NO.
MISS.	

CORRUGATED STEEL AND ALUMINUM PIPE (ROUND)

PIPE DIAMETER (in)	MINIMUM COVER FROM TOP OF PIPE TO TOP OF SUBGRADE (in)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (ft)				
		SHEET THICKNESS (in)				
		0.064 STEEL 0.060 ALUM. 16 GAGE	0.079 STEEL 0.075 ALUM. 14 GAGE	0.109 STEEL 0.105 ALUM. 12 GAGE	0.138 STEEL 0.135 ALUM. 10 GAGE	0.168 STEEL 0.164 ALUM. 8 GAGE
		2 2/3" X 1/2" CORRUGATED STEEL / CORRUGATED STEEL / CORRUGATED ALUMINUM HELICAL				
12"	12"	207' / - / 125'	259' / - / 157'	- / - / -	- / - / -	- / - / -
15"	12"	165' / - / 100'	207' / - / 125'	- / - / -	- / - / -	- / - / -
18"	12"	138' / - / 83'	172' / - / 104'	242' / - / -	- / - / -	- / - / -
24"	12"	103' / - / 62'	129' / - / 78'	181' / - / 109'	- / - / -	- / - / -
30"	12"	82' / - / -	103' / - / 69'	145' / - / 97'	- / - / -	- / - / -
36"	12"	68' / - / -	86' / - / 62'	120' / - / 87'	155' / - / 94'	- / - / -
42"	12"	58' / - / -	73' / - / 51'	103' / - / 73'	133' / - / 80'	163' / - / -
48"	12"	51' / - / -	64' / - / -	90' / - / 62'	116' / - / 70'	142' / - / 85'
54"	12"	- / 46' / -	57' / 58' / -	80' / 82' / 54'	103' / 106' / 62'	126' / 129' / 76'
60"	12"	- / 42' / -	- / 52' / -	72' / 74' / 48'	93' / 95' / 52'	114' / 116' / 64'
66"	12"	- / 38' / -	- / 47' / -	- / 66' / -	84' / 86' / -	103' / 106' / 52'
72"	12"	- / 35' / -	- / 43' / -	- / 61' / -	77' / 79' / -	94' / 97' / 43'
78"	12"	- / 32' / -	- / 40' / -	- / 56' / -	- / 73' / -	84' / 89' / -
84"	12"	- / 29' / -	- / 37' / -	- / 52' / -	- / 68' / -	72' / 83' / -
90"	12"	- / 27' / -	- / 34' / -	- / 49' / -	- / 63' / -	- / 77' / -
96"	12"	- / - / -	- / 32' / -	- / 46' / -	- / 59' / -	- / 72' / -
102"	24"	- / - / -	- / 30' / -	- / 43' / -	- / 55' / -	- / 68' / -
108"	24"	- / - / -	- / - / -	- / 40' / -	- / 52' / -	- / 64' / -
114"	24"	- / - / -	- / - / -	- / 38' / -	- / 50' / -	- / 61' / -
120"	24"	- / - / -	- / - / -	- / 36' / -	- / 47' / -	- / 58' / -

NOTE: THE AVERAGE INSIDE DIAMETER SHALL NOT VARY MORE THAN ONE (1) PERCENT OR 1/2", WHICHEVER IS GREATER, FROM THE NOMINAL DIAMETER WHEN MEASURED ON THE INSIDE CREST OF THE CORRUGATIONS (AASHTO M 36/M 36 & AASHTO M 196/M 196).



MAXIMUM HEIGHT OF FILL
OVER REINFORCED CONCRETE PIPE

CLASS OF PIPE	MAXIMUM COVER (ft)	
	CLASS "C" BEDDING	CLASS "B" BEDDING
III	12'	19'
IV	18'	30'
V	28'	48'
SPECIAL DESIGN	>28'	>48'

NOTE: CLASS OF PIPE AND BEDDING TO BE CONSISTENT THROUGHOUT THE PIPE LENGTH.

CORRUGATED METAL PIPE ARCHES

EQUIV. DIAMETER (in)	PIPE DIMENSION (SPAN X RISE) (in)	MINIMUM COVER	STEEL		ALUMINUM	
			MINIMUM THICKNESS REQUIRED (in)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (ft) FOR THE FOLLOWING CORNER BEARING PRESSURE (tons/ft ²)	MINIMUM THICKNESS REQUIRED (in)	MAXIMUM FILL HEIGHT ABOVE TOP OF PIPE (ft) FOR THE FOLLOWING CORNER BEARING PRESSURE (tons/ft ²)
				† 4 tons/ft ²		† 4 tons/ft ²
			2 2/3" X 1/2" CORRUGATION HELICAL		2 2/3" X 1/2" CORRUGATION RIVETED OR HELICAL	
15"	17" X 13"	12"	0.064"	13'	0.060"	13'
18"	21" X 15"	12"	0.064"	12'	0.060"	12'
24"	28" X 20"	12"	0.064"	12'	0.075"	12'
30"	35" X 24"	12"	0.064"	12'	0.075"	12'
36"	42" X 29"	12"	0.064"	12'	0.105"	12'
42"	49" X 33"	12"	0.079"	12'	0.105"	12'
48"	57" X 38"	12"	0.109"	12'	0.135"	12'
54"	64" X 43"	12"	0.109"	12'	0.135"	12'
60"	71" X 47"	12"	0.138"	12'	0.164"	12'
66"	77" X 52"	12"	0.168"	12'		
72"	83" X 57"	12"	0.168"	12'		
			3" X 1" CORRUGATION HELICAL / 5" X 1" CORRUGATION HELICAL			
48"	53" X 41"	12' / -	0.079"	12' / -		
54"	60" X 46"	15' / -	0.079"	20' / -		
60"	66" X 51"	15' / -	0.079"	20' / -		
66"	73" X 55"	18' / -	0.079"	20' / -		
72"	81" X 59"	18' / 18'	0.079" / 0.109"	17' / 17'		
78"	87" X 63"	18' / 18'	0.079" / 0.109"	16' / 16'		
84"	95" X 67"	18" / 18"	0.079" / 0.109"	16' / 16'		
90"	103" X 71"	18" / 18"	0.109" / 0.109"	16' / 16'		
96"	112" X 75"	21" / 21"	0.109" / 0.109"	16' / 16'		
102"	117" X 79"	21" / 21"	0.109" / 0.109"	16' / 16'		
108"	128" X 83"	24" / 24"	0.138" / 0.138"	16' / 16'		
114"	137" X 87"	24" / 24"	0.138" / 0.138"	16' / 16'		
120"	142" X 91"	27" / 27"	0.168" / 0.168"	16' / 16'		

NOTES:
1. THE AVERAGE INSIDE DIAMETER SHALL NOT VARY MORE THAN ONE (1) PERCENT OR 1/2", WHICHEVER IS GREATER, FROM THE NOMINAL DIAMETER WHEN MEASURED ON THE INSIDE CREST OF THE CORRUGATIONS. (AASHTO M 36/M 36 & AASHTO M 196/M 196).

† 2. BEARING PRESSURES FOR GIVEN FILL HEIGHT SHALL HAVE FOUNDATION MATERIALS INVESTIGATED TO DETERMINE BEARING CAPACITY.

GENERAL NOTES:

1. MINIMUM SPACING BETWEEN MULTIPLE LINES OF PARALLEL PIPE SHALL BE THE DISTANCE REQUIRED FOR INSTALLING THE ADJACENT FLARED END SECTIONS OR AS SHOWN ON THE HEADWALL DRAWINGS FOR CONDUITS REQUIRING HEADWALLS.
2. UNLESS OTHERWISE INDICATED, THE TOP OF THE PIPE SHALL BE BELOW THE TOP OF THE SUBGRADE, AND A MINIMUM OF 12" OF COVER OVER THE TOP OF THE PIPE SHALL BE MAINTAINED BETWEEN THE SHOULDER LINES.
3. WHERE PRE-BED PIPE IS INSTALLED, FLARED END SECTIONS FROM OTHER MANUFACTURERS MAY BE JOINED TO PRE-BED PIPE PROVIDED A CONCRETE COLLAR IS PLACED AT THE CONTRACTOR'S EXPENSE AND A DEFORMATION TO THE PIPE'S FLOWLINE IS NOT EVIDENT ON FINAL PLACEMENT.
4. THE BACKFILL SHALL BE EITHER CLASS "B", CLASS "C", OR CLASS "C" MODIFIED. A MINIMUM COMPACTION LEVEL OF 95% STANDARD PROCTOR DENSITY PER AASHTO T99 SHALL BE ACHIEVED BY USE OF VIBRATORY PLATE, HYDROHAMMER TYPE COMPACTIONERS SHALL NOT BE USED OVER THE PIPE. ALL COMPACTION EQUIPMENT USED SHALL BE APPROVED BY THE ENGINEER.

				BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN	
				REVISION	PIPE CULVERT INSTALLATION	
				DATE	ISSUE DATE: AUGUST 01, 2017	WORKING NUMBER PI-1 SHEET NUMBER 6501

STANDARD INSTALLATION DETAIL

TABLE 1: BEDDING AND BACKFILL REQUIREMENTS

BEDDING AND BACKFILL REQUIREMENTS FOR NON-RIGID PIPE IN CROSS DRAIN AND STORM DRAIN APPLICATIONS

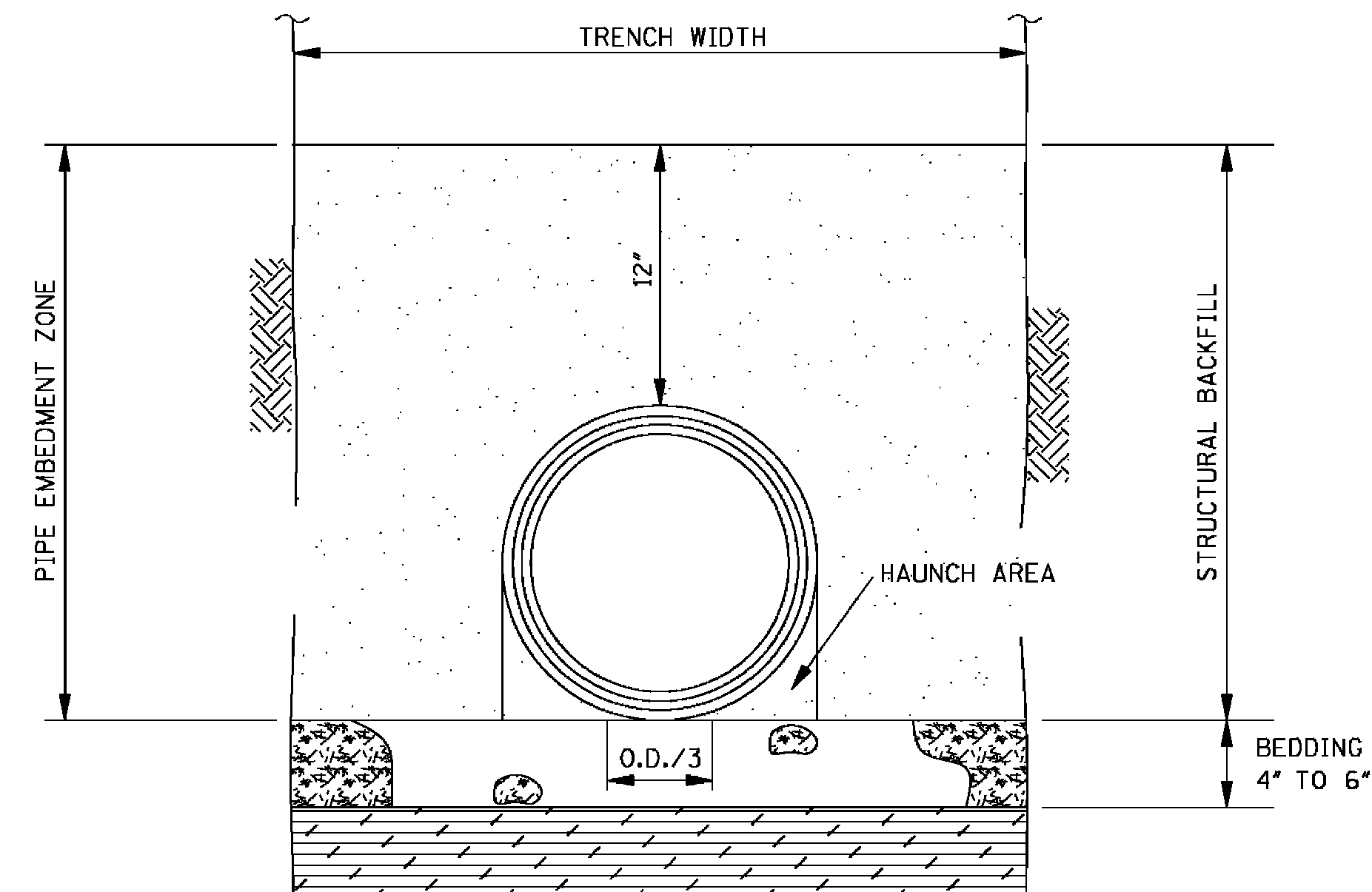
- A. BEDDING SHALL BE CLASS B IN ACCORDANCE WITH THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
- B. BACKFILL MATERIAL SHALL BE ONE OF THE FOLLOWING:
1. FLOWABLE FILL IN ACCORDANCE WITH THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
 2. CRUSHED STONE AGGREGATE BACKFILL IN ACCORDANCE WITH THE MISSISSIPPI STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.

IF FLOWABLE FILL IS UTILIZED, CARE SHALL BE TAKEN TO PREVENT "FLOATING" OF THE PIPE.
THE COST OF FURNISHING AND PLACING THE REQUIRED BEDDING AND BACKFILL MATERIAL INDICATED IN A AND B SHALL BE INCLUDED
IN THE UNIT COST OF THE NON-RIGID PIPE ALTERNATE, I.E., THERE IS NO SEPARATE PAY ITEM FOR NON-RIGID PIPE BEDDING AND
BACKFILL MATERIAL.

BEDDING AND BACKFILL REQUIREMENTS FOR NON-RIGID PIPE IN SIDE DRAIN APPLICATIONS

- A. BEDDING SHALL BE CLASS C IN ACCORDANCE WITH THE MISSISSIPPI SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION.
- B. BACKFILL MATERIAL SHALL BE IN ACCORDANCE WITH THE MISSISSIPPI SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, LATEST EDITION. PIPES THAT SERVE AS A SIDE DRAIN ON DEPARTMENT RIGHT OF WAY, BUT CARRY DRAINAGE UNDER A COUNTY OR LOCAL ROAD SHALL ADHERE TO THE BEDDING AND BACKFILL REQUIREMENTS FOR A CROSS DRAIN CONTAINED ABOVE.

THE COST OF FURNISHING AND PLACING THE REQUIRED BEDDING AND BACKFILL MATERIAL INDICATED IN A AND B SHALL BE INCLUDED IN THE UNIT COST OF THE NON-RIGID ALTERNATE PIPE, I.E., THERE IS NO SEPARATE PAY ITEM FOR NON-RIGID BEDDING AND BACKFILL MATERIAL.



TRENCH CROSS SECTION SHOWING TERMINOLOGY

GENERAL NOTES:

1. MATERIALS
THERMOPLASTIC PIPE
POLYETHYLENE PIPE SHALL COMFORM TO THE REQUIREMENTS OF AASHTO M 294, LATEST EDITION.
DESIGNATION OF TYPE: TYPE S: THIS PIPE WILL HAVE A FULL CIRCULAR CROSS SECTION WITH AN OUTER CORRUGATED PIPE WALL AND A SMOOTH INNER LINER.
BEDDING MATERIAL AND STRUCTURAL BACKFILL
BEDDING MATERIAL AND STRUCTURAL BACKFILL SHALL MEET THE REQUIREMENTS OF TABLE 1.
2. JOINTS
JOINTS FOR THERMOPLASTIC PIPE SHALL MEET THE PERFORMANCE REQUIREMENTS OF SOIL TIGHTNESS UNLESS WATERTIGHTNESS IS SPECIFIED.
SUITABLE JOINTS CAN BE OBTAINED WITH THE FOLLOWING TYPES OF CONNECTIONS:
A) CORRUGATED BANDS (WITH OR WITHOUT GASKETS)
B) BELL AND SPICOT PIPE ENDS (WITH OR WITHOUT GASKETS)
C) DOUBLE BELL COUPLINGS (WITH OR WITHOUT GASKETS)
3. INSTALLATION
MINIMUM TRENCH WIDTHS SHALL MEET THE REQUIREMENTS OF TABLE 3.
THE MIDDLE THIRD OF THE BEDDING MATERIAL UNDER THE PIPE SHOULD BE LOOSELY PLACED, WHILE THE REMAINDER SHALL BE COMPACTED TO A MINIMUM 90% OF MAXIMUM DENSITY PER AASHTO T 99.
A MINIMUM OF 4 INCHES OF BEDDING SHALL BE PROVIDED PRIOR TO PLACEMENT OF THE PIPE.
STRUCTURAL BACKFILL SHALL BE PLACED AND COMPACTED IN LAYERS NOT EXCEEDING AN 8" LOOSE LIFT THICKNESS AND BROUGHT UP EVENLY ON BOTH SIDES OF THE PIPE WITH AN ELEVATION NOT LESS THAN 12 INCHES ABOVE THE TOP OF THE PIPE. A MINIMUM COMPACTION LEVEL OF 90% STANDARD DENSITY PER AASHTO T 99 SHALL BE ACHIEVED.
MINIMUM COVER REQUIREMENTS SHALL MEET THE REQUIREMENTS OF TABLE 2.
FOR MULTIPLE INSTALLATIONS OF POLYETHYLENE PIPES, A CLEAR DISTANCE BETWEEN THE PIPES SHALL MEET THE REQUIREMENTS OF TABLE 4.
4. CALCULATIONS FOR FILL DEPTHS ARE BASED ON PROPERTIES DEFINED IN
AASHTO M294 AND CALCULATIONS IN AASHTO SEC. 19.

TABLE 3: RECOMMENDED TRENCH WIDTH

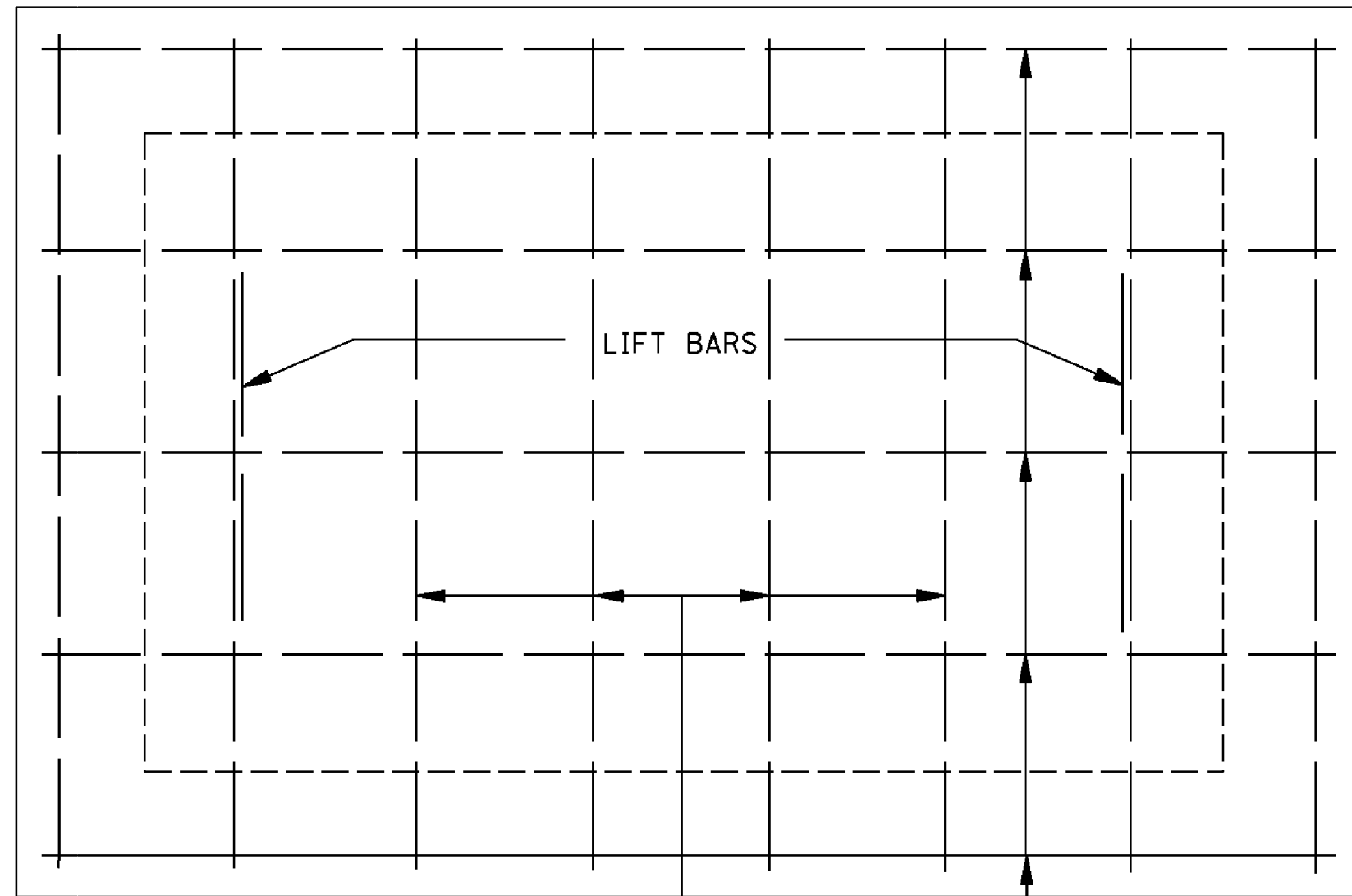
DIAMETER IN.	O.D. IN.	TRENCH WIDTH IN.
12	14.45	34
15	17.57	38
18	21.20	44
24	27.80	54
30	35.10	65
36	41.70	75
42	47.70	84
48	53.60	92

THE TRENCH WIDTH MUST BE WIDE ENOUGH TO
ACCOMMODATE COMPACTION EQUIPMENT

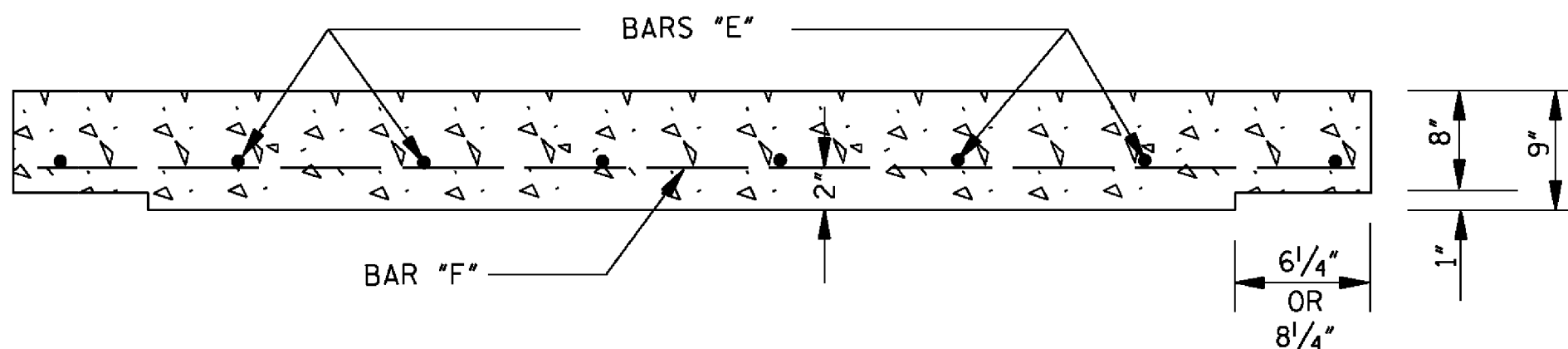
TABLE 4: MULTIPLE INSTALLATION OF POLYETHYLENE PIPES

DIAMETER OF PIPE IN.	CLEAR DISTANCE BETWEEN PIPES FT.-IN.
18	1'-2"
24	1'-5"
30	1'-8"
36	1'-11"
42	2'-2"
48	2'-5"

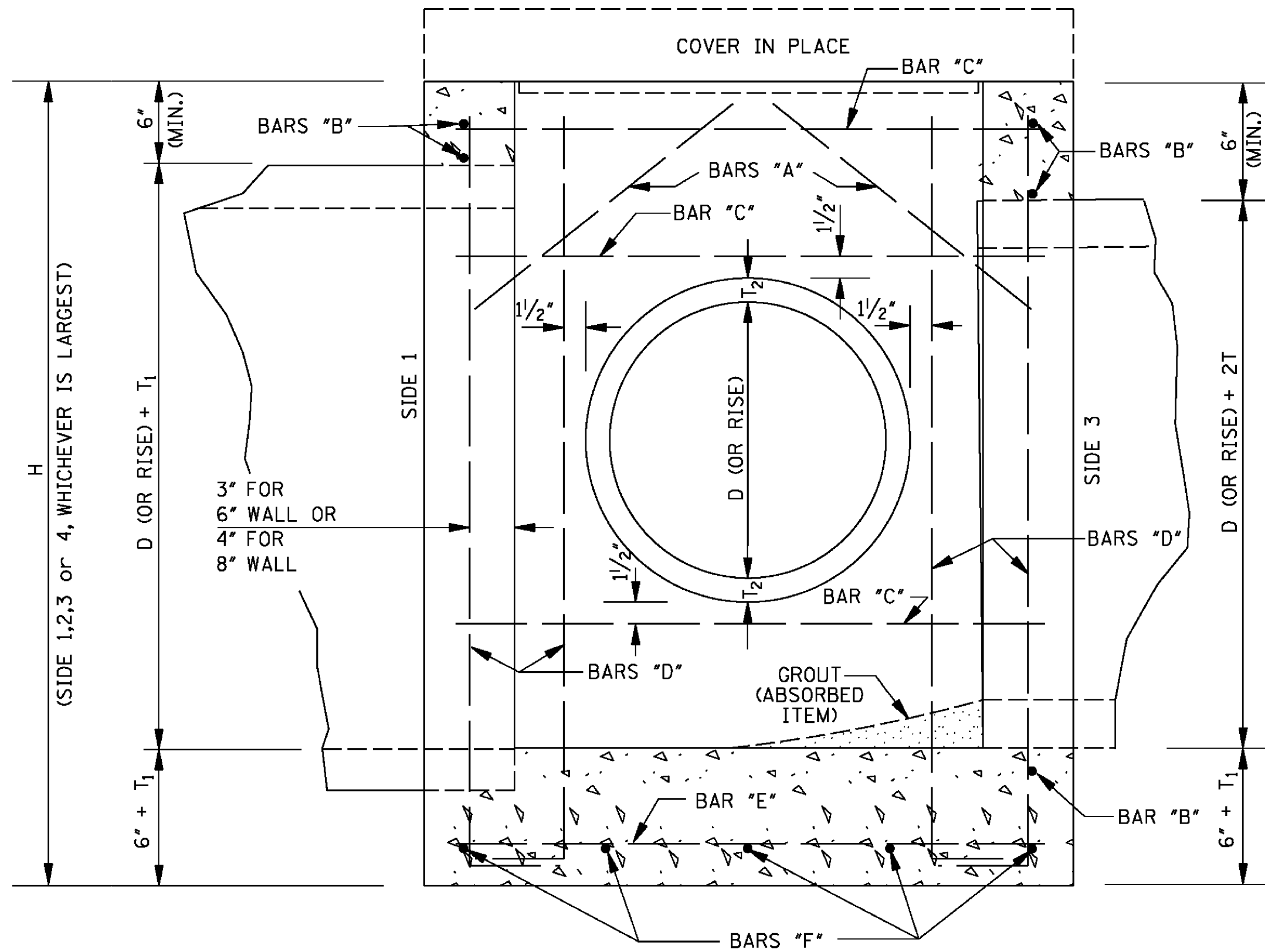
				BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION ROADWAY DESIGN DIVISION STANDARD PLAN
				REVISION	
				DATE	<i>FLEXIBLE PIPE CULVERT INSTALLATION</i>  WORKING NUMBER PI-2 ISSUE DATE: <u> AUGUST 01, 2017 </u> SHEET NUMBER 6502



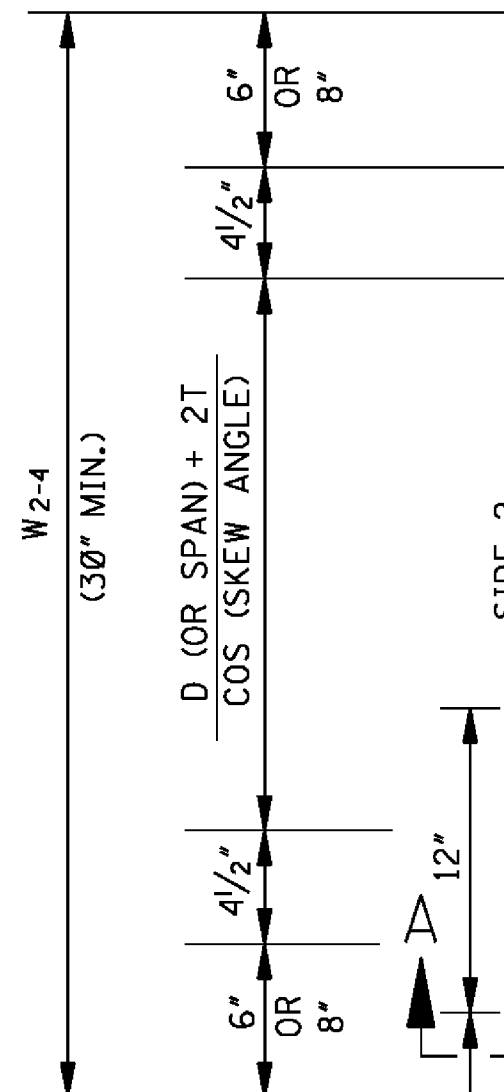
PLAN OF COVER



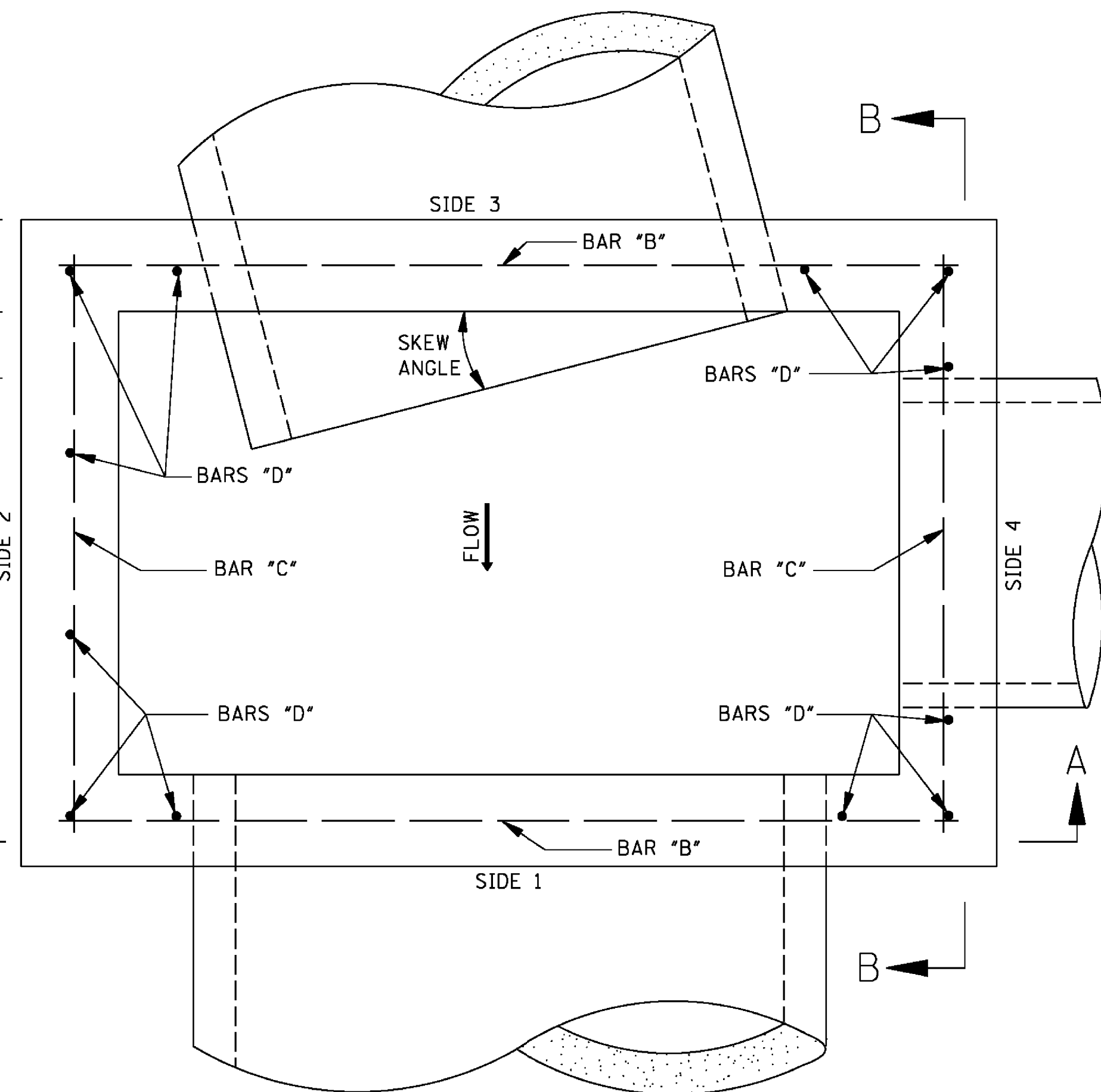
ELEVATION OF COVER



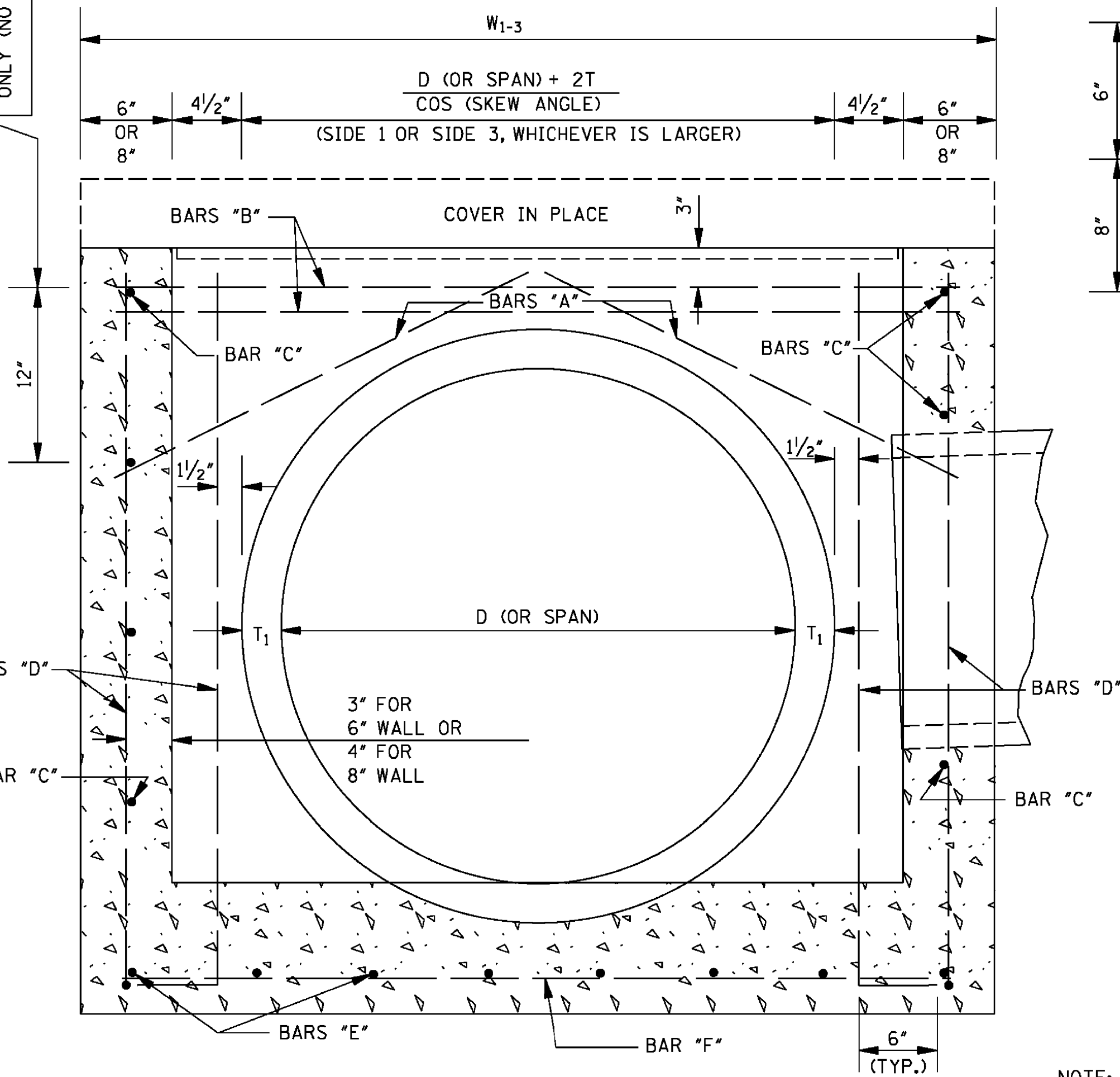
SECTION B-B



#6 BARS FOR 6" WALLS
#7 BARS FOR 8" WALLS
REQUIRED ON SOLID WALLS
ONLY (NO PIPE OPENINGS)



PLAN



SECTION A-A

REINFORCING BAR LIST			
BAR	SIZE	NUMBER REQUIRED	LENGTH
"A"	#4	2 PER PIPE OPENING	$\sqrt{196 + \left(\frac{W}{2} + 2\right)^2}$
"B"	#6 FOR 6" WALL	2 + [2 PER OPENING SIDE 3] + [1 PER SIDE 1] + [12" O.C. FOR SOLID WALL]	$W_{1-3} - 4"$
"C"	#7 FOR 8" WALL	2 + [2 PER OPENING] + [12" O.C. FOR SOLID WALL]	$W_{2-4} - 4"$
"D"		4 + [2 PER OPENING] + [12" O.C. FOR SOLID WALL]	H
"E"	#6	$2 \left[\left(\frac{W_{1-3}}{6} \right)^{**} + 1 \right]$	$W_{2-4} - 4"$
"F"	#6	$2 \left[\left(\frac{W_{2-4}}{6} \right)^{**} + 1 \right]$	$W_{1-3} - 4"$

NOTE: VARIABLES AND DESIGNATIONS ARE AS FOLLOWS:

D (OR SPAN) = PIPE DIAMETER (OR SPAN)
W₁₋₃ = WIDTH OF SIDE 1 & SIDE 3
W₂₋₄ = WIDTH OF SIDE 2 & SIDE 4
W* = W₁₋₃ OR W₂₋₄ (SIDE OF ENTERING PIPE)
** = ROUND TO NEAREST WHOLE NUMBER

CL. "B" CONC. (yd³) = [(Q1 + Q2) / 46,656] - Σ PIPE OPENING DEDUCTIONS

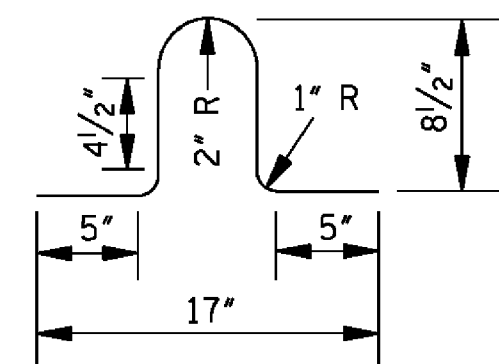
WHERE: 6" WALL
Q1 = [8"W₁₋₃W₂₋₄] + [1"(W₁₋₃ - 12.5")(W₂₋₄ - 12.5")] + [(T₁ + 6")W₁₋₃W₂₋₄]
Q2 = 12"[H - (T₁ + 6")][(W₁₋₃ - 12") + W₂₋₄]
OR: 8" WALL
Q1 = [8"W₁₋₃W₂₋₄] + [1"(W₁₋₃ - 16.5")(W₂₋₄ - 16.5")] + [(T₁ + 6")W₁₋₃W₂₋₄]
Q2 = 16"[H - (T₁ + 6")][(W₁₋₃ - 16") + W₂₋₄]

COMMON PIPE SIZE			
CIRCULAR PIPE			
PIPE SIZE	T	PIPE OPENING DEDUCTION (yd ³)	
		6" WALL	18" WALL
18"	2 1/2"	0.053	0.071
24"	3"	0.091	0.121
30"	3 1/2"	0.138	0.184
36"	4"	0.196	0.261
42"	4 1/2"	0.263	0.350
48"	5"	-	0.453
54"	5 1/2"	-	0.569
60"	6"	-	0.699
66"	6 1/2"	-	0.840
72"	7"	-	0.996
ARCH PIPE			
PIPE SIZE	T	PIPE OPENING DEDUCTION (yd ³)	
		6" WALL	18" WALL
22" X 13"	2 1/2"	0.053	0.071
29" X 18"	3"	0.087	0.116
36" X 23"	3 1/2"	0.129	0.172
44" X 27"	4"	0.185	0.247
51" X 31"	4 1/2"	-	0.327
58" X 36"	5"	-	0.424
65" X 40"	5 1/2"	-	0.525
73" X 45"	6"	-	0.652

+ NOTE: IF ANY PIPE REQUIRING A 8" WALL IS USED, ALL WALLS SHALL BE 8" REGARDLESS OF PIPE SIZE.

GENERAL NOTES:

- REINFORCING STEEL QUANTITIES TO BE COMPUTED FROM BAR LIST AND SHOWN ELSEWHERE ON THE PLANS.
- QUANTITIES FOR JUNCTION BOXES SHOWN ON THE PLANS WILL BE THE BASIS FOR PAYMENT UNLESS AUTHORIZED MODIFICATIONS ARE MADE.
- CONCRETE SHALL BE CLASS "B" AND REINFORCING STEEL SHALL BE DEFORMED BARS, ASTM A 615, GRADE 60 OR AASHTO M 31, GRADE 60.
- SIDE 1 OF THE JUNCTION BOX WILL ALWAYS BE THE OUTFLOW SIDE.
- IF PIPES ARE SKEWED MORE THAN 15° OR IF SKEWED PIPES PRODUCE CONFLICTS WITH ANOTHER OPENING, THE PIPE SHALL BE BROKEN BACK TO THE WALL OF THE JUNCTION BOX.



LIFT BAR

NOTE: LIFT BAR TO BE FABRICATED FROM A #4 BAR 30" LONG. TWO LIFT BARS ARE REQUIRED. REINFORCING STEEL FOR 2 LIFT BARS = 3.3 lbs.

BY	MISSISSIPPI DEPARTMENT OF TRANSPORTATION
REVISION	ROADWAY DESIGN DIVISION
DATE	STANDARD PLAN
	JUNCTION BOX TYPE 2
	FOR TRAFFIC LOAD
	(MAXIMUM "W" = 9'-3")
	WORKING NUMBER
	JB-2
	SHEET NUMBER
	6506
	ISSUE DATE: AUGUST 01, 2017



Memorandum

To: Mayor Toby Barker and Members of City Council
From: Chris McGee, Director of Parks and Recreation
cc:
Date: Tuesday, June 22, 2021
Re: Approve the sale of grave spaces, per attached Memo's, Receipts and Deeds.
File Number: 2021-807
Minute Book #

Summary

Approve the sale of grave spaces, per attached Memo's, Receipts and Deeds.

Recommendation Statement

I am recommending approval of the sale of grave spaces.

Please place this on the June 22, 2021 City Council meeting for consideration.

To: CITY COUNCIL

From: Deborah Bourne, Division Manager of Cemeteries

Date: June 4, 2021

Mary L. Brown

(1) Space \$ 175.00

South Half (S ½) of the Northeast Quarter (NE ¼)

Lot 29, Section 34, Highland Cemetery

James Terrell

(1) Space \$ 175.00

North Half (N ½) of the Northeast Quarter (NE ¼)

Lot 77, Section 36, Highland Cemetery

Willie Joe Brown, Sr

(1) Space \$ 175.00

North Half (N ½) of the Northwest Quarter (NW ¼)

Lot 19, Section 34, Highland Cemetery

Brenda P. Willis

(1) Space \$ 175.00

South Half (S ½) of the Southwest Quarter (SW ¼)

Lot 115, Section 38, Highland Cemetery

Anita Pugh

(1) Space \$ 175.00

South Half (S ½) of the Southeast Quarter (SE ¼)

Lot 10, Section 34, Highland Cemetery

Bobby E. Butler, Jr

(1) Space \$ 175.00

South Half (S ½) of the Northwest Quarter (NW ¼)

Lot 76, Section 36, Highland Cemetery

Mamie Jackson

(1) Space \$ 175.00

South Half (S ½) of the Southwest Quarter (SW ¼)

Lot 79, Section 39, Highland Cemetery

Anita Pugh

(1) Space \$ 175.00

North Half (N ½) of the Northeast Quarter (NE ¼)

Lot 10, Section 34, Highland Cemetery

Bobby Watson

(1) Space \$ 175.00

North Half (N ½) of the Southwest Quarter (SW ¼)

Lot 37, Section 34, Highland Cemetery

CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES

Hattiesburg, Miss., 20 21

OLD TO:

Mr. Mrs. Miss Mary L. Brown

ADDRESS 118 Amos St. Hattiesburg, Miss. 39401

Desires to purchase the grave space described below, subject to Cemetery regulations.

S 1/2 NE 1/4 Lot No. 29 Section No. in Cemetery

Number of grave spaces 1 Price per grave space \$

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

By
Supt. of City Cemeteries

CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES

Hattiesburg, Miss., 03-26- 20 21

OLD TO:

Mrs. Miss James Terrell

ADDRESS 1016 E 5th St. Hattiesburg, Miss. 39401

Desires to purchase the grave space described below, subject to Cemetery regulations.

L 1/2 NE 1/4 Lot No. 77 Section No. in Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

By
Supt. of City Cemeteries

CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES

Hattiesburg, Miss., 06/03/ 20 21

OLD TO:

Mrs. Miss Anita Dugh

ADDRESS 310 West Ray DR, Hattiesburg, MS 39401

Desires to purchase the grave space described below, subject to Cemetery regulations.

S 1/2 SE 1/4 Lot No. 10 Section No. 34 in Hickory Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

By
Supt. of City Cemeteries

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 04/17/ 2021

SOLD TO:

Mr.. Mrs. Miss Bobby Watson

ADDRESS 209 Rebecca Ave Hattiesburg MS 39401

desires to purchase the grave space described below, subject to Cemetery regulations.

N 1/2 SW 1/4 Lot No. 37 Section No. 34 in Hughland Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CASH

CITY OF HATTIESBURG, MISSISSIPPI

By [Signature]
Supt. of City Cemeteries

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 06-03- 2021

SOLD TO:

Mr.. Mrs. Miss Willie Joe Beaman Sr.

ADDRESS 7084 U.S. HWY 98 West Hattiesburg MS 39402

desires to purchase the grave space described below, subject to Cemetery regulations.

N 1/2 NW 1/4 Lot No. 19 Section No. 34 in Hughland Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CASH

CITY OF HATTIESBURG, MISSISSIPPI

By [Signature]
Supt. of City Cemeteries

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 07-26- 2021

SOLD TO:

Mr.. (Mrs.) Miss Brenda P. Willis

ADDRESS P.O. Box 116147 Hattiesburg MS 39404-147

desires to purchase the grave space described below, subject to Cemetery regulations.

S 1/2 SW 1/4 Lot No. 115 Section No. 34 in Hughland Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 20 21

SOLD TO:

Mr.. Mrs. Miss Bobby E. B...

ADDRESS 1914 Fowler St Hattiesburg MS 39402

desires to purchase the grave space described below, subject to Cemetery regulations.

S $\frac{1}{2}$ NW $\frac{1}{4}$ Lot No. 76 Section No. in Cemetery

Number of grave spaces 1 Price per grave space \$

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

By
Supt. of City Cemeteries

CR# 1743

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 20 21

SOLD TO:

Mr.. Mrs. Miss Anita Pugh

ADDRESS 310 West Bay Dr Hattiesburg MS 39401

desires to purchase the grave space described below, subject to Cemetery regulations.

N $\frac{1}{2}$ NE $\frac{1}{4}$ Lot No. 10 Section No. 29 in Hollywood Cemetery

Number of grave spaces 1 Price per grave space \$ 175.00

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

By
Supt. of City Cemeteries

CR# 9632

**CITY OF HATTIESBURG
PURCHASE OF CEMETERY GRAVE SPACES**

Hattiesburg, Miss., 20 21

SOLD TO:

Mr.. Mrs. Miss

ADDRESS 908 DAVIS ST HATTIESBURG MS 39401

desires to purchase the grave space described below, subject to Cemetery regulations.

S $\frac{1}{2}$ SW $\frac{1}{4}$ Lot No. 79 Section No. in Cemetery

Number of grave spaces 1 Price per grave space \$

Price Received \$ 175.00

CITY OF HATTIESBURG, MISSISSIPPI

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Mary L. Brown, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

South Half (S½) of the Northeast Quarter (NE¼)

Lot 29 Section 34

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto James Terrell, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

North Half (N½) of the Northeast Quarter (NE¼)

Lot 77 Section 36

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Willie Joe Brown, Sr, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

North Half (N½) of the Northwest Quarter (NW¼)

Lot 19 Section 34

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kernas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Bobby Watson, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

North Half (N½) of the Southwest Quarter (SW¼)

Lot 37 Section 34

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Anita Pugh, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

South Half (S½) of the Southeast Quarter (SE¼)

Lot 10 Section 34

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Brenda P. Willis, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

South Half (S½) of the Southwest Quarter (SW¼)

Lot 115 Section 38

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires: _____

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Bobby E. Butler, Jr., subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

South Half (S½) of the Northwest Quarter (NW¼)

Lot 76 Section 36

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Mamie Jackson, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

South Half (S½) of the Southwest Quarter (SW¼)

Lot 79 Section 39

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR
CITY OF HATTIESBURG
HATTIESBURG, MS

**DEED TO CEMETERY LOT
HIGHLAND CEMETERY**

For and in consideration of the sum of ONE HUNDRED SEVENTY-FIVE AND NO/100 Dollars (\$175.00), cash in hand paid to the City of Hattiesburg, Mississippi, the City of Hattiesburg, Mississippi acting by and through its duly authorized Mayor and City Clerk does hereby bargain, sell and convey unto Anita Pugh, subject to the reservations and restrictions hereinafter set out and subject to rules and regulations now or hereafter adopted, the following described grave spaces:

North Half (N½) of the Northeast Quarter (NE¼)

Lot 10 Section 34

according to the Cemetery Survey of the City of Hattiesburg, Mississippi known as Highland Cemetery, and containing

One (1) Grave space (s).

SAID Lot shall be used for burial purposes only and all graves therein must be checked and laid out by the Cemetery sexton before the same is dug and must be at least 4 feet deep and shall be, when completed, level with the ground. No shrubbery, vines or trees shall be planted in the Cemetery Lot and there shall be nothing left above the ground except markers which may be erected to meet all City regulations and requirements. All burials in the grave space(s) herein conveyed shall comply with applicable State and Federal laws governing human burial and with City rules and regulations pertaining thereto. If boxes or vaults are used they shall be at least 10 inches below the ground level.

GRANTEE herein shall not sell or convey this lot without a written permit from the Mayor and Council of the City of Hattiesburg, Mississippi.

WITNESS the signature and seal of the City of Hattiesburg, Mississippi, a Municipal Corporation, acting, by and through its duly authorized Mayor and City Clerk, on this, the 22nd day of June, 2021.

ATTEST:

CITY OF HATTIESBURG, MISSISSIPPI

CITY CLERK

MAYOR

(S E A L)

STATE OF MISSISSIPPI
COUNTY OF FORREST/LAMAR

Personally, appeared before me, the undersigned authority in and for said County and State, Toby Barker and Kermas Eaton, Mayor and City Clerk, respectively, of the City of Hattiesburg, Mississippi, a municipal corporation, each of whom acknowledged before me that they signed, executed and delivered the above and foregoing Cemetery Deed on the day and year therein mentioned as the act and deed of the City of Hattiesburg after having first been authorized so to do.

Given under my hand and official seal of office on this, the 22nd day of June, 2021.

My Commission Expires:

NOTARY PUBLIC



Memorandum

To: Mayor Toby Barker and Members of City Council

From:

cc:

Date: Tuesday, June 22, 2021

Re: Approve claims docket for the period ending June 18, 2021.
File Number: 2021-834
Minute Book #

Summary

Approve claims docket for the period ending June 18, 2021.

Recommendation Statement

Please place this on the June 22, 2021 City Council meeting for consideration.

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001000				BALANCE SHEET							
001000	0520EM			D/F EMER.MGMT.DISTRICT							
002158	AT&T	6/21	MB81-8327	0	2021	9	INV	P	2,998.11	061821	283097 LONG DISTANCE SERVI
				ACCOUNT TOTAL					2,998.11		
001000	0520LB			D/F LIBRARY							
002158	AT&T	6/21	MB81-8327	0	2021	9	INV	P	237.80	061821	283097 LONG DISTANCE SERVI
				ACCOUNT TOTAL					237.80		
001000	060100			GAS/LUBRICANT-CITY BARN							
003308	KEITHCO PETROLEUM	806894		221552	2021	9	INV	P	9,293.28	061821	283256 GAS FOR FUEL STATIO
003308	KEITHCO PETROLEUM	806926		221552	2021	9	INV	P	6,338.64	061821	283256 GAS FOR FUEL STATIO
									15,631.92		
003497	MAPLES GAS COMPANY	205125-2		222219	2021	9	INV	P	14,576.68	061821	283284 GAS FOR FUEL STATIO
003497	MAPLES GAS COMPANY	205520		222311	2021	9	INV	P	11,145.43	061821	283284 GAS FOR FUEL STATIO
									25,722.11		
003918	PINE BELT OIL COMPAN	10719458		222120	2021	9	INV	P	6,439.92	061821	283336 GAS & DIESEL FOR FU
003918	PINE BELT OIL COMPAN	10726431		222007	2021	9	INV	P	15,256.28	061821	283336 GAS FOR FUEL STATIO
003918	PINE BELT OIL COMPAN	10732564		222120	2021	9	INV	P	14,898.52	061821	283336 GAS & DIESEL FOR FU
003918	PINE BELT OIL COMPAN	10732863		222218	2021	9	INV	P	8,233.40	061821	283336 DIESEL FOR FUEL STA
									44,828.12		
				ACCOUNT TOTAL					86,182.15		
001000	122000			DAMAGE DEPOSITS							
047591	PHYLLIS PARKER	6/18/21	PP	0	2021	9	INV	P	100.00	061821	283323 REFUND #77791
047592	JONES TRANSPORT	REFUND	JT	0	2021	9	INV	P	100.00	061821	283247 REFUND #77578
047593	JOHN PUCKETT	REFUND	JP	0	2021	9	INV	P	500.00	061821	283352 REFUND #76923
				ACCOUNT TOTAL					700.00		
001000	126100			BONDS PENDING							
047579	DONALD ALLEN TEMPLAR	6/9/21	D TEMPLAR	0	2021	9	INV	P	701.75	061821	283404 REFUND BOND-CASE R-
				ACCOUNT TOTAL					701.75		
				ORG 001000				TOTAL	90,819.81		
001001				REVENUES							
001001	287000			POLICE/FIRE-SPECIAL DUTY							
047581	PROTECTION AGENCY &	1102		0	2021	9	INV	P	95.00	061821	283349 SECURITY 5/14/21 PU
047581	PROTECTION AGENCY &	1104		0	2021	9	INV	P	133.00	061821	283349 SECURITY 5/22/21 -

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8		TO 2021/9																			
ACCOUNT/VENDOR				INVOICE				PO		YEAR/PR		TYP		S		WARRANT		CHECK		DESCRIPTION	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR TYP S			WARRANT		CHECK	DESCRIPTION
004050	RICOH CORP	35179582	0	2021	9	INV P	287.51	061821	283362	COURT MONTHLY RICOH
004050	RICOH CORP	5062113270	0	2021	9	INV P	143.13	061821	283362	COURT RICOH COPIER
							430.64			
004057	RJ YOUNG COMPANY	INV4239739	0	2021	9	INV P	168.00	061821	283363	COURT RJ YOUNG COPI
ACCOUNT TOTAL							627.59			
001015	606000			TELEPHONE AND TELEGRAPH						
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	395.69	061821	283100	MB2016-287/WIRELESS
ACCOUNT TOTAL							395.69			
001015	611000			TRAVEL EXPENSE						
004017	REGIONS CARDHOLDER S	1708 - 05-31-2021	0	2021	9	INV P	-89.59	061821	283358	1708 - 05-31-2021 C
ACCOUNT TOTAL							-89.59			
001015	611800			TRVL-HHS SAMHSA GRANT						
004017	REGIONS CARDHOLDER S	4670 - 05-31-2021	0	2021	9	INV P	420.96	061821	283358	4670 - 05-31-2021 C
ACCOUNT TOTAL							420.96			
001015	630000			GAS						
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV P	32.51	061821	283394	GAS VERIOUS DEPARTM
ACCOUNT TOTAL							32.51			
001015	630500			ELECTRICITY						
003700	MS POWER COMPANY	E2021 6/1	0	2021	9	INV P	11,075.91	061821	283307	MS POWER VARIOUS DE
ACCOUNT TOTAL							11,075.91			
001015	635000			BUILDING R&M						
002136	ANOINTED HANDS SERVI	6946	0	2021	9	INV P	684.43	061821	283094	COURT MONTHLY JANIT
ACCOUNT TOTAL							684.43			
ORG 001015 TOTAL							21,712.42			
001020	MAYOR/ADMIN.									
001020	511500			FOOD						
002500	COCA COLA BOTTLING C	17311206387	0	2021	9	INV P	123.75	061821	283145	ADMIN - WATER
ACCOUNT TOTAL							123.75			
001020	606000			TELEPHONE AND TELEGRAPH						
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	177.40	061821	283100	MB2016-287/WIRELESS
002160	AT&T MOBILITY	287289913717X0605202	0	2021	9	INV P	99.39	061821	283100	MB2016-287/WIRELESS

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9				ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
										276.79		
ACCOUNT TOTAL										276.79		
001020	615000					ADVERTISING						
004017	REGIONS CARDHOLDER S	4524	-	05-31-2021	0	2021	9	INV	P	16.04	061821	283358 4524 - 05-31-2021 C
047576	LEE CHRISTOPHER	2021-RIVER			0	2021	9	INV	P	250.00	061821	283273 ADMIN - SPONSORSHIP
ACCOUNT TOTAL										266.04		
001020	641000					OFFICE EQUIPMENT RENT						
003825	OWENS BUSINESS MACHI	416419			0	2021	8	INV	P	187.00	061821	283320 ADMIN - COPIER LEAS
003825	OWENS BUSINESS MACHI	420444			0	2021	8	INV	P	187.00	061821	283320 ADMIN - COPIER LEAS
003825	OWENS BUSINESS MACHI	420445			0	2021	8	INV	P	50.94	061821	283320 ADMIN - COPIER MAIN
										424.94		
ACCOUNT TOTAL										424.94		
ORG 001020 TOTAL										1,091.52		
001030	ELECTIONS											
001030	501000					OTHER EXPENDABLE OFF.SPL						
004575	WALMART STORES INC	1635670365/PURCH			221638	2021	9	INV	P	166.15	061821	283437 OFFICE SUPPLIES
ACCOUNT TOTAL										166.15		
001030	559000					OTHER OPERATING MATL/SPLY						
003742	N & H ELECTRONIC DIS	218386			222263	2021	9	INV	P	120.00	061821	283312 CR2032 BATTERIES FO
ACCOUNT TOTAL										120.00		
001030	699900					SERVICES NOT SPECIFIED						
002054	ADAMS, WILMA	6/21	GEN	ELEC	WA	0	2021	9	INV	P	157.00	061821 283083 POLL WORKER GEN ELE
002246	BETTS, JACKIE	6/21	GEN	ELEC	JB	0	2021	9	INV	P	145.00	061821 283112 POLL WORKER GEN ELE
002262	BIVINS, VERNA	6/21	GEN	ELEC	VB	0	2021	9	INV	P	157.00	061821 283113 POLL WORKER GEN ELE
002308	BRADLEY, BETTY	06/21	GEN	ELEC	BB	0	2021	9	INV	P	125.00	061821 283120 POLL WORKER GEN ELE
002335	BROWN, MATTIE	6/21	GEN	ELEC	MB	0	2021	9	INV	P	125.00	061821 283123 POLL WORKER GEN ELE
002363	BURKETT, JOYCE	6/21	GEN	ELEC	JB	0	2021	9	INV	P	157.00	061821 283125 POLL WORKER GEN ELE
002421	CARSON, CARRIE	6/21	GEN	ELEC	CCARSO	0	2021	9	INV	P	137.00	061821 283131 POLL WORKER GEN ELE
002430	CASTLE, RUSSLYN	6/21	GEN	ELEC	RC	0	2021	9	INV	P	157.00	061821 283132 POLL WORKER GEN ELE
002554	COOPER, LILLIE	6/21	GEN	ELEC	LC	0	2021	9	INV	P	125.00	061821 283153 POLL WORKER GEN ELE

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
002834	FLOYD, LUCILLE	6/21	GEN	ELEC LF	0	2021	9	INV P	137.00	061821	283190	POLL WORKER GEN ELE
002875	GAINES, GRADY	6/21	GEN	ELEC GG	0	2021	9	INV P	137.00	061821	283197	POLL WORKER GEN ELE
002910	GOLDEN, MIKE	6/21	GEN	ELEC MG	0	2021	9	INV P	175.00	061821	283203	POLL WORKER GEN ELE
002964	GUNN, MARY	6/21	GEN	ELEC MG	0	2021	9	INV P	145.00	061821	283210	POLL WORKER GEN ELE
003012	HARPER, ANTHONY	6/21	GEN	ELEC AH	0	2021	9	INV P	137.00	061821	283215	POLL WORKER GEN ELE
003094	HILL, BETTY	6/21	GEN	ELEC BH	0	2021	9	INV P	125.00	061821	283224	POLL WORKER GEN ELE
003227	JACKSON, TONY	6/21	GEN	ELEC TJ	0	2021	9	INV P	187.00	061821	283238	POLL WORKER GEN ELE
003245	JENKINS, ZELLA	6/21	GEN	ELEC ZJ	0	2021	9	INV P	137.00	061821	283241	POLL WORKER GEN ELE
003269	JOHNSON, ROBERT A	6/21	GEN	ELEC RJ	0	2021	9	INV P	187.00	061821	283246	POLL WORKER GEN ELE
003327	KING, SUSAN	6/21	GEN	ELEC SK	0	2021	9	INV P	145.00	061821	283259	POLL WORKER GEN ELE
003338	KNIGHT, DAVID	6/21	GEN	ELEC DK	0	2021	9	INV P	187.00	061821	283262	POLL WORKER GEN ELE
003359	LACY, JAMES	6/21	GEN	ELEC JL	0	2021	9	INV P	137.00	061821	283267	POLL WORKER GEN ELE
003390	LASTER, JAMARA J	6/21	GEN	ELEC JL	0	2021	9	INV P	175.00	061821	283272	POLL WORKER GEN ELE
003484	MAGEE, CLARENCE E	6/21	GEN	ELEC CM	0	2021	9	INV P	187.00	061821	283281	POLL WORKER GEN ELE
003508	MARTIN, MAGDALINE	6/21	GEN	ELEC MM	0	2021	9	INV P	137.00	061821	283286	POLL WORKER GEN ELE
003510	MARTIN, RAYMOND M	6/21	GEN	ELEC RM	0	2021	9	INV P	150.00	061821	283287	POLL WORKER GEN ELE
003519	MAXWELL, ANGELA	6/21	GEN	ELEC AM	0	2021	9	INV P	137.00	061821	283289	POLL WORKER GEN ELE
003534	MCCOY, DEBORAH	6/21	GEN	ELEC DM	0	2021	9	INV P	137.00	061821	283290	POLL WORKER GEN ELE
003555	MCKELLER, TONY G	6/21	GEN	ELEC TM	0	2021	9	INV P	195.00	061821	283292	POLL WORKER GEN ELE
003761	NAYLOR, EMMA	6/21	GEN	ELEC EN	0	2021	9	INV P	137.00	061821	283313	POLL WORKER GEN ELE
003819	ORMAN, MARTHA	6/21	GEN	ELEC MO	0	2021	9	INV P	137.00	061821	283319	POLL WORKER GEN ELE
003896	PHILLIPS , FORREST C	6/21	GEN	ELEC CP	0	2021	9	INV P	162.00	061821	283331	POLL WORKER GEN ELE
004252	SMITHKA, PAULA	6/21	GEN	ELEC PS	0	2021	9	INV P	145.00	061821	283381	POLL WORKER GEN ELE
004334	STEADMAN, SUSAN	6/21	GEN	ELEC SS	0	2021	9	INV P	137.00	061821	283398	POLL WORKER GEN ELE
004426	THOMAS MELODY	6/21	GEN	ELEC MT	0	2021	9	INV P	137.00	061821	283408	POLL WORKER GEN ELE
004515	UQDAH, MIKAL	6/21	GEN	ELC MU	0	2021	9	INV P	125.00	061821	283428	POLL WORKER GEN ELE

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9														
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR TYP S				WARRANT		CHECK	DESCRIPTION		
004532	VAN SLYKE, EDWINA	6/21	GEN ELEC EVS	0	2021	9	INV	P	157.00	061821	283431	POLL	WORKER	GEN ELE
004649	WILKINSON, MEGAN	6/21	GEN ELEC MW	0	2021	9	INV	P	157.00	061821	283450	POLL	WORKER	GEN ELE
004655	WILLIAMS, CAROLYN	6/21	GEN ELEC CW	0	2021	9	INV	P	125.00	061821	283451	POLL	WORKER	GEN ELE
004685	WOULLARD, WILLIE	6/21	GEN ELEC WW	0	2021	9	INV	P	125.00	061821	283457	POLL	WORKER	GEN ELE
047353	ALFORD, NICOLE	6/21	GEN ELEC NA	0	2021	9	INV	P	125.00	061821	283087	POLL	WORKER	GEN ELE
047355	FORD, ROSE M	6/21	GEN ELEC RF	0	2021	9	INV	P	175.00	061821	283192	POLL	WORKER	GEN ELE
047357	BROWN, HATTIE	6/21	GEN ELEC HB	0	2021	9	INV	P	125.00	061821	283122	POLL	WORKER	GEN ELE
047359	WALKER, JACKIE	6/21	GEN ELEC JW	0	2021	9	INV	P	137.00	061821	283436	POLL	WORKER	GEN ELE
047364	TAYLOR-JONES, NARIAD	6/21	GEN ELEC NTJ	0	2021	9	INV	P	145.00	061821	283403	POLL	WORKER	GEN ELE
047368	HOARD, ERICA	6/21	GEN ELEC EH	0	2021	9	INV	P	137.00	061821	283227	POLL	WORKER	GEN ELE
047369	COLEMAN, CORA	6/21	GEN ELEC CC	0	2021	9	INV	P	157.00	061821	283146	POLL	WORKER	GEN ELE
047370	EVAN, DELORIS	6/21	GEN ELEC DE	0	2021	9	INV	P	137.00	061821	283184	POLL	WORKER	GEN ELE
047373	CROSBY, EVA	6/21	GEN ELEC EC	0	2021	9	INV	P	137.00	061821	283160	POLL	WORKER	GEN ELE
047374	BRELAND, DIANNE	6/21	GEN ELEC DB	0	2021	9	INV	P	157.00	061821	283121	POLL	WORKER	GEN ELE
047376	LONG, JONATHAN	6/21	GEN ELEC JL	0	2021	9	INV	P	187.00	061821	283277	POLL	WORKER	GEN ELE
047377	PAYTON BOBBIE	6/21	GEN ELEC BP	0	2021	9	INV	P	125.00	061821	283327	POLL	WORKER	GEN ELE
047380	DWIGHT, LILLIE	6/21	GEN ELEC LD	0	2021	9	INV	P	125.00	061821	283172	POLL	WORKER	GEN ELE
047383	CHATMAN SHIRLEY	6/21	GEN ELEC SC	0	2021	9	INV	P	125.00	061821	283134	POLL	WORKER	GEN ELE
047384	HAMMOND, MARTACE	6/21	GEN ELEC MH	0	2021	9	INV	P	157.00	061821	283213	POLL	WORKER	GEN ELE
047388	SULLIVAN DOROTHY	6/21	GEN ELEC DS	0	2021	9	INV	P	137.00	061821	283401	POLL	WORKER	GEN ELE
047390	HENDRIX VIRGINIA	6/21	GEN ELEC VH	0	2021	9	INV	P	157.00	061821	283220	POLL	WORKER	GEN ELE
047394	BOOTH BRENDA	6/21	GEN ELEC BB	0	2021	9	INV	P	145.00	061821	283118	POLL	WORKER	GEN ELE
047477	PERRY, GEORGE	6/21	GEN ELEC GP	0	2021	9	INV	P	125.00	061821	283330	POLL	WORKER	GEN ELE
047484	HOLMES, TAMMY	6/21	GEN ELEC TH	0	2021	9	INV	P	125.00	061821	283229	POLL	WORKER	GEN ELE
047601	KINNEL, HARRIET	6/21	GEN ELEC HK	0	2021	9	INV	P	125.00	061821	283261	POLL	WORKER	GEN ELE
047602	GOHLSON, MELINDA	6/21	GEN ELEC MG	0	2021	9	INV	P	125.00	061821	283201	POLL	WORKER	GEN ELE

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
047603	FRIDAY, CHARLAS T	6/21	GEN	ELEC	CF	0	2021	9	INV	P	125.00 061821 283196 POLL WORKER GEN ELE
047604	JORDAN, DEBORAH	6/21	GEN	ELEC	DJ	0	2021	9	INV	P	137.00 061821 283249 POLL WORKER GEN ELE
047605	BELL, QUEEN	6/21	GEN	ELEC	QB	0	2021	9	INV	P	137.00 061821 283109 POLL WORKER GEN ELE
047606	KNIGHT, JANICE	6/21	GEN	ELEC	JK	0	2021	9	INV	P	137.00 061821 283263 POLL WORKER GEN ELE
047607	ELLEDGE, MARTHA	6/21	GEN	ELEC	ME	0	2021	9	INV	P	137.00 061821 283178 POLL WORKER GEN ELE
047608	JORDAN, TAMMY	6/21	GEN	ELEC	TJ	0	2021	9	INV	P	137.00 061821 283251 POLL WORKER GEN ELE
047609	SPEED, GABY	6/21	GEN	ELEC	GS	0	2021	9	INV	P	137.00 061821 283391 POLL WORKER GEN ELE
047610	PHILLIPS, NELLIE	6/21	GEN	ELEC	NP	0	2021	9	INV	P	137.00 061821 283332 POLL WORKER GEN ELE
047611	RETO, CATHY	6/21	GEN	ELEC	CR	0	2021	9	INV	P	137.00 061821 283360 POLL WORKER GEN ELE
047612	BENVENUTTI, LAURIE	6/21	GEN	ELEC	LB	0	2021	9	INV	P	137.00 061821 283110 POLL WORKER GEN ELE
047613	ROBINSON, COURTNEY	6/21	GEN	ELEC	CR	0	2021	9	INV	P	137.00 061821 283365 POLL WORKER GEN ELE
047614	FOX, GLADYS	6/21	GEN	ELEC	GF	0	2021	9	INV	P	137.00 061821 283195 POLL WORKER GEN ELE
047615	JORDAN, SHERIE	6/21	GEN	ELEC	SJ	0	2021	9	INV	P	125.00 061821 283250 POLL WORKER GEN ELE
047616	JACKSON, NAKIAH	6/21	GEN	ELEC	NJ	0	2021	9	INV	P	137.00 061821 283236 POLL WORKER GEN ELE
047617	MOORE, MISTIA	6/21	GEN	ELEC	MM	0	2021	9	INV	P	137.00 061821 283302 POLL WORKER GEN ELE
047618	CONLEY, MITCHELL	6/21	GEN	ELEC	MC	0	2021	9	INV	P	187.00 061821 283151 POLL WORKER GEN ELE
047619	MARTIN, STACY	6/21	GEN	ELEC	SM	0	2021	9	INV	P	137.00 061821 283288 POLL WORKER GEN ELE
047620	RUSSEY-STARNES, KATT	6/21	GEN	ELEC	KRS	0	2021	9	INV	P	125.00 061821 283369 POLL WORKER GEN ELE
047621	JACKSON, TERRY	6/21	GEN	ELEC	TJ	0	2021	9	INV	P	137.00 061821 283237 POLL WORKER GEN ELE
047622	JONES, JACQUELYN	6/21	GEN	ELEC	JJ	0	2021	9	INV	P	125.00 061821 283248 POLL WORKER GEN ELE
047623	MOONEY, EMILY	6/21	GEN	ELEC	EM	0	2021	9	INV	P	125.00 061821 283301 POLL WORKER GEN ELE
047624	WARE, TOMMIE	6/21	GEN	ELEC	TW	0	2021	9	INV	P	187.00 061821 283440 POLL WORKER GEN ELE
047625	MACKABEE, STELLA	6/21	GEN	ELEC	SM	0	2021	9	INV	P	137.00 061821 283280 POLL WORKER GEN ELE
047626	THOMAS, KELLY	6/21	GEN	ELEC	KT	0	2021	9	INV	P	125.00 061821 283410 POLL WORKER GEN ELE
047627	PATTERSON, LYNDELL	6/21	GEN	ELEC	LP	0	2021	9	INV	P	137.00 061821 283326 POLL WORKER GEN ELE
047628	PATTERSON, LARRY	6/21	GEN	ELEC	LP	0	2021	9	INV	P	137.00 061821 283325 POLL WORKER GEN ELE

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YEAR/PERIOD: 2021/8 TO 2021/9												
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR TYP S			WARRANT		CHECK	DESCRIPTION	
047629	MITCHELL, JENEFER	6/21	GEN ELEC JM	0	2021	9	INV P	137.00	061821	283298	POLL WORKER GEN ELE	
047630	KINNAN, CHRIS	6/21	GEN ELEC CK	0	2021	9	INV P	157.00	061821	283260	POLL WORKER GEN ELE	
047631	RADCLIFFE, CONNIE	6/21	GEN ELEC CR	0	2021	9	INV P	137.00	061821	283355	POLL WORKER GEN ELE	
047632	HAMILTON, ROBBIE	6/21	GEN ELEC RH	0	2021	9	INV P	125.00	061821	283212	POLL WORKER GEN ELE	
047633	THOMPSON, SANDRA	6/21	GEN ELEC ST	0	2021	9	INV P	157.00	061821	283411	POLL WORKER GEN ELE	
047634	WILLIAMS, KIMBERLY	6/21	GEN ELEC KW	0	2021	9	INV P	137.00	061821	283452	POLL WORKER GEN ELE	
047635	WOULLARD, PRINCE JR	6/21	GEN ELEC PW	0	2021	9	INV P	175.00	061821	283456	POLL WORKER GEN ELE	
047636	WILLIAMS, RANDALL	6/21	GEN ELEC RW	0	2021	9	INV P	125.00	061821	283454	POLL WORKER GEN ELE	
ACCOUNT TOTAL								13,613.00				
ORG 001030 TOTAL								13,899.15				
MUNICIPAL CLERK												
001040	615000	ADVERTISING										
002847	FORREST COUNTY CHANC	INV0061	0	2021	9	INV P	26.00	061821	283193	RECORDING FEE WARRA		
ACCOUNT TOTAL								26.00				
OFFICE EQUIPMENT RENT												
001040	641000	OFFICE EQUIPMENT RENT										
004057	RJ YOUNG COMPANY	INV4259708	0	2021	9	INV P	355.56	061821	283363	COPIER LEASE FOR CL		
ACCOUNT TOTAL								355.56				
ORG 001040 TOTAL								381.56				
ACCOUNTING DIV.												
001042	501000	OTHER EXPENDABLE OFF.SPL										
003809	OFFICE DEPOT INC	2496758948	222193	2021	9	INV P	22.64	061821	283318	OFFICE SUPPLIES - A		
ACCOUNT TOTAL								22.64				
ORG 001042 TOTAL								22.64				
LOSS CONTROL												
001081	606000	TELEPHONE AND TELEGRAPH										
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	97.14	061821	283100	MB2016-287/WIRELESS		
ACCOUNT TOTAL								97.14				
ORG 001081 TOTAL								97.14				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001090			URBAN DEVELOPMT						
001090	500300		PAPER						
004328	STAPLES	3479286420	222359	2021	9	INV P	25.18	061821	283396 OFFICE SUPPLIES - P
ACCOUNT TOTAL							25.18		
001090	501000		OTHER EXPENDABLE			OFF.SPL			
004328	STAPLES	3479286420	222359	2021	9	INV P	117.64	061821	283396 OFFICE SUPPLIES - P
004328	STAPLES	3479286421	222359	2021	9	INV P	134.20	061821	283396 OFFICE SUPPLIES - P
							251.84		
ACCOUNT TOTAL							251.84		
001090	535500		WEARING APPAREL						
002728	ELITE SCREEN PRINTIN	38357	222201	2021	9	INV P	119.95	061821	283175 UNIFORM SHIRTS FOR
002728	ELITE SCREEN PRINTIN	38373	222203	2021	9	INV P	94.85	061821	283175 UNIFORM SHIRTS NEIG
							214.80		
004106	SACKS OUTDOOR SUPPLY	RC00001000123921	222408	2021	9	INV P	150.00	061821	283370 BOOTS, HOMELESS COO
ACCOUNT TOTAL							364.80		
001090	570000		MTR VEHICLE REP.			PTS/SPL			
004514	UNIVERSITY TIRE & SE	INV175180	222195	2021	9	INV P	326.04	061821	283427 TIRES FOR CHEVY IMP
004514	UNIVERSITY TIRE & SE	INV175834	222283	2021	9	INV P	24.00	061821	283427 OIL CHANGE, UNIT 20
							350.04		
ACCOUNT TOTAL							350.04		
001090	606000		TELEPHONE AND TELEGRAPH						
002160	AT&T MOBILITY	287273578351x0608202 0		2021	9	INV P	250.84	061821	283100 MB2016-287/WIRELESS
ACCOUNT TOTAL							250.84		
001090	611000		TRAVEL EXPENSE						
002730	ELLARD, ANDREW	TRAVADVELLARD7.25.21 0		2021	9	INV P	184.00	061821	283177 TRAVEL ADV A. ELLAR
ACCOUNT TOTAL							184.00		
001090	638400		MOTOR VEHICLE EQ. R&M						
004514	UNIVERSITY TIRE & SE	INV175180	222195	2021	9	INV P	129.95	061821	283427 TIRES FOR CHEVY IMP
004514	UNIVERSITY TIRE & SE	INV175834	222283	2021	9	INV P	18.95	061821	283427 OIL CHANGE, UNIT 20
							148.90		
ACCOUNT TOTAL							148.90		
001090	641000		OFFICE EQUIPMENT RENT						

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
004050	RICOH CORP	35179575	0	2021	9	INV P	232.90	061821	283362	COPIER FEE JUL 2021
004050	RICOH CORP	5062113918	0	2021	9	INV P	16.78	061821	283362	COPIER MAY 2021 PLA
							249.68			
ACCOUNT TOTAL							249.68			
001090	684000			DUES AND MEMBERSHIPS						
004017	REGIONS CARDHOLDER S	7963 - 05-31-2021	0	2021	9	INV P	220.00	061821	283358	7963 - 05-31-2021 C
ACCOUNT TOTAL							220.00			
001090	684500			REGISTRATION FEE/TUITION						
004017	REGIONS CARDHOLDER S	7963 - 05-31-2021	0	2021	9	INV P	56.32	061821	283358	7963 - 05-31-2021 C
ACCOUNT TOTAL							56.32			
ORG 001090 TOTAL							2,101.60			
001091	INFO TECHNOLOGY									
001091	508000			COMPUTER SUPPLIES						
004017	REGIONS CARDHOLDER S	1708 - 05-31-2021	0	2021	9	INV P	418.00	061821	283358	1708 - 05-31-2021 C
ACCOUNT TOTAL							418.00			
001091	604900			OTHER PROFESSIONAL SERV.						
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	161.25	061821	283100	MB2016-287/WIRELESS
002160	AT&T MOBILITY	287289913717X0605202	0	2021	9	INV P	379.35	061821	283100	MB2016-287/WIRELESS
							540.60			
004482	TYLER TECHNOLGIES IN	045-338377	0	2021	8	INV P	6,300.00	061821	283420	MUNIS IMPLEMENTATIO
ACCOUNT TOTAL							6,840.60			
001091	636500			OFFICE EQUIPMENT R&M						
002158	AT&T	0591 5.8.21	0	2021	8	INV P	47.00	061821	283097	INTERACT SUPPORT -
002158	AT&T	0598 5.8.21	0	2021	8	INV P	6,790.00	061821	283097	INTERACT SUPPORT -
							6,837.00			
003342	KRONOS INCORPORATED	11757027	0	2021	8	INV P	9,964.78	061821	283265	MB 2020-234 PAYROLL
ACCOUNT TOTAL							16,801.78			
ORG 001091 TOTAL							24,060.38			
001092	GEN.GOV'T.BLDG									
001092	510000			CLEANING/JANITORIAL SPLY						
002729	ELKINS WHOLESALE INC	455464 00 00	222329	2021	9	INV P	106.00	061821	283176	JANITORIAL SUPPLIES
003772	NEWELL PAPER COMPANY	4109436	222224	2021	9	INV P	684.32	061821	283315	CITY HALL JANITORIA

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION
ACCOUNT TOTAL							790.32		
001092	513000			CHEMICALS					
002459	CHEM-AQUA	7334866	0	2021	9	INV P	583.33	061821	283135 CHEMICALS FOR COOLI
002459	CHEM-AQUA	7372183	0	2021	9	INV P	583.33	061821	283135 CHEMICALS FOR COOLI
							1,166.66		
ACCOUNT TOTAL							1,166.66		
001092	544000			HORT./LANDSCAPING SPLY.					
004279	SOUTHERN MS PINE STR	12829	222130	2021	9	INV P	120.00	061821	283386 CITY HALL PINE STRA
004547	VESELY'S NURSERY	2127	222127	2021	9	INV P	720.00	061821	283434 CITY HALL SPRING PL
ACCOUNT TOTAL							840.00		
001092	630000			GAS					
004321	SPIRE ENERGY	G2021-10 JUN	0	2021	9	INV P	40.00	061821	283394 GAS VARIOUS LOCATIO
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV P	511.37	061821	283394 GAS VERIOUS DEPARTM
							551.37		
ACCOUNT TOTAL							551.37		
001092	637000			HOUSEHOLD EQUIPMENT R&M					
003905	PIERCE PLUMBING INC	606165	0	2021	8	INV P	429.12	061821	283333 SERVICE CALL TO REP
ACCOUNT TOTAL							429.12		
001092	644900			OTHER RENT					
002720	EDWARDS PROPERTY MGM	7/21	0	2021	9	INV P	1,100.00	061821	283174 RENT JULY 2021
ACCOUNT TOTAL							1,100.00		
ORG 001092 TOTAL							4,877.47		
001093				INTERMODAL FAC O&M					
001093	544000			HORT./LANDSCAPING SPLY.					
004279	SOUTHERN MS PINE STR	12822	222092	2021	9	INV P	120.00	061821	283386 P&R COMM CENTER STR
ACCOUNT TOTAL							120.00		
001093	635000			BUILDING R&M					
002901	GILKEY ELECTRIC SUPP	339364	222133	2021	9	INV P	530.20	061821	283198 TRAIN DEPOT FLOOD L
ACCOUNT TOTAL							530.20		
001093	639900			OTHER REPAIRS AND MAINT.					
004315	SPEEDY MASONRY	682021	0	2021	9	INV P	85.00	061821	283392 FIX BALLAST LIGHT @

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
ACCOUNT TOTAL						85.00				
ORG 001093 TOTAL						735.20				
001094	METRPLTN PLANG.									
001094	501000			OTHER EXPENDABLE OFF.SPL						
004328	STAPLES	3476982420	221928	2021	9	INV P	57.58	061821	283396	OFFICE SUPPLIES MPO
ACCOUNT TOTAL						57.58				
001094	604900			OTHER PROFESSIONAL SERV.						
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	37.23	061821	283100	MB2016-287/WIRELESS
ACCOUNT TOTAL						37.23				
001094	620000			PRINTING						
004484	U P S STORE, THE (HA	P.O.00222284	222284	2021	9	INV P	101.00	061821	283421	TRANSIT MASTER PLAN
ACCOUNT TOTAL						101.00				
001094	636500			OFFICE EQUIPMENT R&M						
004057	RJ YOUNG COMPANY	INV4259709	0	2021	9	INV P	195.39	061821	283363	COPIER CHARGES, 5.5
ACCOUNT TOTAL						195.39				
001094	684500			REGISTRATION FEE/TUITION						
004017	REGIONS CARDHOLDER S	7963 - 05-31-2021	0	2021	9	INV P	58.32	061821	283358	7963 - 05-31-2021 C
ACCOUNT TOTAL						58.32				
ORG 001094 TOTAL						449.52				
001095	G/G INS.OTH SER									
001095	602500			LEGAL						
003090	HICKS LAW FIRM, LLC	9965	0	2021	9	INV P	1,200.00	061821	283222	PRECISION CONSTRUCT
003090	HICKS LAW FIRM, LLC	9966	0	2021	9	INV P	1,032.41	061821	283222	ELECTION COMMISSION
003090	HICKS LAW FIRM, LLC	9967	0	2021	9	INV P	871.71	061821	283222	GENERAL LEGAL SERVI
						3,104.12				
004040	RICHARD & THOMAS, PL	061021	0	2021	9	INV P	1,200.00	061821	283361	ADMIN - TITLE OPINI
ACCOUNT TOTAL						4,304.12				
001095	602701			MEDICAL ANALYSIS-EMP CLINIC						
002136	ANOINTED HANDS SERVI	6942	0	2021	9	INV P	280.00	061821	283094	JUNE JANITORIAL - E
002522	COMCAST	839641 5/26	0	2021	9	INV P	192.95	061821	283147	CABLE EMPLOYEE HEAL
003576	MEDICAL ANALYSIS-GHV	10646	0	2021	9	INV P	29,606.60	061821	283294	CLINIC FEE AND LAB
004017	REGIONS CARDHOLDER S	1708 - 05-31-2021	0	2021	9	INV P	371.34	061821	283358	1708 - 05-31-2021 C

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9				ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
ACCOUNT TOTAL											30,450.89		
001095	604900									OTHER PROFESSIONAL SERV.			
002523	COMCAST CABLEVISION	839641	06/21	0	2021	9	INV	P	341.49	061821	283148	CITY HALL CABLE SVC	
002961	GULF SOUTH PRODUCTIO	2054		0	2021	9	INV	P	1,500.00	061821	283209	ADMIN - AV PKG CITY	
004155	SERVICEMASTER INC	122368		0	2021	9	INV	P	2,306.05	061821	283373	ADMIN / URBANDEV -	
047490	PRECISION COMMUNICAT	17591		222271	2021	9	INV	P	4,977.75	061821	283348	SIREN REPAIR AT TAT	
ACCOUNT TOTAL											9,125.29		
001095	606000									TELEPHONE AND TELEGRAPH			
002158	AT&T	6/21 MB81-8327		0	2021	9	INV	P	6,642.39	061821	283097	LONG DISTANCE SERVI	
002158	AT&T	L2021 5/20/2021		0	2021	9	INV	P	50.68	061821	283097	BL TRACE 520-6-19	
002158	AT&T	L2021-6/8		0	2021	9	INV	P	225.85	061821	283097	BLLD 5/28/2021	
											6,918.92		
002159	AT&T LONG DISTANCE S	L2021 6/7		0	2021	9	INV	P	33.59	061821	283099	LD SERVICE 6/1-6/30	
ACCOUNT TOTAL											6,952.51		
001095	607000									POSTAGE			
004491	U S POSTMASTER-BOX R	06302021		0	2021	9	INV	P	558.00	061821	283422	POST OFFICE BOX #18	
ACCOUNT TOTAL											558.00		
ORG 001095 TOTAL											51,390.81		
001100	POLICE/PUB.SFTY												
001100	505000									SUBSCRIPTIONS,MAGS,MAPS			
002568	COVERT TRACK GROUP,	44531		0	2021	9	INV	P	1,200.00	061821	283158	ANNUAL PRESCRIPTION	
ACCOUNT TOTAL											1,200.00		
001100	508000									COMPUTER SUPPLIES			
047599	CRASH DATA GROUP	INV10189		0	2021	9	INV	P	1,250.00	061821	283159	CRASH DATA SUBSCRIP	
ACCOUNT TOTAL											1,250.00		
001100	510000									CLEANING/JANITORIAL SPLY			
003772	NEWELL PAPER COMPANY	4107829		221922	2021	9	INV	P	1,821.26	061821	283315	CLEANING SUPPLIES-H	
ACCOUNT TOTAL											1,821.26		
001100	515000									FEED FOR ANIMALS			
003106	HOLLAND VETERINARY H	47209		221964	2021	9	INV	P	514.20	061821	283228	K9 FOOD	
ACCOUNT TOTAL											514.20		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001100	525000										
003918	PINE BELT OIL COMPAN	12320008	5/21		0	2021	9	INV P	1,063.68	061821	283336 5/2021 MINIT MART C
									1,063.68		
001100	535000										
003588	MID SOUTH UNIFORM &	617679			221979	2021	9	INV P	17.00	061821	283296 NAME PLATE REPLACEM
003590	MIDSOUTH SOLUTIONS	166588			222167	2021	9	INV P	4,675.00	061821	283297 SHORT SLEEVE BLAUER
									4,692.00		
001100	535500										
002769	EXPRESS PRESS	44700A			221553	2021	9	INV P	584.00	061821	283185 POLO'S FOR RECORDS-
002769	EXPRESS PRESS	44700B			221554	2021	9	INV P	73.00	061821	283185 POLO'S FOR RECORDS-
									657.00		
004017	REGIONS CARDHOLDER S	1346 - 05-31-2021			0	2021	9	INV P	355.18	061821	283358 1346 - 05-31-2021 C
004017	REGIONS CARDHOLDER S	4670 - 05-31-2021			0	2021	9	INV P	670.36	061821	283358 4670 - 05-31-2021 C
004017	REGIONS CARDHOLDER S	7963 - 05-31-2021			0	2021	9	INV P	1,425.04	061821	283358 7963 - 05-31-2021 C
									2,450.58		
004422	THE SOUTHERN CONNECT	18133			202848	2021	9	INV P	2,244.00	061821	283407 HPD - POLO SHIRTS F
									5,351.58		
001100	546000										
002535	COMSOUTH	198186			221769	2021	9	INV P	313.32	061821	283150 PLUGS & CABLES -HPD
002901	GILKEY ELECTRIC SUPP	339514			222126	2021	9	INV P	169.75	061821	283198 LIGHT BULBS FOR PD-
002901	GILKEY ELECTRIC SUPP	339933			222279	2021	9	INV P	468.00	061821	283198 LED LIGHTS FOR SERV
									637.75		
004158	SETCOM CORPORATION	45847			222073	2021	9	INV P	163.50	061821	283374 REPAIRS TO MOTOR SE
004256	SOLAR SUPPLY INC	3441712			222416	2021	9	INV P	771.85	061821	283382 FREON FOR SERVICE C
004593	WATCH GUARD VIDEO	ADVREP212842			221729	2021	9	INV P	1,800.00	061821	283446 VISTA REPAIRS-HPD
004593	WATCH GUARD VIDEO	SRINV0021137			221487	2021	9	INV P	339.00	061821	283446 DVR REPAIRS-HPD
									2,139.00		
									4,025.42		
001100	559000										
003207	INTOXIMETERS	682492			221457	2021	9	INV P	159.00	061821	283234 INTOXIMETERS & MOUT
003681	MS FIRE & SAFETY OF	74118			0	2021	9	INV P	277.00	061821	283306 SERVICE & CERTIFICA

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR			INVOICE	PO	YEAR/PR	TYP	S	WARRANT		CHECK	DESCRIPTION
004466	TRUCKS PLUS AUTO ACC	43034		222266	2021	9	INV P		339.00	061821	283419 HITCH FOR UNIT#1664
ACCOUNT TOTAL									775.00		
001100	570000			MTR	VEHICLE	REP.	PTS/SPL				
002160	AT&T MOBILITY	287273861504x0608202	0	2021	9	INV P		2,395.19	061821	283100 MB2016-287/GPS TRAC	
002413	CARQUEST AUTO PARTS	14758-158004		221852	2021	9	INV P	20.66	061821	283130 CAMSHAFT UNIT#18328	
002413	CARQUEST AUTO PARTS	14758-158920		222152	2021	9	INV P	56.36	061821	283130 DEGREASER-HPD	
002413	CARQUEST AUTO PARTS	14758-159299		222264	2021	9	INV P	58.08	061821	283130 REPAIR PARTS FOR ST	
								135.10			
002648	DELTA FOREMOST CHEMI	177133		222111	2021	9	INV P	836.00	061821	283165 SOAP AND DISPENSOR-	
003861	PATTERSON AUTO ELECT	80993		222125	2021	9	INV P	137.00	061821	283324 FUEL INJECTOR UNIT#	
003915	PINE BELT CDJR, INC	60756		222191	2021	9	INV P	521.60	061821	283334 MASTER DOOR SWITCH	
004514	UNIVERSITY TIRE & SE	INV175571		222280	2021	9	INV P	2,520.00	061821	283427 TIRES FOR STOCK &	
047474	1800 RADIATOR & AC	41176692		222194	2021	9	INV P	896.00	061821	283076 A/C COMPESSOR 18331	
ACCOUNT TOTAL									7,440.89		
001100	602700			MEDICAL							
003033	HATTIESBURG CLINIC P	7645859	0	2021	8	INV P		300.00	061821	283216 PSYCH EVAL FOR POTE	
ACCOUNT TOTAL									300.00		
001100	604900			OTHER PROFESSIONAL SERV.							
002523	COMCAST CABLEVISION	6/1/2021-6/30/2021	0	2021	9	INV P		119.51	061821	283148 CONVERTER BOX LEASE	
002610	D P S CRIME LAB	90104535	0	2021	9	INV P		300.00	061821	283161 ANALYTICAL FEES	
003184	INMATE SERVICES CORP	27542		222036	2021	8	INV P	1,000.00	061821	283232 TRANSPORT INMATE FR	
004008	RAYNER, JACK	06032021	0	2021	9	INV P		150.00	061821	283357 LATERAL POLYGRAPHKA	
004453	TRANSUNION RISK AND	362606-202105-1	0	2021	9	INV P		542.20	061821	283417 ON LINE INVESTIGATI	
ACCOUNT TOTAL									2,111.71		
001100	606000			TELEPHONE AND TELEGRAPH							
002158	AT&T	2158	0	2021	9	INV P		413.50	061821	283097 AT&T 5/23-6/22	
002158	AT&T	601M269404 404 6/21	0	2021	9	INV P		76.00	061821	283098 601 M26-9404 404 05	
002158	AT&T	L2021	0	2021	9	INV P		202.00	061821	283097 AT&T 5/28-6/27	
002158	AT&T	L2021 6/8	0	2021	9	INV P		413.50	061821	283097 AT&T 5/23-6/22	
								1,105.00			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	2,343.04	061821	283100	MB2016-287/WIRELESS
002160	AT&T MOBILITY	287289913717X0605202	0	2021	9	INV P	6,105.85	061821	283100	MB2016-287/WIRELESS
							8,448.89			
ACCOUNT TOTAL							9,553.89			
001100	612000	FREIGHT								
002648	DELTA FOREMOST CHEMI	177133	222111	2021	9	INV P	66.40	061821	283165	SOAP AND DISPENSOR-
004158	SETCOM CORPORATION	45847	222073	2021	9	INV P	17.80	061821	283374	REPAIRS TO MOTOR SE
004505	UNITED PARCEL SERVIC	00008E1Y15211	0	2021	9	INV P	8.86	061821	283426	SHIPPING FEES
004505	UNITED PARCEL SERVIC	00008E1Y15231	0	2021	9	INV P	17.53	061821	283426	SHIPPING FEES-HPD
							26.39			
004593	WATCH GUARD VIDEO	ADVREP212842	221729	2021	9	INV P	30.00	061821	283446	VISTA REPAIRS-HPD
ACCOUNT TOTAL							140.59			
001100	630000	GAS								
004321	SPIRE ENERGY	G2021-10 JUN	0	2021	9	INV P	89.48	061821	283394	GAS VARIOUS LOCATIO
ACCOUNT TOTAL							89.48			
001100	638400	MOTOR VEHICLE EQ. R&M								
002034	AAMCO TRANSMISSION (	I111760	222161	2021	8	INV P	1,400.77	061821	283079	REPAIR OIL LEAK UNI
002035	AAMCO TRANSMISSION (	I143889	222319	2021	9	INV P	1,520.00	061821	283080	REPAIRS TO UNIT#173
002035	AAMCO TRANSMISSION (	I143891	222318	2021	9	INV P	136.00	061821	283080	REPAIRS TO UNIT#171
002035	AAMCO TRANSMISSION (	I143892	221273	2021	9	INV P	799.19	061821	283080	FUEL PUMP REPLACE U
002035	AAMCO TRANSMISSION (	I143893	222325	2021	9	INV P	350.00	061821	283080	REPAIR TO UNT#17742
002035	AAMCO TRANSMISSION (	I43890	222317	2021	9	INV P	392.45	061821	283080	REPAIR TO UNIT#1832
							3,197.64			
002282	BODY TECH INC	14BA518D	221813	2021	9	INV P	925.20	061821	283116	REPAIR TO UNIT#1832
003861	PATTERSON AUTO ELECT	81044	222208	2021	9	INV P	2,427.50	061821	283324	REPAIRS TO UNIT#191
004514	UNIVERSITY TIRE & SE	INV173924	222192	2021	9	INV P	69.95	061821	283427	ALIGNMENT FOR UNIT#
004514	UNIVERSITY TIRE & SE	INV175087	222166	2021	8	INV P	89.99	061821	283427	ALIGNMENT FOR UNIT#
							159.94			
047424	HILL'S AUTHOMOTIVE &	298	221861	2021	8	INV P	1,235.00	061821	283223	REPAIR TO UNIT#2042
047474	1800 RADIATOR & AC	41171015	221936	2021	8	INV P	439.00	061821	283076	A/C COMPRESSOR FOR
ACCOUNT TOTAL							9,785.05			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001100	639800										
						TOW	IN	CHARGES			
003389	LARRY'S WRECKER SERV	8046			0	2021	9	INV P	55.00	061821	283271 TOWING OF UNIT#1832
003389	LARRY'S WRECKER SERV	8284			0	2021	9	INV P	55.00	061821	283271 TOWING OF UNIT#1832
003389	LARRY'S WRECKER SERV	8377			0	2021	9	INV P	55.00	061821	283271 TOWING OF UNIT#1833
									165.00		
003869	PEANUTS TOWING SERVI	096157			0	2021	9	INV P	65.00	061821	283328 TOWING OF UNIT#1820
								ACCOUNT TOTAL	230.00		
001100	641000							OFFICE EQUIPMENT RENT			
004057	RJ YOUNG COMPANY	INV4239633			0	2021	8	INV P	253.00	061821	283363 COPIER LEASE ADMIN
004057	RJ YOUNG COMPANY	INV4250240			0	2021	9	INV P	487.60	061821	283363 MB#2011-6/196 ADMIN
									740.60		
								ACCOUNT TOTAL	740.60		
001100	641700							MOTORCYCLE RENT			
002343	BRUCE ROSSMEYERS DAY	07012021			0	2021	9	INV P	13,500.00	061821	283124 MB#2021-123 MOTOR L
								ACCOUNT TOTAL	13,500.00		
001100	684000							DUES AND MEMBERSHIPS			
004073	ROCIC-REGIONAL ORGAN	00513107-IN			0	2021	9	INV P	300.00	061821	283366 SERVICE FEE JULY 20
								ACCOUNT TOTAL	300.00		
001100	684500							REGISTRATION FEE/TUITION			
004073	ROCIC-REGIONAL ORGAN	8/15/21-8/18/21			0	2021	9	INV P	450.00	061821	283366 ROCIC 30TH ANNUAL H
								ACCOUNT TOTAL	450.00		
								ORG 001100 TOTAL	65,335.35		
001131								JOINT P&F TRNG.			
001131	501000							OTHER EXPENDABLE OFF.SPL			
002527	COMMERCIAL STATIONER	448211-0			222462	2021	9	INV P	122.76	061821	283149 P/F OFFICE SUPPLIES
								ACCOUNT TOTAL	122.76		
001131	508000							COMPUTER SUPPLIES			
002905	GILLILANDS ELECTRONI	5325			0	2021	9	INV P	85.00	061821	283199 P/F ADD CAMERA SOFT
								ACCOUNT TOTAL	85.00		
001131	510000							CLEANING/JANITORIAL SPLY			
002527	COMMERCIAL STATIONER	448101-0			222406	2021	9	INV P	137.80	061821	283149 P/F SUPPLIES
								ACCOUNT TOTAL	137.80		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR		TYP S		WARRANT	CHECK	DESCRIPTION
001131	511500				FOOD						
004081	ROSE'S QUIK STOP	0001		222306	2021	9	INV	P	64.95 061821	283368	P/F LUNCH FOR PROCT
004081	ROSE'S QUIK STOP	0002		222332	2021	9	INV	P	64.95 061821	283368	P/F LUNCH FOR PROCT
									129.90		
ACCOUNT TOTAL									129.90		
001131	545000				HAND TOOLS						
004499	UNDERWOOD OUTDOOR PO 100837			222245	2021	9	INV	P	53.92 061821	283425	P/F LAWN MOWER PART
ACCOUNT TOTAL									53.92		
001131	5460PO				MINOR EQUIPMENT-POLICE						
003991	QUALIFICATION TARGET 22101685			222154	2021	9	INV	P	373.00 061821	283353	P/F TRAINING TARGET
ACCOUNT TOTAL									373.00		
001131	559000				OTHER OPERATING MATL/SPLY						
002203	BARNEY'S OF LAFAYETT 00148934-0			221121	2021	9	INV	P	544.00 061821	283106	P/F SIMULATION ROUN
ACCOUNT TOTAL									544.00		
001131	612000				FREIGHT						
003991	QUALIFICATION TARGET 22101685			222154	2021	9	INV	P	210.31 061821	283353	P/F TRAINING TARGET
ACCOUNT TOTAL									210.31		
001131	630000				GAS						
004321	SPIRE ENERGY G2021-6/3			0	2021	9	INV	P	100.63 061821	283394	GAS VERIOUS DEPARTM
ACCOUNT TOTAL									100.63		
001131	644900				OTHER RENT						
004057	RJ YOUNG COMPANY INV4269551			0	2021	9	INV	P	198.00 061821	283363	P/F COPIER RENTAL 0
ACCOUNT TOTAL									198.00		
001131	6845FR				REGISTRATION-FIRE						
004331	STATE FIRE ACADEMY 28833			0	2021	9	INV	P	3,500.00 061821	283397	P/F RECRUIT TESTING
ACCOUNT TOTAL									3,500.00		
001131	6845PO				REGISTRATION-POLICE						
002909	GLOCK INC TRP/100152133			0	2021	9	INV	P	250.00 061821	283200	P/F REG FEE FOR CLA
ACCOUNT TOTAL									250.00		
ORG 001131 TOTAL									5,705.32		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001160				FIRE DIVISION							
001160	510000			CLEANING/JANITORIAL SPLY							
002729	ELKINS WHOLESALE INC	4540390000	222141	2021	9	INV	P		449.15	061821	283176 HFD JANITORIAL SUPP
				ACCOUNT TOTAL					449.15		
001160	511000			HOUSEHOLD SUPPLIES							
004575	WALMART STORES INC	1635670365-HFD	221955	2021	9	INV	P		301.77	061821	283437 HFD HOUSEHOLD SUPPL
				ACCOUNT TOTAL					301.77		
001160	525000			GAS AND OIL							
003918	PINE BELT OIL COMPAN	12320008 5/21	0	2021	9	INV	P		318.80	061821	283336 5/2021 MINIT MART C
				ACCOUNT TOTAL					318.80		
001160	525700			DIESEL FUEL							
003918	PINE BELT OIL COMPAN	12320008 5/21	0	2021	9	INV	P		1,540.97	061821	283336 5/2021 MINIT MART C
				ACCOUNT TOTAL					1,540.97		
001160	535000			UNIFORMS, BADGES, ETC.							
004017	REGIONS CARDHOLDER S	1346 - 05-31-2021	0	2021	9	INV	P		70.62	061821	283358 1346 - 05-31-2021 C
004445	TOP NOTCH EMBROIDERY	906	222171	2021	9	INV	P		160.00	061821	283413 HFD UNIFORM EMBROID
				ACCOUNT TOTAL					230.62		
001160	546200			MINOR FIRE FIGHTING EQUIP.							
002733	EMERGENCY EQUIPMENT	460437	221776	2021	9	INV	P		341.00	061821	283180 HFD UNIT #20315 REP
002733	EMERGENCY EQUIPMENT	460745	221353	2021	9	INV	P		495.65	061821	283180 HFD ENGINE 4 PPV FA
									836.65		
				ACCOUNT TOTAL					836.65		
001160	570000			MTR VEHICLE REP. PTS/SPL							
002160	AT&T MOBILITY	287273861504X0608202	0	2021	9	INV	P		536.64	061821	283100 MB2016-287/GPS TRAC
002194	BARDING GENERATOR &	176553	222172	2021	9	INV	P		667.80	061821	283105 HFD UNIT # 18098 RE
002733	EMERGENCY EQUIPMENT	459924	221953	2021	8	INV	P		304.84	061821	283180 HFD UNIT # 18099 RE
002733	EMERGENCY EQUIPMENT	460438	220087	2021	9	INV	P		212.00	061821	283180 UNIT #14517 AXE BRA
002733	EMERGENCY EQUIPMENT	460643	221528	2021	9	INV	P		3,058.94	061821	283180 HFD UNIT #18099 LIG
									3,575.78		
003252	JOHNNIE WRIGHT RADIA	83544	222114	2021	9	INV	P		2,105.26	061821	283243 HFD UNIT#13932 E-1
004451	TRACTOR SUPPLY	200699455	221346	2021	9	INV	P		209.96	061821	283415 HFD ENGINE 6 MATS

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
				ACCOUNT TOTAL		7,095.44			
001160	606000			TELEPHONE AND TELEGRAPH					
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	215.29	061821	283100 MB2016-287/WIRELESS
002160	AT&T MOBILITY	287290217384X0605202	0	2021	9	INV P	1,291.49	061821	283100 MB2016-287/WIRELESS
						1,506.78			
				ACCOUNT TOTAL		1,506.78			
001160	630000			GAS					
004321	SPIRE ENERGY	G2021-10 JUN	0	2021	9	INV P	145.55	061821	283394 GAS VARIOUS LOCATIO
004321	SPIRE ENERGY	G2021-6/1	0	2021	9	INV P	356.01	061821	283394 GAS VARIOUS LOCATIO
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV P	130.68	061821	283394 GAS VERIOUS DEPARTM
						632.24			
				ACCOUNT TOTAL		632.24			
001160	631500			WATER					
002146	ARNOLD LINE WATER AS T	2021-6/7	0	2021	9	INV P	25.00	061821	283095 WATER SERVICE FIRE
				ACCOUNT TOTAL		25.00			
001160	635000			BUILDING R&M					
002304	BRACKMAN MOWER WAREH 5858		221825	2021	9	INV P	100.00	061821	283119 HFD STATION 5 WASHE
				ACCOUNT TOTAL		100.00			
001160	636500			OFFICE EQUIPMENT R&M					
004050	RICOH CORP	1088393874	0	2021	8	INV P	168.95	061821	283362 HFD STATION 8 PRINT
				ACCOUNT TOTAL		168.95			
001160	638400			MOTOR VEHICLE EQ. R&M					
002194	BARDING GENERATOR &	176559	0	2021	9	INV P	495.95	061821	283105 HFD UNIT #18098 REP
				ACCOUNT TOTAL		495.95			
001160	638900			SCBA EQUIP. R&M					
002733	EMERGENCY EQUIPMENT	460619	0	2021	9	INV P	212.15	061821	283179 HFD SCBA MAINTENANC
				ACCOUNT TOTAL		212.15			
001160	641000			OFFICE EQUIPMENT RENT					
002471	CINTAS CORPORATION #	4086361289	0	2021	9	INV P	39.98	061821	283136 HFD ADMIN & PREVENT
004050	RICOH CORP	5062113096	0	2021	9	INV P	43.55	061821	283362 HFD ADMIN OFFICE CO
				ACCOUNT TOTAL		83.53			
001160	642500			CYLINDER RENT					

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR			INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
004273	SOUTHERN GAS & SUPPL		36288528	0	2021	9	INV P	302.32 061821	283385	HFD OXYGEN CYLINDER	
ACCOUNT TOTAL								302.32			
ORG 001160 TOTAL								14,300.32			
001180	LAND DEVEL.ADM.										
001180	500300	PAPER									
004328	STAPLES	3425734026	0	2021	9	INV P	133.62 061821	283396	PO 193180 CREDIT TA		
ACCOUNT TOTAL								133.62			
001180	501000	OTHER EXPENDABLE OFF.SPL									
004328	STAPLES	3476982421	221931	2021	9	INV P	336.46 061821	283396	OFFICE SUPPLIES COD		
ACCOUNT TOTAL								336.46			
001180	535500	WEARING APPAREL									
002728	ELITE SCREEN PRINTIN	38150	221934	2021	9	INV P	302.54 061821	283175	UNIFORM SHIRTS(COUR		
ACCOUNT TOTAL								302.54			
001180	601600	TITLE OPINIONS									
004076	ROGERS, KEVIN	TITLEOPINION6.11.21	0	2021	9	INV P	750.00 061821	283367	TITLE OPINIONS JUNE		
004076	ROGERS, KEVIN	TITLEOPINION6.7.2021	0	2021	9	INV P	500.00 061821	283367	TITLE OPINIONS JUNE		
								1,250.00			
ACCOUNT TOTAL								1,250.00			
001180	604900	OTHER PROFESSIONAL SERV.									
002160	AT&T MOBILITY	287273861504x0608202	0	2021	9	INV P	204.30 061821	283100	MB2016-287/GPS TRAC		
ACCOUNT TOTAL								204.30			
001180	606000	TELEPHONE AND TELEGRAPH									
002160	AT&T MOBILITY	287273578351x0608202	0	2021	9	INV P	831.22 061821	283100	MB2016-287/WIRELESS		
ACCOUNT TOTAL								831.22			
001180	644900	OTHER RENT									
004057	RJ YOUNG COMPANY	INV4270990	0	2021	9	INV P	273.46 061821	283363	COPIER FEE, 5.11-6.		
ACCOUNT TOTAL								273.46			
001180	684000	DUES AND MEMBERSHIPS									
003677	MS DEPARTMENT OF ENV	MDEQAPPCCOPELAND2021	0	2021	9	INV P	200.00 061821	283305	ASBESTOS CERT C. CO		
003677	MS DEPARTMENT OF ENV	MDEQAPPQUINN2021	0	2021	9	INV P	200.00 061821	283305	ASBESTOS CERT 2021		
								400.00			
ACCOUNT TOTAL								400.00			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001180	684500								
004017	REGIONS CARDHOLDER S	7963 - 05-31-2021	0	2021 9	INV	P	28.16 061821	283358	7963 - 05-31-2021 C
							28.16		
				ORG 001180	TOTAL		3,759.76		
001191									
001191	501000								
002901	GILKEY ELECTRIC SUPP	339100	221986	2021 9	INV	P	482.00 061821	283198	TRAFFIC OFFICE LIGH
							482.00		
001191	508000								
003177	INDOFF INC	3478284	222270	2021 9	INV	P	93.44 061821	283231	TRAFFIC INK
							93.44		
001191	535500								
002795	FASTENAL COMPANY	MSHAT231273	221783	2021 9	INV	P	100.86 061821	283187	TRAFFIC RAIN APPARE
003216	J M H GRAPHICS	30757	222164	2021 9	INV	P	329.76 061821	283235	TRAFFIC SHIRTS
							430.62		
001191	554000								
002215	BATTERIES PLUS BULBS	39939951	222086	2021 9	INV	P	94.10 061821	283108	TRAFFIC BATTERY
004412	TEMPLE INC	INV0208762	221357	2021 9	INV	P	4,865.00 061821	283405	SCHOOL ZONE BEACON
047473	TRAFFIC LOGIX CO	SIN11850	221753	2021 9	INV	P	4,406.00 061821	283416	EVOLUTION RADAR FEE
							9,365.10		
001191	554500								
004316	SPEEDY PRINTING & SI	29044	222149	2021 9	INV	P	96.00 061821	283393	TRAFFIC SIGN
004316	SPEEDY PRINTING & SI	29079	222326	2021 9	INV	P	56.00 061821	283393	STREET MARKERS TRAF
							152.00		
							152.00		
001191	559000								
002274	BLOSSMAN GAS INC	17122610	222143	2021 9	INV	P	19.00 061821	283114	PROPANE GAS TRAFFIC
							19.00		
001191	570000								
002035	AAMCO TRANSMISSION (	I143898	221444	2021 9	INV	P	4,799.00 061821	283080	TRAFFIC UNIT 17528
003915	PINE BELT CDJR, INC	60980	222352	2021 9	INV	P	35.36 061821	283334	TRAFFIC TIRE SENSO

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
004514	UNIVERSITY TIRE & SE	175429	222227	2021	9	INV P	47.69	061821	283427 TRAFFIC UNIT 6342 A
004514	UNIVERSITY TIRE & SE	INV175491	222223	2021	9	INV P	638.80	061821	283427 TRAFFIC TIRES UNIT
							686.49		
ACCOUNT TOTAL							5,520.85		
001191	606000		TELEPHONE AND TELEGRAPH						
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	71.71	061821	283100 MB2016-287/WIRELESS
ACCOUNT TOTAL							71.71		
001191	630000		GAS						
004321	SPIRE ENERGY	G2021-10 JUN	0	2021	9	INV P	63.12	061821	283394 GAS VARIOUS LOCATIO
ACCOUNT TOTAL							63.12		
001191	638400		MOTOR VEHICLE EQ. R&M						
002035	AAMCO TRANSMISSION (	143856	220149	2021	9	INV P	2,882.19	061821	283080 REMOVE AND REPLACE
002035	AAMCO TRANSMISSION (	I143897	221446	2021	9	INV P	3,176.66	061821	283080 TRAFFIC UNIT17528 E
							6,058.85		
ACCOUNT TOTAL							6,058.85		
001191	643000		UNIFORM RENT						
002471	CINTAS CORPORATION #	4085696208	0	2021	9	INV P	25.00	061821	283138 TRAFFIC UNIFORM SC/
002471	CINTAS CORPORATION #	4086359896	0	2021	9	INV P	25.00	061821	283139 TRAFFIC UNIFORM SC/
002471	CINTAS CORPORATION #	4087061891	0	2021	9	INV P	25.00	061821	283139 TRAFFIC UNIFORM SC
							75.00		
ACCOUNT TOTAL							75.00		
001191	643500		MOP-MAT-RAG RENT						
002471	CINTAS CORPORATION #	4085695873	0	2021	9	INV P	8.14	061821	283138 TRAFFIC MATS SC/820
002471	CINTAS CORPORATION #	4086359430	0	2021	9	INV P	8.14	061821	283139 TRAFFIC MATS SC/82
002471	CINTAS CORPORATION #	4087061536	0	2021	9	INV P	8.14	061821	283140 TRAFFIC MATS SC/
							24.42		
ACCOUNT TOTAL							24.42		
001191	687000		CUSTODIAL SERVICE						
002037	AB SUPPORT SERVICES	010097	0	2021	9	INV P	325.00	061821	283081 MB# 2020-957 JANITO
ACCOUNT TOTAL							325.00		
ORG 001191 TOTAL							22,681.11		

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
001201					STREET DIV.							
001201	510000				CLEANING/JANITORIAL			SPLY				
004634	WHEELER'S JANITORIAL	81421	221149	2021	9	INV	P	579.80	061821	283449	BAGS & GLOVES PUBLI	
ACCOUNT TOTAL								579.80				
001201	540000				ASPHALT & ASPHALT PROD.							
004586	WARREN PAVING INC	44922	221874	2021	9	INV	P	151.17	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45305	221874	2021	9	INV	P	275.77	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45455	221874	2021	9	INV	P	277.04	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45461	221874	2021	9	INV	P	128.40	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45469	221874	2021	9	INV	P	205.56	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45570	221874	2021	9	INV	P	141.05	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45755	221874	2021	9	INV	P	281.46	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45765	221874	2021	9	INV	P	218.84	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45770	221874	2021	9	INV	P	185.32	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45816	221874	2021	9	INV	P	170.14	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	45902	221874	2021	9	INV	P	289.68	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	46022	221874	2021	9	INV	P	274.51	061821	283442	HOT ASPHALT FOR VAR	
004586	WARREN PAVING INC	46028	221874	2021	9	INV	P	122.07	061821	283442	HOT ASPHALT FOR VAR	
								2,721.01				
ACCOUNT TOTAL								2,721.01				
001201	541000				BRICK,STONE,MORTAR,ETC.							
002104	AMERICAN CONCRETE PR	78205	220312	2021	9	INV	P	705.42	061821	283092	CONCRETE BLOCKS AND	
002104	AMERICAN CONCRETE PR	78390	220312	2021	9	CRM	P	-24.00	061821	283092	CONCRETE BLOCKS AND	
002104	AMERICAN CONCRETE PR	78419	220312	2021	9	CRM	P	-24.00	061821	283092	CONCRETE BLOCKS AND	
								657.42				
047525	DELTA INDUSTIRES	719585	222207	2021	8	INV	P	238.61	061821	283166	CONCRETE FOR VARIOU	
ACCOUNT TOTAL								896.03				
001201	542000				DRAINAGE PIPE & CULVERTS							
002657	DEWS, C L & SONS FOU	202774	222138	2021	9	INV	P	336.00	061821	283167	V-1731/1730 DF24 RI	
ACCOUNT TOTAL								336.00				
001201	559000				OTHER OPERATING MATL/SPLY							
002492	CLEMTS HARDWARE	128448	222401	2021	9	INV	P	149.00	061821	283144	COOLER	
ACCOUNT TOTAL								149.00				
001201	560000				BUILDING MATERIALS & SPLY							
002714	ECONOMY SUPPLY CO	055582	222187	2021	8	INV	P	111.90	061821	283173	BATHROOM LOCKS FOR	
002901	GILKEY ELECTRIC SUPP	339486	222123	2021	8	INV	P	1,363.00	061821	283198	LIGHTS FOR PUBLIC W	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
ACCOUNT TOTAL							1,474.90			
001201	570000			MTR	VEHICLE	REP.	PTS/SPL			
002160	AT&T MOBILITY	287273861504x0608202	0	2021	9	INV	P	2,569.65	061821	283100 MB2016-287/GPS TRAC
002413	CARQUEST AUTO PARTS	14758-159166	222214	2021	9	INV	P	88.48	061821	283130 HEADLIGHT SWITCH UN
002413	CARQUEST AUTO PARTS	14758-159167	222212	2021	9	INV	P	314.39	061821	283130 AC CMPR NEW W/ CLUT
							402.87			
003380	LANCASTER'S MACHINE	24861	221915	2021	9	INV	P	675.00	061821	283268 REPAIR TRAILER TAIL
003916	PINE BELT INDUSTRIAL	4188768-01	221484	2021	9	INV	P	287.54	061821	283335 BELTS FOR ALL MOWER
003986	PUCKETT MACHINERY CO	P05C5712411	222061	2021	9	INV	P	417.16	061821	283350 OIL SUPPLY/UNIT 180
004514	UNIVERSITY TIRE & SE	INV175189	222198	2021	9	INV	P	638.80	061821	283427 TIRES/21722
004514	UNIVERSITY TIRE & SE	INV176212	222433	2021	9	INV	P	544.43	061821	283427 FORTITUDE HT OWL TI
							1,183.23			
ACCOUNT TOTAL							5,535.45			
001201	575500			AGRICLTRL	REPAIR	PTS/SPL				
003034	HATTIESBURG HYDRAULI	89475	222134	2021	9	INV	P	279.07	061821	283217 PARTS FOR UNIT 1803
003298	K & K TRUCK-TRAILER	74018	220846	2021	9	INV	P	1,046.31	061821	283254 REPAIRS ON TWO TRAI
003986	PUCKETT MACHINERY CO	05C65275	222259	2021	9	INV	P	162.52	061821	283350 FILTER AIR SECNDRY
ACCOUNT TOTAL							1,487.90			
001201	612000			FREIGHT						
002836	FLUIDS INC.	13741	222087	2021	9	INV	P	214.79	061821	283191 MOSQUITO CHEMICALS
ACCOUNT TOTAL							214.79			
001201	638700			AGRICULTURAL	EQ.	R&M				
003380	LANCASTER'S MACHINE	24882	222148	2021	9	INV	P	400.00	061821	283268 NEW BLADES & REPLAC
ACCOUNT TOTAL							400.00			
001201	639800			TOW	IN CHARGES					
003253	JOHNNY'S WRECKER SER	8292	0	2021	9	INV	P	85.00	061821	283244 TOWED VEHICLE SERVI
003253	JOHNNY'S WRECKER SER	8293	0	2021	9	INV	P	85.00	061821	283244 TOWED TO MCMULLEN M
							170.00			
ACCOUNT TOTAL							170.00			
001201	643000			UNIFORM RENT						
002471	CINTAS CORPORATION #	4056359902	0	2021	9	INV	P	8.51	061821	283138 UNIFORMS SC 8200044

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR	TYP	S	WARRANT		CHECK	DESCRIPTION
002471	CINTAS CORPORATION #	4085695962		0	2021	9	INV P	28.06	061821	283137	MATS SC 8200044758
002471	CINTAS CORPORATION #	4085696107		0	2021	9	INV P	32.97	061821	283137	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4085696133		0	2021	9	INV P	63.81	061821	283137	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4085696137		0	2021	9	INV P	77.40	061821	283137	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4085696211		0	2021	9	INV P	46.60	061821	283138	UNIFORM SC 82000447
002471	CINTAS CORPORATION #	4086359682		0	2021	9	INV P	287.81	061821	283138	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4086359764		0	2021	9	INV P	77.40	061821	283138	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4086359774		0	2021	9	INV P	32.97	061821	283138	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4086359930		0	2021	9	INV P	46.60	061821	283138	UNIFORM SC 82000447
002471	CINTAS CORPORATION #	4087061706		0	2021	9	INV P	59.84	061821	283139	UNIFORM SC 82000447
002471	CINTAS CORPORATION #	4087061834		0	2021	9	INV P	32.97	061821	283139	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4087061940		0	2021	9	INV P	46.60	061821	283139	UNIFORMS SC 8200044
002471	CINTAS CORPORATION #	4087061982		0	2021	9	INV P	8.51	061821	283139	UNIFORMS SC 8200044
								850.05			
ACCOUNT TOTAL								850.05			
ORG 001201 TOTAL								14,814.93			
001202	STREET LIGHTS										
001202	630500	ELECTRICITY									
003873	PEARL RIVER VALLEY E	E2021-6/1	0	2021	9	INV P	1,244.45	061821	283329	PRVE VARIOUS LOCATI	
003873	PEARL RIVER VALLEY E	E2021-6/7/2021	0	2021	9	INV P	3,572.78	061821	283329	PRVE VARIOUS DEPART	
								4,817.23			
004282	SOUTHERN PINE ELECTR	E2021 6/2	0	2021	9	INV P	1,332.19	061821	283387	SOPE VARIOUS DEPARM	
ACCOUNT TOTAL								6,149.42			
ORG 001202 TOTAL								6,149.42			
001203	ENGR/PUBLIC SER										
001203	501000	OTHER EXPENDABLE OFF.SPL									
004495	ULINE	134345068	222210	2021	9	INV P	88.75	061821	283424	FOAM CORE BOARD - E	
004634	WHEELER'S JANITORIAL	8400	222301	2021	9	INV P	115.41	061821	283449	PAPER PRODUCTS	
ACCOUNT TOTAL								204.16			
001203	505000	SUBSCRIPTIONS,MAGS,MAPS									
002478	CLARION LEDGER/HATTI	HA0035737 061521	0	2021	9	INV P	79.12	061821	283143	HATTIESBURG AMERICA	
ACCOUNT TOTAL								79.12			
001203	508000	COMPUTER SUPPLIES									
002383	C D W GOVERNMENT	D731300	222139	2021	9	INV P	449.72	061821	283126	FUJITSU SCANSNAP ix	
004017	REGIONS CARDHOLDER S	1346 - 05-31-2021	0	2021	9	INV P	62.51	061821	283358	1346 - 05-31-2021 C	
ACCOUNT TOTAL								512.23			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001203	601500										
004197	SHOWS DEARMAN & WAIT	22058	0	ENGINEERING	2021	9	INV	P	465.00	061821	283378 INDUSTRIAL USE INVE
				ACCOUNT TOTAL					465.00		
001203	604900										
003256	JOHNSON CONTROLS, IN	00073785989	0	OTHER PROFESSIONAL SERV.	2021	9	INV	P	11,497.25	061821	283245 MB 2015-217 & 240 M
				ACCOUNT TOTAL					11,497.25		
001203	606000										
002160	AT&T MOBILITY	287273578351X0608202	0	TELEPHONE AND TELEGRAPH	2021	9	INV	P	214.88	061821	283100 MB2016-287/WIRELESS
				ACCOUNT TOTAL					214.88		
001203	612000										
004495	ULINE	134345068	222210	FREIGHT	2021	9	INV	P	18.92	061821	283424 FOAM CORE BOARD - E
				ACCOUNT TOTAL					18.92		
001203	630000										
004321	SPIRE ENERGY	G2021-6/3	0	GAS	2021	9	INV	P	37.32	061821	283394 GAS VERIOUS DEPARTM
				ACCOUNT TOTAL					37.32		
001203	641000										
004057	RJ YOUNG COMPANY	INV4239587	0	OFFICE EQUIPMENT RENT	2021	9	INV	P	262.00	061821	283363 MB 2019-60 COPIER L
				ACCOUNT TOTAL					262.00		
001203	687000										
002037	AB SUPPORT SERVICES	010097	0	CUSTODIAL SERVICE	2021	9	INV	P	425.00	061821	283081 MB# 2020-957 JANITO
				ACCOUNT TOTAL					425.00		
				ORG 001203 TOTAL					13,715.88		
001204				SHOP DIVISION							
001204	513000			CHEMICALS							
002413	CARQUEST AUTO PARTS	14758-158706	222076	2021	9	INV	P		65.98	061821	283130 SHOP SOAP
002413	CARQUEST AUTO PARTS	14758-158887	222135	2021	9	INV	P		65.04	061821	283130 BRAKE CLEANER
									131.02		
004583	WARING OIL CO (GULFP	53259	222324	2021	9	INV	P		2,796.00	061821	283441 CHEMICALS SHOP
				ACCOUNT TOTAL					2,927.02		
001204	525000										
004592	WASTE OIL COLLECTORS	0024769	222108	GAS AND OIL	2021	9	INV	P	80.00	061821	283445 SHOP PUMPING USED O

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION
					ACCOUNT TOTAL			80.00			
					OTHER OPERATING MATL/SPLY						
001204	559000				222285	2021	9	INV P	231.78	061821	283315 SHOP RAGS
					ACCOUNT TOTAL			231.78			
					MTR VEHICLE REP. PTS/SPL						
001204	570000				221987	2021	9	INV P	32.85	061821	283130 SHOP TIRE NEEDLE
002413	CARQUEST AUTO PARTS	14758-158459			222366	2021	9	INV P	12.99	061821	283130 SHOP COIL CLEANER
								45.84			
					ACCOUNT TOTAL			45.84			
					GAS						
001204	630000				0	2021	9	INV P	131.64	061821	283394 GAS VERIOUS DEPARTM
					ACCOUNT TOTAL			131.64			
					CYLINDER RENT						
001204	642500				0	2021	9	INV P	331.57	061821	283084 CYLINDER RENTAL/PW
					ACCOUNT TOTAL			331.57			
					UNIFORM RENT						
001204	643000				0	2021	9	INV P	89.97	061821	283139 UNIFORM RENTAL PW S
002471	CINTAS CORPORATION #	408569214			0	2021	9	INV P	89.97	061821	283139 UNIFORM RENT PWSHOP
002471	CINTAS CORPORATION #	4086359794			0	2021	9	INV P	79.97	061821	283139 UNIFORM RENTAL/PWSH
								259.91			
					ACCOUNT TOTAL			259.91			
					ORG 001204 TOTAL			4,007.76			
					G O & F S DIV.						
					OTHER PROFESSIONAL SERV.						
001205	604900				0	2021	9	INV P	414.07	061821	283336 GAS CARDS/STREET,HE
					ACCOUNT TOTAL			414.07			
					ORG 001205 TOTAL			414.07			
					DRAINAGE DIV.						
					TELEPHONE AND TELEGRAPH						
001206	606000				0	2021	9	INV P	483.88	061821	283100 MB2016-287/WIRELESS
002160	AT&T MOBILITY	287273578351X0608202			0	2021	9	INV P	1,783.51	061821	283100 MB2016-287/WIRELESS
								2,267.39			
					ACCOUNT TOTAL			2,267.39			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION
001206 729500 OTHER IMPROVEMENTS											
004058 RJM MCQUEEN CONTRACT 2444				222085	2021	9	INV	P	15,997.50	061821	283364 J ED TURNER DR - EN
004197 SHOWS DEARMAN & WAIT 21731				0	2021	9	INV	P	9,367.50	061821	283378 MB 2012-1/34 3611 P
004197 SHOWS DEARMAN & WAIT 22055				0	2021	9	INV	P	1,667.50	061821	283378 DRAIN INVESTIGATION
004197 SHOWS DEARMAN & WAIT 22056				0	2021	9	INV	P	1,782.50	061821	283378 DRAINAGE INVESTIGAT
004197 SHOWS DEARMAN & WAIT 22077				0	2021	9	INV	P	225.00	061821	283378 706 N CHANCELLOR DR
									13,042.50		
ACCOUNT TOTAL									29,040.00		
ORG 001206 TOTAL									31,307.39		
001207 CONSTRUCTION											
001207 560500 ELECTRICAL SUPPLIES											
002901 GILKEY ELECTRIC SUPP 340045				222374	2021	9	INV	P	72.49	061821	283198 TOOLS FOR ELECTRICI
002901 GILKEY ELECTRIC SUPP 340057				222357	2021	9	INV	P	127.50	061821	283198 PHOTO CELL/ELECTRIC
									199.99		
004256 SOLAR SUPPLY INC 3441710				222418	2021	9	INV	P	112.60	061821	283382 GAS FOR TORCHES/A/C
ACCOUNT TOTAL									312.59		
001207 570000 MTR VEHICLE REP. PTS/SPL											
002413 CARQUEST AUTO PARTS 14758-159229				222240	2021	8	INV	P	297.98	061821	283130 REPAIR BACK VAN DOO
004514 UNIVERSITY TIRE & SE INV175989				222375	2021	9	INV	P	487.88	061821	283427 TIRES FOR UNIT#1955
ACCOUNT TOTAL									785.86		
001207 604900 OTHER PROFESSIONAL SERV.											
002523 COMCAST CABLEVISION 8396410730734155/TRA 0				2021	9	INV	P	6.26	061821	283148 COMCAST CABLE/TRAFF	
003191 INTERFACE SECURITY S 19947680				0	2021	9	INV	P	46.99	061821	283233 SECURITY SYSTEMS/TW
003191 INTERFACE SECURITY S 19990877				0	2021	8	INV	P	46.99	061821	283233 SECURITY SYSTEM/06/
									93.98		
ACCOUNT TOTAL									100.24		
001207 606000 TELEPHONE AND TELEGRAPH											
002160 AT&T MOBILITY 287273578351X0608202 0				2021	9	INV	P	123.45	061821	283100 MB2016-287/WIRELESS	
ACCOUNT TOTAL									123.45		
001207 642500 CYLINDER RENT											
002071 AIRGAS USA LLC (NORD 9980184727				0	2021	9	INV	P	148.78	061821	283084 CYLINDER RENTAL/CON
ACCOUNT TOTAL									148.78		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
001207	643000					UNIFORM RENT					
002471	CINTAS CORPORATION # 4085696010	0	2021	8	INV	P	43.28	061821	283137	UNIFORM RENT/CONST	
002471	CINTAS CORPORATION # 4086359673	0	2021	9	INV	P	43.28	061821	283139	UNIFORM RENT/CONST	
002471	CINTAS CORPORATION # 4087061785	0	2021	9	INV	P	43.28	061821	283139	UNIFORM RENTAL/CONS	
							129.84				
ACCOUNT TOTAL							129.84				
ORG 001207 TOTAL							1,600.76				
001220	SANITATION DIV.										
001220	510000					CLEANING/JANITORIAL SPLY					
004634	WHEELER'S JANITORIAL 8325	221993	2021	8	INV	P	334.80	061821	283449	COATED WORK GLOVES--	
ACCOUNT TOTAL							334.80				
001220	511000					HOUSEHOLD SUPPLIES					
003457	LOWE'S OF HATTIESBUR 938677-GWOUEU	221965	2021	9	INV	P	153.85	061821	283279	64 GALLON TOTES --R	
ACCOUNT TOTAL							153.85				
001220	535500					WEARING APPAREL					
004634	WHEELER'S JANITORIAL 8420	222295	2021	9	INV	P	225.00	061821	283449	SAFETY GEAR-HARD HA	
ACCOUNT TOTAL							225.00				
001220	559000					OTHER OPERATING MATL/SPLY					
002714	ECONOMY SUPPLY CO 058888	222417	2021	9	INV	P	26.75	061821	283173	MAILBOX POST 2700 M	
ACCOUNT TOTAL							26.75				
001220	559001					OTHER OPERATING SPLY-RECYCLING					
004634	WHEELER'S JANITORIAL 8420	222295	2021	9	INV	P	54.00	061821	283449	SAFETY GEAR-HARD HA	
ACCOUNT TOTAL							54.00				
001220	570000					MTR VEHICLE REP. PTS/SPL					
002035	AAMCO TRANSMISSION (I143870	221733	2021	9	INV	P	1,022.04	061821	283080	UNIT 11970 BLEND DO	
002738	EMPIRE TRUCK SALES (CE006179839:01	222221	2021	9	INV	P	170.52	061821	283181	ITEM# 006F/BW 50044	
002738	EMPIRE TRUCK SALES (CE006179915:01	222222	2021	9	INV	P	175.10	061821	283181	UNIT 20070 CRANKCAS	
002738	EMPIRE TRUCK SALES (CE006179932:01	222246	2021	9	INV	P	32.36	061821	283181	UNIT 20089 PRESSURE	
002738	EMPIRE TRUCK SALES (CE006180366:01	222385	2021	9	INV	P	131.52	061821	283181	VENTILATOR FILTERS	
002738	EMPIRE TRUCK SALES (RE006034560:01	222457	2021	9	INV	P	638.66	061821	283181	UNIT 20072 SENSOR/C	
002738	EMPIRE TRUCK SALES (RE00604454:01	222244	2021	9	INV	P	566.68	061821	283181	UNIT 20072 RECEIVER	
							1,714.84				
004597	WATERS INTERNATIONAL 08P806955	221600	2021	9	INV	P	204.96	061821	283447	UNIT 20074 ELBOW/TE	
004597	WATERS INTERNATIONAL 08p808936	222181	2021	9	INV	P	29.41	061821	283447	UNIT 14406 HOSE-SAN	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
									234.37		
ACCOUNT TOTAL									2,971.25		
001220	604900				OTHER PROFESSIONAL SERV.						
002523	COMCAST CABLEVISION	83964107030898612	05	0	2021	8	INV	P	2.00	061821	283148 COMCAST/05/22/2021-
003253	JOHNNY'S WRECKER SER	42047		0	2021	9	INV	P	350.00	061821	283244 PULLED UNIT 20064 O
003703	MS RECYCLING COALITI	2021-004		0	2021	9	INV	P	250.00	061821	283308 N. FRAZIER YEARLY M
004316	SPEEDY PRINTING & SI	29062		222220	2021	9	INV	P	488.00	061821	283393 INSTALL OF TRUCK LE
004316	SPEEDY PRINTING & SI	29076		222286	2021	9	INV	P	135.00	061821	283393 UNIT 21727 ADDITION
									623.00		
ACCOUNT TOTAL									1,225.00		
001220	611000				TRAVEL EXPENSE						
004017	REGIONS CARDHOLDER S	1708 - 05-31-2021		0	2021	9	INV	P	741.55	061821	283358 1708 - 05-31-2021 C
ACCOUNT TOTAL									741.55		
001220	612000				FREIGHT						
002738	EMPIRE TRUCK SALES (	CE006179915:01		222222	2021	9	INV	P	15.00	061821	283181 UNIT 20070 CRANKCAS
004120	SANSOM EQUIPMENT CO	P01465		222055	2021	9	INV	P	93.95	061821	283372 UNIT 20072 ARM GUAR
ACCOUNT TOTAL									108.95		
001220	638400				MOTOR VEHICLE EQ. R&M						
002035	AAMCO TRANSMISSION (	I143873		222215	2021	9	INV	P	371.78	061821	283080 CABLE ASSEMBLY UNIT
002035	AAMCO TRANSMISSION (	I143876		221989	2021	9	INV	P	979.30	061821	283080 UNIT 9609 THROTTLE/
									1,351.08		
003253	JOHNNY'S WRECKER SER	42031		0	2021	8	INV	P	350.00	061821	283244 TRANSPORT UNIT 1988
004120	SANSOM EQUIPMENT CO	P01465		222055	2021	9	INV	P	1,446.96	061821	283372 UNIT 20072 ARM GUAR
047038	KENWORTH OF MISSISSI	0530586010		222373	2021	9	INV	P	183.50	061821	283257 AIR/OIL FILTERS FOR
ACCOUNT TOTAL									3,331.54		
001220	643000				UNIFORM RENT						
002471	CINTAS CORPORATION #	4085696239		0	2021	8	INV	P	8.51	061821	283137 SC#8200044758
002471	CINTAS CORPORATION #	4085696438		0	2021	8	INV	P	166.53	061821	283137 SC#8200044758 SANIT
002471	CINTAS CORPORATION #	4086359533		0	2021	9	INV	P	28.06	061821	283139 SC#8200044758 SANIT
002471	CINTAS CORPORATION #	4086360016		0	2021	9	INV	P	166.53	061821	283139 SC#8200044758
002471	CINTAS CORPORATION #	408701571		0	2021	9	INV	P	28.06	061821	283139 SC#4087061571
002471	CINTAS CORPORATION #	4087062126		0	2021	9	INV	P	166.53	061821	283139 SC#8200044758 SANIT

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION	
								564.22			
002472	CINTAS FIRST AID J71	5065538238		0	2021	9	INV P	195.56	061821	283141	SANIT. FIRST AID SE
ACCOUNT TOTAL								759.78			
001220	688000	TIPPING FEES									
002007	98 WASTE LLC	3275		0	2021	9	INV P	1,330.00	061821	283077	MB#2016-22
002007	98 WASTE LLC	3399		0	2021	9	INV P	2,625.00	061821	283077	MB# 2016-322 PARKS
002007	98 WASTE LLC	3400		0	2021	9	INV P	47,425.00	061821	283077	MB#2016-322
002007	98 WASTE LLC	3471		0	2021	9	INV P	14,420.00	061821	283077	MB#2016-322 SANIT.
002007	98 WASTE LLC	3472		0	2021	9	INV P	1,155.00	061821	283077	MB#2016-322-PARKS &
002007	98 WASTE LLC	3498		0	2021	9	INV P	196.00	061821	283077	MB#2016-322 CODE EN
002007	98 WASTE LLC	3514		0	2021	9	INV P	19,600.00	061821	283077	MB#2016-22 SANITATI
								86,751.00			
003920	PINE BELT REGIONAL S	STATEMENT5/31/21		0	2021	9	INV P	39,917.07	061821	283337	MB#197-1/451-454 SA
004591	WASTE MANAGEMENT OF	0012741-2526-7		0	2021	9	INV P	1,558.38	061821	283444	MB#2003-5/484 SANIT
004591	WASTE MANAGEMENT OF	0012765-2526-6		0	2021	9	INV P	1,523.07	061821	283444	MB#2003-5/484-SANIT
								3,081.45			
ACCOUNT TOTAL								129,749.52			
001220	689000	RECYCLING FEES									
004030	REPUBLIC SERVICES IN	0991-000322763		222077	2021	9	INV P	7,662.88	061821	283359	RECYCLE COLLECTION
004030	REPUBLIC SERVICES IN	0991-000322763A		221976	2021	9	INV P	10,236.77	061821	283359	RECYCLE COLLECTION
								17,899.65			
ACCOUNT TOTAL								17,899.65			
ORG 001220 TOTAL								157,581.64			
001250	HEALTH DIVISION										
001250	513000	CHEMICALS									
002443	CERTIFIED LABORATORI	7380793		222089	2021	9	INV P	4,936.25	061821	283133	WEED KILLER FOR DIT
002836	FLUIDS INC.	13741		222087	2021	9	INV P	3,511.32	061821	283191	MOSQUITO CHEMICALS
ACCOUNT TOTAL								8,447.57			
001250	570000	MTR VEHICLE REP. PTS/SPL									
004354	STRIBLING EQUIPMENT	C5006112860:01		222405	2021	9	INV P	50.63	061821	283400	V-BELT UNIT 17898 D
ACCOUNT TOTAL								50.63			
001250	575500	AGRICLTRL REPAIR PTS/SPL									
003843	PARISH TRACTOR (HATT 02-168234			222254	2021	9	INV P	522.86	061821	283322	BHG DUAL SPINDLE UN

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9				ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
ACCOUNT TOTAL											522.86		
001250	733500			AGRICULTURAL EQUIPMENT									
047023	ALAMO SALES CORP	7483119	203904	2021	9	INV	P	61,591.00	061821		283085	SAMURAI BOOM MOWER	
ACCOUNT TOTAL											61,591.00		
ORG 001250 TOTAL											70,612.06		
001260			ANIMAL CONTROL										
001260	546000			MINOR EQUIPMENT									
002535	COMSOUTH	198174	221624	2021	8	INV	P	188.00	061821		283150	BATTERY & SPEAKER F	
ACCOUNT TOTAL											188.00		
001260	570000			MTR VEHICLE REP. PTS/SPL									
004514	UNIVERSITY TIRE & SE	INV175571	222280	2021	9	INV	P	1,007.92	061821		283427	TIRES FOR STOCK &	
ACCOUNT TOTAL											1,007.92		
001260	638400			MOTOR VEHICLE EQ. R&M									
004514	UNIVERSITY TIRE & SE	INV175619	222035	2021	9	INV	P	285.18	061821		283427	TIRES UNIT#19750-AN	
ACCOUNT TOTAL											285.18		
001260	699900			SERVICES NOT SPECIFIED									
004283	SOUTHERN PINES ANIMA	COB-28	0	2021	8	INV	P	15,000.00	061821		283388	HOUSING OF ANIMALS	
ACCOUNT TOTAL											15,000.00		
ORG 001260 TOTAL											16,481.10		
001551			AIRPORT DIV.										
001551	630000			GAS									
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV	P	34.44	061821		283394	GAS VERIOUS DEPARTM	
ACCOUNT TOTAL											34.44		
001551	635000			BUILDING R&M									
047014	R K WALLACE CONST IN	2033101	203864	2021	9	INV	P	4,900.00	061821		283354	LABOR & EQUIPMENT T	
ACCOUNT TOTAL											4,900.00		
ORG 001551 TOTAL											4,934.44		
001553			CEMETERY DIV										
001553	544000			HORT./LANDSCAPING SPLY.									
002049	ADAMS NURSERY	330860	222226	2021	9	INV	P	38.00	061821		283082	TREATMENT CHEMICALS	
002083	ALLBRITTON CHAIN SAW	83266	222336	2021	9	INV	P	97.62	061821		283088	CHAINS FOR POLE SAW	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9												
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT		CHECK	DESCRIPTION		
003717	MS TURF	219670	222425	2021	9	INV P	230.00	061821	283311	CENIPEDE	SOD FOR C	
003717	MS TURF	625447	221249	2021	9	INV P	230.00	061821	283311	PALLETS OF	CENTIPED	
							460.00					
ACCOUNT TOTAL							595.62					
001553	546000			MINOR EQUIPMENT								
002071	AIRGAS USA LLC (NORD	9980184725	0	2021	9	INV P	73.77	061821	283084	WELDING CYLINDER	BO	
ACCOUNT TOTAL							73.77					
001553	570000			MTR VEHICLE REP.	PTS/SPL							
002413	CARQUEST AUTO PARTS	14758-159150	222211	2021	9	INV P	34.60	061821	283130	BRAKE PADS FOR UNIT		
002413	CARQUEST AUTO PARTS	14758-159443	222304	2021	9	INV P	740.05	061821	283130	PART FOR DUMP TRUCK		
002413	CARQUEST AUTO PARTS	14758-159508	222333	2021	9	INV P	50.97	061821	283130	TPS-33500-TPMS SENS		
							825.62					
004597	WATERS INTERNATIONAL	08P809619	222379	2021	9	INV P	93.15	061821	283447	THERMOSTAT & COOLAN		
004597	WATERS INTERNATIONAL	08P810016	222380	2021	9	INV P	81.18	061821	283447	BRAKE PARTS FOR UNI		
							174.33					
ACCOUNT TOTAL							999.95					
001553	575500			AGRICLTRL REPAIR	PTS/SPL							
002083	ALLBRITTON CHAIN SAW	82979	222145	2021	8	INV P	161.90	061821	283088	SCAG-486283-BELT, D		
003961	POWER HOUSE TOOLS &	220000003678	222434	2021	9	INV P	299.99	061821	283346	15774-CLUTCH FOR UN		
ACCOUNT TOTAL							461.89					
001553	604900			OTHER PROFESSIONAL SERV.								
003634	MOLLY MAID	006	0	2021	9	INV P	245.00	061821	283300	MINUTE BOOK#2005-2/		
ACCOUNT TOTAL							245.00					
001553	606000			TELEPHONE AND TELEGRAPH								
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	115.42	061821	283100	MB2016-287/WIRELESS		
ACCOUNT TOTAL							115.42					
001553	630000			GAS								
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV P	20.00	061821	283394	GAS VERIOUS DEPARTM		
ACCOUNT TOTAL							20.00					
001553	638400			MOTOR VEHICLE EQ. R&M								
047021	HINTON, ANTHONY	52921	222063	2021	9	INV P	335.00	061821	283225	TROUBLESHOOT & REPA		
ACCOUNT TOTAL							335.00					

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION
001553 638600						CONSTRUCTION EQUIP R&M					
004528	UWOOD CO INC		19565		222299	2021	9	INV P	703.43	061821	283429 REPAIRS TO EQUIPMEN
ACCOUNT TOTAL									703.43		
001553 643000						UNIFORM RENT					
002471	CINTAS CORPORATION # 4083066328			0		2021	8	INV P	86.45	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4083756956			0		2021	8	INV P	65.45	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4084420014			0		2021	8	INV P	65.45	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4085098466			0		2021	8	INV P	107.45	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4085699322			0		2021	8	INV P	86.45	061821	283137 ST CONTRACT#8200044
									411.25		
ACCOUNT TOTAL									411.25		
001553 643500						MOP-MAT-RAG RENT					
002471	CINTAS CORPORATION # 4083066296			0		2021	8	INV P	23.33	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4083756780			0		2021	8	INV P	23.33	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4084419750			0		2021	8	INV P	23.33	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4085098300			0		2021	8	INV P	23.33	061821	283137 ST CONTRACT#8200044
002471	CINTAS CORPORATION # 4085699133			0		2021	8	INV P	23.33	061821	283137 ST CONTRACT#8200044
									116.65		
ACCOUNT TOTAL									116.65		
ORG 001553 TOTAL									4,077.98		
001560						PARKING OPER.					
001560	640200					PARKING GARAGE/LOT RENT					
003789	NORFOLK SOUTHERN COR	92054898		0		2021	9	INV P	2,111.52	061821	283317 PARKING LEASE AT RA
004530	V F W OF THE US		062021	0		2021	9	INV P	75.00	061821	283430
ACCOUNT TOTAL									2,186.52		
ORG 001560 TOTAL									2,186.52		
FUND 001 REVENUES						TOTAL:		653,818.21			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9													
ACCOUNT/VENDOR		INVOICE		PO		YEAR/PR TYP S		WARRANT		CHECK		DESCRIPTION	
002001		PKS/REC FUND REVENUES											
002001	314700	DAHMER PAVILION USE FEE											
047580	TAKIYANA HERRERA	6/3/21	78082	0		2021	9 INV P	40.00	061821	283221		REFUND DUE TO EVENT	
ACCOUNT TOTAL								40.00					
ORG 002001 TOTAL								40.00					
002300		PKS/REC-RECREATION MAINT. DIV.											
002300	510000	CLEANING/JANITORIAL SPLY											
002729	ELKINS WHOLESALE INC 452274	221835	2021	9	INV P	145.89	061821	283176		P&R	GRNDS	JANITORIA	
002729	ELKINS WHOLESALE INC 452583	221835	2021	9	INV P	1,031.47	061821	283176		P&R	GRNDS	JANITORIA	
002729	ELKINS WHOLESALE INC 452583-01	221835	2021	9	INV P	361.08	061821	283176		P&R	GRNDS	JANITORIA	
002729	ELKINS WHOLESALE INC 452583-02	221835	2021	9	INV P	38.70	061821	283176		P&R	GRNDS	JANITORIA	
002729	ELKINS WHOLESALE INC 452583-03	221835	2021	9	INV P	103.20	061821	283176		P&R	GRNDS	JANITORIA	
002729	ELKINS WHOLESALE INC 455670	222391	2021	9	INV P	454.80	061821	283176		P&R	GRNDS	JANITORIA	
								2,135.14					
003772	NEWELL PAPER COMPANY 4079181	221836	2021	9	CRM P	-8.80	061821	283315		P&R	GRNDS	JANITOR	
ACCOUNT TOTAL								2,126.34					
002300	513000	CHEMICALS											
003772	NEWELL PAPER COMPANY 4107341	221836	2021	9	INV P	288.00	061821	283315		P&R	GRNDS	JANITOR	
ACCOUNT TOTAL								288.00					
002300	525000	GAS AND OIL											
001002	CITY OF HATTIESBURG 6/1/21 FUND2	0	2021	9	INV P	5,848.49	061821	283142		FUEL	USAGE	5/1-5/31	
ACCOUNT TOTAL								5,848.49					
002300	525500	LUBRICANTS											
002304	BRACKMAN MOWER WAREH 7432	222185	2021	9	INV P	114.72	061821	283119		P&R	GRNDS	MAINT-EQU	
ACCOUNT TOTAL								114.72					
002300	544000	HORT./LANDSCAPING SPLY.											
003098	HISTORIC HATTIESBURG 2261	222261	2021	9	INV P	553.82	061821	283226		P&R	DOWNTOWN	HBURG	
003456	LOWE'S HOME IMPROVEM 990169-GXAVIZ	222005	2021	9	INV P	265.88	061821	283278		ADMIN	-	GREENERY FO	
004547	VESELY'S NURSERY 2160	222160	2021	9	INV P	80.00	061821	283434		P&R	GRNDS	MAINT LAN	
ACCOUNT TOTAL								899.70					
002300	546000	MINOR EQUIPMENT											
002023	A & R FARM AND GARDE 350692	222100	2021	9	INV P	142.50	061821	283078		P&R	GRNDS	MAINT MIN	
ACCOUNT TOTAL								142.50					

YEAR/PERIOD: 2021/8 TO 2021/9				ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
002300	551000											
003457	LOWE'S OF HATTIESBUR	937232-GWFEJE		221784	2021	9	INV	P	737.41	061821	283279	P&R GRNDS MAINT- RE
									737.41			
002300	560000											
002714	ECONOMY SUPPLY CO	055544		222168	2021	9	INV	P	223.60	061821	283173	P&R TATUM TENNIS SU
002714	ECONOMY SUPPLY CO	055894		222272	2021	9	INV	P	135.80	061821	283173	P&R DAHMER PARK POO
									359.40			
									359.40			
002300	561000											
003302	KEELING COMPANY (HAT	S3965166.001		222180	2021	9	INV	P	210.10	061821	283255	P&R JAYCEE PARK PLU
003543	MCELHANEY PLUMBING I	288487		222157	2021	9	INV	P	122.85	061821	283291	P&R UNETTA ST GYM-P
									332.95			
002300	565000											
002714	ECONOMY SUPPLY CO	055297		222142	2021	9	INV	P	557.20	061821	283173	P&R ALL BALLFIELDS-
002714	ECONOMY SUPPLY CO	055344		222128	2021	9	INV	P	183.80	061821	283173	P&R DAHMER PARK PAI
									741.00			
003926	PIONEER MANUFACTURIN	790429		221751	2021	9	INV	P	3,458.00	061821	283339	P&R REC MAINT BALLF
004176	SHERWIN-WILLIAMS COM	0893-5		222053	2021	9	INV	P	332.17	061821	283377	P&R VETERANS FOUNTA
									4,531.17			
002300	570000											
002413	CARQUEST AUTO PARTS	14758-159291		222253	2021	9	INV	P	69.62	061821	283130	P&R TRK UNIT 16048-
004299	SOUTHERN TIRE MART L	2520064340		222281	2021	9	INV	P	332.23	061821	283390	P&R TRK UNIT 14127-
									401.85			
002300	575500											
002304	BRACKMAN MOWER WAREH	6974		222101	2021	9	INV	P	23.73	061821	283119	P&R MOWER UNIT 1708
002304	BRACKMAN MOWER WAREH	7432		222185	2021	9	INV	P	317.50	061821	283119	P&R GRNDS MAINT-EQU
002304	BRACKMAN MOWER WAREH	7723		222249	2021	9	INV	P	50.13	061821	283119	P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7726		222237	2021	9	INV	P	59.63	061821	283119	P&R MOWER 20823-SER
002304	BRACKMAN MOWER WAREH	7731		222233	2021	9	INV	P	105.51	061821	283119	P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7732		222236	2021	9	INV	P	113.15	061821	283119	P&R MOWER UNIT 2082
002304	BRACKMAN MOWER WAREH	7735		222250	2021	9	INV	P	50.13	061821	283119	P&R MOWER UNIT 2109
002304	BRACKMAN MOWER WAREH	7736		222239	2021	9	INV	P	237.39	061821	283119	P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7737		222251	2021	9	INV	P	50.13	061821	283119	P&R MOWER UNIT 2109
002304	BRACKMAN MOWER WAREH	7739										

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
ACCOUNT/VENDOR									
							1,038.80		
							1,038.80		
002300	604900								
002275	BLUE DOLPHIN POOLS	42790	0	2021	9	INV P	600.00	061821	283115 P&R MNTHLY FOUNTAIN
							600.00		
002300	612000								
002714	ECONOMY SUPPLY CO	055297	222142	2021	9	INV P	10.00	061821	283173 P&R ALL BALLFIELDS-
003926	PIONEER MANUFACTURIN	790429	221751	2021	9	INV P	50.00	061821	283339 P&R REC MAINT BALLF
							60.00		
002300	630500								
003700	MS POWER COMPANY	E2021 6/1	0	2021	9	INV P	47.29	061821	283307 MS POWER VARIOUS DE
							47.29		
002300	635700								
002100	AMERICAN AIR SPECIAL	108914	222065	2021	9	INV P	144.12	061821	283091 P&R CAMERON FIELD P
							144.12		
002300	638400								
004299	SOUTHERN TIRE MART L	2520064340	222281	2021	9	INV P	73.67	061821	283390 P&R TRK UNIT 14127-
							73.67		
002300	638700								
002304	BRACKMAN MOWER WAREH	6974	222101	2021	9	INV P	46.91	061821	283119 P&R MOWER UNIT 1708
002304	BRACKMAN MOWER WAREH	7722	222238	2021	9	INV P	180.75	061821	283119 P&R MOWER 21597-SER
002304	BRACKMAN MOWER WAREH	7723	222249	2021	9	INV P	88.90	061821	283119 P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7726	222237	2021	9	INV P	100.00	061821	283119 P&R MOWER 20823-SER
002304	BRACKMAN MOWER WAREH	7731	222233	2021	9	INV P	90.57	061821	283119 P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7732	222236	2021	9	INV P	131.99	061821	283119 P&R MOWER UNIT 2082
002304	BRACKMAN MOWER WAREH	7735	222250	2021	9	INV P	88.90	061821	283119 P&R MOWER UNIT 2109
002304	BRACKMAN MOWER WAREH	7736	222239	2021	9	INV P	130.72	061821	283119 P&R MOWER UNIT 2074
002304	BRACKMAN MOWER WAREH	7737	222251	2021	9	INV P	88.90	061821	283119 P&R MOWER UNIT 2109
							947.64		
003380	LANCASTER'S MACHINE	24873	222052	2021	9	INV P	615.00	061821	283268 P&R MOWER UNIT 2023
003380	LANCASTER'S MACHINE	24887	222159	2021	9	INV P	300.00	061821	283268 P&R LABOR TO REPAIR
							915.00		
							1,862.64		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
002300	639600			SIGN PAINTING							
004316	SPEEDY PRINTING & SI	29046	222158	2021	9	INV	P	184.00	061821	283393	P&R VETERANS PARK-S
ACCOUNT TOTAL									184.00		
002300	639800			TOW IN CHARGES							
003869	PEANUTS TOWING SERVI	096191	0	2021	9	INV	P	85.00	061821	283328	P&R TRK UNIT 18560-
003869	PEANUTS TOWING SERVI	096592	0	2021	9	INV	P	100.00	061821	283328	P&R TRK UNIT 18558
003869	PEANUTS TOWING SERVI	096615	0	2021	9	INV	P	75.00	061821	283328	P&R TRK UNIT 18560-
003869	PEANUTS TOWING SERVI	096734	0	2021	9	INV	P	85.00	061821	283328	P&R TRK UNIT 18560-
									345.00		
ACCOUNT TOTAL									345.00		
002300	642000			MACHINERY RENT							
003987	PUCKETT RENTS	824333-0001	221712	2021	9	INV	P	767.70	061821	283351	P&R GRNDS MAINT EQU
ACCOUNT TOTAL									767.70		
002300	643000			UNIFORM RENT							
002471	CINTAS CORPORATION #	4084171462	0	2021	9	INV	P	133.87	061821	283138	P&R GRNDS MAINT UNI
002471	CINTAS CORPORATION #	4084799434	0	2021	9	INV	P	128.14	061821	283138	P&R GRNDS MAINT UNI
002471	CINTAS CORPORATION #	4085486909	0	2021	9	INV	P	128.14	061821	283138	P&R GRNDS MAINT UNI
002471	CINTAS CORPORATION #	4086174033	0	2021	9	INV	P	128.14	061821	283138	P&R GRNDS MAINT UNI
									518.29		
ACCOUNT TOTAL									518.29		
002300	644900			OTHER RENT							
002071	AIRGAS USA LLC (NORD	9980184725-001	0	2021	9	INV	P	36.70	061821	283084	P&R GRNDS MAINT HEL
002471	CINTAS CORPORATION #	4084171110	0	2021	9	INV	P	19.75	061821	283136	P&R GRNDS MAINT MAT
002471	CINTAS CORPORATION #	4084799077	0	2021	9	INV	P	19.75	061821	283138	P&R GRNDS MAINT MAT
002471	CINTAS CORPORATION #	4085486621	0	2021	9	INV	P	30.06	061821	283138	P&R GRNDS MAINT MAT
002471	CINTAS CORPORATION #	4086173985	0	2021	9	INV	P	30.06	061821	283138	P&R GRNDS MAINT MAT
									99.62		
047043	PORTABLE TOILETS	75848	220932	2021	9	INV	P	742.00	061821	283342	P&R TWO QUOTE FOR R
047043	PORTABLE TOILETS	76409	220932	2021	9	INV	P	406.00	061821	283342	P&R TWO QUOTE FOR R
047043	PORTABLE TOILETS	77153	220932	2021	9	INV	P	2,631.00	061821	283342	P&R TWO QUOTE FOR R
047043	PORTABLE TOILETS	77326	220932	2021	9	INV	P	826.00	061821	283342	P&R TWO QUOTE FOR R
047043	PORTABLE TOILETS	78280	220932	2021	9	INV	P	742.00	061821	283342	P&R TWO QUOTE FOR R
									5,347.00		
047549	BARRETT'S GARDEN CEN	15380	222083	2021	9	INV	P	48.00	061821	283107	ADMIN - KENNARD DED
ACCOUNT TOTAL									5,531.32		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
002300	684000										
003712	MS STATE/TAX	COMM/TA	21327	0	2021	9	INV P	12.00	061821	283310	P&R GRNDS MAINT TRK
003712	MS STATE/TAX	COMM/TA	21328	0	2021	9	INV P	12.00	061821	283310	P&R GRNDS MAINT TRK
003712	MS STATE/TAX	COMM/TA	21613	0	2021	9	INV P	12.00	061821	283310	P&R GRNDS MAINT TRK
003712	MS STATE/TAX	COMM/TA	21622	0	2021	9	INV P	12.00	061821	283310	P&R GRNDS MAINT TRK
003712	MS STATE/TAX	COMM/TA	21625	0	2021	9	INV P	12.00	061821	283310	P&R GRNDS MAINT TRK
								60.00			
								60.00			
002300	687000										
002136	ANOINTED HANDS SERVI		6940	0	2021	9	INV P	310.00	061821	283094	P&R GRNDS MAINT BLD
								310.00			
002300	699900										
004609	WEBBS PAINT COMPANY		881311	222009	2021	9	INV P	4,910.00	061821	283448	P&R VETERANS PARK-L
047187	FOUR SEASONS LAWN		10504	0	2021	9	INV P	3,155.00	061821	283194	P&R LAWN MAINTENANC
								8,065.00			
002300	700000										
002847	FORREST COUNTY CHANC		13868	0	2021	9	INV P	1,316.92	061821	283193	ADMIN - BACK TAXES
								1,316.92			
								36,707.28			
002315											
002315	513000										
047471	SAMMY GRAHAM LLC		0246	222403	2021	9	INV P	246.80	061821	283371	P&R HPR SULLIVAN SP
047471	SAMMY GRAHAM LLC		5557	222056	2021	9	INV P	5,557.50	061821	283371	P&R HPR TWO QUOTE F
								5,804.30			
								5,804.30			
002315	525000										
001002	CITY OF HATTIESBURG	6/1/21	FUND2	0	2021	9	INV P	132.45	061821	283142	FUEL USAGE 5/1-5/31
								132.45			
002315	551000										
002901	GILKEY ELECTRIC SUPP		339986	222292	2021	9	INV P	37.50	061821	283198	P&R CE ROY POOL REP
003921	PINE BELT TROPHY		00222146	222146	2021	9	INV P	101.50	061821	283338	HPR: SOFTBALL TROPH
003937	PLAY IT AGAIN SPORTS #	INV-000637		222147	2021	9	INV P	1,401.00	061821	283340	CHAMPION SHIRTS FOR
004017	REGIONS CARDHOLDER S	4670 - 05-31-2021		0	2021	9	INV P	363.89	061821	283358	4670 - 05-31-2021 C

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
ACCOUNT/VENDOR									
047471 SAMMY GRAHAM LLC	1296-1		222402	2021	9	INV P	726.00	061821	283371 LABOR TO REPAIR MEC
ACCOUNT TOTAL							2,629.89		
002315 603400						OFFICIALS			
002756 ESTERS, WILLARD (BUT	5/20/21-6/8/21		0	2021	9	INV P	260.00	061821	283183 CONTRACT SOFTBALL L
002829 FLETCHER, JERRY D	5/20/21-6/8/21		0	2021	9	INV P	240.00	061821	283189 CONTRACT SOFTBALL L
002911 GOLDEN, NICHOLAS D	5/20/21-6/8/21		0	2021	9	INV P	240.00	061821	283204 CONTRACT SOFTBALL L
004221 SMITH, CARLTON L	5/20/21-6/8/21		0	2021	9	INV P	160.00	061821	283380 CONTRACT SOFTBALL L
004416 TERRELL, WINSTON	5/20/21-6/8/21		0	2021	9	INV P	240.00	061821	283406 CONTRACT SOFTBALL L
004462 TROTTER, WILLIE	5/20/21-6/8/21		0	2021	9	INV P	210.00	061821	283418 CONTRACT SOFTBALL L
004540 VASQUEZ, LINDA M	5/20/21-6/8/21		0	2021	9	INV P	220.00	061821	283432 CONTRACT SOFTBALL L
047547 SMITH FERNANDO	5/20/21-6/8/21		0	2021	9	INV P	240.00	061821	283379 CONTRACT SOFTBALL L
047595 MARTIN DERRICAS	5/20/21-6/8/21		0	2021	9	INV P	120.00	061821	283285 CONTRACT ADULT SOFT
ACCOUNT TOTAL							1,930.00		
002315 604900						OTHER PROFESSIONAL SERV.			
002540 CONNER, TOBARRA	5/20/21-6/8/21		0	2021	9	INV P	128.00	061821	283152 CONTRACT SOFTBALL L
002940 GREEN, CHARLES A	4/2-23/21 CG		0	2021	9	INV P	80.00	061821	283205 HPR CONTRACT LABOR
002965 GUTHRIE, JONI S	5/25/21-6/10/21		0	2021	9	INV P	270.00	061821	283211 CONTRACT SENIOR LAB
003313 KETTLEY, ANNETTE	5/20/21-6/8/21		0	2021	9	INV P	112.00	061821	283258 CONTRACT SOFTBALL L
003508 MARTIN, MAGDALINE	5/27/21-6/10/21		0	2021	9	INV P	72.00	061821	283286 CONTRACT SENIOR LAB
003949 PORTER, JAMAL	4/2-23/21 JP		0	2021	9	INV P	100.00	061821	283343 HPR CONTRACT LABOR
003950 PORTER, ROMESHA	4/2-23/21		0	2021	9	INV P	80.00	061821	283344 HPR CONTRACT LABOR
003958 POWELL, RANDY	4/2-23/21 RP		0	2021	9	INV P	112.00	061821	283345 HPR CONTRACT LABOR
003958 POWELL, RANDY	5/20/21-6/8/21		0	2021	9	INV P	290.00	061821	283345 CONTRACT SOFTBALL L
							402.00		
004162 SHABAZZ, AMATULLAH	5/25/21-6/8/21		0	2021	9	INV P	96.00	061821	283375 CONTRACT SENIOR LAB
004564 WALCK, SUSAN A	5/24/21-6/7/21		0	2021	9	INV P	80.00	061821	283435 CONTRACT SENIOR LAB
004661 WILLIAMS, MICHELLE K	0521		0	2021	9	INV P	3,000.00	061821	283453 P&R HPR POOLS LABOR

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9												
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT		CHECK	DESCRIPTION		
047263	DRUMMOND LENASIA	4/2-23/21 LD	0	2021	9	INV P	80.00	061821	283170	HPR	CONTRACT	LABOR
047289	MOLDEN JAVARIUS	4/2-23/21 JM	0	2021	9	INV P	80.00	061821	283299	HPR	CONTRACT	LABOR
047290	LI ADDAM	4/2-23/21 AL	0	2021	9	INV P	80.00	061821	283274	HPR	CONTRACT	LABOR
047303	DUCKWORTH CHANSE	4/2-23/21 CD	0	2021	9	INV P	80.00	061821	283171	HPR	CONTRACT	LABOR
047471	SAMMY GRAHAM LLC	06022021	222265	2021	9	INV P	195.00	061821	283371	P&R	POOL REPAIR	BEN
047471	SAMMY GRAHAM LLC	1296	222402	2021	9	INV P	1,296.00	061821	283371	LABOR TO REPAIR	MEC	
							1,491.00					
047494	WISEMAN ERIC	5/20/21-6/8/21	0	2021	9	INV P	104.00	061821	283455	CONTRACT	SOFTBALL	L
047518	NEWTON, CAMRUN	4/2-23/21 CN	0	2021	9	INV P	80.00	061821	283316	HPR	CONTRACT	LABOR
ACCOUNT TOTAL							6,415.00					
002315	606000			TELEPHONE AND TELEGRAPH								
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	509.43	061821	283100	MB2016-287/WIRELESS		
ACCOUNT TOTAL							509.43					
002315	630000			GAS								
004321	SPIRE ENERGY	G2021-10 JUN	0	2021	9	INV P	340.63	061821	283394	GAS	VARIOUS LOCATIO	
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV P	20.00	061821	283394	GAS	VERIOUS DEPARTM	
							360.63					
ACCOUNT TOTAL							360.63					
002315	630500			ELECTRICITY								
003700	MS POWER COMPANY	E2021 6/1	0	2021	9	INV P	944.23	061821	283307	MS POWER	VARIOUS DE	
ACCOUNT TOTAL							944.23					
002315	684500			REGISTRATION FEE/TUITION								
047575	MS AMATEUR SOFTBALL	00222353	222353	2021	9	INV P	425.00	061821	283304	P&R	HPR	SOFTBALL TE
ACCOUNT TOTAL							425.00					
ORG 002315 TOTAL							19,150.93					
FUND 002 PARKS & RECREATION FUND							TOTAL:	55,898.21				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
009660			W&S O&M-CUSTOMER ACCT. DIV.						
009660	501000			OTHER EXPENDABLE OFF.SPL					
004327	STANDARD OFFICE SUPP	5205747-0	0	2021	9	INV P	246.98	061821	283395 FOR REMAINDER OF PO
004327	STANDARD OFFICE SUPP	5205757-0	222156	2021	9	INV P	53.36	061821	283395 OFFICE SUPPLIES WAT
							300.34		
ACCOUNT TOTAL							300.34		
009660	502000			MINOR OFFICE EQUIP/FURN.					
003809	OFFICE DEPOT INC	2495984376	221843	2021	9	INV P	269.99	061821	283318 PRINTER WATER BILLI
004017	REGIONS CARDHOLDER S	1346 - 05-31-2021	0	2021	9	INV P	427.98	061821	283358 1346 - 05-31-2021 C
ACCOUNT TOTAL							697.97		
009660	525000			GAS AND OIL					
001002	CITY OF HATTIESBURG	6/1/21 FUND9	0	2021	9	INV P	960.80	061821	283142 FUEL USAGE 5/1-5/31
ACCOUNT TOTAL							960.80		
009660	570000			MTR VEHICLE REP. PTS/SPL					
003861	PATTERSON AUTO ELECT	80925	222369	2021	9	INV P	338.96	061821	283324 REPAIR TO UNIT 1121
ACCOUNT TOTAL							338.96		
009660	604900			OTHER PROFESSIONAL SERV.					
002181	BADGER METER INC	80075081	0	2021	9	INV P	1,074.75	061821	283104 M/B 2018-832 BEACON
002665	DIXIE COMMUNITY UTIL	060421 DIXIE	0	2021	9	INV P	417.00	061821	283168 SEWER READS MAY 202
002905	GILLILANDS ELECTRONI	5284	0	2021	9	INV P	85.00	061821	283199 INTERCOM SERVICE DR
004003	RAWLS SPRINGS UTILIT	052021 RAWLS	0	2021	9	INV P	202.00	061821	283356 SEWER READS MAY 202
ACCOUNT TOTAL							1,778.75		
009660	606000			TELEPHONE AND TELEGRAPH					
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	592.05	061821	283100 MB2016-287/WIRELESS
ACCOUNT TOTAL							592.05		
009660	607000			POSTAGE					
004493	U S POSTMASTER-POSTA	061021 POSTAGE	0	2021	9	INV P	5,000.00	061821	283423 POSTAGE PERMIT 213
047562	ENCO UTILITY	060421 PREPAID POSTA	0	2021	9	INV P	20,000.00	061821	283182 MB 2020-835 HATTIES
ACCOUNT TOTAL							25,000.00		
009660	635000			BUILDING R&M					
004176	SHERWIN-WILLIAMS COM	4824-8	222360	2021	9	INV P	110.64	061821	283377 REPAINT DROP BOX WA

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP S	WARRANT	CHECK	DESCRIPTION	
ACCOUNT TOTAL						110.64			
009660	638400	MOTOR VEHICLE EQ. R&M							
003861	PATTERSON AUTO ELECT	80925	222369	2021 9	INV P	680.00	061821	283324	REPAIR TO UNIT 1121
ACCOUNT TOTAL						680.00			
009660	643000	UNIFORM RENT							
002471	CINTAS CORPORATION #	4085097232	0	2021 9	INV P	56.95	061821	283136	S/C 8200044758 UNIF
002471	CINTAS CORPORATION #	4085697967	0	2021 9	INV P	56.95	061821	283137	S/C 8200044758 UNIF
002471	CINTAS CORPORATION #	4086361443	0	2021 9	INV P	84.95	061821	283136	S/C 8200044758 UNIF
002471	CINTAS CORPORATION #	4087063492	0	2021 9	INV P	56.95	061821	283136	S/C 8200044758 UNIF
						255.80			
ACCOUNT TOTAL						255.80			
009660	687000	CUSTODIAL SERVICE							
002037	AB SUPPORT SERVICES	010097	0	2021 9	INV P	550.00	061821	283081	MB# 2020-957 JANITO
ACCOUNT TOTAL						550.00			
ORG 009660 TOTAL						31,265.31			
009672	W&S O&M-WATER TRANSMISSION DIV								
009672	525000	GAS AND OIL							
001002	CITY OF HATTIESBURG	6/1/21 FUND9	0	2021 9	INV P	4,359.85	061821	283142	FUEL USAGE 5/1-5/31
ACCOUNT TOTAL						4,359.85			
009672	525700	DIESEL FUEL							
001002	CITY OF HATTIESBURG	6/1/21 FUND9	0	2021 9	INV P	81.04	061821	283142	FUEL USAGE 5/1-5/31
ACCOUNT TOTAL						81.04			
009672	535500	WEARING APPAREL							
002729	ELKINS WHOLESALE INC	440670-04	0	2021 9	INV P	119.00	061821	283176	RUBBER BOOTS FOR WA
ACCOUNT TOTAL						119.00			
009672	541500	SAND,CLAY,GRVL,FILL DIRT							
004586	WARREN PAVING INC	45965	221910	2021 9	INV P	559.74	061821	283442	CRUSHED LIMESTONE A
ACCOUNT TOTAL						559.74			
009672	561000	PLUMBING SUPPLIES							
002559	CORE & MAIN (HD SUPP	0258790	222011	2021 9	INV P	3,350.36	061821	283154	WAREHOUSE STOCK FOR
ACCOUNT TOTAL						3,350.36			
009672	599000	OTHER REPAIR/MAINT. SPL.							

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION		
003843	PARISH TRACTOR (HATT	02-168625	222346	2021	9	INV P	328.40	061821	283322	REPAIRS ASSET # 220	
ACCOUNT TOTAL							328.40				
009672	636000			STREETS & STRUCTURES R&M							
003649	MORGAN, C J INC	2021036	0	2021	8	INV P	167,668.85	061821	283303	MB2020-179:WATER RE	
ACCOUNT TOTAL							167,668.85				
009672	643000			UNIFORM RENT							
002471	CINTAS CORPORATION # 4085698435		0	2021	9	INV P	185.93	061821	283137	SC#8200044758-UNIFO	
002471	CINTAS CORPORATION # 4086361903		0	2021	9	INV P	231.93	061821	283138	SC#8200044758--UNIF	
002471	CINTAS CORPORATION # 4087063700		0	2021	9	INV P	185.93	061821	283139	SC#820004478--UNIFO	
							603.79				
ACCOUNT TOTAL							603.79				
ORG 009672 TOTAL							177,071.03				
009673				W&S O&M-WATER PLANT DIVISION							
009673	525000			GAS AND OIL							
001002	CITY OF HATTIESBURG	6/1/21 FUND9	0	2021	9	INV P	692.25	061821	283142	FUEL USAGE 5/1-5/31	
ACCOUNT TOTAL							692.25				
009673	525700			DIESEL FUEL							
001002	CITY OF HATTIESBURG	6/1/21 FUND9	0	2021	9	INV P	58.12	061821	283142	FUEL USAGE 5/1-5/31	
ACCOUNT TOTAL							58.12				
009673	546000			MINOR EQUIPMENT							
002567	COURTNEY'S RESTAURAN	14037	0	2021	8	INV P	172.01	061821	283157	TEARDOWN, INSPECT, RE	
ACCOUNT TOTAL							172.01				
009673	570000			MTR VEHICLE REP. PTS/SPL							
002160	AT&T MOBILITY	287273861504x0608202	0	2021	9	INV P	244.93	061821	283100	MB2016-287/GPS TRAC	
002166	AUTO ARMATURE SERVIC	24931	222204	2021	9	INV P	139.95	061821	283103	REPAIR PARTS FOR UN	
002166	AUTO ARMATURE SERVIC	25057	222407	2021	9	INV P	179.95	061821	283103	BATTERY FOR UNIT #	
							319.90				
002413	CARQUEST AUTO PARTS	14758-159308	222275	2021	9	INV P	18.65	061821	283130	REPAIR PARTS FOR UN	
002413	CARQUEST AUTO PARTS	14758-159588	222355	2021	9	INV P	85.15	061821	283130	REPAIR PARTS FOR #	
002413	CARQUEST AUTO PARTS	14758-159669	222390	2021	9	INV P	2.29	061821	283130	REPAIR PARTS FOR #	
							106.09				
004514	UNIVERSITY TIRE & SE	INV176230	222440	2021	9	INV P	518.61	061821	283427	TIRES FOR UNIT # 19	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9				ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR TYP S	WARRANT	CHECK	DESCRIPTION	
								ACCOUNT TOTAL	1,189.53			
009673	604900							OTHER PROFESSIONAL SERV.				
002288	BONNER ANALYTICAL TE	74150				0	2021 9 INV P	1,325.00	061821	283117	JUNE 2021 ROUTINE C	
								ACCOUNT TOTAL	1,325.00			
009673	611000							TRAVEL EXPENSE				
003136	HOWE, ALAN	89250T				0	2021 9 INV P	138.00	061821	283230	MSRWA TRAVEL EXPENS	
004017	REGIONS CARDHOLDER S	1346 - 05-31-2021				0	2021 9 INV P	515.00	061821	283358	1346 - 05-31-2021 C	
								ACCOUNT TOTAL	653.00			
009673	630000							GAS				
004321	SPIRE ENERGY	G2021-10 JUN				0	2021 9 INV P	656.51	061821	283394	GAS VARIOUS LOCATIO	
004321	SPIRE ENERGY	G2021-6/1				0	2021 9 INV P	36.39	061821	283394	GAS VARIOUS LOCATIO	
								692.90				
								ACCOUNT TOTAL	692.90			
009673	630500							ELECTRICITY				
003700	MS POWER COMPANY	E2021 6/1				0	2021 9 INV P	22,255.68	061821	283307	MS POWER VARIOUS DE	
003873	PEARL RIVER VALLEY E	2021-6/14				0	2021 9 INV P	4,871.64	061821	283329	ELECTRIC VARIOUS DE	
003873	PEARL RIVER VALLEY E	E2021-6/7/2021				0	2021 9 INV P	116.95	061821	283329	PRVE VARIOUS DEPART	
								4,988.59				
								ACCOUNT TOTAL	27,244.27			
009673	639900							OTHER REPAIRS AND MAINT.				
047517	PRECISION ARMATURE S	10475				221962	2021 9 INV P	5,467.96	061821	283347	TEARDOWN,INSPECT,RE	
								ACCOUNT TOTAL	5,467.96			
009673	643500							MOP-MAT-RAG RENT				
002471	CINTAS CORPORATION #	4085698122				0	2021 9 INV P	22.11	061821	283137	SC#8200044758--MOPS	
002471	CINTAS CORPORATION #	4086361557				0	2021 9 INV P	22.11	061821	283138	SC#8200044758--MOPS	
002471	CINTAS CORPORATION #	4087063604				0	2021 9 INV P	22.11	061821	283139	SC#8200044758-- MOP	
								66.33				
								ACCOUNT TOTAL	66.33			
009673	687000							CUSTODIAL SERVICE				
002136	ANOINTED HANDS SERVI	6941				0	2021 9 INV P	488.00	061821	283094	JUNE '21 JANITORIAL	
								ACCOUNT TOTAL	488.00			
009673	699900							SERVICES NOT SPECIFIED				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
003704	MS RURAL WATER ASSN	10323-2022		0	2021	9	INV	P	1,315.00	061821	283309 MSRWA DUES FOR JULY
ACCOUNT TOTAL									1,315.00		
ORG 009673 TOTAL									39,364.37		
009676	W&S O&M-SEWER DIVISION										
009676	513000										
002443	CERTIFIED LABORATORI	7398759		222308	2021	9	INV	P	9,736.80	061821	283133 DR.ZYME & ACTAMINE,
ACCOUNT TOTAL									9,736.80		
009676	525000										
001002	CITY OF HATTIESBURG	6/1/21 FUND9		0	GAS AND OIL	2021	9	INV	P	655.50	061821 283142 FUEL USAGE 5/1-5/31
ACCOUNT TOTAL									655.50		
009676	525700										
001002	CITY OF HATTIESBURG	6/1/21 FUND9		0	DIESEL FUEL	2021	9	INV	P	188.02	061821 283142 FUEL USAGE 5/1-5/31
ACCOUNT TOTAL									188.02		
009676	546000										
003987	PUCKETT RENTS	830177-0001		222081	2021	9	INV	P	318.50	061821	283351 CHOPSAW BLADES FOR
ACCOUNT TOTAL									318.50		
009676	559000										
003772	NEWELL PAPER COMPANY	4100857		220130	2021	9	INV	P	122.52	061821	283315 TRASH BAGS FOR GROU
003772	NEWELL PAPER COMPANY	4107048		221704	2021	9	INV	P	122.52	061821	283315 TRASH BAGS FOR GROU
									245.04		
ACCOUNT TOTAL									245.04		
009676	570000										
002413	CARQUEST AUTO PARTS	14758-159828		222377	2021	9	INV	P	18.74	061821	283130 REPAIR PARTS FOR JE
003861	PATTERSON AUTO ELECT	81048		222132	2021	9	INV	P	2,138.15	061821	283324 REPAIRS FOR UNIT #
ACCOUNT TOTAL									2,156.89		
009676	611000										
047577	BERCH, MALCOLM	89260T		0	TRAVEL EXPENSE	2021	9	INV	P	670.40	061821 283111 MSRWA TRAVEL EXPENS
ACCOUNT TOTAL									670.40		
009676	630500										
003700	MS POWER COMPANY	E2021 6/1		0	ELECTRICITY	2021	9	INV	P	1,013.55	061821 283307 MS POWER VARIOUS DE
004282	SOUTHERN PINE ELECTR	E2021 6/14		0		2021	9	INV	P	1,080.34	061821 283387 ELECTRIC VARIOUS DE
004282	SOUTHERN PINE ELECTR	E2021 6/2		0		2021	9	INV	P	233.26	061821 283387 SOPE VARIOUS DEPARM

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
ACCOUNT/VENDOR	INVOICE							
004282 SOUTHERN PINE ELECTR	E2021-6/1	0	2021	9	INV P	269.97	061821	283387 SOPE VARIOUS LOCATI
						1,583.57		
					ACCOUNT TOTAL	2,597.12		
009676 636000					STREETS & STRUCTURES R&M			
004058 RJM MCQUEEN CONTRACT 2445		0	2021	9	INV P	5,309.55	061821	283364 MB2020-179:SEWER RE
					ACCOUNT TOTAL	5,309.55		
009676 638400					MOTOR VEHICLE EQ. R&M			
003861 PATTERSON AUTO ELECT 81048		222132	2021	9	INV P	1,700.00	061821	283324 REPAIRS FOR UNIT #
					ACCOUNT TOTAL	1,700.00		
009676 638600					CONSTRUCTION EQUIP R&M			
002083 ALLBRITTON CHAIN SAW 10754		222350	2021	9	INV P	71.75	061821	283088 REPAIR ECHO SEM-262
002083 ALLBRITTON CHAIN SAW 10794		222348	2021	9	INV P	28.00	061821	283088 REPAIRS ASSET # 197
002083 ALLBRITTON CHAIN SAW 10904		222423	2021	9	INV P	60.60	061821	283088 CHOPSAW REPAIR FOR
002083 ALLBRITTON CHAIN SAW 83314		222349	2021	9	INV P	361.00	061821	283088 REPAIRS ASSET # 216
002083 ALLBRITTON CHAIN SAW 83315		222347	2021	9	INV P	99.90	061821	283088 BATTERY FOR ASSET #
						621.25		
					ACCOUNT TOTAL	621.25		
					ORG 009676 TOTAL	24,199.07		
009677					W&S O&M-SEWER LAGOON DIV.			
009677 513000					CHEMICALS			
002094 ALLIED UNIVERSAL COR I1698166		221559	2021	9	INV P	2,348.60	061821	283090 CHLORINE & SULFUR D
					ACCOUNT TOTAL	2,348.60		
009677 525000					GAS AND OIL			
001002 CITY OF HATTIESBURG 6/1/21 FUND9		0	2021	9	INV P	414.75	061821	283142 FUEL USAGE 5/1-5/31
					ACCOUNT TOTAL	414.75		
009677 525700					DIESEL FUEL			
001002 CITY OF HATTIESBURG 6/1/21 FUND9		0	2021	9	INV P	90.20	061821	283142 FUEL USAGE 5/1-5/31
					ACCOUNT TOTAL	90.20		
009677 630500					ELECTRICITY			
003700 MS POWER COMPANY E2021 6/1		0	2021	9	INV P	16,204.08	061821	283307 MS POWER VARIOUS DE
003873 PEARL RIVER VALLEY E 2021-6/14		0	2021	9	INV P	2,534.86	061821	283329 ELECTRIC VARIOUS DE
003873 PEARL RIVER VALLEY E 2021-6/1		0	2021	9	INV P	461.92	061821	283329 PRVE VARIOUS LOCATI
003873 PEARL RIVER VALLEY E 2021-6/7/2021		0	2021	9	INV P	747.41	061821	283329 PRVE VARIOUS DEPART

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP S		WARRANT	CHECK	DESCRIPTION
							3,744.19		
						ACCOUNT TOTAL	19,948.27		
009677	638000								
003348	L & A CONTRACTING CO	483-189	0	FIXED EQUIPMENT R&M	2021 9 INV P		46,532.32	061821	283266 MB2016-64:LAGOONS A
						ACCOUNT TOTAL	46,532.32		
						ORG 009677 TOTAL	69,334.14		
FUND 009 WATER & SEWER OPERATION/MAINT.						TOTAL:	341,233.92		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9																	
ACCOUNT/VENDOR				INVOICE		PO	YEAR/PR TYP S			WARRANT		CHECK	DESCRIPTION				
011000						WATER & SEWER		BALANCE SHEET									
011000				114000				METER SECURITY DEPOSITS									
047563	ANDREW	LITTLE	052521	61417	0	2021	9	INV	P	14.96	061821	283093	MTR	DEP	REF	61417	
047564	WALTER	PAULS WELDING	052521	64600	0	2021	9	INV	P	36.66	061821	283438	MTR	DEP	REF	64600	
047565	KRISTEN	MUELLER	052521	64686	0	2021	9	INV	P	20.96	061821	283264	MTR	DEP	REF	64686	
047566	SHATIYA	CANNON	052521	69315	0	2021	9	INV	P	75.00	061821	283376	MTR	DEP	REF	69315	
047567	JESSICA	REYNOLDS	052521	76199	0	2021	9	INV	P	75.00	061821	283242	MTR	DEP	REF	76199	
047568	JULIE	HAMMOND	052521	78225	0	2021	9	INV	P	20.96	061821	283253	MTR	DEP	REF	78225	
047569	THOMAS	MOREA	052521	81648	0	2021	9	INV	P	13.36	061821	283409	MTR	DEP	REF	81648	
047570	CAROLYN	PREYOR	052521	83330	0	2021	9	INV	P	20.96	061821	283128	MTR	DEP	REF	83330	
047571	CAROLYN	RUSSELL	052521	83920	0	2021	9	INV	P	20.96	061821	283129	MTR	DEP	REF	83920	
047572	ASHLEY	COOPER	052521	84032	0	2021	9	INV	P	75.00	061821	283096	MTR	DEP	REF	84032	
047578	DEARMAN	PROPERTY	060921	72490	0	2021	9	INV	P	75.00	061821	283163	MTR	DEP	REF	72490	
ACCOUNT TOTAL										448.82							
ORG 011000 TOTAL										448.82							
011660						WATER & SEWER		CUST.ACCT.DIV.									
011660				6835WT				WATER RELATED REFUND									
047573	JOSEPH	TULLOS	060321	70715	0	2021	9	INV	P	1,117.02	061821	283252	OVERPAYMENT	REF	707		
ACCOUNT TOTAL										1,117.02							
ORG 011660 TOTAL										1,117.02							
FUND 011 WATER & SEWER FUND										TOTAL:		1,565.84					

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9																
ACCOUNT/VENDOR					INVOICE		PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION			
019100							POL.FORFEITURES-POLICE DIV.									
019100 559200							OTHER OPER.MATLS-D.A.R.E.									
004446 TOSHIBA BUSINESS SOL 5281363							0	2021	9	INV	P	276.60	061821	283414	MB#2018-164 COMMUNI	
							ACCOUNT TOTAL					276.60				
019100 603900							METRO CRIME STOPPERS									
003584 METRO CRIMESTOPPERS INVOICE2022							0	2021	9	INV	P	10,000.00	061821	283295	SHARED FUNDING FOR	
							ACCOUNT TOTAL					10,000.00				
							ORG 019100	TOTAL					10,276.60			
FUND 019 POLICE FORFEITURES FUND							TOTAL:					10,276.60				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
039551								AIRPORT IMPR.-AIRPORT DIV	
039551	729599							MISC.OTHER IMPROVEMENTS	
047307	ZA CONSTRUCTION LLC	16099	221259	2021	9 INV P	22,500.00	061821	283458	2-QUOTE-ENG-CLEAR T
					ACCOUNT TOTAL	22,500.00			
					ORG 039551 TOTAL	22,500.00			
FUND 039 AIRPORT IMPROVEMENT FUND						TOTAL:	22,500.00		

YEAR/PERIOD: 2021/8 TO 2021/9		INVOICE		PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
072201				MUN.ROAD&BRIDGE-STREET DIV							
072201	601500				ENGINEERING						
004197	SHOWS	DEARMAN & WAIT	21989	0	2021	9	INV P	517.50	061821	283378 MB 2012-1/34 BRIDGE	
004197	SHOWS	DEARMAN & WAIT	22051	0	2021	9	INV P	345.00	061821	283378 FEMA CULV-ROY, BRADY	
004197	SHOWS	DEARMAN & WAIT	22054	0	2021	9	INV P	690.00	061821	283378 HBURG NON-NBIS BRID	
								1,552.50			
ACCOUNT TOTAL								1,552.50			
072201	721005				S. LAGOON BRIDGE REPLACEMENT						
004058	RJM MCQUEEN	CONTRACT	2379	220098	2021	9	INV P	24,500.00	061821	283364 FEMA EROSION REPAIR	
004058	RJM MCQUEEN	CONTRACT	2449	204286	2021	9	INV P	49,400.00	061821	283364 EROSION REPAIR-FEMA	
004058	RJM MCQUEEN	CONTRACT	2450	220098	2021	9	INV P	7,550.00	061821	283364 FEMA EROSION REPAIR	
								81,450.00			
ACCOUNT TOTAL								81,450.00			
072201	722501				SIDEWALKS-NON SPECIFIC						
004058	RJM MCQUEEN	CONTRACT	2447	221567	2021	9	INV P	10,853.58	061821	283364 4TH AVE ALLEY SIDEW	
ACCOUNT TOTAL								10,853.58			
072201	722514				LLT TO AFRICAN AMER MUSEUM						
047003	GULF SOUTH CONS	CE ROY #5 & FINAL		0	2021	9	INV P	8,773.17	061821	283208 MB 2020-192 C.E. RO	
ACCOUNT TOTAL								8,773.17			
072201	722517				CONCAR ST/ZOO ENTRANCE SDWLKS						
003700	MS POWER COMPANY	11838-33017	060721	0	2021	9	INV P	622.23	061821	283307 MB 2020-192 HARDY S	
ACCOUNT TOTAL								622.23			
072201	723014				LAMAR BLVD-REGIONS						
004579	WALTERS CONSTRUCTION	LAMAR BLVD NO. 1		0	2021	9	INV P	20,539.62	061821	283439 MB 2020-113 LAMAR B	
ACCOUNT TOTAL								20,539.62			
072201	723083				HARDY/49-W PINE/BP FUNDS						
047056	WARREN PAVING INC	HARDY ST NO. 1		0	2021	9	INV P	616,674.84	061821	283443 MB 2020-259	
ACCOUNT TOTAL								616,674.84			
ORG 072201 TOTAL								740,465.94			
FUND 072 MUNICIPAL ROAD & BRIDGE								TOTAL:	740,465.94		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
073570	MASS TRANSIT-TRANSPORTATION								
073570	510000								
004634	WHEELER'S JANITORIAL	080669	203902	2021	9	INV P	337.19	061821	283449 MASS TRANS - JANITO
ACCOUNT TOTAL							337.19		
073570	513000								
047024	GREENPOINT AG HOLDIN	1121643	222037	2021	9	INV P	46.25	061821	283206 HUB CITY TRANSIT-WE
ACCOUNT TOTAL							46.25		
073570	525000								
001002	CITY OF HATTIESBURG	6/1/21 FUND73	0	2021	9	INV P	452.69	061821	283142 FUEL USAGE 5/1-5/31
004583	WARING OIL CO (GULFP	51654	221929	2021	9	INV P	1,919.88	061821	283441 HUB CITY TRANSIT-CH
ACCOUNT TOTAL							2,372.57		
073570	525700								
001002	CITY OF HATTIESBURG	6/1/21 FUND73	0	2021	9	INV P	6,690.63	061821	283142 FUEL USAGE 5/1-5/31
ACCOUNT TOTAL							6,690.63		
073570	571001								
002093	ALLIANCE BUS GROUP I	523655	221304	2021	9	INV P	753.21	061821	283089 HUB CITY TRANSIT-BU
002413	CARQUEST AUTO PARTS	14758-159215	222231	2021	9	INV P	559.96	061821	283130 HUB CITY TRANSIT-BA
002565	COURTESY MOTORS INC	520761	221939	2021	9	INV P	148.44	061821	283156 REPLACE WHEEL SEALS
004514	UNIVERSITY TIRE & SE	INV174543	222038	2021	9	INV P	2,181.76	061821	283427 HUB CITY TRANSIT-TI
ACCOUNT TOTAL							3,643.37		
073570	571002								
004597	WATERS INTERNATIONAL	08P810203	222441	2021	9	INV P	42.95	061821	283447 HUB CITY TRANSIT-RE
ACCOUNT TOTAL							42.95		
073570	602000								
003764	NEEL-SCHAFFER INC	1070973	222113	2021	9	INV P	9,995.75	061821	283314 TRANSIT MASTER PLAN
003764	NEEL-SCHAFFER INC	1071593	222113	2021	9	INV P	22,641.75	061821	283314 TRANSIT MASTER PLAN
							32,637.50		
ACCOUNT TOTAL							32,637.50		
073570	606000								
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV P	179.13	061821	283100 MB2016-287/WIRELESS
002160	AT&T MOBILITY	287273861504X0608202	0	2021	9	INV P	242.90	061821	283100 MB2016-287/GPS TRAC

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
									422.03		
									ACCOUNT TOTAL	422.03	
073570	612000								FREIGHT		
002093	ALLIANCE BUS GROUP I	523655	221304	2021	9	INV	P		340.00	061821	283089 HUB CITY TRANSIT-BU
									ACCOUNT TOTAL	340.00	
073570	638400								MOTOR VEHICLE EQ. R&M		
002413	CARQUEST AUTO PARTS	14758-159477	222327	2021	9	INV	P		184.71	061821	283130 HUB CITY TRANSIT -R
									ACCOUNT TOTAL	184.71	
073570	638501								BUS EQUIP R&M-FIXED ROUTE		
002565	COURTESY MOTORS INC	522060	222335	2021	9	INV	P		159.40	061821	283156 HUB CITY TRANSIT-RE
004514	UNIVERSITY TIRE & SE	INV174543	222038	2021	9	INV	P		21.95	061821	283427 HUB CITY TRANSIT-TI
									ACCOUNT TOTAL	181.35	
073570	639900								OTHER REPAIRS AND MAINT.		
002083	ALLBRITTON CHAIN SAW	10609	222044	2021	9	INV	P		46.95	061821	283088 HUB CITY TRANSIT-RE
									ACCOUNT TOTAL	46.95	
073570	686800								JARC-OPERATIONS		
002956	GROVE TRANSIT	JARC4/25/21-5/8/21	0	2021	9	INV	P		3,774.50	061821	283207 JARC RIDES 4/25-5/8
002956	GROVE TRANSIT	JARC5/23/21-6/5/21	0	2021	9	INV	P		3,072.50	061821	283207 JARC RIDES 5.23-6.5
002956	GROVE TRANSIT	JARC5/9/21-5/22/21	0	2021	9	INV	P		3,013.50	061821	283207 JARC RIDES 5/9-5/21
									9,860.50		
									ACCOUNT TOTAL	9,860.50	
073570	687000								CUSTODIAL SERVICE		
002037	AB SUPPORT SERVICES	010097	0	2021	9	INV	P		300.00	061821	283081 MB# 2020-957 JANITO
									ACCOUNT TOTAL	300.00	
073570	710029								TRANSIT FACILITY ARCHIT/DESIGN		
003490	MAJOR DESIGN STUDIO, 20070.1		222287	2021	9	INV	P		5,700.00	061821	283282 ARCHITECT/ENGINEER
									ACCOUNT TOTAL	5,700.00	
									ORG 073570 TOTAL	62,806.00	
FUND 073 MASS TRANSIT FUND									TOTAL:	62,806.00	

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR				INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
075695				W&S CONSTR.-CAPITAL PROJECTS							
075695 601500				ENGINEERING							
004197	SHOWS	DEARMAN & WAIT	22067	0	2021	9	INV	P	962.50	061821	283378 EPA RESPONSE - MB 2
004197	SHOWS	DEARMAN & WAIT	22068	0	2021	9	INV	P	4,637.50	061821	283378 WATER RATE STUDY-20
004197	SHOWS	DEARMAN & WAIT	22070	0	2021	9	INV	P	8,200.00	061821	283378 INFRASTRUCTURE MGMT
004197	SHOWS	DEARMAN & WAIT	22073	0	2021	9	INV	P	12,672.00	061821	283378 UPDT. SEWER MODEL I
004197	SHOWS	DEARMAN & WAIT	22074	0	2021	9	INV	P	5,487.00	061821	283378 UPDT HYDRAULIC ANAL
004197	SHOWS	DEARMAN & WAIT	22075	0	2021	9	INV	P	24,146.10	061821	283378 HALL AVE SEWER - MB
004197	SHOWS	DEARMAN & WAIT	22076	0	2021	9	INV	P	6,670.00	061821	283378 GEN. ENG. SUPPORT &
									62,775.10		
ACCOUNT TOTAL									62,775.10		
075695 722002				LONGLEAF HEIGHTS NORTH							
004197	SHOWS	DEARMAN & WAIT	22072	0	2021	9	INV	P	18,800.00	061821	283378 LONGLEAF N. NEIGHBO
047349	HEMPHILL CONST		LONGLEAF #3	0	2021	9	INV	P	234,059.52	061821	283219 MB 2021-6 LONGLEAF
ACCOUNT TOTAL									252,859.52		
075695 724529				EAST JERUSALEM AREA							
004197	SHOWS	DEARMAN & WAIT	21978	0	2021	9	INV	P	14,630.00	061821	283378 MB 2019-88 EAST JER
004197	SHOWS	DEARMAN & WAIT	21997	0	2021	9	CRM	P	-14,715.85	061821	283378 MB 2019-88 EAST JER
004197	SHOWS	DEARMAN & WAIT	22071	0	2021	9	INV	P	7,765.00	061821	283378 MB 2019-88 EAST JER
									7,679.15		
047045	JAY BEARDEN CONSTRUC		EAST JERUSALEM #10	0	2021	9	INV	P	7,176.48	061821	283240 MB 2020-96 EAST JER
ACCOUNT TOTAL									14,855.63		
ORG 075695 TOTAL									330,490.25		
FUND 075 WATER&SEWER CONSTRUCTION FUND				TOTAL:				330,490.25			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
077000	COMMUNITY CTR			BALANCE SHEET						
077000	122000	DAMAGE DEPOSITS								
047582	LAKISHA STEWART	6/18/21 LS	0	2021	9	INV P	100.00 061821	283399	REFUND #77506	
047583	CHYLA HAYES	06/18/21	0	2021	9	INV P	100.00 061821	283218	REFUND #77796	
047584	COURTNEY GOLDEN	06/18/21 CG	0	2021	9	INV P	100.00 061821	283202	REFUND #77659	
047585	SHERIEE DONALDSON	06/18/21 SD	0	2021	9	INV P	250.00 061821	283169	REFUND #77510	
047586	LATOTIA MCKENZIE	06/18/21 LM	0	2021	9	INV P	100.00 061821	283293	REFUND #77798	
047587	ANNESSIA DAWSON	06/18/21 AD	0	2021	9	INV P	100.00 061821	283162	REFUND 77657	
047588	TIFFANY FAIRLEY	06/18/21 TF	0	2021	9	INV P	100.00 061821	283186	REFUND #77795	
047589	ARIEL ATKINS	06/18/21 AA	0	2021	9	INV P	100.00 061821	283102	REFUND #77832	
ACCOUNT TOTAL							950.00			
ORG 077000 TOTAL							950.00			
077001	COMMUNITY CTR			REVENUES						
077001	314300	JDS C.C. USE FEE								
047590	TAMIKA PAIGE	06/18/21 TP	0	2021	9	INV P	100.00 061821	283321	REFUND #77573	
ACCOUNT TOTAL							100.00			
ORG 077001 TOTAL							100.00			
077650	COMMUNITY CTR-ADMIN/GENERAL									
077650	510000	CLEANING/JANITORIAL SPLY								
002729	ELKINS WHOLESALE INC	455465 0000	222331	2021	9	INV P	106.00 061821	283176	P&R COMMUNITY CENTE	
003772	NEWELL PAPER COMPANY	4105221	221030	2021	9	INV P	266.45 061821	283315	JANITORIAL SUPPLIES	
003772	NEWELL PAPER COMPANY	4105222	221256	2021	9	INV P	328.59 061821	283315	JANITORIAL SUPPLIES	
003772	NEWELL PAPER COMPANY	41409741	222330	2021	9	INV P	120.00 061821	283315	NEWJAX BUG-A-BOO RE	
							715.04			
ACCOUNT TOTAL							821.04			
077650	525000	GAS AND OIL								
001002	CITY OF HATTIESBURG	6/1/21 FUND77	0	2021	9	INV P	243.47 061821	283142	FUEL USAGE 5/1-5/31	
ACCOUNT TOTAL							243.47			
077650	544000	HORT./LANDSCAPING SPLY.								
004279	SOUTHERN MS PINE STR	12822	222092	2021	9	INV P	360.00 061821	283386	P&R COMM CENTER STR	
ACCOUNT TOTAL							360.00			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9		ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION
077650	560500							ELECTRICAL SUPPLIES			
004256	SOLAR SUPPLY INC		3441088	222155	2021	9	INV	P	421.76	061821	283382 P&R MATERIAL FOR BN
ACCOUNT TOTAL									421.76		
077650	570000							MTR VEHICLE REP. PTS/SPL			
004297	SOUTHERN TIRE MART (	2520063820	222199	2021	8	INV	P		269.72	061821	283389 P&R TIRES FOR UNIT
ACCOUNT TOTAL									269.72		
077650	604900							OTHER PROFESSIONAL SERV.			
004401	TAYLOR RENTAL CENTER	177-052321	0	2021	9	INV	P		1,699.48	061821	283402 ADMIN - COVID TEST
ACCOUNT TOTAL									1,699.48		
077650	606000							TELEPHONE AND TELEGRAPH			
002160	AT&T MOBILITY	287273578351X0608202	0	2021	9	INV	P		61.71	061821	283100 MB2016-287/WIRELESS
ACCOUNT TOTAL									61.71		
077650	630000							GAS			
004321	SPIRE ENERGY	G2021-6/3	0	2021	9	INV	P		222.65	061821	283394 GAS VARIOUS DEPARTM
ACCOUNT TOTAL									222.65		
077650	630500							ELECTRICITY			
003700	MS POWER COMPANY	E2021 6/1	0	2021	9	INV	P		2,658.48	061821	283307 MS POWER VARIOUS DE
ACCOUNT TOTAL									2,658.48		
077650	635000							BUILDING R&M			
003493	MALONE ROOFING SERVI	42549	221517	2021	9	INV	P		1,700.00	061821	283283 P&R CULTURAL CENTE
ACCOUNT TOTAL									1,700.00		
077650	635700							PLUMBING EQUIPMENT R&M			
003905	PIERCE PLUMBING INC	606175	0	2021	9	INV	P		191.87	061821	283333 SERVICE CALL TO REP
ACCOUNT TOTAL									191.87		
077650	643000							UNIFORM RENT			
002471	CINTAS CORPORATION #	4083066087	0	2021	9	INV	P		121.60	061821	283138 UNIFORM RENTAL FOR
002471	CINTAS CORPORATION #	4083756792	0	2021	9	INV	P		121.60	061821	283138 P&R COMM CNTR UNIFO
002471	CINTAS CORPORATION #	4084419561	0	2021	9	INV	P		121.60	061821	283138 P&R COMM CNTR UNIFO
002471	CINTAS CORPORATION #	4085098182	0	2021	9	INV	P		169.32	061821	283139 P&R COMM.CNTR UNIFO
002471	CINTAS CORPORATION #	4085698846	0	2021	9	INV	P		115.26	061821	283139 P&R COMM.CNTR UNIFO
									649.38		
ACCOUNT TOTAL									649.38		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
		ORG 077650	TOTAL			9,299.56			
FUND 077	COMMUNITY CENTERS'	FUND	TOTAL:			10,349.56			

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9												
ACCOUNT/VENDOR				INVOICE		PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION
082285 CDBG-ENTITLEMENTS												
082285	502000					MINOR OFFICE EQUIP/FURN.						
002161	AT&T MOBILITY (SEI P 615092519				0	2021	9	INV P	774.99	061821	283101 IPAD FIELD USE PO #	
ACCOUNT TOTAL									774.99			
082285	525000					GAS AND OIL						
001002	CITY OF HATTIESBURG 6/1/21 FUND82				0	2021	9	INV P	262.69	061821	283142 FUEL USAGE 5/1-5/31	
ACCOUNT TOTAL									262.69			
082285	684000					DUES AND MEMBERSHIPS						
003677	MS DEPARTMENT OF ENV MDEQAPPKMASTER2021				0	2021	9	INV P	200.00	061821	283305 ASBESTOS CERT K. LA	
ACCOUNT TOTAL									200.00			
082285	684500					REGISTRATION FEE/TUITION						
004017	REGIONS CARDHOLDER S 7963 - 05-31-2021				0	2021	9	INV P	56.32	061821	283358 7963 - 05-31-2021 C	
ACCOUNT TOTAL									56.32			
ORG 082285 TOTAL									1,294.00			
FUND 082 COMMUNITY DEVELOP. BLOCK GRANT						TOTAL:		1,294.00				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
086300								SPEC SALES TAX/RECREATION MAIN	
086300	729504							SULLIVAN PARK SPLASH PA	
002796	FASTSIGNS OF HATTIES	2153-6938	222136	2021	9 INV P	126.34	061821	283188	YARD SIGNS- SULLIVA
					ACCOUNT TOTAL	126.34			
086300	729506							HBURG AMERICAN ARTS CENTER	
047017	VERGE ENTRANCE SOLUT	4016	221617	2021	9 INV P	1,021.73	061821	283433	HBG ARTS CENTER, RE
					ACCOUNT TOTAL	1,021.73			
					ORG 086300 TOTAL	1,148.07			
FUND 086 SPEC SALES TAX P&R/UNIV IMPROV						TOTAL:	1,148.07		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9									
ACCOUNT/VENDOR	INVOICE	PO	YEAR/PR	TYP	S	WARRANT	CHECK	DESCRIPTION	
087601			INDUSTRIAL	PK-G.O.	ACQUISITIONS				
087601 601000				AUDITING AND ACCOUNTING					
004442 TMH	216208	0	2021	9	INV P	7,950.00	061821	283412	FY20 AUDIT
				ACCOUNT TOTAL		7,950.00			
			ORG 087601	TOTAL		7,950.00			
FUND 087 INDUSTRIAL PARK DEVELOPMENT						TOTAL:	7,950.00		

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9										
ACCOUNT/VENDOR		INVOICE	PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION	
088603			PUBLIC SAFETY/REC CONSTRUCTION							
088603 710022			POLICE DEPARTMENT							
002077	ALBERT & MCCLESKEY A 53		0	2021	9	INV P	16,268.65	061821	283086	MB 2018-295 PUBLIC
002996	HANCO CORP PSC NO. 28		0	2021	9	INV P	558,206.57	061821	283214	MB 2019-45 PUBLIC S
003381	LANDARC CONSULTING G 06-1928		0	2021	9	INV P	5,862.50	061821	283269	PUBLIC SAFETY COMPL
ACCOUNT TOTAL							580,337.72			
088603 729501			HALL AVENUE OVERPASS							
003228	JACKSON, TULLOS & RO 3815		0	2021	9	INV P	8,900.00	061821	283239	HALL AVE OVERPASS E
ACCOUNT TOTAL							8,900.00			
ORG 088603 TOTAL							589,237.72			
FUND 088 PUBLIC SAFETY/REC CONSTRUCTION				TOTAL:		589,237.72				

INVOICE LIST BY GL ACCOUNT

YEAR/PERIOD: 2021/8 TO 2021/9											
ACCOUNT/VENDOR		INVOICE		PO	YEAR/PR TYP S			WARRANT	CHECK	DESCRIPTION	
095635 2019 FIRE STATION CONSTRUCTION											
095635	715009				FIRE STATION 9						
002996	HANCO CORP	FS NO. 9 FINAL	0	2021	9	INV P	59,846.08	061821	283214	MB 2020-32 FIRE STA	
003385	LANDRY LEWIS GERMANY	18-3707-023	0	2021	9	INV P	718.15	061821	283270	MB 2018-276 FIRE ST	
004003	RAWLS SPRINGS UTILIT	FS #9 052821	0	2021	9	INV P	76.90	061821	283356	WATER BILL FIRE STA	
004003	RAWLS SPRINGS UTILIT	FS #9 060321	0	2021	9	INV P	45.86	061821	283356	WATER BILL FIRE STA	
							122.76				
004282	SOUTHERN PINE ELECTR	400018539 060321	0	2021	9	INV P	486.93	061821	283387	FS #9 FINAL POWER B	
ACCOUNT TOTAL							61,173.92				
095635 744000 DUMP TRUCKS											
002733	EMERGENCY EQUIPMENT	460403	220790	2021	9	INV P	30,404.00	061821	283180	HFD-AIR PAKS FOR NE	
ACCOUNT TOTAL							30,404.00				
ORG 095635 TOTAL							91,577.92				
FUND 095 GENERAL FUND-G/G INS.OTH SER TOTAL:							91,577.92				

** END OF REPORT - Generated by Theresa McCombs **

FUND	DUE TO	DUE FR
001 General Fund		653,818.21
002 PARKS & RECREATION FUND		55,898.21
009 WATER & SEWER OPERATION/MAINT.		341,233.92
011 WATER & SEWER FUND		1,565.84
019 POLICE FORFEITURES FUND		10,276.60
039 AIRPORT IMPROVEMENT FUND		22,500.00
072 MUNICIPAL ROAD & BRIDGE		740,465.94
073 MASS TRANSIT FUND		62,806.00
075 WATER&SEWER CONSTRUCTION FUND		330,490.25
077 COMMUNITY CENTERS' FUND		10,349.56
082 COMMUNITY DEVELOP. BLOCK GRANT		1,294.00
086 SPEC SALES TAX-P&R/UNIV IMPROV		1,148.07
087 INDUSTRIAL PARK DEVELOPMENT		7,950.00
088 PUBLIC SAFETY/REC CONSTRUCTION		589,237.72
095 2019 FIRE STATION CONSTRUCTION		91,577.92
801 CLAIMS FUND		
	2,920,612.24	
	TOTAL	2,920,612.24