



**City Utilities of Springfield, Missouri**

# **James River Power Restroom Addition**

**COMPETITIVE REQUEST FOR PROPOSAL  
RFP #0000076629**

**January 2024**

**City Utilities of Springfield, Missouri**

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## I. INVITATION TO BID

### A. INTRODUCTION

City Utilities of Springfield, Missouri invites you to submit a proposal for the work described herein. Contract Documents are available online as instructed in RFP Section I-C (*Supplemental Procurement Documents*). Questions should be directed to:

T.J. Bransfield		Purchasing Department
Buyer I		City Utilities of Springfield, Missouri
[P] (417) 831-8847	- AND -	[P] (417) 831-8363
[F] (417) 831-8377		[F] (417) 831-8377
[E] <a href="mailto:tj.bransfield@cityutilities.net">tj.bransfield@cityutilities.net</a>		[E] <a href="mailto:purchasing@cityutilities.net">purchasing@cityutilities.net</a>

City Utilities of Springfield, Missouri is a municipal utility governed by the Board of Public Utilities of Springfield, Missouri. City Utilities is engaged in the production and distribution of electricity, distribution of natural gas, the treatment and distribution of water, provision of commercially available broadband services and the provision of public transportation services for the City of Springfield and the surrounding area. Since City Utilities is an component part of the City of Springfield, Missouri a Missouri municipal corporation, the laws of the state of Missouri shall apply and control any contract which is awarded. When the term “City Utilities of Springfield, Missouri”, “City Utilities” or “CU” is used in this document, it shall refer to the City of Springfield, Missouri, a municipal corporation, operating its public utilities through the Board of Public Utilities.

CU reserves the right to waive informalities and to accept or reject any and all responses submitted. The terms “bid”, “proposal” and “response” are synonymous when used in this document. The term “Bidder” may also be referred to as “Proposer”, “Contractor” or “Seller”. “City Utilities of Springfield, Missouri” may also be referred to as “City Utilities”, “Owner”, “Buyer” or “CU”.

### B. RFP REGISTRATION

City Utilities requests that firms interested in participating in this bidding event contact the CU Purchasing representative listed in RFP Section I-A (*Introduction*) and register as a bidder. City Utilities will notify those that have registered when addenda are issued. Bidders are advised that addenda containing additional information and instruction pertaining to this RFP may be issued at any time. It is the bidder’s responsibility to verify, prior to the stated proposal opening date/time, as to whether addenda have been issued.

### C. SUPPLEMENTAL PROCUREMENT DOCUMENTS

Procurement Documents for **RFP 0000076629**, complete with detailed specifications, drawings and bid form, can be viewed and downloaded by navigating to the following Website and searching by bidding event number or name:

<https://www.cityutilities.net/bids>

or go to

[www.cityutilities.net](http://www.cityutilities.net) and follow these links:

- For Business (top of page)

- Purchasing
- Bidding Opportunities
- Current Bidding Events & Awards Results
- All CU Bidding Opportunities
- **000076629**

You will have access to open, print and/or save pdf file(s).

D. SUMMARY SCOPE OF WORK AND SPECIAL CONDITIONS

Work includes underground site utility work for new sanitary sewer connection to City of Springfield's public sewer system. Additional domestic sewer line work for City Utilities operations and restroom addition. New domestic and fire service water line work connecting to existing City Utilities services. New restroom building addition to serve existing maintenance buildings personnel. City Utilities is ready to start this project immediately after the contract is awarded and as contracts are signed.

E. PRE-PROPOSAL CONFERENCE

A pre-proposal/prebid/walk-thru will be held at **1:00 PM (CST)** on **January 18, 2024** at James River Power Plant, 5701 South Kissick, Springfield, Missouri. Parking is available adjacent to main entrance gate.

Participation in this Pre-Proposal Conference is not mandatory, but it is highly recommended.

F. PROPOSAL OPENING

All proposals must be in the hands of the Purchasing Agent of City Utilities, per one of the approved submittal methods provided in RFP Section I-G (*Proposal Submittal Methods*), by the Proposal Opening date and time, which is **February 1, 2023**, at 2:00 PM (CST). **Any proposal received after such date and time will be rejected.**

Proposals will not be publicly opened or read since the selection process will be determined based upon competitive negotiated procurement procedures for proposals as described in this RFP.

All proposals shall be irrevocable for ninety (90) days after the time for opening of proposals.

G. PROPOSAL SUBMITTAL METHODS

FAX AND EMAIL RESPONSES ARE NOT ACCEPTABLE. All proposals must be received by CU Purchasing by the opening date and time stated in this document. The method of submittal is at the sole discretion and risk of the Contractor. Preparation for any submittal method should be taken well enough in advance of the posted opening date and time to allow for unexpected issues. City Utilities is not responsible for submittal failures of any kind- electronic or otherwise. Contractors utilizing CU's Electronic Bid Attachment Tool (EBAT) should verify that any attachment meets the posted electronic file type and size requirements. Contractors mailing proposals or having proposals delivered should allow sufficient time to ensure receipt by the due date and time specified. Mail, express mail and delivered responses must be sealed in an opaque envelope or package and should include one set of original documents.

**\*\*\*\* Proposals in response to this RFP may be submitted by any of the methods listed below \*\*\*\***

**1. Electronic Bid Attachment Tool (EBAT)**

Open to all bidders – NO REGISTRATION OR LOGIN REQUIRED. Proposals submitted via EBAT must be an approved electronic file type (PDF, DOC, XLS, TIF or ZIP) and have a total attachment size that does not exceed 50-MB.

[www.cityutilities.net/EBAT](http://www.cityutilities.net/EBAT)

OR GO TO [www.cityutilities.net](http://www.cityutilities.net) and click on the following links:

- For Business (at top of page)
- Purchasing
- Bidding Opportunities
- Electronic Bid Attachment Tool (EBAT)

**2. Mail / Express Mail / Hand Deliver**

Proposals submitted via mail/express mail or hand delivered shall be sealed in an opaque envelope or package that is clearly marked on the outside with the RFP number and opening date/time. Proposals are to be addressed to:

City Utilities of Springfield, Missouri  
 Purchasing Manager  
 301 East Central (65802)- *physical location for hand delivery*  
 P.O. Box 551  
 Springfield, MO 65801-0551

**\*\*\* SPECIAL NOTICE REGARDING HAND DELIVERY \*\*\*** Hand delivered responses should be routed to the Training Center at the physical location address provided above. The Training Center building is closed to the public. Bidders are strongly encouraged to utilize the Electronic Bid Attachment Tool (EBAT) or Mail/Express Mail options for submittal of a bidding event response. If the hand deliver option is utilized, the person delivering the bidding event response will be required upon arrival to contact security per the method posted at the entry doors. Once notified, a CU Purchasing representative will meet the delivery person at the door to take possession of the bidding event response. This process may take several minutes to complete, and if the bid response is not physically in the hands of a CU Purchasing representative by the published opening date and time, it will be rejected.

**H. SCHEDULE OF EVENTS**

Event	Date
1. RFP Distribution	01/12/2024
2.Pre-Proposal Conference	01/18/2024
3. Proposal Due Date	02/01/2024
4.Target Date for Review of Proposals	02/08/2024
5. Anticipated decision and selection of Vendor	02/12/2024
6.Anticipated commencement date of work	TBD

\*\*\* END OF SECTION \*\*\*

## II. RFP REQUIREMENTS

### A. REQUEST FOR INTERPRETATION, CLARIFICATION, AND ADDITIONAL INFORMATION

A prospective bidder who is in doubt as to the meaning of any part of the Contract Documents or any addenda thereto, or is seeking clarification or requesting additional data/information, may submit a written request directed to the CU Purchasing representative, and the CU Purchasing department general email address, as specified in RFP Section I-A (*Introduction*).

Any such interpretation, clarification, or recognition of additional data/information will be made by written addendum. City Utilities will not be responsible for any explanation or interpretation of proposed documents other than by such an addendum. An oral permission or interpretation has no legal force, authority, or effect. Any addenda must be acknowledged in the RFP response and will become a part of the Contract Documents. Failure to acknowledge all addenda issued may constitute grounds for rejection of that RFP response.

All requests for interpretations must be received by the Purchasing Department no later than the **five (5) calendar days prior to the proposal opening date provided in RFP Section I-F (*Proposal Opening*)**. Requests received after that date will not be answered. Persons submitting a request will be responsible for its prompt delivery.

### B. GUARANTY

Each proposal must be accompanied by a Bid Bond with an adequate surety, naming the City Utilities of Springfield, Missouri, as obligee, in a penal sum equal to five percent of the maximum bid price excluding options, or in lieu thereof, a certified check drawn on a Federally insured banking institution, payable to City Utilities in the same amount as the penalty of the Bond. The Bond or Check shall be conditioned that should a bidder, after award, fail to enter into a contract, then the entire amount of the Bond or Check shall become the property of the City Utilities, or City Utilities shall be entitled to recover the entire penal sum of the Bond or Check without further proof of damage. Bid Checks will be returned to all unsuccessful bidders within a period of thirty days following contract execution.

### C. SIGNATURE ON PROPOSALS

Each proposal must be signed in ink and include the full business address of the bidder. Proposals by partnerships must be signed in the partnership name by one or more of the general partners. Proposals by a corporation must be signed by an officer of the corporation or other person authorized to bind the corporation to the proposal. The names and titles of all persons signing shall be typed or printed below their signatures.

### D. EVALUATION AND SELECTION PROCESS

The proposal evaluation and selection process will be conducted under this Request for Proposal (RFP) based on competitive negotiated procurement procedures. Interviews, discussions, negotiations and a Best and Final Offer (BAFO) may be held only with selected firms who meet City Utilities requirements and fall within the competitive range as determined by City Utilities. City Utilities reserves the right to limit negotiations to those proposals which received the highest rankings during the initial evaluation phase. However, City Utilities reserves the right to award a contract to a firm solely on the basis of this initial proposal submitted and without any further interview, discussions and negotiation.

If City Utilities determines that the number of proposals that would otherwise be in the competitive range exceeds the number at which an efficient competition can be conducted, City Utilities may limit the number of proposals in the competitive range to the greatest number that will permit an efficient competition among the most highly rated proposals.

Each Proposer must comply with the requirements contained in the RFP. Deviation from the requirements will be evaluated, but may, in the discretion of City Utilities, result in rejection of a proposal.

The City Utilities will evaluate each proposal to determine which is the lowest and best (i.e., Best Value). City Utilities reserves the right to waive informalities and to accept or reject any or all proposals submitted.

If City Utilities determines that a proposal has failed to meet an acceptable level on any factor listed below, the City Utilities may reject that proposal.

## **EVALUATION CRITERIA**

In evaluating the proposals, City Utilities will use the following evaluation factors to determine the lowest and best proposal. Deviation from the requirements will be evaluated, but may, in the discretion of City Utilities, result in rejection of a proposal.

- 80% Total Cost
- 20% Adherence to RFP requirements, including responses to Section IV-C, *Questions/Requests for Submittals*

Bidders should consider these factors when preparing their proposals and should provide a specific response to each of the evaluation factors.

Based on the evaluation process described, the Evaluation Committee comprised of City Utilities employees, will review the proposals.

### **E. BIDDER'S RESPONSIBILITIES**

By submitting a proposal, each bidder represents that he is familiar with, assumes full responsibility for having familiarized himself with, and will comply with the content of the Contract Documents, the nature of the work, the locality, permits, licenses, and all local conditions, together with all applicable Federal, State, and local laws and ordinances.

### **F. PROPRIETARY INFORMATION**

Proprietary Information: Pursuant to Section 610.021.15 R.S.Mo, City Utilities may close records that relate to scientific and technological innovations in which the owner has a proprietary interest. If you plan to submit such information with your bid and wish to keep it confidential, please submit it in a separate envelope with your bid and clearly mark it "CONFIDENTIAL AND PROPRIETARY SCIENTIFIC AND/OR TECHNOLOGICAL INFORMATION." This information must not include prices, terms and conditions, Bidder's qualifications, or any other information submitted in response to this Request for Proposal that is not exempted under Section 610.021.15. Any information that does not fall within Section 610.021.15 or other exception to Missouri's Sunshine Law (Section 610.021 R.S.Mo., et seq.) is a public record and will be disclosed upon request.

### **G. ERRORS IN PROPOSALS**

Each bidder must carefully examine his proposal prior to submission. Failure to do so is at the bidder's risk. He is responsible for any errors therein. Claim of oversight is not a basis for permitting withdrawal of a proposal after opening. There shall be no erasures in any proposal. Any changes must be made by striking the portion to be changed with the change noted above the deleted portion, followed by the bidder's initials and date.

H. PROPOSAL WITHDRAWAL

Proposals may be withdrawn at any time prior to the time for the opening of proposals.

I. CONDITIONS AFFECTING THE WORK

Each bidder should take such steps as he thinks necessary to ascertain the nature and location of the work and any peculiar local conditions which can affect the work or its cost. Failure to do so will not relieve the bidder of his responsibility for proper estimation of the difficulty or cost of the work. City Utilities assumes no responsibility for any understanding or representation made by any person at any time, unless it is included in the Contract Documents, including addenda.

J. PREVAILING WAGE REQUIREMENT

This contract is subject to the prevailing wage law. It is agreed that all workman employed by Contractor and any subcontractor under him will be paid not less than the prevailing wage as determined by Missouri Department of Labor and Industrial Relations and Annual Wage Order, and any amendments, attached hereto and made a part hereof. Contractor shall forfeit as a penalty to the Board of Public Utilities of Springfield, Missouri, \$100.00 for each workman employed, for each calendar day or portion thereof, such workman is paid less than said wage for work done pursuant to this Contract.

It is agreed that the Contract or sums payable to Contractor for the performance of this agreement are not subject to increase as a result of any change in the amount of such wage determined pursuant to Section 290.210 et. seq. R.S.Mo., Prevailing wages for renewal years will be the then current Annual Wage Order in effect at the time of renewal and any amendments, if applicable.

Per HB 1729 which went into effect August 28, 2018, projects valued under \$75,000 are not subject to prevailing wage, and no project may be split up to avoid paying prevailing wage rates.

Recognized Annual Wage Order (AWO) 30, Effective June 27, 2023.

Copies of the referenced AWO are available at the following website or upon request:  
<https://www.cityutilities.net/wp-content/uploads/purchasing-annualwageorder.pdf>

The Contractor shall be required to complete an affidavit stating that he or she has complied with the prevailing wage law prior to final payment by City Utilities. This affidavit is available at the following website or upon request: <https://labor.mo.gov/media/pdf/pw-4-ai>

K. REQUIRED AFFIDAVIT FOR CONTRACTS OVER \$5,000 DOLLARS (US)

Company shall comply with the provisions of Section 285.525 through 285.550 R.S.Mo. Contract award is contingent on Company providing an acceptable notarized affidavit stating:

1. that Company is enrolled in and participates in a federal work authorization program with respect to the employees working in connection with the contracted services; and
2. that Company does not knowingly employ any person who is an unauthorized alien in connection the contracted services.

Copy of the affidavit can be found and downloaded at CU website; <https://www.cityutilities.net/wp-content/uploads/purchasing-complianceaffidavit.pdf>



Additionally, Company must provide documentation evidencing current enrollment in a federal work authorization program (e.g. electronic signature page from E-Verify program's Memo of Understanding (MOU)).

L. TRANSIENT EMPLOYER LAW

Any out of state (non-Missouri) company who, pursuant to a contract with City Utilities, will have its employees perform work inside the state of Missouri, must provide:

1. A certificate from the Missouri Director of Revenue showing compliance with the Transient Employer Law (285.230 R.S.Mo. et seq.); or
2. Proof of exemption from Section 285.230 R.S.Mo.

A Certificate of Compliance or proof of exemption must be submitted to City Utilities in regards to the transient employer law. Questions? See <http://dor.mo.gov/business/register/> or call (573) 751-0459.

N. PERFORMANCE AND PAYMENT BOND

Successful Bidder shall furnish a Performance and Payment Bond as security for the faithful performance and payment of all their obligations under the Purchase Order (Contract) and Section 107.170 R.S.Mo. The Bond shall be in the amount of the proposal and in the form provided herein and with such sureties as are licensed to conduct business in the State of Missouri and are named in the current list of "Surety Companies acceptable on Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Department, and as acceptable reinsuring companies as published in the Federal Register by the department of the Treasury.

If the surety on any Bond furnished by Bidder (Contractor) is declared bankrupt or becomes insolvent or its rights to do business is terminated or revoked in any state where any of the project is located, bidder (Contractor) shall within five days thereafter substitute another bond and surety, both of which shall be acceptable to City Utilities.

The bond shall be filed with City Utilities within ten days unless superseded in the Request for Proposal documents. The Bond shall be approved prior to the start of work.

O. SALES TAX EXEMPTION NOTICE

This is to notify Bidders that certain materials incorporated into the project are exempt from Missouri sales tax pursuant to the provisions of Section 144.062 R.S.Mo. The selected Contractor will receive a Project Exemption Certificate and a Missouri Tax Exemption letter from City Utilities to use in purchasing materials on a tax-free basis. It will be the contractor's responsibility to provide the documentation to any Subcontractor or Supplier. These documents will be used solely for purchase of materials being directly incorporated into or consumed in the construction of the work under this Agreement.

P. OSHA COMPLIANCE

Contractor shall comply with all applicable OSHA rules.

R. HARD HAT COMPLIANCE

Contractor shall be responsible for strictly adhering to City Utilities hard hat policy. Additionally, no on-site work may be performed unless a hard hat is worn.

S. PROMPT PAYMENT

Contractor agrees to pay each Subcontractor under each Purchase Order/Agreement for satisfactory performance of its contract in accordance with Section 34.057 R. S. Mo.

T. OSHA CONSTRUCTION SAFETY AND HEALTH TRAINING

CONTRACTOR shall provide a ten-hour Occupational Safety and Health Administration (OSHA) construction safety program for its onsite employees, which includes a course in construction safety and health approved by OSHA or a similar program approved by the department which is a least as stringent as an approved OSHA program, unless such employees have previously completed the required program. All employees are required to complete the program within sixty days of beginning work on such construction project. An employee found on a work site without documentation of the successful completion of the required training shall be afforded twenty days to produce such documentation before being subject to removal from the project. This provision is subject to and Contractor shall comply with all requirements of Section 292.675 R.S.Mo.

U. DIVERSITY

City Utilities of Springfield encourages prime and general contractors to consider certified DBE, WBE and MBE's for those construction contracts which have subcontracting opportunities.

V. STANDARD BIDDING INSTRUCTIONS AND GENERAL CONDITIONS

Any order arising from this Bidding Event will be subject to the following **WHICH ARE INCORPORATED HEREIN BY REFERENCE**:

- *City Utilities of Springfield Missouri Standard Bidding Instructions (Rev 4-20-2023)*
- *City Utilities of Springfield Missouri General Conditions (Rev 8-2016)*

The referenced documents are available at <https://www.cityutilities.net/purchasing/general/> or upon request.

\*\*\* END OF SECTION \*\*\*

**III. INSURANCE REQUIREMENTS**

1004- INSURANCE REQUIREMENTS

Without limiting any of the other obligations or liabilities of the Contractor, the Contractor shall secure and maintain at its own cost and expense, throughout the duration of this Contract and until the Work is completed and accepted by City Utilities, insurance of such types and in such amounts as may be necessary to protect it and the interests of City Utilities against all hazards or risks of loss as hereunder specified or which may arise out of the performance of the Contract Documents. The form and limits of such insurance, together with the underwriter thereof in each case, are subject to approval by City Utilities. Regardless of such approval, it shall be the responsibility of the Contractor to maintain adequate insurance coverage at all times during the term of the Contract. Failure of the Contractor to maintain coverage shall not relieve him of any contractual responsibility or obligation or liability under the Contract Documents.

The certificate of insurance, including evidence of the required endorsements hereunder or the policies shall be filed with City Utilities within ten (10) days after the date of the receipt of Notice of Award of the Contract to the Contractor and prior to the start of work. All insurance policies shall provide thirty (30) days written notice to be given by the insurance company in question prior to cancellation of such insurance. Such notices shall be mailed, certified mail, return receipt requested, to:

Risk Manager  
City Utilities of Springfield, Missouri  
301 E. Central Street  
P.O. Box 551  
Springfield, MO 65801-0551

The minimum coverage for the insurance referred to herein shall be in accordance with the requirements established below:

- (A) Workers' Compensation\* \*\*Statutory Employer's Liability
  - Bodily Injury by Accident—each accident..... \$1,000,000
  - Bodily Injury by Disease—each employee limit..... \$1,000,000
  - Bodily Injury by Disease—policy limit..... \$1,000,000

**\* Workers' Compensation: Policy or self-insurance plan with statutory limits formally approved by the State of Missouri will be required, even if no employees other than owners.**

**\*\* Workers' Compensation coverage shall include a waiver of subrogation in favor of City Utilities where permitted by law.**

- (B) Commercial General Liability Insurance\*\*\*, Including Premises, Operations, Products and Completed Operations, Contractual Liability, Broad Form Property Damage, Independent Contractors; Such Coverage Shall Apply to Bodily Injury and Property Damage on an "Occurrence Form Basis" with each Occurrence Limit of..... \$1,000,000  
In the Aggregate..... \$2,000,000
- (C) Automobile Liability Insurance\*\*\* Covering Bodily Injury And Property Damage for Owned, Non-owned and Hired Vehicles with a Combined Single Limit of: ..... \$1,000,000
- (D) Umbrella or Excess Insurance\*\*\* (Following Form).....\$5,000,000

**\*\*\* The City of Springfield, Missouri including The Board of Public Utilities of the City of Springfield, Missouri dba City Utilities of Springfield, Missouri" shall be added as an Additional Insured for the full limits of the Liability Insurance coverages, using the ISO Additional Insured-Owner endorsement, CG 20 10, for premises/operations and CG 20 37 for completed operations, or substitute endorsement providing equivalent coverage.**

Contractor shall require any and all subcontractors with whom he enters into a contract to perform Work on this Project, to protect, through insurance, against applicable hazards or risks and shall, upon request of City Utilities, provide evidence of such insurance. Contractor shall be liable for all deductible amounts from such insurance and shall indemnify and hold City Utilities harmless therefrom. These Insurance Requirements are intended to be minimum coverages, and City Utilities does not warrant that coverages or amounts will be sufficient protection for contractors or City Utilities. Contractors will be responsible for any deficiencies thereof.

**NOTE:**

Acord certificate changes regarding cancellation notifications do not lessen the responsibility of vendors to comply with obligations set forth in these insurance requirements. Specifically, the requirement "All insurance policies shall provide thirty (30) days written notice to be given by the insurance company in question prior to material reduction in coverage or protection of City Utilities or cancellation of such insurance." must be met wherever permitted by law.

Since the requirement cannot be met using the Acord certificate, the requirement can be met by (1) specifically endorsing CU onto each policy to receive notifications or (2) any other means that complies with CU requirements.

**IV. BID FORM**

**A. NAME OF BIDDER:**

<b>Company Name [include applicable dba(s)]</b>		<b>Organized As (circle one)</b>	
		Corporation / LLC / Partnership	
		Individual or Sole Trader	
<b>Registered Address</b>			
Address 1			
Address 2			
City	State	Zip	

**B. TO:  
CITY OF SPRINGFIELD, MISSOURI**

The undersigned proposes to furnish at his sole risk, cost, and expense all labor, tools, equipment, materials, supplies, facilities, transportation and other means necessary to perform the work as set out in this RFP in strict accordance therewith, for the prices reflected below:

**1. Base Bid Items  
Item 1**

Provide total cost for all site utility work as indicated on plan sheets ME1, ME2, M1 and E1. This bid item to include all MEP work as indicated on these drawings with exception of the cost of the 8' x 9' restroom building addition. See bid item 2 for all associated cost of construction including mechanical, electrical and plumbing associated with restroom building addition. See plan sheet ME2 for additional notes.

Total Lump Sum Price:           \$ \_\_\_\_\_

**2. Base Bid Items  
Item 2**

Provide total cost for all construction work associated with restroom building addition per plan sheet A1.1, S1.1, ME1, ME2, M1 and E1. This bid item to include all associated cost of construction of the 8' x 9' building addition including mechanical, electrical and plumbing associated with restroom building addition. All site utility work to be included in Bid Item 1 ONLY. See plan sheet ME2 for additional notes.

Total Lump Sum Price:           \$ \_\_\_\_\_

3. BOND

Cost of required bond will be paid by City Utilities. The amount to be paid will be the actual cost of the bond verified by the bonding company's invoice and will not exceed the amounts quoted by the bidder:

Cost of bond in the amount of the Total Lump Sum Price from Bid Item 1: \$ \_\_\_\_\_

Cost per additional \$1,000.00 coverage: \$ \_\_\_\_\_

3. Contractor to estimate their approximate start date based on preliminary subcontractor/material schedule and estimate total days of completion.

Estimated Start Date/Date of Completion: \_\_\_\_\_

## C. QUESTIONS / REQUESTS FOR SUBMITTALS

Bidder shall include with submission of proposal sufficient and detailed responses to the following questions and/or requests for submittals. Responses should be submitted in a clear form that corresponds to the numbering format contained herein. Failure to provide this information as instructed may result in rejection of proposal:

1. Bidder to provide complete details as to how their firm is qualified to perform the work identified within this RFP. Details should include, but not necessarily be limited to:

- Applicable job/contract history including references (complete with owner contact information) from jobs/contracts similar in scope to this this RFP
- Details, experience and/or resumes for employees that will work on this contract (include training programs, certifications, etc. as applicable to this RFP)
- General company information (years in business, name changes, etc.)
- Information on applicable prior projects completed for City Utilities

2. Safety and Loss Control

a. List your organization's Interstate Experience Modification Rate (EMR) for the past three years. Use your intrastate EMR if not interstate rated. **Attach a signed and dated letter from your workers' compensation insurance carrier verifying your EMR.**

b. Provide your organization's Standard Occupational Classification (SOC) number.

c. Provide your organization's injury experience for the past three years using OSHA No. 300 logs (As an alternative, you may submit copies of your logs). The following items must be addressed:

1. Number of OSHA recordable cases:
2. Number of lost workday cases:
3. Number of lost workdays:
4. Number of restricted workday cases:
5. Number of fatalities:
6. Number of man-hours worked:

d. Will a full-time or part-time safety professional be utilized on this Contract? If yes, provide details including the name and contact information for the safety professional.

e. Does your organization conduct documented safety inspections? If yes, provide details including the frequency of the safety inspections, who conducts the inspections, etc.

f. From the three options below, Provide details regarding your organization's Written Safety Program:

1. Written Safety Program is currently on file with City Utilities (provide most recent revision date)
2. Written Safety Program is included with response to this RFP
3. No Written Safety Program

3. Listing of equipment:
  - a. Type and size of equipment to be used for work under this Contract.
  - b. Listing of which equipment is owned, rented, and leased.
  
4. Arbitration/Litigation. List of all projects undertaken in the last 5 years which have resulted in partial or final settlement of the Contract by arbitration or litigation. Provide for each project:
  - a. Name of client and project.
  - b. Original Contract amount.
  - c. Total claims arbitrated or litigated.
  - d. Amount of settlement of claims.

**EXCEPTIONS**

The undersigned declares that the following list states any and all variations from and exceptions to the requirements of the Request for Quotation and that otherwise it is the intent that the work will be performed strictly in accordance therewith. If no exceptions are taken, state "NONE". (Note: use separate page, if necessary)

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**SUBCONTRACTORS**

Each bidder must submit with its proposal the names of all Subcontractors and major suppliers of material and equipment that it intends to use on the job. City Utilities reserves the right to object to any Subcontractor or supplier.

List items to be subcontracted with proposed subcontractor

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**ADDENDA**

The undersigned declares that the following listed addenda have been received and all changes required by them are included in the bid amount. If no Addenda have been received, state "NONE". (Note: use separate page, if necessary). Bidders are advised that addenda containing additional information and instruction pertaining to this RFP may be issued at any time. It is the bidder's responsibility to verify, prior to the stated proposal opening date/time, as to whether addenda have been issued.

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**AUTHORIZED SIGNATURE**

The undersigned declares that all interested principals are named herein. No other person or firm has any interest in the proposal or agreement to be entered into; that this proposal is made without collusion with any other person, company, or party, submitting a proposal.

*The undersigned understands and agrees that the accompanying bid deposit (if applicable) shall become the property of City Utilities should his proposal be accepted and he fail or refuse to execute the agreement and furnish a performance bond, insurance policies, and certificates of insurance as called for within the time provided.*

The Bidder recognizes that City Utilities reserves the right to accept or reject any or all proposals and to waive any technicality or informality therein.

In making this proposal the undersigned has taken into account each provision of all of said Contract Documents and hereby offers this Proposal and agrees to be bound and perform the work according to the terms of the Contract Documents should City Utilities issue a Notice of Award and enter into an Agreement with Bidder.

Firm Name: \_\_\_\_\_

Name: \_\_\_\_\_ Title: \_\_\_\_\_

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Phone #: \_\_\_\_\_ Fax #: \_\_\_\_\_

Email: \_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

**IV. PERFORMANCE, LABOR, AND MATERIALS BOND (SAMPLE)**

KNOW ALL MEN BY THESE PRESENTS: That \_\_\_\_\_, as principal and \_\_\_\_\_, as surety, are held and firmly bound to the City Utilities of Springfield, Missouri, hereinafter referred to as City Utilities, in the sum of and no/100 U.S. DOLLARS (\$\_\_\_\_\_ U.S.) for the payment of which we, and each of us, hereby bind ourselves, our heirs, our executors, administrators, successors and assigns firmly by these presents; the conditions of this bond are such that:

WHEREAS, the above-named principal did on the \_\_\_\_ day of \_\_\_\_\_, \_\_\_\_\_, entered into a contract with City Utilities of Springfield, Missouri for:

*Specification Title* \_\_\_\_\_

NOW, THEREFORE, if the above-named principal shall well and truly:

1. Keep and perform all of the contract on his, its or their part to be kept and performed, and faithfully comply with all laws and regulations applicable thereto and complete the same within the time stipulated therein or within a reasonable time if no time is stipulated; and,
2. Pay for any and all materials, incorporated, consumed or used in connection with the construction of the work aforescribed, and all insurance premiums both for compensation and for all other kinds of insurance on said work above described, and for all labor performed in the work whether by the principal or by subcontractor or otherwise and at the prevailing hourly rate of wages made applicable to the work as specified by the contract (if prevailing hourly rate wages shall have been so specified). This bond is issued under the terms of Section 107.170 R.S.Mo.

Then this obligation shall be void, otherwise it shall remain in full force and effect.

It is understood and agreed that this bond shall not be avoided because of changes in the plans or specifications for the work, or because of extensions of time for the performance of work, and the surety above-named hereby waives notice of and consents to any such changes or extensions of time.

The parties hereto agree that should any litigation arise out of this bond, the venue thereof shall be in the Circuit Court of Greene County, Missouri, or the US District Court for the Western District of Missouri, Southern Division.

IN WITNESS WHEREOF, we have hereto set our hands and seals this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_, or have caused these presents to be executed by our authorized agent on the same day and year.

Principal: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Surety: \_\_\_\_\_

\_\_\_\_\_

\*\*\* END OF SECTION \*\*\*

**V. AGREEMENT (SAMPLE)**

THIS AGREEMENT made and entered into this \_\_\_\_\_ day of \_\_\_\_\_ by and between CITY UTILITIES OF SPRINGFIELD, MISSOURI, hereinafter referred to as "Owner" and

Company Name [include applicable dba(s)]	Organized As (circle one)	
	Corporation / LLC / Partnership  Individual or Sole Trader	
Registered Address		
_____ Address 1		
_____ Address 2		
_____ City	_____ State	_____ Zip

WITNESSETH:

THAT, WHEREAS, Owner has heretofore caused to be prepared certain Contract Documents for furnishing equipment, materials, and labor, and performing work therein fully described, and the Contractor did, on the \_\_\_ day of \_\_\_\_\_, 20 \_\_, file with Owner his offer and bid to furnish the material and perform the work described in the Contract Documents on the terms set forth in his offer, and,

WHEREAS, owner duly accepted the proposal and awarded a contract therefore to Contractor, based upon said bid,

NOW, THEREFORE, IT IS AGREED,

1. The Contract Documents (as defined in the General Conditions) are attached hereto and made a part hereof by reference, and those, together with this agreement, comprise the entire agreement between the parties.
2. The Contractor agrees, in the manner set forth in the Contract Documents, to furnish all labor, equipment, and materials necessary to perform the work herein described at the price established in the Bid Form of the Contract Documents. Time is of the essence in completion of this contract.

IN WITNESS WHEREOF, the parties have signed this Agreement on the day and year first above written.

**CITY UTILITIES OF SPRINGFIELD, MISSOURI**

By:

\_\_\_\_\_  
Name

\_\_\_\_\_  
Title

ATTEST: \_\_\_\_\_

Approved as to Form and Content:

\_\_\_\_\_  
CU Legal Counsel

\_\_\_\_\_  
Date

---

**CONTRACTOR:**

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
By: Authorized Representative's Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

ATTEST:

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Title

\*\*\* END OF SECTION \*\*\*

## VIII. PLANS AND TECHNICAL SPECIFICATIONS

\*\*\* See Below Specification Manual and Plans- This Page Left Intentionally Blank \*\*\*

# **SPECIFICATION MANUAL**

## **JAMES RIVER POWER STATION GAS TURBINE MAINTENANCE BUILDING RESTROOM ADDITION**

**5701 South Kissick  
Springfield, Missouri**

**January 2024**

### **ARCHITECT**

City Utilities of Springfield Missouri  
Tyler J. Peck, AIA  
301 E. Central Street  
Springfield, Missouri 65801  
phone: 417.299.5863

### **MEP ENGINEER**

RTM Engineering Consultants  
Jennifer Luce, PE, LEED AP  
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phone: 417.881.0020

### **STRUCTURAL ENGINEER**

Crawford, Murphy & Tilly  
Jeff Fickbohm, PE  
1631 W. Elfindale Street  
Springfield, Missouri 65807  
phone: 417.799.6254

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NONE THIS SECTION

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## SECTION 011000 - SUMMARY

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section includes:

1. Project information.
2. Project requirements and timeline.
3. Work covered by Contract Documents.
4. Work under separate contracts.
5. Access to site.
6. Coordination with occupants.
7. Project Supervision
8. Work restrictions.
9. Specification and drawing conventions.

##### B. Related Section:

1. Division 01 Section "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

#### 1.2 PROJECT INFORMATION

##### A. Project Identification:

1. Project Location: 5701 S. Kissick, Springfield, MO

#### 1.3 PROJECT REQUIREMENTS AND TIMELINE

- ##### A.
- This work may start at anytime once the contract between owner and contractor has been signed. The contractor shall schedule the demolition and new work as to not open up the building to inclement weather. Temporary weather protection will be required at all times during construction.

#### 1.4 WORK COVERED BY CONTRACT DOCUMENTS

- ##### A.
- The Work of the Project is defined by the Contract Documents and project manual.



## 1.5 ACCESS TO SITE

- A. General: Contractor shall have limited use of Project site for construction as not to conflict with Owner's daily operations.
- B. Use of Site: Limit use of Project site to areas within the Contract limits of work indicated on drawings. Do not disturb portions of project site beyond areas in which the Work is indicated.
  - 1. Driveways, Walkways and Entrances: Keep driveways, loading areas and entrances serving premises clear and available to Owner, Owner's employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.
    - a. Schedule deliveries to minimize use of driveways and entrances by construction operations.
    - b. Schedule deliveries to minimize space and time requirements for storage of materials and equipment on-site.
    - c. Owner will coordinate area on site for staging materials.

## 1.6 COORDINATION WITH OCCUPANTS

- A. Full Owner Occupancy: Owner will occupy the building, drives, parking and sidewalks during entire construction period. Cooperate with Owner during construction operations to minimize conflicts and facilitate Owner usage. Perform the Work so as not to interfere with Owner's day-to-day operations. Maintain existing exits unless otherwise indicated.
  - 1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Owner and approval of authorities having jurisdiction.
  - 2. Notify the Owner not less than 24 hours in advance of activities that will affect Owner's operations.

## 1.7 PROJECT SUPERVISION

- A. Project Manager/Superintendent: General Contractor shall provide a project manager or superintendent as required for coordinating on site daily work.
- B. Superintendent/ Project managers job requirements/qualifications:
  - 1. Knowledge of type of construction and experience in similar size projects
  - 2. Ability to understand and follow plans/specifications in the construction of project.
  - 3. Knowledge of the construction techniques and sequencing of subcontractor's scope of work.
  - 4. Ability to organize and schedule subcontractors/suppliers effectively during the project duration to meet predefined schedule.
  - 5. Ability to implement and enforce safety regulations for all workers.

## 1.8 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.
  - 1. Comply with limitations on use of public streets and other requirements of authorities having jurisdiction.
- B. Existing Utility Interruptions: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after providing temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than 2 days in advance of proposed utility interruptions.
  - 2. Obtain Owner's permission before proceeding with utility interruptions.
- C. Noise, Vibration, and Odors: Coordinate operations that may result in high levels of noise and vibration, odors, or other disruption to Owner occupancy with Owner.
  - 1. Notify Owner not less than two days in advance of proposed disruptive operations.
  - 2. Obtain Owner's permission before proceeding with disruptive operations.
- D. Nonsmoking Property: Smoking is not permitted on City Utilities property.

## 1.9 SPECIFICATION AND DRAWING CONVENTIONS

- A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
  - 1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
  - 2. Specification requirements are to be performed by Contractor unless specifically stated otherwise.
- B. Drawing Coordination: Requirements for materials and products identified on the Drawings are described in detail in the Specifications. One or more of the following are used on the Drawings to identify materials and products:
  - 1. Terminology: Materials and products are identified by the typical generic terms used in the individual Specifications Sections.
  - 2. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

END OF SECTION 011000

## SECTION 012500 - SUBSTITUTION PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for substitution requests for acceptance of products not indicated as approved equal in the specifications or construction drawings.

#### 1.2 DEFINITIONS

- A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor, subcontractors and suppliers.

#### 1.3 SUBMITTALS

- A. Substitution Requests: During bidding contractor, subcontractors and suppliers shall be allowed to submit documentation for approval for products and manufacturers not specified as part of these specifications or construction drawings unless noted otherwise. Any product submitted during shop drawing process that has not been formally approved will be reviewed by the architect and engineer for compliance with the original specified product. If the architect or engineer disapproves the product substitution request, the Contractor will provide the product from approved list of acceptable manufactures at no additional cost to project.
- B. Substitution Requests must be submitted no later than 7 days prior to bid date for Architect and/or Engineer review.
- C. Submit substitution request form per section 012600 with the following documentation.
  - 1. Show compliance with requirements for substitutions and the following, as applicable.
    - a. Coordination information, including a list of changes or modifications needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
    - b. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable specification section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
    - c. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
    - d. Samples, where applicable or requested.
    - e. Certificates and qualification data, where applicable or requested.

- f. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
- g. Research reports evidencing compliance with building code in effect for Project.
- h. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
- i. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
- j. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.
- k. Architect and/or Engineers Action: Architect and/or engineer will review substitution request forms and data to ensure they meet the design intent per the original plans and specifications. If approved the product and manufacture will be formally approved on addendum prior to bid date.
- l. Approved substitutions shall not limit the features or color selections of the specified product unless formally approved by architect and/or engineer.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012500

SECTION 012600 - SUBSTITUTION REQUEST FORM

This form is to be used to submit product(s) for Architect or Engineers approval prior to bids submitted. Submit this document to Architect per section 012500.

To: \_\_\_\_\_

We hereby submit for your consideration the following product instead of the specified items for the above project:

Specification Section: \_\_\_\_\_

Proposed Substitution: \_\_\_\_\_

Attach complete Product description, drawings, photographs, performance and test data, and other information necessary for evaluation.

A. What difference exists between proposed substitution and specified item?

\_\_\_\_\_

B. Does manufacturer's warranty of proposed substitution differ from that specified?

YES \_\_\_\_ NO \_\_\_\_

If yes, explain \_\_\_\_\_

C. Will maintenance and service parts be locally available for substitution?

YES \_\_\_\_ NO \_\_\_\_

If yes, explain \_\_\_\_\_

COMPANY NAME

\_\_\_\_\_  
CONTACT PERSON

\_\_\_\_\_  
TELEPHONE

END OF SECTION 012600

## SECTION 012700 - CONTRACT MODIFICATION PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

#### 1.2 MINOR CHANGES IN THE WORK

- A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time, on Architect's Supplemental Instructions.

#### 1.3 PROPOSAL REQUESTS

- A. Owner-Initiated Proposal Requests: Owner will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.
  - 1. Proposal Requests issued by Owner are not instructions either to stop work in progress or to execute the proposed change.
  - 2. Within five days after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.
    - a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    - b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    - c. Include costs of labor and supervision directly attributable to the change.
    - d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
- B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to Architect.
  - 1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.

2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.
5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

#### 1.4 CHANGE ORDER PROCEDURES

- A. On Owner's approval of a Proposal Request costs, Owner will issue a Change Order for signatures of Owner and Contractor.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 012600

## SECTION 013100 - PROJECT MANAGEMENT AND COORDINATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes administrative provisions for coordinating construction operations on Project including, but not limited to, the following:
  - 1. Coordination drawings.
  - 2. Requests for Information (RFIs).

#### 1.2 DEFINITIONS

- A. RFI: Request from Owner, Architect, or Contractor seeking information from each other during construction.

#### 1.3 COORDINATION

- A. Coordination: Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations, included in different Sections, that depend on each other for proper installation, connection, and operation.
  - 1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
  - 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
  - 3. Make adequate provisions to accommodate items scheduled for later installation.
- B. Prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and list of attendees at meetings.
  - 1. Prepare similar memoranda for Owner and separate contractors if coordination of their Work is required.
- C. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
  - 1. Preparation of Contractor's construction schedule.
  - 2. Preparation of the schedule of values.
  - 3. Installation and removal of temporary facilities.
  - 4. Delivery and processing of submittals.
  - 5. Project closeout activities.



#### 1.4 REQUESTS FOR INFORMATION (RFIs)

- A. General: Immediately on discovery of the need for additional information or interpretation of the Contract Documents, Contractor shall prepare and submit an RFI in the form specified.
  - 1. Coordinate and submit RFIs in a prompt manner so as to avoid delays in Contractor's work or work of subcontractors.
  
- B. Content of the RFI: Include a detailed, legible description of item needing information or interpretation and the following:
  - 1. RFI number, numbered sequentially.
  - 2. RFI subject.
  - 3. Specification Section number and title and related paragraphs, as appropriate.
  - 4. Drawing number and detail references, as appropriate.
  - 5. Field dimensions and conditions, as appropriate.
  - 6. Contractor's suggested resolution. If Contractor's solution(s) impacts the Contract Time or the Contract Sum, Contractor shall state impact in the RFI.
  - 7. Contractor's signature.
  - 8. Attachments: Include sketches, descriptions, measurements, photos, Product Data, Shop Drawings, coordination drawings, and other information necessary to fully describe items needing interpretation.
  
- C. Owner's Action: Owner will review each RFI, determine action required, and respond. Allow two working days Owner's response for each RFI. RFIs received by Owner after 1:00 p.m. will be considered as received the following working day.
  - 1. Owner's action may include a request for additional information, in which case Owner's time for response will date from time of receipt of additional information.
  - 2. Owner's action on RFIs that may result in a change to the Contract Time or the Contract Sum may be eligible for Contractor to submit Change Proposal according "Contract of Contract Price."
    - a. If Contractor believes the RFI response warrants change in the Contract Time or the Contract Sum, notify Owner's in writing within 5 days of receipt of the RFI response.

#### 1.5 PROJECT MEETINGS

- A. General: Schedule and conduct meetings and conferences at Project site, unless otherwise indicated.
  - 1. Attendees: Inform participants and others involved, and individuals whose presence is required, of date and time of each meeting. Notify Owner and Architect of scheduled meeting dates and times.
  
- B. Preconstruction Conference: Architect will schedule a preconstruction conference before starting construction, at a time convenient to Owner and Architect.
  - 1. Attendees: Authorized representatives of Owner, Architect, and their consultants; Contractor and its superintendent; major subcontractors; suppliers; and other concerned parties shall attend the conference. Participants at the conference shall be familiar with Project and authorized to conclude matters relating to the Work.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

END OF SECTION 013100

## SECTION 013300 - SUBMITTAL PROCEDURES

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes requirements for the submittal schedule and administrative and procedural requirements for submitting Shop Drawings, Product Data, Samples, and other submittals.

#### 1.2 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Processing Time: Allow time for submittal review, including time for resubmittals, as follows. Time for review shall commence on Architects receipt of submittal. No extension of the Contract Time will be authorized because of failure to transmit submittals enough in advance of the Work to permit processing, including resubmittals.
  - 1. Initial Review: Allow 5 days for initial review of each submittal. Allow additional time if coordination with subsequent submittals is required. Architect will advise Contractor when a submittal being processed must be delayed for coordination.
  - 2. Intermediate Review: If intermediate submittal is necessary, process it in same manner as initial submittal.
  - 3. Resubmittal Review: Allow 2 days for review of each resubmittal.
- B. Distribution: Furnish copies of final submittals to manufacturers, subcontractors, suppliers, fabricators, installers, authorities having jurisdiction, and others as necessary for performance of construction activities.
- C. Use for Construction: Use only final submittals that are marked with approval notation from Architect's action stamp.

### PART 2 - PRODUCTS

#### 2.1 SUBMITTAL PROCEDURES

- A. General Submittal Procedure Requirements:
  - 1. Submittals: Submit electronic pdf copies of all submittals.
- B. Product Data: Collect information into a single submittal for each element of construction and type of product or equipment.
  - 1. If information must be specially prepared for submittal because standard published data are not suitable for use, submit as Shop Drawings, not as Product Data.
  - 2. Include the following information, as applicable:
    - a. Manufacturer's catalog cuts.
    - b. Manufacturer's product specifications.

c. Standard color charts.

C. Samples: Submit Samples for review of kind, color, pattern, and texture for approval.

## 2.2 CONTRACTOR'S REVIEW

A. Submittals: Review each submittal and check for coordination with other Work of the Contract and for compliance with the Contract Documents. Note corrections and field dimensions. Mark with approval stamp before submitting to Architect.

B. Approval Stamp: Stamp each submittal with a uniform, approval stamp. Include Project name and location, submittal number, Specification Section title and number, name of reviewer, date of Contractor's approval, and statement certifying that submittal has been reviewed, checked, and approved for compliance with the Contract Documents.

## 2.3 ARCHITECT/ENGINEER'S ACTION

A. Submittals: Architect will review each submittal return it upon its review and approval.

END OF SECTION 013300

## SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes requirements for temporary utilities, support facilities, job site sign, and security and protection facilities.

### PART 2 - PRODUCTS

#### 2.1 EQUIPMENT

- A. Fire Extinguishers: Provide portable, UL rated; with class and extinguishing agent as required by locations and classes of fire exposures.

### PART 3 - EXECUTION

#### 3.1 TEMPORARY UTILITY INSTALLATION

- A. Water Service: Connect to Owner's existing water service facilities. Clean and maintain water service facilities in a condition acceptable to Owner.
- B. Sanitary Facilities: Provide temporary toilet for use of construction personnel. Locate per owner's direction.
- C. Electric Power Service: Connect to Owner's existing electric power service.

#### 3.2 SUPPORT FACILITIES INSTALLATION

- A. Site
  1. Protect existing site improvements to remain including curbs, pavement, and utilities.
  2. Maintain access for fire-fighting equipment and access to fire hydrants.
- B. Parking: Owner will designate parking areas for construction personnel.
- C. Waste Disposal Facilities: Provide waste-collection containers in sizes adequate to handle waste from construction operations.

### 3.3 PROTECTION FACILITIES INSTALLATION

- A. Site Enclosure Fence: Before construction operations begin furnish and install vinyl enclosure fence in a manner that will prevent people from easily entering site adjacent to front entry.
- B. Temporary Egress: Maintain temporary egress from existing occupied facilities as required during construction.

END OF SECTION 015000

## SECTION 017300 - EXECUTION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes general administrative and procedural requirements governing execution of the Work including, but not limited to, the following:
  - 1. Construction layout.
  - 2. Installation of the Work.
  - 3. Cutting and patching.
  - 4. Progress cleaning.
  - 5. Correction of the Work.

#### 1.2 QUALITY ASSURANCE

- A. Cutting and Patching: Comply with requirements for and limitations on cutting and patching of construction elements.
  - 1. Structural Elements: When cutting structural elements notify Owner of locations and details of cutting and await directions from the Architect before proceeding.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. In-Place Materials: Use materials for patching identical to in-place materials. For exposed surfaces, use materials that visually match in-place adjacent surfaces to the fullest extent possible.
  - 1. If identical materials are unavailable or cannot be used, use materials that, when installed, will provide a match acceptable to the Architect for the visual and functional performance of in-place materials.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Existing Conditions: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning sitework, investigate and verify the existence and location of underground utilities, mechanical and electrical systems, and other construction affecting the Work.

- B. Examination and Acceptance of Conditions: Before proceeding with each component of the Work, examine substrates, areas, and conditions, with Installer or Applicator present where indicated, for compliance with requirements for installation tolerances and other conditions affecting performance. Record observations.
  - 1. Verify compatibility with and suitability of substrates, including compatibility with existing finishes or primers.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected. Proceeding with the Work indicates acceptance of surfaces and conditions.

### 3.2 PREPARATION

- A. Field Measurements: Take field measurements as required to fit the Work properly. Recheck measurements before installing each product. Where portions of the Work are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Review of Contract Documents and Field Conditions: Immediately on discovery of the need for clarification of the Contract Documents caused by differing field conditions outside the control of the Contractor, submit a request for information to Owner.

### 3.3 CONSTRUCTION LAYOUT

- A. Verification: Before proceeding to lay out the Work, verify layout information shown on Drawings, in relation to the property survey and existing benchmarks. If discrepancies are discovered, notify Owner promptly.

### 3.4 INSTALLATION

- A. General: Locate the Work and components of the Work accurately, in correct alignment and elevation, as indicated.
  - 1. Make vertical work plumb and make horizontal work level.
- B. Install products at the time and under conditions that will ensure the best possible results. Maintain conditions required for product performance until Substantial Completion.
- C. Conduct construction operations so no part of the Work is subjected to damaging operations or loading in excess of that expected during normal conditions of occupancy.

### 3.5 CUTTING AND PATCHING

- A. Cutting and Patching, General: Employ skilled workers to perform cutting and patching. Proceed with cutting and patching at the earliest feasible time, and complete without delay.



1. Cut in-place construction to provide for installation of other components or performance of other construction, and subsequently patch as required to restore surfaces to their original condition.
- B. Temporary Support: Provide temporary support of work to be cut.
- C. Protection: Protect in-place construction during cutting and patching to prevent damage. Provide protection from adverse weather conditions for portions of Project that might be exposed during cutting and patching operations.
- D. Adjacent Occupied Areas: Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.
- E. Cutting: Cut in-place construction by sawing, drilling, breaking, chipping, grinding, and similar operations, including excavation, using methods least likely to damage elements retained or adjoining construction. If possible, review proposed procedures with original Installer; comply with original Installer's written recommendations.
  1. In general, use hand or small power tools designed for sawing and grinding, not hammering and chopping. Cut holes and slots neatly to minimum size required, and with minimum disturbance of adjacent surfaces. Temporarily cover openings when not in use.
  2. Concrete and masonry cutting: Cut using a cutting machine, such as an abrasive saw or a diamond-core drill.
- F. Patching: Patch construction by filling, repairing, refinishing, closing up, and similar operations following performance of other work. Patch with durable seams that are as invisible as practicable. Provide materials and comply with installation requirements specified in other Sections, where applicable.

### 3.6 PROGRESS CLEANING

- A. Site: Maintain Project site free of waste materials and debris.

### 3.7 CORRECTION OF THE WORK

- A. Repair or remove and replace defective construction. Restore damaged substrates and finishes.
  1. Repairing includes replacing defective parts, refinishing damaged surfaces, touching up with matching materials, and properly adjusting operating equipment.
- B. Remove and replace damaged surfaces that are exposed to view if surfaces cannot be repaired without visible evidence of repair.

END OF SECTION 017300

## SECTION 033000 - CAST-IN-PLACE CONCRETE

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section specifies cast-in place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

#### 1.2 RELATED SECTIONS

- A. Division 312000 Earthwork.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Design Mixtures: For each concrete mixture.
- C. Shop Drawings: For steel reinforcement.

#### 1.4 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A firm with minimum of five years experience
- B. The concrete supplier shall have a minimum of five years experience in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
  - 1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."
- C. Codes and Standards: Comply with provisions of following codes, specifications and standards, except where more stringent requirements are shown or specified:
  - 1. ACI 301, "Specification for Structural Concrete," Sections 1 through 5.
  - 2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials".
  - 3. ACI 318 – "Building Code Requirements for Reinforced Concrete".
  - 4. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice".
- D. The Contractor is responsible for quality control, including workmanship and materials furnished by his subcontractors and suppliers. The concrete contractor shall have a minimum of five years experience with installation of concrete similar in material, design and extent to that indicated for this Project and whose work has resulted in construction with a record of successful –service performance.

- E. Any testing laboratory retained to run tests required by this specification shall meet the basic requirements of ASTM E 329.

## PART 2 - PRODUCTS

### 2.1 FORM-FACING MATERIALS

- A. Smooth-Formed Finished Concrete: Form-facing panels that will provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.
- B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

### 2.2 STEEL REINFORCEMENT

- A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 (Grade 420), deformed.
- B. Plain-Steel Welded Wire Reinforcement: ASTM A 185, plain, fabricated from as-drawn steel wire into flat sheets.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

### 2.3 CONCRETE MATERIALS

- A. Refer to the drawings for classes and strengths of concrete required.
- B. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source, throughout Project:
  - 1. Portland Cement: ASTM C 150, Type I or II. All footing and foundation work should be type II. Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class C or Class F.
- C. Normal-Weight Aggregates: ASTM C 33, graded, 3/4-inch nominal maximum coarse-aggregate size.
  - 1. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- D. Water: ASTM C 94/C 94M and potable.
- E. Air-Entraining Admixture: ASTM C 260.
- F. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those

permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
2. Retarding Admixture: ASTM C 494/C 494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.4 RELATED MATERIALS

- A. Plastic Vapor Retarder: Refer to section 073100.
- B. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.
- C. Waterstops: (Reserved)
- D. Fabricate steel reinforcement: according to CRSI's "Manual of Standard Practice."
- E. Anchor Rods: (Reserved)
- F. NON-SHRINK GROUT
  1. Specifications: Non-shrink grout shall conform to ASTM C 1107.
- G. CONTRUCTION JOINT FILLER
  1. Contraction and Construction Joint (including saw joints) -Filler Material for Slabs-on-Grade: In all joints provide a 2 component semi-rigid, 100% solids epoxy joint filler having a minimum shore A hardness of 80 when tested in accordance with ASTM D 2240

## 2.5 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. when dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
- E. Clear, Solvent-Borne, Membrane-Forming Curing and Sealing Compound: ASTM C 1315, Type 1, Class A.

## 2.6 CONCRETE MIXTURES

- A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
- B. Cementitious Materials: Use fly ash as needed to reduce the total amount of portland cement, which would otherwise be used, by not more than 20 percent.
- C. Proportion normal-weight concrete mixture as follows:
  - 1. Minimum Compressive Strength: 4000 psi at 28 days.
  - 2. Maximum Water-Cementitious Materials Ratio: 0.45.
  - 3. Slump Limit: 4 inches, 8 inches for concrete with verified slump of 2 to 4 inches before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch.
  - 4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 3/4-inch nominal maximum aggregate size, for all concrete except interior slabs.
  - 5. Air Content: Do not allow air content of troweled finished floors to exceed 3 percent

## 2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

## PART 3 - EXECUTION

### 3.1 FORMWORK

- A. Design, erect, shore, brace, and maintain formwork according to ACI 301 to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.
- B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117.
- C. Do not chamfer exterior corners and edges of permanently exposed concrete unless noted otherwise.

### 3.2 EMBEDDED ITEMS

- A. 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

unless directed otherwise by these specifications. Install reglets to receive top edge of foundation sheet waterproofing where specified by the Architect, and to receive thru-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, relieving angles and other conditions.

- B. 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.
- C. Do not install sleeves in concrete slabs, pier caps, footings or walls except where shown on the structural drawings or approved by the Architect and Engineer.
- D. Securely fasten embedded plates, angles, anchor rods and other items to be built into the concrete to the formwork or hold in place with templates. Insertion of these items into concrete after casting is prohibited.
- E. Installation of Adhesive Anchors using Injectable Epoxy or Adhesive: After drilling the hole to the diameter and depth recommended by the manufacturer, clean the hole with a wire or nylon brush. Blow the dust out of the hole using compressed air with a nozzle that reaches to the bottom of the hole. When using adhesive from a new pack, the adhesive that is discharged from the mixing nozzle should be a uniform gray color before any adhesive is installed in the hole. Fill the hole with adhesive starting from the very bottom of the hole until the hole is about 2/3 full. Do not leave an air pocket at the bottom of the hole. Insert the anchor rod or dowel by slowly twisting it into the hole.

### 3.3 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for placing reinforcement.
  - 1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

### 3.4 JOINTS

- A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.
- B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Architect.
- C. Contraction Joints in Slabs-on-Grade: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth the depth of concrete thickness as follows:
  - 1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint to a radius of 1/8 inch. Repeat grooving of contraction joints after applying surface finishes. Eliminate groover tool marks on concrete surfaces. Do not use form joint in areas subject to vehicle traffic.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before concrete develops random contraction cracks.
- D. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

### 3.5 CONCRETE PLACEMENT

- A. Pre-placement 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. Before placing concrete, verify that installation of vapor barrier, formwork, reinforcement, and embedded items is complete and that required inspections have been performed.
- B. Concrete shall not be placed when the outside air temperature is 40°F or less unless cold weather concreting practices are followed per engineers approved methods. Design mix shall be formulated for cold weather placement and approved by engineer.
- C. Follow hot weather concreting practices when required to limit the concrete temperature at the truck discharge point to the stated maximum acceptable temperature. Design mix shall be formulated for hot weather placement and approved by engineer.
- D. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete will be placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete 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, rodding or tamping. Use internal vibrators of the largest size and power that can properly be used in the work as described in the table entitled "Range of characteristics, performance, and applications of internal vibrators" found in ACI 301.
- G. 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

- H. 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. Place concrete for beams, girders, brackets, column capitals, haunches, and drop panels at the same time as concrete for slabs. Do not place concrete over columns and walls until concrete in columns and walls is no longer plastic and has been in place at least one hour.
- I. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners of forms, eliminating air and stone pockets that may cause honeycombing, pitting, or planes of weakness.
- J. Bring slab surfaces to correct level with straightedge and strikeoff. Use highway straightedges, bull floats or darbies to smooth surface free of humps or hollows before excess moisture or bleedwater appears on the surface. Do not disturb slab surfaces prior to beginning finishing operations.
- K. Maintain reinforcing in proper position during concrete placement operations. Placing Concrete by Pump: If concrete is placed by using a pump, the grout used for pump priming must not become a part of the completed structure unless an engineered grout design mix and grout location are approved in advance by the Engineer.
- L. Cold-Weather Placement: Comply with ACI 306.1.
- M. Hot-Weather Placement: Comply with ACI 301.
- N. SLUMP LIMIT
  - 1. The slump, as measured in the field where concrete cylinders are taken, shall be within plus or minus 1 inch of the design slump noted on the Mix Design Submittal Form. Self-consolidating concrete shall have a slump/flow of plus or minus 2 inches of the design slump noted on the Mix Design Submittal Form. Water may be added to the concrete in the field only to the extent that the prescribed water/cementitious ratio noted in the Mix Design Submittal Form is not exceeded.

### 3.6 FINISHING FORMED SURFACES

- A. Rough Form Finish: Provide rough form finish for formed concrete surfaces not otherwise scheduled on the drawings to receive a smooth-form finish. 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.
  - 1. Apply to concrete surfaces not exposed to public view.
- B. Smooth Form Finish: Provide smooth form finish for formed concrete surfaces as scheduled on the drawings, which may include those exposed-to-view, or that are to be covered with a coating or covering material applied directly to concrete such as waterproofing, dampproofing, painting, veneer plaster or other similar system, or to a surface that is to receive a smooth rubbed finish or grout cleaned finish. This is an 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 exceeding 1/8 inch in height removed and smoothed.



1. Apply to concrete surfaces exposed to public view.
- C. Rubbed Finish: Smooth Rubbed Finish: Provide smooth rubbed finish to scheduled or specified concrete surfaces, which have received smooth-form finish treatment, not later than one day after form removal. Moisten 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. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces 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.

### 3.7 FINISHING FLOORS AND SLABS

- A. General: Comply with ACI 302.1R recommendations for screeding, restraighening, and finishing operations for concrete surfaces. Do not wet concrete surfaces.
- B. Float Finish: Consolidate surface with power-driven floats or by hand floating if area is small or inaccessible to power driven floats. Restraighten, cut down high spots, and fill low spots. Repeat float passes and restraighening until surface is left with a uniform, smooth, granular texture.
1. Apply float finish to surfaces indicated
- C. Trowel Finish: After applying float finish, apply first troweling and consolidate concrete by hand or power-driven trowel. Continue troweling passes and restraighten until surface is free of trowel marks and uniform in texture and appearance. Grind smooth any surface defects that would telegraph through applied coatings or floor coverings.
1. Finish surfaces to the following tolerances, according to ASTM E 1155, for a randomly trafficked floor surface:
    - a. Specified overall values of flatness, F(F) 35; and of levelness, F(L) 25. Minimum values F(F) 24 and F(L) 17.
  2. Finish and measure surface so gap at any point between concrete surface and an unleveled, freestanding, 10-ft.- long straightedge resting on two high spots and placed anywhere on the surface does not exceed 1/8 inch.
- D. Trowel and Fine-Broom Finish: Apply a first trowel finish to surfaces indicated. While concrete is still plastic, slightly scarify surface with a fine broom.
1. Comply with flatness and levelness tolerances for trowel finished floor surfaces.
- E. Broom Finish: Apply a broom finish to exterior concrete sidewalks, pads, platforms, steps, and ramps, and elsewhere as indicated.

### 3.8 CONCRETE PROTECTING AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 for hot-

weather protection during curing. Coordinate with architectural finish schedule for areas to receive staining. No cure and seal shall occur on concrete slabs to receive staining.

- B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- C. Cure concrete according to ACI 308.1, by one or a combination of the following methods:
  - 1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing and Sealing Compound: Apply uniformly to floors and slabs in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period. Verify with flooring subcontractor all that proposed floor covering/adhesives are compatible with cure and seal product.

### 3.9 CONCRETE SURFACE REPAIRS

- A. Defective Concrete:
  - 1. If, in the opinion of the Architect/Engineer or Owner's Representative, all or any portion of the substandard work can be repaired without sacrifice to the appearance or serviceability of the area, then the Contractor shall immediately undertake the approved repair method.
  - 2. The Contractor shall submit for review and approval a detailed work plan of the proposed repair showing areas to be repaired, method of repair and time to affect the repair.
  - 3. Repair method(s), at the sole discretion of the Architect/Engineer or Owner's Representative, may include grinding (floor stoning), planing, retopping with self leveling underlayment compound or repair topping, or any combination of the above.
  - 4. The Architect/Engineer or Owner's Representative maintains the right to require a test repair section using the approved method of repair for review and approval to demonstrate a satisfactory end product. If, in the opinion of the Architect/Engineer or Owner's Representative, the repair is not satisfactory an alternate method of repair shall be submitted or the defective area shall be replaced.
  - 5. The judgment of the Architect/Engineer or Owner's Representative on the appropriateness of a repair method and its ability to achieve the desired end product shall be final
  - 6. If, in the opinion of the Architect/Engineer or Owner's Representative, all or any portion of the substandard work cannot be satisfactorily repaired without sacrifice to the appearance or serviceability of the area, then the Contractor shall immediately commence to remove and replace the defective work.

7. All replacement work as a result of defective workmanship shall be performed at no additional cost to the Owner

B. CONCRETE FINISH MEASUREMENT AND TOLERANCES

C. Testing Procedure: ASTM E 1155

D. Tolerance on Floor Elevations: Construction tolerance on absolute floor elevation from the specified elevation as shown on the drawings shall be as specified below, taken from ACI 117:

1. Slab-on-Grade Construction  $\pm 3/4"$ .
2. Top surfaces of formed slabs measured prior to removal of supporting shores  $\pm 3/4"$ .
3. Top surfaces of all other slabs  $\pm 3/4"$ .

3.10 FIELD QUALITY CONTROL

A. Testing and Inspecting: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

1. Testing Services: Tests shall be performed according to ACI 301.

END OF SECTION 033000

## SECTION 054000 - COLD-FORMED METAL FRAMING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Exterior load-bearing wall framing.
  - 2. Roof rafter framing.

#### 1.2 PERFORMANCE REQUIREMENTS

- A. Structural Performance: Provide cold-formed metal framing capable of withstanding design loads within limits and under conditions indicated.
  - 1. Design Loads: As indicated on plans.
  - 2. Deflection Limits: Design framing systems to withstand design loads without deflections greater than the following:
    - a. Exterior Load-Bearing Wall Framing: Horizontal deflection of 1/360 of the wall height.
    - b. Roof Rafter Framing: Vertical deflection of 1/240 of the horizontally projected span.
    - c. Ceiling Joist Framing: Vertical deflection of 1/360 of the span.
  - 3. Design framing systems to provide for movement of framing members without damage or overstressing, sheathing failure, connection failure, undue strain on fasteners and anchors, or other detrimental effects when subject to a maximum ambient temperature change of 120 deg F.
  - 4. Design framing system to maintain clearances at openings, to allow for construction tolerances, and to accommodate live load deflection of primary building structure as follows:
    - a. Upward and downward movement of 1 inch.
- B. Cold-Formed Steel Framing, General: Design according to AISI's "Standard for Cold-Formed Steel Framing - General Provisions."
  - 1. Headers: Design according to AISI's "Standard for Cold-Formed Steel Framing - Header Design."
  - 2. Design exterior non-load-bearing wall framing to accommodate horizontal deflection without regard for contribution of sheathing materials.
  - 3. Roof Trusses: Design according to AISI's "Standard for Cold-Formed Steel Framing - Truss Design."

#### 1.3 SUBMITTALS

- A. Product Data: For each type of product and accessory indicated.

- B. Welding certificates.
- C. Qualification data.
- D. Product Test Reports: From a qualified testing agency, unless otherwise stated, indicating that each of the following complies with requirements, based on evaluation of comprehensive tests for current products:
  1. Steel sheet.
  2. Expansion anchors.
  3. Power-actuated anchors.
  4. Mechanical fasteners.
  5. Vertical deflection clips.
  6. Horizontal drift deflection clips
  7. Miscellaneous structural clips and accessories.
- E. Research/evaluation reports: For cold formed steel framing.
  1. Metal stud manufacturer to have a 3rd party evaluation report for its products that are reviewed to the local building code or its model code (IBC 2016 and AISI S100).

#### 1.4 QUALITY ASSURANCE

- A. Testing Agency Qualifications: An independent testing agency, acceptable to authorities having jurisdiction, qualified according to ASTM E 329 to conduct the testing indicated.
- B. Product Tests: Mill certificates or data from a qualified independent testing agency indicating steel sheet complies with requirements.
- C. Welding: Qualify procedures and personnel according to AWS D1.3, "Structural Welding Code-Sheet Steel."
- D. Fire-Test-Response Characteristics: Where indicated, provide cold-formed metal framing identical to that of assemblies tested for fire resistance per ASTM E 119 by a testing and inspecting agency acceptable to authorities having jurisdiction.
- E. AISI Specifications and Standards: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" and its "Standard for Cold-Formed Steel Framing - General Provisions."
  1. Comply with AISI's "Standard for Cold-Formed Steel Framing - Truss Design."
  2. Comply with AISI's "Standard for Cold-Formed Steel Framing - Header Design."

#### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Protect cold-formed metal framing from corrosion, moisture staining, deformation, and other damage during delivery, storage, and handling as required in AISI's "Code of Standard Practice".

- B. Store cold-formed metal framing, protect with a waterproof covering, and ventilate to avoid condensation.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- A. Steel Sheet: ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of grade and coating weight as follows:
  - 1. Grade: As required by structural performance.
  - 2. Coating: G60 galvanized coating

### 2.2 LOAD-BEARING WALL FRAMING

- A. Steel Studs: Manufacturer's standard C-shaped steel studs, of web depths indicated, punched, with stiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness 0.0566 inch.
  - 2. Flange Width: 1-5/8 inches.
  - 3. Section Properties: As required.
- B. Steel Track: Manufacturer's standard U-shaped steel track, of web depths indicated, unpunched, with straight flanges, and same minimum base-metal thickness as steel studs.
- C. Steel Box or Back-to-Back Headers: Manufacturer's standard C-shapes used to form header beams, of web depths indicated, punched, with stiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness: 0.0566 inch
  - 2. Flange widths vary with application; coordinate with wall width. 1 5/8 inches.
- D. Headers and Jambs - Heavy-Duty Stud: Manufacturer's proprietary shape used to form header beams and jambs, columns or posts, of web depths indicated, unpunched, with stiffened flanges and as follows:
  - 1. Product: ClarkDietrich Building Systems; or a comparable product.
  - 2. Minimum Base-Metal Thickness: 0.0451 inch.
  - 3. Web and Flange Widths: As indicated on Drawings.

### 2.3 ROOF-RAFTER FRAMING

- A. Steel Rafters: Manufacturer's standard C-shaped steel sections, of web depths indicated, unpunched, with stiffened flanges, and as follows:
  - 1. Minimum Base-Metal Thickness: 0.0451 inch.
  - 2. Flange Width: 1-3/4 inches, minimum.
  - 3. Section Properties: As required

- B. Built-up Members: Built-up members of manufacturer's standard C-shaped steel section, with stiffened flanges, nested into a U-shaped steel section joist track, with unstiffened flanges; unpunched; of web depths indicated; and as follows:
  - 1. Minimum Base-Metal Thickness: 0.0451 inch
  - 2. Flange Width: 1-3/4 inches, minimum.

## 2.4 FRAMING ACCESSORIES

- A. Fabricate steel-framing accessories from steel sheet, ASTM A 1003/A 1003M, Structural Grade, Type H, metallic coated, of same grade and coating weight used for framing members, unless otherwise indicated.
- B. Provide accessories of manufacturer's standard thickness and configuration, unless otherwise indicated, as follows:
  - 1. Supplementary framing.
  - 2. Bracing, bridging, and solid blocking.
    - a. Product: ClarkDietrich Building Systems; Spazzer 5400 Bridging and Spazzer Bar Guard (SPBG)
  - 3. Web stiffeners.
    - a. Product: ClarkDietrich Building Systems; QTWS.
  - 4. Anchor clips.
  - 5. End clips.
  - 6. Foundation clips.
  - 7. Gusset plates.
  - 8. Stud kickers, knee braces, and girts.
  - 9. Joist hangers and end closures.
  - 10. Hole reinforcing plates.
  - 11. Backer plates.
- C. Steel Shapes and Clips: ASTM A 36/A 36M, zinc coated by hot-dip process according to ASTM A 123/A 123M.
- D. Anchor Bolts: ASTM F 1554, Grade 36, threaded carbon-steel hex-headed bolts] and carbon-steel nuts; and flat, hardened-steel washers; zinc coated by hot-dip process according to ASTM A 153/A 153M, Class C.
- E. Expansion Anchors: Fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 5 times design load, as determined by testing per ASTM E 488 conducted by a qualified independent testing agency.
- F. Power-Actuated Anchors: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with capability to sustain, without failure, a load equal to 10 times design load, as determined by testing per ASTM E 1190 conducted by a qualified independent testing agency.
- G. Mechanical Fasteners: ASTM C 1513, corrosion-resistant-coated, self-drilling, self-tapping steel drill screws.
  - 1. Head Type: Low-profile head beneath sheathing, manufacturer's standard elsewhere.

## 2.5 MISCELLANEOUS MATERIALS

- A. Shims: Load bearing, high-density multi-monomer plastic, non-leaching.
- B. Sealer Gaskets: Closed-cell neoprene foam, 1/4 inch thick, selected from manufacturer's standard widths to match width of bottom track or rim track members.

## 2.6 FABRICATION

- A. Fabricate cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened, according to referenced AISI's specifications and standards, manufacturer's written instructions, and requirements in this Section.
  - 1. Fabricate framing assemblies using jigs or templates.
  - 2. Cut framing members by sawing or shearing; do not torch cut.
  - 3. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting as standard with fabricator. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, with screw penetrating joined members by not less than three exposed screw threads.
  - 4. Fasten other materials to cold-formed metal framing by welding, bolting, or screw fastening, according to Shop Drawings.
- B. Reinforce, stiffen, and brace framing assemblies to withstand handling, delivery, and erection stresses. Lift fabricated assemblies to prevent damage or permanent distortion.
- C. Fabrication Tolerances: Fabricate assemblies level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Spacing: Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.
  - 2. Squareness: Fabricate each cold-formed metal framing assembly to a maximum out-of-square tolerance of 1/8 inch.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Install load bearing shims or grout between the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations to ensure a uniform bearing surface on supporting concrete or masonry construction.
- B. Install sealer gaskets to isolate the underside of wall bottom track or rim track and the top of foundation wall or slab at stud or joist locations.



### 3.2 INSTALLATION, GENERAL

- A. Install cold-formed metal framing according to ASTM C 1007, AISI's "Standard for Cold-Formed Steel Framing - General Provisions" and to manufacturer's written instructions unless more stringent requirements are indicated.
- B. Cold-formed metal framing may be shop or field fabricated for installation, or it may be field assembled.
- C. Install shop- or field-fabricated, cold-formed framing and securely anchor to supporting structure.
  - 1. Screw, bolt, or weld wall panels at horizontal and vertical junctures to produce flush, even, true-to-line joints with maximum variation in plane and true position between fabricated panels not exceeding 1/16 inch.
- D. Install cold-formed metal framing and accessories plumb, square, and true to line, and with connections securely fastened.
  - 1. Cut framing members by sawing or shearing; do not torch cut.
  - 2. Fasten cold-formed metal framing members by welding, screw fastening, clinch fastening, or riveting. Wire tying of framing members is not permitted.
    - a. Comply with AWS D1.3 requirements and procedures for welding, appearance and quality of welds, and methods used in correcting welding work.
    - b. Locate mechanical fasteners and install according to Shop Drawings, and complying with requirements for spacing, edge distances, and screw penetration.
- E. Install framing members in one-piece lengths.
- F. Install temporary bracing and supports to secure framing and support loads comparable in intensity to those for which structure was designed. Maintain braces and supports in place, undisturbed, until entire integrated supporting structure has been completed and permanent connections to framing are secured.
- G. Do not bridge building expansion and control joints with cold-formed metal framing. Independently frame both sides of joints.
- H. Install insulation, specified in Division 07 Section "Thermal Insulation," in built-up exterior framing members, such as headers, sills, boxed joists, and multiple studs at openings, that are inaccessible on completion of framing work.
- I. Fasten hole reinforcing plate over web penetrations that exceed size of manufacturer's standard punched openings.
- J. Erection Tolerances: Install cold-formed metal framing level, plumb, and true to line to a maximum allowable tolerance variation of 1/8 inch in 10 feet and as follows:
  - 1. Space individual framing members no more than plus or minus 1/8 inch from plan location. Cumulative error shall not exceed minimum fastening requirements of sheathing or other finishing materials.

### 3.3 LOAD-BEARING WALL INSTALLATION

- A. Install continuous top and bottom tracks sized to match studs. Align tracks accurately and securely anchor at corners and ends, and at spacings as follows:
  - 1. Anchor Spacing: To match stud spacing.
- B. Squarely seat studs against top and bottom tracks with gap not exceeding of 1/8 inch between the end of wall framing member and the web of track. Fasten both flanges of studs to top and bottom tracks. Space studs as follows:
  - 1. Stud Spacing: As indicated.
- C. Set studs plumb, except as needed for diagonal bracing or required for nonplumb walls or warped surfaces and similar configurations.
- D. Align studs vertically where floor framing interrupts wall-framing continuity. Where studs cannot be aligned, continuously reinforce track to transfer loads.
- E. Align floor and roof framing over studs. Where framing cannot be aligned, continuously reinforce track to transfer loads.
- F. Anchor studs abutting structural columns or walls, including masonry walls, to supporting structure as indicated.
- G. Install headers over wall openings wider than stud spacing. Locate headers above openings as indicated. Fabricate headers of compound shapes indicated or required to transfer load to supporting studs, complete with clip-angle connectors, web stiffeners, or gusset plates.
  - 1. Frame wall openings with not less than a double stud at each jamb of frame as indicated on Shop Drawings. Fasten jamb members together to uniformly distribute loads.
  - 2. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with clip angles or by welding, and space jack studs same as full-height wall studs.
- H. Install supplementary framing, blocking, and bracing in stud framing indicated to support fixtures, equipment, services, casework, heavy trim, furnishings, and similar work requiring attachment to framing.
  - 1. If type of supplementary support is not indicated, comply with stud manufacturer's written recommendations and industry standards in each case, considering weight or load resulting from item supported.
- I. Install horizontal bridging in stud system, spaced 48 inches. Select type of bridging required from three subparagraphs below or revise to suit Project. Add locations if more than one type of bridging is required. Add minimum size of flat steel strap, such as 1-1/2 by 0.0329 inch (38 by 0.84 mm), if default size is required.
  - 1. Bridging: Cold-formed steel channel, welded or mechanically fastened to webs of punched studs with a minimum of 2 screws into each flange of the clip angle for framing members up to 6 inches deep.
  - 2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and stud-track solid blocking of width and thickness to match studs. Fasten flat straps to stud flanges and secure solid blocking to stud webs or flanges.

3. Bridging: Proprietary bridging bars installed according to manufacturer's written instructions.

J. Install steel sheet diagonal bracing straps to both stud flanges, terminate at and fasten to reinforced top and bottom tracks. Fasten clip-angle connectors to multiple studs at ends of bracing and anchor to structure.

K. Install miscellaneous framing and connections, including supplementary framing, web stiffeners, clip angles, continuous angles, anchors, and fasteners, to provide a complete and stable wall-framing system.

### 3.4 EXTERIOR NON-LOAD-BEARING WALL INSTALLATION (RESERVED)

### 3.5 JOIST INSTALLATION

A. Install perimeter joist track sized to match joists. Align and securely anchor or fasten track to supporting structure at corners, ends, and spacings indicated on Shop Drawings.

B. Install joists bearing on supporting frame, level, straight, and plumb; adjust to final position, brace, and reinforce. Fasten joists to both flanges of joist track.

1. Install joists over supporting frame with a minimum end bearing of 1-1/2 inches.
2. Reinforce ends and bearing points of joists with web stiffeners, end clips, joist hangers, steel clip angles, or steel-stud sections as indicated on Shop Drawings.

C. Space joists not more than 2 inches from abutting walls, and as follows:

1. Joist Spacing: As indicated.

D. Frame openings with built-up joist headers consisting of joist and joist track, nesting joists, or another combination of connected joists if indicated.

E. Install joist reinforcement at interior supports with single, short length of joist section located directly over interior support, with lapped joists of equal length to joist reinforcement, or as indicated.

1. Install web stiffeners to transfer axial loads of walls above.

F. Install bridging at intervals indicated. Fasten bridging at each joist intersection as follows:

1. Bridging: Joist-track solid blocking of width and thickness indicated, secured to joist webs.
2. Bridging: Combination of flat, taut, steel sheet straps of width and thickness indicated and joist-track solid blocking of width and thickness indicated. Fasten flat straps to bottom flange of joists and secure solid blocking to joist webs.

G. Install miscellaneous joist framing and connections, including web stiffeners, closure pieces, clip angles, continuous angles, hold-down angles, anchors, and fasteners, to provide a complete and stable joist-framing assembly.

### 3.6 FIELD QUALITY CONTROL

- A. Field and shop welds will be subject to testing and inspecting.
- B. Remove and replace work where test results indicate that it does not comply with specified requirements.

### 3.7 REPAIRS AND PROTECTION

- A. Galvanizing Repairs: Prepare and repair damaged galvanized coatings on fabricated and installed cold-formed metal framing with galvanized repair paint according to ASTM A 780 and manufacturer's written instructions.
- B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, that ensure that cold-formed metal framing is without damage or deterioration at time of Substantial Completion.

END OF SECTION 054000

## SECTION 061000 - ROUGH CARPENTRY

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Wood blocking and nailers.
  - 2. Fire rated plywood wall sheathing
  - 3. Fire rated plywood for roof sheathing

#### 1.2 SUBMITTALS

- A. Product Data: For each type of process and factory-fabricated product.
  - 1. Include data for wood-preservative and fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements.
- B. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the American Lumber Standards Committee Board of Review.

### PART 2 - PRODUCTS

#### 2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
  - 1. Factory mark each piece of lumber with grade stamp of grading agency.
  - 2. Provide dressed lumber, S4S, unless otherwise indicated.

#### 2.2 WOOD-PRESERVATIVE-TREATED LUMBER

- A. Preservative Treatment by Pressure Process: AWPA C2
  - 1. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
- B. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent.
- C. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
- D. Application: Treat all wood framing used in locations listed below.
  - 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.

2. Wood sills, sleepers, blocking, furring, and similar concealed members in contact with masonry or concrete.
3. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
4. Wood framing members that are less than 18 inches above the ground in crawlspaces or unexcavated areas.
5. Wood floor plates that are installed over concrete slabs-on-grade.

### 2.3 FIRE-RETARDANT PLYWOOD

- A. Product: Provide  $\frac{3}{4}$ " x 4' x 8' fire retardant plywood at locations indicated on plans. Plywood to be equal to PYRO-GUARD as manufactured by Hoover Treated Wood Products. Flame spread to be Class A (25 or less) per ASTM E 84. Plywood shall bear UL rating label. Plywood to meet performance requirement of AWPA U1 and shall be produced in accordance with ICC Evaluation Service Report 1791 (ESR-1791)
- B. Installation: Install plywood with hot dip zinc coated steel or stainless steel fasteners in accordance with ASTM A153 or ASTM B 695. Fasteners to be installed at 16" o.c..

### 2.4 MISCELLANEOUS LUMBER

- A. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
  1. Blocking.
  2. Nailers.
  3. Furring.
  4. Cants
- B. For items of dimension lumber size, provide Construction or No. 2 grade lumber with 19 percent maximum moisture content of any species.
- C. For concealed boards, provide lumber with 19 percent maximum moisture content and any of the following species and grades:
  1. Mixed southern pine, No. 2 grade; SPIB.
  2. Eastern softwoods, No. 2 Common grade; NeLMA.
  3. Northern species, No. 2 Common grade; NLGA.
  4. Western woods, Construction or No. 2 Common grade; WCLIB or WWPA.

### 2.5 FASTENERS

- A. General: Provide fasteners of size and type indicated that comply with requirements specified.
  1. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M of Type 304 stainless steel.
- B. Power-Driven Fasteners: NES NER-272.
- C. Bolts: Steel bolts complying with ASTM A 307, Grade A; with ASTM A 563 hex nuts and, where indicated, flat washers.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, and similar supports to comply with requirements for attaching other construction.
- B. Where wood-preserved-treated lumber is installed adjacent to metal decking, install continuous flexible flashing separator between wood and metal decking.
- C. Do not splice structural members between supports, unless otherwise indicated.
- D. Comply with AWWA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
- E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
  - 1. NES NER-272 for power-driven fasteners.
  - 2. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.

### 3.2 FIELD QUALITY CONTROL

- A. All work found not to meet industry standards shall be modified or replaced.

### 3.3 PROTECTION

- A. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 061000

## SECTION 072100 - THERMAL INSULATION

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Glass-fiber blanket batt insulation.
  - 2. Reflective foil insulation

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product test/evaluation reports.

### PART 2 - PRODUCTS

#### 2.1 GLASS-FIBER BLANKET INSULATION-exterior wall cavities

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. CertainTeed Corporation.
  - 2. Guardian Building Products, Inc.
  - 3. Johns Manville.
  - 4. Knauf Insulation.
  - 5. Owens Corning.
- B. Unfaced Insulation: Glass-Fiber Blanket Insulation: ASTM C 665, Type II (non-reflective faced), Class C (faced surface not rated for flame propagation); Category 1 (membrane is a vapor barrier). See plans and sections for locations.
  - 1. Provide R-21 insulation in exterior wall cavities as indicated on plans.
  - 2. Provide R-30 insulation per building sections.
- C. Metal wall and roof panel insulation: rFOIL reflective insulation. Insulation to be equal to rFoil 2520 Series (double) 5/16" thick x 72" wide as manufactured by rFoil by Covertech Fabricating. See plans for locations.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION, GENERAL

- A. Comply with insulation manufacturer's written instructions applicable to products and applications indicated.



- B. Install insulation that is undamaged, dry, and unsoiled and that has not been left exposed to ice, rain, or snow at any time.
- C. Extend insulation to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- D. Provide sizes to fit applications indicated and selected from manufacturer's standard thickness, widths, and lengths. Apply single layer of insulation units to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.

### 3.2 INSTALLATION OF INSULATION FOR FRAMED CONSTRUCTION

- A. Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.
- B. Glass-Fiber Insulation: Install in cavities formed by framing members according to the following requirements:
  - 1. Use insulation widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill the cavities, provide lengths that will produce a snug fit between ends.
  - 2. Place insulation in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members.
- C. Miscellaneous Voids: Install insulation in miscellaneous voids and cavity spaces where required to prevent gaps in insulation using the following materials:

END OF SECTION 072100

## SECTION 073100 – UNDER SLAB VAPOR BARRIER

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Included in this Section
  - 1. vapor barrier
  - 2. seam tape
  - 3. mastic
  - 4. pipe boots for installation under concrete slabs.
- B. Related Sections
  - 1. Section 033000 Cast-in-Place Concrete

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM)
  - 1. ASTM E 1745-97 (2004) 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
  - 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 1643-98 (2005) Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs
- B. American Concrete Institute (ACI)
  - 1. ACI 302.1R-04 Vapor barrier component (plastic membrane) is not less than 10 mils thick.

#### 1.3 SUBMITTALS

- A. Quality Control / Assurance
  - 1. Manufacturer's samples, literature
  - 2. Manufacturer's installation instructions for placement, seaming and pipe boot installation

### PART 2 - PRODUCTS

#### 2.1 MATERIALS

- A. Vapor Barrier must have all of the following qualities:
  - 1. Must meet ASTM E 1745 Class A

- B. Vapor Barrier products:
  - 1. Vapor barrier to be equal to Raven Industries: Vaporblock 10 as supplied by Carter-Waters Construction Materials.
- C. Approved Manufacturers
  - 1. W.R. Meadows Inc.
  - 2. Insulation Solutions, Inc.

## 2.2 ACCESSORIES

- A. Seam Tape:
  - 1. Vapor Bond Tape (Part #TVB4).
- B. Pipe Boots
  - 1. Construct pipe boots from vapor barrier material, pressure sensitive tape and/or mastic per manufacturer's instructions.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Ensure that subsoil is approved by Architect or Geotechnical Engineer.
  - 1. Level and tamp or roll aggregate, sand or granular base.

### 3.2 INSTALLATION

- A. Install vapor barrier in accordance with manufacturer's instructions and ASTM E 1643-98 (2005).
  - 1. Unroll vapor barrier with the longest dimension parallel with the direction of the concrete pour.
  - 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.

### 3.3 FINAL

- A. Repair damaged areas by cutting patches of vapor barrier, overlapping damaged area 6 inches and taping all four sides with tape.

END OF SECTION 073100

## SECTION 074113 METAL ROOF PANELS

### Part 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Factory-formed sheet metal roofing, including flashings and trim. Gutters and downspouts.
- B. Related Sections: Section(s) related to this section include:
  - 1. Cold Formed Metal Framing: Division Metal Framing Section.
  - 2. Sealants: Division 7 Joint Sealants Section.

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM A653/A653M Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot Dip Process.
  - 3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 4. ASTM D2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
  - 5. ASTM E1680 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors Under Specified Pressure Differences Across the Specimen.
  - 6. ASTM E1646 Standard Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
  - 7. ASTM G90 Standard Practice for Performing Accelerated Outdoor Weathering of Non-Metallic Materials Using Concentrated Natural Sunlight.
  - 8. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
  - 9. ASTM D 4214 - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
  - 10. ASTM E 119 - Standard Test Methods for Fire Tests of Building Construction and Materials
  - 11. ASTM E 1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
  - 12. ASTM E 2140 - Standard Test Method for Water Penetration of Metal Roof Panel Systems by Static Water Pressure Head.
- B. Underwriters Laboratories (UL):
  - 1. UL 263 - Fire Tests of Building Construction and Materials.
  - 2. 580 - Tests for Uplift Resistance of Roof Assemblies.
  - 3. UL 790 - Standard Test Methods for Fire Tests of Roof Coverings.
  - 4. UL 2218 - Impact Resistance of Prepared Roof Covering Materials.

- C. Sheet Metal and Air Conditioning Contractors' National Association (SMACNA); "Architectural Sheet Metal Manual"

### 1.3 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide sheet metal roofing which has been manufactured, fabricated and installed to withstand structural and thermal movement, wind loading and weather exposure to maintain manufacturer's performance criteria without defects, damage, failure or infiltration of water.
  - 1. Air infiltration: Maximum 0.06 cfm per lineal foot (0.33 m<sup>3</sup>/hr per linear meter) of seam at static pressure of 6.24 psf (3.0 kPa) when tested per ASTM E1680.
  - 2. Water penetration:
    - a. No uncontrolled water penetration through the joints at a static pressure of 6.24 psf (3.0 kPa) when tested in accordance with ASTM E1646.
  - 3. Fire rating: Class A
  - 4. Uplift Tests:
    - a. UL 580 Class 90
    - b. ASTM E 1592 (1.5", 2" & 3")
  - 6. Class 4 Impact Resistance: UL 2218
  - 7. Fire Resistance: UL 263
  - 9. ICC-ES: ESL 1082
- B. Finish Performance Requirements:
  - 1. Two coat coil applied, baked on full strength (70% resin, PVDF) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness.
  - 2. Color change and fade resistance: No cracking, peeling, blistering or loss of adhesion when tested in accordance with ASTM G23; color change, after removal of surface deposits such as dirt or chalk, maximum 5 NBS units.
  - 3. Humidity resistance: No blistering, peeling or loss of adhesion after 1000 hours testing, in accordance with ASTM D2247.

### 1.4 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Submittal Procedures Section.
- B. Product Data: Submit manufacturer's product data for specified products.
- C. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.
  - 1. Indicate layout of roofing panels and roof panel sizes, including custom-fabricated roofing panels if indicated; indicate each item of trim and accessories.
  - 2. Indicate in detailed drawings profile and gauge of interior and exterior sheets, and locations and types of fasteners; indicate locations, gauges, shapes and methods of attachment of roofing panels, trim and accessory items.
  - 3. Include Sealant location and denote those that are factory and field applied.
  - 4. Indicate products/materials required for construction activities and field worked conditions of this section not supplied by manufacturer of products of this section.

F. Warranties:

1. Substrate Warranty
2. Finish Warranty

G. Test and Evaluation Reports: Showing compliance with specified performance characteristics and physical properties.

H. Quality Assurance Submittals: Submit the following:

1. Contractor Certificates: Contractor's certification that:
  - a. Manufacturer of products of this section meets specified qualifications.
  - b. Installer of products of this section meets specified qualifications.
2. Manufacturer Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and physical requirements.
3. Manufacturer's Instructions: Manufacturer's installation instructions.
4. Manufacturer's Field Reports: Manufacturer's field reports if required.

## 1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Provider of "hands on" installer training at manufacturer or customer facility.
2. Minimum of ten years' experience in manufacturing metal roof systems.
3. Provider of product produced in a permanent factory environment with fixed roll-forming equipment and also possesses the capability to roll form continuous panels on jobsites with a factory technician for jobs with panel lengths in excess of 50'

B. Installer Qualifications:

1. At least five years' experience in the installation of structural standing seam metal roof panels.
2. Experience on at least five projects of similar size, type and complexity as this project that have been in service for a minimum of two years with satisfactory performance of the roof system.
3. Employer of workers for this project who are competent in techniques required by manufacturer for installation indicated and who shall be supervised at all times when material is being installed.

## 1.6 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirements Sections.

1. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Identify fabricated components with UL 90 label where appropriate.

C. Delivery and Acceptance Requirements: Ensure all panels are received in good condition. In cases where damage is visible, note all paperwork; inform architect and project superintendent.

D. Packing, Shipping, Handling and Unloading:

1. Roofing panels to be crated to protect panels from shipping damage.
2. Package trim and accessories in waterproof wrapping paper.

E. Storage and Protection: Store materials protected from exposure to harmful conditions. Store material in dry, above-ground location.

1. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture runoff.
2. Store products of this section in manufacturer's unopened packaging until installation of products
3. Maintain dry, heated storage area for products of this section until installation of products.
4. Remove strippable plastic film before storage under high-heat conditions.

## 1.7 PROJECT CONDITIONS

- A. 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.
- B. 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.

## 1.8 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
1. Panel Material: Furnish manufacturers 45 year warranty covering the panel against rupture, structural failure, or perforation.
  2. Panel Coating: Furnish manufacturer's 40-year warranty covering cracking, checking, and peeling, and 30 year warranty covering fade and chalk on the Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating.
    - a. Manufacturer's warranty may exclude surface deterioration due to physical damage and corrosive environments.

## PART 2 PRODUCTS

### 2.1 Metal Roof Panels

A. Manufacturer: McElroy Metal, Inc.

1. Contact: 1500 Hamilton Rd., Bossier City, LA 71111; Telephone: (800) 950-6531; Fax: (318) 747-8099; E-mail: [info@mcelroymetal.com](mailto:info@mcelroymetal.com); website: [www.mcelroymetal.com](http://www.mcelroymetal.com).
2. Proprietary Products: McElroy Metal Preformed Sheet Metal Roofing Panels.

B. Substitutions:

1. Basis of Design Product: Subject to compliance with requirements provide McElroy Metal Medallion Lok
2. Substitution Limitations
  - a. Requests for approval must be submitted in writing at least ten (10) days prior to bid date, and are accompanied by all related test reports and design calculations listed in section 1.4 and Design and Performance criteria Section 2.2.
  - b. Substitute manufacturers will be approved by written addendum to all bidders. Voluntary alternates will not be considered. Substitutions will not be permitted after the bid date of this project.
  - c. Roof panels proposed for substitution shall fully comply with specified requirements in appearance, assembly, and performance.

## 2.2 MANUFACTURED UNITS

### A. McElroy Metal Medallion-Lok Panels:

1. Profile: Vertical leg standing seam panel with male/female seams that are interlocked via snapping during installation.
2. Size: 1.75" high seam by 16" width. Length as indicated on drawings.
3. Panel Surface: Striated
4. Material: Galvalume steel sheet conforming to ASTM A792, AZ55 coating for bare; AZ50 coating for painted; [24 standard; 22 Optional-minimum quantities may apply] gauge sheet thickness.

## 2.3 METAL ROOF PANEL ACCESSORIES

- A. General: Provide complete metal roof panel assembly incorporating trim, copings, fasciae, gutters and downspouts, and miscellaneous flashings, in [manufacturer's standard profiles] [profiles as indicated]. Provide required fasteners, closure strips, 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: ASTM A 653/A 653M, 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.
- F. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.



- G. Hanging Gutters: Fabricate to cross section indicated, complete with end pieces, outlet tubes, and other accessories as required. Fabricate in minimum 96-inch long sections. Furnish flat-stock gutter spacers and gutter brackets fabricated from same metal as gutters, of size recommended by SMACNA but not less than twice the gutter thickness. Fabricate expansion joints, expansion-joint covers, gutter bead reinforcing bars, and gutter accessories from same metal as gutters. Join sections with riveted and soldered joints or with lapped joints sealed with sealant. Provide for thermal expansion. Attach gutters at eave or fascia to firmly anchored gutter brackets and straps spaced not more than 36 inches apart. Provide end closures and seal watertight with sealant. Slope to downspouts.
- H. Downspouts: Fabricate rectangular downspouts complete with mitered elbows. Join sections with 1-1/2-inch telescoping joints. Provide manufacturers standard hangers with fasteners designed to hold downspouts securely to walls. Locate hangers at top and bottom and at approximately 60 inches o.c. in between.

## 2.4 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.

## 2.5 FINISHES

- A. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness. Finish to be selected from manufacturer's standard color selection. The back side of the material should be 0.25 mil primer and a 0.25 mil polyester wash coat.
  - 1. Roof Panel Color:
    - a. Selected from full range of manufacturer's standard colors.
  - 2. Roof Related Trim/Accessories Color:
    - b. Selected from full range of manufacturer's standard colors.

## 2.6 RELATED MATERIALS

- A. General: Coordinate use of related materials:
  - 1. Underlayment: Refer to Division 7 Roofing Section
  - 2. Plywood Deck: Refer to Division 6 Rough Carpentry Section
  - 3. Sealants: Refer to Division 7 Joint Sealants Section

## 2.7 SOURCE QUALITY

- A. Source Quality: Obtain metal panel products from a single manufacturer.
- B. Quality Control: Obtain standing seam metal roof panels, trim and other accessories from a manufacturer capable of providing on-site technical support and installation assistance.

## PART 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.
  - 1. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of roofing panels.
- B. 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.
  - 1. Verification of Conditions:
    - a. Panel support systems are ready for construction activities of this section and within specified tolerances.
    - b. Rough-in utilities are in correct locations.
  - 2. Installer's Examination:
    - a. Have installer of this section examine conditions under which construction activities of this section are to be performed, then submit written notification if such conditions are unacceptable.
    - b. Transmit 2 copies of installer's report to Architect within 24 hours of receipt.
    - c. Delay construction activities of this section until unacceptable conditions have been corrected.
    - d. Beginning construction activities of this section indicates installer's acceptance of conditions.

### 3.2 PREPARATION

- A. Coordination: Coordinate metal roofing with other work to provide a noncorrosive and leak-proof installation.
  - 1. Install substrate boards, hat channels, purlins, or furring channels in accordance with manufacturer's recommendations.
  - 2. Coordinate work, with installation of other associated work, to ensure quality application.
  - 3. Coordinate work with installation of associated metal flashings and building walls.
  - 4. Coordinate work to minimize foot traffic and construction activity on installed finished surfaces.
  - 5. Coordinate location of pipe penetrations to allow centering of pipe in panel.
  - 6. Coordinate location of roof curbs, to allow proper integration with roof panel.
  - 7. Coordinate work to minimize foot traffic and construction activity on installed finished. surfaces.
  - 8. Dissimilar Metals: Prevent galvanic action of dissimilar metals.

### 3.3 INSTALLATION

- A. General: Install metal roofing panels to profiles, patterns and drainage indicated and required for leak-proof installation. Provide for structural and thermal movement of work. Seal joints for leak-proof installation.
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.
  3. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  4. Install screw fasteners in predrilled holes for clip installation.
  5. Locate and space fasteners in uniform vertical and horizontal alignment.
  6. Install flashing and trim as metal panel work proceeds.
  7. Install continuous length panels.
  8. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws.
  9. Fasten flashings and trim around openings and similar elements with self-tapping screws.
  10. Provide weathertight EPDM Flashing for pipe- and conduit-penetrating panels.
  11. Seams: Provide uniform, neat seams.
  12. Fix panels at location depicted on reviewed shop drawings.
  13. Allow for required panel clearance at penetrations for thermal movement.
  14. Align pipe penetrations to occur at center of roof panel. Report and have corrected improperly placed penetrations before proceeding with panel installation. Remove and replace roof panels which have improperly placed penetration flashings.
  15. Allow for required panel clearance at penetrations for thermal movement.
  16. Fasteners: Conceal fasteners where possible in exposed work. Cover and seal fasteners and anchors for watertight and leak-proof installation.
  17. Sealant-Type Joints: Provide sealant-type joint where indicated. Form joints to conceal sealant. Comply with Division 7 Joint Sealants Section for sealant installation.
- B. Roofing Installation:
1. Install roofing plumb, true and in correct alignment with structural framing, in accordance with shop drawings and manufacturer's printed installation instructions.
  2. Install roofing using manufacturer's concealed fastening system or non-corroding fasteners color-matched to panel.
  3. Install trim using concealed fasteners where possible; sight-exposed non-corroding fasteners color-matched to trim are permitted on vertical surfaces only.
- C. Installation Tolerances:
1. Variation from Plumb: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).
  2. Variation from Level: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).
  3. Variation from True Plane: Maximum 1/4" (3.2 mm) in 20 feet (6.096 m).
- D. Underlayment Installation
1. Underlayment to be supplied by metal roof panel manufacturer.
  2. Self-adhered High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils thick adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
  3. Thermal Stability: Stable after testing at 240 degree F; ASTM D1970.

4. Low-Temperature Flexibility: Passes after testing at minus 20 degree F; ASTM D1970.
  5. Supplied by metal roof panel manufacturer.
  6. Retain one of two subparagraphs below or delete both if indicated on Drawings.
    - a. Apply over the entire roof surface.
- E. Accessory Installation: Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weathertight mounting. Provide for thermal movement. Coordinate installation with flashings and other components
- F. Flashing and Trim Installation: Comply with performance requirements, manufacturer's written installation instructions, and the SMACNA "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and install units to true level. Install work with laps, joints, and seams that will be permanently watertight.

#### 3.4 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas.
- B. Repair or replace damaged installed products.
- C. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.
- D. Remove construction debris from project site and legally dispose of debris.
- E. Remove strippable coating and perform dry wipe-down cleaning of panels as erected.

#### 3.6 PROTECTION

- A. Protection: Protect installed product's finish surfaces from damage during construction:
  1. Protect installed products from damage by subsequent construction activities.
  2. Replace products having damage other than minor finish damage.
  3. Repair products having minor damage to finish in accordance with panel Manufacturer's recommendation
  4. Architect shall be sole judge of acceptability of repair to damaged finishes; replace products having rejected repairs.

END OF SECTION 074113

## SECTION 074213 METAL WALL PANELS

### PART 1 GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Factory-formed metal wall panels, including fascia and includes:
  - 1. Factory-formed panels in vertical installation.
  - 2. Metal flashings and trim.

#### 1.2 REFERENCES

- A. American Society for Testing and Materials (ASTM):
  - 1. ASTM A653/A653M Standard Specification for Steel Sheets, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - 2. ASTM A792/A792M Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy Coated by the Hot-Dip Process.
  - 3. ASTM B209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
  - 4. ASTM D2247 Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
  - 5. ASTM E1680 Standard Test Method for Determining the Rate of Air Leakage Through Exterior Metal Systems Under Specified Pressure Differences Across the Specimen.
  - 6. ASTM E1646 Standard Test Method for Water Penetration of Metal Systems by Uniform Static Air Pressure Difference.

#### 1.3 SYSTEM DESCRIPTION

- A. Panel Performance Requirements: Provide panels, which have been manufactured, fabricated and installed to withstand structural and thermal movement, wind loading and weather exposure to maintain manufacturer's performance criteria without defects, damage, failure or infiltration of water.
  - 1. Air Infiltration: Maximum 0.011 cfm/lf (0.061 m<sup>3</sup>/hr/m) of seam at static pressure of +/-6.24 psf (0.30 kPa) when tested per ASTM E1680.
  - 2. Water Penetration: No uncontrolled water penetration through the panel joints at a static pressure of 12.0 psf (0.57 kPa) when tested in accordance with ASTM E1646.
  - 3. Fire rating: Class A
  - 4. Uplift Tests:
    - a. UL 580 Class 90
    - b. ASTM E 1592
  - 5. Miami Dade
  - 6. Class 4 Impact Resistance: UL 2218

7. FM 4471 Appendix G
8. Fire Resistance: UL 263
9. Florida State Approval
10. Texas Department of Insurance

B. Finish Performance Requirements:

1. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating:
  - a. Consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness.
  - b. Color change and fade resistance: No cracking, peeling, blistering or loss of adhesion when tested in accordance with ASTM G23; color change, after removal of surface deposits such as dirt or chalk, maximum 5 NBS units.
  - c. Humidity resistance: No blistering, peeling or loss of adhesion after 1000 hours testing, in accordance with ASTM D2247.

## 1.5 SUBMITTALS

A. Product Data: Submit manufacturer's product data for specified products.

B. Shop Drawings: Submit shop drawings showing layout, profiles and product components, including anchorage, accessories, finish colors and textures.

1. Indicate layout of metal panels and metal panel sizes, including custom-fabricated metal panels if indicated; indicate each item of trim and accessories.
2. Indicate in detailed drawings profile and gauge of interior and exterior sheets, and locations and types of fasteners; indicate locations, gauges, shapes and methods of attachment of metal panels, trim and accessory items.
3. Include sealant location and denote those that are factory and field applied.
4. Indicate products/materials required for construction activities and field worked conditions of this section not supplied by manufacturer of products of this section.

D. Warranties:

1. Finish Warranty

E. Quality Assurance Submittals: Submit the following:

1. Contractor Certificates: Contractor's certification that:
  - a. Manufacturer of products of this section meets specified qualifications.
  - b. Installer of products of this section meets specified qualifications.

## 1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications:

1. Minimum of ten years' experience in manufacturing metal roof and wall systems.

B. Installer Qualifications:

1. Experience on at least five projects of similar size, type and complexity as this project that have been in service for a minimum of two years with satisfactory performance of the metal panel system.
2. Employer of workers for this project who are competent in techniques required by manufacturer for installation indicated and who shall be supervised at all times when material is being installed.

1.7 DELIVERY, STORAGE & HANDLING

A. General: Comply with Division 1 Product Requirements Sections.

1. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.

B. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact. Identify fabricated components with UL 90 label where appropriate.

C. Delivery and Acceptance Requirements: Ensure all panels are received in good condition. In cases where damage is visible, note all paperwork; inform architect and project superintendent.

D. Packing, Shipping, Handling and Unloading:

1. Bundle panels in waterproof wrapping paper when nested, or wooden crates when panels cannot be nested.
2. Package trim and accessories in waterproof wrapping paper.

E. Storage and Protection: Store materials protected from exposure to harmful conditions. Store material in dry, above-ground location.

1. Stack prefinished material to prevent twisting, bending, abrasion, scratching and denting. Elevate one end of each skid to allow for moisture runoff.
2. Store products of this section in manufacturer's unopened packaging until installation of products
3. Maintain dry, heated storage area for products of this section until installation of products.
4. Remove strippable plastic film before storage under high-heat conditions.

1.8 PROJECT CONDITIONS

A. 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.

- B. 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 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.
  - 1. Panel Material: Furnish manufacturers 25 year warranty covering the panel against rupture, structural failure, or perforation.
  - 2. Panel Coating:
    - a. Polyvinylidene Fluoride: Furnish manufacturer's 40-year warranty covering cracking, checking, and peeling, and 30 year warranty covering fade and chalk on the two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating. Manufacturer's warranty may exclude surface deterioration due to physical damage and corrosive environments.

## PART 2 PRODUCTS

### 2.1 METAL PANELS

- A. Manufacturer: McElroy Metal, Inc.
  - 1. Contact: 1500 Hamilton Rd., Bossier City, LA 71111; Telephone: (800) 562-3576, (318) 747-8097; Fax: (318) 747-8099; E-mail: [info@mcelroymetal.com](mailto:info@mcelroymetal.com); website: [www.mcelroymetal.com](http://www.mcelroymetal.com).
  - 2. Provide metal panel equal to McElroy Metal Preformed Wall and Metal Panels R Panel.
- B. Substitutions:
  - 1. Basis of Design Product: Subject to compliance with requirements provide McElroy Metal R-Panel.
  - 2. Substitution Limitations
    - a. Metal panels proposed for substitution shall fully comply with specified requirements in appearance, assembly, and performance.

### 2.2 MANUFACTURED UNITS

- A. McElroy Metal R-Panel
  - 1. Profile: Major longitudinal ribs 1 1/4" (32 mm) deep, spaced 12" (305 mm) on center; minor longitudinal ribs centered between major ribs, spaced 4" (102 mm) on center panel; normal-run where ribs protrude from panel plane, viewed from exterior, reverse-run where ribs recede from panel plane, viewed from exterior.
  - 2. Size: 36" (914 mm) cover width, lengths indicated on drawings.



## 2.3 MATERIALS

- A. Material: Galvalume steel sheet conforming to ASTM A792, AZ55 coating for bare; AZ50 coating for painted; 24 gauge sheet thickness.

## 2.4 METAL WALL PANEL ACCESSORIES

- A. General: Provide complete metal panel assembly incorporating trim, copings, fasciae, and miscellaneous flashings, in manufacturer's standard profiles. Provide required fasteners, closure strips, 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 Fasteners: Self-tapping screws and other acceptable corrosion-resistant fasteners recommended by metal 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.
- D. Joint Sealers: Manufacturer's standard or recommended liquid and preformed sealers and tapes, and as follows:
  - 1. Tape Sealers: Manufacturer's standard non-curing butyl tape, AAMA 809.2.
  - 2. Concealed Joint Sealant: Non-curing butyl, AAMA 809.2.
- E. Steel Sheet Miscellaneous Framing Components: ASTM C 645, with ASTM A 653/A 653M, G60 (Z180) hot-dip galvanized zinc coating.

## 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 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.

## 2.6 FINISHES

- A. Two coat coil applied, baked on full strength (70% resin, PVF2) fluorocarbon coating consisting of a nominal 0.25 mil dry film thickness primer, and a nominal dry film thickness of 0.7 -0.8 mil color coat for a total 0.9 to 1.1 mil total system dry film thickness. Finish to be selected from manufacturer's standard color selection. The back side of the material should be 0.25 mil primer and a 0.25 mil polyester wash coat.
  - 1. Metal Panel Color:
    - a. Selected from full range of manufacturer's standard colors.
  - 2. Metal Related Trim/Accessories Color:
    - a. Selected from full range of manufacturer's standard colors.

## 2.7 SOURCE QUALITY

- A. Source Quality: Obtain metal panel products from a single manufacturer.

## PART 3 EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, recommendations and installation instructions for substrate verification, preparation requirements and installation.
  - 1. Strippable Film: Remove manufacturer's protective film, if any, from surfaces of metal panels.

### 3.2 PREPARATION

- A. Coordination: Coordinate metal panel work with other trades to provide a noncorrosive and leak-free metal installation.
  - 1. Install substrate boards, hat channels, purlins, or furring channels in accordance with manufacturer's recommendations.
  - 2. Coordinate work, with installation of other associated work, to ensure quality application.
  - 3. Coordinate work with installation of associated metal flashings and building walls.
  - 4. Coordinate work to minimize foot traffic and construction activity on installed finished surfaces.
  - 5. Coordinate location of pipe penetrations to allow centering of pipe in panel.
  - 6. Coordinate location of metal curbs, to allow proper integration with metal panel.
  - 7. Coordinate work to minimize foot traffic and construction activity on installed finished. surfaces.
  - 8. Dissimilar Metals: Prevent galvanic action of dissimilar metals.

### 3.3 INSTALLATION

- A. General: Install metal panels to profiles, patterns and drainage indicated and required for leak-free performance. Provide for structural and thermal movement of work. Seal joints for leak-free metal installation.
  - 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.
  - 3. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
  - 4. Locate and space fasteners in uniform vertical and horizontal alignment.
  - 5. Install flashing and trim as metal panel work proceeds.
  - 6. Install continuous length panels if at all possible. If splices are required, locate panel splices over, but not attached to, structural supports and only with prior Architect approval.
  - 7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws.

8. Fasten flashings and trim around openings and similar elements with self-tapping screws.
9. Provide weathertight EPDM Flashing for pipe- and conduit-penetrating panels.
10. Fix panels at location depicted on reviewed shop drawings.
11. Allow for required panel clearance at penetrations for thermal movement.
12. Align pipe penetrations to occur in the flat of the metal panel. Report and have corrected improperly placed penetrations before proceeding with panel installation. Remove and replace metal panels which have improperly placed penetration flashings.
13. Allow for required panel clearance at penetrations for thermal movement.
14. Fasteners: Conceal fasteners where possible in exposed work. Cover and seal fasteners and anchors for watertight and leak-free metal installation.
15. Sealant-Type Joints: Provide sealant-type joint where indicated. Form joints to conceal sealant. Comply with Division 7 Joint Sealants Section for sealant installation.

B. Metal Installation:

1. Install metal panels plumb, true and in correct alignment with structural framing, in accordance with shop drawings and manufacturer's printed installation instructions.
2. Install metal panels using manufacturer's concealed fastening system or non-corroding fasteners color-matched to panel.
3. Install trim using concealed fasteners where possible; sight-exposed non-corroding fasteners color-matched to trim are permitted on vertical surfaces only.

C. Installation Tolerances:

1. Variation from Plumb: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).
2. Variation from Level: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).
3. Variation from True Plane: Maximum 1/8" (3.2 mm) in 20 feet (6.096 m).

D. Underlayment Installation

1. Underlayment to be supplied by metal panel manufacturer.
2. Self-adhered High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 40 mils thick adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.
3. Thermal Stability: Stable after testing at 240 degree F; ASTM D1970.
4. Low-Temperature Flexibility: Passes after testing at minus 20 degree F; ASTM D1970.

E. Accessory Installation: Install accessories using techniques recommended by manufacturer and which will assure positive anchorage to building and weather tight mounting. Provide for thermal movement. Coordinate installation with flashings and other components.

F. Flashing and Trim Installation: Comply with performance requirements, manufacturer's written installation instructions, and the SMACNA "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and install units to true level. Install work with laps, joints, and seams that will be permanently watertight.

### 3.4 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas.
- B. Repair or replace damaged installed products.
- C. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance.
- D. Remove construction debris from project site and legally dispose of debris.
- E. Remove strippable coating and perform dry wipe-down cleaning of panels as erected.

END OF SECTION 074213

## SECTION 079200 - JOINT SEALANTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
1. Silicone joint sealants.
  2. Urethane joint sealants.
  3. Latex joint sealants.

#### 1.2 SUBMITTALS

- A. Product Data: For each joint-sealant product indicated.

#### 1.3 WARRANTY

- A. Special Installer's Warranty: Manufacturer's standard form in which Installer agrees to repair or replace joint sealants that do not comply with performance and other requirements specified in this Section within specified warranty period.
1. Warranty Period: 1 year from date of Substantial Completion.

### PART 2 - PRODUCTS

#### 2.1 MATERIALS GENERAL

- A. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

#### 2.2 SILICONE JOINT SEALANTS

- A. Mildew-Resistant Silicone Joint Sealant: ASTM C 920.
1. Manufacturers: Provided product by one of the following manufactures, or approved equal.
  2. Basis-of-Design Product: Subject to compliance with requirements select from manufacturer below or approved equal
    - a. Dow Corning Corporation: 786 Mildew Resistant
    - b. GE Advanced Materials: Silicones: Sanitary SCS1700
    - c. Tremco Incorporated: Tremsil 200 white
  3. Type and Grade: S (single component) and NS (non sag)
  4. Class: 25
  5. Uses Related to Joint Substrates (per schedule):G, A or as applicable.

6. Use related to exposure: NT (non traffic)
- B. Single-Component Neutral Curing Silicone Sealant:
1. Manufacturers: Provided product by one of the following manufactures, or approved equal.
  2. Basis-of-Design Product: Subject to compliance with requirements select from manufacturer below or approved equal
    - a. Dow Corning Corporation: 790
    - b. GE Advanced Materials: SilPruf LM SCS2700
    - c. Tremco Incorporated: Spectrem 1 (Basic)
  3. Type and Grade: S (single component) and NS (non sag)
  4. Class: 100/50
  5. Uses Related to Joint Substrates (per schedule): M, G, A or as applicable.
  6. Use related to exposure: NT (non traffic)
- C. Single Component Pourable Urethane Sealant
1. Manufacturers: Provided product by one of the following manufactures, or approved equal.
  2. Basis-of-Design Product: Subject to compliance with requirements select from manufacturer below or approved equal
    - a. Bostik, Inc.: Chem-Calk 950
    - b. Pecora Corporation: Ureexpan NR-201
    - c. Tremco Incorporated: Tremflex S/L, Vulkem 45
  3. Type and Grade: S (single component) and NS (non sag)
  4. Class: 25
  5. Uses Related to Joint Substrates (per schedule): M, G, A or as applicable.
  6. Use related to exposure: T (traffic)

### 2.3 URETHANE JOINT SEALANTS

- A. Urethane Joint Sealant-non sag: ASTM C 920.
1. Manufacturers: Provided product by one of the following manufactures, or approved equal.
  2. Basis-of-Design Product: Subject to compliance with requirements select from manufacturer below or approved equal
    - a. Bostik, Inc.: Chem-Calk 900
    - b. Pecora Corporation: Dynatrol I-XL
    - c. Tremco Incorporated: Dymonic, Vulkem 921, Vulkem 931
    - d. The Euclid Chemical Company: Eucoastic 1
  3. Type and Grade: S (single component) and NS (non sag)
  4. Class: 100/50
  5. Uses Related to Exposure: NT (non traffic)
  6. Use related to joint substrates: M, G, A or as applicable.

### 2.4 LATEX JOINT SEALANTS

- A. Latex Joint Sealant: Acrylic latex or siliconized acrylic latex, ASTM C 834, Type OP, Grade NF.

1. Manufacturers: Provided product by one of the following manufactures, or approved equal.
2. Basis-of-Design Product: Subject to compliance with requirements, provide or comparable product by one of the following:
  - a. Bostik, Inc.: Chem-Calk 600
  - b. Pecora Corporation: AC 20+
  - c. Schnee-Morehead, Inc.: SM 8200
  - d. Tremco Incorporated: Tremflex 834
  - e. Sonneborn, Division of ChemRex Inc.: Sonalac

## 2.5 JOINT SEALANT BACKING

- A. Cylindrical Sealant Backings: ASTM C 1330, Type C closed-cell material with a surface skin, as approved in writing by joint-sealant manufacturer for joint application indicated, and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.
- B. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer.

## 2.6 MISCELLANEOUS MATERIALS

- A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials.
- C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
  1. Remove laitance and form-release agents from concrete.
  2. Clean nonporous joint substrate surfaces with chemical cleaners or other means that do not stain, harm substrates, or leave residues capable of interfering with adhesion of joint sealants.
- B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

- C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

### 3.2 INSTALLATION

- A. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- B. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of sealant backings.
  - 2. Do not stretch, twist, puncture, or tear sealant backings.
  - 3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- C. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses in each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealant from surfaces adjacent to joints.
  - 2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
  - 3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
- F. Acoustical Sealant Installation: Comply with ASTM C 919 and with manufacturer's written recommendations.
- G. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

### 3.3 JOINT-SEALANT SCHEDULE

- A. Joint-Sealant Application: Exterior joints between metal panels
  - 1. Joint Sealant: single component nonsag urethane sealant (verify with panel manufacturer).



- B. Joint-Sealant Application: Exterior vertical joints between different materials
  - 1. Joint Sealant: Single component nonsag urethane sealant
  
- C. Joint-Sealant Application: Exterior perimeter joints between metal wall panels and frames of doors, windows and louvers.
  - 1. Joint Sealant: Single component nonsag urethane sealant
  
- D. Joint-Sealant Application: Other exterior joints in vertical and horizontal nontraffic surfaces
  - 1. Joint Sealant: Single component nonsag urethane sealant.
  
- E. Joint-Sealant Application: Interior perimeter joints of exterior openings.
  - 1. Joint Sealant: Latex sealant.
  
- F. Joint Sealant Application: Perimeter joints between interior wall surfaces and frames of interior doors and windows.
  - 1. Joint Sealant: Latex sealant.

END OF SECTION 079200

## SECTION 088300 - MIRRORS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section includes the following types of silvered flat glass mirrors:
  - 1. Film-backed glass mirrors.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Include mirror elevations, edge details, mirror hardware, and attachments to other work.
- C. Maintenance data.
- D. Warranty: Sample of special warranty.

#### 1.3 QUALITY ASSURANCE

- A. Glazing Publications: Comply with GANA's "Glazing Manual" and "Mirrors, Handle with Extreme Care: Tips for the Professional on the Care and Handling of Mirrors."
- B. Safety Glazing Products: For film-backed mirrors, provide products complying with testing requirements in 16 CFR 1201 for Category II materials.
- C. Preconstruction Mirror Mastic Compatibility Test: Submit mirror mastic products to mirror manufacturer for testing to determine compatibility of mastic with mirror backing and substrates on which mirrors are installed.

#### 1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which mirror manufacturer agrees to replace mirrors that deteriorate within specified warranty period. Deterioration of mirrors is defined as defects developed from normal use that are not attributed to mirror breakage or to maintaining and cleaning mirrors contrary to manufacturer's written instructions. Defects include discoloration, black spots, and clouding of the silver film.
  - 1. Warranty Period: Five years from date of Substantial Completion

### PART 2 - PRODUCTS

#### 2.1 SILVERED FLAT GLASS MIRRORS

- A. Glass Mirrors, General: ASTM C 1503; manufactured using copper-free, low-lead mirror coating process.

1. Manufacturers: Subject to compliance with requirements, provide equal to one of the following, but are not limited to, the following:
  - a. Arch Aluminum & Glass Co., Inc.
  - b. Avalon Glass and Mirror Company.
  - c. Binswanger Mirror; a division of Vitro America, Inc.
  - d. D & W Incorporated
  - e. Donisi Mirror Company.
  - f. Gardner Glass, Inc.
  - g. Gilded Mirrors, Inc.
  - h. Guardian Industries.
  - i. Head West.
  - j. Independent Mirror Industries, Inc.
  - k. Lenoir Mirror Company.
  - l. Maran-Wurzell Glass & Mirror.
  - m. National Glass Industries.
  - n. Stroupe Mirror Co., Inc.
  - o. Sunshine Mirror; Westshore Glass Corp.
  - p. Virginia Mirror Company, Inc.
  - q. Walker Glass Co., Ltd.
  
- B. Clear Glass: Provide Mirrors with clear plate mirror glass with a minimum 91 percent visible light transmission. Provide silver film backing: silver weight 65-75 mg/square foot. Provide protective layer of copper over silver: weight of copper 20-25 mg/square foot.
  1. Nominal Thickness: 1/4"

## 2.2 MISCELLANEOUS MATERIALS

- A. Setting Blocks: Elastomeric material with a Shore, Type A durometer hardness of 85, plus or minus 5.
- B. Edge Sealer: Approved by mirror manufacturer.
- C. Film Backing for Safety Mirrors: Provide Film backing and pressure-sensitive adhesive for all ; both compatible with mirror backing paint as certified by mirror manufacturer.

## 2.3 MIRROR HARDWARE

- A. Top and Bottom Aluminum Clips: Aluminum extrusions with a return deep enough to produce a glazing channel to accommodate mirrors of thickness indicated.
  1. Finish: chrome
- B. Mirror Bottom Clips: J-clip fasteners approved for weight and size of mirror.
- C. Mirror Top Clips: J-clip fasteners approved for weight and size of mirror.
- D. Anchors and Inserts: Provide devices as required for mirror hardware installation.

## 2.4 FABRICATION

- A. Mirror Edge Treatment: Seamed or polished edge. Seal edges of mirrors with edge sealer.
- B. Film-Backed Safety Mirrors: Apply film backing with adhesive coating over mirror backing paint as recommended in writing by film-backing manufacturer.

## PART 3 - EXECUTION

### 3.1 INSTALLATION

- A. Examine substrates, over which mirrors are to be mounted, with Installer present, for compliance with installation tolerances, substrate preparation, and other conditions affecting performance of the Work.
  - 1. Verify compatibility with and suitability of substrates, including compatibility of mirror mastic with existing finishes or primers.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected and surfaces are dry.
- B. Comply with mastic manufacturer's written installation instructions for preparation of substrates, including coating substrates with mastic manufacturer's special bond coating where applicable.
- C. General: Install mirrors to comply with mirror manufacturer's written instructions and with referenced GANA publications. Mount mirrors accurately in place in a manner that avoids distorting reflected images.
- D. Wall-Mounted Mirrors: Install mirrors with mirror hardware. Attach mirror hardware securely to mounting surfaces with mechanical fasteners installed with anchors or inserts as applicable. Install fasteners so heads do not impose point loads on backs of mirrors. Protect mirrors from breakage and contaminating substances resulting from construction operations.
- E. Do not permit edges of mirrors to be exposed to standing water.
- F. Maintain environmental conditions that will prevent mirrors from being exposed to moisture from condensation or other sources for continuous periods of time.
- G. Wash exposed surface of mirrors not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash mirrors as recommended in writing by mirror manufacturer.

END OF SECTION 088300

## SECTION 097700 – FIBERGLASS REINFORCED WALL PANELS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes: Prefinished polyester glass reinforced plastic sheets and adhered to unfinished [gypsum] [cementitious] [untreated plywood] wallboard.
  - 1. PVC trim.
- B. Products Not Furnished or Installed under This Section:
  - 1. Resilient Base.

#### 1.2 REFERENCES

- A. American Society for Testing and Materials: Standard Specifications (ASTM)
  - 1. ASTM D 256 - Izod Impact Strengths (ft #/in)
  - 2. ASTM D 570 - Water Absorption (%)
  - 3. ASTM D 638 - Tensile Strengths (psi) & Tensile Modulus (psi)
  - 4. ASTM D 790 - Flexural Strengths (psi) & Flexural Modulus (psi)
  - 5. ASTM D 2583- Barcol Hardness
  - 6. ASTM D 5319 - Standard Specification for Glass-Fiber Reinforced Polyester Wall and Ceiling Panels.
  - 7. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials.

#### 1.3 SUBMITTALS

- A. Product Data: Submit sufficient manufacturer's data to indicate compliance with these specifications, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation methods.
- B. Shop Drawings: Submit elevations of each wall showing location of paneling and trim members with respect to all discontinuities in the wall elevation.
- C. Selection Samples: Submit manufacturer's standard color pattern selection samples representing manufacturer's full range of available colors and patterns.
- D. Samples for Verification: Submit appropriate section of panel for each finish selected indicating the color, texture, and pattern required.
  - 1. Submit complete with specified applied finish.
  - 2. For selected patterns show complete pattern repeat.

3. Exposed Molding and Trim: Provide samples of each type, finish, and color.
- E. Manufacturers Material Safety Data Sheets (MSDS) for adhesives, sealants and other pertinent materials prior to their delivery to the site (available as downloads for most Marlite's products at <http://www.marlite.com/tech-details.aspx> or by contacting Marlite at [info@marlite.com](mailto:info@marlite.com)).

#### 1.4 QUALITY ASSURANCE

- A. Conform to building code requirements for interior finish for smoke and flame spread requirements as tested in accordance with:
1. ASTM E 84 (Method of test for surface burning characteristics of building Materials)
    - a. Wall Required Rating – Class [A] [C].
- B. Sanitary Standards: System components and finishes to comply with:
1. United States Department of Agriculture (USDA) / Food Safety & Inspection Services (FSIS) requirements for food preparation facilities, incidental contact.
  2. Food and Drug Administration (FDA) 2013 Food Code 6-101.11.
  3. Canadian Food Inspection Agency (CFIA) requirements.

#### 1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver materials factory packaged on strong pallets.
- B. Store panels and trim lying flat, under cover and protected from the elements. Allow panels to acclimate to room temperature (range of 60 to 75°F) for 48 hours prior to installation.

#### 1.6 PROJECT CONDITIONS

- A. Environmental Limitations: Building are to be fully enclosed prior to installation with sufficient heat (70°) and ventilation consistent with good working conditions for finish work.
- B. During installation and for not less than 48 hours before, maintain an ambient temperature and relative humidity within limits required by type of adhesive used and recommendation of adhesive manufacturer.
1. Provide ventilation to disperse fumes during application of adhesive as recommended by the adhesive manufacturer.

#### 1.7 WARRANTY

- A. Furnish one-year guarantee against defects in material and workmanship.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURER

- A. Marlite; 1 Marlite Drive, Dover, OH 44622. 800-377-1221 FAX (330) 343-4668 Email: info@marlite.com [www.marlite.com](http://www.marlite.com).
- B. Product:
  - 1. Standard FRP

### 2.2 PANELS

- A. Fiberglass reinforced thermosetting polyester resin panel sheets complying with ASTM D 5319.
  - 1. Dimensions:
    - a. Thickness – 0.090 " (2.29mm) nominal
    - b. Width - 4'-0" (1.22m) nominal
    - c. Length – 10'-0" (3.0m) and 8'-0" (2.4m)
  - 2. Tolerance:
    - a. Length and Width: +/-1/8 " (3.175mm)
    - b. Square - Not to exceed 1/8 " for 8 foot (2.4m) panels or 5/32 " (3.96mm) for 10 foot (2.4m) panels
- B. Properties: Resistant to rot, corrosion, staining, denting, peeling, and splintering.
  - 1. Flexural Strength -  $1.7 \times 10^4$  psi per ASTM D 790.
  - 2. Flexural Modulus –  $6.0 \times 10^5$  psi per ASTM D 790.
  - 3. Tensile Strength –  $8.0 \times 10^3$  psi per ASTM D 638.
  - 4. Tensile Modulus –  $9.43 \times 10^5$  psi per ASTM D 638.
  - 5. Water Absorption - 0.17% per ASTM D 570.
  - 6. Barcol Hardness (scratch resistance) of 30 as per ASTM D 2583.
  - 7. Izod Impact Strength of 7.0 ft. lbs./in ASTM D 256
- C. Back Surface: Smooth. Imperfections which do not affect functional properties are not cause for rejection.
- D. Front Finish: As indicated below.
  - a. Color: To be selected from standard pebbled colors.
  - b. Surface Pebbled
  - c. Fire Rating Class A (I)
  - d. Size:
    - 1) Marlite Standard FRP
      - a) Ceilings: 48" x 96" [1.2m x 2.4m] x .090" (3mm) nom.
      - b) Walls: 48" x 120" [1.2m x 3m] x .090" (3mm) nom.

## 2.3 MOLDINGS

- A. PVC Trim: Thin-wall semi-rigid extruded PVC.
  - 1. M 350 Inside Corner, 10' length
  - 2. M 360 Outside Corner, 10' length
  - 3. M 365 Division, 10' length
  - 4. M 370 Edge, 10' length

## 2.4 ACCESSORIES

- A. Fasteners: Non-staining nylon drive rivets.
  - 1. Match panel colors.
  - 2. Length to suit project conditions.
- B. Adhesive: Either of the following construction adhesives complying with ASTM C 557.
  - 1. Marlite C-551 FRP Adhesive - Water- resistant, non-flammable adhesive.
  - 2. Marlite C-915 Construction Adhesive - Flexible, water-resistant, solvent based adhesive, formulated for fast, easy application.
  - 3. Titebond Advanced Polymer Panel Adhesive – VOC compliant, non-flammable, environmentally safe adhesive.
- C. Sealant:
  - 1. Marlite Brand MS-250 Clear Silicone Sealant.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Examine backup surfaces to determine that corners are plumb and straight, surfaces are smooth, uniform, clean and free from foreign matter, nails countersunk, joints and cracks filled flush and smooth with the adjoining surface.
  - 1. Verify that stud spacing does not exceed 24" (61cm) on-center.
- B. Repair defects prior to installation.
  - 1. Level wall surfaces to panel manufacturer's requirements. Remove protrusions and fill indentations.

### 3.2 INSTALLATION

- A. Comply with manufacturer's recommended procedures and installation sequence.
- B. Cut sheets to meet supports allowing 1/8" (3 mm) clearance for every 8 foot (2.4m) of panel.
  - 1. Cut and drill with carbide tipped saw blades or drill bits, or cut with shears.
  - 2. Pre-drill fastener holes 1/8" (3mm) oversize with high speed drill bit.



- a. Space at 8" (200mm) maximum on center at perimeter, approximately 1" from panel edge.
  - b. Space at in field in rows 16' (40.64cm) on center, with fasteners spaced at 12" (30.48 cm) maximum on center.
- C. Apply panels to board substrate, above base, vertically oriented with seams plumb and pattern aligned with adjoining panels.
  - 1. Install panels with manufacturer's recommended gap for panel field and corner joints.
    - a. Adhesive trowel and application method to conform to adhesive manufacturer's recommendations.
    - b. Drive fasteners for snug fit. Do not over-tighten.
- D. Apply panel moldings to all panel edges using silicone sealant providing for required clearances.
  - 1. All moldings must provide for a minimum 1/8 "(3mm) of panel expansion at joints and edges, to insure proper installation.
  - 2. Apply sealant to all moldings, channels and joints between the system and different materials to assure watertight installation.

### 3.3 CLEANING

- A. Remove excess sealant from panels and moldings. Wipe panel down using a damp cloth and mild soap solution or cleaner.
- B. Refer to manufacturer's specific cleaning recommendations Do not use abrasive cleaners.
- C. END OF SECTION

## SECTION 099123 - PAINTING AND COATING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes surface preparation and the application of paint systems and coatings on the following interior substrates:
1. Steel.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Samples: For each finish and for each color and texture required.
- C. Product List: Printout of current "MPI Approved Products List" for each product category specified in Part 2, with the proposed product highlighted.

#### 1.3 QUALITY ASSURANCE

- A. MPI Standards:
1. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
  2. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.

### PART 2 - PRODUCTS

#### 2.1 MANUFACTURERS

- A. Acceptable Manufacturer:
- The Sherwin-Williams Company or Approved Equal- "Pro Green"  
101 Prospect Avenue NW  
Cleveland, OH 44115  
Tel: (800) 321-8194  
Fax: (216) 566-1392  
[www.sherwin-williams.com](http://www.sherwin-williams.com)
- Other acceptable Manufacturers: KWAL, Benjamin Moore, ICI, PPG Pittsburgh Paints
1. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
  2. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- B. Substitutions: Requests for substitution will be considered in accordance with provisions of section 012500 product requirements. When submitting requests for substitution, provide complete product data specified above under submittals, for each substitute product.

- C. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
  2. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
  3. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 500 g/L.
  4. Floor Coatings: VOC not more than 100 g/L.
  5. Shellacs, Clear: VOC not more than 730 g/L.
  6. Shellacs, Pigmented: VOC not more than 550 g/L.
  7. Flat Topcoat Paints: VOC content of not more than 50 g/L.
  8. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
  9. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
  10. Floor Coatings: VOC not more than 100 g/L.
  11. Shellacs, Clear: VOC not more than 730 g/L.
  12. Shellacs, Pigmented: VOC not more than 550 g/L.
  13. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
  14. Dry-Fog Coatings: VOC content of not more than 400 g/L.
  15. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
  16. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.
- D. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
1. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
  2. Restricted Components: Paints and coatings shall not contain any of the following:
    - a. Acrolein.
    - b. Acrylonitrile.
    - c. Antimony.
    - d. Benzene.
    - e. Butyl benzyl phthalate.
    - f. Cadmium.
    - g. Di (2-ethylhexyl) phthalate.
    - h. Di-n-butyl phthalate.
    - i. Di-n-octyl phthalate.
    - j. 1,2-dichlorobenzene.
    - k. Diethyl phthalate.
    - l. Dimethyl phthalate.
    - m. Ethylbenzene.
    - n. Formaldehyde.
    - o. Hexavalent chromium.
    - p. Isophorone.
    - q. Lead.

- r. Mercury.
- s. Methyl ethyl ketone.
- t. Methyl isobutyl ketone.
- u. Methylene chloride.
- v. Naphthalene.
- w. Toluene (methylbenzene).
- x. 1,1,1-trichloroethane.
- y. Vinyl chloride.

E. Colors: As selected by Architect from manufacturer's full range.

## 2.2 INTERIOR PAINTING and COATING

### A. METAL (Door and Door frames)

#### 1. Acrylic Systems

- a. LOWER ODOR/LOW VOC: Semi-Gloss Finish
  - 1st Coat: S-W Pro Industrial Pro-Cryl® Universal Primer, B66-310 Series  
(5-10 mils wet, 2-4 mils dry per coat)
  - 2nd Coat: S-W Pro Industrial 0 VOC Acrylic, B66-650 Series
  - 3rd Coat: S-W Pro Industrial 0 VOC Acrylic, B66-650 Series  
(7 mils wet)  
(4 mils wet, 1.7 mils dry per coat)

### B. EXPOSED CONCRETE FLOOR

- 1. Provide sealer over all exposed concrete floors.
- 2. Sealer to be equal to Infusion Water Based Sealer as supplied by H & C Concrete/Sherwin Williams. 1-800-867-8246 or [www.hcconcrete.com](http://www.hcconcrete.com).
- 3. Sealer is to be applied to new concrete surface. Moisture cure or apply clear non-residual curing compound.

## 2.3 MATERIALS

### A. Paints and Coatings - General:

- 1. Unless otherwise indicated, provide factory-mixed coatings. When required, mix coatings to correct consistency in accordance with manufacturer's instructions before application. Do not reduce, thin, or dilute coatings or add materials to coatings unless such a procedure is specifically described in manufacturer's product instructions. VOC numbers need to be confirmed by using the products MSDS sheets.

## 2.4 ACCESSORIES

### A. Coating Application Accessories:

- 1. Provide all primers, sealers, cleaning agents, cleaning cloths, sanding materials, and clean-up materials required per manufacturers specifications.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Do not begin application of coating until substrates have been properly prepared. Notify Architect of unsatisfactory conditions before proceeding.
- B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
- C. Proceed with work only after conditions have been corrected and approved by all parties otherwise application of coatings will be considered and acceptance of surface conditions.

### 3.2 SURFACE PREPARATION

- A. Proper product selection, surface preparation, and application affect coating performance. Coating integrity and service life will be reduced because of improperly prepared surfaces. Selection and implementation of proper surface preparation ensures coating adhesion to the substrate and prolongs the service life of the coating system.
- B. Selection of the proper method of surface preparation depends on the substrate, the environment, and the expected service life of the coating system. Economics, surface contamination, and the effect on the substrate will also influence the selection of surface preparation methods.
- C. The surface must be dry and in sound condition. Remove oil, dust, dirt, loose rust, peeling paint or other contamination to ensure good adhesion.
- D. No painting should take place when the interior temperature is below 50°F unless the specified product is designed for the marginal conditions.

### 3.3 INSTALLATION

- A. Apply all coatings and materials with manufacturer specifications in mind. Mix and thin coatings according to manufacturer's recommendations.
- B. Do not apply to wet or damp surfaces.
  - 1. Wait at least 30 days before applying to new concrete or masonry. Or follow manufacturer's procedures to apply appropriate coatings prior to 30 days.
  - 2. Test new concrete for moisture content.
- C. Apply coatings using methods recommended by manufacturer.
- D. Uniformly apply coatings without runs, drips, or sags, without brush marks and with the consistent sheen.
- E. Apply coatings at spreading rate required to achieve the manufacturer's recommended dry film thickness.

- F. Inspection: The coated surface must be inspected and approved by the Architect or Engineer just prior to each coat.

#### 3.4 PROTECTION

- A. Protect finished coatings from damage until completion of project.
- B. Touch-up damaged coating after substantial completion, following manufacturer's recommendations for touch up or repair of damaged coatings. Repair any defects that will hinder the performance of the coatings.

END OF SECTION 099123

## SECTION 102800 – GRAB BARS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Grab bars.

#### 1.2 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Product quantities, sizes, and installation locations per plans.
- C. Maintenance data.
- D. Warranty: Sample of special warranty.

### PART 2 - PRODUCTS

#### 2.1 PUBLIC-USE WASHROOM ACCESSORIES

- A. Manufacturers: Subject to compliance with requirements, [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:
- B. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated on Drawings or comparable product by one of the following:
  - 1. Bobrick Washroom Equipment, Inc.
  - 2. Bradley Corporation.
  - 3. GAMCO Specialty Accessories; a division of Bobrick Washroom Equipment, Inc.
  - 4. ASI, American Specialties, Inc.
- C. Grab Bar:
  - 1. Provide grab bars in all accessible restrooms and toilet compartments as indicated on the architectural drawings. Provide 1-1/2" diameter x 42" long Bobrick B-6806 concealed mounted satin finish 18 ga. Type 304 stainless steel. Provide 1-1/2" diameter x 36" long Bobrick B-6806 concealed mounted satin finish 18 ga. Type 304 stainless steel. Provide 1-1/2" diameter x 18" long Bobrick B-6806 concealed mounted satin finish 18 ga. Type 304 stainless steel.

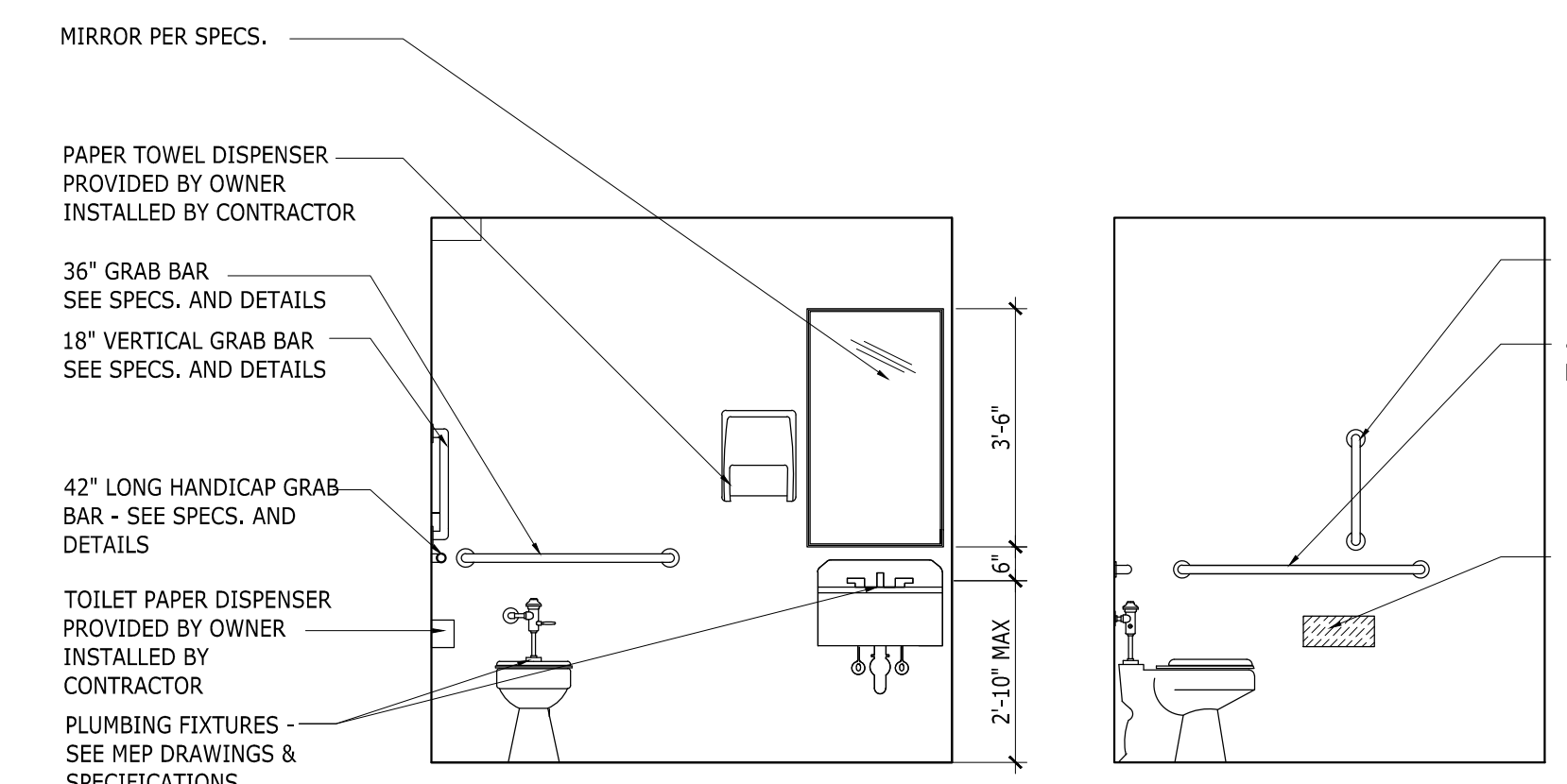
PART 3 - EXECUTION

3.1 INSTALLATION

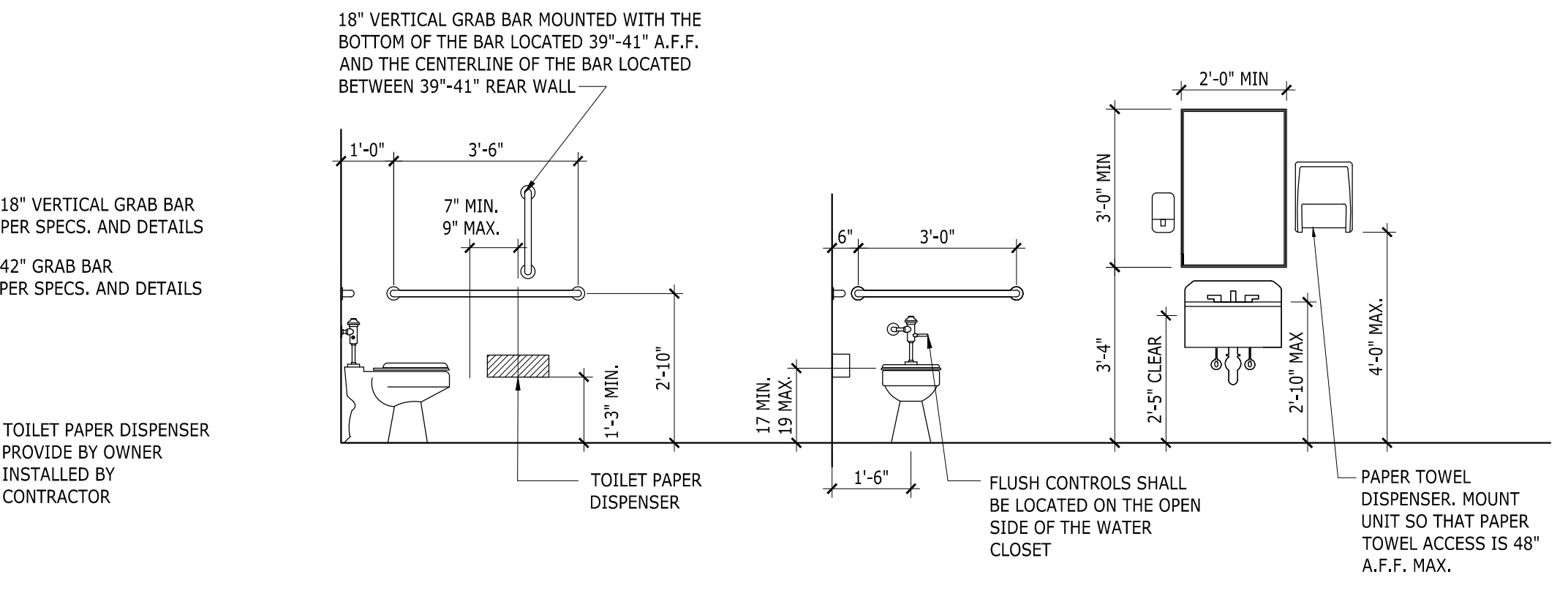
- A. Install accessories according to manufacturers' written instructions, using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
- B. Grab Bars: Install to withstand a downward load of at least 250 lbf, when tested according to ASTM F 446.

END OF SECTION

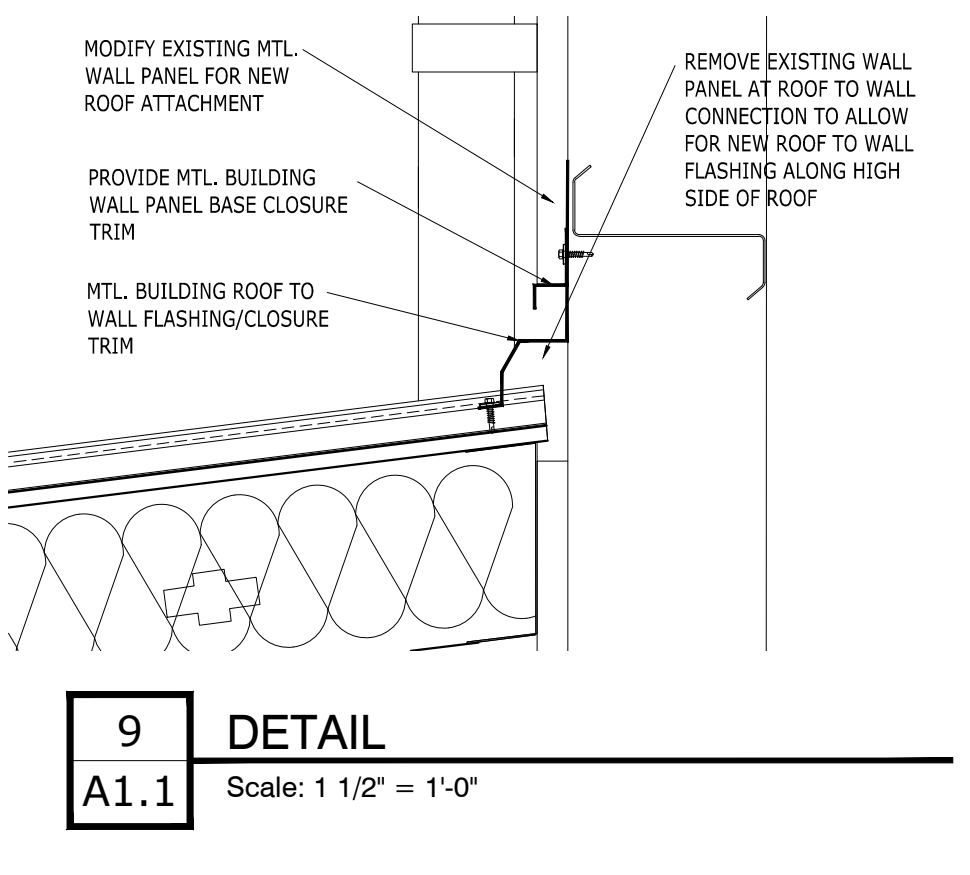




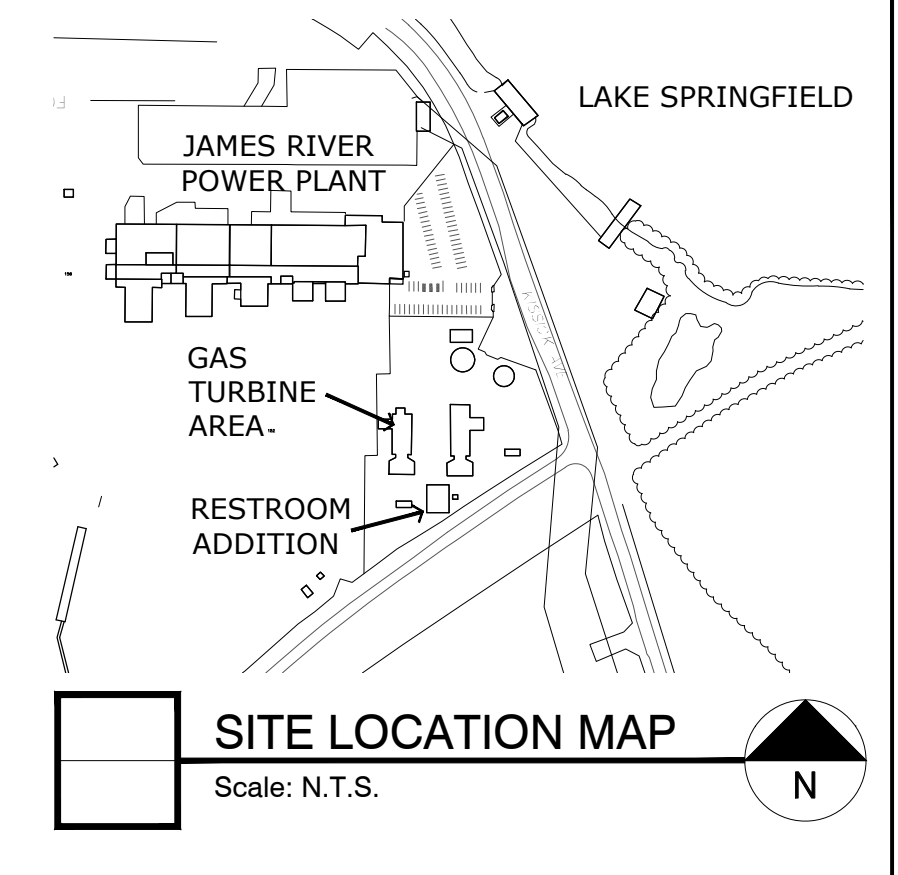
**7 RESTROOM ELEVATION**  
A1.1 Scale: 3/8" = 1'-0"



**10 FIXTURE MOUNTING HEIGHTS**  
A1.1 Scale: 3/8" = 1'-0"

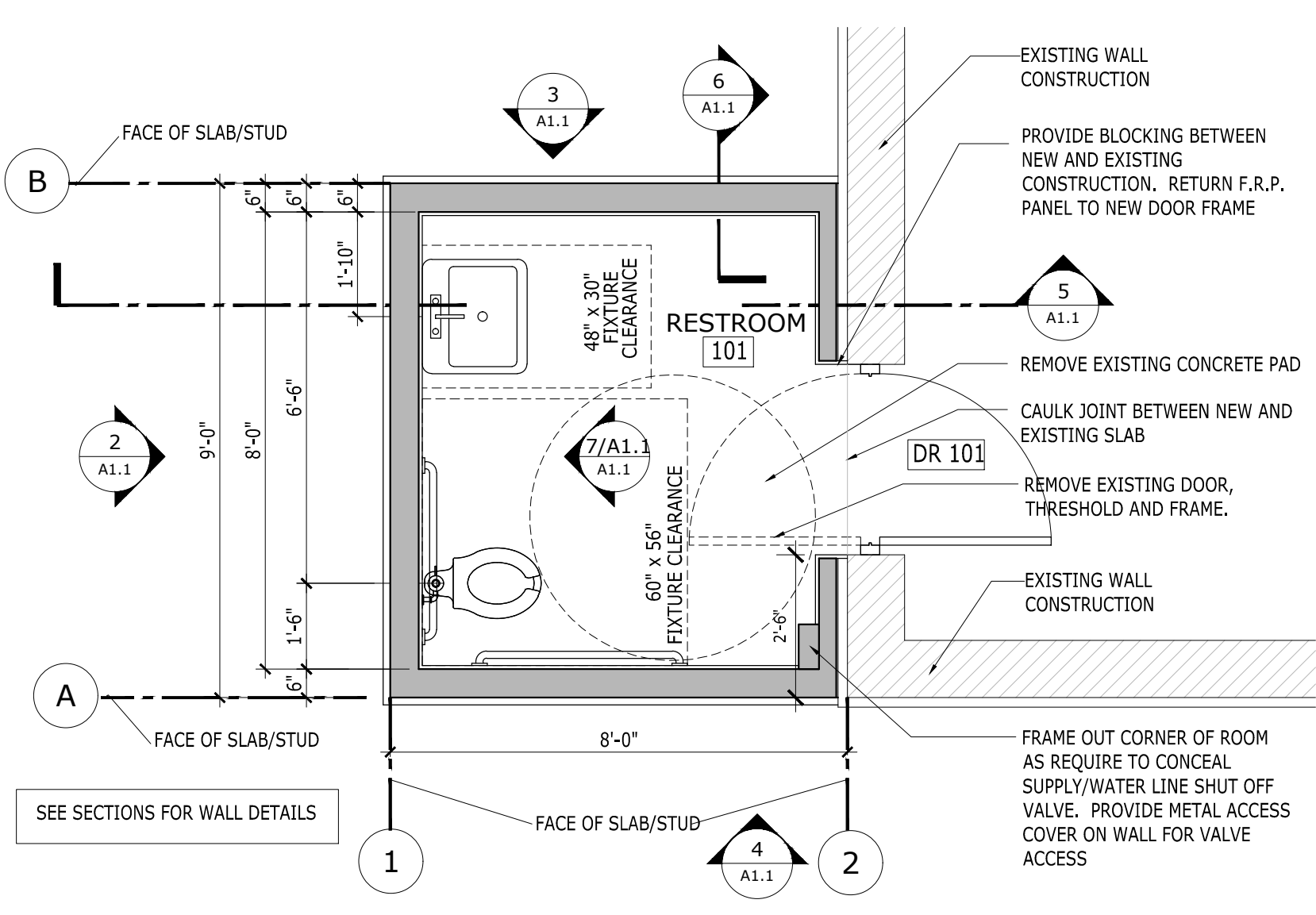


**9 DETAIL**  
A1.1 Scale: 1 1/2" = 1'-0"



**SITE LOCATION MAP**  
Scale: N.T.S.

- GENERAL NOTES:**
- CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS PRIOR TO PERFORMING ANY NEW WORK. CONSULT ARCHITECT IF CONFLICTS OCCUR.
  - CONTRACTOR TO MAINTAIN A FIXED 8'-0" HIGH CHAIN LINK FENCE PERIMETER OF SITE AT ALL TIMES DURING UNDERGROUND UTILITY WORK. NO EXISTING FENCE CAN BE REMOVED WITHOUT PRIOR INSTALLATION OF A TEMPORARY 8'-0" HIGH CHAIN LINK FENCE EQUAL TO EXISTING FENCE WITH POSTS SET IN GROUND AS REQUIRED TO MAINTAIN SECURITY PERIMETER OF SITE DURING CONSTRUCTION.
  - CONTRACTOR SHALL MEET REQUIRED OSHA SAFETY REQUIREMENTS DURING THE ENTIRE PROCESS.
  - ALL ITEMS NOTED TO BE REMOVED SHALL BE CONTRACTORS RESPONSIBILITY TO DISPOSE OF OFF SITE.
  - CONTRACTOR TO COORDINATE WITH CITY UTILITIES FOR STAGING AREA FOR ALL EQUIPMENT AND MATERIAL STORAGE.
  - CONTRACTOR TO CALL FOR UTILITY LOCATE AND VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO DIGGING.
  - SEE STRUCTURAL, MECHANICAL, PLUMBING AND ELECTRICAL DRAWINGS FOR ADDITIONAL DETAILS.



**10 ENLARGED FLOOR PLAN**  
A1.1 Scale: 3/8" = 1'-0"

**DOOR SCHEDULE**

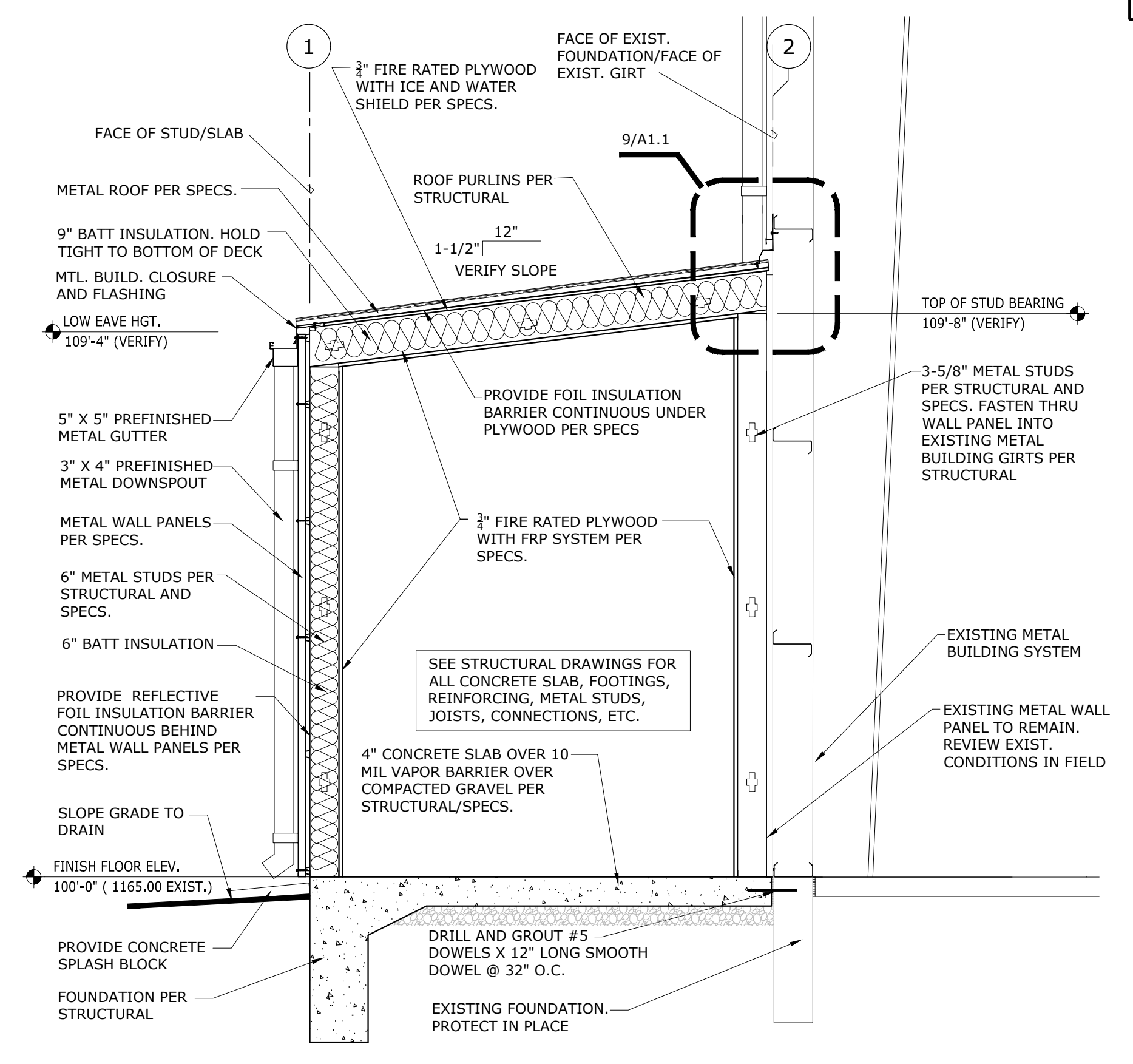
Door Number	Door Size	Door Material	Frame		Head/Jamb	Closer	Hardware Function	Notes
			Type	Material				
DR 101	3'-0" X 7'-0"	STEEL	1	STEEL	3-5/8"	X	PUSH/PULL	see hardware notes below

**GENERAL DOOR AND HARDWARE NOTES**

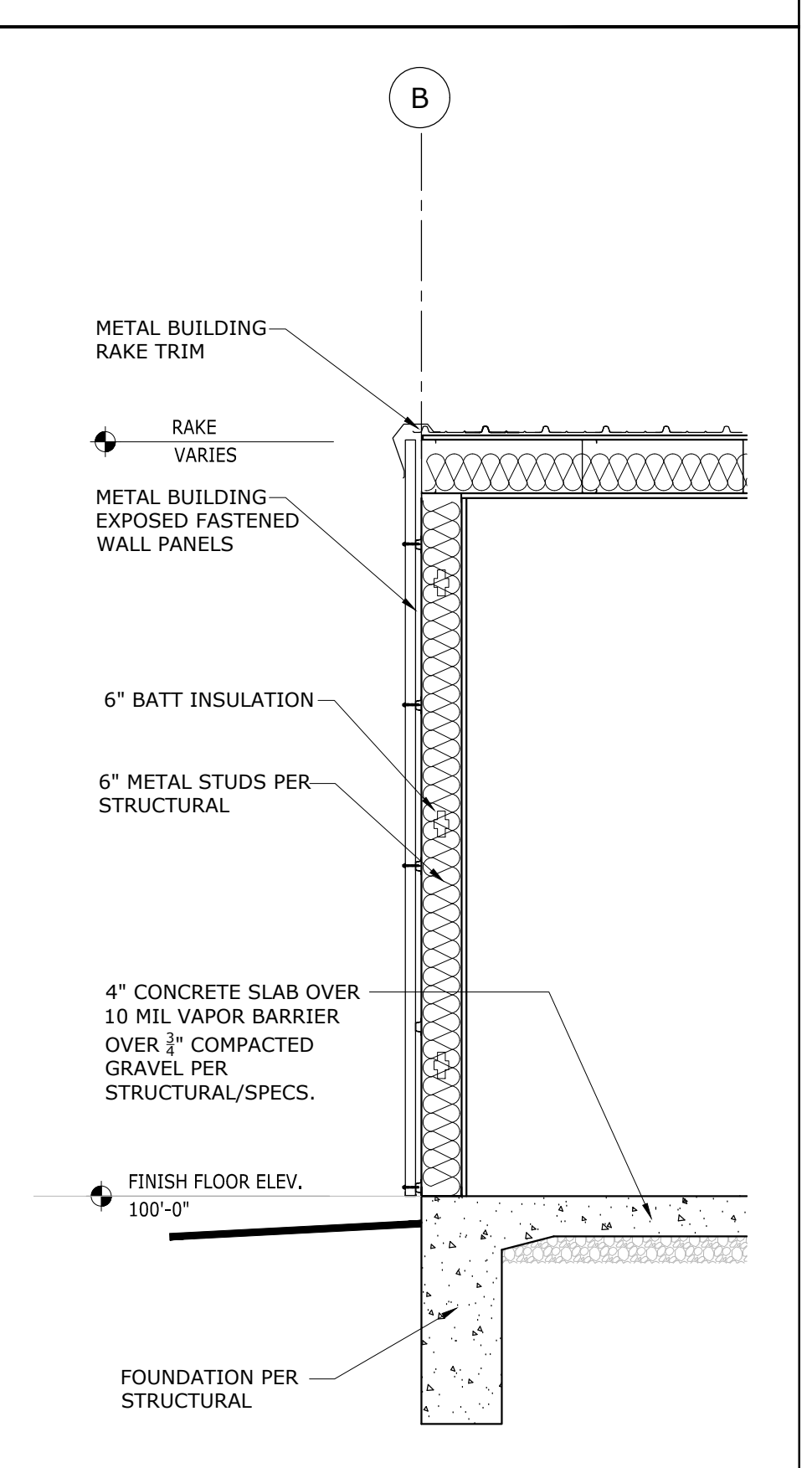
- Metal doors to be equal to CECO Door Products: 18 gauge 1-3/4" thick with 10 gauge hinge reinforcement/14 gauge lock reinforcement. Top and bottom channel min 16 gauge. All doors to be primed ready for field painting.
- Door frames to be knock-down 16 gauge. Hinge reinforcement 7 gauge. All frames to be primed ready for field paint.
- Provide door silencers
- Factory prep doors for all hardware.
- Provide (3) hinges equal to Hager BB1279 4-1/2" x 4-1/2" US26D
- Provide closer equal to Norton 8301 BF 689
- Provide kickplate 8"x34" US32D
- Provide Push/Pull Hardware equal to Rockwood 107 x 70C w/ 71C plate US26D
- Provide Occupancy/deadbolt lock equal to Hager 3216 dead bolt US26D with Rockwood 107 x 70C w/ 71C plate US26D (prep plates for deadbolt hole)

**INTERIOR FINISH SCHEDULE**

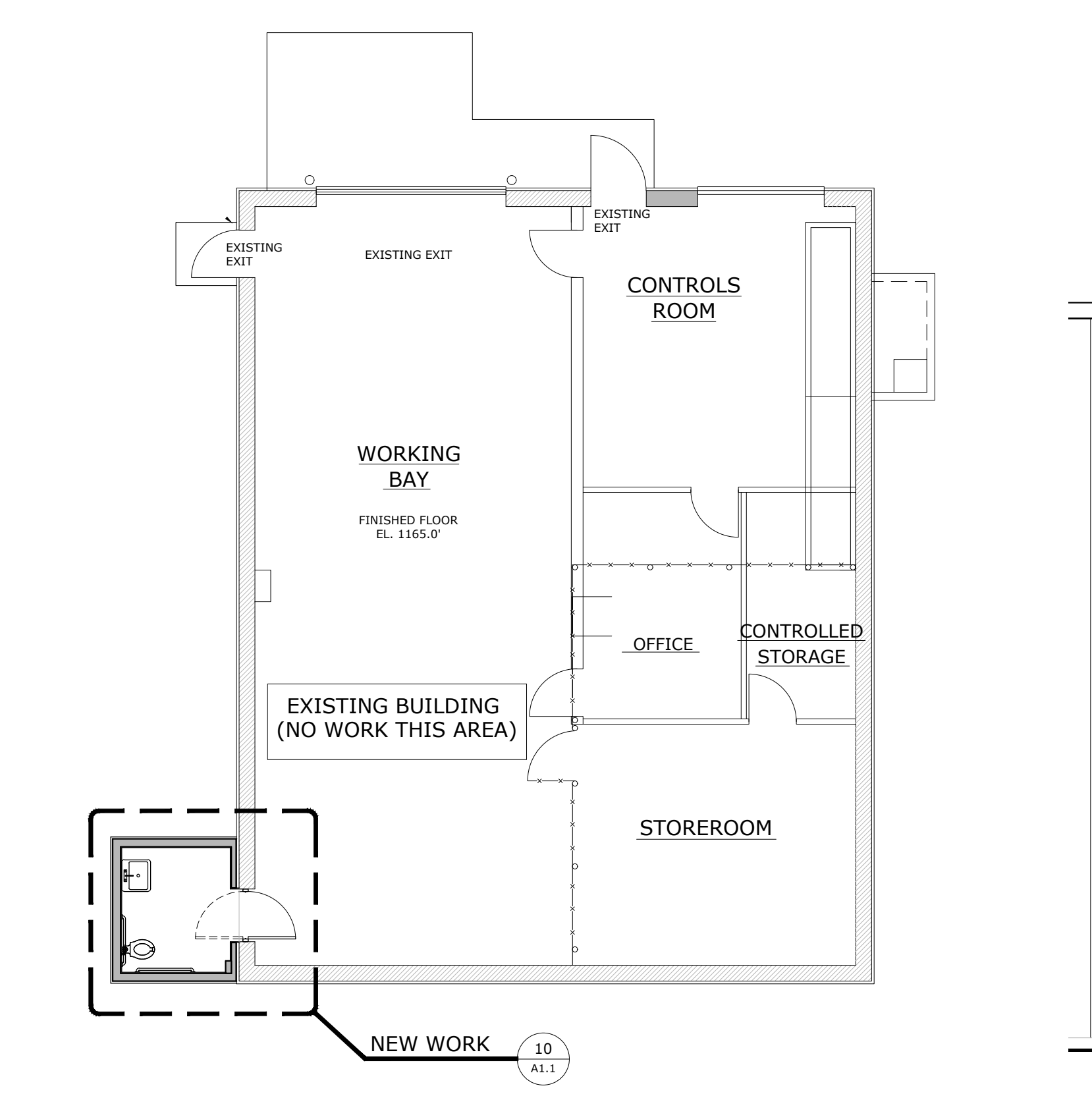
Room Name	Floor Finish	Ceiling Finish	Ceiling Height	Wall Finish				Base
				North	South	East	West	
RESTROOM 101	SEALED CONCRETE	FRP	PER SECTION	FRP	FRP	FRP	FRP	VINYL



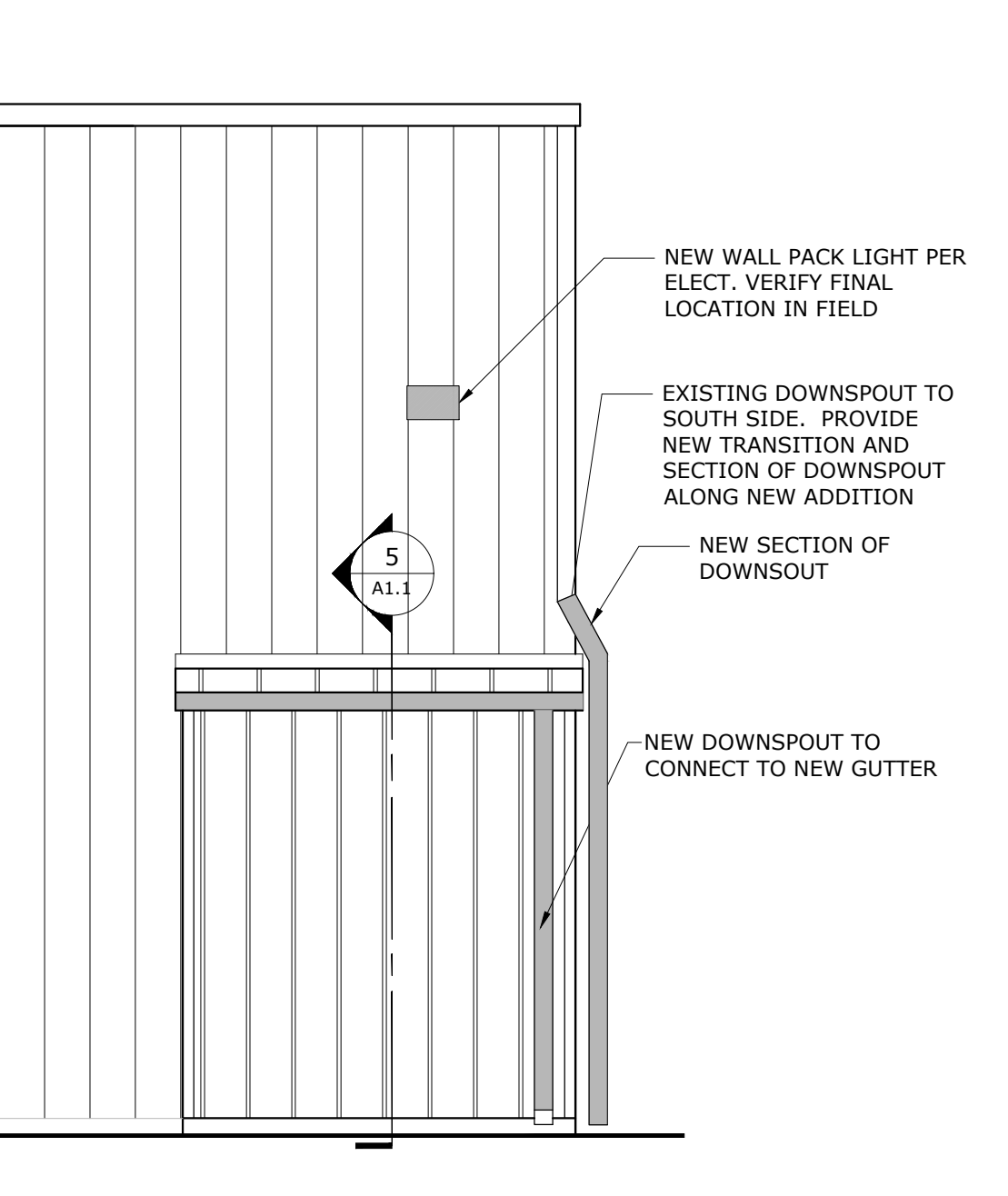
**5 BUILDING SECTION**  
A1.1 Scale: 1/4" = 1'-0"



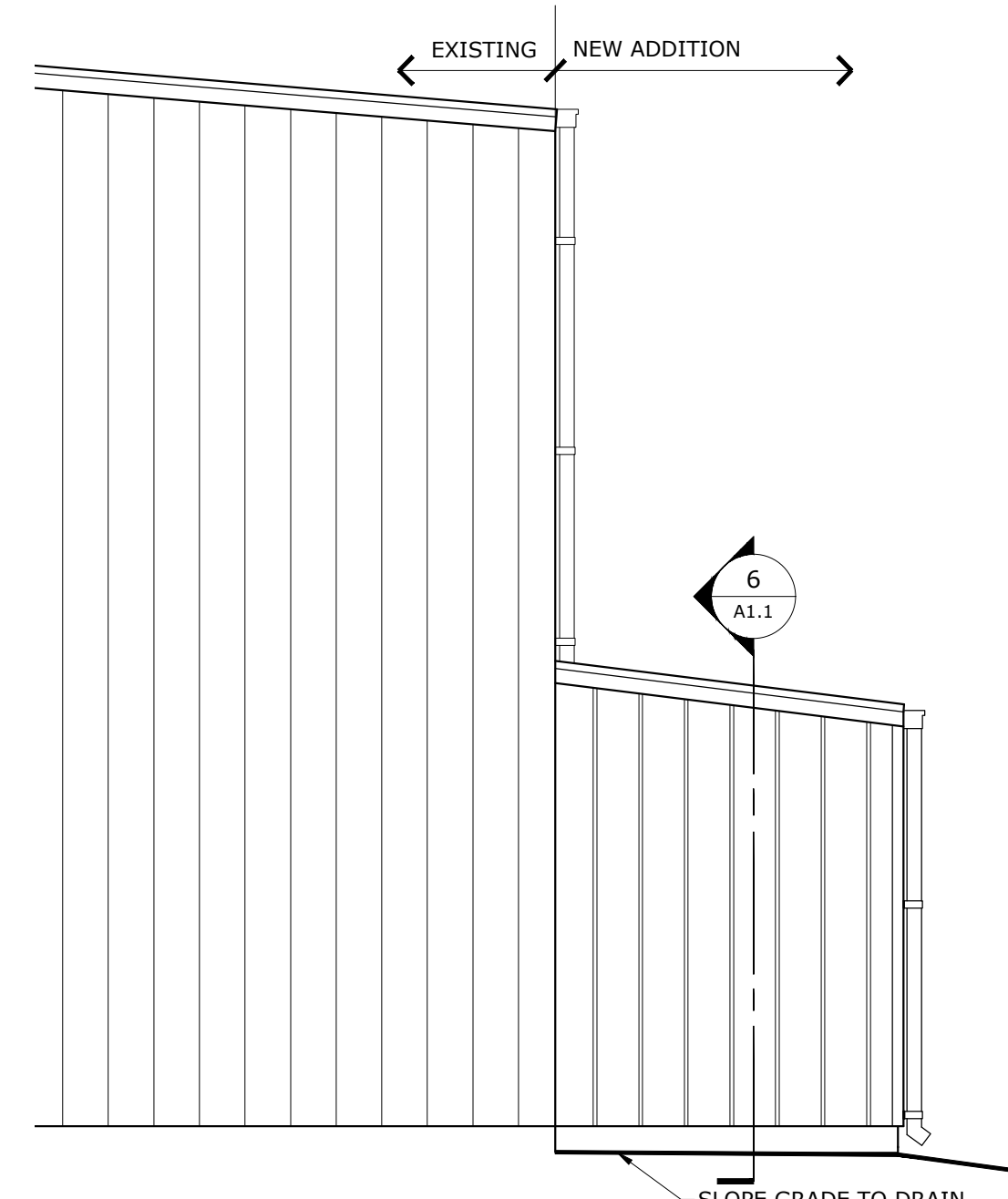
**6 WALL SECTION**  
A1.1 Scale: 1/4" = 1'-0"



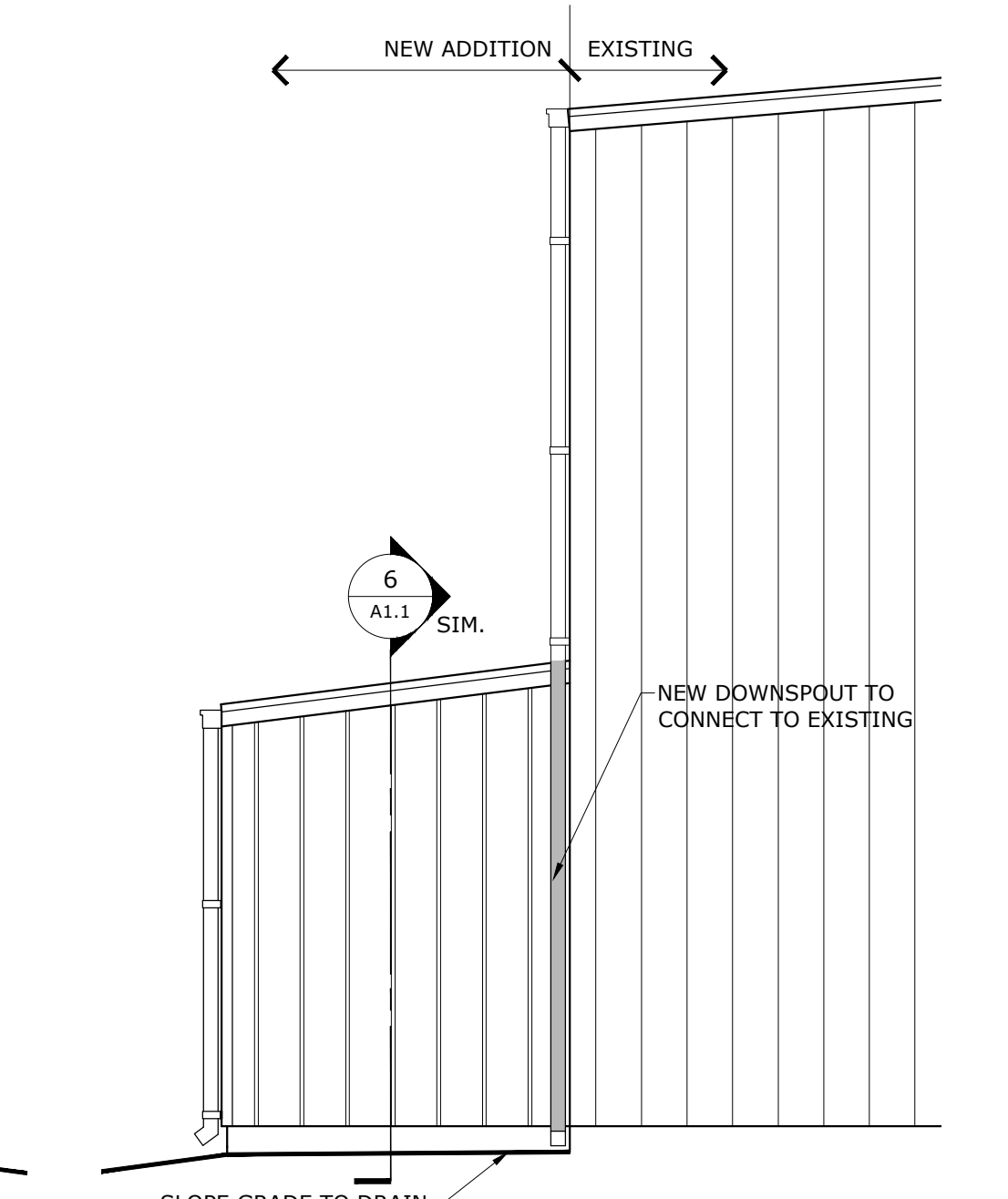
**1A FLOOR PLAN**  
A1.1 Scale: 1/8" = 1'-0"



**2 WEST ELEVATION**  
A1.1 Scale: 1/4" = 1'-0"



**3 NORTH ELEVATION**  
A1.1 Scale: 1/4" = 1'-0"



**4 SOUTH ELEVATION**  
A1.1 Scale: 1/4" = 1'-0"

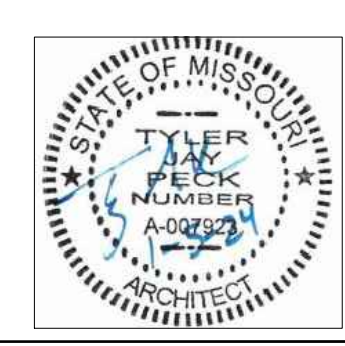
**BUILDING CODE DATA**

- 2018 INTERNATIONAL BUILDING CODE
- 2018 INTERNATIONAL PLUMBING CODE
- 2018 INTERNATIONAL MECHANICAL CODE
- 2017 NATIONAL ELECTRICAL CODE
- 2018 INTERNATIONAL FIRE CODE
- 2018 INTERNATIONAL FUEL GAS CODE
- 2009 ANSI/ICC A117.1

BUILDING USE GROUP \_\_\_\_\_ F-1  
 CONSTRUCTION TYPE \_\_\_\_\_ 2B  
 NFPA 13 SPRINKLER SYSTEM \_\_\_\_\_ FULLY SPRINKLED  
 EXISTING BUILDING AREA \_\_\_\_\_ 2,000 S.F.  
 NEW RESTROOM ADDITION AREA \_\_\_\_\_ 72 S.F.  
 OCCUPANT LOAD (200 GROSS) \_\_\_\_\_ 11 PERSONS

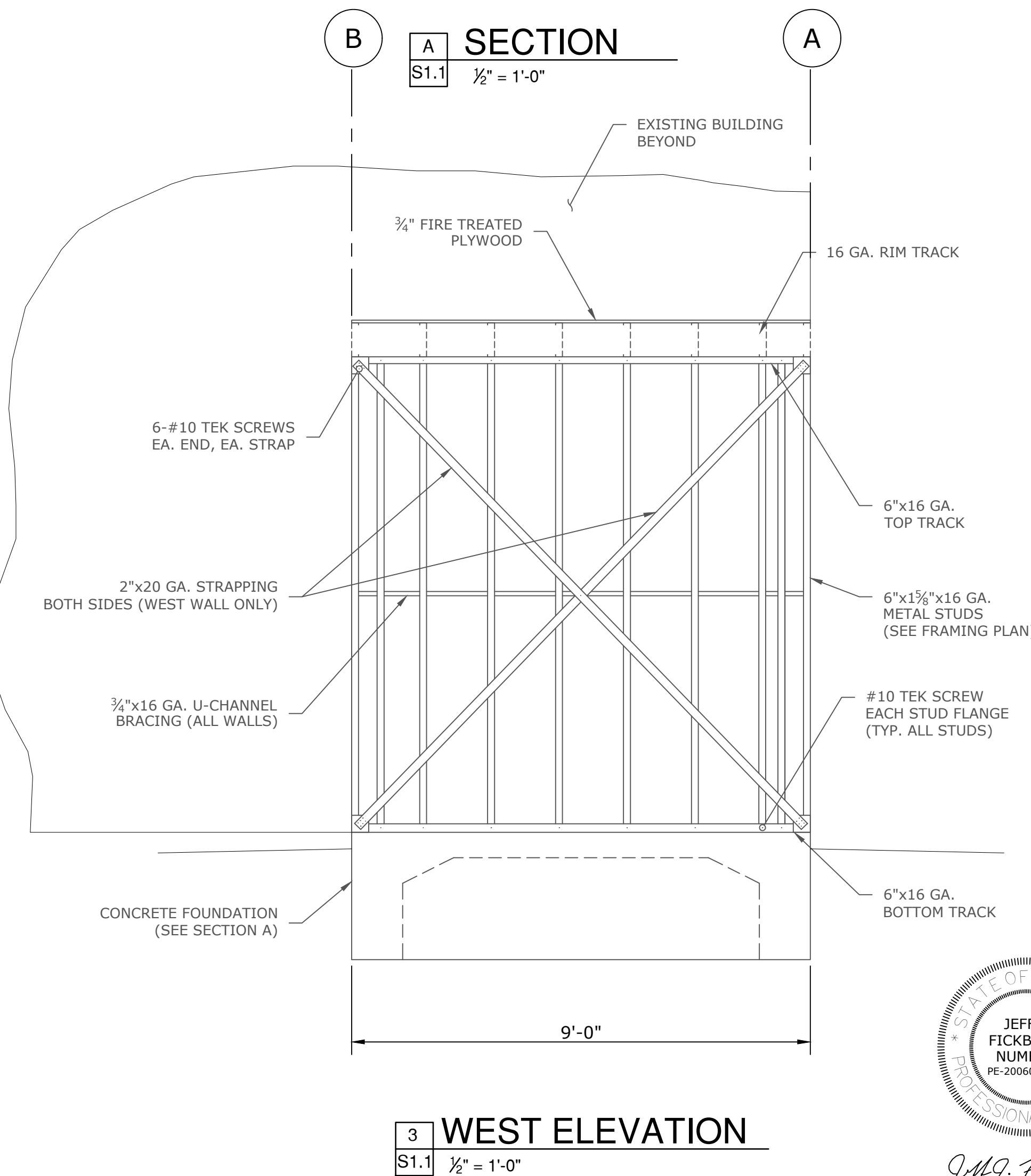
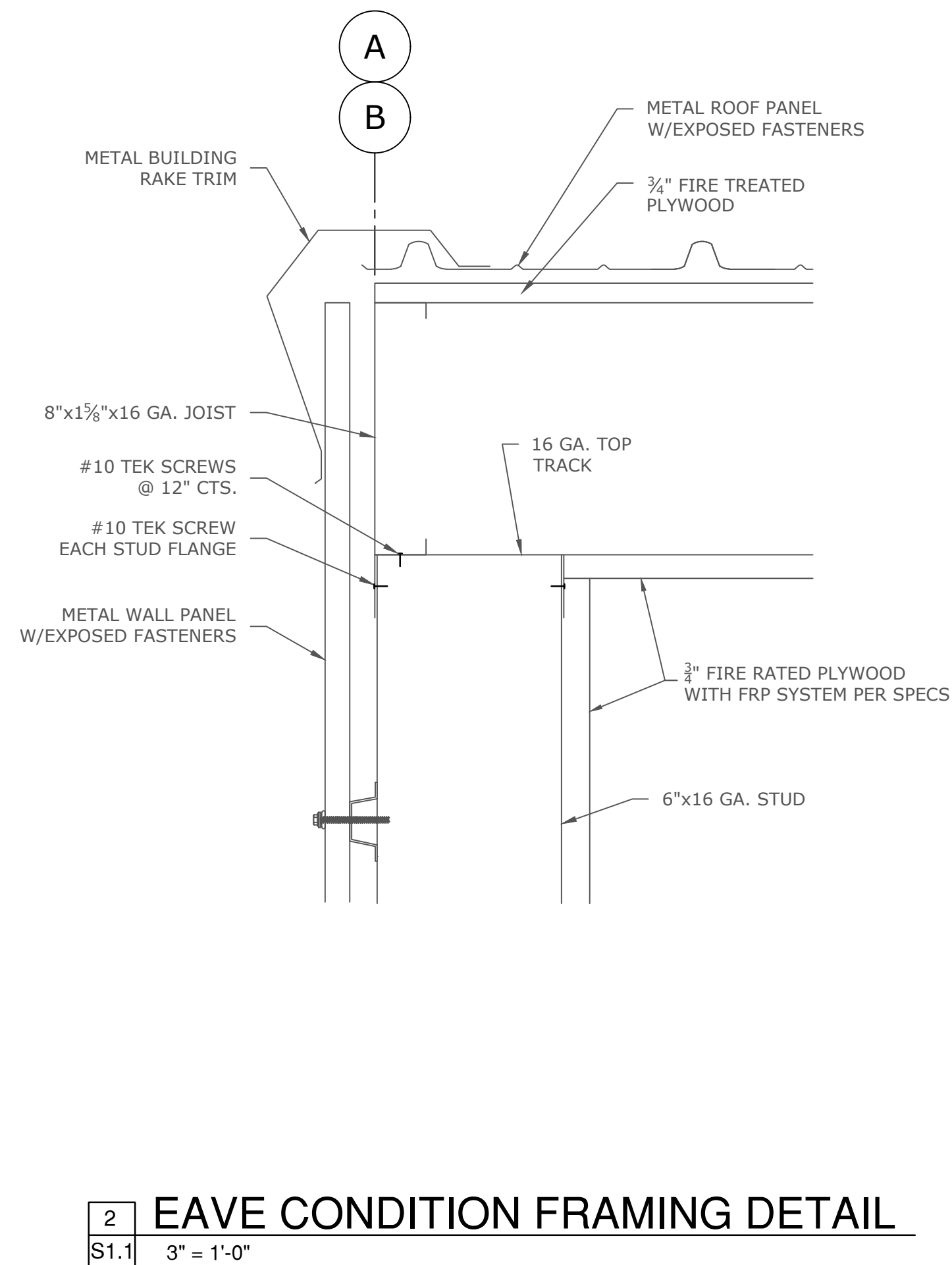
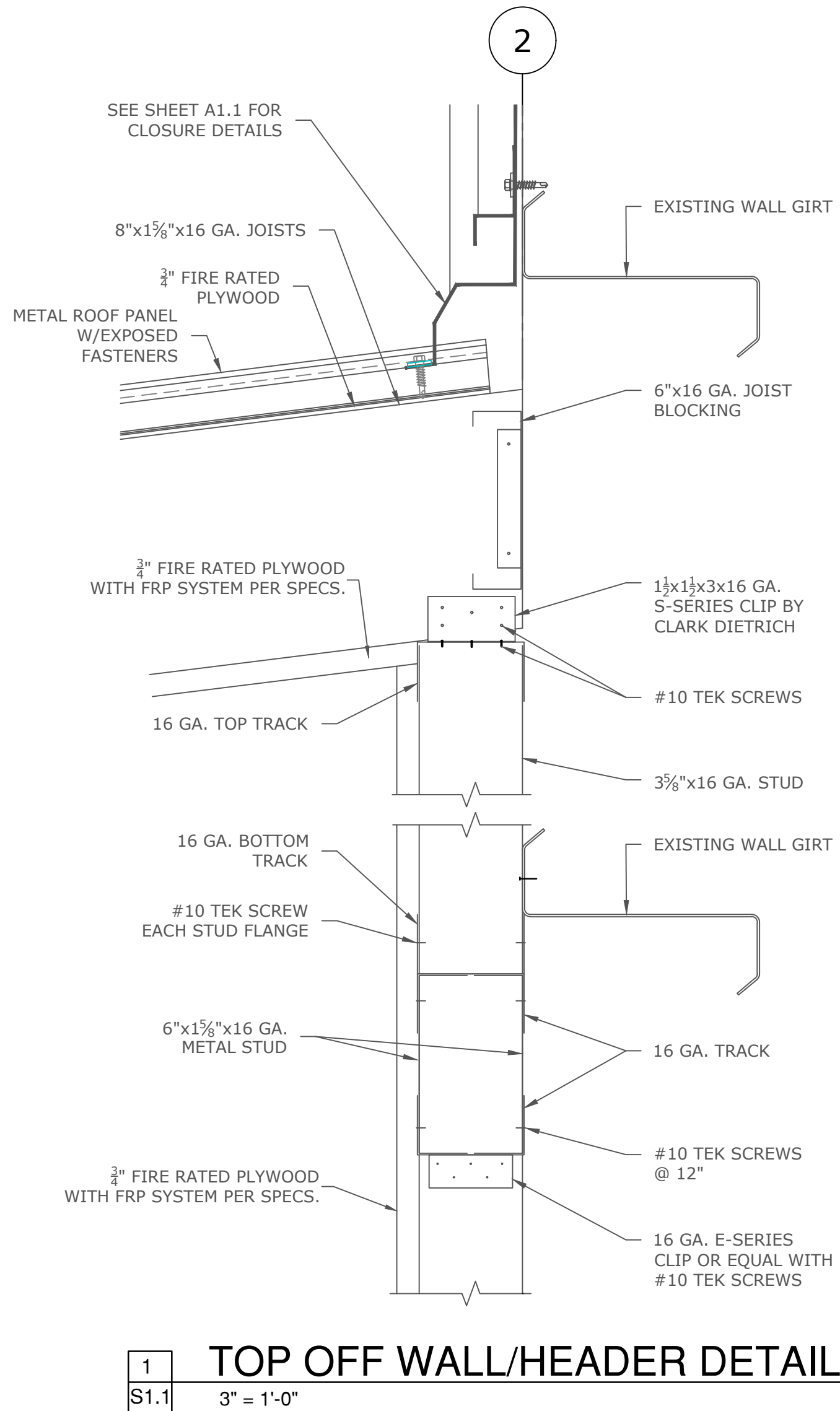
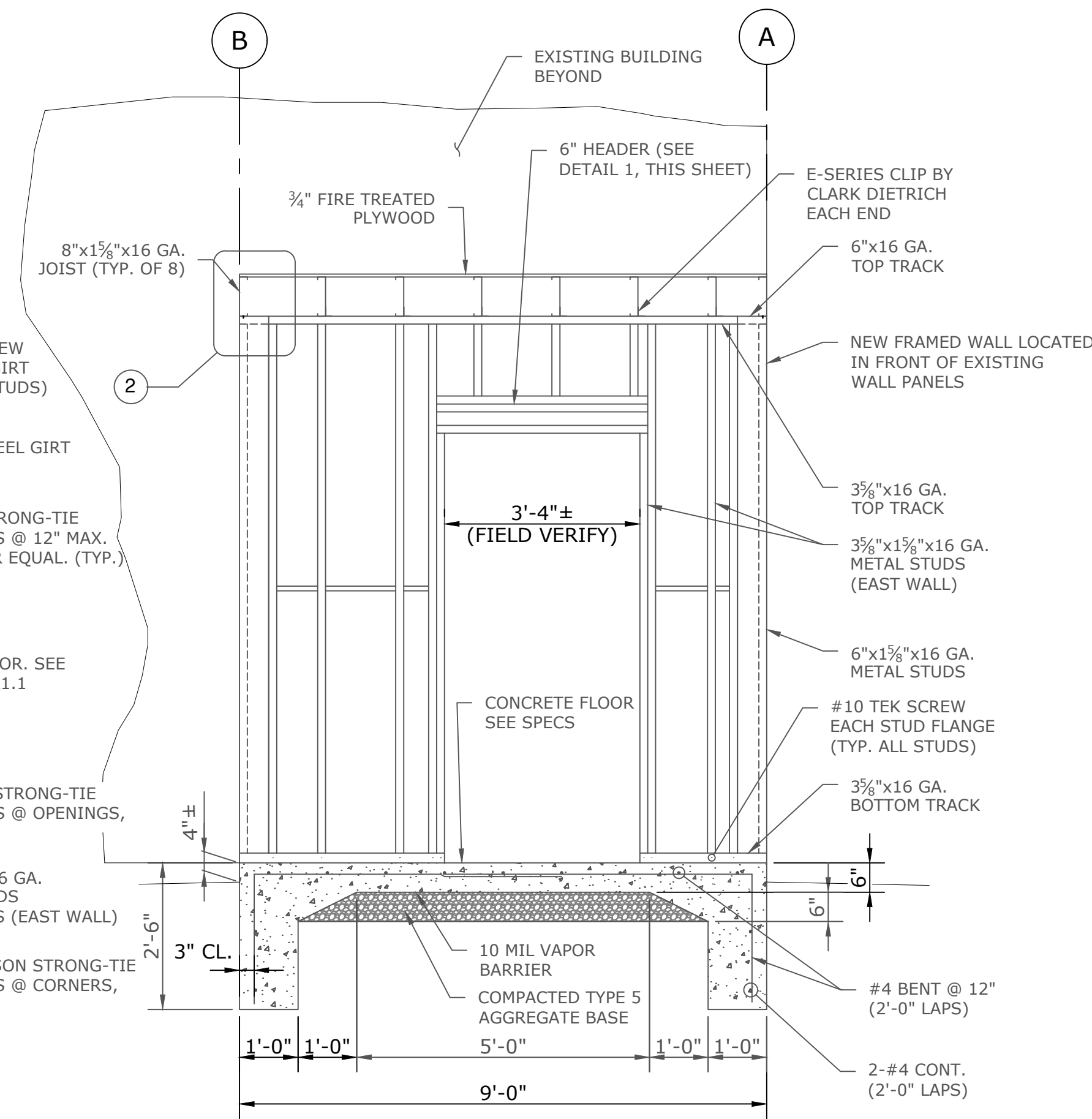
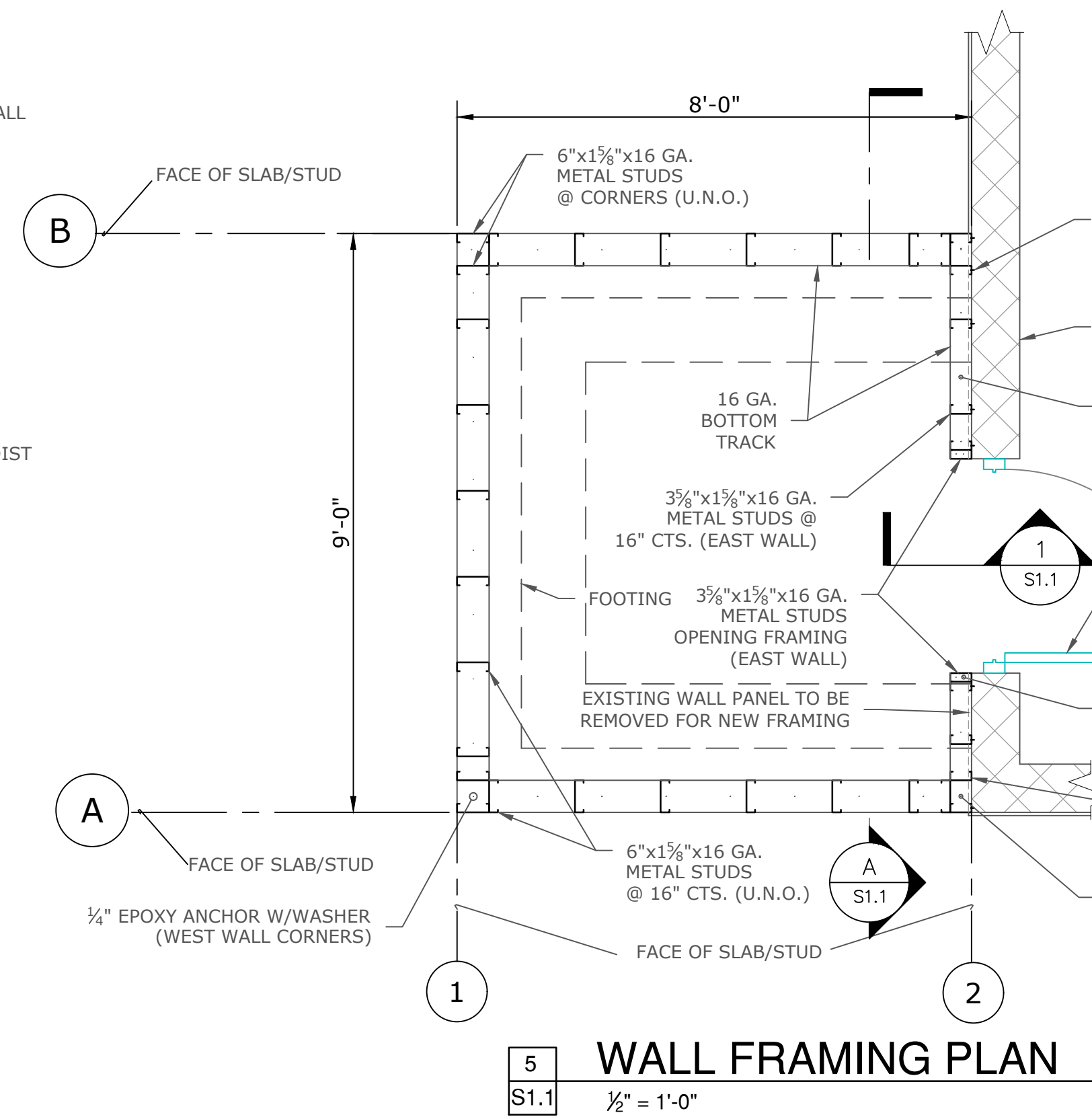
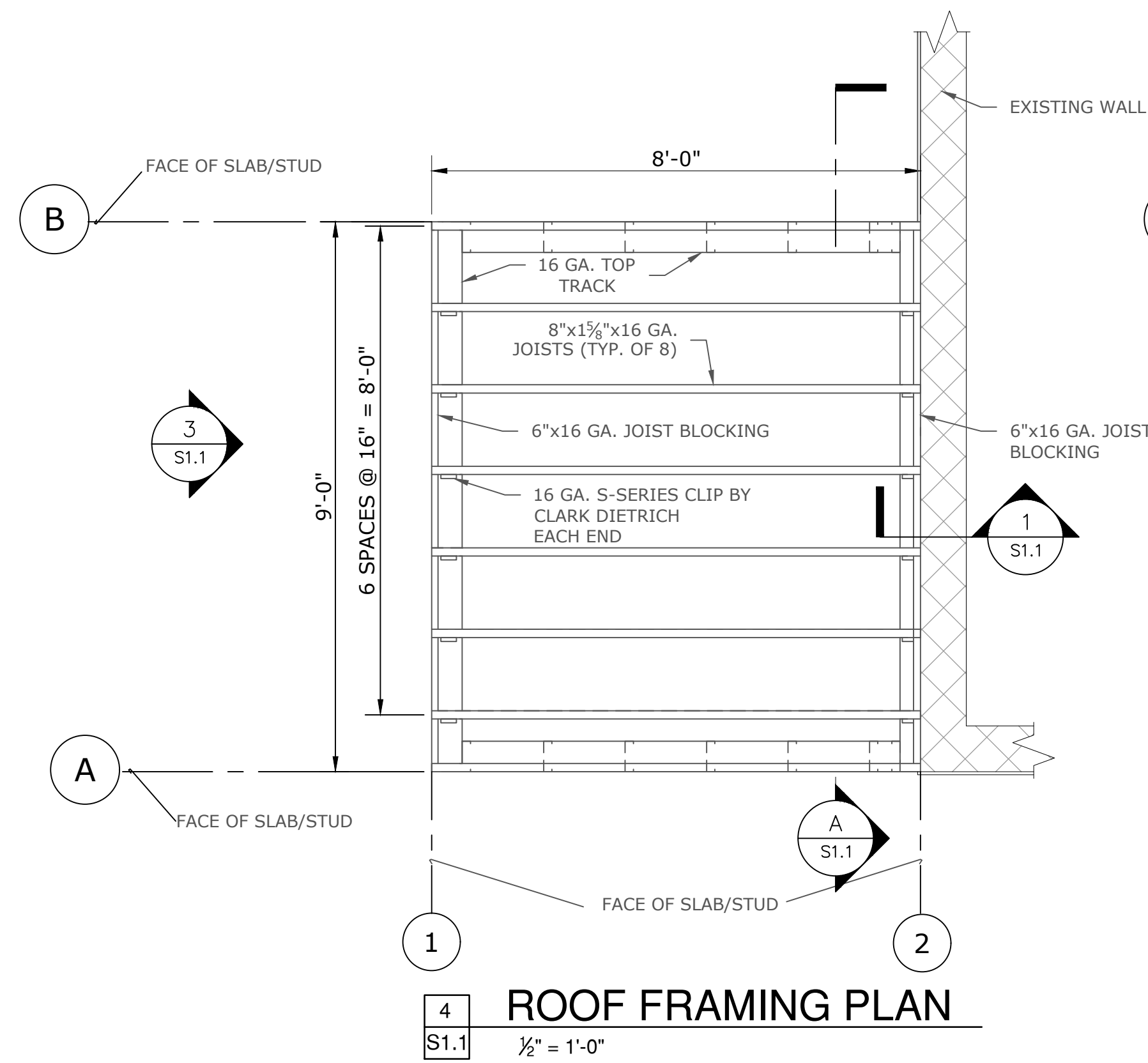
**PARKING SUMMARY**  
 NO CHANGE IN USE - NO CHANGE IN PARKING

**DEFERRED SUBMITTAL**  
 SPRINKLER PLANS



<b>City Utilities</b> Connecting Our Community		<b>JAMES RIVER POWER STATION GAS TURBINE RESTROOM ADDITION 5701 SOUTH KISSICK</b>	
ENGINEERED BY: TJP	APPROVED BY: TJP	DATE: 1-5-23	DATE ISSUED: 1-5-23
DRAWN BY: JET/TJP	AGENCY NO.:	PROJECT NO.:	MAP NO.:
APPLICATION NO.:	PERMIT NO.:	SHEET OF:	DRAWING NUMBER: <b>A1.1</b>

- GENERAL NOTES:**
- SEE ARCHITECTURAL PLANS FOR ALL SHEATHING, INSULATION, METAL ROOF AND WALL DETAILS.
  - SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.



JEFF J. FICKBOHNM  
1/5/2024  
EXPIRES 12/31/24

<b>City Utilities</b> Connecting Our Community		<b>STRUCTURAL DETAILS</b>	
ENGINEERED BY: TJP	APPROVED BY: TJP	DATE: 1/5/2024	DATE ISSUED: 1/05/2024
DRAWN BY: JJF	AGENCY NO.:	PERMIT NO.:	MAP NO.:
APPLICATION NO.:	PERMIT NO.:	SHEET OF 2/2	DRAWING NUMBER: S1.1

MECHANICAL SYMBOLS-

Table of mechanical symbols including Domestic Cold Water, Domestic Hot Water, Roof Drain, Acid Waste, Grease Waste, and various valves and piping components.

MECHANICAL SYMBOLS-

Table of mechanical symbols including Hose Bibb, Wall Hydrant, Flush Floor Cleanout, Floor Sink, and various fixtures like showers and lavatories.

ELECTRICAL SYMBOLS-

Table of electrical symbols including Light Fixture, Emergency Light, Junction Box, Switches, and various control devices like thermostats and dimmers.

ELECTRICAL SYMBOLS-

Table of electrical symbols including Switched Receptacle, Duplex Receptacle, Telephone Outlet, and various outlet types like computer and television.

ELECTRICAL SYMBOLS-

Table of electrical symbols including End of Line Relay, Water Flow Switch, Fire Alarm Station, and various fire and safety related devices.

ABBREVIATIONS-

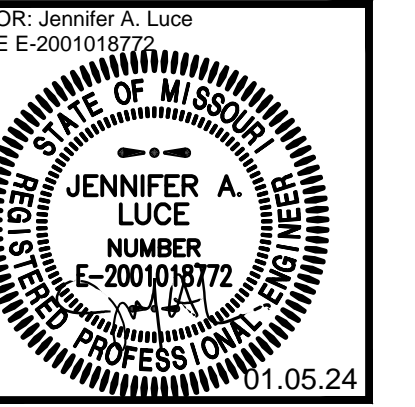
Table of abbreviations such as AD (Access Door), AFF (Above Finished Floor), and various equipment and material codes.

ELECTRICAL NOTATIONS-

Table of electrical notations including "AC" or "A", "GF", "IG", "SS", "TL", "WP", "WPI", "XP", "TR", and dimensioning codes.

PLAN NOTATIONS-

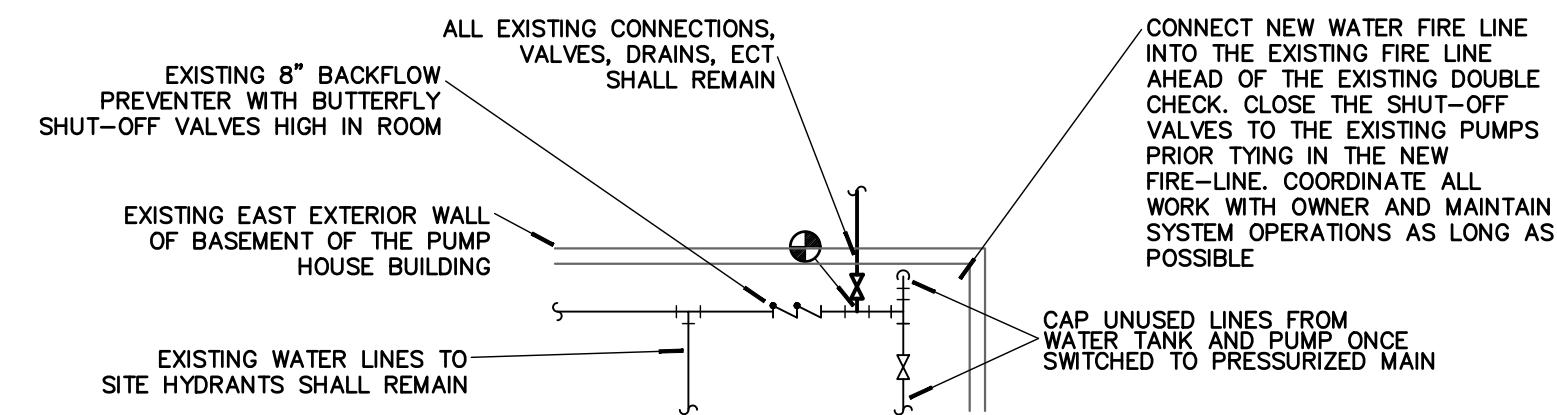
Table of plan notations including North arrow, detail reference (1/MT), plan note reference (1), room number reference (100), and connection to existing system.



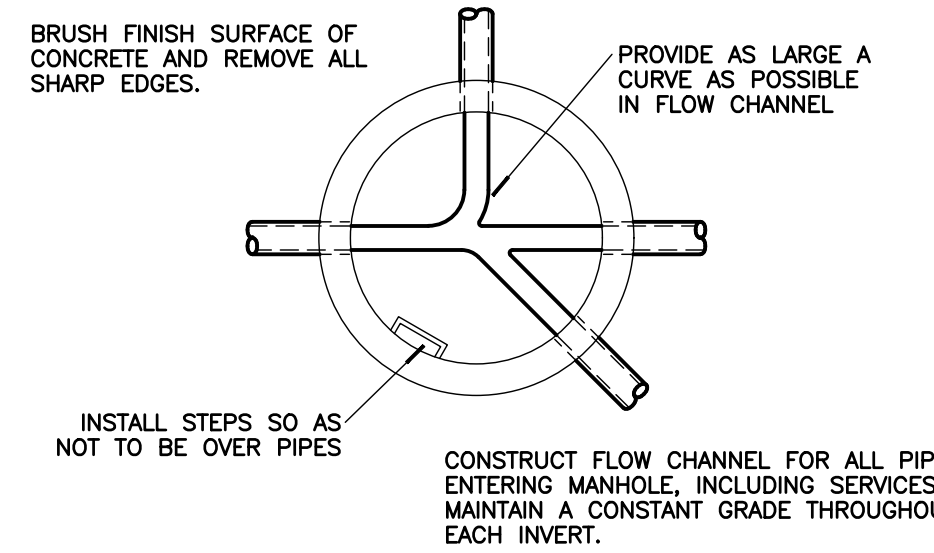
PROJECT: JAMES RIVER POWER STATION UPGRADE 2023-12-14
CITY UTILITIES OF SPRINGFIELD, MO



Table with project details: DATE 01/05/2024, PROJECT NUMBER 23.CU.001, DRAWN BY JMC, CHECKED BY JAL, SHEET NUMBER ME1.

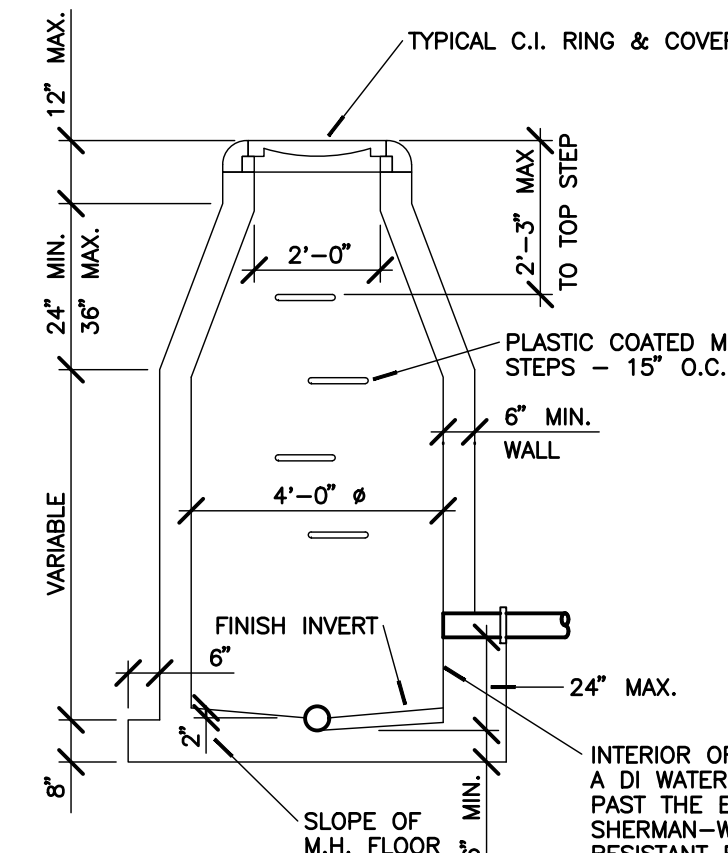


**7 EXISTING PUMP HOUSE RISER**  
ME2 SCALE: NTS



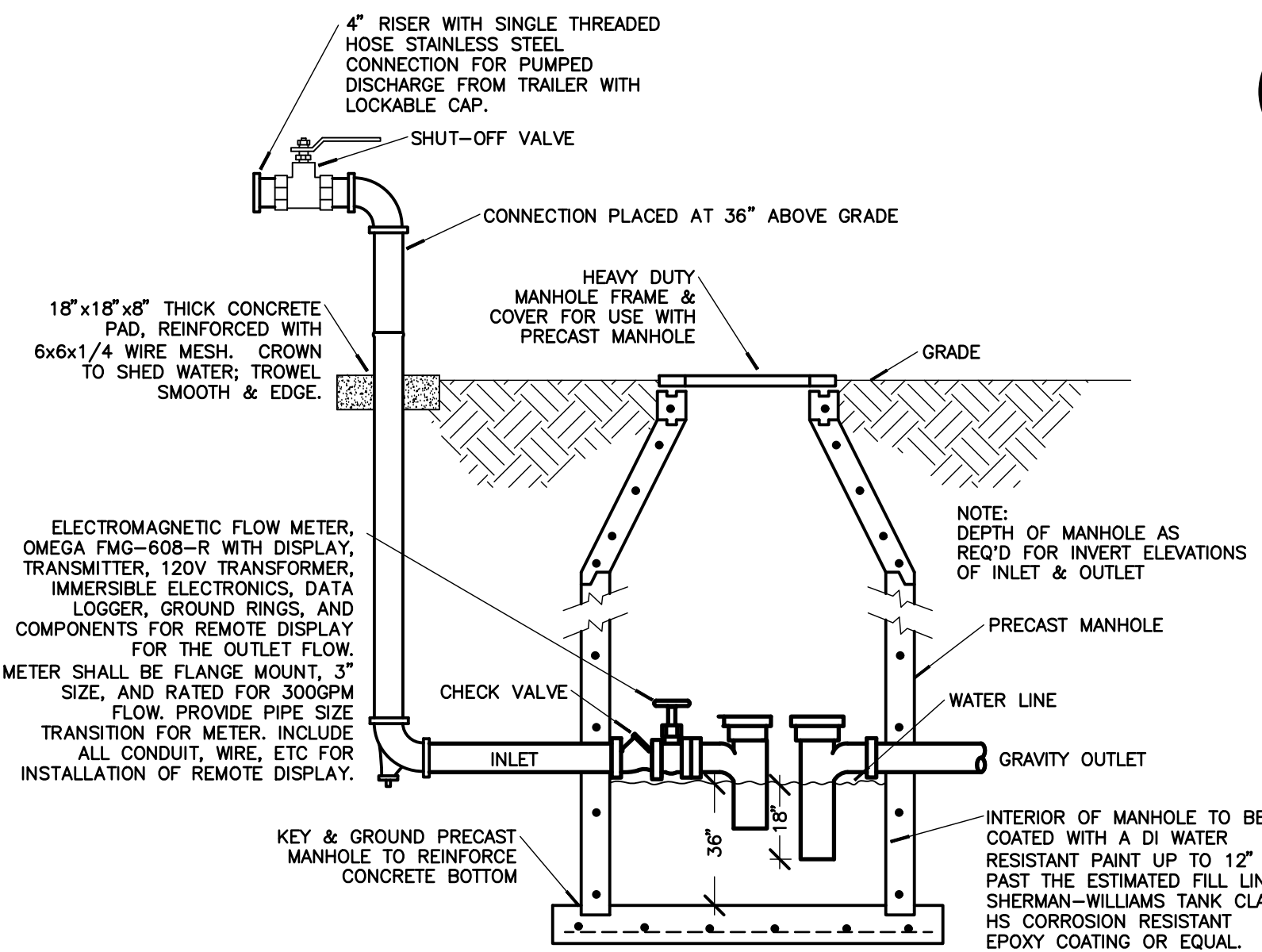
**3 MANHOLE BOTTOM DETAIL**

- MANHOLES MAY BE CONSTRUCTED OF PRECAST REINFORCED CONCRETE OR POURED IN-PLACE CONCRETE.
- IF CAST IRON MECHANICAL JOINT PIPE AND FITTINGS ARE USED FOR DROP CONSTRUCTION, CONCRETE ENCASUREMENT MAY BE ELIMINATED EXCEPT FOR 90° BEND SUPPORT.
  - TO BE USED WHERE DIFFERENCE IN FLOWLINE ELEVATION OF INTERSECTING LINES EXCEEDS 24"
- CENTERLINE OF ALL PIPES ENTERING AND LEAVING MANHOLE SHALL PASS THROUGH CENTER OF MANHOLE.

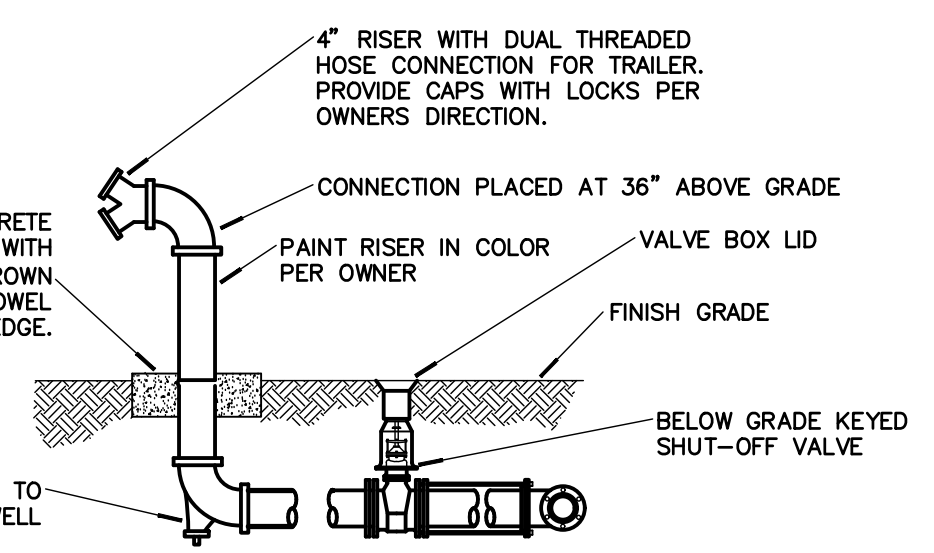


**1 STANDARD MANHOLE**

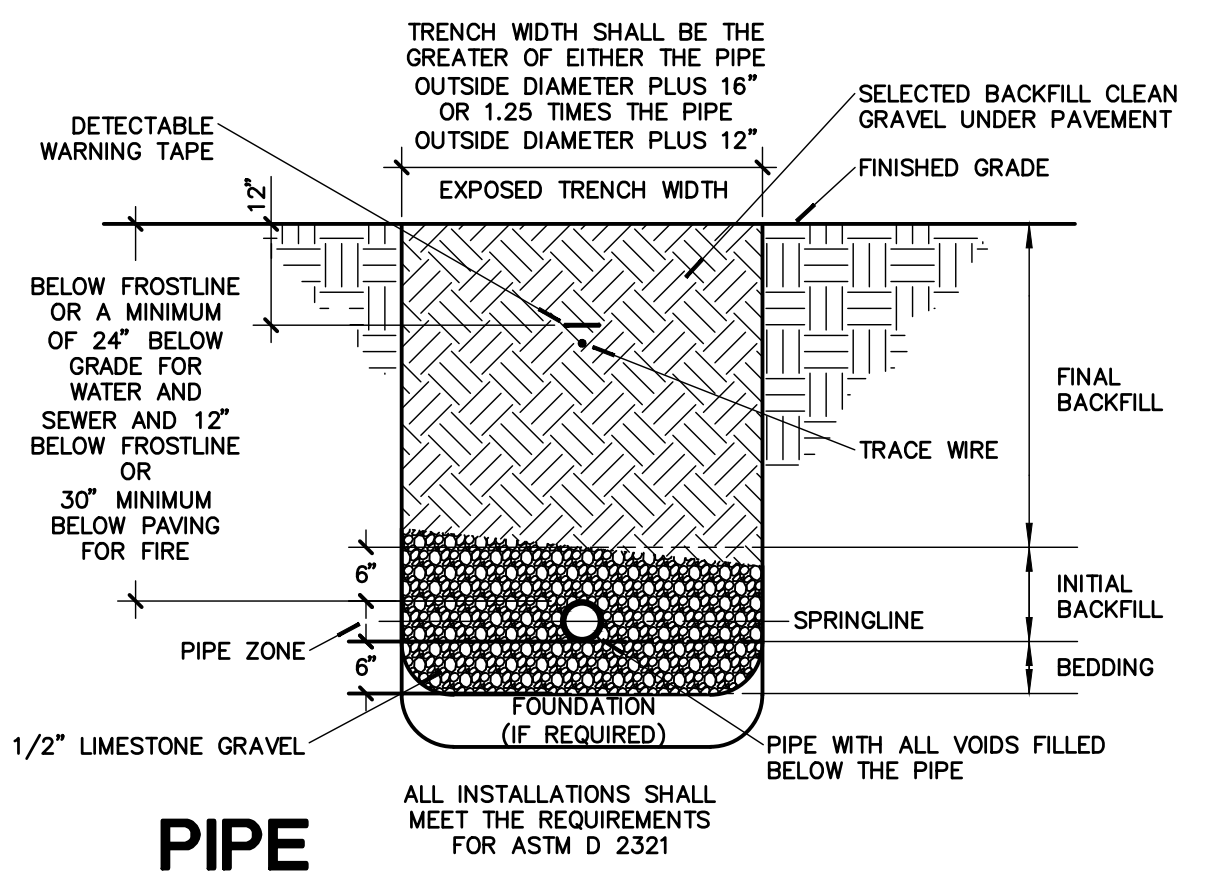
**5 MANHOLE DETAIL**  
ME2 NO SCALE



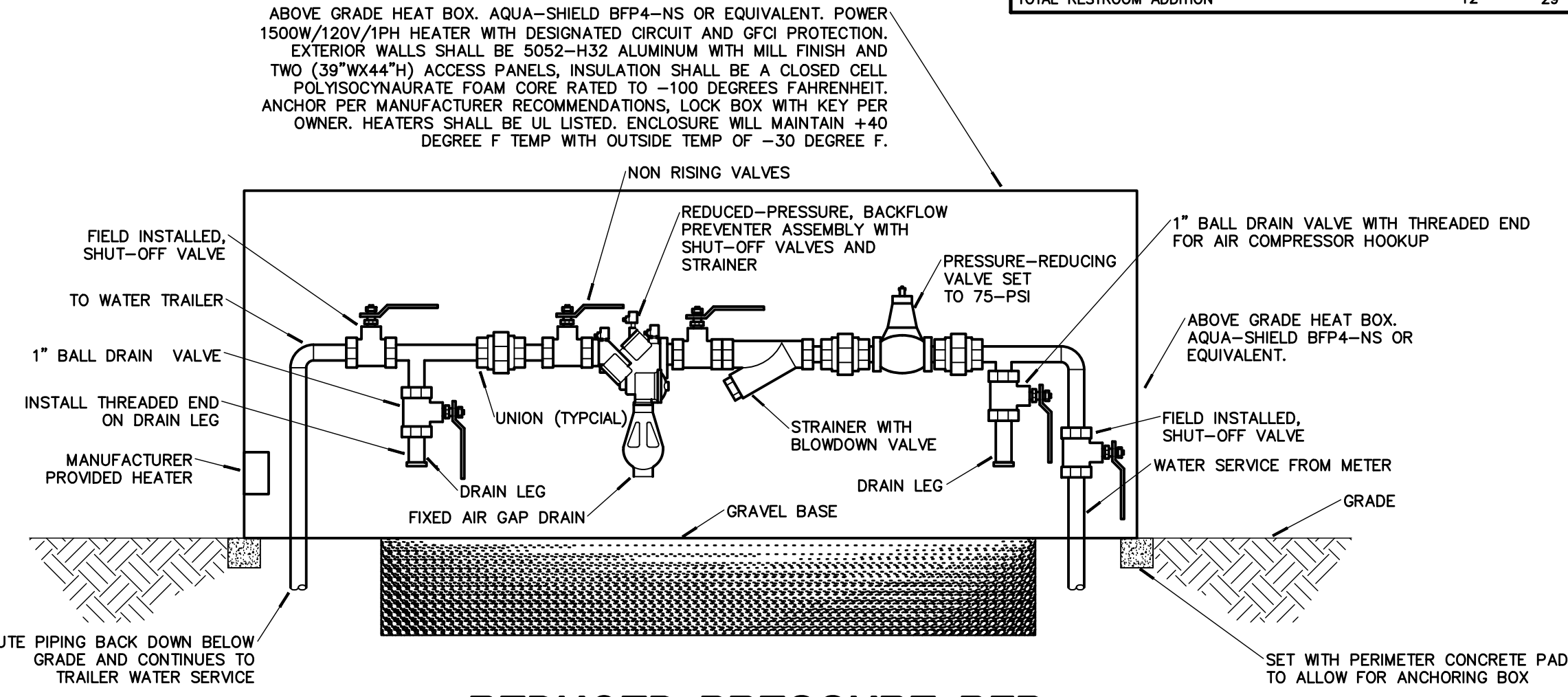
**4 RO WASTE PIT DETAIL**  
ME2 NO SCALE



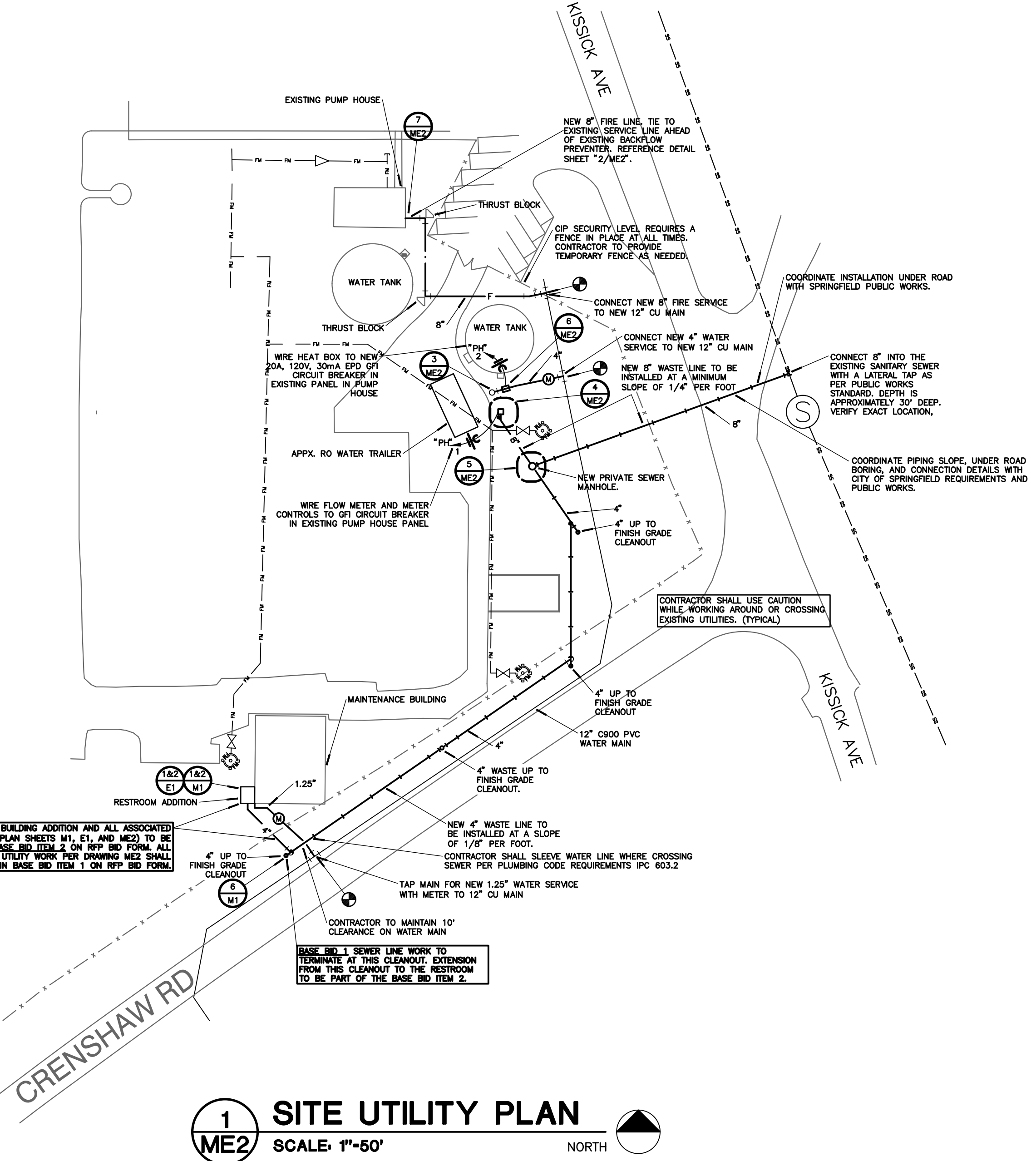
**3 RO WATER TRAILER WATER SERVICE DETAIL**  
ME2 NO SCALE



**2 PIPE INSTALLATION DETAIL**  
ME2 NO SCALE

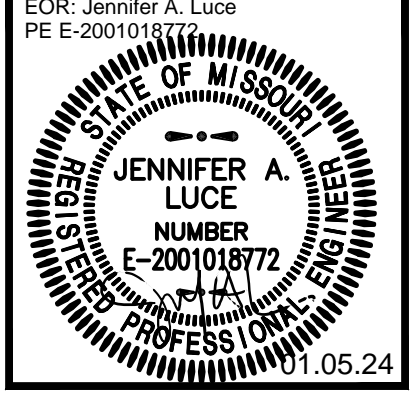


**6 REDUCED PRESSURE BFP RO WATER TRAILER SERVICE**  
ME2 NO SCALE



DOMESTIC WATER DEMAND TABLE				
FIXTURE (SITE ADDITION)	QUANT.	SFU	TOTAL SFU	GPM
PUMP HOUSE/FIRE SYSTEM	1	-	-	2150
RO WATER TREATMENT TRAILER	1	-	-	300
FIXTURE (RESTROOM ADDITION)	QUANT.	SFU	TOTAL SFU	GPM
SINK (1 FAUCET)	1	2.0	2.0	-
WATER CLOSET, PUBLIC (FLUSH VALVE)	1	10.0	10.0	-
TOTAL RESTROOM ADDITION			12	29

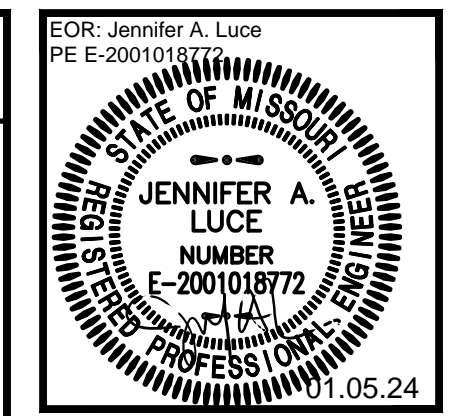
- NOTES:**
- GENERAL NOTES:**
- CONTRACTOR SHALL INSTALL PIPING, VALVES, AND UTILITY SERVICES FOR WATER AND FIRE SERVICE BEFORE DISCONNECTING EXISTING FIRE WATER SUPPLY. COORDINATE SWITCHOVER AND OUTAGE WITH OWNER AND FIRE DEPARTMENT.
  - CONTRACTOR SHALL CONTACT THE LOCAL WATER DEPARTMENT AND ARRANGE FOR WATER SERVICE AND FIRE SERVICE AS INDICATED ON THE DRAWINGS. INCLUDE ALL COSTS, CHARGES, FEES, ETC. INCURRED BY LOCAL AUTHORITIES INTO BID. PROVIDE ALL THE MATERIALS AS REQUIRED BY LOCAL AUTHORITIES FOR WATER SERVICE. INSTALLATION, ALL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF LOCAL AUTHORITIES.
  - CONTRACTOR SHALL PAINT AND LABEL ALL NEW EXPOSED PIPING FOR TRAILER WASTE AND WATER CONNECTIONS TO MATCH EXISTING.
  - CONTRACTOR SHALL BE RESPONSIBLE FOR TRENCHING, BORING, AND BACKFILLING AS REQUIRED. GRADE SHALL BE RETURNED TO SAME CONDITION BEFORE WORK. COORDINATE WITH OWNER.
- GENERAL PLUMBING NOTES:**



PROJECT: JAMES RIVER POWER STATION UPGRADE 2023-12-14  
CITY UTILITIES OF SPRINGFIELD, MO



DATE	01/05/2024
PROJECT NUMBER	23.CU.001
DRAWN BY	JMC
CHECKED BY	JAL
SHEET NUMBER	ME2



PROJECT: JAMES RIVER POWER STATION UPGRADE 2023-12-14  
CITY UTILITIES OF SPRINGFIELD, MO



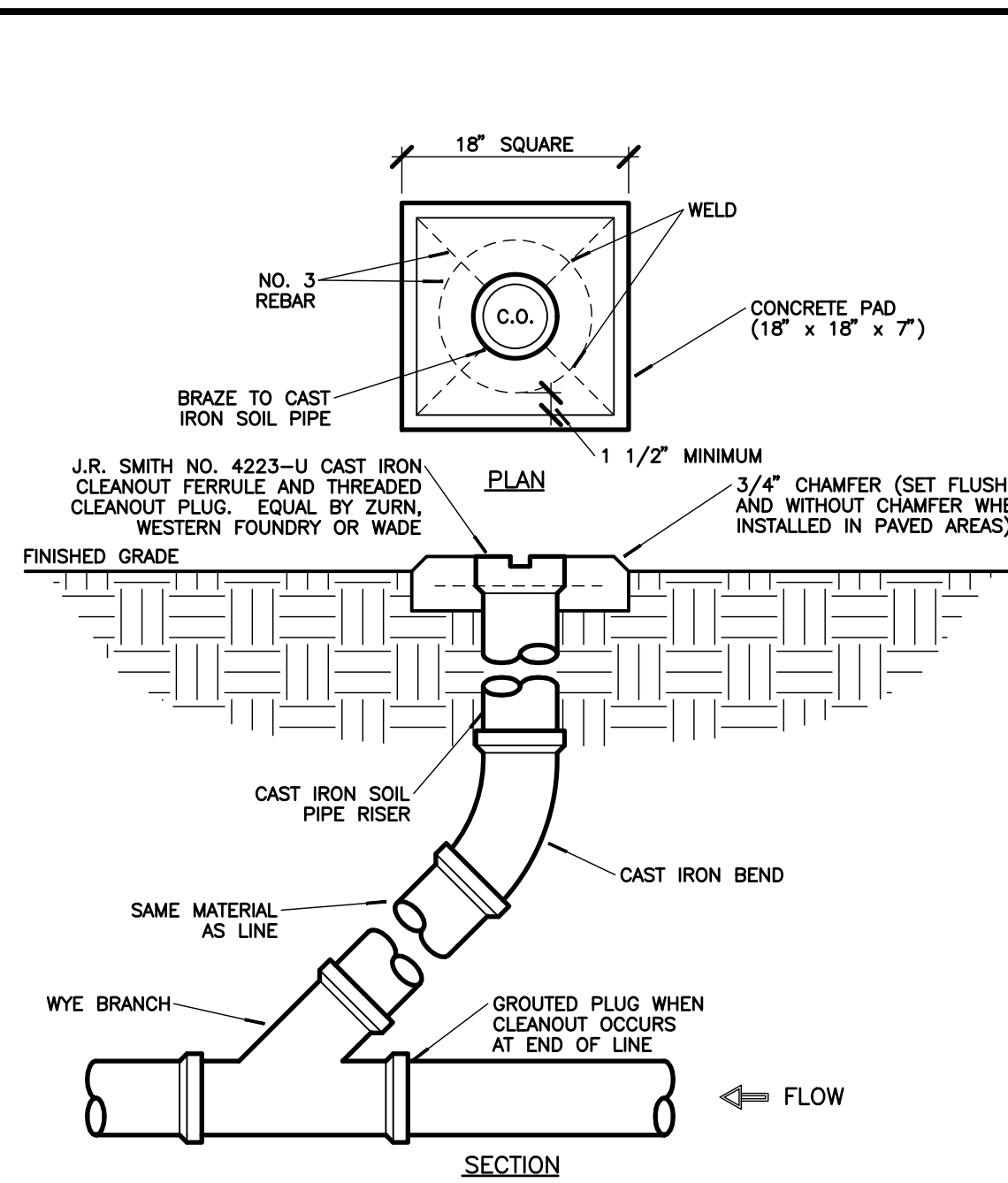
DATE	01/05/2024
PROJECT NUMBER	23.CU.001
DRAWN BY	ZM
CHECKED BY	JAL
SHEET NUMBER	M1

### NOTES:

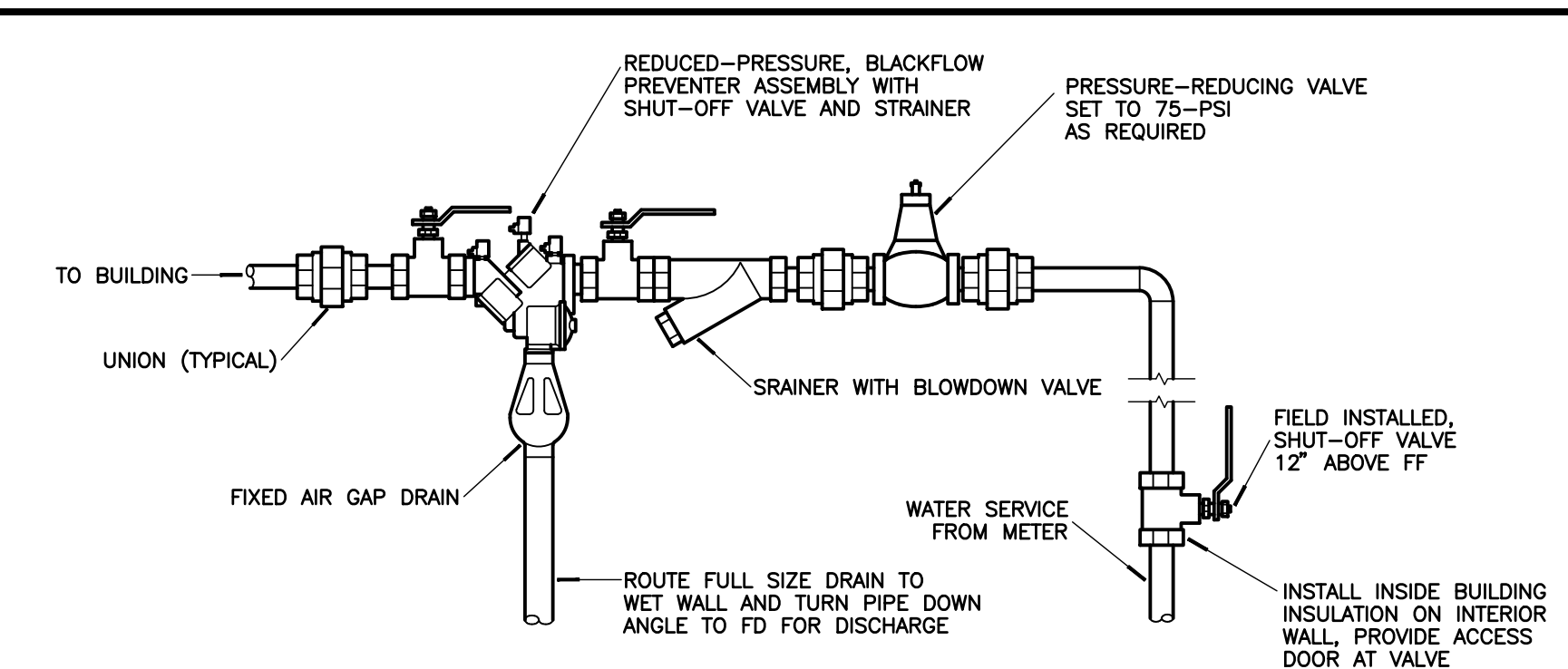
- GENERAL NOTES:**
- ALL MECHANICAL WORK SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE 2018 INTERNATIONAL MECHANICAL CODE AS ADOPTED BY THE CITY OF SPRINGFIELD, MISSOURI.
  - FOR ALL PLUMBING QUESTIONS ON THIS PROJECT, CONTACT WITH ENGINEERING CONSULTANTS AT (417) 881-0020. CONTACT: JAMES COUCH.
  - CONTRACTOR SHALL SECURE AND PAY FOR NECESSARY MECHANICAL PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY GOVERNMENTAL ORDINANCES, LAWS, RULES, OR REGULATIONS.
  - FINAL ACCEPTANCE OF WORK SHALL BE SUBJECT TO THE CONDITION THAT ALL SYSTEMS, EQUIPMENT, APPARATUS, AND APPLIANCES OPERATE SATISFACTORILY AS DESIGNED AND INTENDED. WORK SHALL INCLUDE REQUIRED REPLACEMENT, ADJUSTMENT OF SYSTEMS AND CONTROL EQUIPMENT AND ALL REQUIRED PROGRAMMING. INSTALLATION, PROVIDE FOR ALL WORK INDICATED ON DRAWINGS OR AS REASONABLY IMPLIED.
  - TEST ALL LINES, SYSTEMS, EQUIPMENT BEFORE THEY ARE USED. PAINTED OR CONCEALED BY CONSTRUCTION OR BACKFILLING. PROVIDE FUEL, WATER, ELECTRICITY, MATERIALS, LABOR, AND EQUIPMENT REQUIRED FOR TESTS. REPAIR OR REPLACE DEFECTIVE PARTS, AND MATERIALS. FAILURES REVEALED BY TESTS AND THEN RETESTED UNTIL SATISFACTORY. MAKE REPAIRS WITH NEW MATERIALS.
  - PROVIDE NECESSARY MATERIALS AND ACCESSORIES FOR INSTALLATION OF FIXTURES, EQUIPMENT, ETC AS REQUIRED FOR COMPLETE AND FUNCTIONAL OPERATION AS NOTED ON DRAWINGS OR IN NOTES.
  - ALL EQUIPMENT, FIXTURES, MATERIALS, ETC SHALL BE INSTALLED IN NEAT, PROFESSIONAL MANNER IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
  - EXISTING CONDITIONS ON THIS SET OF BID DOCUMENTS WERE TAKEN FROM VISUAL SITE VISITS AND VISUAL OBSERVATIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CHANGE ORDERS WILL NOT BE PAID DUE TO UNANTICIPATED CONDITIONS TO MEET INTENT OF WORK.
  - PLANS ARE DIAGNOSTIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
  - ALL METAL DUCTWORK SPECIFIED TO RECEIVE EXTERIOR WRAP INSULATION.
  - MECHANICAL CONTRACTOR SHALL BE RESPONSIBLE FOR TRANSITIONS TO ALL EQUIPMENT CONNECTION SIZES.
  - ALL PLUMBING WORK SHALL BE IN ACCORDANCE WITH THE 2018 EDITION OF THE INTERNATIONAL PLUMBING CODE AS ADOPTED BY THE CITY OF SPRINGFIELD, MISSOURI.
  - FOR ALL MECHANICAL QUESTIONS ON THIS PROJECT, CONTACT WITH ENGINEERING CONSULTANTS AT (417) 881-0020. CONTACT: JAMES COUCH.
  - CONTRACTOR SHALL SECURE AND PAY FOR NECESSARY MECHANICAL PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY GOVERNMENTAL ORDINANCES, LAWS, RULES, OR REGULATIONS.
  - PROVIDE NECESSARY MATERIALS AND ACCESSORIES FOR INSTALLATION OF FIXTURES, EQUIPMENT, ETC AS REQUIRED FOR COMPLETE AND FUNCTIONAL OPERATION AS NOTED ON DRAWINGS OR IN NOTES.
  - DUCT MATERIALS SHALL BE AS FOLLOWS: ROUND EXHAUST/OUTSIDE AIR DUCT - 1" PRESSURE CLASS OR LESS; GALVANIZED SHEET METAL PIPE WITH GALVANIZED JOINTS TYPED. WRAP WITH 1.5" 3.0 LB DENSITY FIBERGLASS DUCT WRAP WITH FOIL-SCRM-KRAFT FACING.
  - ALL DUCTWORK SHALL BE FABRICATED AND INSTALLED IN ACCORDANCE WITH SMACNA STANDARDS. MANUAL, 15G. ALL SUPPLY AIR DUCT PRESSURE CLASSES SHALL BE THE SAME AS THE EXTERNAL STATIC PRESSURE (ESP) OF THE EQUIPMENT SUPPLYING THE DUCT. THE EQUIPMENT ESP SHALL BE THE PRESSURE CLASS FOR THE ENTIRE SUPPLY DUCT SYSTEM.
  - EQUIVALENT MANUFACTURERS OF EXHAUST FANS SHALL BE LOREN COOK, FENWICK, JEN, INDUSTRIES, OR GREENHECK.
  - PROVIDE FLEXIBLE CONNECTION FOR ALL DUCTS CONNECTING TO NEW EQUIPMENT.
  - ALL NEW EQUIPMENT FURNISHED UNDER THIS CONTRACT SHALL UNDERGO COMPLETE TEST AND BALANCE OF SYSTEMS TO ENSURE FUNCTIONALITY.
  - WALL LOUVERS/CAPS SHALL BE PROVIDED WITH BIRD SCREEN AND SHALL HAVE THE CAPABILITY TO BE PAINTED WITH A CUSTOM COLOR.
  - INSULATE ALL DOMESTIC WATER, REFRIGERANT, AND CONDENSATE DRAIN LINES WITH 1/2" AP ARMAFLEX. ALL INSULATION MATERIALS SHALL HAVE A FLAME SPREAD RATING NO GREATER THAN 25 AND A SMOKE DEVELOPED RATING NO GREATER THAN 50. INSULATION SHALL BE CONTIGUOUS AT ALL HANGERS, SUPPORTS, AND FRAMES. 120 DEGREE HOT WATER PIPING SHALL BE 1" INSULATION FOR PIPING.
  - FINISHED FLOOR CLEANOUTS SHALL BE J. R. SMITH MODEL 4031 CAST IRON CLEANOUT WITH ROUND NICKEL BRONZE SCORRIATED COVER. EQUIVALENT FINISHED FLOOR CLEANOUTS BY JONESPEC, WADE, OR ZURN. FINISH GRADE CLEANOUTS SHALL BE J. R. SMITH 4223 CAST IRON WITH EXTRA DUTY CAST IRON TOP SET IN 18"X18" CONCRETE PAD UNLESS ALREADY IN PAVED SURFACE.
  - FLOOR DRAIN SHALL BE J. R. SMITH MODEL 2010-A INSIDE CAULK CAST IRON BODY FLOOR DRAIN WITH INTEGRAL FLASHING COLLAR AND ADJUSTABLE ROUND NICKEL BRONZE STRAINER HEAD. NEOPRENE PUSH ON GASKET MAY BE USED IN LIEU OF INSIDE CAULK AT CONTRACTOR'S OPTION. PROVIDE A P-TRAP FOR ALL FLOOR DRAINS. EQUIVALENT FLOOR DRAINS BY JONESPEC, WADE, OR ZURN. EQUIVALENT HOLE IN GRATE OR FUNNEL WHERE FLOOR DRAIN IS LOCATED FOR EQUIPMENT DRAINAGE.
  - ALL SHUTOFF VALVES ON DOMESTIC WATER SHALL BE APOLLO SERIES 70-00 BRONZE FULL PORT BALL VALVE AND PSI-HOG WITH TEFLOON SEATS, BRONZE BALL, SILICON BRONZE STEM INSULATED HANDLE, AND SCREWED SOLDER ENDS. EQUIVALENT VALVES BY MIRO-SCOTT, CRANE, FAIRBANKS, HALL, MUESO STOCKHAM, KENNEDY, KEYSTONE, OR POWELL. EACH VALVE SHALL BE INSTALLED SO THAT IT IS EASILY ACCESSIBLE FOR OPERATION, VISUAL INSPECTION, AND MAINTENANCE.
  - PROVIDE JGSM ABSORBITION SHOCK ABSORBERS AT ALL FLUSH VALVE FIXTURES AND ON ALL PLUMBING FIXTURE BATTERIES WERE SHOWN ON PLANS SIZED IN ACCORDANCE WITH PLUMBING AND DRAINAGE INSTITUTE STANDARD P.D.I. W201. EQUIVALENT SHOCK ABSORBERS BY JONESPEC, WADE, SLODK CHIEF, OR J.R. SMITH.
  - EQUIVALENT PLUMBING FIXTURES BY AMERICAN STANDARD, KOHLER, ELJER, OR CRANE.
  - EQUIVALENT WATER HEATERS BY EEMAX, BRADFORD WHITE, OR EQUAL COMMERCIAL GRADE MANUFACTURER.
  - EQUIVALENT FAUCETS AND FITTINGS BY AMERICAN STANDARD, KOHLER, ELJER, CRANE, MOEN, OR DELTA.
  - THE EXISTING BUILDING IS PROVIDED WITH AN AUTOMATIC FIRE SPRINKLER SYSTEM. THE WORK INCLUDES PROVIDING A FULLY OPERATIONAL AUTOMATIC FIRE SPRINKLER SYSTEM FOR ALL AREAS OF THE BUILDING INCLUDING ADDING FOR NEW ADDITION. ALL FIRE SPRINKLER MATERIALS AND INSTALLATION SHALL COMPLY WITH NFPA 13, STATE AND LOCAL CODES AND FACTORY MUTUAL ENGINEERING REQUIREMENTS. THE FIRE SPRINKLER CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING HIS OWN FLOW READINGS OR PURPOSES OF DESIGN. FIRE SPRINKLER SYSTEM CONTRACTOR SHALL ENGINEER AND INSTITUTE STANDARD P.D.I. W201. AS REQUIRED TO PROVIDE PROPER COVERAGE FOR THE ENTIRE BUILDING. BEFORE ANY SPRINKLER WORK BEGINS SUBMIT SCALED DRAWINGS INDICATING THE LOCATIONS OF SPRINKLER HEADS AND HOW THEY INTERFERE WITH CEILING TILES, LIGHTING FIXTURES, HVAC GRILLES AND DIFFUSERS, ETC. LAYOUT DRAWINGS SHALL ALSO INCLUDE, BUT NOT LIMITED TO PIPE SIZES AND LOCATIONS, ELEVATIONS AND SLOPES OF HORIZONTAL PIPING RUNS, COORDINATION OF PIPING WITH DUCTWORK, PIPING, ETC. AND HANGER LOCATIONS DRAWINGS AND CALCULATIONS SHALL BEAR THE SEAL OF A REGISTERED PROFESSIONAL ENGINEER. THE SPRINKLER SYSTEM SHALL BE A COMPLETE SYSTEM AS REQUIRED BY LOCAL AUTHORITIES. SUBMIT TO THE AGENCY HAVING JURISDICTION FOR APPROVAL WITHIN 30 DAYS OF ISSUANCE OF BUILDING PERMITS. SUBMIT ONE APPROVED COPY BEARING THE STAMP AND/OR SIGNATURE OF THE AGENCY HAVING JURISDICTION, BEFORE PROCEEDING WITH INSTALLATION. NO FIRE SPRINKLER WORK SHALL BEG UNLESS FINAL SHOP DRAWINGS ARE APPROVED. PROVIDE CHROME PLATED SPRINKLER HEADS IN FINISHED AREA. FIRE PROTECTION WORK SHALL BE INSTALLED BY A QUALIFIED CONTRACTOR (SPRINKLER FITTER OR FIRE JURISDICTIONAL DICTATES) WITH AT LEAST 3 YEARS OF INSTALLATION EXPERIENCE ON PROJECTS WITH FIRE PROTECTION WORK SIMILAR TO THAT REQUIRED FOR THE PROJECT.
  - CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, ACCESSORIES, AND MATERIAL FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.

32. PROVIDE PLUMBING FIXTURES AS SHOWN ON DRAWINGS AS SPECIFIED COMPLETE INCLUDING PIPING AND CONNECTIONS. FIXTURES FITTING AGAINST WALLS SHALL HAVE GROUND BACKS. EXPOSED PIPING AND FITTING SHALL BE CHROME PLATED. SET FIXTURES TRUE AND LEVEL WITH ALL NECESSARY SUPPORTS FOR FIXTURES INSTALLED BEFORE PLASTERING IS DONE. NIPPLES THROUGH WALL TO FIXTURE CONNECTION SHALL BE CHROME PLATED BRASS. CONTRACTOR MAY USE COPPER STUB OUTS TO STOPS UNDER LAVATORIES. PROVIDE DEEP ESCUTCHEONS ARE USED AND NO COPPER IS VISIBLE IN LIEU OF CHROME NIPPLES. PROVIDE ALL NEW CHROME PLATED BRASS TRAPS AND STAINLESS-STEEL SUPPLIES WITH COMPRESSION INLET ANGLE COMPRESSION STOP AT ALL APPLICABLE FIXTURES. PROVIDE OFFSET TRAPS AND FLUSH LEVER FOR URINALS AND WATER CLOSET AS REQUIRED FOR ADA COMPLIANCE. PROVIDE FLOOR MOUNT NEW CARRIERS FOR PLUMBING FIXTURES. ALL FIXTURES SHALL BE INSTALLED FOR ADA COMPLIANCE.

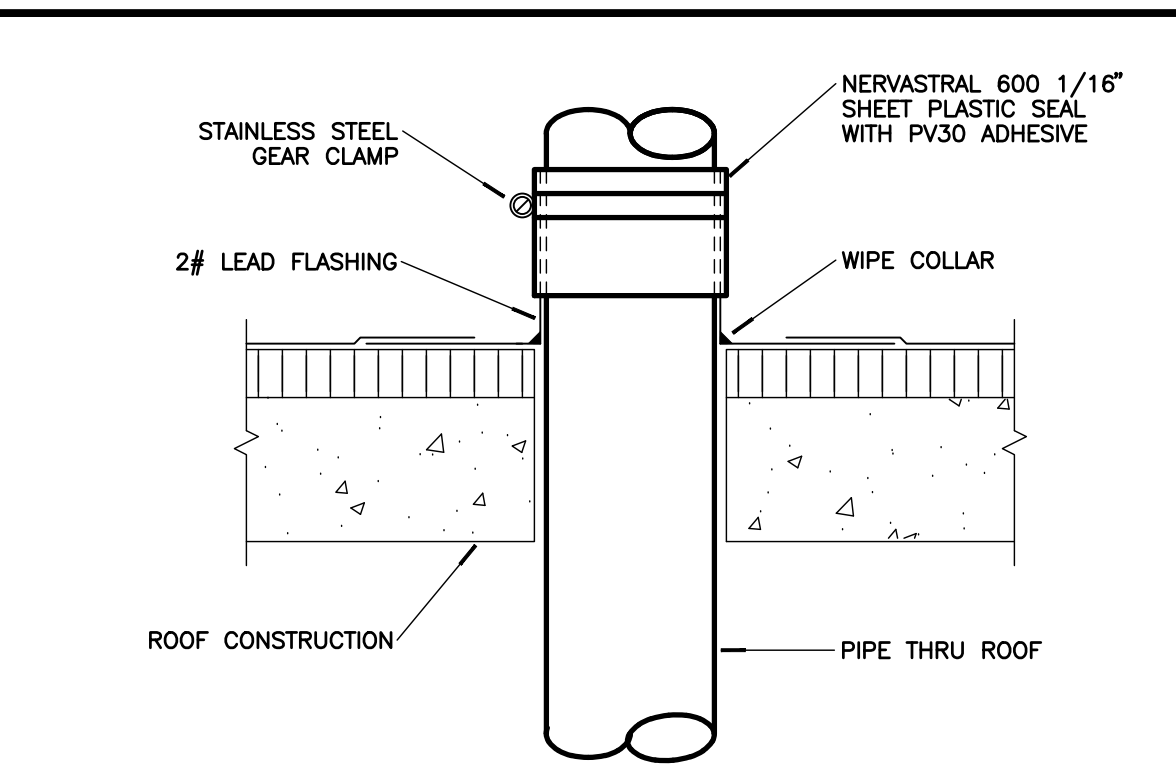
- PLUMBING FIXTURE SCHEDULE**
- FLOOR MOUNT, FLUSH VALVE, BOTTOM OUTLET WATER CLOSET: ZURN #2565-0M1; ELONGATED BOWL, VITREOUS CHINA, FLOOR MOUNTED, BOTTOM OUTLET, SIPHON JET, 1.6 GALLONS PER FLUSH, 1 1/2" TOP SPUD WATER CLOSET WITH ZURN #2000M1 FLUSH VALVE CLOSE-COUPLED WATER CLOSET WITH OLSMITE #95 OPEN FRONT WHITE SEAT LESS COVER.
  - WALL MOUNTED SERVICE SINK, 25" X 19.5", WALL HANGER SUPPORT, STAINLESS STEEL, ELKAY DW2520, FAUCET TYPE 1: ASSE1070 THERMOSTATIC MIXING VALVE, CONCEALED HEAVY DUTY WALL CARRIER, AND ALL SUPPLIES. FAUCET AND GRID DRAIN SYSTEM, REFER TO ARCHITECTURAL DRAWINGS FOR MOUNTING AND ELEVATIONS. MOUNT AND SECURE MIXING VALVE TIGHT UNDER SINK.
  - WALL MOUNTED SERVICE SINK FAUCET, T85 #B-1148-01, CHROME PLATED BRASS BODY, WALL MOUNT 2-15/16" SWIVEL GOOSENECK WITH QUARTER TURN COMPRESSION CARTRIDGES, COLOR CODED LEVER HANDLES, 2.2 AERATOR AND GRID DRAIN.



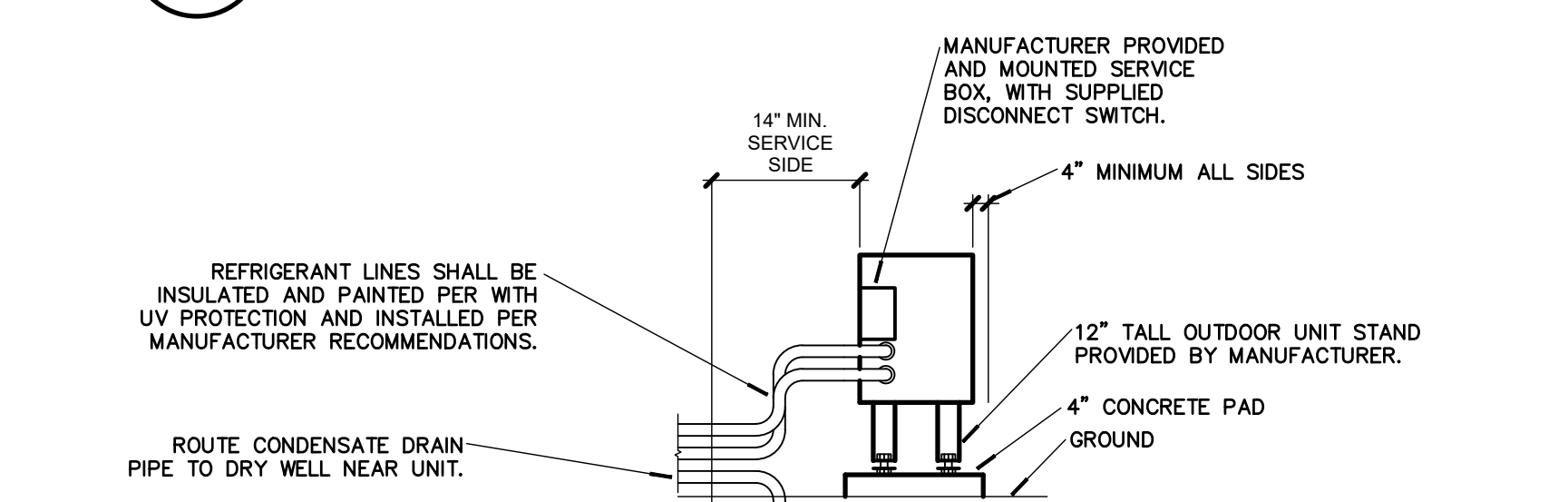
**6**  
M1 NO SCALE



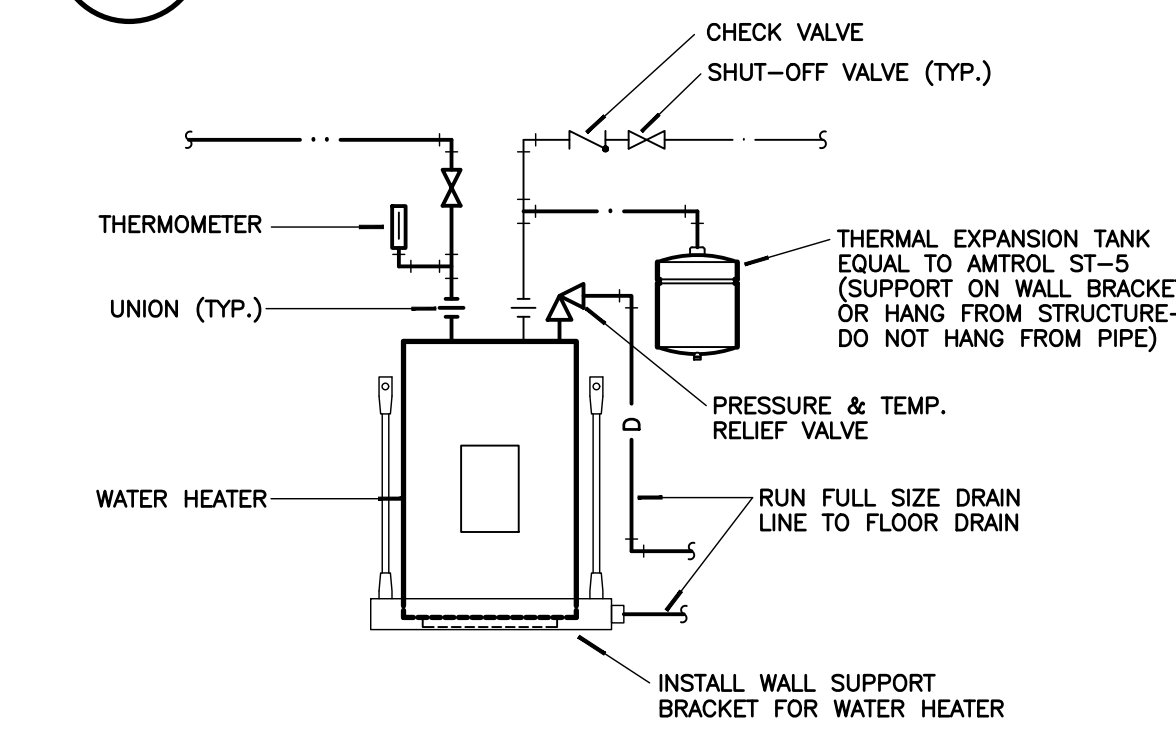
**5**  
M1 NO SCALE



**4**  
M1 NO SCALE



**7**  
M1 NO SCALE



**3**  
M1 NO SCALE

RESTROOM A/C UNIT SCHEDULE											
DUCTLESS MINI-SPLIT INDOOR UNIT											
MARK	MFG.	MODEL #	CFM	COOLING DATA			HEATING DATA			ELECTRICAL DATA	ACCESSORIES
				SHC	THC	THC	VOLT/PH	FLA	MCA	MOP(A)	
FC1	MITSUBISHI	MSZ-FS06NA	140	8640	9000	12,840	208/1	.65	1	-	THERMOSTAT, FILTER
OUTDOOR HEAT PUMP											
MARK	MFG.	MODEL #	AMB. TEMP.	COOLING CAPACITY	SEER	HEATING CAPACITY	MIN COP	VOLT/PH	MCA	MOP(A)	ACCESSORIES
HP1	MITSUBISHI	MUZ-FS06NA	95	9000	32.2	10,500*	2.46	208/1	10	15	HAIL GUARD, 12" STAND

ABBREVIATIONS:  
\* - EVALUATED AT 5 DEGREE FAHRENHEIT

EXHAUST FAN SCHEDULE							
MARK	MANUFACTURER	CATALOG NUMBER	CFM	EST. ESP.	VOLTS/ PHASE	MOTOR	ACCESSORIES
EF1	LOREN COOK	GC-146	114	.2	120/1	34.4W	CG, GBD, HK, WC

ABBREVIATIONS:  
ARC - ACID RESISTANT COATING  
CG - WHITE ALUMINUM CEILING GRILLE  
DM - DISCONNECT MEANS  
GDB - GRAVITY BACKDRAFT DAMPER  
GK - GREASE TERMINATION KIT  
HB - HINGED BASE  
HK - VIBRATION ISOLATOR HANGING KIT  
MBD - MOTORIZED BACKDRAFT DAMPER  
RP - ROOF CAP WITH INSULATED ROOF CURB  
RC - INSULATED ROOF CURB  
RJ - ROOF JACK  
SC - SPEED CONTROLLER  
VC - VENT ILATED ROOF CURB  
WC - WALL CAP

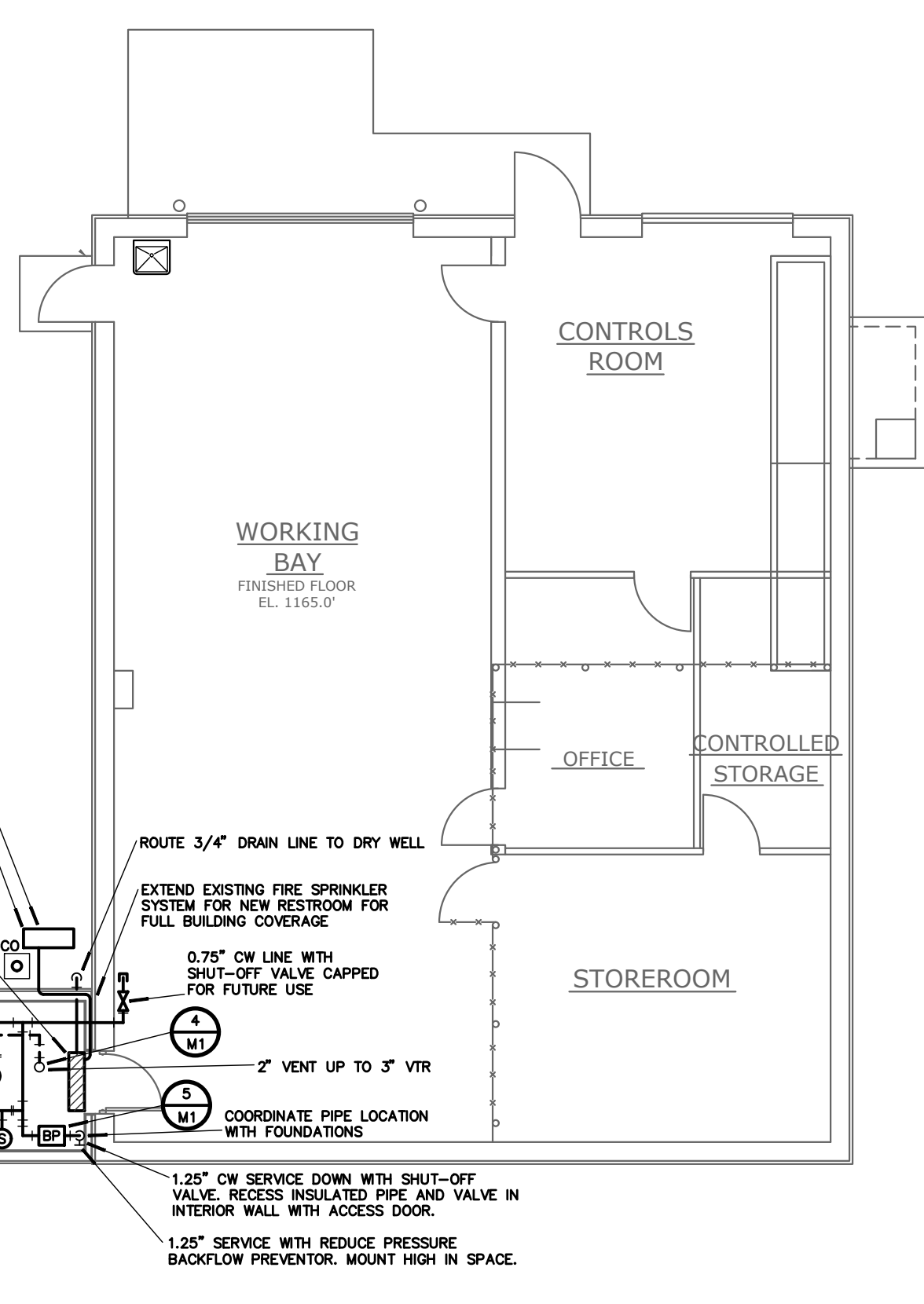
PIPING MATERIAL SCHEDULE												
PIPING						FITTINGS		MAX. WORKING		FIELD TEST		
SYSTEM	SIZE	TYPE	SCH	GRD	ASTM	MATERIAL	MAT.	TYPE	PRESS (PSI)	TEMP (°F)	PRESS (PSI)	TIME
DOMESTIC WATER SERVICE	ALL	PVC	80	-	D1785	PVC	PVC	SW	125	40-90	200	1 HR
DOMESTIC WATER ABOVE GRADE	ALL	L	-	-	B88	CP	CP	SJ	120	40-180	150	1 HR
TEMPERATURE & PRESSURE RELIEF DRAIN	ALL	M	-	-	B88	CP	CP	DR/S	10 FT	140-120	10 FT	1 HR
WASTE & VENT BELOW GRADE	ALL	DWV	40	-	2865	PVC	PVC	DR/SW	10 FT	50-140	10 FT	1 HR
FIRE SERVICE ABOVE GRADE	ALL	DI	-	-	C150	DI	DI	MJ	200 FT	50-90	200 FT	2 HR
FIRE SERVICE BELOW GRADE	ALL	PVC	-	-	C900	PVC	DI	MJ	200 FT	50-90	200 FT	2 HR
WASTE & VENT ABOVE GRADE (DUCTED RETURN)	ALL	DWV	40	-	2865	PVC	PVC	DR/SW	10 FT	50-140	10 FT	1 HR

ATP - ARMO TRUSS PIPE  
BLK - BLACK  
BS - BELL & SPIGOT  
CF - CRIMPED FITTING  
CI - CAST IRON  
CP - COPPER  
CS - CARBON STEEL  
CTD - PIPE LINE SERVICE COMPANY X-TRU-COAT  
DI - DUCTILE IRON  
DR - DRAINAGE FITTING  
GLV - GALVANIZED  
HF - HEAT FUSED  
LC - LEAD CAULKING  
MI - MALLEABLE IRON

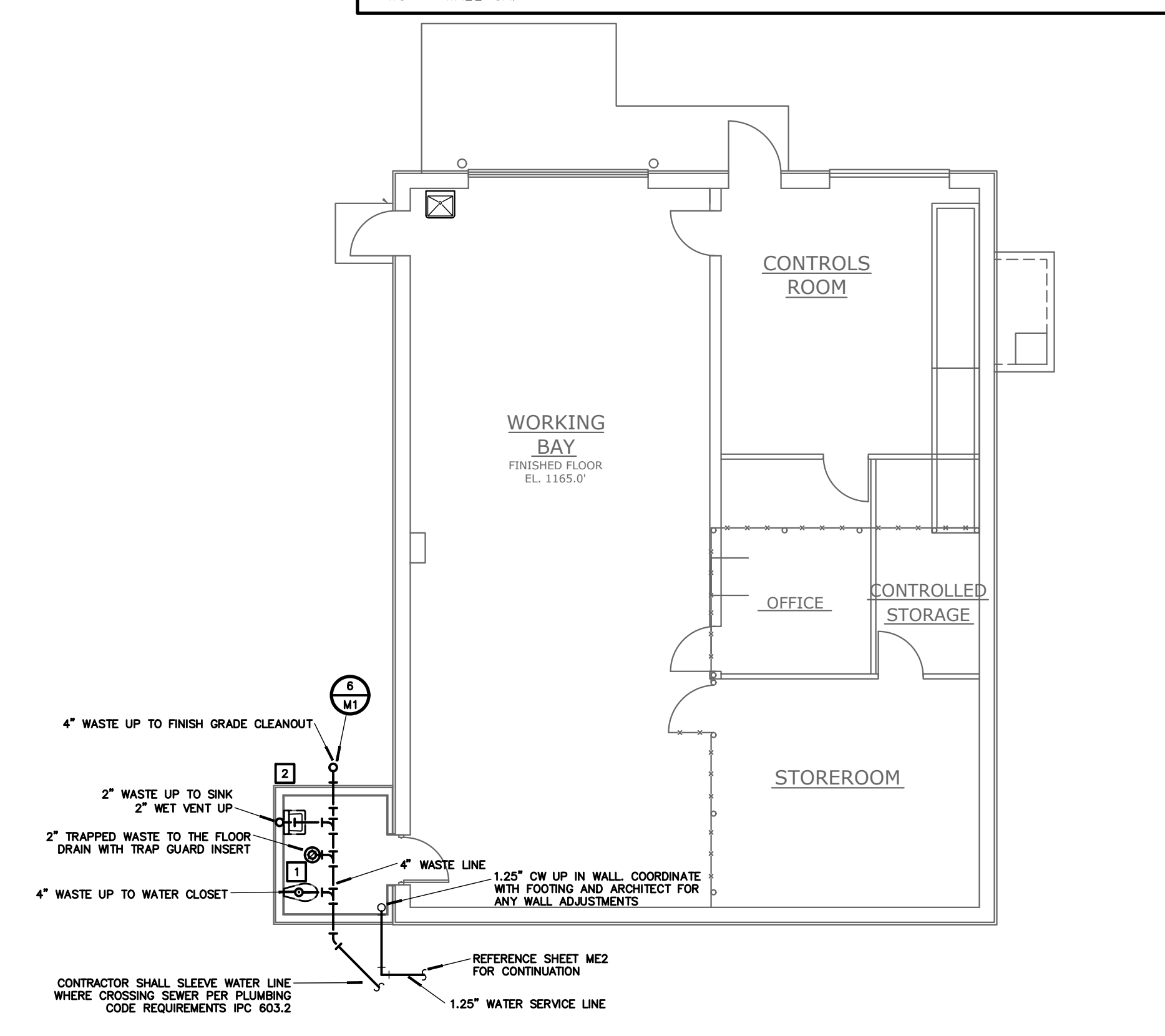
MJ - MECHANICAL JOINT  
NG - NEOPRENE GASKET  
NH - NO-HUB  
PE - POLYETHYLENE  
PVC - POLYVINYL CHLORIDE  
PVC - BRAZED JOINT - SILVER BRAZING ALLOY  
SJ - SOLDER JOINT 95-5 TIN-ANTIMONY  
SL - SEAMLESS STEEL  
SS - STANDARD STRENGTH - SERVICE WEIGHT  
SW - SOLVENT WELD  
TS - TY-SEAL  
THRD - THREADED  
VCP - VITRIFIED CLAY PIPE  
WELD - WELDED  
XH - EXTRA HEAVY

WATER HEATER SCHEDULE									
MARK	MANUFACTURER	MODEL NO.	TYPE	GALLON CAP.	GPH @ 90 F	INPUT	OUTPUT	VOLT/PH	ACCESSORIES
WH1	RHEEM	XE02P08P14U0	ELEC	2.5	6.8	1.4kW	1.4kW	120/1	PTRV, WALL BRACKET

ABBREVIATIONS:  
PTRV - PRESSURE & TEMPERATURE RELIEF VALVE



**2**  
M1 SCALE: 1/8"=1'-0" NORTH



**1**  
M1 SCALE: 1/8"=1'-0" NORTH

### CIRCUIT BREAKER PANELBOARD SCHEDULE

PANELBOARD DESIGNATION: "LP"		MANUFACTURER: SQUARE D		VOLTAGE: 120/240						
		TYPE: QO LOAD CENTER		PHASE: 1						
		ENCLOSURE/SPACES: NEMA 1 / 30		WIRE: 3						
		MOUNTING/MAX. DIMENSION: SURFACE / 20"Wx5.75"D		MAIN RATING (AMPS): 200 AMP						
		MIN. AIC RATING (AMPS): 10000		MAIN TYPE: 200 MCB						
CIRC NO.	LOAD DESCRIPTION	CIRCUIT BREAKER	CIRCUIT BREAKER ACC.	LOAD (VA)	PHASE LOADS (VA)	LOAD (VA)	CIRCUIT BREAKER	CIRCUIT BREAKER ACC.	LOAD DESCRIPTION	CIRC NO.
1	EXISTING	20		0	0	0	20		EXISTING	2
3	EXISTING	20		0	0	0	20		EXISTING	4
5	EXISTING	20		0	0	0	20		EXISTING	6
7	EXISTING	20		0	0	0	20		EXISTING	8
9	EXISTING	20		0	0	0	20		EXISTING	10
11	EXISTING	20		0	0	0	20		EXISTING	12
13	EXISTING	20		0	0	0	20		EXISTING	14
15	EXISTING	20		0	0	0	20		EXISTING	16
17	SPACE	20		0	0	0	20		EXISTING	18
19	WATER HEATER "WH1"	20		1440	1440	0	20		SPACE	20
21	HVAC UNIT "HP1" "FC1"	15		1040	1040	0	40		SPACE	22
23	SPACE	2		1040	1040	0	20		SPACE	24
25	SPACE	2		0	0	0	20		SPACE	26
27	SPACE	20		0	0	0	20		SPACE	28
29	SPACE	20		0	0	0	20		SPACE	30
CONNECTED SUBTOTAL (VA):				1040	2480		3520 TOTAL CONNECTED (VA)			
*DIVERSIFIED COOLING TOTAL (VA):				1040	2480		COOLING CONTROLLING LOAD			
*DIVERSIFIED HEATING TOTAL (VA):				1040	2480		1.25 FUTURE FACTOR (INCLUDED)			
PHASE LOADS (AMPS):				9	21		26 CALCULATED PANEL SIZING AMPS			
CIRCUIT BREAKER ACC. ABBREVIATIONS:										
GFI - GROUND-FAULT CIRCUIT INTERRUPTER										
AF - ARC-FAULT CIRCUIT INTERRUPTER										
ST - SHUNT TRIP										
HL-ON - HANDLE-LOCK ON DEVICE										
HL-OFF - HANDLE-LOCK OFF DEVICE										
EPD - EQUIPMENT PROTECTION DEVICE										
PANEL NOTES/ACCESSORIES:		1								
		2								
		3								

(\* DIVERSIFIED LOADS HAVE BEEN CALCULATED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE.)

PROVIDE NEW 20A, 125V, SINGLE POLE BREAKER.

PROVIDE NEW 15A, 208V, 2-POLE BREAKER.

### LIGHTING FIXTURE SCHEDULE

MARK	MFG.	CATALOG #	MTG.	FINISH	LAMPS		EQUIVALENT
					TYPE	QTY	
A	WILLIAMS	75R-4-L50/840-VB2-DRV-UNV	SUSP	WHITE	LED	4000K, 5000 LUMENS	1 LJ
B	LUMARK	XTOR3B-PC1	WALL	BRONZE	LED	5000K, 2800 LUMENS	1 LJ,WI
X	WILLIAMS	EXIT/EM/LED-R-WH-RC-D-WETDRHL-D-HL	WALL	WHITE	LED	4000K, 5000 LUMENS	1 LJ,HU

**ABBREVIATIONS:**

Ab - ABOLITE	Ge - GENERAL ELEC	Lc - LITECONTROL	Pg - PROGRESS	Mtg - MOUNTING
Al - ALICCO	Gh - GUTH	Ld - LEVITON	Pp - PRESOLITE	Rec - RECESSED
Am - APPLETON	Hd - HALO	Ll - LITHONIA	Ps - PASS & SEYMOUR	Surf - SURFACE
Aa - ARCH AREA LIGHTING	Hh - HOLLOWAY	Ll - LONG LIGHTS	Rd - ROBERTS	Trk - TRACK
Ch - CHLORIDE	Hu - HUBBELL	Ll - LINEAR LIGHTING	St - STAFF	Trk - TRACK
Cl - COAST LIGHTING	Hy - HYREL	Lf - LIGHTOLIER	Sp - SPAULDING	Cabl - CABLE
Cs - COLUMBIA	Ic - ICE	Lm - LUMARK	SPI - SPI	Mfg - MANUFACTURER
Ch - CROUSE-HINDS	Id - INDALUX	Md - MARCO	St - STERNER	Qty - QUANTITY
Dd - DEVINE	Kd - KENALL	Md - METALUX	Sr - SURE-LITES	Fir - FLUORESCENT
Dl - DUAL-LITE	Km - KIM	Mg - MCGRAW EDISON	Sv - SYLVAN	Inc - INCANDESCENT
Ed - EDISON PRICE	Kv - KURT VERSEN	Nu - NU-LITE	Ti - TIVOLI	Hid - HIGH INTENSITY DISCHARGE
El - EMER-LITE	Lm - LAM	Pd - PEERLESS	Wi - WILLIAMS	Univ - UNIVERSAL
Fs - FAIL-SAFE	Ld - LIGHTALARMS	Pd - PRUDENTIAL		

### DISCONNECT SWITCH SCHEDULE

MARK	LOAD EQUIPMENT SERVED	VOLTS	SWITCH		FUSE		ENCLOSURE NEMA TYPE	NOTES
			DUTY	POLE	AMP	TYPE		
DS1	"HP1"	208	GD	30	2	-	3R	-

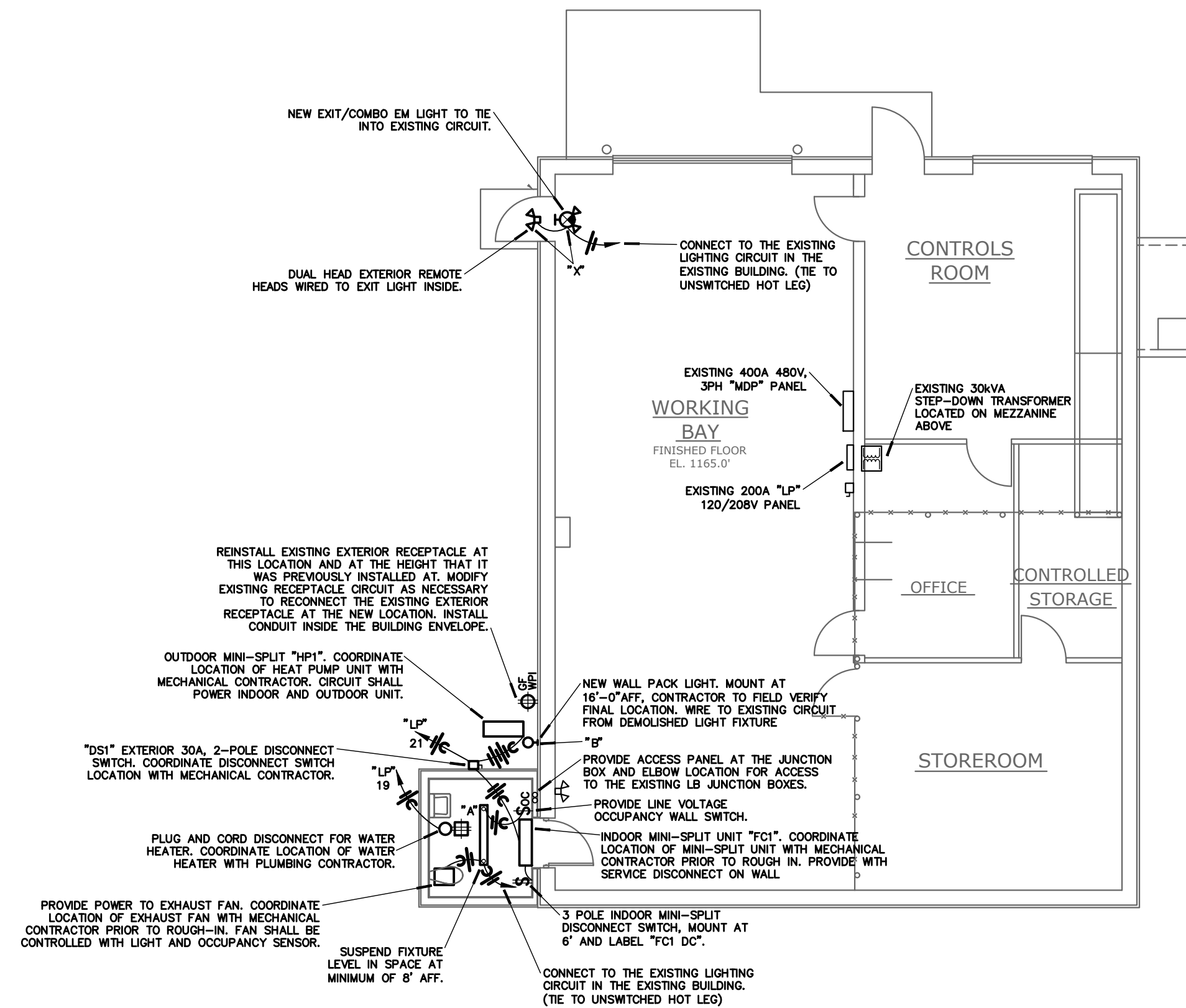
**ABBREVIATIONS:**

GD - GENERAL DUTY  
HD - HEAVY DUTY  
SN - SOLID NEUTRAL

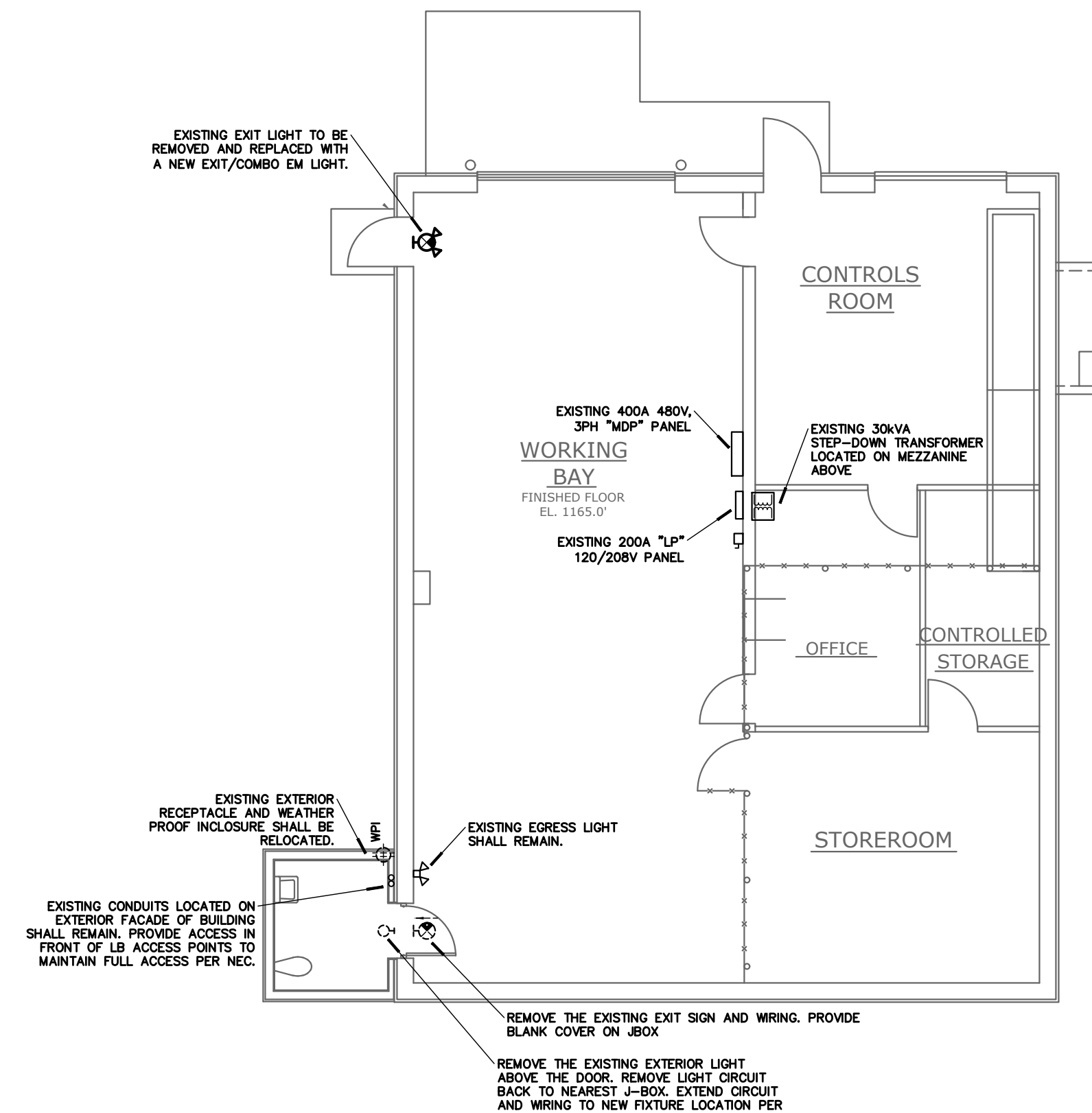
## NOTES:

### GENERAL ELECTRICAL NOTES:

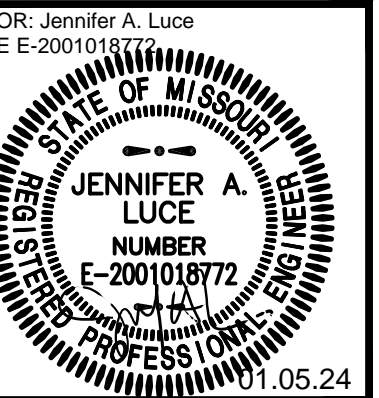
- ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE 2017 NATIONAL ELECTRIC CODE AS ADOPTED BY THE CITY OF SPRINGFIELD, MISSOURI.
- FOR ALL ELECTRICAL QUESTIONS ON THIS PROJECT, CONTACT WITH ENGINEERING CONSULTANTS AT (417) 881-0020. CONTACT: JAMES COUCH.
- CONTRACTOR SHALL SECURE AND PAY FOR NECESSARY MEP PERMITS AND CERTIFICATES OF INSPECTION REQUIRED BY GOVERNMENTAL ORDINANCES, LAWS, RULES, OR REGULATIONS.
- FINAL ACCEPTANCE OF WORK SHALL BE SUBJECT TO THE CONDITION THAT ALL SYSTEMS, EQUIPMENT, APPARATUS, AND APPLIANCES OPERATE SATISFACTORILY AS DESIGNED AND INTENDED. WORK SHALL INCLUDE REQUIRED REPLACEMENT, ADJUSTMENT OF SYSTEMS AND CONTROL EQUIPMENT AND ALL REQUIRED PROGRAMMING. PROVIDE FOR ALL WORK INDICATED ON DRAWINGS OR AS REASONABLY IMPLIED. PROVIDE NECESSARY MATERIALS AND ACCESSORIES FOR THE INSTALLATION OF FIXTURES, EQUIPMENT, ETC AS REQUIRED FOR COMPLETE AND FUNCTIONAL OPERATION AS NOTED ON DRAWINGS IN NOTES.
- ACCESS PANELS SHALL BE PROVIDED WHEREVER NECESSARY TO PROVIDE ACCESS TO VALVES, JUNCTION BOXES, ETC. LOCATED IN CONCEALED SPACES. PROVIDE COVER FOR ANY OPEN JUNCTION BOXES.
- THE CONTRACTOR SHALL CONTACT THE OWNER AND COORDINATE ALL OUTAGES 5 DAYS PRIOR TO ANY SHUT-OFF OF SERVICES.
- THE CONTRACTOR SHALL SCHEDULE AND EXECUTE ALL WORK WITH REGARD TO THE OWNER'S USE OF THE BUILDING.
- PLANS ARE DIAGRAMMATIC AND SHALL NOT BE SCALED. REFER TO ARCHITECTURAL DRAWINGS FOR DIMENSIONS.
- PROVIDE PULL BOXES AS REQUIRED TO PROPERLY INSTALL THE RACEWAYS AND CIRCUITS INDICATED.
- WHERE DEMOLISHED ELECTRICAL DEVICES ARE PART OF A CIRCUIT THAT IS THRU-WIRED OR HAS ADDITIONAL DEVICES ON THE CIRCUIT THAT ARE TO REMAIN UNCHANGED, THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING THE INTEGRITY OF THE EXISTING CIRCUIT. ANY ADDITIONAL CONDUIT, WIRING, BOXES, ETC. NEEDED TO MODIFY THE EXISTING CIRCUIT TO MAINTAIN THE INTEGRITY ARE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL BE INCLUDED IN THE BASE BID.
- EXISTING CONDITIONS ON THIS SET OF BID DOCUMENTS WERE TAKEN FROM EXISTING DRAWINGS, LIMITED SITE VISITS, AND VISUAL OBSERVATIONS. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO SUBMITTING FINAL BIDS. CHANGE ORDERS WILL NOT BE PAID DUE TO UNANTICIPATED CONDITIONS TO MEET INTENT OF WORK.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CORING, PATCH, AND REPAIR OF ALL WALL AND FLOOR SYSTEMS AS REQUIRED DUE TO CONSTRUCTION WORK. MAINTAIN ALL FIRE RATINGS.
- LIGHTING CONTROLS BY WATTSTOPPER, LUTRON, AND LEVITON.
- PROVIDE CONDUCTORS FOR LISTED APPLICATIONS AS FOLLOWS:  
LIGHTING AND RECEPTACLE CIRCUITS: TYPE THHN, 600 VOLT, 75 DEGREE C (194 DEGREE F) THERMOPLASTIC INSULATED BUILDING CONDUCTOR.
- ALL WIRING SHALL BE CONCEALED IN ALL FINISHED SPACES. ALL WIRING SHALL BE IN EXISTING CONDUIT UNLESS OTHERWISE NOTED. SURFACE MOUNTED CONDUIT IS ACCEPTABLE FOR EXISTING WALLS. FLEXIBLE CONDUIT SHALL BE ACCEPTABLE FOR CONNECTIONS TO LIGHT FIXTURES AND WHERE NEW DEVICES ARE INSTALLED IN EXISTING WALLS.
- ALL RECEPTACLES SHALL BE AT 18" AFF UNLESS NOTED OTHERWISE.
- DUPLEX RECEPTACLES SHALL BE HUBBELL MODEL 5352 20A, 125V, NEW CONFIGURATION 5-20R WHITE DUPLEX RECEPTACLE WITH STAINLESS STEEL COVERPLATE TO MATCH EXISTING.
- CONTRACTOR SHALL PROVIDE A MODIFIED CIRCUIT DIRECTORY FOR ANY PANELS WITH REVISIONS AS NOTED ON PLANS.
- CONTRACTOR RESPONSIBLE FOR ALL PATCH AND REPAIR OF EXISTING SURFACES AS REQUIRED FOR THE INSTALLATION OF NEW DEVICES. REMOVE AND REPLACE DEVICES ON EXISTING WALL AS NEEDED FOR NEW FINISHES. PROVIDE EXTENSION RINGS WHERE REQUIRED.
- CONTRACTOR SHALL GUARANTEE ALL EQUIPMENT, ACCESSORIES, AND MATERIALS FURNISHED UNDER THIS CONTRACT FOR A PERIOD OF ONE YEAR FROM FINAL ACCEPTANCE.



**2 E1 ELECTRICAL IMPROVEMENT PLAN**  
SCALE: 1/8"=1'-0" NORTH



**1 E1 ELECTRICAL DEMO PLAN**  
SCALE: 1/8"=1'-0" NORTH



PROJECT: JAMES RIVER POWER STATION UPGRADE 2023-12-14  
CITY UTILITIES OF SPRINGFIELD, MO



DATE: 01/05/2024  
PROJECT NUMBER: 23.CU.001  
DRAWN BY: JMC  
CHECKED BY: JAL  
SHEET NUMBER: E1



LAKE SPRINGFIELD

JAMES RIVER POWER STATION

PARKING AREA

RESTROOM  
ADDITION

KISSICK AVE