

NORTH BEND ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE ALARM REPLACEMENT

**ADDENDUM NO. 2**

DATE: February 24, 2020

ENGINEER: Gipe Associates  
1220 East Joppa Road, Suite 223  
Baltimore, Maryland 21286  
Phone: (410) 832-2420

OWNER: Harford County Public Schools

PROJECT: North Bend Elementary School  
1445 N. Bend Rd.  
Jarrettsville, Maryland 21084  
Gipe Project No. 19072

TO: All Prospective Bidders

The following changes are made a part of the Drawings and Specifications for the subject project, dated January 31, 2020. Receipt of this Addendum is to be acknowledged, in the space provided in the Bid Form. Failure to do so may subject the Bid to be considered as non-responsive.

**A. CHANGES TO SPECIFICATIONS**

- 00 00 02 TABLE OF CONTENTS: Added the following Sections: 01 23 00 ALTERNATES and 32 31 13 CHAIN LINK FENCES AND GATES. Indicated revisions for Sections: 00 03 00 FORM OF PROPOSAL, 01 10 00 SUMMARY.
- 00 03 00 FORM OF PROPOSAL: Modified section to include the Alternates.
- 01 10 00 SUMMARY: Modified section to include the Alternates.
- 01 23 00 ALTERNATES: Added the entire section.
- 23 06 00 HEATING, VENTILATING AND AIR CONDITIONING EQUIPMENT: Paragraph 2.3.A Add the following acceptable manufacturer, CleaverBrooks Clearfire-C Model.
- 32 31 13 CHAIN LINK FENCES AND GATES: Added the entire section.

**B. CHANGES TO DRAWINGS**

**1. CIVIL DRAWINGS**

- DRAWING C0.2 EX. CONDITION & DEMOLITION PLAN:** Refer to the clouded and noted areas.
- DRAWING C0.3 SITE PLAN & DETAILS:** Refer to the clouded and noted areas.
- DRAWING C0.4 EROSION & SEDIMENT CONTROL PLAN:** Refer to the clouded and noted areas.

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2. **ARCHITECTURAL DRAWINGS**

- DRAWING A1.0 EQUIPMENT COURTYARD – NEW WORK:** Refer to the clouded and noted areas.

3. **MECHANICAL DRAWINGS**

- DRAWING M0.1 ABBREVIATIONS, LEGEND, GENERAL NOTES:** Refer to the clouded and noted areas.
- DRAWING M1.1 FIRST FLOOR PLAN – MECHANICAL DEMOLITION AND NEW WORK:** Refer to the clouded and noted areas.
- DRAWING M1.2 MECHANICAL ROOM AND EQUIPMENT COURTYARD:** Refer to the clouded and noted areas.
- DRAWING M1.3 MECHANICAL SITE PLAN:** Refer to the clouded and noted areas.
- DRAWING M3.1 MECHANICAL ROOM AND EQUIPMENT COURTYARD MECHANICAL NEW WORK:** Refer to the clouded and noted areas.
- DRAWING M5.1 CONTROLS:** Revise the following note: "RX 3-WAY CONTROL VALVE AND PROVIDE NEW TWO-WAY CONTROL VALVE (TYP OF 10)" to read as "RX 3-WAY CONTROL VALVE AND PROVIDE NEW TWO-WAY CONTROL VALVE (TYP OF 6)". Revise the following note: "RX 3-WAY CONTROL VALVE AND PROVIDE NEW THREE-WAY CONTROL VALVE (TYP OF 1)" to read as "RX 3-WAY CONTROL VALVE AND PROVIDE NEW THREE-WAY CONTROL VALVE (TYP OF 5)".

C. **RFI QUESTIONS/ANSWERS**

- None.

D. **ATTACHMENTS**

1. 00 00 02 TABLE OF CONTENTS
2. 00 03 00 FORM OF PROPOSAL
3. 01 10 00 SUMMARY
4. 01 23 00 ALTERNATES
5. 32 31 13 CHAIN LINK FENCES AND GATES
6. DRAWING C0.2 EX. CONDITION & DEMOLITION PLAN
7. DRAWING C0.3 SITE PLAN & DETAILS
8. DRAWING C0.4 EROSION & SEDIMENT CONTROL PLAN
9. DRAWING A1.0 EQUIPMENT COURTYARD – NEW WORK
10. DRAWING M0.1 ABBREVIATIONS, LEGEND, GENERAL NOTES
11. DRAWING M1.1 FIRST FLOOR PLAN – MECHANICAL DEMOLITION AND NEW WORK
12. DRAWING M1.2 MECHANICAL ROOM AND EQUIPMENT COURTYARD
13. DRAWING M1.3 MECHANICAL SITE PLAN
14. DRAWING M3.1 MECHANICAL ROOM AND EQUIPMENT COURTYARD MECHANICAL NEW WORK

**END OF ADDENDUM NO. 2**

**SECTION 00 00 02 – TABLE OF CONTENTS-REVISED ADD NO.2**

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SECTION 00 00 03.	.	LIST OF DRAWINGS
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SECTION 00 01 00.	.	INSTRUCTION TO BIDDERS
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SECTION 00 03 00.	.	FORM OF PROPOSAL- <u>REVISED ADD NO.2</u>
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SECTION 00 06 10.	.	PERFORMANCE BOND
SECTION 00 06 20.	.	PAYMENT BOND
SECTION 00 06 30.	.	AFFIDAVIT OF QUALIFICATION TO BID
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SECTION 00 06 50.	.	CONTRACTOR'S QUALIFICATION STATEMENT
SECTION 00 06 60.	.	MINORITY BUSINESS ENTERPRISE REQUIREMENTS
SECTION 00 06 60.	.	MINORITY BUSINESS ENTERPRISE PROCEDURES ATTACHMENT 1A – MBE UTILIZATION AND FAIR SOLICITATION AFFIDAVIT & MBE PARTICIPATION SCHEDULE ATTACHMENT C – OUTREACH EFFORTS COMPLIANCE STATEMENT ATTACHMENT D – MINORITY BUSINESS ENTERPRISE SUBCONTRACTOR PROJECT PARTICIPATION STATEMENT ATTACHMENT E – MINORITY SUBCONTRACTOR UNAVAILABILITY CERTIFICATE ATTACHMENT F – MBE WAIVER DOCUMENTATION IAC/PSCP FORM 306.4 – CERTIFIED MINORITY BUSINESS ENTERPRISE PARTICIPATION STANDARD MONTHLY CONTRACTOR'S REQUISITION FOR PAYMENT 306.4 ATTACHMENT H – CLOSE-OUT COST SUMMARY (IAC/PSCP FORM 306.0)
SECTION 00 07 00.	.	GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION
SECTION 00 08 00.	.	AMENDMENTS TO GENERAL CONDITIONS

**SECTION 00 09 00. . SUPPLEMENTARY GENERAL CONDITONS**

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- SECTION 01 10 00. . SUMMARY-REVISED ADD NO.2**
- SECTION 01 23 00 . ALTERNATES-ADDED ADD NO.2**
- SECTION 01 29 00 . PAYMENT PROCEDURES**
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- SECTION 01 32 00. . CONSTRUCTION PROGRESS AND DOCUMENTATION**
- SECTION 01 32 33. . PHOTOGRAPHIC DOCUMENTATION**
- SECTION 01 33 00. . SUBMITTAL PROCEDURES**
- SECTION 01 40 00. . QUALITY REQUIREMENTS**
- SECTION 01 50 00. . TEMPORARY FACILITIES AND CONTROLS**
- SECTION 01 58 00. . PROJECT IDENTIFICATION AND SIGNS**
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**SECTION 00 03 00 - FORM OF PROPOSAL**

Proposal of: \_\_\_\_\_ (firm name)

Re: North Bend Elementary School Central Plant & Fire Alarm Replacement Project  
Location: 1445 N. Bend Rd., Jarrettsville, MD 21084

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

To: Board of Education of Harford County  
Harford County Public Schools  
102 South Hickory Avenue  
Bel Air, Maryland 21014

Gentlemen

Having examined the Instruction to Bidders, the Drawings and the Specification, including Addenda Nos. \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_, thereto, and other proposed Contract Documents prepared by Gipe Associates, Inc. and having examined the site and other conditions affecting the construction, the undersigned hereby proposes to furnish all labor, materials, equipment and services to perform all work required for the Central Plant & Fire Alarm Project at North Bend Elementary School in strict accordance with the Contract Documents for the sums listed in the following bid items:

It is understood that if no figure is listed for an Alternate, that the Alternate may be accepted and there shall be no change in the Base Bid amount indicated below:

1. BASE BID:

The Lump Sum Base Bid for the air-cooled chiller and associated pumps, piping, controls, two below grade propane tanks, water heaters, electrical work, fire alarm, fenced enclosed chiller courtyard and site work includes prevailing wage scale.

\_\_\_\_\_, Dollars (\$ \_\_\_\_\_)

2. ADD ALTERNATE NO.1: Provide concrete slab in lieu of stone within the new chiller enclosure.

Add \_\_\_\_\_, Dollars (\$ \_\_\_\_\_)

ADD ALTERNATE NO.2: Remove second fuel oil tank and provide new 275 gallon aboveground tank and containment in the Boiler Room. Repair exterior surfaces to the original condition.

Add \_\_\_\_\_, Dollars (\$ \_\_\_\_\_)

ADD ALTERNATE NO.3: Provide temporary 150 ton air-cooled chiller with the temporary tie-ins to the existing chilled water system for a ninety (90) day operational period starting once the school year ends.

Add \_\_\_\_\_, Dollars (\$ \_\_\_\_\_)

**SUBSTITUTIONS REQUESTS:**

Indicate proposed substitutions below and attach copies of "Substitution Request Form" referenced in Section 01 06 00A.

<u>Proposed Substitution</u>	<u>Price Change</u>
_____	\$ _____
_____	\$ _____

**EXECUTION:**

The undersigned affirms that the Base Bid stated above represents the entire cost of the Project in accordance with the Bid Documents and that no claim shall be made on account of any increase in wage, scales, material prices, taxes, insurance, cost indexes, or any other rate affecting the construction industry and/or this project.

The undersigned agrees, upon receipt of written notice of the acceptance of this bid within (60) calendar days after the date of opening of bids to execute the standard form of contract in accordance with the bid as accepted, and to give performance and payment bond with good and sufficient surety or sureties, for the faithful performance of the contract and for the protection of all persons supplying labor and materials in the prosecution of the work, within ten (10) calendar days after the prescribed forms are presented for signature.

Signature of:

X \_\_\_\_\_  
Bidder if the bidder is an individual

\_\_\_\_\_  
Name and Title (printed)

Registered Maryland Contractor No. \_\_\_\_\_

**OR**

X \_\_\_\_\_  
Partner if the bidder is a partnership



Name and Title (printed)

Registered Maryland Contractor No. \_\_\_\_\_

**OR**

X \_\_\_\_\_  
Officer if bidder is a corporation

\_\_\_\_\_  
Name and Title (printed)

Registered Maryland Contractor No. \_\_\_\_\_

**ALL**

Subscribed and sworn before me this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.

X \_\_\_\_\_  
Notary Public

My Commission expires: \_\_\_\_\_

NOTE: The following items shall be completed and submitted as attachments to the Bid at the time of the Bid opening:

- \*1. Section 00 05 00 Bid Bond
- \*2. Section 00 06 60 MBE Attachment 1A; MBE Utilization and Fair Solicitation Affidavit and MBE Participation Schedule
- 3. Section 00 06 30 Affidavit of Qualification to Bid

**\*NOTE: Items 1 and 2 must be submitted in proper form and content at the time of bid opening or the bid will be rejected as non-responsive.**

**END OF SECTION**

## SECTION 01 10 00 - SUMMARY

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

1. Project information.
2. Work covered by Contract Documents.
3. Phased construction.
4. Work by Owner.
5. Work under separate contracts.
6. Purchase contracts.
7. Owner-furnished products.
8. Contractor-furnished, Owner-installed products.
9. Access to site.
10. Coordination with occupants.
11. Work restrictions.
12. Specification and drawing conventions.
13. Miscellaneous provisions.

- B. Related Requirements:

1. Section 015000 "Temporary Facilities and Controls" for limitations and procedures governing temporary use of Owner's facilities.

#### 1.3 PROJECT INFORMATION

- A. Project Identification: **NORTH BEND ELEMENTARY SCHOOL CENTRAL PLANT AND FIRE ALARM REPLACEMENT.**

1. Project Location: 1445 n. Bend Rd., Jarrettsville, MD 21084.

- B. Owner: Board of Education of Harford County, 102 South Hickory Avenue, Bel Air, MD 21014.

1. Owner's Representative: Will be identified at the Pre-Bid Conference.

- C. Engineer: Gipe Associates, Inc, 1220 East Joppa Road – Suite 223, Towson, MD 21286.
- D. Engineer's Consultants: The Engineer has retained the following firms to prepare designated portions of the Contract Documents:
  - 1. Frederick Ward Associates, 5 South Main Street, Bel Air, MD 21014.
  - 2. Baker, Ingram & Associates, 1547 Oregon Pike, Lancaster, PA 17601.

1.4 WORK COVERED BY CONTRACT DOCUMENTS

A. The Work of Project is defined by the Contract Documents and consists of the following:

- 1. The purpose of the project is to remove the existing water-cooled chiller, cooling tower, associated pumps, boilers, underground fuel oil tank, fuel oil pumps, domestic water heater, fire alarm, and associated electrical work. The existing equipment courtyard shall require some demolition to prepare for the new fenced enclosure. A new air-cooled chiller shall be provided in the equipment courtyard. Two new boilers will be provided. New hydronic pumps and associated variable speed drives and two-way valves at the building air handling equipment shall be provided. Two new LP gas tanks will be provided and they will serve the new LP gas-fired boilers and water heater. A new fire alarm system for the entire building shall be provided. Associated electrical work shall be provided in support of the mechanical and fire alarm work.
- 2. There are three Alternates for the project as follows:

Alternate No.1: Provide concrete slab in lieu of stone within the new chiller enclosure.

Alternate No.2: Remove second underground fuel oil tank and provide new 275 gallon aboveground tank and containment in the Boiler Room. Repair exterior surfaces to the original condition.

Alternate No.3: Provide a temporary 150 ton air-cooled chiller with temporary tie-ins to the existing chilled water system for a ninety (90) day operational period starting once the school year ends in June 2019. Contractor shall provide the necessary electrical power and controls from the existing systems. Contractor shall use one of the backup chilled water pumps or one of the condenser water pumps, slated for demolition, to distribute the chilled water.

B. Type of Contract:

- 1. Project will be constructed under a single prime contract.

## 1.5 ACCESS TO SITE

- A. General: Contractor shall have full use of Project site for construction operations during construction period. Contractor's use of Project site is limited only by Owner's right to perform work or to retain other contractors on portions of Project.
- B. General: Contractor shall have limited use of Project site for construction operations as indicated on Drawings by the Contract limits and as indicated by requirements of this Section.
- C. Use of Site: Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
  - 1. Limits: Confine construction operations to areas where work is permitted.
  - 2. 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.
- D. Condition of Existing Building: Maintain portions of existing building affected by construction operations in a weathertight condition throughout construction period. Repair damage caused by construction operations.

## 1.6 COORDINATION WITH OCCUPANTS

- A. Full and Partial Owner Occupancy: Owner will occupy site and existing adjacent building(s) 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 Owner not less than 72 hours in advance of activities that will affect Owner's operations.

## 1.7 WORK RESTRICTIONS

- A. Work Restrictions, General: Comply with restrictions on construction operations.

1. Comply with limitations on use of public streets and with other requirements of authorities having jurisdiction.
- B. On-Site Work Hours: See Section 00 0100 *"Instruction to Bidders"*.
1. Weekend Hours: See Section 00 0100 *"Instruction to Bidders"*.
  2. Early Morning Hours: Coordinate with Owner.
  3. Hours for Core Drilling: Before and after school hours.
- C. 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 Engineer and Owner not less than five days in advance of proposed utility interruptions.
  2. Obtain Owner's written permission before proceeding with utility interruptions.
- D. 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 Engineer not less than two days in advance of proposed disruptive operations.
  2. Obtain Owner's written permission before proceeding with disruptive operations.
- E. Controlled Substances: Use of tobacco products and other controlled substances on School Property is not permitted.
- F. Employee Identification: Provide identification tags for Contractor personnel working on Project site. Require personnel to use identification tags at all times.
- G. Employee Screening: Comply with Owner's requirements for drug and background screening of Contractor personnel working on Project site.
1. Maintain list of approved screened personnel with Owner's representative.
- H. Asbestos/asbestos containing material (ACM): In the event that the contractor encounters any materials suspected of being asbestos or containing asbestos, the contractor shall immediately stop work and notify the HCPS project manager. In the event asbestos identification and/or abatement is required, the same shall be performed by HCPS and not the contractor. The Ahera management plan for each building is available for review and the contractor is to make full use of this document. Unless otherwise specified in the contract, asbestos removal and abatement is not the contractor's responsibility or obligation. If the contractor encounters ACM, the contractor shall immediately stop work and notify the HCPS project manager. In the event that the contractor performs any work with respect to any materials suspected of being ACM or containing ACM after encountering the same, the contractor shall pay and indemnify HCPS with respect to any and all cost(s) of remediation or damages arising out of the contractor's continuation of work after encountering materials which are suspected of containing ACM or being ACM. No materials provided under this contract shall contain asbestos. HCPS shall be

entitled to pursue all remedies including but not limited to immediate termination of the contract in the event that the contractor fails to comply with any obligation set forth above.

## 1.8 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. Division 01 General Requirements: Requirements of Sections in Division 01 apply to the Work of all Sections in the Specifications.
- C. Drawing Coordination: Requirements for materials and products identified on Drawings are described in detail in the Specifications. One or more of the following are used on 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. Abbreviations: Materials and products are identified by abbreviations and scheduled on Drawings.
  3. Keynoting: Materials and products are identified by reference keynotes referencing Specification Section numbers found in this Project Manual.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION (Not Used)

**END OF SECTION**

## SECTION 01 23 00 - ALTERNATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

#### 1.3 DEFINITIONS

- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

#### 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.

## SECTION 01 23 00 - ALTERNATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section includes administrative and procedural requirements for alternates.

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- A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the bidding requirements that may be added to or deducted from the base bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.
  - 1. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
  - 2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

#### 1.4 PROCEDURES

- A. Coordination: Revise or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.
  - 1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.
- B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated revisions to alternates.



- C. Execute accepted alternates under the same conditions as other work of the Contract.
- D. Schedule: A schedule of alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

- A. Alternate No. 1:
  - 1. Provide concrete slab in lieu of stone within the new chiller enclosure.
- B. Alternate No.2:
  - 1. Remove second underground fuel oil tank and provide new 275 gallon aboveground tank and containment in the Boiler Room. Repair exterior surfaces to the original condition.
- C. Alternate No.3:
  - 1. Provide a temporary 150 ton air-cooled chiller with temporary tie-ins to the existing chilled water system for a ninety (90) day operational period starting once the school year ends in June 2019. Contractor shall provide the necessary electrical power and controls from the existing systems. Contractor shall use one of the backup chilled water pumps or one of the condenser water pumps, slated for demolition, to distribute the chilled water.

**END OF SECTION**

## SECTION 323113 - CHAIN LINK FENCES AND GATES

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

#### 1.2 SUMMARY

- A. Section Includes:

- 1. Chain-link fences.
- 2. Swing gates.
- 3. Privacy slats.

- B. Related Requirements:

- 1. Section 033000 "Cast-in-Place Concrete" for cast-in-place concrete footings.

#### 1.3 ACTION SUBMITTALS

- A. Product Data: For each type of product.

- 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for the following:
  - a. Fence and gate posts, rails, and fittings.
  - b. Chain-link fabric, reinforcements, and attachments.
  - c. Accessories: Privacy slats
  - d. Gates and hardware.

- B. Shop Drawings: For each type of fence and gate assembly.

- 1. Include plans, elevations, sections, details, and attachments to other work.
- 2. Include accessories, hardware, gate operation, and operational clearances.

- C. Samples for Initial Selection: For each type of factory-applied finish.

- D. Samples for Verification: For each type of component with factory-applied finish, prepared on Samples of size indicated below:
  - 1. Polymer-Coated Components: In 6-inch lengths for components and on full-sized units for accessories.
- E. Delegated-Design Submittal: For structural performance of chain-link fence and gate frameworks, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For professional engineer
- B. Retain "Product Certificates" Paragraph below to require submittal of product certificates from manufacturers.
- C. Product Certificates: For each type of chain-link fence and gate.
- D. Product Test Reports: For framework strength according to ASTM F 1043, for tests performed by manufacturer and witnessed by a qualified testing agency or a qualified testing agency.
- E. Field quality-control reports.
- F. Sample Warranty: For special warranty.

#### 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: For testing fence grounding; member company of NETA or an NRTL.
  - 1. Testing Agency's Field Supervisor: Certified by NETA to supervise on-site testing.
- B. Mockups: Build mockups to set quality standards for fabrication and installation.
  - 1. Build mockup for typical chain-link fence and gate, including accessories.
    - a. Size: 10-foot high of fence.

## 1.6 WARRANTY

- A. Special Warranty: Installer agrees to repair or replace components of chain-link fences and gates that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Failure to comply with performance requirements.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: Five years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design chain-link fence and gate frameworks.
- B. Structural Performance: Chain-link fence and gate frameworks shall withstand the design wind loads and stresses for fence height(s) and under exposure conditions indicated according to ASCE/SEI 7.
  - 1. Design Wind Load:
    - a. Minimum Post Size: Determine according to ASTM F 1043 for post spacing not to exceed 10 feet for Material Group IA, ASTM F 1043, Schedule 40 steel pipe.
    - b. Minimum Post Size and Maximum Spacing: Determine according to CLFMI WLG 2445, based on mesh size and pattern specified.
- C. Lightning Protection System: Maximum resistance-to-ground value of 25 ohms at each grounding location along fence under normal dry conditions.

### 2.2 CHAIN-LINK FENCE FABRIC

- A. General: Provide fabric in one-piece heights measured between top and bottom of outer edge of selvaige knuckle or twist according to "CLFMI Product Manual" and requirements indicated below:
  - 1. Fabric Height: As indicated on Drawings.
  - 2. Steel Wire for Fabric: Wire diameter of 0.192 inch

- a. Mesh Size: 2-1/8 inches
  - b. Polymer-Coated Fabric: ASTM F 668, Class 1 over zinc coated steel wire.
    - 1) Color: Black, according to ASTM F 934.
  - c. Coat selvage ends of metallic-coated fabric before the weaving process with manufacturer's standard clear protective coating.
3. Selvage: Knuckled at both selvages

### 2.3 FENCE FRAMEWORK

- A. Posts and Rails: ASTM F 1043 for framework, including rails, braces, and line; terminal; and corner posts. Provide members with minimum dimensions and wall thickness according to ASTM F 1043 or ASTM F 1083 based on the following:
- 1. Fence Height: As indicated on Drawings.
  - 2. Light-Industrial-Strength Material: Group IC-L, round steel pipe, electric-resistance-welded pipe.
    - a. Line Post: 1.9 inches in diameter
    - b. End, Corner, and Pull Posts: 2.375 inches
  - 3. Horizontal Framework Members: Intermediate, top and bottom rails according to ASTM F 1043.
    - a. Top Rail: 1.66 inches (42 mm) in diameter
  - 4. Brace Rails: ASTM F 1043.
  - 5. Metallic Coating for Steel Framework:
    - a. Type A: Not less than minimum 2.0-oz./sq. ft. (0.61-kg/sq. m) average zinc coating according to ASTM A 123/A 123M or 4.0-oz./sq. ft. (1.22-kg/sq. m) zinc coating according to ASTM A 653/A 653M.
    - b. Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film.
    - c. External, Type B: Zinc with organic overcoat, consisting of a minimum of 0.9 oz./sq. ft. (0.27 kg/sq. m) of zinc after welding, a chromate conversion coating, and a clear, verifiable polymer film. Internal, Type D, consisting of 81 percent, not less than 0.3-mil- (0.0076-mm-) thick, zinc-pigmented coating.

- d. Type C: Zn-5-Al-MM alloy, consisting of not less than 1.8-oz./sq. ft. (0.55-kg/sq. m) coating.
  - e. Coatings: Any coating above.
6. Polymer coating over metallic coating.
- a. Color: As selected by Architect from manufacturer's full range, according to ASTM F 934.
- 2.4 TENSION WIRE
- A. Polymer-Coated Steel Wire: 0.177-inch- (4.5-mm-) diameter, tension wire according to ASTM F 1664, Class 1 over zinc-coated steel wire.
    - 1. Color: Black, according to ASTM F 934.
- 2.5 SWING GATES
- A. General: ASTM F 900 for gate posts and double swing gate types.
    - 1. Gate Leaf Width: 42 inches (1067 mm) or as dimensioned
    - 2. Framework Member Sizes and Strength: Based on gate fabric height [of 72 inches (1830 mm) or less] [of more than 72 inches (1830 mm)] [as indicated] <Insert dimension>.
  - B. Pipe and Tubing:
    - 1. Zinc-Coated Steel: ASTM F 1043 and ASTM F 1083; protective coating and finish to match fence framework
    - 2. Gate Posts: Round tubular steel.
    - 3. Gate Frames and Bracing: Round tubular steel.
  - C. Frame Corner Construction: assembled with corner fittings.
  - D. Extended Gate Posts and Frame Members: Fabricate gate posts and frame end members to extend 12 inches (300 mm) above top of chain-link fabric at both ends of gate frame to attach barbed assemblies.
  - E. Hardware:
    - 1. Hinges: 180-degree outward swing.
    - 2. Latch: Permitting operation from both sides of gate [with provision for padlocking accessible from both sides of gate].
    - 3. Lock: Manufacturer's standard internal device.

4. Padlock and Chain: Provided by installer
5. Closer: Manufacturer's standard.

## 2.6 FITTINGS

- A. Provide fittings according to ASTM F 626.
- B. Post Caps: Provide for each post.
  1. Provide line post caps with loop to receive tension wire or top rail.
- C. Rail and Brace Ends: For each gate, corner, pull, and end post.
- D. Rail Fittings: Provide the following:
  1. Top Rail Sleeves: Pressed-steel or round-steel tubing not less than 6 inches (152 mm) long.
  2. Rail Clamps: Line and corner boulevard clamps for connecting intermediate and bottom rails to posts.
- E. Tension and Brace Bands: Pressed steel.
- F. Tension Bars: Steel, length not less than 2 inches (50 mm) shorter than full height of chain-link fabric. Provide one bar for each gate and end post, and two for each corner and pull post, unless fabric is integrally woven into post.
- G. Truss Rod Assemblies: Steel, hot-dip galvanized after threading rod and turnbuckle or other means of adjustment.
- H. Tie Wires, Clips, and Fasteners: According to ASTM F 626.
  1. Standard Round Wire Ties: For attaching chain-link fabric to posts, rails, and frames, according to the following:
    - a. Hot-Dip Galvanized Steel: 0.106-inch- (2.69-mm-) diameter wire; galvanized coating thickness matching coating thickness of chain-link fence fabric.
    - b. Aluminum: ASTM B 211 (ASTM B 211M); Alloy 1350-H19; 0.148-inch- (3.76-mm-) diameter, mill-finished wire.
- I. Finish:
  1. Metallic Coating for Pressed Steel or Cast Iron: Not less than 1.2 oz./sq. ft. (366 g/sq. m) of zinc.

- a. Polymer coating over metallic coating.
- 2. Aluminum: Mill finish.

## 2.7 PRIVACY SLATS

- A. Fiber-Glass-Reinforced Plastic Slats: UV-light-stabilized fiber-glass-reinforced plastic, not less than 0.06 inch (1.5 mm) thick, sized to fit mesh specified for direction indicated, with vandal-resistant fasteners and lock strips.
- B. Color: Black.

## PART 3 - EXECUTION

### 3.1 CHAIN-LINK FENCE INSTALLATION

- A. Install chain-link fencing according to ASTM F 567 and more stringent requirements specified.
- B. Post Setting: Set posts in concrete with mechanical anchors at indicated spacing.
  - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  - 2. Concrete Fill: Place concrete around posts to dimensions indicated and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    - a. Exposed Concrete: Extend 2 inches (50 mm) above grade; shape and smooth to shed water.
    - b. Posts Set into Sleeves in Concrete: Use steel pipe sleeves preset and anchored into concrete for installing posts. After posts are inserted into sleeves, fill annular space between post and sleeve with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
    - c. Posts Set into Holes in Concrete: Form or core drill holes not less than 5 inches (127 mm) deep and 3/4 inch (20 mm) larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with nonshrink, nonmetallic grout or anchoring cement, mixed and placed according to anchoring material manufacturer's written instructions. Finish anchorage joint to slope away from post to drain water.
- C. Terminal Posts: Install terminal end, corner, and gate posts according to ASTM F 567 and terminal pull posts at changes in horizontal or vertical alignment of 15 degrees or more. For



- runs exceeding 500 feet (152 m), space pull posts an equal distance between corner or end posts.
- D. Line Posts: Space line posts uniformly at 96 inches (2440 mm) o.c.
- E. Post Bracing and Intermediate Rails: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Diagonally brace terminal posts to adjacent line posts with truss rods and turnbuckles. Install braces at end and gate posts and at both sides of corner and pull posts.
1. Locate horizontal braces at midheight of fabric 72 inches (1830 mm) or higher, on fences with top rail, and at two-third fabric height on fences without top rail. Install so posts are plumb when diagonal rod is under proper tension.
- F. Tension Wire: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Pull wire taut, without sags. Fasten fabric to tension wire with 0.120-inch- (3.05-mm-) diameter hog rings of same material and finish as fabric wire, spaced a maximum of 24 inches (610 mm) o.c. Install tension wire in locations indicated before stretching fabric. Provide horizontal tension wire at the following locations:
1. Extended along top and bottom of fence fabric. Install top tension wire through post cap loops. Install bottom tension wire within 6 inches (152 mm) of bottom of fabric and tie to each post with not less than same diameter and type of wire.
  2. Extended along top of and top of fence fabric to support barbed tape.
- G. Top Rail: Install according to ASTM F 567, maintaining plumb position and alignment of fence posts. Run rail continuously through line post caps, bending to radius for curved runs and terminating into rail end attached to posts or post caps fabricated to receive rail at terminal posts. Provide expansion couplings as recommended in writing by fencing manufacturer.
- H. Intermediate and Bottom Rails: Secure to posts with fittings.
- I. Chain-Link Fabric: Apply fabric to outside of enclosing framework. Leave 1-inch (25-mm) bottom clearance between finish grade or surface and bottom selvage unless otherwise indicated. Pull fabric taut and tie to posts, rails, and tension wires. Anchor to framework so fabric remains under tension after pulling force is released.
- J. Tension or Stretcher Bars: Thread through fabric and secure to end, corner, pull, and gate posts, with tension bands spaced not more than 15 inches (380 mm) o.c.
- K. Tie Wires: Use wire of proper length to firmly secure fabric to line posts and rails. Attach wire at one end to chain-link fabric, wrap wire around post a minimum of 180 degrees, and attach other end to chain-link fabric according to ASTM F 626. Bend ends of wire to minimize hazard to individuals and clothing.

1. Maximum Spacing: Tie fabric to line posts at 12 inches (300 mm) o.c. and to braces at 24 inches (610 mm) o.c.

- L. Fasteners: Install nuts for tension bands and carriage bolts on the side of fence opposite the fabric side. Peen ends of bolts or score threads to prevent removal of nuts.

### 3.2 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach fabric as for fencing. Attach hardware using tamper-resistant or concealed means. Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation.

### 3.3 GROUNDING AND BONDING

- A. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."

- B. Fence and Gate Grounding:

1. Ground for fence and fence posts shall be a separate system from ground for gate and gate posts.
2. Install a ground rod

- C. Grounding Method: At each grounding location, drive a grounding rod vertically until the top is 6 inches (152 mm) below finished grade. Connect rod to fence with No. 6 AWG conductor. Connect conductor to each fence component at grounding location.

1. Make grounding connections to each barbed wire strand with wire-to-wire connectors designed for this purpose.
2. Make grounding connections to each barbed tape coil with connectors designed for this purpose.

- D. Connections:

1. Make connections with clean, bare metal at points of contact.
2. Make aluminum-to-steel connections with stainless-steel separators and mechanical clamps.
3. Make aluminum-to-galvanized-steel connections with tin-plated copper jumpers and mechanical clamps.
4. Make above-grade ground connections with mechanical fasteners.
5. Make below-grade ground connections with exothermic welds.
6. Coat and seal connections having dissimilar metals with inert material to prevent future penetration of moisture to contact surfaces.

- E. Bonding to Lightning Protection System: Ground fence and bond fence grounding conductor to lightning protection down conductor or lightning protection grounding conductor according to NFPA 780.
- F. Comply with requirements in Section 264113 "Lightning Protection for Structures."

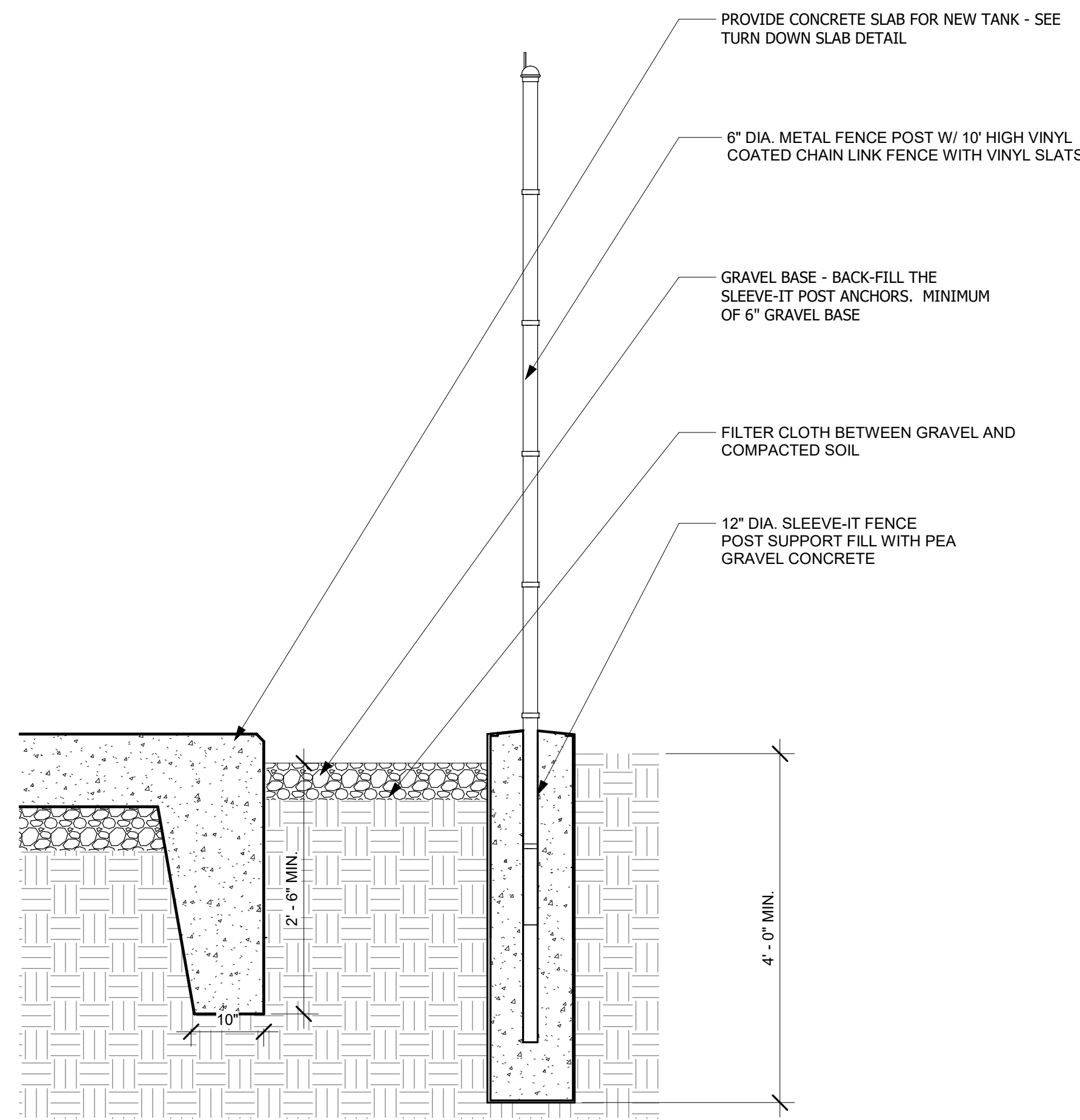
3.4 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware and other moving parts.

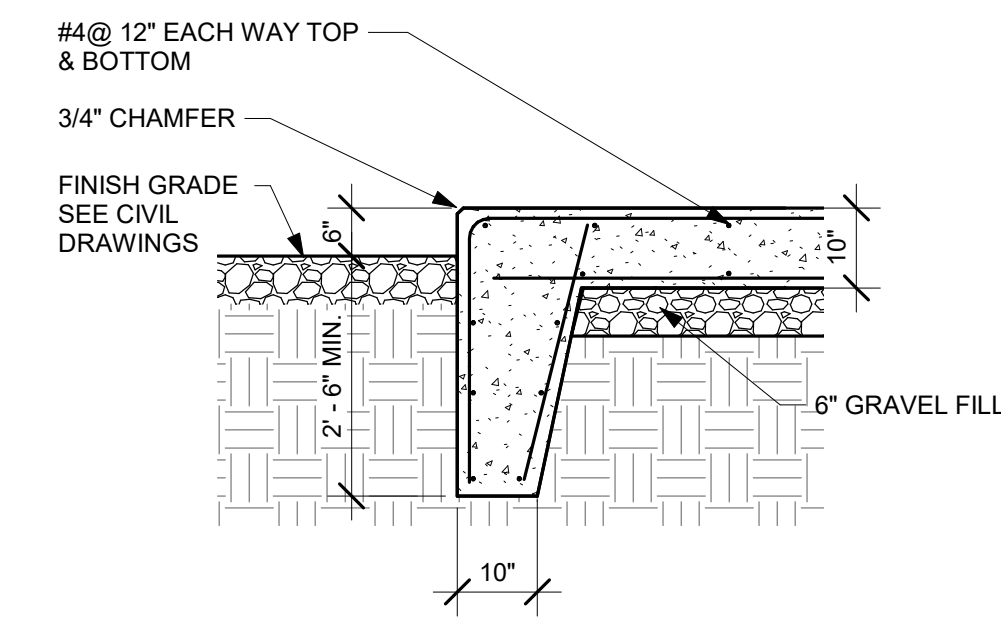
3.5 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain chain-link fences and gates.

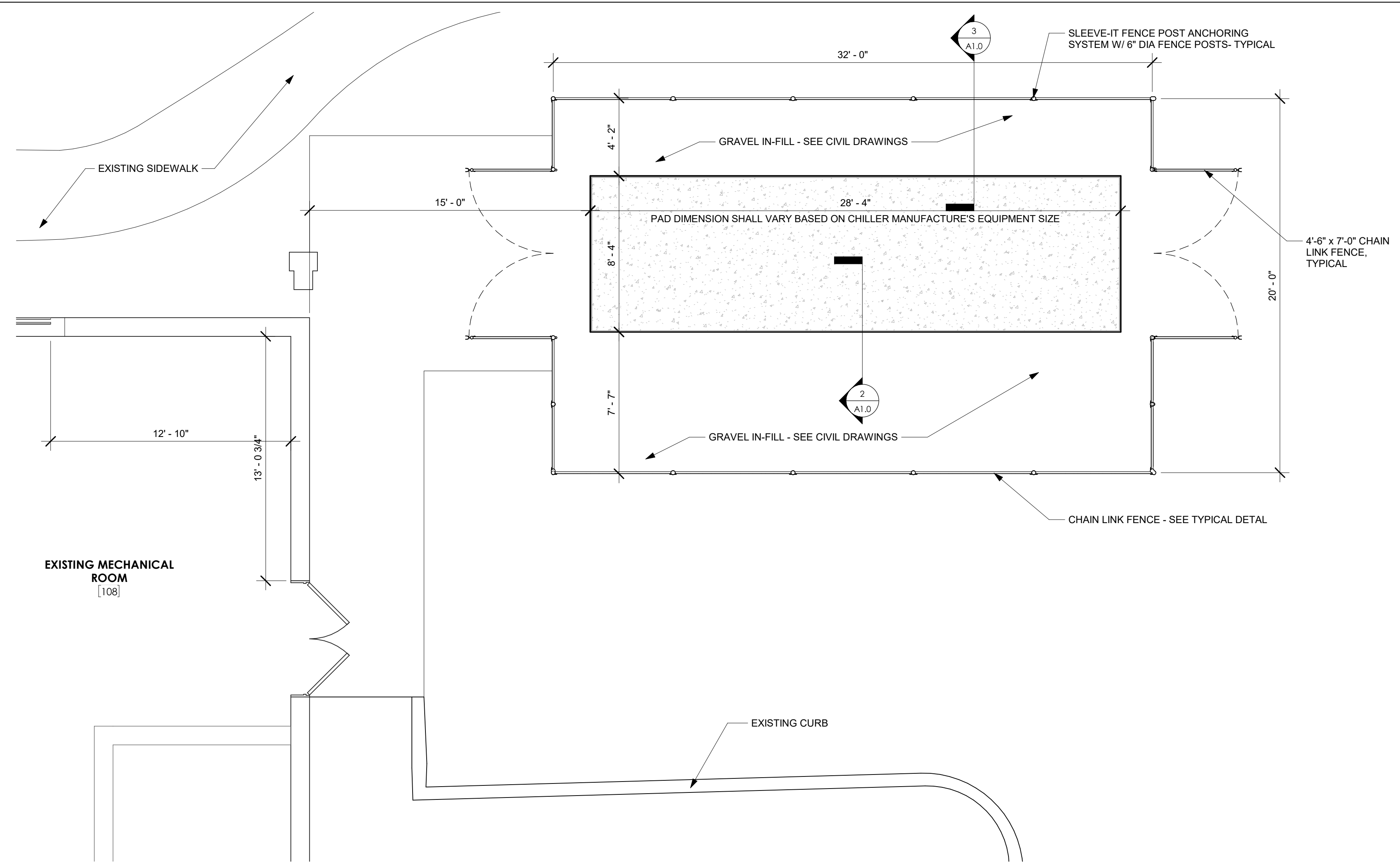
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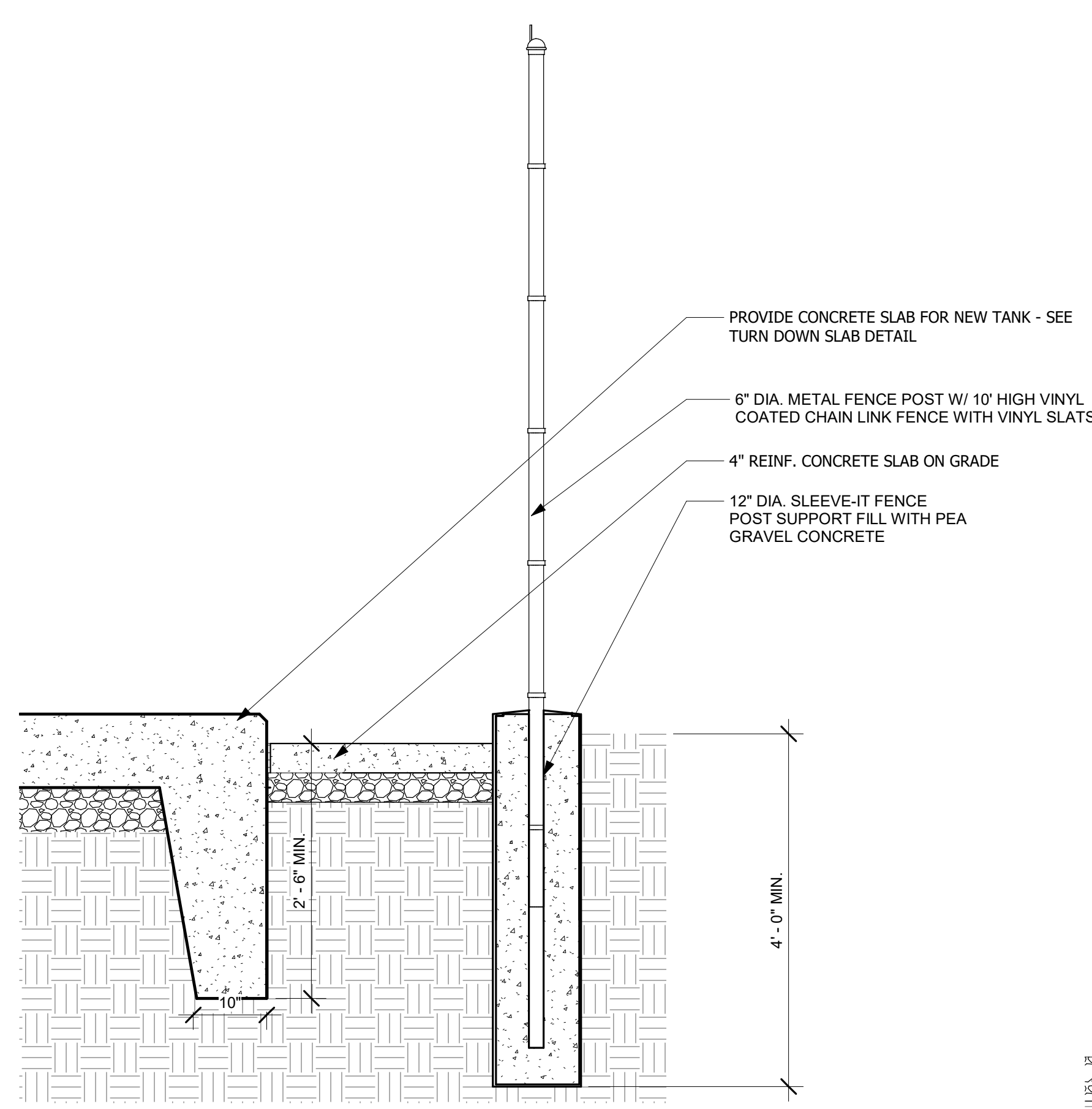
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3/4" = 1'-0"



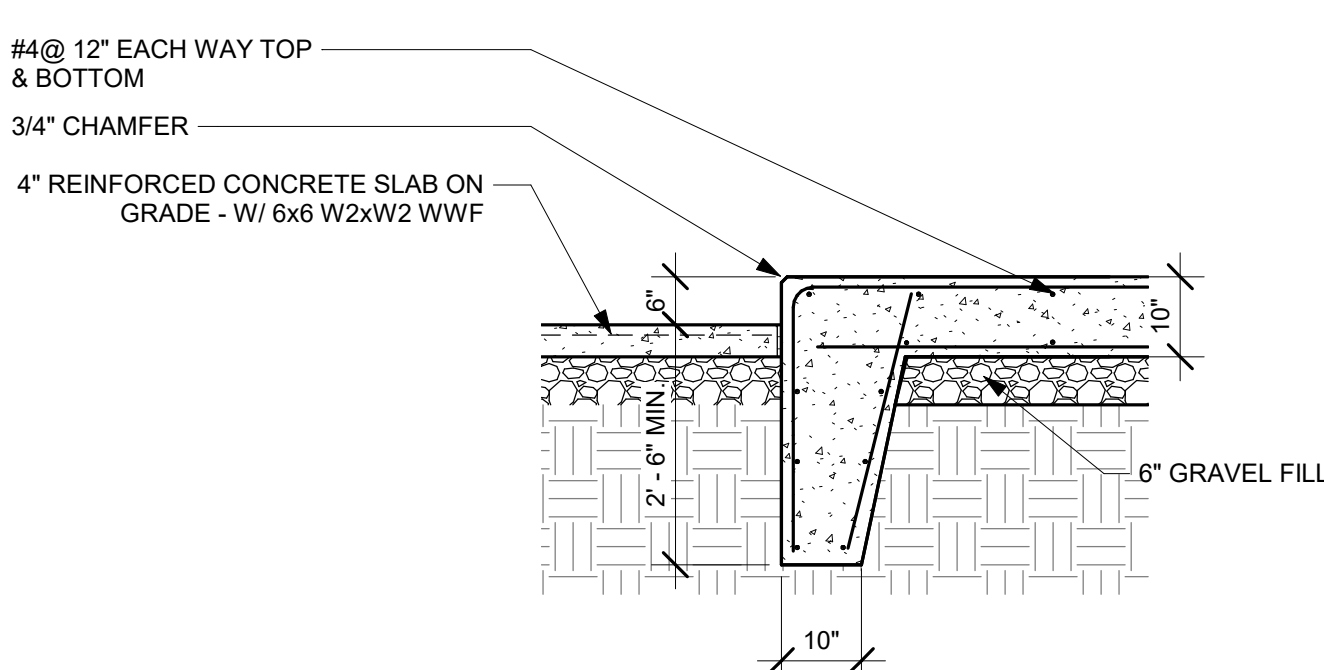
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TYPICAL TURN DOWN SLAB DETAIL - BASE BID  
1/2" = 1'-0"



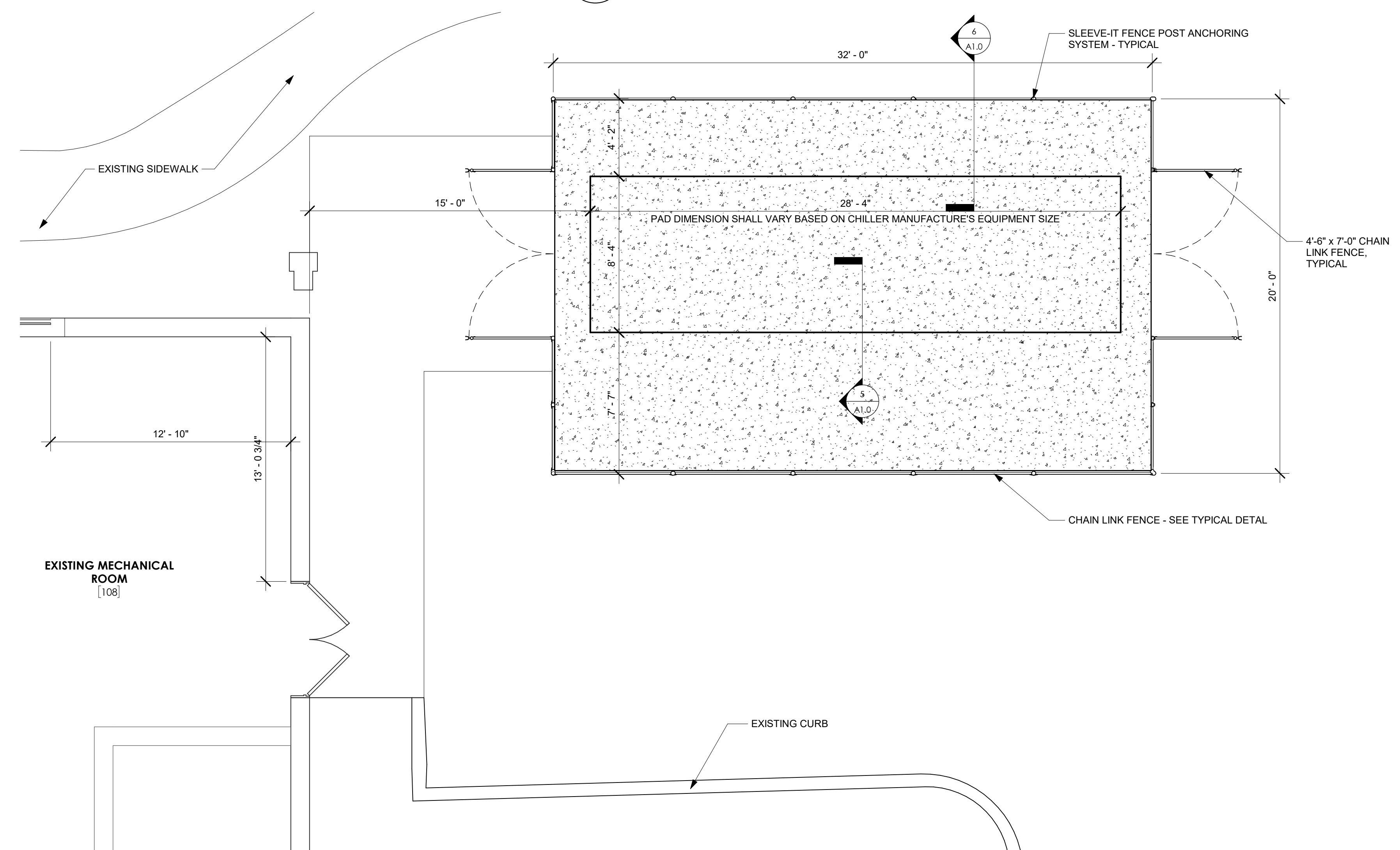
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1/4" = 1'-0"



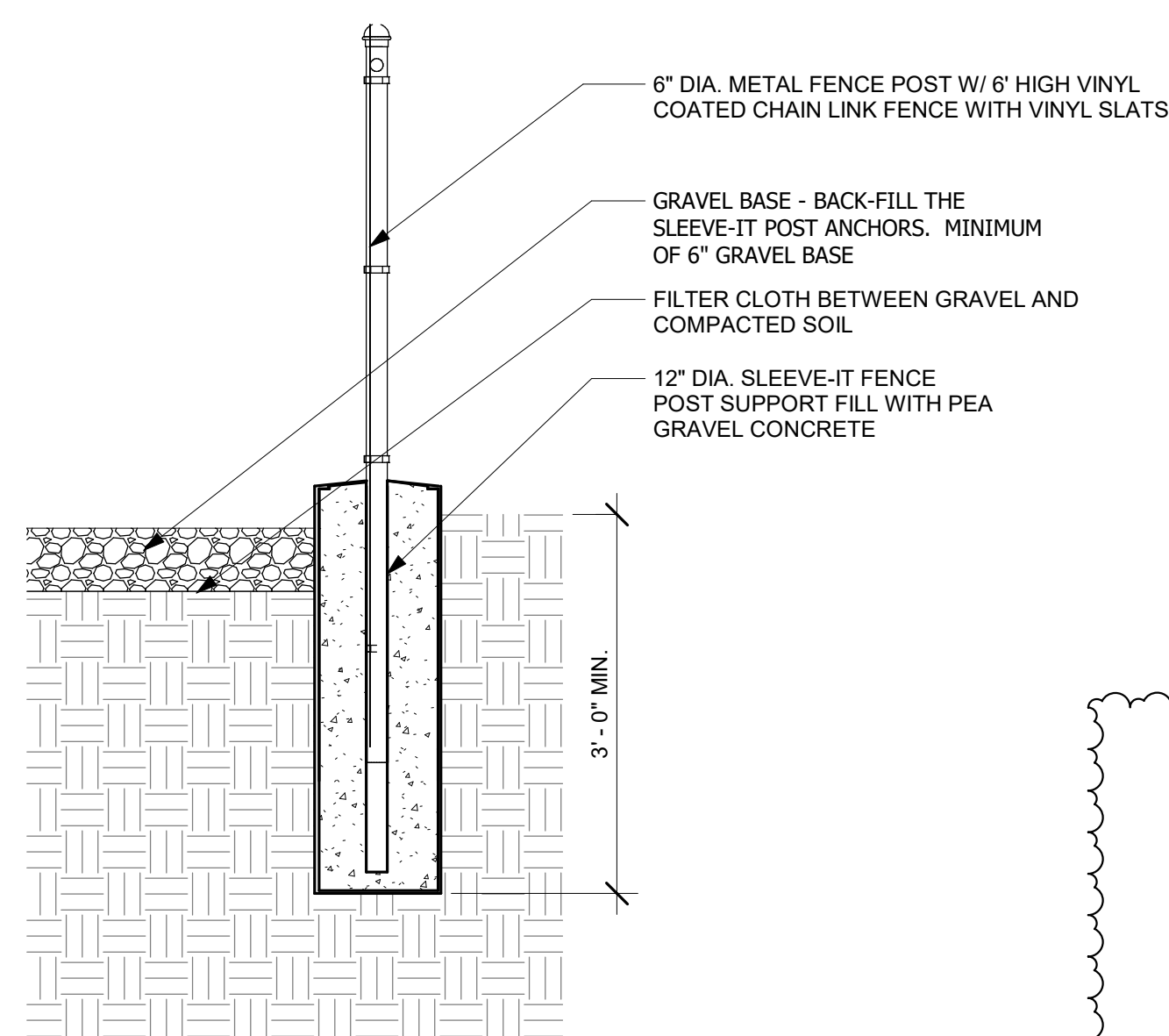
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3/4" = 1'-0"



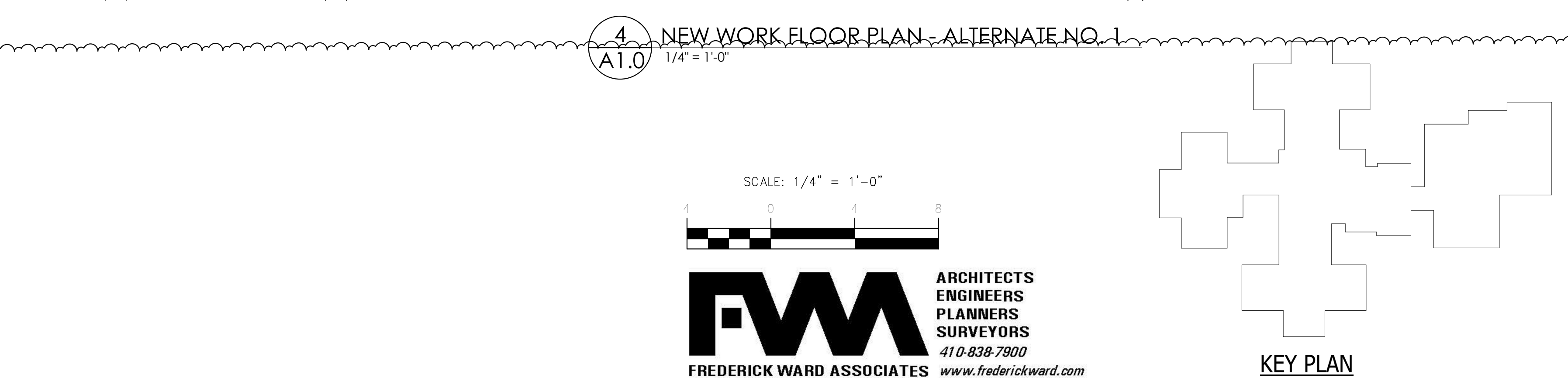
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TYPICAL TURN DOWN SLAB DETAIL - ALTERNATE NO. 1  
1/2" = 1'-0"



4  
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NEW WORK FLOOR PLAN - ALTERNATE NO. 1  
1/4" = 1'-0"



7  
A1.0  
TYPICAL 6' FENCE SECTION DETAIL  
3/4" = 1'-0"



SCALE: 1/4" = 1'-0"

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KEY PLAN  
N.T.S.

NO.	DATE	DESCRIPTION
1	02/24/2020	Addendum No. 2

PROFESSIONAL CERTIFICATION  
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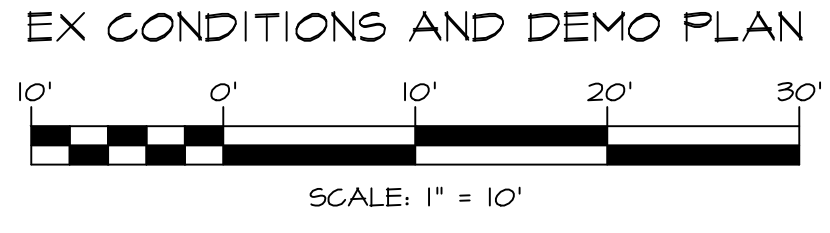
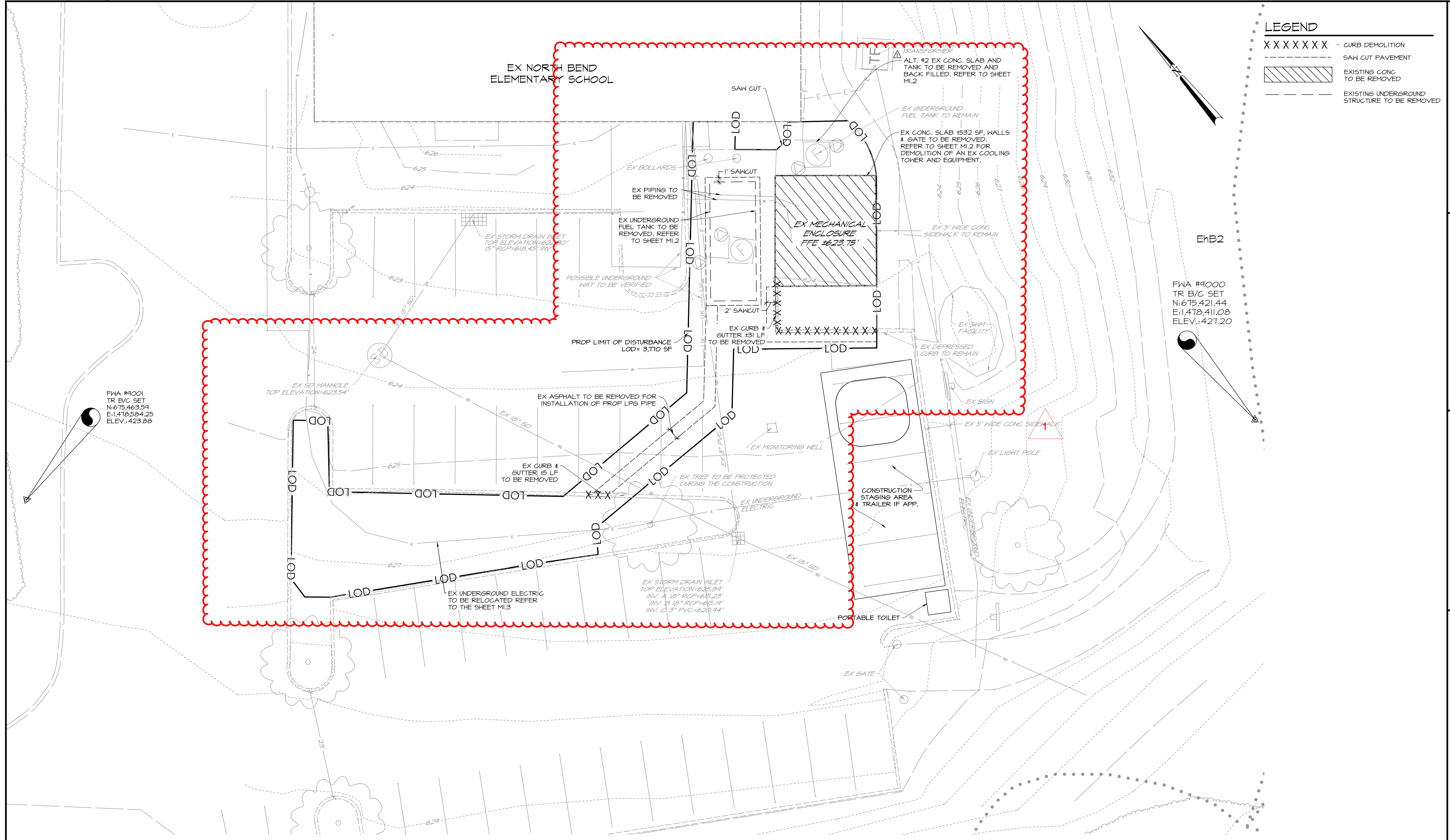
**Gipe Associates Inc.**  
Consulting Engineers  
1915 Brooke Drive  
Suite 205  
Baltimore, Maryland 21086  
Tel: 410/822-9100  
Fax: 410/822-9196

WO# 19072  
PROJECT MANAGER: BAM  
DESIGNER: DBW  
DATE: 01/31/20

EQUIPMENT COURTYARD - NEW WORK  
HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL  
GENERAL PLANT/FIRE ALARM REPLACEMENT  
1445 N. BEND RD., JARRETTSVILLE, MARYLAND 21084

A1.0

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**LEGEND**

XXXXXXXX	CURB DEMOLITION
XXXXXX	SAW CUT PAVEMENT
[Hatched Box]	EXISTING CONC TO BE REMOVED
---	EXISTING UNDERGROUND STRUCTURE TO BE REMOVED

REV#	DATE	DESCRIPTION
1	2/24/20	Addendum No. 2

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**EX. CONDITION & DEMOLITION PLAN**

**NORTH BEND  
ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE  
ALARM REPLACEMENT**

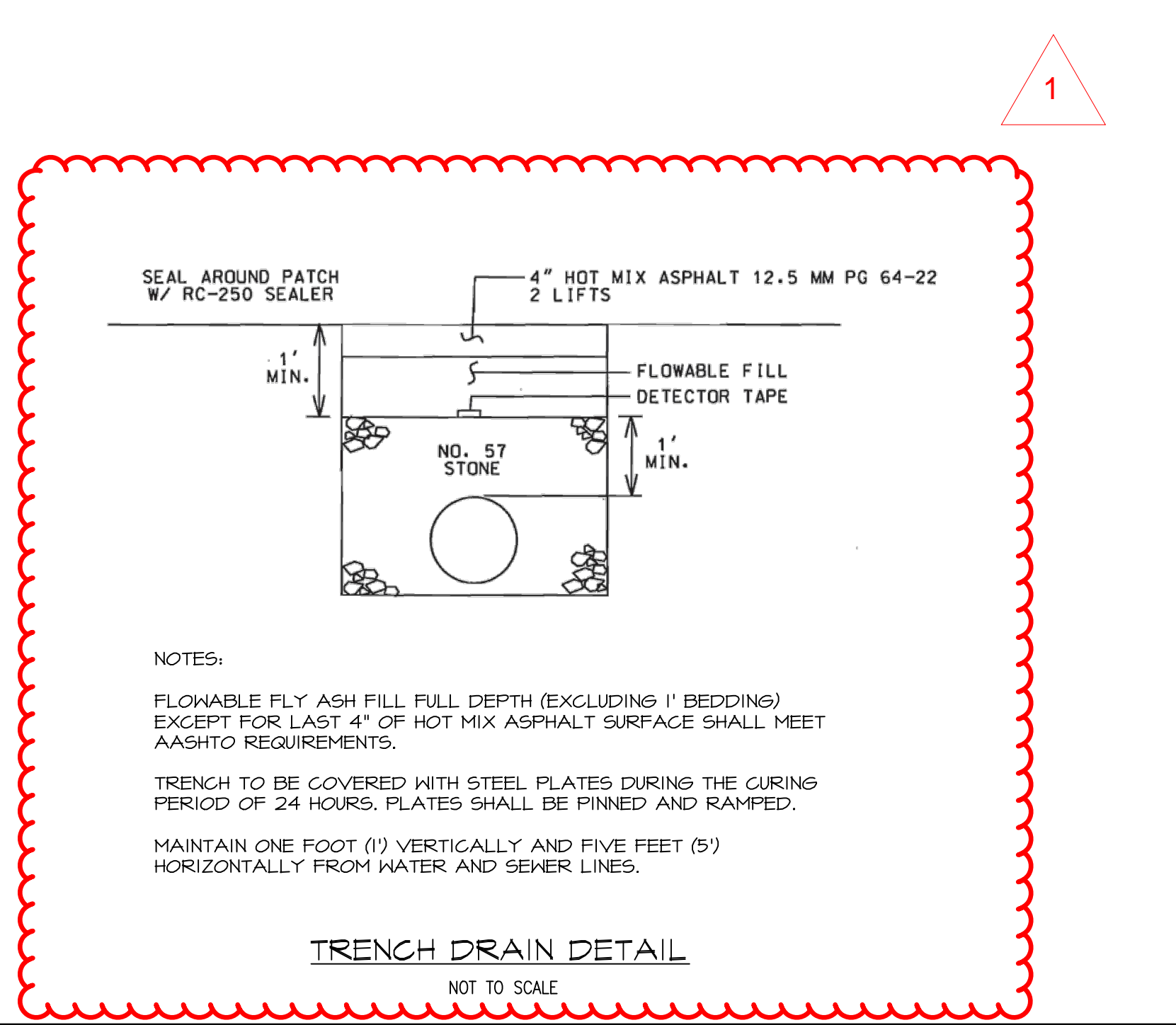
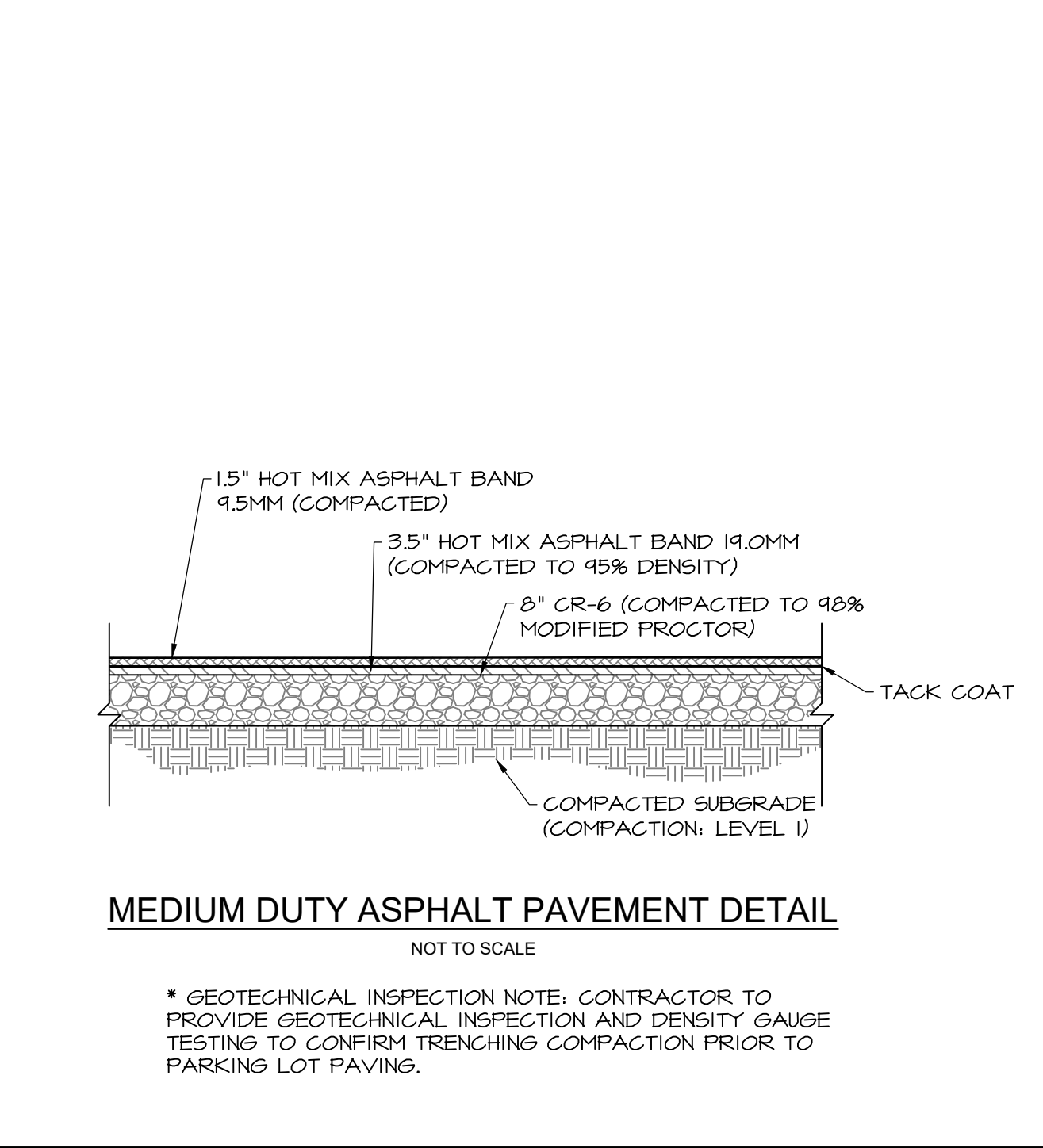
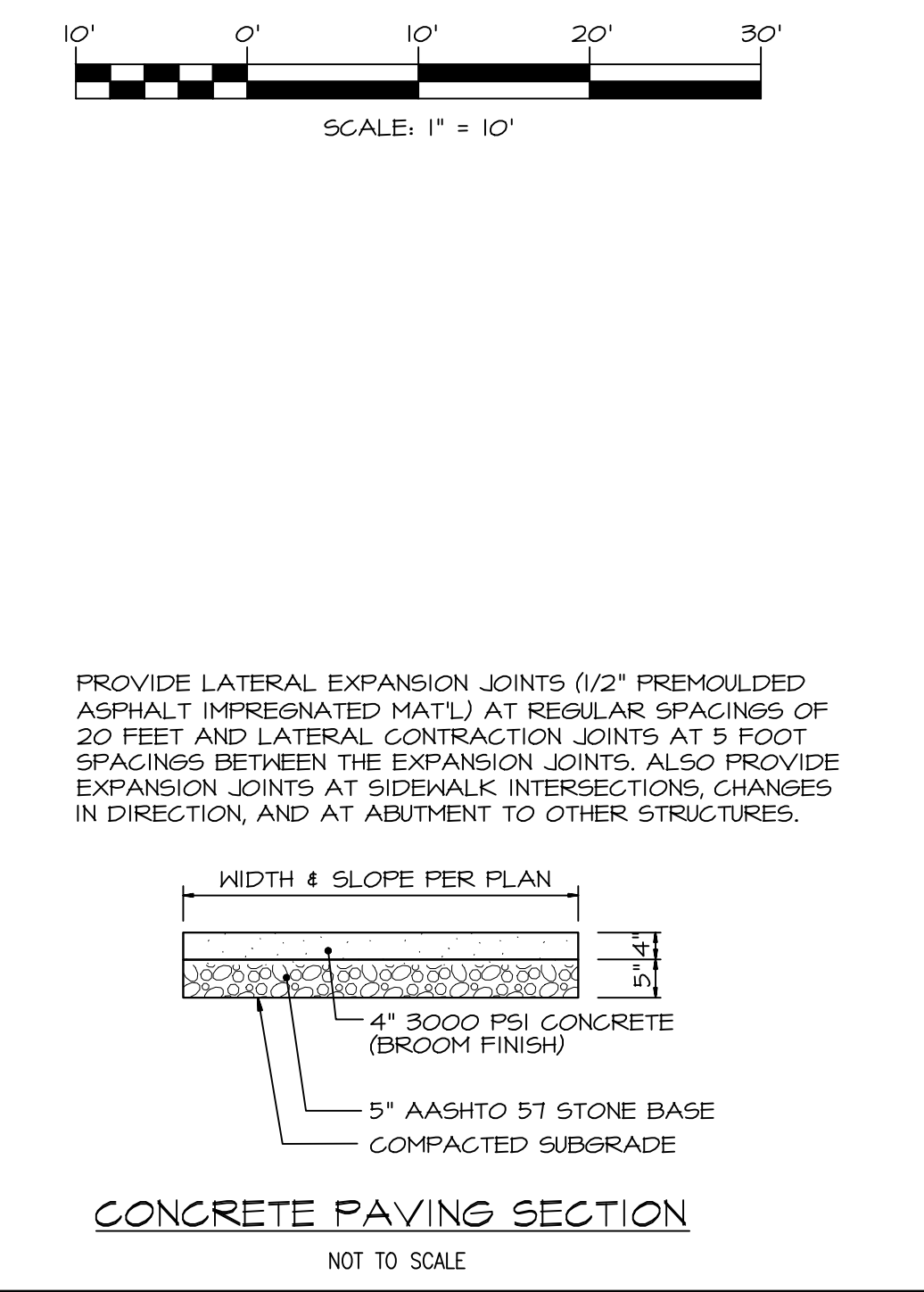
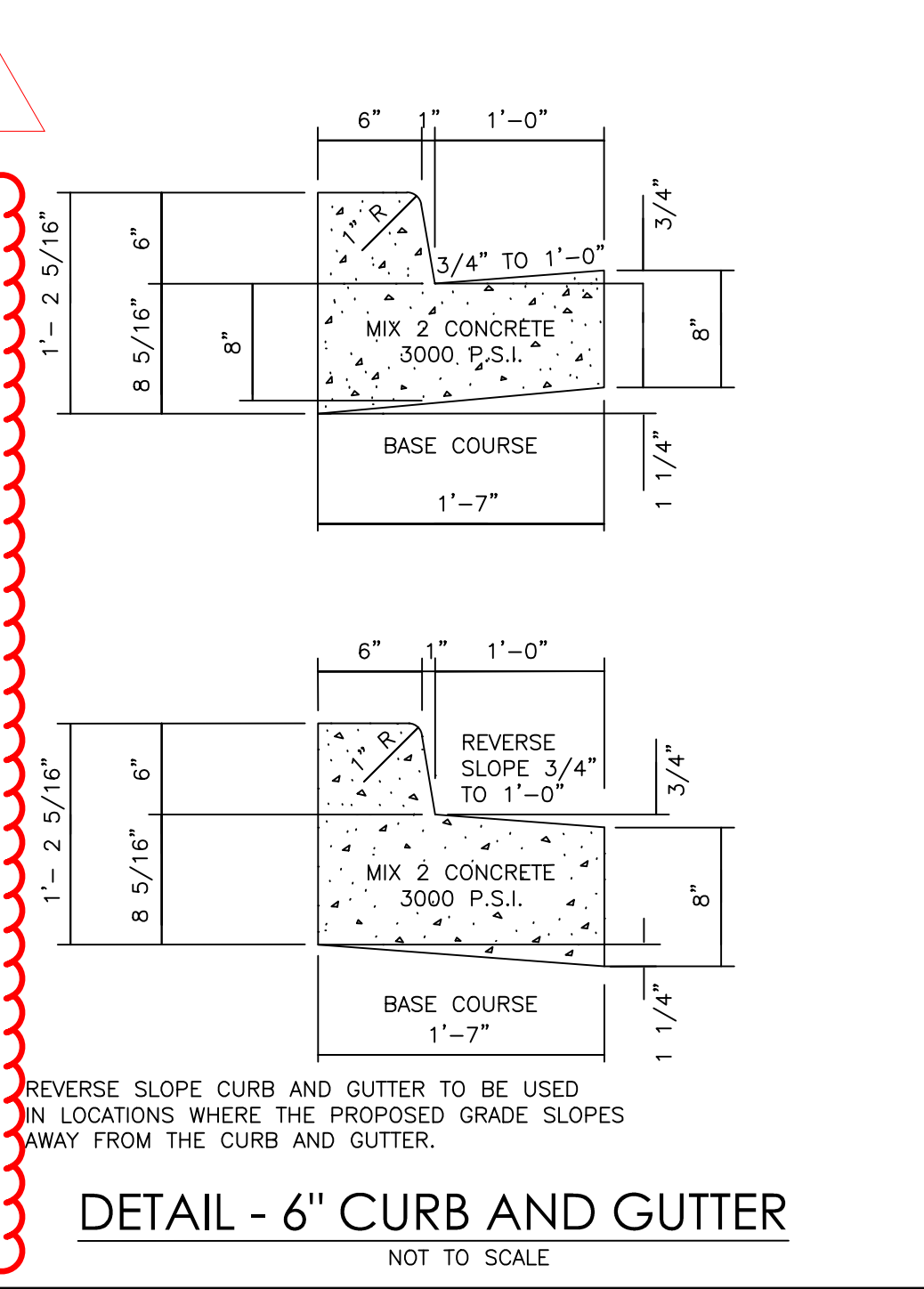
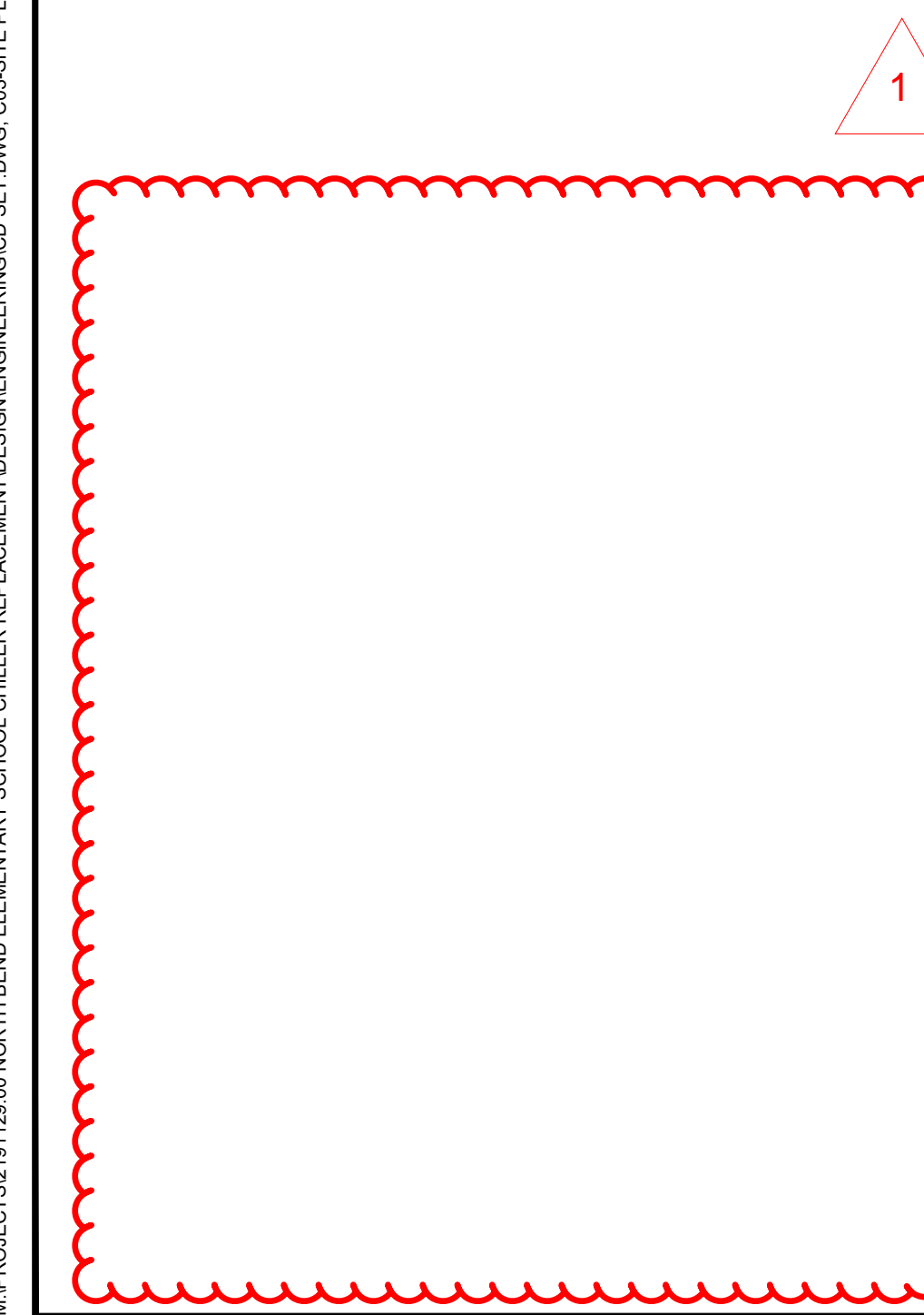
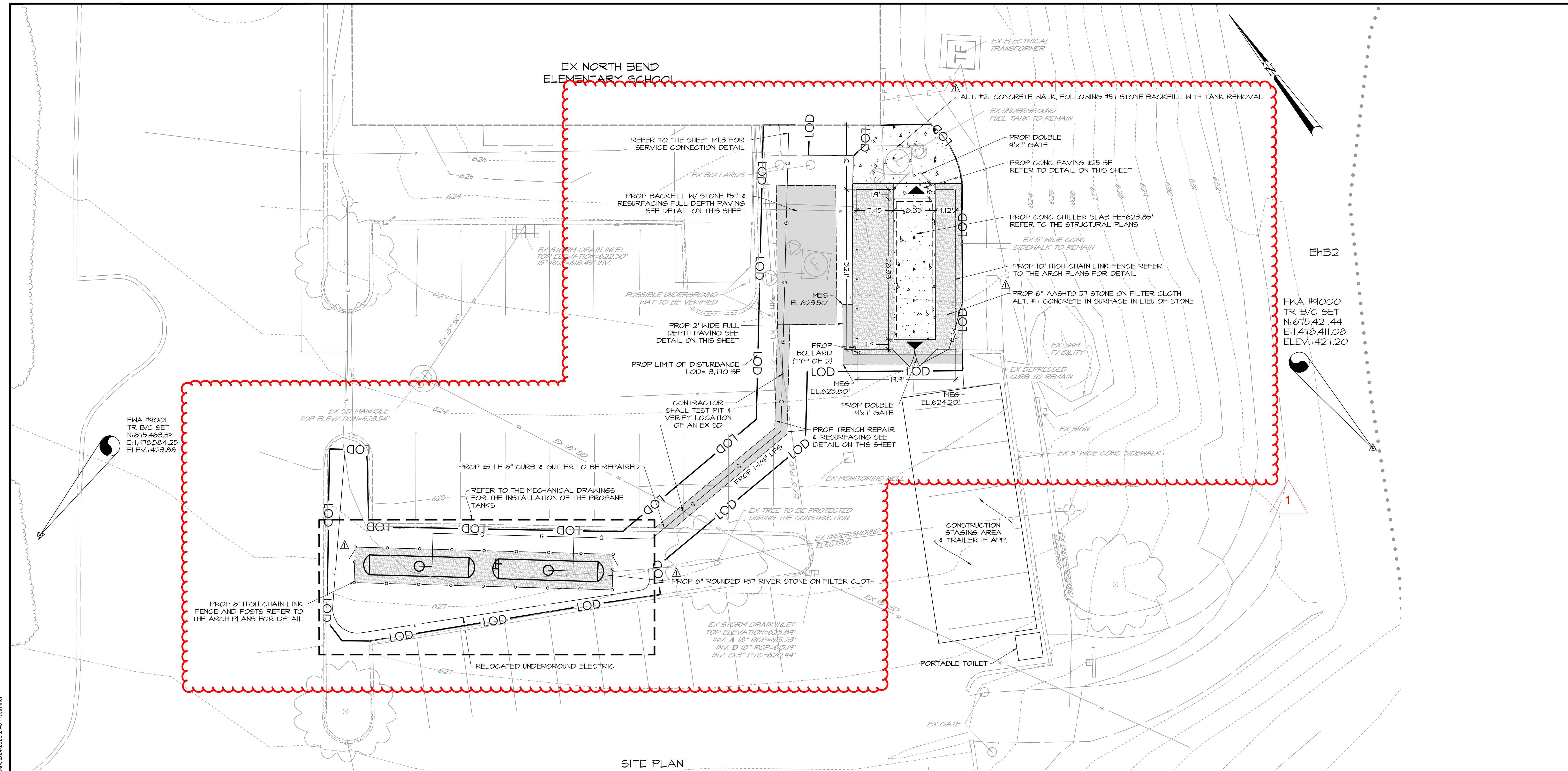
HARFORD COUNTY  
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DATE:	01/31/2020
SCALE:	1" = 10'
DESIGNED BY:	VV
DRAWN BY:	VV
CHECKED BY:	TMM

DRAWING NO:	<b>C0.2</b>
SHEET	2 OF 4
FWA JOB NUMBER:	2191129.00

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REVW	2/24/20	Addendum No. 2

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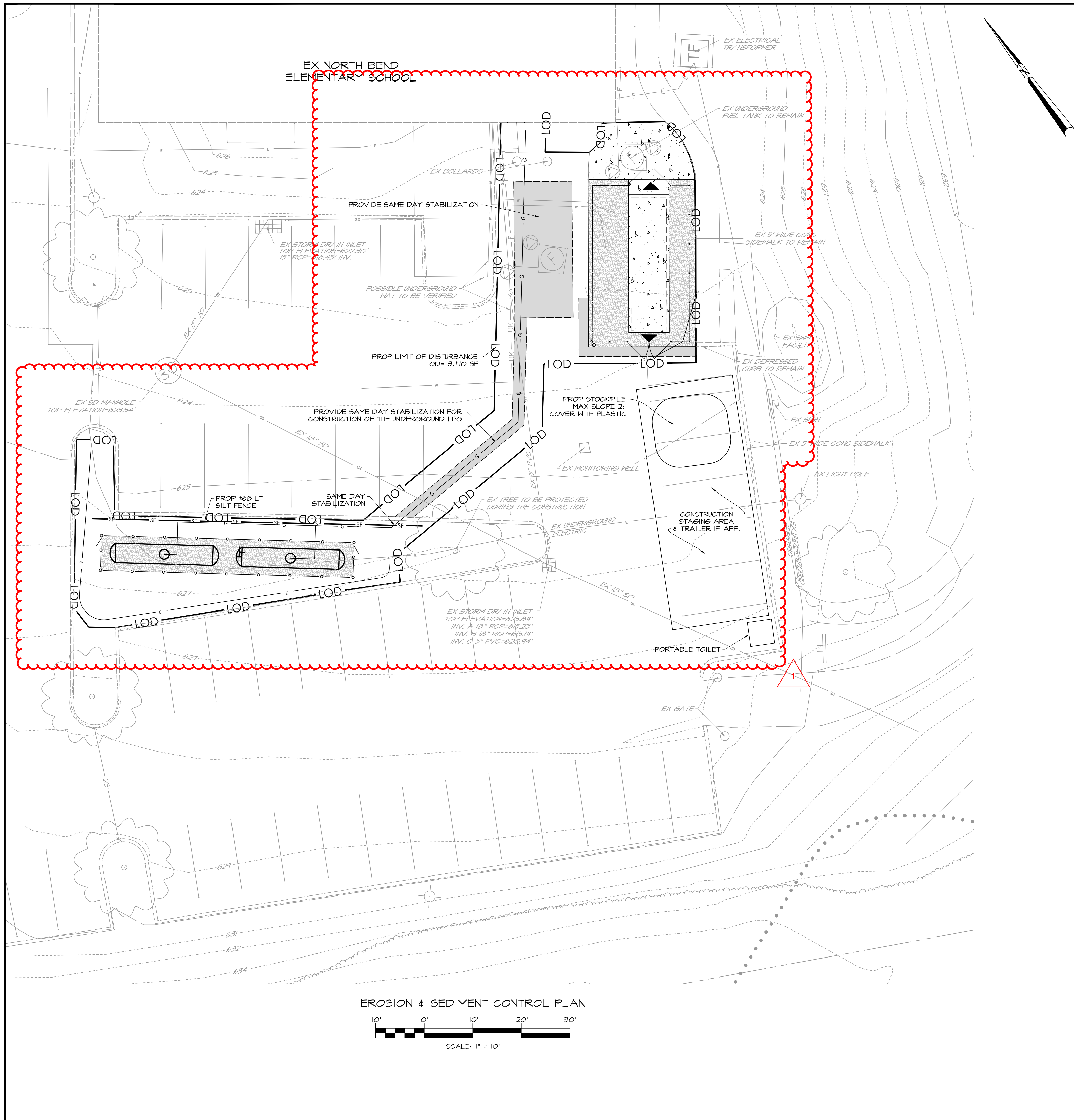
**SITE PLAN & DETAILS**  
**NORTH BEND  
ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE  
ALARM REPLACEMENT**  
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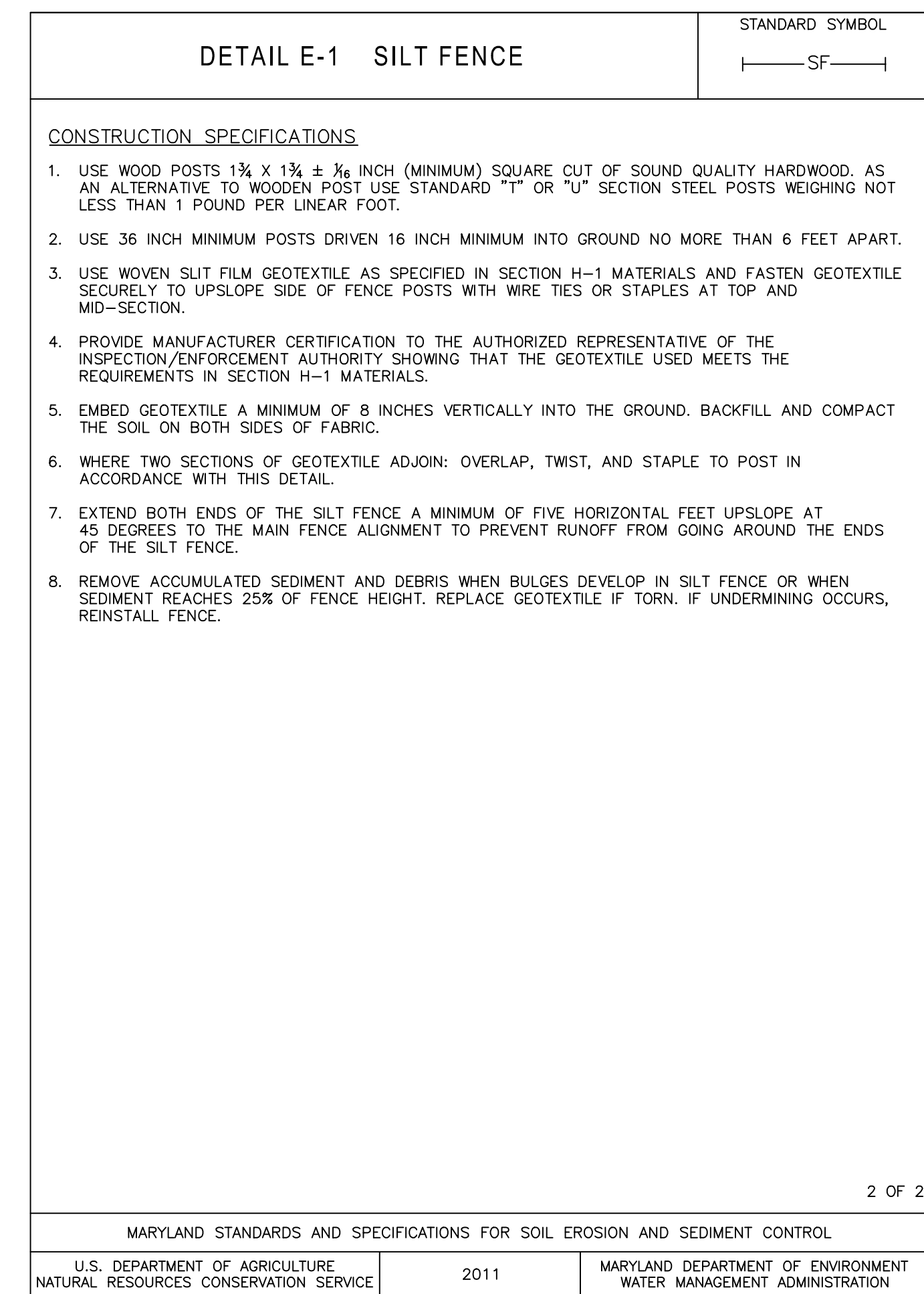
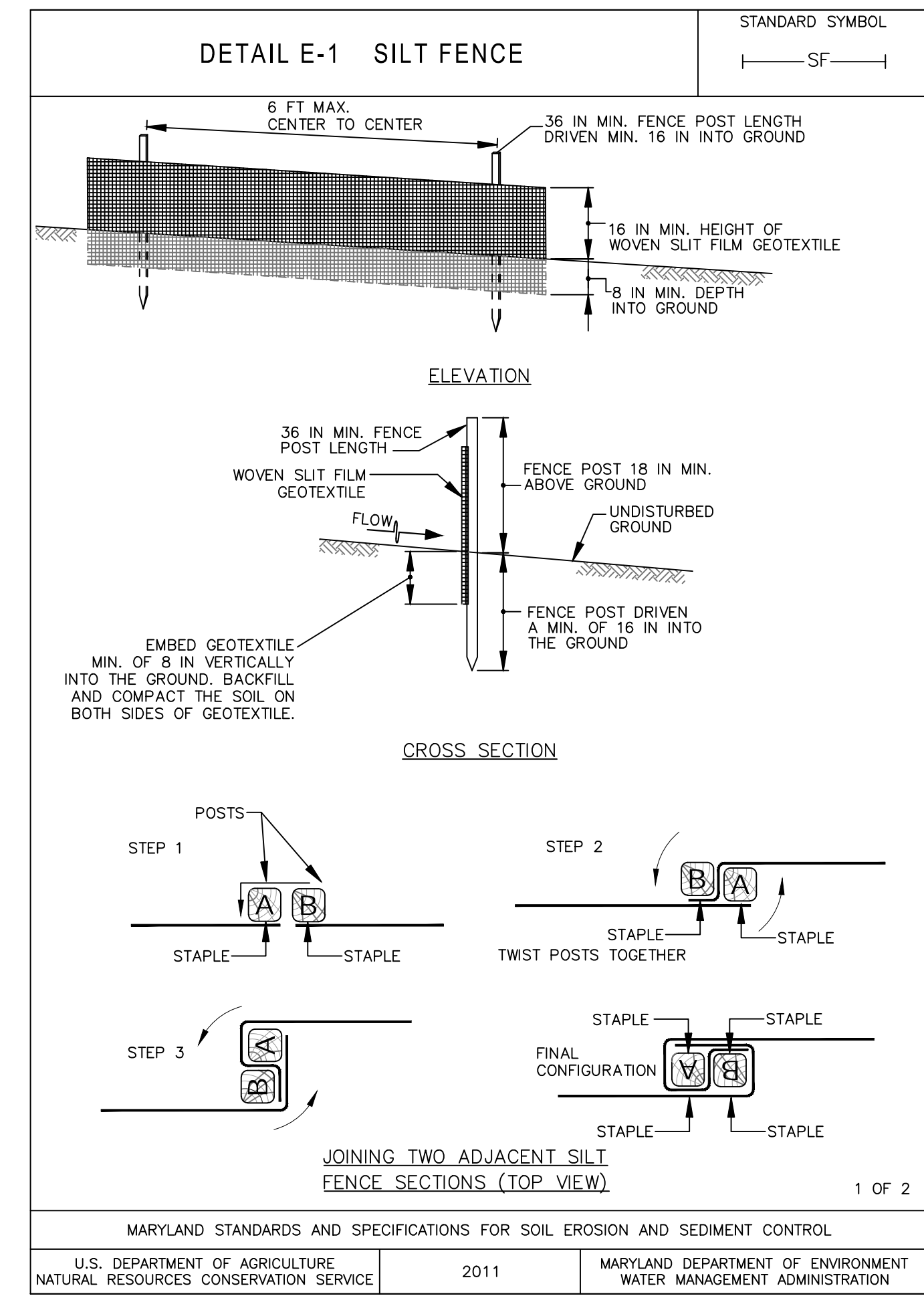
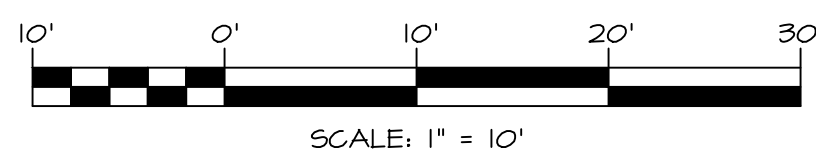
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SHEET 3 OF 4  
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EROSION & SEDIMENT CONTROL PLAN



REVISIONS	DATE	DESCRIPTION
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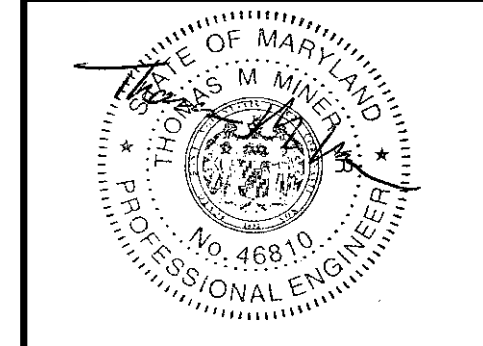
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EROSION & SEDIMENT CONTROL PLAN

NORTH BEND  
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ALARM REPLACEMENT

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FWA JOB NUMBER:	2191129.00

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GENERAL MECHANICAL LEGEND

Table with 2 columns: SYMBOL and DEFINITION. Includes symbols for diameter, connection to existing, demolition ends here, drawing note designation, and section number.

MECHANICAL DUCTWORK LEGEND

Table with 2 columns: SYMBOL and DEFINITION. Includes symbols for supply air duct up/down, return air duct up/down, exhaust air duct up/down, outside air duct up/down, duct to round transition, flexible connection, elbow/wrapping vanes, radius elbow, acoustic sound lining, duct transition, and change in elevation (rise/run, drop/run).

MECHANICAL PIPING LEGEND

Table with 2 columns: SYMBOL and DEFINITION. Includes symbols for chilled water supply/return, coil water, heating supply/return, dual temperature water supply/return, condenser water supply/return, condenser drain line, non-potable water, refrigerant liquid, refrigerant suction, refrigerant down, refrigerant up, pipe drop into, pipe tap into bottom, 2-line pipe down/up, solenoid valve, end cap, direction of flow, gate valve, globe valve, ball valve, balancing valve, multi-port/stop valve, check valve, butterfly valve, 3-way modulating valve (ATC), 2-way modulating valve (ATC), pressure reducing valve, needle valve, pressure relief or safety valve, strainer whose end drain valve & cap, automatic air vent, flow meter fitting, combination shut-off/balancing valve, union, concentric reducer, eccentric reducer, flexible connection (piping), manual air vent, thermometer, pressure gauge/wire/weld valve, automatic flow control valve, differential pressure transmitter, and motor operated damper.

MECHANICAL ABBREVIATIONS

Table with 2 columns: ABBREVI and DESCRIPTION. Lists abbreviations for A/C units, air conditioning unit, building automation system, compressor, cold water, duct to existing, damper/door/door/frame/drainage/drainage, down, differential pressure sensor, dual temperature water supply/return, emergency shutoff switch, expansion tank, existing to remain, entering water temperature, expansion, expansion tank/frame/pressure/pressure/pressure, fluid, fluid long amps, flow switch, feet/foot, gal, gallon, galvanize, galvanized, gas, gas per hour, gas per minute, head, hca, hand-off-automatic switch, hp, high pressure/horsepower, htg, heating, venting, and air conditioning, hvac, hot water, hwr, hot water return, hv, heating, heated part load valve, hv, kilowatt, lft, leaving fluid temperature, lba, locked rotor amps, lvt, leaving water temperature, max, maximum, mca, minimum circuit amps, mca, minimum amp, mca, minimum amp, misc, miscellaneous, mop, motor-operated damper, month, normally open/closed, not to scale, not to show, open-end duct, oep, operating pressure/pressure, p, phase, phc, preheat coil, psi, pressure/pounds per square inch, rpm, room, r, remove existing, s, start/stop/drainage/drainage/drainage, t, variable speed drive, v, variable speed drive, w/c, water closet/water column/wheelchair accessible, w/pd, water pressure drop, and xmfr, transformer.

GENERAL NOTES

- 1. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL STATE, COUNTY AND LOCAL CODES, REGULATIONS AND ORDINANCES. MATERIAL, EQUIPMENT, INSTALLATION, AND PROCEDURES SHALL BE IN STRICT ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF THE LATEST CURRENT EDITION OF THE REFERENCED DOCUMENTATION.
2. CONTRACTORS SHALL BE RESPONSIBLE TO VERIFY AND FAMILIARIZE THEMSELVES WITH ACTUAL FIELD CONDITIONS ASSOCIATED WITH WORK UNDER THIS CONTRACT PRIOR TO SUBMITTING THEIR BID.
3. THE LOCATION OF ALL EXISTING UNDERGROUND UTILITIES IS SHOWN IN AN APPROXIMATE WAY ONLY. DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK. REPAIR ALL DAMAGES OCCURRED BY FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.
4. ELEVATIONS NOTED ARE TO CENTER LINES OF PIPES FOR ALL PRESSURE LINES AND TO INVERT FOR ALL GRAVITY FLOW LINES.
5. MAINTAIN MINIMUM OF 3'-0" COVER OVER UNDERGROUND WATER MAINS.
6. PROVIDE SHUT-OFF VALVES IN BRANCH WATER PIPES SERVING TWO OR MORE PIECES OF EQUIPMENT.
7. PROVIDE AIR AIR VENT AT THE HIGH POINT OF EACH DROP IN THE HEATING WATER, CHILLED WATER, DUAL TEMPERATURE WATER SYSTEMS.
8. UNLESS OTHERWISE NOTED, ALL PIPING AND DUCTWORK IS OVERHEAD, TIGHT TO UNDERSIDE OF SLAB AND STRUCTURE, WITH SPACE FOR INSULATION, IF REQUIRED.
9. INSTALL PIPING SO THAT ALL VALVES ARE ACCESSIBLE.
10. COORDINATE ALL MECHANICAL WORK WITH OTHER TRADES INCLUDING BUT NOT LIMITED TO PLUMBING WORK, FIRE PROTECTION WORK, ELECTRICAL, STRUCTURAL, AND ARCHITECTURAL WORK ETC., SHOWN ON OTHER DRAWINGS.
11. MAINTAIN MINIMUM 6'-0" CLEARANCE TO UNDERSIDE OF PIPES, DUCTS, CONDUIT, SUSPENDED EQUIPMENT, ETC., THROUGHOUT ACCESS ROUTES IN MECHANICAL AND ELECTRICAL ROOMS.
12. CERTAIN ITEMS SUCH AS RISERS AND RISERS IN PIPING, ETC., ARE INDICATED ON THE DRAWINGS FOR CLARITY OR A SPECIFIC LOCATION REQUIREMENT AND SHALL NOT BE INTERFERED AS THE EXTENT OF THE REQUIREMENTS FOR THOSE ITEMS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THESE ITEMS AS REQUIRED ELSEWHERE IN THE CONTRACT DOCUMENTS.
13. EQUIPMENT CONNECTION SIZES MAY DIFFER FROM INDICATED PIPE SIZES. PROVIDE APPROPRIATE TRANSITIONS WHERE REQUIRED.
14. THE DRAWINGS ARE DIAGNOSTIC AND ALL OFFSETS, FITTINGS, TRANSITIONS AND ACCESSORIES ARE NOT NECESSARILY SHOWN. COORDINATE THE INSTALLATION OF ALL PIPING, EQUIPMENT AND OTHER WORK WITH ALL OTHER TRADES.
15. IT IS THE INTENT THAT ALL WORK SHALL BE COMPLETE IN EVERY RESPECT AND THAT MATERIAL OR WORK SPECIFICALLY NOT INDICATED ON THE DRAWINGS, BUT NECESSARY TO COMPLETE THE WORK, SHALL BE PROVIDED.
16. ALL AUTOMATIC TEMPERATURE CONTROL SETPOINTS SHALL BE ADJUSTABLE.
17. PROVIDE A MINIMUM OF 36-INCHES OF CLEARANCE TO ALL EQUIPMENT AT THE ELECTRICAL COMPONENT LOCATIONS.
18. PROVIDE DIRT POCKET AT EACH DROP IN GAS PIPING. DO NOT PROVIDE DIRT POCKETS WHERE PIPE IS SUBJECT TO FREEZING.
19. CONTRACTOR IS PROHIBITED FROM ATTACHING TO THE ROOF DECK AND LOWER CHORD OF JOISTS AS A SUPPORT SYSTEM FOR DEVICES AND BUILDING SYSTEMS.
20. CONTRACTOR SHALL REPAIR ALL PENETRATION HOLES IN WALLS, FLOORS, CEILINGS AND ROOF AS A RESULT OF DEMOLITION WORK. REPAIRS SHALL MATCH ADJACENT CONSTRUCTION.
21. ALL PIPE PENETRATIONS IN EXPOSED AREAS SHALL HAVE ESCUTCHEON PLATES.
22. PROVIDE ALL NECESSARY COMPONENTS FOR U.L. LISTED THROUGH PENETRATION SYSTEM AT RATED FLOORS, CEILING AND WALL PENETRATIONS IN ORDER TO MAINTAIN THE REQUIRED ASSEMBLY RATING. REFER TO ARCHITECTURAL DRAWINGS FOR RATED ASSEMBLY LOCATIONS AND CONSTRUCTION.
23. REFRIGERANTS SHALL BE RECOVERED FROM ALL REFRIGERATION EQUIPMENT IN ACCORDANCE WITH ARI AND EPA STANDARDS. RECOVERED REFRIGERANT SHALL BE PLACED IN APPROVED CONTAINERS LABELED IN ACCORDANCE WITH ARI AND EPA STANDARDS AND TURNED OVER TO THE OWNER.
24. THE EXISTING ROOF IS UNDER WARRANTY. THE ROOF IS WARRANTED BY SEAMAN CORPORATION. COORDINATE ALL PROPOSED WORK WITH SEAMAN CORPORATION PRIOR TO PERFORMING ANY WORK. WARRANTY SERIAL NUMBER: 20110778, EXPIRATION DATE 2021.
25. ALTERNATE NO. 3: PROVIDE A TEMPORARY 150 TON AIR-COOLED CHILLER WITH TEMPORARY TIE-INS TO THE EXISTING CHILLED WATER SYSTEM FOR A NINETY DAY OPERATIONAL PERIOD STARTING ONCE THE SCHOOL YEAR ENDS IN JUNE 2019. CONTRACTOR SHALL PROVIDE THE MESSARY ELECTRICAL POWER AND CONTROLS FROM THE EXISTING SYSTEM. CONTRACTOR SHALL USE ONE OF THE DRAWN CHILLED WATER PUMPS OR ON-OF-THE COMPENSER WATER PUMPS, STATED FOR DEMOLITION, TO DISTRIBUTE THE CHILLED WATER.

Gipe Associates Inc. Consulting Engineers. 1220 East Zappa Road, Suite 202, Towson, MD, 21286. Phone: 410/832-2420. Fax: 410/832-2418. 8719 Brooke Drive, Suite 202, Easton, Maryland 21601. Phone: 410/832-8668. Fax: 410/832-6396.

PROJECT: HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL CENTRAL PLANT/FIRE ALARM REPLACEMENT 1445 N. BEND RD. JARRETTSVILLE, MARYLAND 21084. PROJECT NUMBER: SED. DESIGNER: SED. DATE: 01/31/2020. WOF# 19072.

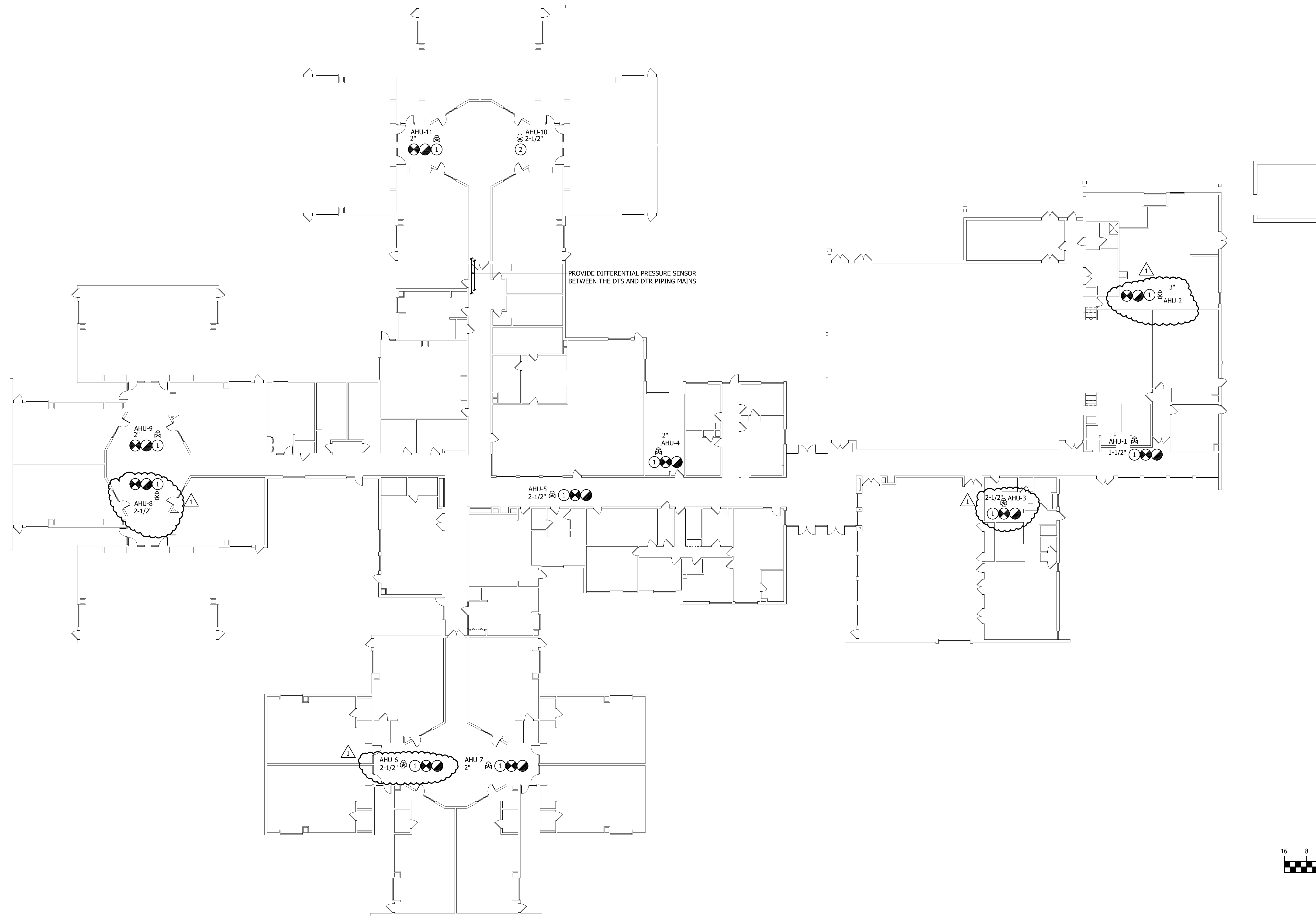


**GENERAL NOTES**

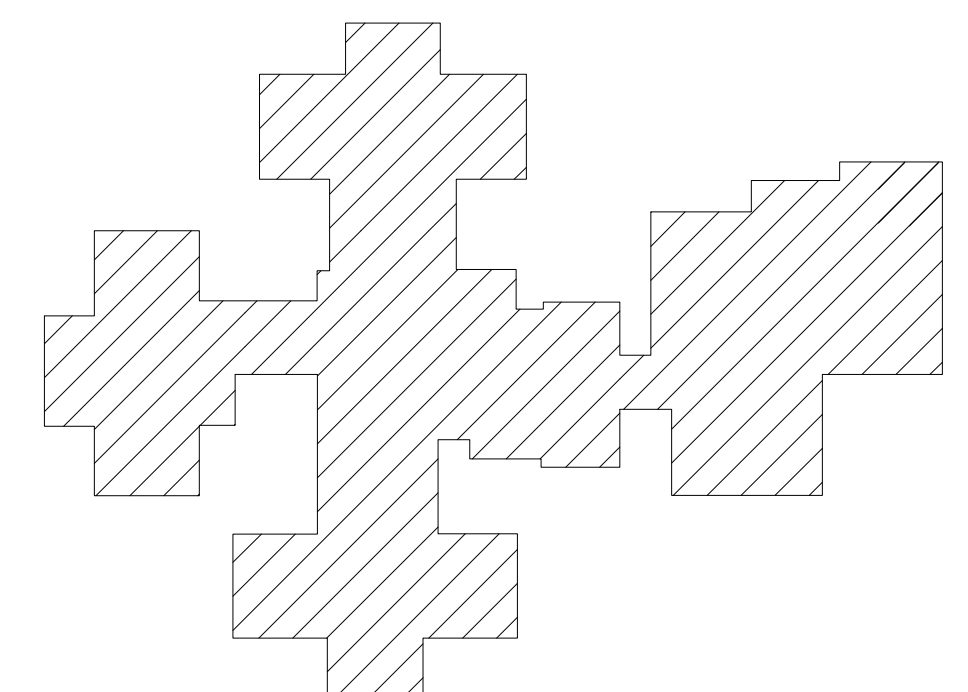
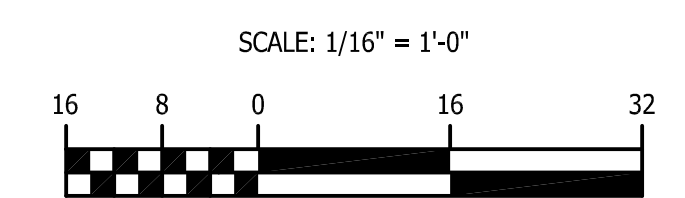
1. EX INDICATED IN THIN/LIGHT LINE WEIGHT.
2. DEMOLITION AND NEW WORK INDICATED IN THICKER/DARK LINE WEIGHT.

**DRAWING NOTES**

- ① RX 3-WAY CONTROL VALVE SERVICING THE AIR HANDLING UNIT COIL. PROVIDE NEW 2-WAY CONTROL VALVE FOR COIL. CAP THE EXISTING BYPASS PIPE.
- ② EX 3-WAY CONTROL VALVE SERVICING THE AIR HANDLING UNIT COIL SHALL REMAIN EXISTING FOR MINIMUM PUMP FLOW.



**FIRST FLOOR PLAN - MECHANICAL DEMOLITION AND NEW WORK**  
SCALE: 1/16" = 1'-0"



**KEY PLAN**  
N.T.S.

NO.	DATE	DESCRIPTION
1	2/24/20	ADDENDUM NO.2



PROFESSIONAL CERTIFICATION:  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND, LICENSE No. 20198, EXPIRATION DATE: 09/28/2021.

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WO# 19072

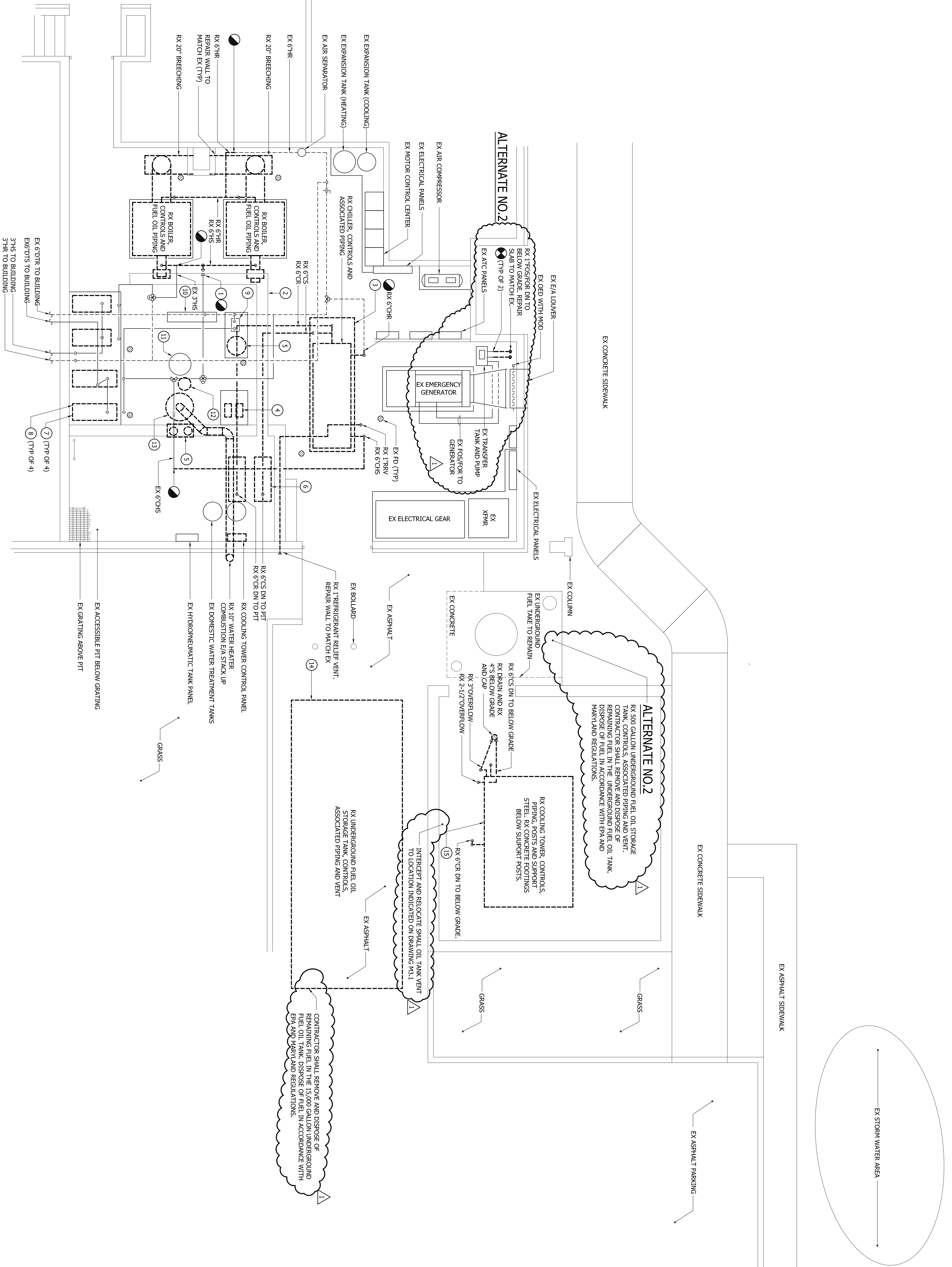
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DESIGNER SED

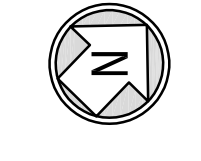
DATE 01/31/2020

**FIRST FLOOR PLAN - MECHANICAL DEMOLITION AND NEW WORK**  
HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE ALARM REPLACEMENT  
1445 N. BEND RD., JARRETSVILLE, MARYLAND 21084

**M1.1**



MECHANICAL ROOM AND EQUIPMENT COURTYARD  
 MECHANICAL - DEMOLITION  
 SCALE: 1/4" = 1'-0"

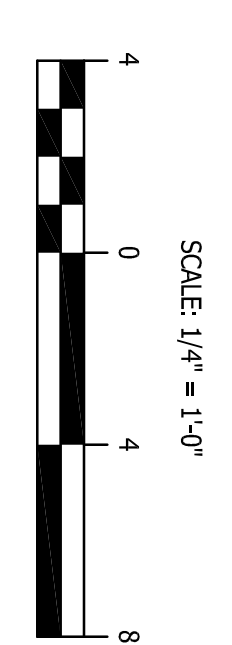


**GENERAL NOTES**

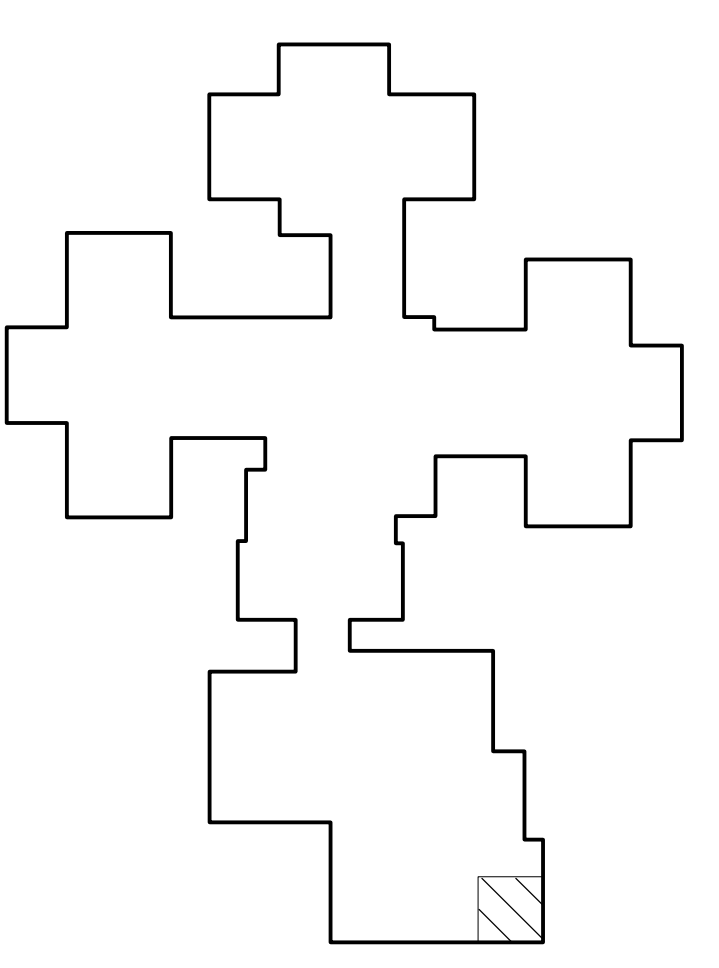
1. EX HIGHLIGHTED IN THIN LIGHT LINE WEIGHT
2. DEMOLITION WORK INDICATED IN THICK DARK LINE WEIGHT

**DRAWING NOTES**

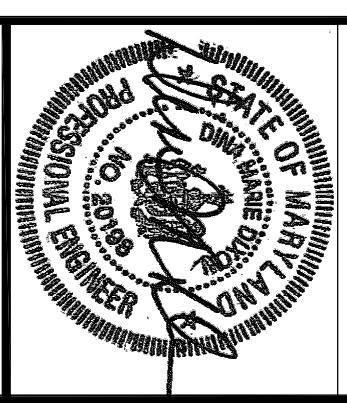
1. EX ELBOW CONNECTION TO HEADER AND VALVE
2. EX DIAMOND PLATE TRENCH COVER, EX FUEL OIL BURNERS, EX FUEL OIL BURNERS AND THE WATER HEATER BURNER, EX HOUSEKEEPING PAD, REPAIR FLOOR TO MATCH ADJACENT FINISHED FLOOR.
3. EX FUEL OIL PUMP SET, CONTROLS AND ASSOCIATED PIPING TO THE BOILERS AND WATER BETWEEN ALL EQUIPMENT.
4. EX COOLING TOWER CHEMICAL TREATMENT EQUIPMENT AND ASSOCIATED PIPING
5. EX CONDENSER WATER PUMPS IN PIT, CONTROLS AND ASSOCIATED PIPING.
6. EX PUMP CONTROLS, PIPING AND VALVES, REFER TO DRAWING M&E FOR ADDITIONAL INFORMATION FOR EXTENT OF REMOVAL.
7. ONCE PUMP MOTORS ARE DISCONNECTED THE CONTRACTOR SHALL CONTACT HOPS IN ORDER FOR THEM TO EVALUATE THE MOTOR FOR RELOCATION. CONTRACTOR SHALL REMOVE MOTORS AND PLACE ON A PALLET, TAG THE MOTORS WITH HP, VOLTAGE AND SHINK WARD THE MOTORS AND PALLETS AND DELIVER TO LOCATION REQUESTED BY HOPS.
8. EX CHEMICAL SHOT FEEDER.
9. EX DOMESTIC WATER TEMPERING ASSEMBLY
10. EX DOMESTIC WATER STORAGE TANK
11. EX DOMESTIC WATER TANK
12. EX DOMESTIC WATER EXPANSION TANK AND RELOCATE TO LOCATION INDICATED ON DRAWING M&E.
13. EX DOMESTIC WATER HEATER, COMBUSTION GAS AND HW AS REQUIRED TO INSTALL NEW WATER HEATER.
14. EX FUEL OIL PIPING FROM UNDERGROUND FUEL OIL TANK TO THE FUEL OIL PUMP SET.
15. EX FCS AND CR BELOW GRADE TO THE CONDENSER WATER PUMPS IN THE PIT.



**KEY PLAN**  
 N.T.S.



REVISIONS		
NO.	DATE	DESCRIPTION
1	2/24/20	ADDENDUM NO.2



PROFESSIONAL CERTIFICATION  
 THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND I AM A DULY LICENSED PROFESSIONAL ENGINEER OF THE STATE OF MARYLAND. My License No. is 09/28/2021.

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WO# 19072	PROJECT SED
DESIGNER SED	DATE 01/31/2020

MECHANICAL ROOM AND EQUIPMENT COURTYARD  
 MECHANICAL DEMOLITION  
 HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL  
 CENTRAL PLANT/FIRE ALARM REPLACEMENT  
 1445 N. BEND RD. JARRETTSVILLE, MARYLAND 21084

**M1.2**

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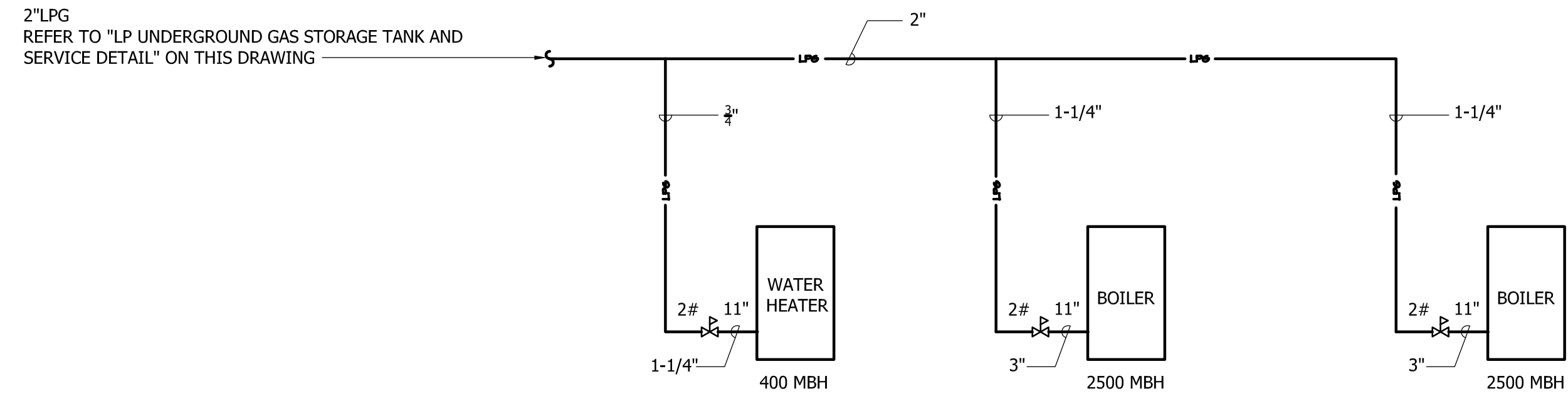
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DESIGNER SED

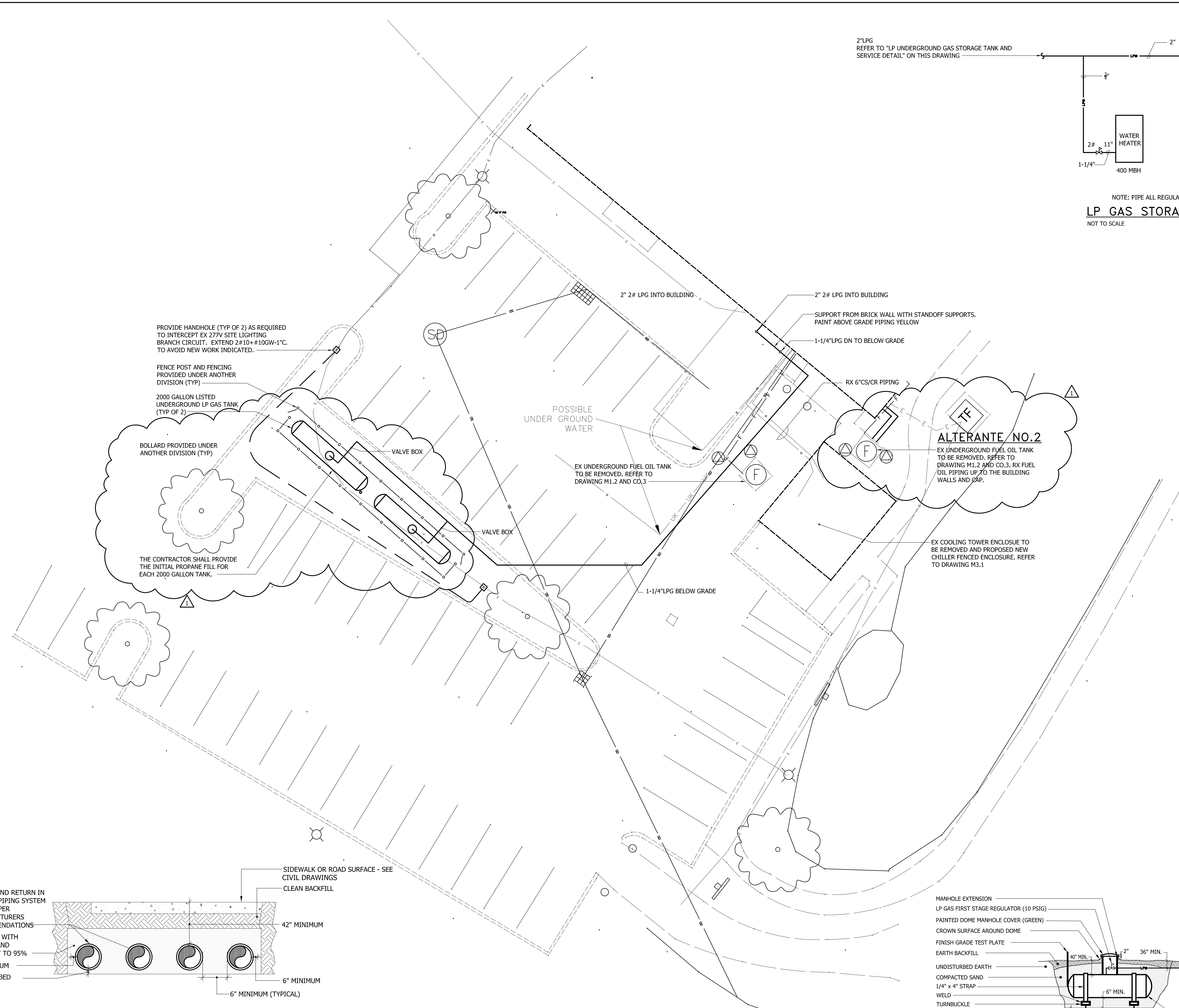
DATE 01/31/2020

**MECHANICAL SITE PLAN**  
HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE ALARM REPLACEMENT  
1445 N. BEND RD., JARRETTSVILLE, MARYLAND 21084

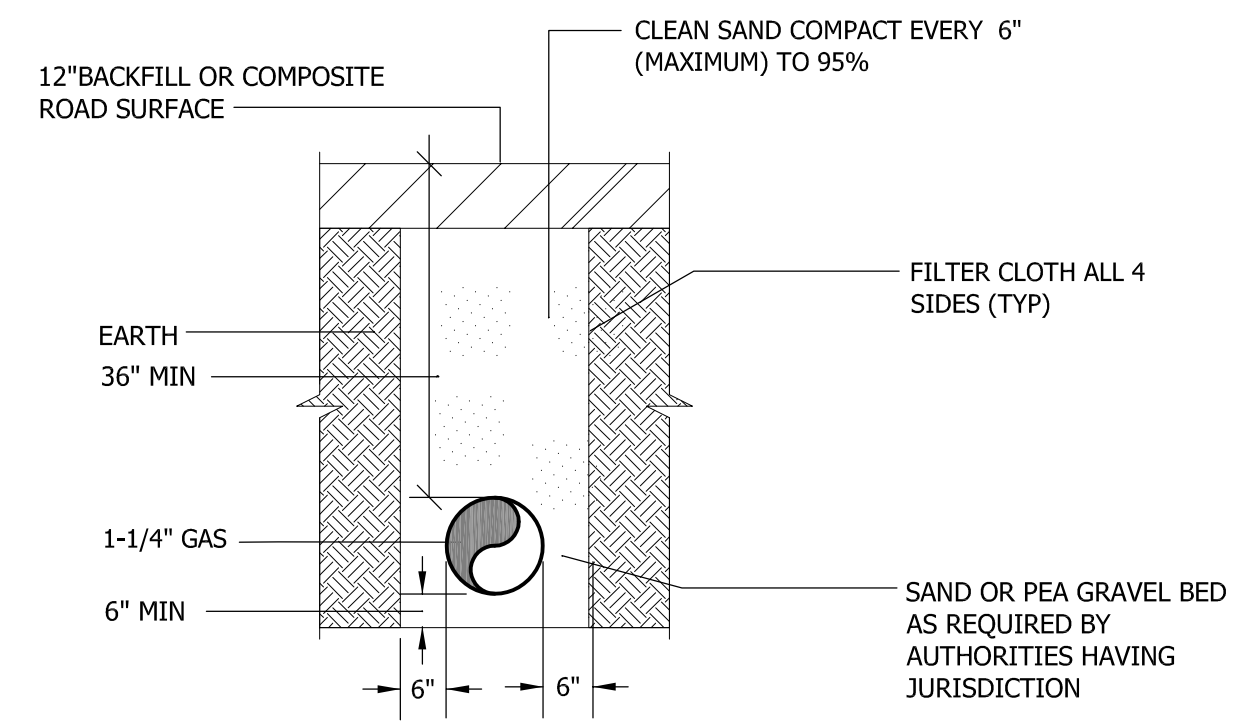
M1.3



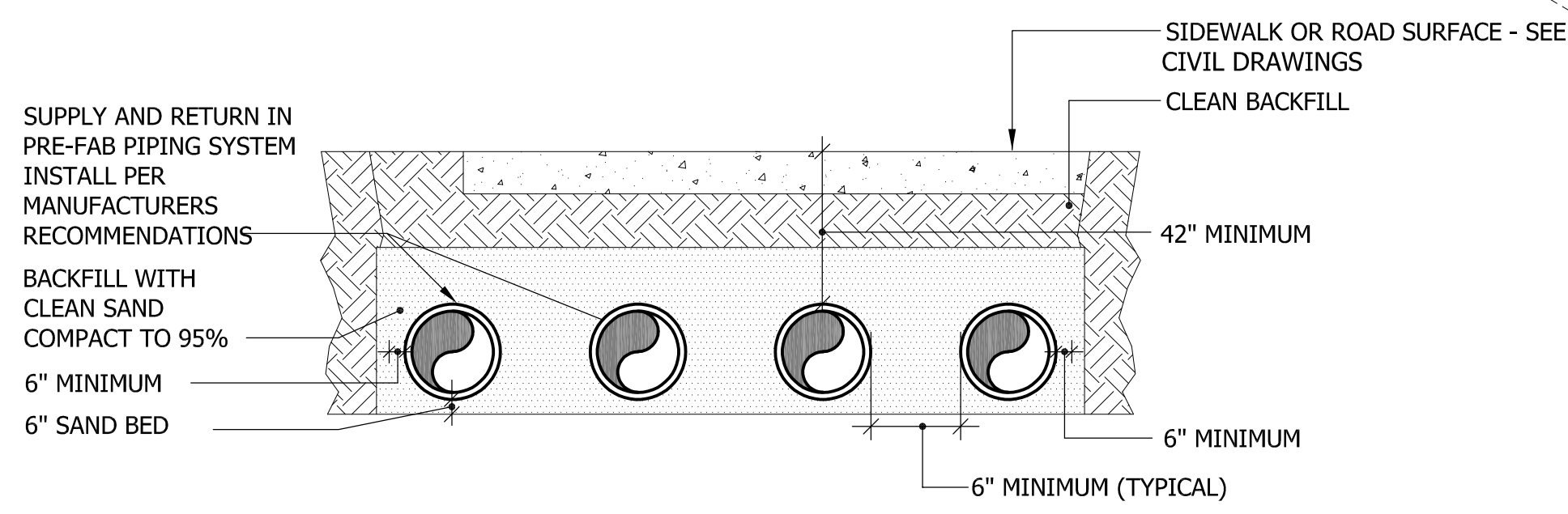
NOTE: PIPE ALL REGULATOR VENTS TO THE EXTERIOR  
**LP GAS STORAGE RISER DIAGRAM**  
NOT TO SCALE



**MECHANICAL SITE PLAN - LP GAS DISTRIBUTION**  
SCALE: 1" = 10'-0"

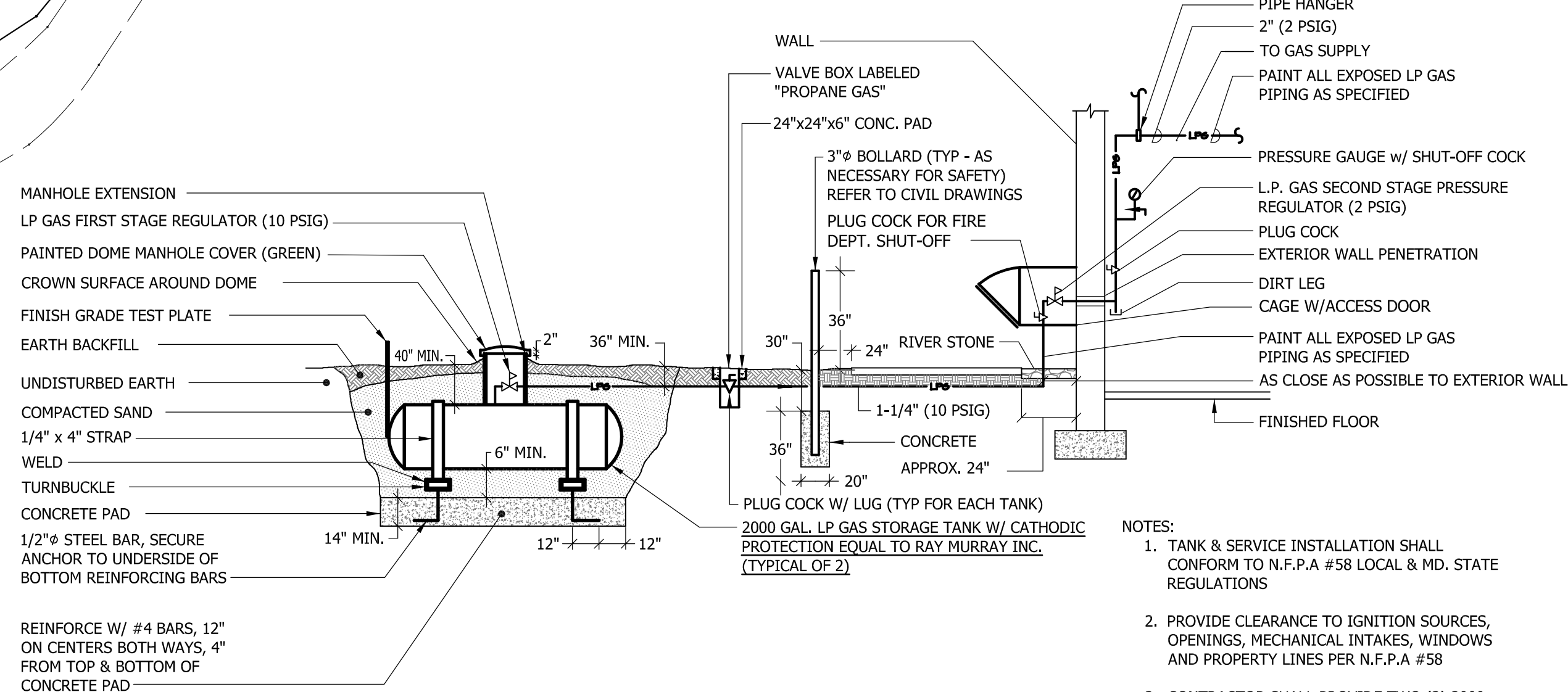


NOTE: PROVIDE FILTER FABRIC AROUND ENTIRE TRENCH.  
**UNDERGROUND GAS PIPING DETAIL**  
NOT TO SCALE

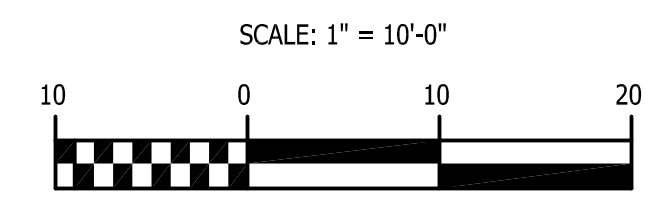


- NOTES:
1. INSTALL THRUST BLOCKS AT ALL FITTINGS IN ACCORDANCE WITH THE MANUFACTURERS RECOMMENDATION.
  2. ADJUST PROFILES TO PROVIDE 42" MIN. DEPTH BELOW GRADE FOR INSTALLATION OF UNDERGROUND PIPES.
  3. PREFABRICATED PIPING SYSTEM SHALL BE EQUAL TO PERMA PIPE POLYETHERM.
  4. INSTALL GALVANIZED PIPE SLEEVES AND LINK SEALS AT ALL WALL/BUILDING PENETRATIONS.
  5. SIMILAR INSTALLATION FOR TWO PIPES.

**UNDERGROUND CHILLED WATER SUPPLY & RETURN PIPING**  
NOT TO SCALE



**LP UNDERGROUND GAS STORAGE TANK AND SERVICE DETAIL**  
NOT TO SCALE



### AIR COOLED CHILLER SCHEDULE

CHILLER #	LOCATION	TONS	MAX KW	COMP.	REFRIG. TYPE	FLUID	EXHAUSTOR FLUID				CONDENSER				PERFORMANCE				SINGLE POINT ELECTRICAL				REMARKS	BASIS OF DESIGN	
							EFF (1)	LF (1)	GF (1)	PASS (1)	NO. OF FANS (1)	EAT (1)	EER (1)	MAX (1)	RLA (1)	LRA (1)	MCA (1)	MOCP (1)	V (1)	PH (1)	HZ (1)				
1	GRADE	204.9	259.93	6	R410A	WATER	52	42	480.4	-	15	12	2:70	95.0	9.5	16.6	-	486	500	460.0	3	60	1, 2	TRANE ACS230, ARCH. LOUVERED PANELS	

NOTES:  
1. COMP: 14 60.0 BUA, 413 DUK, COMP: 18 60.0 BUA, 413 DUK, COMP: 15 60.0 BUA, 413 DUK, COMP: 24 60.0 BUA, 413 DUK, COMP: 28 60.0 BUA, 413 DUK, COMP: 20 60.0 BUA, 413 DUK.  
2. EACH CONDENSER FIN: 2/7" DIA.

### BOILER SCHEDULE

N#	SERVICE	FUEL SOURCE	TYPE	PRESSURE (WC)	INPUT (MMBtu)	GAS MAIN TYPE	FLOW RATE (GPM)		MAX WPD (75)	EV (7)	LWT (7)	SETTING (PSIG)	RELIEF VENT CONNECTIONS		ELECTRICAL		EMERGENCY POWER	SIZE (L X W X H)	BASED ON
							MIN	MAX					V/4/HZ	FLA	FLA	EMERGENCY POWER			
1	HEATING WATER	LP GAS	11	2500	FM/UL	25	350	3	115	140	60	8	10	460/3/60	15	NO	58" x28" x78"	AERCO BENCHMARK 2500	
2	HEATING WATER	LP GAS	11	2500	FM/UL	25	350	3	115	140	60	8	10	460/3/60	15	NO	58" x28" x78"	AERCO BENCHMARK 2500	

NOTES:  
1. MINIMUM THERMAL EFFICIENCY SHALL BE 93.0%.  
2. MAXIMUM WPD SHALL BE AT TYPICAL FLOW RATE OF 218 GPM.

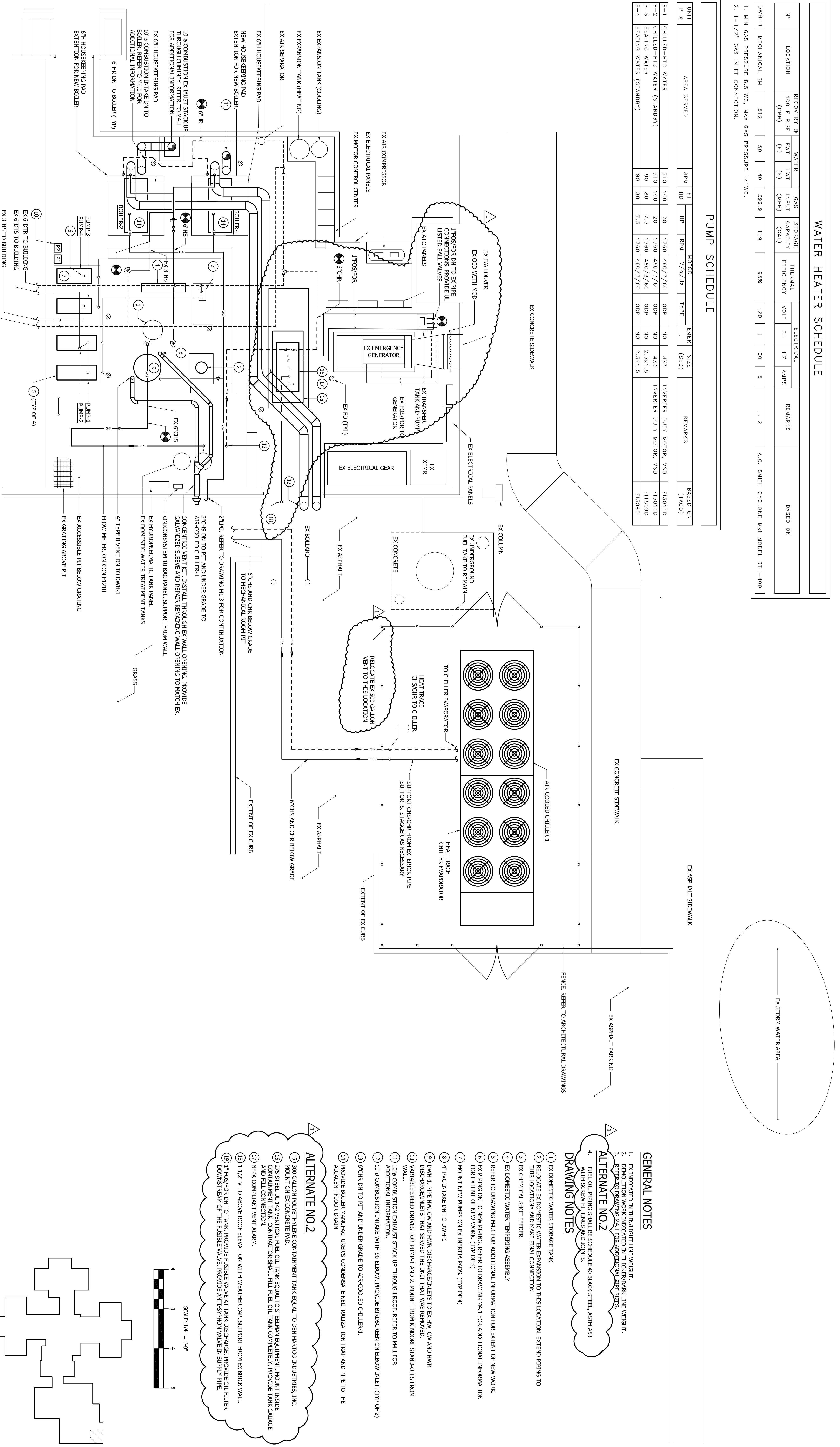
### WATER HEATER SCHEDULE

N#	LOCATION	RECOVERY @ 100 F RISE (GPH)	WATER EMT (F)	LWT (F)	GAS INPUT (MMBtu)	THERMAL EFFICIENCY (%)	VOLT	PH	HZ	AMPS	REMARKS	BASED ON	
													PH
DWH-1	MECHANICAL RM	512	50	140	399.9	119	93%	120	1	60	5	1, 2	A.O. SMITH CYCLONE MKI, MODEL DWH-400

1. MIN GAS PRESSURE 8.5"W.C. MAX GAS PRESSURE 14"W.C.  
2. 1-1/2" GAS INLET CONNECTION.

### PUMP SCHEDULE

UNIT	AREA SERVED	GPM	FT HD	HP	RPM	MOTOR V/4/HZ	TYPE	EMER. SIZE (3x0)	REMARKS	BASED ON (TACO)
P-1	CHILLED-H2O WATER	510	100	20	1760	460/3/60	ODP	NO	4X3	INVERTER DUTY MOTOR, VSD
P-2	CHILLED-H2O WATER (STANDBY)	510	100	20	1760	460/3/60	ODP	NO	4X3	INVERTER DUTY MOTOR, VSD
P-3	HEATING WATER	90	80	7.5	1760	460/3/60	ODP	NO	2.5x1.5	FT1509D
P-4	HEATING WATER (STANDBY)	90	80	7.5	1760	460/3/60	ODP	NO	2.5x1.5	FT1509D



### GENERAL NOTES

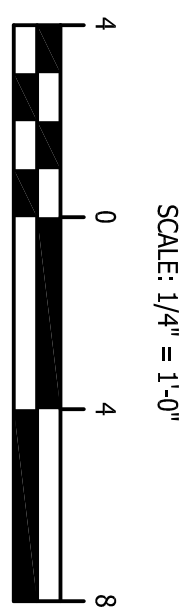
- EX INDICATED IN THIN/LIGHT LINE WEIGHT.
- RELOCATE EX DOMESTIC WATER STORAGE TANK TO THIS LOCATION AND MAKE FINAL CONNECTION.
- EX CHEMICAL SHOT FEEDER.
- EX DOMESTIC WATER TEMPERING ASSEMBLY.
- REFER TO DRAWING M-1 FOR ADDITIONAL INFORMATION FOR EXTENT OF NEW WORK.
- EX PIPING ON TO NEW PIPING. REFER TO DRAWING M-1 FOR ADDITIONAL INFORMATION FOR EXTENT OF NEW WORK. (TYPE OF 8)
- MOUNT NEW PUMPS ON EX INERTIA PADS. (TYPE OF 4)
- 4" PVC INTAKE DN TO DWH-1.
- DWH-1, PIPE HW, CW AND HWR DISCHARGE/INLETS TO EX HW, CW AND HWR DISCHARGE/INLETS THAT SERVED THE UNIT THAT WAS REMOVED.
- VARIABLE SPEED DRIVES FOR PUMP-1 AND 2. MOUNT ROOM KICKOFF STAND-OFFS FROM WALL.
- 10% COMBUSTION EXHAUST STACK UP THROUGH ROOF. REFER TO M-1 FOR ADDITIONAL INFORMATION.
- 10% COMBUSTION INTAKE WITH 90 ELBOW. PROVIDE BRISCREEN ON ELBOW INLET. (TYPE OF 2)
- 6" CHR DN TO PT AND UNDER GRADE TO AIR-COOLED CHILLER-1.
- PROVIDE BOILER MANUFACTURER'S CONDENSATE NEUTRALIZATION TRAP AND PIPE TO THE ADJACENT FLOOR DRAIN.

### ALTERNATE NO. 2

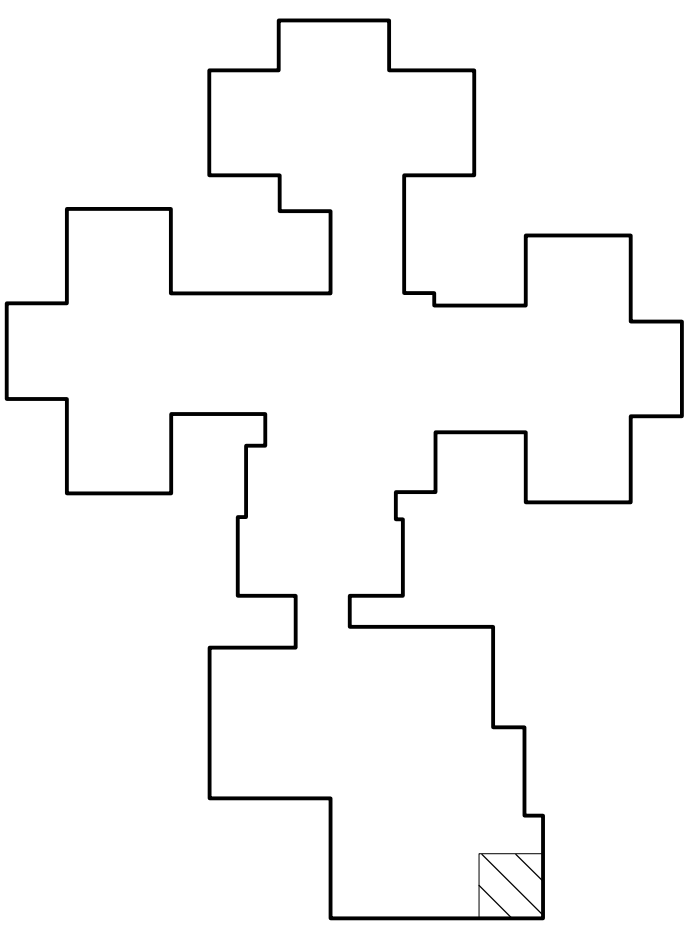
- EX DOMESTIC WATER STORAGE TANK
- RELOCATE EX DOMESTIC WATER EXPANSION TO THIS LOCATION. EXTEND PIPING TO THIS LOCATION AND MAKE FINAL CONNECTION.
- EX CHEMICAL SHOT FEEDER.
- EX DOMESTIC WATER TEMPERING ASSEMBLY
- REFER TO DRAWING M-1 FOR ADDITIONAL INFORMATION FOR EXTENT OF NEW WORK.
- EX PIPING ON TO NEW PIPING. REFER TO DRAWING M-1 FOR ADDITIONAL INFORMATION FOR EXTENT OF NEW WORK. (TYPE OF 8)
- MOUNT NEW PUMPS ON EX INERTIA PADS. (TYPE OF 4)
- 4" PVC INTAKE DN TO DWH-1.
- DWH-1, PIPE HW, CW AND HWR DISCHARGE/INLETS TO EX HW, CW AND HWR DISCHARGE/INLETS THAT SERVED THE UNIT THAT WAS REMOVED.
- VARIABLE SPEED DRIVES FOR PUMP-1 AND 2. MOUNT ROOM KICKOFF STAND-OFFS FROM WALL.
- 10% COMBUSTION EXHAUST STACK UP THROUGH ROOF. REFER TO M-1 FOR ADDITIONAL INFORMATION.
- 10% COMBUSTION INTAKE WITH 90 ELBOW. PROVIDE BRISCREEN ON ELBOW INLET. (TYPE OF 2)
- 6" CHR DN TO PT AND UNDER GRADE TO AIR-COOLED CHILLER-1.
- PROVIDE BOILER MANUFACTURER'S CONDENSATE NEUTRALIZATION TRAP AND PIPE TO THE ADJACENT FLOOR DRAIN.

### ALTERNATE NO. 2

- 360 GALLON POLYETHYLENE CONTAINMENT TANK EQUAL TO DEN HARLOW INDUSTRIES, INC. MOUNT ON EX CONCRETE PAD.
- 275 STEEL UL-142 VERTICAL FUEL OIL TANK EQUAL TO STEELMAN EQUIPMENT. MOUNT INSIDE CONTAINMENT TANK. CONTRACTOR SHALL FILL FUEL OIL TANK COMPLETELY. PROVIDE TANK GALVANIZING AND TANK CONNECTION.
- NFPA COMPLIANT VENT ALARM.
- 1-1/2" V TO ABOVE ROOF ELEVATION WITH WEATHER CAP. SUPPORT FROM EX BRICK WALL.
- 1" ROS/FOR DN TO TANK. PROVIDE FUSIBLE VALVE AT TANK DISCHARGE. PROVIDE OIL FILTER DOWNSTREAM OF THE FUSIBLE VALVE. PROVIDE ANTI-SIPHON VALVE IN SUPPLY PIPE.



### KEY PLAN



M3.1

## MECHANICAL ROOM AND EQUIPMENT COURTYARD

### MECHANICAL - NEW WORK

HARFORD COUNTY PUBLIC SCHOOLS - NORTH BEND ELEMENTARY SCHOOL  
CENTRAL PLANT/FIRE ALARM REPLACEMENT  
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PROFESSIONAL CERTIFICATION  
I HEREBY CERTIFY THAT THESE DOCUMENTS WERE PREPARED BY ME OR UNDER MY CLOSE PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER OF THE STATE OF MARYLAND. MY LICENSE NO. IS 20939 AND I EXPIRES ON 09/28/2021.



### REVISIONS

NO.	DATE	DESCRIPTION
1	2/24/20	ADDENDUM NO. 2

WO# 19072

PROJECT SED

DESIGNER SED

DWT 01/31/2020