

**MASON COUNTY PUBLIC SERVICE DISTRICT  
MASON COUNTY, WEST VIRGINIA**

**CONTRACT #1 - J2Y35 WATERLINE EXTENSION**

**ADDENDUM #2**

**NOVEMBER 23, 2022**

**THRASHER PROJECT #010-10151**

TO WHOM IT MAY CONCERN:

The following are clarifications and responses to questions posed by Contractors for the above reference project.

**A. GENERAL**

1. Bids will be received until 2:00 p.m. on Thursday, December 1, 2022, at the Mason County Public Service District's Office located at 101 Camden Avenue, Point Pleasant, Mason County, West Virginia. At that time, the Bids received will be publicly opened and read.

**B. SPECIFICATIONS**

1. **ADD** Specification Section 400567.36 – Pressure-Regulating Valves.
2. **REPLACE** Specification Section 073113 – Asphalt Shingles with Specification Section 076200 – Sheet Metal Flashing and Trim.

**C. DRAWINGS**

1. **REPLACE** Sheet 1 included in this Addendum #2.
2. **REPLACE** Sheet 2 included in this Addendum #2.
3. **REPLACE** Sheet 3 included in this Addendum #2.
4. **REPLACE** Sheet 4 included in this Addendum #2.
5. **REPLACE** Sheet 6 included in this Addendum #2.
6. **REPLACE** Sheet B2 included in this Addendum #2.
7. **REPLACE** Sheet B5 included in this Addendum #2.

**D. QUESTIONS AND RESPONSES**

**QUESTION**

1. What is the inlet and outlet pressures for the valves?

**RESPONSE**

The pressure reducing valve will be sized for an inlet pressure of approximately 100 psi and an outlet pressure of approximately 25 psi. Refer to Specification Section 400567.36 – Pressure-Regulating Valves included in this Addendum #2.

**CLARIFICATIONS**

1. Erosion and Sedimentation Controls have been added on Sheets 1, 2, 3, 4, and 6 included with this Addendum.
2. Sheet B2 and Sheet B5 have been revised to show sheet metal roofing rather than asphalt shingles. The color shall be matched to the Owner's sample.

If you have any questions or comments, please feel free to contact me at your earliest convenience. As a reminder, bids will be received until 2:00 p.m. on Thursday, December 1, 2022, at the Mason County Public Service District Office located at 101 Camden Avenue, Point Pleasant, Mason County, WV. Good luck and thank you for your interest in the project.

Sincerely,

THE JOYTRAN CARPENTER GROUP, INC.



Jonathan Carpenter  
Project Manager

Enclosures: Specifications  
Plan Sheets

SECTION 400567.36 – PRESSURE-REGULATING VALVES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Pressure-reducing valves.

1.2 REFERENCE STANDARDS

A. ASME International:

1. ASME B1.20.1 - Pipe Threads, General Purpose.
2. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.
3. ASME B16.24 - Cast Copper Alloy Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500, and 2500.
4. ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings, Classes 150 and 300.

B. ASTM International:

1. ASTM A126 - Standard Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings.
2. ASTM A216/A216M - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.
3. ASTM A536 - Standard Specification for Ductile Iron Castings.
4. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

C. American Water Works Association:

1. AWWA C550 - Protective Interior Coatings for Valves and Hydrants.

D. NSF International:

1. NSF 61 - Drinking Water System Components - Health Effects.
2. NSF 372 - Drinking Water System Components - Lead Content.

1.3 COORDINATION

A. Section 013000 - Administrative Requirements: Requirements for coordination.

B. Coordinate with installation of process piping.

1.4 SUBMITTALS

- A. Section 013300 - Submittal Procedures: Requirements for submittals.
- B. Product Data: Submit manufacturer catalog information.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.
- D. Manufacturer Instructions: Submit special procedures and setting dimensions.
- E. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
- F. Qualifications Statement:
  - 1. Submit qualifications for manufacturer.

1.5 CLOSEOUT SUBMITTALS

- A. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
- B. Project Record Documents: Record actual locations of pressure-regulating valves.

1.6 QUALITY ASSURANCE

- A. Materials in Contact with Potable Water: Certified to NSF Standards 61 and 372.
- B. Perform Work according to ASME B16.5 standards.
- C. Maintain one (1) copy of each standard affecting Work of this Section on Site.

1.7 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

1.8 DELIVERY, STORAGE, AND HANDLING

- A. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
- C. Store materials according to manufacturer instructions.
- D. Protection:

1. Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.
2. Furnish temporary end caps and closures on piping and fittings and maintain in place until installation.
3. Provide additional protection according to manufacturer instructions.

#### 1.9 EXISTING CONDITIONS

##### A. Field Measurements:

1. Verify field measurements prior to fabrication.
2. Indicate field measurements on Shop Drawings.

#### 1.10 WARRANTY

- A. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
- B. Cavitation Damage: Warrant that valves will not suffer cavitation damage within a five-year period from date of installation when exposed to specified operating conditions.

### PART 2 - PRODUCTS

#### 2.1 PRESSURE-REDUCING VALVES

##### A. Manufacturers:

1. Cla-Val, DeZurik, or Engineer's Approved Equal.
2. Contract Drawings are based on the Cla-Val Model 90-01. Substitutions shall be considered subject to the requirements of Section 016000 – Product Requirements.
3. Furnish materials according to ASTM A536 standards.

##### B. Description:

1. Type: Pilot-operated pressure-reducing valve.
2. Outlet Pressure: 25 psig.
3. Maximum Working Pressure: 250 psig.
4. Flow Area:
  - a. Equal to connecting nominal pipe diameter.
5. Operation:
  - a. Normally Open.
  - b. Type: Hydraulic.
  - c. Actuation: Diaphragm.
  - d. Control: Pilot.
6. Downstream Pressure Set Point:

- a. Zero to 110 percent.
- b. Field adjustable.
  
7. Internal Access: Flanged cover piece.
8. Furnish piston position indicator.
  
9. End Connections:
  - a. Flanged.
  - b. Comply with ASME B16.42
  
- C. Materials:
  1. Body: Ductile iron.
  2. Diaphragm: Nylon Reinforced Buna-N Rubber.
  3. Control Trim:
    - a. Fittings: Bronze or stainless steel.
    - b. Tubes: Copper.
  4. Seals: Buna-N Synthetic Rubber
  5. Finishes: As specified in Section 400551 - Common Requirements for Process Valves.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation examination.
- B. Verify that field dimensions are as indicated on Shop Drawings.
- C. Inspect existing flanges for nonstandard bolthole configurations or design and verify that new pipe and flanges mate properly.

#### 3.2 PREPARATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for installation preparation.
- B. Thoroughly clean end connections before installation.
- C. Close pipe and equipment openings with caps or plugs during installation.
- D. Cleaning: Clean surfaces to remove foreign substances.

#### 3.3 INSTALLATION

- A. According to manufacturer instructions and local code requirements.

- B. Install with nameplate and test cock accessible.

### 3.4 FIELD QUALITY CONTROL

- A. Section 017000 - Execution and Closeout Requirements: Requirements for testing, adjusting, and balancing.
- B. After installation, inspect for interferences and proper supports.
- C. Testing:
  - 1. Hydrostatic: Test each assembled valve, except control piping, hydrostatically at 1-1/2 times rated working pressure for minimum five minutes.
  - 2. Leakage:
    - a. Test each valve for leakage at rated working pressure against closed valve.
    - b. Test Duration: Minimum 15 minutes.
    - c. Permitted Leakage: Zero.
  - 3. Perform functional test on each valve to verify specified performance.
- D. Repair damaged coatings with material equal to original coating.

### 3.5 CLEANING

- A. Section 017000 - Execution and Closeout Requirements: Requirements for cleaning.
- B. Keep interior of valves clean as installation progresses.

### 3.6 DEMONSTRATION

- A. Section 017000 - Execution and Closeout Requirements: Requirements for demonstration and training.
- B. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Owner's personnel.

END OF SECTION 400567.36

Mason County Public Service District  
Contract #1 – J2Y35 Waterline Extension

010-10151  
11/2022  
Addendum #2

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## SECTION 076200 - SHEET METAL FLASHING AND TRIM

### PART 1 - GENERAL

#### 1.1 SUMMARY

##### A. Section Includes:

1. Manufactured reglets with counterflashing.
2. Formed roof-drainage sheet metal fabrications.
3. Formed low-slope roof sheet metal fabrications.
4. Formed wall sheet metal fabrications.

#### 1.2 PREINSTALLATION MEETINGS

- ##### A. Preinstallation Conference: Conduct conference at Project site.

#### 1.3 ACTION SUBMITTALS

##### A. Product Data: For each of the following

1. Underlayment materials.
2. Elastomeric sealant.
3. Butyl sealant.
4. Epoxy seam sealer.

##### B. Shop Drawings: For sheet metal flashing and trim.

1. Include plans, elevations, sections, and attachment details.
2. Detail fabrication and installation layouts, expansion-joint locations, and keyed details. Distinguish between shop- and field-assembled Work.
3. Include identification of material, thickness, weight, and finish for each item and location in Project.
4. Include details for forming, including profiles, shapes, seams, and dimensions.
5. Include details for joining, supporting, and securing, including layout and spacing of fasteners, cleats, clips, and other attachments. Include pattern of seams.
6. Include details of termination points and assemblies.
7. Include details of expansion joints and expansion-joint covers, including showing direction of expansion and contraction from fixed points.
8. Include details of roof-penetration flashing.
9. Include details of edge conditions, including eaves, ridges, valleys, rakes, crickets, flashings, and counterflashings.
10. Include details of special conditions.
11. Include details of connections to adjoining work.

- C. Samples: For each exposed product and for each color and texture specified, 12 inches long by actual width.

#### 1.4 INFORMATIONAL SUBMITTALS

- A. Product Certificates: For each type of coping and roof edge flashing that is ANSI/SPRI/FM 4435/ES-1 tested.
- B. Evaluation Reports: For copings and roof edge flashing, from an agency acceptable to authority having jurisdiction showing compliance with ANSI/SPRI/FM 4435/ES-1.
- C. Sample warranty.

#### 1.5 CLOSEOUT SUBMITTALS

- A. Maintenance data.
- B. Special warranty.

#### 1.6 QUALITY ASSURANCE

- A. Fabricator Qualifications: Employs skilled workers who custom fabricate sheet metal flashing and trim similar to that required for this Project and whose products have a record of successful in-service performance.
  - 1. For copings and roof edge flashings that are ANSI/SPRI/FM 4435/ES-1 tested, shop shall be listed as able to fabricate required details as tested and approved.

#### 1.7 WARRANTY

- A. Special Warranty on Finishes: Manufacturer agrees to repair finish or replace sheet metal flashing and trim that shows evidence of deterioration of factory-applied finishes within specified warranty period.
  - 1. Exposed Panel Finish: Deterioration includes, but is not limited to, the following:
    - a. Color fading more than 5 Delta E units when tested in accordance with ASTM D2244.
    - b. Chalking in excess of a No. 8 rating when tested in accordance with ASTM D4214.
    - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
  - 2. Finish Warranty Period: 20 years from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 PERFORMANCE REQUIREMENTS

- A. Sheet metal flashing and trim assemblies, including cleats, anchors, and fasteners, shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.
- B. Sheet Metal Standard for Flashing and Trim: Comply with SMACNA's "Architectural Sheet Metal Manual" requirements for dimensions and profiles shown unless more stringent requirements are indicated.
- C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes to prevent buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
  - 1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.

### 2.2 SHEET METALS

- A. Protect mechanical and other finishes on exposed surfaces from damage by applying strippable, temporary protective film before shipping.
- B. Aluminum Sheet: ASTM B209, alloy as standard with manufacturer for finish required, with temper as required to suit forming operations and performance required; with smooth, flat surface.
  - 1. As-Milled Finish: One-side bright mill.
  - 2. Color Anodic Finish, Coil Coated: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.
    - a. Color: Match Owner's Sample.
    - b. Color Range: Noticeable variations in same piece are unacceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
  - 3. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 2605. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  - 4. Color: Match Owner's Sample.
  - 5. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.

- C. Metallic-Coated Steel Sheet: Provide zinc-coated (galvanized) steel sheet in accordance with ASTM A653/A653M, G90 coating designation or aluminum-zinc alloy-coated steel sheet in accordance with ASTM A792/A792M, Class AZ50 coating designation, Grade 40; prepainted by coil-coating process to comply with ASTM A755/A755M.
1. Surface: Smooth, flat.
  2. Exposed Coil-Coated Finish:
    - a. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
  3. Color: Match Owner's Sample.
  4. Concealed Finish: Pretreat with manufacturer's standard white or light-colored acrylic or polyester backer finish, consisting of prime coat and wash coat with minimum total dry film thickness of 0.5 mil.
- D. Lead Sheet: ASTM B749 lead sheet.

### 2.3 UNDERLAYMENT MATERIALS

- A. Self-Adhering, High-Temperature Sheet Underlayment: Minimum 30 mils thick, consisting of a slip-resistant polyethylene- or polypropylene-film top surface laminated to a layer of butyl- or SBS-modified asphalt adhesive, with release-paper backing; specifically designed to withstand high metal temperatures beneath metal roofing. Provide primer in accordance with underlayment manufacturer's written instructions.
1. Low-Temperature Flexibility: ASTM D1970/D1970M; passes after testing at minus 20 deg F or lower.
- B. Slip Sheet: Rosin-sized building paper, 3 lb/100 sq. ft. minimum.

### 2.4 MISCELLANEOUS MATERIALS

- A. Provide materials and types of fasteners, solder, protective coatings, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and as recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.
- B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads and recommended by manufacturer of primary sheet metal or manufactured item.
1. General: Blind fasteners or self-drilling screws, gasketed, with hex-washer head.
    - a. Exposed Fasteners: Heads matching color of sheet metal using plastic caps or factory-applied coating. Provide metal-backed EPDM or PVC sealing washers under heads of exposed fasteners bearing on weather side of metal.

- b. Blind Fasteners: High-strength aluminum or stainless steel rivets suitable for metal being fastened.
  - c. Spikes and Ferrules: Same material as gutter; with spike with ferrule matching internal gutter width.
  2. Fasteners for Aluminum Sheet: Aluminum or Series 300 stainless steel.
  3. Fasteners for Zinc-Coated (Galvanized) or Aluminum-Zinc Alloy-Coated Steel Sheet: Series 300 stainless steel or hot-dip galvanized steel in accordance with ASTM A153/A153M or ASTM F2329.
- C. Solder:
1. For Zinc-Coated (Galvanized) Steel: ASTM B32, Grade Sn50, 50 percent tin and 50 percent lead or Grade Sn60, 60 percent tin and 40 percent lead.
- D. Sealant Tape: Pressure-sensitive, 100 percent solids, polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
- E. Elastomeric Sealant: ASTM C920, elastomeric polyurethane polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.
- F. Butyl Sealant: ASTM C1311, single-component, solvent-release butyl rubber sealant; polyisobutylene plasticized; heavy bodied for hooked-type expansion joints with limited movement.
- G. Reglets: Units of type, material, and profile required, formed to provide secure interlocking of separate reglet and counterflashing pieces, and compatible with flashing indicated with factory-mitered and -welded corners and junctions and with interlocking counterflashing on exterior face, of same metal as reglet.
1. Material: Aluminum, 0.024 inch thick.
  2. Surface-Mounted Type: Provide with slotted holes for fastening to substrate, with neoprene or other suitable weatherproofing washers, and with channel for sealant at top edge.
  3. Stucco Type: Provide with upturned fastening flange and extension leg of length to match thickness of applied finish materials.
  4. Concrete Type: Provide temporary closure tape to keep reglet free of concrete materials, special fasteners for attaching reglet to concrete forms, and guides to ensure alignment of reglet section ends.
  5. Masonry Type: Provide with offset top flange for embedment in masonry mortar joint.
  6. Accessories:
    - a. Flexible-Flashing Retainer: Provide resilient plastic or rubber accessory to secure flexible flashing in reglet where clearance does not permit use of standard metal counterflashing or where Drawings show reglet without metal counterflashing.
    - b. Counterflashing Wind-Restraint Clips: Provide clips to be installed before counterflashing to prevent wind uplift of counterflashing's lower edge.
  7. Finish: Mill.

2.5 FABRICATION, GENERAL

- A. Custom fabricate sheet metal flashing and trim to comply with details indicated and recommendations in cited sheet metal standard that apply to design, dimensions, geometry, metal thickness, and other characteristics of item required.
1. Fabricate sheet metal flashing and trim in shop to greatest extent possible.
  2. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  3. Verify shapes and dimensions of surfaces to be covered and obtain field measurements for accurate fit before shop fabrication.
  4. Form sheet metal flashing and trim to fit substrates without excessive oil-canning, buckling, and tool marks; true to line, levels, and slopes; and with exposed edges folded back to form hems.
  5. Conceal fasteners and expansion provisions where possible. Do not use exposed fasteners on faces exposed to view.
- B. Built-in Gutters:
1. Fabricate to cross section required, with riveted and soldered joints, complete with end pieces, outlet tubes, and other special accessories as required.
  2. Fabricate in minimum 96-inch-long sections. Fabricate expansion joints and accessories from same metal as gutters unless otherwise indicated.
  3. Fabricate gutters with built-in expansion joints and gutter-end expansion joints at walls.
  4. Accessories: Continuous, removable leaf screen with sheet metal frame and hardware cloth screen.
  5. Fabricate from the following materials:
    - a. Stainless Steel: 0.0156 inch thick.
- C. Downspouts: Fabricate rectangular downspouts to dimensions indicated on Drawings, complete with mitered elbows. Furnish with metal hangers from same material as downspouts and anchors.
1. Hanger Style: K-style heavy duty.
  2. Fabricate from the following materials:
    - a. Aluminum: 0.024 inch thick.
    - b. Stainless Steel: 0.0156 inch thick.
    - c. Galvanized Steel: 0.022 inch thick.
    - d. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.
- D. Parapet Scuppers: Fabricate scuppers to dimensions required, with closure flange trim to exterior, 4-inch-wide wall flanges to interior, and base extending 4 inches beyond cant or tapered strip into field of roof. Fasten gravel guard angles to base of scupper. Fabricate from the following materials:
1. Aluminum: 0.032 inch thick.
  2. Stainless Steel: 0.0188 inch thick.
  3. Galvanized Steel: 0.028 inch thick.
  4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

- E. Conductor Heads: Fabricate conductor heads with flanged back and stiffened top edge and of dimensions and shape required, complete with outlet tubes, exterior flange trim, and built-in overflows. Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
  - 2. Stainless Steel: 0.0156 inch thick.
  - 3. Galvanized Steel: 0.028 inch thick.
  - 4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
  
- F. Splash Pans: Fabricate to dimensions and shape required and from the following materials:
  - 1. Aluminum: 0.040 inch thick.
  - 2. Stainless Steel: 0.0188 inch thick.

## 2.6 LOW-SLOPE ROOF SHEET METAL FABRICATIONS

- A. Roof Edge Flashing (Gravel Stop) and Fascia Cap: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long sections. Furnish with 6-inch-wide, joint cover plates.
  - 1. Fabricate from the following materials:
    - a. Aluminum: 0.050 inch thick.
    - b. Stainless Steel: 0.0188 inch thick.
    - c. Galvanized Steel: 0.028 inch thick.
    - d. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
  
- B. Copings: Fabricate in minimum 96-inch-long, but not exceeding 12-foot-long, sections. Fabricate joint plates of same thickness as copings. Furnish with continuous cleats to support edge of external leg and drill elongated holes for fasteners on interior leg. Miter corners, fasten and seal watertight.
  - 1. Fabricate from the following materials:
    - a. Aluminum: 0.050 inch thick.
    - b. Stainless Steel: 0.0250 inch thick.
    - c. Galvanized Steel: 0.040 inch thick.
    - d. Aluminum-Zinc Alloy-Coated Steel: 0.040 inch thick.
  
- C. Base Flashing: Fabricate from the following materials:
  - 1. Aluminum: 0.040 inch thick.
  - 2. Stainless Steel: 0.0188 inch thick.
  - 3. Galvanized Steel: 0.028 inch thick.
  - 4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
  
- D. Counterflashing: Fabricate from the following materials:
  - 1. Aluminum: 0.032 inch thick.
  - 2. Stainless Steel: 0.0188 inch thick.
  - 3. Galvanized Steel: 0.022 inch thick.
  - 4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.
  
- E. Roof-Penetration Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.0188 inch thick.
2. Galvanized Steel: 0.028 inch thick.
3. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.
4. Lead: 4 lb.

F. Roof-Drain Flashing: Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

## 2.7 WALL SHEET METAL FABRICATIONS

A. Through-Wall Flashing: Fabricate continuous flashings in minimum 96-inch-long, but not exceeding 12-foot-long, sections, under copings, and at shelf angles. Fabricate discontinuous lintel, sill, and similar flashings to extend 6 inches beyond each side of wall openings; and form with 2-inch-high, end dams. Fabricate from the following materials:

1. Stainless Steel: 0.0156 inch thick.

B. Opening Flashings in Frame Construction: Fabricate head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings. Form head and sill flashing with 2-inch-high, end dams. Fabricate from the following materials:

1. Aluminum: 0.032 inch thick.
2. Stainless Steel: 0.0156 inch thick.
3. Galvanized Steel: 0.022 inch thick.
4. Aluminum-Zinc Alloy-Coated Steel: 0.022 inch thick.

C. Wall Expansion-Joint Cover: Fabricate from the following materials:

1. Aluminum: 0.040 inch thick.
2. Stainless Steel: 0.0188 inch thick.
3. Galvanized Steel: 0.028 inch thick.
4. Aluminum-Zinc Alloy-Coated Steel: 0.028 inch thick.

## PART 3 - EXECUTION

### 3.1 INSTALLATION OF UNDERLAYMENT

A. Felt Underlayment: Install felt underlayment, wrinkle free, using adhesive to minimize use of mechanical fasteners under sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lap joints not less than 2 inches.

B. Synthetic Underlayment: Install synthetic underlayment, wrinkle free, in accordance with manufacturers' written instructions, and using adhesive where possible to minimize use of mechanical fasteners under sheet metal.



1. Lap horizontal joints not less than 4 inches.
2. Lap end joints not less than 12 inches.

C. Self-Adhering, High-Temperature Sheet Underlayment:

1. Install self-adhering, high-temperature sheet underlayment; wrinkle free.
2. Prime substrate if recommended by underlayment manufacturer.
3. Comply with temperature restrictions of underlayment manufacturer for installation; use primer for installing underlayment at low temperatures.
4. Apply in shingle fashion to shed water, with end laps of not less than 6 inches staggered 24 inches between courses.
5. Overlap side edges not less than 3-1/2 inches. Roll laps and edges with roller.
6. Roll laps and edges with roller.
7. Cover underlayment within 14 days.

D. Install slip sheet, wrinkle free, over underlayment before installing sheet metal flashing and trim.

1. Install in shingle fashion to shed water.
2. Lapp joints not less than 4 inches.

### 3.2 INSTALLATION, GENERAL

A. Install sheet metal flashing and trim to comply with details indicated and recommendations of cited sheet metal standard that apply to installation characteristics required unless otherwise indicated on Drawings.

1. Install fasteners, solder, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
2. Install sheet metal flashing and trim true to line, levels, and slopes. Provide uniform, neat seams with minimum exposure of solder and sealant.
3. Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement.
4. Install sheet metal flashing and trim to fit substrates and to result in watertight performance.
5. Install continuous cleats with fasteners spaced not more than 12 inches o.c.
6. Space individual cleats not more than 12 inches apart. Attach each cleat with at least two fasteners. Bend tabs over fasteners.
7. Install exposed sheet metal flashing and trim with limited oil-canning, and free of buckling and tool marks.
8. Do not field cut sheet metal flashing and trim by torch.

B. Metal Protection: Where dissimilar metals contact each other, or where metal contacts pressure-treated wood or other corrosive substrates, protect against galvanic action or corrosion by painting contact surfaces with bituminous coating or by other permanent separation as recommended by sheet metal manufacturer or cited sheet metal standard.

1. Coat concealed side of uncoated-aluminum and stainless steel sheet metal flashing and trim with bituminous coating where flashing and trim contact wood, ferrous metal, or cementitious construction.

2. Underlayment: Where installing sheet metal flashing and trim directly on cementitious or wood substrates, install underlayment and cover with slip sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim.
  1. Space movement joints at maximum of 10 feet with no joints within 24 inches of corner or intersection.
  2. Form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with sealant concealed within joints.
  3. Use lapped expansion joints only where indicated on Drawings.
- D. Fasteners: Use fastener sizes that penetrate wood blocking or sheathing not less than 1-1/4 inches for nails and not less than 3/4 inch for wood screws.
- E. Conceal fasteners and expansion provisions where possible in exposed work and locate to minimize possibility of leakage. Cover and seal fasteners and anchors as required for a tight installation.
- F. Seal joints as required for watertight construction.
  1. Use sealant-filled joints unless otherwise indicated.
    - a. Embed hooked flanges of joint members not less than 1 inch into sealant.
    - b. Form joints to completely conceal sealant.
    - c. When ambient temperature at time of installation is between 40 and 70 deg F, set joint members for 50 percent movement each way.
    - d. Adjust setting proportionately for installation at higher ambient temperatures.
      - 1) Do not install sealant-type joints at temperatures below 40 deg F.
  2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."
- G. Soldered Joints: Clean surfaces to be soldered, removing oils and foreign matter.
  1. Pretin edges of sheets with solder to width of 1-1/2 inches; however, reduce pretinning where pretinned surface would show in completed Work.
  2. Do not solder metallic-coated steel and aluminum sheet.
  3. Do not pretin zinc-tin alloy-coated copper.
  4. Do not use torches for soldering.
  5. Heat surfaces to receive solder, and flow solder into joint.
    - a. Fill joint completely.
    - b. Completely remove flux and spatter from exposed surfaces.
  6. Stainless Steel Soldering:
    - a. Tin edges of uncoated sheets, using solder for stainless steel and acid flux.
    - b. Promptly remove acid-flux residue from metal after tinning and soldering.
    - c. Comply with solder manufacturer's recommended methods for cleaning and neutralization.

- H. Rivets: Rivet joints in uncoated aluminum where necessary for strength.

### 3.3 INSTALLATION OF ROOF-DRAINAGE SYSTEM

- A. Install sheet metal roof-drainage items to produce complete roof-drainage system in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of roof perimeter flashing with installation of roof-drainage system.
- B. Built-in Gutters:
1. Join sections with riveted and soldered joints or joints sealed with sealant.
  2. Provide for thermal expansion.
  3. Slope to downspouts.
  4. Provide end closures and seal watertight with sealant.
  5. Install underlayment layer in built-in gutter trough and extend to drip edge at eaves and under underlayment on roof sheathing.
    - a. Lap sides minimum of 2 inches over underlying course.
    - b. Lap ends minimum of 4 inches.
    - c. Stagger end laps between succeeding courses at least 72 inches.
    - d. Fasten with roofing nails.
    - e. Install slip sheet over underlayment.
  6. Install gutter with expansion joints at locations indicated on Drawings, but not exceeding, 50 feet apart. Install expansion-joint caps.
- C. Downspouts:
1. Join sections with 1-1/2-inch telescoping joints.
  2. Provide hangers with fasteners designed to hold downspouts securely to walls.
  3. Locate hangers at top and bottom and at approximately 60 inches o.c.
  4. Provide elbows at base of downspout to direct water away from building.
  5. Connect downspouts to underground drainage system.
- D. Splash Pans:
1. Install where downspouts discharge on low-slope roofs.
  2. Set in elastomeric sealant compatible with the substrate.
- E. Parapet Scuppers:
1. Continuously support scupper, set to correct elevation, and seal flanges to interior wall face, over cants or tapered edge strips, and under roofing membrane.
  2. Anchor scupper closure trim flange to exterior wall and solder or seal with elastomeric sealant to scupper.
  3. Loosely lock front edge of scupper with conductor head.
  4. Solder or seal with elastomeric sealant exterior wall scupper flanges into back of conductor head.

- F. Conductor Heads: Anchor securely to wall, with elevation of conductor head rim at minimum of 1 inch below scupper or gutter discharge.
- G. Expansion-Joint Covers: Install expansion-joint covers at locations and of configuration indicated on Drawings. Lap joints minimum of 4 inches in direction of water flow.

### 3.4 INSTALLATION OF ROOF FLASHINGS

- A. Install sheet metal flashing and trim to comply with performance requirements and cited sheet metal standard.
  - 1. Provide concealed fasteners where possible, and set units true to line, levels, and slopes.
  - 2. Install work with laps, joints, and seams that are permanently watertight and weather resistant.
- B. Roof Edge Flashing:
  - 1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
  - 2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated. Interlock bottom edge of roof edge flashing with continuous cleat anchored to substrate at staggered 3-inch centers.
  - 3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for FM Approvals' listing for required windstorm classification.
- C. Copings:
  - 1. Install roof edge flashings in accordance with ANSI/SPRI/FM 4435/ES-1.
  - 2. Anchor to resist uplift and outward forces in accordance with recommendations in cited sheet metal standard unless otherwise indicated.
    - a. Interlock exterior bottom edge of coping with continuous cleat anchored to substrate at 24-inch centers.
    - b. Anchor interior leg of coping with washers and screw fasteners through slotted holes at 24-inch centers.
  - 3. Anchor to resist uplift and outward forces in accordance with recommendations in FM Global Property Loss Prevention Data Sheet 1-49 for specified FM Approvals' listing for required windstorm classification.
- D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending minimum of 4 inches over base flashing. Install stainless steel draw band and tighten.
- E. Counterflashing: Coordinate installation of counterflashing with installation of base flashing.
  - 1. Insert counterflashing in reglets or receivers and fit tightly to base flashing.
  - 2. Extend counterflashing 4 inches over base flashing.
  - 3. Lap counterflashing joints minimum of 4 inches.

- F. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Seal with elastomeric sealant and clamp flashing to pipes that penetrate roof.

### 3.5 INSTALLATION OF WALL FLASHINGS

- A. Install sheet metal wall flashing to intercept and exclude penetrating moisture in accordance with cited sheet metal standard unless otherwise indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.
- B. Opening Flashings in Frame Construction: Install continuous head, sill, jamb, and similar flashings to extend 4 inches beyond wall openings.
- C. Reglets: Installation of reglets is specified in Section 0422000 "Concrete Unit Masonry."

### 3.6 INSTALLATION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerance of 1/4 inch in 20 feet on slope and location lines indicated on Drawings and within 1/8-inch offset of adjoining faces and of alignment of matching profiles.

### 3.7 CLEANING

- A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.
- B. Clean and neutralize flux materials. Clean off excess solder.
- C. Clean off excess sealants.

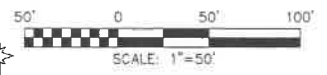
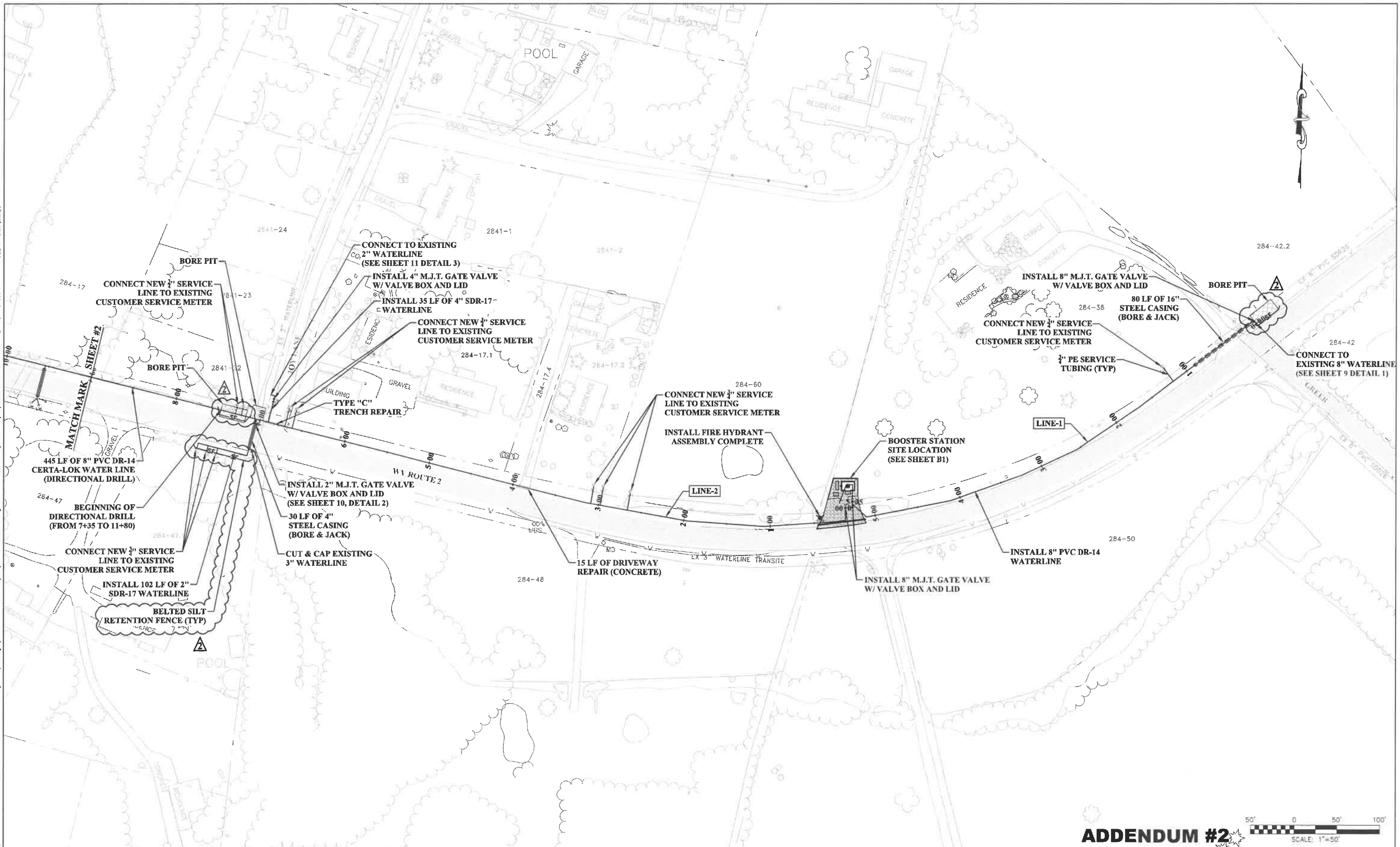
### 3.8 PROTECTION

- A. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions.
- B. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures, as determined by Architect.

END OF SECTION 076200

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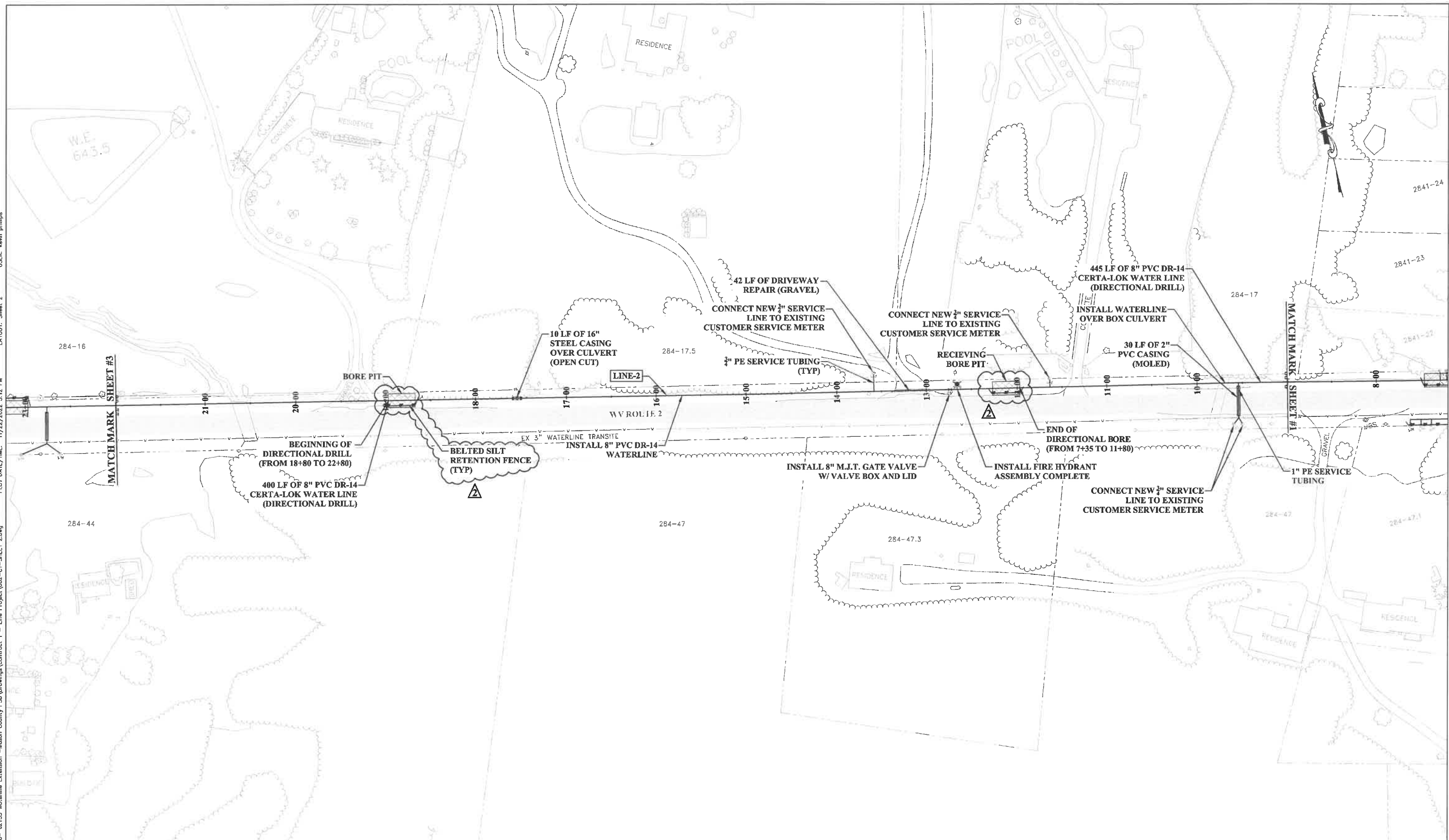
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MASON COUNTY PUBLIC SERIVE DISTRICT  
 MASON COUNTY, WEST VIRGINIA  
 PROPOSED WATERLINE EXTENSION  
 LEWIS DISTRICT  
 PLAN

SHEET No.  
**1**

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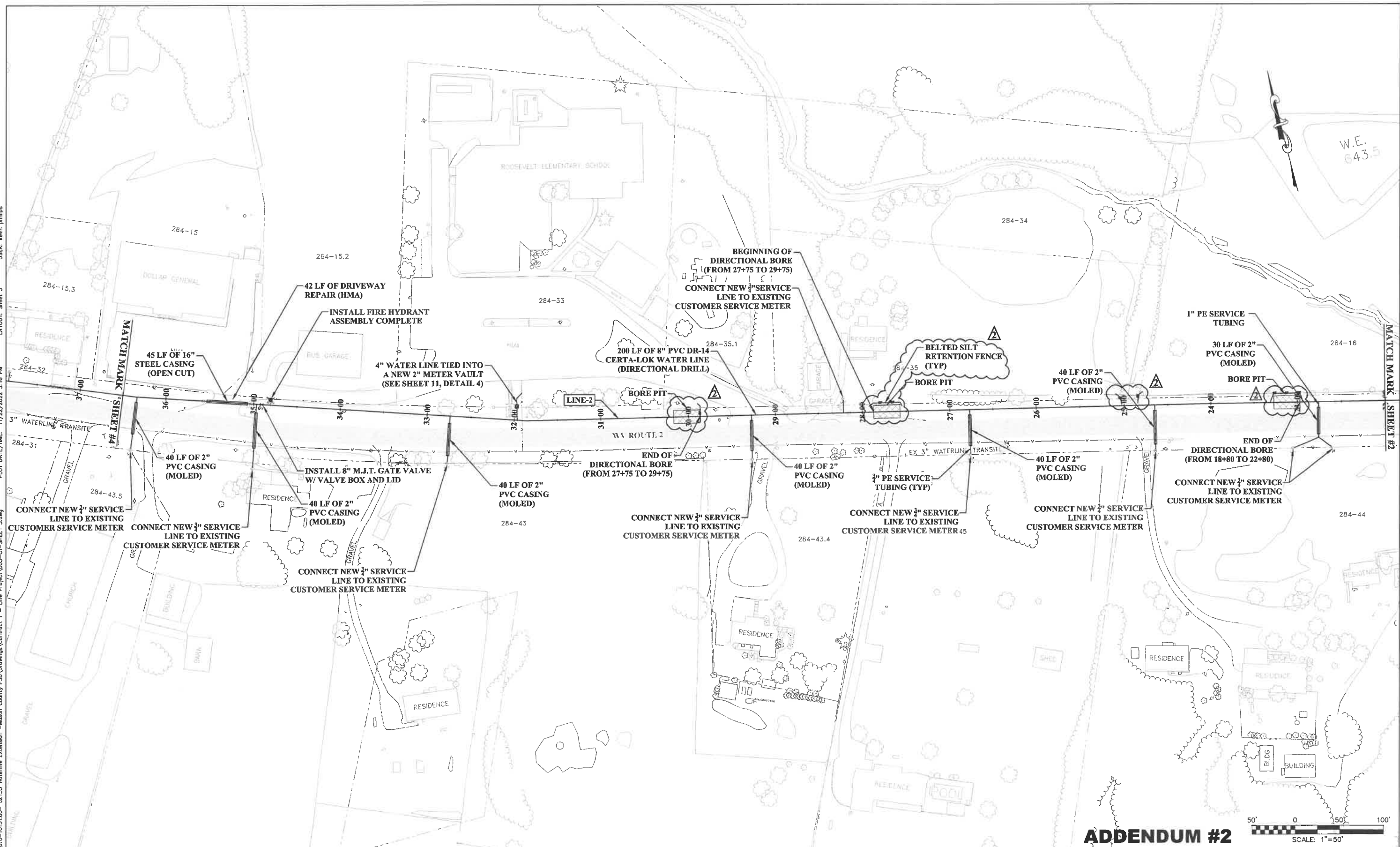


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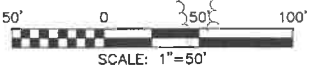
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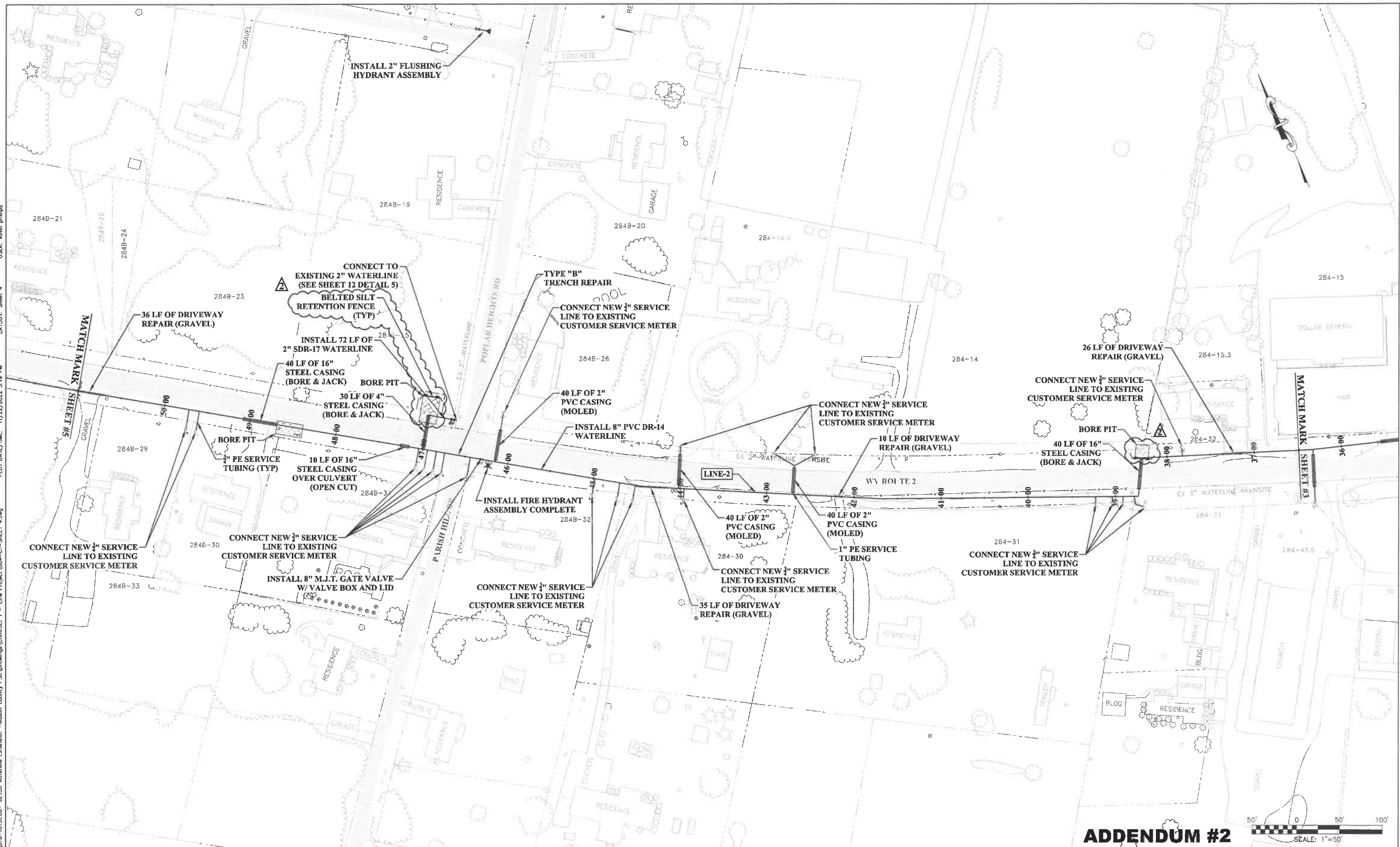
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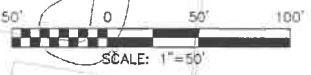
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**PROPOSED WATERLINE EXTENSION**  
**LEWIS DISTRICT**  
**PLAN**

SHEET No.	<b>3</b>
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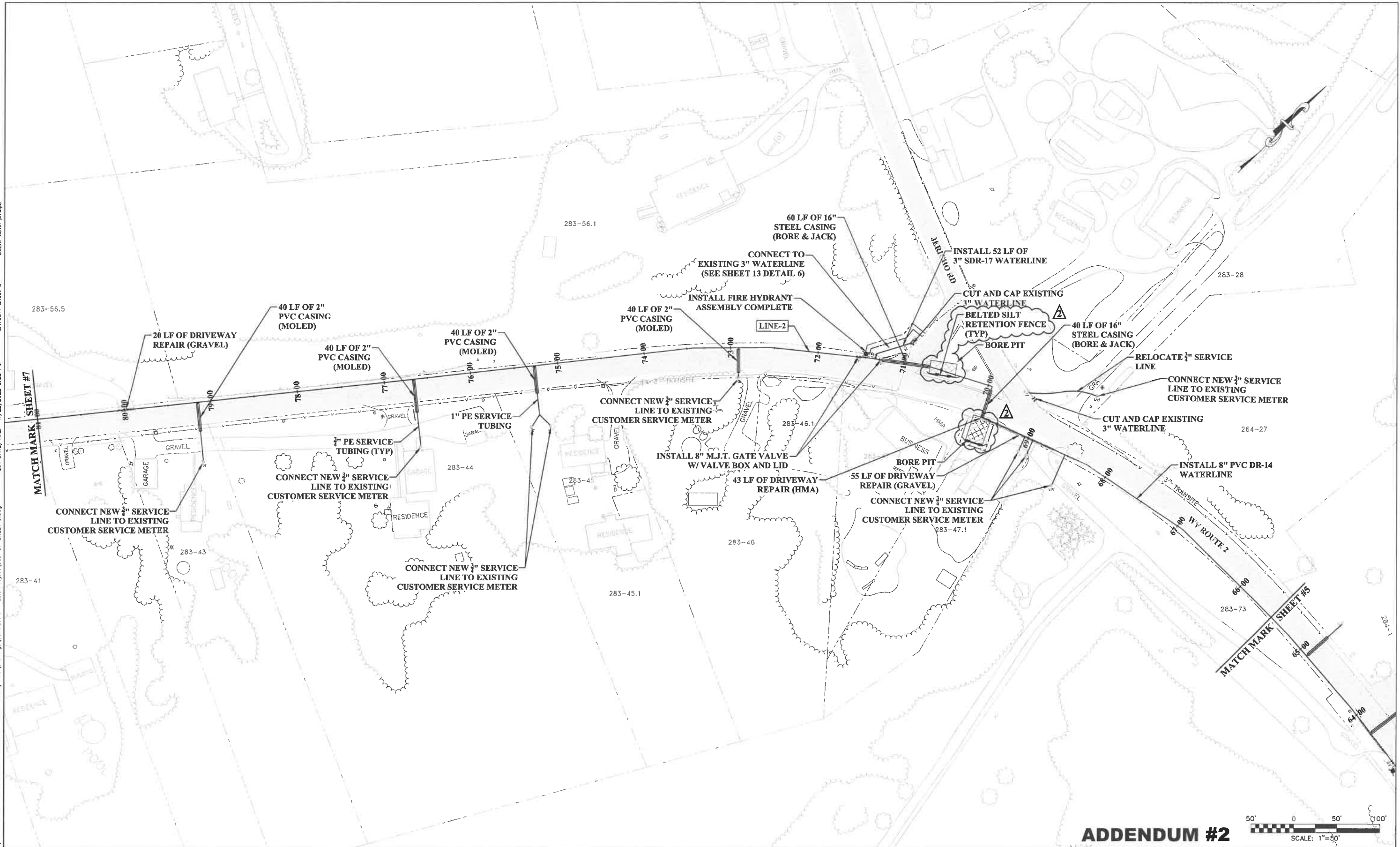
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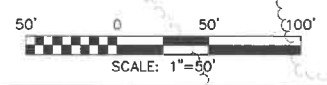
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SHEET No.  
4

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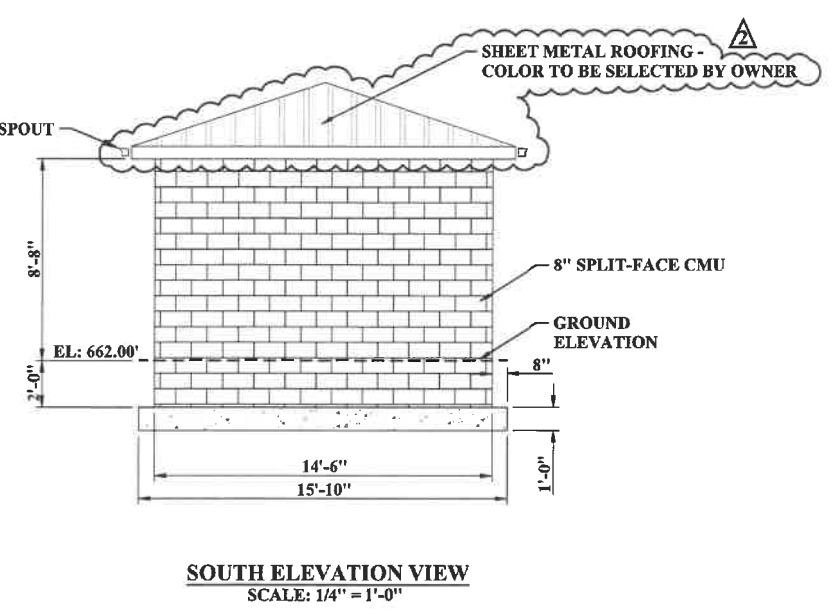
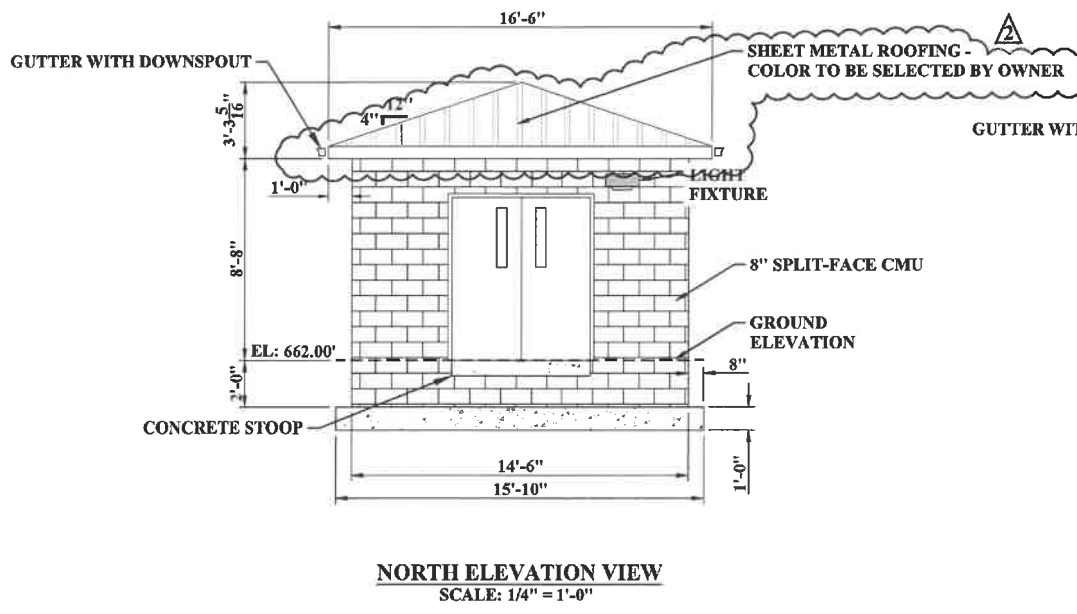
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 PROPOSED WATERLINE EXTENSION  
 LEWIS DISTRICT  
 PLAN

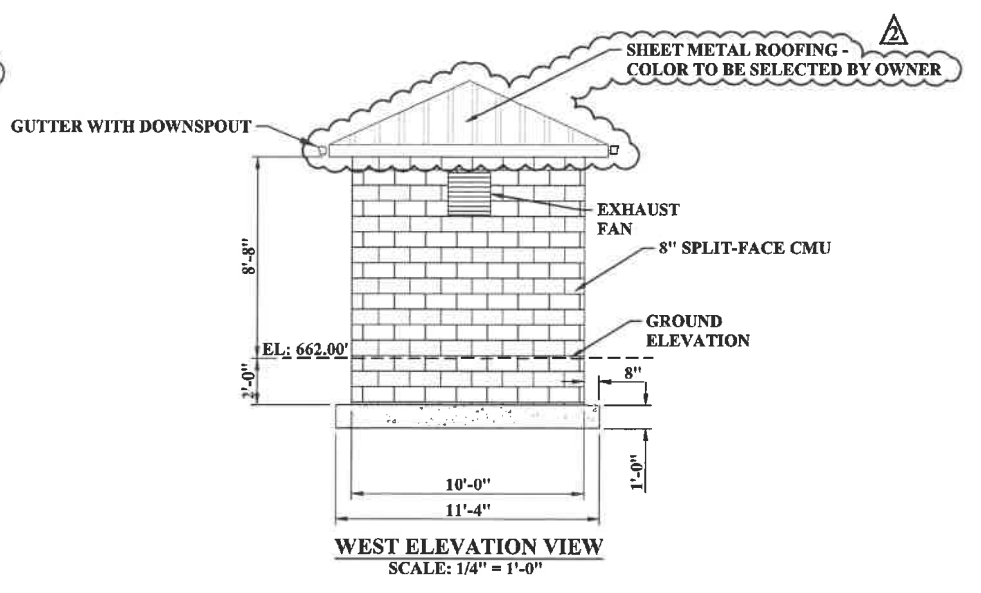
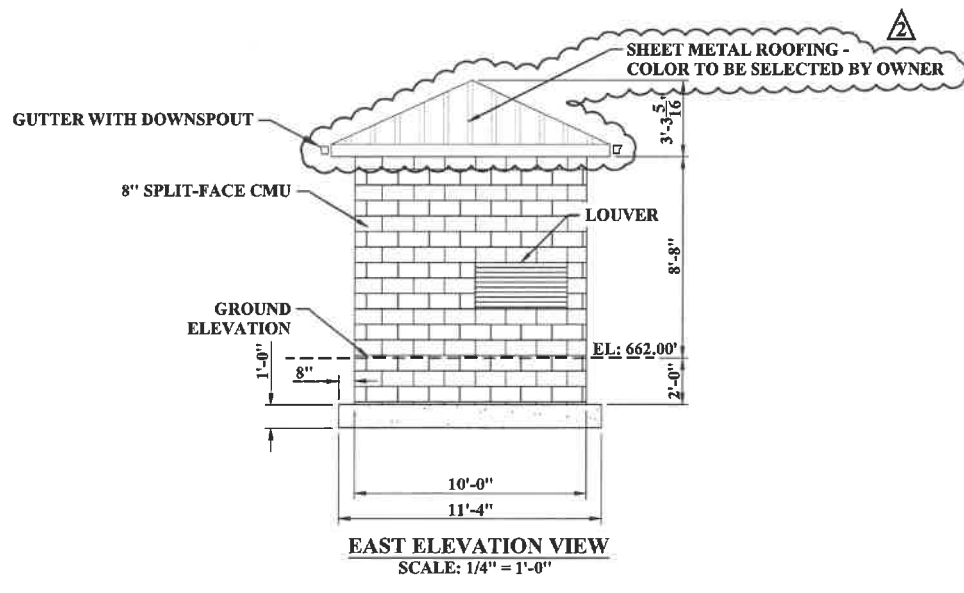
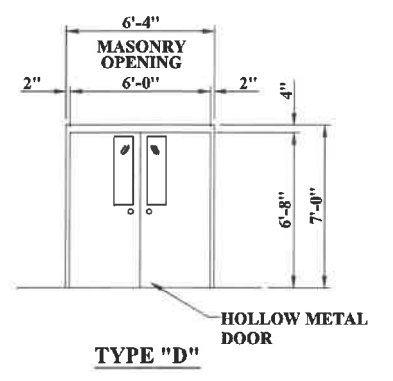
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DOOR SCHEDULE						
DOOR NUMBER	WIDTH	HEIGHT	THICKNESS	MATERIAL	DOOR TYPE	FIRE RATING
D1	6'-0"	6'-8"	1 3/4"	HOLLOW METAL	D	NA

- DOOR NOTES:**
1. USE BULL NOSE BLOCKS AT ALL DOOR OPENINGS.
  2. ALL DOORS REQUIRE DOOR SILENCERS, PUSH PULL PLATES, PROTECTIVE PLATES AND INSULATED.
  3. ALL EXTERIOR DOORS REQUIRE KEY LOCKSETS, DOOR STOPS, THRESHOLD AND WEATHER STRIPS.
  4. DOORS MUST BE SIZED TO FIT OPENINGS USING MANUFACTURER'S RECOMMENDATIONS.
  5. DOOR GLASS SHALL BE SHATTERPROOF.
  6. ALL CONTROL ROOM DOORS SHALL HAVE EMBOSSED PLASTIC LAMINATE SIGNS (2"x8") IDENTIFYING THE ROOM - WHITE BACKGROUND AND BLACK LETTERS. THE SIGNS SHALL BE ATTACHED WITH STAINLESS STEEL SCREWS. CONTRACTOR SHALL SUBMIT DOOR LABEL SCHEDULE FOR APPROVAL PRIOR TO FABRICATION.
  7. INSULATED AND LOCK.
  8. ALL DOORS SHALL HAVE DOOR CLOSERS.



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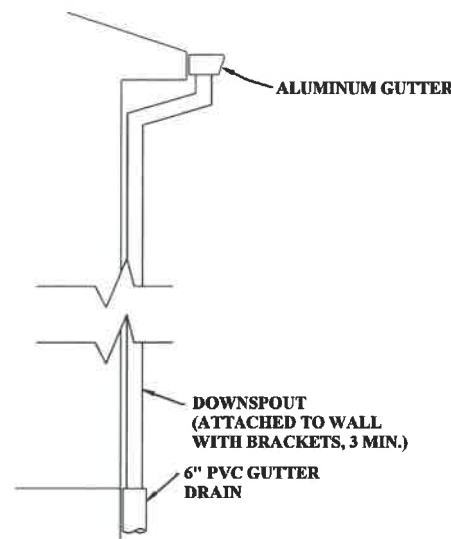
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CONTRACT No.	1
PROJECT No.	010-10151

MASON COUNTY PUBLIC SERVICE DISTRICT  
 MASON COUNTY, WEST VIRGINIA  
 PROPOSED WATERLINE EXTENSION  
 LEWIS DISTRICT  
 BOOSTER STATION BUILDING

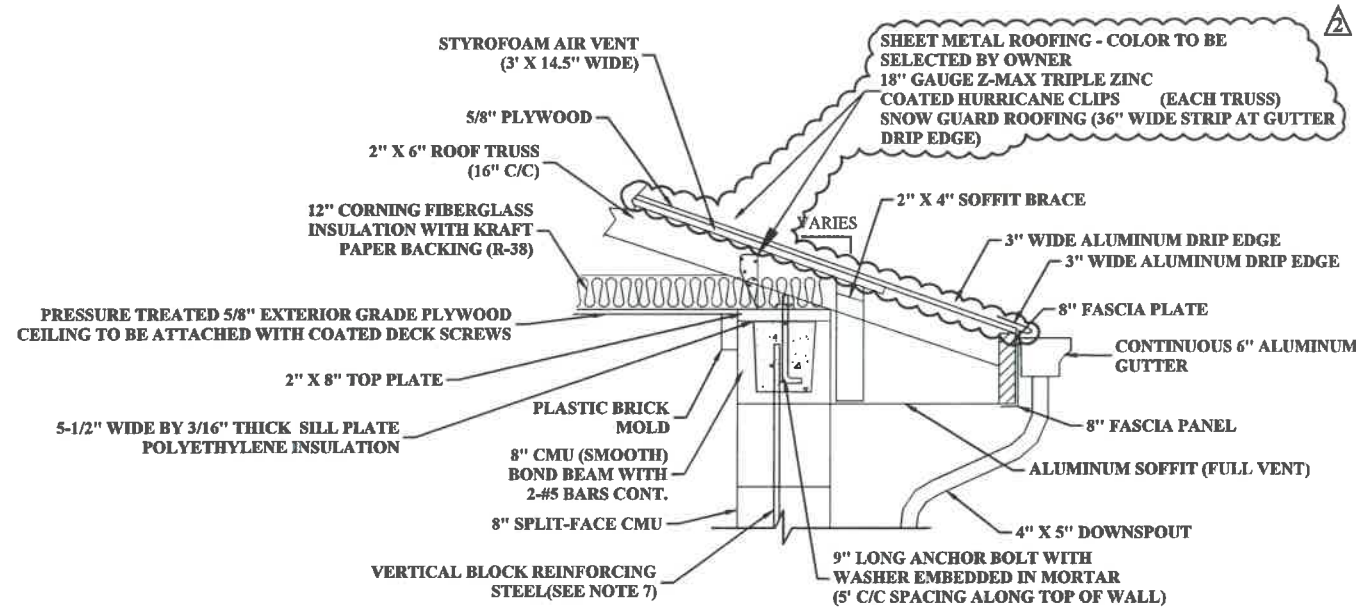
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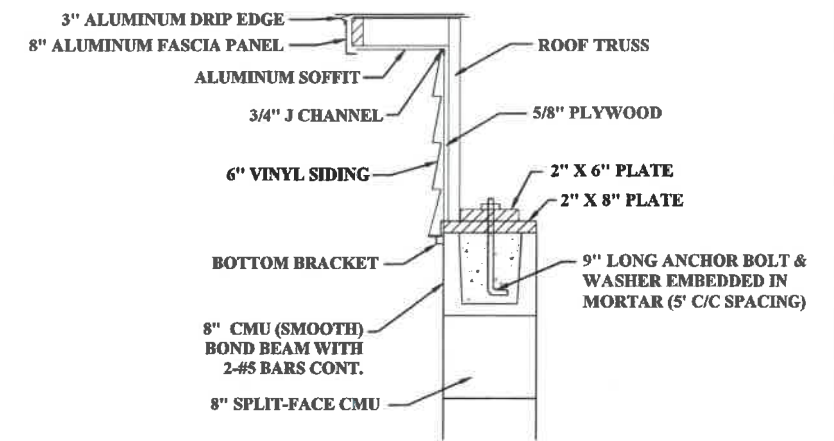
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**TYP. DOWNSPOUT GUTTER  
DETAILS FOR ALL BUILDINGS**  
NO SCALE



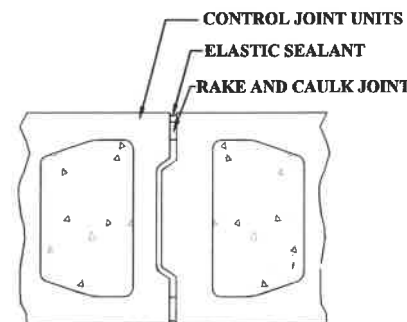
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SCALE: 1" = 1'



**TYPICAL FASCIA SECTION**  
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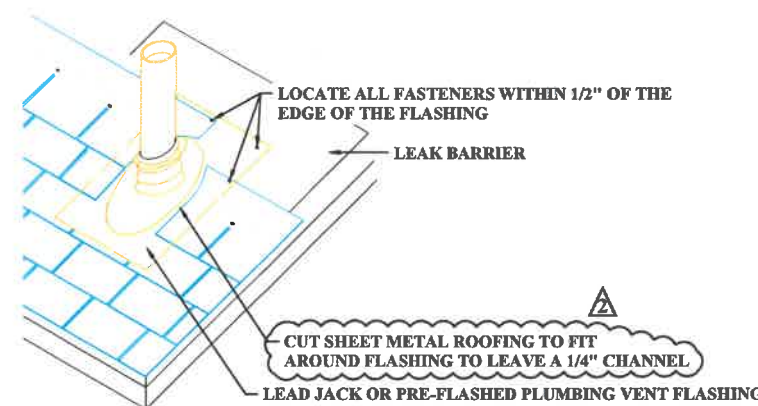
**NOTES:**

1. PLACE 4" CLASS 1 STONE WITH FOUNDATION FABRIC UNDER ALL FLOOR SLABS.
2. PLACE 5/8" EXPANSION MATERIAL WHERE ALL FLOOR SLABS MEET MASONRY WALLS.
3. FOOTER REINFORCEMENT STEEL TO HAVE 3" CLEARANCE FROM GROUND.
4. FLOOR SLAB REINFORCEMENT STEEL TO HAVE 3" CLEARANCE FROM STONE.
5. ALL STEEL REBAR ARE AT 12" SPACING, UNLESS NOTED OTHERWISE.
6. 2" TK. X 24" RIGID "EXTRUDED" POLYSTYRENE INSULATION TO BE PLACED BEHIND FOUNDATION WALLS AND UNDER FLOOR SLAB EDGES AROUND ENTIRE PERIMETER OF BUILDINGS.
7. #5 BARS @ 40" C/C MINIMUM, ADDITIONAL BARS REQUIRED AT OPENINGS. (SEE SHEET 10)



**TYPICAL CONTROL JOINT**  
NO SCALE

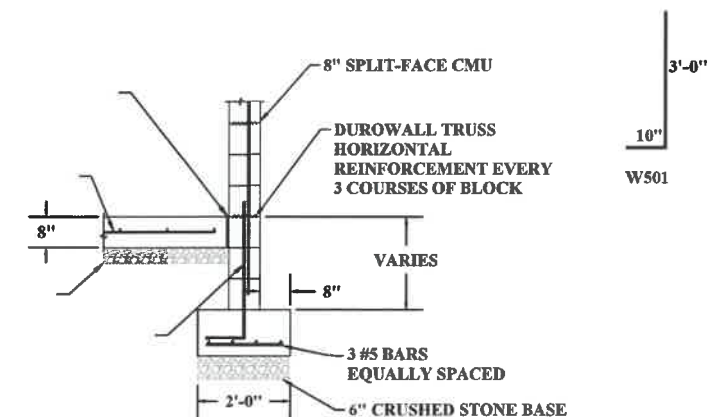
NOTE: CONTROL JOINTS TO BE SPACED AT A MAXIMUM OF 18'-0".



**NOTES:**

1. INSTALL 24" LEAK BARRIER TARGET SHEET.
2. DO NOT FACE NAIL TOWARD THE PLUMBING VENT FLASHING.

**TYP. VENT PIPE ROOF  
PENETRATION DETAIL**  
NO SCALE



**WALL FOUNDATION DETAIL**  
SCALE: 1" = 1'

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MASON COUNTY PUBLIC SERVICE DISTRICT  
MASON COUNTY, WEST VIRGINIA  
PROPOSED WATERLINE EXTENSION  
LEWIS DISTRICT  
BOOSTER STATION BUILDING DETAILS

SHEET No.

**B5**