City of Flint

Department of Purchases & Supplies

Sheldon A. Neeley

TO: All Proposers
FROM: Jarin McGee, Chief Buyer
DATE: **July 19, 2023**
SUBJECT: **Addendum #04 –** P24-501 – Waste Unloading Station

This addendum has been published to address the following.

There have been questions/concerns regarding Addendum #1 on the COF Website. Attached is the full addendum.

All other bidding terms, requirements, and conditions continue as indicated in the remaining original bid documents.
The Chief Buyer, Jarin McGee, is an officer for the City of Flint with respect to this RFP.

In the submission of their proposal, Proposer must acknowledge receipt of this addendum. Proposer shall acknowledge this addendum by signing and returning one copy of this notice with their submission.

Company Name: _____

Address: _____

City / State / Zip: _____

Telephone: _____Fax: _____ Email: _____

Print Name: _____Title: _____

Signature: _____Date: _____

Thank you.

SECTION 00 91 13
ADDENDUM NO. 01

To all prospective bidders and others concerned, YOU ARE HEREBY ADVISED THAT the Contract Documents for the above referenced Project are revised in the following particulars:

Section	Desc iption of C an e
00 01 10	Delete the following Section(s) from the Project Manual and from Section 00 01 10 in their entirety: 07 26 00 - Vapor Retarders 26 05 33 - Raceways and Boxes 26 24 17 - Intelligent Panelboard for Lighting Control and Energy Management 26 28 16 - Low Voltage Circuit Breakers 40 71 13 - Magnetic Flowmeters 40 72 00 - Level Measurements
00 01 10	Delete the following Section(s) from the Project Manual in their entirety and replace with the Section(s) accompanying this Addendum: 22 05 13 - Common Motor Requirements for HVAC Equipment
00 01 10	Add the following Section(s) from the Project Manual in their entirety and accompany this Addendum: 22 05 19 - Meters and Gauges for Plumbing Piping 22 05 23 - General-Duty Valves for Plumbing Piping 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment 22 05 53 - Identification for Plumbing Piping and Equipment 22 10 00 - Plumbing Materials and Methods 22 10 05 - Plumbing Piping
01 21 00	Add the following Allowance Schedule in paragraph 1.07 of Section 01 21 00: 1. SCADA Allowance: Work for SCADA system shall be performed by MAK Controls in accordance with their proposal contained in these specifications. An amount of 12,000.00 shall be included in the contract for this work. 2. Owner Controlled Change Allowance: This allowance is for unforeseen work which may arise during the course of construction and will only be used at the Owner's direction. An amount of $150,000.00 shall be included in the contract for this work.
02 41 00	Delete paragraph 1.01.A.1 in its entirety from Section 02 41 00 which begins "Demolish buildings …".
22 13 33	In paragraph 1.02.D of Section 22 13 33, replace the reference to Section 40 63 00 with Section 40 91 00.
22 13 33	In paragraph 1.06.D of Section 22 13 33, change the words "one (1) year" to "two (2) years".
22 13 33	In paragraph 2.09, add the following as 2.09.F: F. Provide four (4) float switches, levels to be set in the field as directed by the Engineer.

Section	Desc iption of C an e
09 96 00	Delete paragraph 3.09 from Section 09 96 00 in its entirety. (Note: Daily Coating Inspection Report sheet is not a part of this paragraph and thus remains.)
33 34 00	In paragraph 2.02.G of Section 33 34 00, replace the words “neoprene gaskets” with “Styrene Butadiene Rubber (SBR) gaskets conforming to ANSI/AWWA A21.11/C 111 requirements.”
40 23 00	In paragraph 2.01.B.5.a of Section 40 23 00, replace the last sentence of this paragraph with the following sentence: “Gaskets shall be Styrene Butadiene Rubber (SBR) conforming to ANSI/AWWA A21.11/C 111 requirements.”

S eet	Desc iption of C an e
Reissue all sheets as listed in the Cover sheet.	

This Addendum is hereby incorporated into the original Contract Documents for the bidding referred to above and is considered as binding as though originally appearing therein. Receipt of this Addendum must be noted in the place provided in Section 00 42 43 - Proposal, dated July 10, 2023.

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SECTION 22 05 13
COMMON MOTOR REQUIREMENTS FOR PLUMBING EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. General construction and requirements.

B. Applications.

C. Three phase electric motors.

1.02 RELATED REQUIREMENTS

A. Section 26 05 83 - Wiring Connections: Electrical characteristics and wiring connections.

1.03 REFERENCE STANDARDS

A. ABMA STD 9 - Load Ratings and Fatigue Life for Ball Bearings 2015 (Reaffirmed 2020).

B. IEEE 112 - IEEE Standard Test Procedure for Polyphase Induction Motors and Generators 2017.

C. NEMA MG 1 - Motors and Generators 2018.

D. NFPA 70 - National Electrical Code Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide wiring diagrams with electrical characteristics and connection requirements.

C. Test Reports: Indicate test results verifying nominal efficiency and power factor for three phase motors larger than 1/2 horsepower.

D. Manufacturer's Installation Instructions: Indicate setting, mechanical connections, lubrication, and wiring instructions.

E. Operation Data: Include instructions for safe operating procedures.

F. Maintenance Data: Include assembly drawings, bearing data including replacement sizes, and lubrication instructions.

1.05 QUALITY ASSURANCE

A. Comply with NFPA 70.

B. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories Inc. as suitable for the purpose specified and indicated.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Protect motors stored on site from weather and moisture by maintaining factory covers and suitable weather-proof covering. For extended outdoor storage, remove motors from equipment and store separately.

1.07 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Baldor Electric Company/ABB Group; _____: www.baldor.com/#sle.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 GENERAL CONSTRUCTION AND REQUIREMENTS

A. Construction:

1. Open drip-proof type except where specifically noted otherwise.
2. Design for continuous operation in 104 degrees F environment.
3. Design for temperature rise in accordance with NEMA MG 1 limits for insulation class, service factor, and motor enclosure type.

B. Explosion-Proof Motors: UL approved and labelled for hazard classification, with over temperature protection.

C. Visible Nameplate: Indicating motor horsepower, voltage, phase, cycles, RPM, full load amps, locked rotor amps, frame size, manufacturer's name and model number, service factor, power factor, efficiency.

D. Wiring Terminations:

1. Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated. Enclose terminal lugs in terminal box sized to NFPA 70, threaded for conduit.
2. For fractional horsepower motors where connection is made directly, provide threaded conduit connection in end frame.

2.03 APPLICATIONS

A. Motors located in exterior locations, wet air streams downstream of sprayed coil dehumidifiers, draw through cooling towers, air cooled condensers, humidifiers, direct drive axial fans, roll filters, explosion proof environments, and dust collection systems: Totally enclosed type.

B. Motors located in outdoors, in wet air streams downstream of sprayed coil dehumidifiers, in draw through cooling towers, and in humidifiers: Totally enclosed weatherproof epoxy-treated type.

2.04 THREE PHASE POWER - SQUIRREL CAGE MOTORS

A. Starting Torque: Between 1 and 1-1/2 times full load torque.

B. Starting Current: Six times full load current.

C. Power Output, Locked Rotor Torque, Breakdown or Pull Out Torque: NEMA Design B characteristics.

D. Design, Construction, Testing, and Performance: Comply with NEMA MG 1 for Design B motors.

E. Insulation System: NEMA Class B or better.

F. Testing Procedure: In accordance with IEEE 112. Load test motors to determine free from electrical or mechanical defects in compliance with performance data.

G. Motor Frames: NEMA Standard T-Frames of steel, aluminum, or cast iron with end brackets of cast iron or aluminum with steel inserts.

H. Bearings: Grease lubricated anti-friction ball bearings with housings equipped with plugged provision for relubrication, rated for minimum ABMA STD 9, L-10 life of 20,000 hours. Calculate bearing load with NEMA minimum V-belt pulley with belt center line at end of NEMA standard shaft extension. Stamp bearing sizes on nameplate.

I. Sound Power Levels: To NEMA MG 1.

J. Weatherproof Epoxy Sealed Motors: Epoxy seal windings using vacuum and pressure with rotor and starter surfaces protected with epoxy enamel; bearings double shielded with waterproof non-washing grease.

K. Nominal Efficiency: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

L. Nominal Power Factor: As indicated at full load and rated voltage when tested in accordance with IEEE 112.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Install securely on firm foundation. Mount ball bearing motors with shaft in any position.

C. Check line voltage and phase and ensure agreement with nameplate.

END OF SECTION

SECTION 22 05 19
METERS AND GAUGES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Pressure gauges.

1.02 REFERENCE STANDARDS

A. AGA/ANSI B109 Set - INCLUDES ANSI B109.1, ANSI B109.2, ANSI B109.3, ANSI B109.4 2000.

B. ASME B40.100 - Pressure Gauges and Gauge Attachments 2022.

1.03 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide red-marked product data sheets for each furnished item with associated components and accessories.

C. Project Record Documents: Record actual locations of components and instrumentation.

D. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.

1. See Section 01 60 00 - Product Requirements. for additional provisions.
2. Extra Pressure Gauges: One of each type and size.

PART 2 PRODUCTS

2.01 PRESSURE GAUGES

A. Manufacturers:

1. Ashcroft, Inc
2. Dwyer Instruments, Inc
3. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Do not install instrumentation when areas are under construction, except for required rough-in, taps, supports, and test plugs.

3.02 INSTALLATION

A. Install pressure gauges as follows:

1. At Pumps: Place single gauge before strainer, suction side and discharge side.
2. Include gauge cock to isolate each gauge and extend nipples for insulation clearance.
3. Adjust gauges to selected viewing angle, clean thoroughly, and calibrate to zero.

3.03 SCHEDULES

A. Pressure Gauges, Location and Scale Range:

1. Pumps, 0 to 100 psi.
2. Pressure reducing valves, 0 to 100 psi.

B. Pressure Gauge Tappings, Location:

1. Control valves 3/4 inch & larger - inlets and outlets.

END OF SECTION

SECTION 22 05 23
GENERAL-DUTY VALVES FOR PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Ball valves.

B. Check valves.

C. Gate valves.

D. Chainwheels.

1.02 RELATED REQUIREMENTS

A. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

B. Section 22 10 05 - Plumbing Piping.

1.03 ABBREVIATIONS AND ACRONYMS

A. CWP: Cold working pressure.

B. EPDM: Ethylene propylene copolymer rubber.

C. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.

D. NRS: Non-rising stem.

E. OS&Y: Outside screw and yoke.

F. PTFE: Polytetrafluoroethylene.

G. RS: Rising stem.

H. TFE: Tetrafluoroethylene.

I. WOG: Water, oil, and gas.

1.04 REFERENCE STANDARDS

A. API STD 594 - Check Valves: Flanged, Lug, Wafer, and Butt-Welding 2022.

B. ASME B1.20.1 - Pipe Threads, General Purpose, Inch 2013 (Reaffirmed 2018).

C. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250 2020.

D. ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard 2020.

E. ASME B16.10 - Face-to-Face and End-to-End Dimensions of Valves 2022.

F. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.

G. ASME B16.34 - Valves — Flanged, Threaded, and Welding End 2020.

H. ASME B31.9 - Building Services Piping 2020.

I. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators 2023.

J. ASTM A536 - Standard Specification for Ductile Iron Castings 1984, with Editorial Revision (2019).

K. ASTM B61 - Standard Specification for Steam or Valve Bronze Castings 2015 (Reapproved 2021).

L. ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings 2017.

M. AWWA C606 - Grooved and Shouldered Joints 2022.

N. MSS SP-45 - Drain and Bypass Connections 2020.

O. MSS SP-70 - Gray Iron Gate Valves, Flanged and Threaded Ends 2011.

P. MSS SP-71 - Gray Iron Swing Check Valves, Flanged and Threaded Ends 2018.

Q. MSS SP-72 - Ball Valves with Flanged or Butt-Welding Ends for General Service 2010a.

R. MSS SP-80 - Bronze Gate, Globe, Angle, and Check Valves 2019.

S. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010, with Errata .

T. MSS SP-125 - Check Valves: Gray Iron and Ductile Iron, In-Line, Spring-Loaded, Center-Guided 2018.

U. NSF 61 - Drinking Water System Components - Health Effects 2022, with Errata.

V. NSF 372 - Drinking Water System Components - Lead Content 2022.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.

C. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listings.

E. Maintenance Materials: Furnish Owner with one wrench for every five plug valves, in each size of square plug valve head.

1. See Section 01 60 00 - Product Requirements for additional provisions.

1.06 QUALITY ASSURANCE

A. Manufacturer:

1. Obtain valves for each valve type from single manufacturer.

2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.

B. Welding Materials and Procedures: Comply with ASME BPVC-IX.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Prepare valves for shipping as follows:

1. Minimize exposure of operable surfaces by setting plug and ball valves to open position.

2. Protect valve parts exposed to piped medium against rust and corrosion.

3. Protect valve piping connections such as grooves, weld ends, threads, and flange faces.

4. Adjust globe, gate, and angle valves to the closed position to avoid clattering.

5. Secure check valves in either the closed position or open position.

B. Use the following precautions during storage:

1. Maintain valve end protection and protect flanges and specialties from dirt.

a. Provide temporary inlet and outlet caps.

b. Maintain caps in place until installation.

2. Store valves in shipping containers and maintain in place until installation.
    a. Store valves indoors in dry environment.
    b. Store valves off the ground in watertight enclosures when indoor storage is not an option.

1.08 EXERCISE THE FOLLOWING PRECAUTIONS FOR HANDLING:

A. Handle large valves with sling, modified to avoid damage to exposed parts.

B. Avoid the use of operating handles or stems as rigging or lifting points.

PART 2 PRODUCTS

2.01 APPLICATIONS

A. See drawings for specific valve locations.

B. Listed pipe sizes shown using nominal pipe sizes (NPS) and nominal diameter (DN).

C. Provide the following valves for the applications if not indicated on drawings:
    1. Shutoff: Ball, butterfly, gate or plug.
    2. Swing Check (Pump Outlet):
        a. 2 inch and Smaller: Bronze swing check valves with bronze or nonmetallic disc.
        b. 2-1/2 inch and Larger for Domestic Water: Iron swing check valves with closure control, metal or resilient seat check valves.

D. Substitutions of valves with higher CWP classes or WSP ratings for same valve types are permitted when specified CWP ratings or WSP classes are not available.

E. Required Valve End Connections for Non-Wafer Types:
    1. Steel Pipe:
        a. 2 inch and Smaller: Threaded ends.
        b. 2-1/2 inch to 4 inch: Grooved or flanged ends except where threaded valve-end option is indicated in valve schedules below.
        c. 5 inch and Larger: Grooved or flanged ends.
    2. Copper Tube:
        a. 2 inch and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules below.
        b. 2-1/2 inch to 4 inch: Grooved or flanged ends except where threaded valve-end option is indicated in valve schedules below.
        c. 5 inch and Larger: Grooved or flanged ends.

F. Sanitary Waste Water Valves:
    1. 2 inch and Smaller:
        a. Bronze and Brass: Provide with solder-joint.
        b. Ball: One piece, full port, brass with brass trim.
        c. Bronze Swing Check: Class 125, bronze disc.
        d. Bronze Gate: Class 125, NRS.
    2. 2-1/2 inch and Larger:
        a. Iron, 2-1/2 inch to 4 inch: Provide with threaded ends.
        b. Iron Ball: Class 150.

c. Iron Swing Check: Class 125, metal seats.

d. Iron Gate: Class 125, NRS.

2.02 GENERAL REQUIREMENTS

A. Valve Pressure and Temperature Ratings: No less than rating indicated; as required for system pressures and temperatures.

B. Valve Sizes: Match upstream piping unless otherwise indicated.

C. Valve Actuator Types:

1. Hand Lever: Quarter-turn valves 6 inch and smaller except plug valves.

D. Valve-End Connections:

1. Threaded End Valves: ASME B1.20.1.
2. Flanges on Iron Valves: ASME B16.1 for flanges on iron valves.
3. Pipe Flanges and Flanged Fittings 1/2 inch through 24 inch: ASME B16.5.
4. Solder Joint Connections: ASME B16.18.

E. General ASME Compliance:

1. Ferrous Valve Dimensions and Design Criteria: ASME B16.10 and ASME B16.34.
2. Solder-joint Connections: ASME B16.18.
3. Building Services Piping Valves: ASME B31.9.

F. Potable Water Use:

1. Certified: Approved for use in compliance with NSF 61 and NSF 372.
2. Lead-Free Certified: Wetted surface material includes less than 0.25 percent lead content.

G. Valve Bypass and Drain Connections: MSS SP-45.

H. Source Limitations: Obtain each valve type from a single manufacturer.

2.03 BRASS, BALL VALVES

A. Two Piece, Full Port with Brass Trim and Female Thread, Male thread, or Solder Connections:

1. Comply with MSS SP-110.
2. WSP Rating: 150 psi.
3. WOG Rating: 600 psi.
4. Body: Forged brass.
5. Seats: PTFE.
6. Ball: Chrome-plated brass.
7. Operator: Lockable handle and memory stop.
8. Manufacturers:

a. Apollo Valves

b. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 BRASS, INLINE CHECK VALVES

A. Class 150:

1. WOG Rating: 200 psi.

2. Maximum Service Temperature: 250 degrees F.
3. Body: Forged brass.
4. Disc: Forged brass.
5. Seal: PTFE, bubble-tight.
6. End Connections: Press.
7. Manufacturers:
    a. Jomar Valves, a division of Jomar Group
    b. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 BRASS, HORIZONTAL SWING CHECK VALVES

A. Class 125, Threaded End Connections:
1. WOG Rating: 200 psi.
2. Body: Forged brass.
3. Disc: Forged brass.
4. Hinge-Pin, Screw, and Cap: Forged brass.
5. Manufacturers:
    a. Jomar Valves, a division of Jomar Group
    b. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 BRONZE, SWING CHECK VALVES

A. General:
1. Fabricate from dezincification resistant material.
2. Copper alloys containing more than 15 percent zinc are not permitted.

B. Class 125:
1. Pressure and Temperature Rating: MSS SP-80, Type 3.
2. Design: Y-pattern, horizontal or vertical flow.
3. WOG Rating: 200 psi.
4. Body: Bronze, ASTM B62.
5. End Connections: Threaded.
6. Disc: Bronze.
7. Manufacturers:
    a. Apollo Valves
    b. Jomar Valves, a division of Jomar Group
    c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Class 150:
1. Pressure and Temperature Rating: MSS SP-80, Type 3.
2. Design: Y-pattern, horizontal or vertical flow.
3. WSP Rating: 150 psi.
4. WOG Rating: 300 psi.
5. Body: Bronze, ASTM B62.

6. End Connections: Threaded or soldered.
7. Disc: Bronze.
8. Manufacturers:
    a. FNW; 1241, Federal:
    b. Substitutions: See Section 01 60 00 - Product Requirements.

2.07 BRONZE, GATE VALVES

A. General:
1. Fabricate from dezincification resistant material.
2. Copper alloys containing more than 15 percent zinc are not permitted.

B. Rising Stem or OS&Y:
1. Pressure-Temperature Range: MSS SP-80, Type I.
2. Class 150: CWP Rating; 300 psi.
3. Body: ASTM B62, bronze with integral seat and screw-in bonnet.
4. End Connections: Threaded or solder.
5. Stem: Bronze.
6. Disc: Solid wedge; bronze.
7. Packing: Asbestos free.
8. Handwheel Operator: Malleable iron.
9. Manufacturers:
    a. Apollo Valves
    b. FNW; 1221, Federal:
    c. Substitutions: See Section 01 60 00 - Product Requirements.

C. Non-Rising Stem or NRS
1. Pressure-Temperature Range: MSS SP-80, Type I.
2. Class 125:
3. Class 150: CWP Rating; 300 psi.
4. Body: ASTM B62, bronze with integral seat and screw-in bonnet.
5. Ends Connections: Threaded or solder.
6. Stem: Bronze.
7. Disc: Solid wedge; bronze.
8. Packing: Asbestos free.
9. Handwheel Operator: Malleable iron.
10. Manufacturers:
    a. Apollo Valves
    b. FNW; 1211, Federal
    c. Substitutions: See Section 01 60 00 - Product Requirements.

PART 3 EXECUTION

3.01 EXAMINATION

A. Discard all packing materials and verify that valve interior, including threads and flanges are completely clean without signs of damage or degradation that could result in leakage.

B. Verify valve parts to be fully operational in all positions from closed to fully open.

C. Confirm gasket material to be suitable for the service, to be of correct size, and without defects that could compromise effectiveness.

D. Should valve is determined to be defective, replace with new valve.

3.02 INSTALLATION

A. Provide unions or flanges with valves to facilitate equipment removal and maintenance while maintaining system operation and full accessibility for servicing.

B. Provide separate valve support as required and locate valve with stem at or above center of piping, maintaining unimpeded stem movement.

C. Install check valves where necessary to maintain direction of flow as follows:

1. Lift Check: Install with stem plumb and vertical.

2. Swing Check: Install horizontal maintaining hinge pin level.

END OF SECTION

SECTION 22 05 29
HANGERS AND SUPPORTS FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Strut systems for pipe or equipment support.

B. Pipe hangers.

C. Pipe supports, guides, shields, and saddles.

D. Anchors and fasteners.

1.02 RELATED REQUIREMENTS

A. Section 03 30 00 - Cast-in-Place Concrete: Concrete equipment pads.

B. Section 05 50 00 - Metal Fabrications.

1.03 REFERENCE STANDARDS

A. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products 2017.

B. ASTM A153/A153M - Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware 2023.

C. ASTM A181/A181M - Standard Specification for Carbon Steel Forgings, for General-Purpose Piping 2023.

D. ASTM A36/A36M - Standard Specification for Carbon Structural Steel 2019.

E. ASTM A47/A47M - Standard Specification for Ferritic Malleable Iron Castings 1999, with Editorial Revision (2022).

F. ASTM A283/A283M - Standard Specification for Low and Intermediate Tensile Strength Carbon Steel Plates 2018.

G. ASTM A395/A395M - Standard Specification for Ferritic Ductile Iron Pressure-Retaining Castings for Use at Elevated Temperatures 1999 (Reapproved 2022).

H. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2023.

I. ASTM A1011/A1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength 2023.

J. ASTM B633 - Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel 2023.

K. ASTM D635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position 2022.

L. ASTM E84 - Standard Test Method for Surface Burning Characteristics of Building Materials 2023a.

M. ASTM E96/E96M - Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials 2022a, with Editorial Revision (2023).

N. MFMA-4 - Metal Framing Standards Publication 2004.

O. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).

P. UL (DIR) - Online Certifications Directory Current Edition.

Q. UL 723 - Standard for Test for Surface Burning Characteristics of Building Materials Current Edition, Including All Revisions.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination:

1. Coordinate sizes and arrangement of supports and bases with the actual equipment and components to be installed.

2. Coordinate the work with other trades to provide additional framing and materials required for installation.

3. Coordinate compatibility of support and attachment components with mounting surfaces at the installed locations.

4. Coordinate the arrangement of supports with ductwork, piping, equipment and other potential conflicts installed under other sections or by others.

5. Notify Engineer of any conflicts with or deviations from Contract Documents. Obtain direction before proceeding with work.

B. Sequencing:

1. Do not install products on or provide attachment to concrete surfaces until concrete has fully cured in accordance with Section 03 30 00.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide manufacturer's standard catalog pages and data sheets for metal channel (strut) framing systems, nonpenetrating rooftop supports, post-installed concrete and masonry anchors, and thermal insulated pipe supports.

1. Fiberglass Strut Channel Framing Systems: Include requirements for strength derating according to ambient temperature.

C. Shop Drawings: Include details for fabricated hangers and supports where materials or methods other than those indicated are proposed for substitution.

1. Application of protective inserts, saddles, and shields at pipe hangers for each type of insulation and hanger.

D. Derating Calculations for Fiberglass Strut Channel Framing Systems: Indicate load ratings adjusted for applicable service conditions.

E. Installer's Qualifications: Include evidence of compliance with specified requirements.

F. Manufacturer's Instructions: Indicate application conditions and limitations of use stipulated by product testing agency. Include instructions for storage, handling, protection, examination, preparation, and installation of product.

1.06 QUALITY ASSURANCE

A. Comply with applicable building code.

B. Installer Qualifications for Powder-Actuated Fasteners (when specified): Certified by fastener system manufacturer with current operator's license.

C. Installer Qualifications for Field-Welding: As specified in Section 05 50 00.

D. Product Listing Organization Qualifications: An organization recognized by OSHA as a Nationally Recognized Testing Laboratory (NRTL) and acceptable to authorities having jurisdiction.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Provide required hardware to hang or support piping, equipment, or fixtures with related accessories as necessary to complete installation of plumbing work.

B. Provide hardware products listed, classified, and labeled as suitable for intended purpose.

C. Do not use wire, chain, perforated pipe strap, or wood for permanent supports unless specifically indicated or permitted.

D. Materials for Metal Fabricated Supports: Comply with Section 05 50 00.

1. Zinc-Plated Steel: Electroplated in accordance with ASTM B633 unless stated otherwise.
2. Galvanized Steel: Hot-dip galvanized in accordance with ASTM A123/A123M or ASTM A153/A153M unless stated otherwise.

E. Corrosion Resistance: Use corrosion-resistant metal-based materials fully compatible with exposed piping materials and suitable for the environment where installed.

1. Outdoor, Damp, or Wet-Indoor Locations: Use galvanized steel, stainless steel, or approved equivalent unless otherwise indicated.

2.02 STRUT SYSTEMS FOR PIPE OR EQUIPMENT SUPPORT

A. Strut Channels:

1. Manufacturers:
   a. ABB Installation Products
   b. Gripple, Inc; Universal Bracket
   c. Unistrut, a brand of Atkore International Inc
   d. Substitutions: See Section 01 60 00 - Product Requirements.
2. ASTM A653/A653M galvanized steel bracket with clamps for surface mounting of piping or plumbing equipment support.
3. Channel or Bracket Kits: Include rods, brackets, end-fixed fittings, covers, clips, and other related hardware required to complete sectional trapeze section for piping or other support.

B. Hanger Rods:

1. Threaded zinc-plated steel unless otherwise indicated.
2. Minimum Size, Unless Otherwise Indicated or Required:
   a. Equipment Supports: 1/2 inch diameter.
   b. Piping up to 1 inch: 1/4 inch diameter.
   c. Piping larger than 1 inch: 3/8 inch diameter.
   d. Trapeze Support for Multiple Pipes: 3/8 inch in length.

C. Channel Nuts:

1. Manufacturers:
   a. B-Line, a brand of Eaton Corporation
   b. FNW; 7821
   c. Unistrut, a brand of Atkore International, Inc
   d. Substitutions: See Section 01 60 00 - Product Requirements.

2. Provide carbon steel channel nut with epoxy copper or zinc finish and long, regular, or short spring as indicated on drawings.

2.03 PIPE HANGERS

A. Band Hangers, Adjustable:

1. Manufacturers:

a. B-Line, a brand of Eaton Corporation

b. Gripple, Inc; Universal Clamp (Threaded):

c. Substitutions: See Section 01 60 00 - Product Requirements.

2. MSS SP-58 type 7 or 9, zinc-plated ASTM A1011/A1011M steel or ASTM A653/A653M carbon steel.

B. Clevis Hangers, Adjustable:

1. Manufacturers:

a. B-Line, a brand of Eaton Corporation

b. FNW; 7005:

c. Substitutions: See Section 01 60 00 - Product Requirements.

2. Copper Tube: MSS SP-58 type 1, epoxy-plated copper.

3. Standard-Duty: MSS SP-58 type 1, zinc-colored, epoxy plated.

4. UL (DIR) listed: Pipe sizes 2-1/2 to 8 inch.

2.04 PIPE CLAMPS

A. Riser Clamps:

1. Manufacturers:

a. B-Line, a brand of Eaton Corporation

b. Substitutions: See Section 01 60 00 - Product Requirements.

2. For insulated pipe runs, provide two bolt-type clamps designed for installation under insulation.

3. MSS SP-58 type 1 or 8, carbon steel or steel with epoxy plated, plain, stainless steel, or zinc plated finish.

4. Copper Tube Pipe Clamp: MSS SP-58 type 8, epoxy plated copper.

5. UL (DIR) listed: Pipe sizes 1/2 to 8 inch.

2.05 PIPE SUPPORTS, GUIDES, SHIELDS, AND SADDLES

A. Dielectric Barriers: Provide between metallic supports and metallic piping and associated items of dissimilar type; acceptable dielectric barriers include rubber or plastic sheets or coatings attached securely to pipe or item.

B. Stanchions:

1. Manufacturers:

a. Anvil International

b. B-Line, a brand of Eaton Corporation

c. Substitutions: See Section 01 60 00 - Product Requirements.

2. Material: Malleable iron, ASTM A47/A47M; or carbon steel, ASTM A36/A36M.

3. Provide coated or plated saddles to isolate steel hangers from dissimilar metal tube or pipe.
4. For pipe runs, use stanchions of same type and material where vertical adjustment is required for stationary pipe.

C. Pipe Supports:

1. Material: ASTM A395/A395M ductile iron, ASTM A36/A36M carbon steel, ASTM A47/A47M malleable iron, ASTM A181/A181M forged steel, or ASTM A283/A283M steel.
2. Liquid Temperatures Up to 122 degrees F:
   a. Overhead Support: MSS SP-58 types 1, 3 through 12 clamps.
   b. Support From Below: MSS SP-58 types 35 through 38.

D. Copper Pipe Supports:

1. Manufacturers:
   a. B-Line, a brand of Eaton Corporation
   b. Substitutions: See Section 01 60 00 - Product Requirements.

2.06 ANCHORS AND FASTENERS

A. Manufacturers - Mechanical Anchors:

1. Hilti, Inc
2. Powers Fasteners, Inc

B. Manufacturers - Powder-Actuated Fastening Systems:

1. Hilti, Inc
2. Substitutions: See Section 01 60 00 - Product Requirements.

C. Unless otherwise indicated and where not otherwise restricted, use the anchor and fastener types indicated for the specified applications.

D. Concrete: Use preset concrete inserts, expansion anchors, or screw anchors.

E. Solid or Grout-Filled Masonry: Use expansion anchors or screw anchors.

F. Hollow Masonry: Use toggle bolts.

G. Plastic and lead anchors are not permitted.

H. Preset Concrete Inserts: Continuous metal strut channel and spot inserts specifically designed to be cast in concrete ceilings, walls, and floors.

1. Channel Material: Use galvanized steel.
2. Manufacturer: Same as manufacturer of metal strut channel framing system.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that mounting surfaces are ready to receive support and attachment components.

C. Verify that conditions are satisfactory for installation prior to starting work.

3.02 INSTALLATION

A. Install products in accordance with manufacturer's instructions.

B. Install anchors and fasteners in accordance with ICC Evaluation Services, LLC (ICC-ES) evaluation report conditions of use where applicable.

C. Provide independent support from building structure. Do not provide support from piping, ductwork, conduit, or other systems.

D. Unless specifically indicated or approved by Engineer, do not provide support from suspended ceiling support system or ceiling grid.

E. Unless specifically indicated or approved by Engineer, do not provide support from roof deck.

F. Do not penetrate or otherwise notch or cut structural members without approval of Structural Engineer.

G. Equipment Support and Attachment:

1. Use metal fabricated supports or supports assembled from metal channel (strut) to support equipment as required.

2. Use metal channel (strut) secured to studs to support equipment surface-mounted on hollow stud walls when wall strength is not sufficient to resist pull-out.

3. Use metal channel (strut) to support surface-mounted equipment in wet or damp locations to provide space between equipment and mounting surface.

4. Unless otherwise indicated, mount floor-mounted equipment on properly sized 3 inch high concrete pad constructed in accordance with Section 03 30 00.

5. Securely fasten floor-mounted equipment. Do not install equipment such that it relies on its own weight for support.

H. Preset Concrete Inserts: Use manufacturer-provided closure strips to inhibit concrete seepage during concrete pour.

I. Secure fasteners according to manufacturer's recommended torque settings.

J. Remove temporary supports.

3.03 FIELD QUALITY CONTROL

A. See Section 01 40 00 - Quality Requirements for additional requirements.

B. Inspect support and attachment components for damage and defects.

C. Repair cuts and abrasions in galvanized finishes using zinc-rich paint recommended by manufacturer. Replace components that exhibit signs of corrosion.

D. Correct deficiencies and replace damaged or defective support and attachment components.

END OF SECTION

SECTION 22 05 53
IDENTIFICATION FOR PLUMBING PIPING AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Nameplates.

B. Tags.

C. Stencils.

D. Pipe markers.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting: Identification painting.

1.03 REFERENCE STANDARDS

A. ASME A13.1 - Scheme for the Identification of Piping Systems 2020.

B. ASTM D709 - Standard Specification for Laminated Thermosetting Materials 2017.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Schedules:

1. Submit plumbing component identification schedule listing equipment, piping, and valves.
2. Detail proposed component identification data in terms of of wording, symbols, letter size, and color coding to be applied to corresponding product.
3. Valve Data Format: Include id-number, location, function, and model number.

C. Product Data: Provide manufacturers catalog literature for each product required.

D. Manufacturer's Installation Instructions: Indicate special procedures, and installation.

E. Project Record Documents: Record actual locations of tagged valves.

PART 2 PRODUCTS

2.01 PLUMBING COMPONENT IDENTIFICATION GUIDELINE

A. Nameplates:

1. Control panels, transducers, and other related control equipment products.
2. Pumps, tanks, filters, water treatment devices, and other plumbing equipment products.

B. Tags:

1. Piping: 3/4 inch diameter and smaller.
2. Manual operated and automated control valves.
3. Instrumentation, relays, gauges, and other related control equipment products.

C. Pipe Markers: 3/4 inch diameter and higher.

2.02 NAMEPLATES

A. Description: Laminated piece with up to three lines of text.

1. Letter Color: White.
2. Letter Height: 1/4 inch.

2.03 TAGS

A. Valve Tag Chart: Typewritten 12-point letter size list in anodized aluminum frame.

B. Piping: 3/4 inch diameter and smaller. Include corrosion resistant chain. Identify service, flow direction, and pressure.

2.04 STENCILS

A. Pipe: Stencil size required per external insulated or uninsulated pipe diameter.

1. 3/4 to 1-1/4 inch Range: 1/2 inch text over 8 inch long background.
2. 1-1/2 to 2 inch Range: 3/4 inch text over 8 inch long background.
3. 8 to 10 inch Range: 2-1/2 inch text over 24 inch long background.

B. Equipment: Use 2-1/2 inch text using Owner defined scheme.

C. Background Paint: Semi-gloss enamel in compliance with Section 09 91 23.

D. Stencil Paint: As specified in Section 09 91 23, semi-gloss enamel, colors complying with ASME A13.1.

E. Fluid Service Identification Scheme, ASME A13.1:

1. Water; Potable, Cooling, Boiler Feed and Other: White text on green background.

2.05 PIPE MARKERS

A. Comply with ASME A13.1.

B. Flexible Marker: Factory fabricated, semi-rigid, preformed to fit around pipe or pipe covering; minimum information indicating flow direction arrow and identification of fluid conveyed.

C. Flexible Tape Marker: Flexible, vinyl film tape with pressure-sensitive adhesive backing and printed markings.

D. Identification Scheme, ASME A13.1:

1. Primary: External Pipe Diameter, Uninsulated or Insulated.
    a. 3/4 to 1-1/4 inches: Use 8 inch field-length with 1/2 inch text height.
    b. 2-1/2 to 6 inches: Use 12 inch field-length with 1-1/4 inch text height.
    c. 8 to 10 inches: Use 24 inch field-length with 2-1/2 inch text height.
    d. Over 10 inches: Use 32 inch field-length with 3-1/2 inch text height.
2. Secondary: Color scheme per fluid service.
    a. Water; Potable, Cooling, Boiler Feed, and Other: White text on green background.
3. Tertiary: Other Details.
    a. Directional flow arrow.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install flexible nameplates with corrosive-resistant mechanical fasteners, or adhesive. Apply with sufficient adhesive to ensure permanent adhesion and seal with clear lacquer.

B. Install tags in clear view and align with axis of piping

C. Apply stencil painted identification in compliance with Section 09 91 23 requirements. Identify unit with assigned id-number and area being served using pipe marking rules.

D. Install plastic pipe markers in accordance with manufacturer's instructions.

E. Install plastic tape pipe marker around pipe in accordance with manufacturer's instructions.

F. Apply ASME A13.1 Pipe Marking Rules:

1. Place pipe marker adjacent to changes in direction.
2. Place pipe marker adjacent each valve port and flange end.
3. Place pipe marker at both sides of floor and wall penetrations.
4. Place pipe marker every 25 to 50 feet interval of straight run.

END OF SECTION

SECTION 22 10 00
PLUMBING MATERIALS AND METHODS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Section includes piping materials and installation methods including, but not limited to pipe, fitting and joining materials, piping specialties, and basic piping installation instructions.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 01 33 00 - Submittal Procedures

1.03 REFERENCE STANDARDS

A. ANSI B9.1, Standard Safety Code for Mechanical Refrigeration.

B. ANSI B31.1.0 - Standard Code for Pressure Piping, Power Piping, and The American Welding Society, Welding Handbook.

1.04 SUBMITTALS

A. Submit product data for the following:

1. Escutcheons.
2. Dielectric unions and fittings.
3. Mechanical sleeve seals.

B. Quality Control Submittals: Submit welders' certificates specified in Quality Assurance Article below.

1.05 DELIVERY, STORAGE AND HANDLING

A. Provide factory applied plastic end-caps on each length of pipe and tube except for concrete, corrugated metal, hub and spigot, and clay pipe.

B. Maintain end-caps through shipping, storage, and handling to prevent pipe end damage and prevent entrance of dirt, debris, and moisture.

C. Protect stored pipes and tubes. Elevate above grade and enclose with durable, waterproof wrapping. When stored inside, do not exceed structural capacity of the floor.

D. Protect flanges, fittings, and specialties from moisture and dirt by inside storage and enclosure, or by packaging with durable, waterproof wrapping.

E. Store pipe in a manner to prevent sagging and bending.

1.06 QUALITY ASSURANCE

A. Welder's Qualifications: Welders shall be qualified in accordance with ASME Boiler and Pressure Vessel Code, Section IX, Welding and Brazing Qualifications.

B. Welding procedures and testing shall comply with ANSI B31.1.0 and ANSI B9.1.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Subject to compliance with specified requirements, manufacturers offering products which may be incorporated in Work include:

1. Pipe Escutcheons:
    a. Chicago Specialty Mfg. Co.
    b. Grinnell.

c. Sanitary-Dash Mfg. Co.

2. Dielectric Waterway Fittings:
   a. Epco Sales, Inc.
   b. Victaulic Company of America.
3. Dielectric Unions:
   a. Eclipse, Inc.
   b. Perfection Corp.
   c. Watts Regulator Co.
4. Mechanical Sleeve Seals:
   a. Thunderline Corp.
5. High-Impact Thermoplastic Wall Sleeve:
   a. Thunderline.
   b. Silicone Rubber Adhesive:
   c. General Electric.
6. High-Density Polyethylene Pipe (64.2):
   a. Driscopipe 8000.
   b. Nipak.
   c. Dupont.
7. High-Density Polyethylene Pipe (64.7):
   a. Driscopipe 8600.
   b. Nipak.
   c. Dupont.

2.02 MATERIALS

A. Refer to the individual piping system specifications in Sections 22 1113 for specifications on piping materials required from those listed below:

1. Steel Pipe (61.1):
   a. Normal Service Pressure: Up to 150 psig
   b. Temperature: Up to 366 degrees Fahrenheit

Type	Size	Specification
Pipe	1/4-inch thru 4-inch	Carbon steel pipe, Schedule 40, ASTM A 120 seamless or electric welded.Note: Standard weight and Schedule 40 are the same in all sizes through 10 inches; in larger sizes, the wall thickness differs.
Types of Joints	1/4-inch thru 2-inches	Screwed
	2-1/2-inch and larger	Welded
Fittings	1/4-inch thru 2-inches	Black malleable iron, 150-pound class, screwed. ANSI

		standard B16.3
Nipples	1/4-inch thru 2-inches	Carbon steel, extra strong, ASTM A 120 or A 53
Unions	1/4-inch thru 2-inches	Malleable iron, 250-pound class (500 WOG), railroad type with brass seats
Thread Sealant		Pipe dope. John Crane Insoluble Plastic Lead seal No. 2 or approved equal. Exception: For temperatures in excess of 250 degree Fahrenheit, use Teflon ribbon, 1/2-inch wide.

2. Cast Iron (62.2):
   a. Temperature: Up to 180 degrees Fahrenheit

Type	Size	Specifications
Pipe	2-inches thru 15-inches	Cast iron soil pipe, plain end, service weight (SV), bituminous coating inside and outside. Cast Iron Soil Pipe Institute Std. 301
Type of Joints	2-inches thru 15-inches	No-hub coupling.
Fittings	2-inches thru 15-inches	Cast iron soil pipe, no-hub type, service weight (SV), bituminous coating inside and outside. Cast Iron Soil Pipe Institute Std. 301.

3. Copper Tubing (63.1):
   a. Normal Service Pressure: Up to 150 psig
   b. Temperature: Up to 250 degrees Fahrenheit
   c. Use solder fittings at all joints between terminal points.
   d. Bends may be used for 1/4-inch and 3/8-inch tubing.
      1) Bends shall be made with a bending tool to the following minimum radii:
         (a) 1/4-inch: 9/16-inch minimum radius
         (b) 3/8-inch: 15/16-inch minimum radius

Type	Size	Specification
Pipe	All sizes	Copper tubing, type L, hard-drawn above ground. Type K (soft) for below grade
Types of Joints	1/4-inch thru 1/2-inch	Soldered or compression type as required
	5/8-inch and larger	Soldered (Exposed), Flared (Buried)
Compression	1/4-inch thru 1/2-inch	Brass compression type fittings

Fittings (Exposed)	All sizes	Gyrolok, Swagelok, Parker CPI
Unions	1/4-inch thru 2-inches	Wrought copper or cast bronze; solder joint union
Flanges	All sizes	Copper, solder-joint flange. 150-pound ASME drilling. Raised or flat face to match equipment
Gaskets		1/16-inch Teflon; ring type for raised-face, or full-face for flat face flange
Solder		Tin/Antimony (or lead-free to meet Code requirements)
Thread Sealant		Teflon tape

4. High Density Polyethylene Pipe (64.2) for Gas Distribution:
   a. Normal Service Pressure: 80 psig
   b. Temperature: Up to 140 degrees Fahrenheit

Type	Size	Specifications
Pipe	3/4-inch and larger	High-density polyethylene, SDR-11, ASTM D2513, PE 3408
Type of Joints	3/4-inch and larger	Fusion welded, ASTM D2513 or socket
Fittings	3/4-inch and larger	High-density polyethylene, SDR-11, socket fusion type, with diameters compatible with pipe for fusion joining
Gaskets	3/4-inch and larger	1/16-inch solid neoprene, full-face type
Flanges	3/4-inch and larger	PVC, 150-pound, flat-face, Sch 80, socket type

5. PVC DWV Pipe (64.6):
   a. Normal Service Pressure: 5 psig (maximum)
   b. Temperature: Up to 150 degrees Fahrenheit

Type	Size	Specifications
Pipe	1-inch thru 8-inches	PVC, Sch 40, ASTM D2665
Type of Joints	1-inch thru 8-inches	Solvent welded
Fittings	1-inch thru 8-inches	PVC, Sch 40, socket type, ASTM D2949

6. High-Density Polyethylene Pipe (64.7) for Sump Discharge:
   a. Normal Service Pressure: 80 psig (maximum)
   b. Temperature: Up to 140 degrees Fahrenheit

Type	Size	Specifications
Pipe	3/4-inch and larger	High-density polyethylene,

		SDR-11, ASTM D3350, PE 3408
Type of Joints	3/4-inch and larger	Fusion welded, ASTM D 3261 or socket. ASTM D2683
Fittings	3/4-inch and larger	High-density polyethylene, SDR-11, socket fusion type, with diameters compatible with pipe for fusion joining
Gasket	3/4-inch and larger	1/16-inch solid hypalon, full-face type
Flanges	3/4-inch and larger	PVC, 150-pound, flat-face, Sch 80, socket type

2.03 JOINTING MATERIALS

A. Welding Materials: Comply with Section II, Part C, ASME Boiler and Pressure Vessel Code for welding materials appropriate for the wall thickness and chemical analysis of the pipe being welded.

B. Brazing Materials: Comply with SFA-5.8, Section II, ASME Boiler and Pressure Vessel Code for brazing filler metal materials appropriate for the materials being joined.

C. Gaskets for Flanged Joints: Gasket material shall be full-faced for cast-iron flanges and raised-face for steel flanges. Select materials to suit the service of the piping system in which installed, and which conform to their respective ANSI Standard (A21.11, B16.20, or B16.21). Provide materials that will not be detrimentally affected by the chemical and thermal conditions of the fluid being carried.

2.04 PIPING SPECIALTIES

A. Escutcheons: Chrome plated, stamped steel, hinged, split-ring escutcheon with setscrew. Inside diameter shall closely fit pipe outside diameter or outside of pipe insulation where pipe is insulated. Outside diameter shall completely cover the opening in floors, walls, or ceilings.

B. Unions: Malleable iron, Class 150 for low-pressure service and Class 250 for high-pressure service; hexagonal stock with ball-and-socket joints, metal-to-metal bronze seating surfaces; female threaded ends.

C. Dielectric Unions: Provide dielectric unions with appropriate end connections for the pipe materials in which installed (screwed, soldered, or flanged), which effectively isolate dissimilar metals, prevent galvanic action, and stop corrosion. Insulated and gasketed, galvanized, malleable iron unions as manufactured by Crane No. 1259, ITT-Grinnell, Figure 470, or equal.

D. Dielectric Waterway Fittings: electroplated steel or brass nipple, with an inert and non-corrosive, thermoplastic lining.

E. Sleeves: Unless otherwise shown on Drawings, at all points where pipes must pass through walls, floors or roofs of structures, Contractor shall furnish and install suitable sleeves or wall castings.

1. In general, the wall sleeve or casting shall be of the same material as the pipe, or standard weight steel pipe thimbles of at least 1 size larger than the pipe itself shall be installed. Iron pipe wall castings, wall pipe, transition sleeves and solid sleeves shall meet the requirements or AWWA Specifications C100 and shall be of the lightest class conforming to the pressure rating of the pipelines which they connect, but in no case shall be lighter than Class B. Sleeves shall be shop coated with universal primer 2 mils minimum thickness.

2. A high-impact thermoplastic wall sleeve as manufactured by Thunderline may be used for low and standard temperature service.

F. Sleeve Seals:

1. Unless otherwise shown or permitted, the space between the pipe and the sleeve shall be caulked at the inside and outside wall faces on walls exposed to earth or water/sewage, at one face of the other walls, and at the top surface of floors and slabs. The space shall be caulked with lead and oakum as specified under Bell and Spigot Lead with an RTV-silicone rubber adhesive as manufactured by General Electric or sealed with a rubber link seal. Rubber link seal shall be identical rubber links interconnected with bolts and elongated nuts and washers.
2. Sealing element shall be made of synthetic rubber material especially compounded to resist aging, ozone, sunlight, and chemical action.
3. Bolts and metal parts shall be made of galvanized or cadmium-plated steel to resist corrosion. Rubber link seal joints shall be submitted to Engineer for approval.

PART 3 EXECUTION

3.01 PREPARATION

A. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.

B. Remove scale, slag, dirt, and debris for both inside and outside of piping and fittings before assembly.

3.02 INSTALLATION

A. Drawings (plans, schematics, and diagrams) indicate the general location and arrangement of the piping systems. Location and arrangement of piping layout take into consideration pipe sizing and friction loss, expansion, pump sizing, and other design considerations. So far as practical, install piping as indicated. Refer to individual system specifications for requirements for submittals.

B. Piping shall be exposed unless indicated otherwise.

C. Install piping free of sags or bends and with ample space between piping to permit proper insulation applications.

D. Install exposed piping at right angles or parallel to building walls. Diagonal runs are not permitted, unless expressly indicated on Drawings.

E. Install piping far enough from slabs, beams, joists, columns, walls, and other permanent elements of the building to permit access for painting. Provide space to permit insulation applications, with 3-inch clearance outside the insulation. Allow sufficient space above removable ceiling panels to allow for panel removal.

F. Locate groups of pipes parallel to each other, spaced to permit applying full insulation and servicing of valves.

G. Install drains at low points in mains, risers, and branch lines consisting of a tee fitting, 3/4-inch ball valve, and short 3/4-inch threaded nipple and cap.

H. Exterior Wall Penetrations: Seal pipe penetrations through exterior walls using sleeves and mechanical sleeve seals.

3.03 FITTINGS AND SPECIALTIES

A. Use fittings for all changes in direction and all branch connections.

B. Remake leaking joints using new materials.

C. Install unions adjacent to each valve, and at the final connection to each piece of equipment and plumbing fixture having 2-inch and smaller connections, and elsewhere as indicated.

D. Install dielectric unions to connect piping materials of dissimilar metals in dry piping systems (gas, compressed air, vacuum).

E. Install dielectric fittings to connect piping materials of dissimilar metals in wet piping systems (water, steam).

3.04 JOINTS

A. Steel Pipe Joints:

1. Pipe 2-inch and Smaller: Thread pipe with tapered pipe threads in accordance with ANSI B2.1.

   a. Cut threads full and clean using sharp dies.

   b. Ream threaded ends to remove burrs and restore full inside diameter. Apply pipe joint lubricant or sealant suitable for the service for which the pipe is intended on the male threads at each joint and tighten joint to leave not more than 3 threads exposed.

B. Pipe Larger than 2-inches:

1. Brazed and Soldered Joints: For copper tube and fitting joints, braze joints in accordance with ANSI B31.1.0, Standard Code for Pressure Piping, Power Piping, and ANSI B9.1, Standard Safety Code for Mechanical Refrigeration.

2. Mechanical Joints: Flared compression fittings may be used for refrigerant lines 3/4-inch and smaller.

3. Joints for other piping materials are specified within the respective piping system sections.

3.05 TESTING

A. Refer to individual piping system specification Sections for more information regarding testing.

END OF SECTION

SECTION 22 10 05
PLUMBING PIPING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Sanitary waste piping, buried within 5 feet of building.

B. Sanitary waste piping, above grade.

C. Domestic water piping, above grade.

D. Storm drainage piping, buried within 5 feet of building.

E. Storm drainage piping, above grade.

F. Pipe flanges, unions, and couplings.

G. Pipe hangers and supports.

H. Pipe sleeve-seal systems.

I. Ball valves.

J. Pressure reducing valves.

1.02 RELATED REQUIREMENTS

A. Section 09 91 23 - Interior Painting.

B. Section 22 05 16 - Expansion Fittings and Loops for Plumbing Piping.

C. Section 22 05 29 - Hangers and Supports for Plumbing Piping and Equipment.

D. Section 22 05 48 - Vibration and Seismic Controls for Plumbing Piping and Equipment.

E. Section 22 05 53 - Identification for Plumbing Piping and Equipment.

F. Section 22 07 19 - Plumbing Piping Insulation.

1.03 REFERENCE STANDARDS

A. ASME B16.18 - Cast Copper Alloy Solder Joint Pressure Fittings 2021.

B. ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings 2021.

C. ASME B31.1 - Power Piping 2022.

D. ASME B31.3 - Process Piping 2022.

E. ASME B31.9 - Building Services Piping 2020.

F. ASME BPVC-IX - Boiler and Pressure Vessel Code, Section IX - Qualification Standard for Welding, Brazing, and Fusing Procedures; Welders; Brazers; and Welding, Brazing, and Fusing Operators 2023.

G. ASSE 1003 - Performance Requirements for Water Pressure Reducing Valves for Potable Water Distribution Systems 2020.

H. ASTM A74 - Standard Specification for Cast Iron Soil Pipe and Fittings 2021.

I. ASTM A536 - Standard Specification for Ductile Iron Castings 1984, with Editorial Revision (2019).

J. ASTM B32 - Standard Specification for Solder Metal 2020.

K. ASTM B42 - Standard Specification for Seamless Copper Pipe, Standard Sizes 2020.

L. ASTM B68/B68M - Standard Specification for Seamless Copper Tube, Bright Annealed 2019.

M. ASTM B75/B75M - Standard Specification for Seamless Copper Tube 2020.

N. ASTM B88 - Standard Specification for Seamless Copper Water Tube 2022.

O. ASTM B88M - Standard Specification for Seamless Copper Water Tube (Metric) 2020.

P. ASTM B813 - Standard Specification for Liquid and Paste Fluxes for Soldering of Copper and Copper Alloy Tube 2016.

Q. ASTM B828 - Standard Practice for Making Capillary Joints by Soldering of Copper and Copper Alloy Tube and Fittings 2016.

R. ASTM C564 - Standard Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings 2020a.

S. ASTM C1277 - Standard Specification for Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings 2020.

T. ASTM C1540 - Standard Specification for Heavy-Duty Shielded Couplings Joining Hubless Cast Iron Soil Pipe and Fittings 2020.

U. ASTM D1785 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120 2021a.

V. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings 2022.

W. ASTM D2241 - Standard Specification for Poly(Vinyl Chloride) (PVC) Pressure-Rated Pipe (SDR Series) 2020.

X. ASTM D2564 - Standard Specification for Solvent Cements for Poly(Vinyl Chloride) (PVC) Plastic Piping Systems 2020.

Y. ASTM D2665 - Standard Specification for Poly(Vinyl Chloride) (PVC) Plastic Drain, Waste, and Vent Pipe and Fittings 2020.

Z. ASTM D2855 - Standard Practice for the Two-Step (Primer and Solvent Cement) Method of Joining Poly (Vinyl Chloride) (PVC) or Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe and Piping Components with Tapered Sockets 2020.

AA. ASTM D3034 - Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings 2021.

BB. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe 2014 (Reapproved 2021).

CC. ASTM F679 - Standard Specification for Poly(Vinyl Chloride) (PVC) Large-Diameter Plastic Gravity Sewer Pipe and Fittings 2021.

DD. ASTM F708 - Standard Practice for Design and Installation of Rigid Pipe Hangers 1992 (Reapproved 2022).

EE. AWS A5.8M/A5.8 - Specification for Filler Metals for Brazing and Braze Welding 2019.

FF. AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings 2021.

GG. AWWA C111/A21.11 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings 2017.

HH. AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast 2017, with Errata (2018).

II. AWWA C550 - Protective Interior Coatings for Valves and Hydrants 2017.

JJ. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. through 60 In. (100 mm through 1500 mm) 2022.

KK. CISPI 301 - Standard Specification for Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications 2021.

LL. CISPI 310 - Specification for Coupling for Use in Connection with Hubless Cast Iron Soil Pipe and Fittings for Sanitary and Storm Drain, Waste, and Vent Piping Applications 2020.

MM. FM 1680 - Approval Standard for Couplings Used in Hubless Cast Iron Systems for Drain, Waste or Vent, Sewer, Rainwater or Storm Drain Systems Above and Below Ground, Industrial/ Commercial and Residential 1989.

NN. ICC-ES AC01 - Acceptance Criteria for Expansion Anchors in Masonry Elements 2018, with Editorial Revision (2020).

OO. ICC-ES AC106 - Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry 2018, with Editorial Revision (2020).

PP. ICC-ES AC193 - Acceptance Criteria for Mechanical Anchors in Concrete Elements 2017, with Editorial Revision (2020).

QQ. ICC-ES AC308 - Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements 2023.

RR. MSS SP-58 - Pipe Hangers and Supports - Materials, Design, Manufacture, Selection, Application, and Installation 2018, with Amendment (2019).

SS. MSS SP-110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends 2010, with Errata .

TT. UL (DIR) - Online Certifications Directory Current Edition.

1.04 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements for submittal procedures.

B. Product Data: Provide data on pipe materials, pipe fittings, valves, and accessories. Provide manufacturers catalog information. Indicate valve data and ratings.

C. Welders' Certificates: Submit certification of welders' compliance with ASME BPVC-IX.

D. Shop Drawings: For non-penetrating rooftop supports, submit detailed layout developed for this project, with design calculations for loadings and spacings.

E. Sustainable Design Documentation: For soldered copper joints, submit installer's certification that the specified installation method and materials were used.

F. Sustainable Design Documentation: For products meeting regulatory lead-content restrictions.

G. Project Record Documents: Record actual locations of valves.

1.05 QUALITY ASSURANCE

A. Perform work in accordance with applicable codes.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

C. Welding Materials and Procedures: Comply with ASME BPVC-IX and applicable state labor regulations.

D. Welder Qualifications: Certified in accordance with ASME BPVC-IX.

E. Identify pipe with marking including size, ASTM material classification, ASTM specification, potable water certification, water pressure rating.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Provide temporary end caps and closures on piping and fittings. Maintain in place until installation.

B. Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.

1.07 FIELD CONDITIONS

A. Do not install underground piping when bedding is wet or frozen.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

A. Potable Water Supply Systems: Provide piping, pipe fittings, and solder and flux (if used), that comply with NSF 61 and NSF 372 for maximum lead content; label pipe and fittings.

2.02 SANITARY WASTE PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. PVC Pipe: ASTM D2665 or ASTM D3034.

1. Fittings: PVC.
2. Joints: Solvent welded, with ASTM D2564 solvent cement.

B. PVC Pipe: ASTM D2665, ASTM D3034, or ASTM F679.

1. Fittings: PVC.
2. Joints: Push-on, using ASTM F477 elastomeric gaskets.

2.03 SANITARY WASTE PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74, service weight.

1. Fittings: Cast iron.
2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless, service weight.

1. Fittings: Cast iron.
2. Joints: CISPI 310, neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.04 DOMESTIC WATER PIPING, BURIED WITHIN 5 FEET OF BUILDING

A. Copper Pipe: ASTM B42, hard drawn.

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22 wrought copper and bronze.
2. Joints: ASTM B32, alloy Sn95 solder.
3. Joints: AWS A5.8M/A5.8, BCuP copper and silver braze.

B. Copper Pipe: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
2. Joints: ASTM B32, alloy Sn95 solder.
3. Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.

2.05 DOMESTIC WATER PIPING, ABOVE GRADE

A. Copper Pipe: ASTM B88 (ASTM B88M), Type K (A), Drawn (H).

1. Fittings: ASME B16.18, cast copper alloy or ASME B16.22, wrought copper and bronze.
2. Joints: ASTM B32, alloy Sn95 solder.
3. Mechanical Press Sealed Fittings: Double-pressed type, NSF 61 and NSF 372 approved or certified, utilizing EPDM, nontoxic, synthetic rubber sealing elements.
    a. Manufacturers:
        1) Anvil International
        2) Grinnell Products
        3) Substitutions: See Section 01 60 00 - Product Requirements.

2.06 STORM DRAINAGE PIPING, ABOVE GRADE

A. Cast Iron Pipe: ASTM A74 extra heavy weight.
   1. Fittings: Cast iron.
   2. Joint Seals: ASTM C564 neoprene gaskets, or lead and oakum.

B. Cast Iron Pipe: CISPI 301, hubless, service weight.
   1. Fittings: Cast iron.
   2. Joints: Neoprene gaskets and stainless steel clamp-and-shield assemblies.

2.07 PIPE FLANGES, UNIONS, AND COUPLINGS

A. Unions for Pipe Sizes 3 inch and Under:
   1. Copper Tube and Pipe: Class 150 bronze unions with soldered joints.

B. No-Hub Couplings:
   1. Testing: In accordance with ASTM C1277 and CISPI 310.
   2. Gasket Material: Neoprene complying with ASTM C564.
   3. Band Material: Stainless steel.
   4. Eyelet Material: Stainless steel.
   5. Manufacturers:
      a. Ideal Clamp Products, Inc; Standard
      b. Substitutions: See Section 01 60 00 - Product Requirements.

C. Shielded, Heavy Duty No-Hub Couplings:
   1. Testing: In accordance with ASTM C1540 and FM 1680.
   2. Gasket Material: Neoprene complying with ASTM C564.
   3. Band Material: Stainless steel.
   4. Eyelet Material: Stainless steel.
   5. Manufacturers:
      a. Ideal Clamp Products, Inc; Yellow Shield Heavy Duty
      b. Substitutions: See Section 01 60 00 - Product Requirements.

2.08 PIPE HANGERS AND SUPPORTS

A. See Section 22 05 29 for additional requirements.

B. Provide hangers and supports that comply with MSS SP-58.
   1. If type of hanger or support for a particular situation is not indicated, select appropriate type using MSS SP-58 recommendations.
   2. Overhead Supports: Individual steel rod hangers attached to structure or to trapeze hangers.
   3. Trapeze Hangers: Welded steel channel frames attached to structure.
   4. Vertical Pipe Support: Steel riser clamp.
   5. Floor Supports: Concrete pier or steel pedestal with floor flange; fixture attachment.

2.09 PIPE SLEEVE-SEAL SYSTEMS

A. Modular Mechanical Seals:

1. Elastomer-based interlocking links continuously fill annular space between pipe and wall-sleeve, wall or casing opening.
2. Watertight seal between pipe and wall-sleeve, wall or casing opening.
3. Size and select seal component materials in accordance to service requirements.
4. Service Requirements:
    a. Corrosion resistant.
    b. Underground, buried, and wet conditions.
    c. Fire Resistant: 1 hour, UL (DIR) approved.
5. Glass reinforced plastic pressure end plates.

2.10 BALL VALVES

A. Manufacturers:
1. Anvil International
2. Apollo Valves
3. Grinnell Products
4. Nibco, Inc
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. Construction, 4 inch and Smaller: MSS SP-110, Class 150, 400 psi CWP, bronze or ductile iron body, 304 stainless steel or chrome plated brass ball, regular port, teflon seats and stuffing box ring, blow-out proof stem, lever handle with balancing stops, threaded or grooved ends with union.

2.11 PRESSURE REDUCING VALVES

A. Manufacturers:
1. Cla-Val Company
2. Flomatic Valves
3. Watts Regulator Company
4. Zurn Industries, LLC; 500XL3
5. Substitutions: See Section 01 60 00 - Product Requirements.

B. 2 inch and Smaller:
1. ASSE 1003, bronze body, stainless steel, and thermoplastic internal parts, fabric reinforced diaphragm, strainer, threaded single union ends.
2. Pressure Reducing Pilot-Operator:
    a. Operating Range: 5 to 50 psi.
    b. Connected into brass or bronze pilot piping and fittings.
    c. Fixed flow restrictor, pressure gauges, and isolation valves.

C. 2 inch and Larger:
1. ASSE 1003, cast iron body with interior lining complying with AWWA C550, bronze fitted, elastomeric diaphragm and seat disc, flanged.
2. Pressure Reducing Pilot-Operator:
    a. Operating Range: 5 to 50 psi.
    b. Connected into brass or bronze pilot piping and fittings.

c. Fixed flow restrictor, strainer, pressure gauges, and isolation valves.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that excavations are to required grade, dry, and not over-excavated.

3.02 PREPARATION

A. Ream pipe and tube ends. Remove burrs. Bevel plain end ferrous pipe.

B. Remove scale and dirt, on inside and outside, before assembly.

C. Prepare piping connections to equipment with flanges or unions.

3.03 INSTALLATION

A. Install in accordance with manufacturer's instructions.

B. Provide non-conducting dielectric connections wherever jointing dissimilar metals.

C. Route piping in orderly manner and maintain gradient. Route parallel and perpendicular to walls.

D. Install piping to maintain headroom, conserve space, and not interfere with use of space.

E. Group piping whenever practical at common elevations.

F. Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment. See Section 22 05 16.

G. Provide clearance in hangers and from structure and other equipment for installation of insulation and access to valves and fittings.

H. Provide access where valves and fittings are not exposed.

I. Establish elevations of buried piping outside the building to ensure not less than 3.5 ft of cover.

J. Install vent piping penetrating roofed areas to maintain integrity of roof assembly

K. Prepare exposed, unfinished pipe, fittings, supports, and accessories for finish painting.

1. See Section 09 91 23 for painting of interior plumbing systems and components.

L. Copper Pipe and Tube: Make soldered joints in accordance with ASTM B828, using specified solder, and flux meeting ASTM B813; in potable water systems use flux also complying with NSF 61 and NSF 372.

M. PVC Pipe: Make solvent-welded joints in accordance with ASTM D2855.

N. Sleeve pipes passing through partitions, walls, and floors.

O. Inserts:

1. Provide inserts for placement in concrete formwork.

2. Where inserts are omitted, drill through concrete slab from below and provide through-bolt with recessed square steel plate and nut above slab.

P. Pipe Hangers and Supports:

1. Install in accordance with ASME B31.9.

2. Support horizontal piping as indicated.

3. Install hangers to provide minimum 1/2 inch space between finished covering and adjacent work.

4. Place hangers within 12 inches of each horizontal elbow.

5. Use hangers with 1-1/2 inch minimum vertical adjustment. Design hangers for pipe movement without disengagement of supported pipe.
6. Support vertical piping at every other floor. Support riser piping independently of connected horizontal piping.
7. Provide copper plated hangers and supports for copper piping.
8. Provide hangers adjacent to motor-driven equipment with vibration isolation; see Section 22 05 48.
9. Support cast iron drainage piping at every joint.

Q. Pipe Sleeve-Seal Systems:

1. Install manufactured sleeve-seal systems in sleeves located in grade slabs and exterior concrete walls at piping entrances into building.
2. Provide sealing elements of the size, quantity, and type required for the piping and sleeve inner diameter or penetration diameter.
3. Locate piping in center of sleeve or penetration.
4. Install field assembled sleeve-seal system components in annular space between sleeve and piping.
5. Tighten bolting for a watertight seal.
6. Install in accordance with manufacturer's recommendations.

R. When installing more than one piping system material, ensure system components are compatible and joined to ensure the integrity of the system. Provide necessary joining fittings. Ensure flanges, union, and couplings for servicing are consistently provided.

3.04 APPLICATION

A. Install unions downstream of valves and at equipment or apparatus connections.

B. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.

C. Install gate valves for shut-off and to isolate equipment, part of systems, or vertical risers.

D. Provide spring-loaded check valves on discharge of water pumps.

3.05 TOLERANCES

A. Drainage Piping: Establish invert elevations within 1/2 inch vertically of location indicated and slope to drain at minimum of 1/4 inch per foot slope.

B. Water Piping: Slope at minimum of 1/32 inch per foot and arrange to drain at low points.

3.06 FIELD TESTS AND INSPECTIONS

A. Verify and inspect systems according to requirements by the Authority Having Jurisdiction. In the absence of specific test and inspection procedures proceed as indicated below.

B. Domestic Water Systems:

1. Perform hydrostatic testing for leakage prior to system disinfection.
2. Test Preparation: Close each fixture valve or disconnect and cap each connected fixture.
3. General:
    a. Fill the system with water and raise static head to 10 psi above service pressure. Minimum static head of 50 to 150 psi. As an exception, certain codes allow a maximum static pressure of 80 psi.
4. Metal Piping Systems Subject to Freezing Conditions:

a. Inject 40 psi of compressed air into piping to spot check for leaks with liquid soap. Document and repair leaks as necessary.

b. Raise injected compressed air pressure to 1.5 times rated service pressure or minimum pressure of 100 psi for a duration of 2 hours and verify with a gauge that no perceptible pressure drop is measured.

C. Test Results: Document and certify successful results, otherwise repair, document, and retest.

3.07 SERVICE CONNECTIONS

A. Provide new sanitary sewer services. Before commencing work, check invert elevations required for sewer connections, confirm inverts and ensure that these can be properly connected with slope for drainage and cover to avoid freezing.

3.08 SCHEDULES

A. Pipe Hanger Spacing:

1. Metal Piping:

a. Pipe Size: 1/2 inch to 1-1/4 inch:

1) Maximum Hanger Spacing: 6.5 ft.

2) Hanger Rod Diameter: 3/8 inches.

b. Pipe Size: 1-1/2 inch to 2 inch:

1) Maximum Hanger Spacing: 10 ft.

2) Hanger Rod Diameter: 3/8 inch.

c. Pipe Size: 2-1/2 inch to 3 inch:

1) Maximum Hanger Spacing: 10 ft.

2) Hanger Rod Diameter: 1/2 inch.

d. Pipe Size: 4 inch to 6 inch:

1) Maximum Hanger Spacing: 10 ft.

2) Hanger Rod Diameter: 5/8 inch.

2. Plastic Piping:

a. All Sizes:

1) Maximum Hanger Spacing: 6 ft.

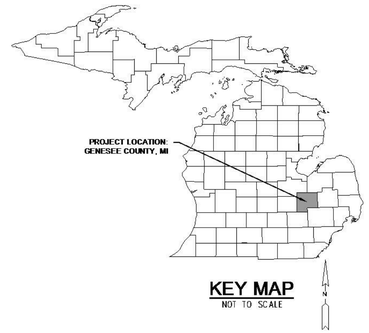
2) Hanger Rod Diameter: 3/8 inch.

END OF SECTION

CITY OF FLINT

GENESEE COUNTY, MICHIGAN
CONSTRUCTION PLANS FOR

WPCF WASTE UNLOADING STATION



COF1076-01F

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C-104	PROPOSED DRAIN PIPE PROFILE
C-105	CIVIL SITE PLAN
C-501	CIVIL DETAILS
C-502	CIVIL DETAILS
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E-501	LIGHTING DETAILS
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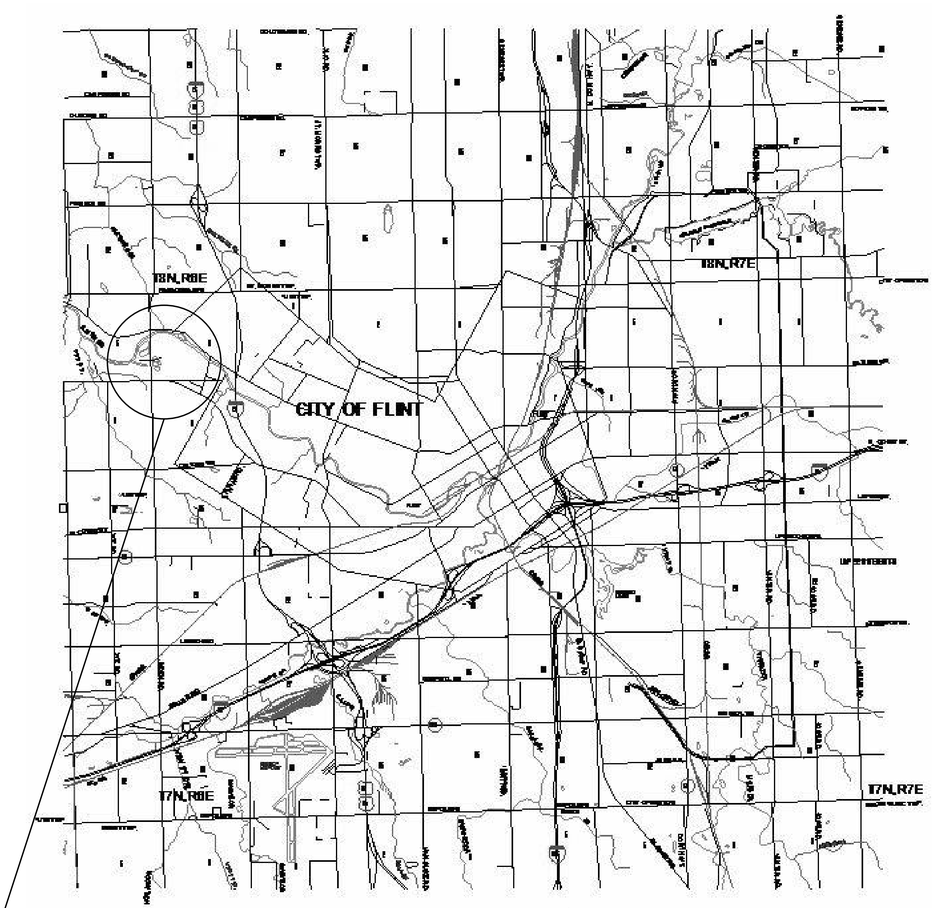

CITY OF FLINT WATER
POLLUTION CONTROL FACILITY
PROJECT LOCATION:
G-4652 BEECHER RD
FLINT, MI 48532

LOCATION MAP

SCALE: NONE
CITY OF FLINT
GENESEE COUNTY, MI
SECTION 4, T7N, R6E

N

UTILITIES & MUNICIPALITIES

TELEPHONE AT&T ENGINEERING 54 NORTH MILL STREET, P.O. BOX 32 PONTIAC, MICHIGAN 48342 CONTACT: JEFF HEATH PHONE: 248.975.4588	CITY OF FLINT 702 WEST 12TH STREET TRANSPORTATION BUILDING FLINT, MICHIGAN 48502 CONTACT: JOHN DALY PHONE: 810.766.7343
CABLE TV COMCAST CABLEVISION 6095 WALL STREET STERLING HEIGHTS, MICHIGAN 48312 CONTACT: TOM DICKINSON PHONE: 586.883.7412	CITY OF FLINT WATER SERVICE CENTER 3310 EAST COURT STREET FLINT, MICHIGAN 48506 CONTACT: PHONE: 810.766.7202
ELECTRIC CONSUMERS ENERGY - ELECTRIC 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: MARCEY CONN PHONE: 810.760.3506	CITY OF FLINT ENGINEERING 702 WEST 12TH STREET FLINT, MICHIGAN 48502 CONTACT: MARK ADAS PHONE: 810.766.7135
GAS CONSUMERS ENERGY 3201 EAST COURT STREET FLINT, MICHIGAN 48501 CONTACT: SALVATORE DELISI PHONE: 810.760.3486	SOIL EROSION & SEDIMENTATION CONTROL GCDC-WWS G-4610 BEECHER ROAD FLINT, MICHIGAN 48532 CONTACT: MARK STEPHENS PHONE: 810.732.7870

2023.07.07 ADDENDUM 1
2023.06.14 ISSUED FOR BID

COVER SHEET

JOB NO. COF1076-01F

SHEET G-001

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PREPARED UNDER THE SUPERVISION OF:

STATE OF MICHIGAN
Trevor S. Wagenmaker
ENGINEER
No. 6201040131
LICENSED PROFESSIONAL ENGINEER

Know what's below.
Call before you dig.

PLOTTED 7/10/2023 12:09:43 PM

BIM 360://COF1076-7-WPCF/WU_WT_G_R21.rvt

GENERAL NOTES

1. LOCATION OF UTILITIES OR OTHER STRUCTURES SHOWN ON THE PLANS ARE TAKEN FROM UTILITY COMPANY OR OTHER RECORDS BELIEVED TO BE RELIABLE. THE OWNER AND ENGINEER ARE NOT RESPONSIBLE FOR ANY OMISSIONS OR VARIATIONS IN THE LOCATION OF THE UTILITIES ENCOUNTERED IN THE WORK.

2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN THE INTEGRITY OF EXISTING UTILITIES AT ALL TIMES. ALL UTILITIES INCLUDING UTILITY POLES, IN THE VICINITY OF CONSTRUCTION SHALL BE PROTECTED BY BRACING, SUPPORTING, BY THE USE OF TRENCH BOXES OR OTHER ACCEPTABLE MEANS AS DETERMINED BY THE OWNER OF THE UTILITY. ALL COSTS FOR PROTECTION OF UTILITIES SHALL BE INCIDENTAL TO THE PROJECT.

3. ALL UTILITIES, MAINS, SERVICES, EDGE DRAINS, OIL LINES, OR OTHER SIMILAR ITEMS DAMAGED BY THE CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR TO THE SATISFACTION OF THE CITY OF FLINT OR IN A MANNER ACCEPTABLE TO THE CITY OF FLINT. ALL COSTS FOR REPAIR OR REPLACEMENT SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND INCIDENTAL TO THE PROJECT.

4. THE CONTRACTOR SHALL LIMIT CONSTRUCTION TRAFFIC AND EQUIPMENT TO THE AREA DIRECTLY UNDER CONSTRUCTION TO PREVENT DAMAGE TO ANY EXISTING IMPROVEMENTS, AND SHALL PREVENT THE SPREAD OF CONSTRUCTION DEBRIS OUTSIDE OF THE CONSTRUCTION AREA.

5. ALL TREES, SHRUBS AND LANDSCAPING NOT DESIGNATED TO BE REMOVED SHALL BE PROTECTED DURING CONSTRUCTION. ALL TREES, SHRUBS OR LANDSCAPING DAMAGED IN ANY WAY BY THE CONTRACTOR (INCLUDING DAMAGING ROOTS) SHALL BE REPLACED WITH LIKE SPECIES AND SIZE AT THE EXPENSE OF THE CONTRACTOR.

6. THE CONTRACTOR SHALL HAVE AN OPERATING VACUUM TYPE PICKUP SWEEPER ON THE JOB AT ALL TIMES. THE PAVEMENT SHALL BE SWEPT A MINIMUM OF TWICE A DAY OR MORE FREQUENTLY AS NECESSARY. THE CONTRACTOR SHALL ALSO COMPLY WITH LOCAL AGENCY FUGITIVE DUST ORDINANCE.

7. THE CONTRACTOR SHALL MAINTAIN EXISTING STORM WATER DRAINAGE AT ALL TIMES DURING THE WORK. ALL COSTS FOR MAINTAINING DRAINAGE SHALL BE INCIDENTAL TO THE PROJECT EXCEPT AS MAY BE OTHERWISE PROVIDED FOR IN THE PROPOSAL.

8. RESTORATION SHALL BE WITH 4-INCHES OF TOPSOIL.THE CONTRACTOR SHALL RESTORE ALL AREAS DISTURBED BY THE CONTRACTORS OPERATION. RESTORATION OUTSIDE THE AREAS INDICATED SHALL BE AT THE EXPENSE OF THE CONTRACTOR. CONTRACTOR SHALL BE RESPONSIBLE FOR PROVIDING AN ESTABLISHED TURF ACCEPTABLE TO THE ENGINEER.

9. PROJECT DATUM INFORMATION IS IN NAVD88,

PAVING CONSTRUCTION NOTES

1. PAVEMENT REMOVAL AND REPLACEMENT SHALL BE PAID FOR THE AREA SHOWN ON THE PLANS OR AS DETERMINED BY THE ENGINEER. PAVEMENT REMOVAL SHALL INCLUDE REMOVAL OF AGGREGATE BASE AND SUBBASE TO DEPTH REQUIRED TO PROVIDE AGGREGATE AND PAVEMENT IN ACCORDANCE WITH STANDARD HMA DETAIL ON SHEET C-502. PAVEMENT REMOVAL THAT THE CONTRACTOR CAUSES TO BE REMOVED OUTSIDE THE AREA SPECIFIED SHALL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

2. THE CONTRACTOR SHALL SAWCUT AND REMOVE THE EXISTING PAVEMENT CLEANLY WHERE PROPOSED PAVEMENT MEETS EXISTING PAVEMENT. SAWCUTTING SHALL BE INCIDENTAL TO THE PROJECT.

3. THE CONTRACTOR SHALL USE PAVEMENT BREAKING AND REMOVAL EQUIPMENT THAT WILL NOT DAMAGE EXISTING STRUCTURES AND UTILITIES. THE CONTRACTOR SHALL IMMEDIATELY CEASE PAVEMENT BREAKING OR REMOVAL OF PAVEMENT, WITH THE OFFENDING EQUIPMENT, IF COLLATERAL DAMAGE BECOMES EVIDENT.

4. WHENEVER ANY AGGREGATE BASE COURSE OR SUBBASE BECOMES CONTAMINATED BASED ON OBSERVATION AND LAB TESTING, THE CONTRACTOR SHALL REMOVE AND REPLACE THE CONTAMINATED MATERIAL AT THE CONTRACTOR'S EXPENSE.

5. CONTRACTOR SHALL PROTECT ANY EXISTING UTILITY OR STRUCTURES FRAMES AND COVERS REMAINING IN PLACE. ANY UTILITY FRAMES AND COVERS WHICH ARE DAMAGED SHALL BE REMOVED AND REPLACED AT THE CONTRACTOR'S EXPENSE.

6. SIDEWALK SHALL BE 4-INCH THICKNESS OF CONCRETE, SIDEWALK RAMPS SHALL BE 4-INCH THICKNESS OF CONCRETE.

7. THE EDGE OF THE EXISTING PAVEMENT SHALL BE CLEANED OF EARTH AND OTHER FOREIGN MATERIAL WITH A WIRE BROOM BEFORE ADJACENT PAVEMENT IS PLACED.

8. CONTRACTOR TO ADJUST ALL EXISTING AND PROPOSED MANHOLE, UTILITY, AND STRUCTURE FRAME AND COVERS TO FINAL GRADE.

SOIL EROSION AND SEDIMENTATION CONTROL (SESC) NOTES

1. ALL SOIL EROSION AND SEDIMENTATION CONTROL SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF WAYNE COUNTY DEPARTMENT OF ENVIRONMENT, LAND RESOURCE MANAGEMENT DIVISION. CONTRACTOR SHALL PAY ALL FEES, AND POST ANY BONDS REQUIRED TO OBTAIN A PERMIT FROM WAYNE COUNTY DEPARTMENT OF ENVIRONMENT, LAND RESOURCE MANAGEMENT DIVISION.

2. ALL TRUCKS LEAVING THE CONSTRUCTION SITE SHALL PASS THROUGH A TEMPORARY GRAVEL CONSTRUCTION ENTRANCE/EXIT DRIVE TO REMOVE DIRT AND SEDIMENT. ANY DIRT AND ACCUMULATED SEDIMENT ON ROADS AND STREETS IN THE VICINITY OF THE PROJECT OR OUTSIDE OF THE PROJECT VICINITY, BUT ATTRIBUTABLE TO THE PROJECT SHALL BE SWEPT CLEAN AT LEAST TWICE DAILY WITH A VACUUM TYPE PICKUP BROOM. ALL MUD, DIRT AND DEBRIS TRACKED OR SPILLED ONTO THE EXISTING ROADS SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR.

3. STABILIZE SLOPES STEEPER THAN 1 ON 4, CHANNELS AND SWALES WITHIN 7 DAYS OF EARTH DISTURBANCE. INSTALL PERMANENT STABILIZATION MEASURES WITHIN 5 DAYS OF FINAL GRADING.

4. DURING STORM SEWER INSTALLATION, ALL NEWLY CONSTRUCTED DRAINAGE STRUCTURES SHALL BE PROTECTED WITH A DRAINAGE STRUCTURE FILTER. THIS WORK WILL BE INCLUDED IN THE DRAINAGE STRUCTURE COST.

5. INSTALL TOPSOIL, SEED AND MULCH / TOPSOIL AND SOD HYDROSEED ON DISTURBED RIGHT-OF-WAY WITHIN 5 DAYS OF COMPLETING UTILITY INSTALLATION.

6. PLACE RIPRAP WITHIN 24 HOURS OF PLACING CULVERTS, HEADWALLS OR OTHER DRAINAGE INLETS/OUTLETS.

7. CLEAN ALL ACCUMULATED SEDIMENT FROM CATCH BASINS, SEWERS AND PAVEMENT AREAS AS REQUIRED FOLLOWING COMPLETION OF CONSTRUCTION.

8. IMMEDIATELY REMOVE ALL EXCESS EXCAVATED MATERIAL FROM SITE OR STABLIZE SOIL STOCKPILES SO EROSION AND SEDIMENTATION DOES NOT OCCUR.

9. SHOULD IT BE NECESSARY FOR THE CONTRACTOR TO DO ANY DEWATERING DURING THE COURSE OF CONSTRUCTION, THE CONTRACTOR SHALL FILTER ALL DISCHARGE THROUGH A DISCHARGE FILTER BAG OR OTHER SEDIMENT CONTROL DEVICE THAT WILL FILTER ALL DISCHARGE WATER. NO DEWATERING DISCHARGE SHALL BE ALLOWED TO FLOW UNFILTERED FROM THE CONSTRUCTION SITE OR INTO GLWA STORM/SANITARY SEWERS.

10. THE CONTRACTOR SHALL CONTROL THE DUST CREATED ON THE CONSTRUCTION SITE AT ALL TIMES. DUST CONTROL SHALL BE ACCOMPLISHED BY THE APPLICATION OF DUST CONTROL MATERIALS AND APPLICATION METHODS ACCEPTABLE TO THE AGENCY HAVING JURISDICTION. ALL COSTS FOR DUST CONTROL SHALL BE INCIDENTAL TO THE PROJECT.

11. ALL SOIL EROSION AND SEDIMENTATION CONTROL (SESC) DEVICES SHALL BE INSTALLED PRIOR TO CONTRACTOR BEGINNING ANY WORK OR IMMEDIATELY FOLLOWING THE PHASE OF CONSTRUCTIONALLOWING OR REQUIRING (SESC) DEVICES. ALL SESC DEVICES SHALL BE MAINTAINED IN AN EFFECTIVE, FUNCTIONING CONDITION AT ALL TIMES DURING THE COURSE OF THE WORK. ALL TEMPORARY SESC DEVICES SHALL BE REMOVED AND THE AREA RESTORED AFTER THE PERMANENT SESC MEASURES ARE INSTALLED AND FUNCTIONING.

12. SHOULD THE SOIL EROSION AND SEDIMENTATION CONTROL REQUIREMENTS OR THE DUST CONTROL REQUIREMENTS BE NEGLECTED, THE OWNER OR AGENCY HAVING JURISDICTION CAN REQUIRE THE CONTRACTOR TO CEASE ALL CONSTRUCTION OPERATIONS UNTIL THE REQUIREMENTS ARE SATISFACTORILY MET.

13. SOIL EROSION AND SEDIMENTATION CONTROL SHALL BE IN ACCORDANCE WITH PART 91 OF ACT 451 OF PA 1994.

14. ALL SOIL EROSION CONTROL MEASURES SHALL BE CHECKED A MINIMUM OF ONCE PER WEEK AND WITHIN A MINIMUM OF 24 HOURS AFTER EVERY 0.5" OF RAINFALL. ANY SOIL EROSION CONTROL MEASURES DAMAGED OR RENDERED INEFFECTIVE SHALL BE IMMEDIATELY REPAIRED OR REMOVED AND REPLACED AT NO ADDITIONAL COST.

15. AS SOON AS POSSIBLE, COMPLETE FINAL GRADING AND PLACING OF PERMANENT SOIL EROSION CONTROL DEVICES. AFTER ESTABLISHMENT OF PERMANENT VEGETATION, REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES.

MICHIGAN UNIFIED KEYING SYSTEM

KEY	DETAIL	CHARACTERISTICS
4	VEGETATIVE STABILIZATION	MAY UTILIZE A VARIETY OF PLANT MATERIAL STABILIZES SOIL SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF
15	PAVING	PROTECTS AREAS WHICH CANNOT OTHERWISE BE PROTECTED, BUT INCREASES RUNOFF, VOLUME AND VELOCITY IRREGULAR SURFACE WILL HELP SLOW VELOCITY
54	SILT FENCE	USES GEOTEXTILE FABRIC AND POSTS OR POLES EASY TO CONSTRUCT AND LOCATE AS NECESSARY

SOIL EROSION AND SEDIMENTATION CONTROL SCHEDULE

CONSTRUCTION SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
TEMPORARY SESC MEASURES												
STRIP AND STOCKPILE												
DEMOLITION												
ROUGH GRADING												
UNDERGROUND UTILITIES												
ROAD INSTALLATION												
BUILDING CONSTRUCTION												
PERMANENT SESC MEASURES												
FINAL GRADE												
LANDSCAPING												

MAINTENANCE SEQUENCE	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
STREET SWEEPING												
SILT FENCING												
MAINTAIN BUFFER STRIPS												
INLET STRUCTURES												
SEEDING AND MULCH												
SEDIMENT BASINS												
RIP-RAP												
REMOVE TEMPORARY MEASURES												

TO BE COMPLETED BY CONTRACTOR AT TIME OF PERMIT ISSUANCE

LEGEND

WATER (DOMESTIC)	EXISTING	PROPOSED
YARD HYDRANT		
FIRE HYDRANT		
GATE VALVE & BOX		
SANITARY SEWER		
SANITARY MANHOLE		

LINE WORK	EXISTING	PROPOSED
TO BE DEMOLISHED	X X X X X X X X X X X X X X X	
BUILDING		
UNDERGROUND ELECTRIC	UE UE	UE UE
FORCEMAIN	FM FM	FM FM
SANITARY SEWER		
DOMESTIC WATER		
SILT FENCE		

MISCELLANEOUS

STATIONING 6+00 7+00

BOLLARD

PATTERNS

HMA PAVEMENT (EXISTING)

HMA REMOVAL

CONCRETE REMOVAL

PROPOSED HMA

PROPOSED CONRETE

PROPOSED SEEDING

PLOTTED

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

CIVIL GENERAL NOTES

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET C-001

DIGESTER STORAGE

CONCRETE PAD TO REMAIN

REMOVE EX. FIRE HYDRANT

NORTH DIGESTER

SLUDGE THICKENING TANKS

DIGESTER BUILDING

CONCRETE PAD TO REMAIN

SLUDGE STORAGE TANK

10 5 0 10 20

SCALE IN FEET

X DEMOLITION NOTES

1. REMOVE ASPHALT PAVEMENT
   ALL SAWCUTS SHALL BE FULL DEPTH.
2. REMOVE 14" EFFLUENT WATER LINE.

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
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CIVIL DEMOLITION PLAN

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ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076-01F

SHEET
C-101

PLOTTED

DIGESTER STORAGE

NORTH DIGESTER

DIGESTER BUILDING

SLUDGE STORAGE TANK

WASTE UNLOADING BUILDING

SLUDGE THICKENING TANKS

SLOPED FLOOR TO TRENCH DRAIN

3" D W/CAST IRON DRAIN CASTING/COVER

CONSTRUCT 8" BOLLARD TYPICAL, 13 EA THIS SHEET. SEE DETAIL SHEET C–502.

MATCH ELEVATION AT OVERHEAD DOORS AND MAN DOORS

8 FT CONC. APRON, 6" THICK W/ 4X4 MESH

PI: 0+49

10 5 0 10 20

SCALE IN FEET

(XX) SITE IMPROVEMENT NOTES

1. CONSTRUCT ASPHALT PAVEMENT SEE DETAIL SHEET C–502
2. CONSTRUCT 12" TRENCH DRAIN FOR SPILL PROTECTION. SEE DETAIL.
3. CONSTRUCT 4" CONCRETE SIDEWALK, SEE DETAIL, SHEET C–501

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
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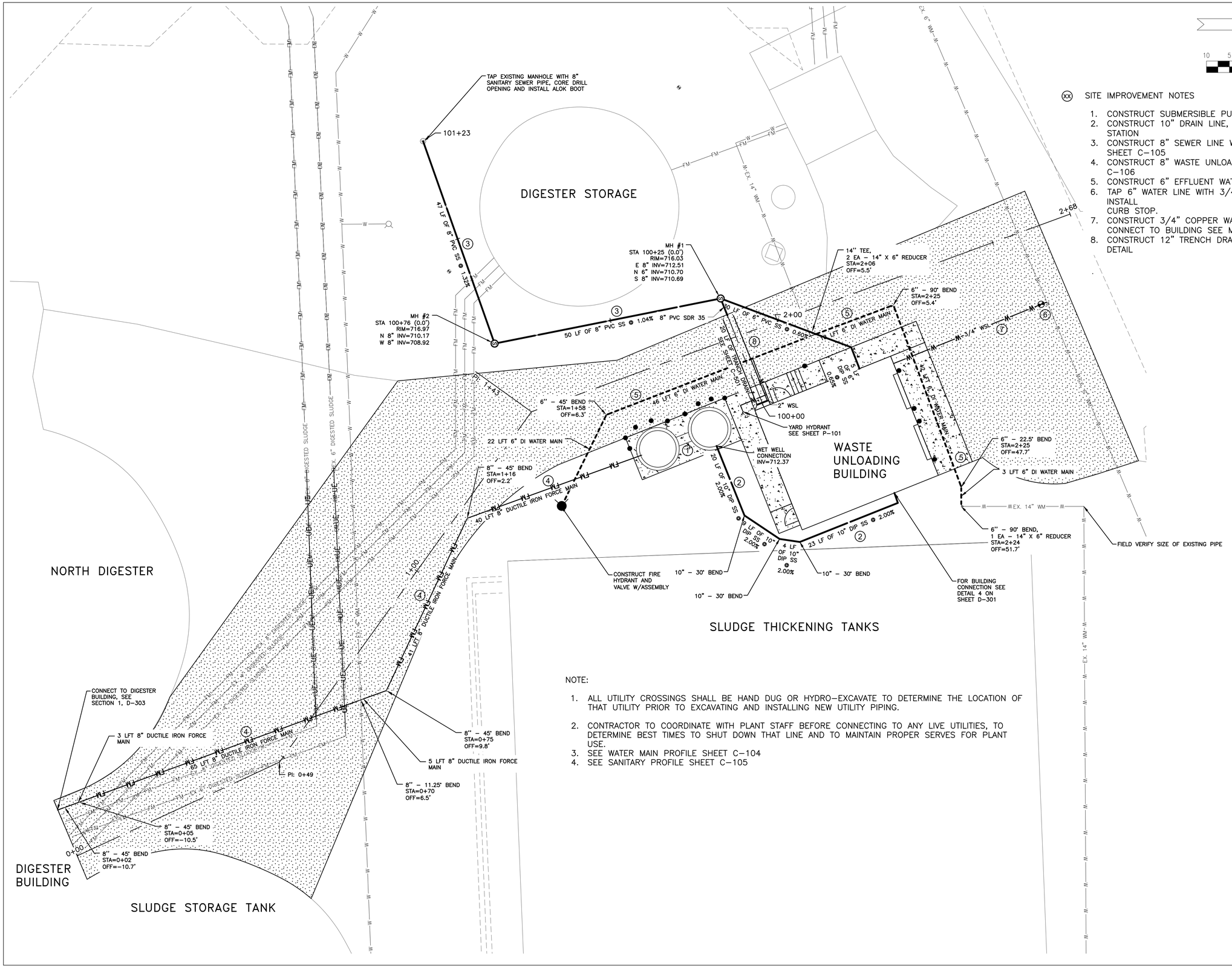
CIVIL SITE PLAN

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET C-102

PLOTTED



(XX) SITE IMPROVEMENT NOTES

1. CONSTRUCT SUBMERSIBLE PUMPING STATION AND VALVE VAULT
2. CONSTRUCT 10" DRAIN LINE, 2% SLOPE DRAINAGE TO PUMP STATION
3. CONSTRUCT 8" SEWER LINE WITH MANHOLES, SEE PROFILE SHEET C–105
4. CONSTRUCT 8" WASTE UNLOADING LINE, SEE PROFILE SHEET C–106
5. CONSTRUCT 6" EFFLUENT WATER LINE, MAINTAIN 5' COVER
6. TAP 6" WATER LINE WITH 3/4" COPPER WATER LINE AND INSTALL CURB STOP.
7. CONSTRUCT 3/4" COPPER WATER LINE MAINTAIN 5' COVER, CONNECT TO BUILDING SEE MECHANICAL PLANS
8. CONSTRUCT 12" TRENCH DRAIN FOR SPILL PROTECTION. SEE DETAIL

NOTE:

1. ALL UTILITY CROSSINGS SHALL BE HAND DUG OR HYDRO–EXCAVATE TO DETERMINE THE LOCATION OF THAT UTILITY PRIOR TO EXCAVATING AND INSTALLING NEW UTILITY PIPING.
2. CONTRACTOR TO COORDINATE WITH PLANT STAFF BEFORE CONNECTING TO ANY LIVE UTILITIES, TO DETERMINE BEST TIMES TO SHUT DOWN THAT LINE AND TO MAINTAIN PROPER SERVES FOR PLANT USE.
3. SEE WATER MAIN PROFILE SHEET C–104
4. SEE SANITARY PROFILE SHEET C–105

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
WPCF WASTE UNLOADING STATION
CIVIL YARD PIPING PLAN

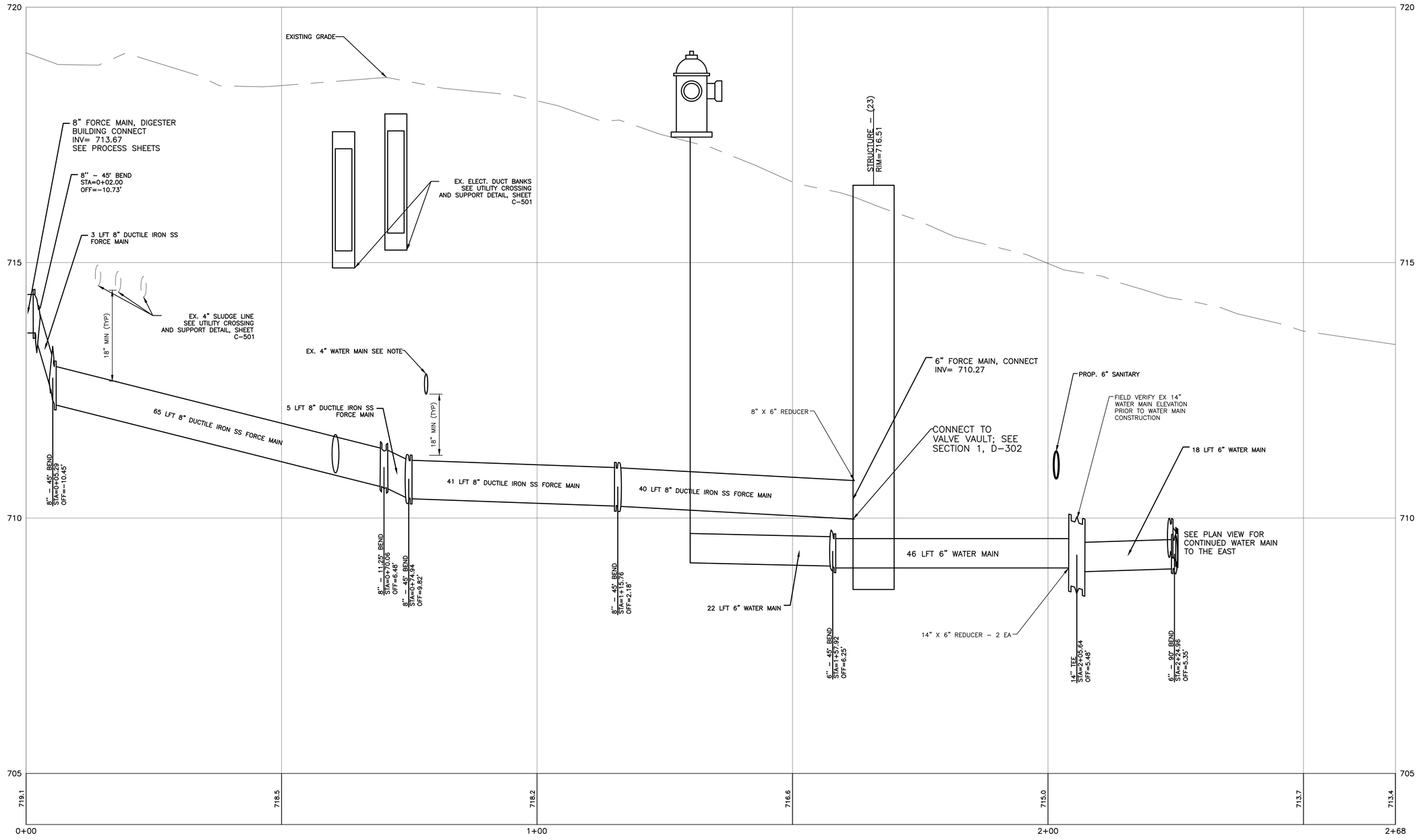
ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076-01F

SHEET
C-103

PLOTTED

NOTE: IN ADDITION TO THE HORIZONTAL AND VERTICAL BENDS SHOWN FOR THIS PIPE, PROVIDE ADDITIONAL FOUR (4) – 45° OR 22.5° BENDS TO USE FOR THE 8–INCH FORCE MAIN TO AVOID EXISTING UTILITIES THAT MAY BE FOUND WHEN EXCAVATING. COST OF PROVIDING AND INSTALLING THESE FITTINGS TO BE INCLUDED IN LUMP SUM COST. REFER TO UTILITY CROSSING AND SUPPORT DETAIL, SHEET C–501.



BY	DESCRIPTION	DATE	REV#
TSW	ADDENDUM 1	2023.07.08	2
TSW	ISSUED FOR BIDS	2023.06.24	1

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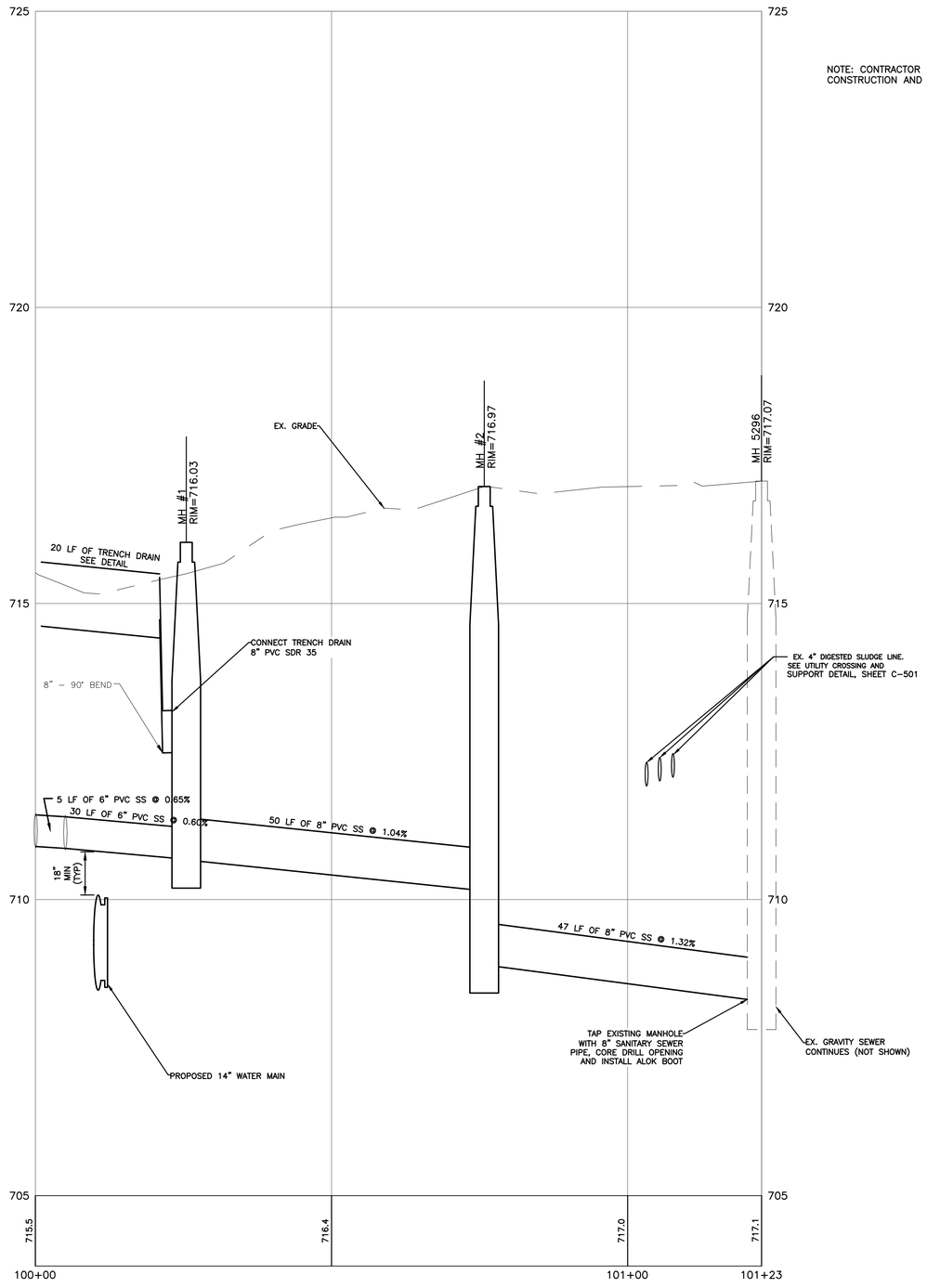
CITY OF FLINT
WPCF WASTE UNLOADING STATION
PROPOSED WASTE UNLOADING LINE PIPE PROFILE

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET C-104

PLOTTED



NOTE: CONTRACTOR SHALL FIELD VERIFY EXISTING SANITARY SEWER INVERTS PRIOR TO CONSTRUCTION AND NOTIFY ENGINEER.

PLOTTED

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
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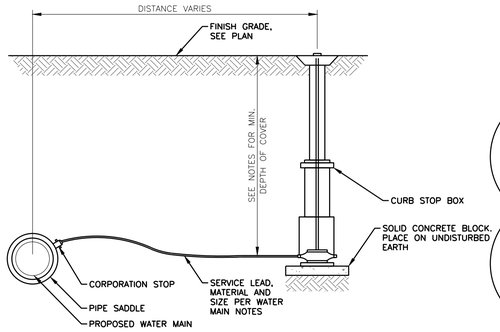
PROPOSED DRAIN PIPE PROFILE

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

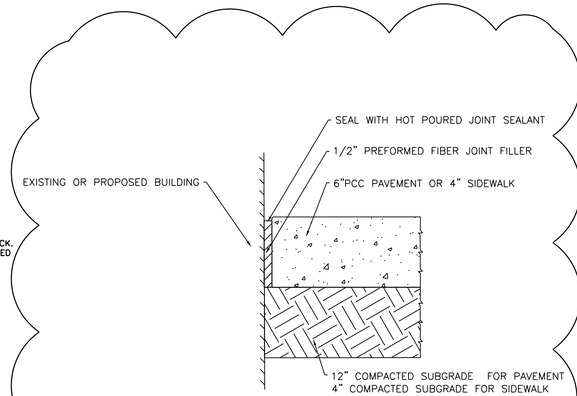
JOB NO.
COF1076-01F

SHEET
C-105

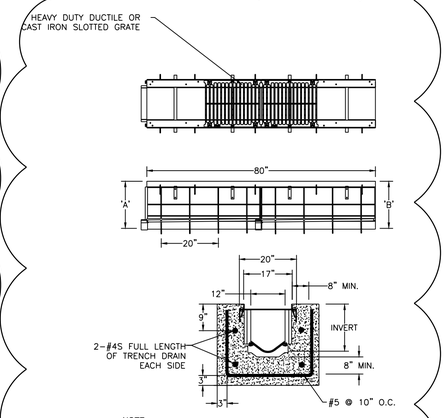


WATER SERVICE DETAIL

NOT TO SCALE

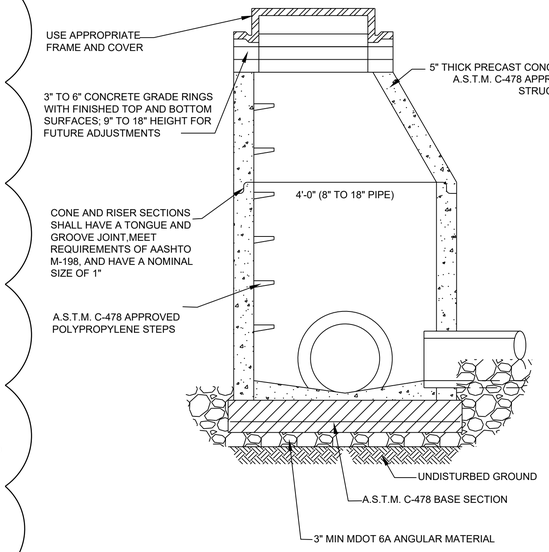


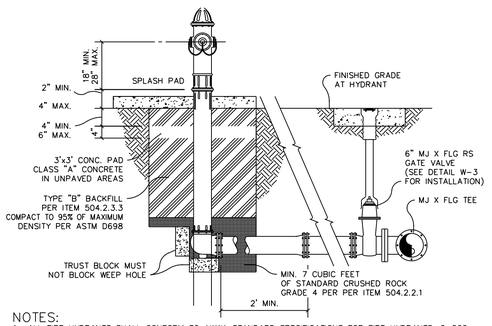
PAVEMENT OR SIDEWALK TO BUILDING DETAIL



NOTE:
1. MINIMUM SLOPE ON CHANNEL SHALL BE 1%, SEE PLANS FOR INVERT ELEVATION AT DOWN STREAM END.
2. TRENCH DRAIN SHALL BE ZURN Z874-12, ACO S300K OR APPROVED EQUAL
3. SOLID CAPPED END ON UPSTREAM SIDE OF TRENCH DRAIN AND OUTLET CAP TO FIT 6" DRAIN PIPE AT ENTRANCE.
4. END CAP TO FIT 4" DRAIN PIPE ON UPSTREAM SIDE OF TRENCH DRAIN AND OUTLET CAP TO FIT 8" DRAIN PIPE AT LOADING DOCK AREA.

TRENCH DRAIN DETAIL

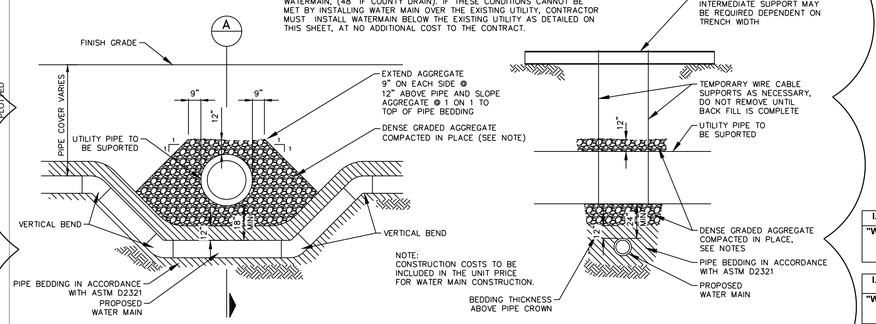




NOTES:
1. ALL FIRE HYDRANTS SHALL CONFORM TO AWWA STANDARD SPECIFICATIONS FOR FIRE HYDRANTS, C-502. FIRE HYDRANTS SHALL HAVE A 5 1/4" MIN. VALVE OPENING AND AND INSIDE BARREL DIAMETER OF APPROXIMATELY 7". ALL HYDRANTS SHALL BE EQUIPPED WITH A BREAKAWAY FLANGE.
2. BURY DEPTH SHALL NOT EXCEED 7-FEET.
3. FIRE HYDRANT SHALL BE PLACED ON THE EXTENDED LOT LINE WHEN POSSIBLE.
4. FIRE HYDRANT SHALL BE LOCATED A MINIMUM OF 1 FOOT OUTSIDE OF THE AREA BETWEEN THE P.C.'s OF THE CORNER TURNING RADIUS AT THE INTERSECTIONS.
5. ALL BELOW GROUND IRON ASSEMBLIES SHALL BE WRAPPED IN POLYETHYLENE ACCORDING TO AWWA C105.
6. BOLLARDS SHALL BE PLACED AROUND FIRE HYDRANT WHERE CURBS ARE NOT POSSIBLE.
7. FIRE HYDRANT SHALL BE AT LEAST 42-INCHES FROM ANY ABOVE GROUND OBSTRUCTIONS, SUCH AS GUARDRAILS, RETAINING WALLS, BOLLARDS, ETC.
8. SPLASH PAD TO BE MIN. 2' WDE AND EXTEND FROM BACK OF CURB TO THE FIRE HYDRANT.
9. ALL FIRE HYDRANTS SHALL HAVE 5' CLEAR ZONE FREE FROM AND OBSTRUCTIONS OR UTILITY.

FIRE HYDRANT DETAIL

NOTE:
WHEN CROSSING AN EXISTING UTILITY, CONTRACTOR MUST MAINTAIN REQUIRED MIN. COVER OVER PROPOSED WATER MAIN, AND 18" MIN. VERTICAL CLEARANCE BETWEEN EXISTING UTILITY AND PROPOSED WATERMAIN, (48" IF COUNTY DRAIN). IF THESE CONDITIONS CANNOT BE MET BY INSTALLING WATER MAIN OVER THE EXISTING UTILITY, CONTRACTOR MUST INSTALL WATERMAIN BELOW THE EXISTING UTILITY AS DETAILED ON THIS SHEET, AT NO ADDITIONAL COST TO THE CONTRACT.



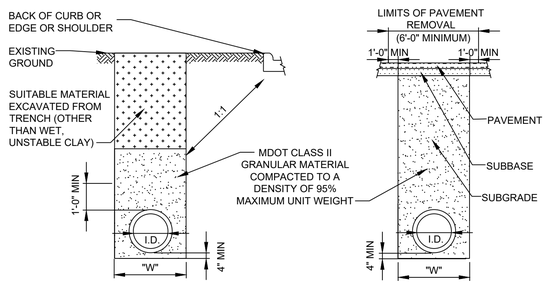
NOTE:
CONSTRUCTION COSTS TO BE INCLUDED IN THE UNIT PRICE FOR WATER MAIN CONSTRUCTION.

PROFILE VIEW

SECTION A

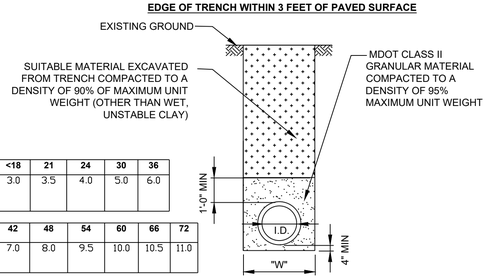
UTILTIY CROSSING AND PIPE SUPPORT DETAIL

NOT TO SCALE



NOTES:
1. WHEN PIPE IS PLACED IN PROPOSED ROADBED AREA, IT SHALL BE BACKFILLED WITH SELECTED EXCAVATION MATERIAL ABOVE FUTURE SUBGRADE TO EXISTING GROUND LINE.

EDGE OF TRENCH WITHIN 3 FEET OF PAVED SURFACE



I.D. PIPE SIZE (IN)	<18	21	24	30	36
"W" TRENCH WIDTH (FT)	3.0	3.5	4.0	5.0	6.0

I.D. PIPE SIZE (IN)	42	48	54	60	66	72
"W" TRENCH WIDTH (FT)	7.0	8.0	9.5	10.0	10.5	11.0

TRENCH NOT WITHIN INFLUENCE OF PAVED AREA

PIPE TRENCH CROSS-SECTIONS

REV#	DATE	DESCRIPTION	BY
2	2023.07.06	ADDENDUM 1	TSW
	2023.06.24	ISSUED FOR BIDS	TSW

CITY of FLINT MICHIGAN

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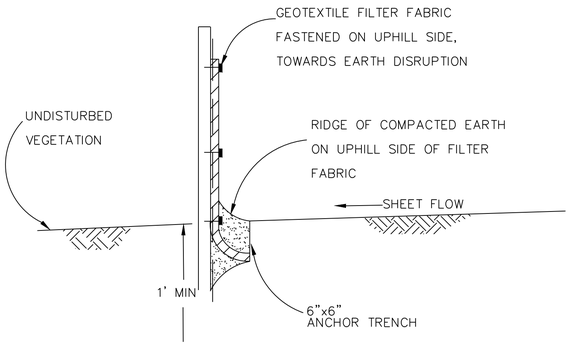
CITY OF FLINT
WPCF WASTE UNLOADING STATION
CIVIL DETAILS

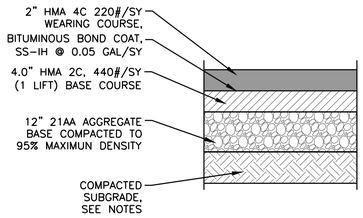
ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076.O1F

SHEET
C-501

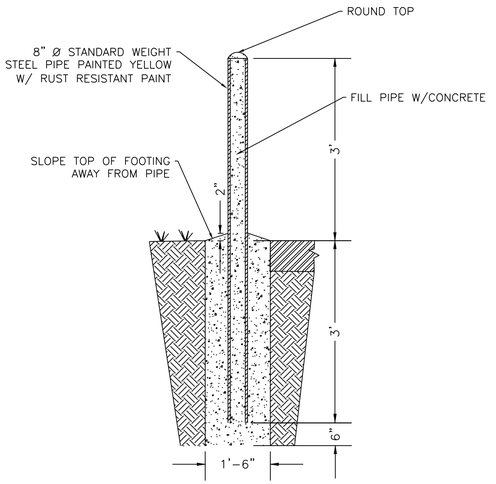


SILT FENCEBOLLARD DETAIL



STANDARD HMA PAVEMENT DETAIL

NOT TO SCALE



NOTES:
1. SUBMIT PRODUCT DATA AND/OR SHOP DRAWINGS.
2. INSTALL BOLLARDS AS SHOWN ON PLANS. ALL LOCATIONS TO BE FIELD VERIFIED WITH OWNER'S REP. PRIOR TO INSTALLATION. USE CAUTION REGARDING UNDERGROUND UTILITIES.

BOLLARD DETAIL

PIPE RESTRAINT SCHEDULE

GROUND BURIED PRESSURE PIPE – POLYETHYLENE ENCASED DUCTILE IRON PIPE

PIPE DIAMETER	TEES, 90° BENDS	45° BENDS	22-1/2° BENDS	11-1/4° BENDS	DEAD ENDS	REDUCERS (ONE SIZE REDUCTION)*	REDUCERS (TWO SIZE REDUCTION)*
4	13	5	3	1	40	--	--
6	19	8	4	2	58	31	--
8	24	10	5	2	75	30	70
12	34	14	7	3	107	57	116
16	43	18	9	4	139	59	137
20	52	22	10	5	169	59	134
24	61	25	12	6	199	60	132
30	73	30	15	7	242	85	168
36	84	35	17	8	281	84	188

LENGTHS OF PIPE RESTRAINT ARE GIVEN IN FEET.

IF REQUIRED PIPE DIAMETER IS NOT LISTED IN THIS TABLE, THE NEXT LARGEST PIPE DIAMETER SHALL BE USED.

THIS TABLE IS BASED ON A TEST PRESSURE OF 180 PSI (OPERATING PRESSURE PLUS WATER HAMMER. FOR OTHER TEST PRESSURES, ALL VALUES TO BE INCREASED OR DECREASED PROPORTIONALLY.

THE VALUES PROVIDED OF RESTRAINT LENGTH ARE IN EACH DIRECTION FROM THE POINT OF DEFLECTION OR TERMINATION EXCEPT FOR TEES, AT WHICH ONLY THE BRANCH IN THE DIRECTION OF THE STEM.

* SIZE REDUCTION IS BASED UPON THE PIPE DIAMETER SHOWN IN THIS TABLE.

BASED UPON:

INTERNAL PRESSURE:	180
PIPE DEPTH:	5
BEDDING CLASS:	TYPE 4
SOIL TYPE:	GOOD SAND
SAFETY FACTOR:	2

PLOTTED

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ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076.O1F

SHEET C-502

GENERAL NOTES

1. DIMENSIONS AND ELEVATIONS OF EXISTING STRUCTURES ARE BASED ON PREVIOUS CONTRACT DRAWINGS. CONTRACTOR IS RESPONSIBLE FOR VERIFYING W/FIELD MEASUREMENTS ALL DIMENSIONS AND ELEVATIONS FOR FABRICATION AND/OR MODIFICATIONS OR ADDITIONS BEING MADE UNDER THIS CONTRACT. ANY DISCREPANCIES SHALL BE PRESENTED TO THE OWNER AND ANY DESIGN CONFLICTS SHALL BE RESOLVED WITH OWNER PRIOR TO FABRICATIONS OR CONSTRUCTION OF IMPACTED ITEMS.

2. ALL EXISTING DIMENSIONS AND ELEVATIONS SHOWN WITH THE ± SYMBOL, ARE APPROXIMATE AND SHALL BE VERIFIED IN FIELD BY THE CONTRACTOR BEFORE FABRICATION AND CONSTRUCTION.

3. ALL DIMENSIONS OR ELEVATIONS MARKED WITH AN ASTERISK "*" SHALL BE DETERMINED OR VERIFIED WITH EQUIP. MFR. CERTIFIED SHOP DRAWINGS OR FIELD MEASUREMENTS OF EXISTING CONSTRUCTION BEFORE FABRICATION AND CONSTRUCTION.

4. ALL ADHESIVE ANCHORING SYSTEMS FOR POST-INSTALLED ANCHORS AND/OR REINFORCING DOWELS IN CONCRETE OR MASONRY SHALL BE "HIT-HY 200 ADHESIVE ANCHORING SYSTEM" BY HILTI AT SIZE AND SPACING INDICATED ON DRAWINGS.

CODES AND LOADS

1. ALL STRUCTURES SHALL BE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:

   A. CODE REQUIREMENTS FOR ENVIRONMENTAL ENGINEERING CONCRETE STRUCTURES - AMERICAN CONCRETE ASSOCIATION ACI 350 (2006)

2. DESIGN LOADS (GENERAL)
   A. ELEVATED SLAB & SLABS ON GRADE - LIVE LOADS - 300 PSF
   B. ELEVATED PLATFORM LIVE LOADS - 150 PSF
   C. SNOW LOADS, PER ASCE 7-16 (OCCUPANCY CATEGORY III)
      1. GROUND SNOW LOAD - 30 PSF
      2. SNOW EXPOSURE FACTOR - Ce = 0.9
      3. SNOW THERMAL FACTOR - Ct = 1.0
      4. SNOW IMPORTANCE FACTOR - I = 1.1
      5. FLAT ROOF SNOW LOAD - Pf = 21.0 PSF

   D. WIND LOADS
      1. BASIC WIND SPEED (3-SECOND)=120 MPH
      2. WIND EXPOSURE CATEGORY C
      3. HEIGHT AND EXPOSURE FACTOR: 1.4

   E. LATERAL EARTH PRESSURES DRAINED CONDITION
      1. ACTIVE PRESSURE - Pa = 40.0 PSF; Ka = 0.32
      2. AT REST PRESSURE - Po = 60.0 PSF; Ko = 0.48
      3. PASSIVE PRESSURE - Pp = 375 PSF; Kp = 3.12
   F. LATERAL EARTH PRESSURE - UNDRAINED CONDITION
      1. ACTIVE PRESSURE - Pa = 84.0 PSF
      2. AT REST PRESSURE - Po = 94.0 PSF
      3. PASSIVE PRESSURE - Pp = 267 PSF

   G. 100 YEAR FLOOD ELEVATION - GRADE

DEMOLITION

1. THE CONTRACTOR SHALL TAKE ALL NECESSARY MEASURES TO PREVENT DAMAGE TO EXISTING STRUCTURES, WHICH ARE TO REMAIN, DURING DEMOLITION WORK. ALL DAMAGE SHALL BE REPAIRED TO THE COMPLETE SATISFACTION OF THE ENGINEER AT THE CONTRACTOR'S EXPENSE.

2. WHEN REMOVING EXISTING CONCRETE BY CUTTING OR CHIPPING THE CONTRACTOR SHALL ONLY REMOVE REINFORCING BARS WHICH CANNOT BE BENT INTO AREAS WHERE NEW CONCRETE WOULD COMPLETELY COVER THEM.

3. IF FRACTURE OF ADJACENT CONCRETE OCCURS DURING DEMOLITION/ ALTERATION WORK, THE REPAIR SHALL BE WITH AN ENGINEER APPROVED PRESSURE INJECTED EPOXY, TO THE COMPLETE SATISFACTION OF THE ENGINEER, AT THE CONTRACTOR'S EXPENSE.

4. CONTRACTOR SHALL PROVIDE WRITTEN PLAN AND DESCRIPTION OF ALL DEMOLITION, MODIFICATION, OR ALTERATION WORK ON EXISTING STRUCTURES FOR REVIEW AND ACCEPTANCE PRIOR TO BEGINNING WORK.

5. ANY REMAINING EXPOSED REINFORCING STEEL AFTER DEMO SHALL BE COATED WITH CORROSION INHIBITING COMPOUND. USE SIKA ARMATEC 110 EPOCEM OR APPROVED EQUAL.

MASONRY

1. HOLLOW CONCRETE BLOCK (MASONRY UNITS) SHALL CONFORM TO ASTM C90, GRADE N (MEDIUM WEIGHT) WITH A MINIMUM COMMPRESSIVE STRENGTH OF 1900 PSI ON THE NET AREA (f'm=1,500 PSI)

2. ALL MORTAR SHALL BE TYPE N AND COMPLY WITH ASTM C476, WITH MINIMUM COMPRESSIVE STRENGTH AT 2500 PSI.

3. REINFORCING BARS SHALL CONFORM TO ASTM A615 GRADE 60.

4. VERTICAL REINFORCEMENT TO BE CONTINUOUS AND LAPPED A MINIMUM OF 48 BAR DIAMETERS.

5. DOWEL ALL VERTICAL REINFORCEMENT FROM FOUNDATIONS AS SHOWN ON PLANS.

6. PROVIDE A MINIMUM OF 1/2" GROUT BETWEEN REINFORCING AND MASONRY UNITS.

PRECAST CONCRETE

1. DESIGN OF PRECAST MEMBERS (ROOF PLANKS) SHALL CONFORM TO ACI 318-14 AND SHALL BE PRESTRESSED TO SUSTAIN THE SUPERIMPOSED LOADS INDICATED.

2. ALL PRECAST, PRESTRESSED ROOF PLANKS SHALL HAVE MINIMUM COMPRESSIVE STRENGTH OF 3500 PSI AT RELEASE OF PRESTRESS CABLES AND 5000 PSI AT 28 DAYS.

3. PROVIDE 1/2" THICK BEARING PADS WHERE INDICATED.

4. ALL PRE-STRESSED STRANDS SHALL BE UNCOATED, 7 WIRE LOW RELAXATION STRANDS CONFORMING TO ASTM A4 16.

5. PRECAST MANUFACTURER SHALL DESIGN PRECAST HOLLOW CORE ROOF PLANK SYSTEM INCLUDING ALL REQUIRED STEEL HANGERS, WHICH SHALL BE HOT DIPPED GALVANIZED STEEL. DESIGN CALCULATION FOR ALL PRECAST MEMBERS SHALL BE SEALED BY A PROFESSIONAL ENGINEER REGISTERED IN THE STATE OF MICHIGAN AND SHALL BE SUBMITTED FOR REVIEW PRIOR TO FABRICATION.

CAST-IN-PLACE CONCRETE

1. THE DETAILING, BENDING, AND PLACING OF REINFORCING STEEL SHALL BE IN ACCORDANCE WITH ACI STANDARD 350-06/350R-06 CODE AND ACI DETAILING MANUAL, SP-66 (94). FIELD BENDING WILL NOT BE PERMITTED UNLESS APPROVED BY ENGINEER

2. ALL REINFORCING STEEL SHALL BE NEW BILLET STEEL DEFORMED BARS CONFORMING TO ASTM A615, GRADE 60.

3. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 5000 PSI @ 28 DAY UNLESS OTHERWISE NOTED

4. STEEL REINFORCING SHALL NOT BE SPLICED AT POINTS OTHER THAN SHOWN ON THE PLANS, EXCEPT AS APPROVED BY THE ENGINEER, UNLESS NOTED OTHERWISE.

5. ALL STIRRUPS AND TIES SHALL BE CLOSED TYPE WITH 135 DEGREE HOOKS, U.N.O.

6. ALL COLD JOINTS IN CONCRETE STRUCTURES SHALL HAVE A CONTINUOUS WATERSTOP CREATING A WATERTIGHT JOINT AS DETAILED. WHERE NOT SPECIFIED ALL COLD JOINTS SHALL HAVE A HYDROPHILIC WATERSTOP PER SPECIFICATIONS.

7. THE LENGTH OF ALL LAP SPLICES SHALL BE AS SPECIFIED IN "REINFORCING TENSION SPLICE TABLE" ON THIS SHEET UNLESS OTHERWISE INDICATED IN DRAWINGS. WHEN BARS OF DIFFERENT SIZE ARE BEING LAPPED, THE LENGTH SHALL BE THE SPECIFIED LAP LENGTH OF THE LARGER BAR.

8. BOTTOM AND TOP REINFORCING BARS FOR ALL DISCONTINUOUS ENDS OF BEAMS AND SLABS SHALL HAVE HOOKS AND SPLICES CONFORMING TO ACI MANUAL OF STANDARD PRACTICE.

9. ALL FILLET AND TOPPING CONCRETE SHALL BE HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 6000 PSI. FILLET CONCRETE, SHALL BE PLACED TO PRODUCE CONTOURS INDICATED ON PLANS, AND SHALL RECEIVE SMOOTH FLOAT FINISH.

10. CONCRETE COVER OVER REINFORCEMENT SHALL BE 2 INCHES MINIMUM, UNLESS NOTED OTHERWISE, AND 3-INCHES MINIMUM WHERE CAST AGAINST EARTH.

METALS

STEEL

1. STRUCTURAL STEEL AND MISCELLANEOUS METALS DESIGN SHALL CONFORM TO THE SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS, AISC/ANSI 360.

2. BOLTS SHALL BE A MINIMUM 3/4" DIAMETER, ASTM A325N, TYPE 1, GALVANIZED, UNLESS NOTED OTHERWISE. PROVIDE COMPATIBLE A563 GRADE DH, HEAVY HEX NUTS, AND F436 GRADE 1 WASHERS.

3. ALL GALVANIZED STEEL SHALL BE HOT-DIP GALVANIZED CONFORMING TO ASTM A123, UNO.

4. ALL STAINLESS STEEL BEAMS AND MISCELLANEOUS SHAPES SHALL CONFORM TO THE REQUIREMENTS OF ASTM A1637 TYP 316/316L GRADE A OR BETTER, HOT ROLLED AND ANNEALED FINISH.

ALUMINUM

1. ALUMINUM CONSTRUCTION SHALL CONFORM TO THE LATEST EDITION OF THE "ALUMINUM CONSTRUCTION MANUAL" OF THE ALUMINUM ASSOCIATION.

2. ALL ALUMINUM SHALL BE ALLOY 6061-T6 MEETING THE REQUIREMENTS OF ASTM B 308 UNO.

3. ALL ALUMINUM IN CONTACT WITH CONCRETE AND MASONRY SHALL HAVE THE CONTACT SURFACES COATED WITH HEAVY ALKALI-RESISTANT BITUMINOUS PAINT.

4. ALL BOLTED CONNECTIONS SHALL BE MADE WITH 3/4" DIA A316 BOLTS UNO.

5. ALL ALUMINUM SHAPES SHALL MEET THE MINIMUM SECTION PROPERTIES LISTED IN THE "2005 ALUMINUM DESIGN MANUAL" PUBLISHED BY THE ALUMINUM ASSOCIATION.

6. ALL 1-1/2" DEEP ALUMINUM GRATING INDICATED ON PLANS SHALL BE 15-SGI-4 BY OHIO GRATINGS INC, OR APPROVED EQUAL. GRATING SHALL HAVE A MINUMUM ALLOWABLE WORKING STRESS OF 12,000 PSI WITH THE FOLLOWING MINIMUM SECTION PROPERTIES:
   Sx = 0.90 IN^3/FT
   Ix = 0.675 IN^4/FT

7. ALL GRATING SHALL HAVE STRIATED SURFACES ON TOP FLANGE OF BEARING BARS.

8. ALL GRATING PENETRATIONS SHALL BE CUT NEATLY AND IN A RECTANGULAR BAND BAR OF THE SAME HEIGHT AND MATERIAL SHALL BE INSTALLED BY WELDING.

9. ALL GRATING SHALL BE SECURED TO FRAMING MEMBERS USING STAINLESS STEEL SADDLE CLIPS AND 1/4" DIA STAINLESS STEEL TEK SCREWS AS SPECIFIED BY THE GRATING MANUFACTURER.

FOUNDATIONS

1. CONTRACTOR SHALL BE AWARE OF AND VERIFY LOCATION OF ALL UNDERGROUND UTILITIES, TANKS, FOUNDATIONS, ETC. DUE CARE SHALL BE EXERCISED DURING CONSTRUCTION ACTIVITIES SUCH THAT THE EXISTING UTILITIES ARE NOT DAMAGED.

2. ALL EXCAVATED MATERIAL SHALL BE DISPOSED OF IN AN APPROVED MANNER. ALL EXCAVATIONS SHALL CONFORM TO OSHA REQUIREMENTS.

3. ALL EXCAVATION, FILLING, BACKFILLING, FOUNDATION AND COMPACTION REQUIREMENTS SHALL BE IN ACCORDANCE WITH REQUIREMENTS NOTED ON THE DRAWINGS, PROJECT SPECIFICATIONS, AND THE PROJECT GEOTECHNICAL REPORT.

4. BARRICADE ALL OPEN EXCAVATIONS OCCURING AS PART OF THE WORK AND POST WITH WARNING LIGHTS.

5. EXISTING FILL BELOW THE FOUNDATIONS FOR THE WASTE UNLOADING STATION IS NOT SUITABLE AND SHOULD BE OVEREXCAVATED TO COMPETENT MATERIAL AND REPLACED WITH COMPACTED 21AA AGGREGATE, PER RECOMMENDATIONS PROVIDED IN THE GEOTECHNICAL REPORT. CONTRACTOR SHALL RETAIN THE SERVICES OF A GEOTECHNICAL ENGINEER DURING THE EXCAVATION AND SUBGRADE IMPROVEMENTS PHASE TO TEST AND VERIFY THE SUBGRADE IS PREPPED AND SUITABLE FOR SUPPORTING THE NEW FOUNDATIONS.

STRUCTURAL ABBREVIATIONS

ALT	ALTERNATE	HPC	HIGH PERFORMANCE COATING
ALUM	ALUMINUM	HK	HOOK
B	BOTTOM	HT	HEIGHT
BLDG	BUILDING	ID	INSIDE DIAMETER
BM	BEAM	IE	INVERT ELEVATION
BSMT	BASEMENT	IF	INSIDE FACE
CJ	CONSTRUCTION JOINT	IN	INCHES
CL	CENTERLINE	INT	INTERIOR
CLR	CLEAR	JT	JOINT
COL	COLUMN	KIP	THOUSAND POUNDS
CONC	CONCRETE	KSI	KIPS PER SQUARE INCH
CONST	CONSTANT	KB	KNEE BRACE
CONSTR	CONSTRUCTION	L	LENGTH
CONT	CONTINUOUS	LP	LOW POINT
CLSM	CONTROLLED LOW STRENGTH MATERIAL	LGHT	LENGTH
CMU	CONCRETE MASONRY UNIT	MAX	MAXIMUM
COR	CORNER	MIN	MINIMUM
CY	CUBIC YARD	MCP	MULTIPLE CORROSION PROTECTION
DBR	DOWEL BAR REPLACEMENT	MO	MASONRY OPENING
DET	DETAIL	NA	NOT APPLICABLE
DIA	DIAMETER	NF	NEAR FACE
DIAG	DIAGONAL	NS	NEAR SIDE
DISC	DISCONTINUOUS	NTS	NOT TO SCALE
DWLS	DOWELS	NIC	NOT IN CONTRACT
EJ	EXPANSION JOINT	OC	ON CENTER
EE	EACH END	OD	OUT SIDE DIAMETER
EF	EACH FACE	OF	OUT SIDE FACE
ES	EACH SIDE	OPNG	OPENING
EQ	EQUAL	PSF	POUNDS PER SQ. FEET
EW	EACH WAY	PSI	POUNDS PER SQUARE INCH
EA	EACH	PT	PRESSURE TREATED
EL	ELEVATION	REINF	REINFORCEMENT
EX	EXISTING	RE	REFER TO
EXT	EXTERIOR/ EXTENSION	REM	REMOVABLE
FC	FILLET CONCRETE	SHTS	SHEETS
FD	FLOOR DRAIN	SIM	SIMILAR
FF	FAR FACE	SJ	SLAB CONTROL JOINT
FS	FAR SIDE	SS	STAINLESS STEEL
FIN	FINISH	STIR	STIRRUPS
FL	FLOOR	STRUCT	STRUCTURAL
FND	FOUNDATION	T/	TOP
FT	FEET	TERS	TEMPORARY EARTH RETENTION SYSTEM
GALV	GALVANIZED	THK	THICK
GR	GRADE	TOS	ELEVATION TOP OF STRUCTURAL STEEL
GVW	GROSS VEHICLE WEIGHT	TYP	TYPICAL
H	HORIZONTAL	UNO	UNLESS NOTED OTHERWISE
HC	HOLLOW CORE	V	VERTICAL
HP	HIGH POINT	W	WIDTH
		WP	WORK POINT

REINFORCING TENSION SPLICE TABLE

BAR SIZE	TENSION LAP LENGTH	* TOP BARS
#3	16"	22"
#4	20"	29"
#5	24"	36"
#6	29"	43"
#7	42"	63"
#8	48"	72"
#9	54"	81"
#10	61"	91"
#11	67"	101"

NOTES

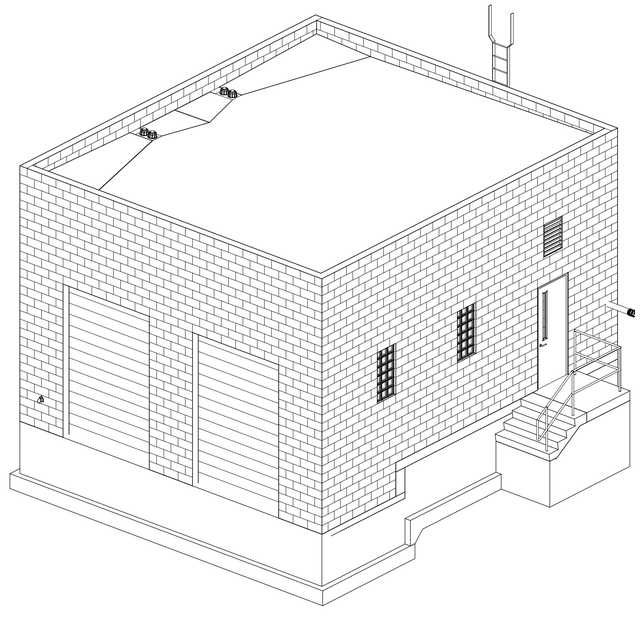
1. ABOVE TABLE IS FOR NORMAL WEIGHT CONCRETE; f'c=5,000 PSI AND REINFORCING STEEL; fy=60,000 PSI.

2. ALL SPLICES SHALL BE CONSIDERED TENSION SPLICES USING LAP LENGTHS IN TABLE ABOVE UNLESS SPECIFICALLY SHOWN OTHERWISE ON THE DRAWINGS.

3. LENGTHS ARE BASED ON LAP CLASS B SPLICES WITH CENTER TO CENTER SPACING OF BARS EQUAL TO OR GREATER THAN 6 DIAMETERS.

4. TOP BARS ARE HORIZONTAL BARS WITH MORE THAN 12" OF CONCRETE CAST UNDER THEM.

5. USE TENSION LAP LENGTHS FOR HORIZ & VERT. WALL BARS.



1 WASTE UNLOADING ISO VIEW
SCALE:

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW

CITY of FLINT MICHIGAN

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

STRUCTURAL GENERAL NOTES & TYP. DETAILS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET S-100

PLOTTED: 7/10/2023 10:19:14 AM

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DIAGONAL BARS
ALL OPENINGS

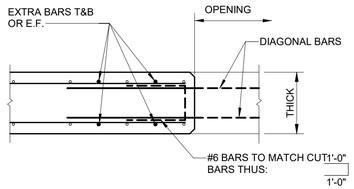
SLAB OR WALL THICKNESS		DIAG. BARS - (4) SIDES OF OPENING E.F., EQUAL SPACING		
FROM	TO & INCLUDING	NO.	BAR SIZE	LENGTH
0	8"	1	#4	3'-0"
8"	16"	2	#5	4'-0"
16"	24"	2	#6	5'-0"
24"	32"	3	#6	5'-0"
32"	40"	3	#7	6'-0"

LENGTH OF EXTRA BARS
CENTERED ON ℄ OF OPENING

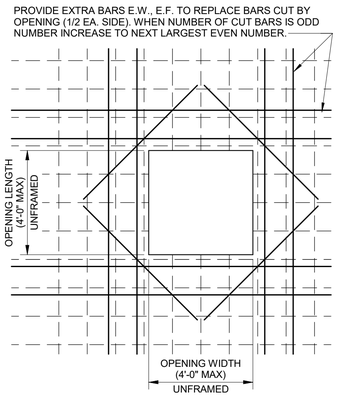
BAR SIZE	LENGTH = OPENING PLUS	BAR SIZE	LENGTH = OPENING PLUS
#4	3'-0"	#8	10'-0"
#5	4'-0"	#9	12'-0"
#6	6'-0"	#10	16'-0"
#7	8'-0"	#11	20'-0"

OPENING REINFORCEMENT SCHEDULE

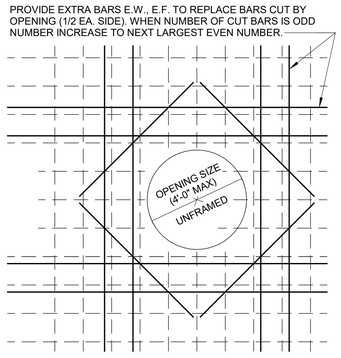
TYPE OF OPENING	THICKNESS	REINFORCEMENT REQUIRED		
		EXTRA	DIAGONAL	[- BARS
UNFRAMED	16" OR LESS	YES	YES	NO
	16" TO 4'-0"	YES	YES	YES
FRAMED (BEAMS)	ALL	NO	YES	NO



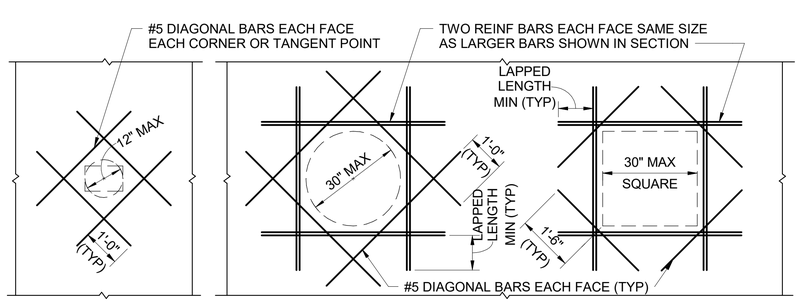
SLAB OPENING DETAIL OR WALL JAMB PLAN



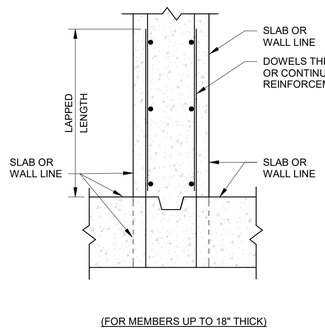
UNFRAMED OPENING DETAIL PLAN-
RECTANGULAR SLAB OPENING ELEV.-
RECTANGULAR WALL OPENING



UNFRAMED OPENING DETAIL PLAN-
CIRCULAR SLAB OPENING ELEV.-CIRCULAR
WALL OPENING



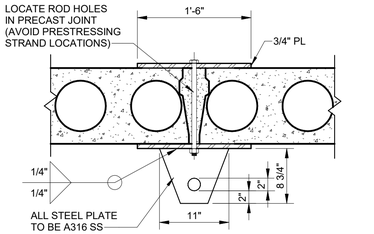
2 REINF. DETAILS FOR SMALL OPENINGS
SCALE: 1/2" = 1'-0"

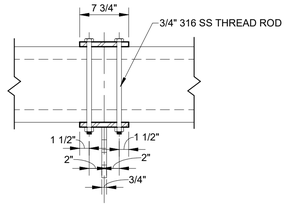


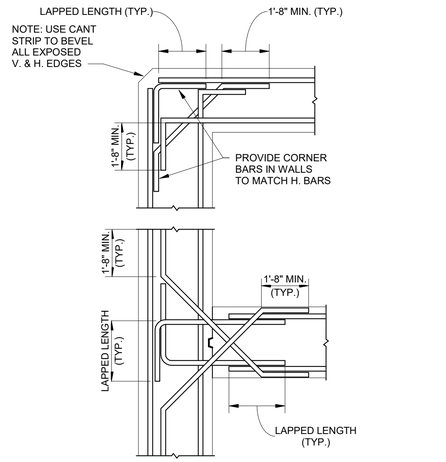
(FOR MEMBERS UP TO 18" THICK)

WALL OR SLAB JOINT NOTES:

1. ALL KEYWAYS SHALL BE CONSTRUCTED USING WOOD FORM EMBEDDED IN PLASTIC CONCRETE AND REMOVED AFTER CURING.

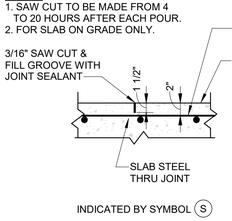






3 SECTIONAL PLAN OF WALLS DETAIL
SCALE: 3/8" = 1'-0"

NOTES:
1. SAW CUT TO BE MADE FROM 4 TO 20 HOURS AFTER EACH POUR.
2. FOR SLAB ON GRADE ONLY.



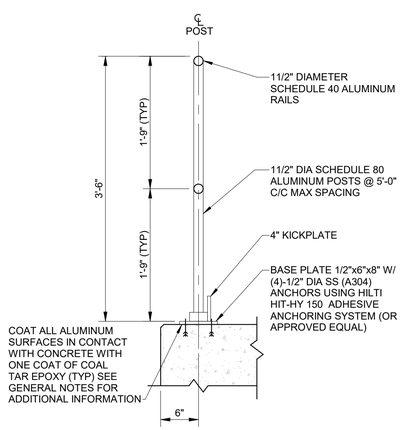
INDICATED BY SYMBOL (S)

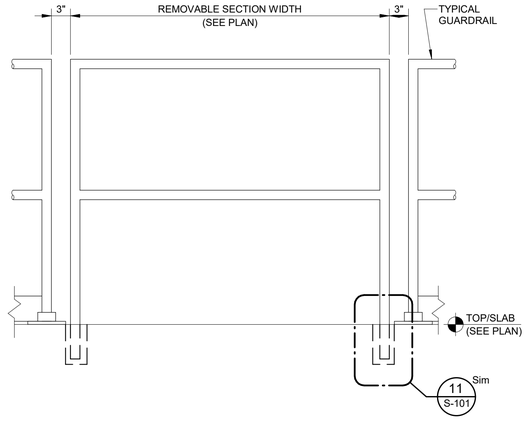
1 ADDITIONAL REINFORCING DETAILS
SCALE: 3/8" = 1'-0"

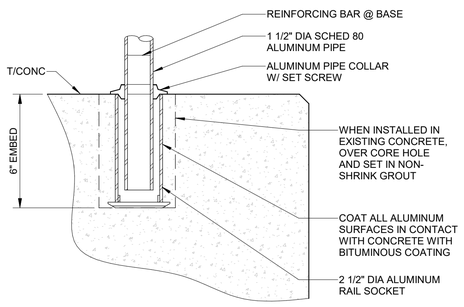
4 STANDARD WALL TO WALL OR WALL TO SLAB JOINT DETAIL
SCALE: 1" = 1'-0"

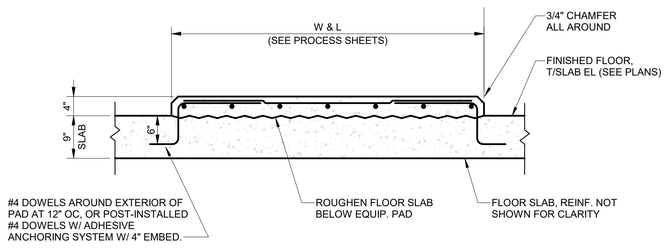
5 HOIST POINT IN PRECAST PANELS
SCALE: 1" = 1'-0"

6 TYPE S CONCRETE SLAB JOINT
SCALE: 1" = 1'-0"









8 ALUM. GUARDRAIL DETAIL-TOP MOUNT
SCALE: 1" = 1'-0"

10 REMOVABLE ALUM. GUARDRAIL DETAIL
SCALE: 1" = 1'-0"

11 REMOVABLE GUARDRAIL ANCHOR DETAIL
S-101 SCALE: 3" = 1'-0"

7 EQUIPMENT PAD DETAIL
SCALE: 3/4" = 1'-0"

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION - TYPICAL DETAILS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF1076-01F

SHEET S-101

PLOTTED: 7/10/2023 10:19:14 AM

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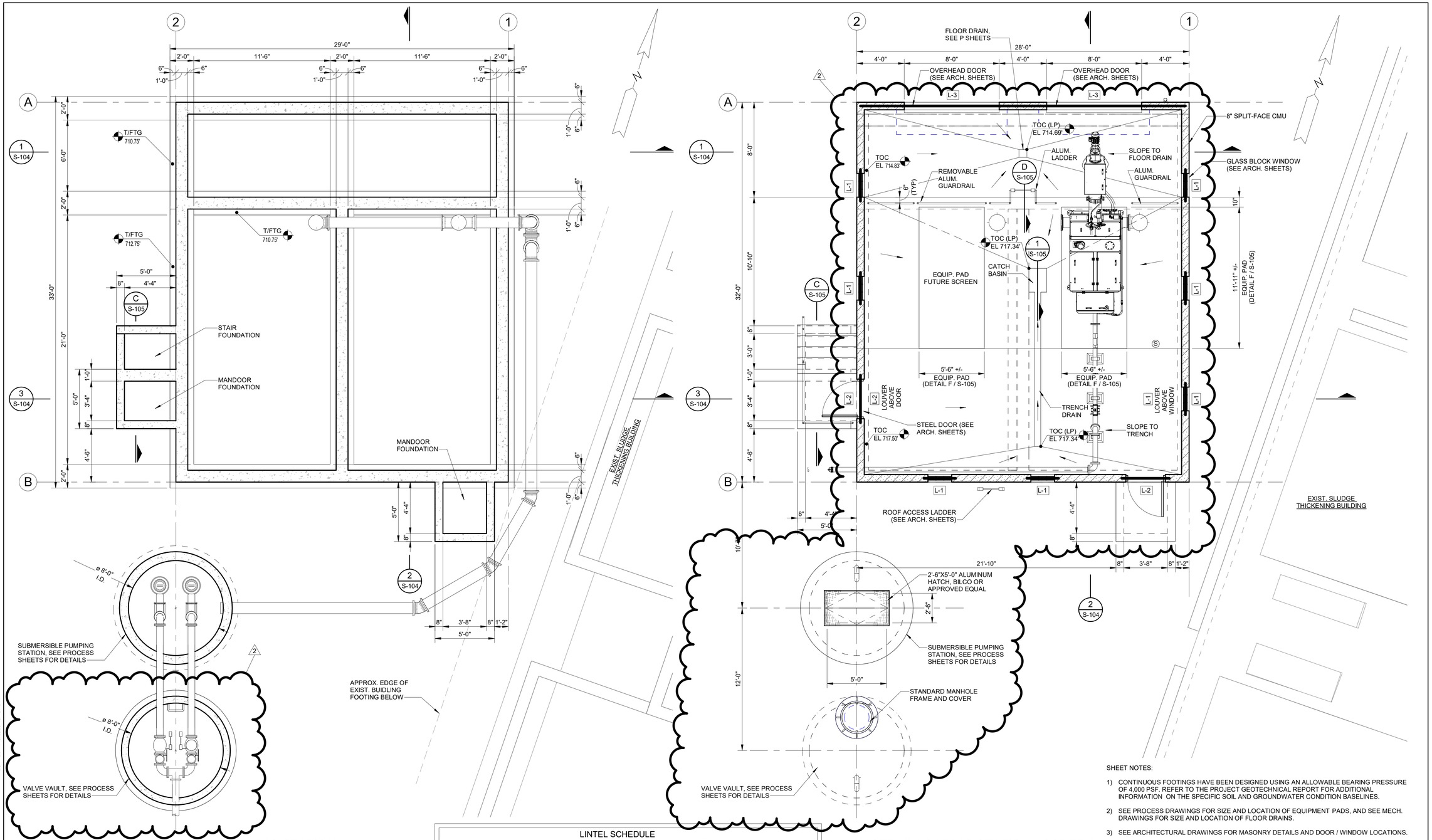

WASTE UNLOADING STATION - FOUNDATION PLAN (EL 712.75-FT)

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

WASTE UNLOADING STATION - SCREEN FLOOR PLAN (EL 717.50-FT)

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

LINTEL SCHEDULE

MARK	TYPE	SIZE (WXD)	REINFORCING	BEARING LENGTH (EA END)	REMARKS
L-1	MASONRY	8"X16"	(1)#5 BAR	8-INCH	
L-2	MASONRY	8"X16"	(2)#5 BAR	8-INCH	
L-3	MASONRY	8"X24"	(2)#5 BAR	8-INCH	FULL LENGTH OF WALL

NOTES:

1) UNLESS MORE STRINGENT REINFORCING IS NOTED OTHERWISE, NOT LESS THAN (2)-#7 BARS SHALL BE PROVIDED ON EACH SIDE OF ALL DOORS, WINDOWS, LOUVERS, AND OTHER OPENINGS IN MASONRY OR CAST-IN-PLACE CONCRETE WALLS. THESE BARS SHALL EXTEND FULL HEIGHT OF WALL.

2) SEE DOOR AND WINDOW SCHEDULES ON ARCHITECTURAL SHEETS FOR LINTEL DETAILS AT DOOR AND WINDOW OPENINGS.

SHEET NOTES:

1) CONTINUOUS FOOTINGS HAVE BEEN DESIGNED USING AN ALLOWABLE BEARING PRESSURE OF 4,000 PSF. REFER TO THE PROJECT GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION ON THE SPECIFIC SOIL AND GROUNDWATER CONDITION BASELINES.

2) SEE PROCESS DRAWINGS FOR SIZE AND LOCATION OF EQUIPMENT PADS, AND SEE MECH. DRAWINGS FOR SIZE AND LOCATION OF FLOOR DRAINS.

3) SEE ARCHITECTURAL DRAWINGS FOR MASONRY DETAILS AND DOOR / WINDOW LOCATIONS.

4) TYPICAL CONCRETE SLAB DESIGN LIVE LOAD = 300 PSF.

5) MASONRY REINFORCING:
   A) VERTICAL REINFORCING:
      a. PROVIDE (2)-#7 BARS FULL HEIGHT OF WALL ON BOTH SIDES OF ALL OPENINGS.
      b. PROVIDE (1)-#7 BAR FULL HEIGHT AT CORNERS, UNO.
      c. PROVIDE #6 BARS VERT. AT 16" OC TYP EXT. WALLS.
   B) PROVIDE DOWELS INTO FLOOR SLAB TO MATCH SIZE AND SPACING OF MASONRY WALL VERTICAL REINFORCING (TYP).

6) ACCESS HATCHES DESIGN LOAD = 300 PSF. HATCH SHALL INCLUDE INTERNAL DRAINAGE FRAME UNO. PROVIDE PVC CONDUIT FROM DRAINAGE FRAME TERMINATING WITH A VERTICAL SECTION OF PIPE NOT LESS THAN 12" LONG AT EXTERIOR WALL OF STRUCTURE AT A LOCATION APPROVED BY THE FIELD ENGINEER UNO. CONDUIT SHALL BE ANCHORED SECURELY TO STRUCTURE WITH STAINLESS STEEL HARDWARE.

7) HATCH SHALL HAVE RIGID ALUMINUM FALL PROTECTION GRATING SYSTEM PERMANENTLY INSTALLED, THAT IS EASILY RETRACTABLE FOR FULL ACCESS AND ALLOWS VISIBILITY FOR INSPECTION. ALL METALLIC COMPONENTS SHALL BE FABRICATED FROM TYPE 316 STAINLESS STEEL. GRATING SHALL BE PAINTED ORANGE.

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION - PLANS

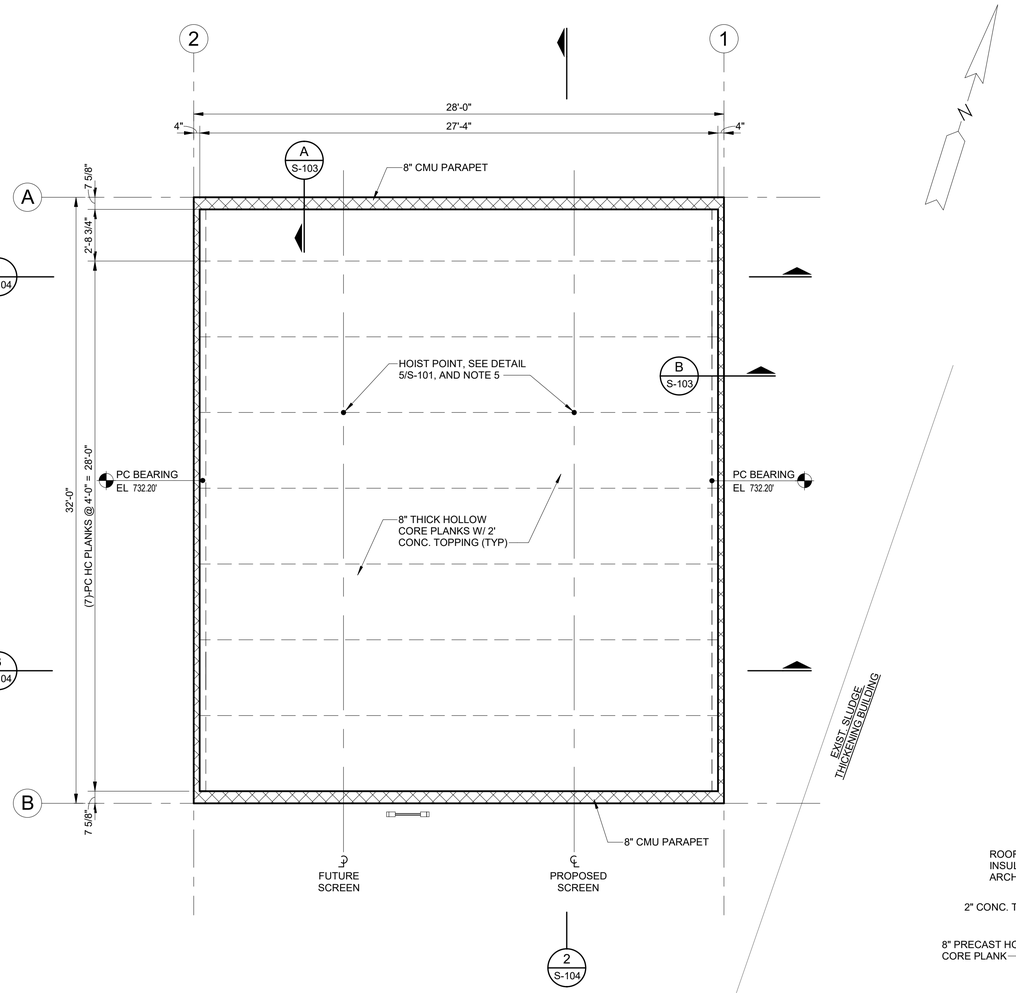
ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET S-102

PLOTTED: 7/10/2023 10:19:19 AM

BIM 360://COF1076-7-WPCFWU_WT_S_R21.rvt



1 S-103 ROOF PLAN (EL 732.25-FT)
SCALE: 1/4" = 1'-0"

NOTES:

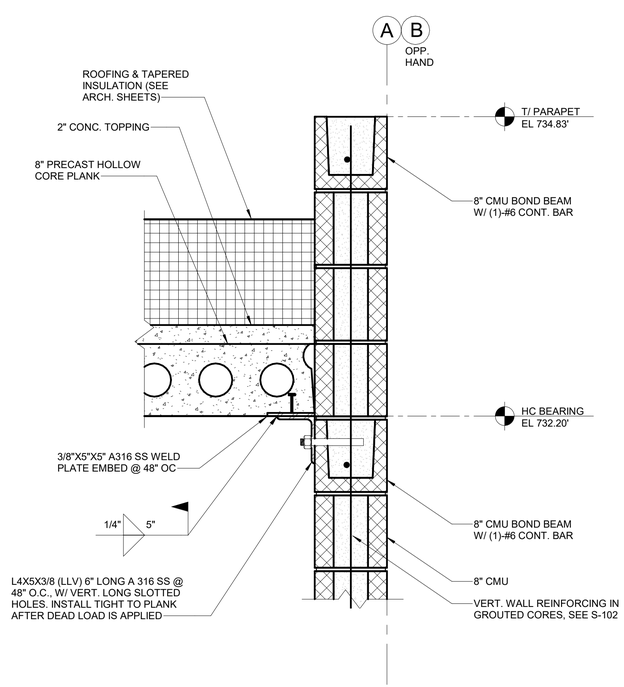
1) FILL HOLLOW CORE KEYWAYS COMPLETELY WITH GROUT.

2) SEE DRAWING S-100 FOR MASONRY VERTICAL REINFORCING SIZE AND SPACING. PROVIDE DOWELS INTO FOUNDATION TO MATCH SIZE AND SPACING OF MASONRY WALL REINFORCING.

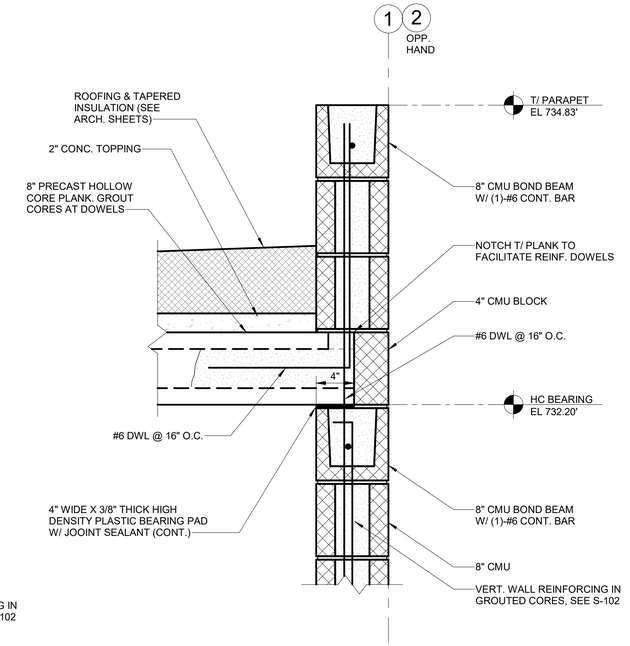
3) PRECAST PLANK DESIGN LOADS:
   A. SUPERIMPOSED DEAD LOAD = 25 PSF
   B. LIVE LOAD = 35 PSF (UNLESS NOTED OTHERWISE)
   C. PLAN DEAD LOAD = ACTUAL WEIGHT OF PLANK & TOPPING

4) PRECAST MANUFACTURER SHALL DESIGN PRECAST HOLLOW CORE ROOF PLANK SYSTEM FOR THE INDICATED LOADING, INCLUDING HOLLOW CORE PLANKS. CALCULATIONS SHALL BE SIGNED AND SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF MICHIGAN.

5) HOIST POINT LOAD = 4,000 LBS



A S-103 PARAPET DETAIL (NON-BEARING END)
SCALE: 1 1/2" = 1'-0"



B S-103 PARAPET DETAIL (BEARING END)
SCALE: 1 1/2" = 1'-0"

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION - ROOF PLAN AND DETAILS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076-01F

SHEET
S-103

PLOTTED 7/10/2023 10:19:20 AM

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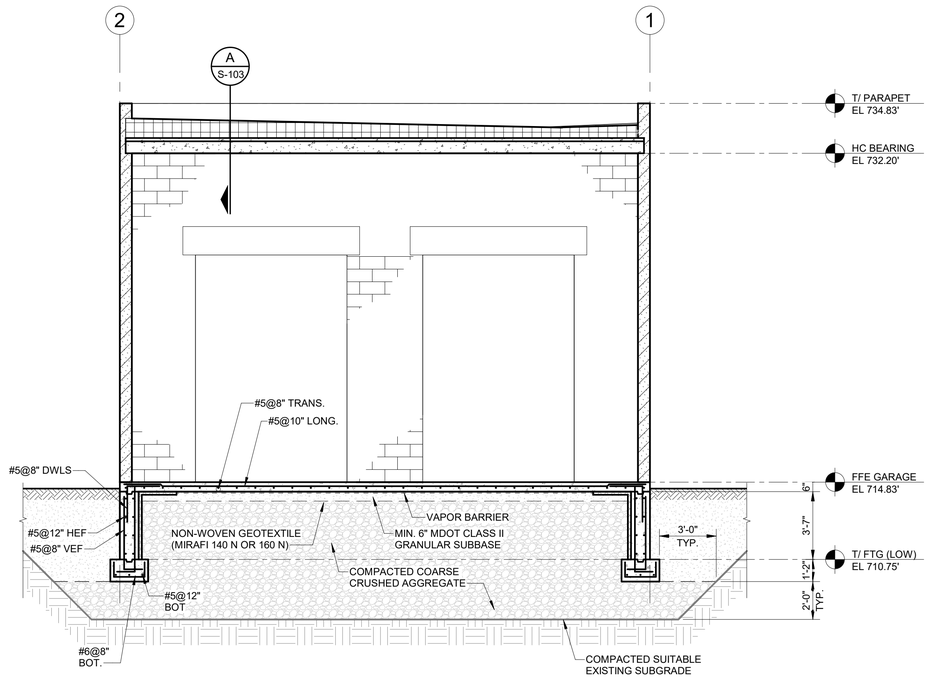
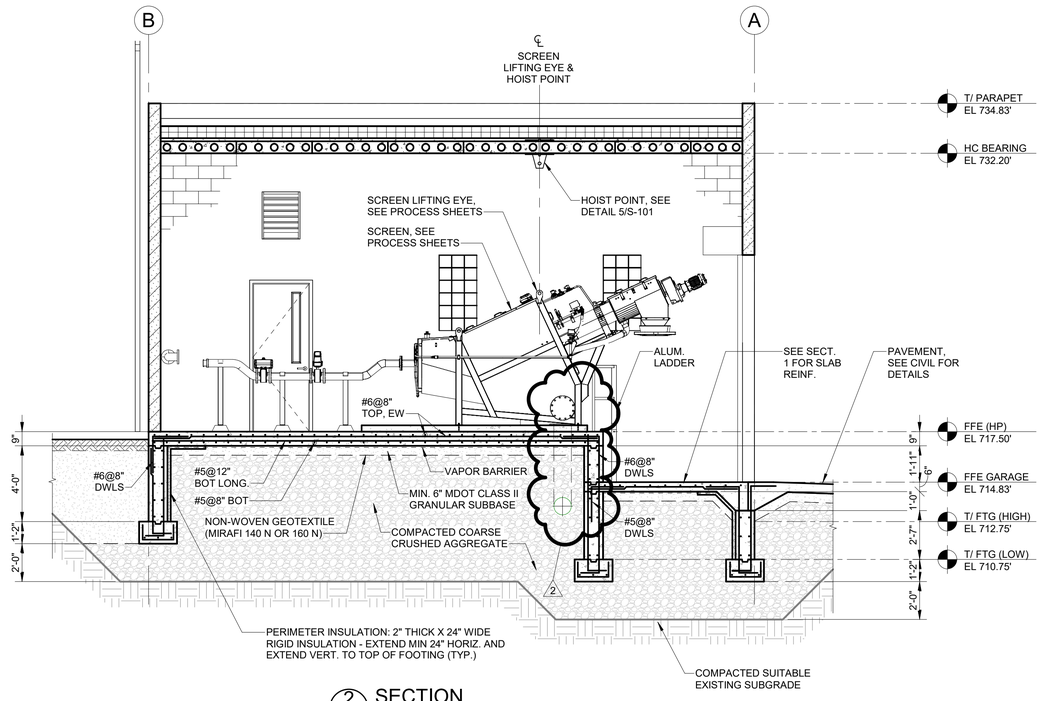


1 S-102 SECTION
SCALE: 1/4" = 1'-0"



2 S-102 SECTION
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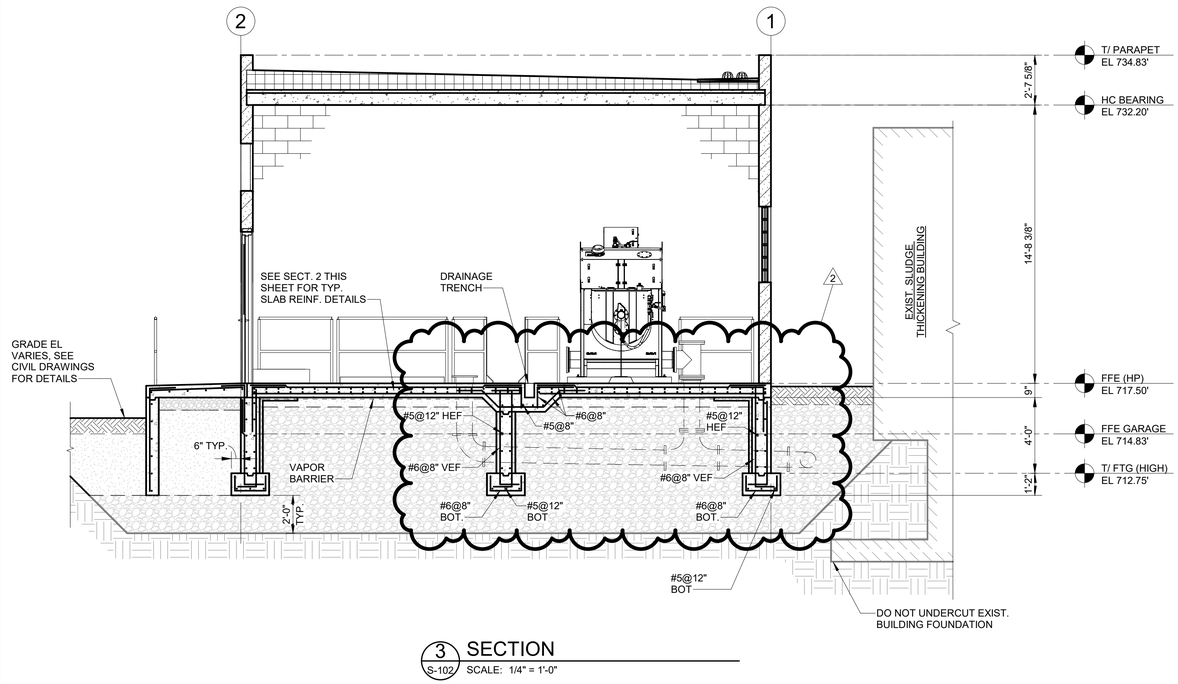

3 S-102 SECTION
SCALE: 1/4" = 1'-0"

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION - SECTIONS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076-01F

SHEET
S-104

PLOTTED: 7/10/2023 10:19:26 AM
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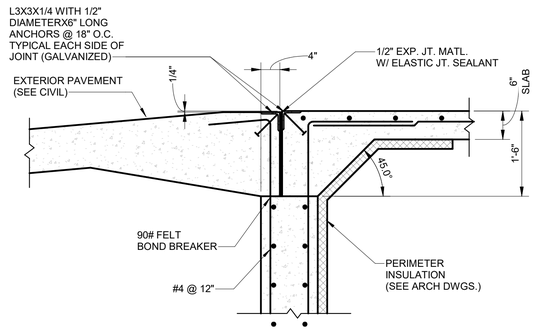
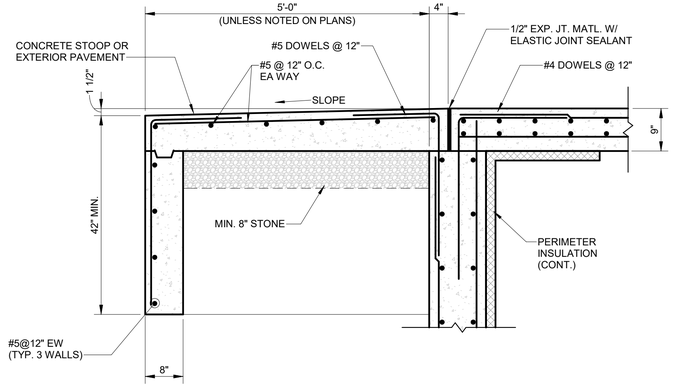


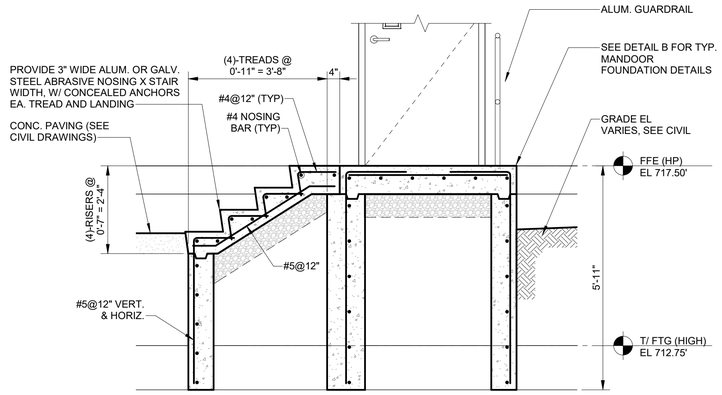
A FOUNDATION SECTION AT TRUCK DOOR

SCALE: 3/4" = 1'-0"



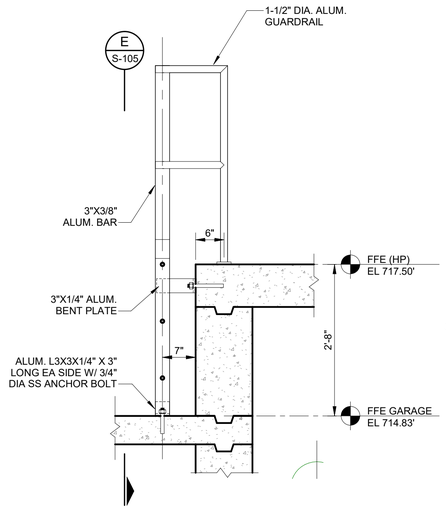
B FOUNDATION SECTION AT MANDOOR

SCALE: 3/4" = 1'-0"



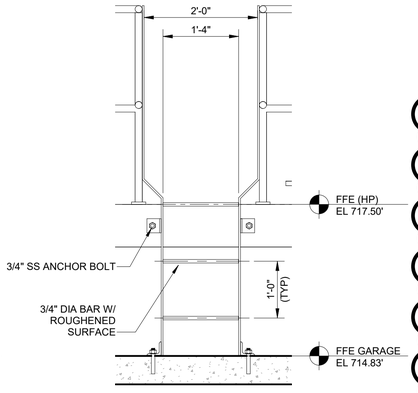
C WEST STAIR SECTION

S-102 SCALE: 1/2" = 1'-0"



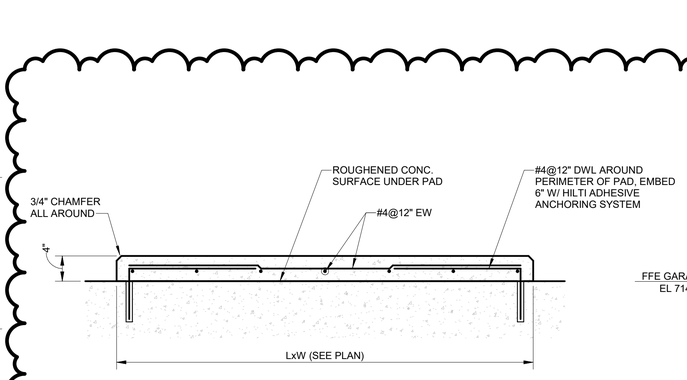
D LADDER DETAIL

S-102 SCALE: 3/4" = 1'-0"



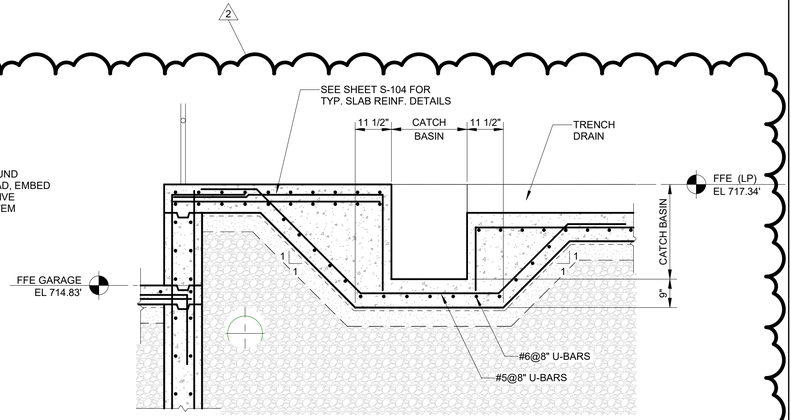
E LADDER SECTION

S-105 SCALE: 3/4" = 1'-0"



F SCREEN EQUIP. PAD

SCALE: 1" = 1'-0"



1 CATCH BASIN SECTION

S-102 SCALE: 1/2" = 1'-0"

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW

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MICHIGAN

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION - DETAILS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET S-105

PLOTTED: 7/10/2023 10:19:26 AM

BIM 360://COF-1076-7-WPCF/WU_WT_S_R21.rvt

GENERAL REQUIREMENTS:

1. THE CONTRACTOR SHALL COORDINATE ALL WORK PRIOR TO INSTALLATION OR FABRICATION OF ANY COMPONENTS. ALL OPENINGS SHALL ALSO BE COORDINATED.

2. ALL WORK MUST CONFORM TO ALL STATUTES OF THE MICHIGAN BUILDING CODE (EDITION IN EFFECT AT THE TIME OF PERMIT), ALL STATE, COUNTY AND LOCAL ORDINANCES, CURRENT BARRIER FREE REGULATIONS, MIOSHA STRUCTURAL GUIDELINES, ASTM STANDARD TESTING PROCEDURES, OWNER'S PRACTICES AND GENERALLY ACCEPTED DESIGN PRACTICES. IF DISCREPANCIES IN DRAWING APPEAR, WORK MUST BE DONE PER CODE. CITY WILL COVER THE COST OF BUILDING, ELECTRICAL, MECHANICAL, AND PLUMBING PERMITS. CONTRACTOR MUST STILL APPLY FOR THE PERMITS.

3. EXISTING CONDITIONS OF BUILDING SHOWN ON CONSTRUCTION DOCUMENTS ARE ILLUSTRATIVE OF CONDITIONS VISIBLE TO ARCHITECT AND BASED ON EXISTING DRAWINGS. ALL EXISTING DIMENSIONS, CONDITIONS, SIZES & LOCATIONS ARE TO BE FIELD VERIFIED.

4. THE CONTRACTOR SHALL PROVIDE NEW OPENINGS AND SUPPORTS AS NOTED. FINAL OPENING DIMENSIONS, CONNECTION SIZES, CLEARANCES, ETC. MUST BE COORDINATED DURING CONSTRUCTION WITH APPROVED COMPONENTS. SEAL TIGHT ALL OPENINGS (ROOF, WALL AND CEILING), EQUIPMENT AND/OR PENETRATIONS - FROM AIR AND MOISTURE.

5. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND APPROVED MANUFACTURERS.

6. ALL INSTALLATIONS TO BE COORDINATED WITH EXISTING CONDITIONS FOR PROPER SIZE, LOCATION AND PROVISIONS REQUIRED TO INSTALL COMPONENTS.

7. PIPING & CONDUIT HANGERS AND SUPPORT LOCATION ARE NOT SHOWN ON DRAWINGS. THE CONTRACTOR SHALL PROVIDE THE PIPING AND CONDUIT HANGERS AND SUPPORTS NECESSARY AS REQUIRED PER CODE.

8. THE CONTRACTOR SHALL PROVIDE ALL REQUIRED TRANSITIONS, FITTINGS AND APPURTENANT CONNECTIONS.

9. THE CONTRACTOR SHALL KEEP THE SITE IN A NEAT AND ORDERLY CONDITION AND SHALL REMOVE RUBBISH DAILY OR AS DIRECTED BY OWNER. DUST CONTROL MEASURES ARE TO BE ERECTED BY THE CONTRACTOR TO PROTECT PATRONS AND VEHICLES DURING DEMOLITION AND CONSTRUCTION ACTIVITIES. ALL STAGING AND MATERIALS STORAGE IS TO BE COORDINATED WITH THE OWNER. THE CONTRACTOR SHALL TAKE PRECAUTIONS TO ISOLATE CONSTRUCTION ACTIVITIES FROM ADJACENT AREAS THAT ARE TO REMAIN IN OPERATION DURING CONSTRUCTION - CONFIRM SCHEDULE AND REQUIRED BARRICADES WITH OWNER PRIOR TO COMMENCEMENT.

10. CONFIRM ANY COLOR SELECTIONS WITH OWNER. COLORS TO COORDINATE WITH EXISTING BUILDINGS ON SITE.

11. PREVENT GALVANIC ACTION AND OTHER FORMS OF CORROSION BY INSULATING METALS OR OTHER MATERIALS FROM DIRECT CONTACT WITH INCOMPATIBLE MATERIALS.

12. SHOP DRAWINGS AND PRODUCT DATA - THE CONTRACTOR SHALL SUBMIT TO THE OWNER AND PROJECT ENGINEER, SHOP DRAWINGS & PRODUCT DATA SUBMITTALS FOR ALL PRODUCTS AND COMPONENTS TO BE USED ON THIS PROJECT. MAINTAIN ONE COPY OF ALL APPROVED SUBMITTALS AT THE SITE FOR THE OWNER'S REFERENCE.

13. "RECORD" DRAWINGS - THE CONTRACTOR SHALL MAINTAIN A SET OF "AS-BUILT" PRINTS, MARKED UP AT THE SITE, CONTAINING ALL "AS-BUILT" INFORMATION. TURN SET OVER TO ENGINEER UPON COMPLETION OF THE WORK.

14. INSTALL ALL MATERIALS IN COMPLIANCE W/ MFR. RECOMMENDATIONS AND CODE REQUIREMENTS.

15. CONTRACTOR MUST VERIFY ALL EXISTING UTILITY LOCATIONS PRIOR TO START OF DEMOLITION AND MAKE EVERY EFFORT TO PROTECT THEM OR RELOCATE AS REQUIRED.

16. ALL PERMANENT WOOD BLOCKING, SHEATHING, FRAMING, ETC. UTILIZED IN CONSTRUCTION TO BE FIRE RETARDANT TREATED.

17. PROVIDE ADDITIONAL BLOCKING TO MATCH EXISTING AT WALLS/ CEILINGS TO ACCOMMODATE NEW INSTALLATIONS. MAINTAIN FIRE RATED ASSEMBLIES AND FIRE STOPPING PER LOCAL GOVERNING CODES AND ORDINANCES.

18. ALL DEMO'D COMPONENTS TO BE PROTECTED AND CAREFULLY REMOVED FOR SALVAGE/ REUSE AS NOTED. DEMOLISHED ITEMS THAT ARE NOT TO BE REUSED ARCT TO BE REMOVED FROM PROJECT SITE PROMPTLY AND DISPOSED OF IN ACCORDANCE WITH OWNER STANDARDS. PROTECT EXISTING FACILITIES IN A MANNER AS TO NOT ADVERSELY AFFECT THE EXISTING FACILITY'S OPERATIONS.

19. WORKING HOURS AT BUILDING ARE AT THE DISCRETION OF THE OWNER. CONFIRM AND ABIDE BY ALL SECURITY RESTRICTIONS AND LOGISTICS PRIOR TO START OF CONSTRUCTION.

20. COORDINATE ANY INTERRUPTIONS OF FACILITY OPERATIONS WITH OWNER PRIOR TO INTERRUPTION.

FIRE EXTINGUISHERS:
1. FIRE EXTINGUISHERS & ACCESSORIES: DRY CHEMICAL TYPE, UL299, HEAVY DUTY STEEL CYLINDER W/ PRESSURE GAGE; RECHARGEABLE UNIT; TYPE 10-A-120-B:C; PAINTED FINISH, COLOR RED. PROVIDE CHROMED STEEL MOUNTING BRACKETS & ALUM. WALL SIGNAGE (WHITE GOTHIC LETTERS ON RED BACKGROUND), BRADY SIGNAGE NO. 43294, 14X10, ALUM. PROVIDE WITH SIGNAGE ABOVE EXTINGUISHER. EXACT LOCATION TO BE DETERMINED BY FIRE MARSHALL & OWNER IN FIELD. PROVIDE (1) EXTINGUISHER WALL MOUNTED ON VALVE VAULT BLDG. INTERIOR ADJACENT TO THE EXTERIOR MANDOOR, WITH SIGNAGE ABOVE EXTINGUISHER - TOTAL OF (2) FIXTURES.

GENERAL NOTES:

1. PROVIDE TEMPORARY OPENING PROTECTION TO PREVENT FALLS AND WEATHER INTRUSION AT ALL HATCHES/ACCESS COVERS AND FLOOR/ROOF OPENINGS THAT ARE TO BE REMOVED OR MODIFIED AS PART OF THIS WORK.

2. REFER TO PLANS AND ELEVATIONS FOR ALL BUILDINGS TO DETERMINE SCOPE OF EXTERIOR AND INTERIOR MASONRY REPOINTING. VERIFY EXACT EXTENT OF REPAIR EFFORTS IN THE FIELD.

3. INTERIOR SPACES OF BUILDINGS AFFECTED BY THIS WORK SCOPE ARE TO BE CLEANED OF ALL DUST AND DEBRIS PRIOR TO FINAL CLOSE OUT OF JOB.

4. CONTRACTORS TO REFER TO ENTIRE SET OF DRAWINGS AND SPECIFICATIONS FOR FULL SCOPE OF WORK. CROSS COORDINATION BETWEEN CIVIL, PROCESS, MECHANICAL, ELECTRICAL, STRUCTURAL AND ARCHITECTURAL DRAWINGS IS REQUIRED.

ROOFING NOTES:

1. ONLY MAJOR ROOF PENETRATIONS & EQUIP. ARE SHOWN. THE ROOF PLAN REPRESENTS THE GENERAL WORK AREA ONLY. THE CONTRACTOR SHALL REFER TO DEMO SHEET, REFERENCE DWGS. & FIELD VERIFY ALL CONDITIONS, OPENINGS, ETC. PRIOR TO BEGINNING WORK, WHETHER OR NOT THEY ARE SPECIFICALLY SHOWN ON THIS PLAN OR REF DWGS.

2. WOOD USED IN ROOFING SHALL BE ACQ TREATED, SEE SPECS. FASTENERS SHALL BE TYPE 304 STAINLESS STEEL OR HOT DIPPED GALV. STEEL. ZINC OR CADMIUM PLATED NOT ACCEPTABLEF OR USE WITH ACQ TREATED LUMBER.

3. PROVIDE WALKWAY PADS FROM ROOF HATCH OR LADDER TO ALL H&V UNITS, FANS, ROOF SUMPS, ETC. IN THE MOST DIRECT ROUTE OF TRAVEL. VERIFY EXACT LAYOUT/LOCATIONS IN FIELD WITH OWNER.

4. NEW METAL PERIMETER EDGING SHALL BE INSTALLED. METALS FOR NEW FLASHING SHALL BE AS SPECIFIED IN SECTION 07 6000. REFER TO SECTIONS FOR WOOD NAILER LOCATIONS, ROOF EDGE CONDITIONS, ETC.

5. ALL CURBS SHALL BE INSTALLED TO MIN. 8" ABOVE TOP OF NEW ROOFING. INSTALL NEW MEMBRANE UP AND OVER CURBS, FASTEN TO INSIDE FACE OF CURBS PER ROOFING MFR. STANDARD DETAIL. ALL VENT PIPING TO BE INSTALLED AS REQ'D TO ACCOMMODATE SIM. FLASHING REQ'MENTS. (TYP.)

6. TAPERED INSULATION REQ'D IN AREAS INDICATED ON ROOF DWG. MAINTAIN MIN. SLOPE PER ROOFING MFR. WARRANTY REQUIREMENTS.

7. ROOF SADDLES ARE TO HAVE A MIN. SLOPE OF 1/2" PER FT. SLOPE (U.N.O.) PER ROOFING MFR. WARRANTY REQUIREMENTS.

8. PROVIDE CRICKETS ON HIGH SIDE OF ALL CURBED ITEMS. MIN 1/2" PER FOOT (U.N.O.) PER ROOFING MANUFACTURERS WARRANTY REQUIREMENTS.

9. ALL PENETRATIONS THROUGH ROOF ARE TO BE INSTALLED SUCH THAT THERE IS A MINIMUM OF 8" CLEAR HEIGHT ABOVE THE FINISHED ROOF SURFACE AVAILABLE FOR INSTALLIGN ROOFING FLASHINGS & TERMINATIONS PER MFR. REQUIREMENTS.

BUILDING DATA

APPLICABLE CODES:
2015 MICHIGAN BUILDING CODE (MBC)
2017 NATIONAL ELECTRIC CODE (NEC) WITH MICHIGAN AMENDMENTS
2015 MICHIGAN MECHANICAL CODE
2018 MICHIGAN PLUMBING CODE
2015 MICHIGAN UNIFORM ENERGY CODE
2015 MICHIGAN REHAB CODE FOR EXISTING BUILDINGS (MRCEB)
ICC ANSI A117.1 - 2009
2015 INTERNATIONAL FIRE CODE

TRAVEL DISTANCE (1016):
F-2 AREAS:
- DISTANCE TO AN EXIT ACCESS DOES NOT EXCEED 75 FEET FOR AREAS CONSTRUCTED UNDER THIS WORK WITH 1 EXIT.

ACCESSIBILITY (1103):
THIS BUILDING IS EXEMPT FROM ACCESSIBILITY REQUIREMENTS UNDER 1103.2.9. BUILDING IS AN UNOCCUPIED STRUCTURE FOR PROCESS EQUIPMENT, PART OF A SEWAGE TREATMENT SYSTEM. DOOR HARDWARE SHALL BE PROVIDED AS SPECIFIED AND INSTALLED IN ACCORDANCE WITH DIVISION 8 SPECIFICATIONS.

OCCUPANCY GROUP (306.3): FACTORY INDUSTRIAL F-2 LOW HAZARD OCCUPANCY

CONSTRUCTION TYPE (TABLE 601): IIB UNSPRINKLED

ALLOWABLE HEIGHT/AREA:

	MAXIMUM	PROVIDED
FOOTPRINT AREA	23,000 SF	823 SF
HEIGHT	55' (3 STORIES)	20'-0" (1 STORY)

FLOOR AREA - GROSS S.F. (1002.1)

OCCUPANCY LOAD: OCCUPANCY CLASSIFICATION PER TABLE 1004.1.2 IS MECHANICAL EQUIPMENT, 300 GROSS S.F. PER OCCUPANT.

		NO. OF OCCUPANTS
WASTE ROOM	823 / 300 =	3

OCCUPANT LOAD MAY BE REDUCED BY CODE OFFICIAL TO REFLECT ACTUAL OCCUPANCY. BUILDING IS A NORMALLY UNOCCUPIED SPACE USED TO HOUSE PROCESS EQUIPMENT.

ENERGY CODE REQUIREMENTS (ASHRAE 90.1: 2013): SEMI-HEATED

	REQ'D	PROVIDED
ROOF INSULATION	R-30	R-30
MASS WALLS	CORE INSUL.	COMPLIES
DOORS	U-0.7	U-0.45
WINDOWS	U-0.62	COMPLIES
SLAB	R-10	R-11.4

(PER EX. B, FILL UNGROUTED CORES w/ MAT'L HAVING MAX. THERMAL CONDUCTIVITY OF 0.44 BTU-IN/H-FT2-F)

CLASS 1 / DIVISION 1 SPACE

FINISH NOTES:

1. AT GRAE LEVEL, PAINT EXPOSED CMU, PRECAST CEILINGS, EXPOSED STRUCTURAL STEEL, ANGLES, ETC.

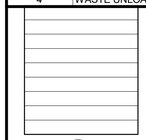
2. PROVIDE CONCRETE FLOOR SEALER FOR BLDG. INTERIOR FLOOR SURFACES, CURBS ETC. SEALER SHALL BE EUCO-GUARD 100 BY EUCLID CHEMICAL COMPANY OR ENGINEER APPROVED EQUAL.

3. SEE SECTION 09 96 00 FOR PAINTING RQUIREMENTS.

4. EXTERIOR SIDE OF CMU WALLS TO BE SEALED PER SPEC SECTION 07 19 00.

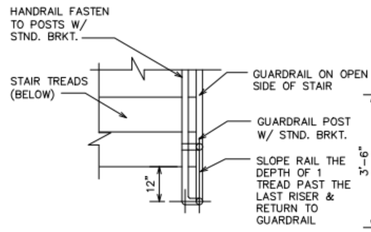
DOOR SCHEDULE

DOOR NO.	DOOR LOCATION	SIZE (WXH)	TYPE	SILL DTL.	JAMB DTL.	HEAD DTL.	INT.	EXT.	DOOR MTL.	FRAME MTL.	HWDR. SET	REMARK
1	WASTE UNLOADING	8'-0"x12'-0"	A	A/S-104	D/A-501	F/A-501		X	STL	STL	N/A	
2	WASTE UNLOADING	8'-0"x12'-0"	A	A/S-104	D/A-501	F/A-501		X	STL	STL	N/A	
3	WASTE UNLOADING	3'-0"x7'-10"	B	S1	J1	H1		X	STL	STL	1	PAINTED
3	WASTE UNLOADING	3'-0"x7'-10"	B	S1	J1	H1		X	STL	STL	1	PAINTED
4	WASTE UNLOADING	3'-0"x7'-10"	B	S1	J1	H1		X	STL	STL	1	PAINTED

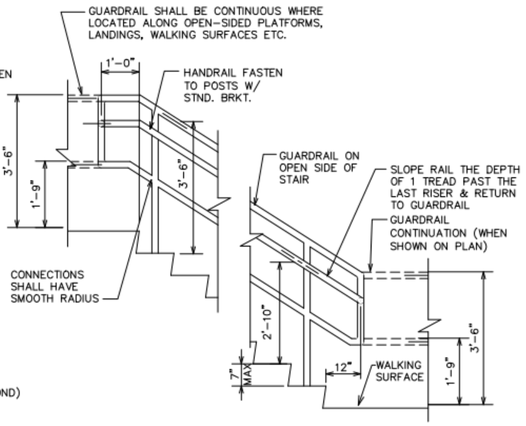


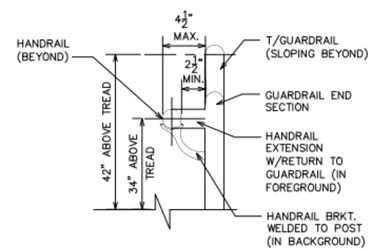
NOTES:
1. SEE SECTION 08 70 00 FOR DOOR HARDWARE.
2. SEE SECTIONS 08 11 50 AND 08 12 13 FOR STEEL DOORS AND FRAMES.
3. ALL FRAMES ARE 2" HIGH PROFILE, JAMS AND HEADS (U.N.O.)
4. PAINT DOORS AND FRAMES PER SPEC SECTION 09 96 00.

DOOR AND WINDOW NOTES:
1. FIELD VERIFY ALL DOOR AND WINDOW OPENING DIMENSIONS PRIOR TO FABRICATION.
2. ALL DOOR FRAMES SHALL BE GROUTED SOLID.
3. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION ON DOORS, FRAMES, WINDOWS, AND HARDWARE.



TYP. HANDRAIL RETURN–PLAN
SCALE: 1 1/2" = 1'-0"

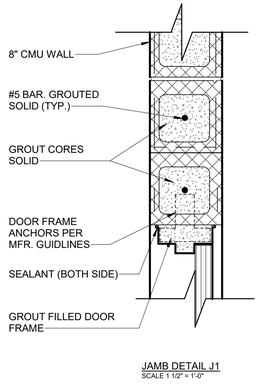




TYP. HANDRAIL RETURN–END VIEW
SCALE: 1 1/2" = 1'-0"

TYP. GUARDRAIL/HANDRAIL ELEV.
SCALE: 1/2" = 1'-0"

STAIR NOTES:
1. ALL DIMENSIONS ARE TO RAILING CENTERLINES. STAIR RAILING HEIGHTS ARE VERTICAL FROM NOSING EDGE TO INTERSECTION OF CENTERLINE.
2. STAIR CONSTRUCTION SHOWN IS GENERIC. SEE DWGS. FOR SPECIFIC STAIR ORIENTATION, LAYOUT, DETAILS ETC. SPECIFIC TO EACH STAIR. REFER TO SPECIFICATIONS AND STRUCTURAL DETAILS FOR FURTHER INFO.



JAMB DETAIL J1
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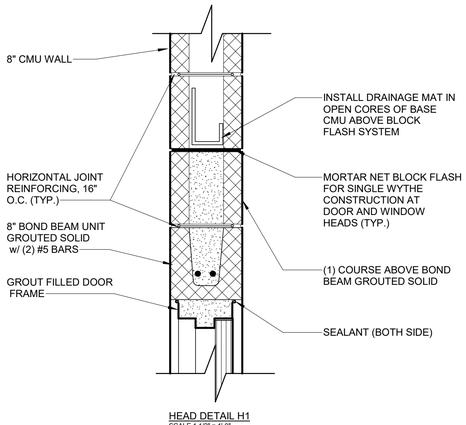
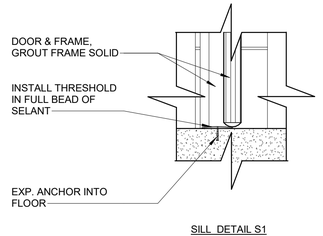


HEAD DETAIL H1
SCALE 1 1/2" = 1'-0"



SILL DETAIL S1
SCALE 1 1/2" = 1'-0"

REV#	DATE	DESCRIPTION	BY
2	2023.07.07	ADDENDUM 1	TSW
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

NOTES, SCHEDULES, AND DETAILS

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JOB NO. COF1076-01F

SHEET A-001

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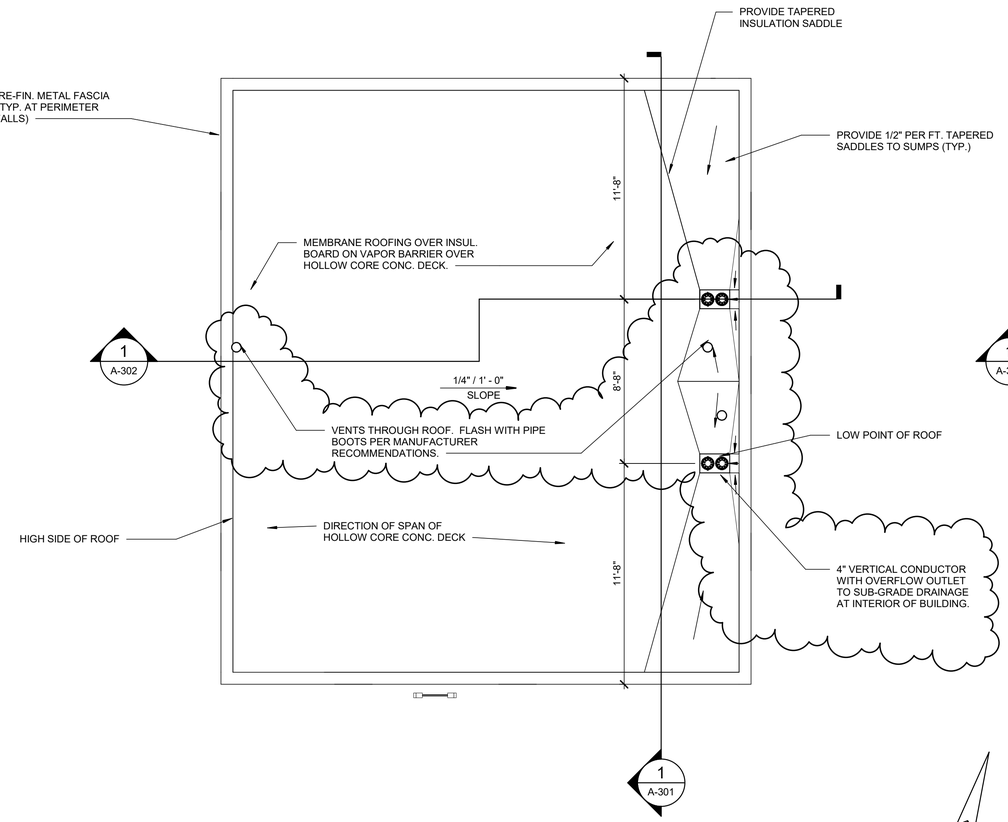
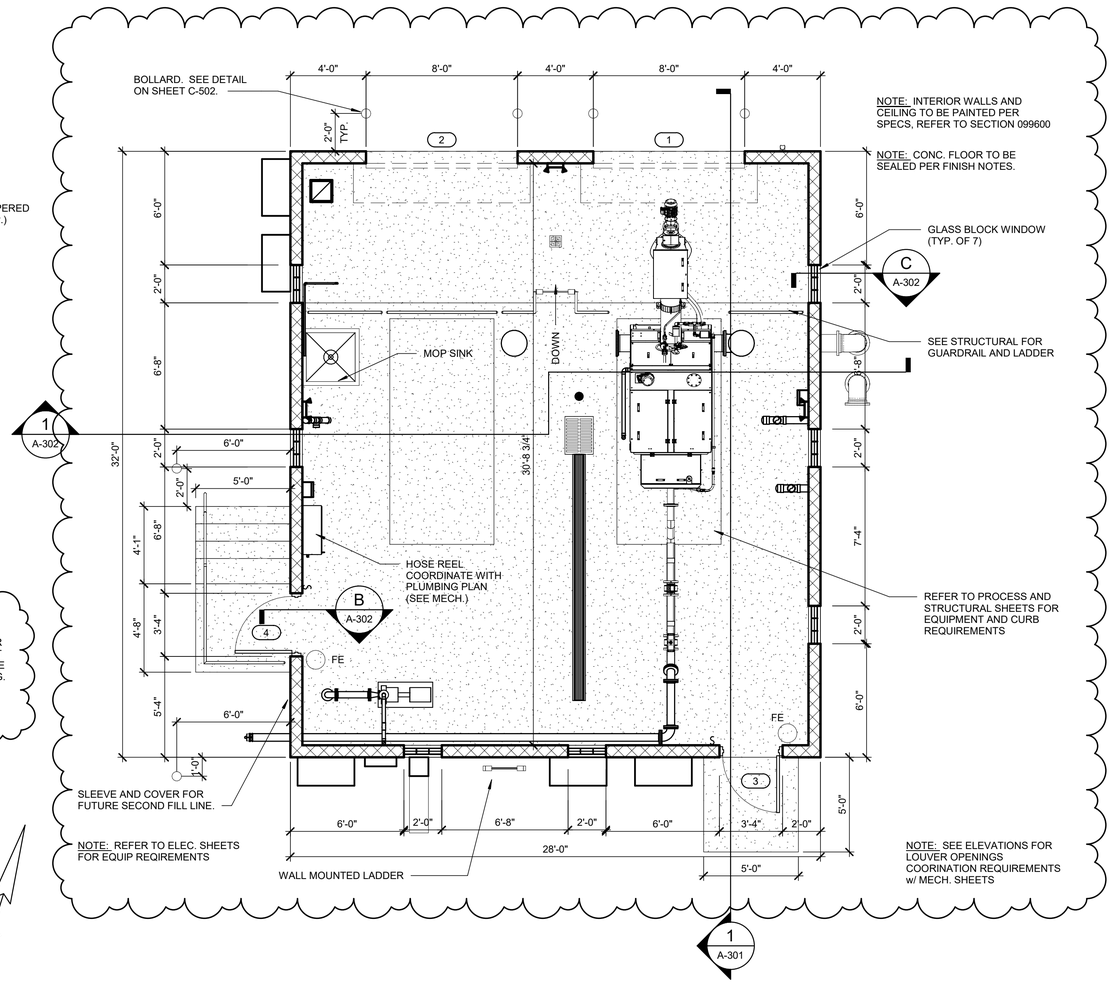


ROOF DECK

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



FLOOR PLAN

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

REV#	DATE	DESCRIPTION	BY
2	2023.07.07	ADDENDUM 1	TSW
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FLOOR AND ROOF PLANS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET A-101

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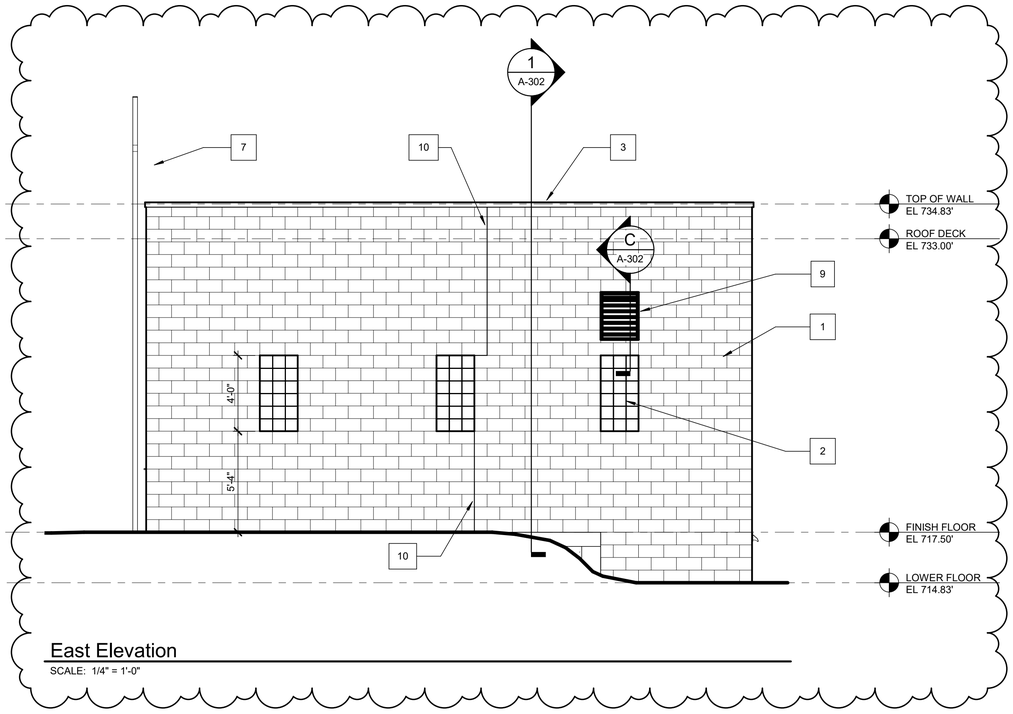
ELEVATION NOTES

1	SMOOTH FACED INTEGRALLY COLORED CMU WALL
2	GLASS BLOCK WINDOW - 8"x8" UNITS
3	PRE-FIN. METAL PARAPET CAP w/ CONCEALED CLEATS & HEMMED EDGE
4	PAINTED STEEL DOOR AND FRAME
5	OVERHEAD DOOR
6	EXTERIOR LIGHTS - REFER TO ELECTRICAL DWGS.
7	GALV. AND PTD. STEEL ROOF LADDER, REFER TO DETAIL, SHEET A-001
8	"COW'S TONGUE" DRAIN FOR ROOF OVERFLOW
9	PRE-FIN. LOUVER (REFER TO MECH. DWGS.)
10	MASONRY CONTROL JOINT

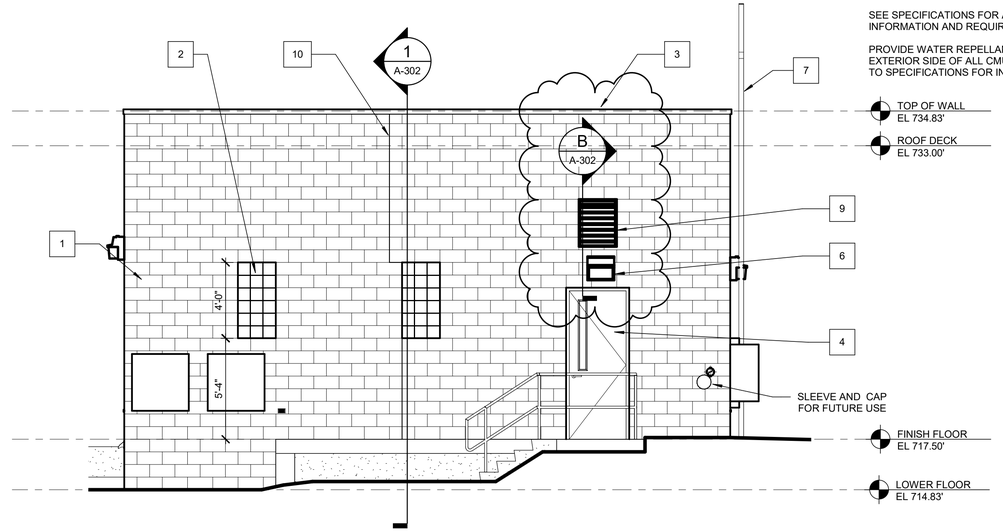
SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS

PROVIDE WATER REPELLANT COATING AT EXTERIOR SIDE OF ALL CMU WALLS - REFER TO SPECIFICATIONS FOR INFORMATION.



East Elevation

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



West Elevation

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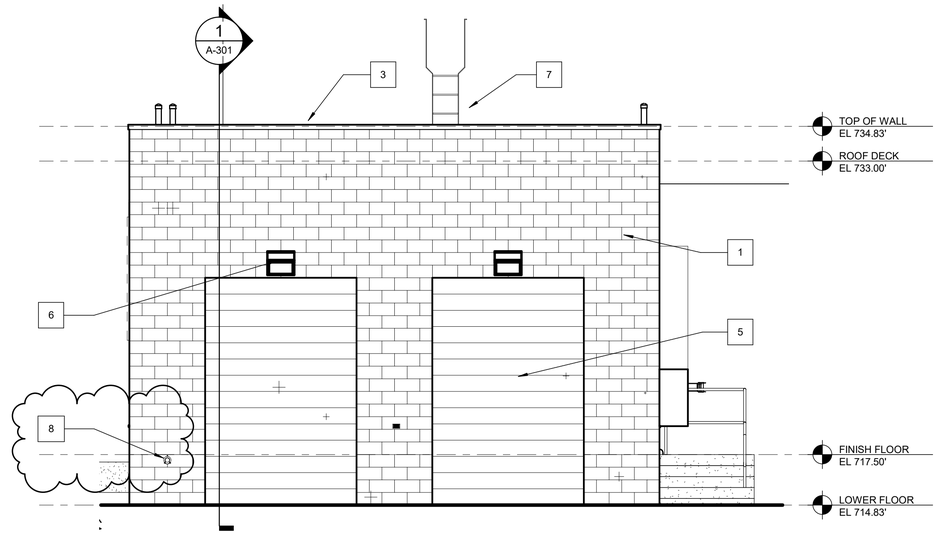

North Elevation

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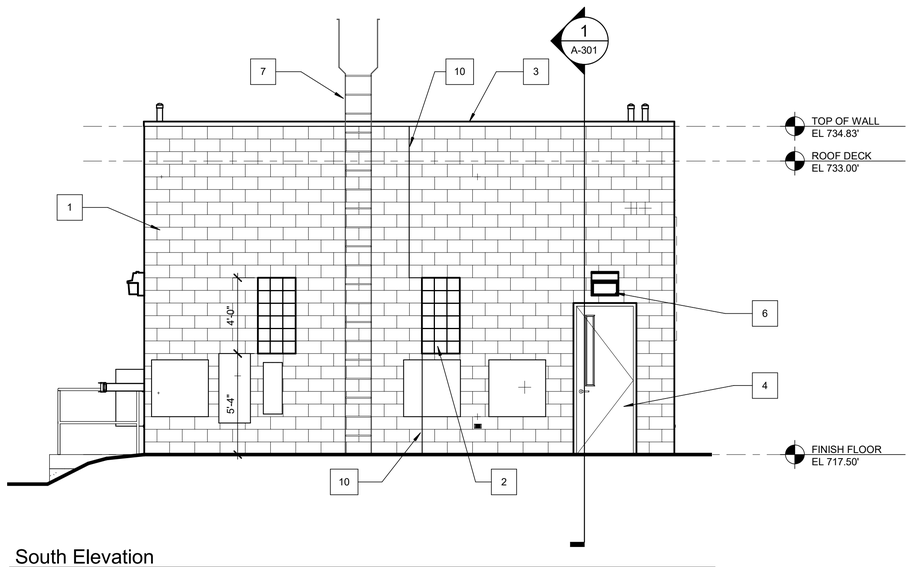

South Elevation

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

REV#	DATE	DESCRIPTION	BY
2	2023.07.07	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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MICHIGAN

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ELEVATIONS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO.
COF1076-01F

SHEET
A-201

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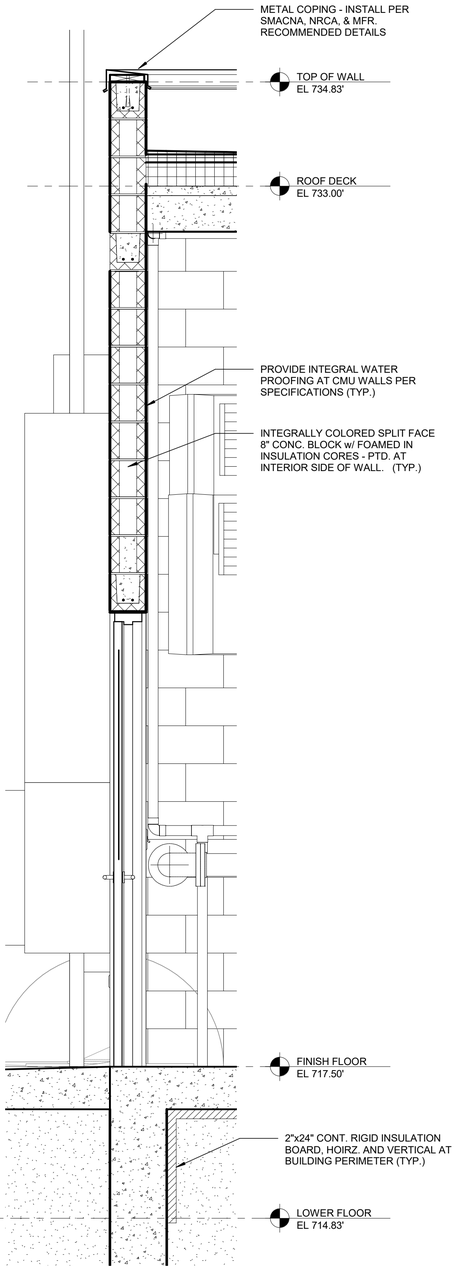
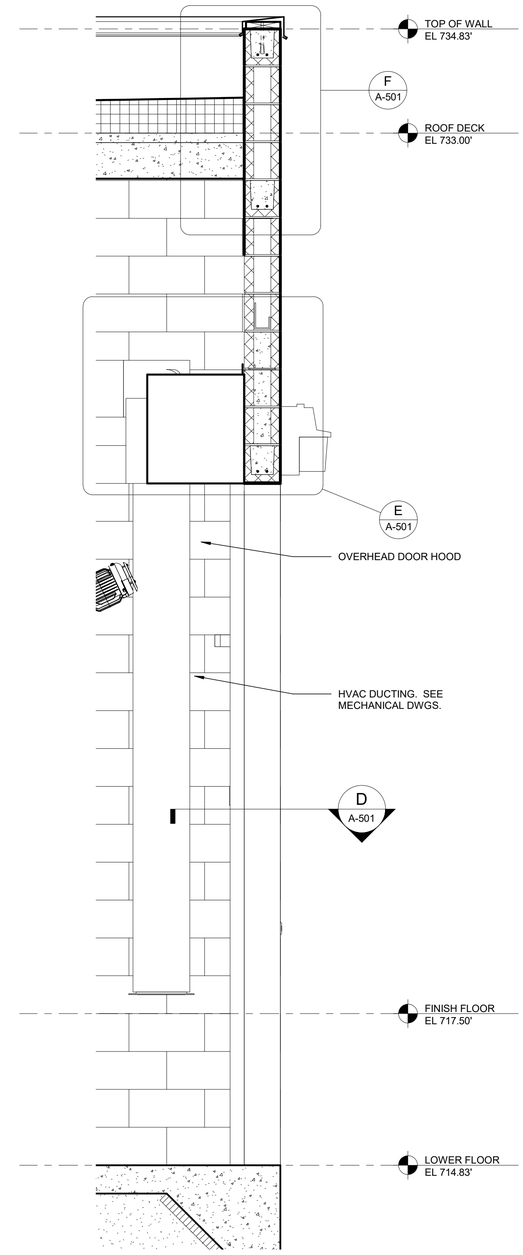


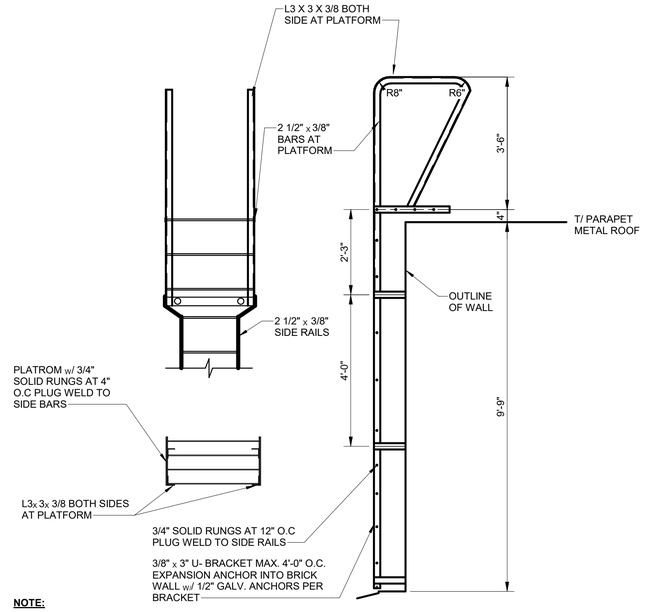
A A-301 WALL SECTION 1

SCALE: 3/4" = 1'-0"



B A-301 WALL SECTION 2

SCALE: 3/4" = 1'-0"



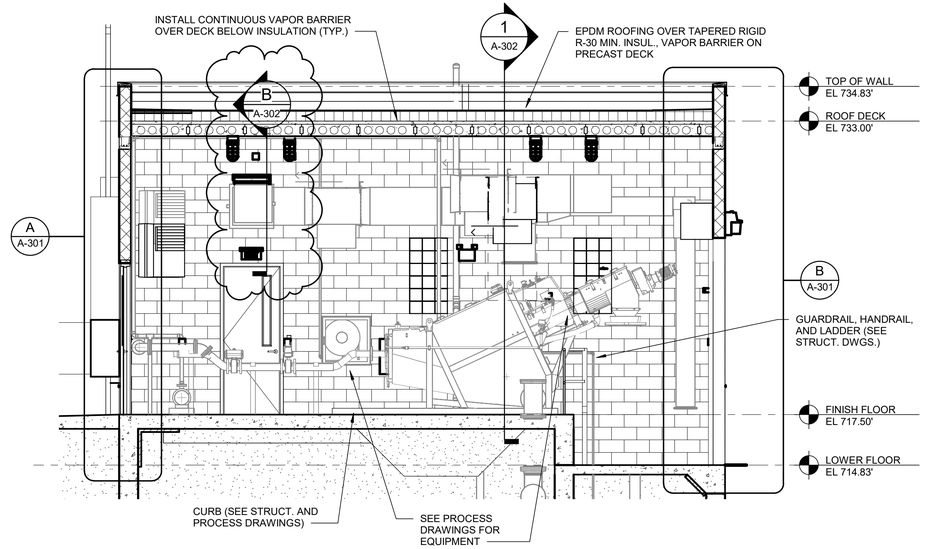
NOTE:

LADDER ASSEMBLY SHALL BE G90 HOT-DIP GALV. ANGLE SHALL BE CUT & WELDED AS NECESSARY TO PROVIDE RADIUS SHOWN PRIOR TO GALVANIZING. FIELD PAINT LADDER OWNER SELECTED COLOR.

** FIELD VERIFY FINAL FIELD ELEV. BOTTOM RUNG SHALL NOT BE MORE THAN 12" ABOVE FINISH GRADE

TYP. ROOF LADDER

SCALE 1/2" = 1'-0"



BUILDING SECTION 1

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

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
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BUILDING AND WALL SECTIONS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO COF1076-01F

SHEET A-301

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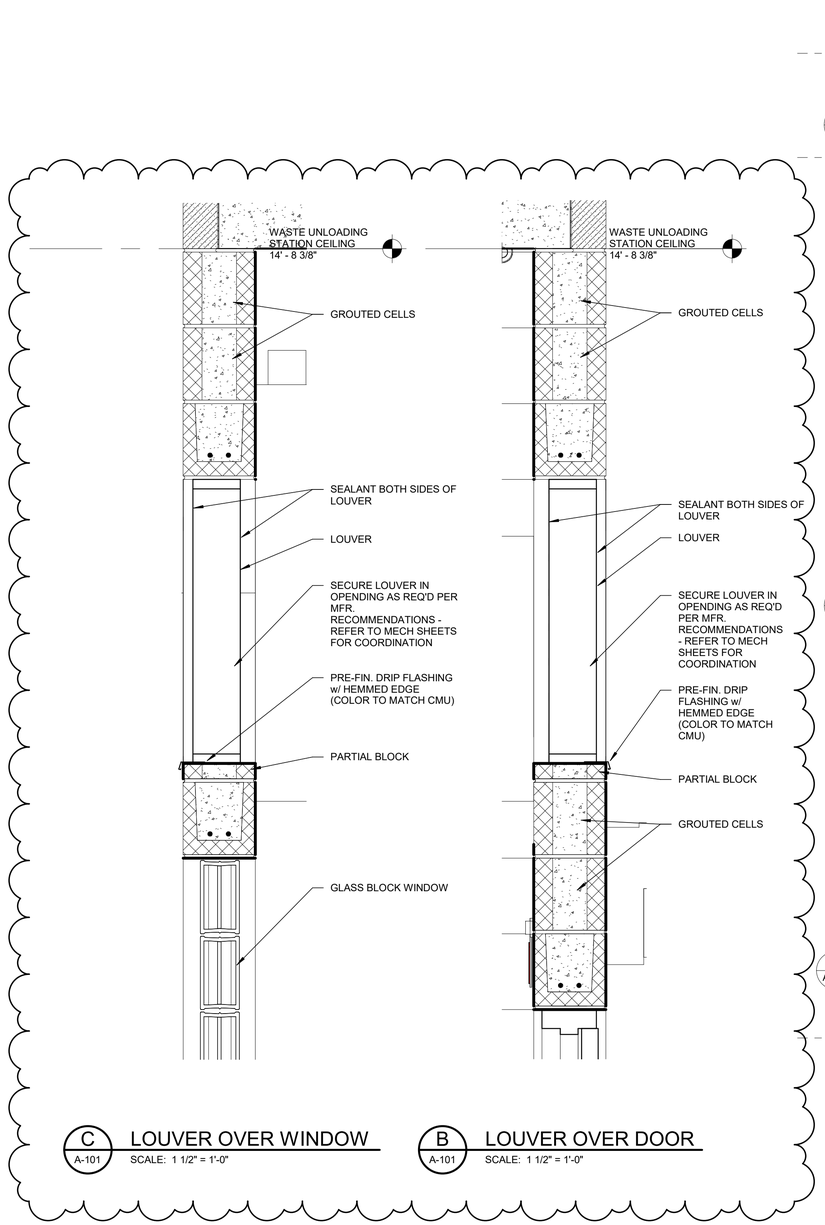
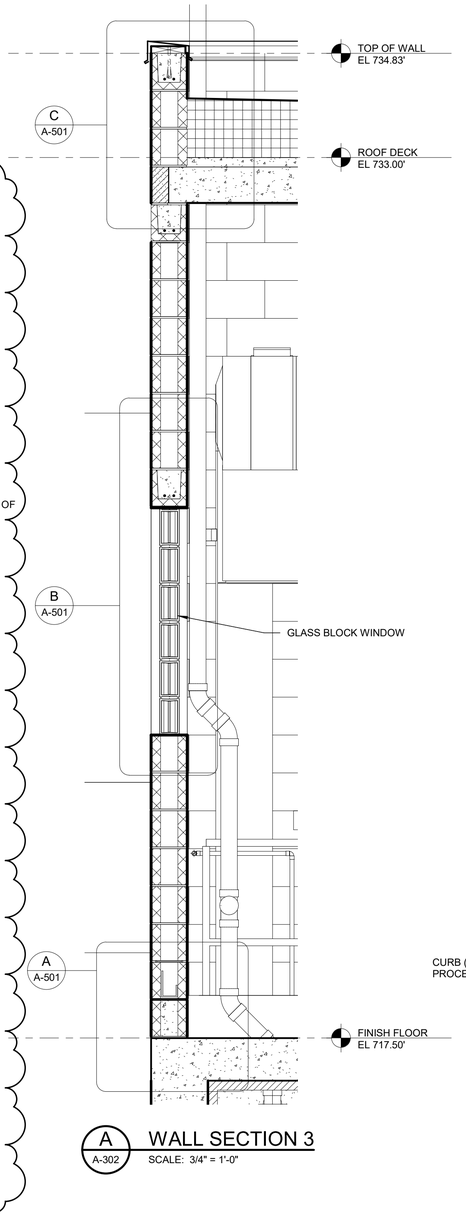


C A-101 LOUVER OVER WINDOW
SCALE: 1 1/2" = 1'-0"

B A-101 LOUVER OVER DOOR
SCALE: 1 1/2" = 1'-0"



A A-302 WALL SECTION 3
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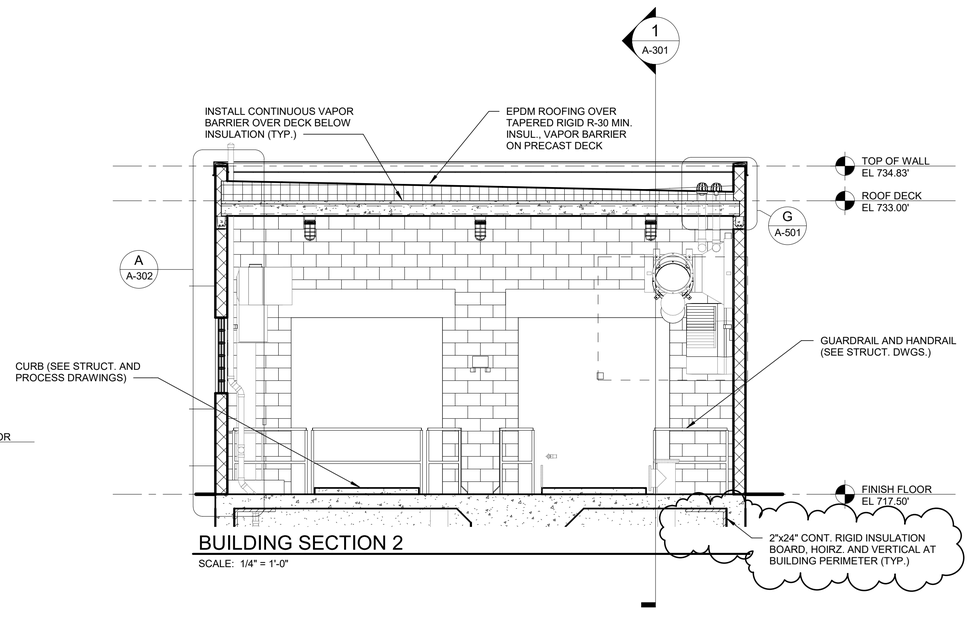

BUILDING SECTION 2
SCALE: 1/4" = 1'-0"

REV#	DATE	DESCRIPTION	BY
2	2023.07.07	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

BUILDING AND WALL SECTIONS

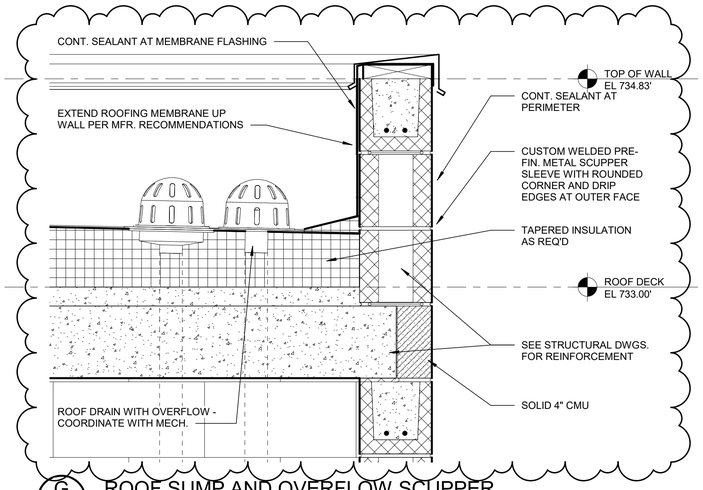
ISSUED FOR: BIDS | DATE: 2023.06.24 | BY: TSW

JOB NO. COF1076-01F

SHEET A-302

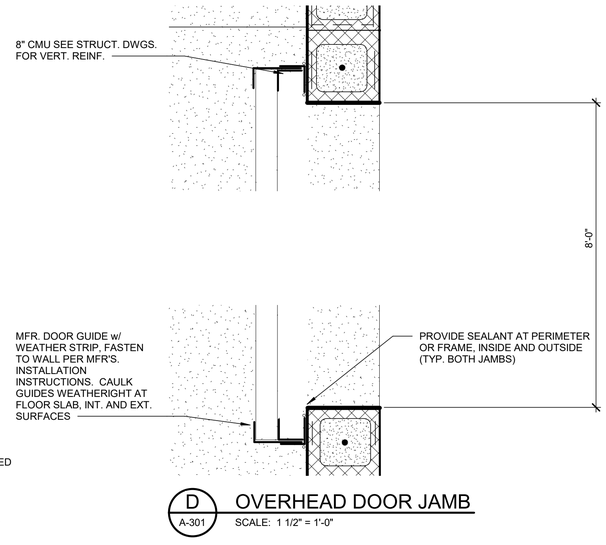
PLOTTED 7/10/2023 10:49:48 AM

BIM 360://COF1076-7-WPCF/WU_HRC_A_R21.rvt



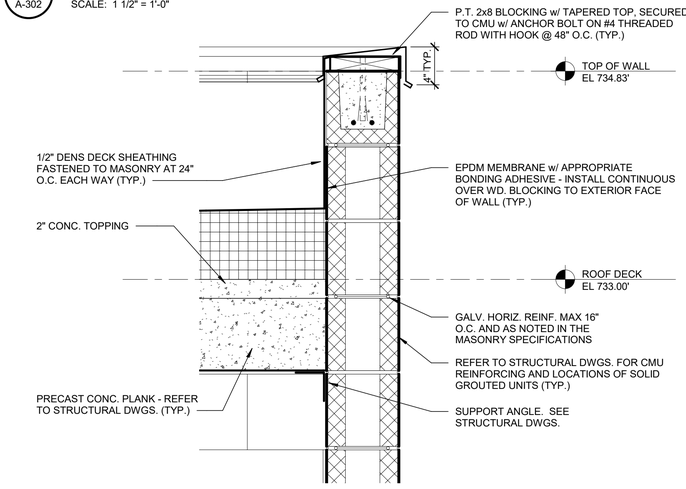
G A-302 ROOF SUMP AND OVERFLOW SCUPPER

SCALE: 1 1/2" = 1'-0"



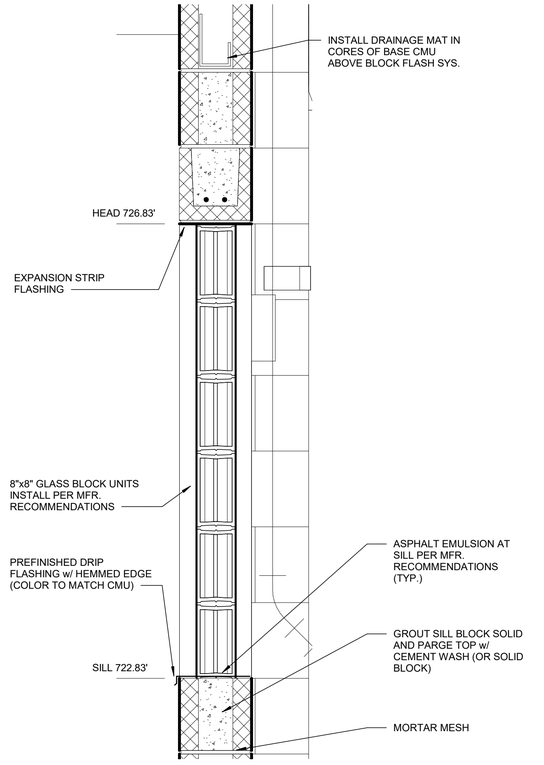
D A-301 OVERHEAD DOOR JAMB

SCALE: 1 1/2" = 1'-0"



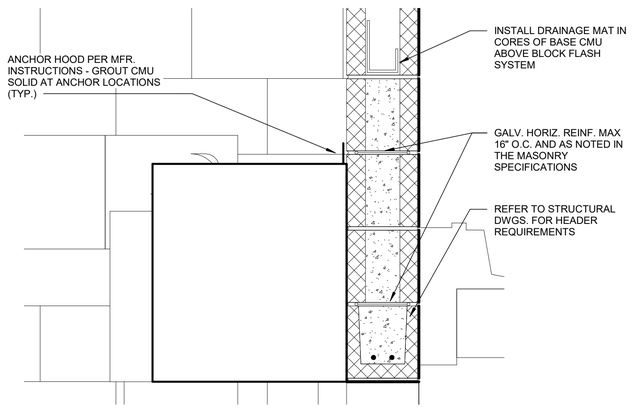
F A-301 TYPICAL PARAPET NON-BEARING SIDE

SCALE: 1 1/2" = 1'-0"



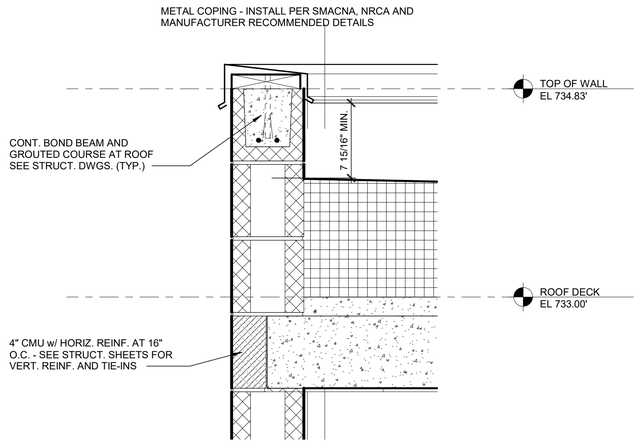
B A-302 TYPICAL GLAZED BLOCK WINDOW

SCALE: 1 1/2" = 1'-0"



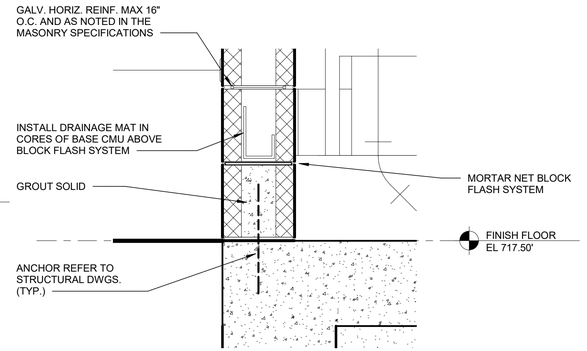
E A-301 OVERHEAD DOOR HEAD

SCALE: 1 1/2" = 1'-0"



C A-302 TYPICAL PARAPET BEARING SIDE

SCALE: 1 1/2" = 1'-0"



A A-302 TYPICAL WALL BASE

SCALE: 1 1/2" = 1'-0"

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

DETAILS

ISSUED FOR: DATE: BY:
BIDS 2023.06.24 TSW

JOB NO. COF1076-01F

SHEET A-501

PLOTTED: 7/10/2023 10:49:49 AM

BIM 360://COF1076-7-WPCF/WU_HRC_A_R21.rvt

ABBREVIATIONS - PIPING

AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ARV	AIR RELIEF VALVE
BCE	BIOLOGICAL CONTACTOR EFFLUENT
BF	BLIND FLANGE
BP	BYPASS
C	CENTRATE
CA	COMPRESSED AIR
CDS	CHEMICAL DOSING
CE	CHLORINATED EFFLUENT
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CL	CENTER LINE
CON	CONCENTRATE
CON RED	CONCENTRIC REDUCER
CONC	CONCRETE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CUP	COPPER PIPE
CW	COLD WATER
D	DRAIN
DE	DECANT
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DS	DIGESTED SLUDGE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
EI	EQUALIZATION TANK INFLUENT
EL	ELEVATION
ELB	ELBOW
ER	EQUALIZATION TANK RETURN
ES	EQUALIZATION TANK SLUDGE
FA	FOUL AIR
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FFWD	FEED FORWARD
FLG	FLANGE
FM	FORCE MAIN
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PIPE
FS	FINAL TANK SLUDGE
FTW	FILTER TO WASTE
GRS	GREASE
GRT	GRIT
GRV	GROOVED JOINT
GSP	GALVANIZED STEEL PIPE
GW	GLAND WATER
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HS	HEATED SLUDGE
INF	INFLUENT
INV	INVERT
IR	INFRARED
LPA	LOW PRESSURE AIR
LR	LONG RADIUS
MBR	MEMBRANE BIOREACTOR

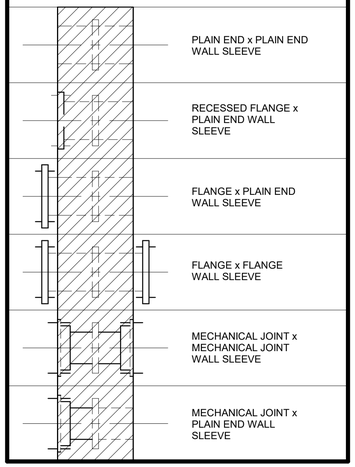
ABBREVIATIONS - PIPING

MFR	MANUFACTURER
MH	MANHOLE
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLP	MAIN LIFT PUMP
NaOCl	SODIUM HYPOCHLORITE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPW	NON-POTABLE WATER
OVRFL	OVERFLOW
PA	PROCESS AIR
PE	PRIMARY TANK EFFLUENT
PEP	POLYETHYLENE PIPE
PERM	PERMEATE
PEW	PLANT EFFLUENT WATER
PI	PRIMARY TANK INFLUENT
PLT	PLATE
POA	PULLOUT ASSEMBLY
PP	POLYPROPYLENE PIPE
PS	PRIMARY TANK SLUDGE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RC	RECYCLED
RCP	REINFORCED CONCRETE PIPE
RDMJ	RESTRAINED DISMANTLING JOINT
RECYC	INTERNAL RECYCLE
RED	REDUCER
REW	REUSE WATER
RFCA	RESTRAINED FLANGED COUPLING ADAPTER
RO	REVERSE OSMOSIS
RS	RAW SEWAGE
RW	RAW WATER
S	SCUM
SAM	SAMPLE
SE	SECONDARY EFFLUENT
SFE	SECONDARY FINAL EFFLUENT
SN	SUPERNATANT
SPD	SUMP PUMP DISCHARGE
SS or SST	STAINLESS STEEL
STL	STEEL PIPE
SW	SECONDARY WASTE
SWHP	SECONDARY WATER - HIGH PRESSURE
SWLP	SECONDARY WATER - LOW PRESSURE
SWMP	SECONDARY WATER - MEDIUM PRESSURE
SWP	SEAL WATER PANEL
TE	TERTIARY EFFLUENT
THD	THREADED
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TOR	THERMAL OIL RETURN
TOS	THERMAL OIL SUPPLY
TS	TRANSFER SLUDGE
UNO	UNLESS NOTED OTHERWISE
UWF	UNFILTERED WATER FLUSH
V	VENT
VIF	VERIFY IN FIELD
WAS	WASTE ACTIVATED SLUDGE
WM	WATER MAIN
WWD	WASHWATER DRAIN
WWS	WASHWATER SUPPLY

PIPING & EQUIPMENT SYMBOLS

- VTR — VENT TO ROOF
- PIPE ANCHOR
- EXPANSION JOINT
- EXPANSION COMPENSATOR
- FLEXIBLE CONNECTOR
- FE — FLOW ELEMENT
- PIPE GUIDE
- YH — YARD HYDRANT
- PRS — PRESSURE REDUCING STATION
- SEAL — PUMP SEALING WATER CONNECTION
- SAMPLE FUNNEL
- LBS — AIR SET ASSEMBLY
- A-TH — AIR TO VALVE OPERATOR (THROTTLING SERVICE)
- A-OS — AIR TO VALVE OPERATOR (OPEN SHUT SERVICE)
- MIX — IN LINE STATIC MIXER
- EDUCTOR
- INJECTOR
- TRAP (STEAM OR AIR MOISTURE)
- QD — QUICK DISCONNECT (AIR) (3/4")
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- REDUCER-CONCENTRIC
- REDUCER-ECCENTRIC
- WYE STRAINER
- BASKET STRAINER
- UNION
- M — METER (TOTALIZING)
- ROTAMETER
- STEEL WALL SLEEVE
- ES — EMERGENCY SHOWER AND EYEWASH
- PIPING (BELOW SLAB)
- FD — FLOOR DRAIN
- FD/SB — FLOOR DRAIN W/SEDIMENT BUCKET
- FS — FLOOR SINK
- PBD — PUMP BASE DRAIN
- E D — EQUIPMENT DRAIN
- C O — CLEANOUT-FLOOR
- C O — CLEANOUT-HORIZONTAL
- R D — ROOF DRAIN
- D — PIPE TO DRAIN
- P — IN-LINE PUMP
- INSTRUMENT AIR PNEUMATIC SIGNAL
- ELECTRIC
- INSTRUMENT CAPILLARY TUBING
- BFP / D — BACKFLOW PREVENTER
- CONNECTION TO EXISTING
- PIPE CAP OR PLUG
- DIRECTION OF FLOW
- EFM — ELBOW FLOW METER

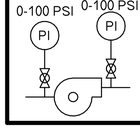
SLEEVE DESIGNATIONS



- PLAIN END x PLAIN END WALL SLEEVE
- RECESSED FLANGE x PLAIN END WALL SLEEVE
- FLANGE x PLAIN END WALL SLEEVE
- FLANGE x FLANGE WALL SLEEVE
- MECHANICAL JOINT x MECHANICAL JOINT WALL SLEEVE
- MECHANICAL JOINT x PLAIN END WALL SLEEVE

VALVE SYMBOLS

- TRIPLE DUTY VALVE
- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CORPORATION COCK
- BALANCING VALVE
- PET COCK
- CHECK VALVE
- PLUG VALVE
- STOP AND CHECK VALVE
- PINCH VALVE
- DIAPHRAGM VALVE
- AUTO-FLOW CONTROL VALVE
- ANGLE OR NEEDLE VALVE
- PRESSURE RELIEF VALVE
- THREE WAY VALVE
- TEMPERING VALVE
- S — SOLENOID OPERATED VALVE
- PRESSURE REGULATING VALVE (SELF CONTAINED)
- M / M — MOTORIZED CONTROL VALVE (OPEN-SHUT, THROTTLING)
- PNEUMATIC OPERATED CONTROL VALVE (OPEN-SHUT, THROTTLING)
- BP — BACKPRESSURE VALVE
- HB — HOSE BIBB (3/4")
- HR — HOSE REEL (3/4")
- FHB — FLUSHING HOSE BIBB (1-1/2")
- SC — SILL COCK (3/4")
- FC — FLUSHING CONNECTION (ON PIPE) 1-1/2"
- ASV — ANTISIPHON VALVE



PUMP/BLOWER INCLUDING PRESSURE GAUGES
PI = PRESSURE GAUGE

PI-D = PRESSURE GAUGE W/ DIAPHRAGM SEAL

PI-P = PRESSURE GAUGE W/ PULSATION DAMPER

GENERAL PIPING NOTES

A	LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
B	UNLESS NOTED OTHERWISE, PIPE ELEVATIONS SHOWN ON PIPING DRAWINGS REFER TO CENTERLINE OF PIPE.
C	SUBMIT THE ROUTING OF PIPING NOT SHOWN IN THE DRAWINGS FOR APPROVAL, INCLUDING PIPING SMALLER THAN 3 INCHES.
D	SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS NOTED OTHERWISE. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
E	LOCATIONS AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL DESIGN AND PROVIDE PIPE SUPPORTS AS SPECIFIED.
F	ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL OR THROUGH WATERTIGHT STRUCTURE.
G	ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS NOTED OTHERWISE. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
H	NOT ALL OF THE GRAPHICS, ABBREVEATIONS, ETC., SHOWN ON THIS SHEET ARE USED ON THE PROJECT.
I	NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
J	WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
K	LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
L	LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
M	LOCATE DRAIN TAPS ON THE BOTTOM OF PROCESS PIPES.
N	INSTALL ALL PLUG, BUTTERFLY, AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS NOTED OTHERWISE.
O	ALL MECHANICAL AND PROCESS EQUIPMENT SHALL BE PLACED ON CONCRETE HOUSEKEEPING PADS, WHETHER INDICATED OR NOT. SEE STRUCTURAL SHEETS FOR TYPICAL DETAILS.
P	VERTICAL ELEVATIONS ARE PROVIDED IN THE CITY OF DETROIT DATUM. ALL OTHER ELEVATIONS ARE PROVIDED IN NAVD88. THE CONVERSION FROM THE CITY OF DETROIT DATUM TO NAVD88 IS 479.20'.

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2	2023.07.08	ADDENDUM 1	TSW
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

PLUMBING GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF10760-1F

SHEET P-001

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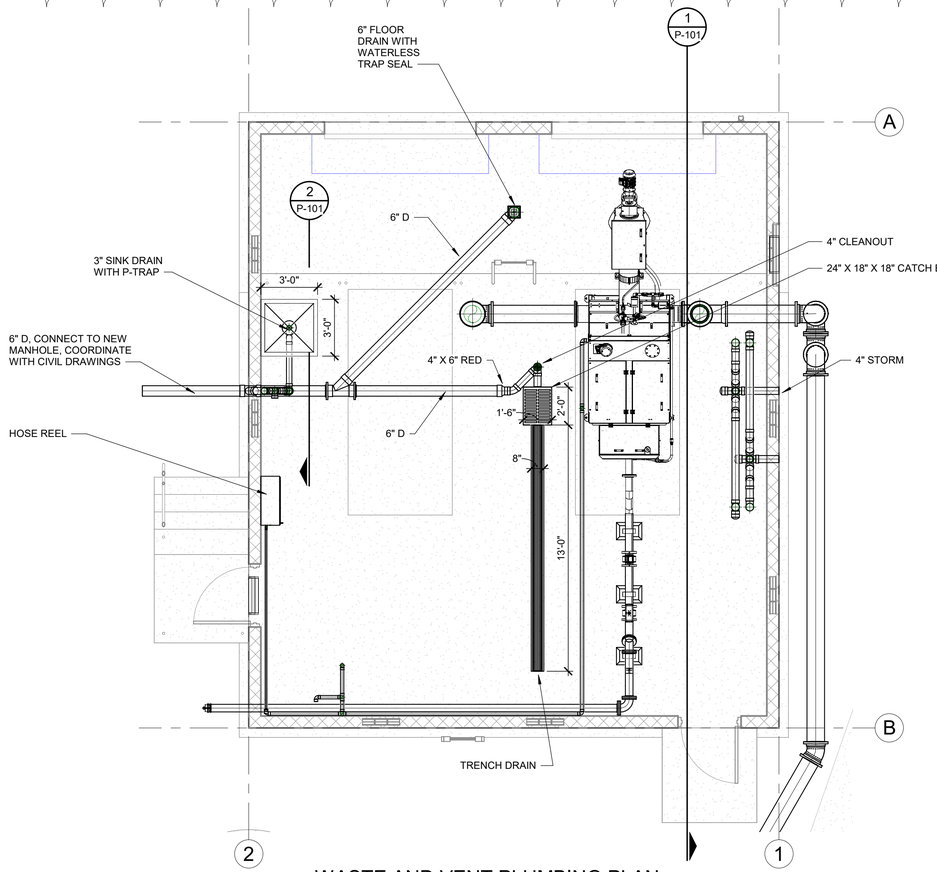
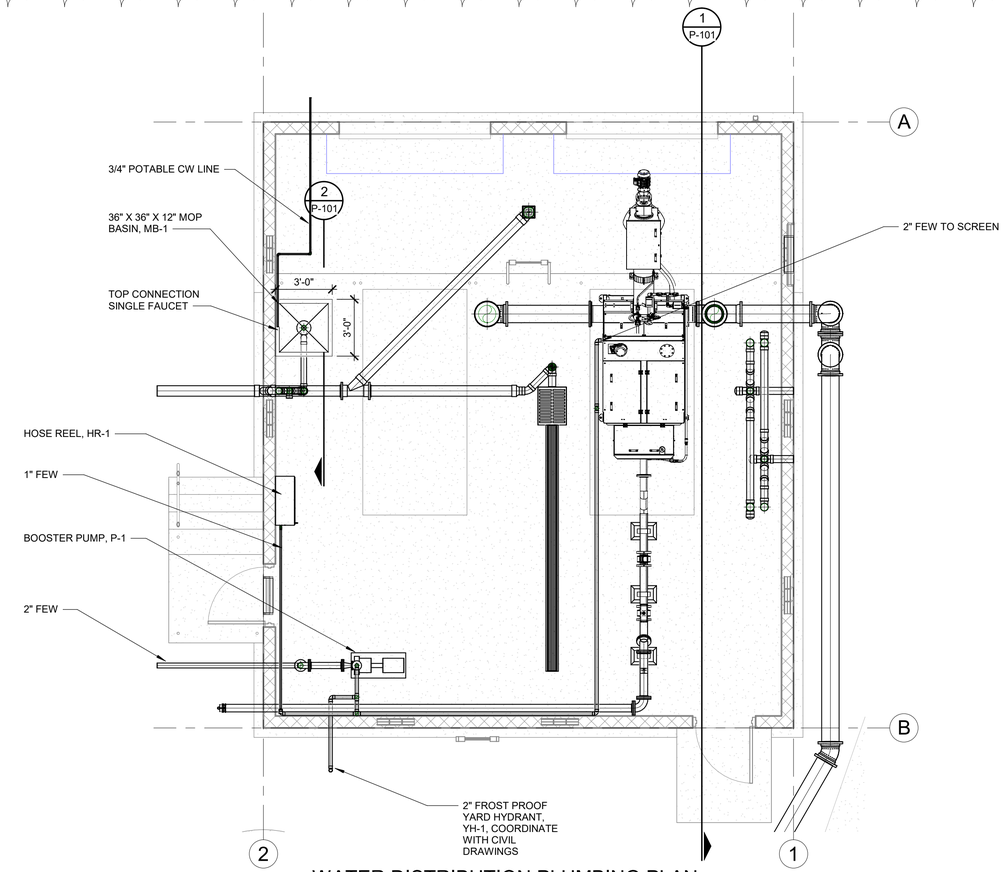


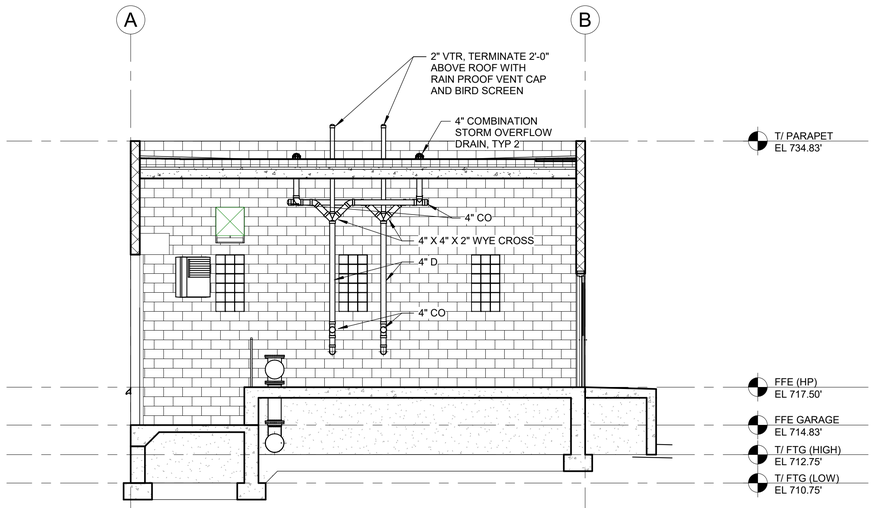
WASTE AND VENT PLUMBING PLAN

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



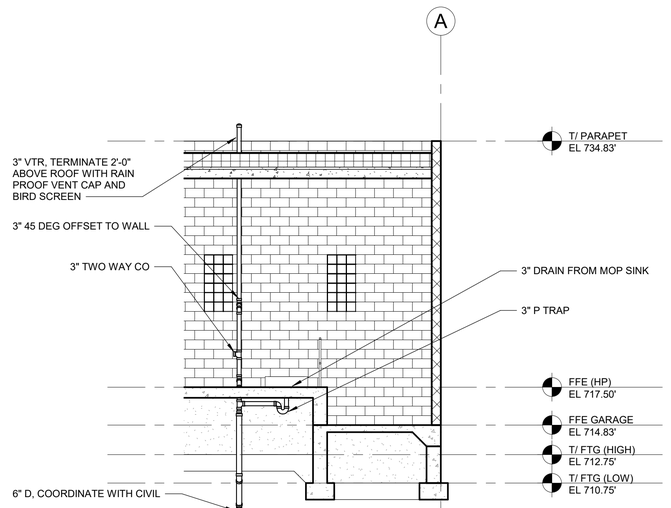
WATER DISTRIBUTION PLUMBING PLAN

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



1 P-101 SECTION 1

SCALE: 3/16" = 1'-0"



2 P-101 SECTION 2

SCALE: 3/16" = 1'-0"

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

PLUMBING PLAN AND SECTIONS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF10760-1F

SHEET P-101

PLOTTED 7/10/2023 11:19:15 AM

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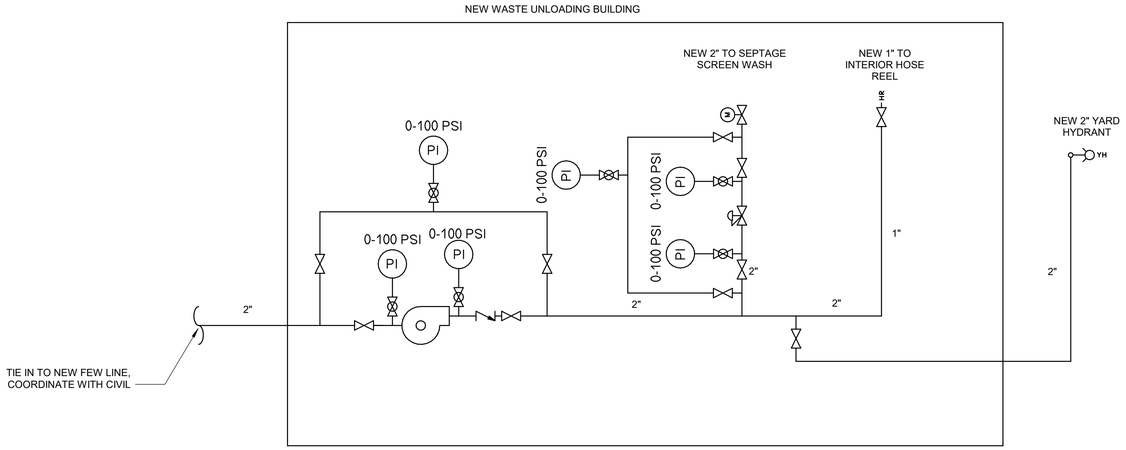
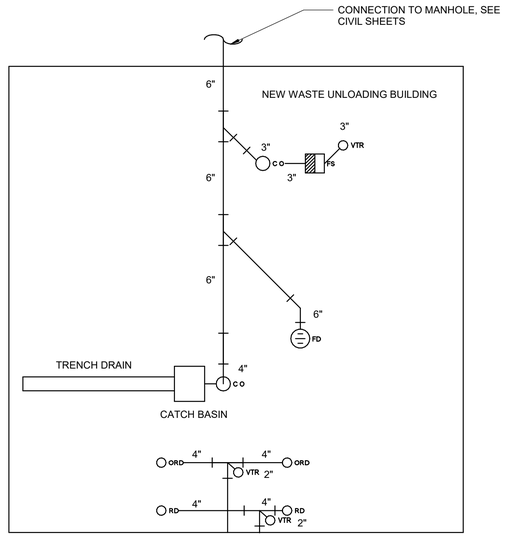
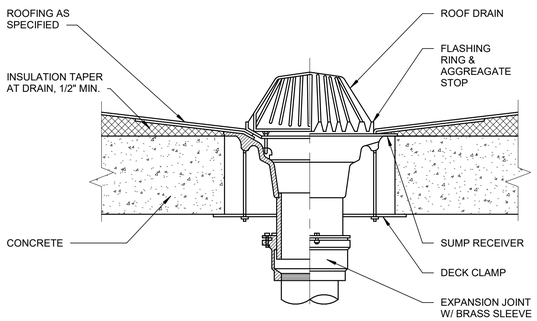


1 P-601 FEW SCHEMATIC
NOT TO SCALE

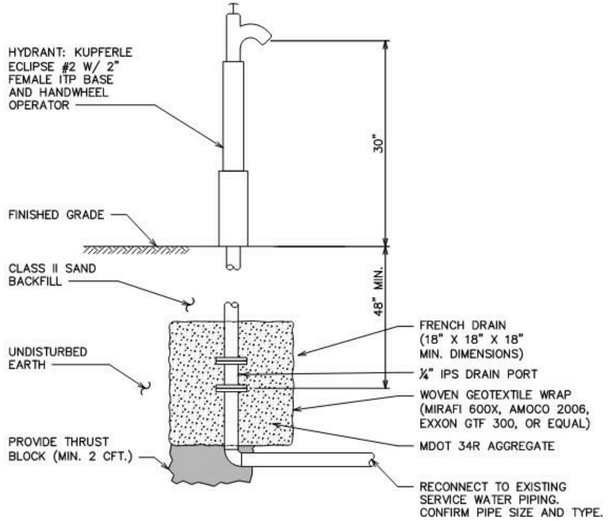


2 P-601 WASTE AND VENT SCHEMATIC
NOT TO SCALE



COORDINATE WITH ARCHITECTURAL AND STRUCTURAL

3 P-601 ROOF SUMP - CONCRETE
NOT TO SCALE



5 TYP YARD HYDRANT
NOT TO SCALE

PUMP SCHEDULE

TAG	LOCATION	VOLTS/PHASE	HP	PRESSURE (BOOST) AND GPM	MANUFACTURER	MODEL	REMARKS
P-1	WASTE UNLOADING	480/3	5	58 PSI / 80 GPM	FRANKLIN ELECTRIC	A1 X 1.5-7	VFD, EXPLOSION PROOF

PLUMBING EQUIPMENT SCHEDULE

TAG	LOCATION	MANUFACTURER	MODEL	REMARKS
MB-1	WASTE UNLOADING	FIAT PRODUCTS	TSB-500	PRECAST TERAZZO MADE OF BLACK AND WHITE MARBLE CHIPS IN GRAY PORTLAND CEMENT TO PRODUCE A COMPRESSIVE STRENGTH NOT LESS THAN 3000 PSI SEVEN DAYS AFTER CASTING, SURFACE GROUND AND POLISHED SMOOTH WITH ALL AIR HOLES OR PITS GROUTED AND EXCESS REMOVED. SHOULDERS SHALL BE NOT LESS THAN 12" HIGH OUTSIDE AND 10" HIGH INSIDE AT LOWEST WALL. SHOULDER WIDTH NOT LESS THAN 2" ALL SIDES WITH 1/4" PITCH TOWARDS THE INSIDE. STAINLESS STEEL DRAIN BODY CAST INTEGRALLY AND CAULKED LEAD CONNECTION NOT LESS THAN 1" DEEP TO 3" PIPE. STAINLESS STEEL STRAINER. PROVIDE SEPERATE 24"X3" WIDE STAINLESS STEEL MOP HANGER WITH 3 RUBBER TOOL GRIPS, 30 INCHES LONG FLEXIBLE, HEAVY DUTY, 5/8" CLOTH REINFORCED RUBBER HOSE WITH 3/4" CHROME COUPLING AT ONE END, 5"X3" WIDE STAINLESS STEEL HOSE BRACKET WITH RUBBER TOOL GRIP. PROVIDE FAUCET, ROUGH CHROME PLATED CAST BRASS WITH VACUUM BREAKER, 3/4 INCH THREADED HOSE SPOUT, METAL LEVER HANDLE, WALL BRACE, PAIL HOOK, AND FLANGED FEMALE SUPPLY ARMS ADJUSTABLE FROM 4 INCH TO 8 3/8 INCH CENTERS AND HAVING INTEGRAL STOPS.
HR-1	WASTE UNLOADING	REELCRAFT	HS37000 L	STAINLESS STEEL HAND CRANK HOSE REEL EPOXY COATED RETRACTABLE HOSE REEL. STAINLESS STEEL HEAVY DUTY HOSE REEL, 1" NPT(F) INLET AND OUTLET, 500 PSI MAX, INCLUDE 50' EPDM RUBBER HOSE AND SPRAYER
YH-1	WASTE UNLOADING	KUPFERLE	ECLIPSE #2	2" FEMALE ITP BASE AND HANDWHEEL OPERATOR

PLUMBING PIPING NOTES

1. ALL ABOVE GRADE WASTE AND VENT PIPING TO BE CAST IRON.
2. ALL BELOW GRADE/BURIED WASTE AND VENT PIPING TO BE PVC.
3. ALL WATER DISTRIBUTION PIPING TO BE COPPER.
4. REFER TO SPECIFICATIONS FOR PIPE TYPE SPECIFICS.
5. COORDINATE WITH CIVIL DRAWINGS FOR YARD PIPING.
6. CONTRACTOR TO SUBMIT PLUMBING PIPING LAYOUT DRAWINGS INCLUDING BUT NOT LIMITED TO:
   A. ARRANGMENT OF PLUMBING EQUIPMENT, VALVES AND FIXTURES
   B. ALL PENETRATIONS COORDINATED WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS
   C. LINE SIZES AND PIPE TYPES

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

PLUMBING SCHEMATIC, SCHEDULES, AND DETAILS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF10760-1F

SHEET P-601

PLOTTED: 7/10/2023 11:19:17 AM
BIM 360://COF1076-7-WPCF/WU_WT_M_R21.rvt

ABBREVIATIONS - PIPING

AFF	ABOVE FINISHED FLOOR
AL	ALUMINUM
ARV	AIR RELIEF VALVE
BCE	BIOLOGICAL CONTACTOR EFFLUENT
BF	BLIND FLANGE
BP	BYPASS
BWST	BURIED WASTE
BWTR	BURIED WATER
C	CENTRATE
CA	COMPRESSED AIR
CDS	CHEMICAL DOSING
CE	CHLORINATED EFFLUENT
CI	CAST IRON
CIP	CAST IRON PIPE
CISP	CAST IRON SOIL PIPE
CL	CENTER LINE
CLK	CAMLOCK CONNECTOR
CON	CONCENTRATE
CON RED	CONCENTRIC REDUCER
CONC	CONCRETE
CPVC	CHLORINATED POLYVINYL CHLORIDE
CUP	COPPER PIPE
CW	COLD WATER
D	DRAIN
DE	DECANT
DI	DUCTILE IRON
DIP	DUCTILE IRON PIPE
DMJ	DISMANTLING JOINT
DS	DIGESTED SLUDGE
ECC	ECCENTRIC
ECC RED	ECCENTRIC REDUCER
ED	EQUIPMENT DRAIN
EFF	EFFLUENT
EI	EQUALIZATION TANK INFLUENT
EL	ELEVATION
ELB	ELBOW
ER	EQUALIZATION TANK RETURN
ES	EQUALIZATION TANK SLUDGE
EWST	EXPOSED WASTE
FA	FOUL AIR
FCA	FLANGED COUPLING ADAPTER
FD	FLOOR DRAIN
FE	FINAL EFFLUENT
FFWD	FEED FORWARD
FLG	FLANGE
FM	FORCE MAIN
FOB	FLAT ON BOTTOM
FOT	FLAT ON TOP
FRP	FIBERGLASS REINFORCED PIPE
FS	FINAL TANK SLUDGE
FTW	FILTER TO WASTE
GRS	GREASE
GRT	GRIT
GRV	GROOVED JOINT
GSP	GALVANIZED STEEL PIPE
GW	GLAND WATER
HDPE	HIGH DENSITY POLYETHYLENE PIPE
HS	HEATED SLUDGE
INF	INFLUENT
INV	INVERT
LPA	LOW PRESSURE AIR
LR	LONG RADIUS

ABBREVIATIONS - PIPING

MBR	MEMBRANE BIOREACTOR
MFR	MANUFACTURER
MH	MANHOLE
MJ	MECHANICAL JOINT
ML	MIXED LIQUOR
MLP	MAIN LIFT PUMP
NaOCl	SODIUM HYPOCHLORITE
NC	NORMALLY CLOSED
NO	NORMALLY OPEN
NPW	NON-POTABLE WATER
OVRFL	OVERFLOW
PA	PROCESS AIR
PE	PRIMARY TANK EFFLUENT
PEP	POLYETHYLENE PIPE
PERM	PERMEATE
PEW	PLANT EFFLUENT WATER
PI	PRIMARY TANK INFLUENT
PLT	PLATE
POA	PULLOUT ASSEMBLY
PP	POLYPROPYLENE PIPE
PS	PRIMARY TANK SLUDGE
PVC	POLYVINYL CHLORIDE
PW	POTABLE WATER
RAS	RETURN ACTIVATED SLUDGE
RC	RECYCLED
RCP	REINFORCED CONCRETE PIPE
RDMJ	RESTRAINED DISMANTLING JOINT
RECYC	INTERNAL RECYCLE
RED	REDUCER
REW	REUSE WATER
RFCA	RESTRAINED FLANGED COUPLING ADAPTER
RO	REVERSE OSMOSIS
RS	RAW SEWAGE
RW	RAW WATER
S	SCUM
SAM	SAMPLE
SE	SECONDARY EFFLUENT
SFE	SECONDARY FINAL EFFLUENT
SN	SUPERNATANT
SPD	SUMP PUMP DISCHARGE
SS or SST	STAINLESS STEEL
STL	STEEL PIPE
SW	SECONDARY WASTE
SWHP	SECONDARY WATER - HIGH PRESSURE
SWLP	SECONDARY WATER - LOW PRESSURE
SWMP	SECONDARY WATER - MEDIUM PRESSURE
SWP	SEAL WATER PANEL
TE	TERTIARY EFFLUENT
THD	THREADED
THS	THICKENED SLUDGE
TO	THICKENER OVERFLOW
TOR	THERMAL OIL RETURN
TOS	THERMAL OIL SUPPLY
TS	TRANSFER SLUDGE
UNO	UNLESS NOTED OTHERWISE
UWF	UNFILTERED WATER FLUSH
V	VENT
VIF	VERIFY IN FIELD
WAS	WASTE ACTIVATED SLUDGE
WM	WATER MAIN
WWD	WASHWATER DRAIN
WWS	WASHWATER SUPPLY

VALVE SYMBOLS

- TRIPLE DUTY VALVE
- GATE VALVE
- GLOBE VALVE
- BALL VALVE
- BUTTERFLY VALVE
- CORPORATION COCK
- BALANCING VALVE
- PET COCK
- CHECK VALVE
- PLUG VALVE
- STOP AND CHECK VALVE
- PINCH VALVE
- DIAPHRAGM VALVE
- AUTO-FLOW CONTROL VALVE
- ANGLE OR NEEDLE VALVE
- PRESSURE RELIEF VALVE
- THREE WAY VALVE
- TEMPERING VALVE
- SOLENOID OPERATED VALVE
- PRESSURE REGULATING VALVE (SELF CONTAINED)
- MOTORIZED CONTROL VALVE (OPEN-SHUT, THROTTLING)
- PNEUMATIC OPERATED CONTROL VALVE (OPEN-SHUT, THROTTLING)
- BACKPRESSURE VALVE
- HOSE BIBB (3/4")
- FLUSHING HOSE BIBB (1-1/2")
- SILL COCK (3/4")
- FLUSHING CONNECTION (ON PIPE) 1-1/2"
- ANTISIPHON VALVE
- PUMP/BLOWER INCLUDING PRESSURE GAUGES
  - PI = PRESSURE GUIDE
  - PI-D = PRESSURE GAUGE W/ DIAPHRAGM SEAL
  - PI-P = PRESSURE GAUGE W/ PULSATION DAMPER

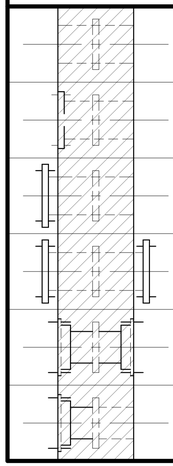
PIPING & EQUIPMENT SYMBOLS

- VENT TO ROOF
- PIPE ANCHOR
- EXPANSION JOINT
- EXPANSION COMPENSATOR
- FLEXIBLE CONNECTOR
- FLOW ELEMENT
- PIPE GUIDE
- YARD HYDRANT (SEE DETAIL)
- PRESSURE REDUCING STATION (SEE DETAIL)
- PUMP SEALING WATER CONNECTION (SEE DETAIL)
- SAMPLE FUNNEL (SEE DETAIL)
- AIR SET ASSEMBLY (SEE DETAIL)
- AIR TO VALVE OPERATOR (SEE DETAIL) (THROTTLING SERVICE)
- AIR TO VALVE OPERATOR (SEE DETAIL) (OPEN SHUT SERVICE)
- IN LINE STATIC MIXER
- EDUCTOR
- INJECTOR
- TRAP (STEAM OR AIR MOISTURE)
- QUICK DISCONNECT (AIR) (3/4")
- ELBOW UP
- ELBOW DOWN
- TEE UP
- TEE DOWN
- REDUCER-CONCENTRIC
- REDUCER-ECCENTRIC
- WYE STRAINER
- BASKET STRAINER
- UNION
- METER (TOTALIZING)
- ROTAMETER
- STEEL WALL SLEEVE
- EMERGENCY SHOWER AND EYEWASH
- PIPING (BELOW SLAB)
- FLOOR DRAIN
- FLOOR DRAIN W/SEDIMENT BUCKET
- FLOOR SINK
- PUMP BASE DRAIN
- EQUIPMENT DRAIN
- CLEANOUT-FLOOR
- CLEANOUT-HORIZONTAL
- ROOF DRAIN
- PIPE TO DRAIN
- IN-LINE PUMP
- INSTRUMENT AIR PNEUMATIC SIGNAL
- ELECTRIC
- INSTRUMENT CAPILLARY TUBING
- BACKFLOW PREVENTER
- CONNECTION TO EXISTING
- PIPE CAP OR PLUG
- DIRECTION OF FLOW

INSTRUMENTATION SYMBOLS

	PANEL MOUNTED INSTRUMENT (INSIDE)
	PANEL MOUNTED INSTRUMENT (FACE)
	LOCALLY MOUNTED INSTRUMENT
FE	FLOW ELEMENT
FI	FLOW INDICATOR
LE	LEVEL ELEMENT
LWC	LOW WATER CUT-OFF
PS	PRESSURE SWITCH
TI	TEMPERATURE INDICATOR
TIC	TEMPERATURE INDICATOR CONTROLLER
TT	TEMPERATURE TRANSMITTER

SLEEVE DESIGNATIONS



- PLAIN END x PLAIN END WALL SLEEVE
- RECESSED FLANGE x PLAIN END WALL SLEEVE
- FLANGE x PLAIN END WALL SLEEVE
- FLANGE x FLANGE WALL SLEEVE
- MECHANICAL JOINT x MECHANICAL JOINT WALL SLEEVE
- MECHANICAL JOINT x PLAIN END WALL SLEEVE

TEMPERATURE CONTROL SYMBOLS

TI	TEMPERATURE INDICATOR
M-1	DAMPER OPERATOR
TT-1	TEMPERATURE TRANSMITTER
FS-1	FIRESTAT
FZ-1	FREEZE STAT
	EP RELAY
TC-1	TEMPERATURE CONTROLLER
R-1	RELAY
C-1	CONTROLLER
SD-1	SMOKE DETECTOR
*	PANEL MOUNTED DEVICES
NT	NIGHT THERMOSTAT

GENERAL NOTES PROCESS PIPING

A	LAY PIPE TO UNIFORM GRADE BETWEEN INDICATED ELEVATION POINTS.
B	UNLESS NOTED OTHERWISE, PIPE ELEVATIONS SHOWN ON PIPING DRAWINGS REFER TO CENTERLINE OF PIPE.
C	SUBMIT THE ROUTING OF PIPING NOT SHOWN IN THE DRAWINGS FOR APPROVAL, INCLUDING PIPING SMALLER THAN 3 INCHES.
D	SIZE OF FITTINGS SHOWN ON DRAWINGS SHALL CORRESPOND TO ADJACENT STRAIGHT RUN OF PIPE, UNLESS NOTED OTHERWISE. TYPE OF JOINT AND FITTING MATERIAL SHALL BE THE SAME AS SHOWN FOR ADJACENT STRAIGHT RUN OF PIPE.
E	LOCATIONS AND NUMBER OF PIPE HANGERS AND PIPE SUPPORTS SHOWN ARE APPROXIMATE. CONTRACTOR SHALL DESIGN AND PROVIDE PIPE SUPPORTS AS SPECIFIED.
F	ALL JOINTS SHALL BE WATERTIGHT. WALL PIPES SHALL BE USED WHEREVER PIPING PASSES FROM A STRUCTURE TO BACKFILL OR THROUGH WATERTIGHT STRUCTURE.
G	ALL FLEXIBLE CONNECTORS AND COUPLING ADAPTERS SHALL BE PROVIDED WITH THRUST PROTECTION AS SPECIFIED, UNLESS NOTED OTHERWISE. THRUST PROTECTION SHALL BE ADEQUATE FOR TEST PRESSURES SPECIFIED.
H	NOT ALL OF THE GRAPHICS, ABBREVEATIONS, ETC., SHOWN ON THIS SHEET ARE USED ON THE PROJECT.
I	NUMBER AND LOCATION OF UNIONS SHOWN ON DRAWINGS ARE APPROXIMATE. PROVIDE ALL UNIONS NECESSARY TO FACILITATE CONVENIENT REMOVAL OF VALVES AND MECHANICAL EQUIPMENT.
J	WHERE A GROOVED END COUPLING IS SHOWN, IT SHALL BE THE RIGID JOINT TYPE, UNLESS OTHERWISE SPECIFIED. WHERE A FLANGED COUPLING ADAPTER IS SHOWN, A STANDARD FLANGE SHALL BE JOINED TO THE COUPLING ADAPTER.
K	LOCATE PRESSURE TAPS ON THE TOP OF PROCESS PIPES.
L	LOCATE SAMPLE TAPS ON THE SIDE OF PROCESS PIPES.
M	LOCATE DRAIN TAPS ON THE BOTTOM OF PROCESS PIPES.
N	INSTALL ALL PLUG, BUTTERFLY, AND BALL VALVES WITH THE SHAFT IN THE HORIZONTAL POSITION, UNLESS NOTED OTHERWISE.
O	ALL MECHANICAL AND PROCESS EQUIPMENT SHALL BE PLACED ON CONCRETE HOUSEKEEPING PADS, WHETHER INDICATED OR NOT. SEE STRUCTURAL SHEETS FOR TYPICAL DETAILS.
P	ALL ELEVATIONS ARE PROVIDED IN NAVD88.

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1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

PROCESS SYMBOLS AND ABBREVIATIONS

ISSUED FOR: BIDS
DATE: 2023.06.14
BY: TSW

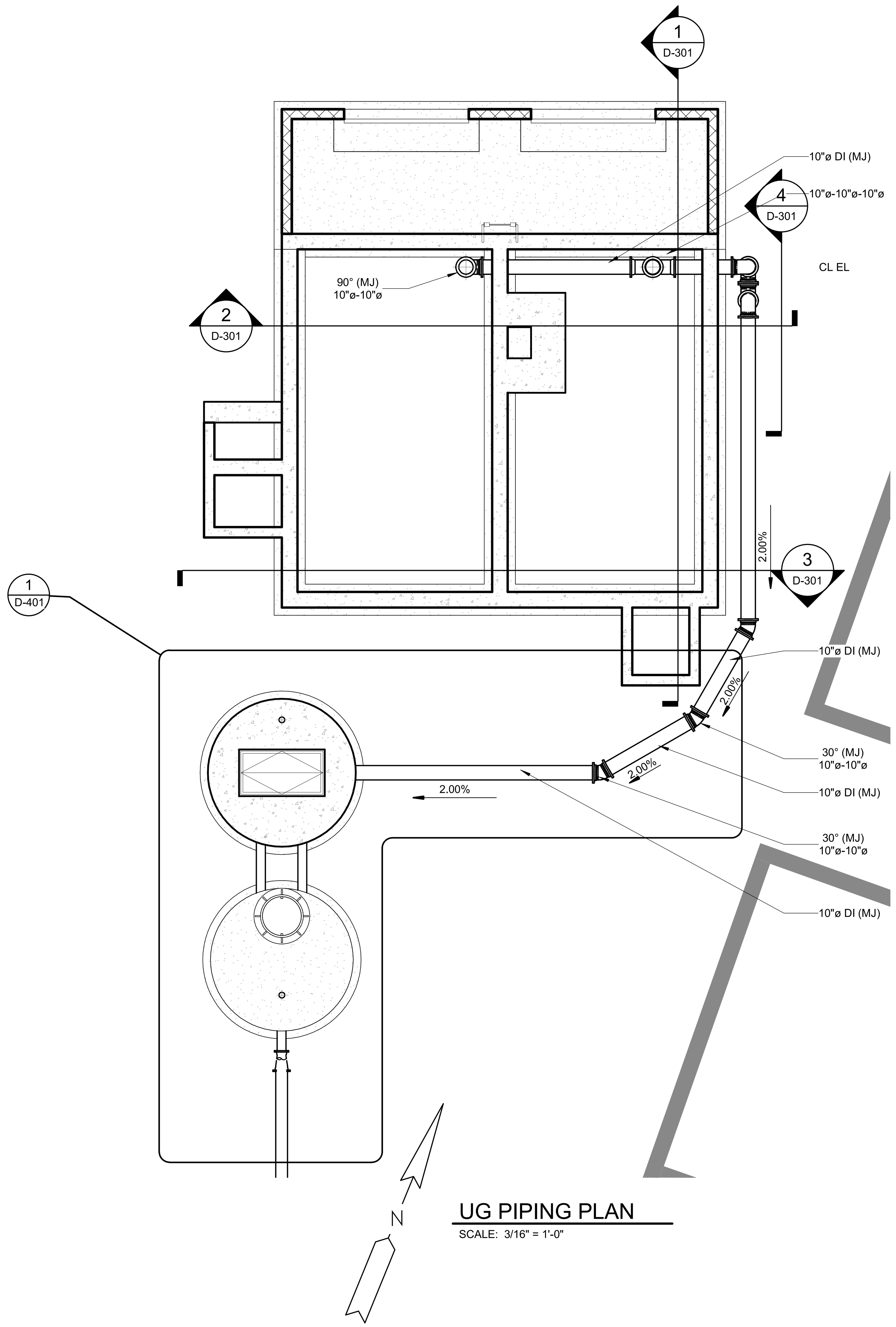
JOB NO COF1076-01F

SHEET D-001

PLOTTED: 7/9/2023 7:14:17 PM

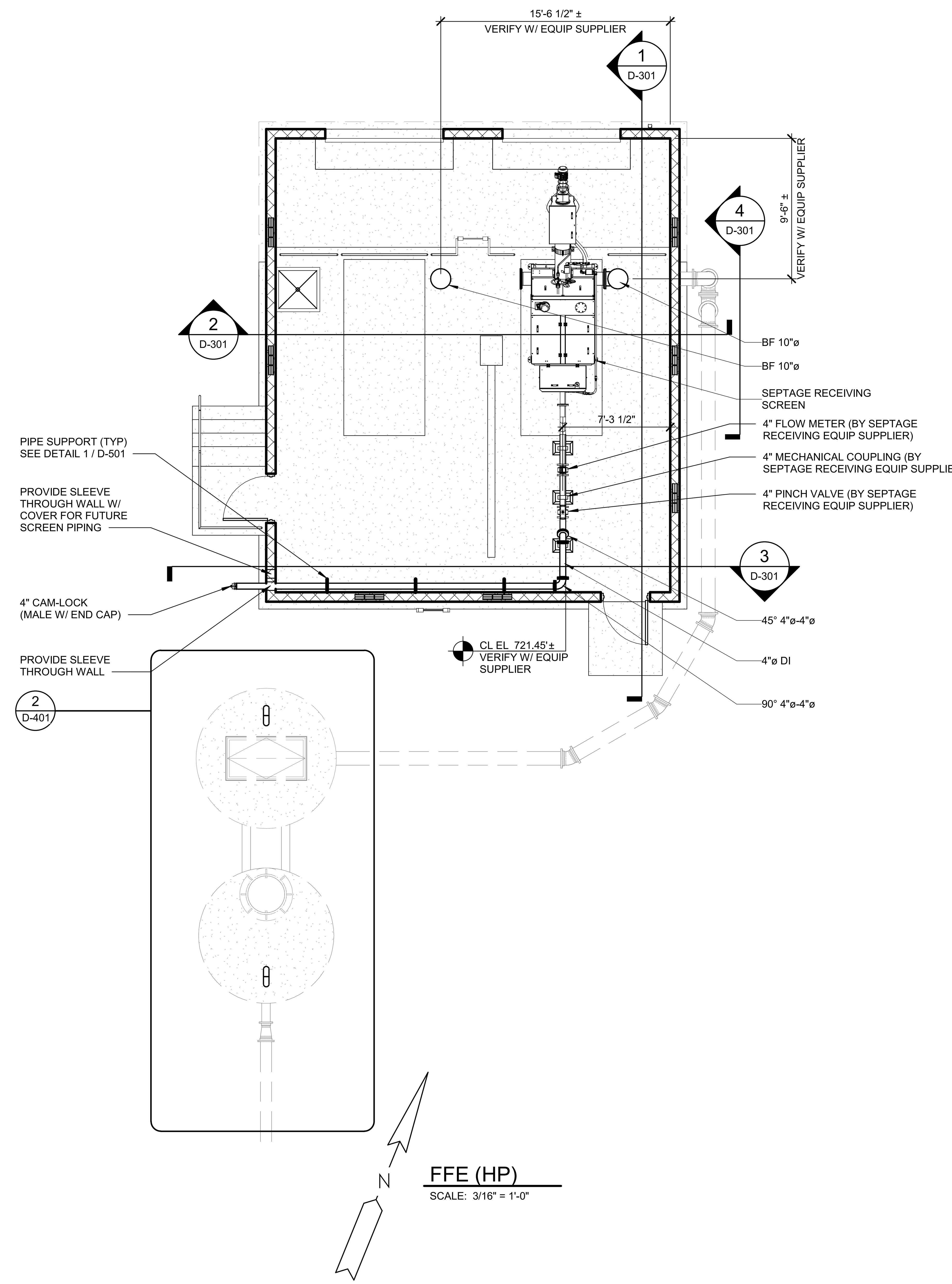
BIM 360://COF1076-7-WPCF/WU_WT_D_R21.rvt

NOTES:
1. COAT ALL EXPOSED PROPOSED PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00.



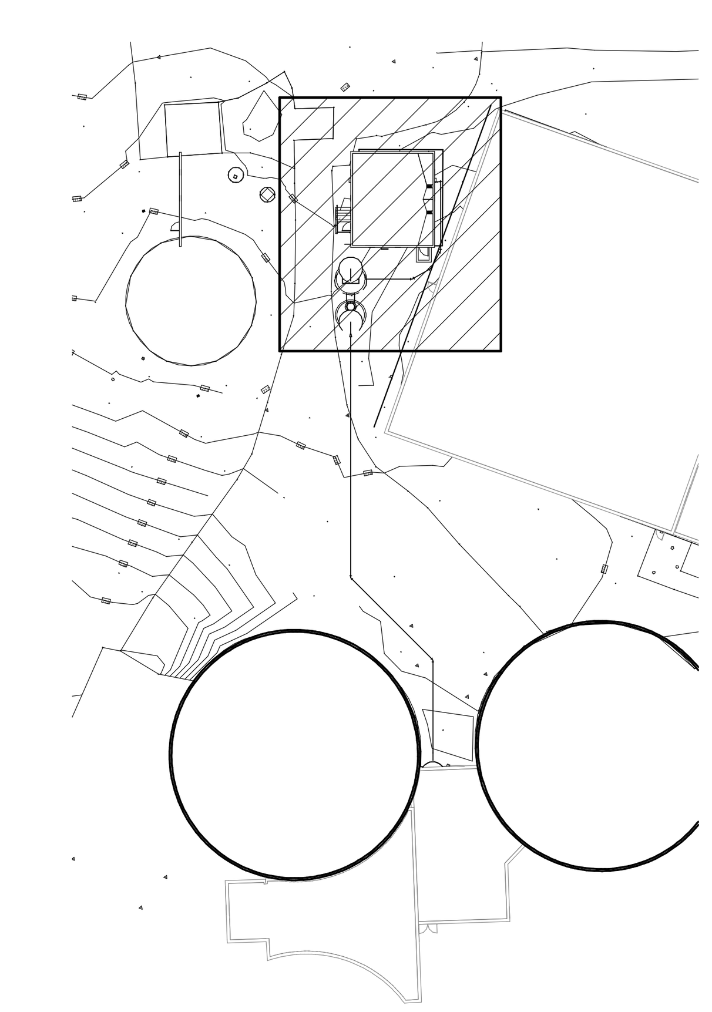
UG PIPING PLAN

SCALE: 3/16" = 1'-0"



FFE (HP)

SCALE: 3/16" = 1'-0"



KEY PLAN

NOT TO SCALE

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
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WASTE UNLOADING BUILDING AND PUMP STATION PLANS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET

D-101

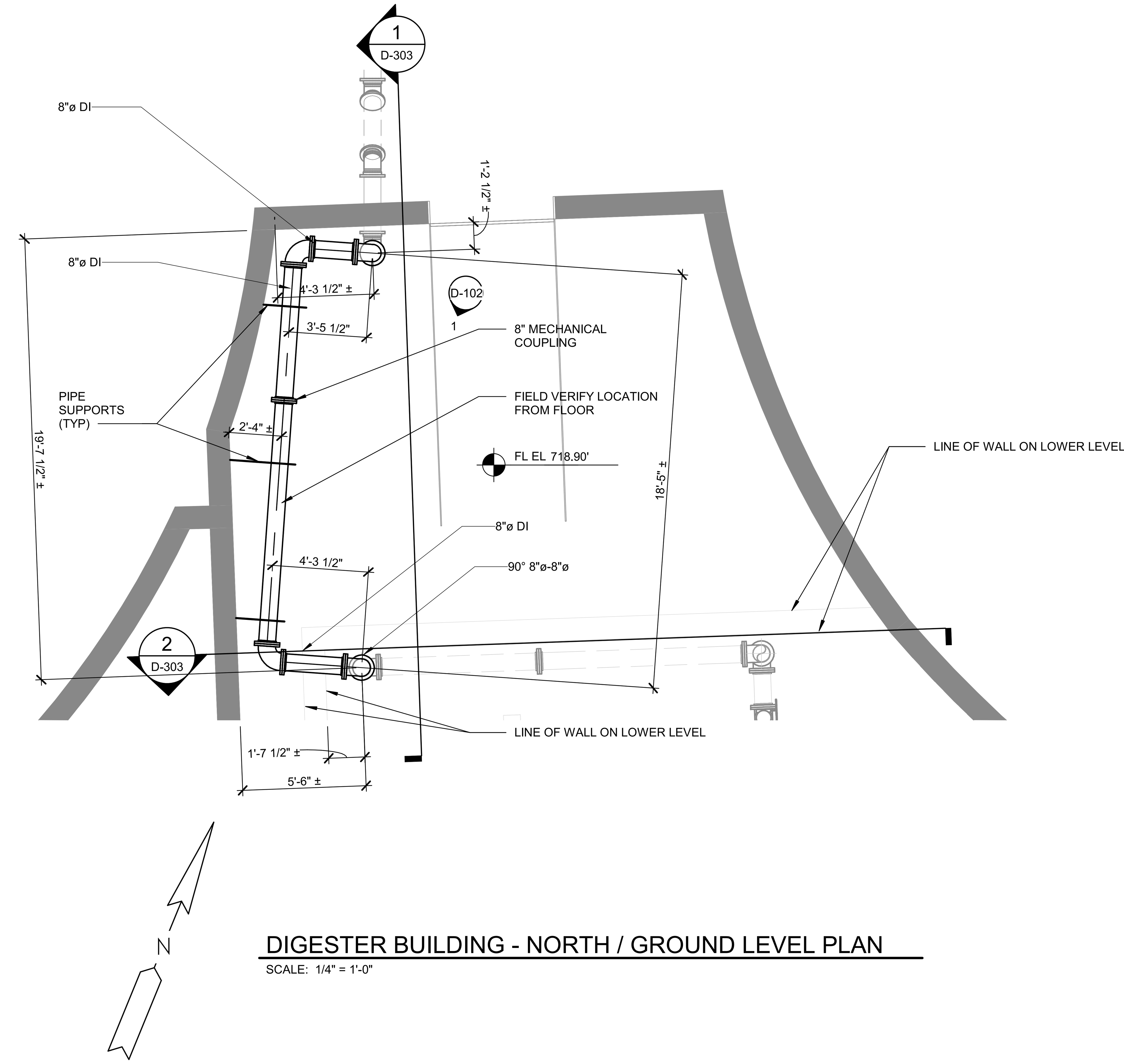
NOTES:
1. EXISTING PIPING AND EQUIPMENT IS NOT ALL SHOWN. FIELD VERIFY EXISTING CONDITIONS AND SUBMIT PIPE FABRICATION / LAYOUT FOR REVIEW.
2. COAT ALL EXPOSED PROPOSED PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00.

CUT EX 6" STAINLESS STEEL PIPE NEAR FLANGE AND WELD TO CUT END OF PIPE NEAR FLOOR.

REMOVE EX 6" STAINLESS STEEL PIPE AND STEEL PIPE STAND. CUT PIPE 6" ABOVE TEE.

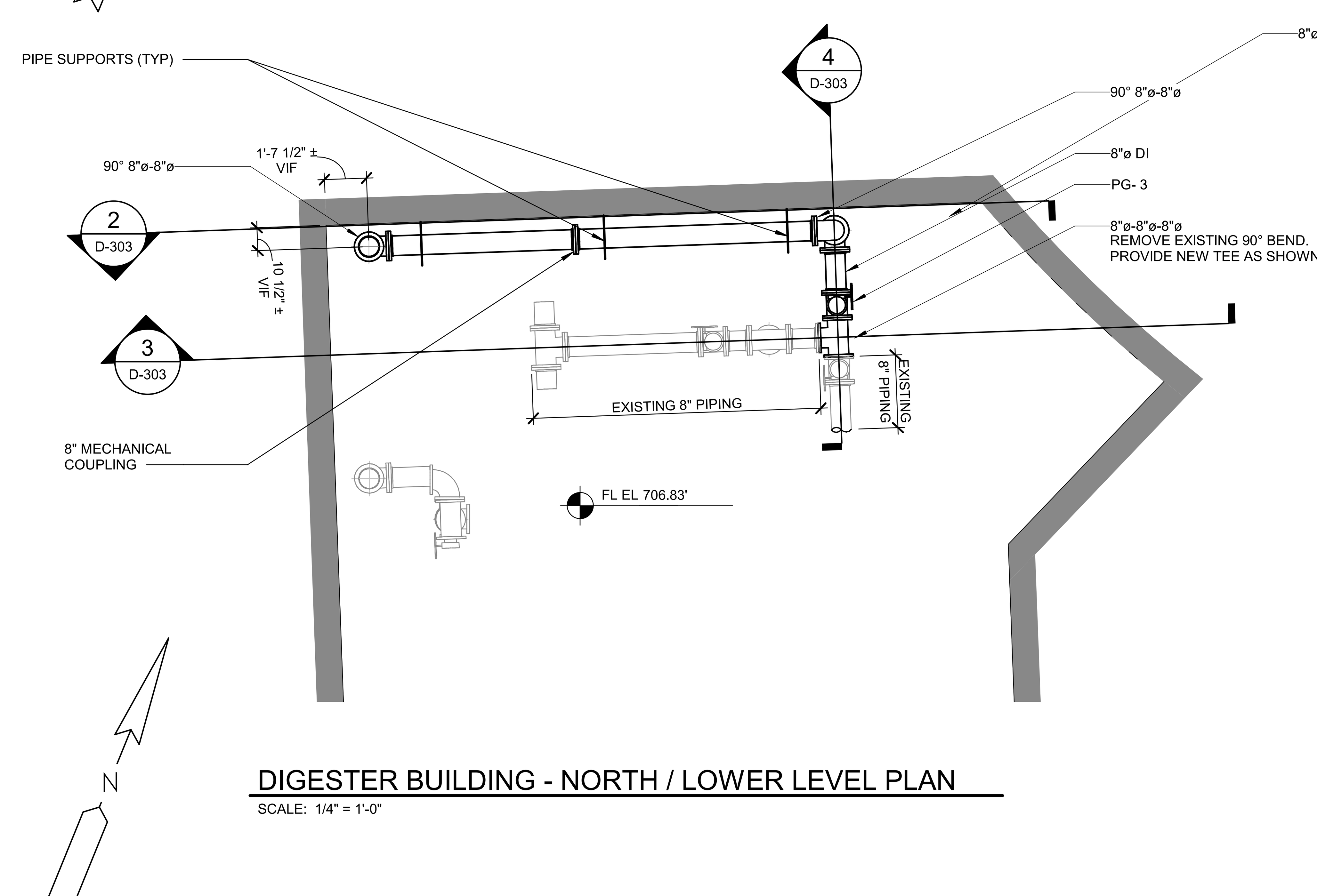
1 D-102 DIGESTER BUILDING - NORTH / GROUND LEVEL - LOOKING SOUTH

NOT TO SCALE



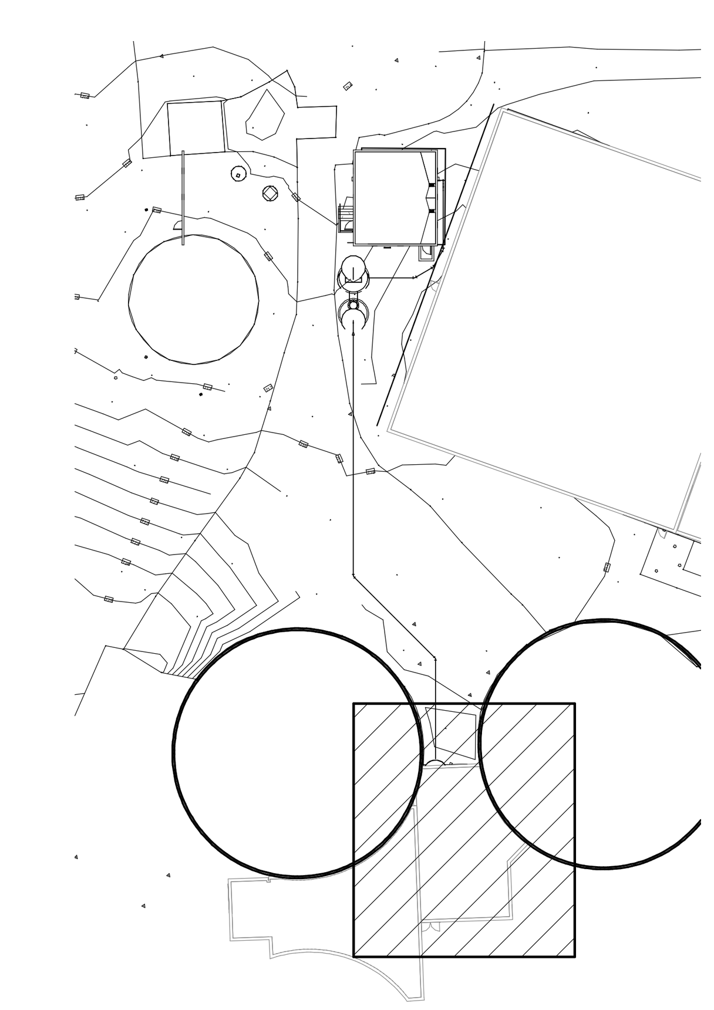
DIGESTER BUILDING - NORTH / GROUND LEVEL PLAN

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



DIGESTER BUILDING - NORTH / LOWER LEVEL PLAN

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



KEY PLAN

NOT TO SCALE

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

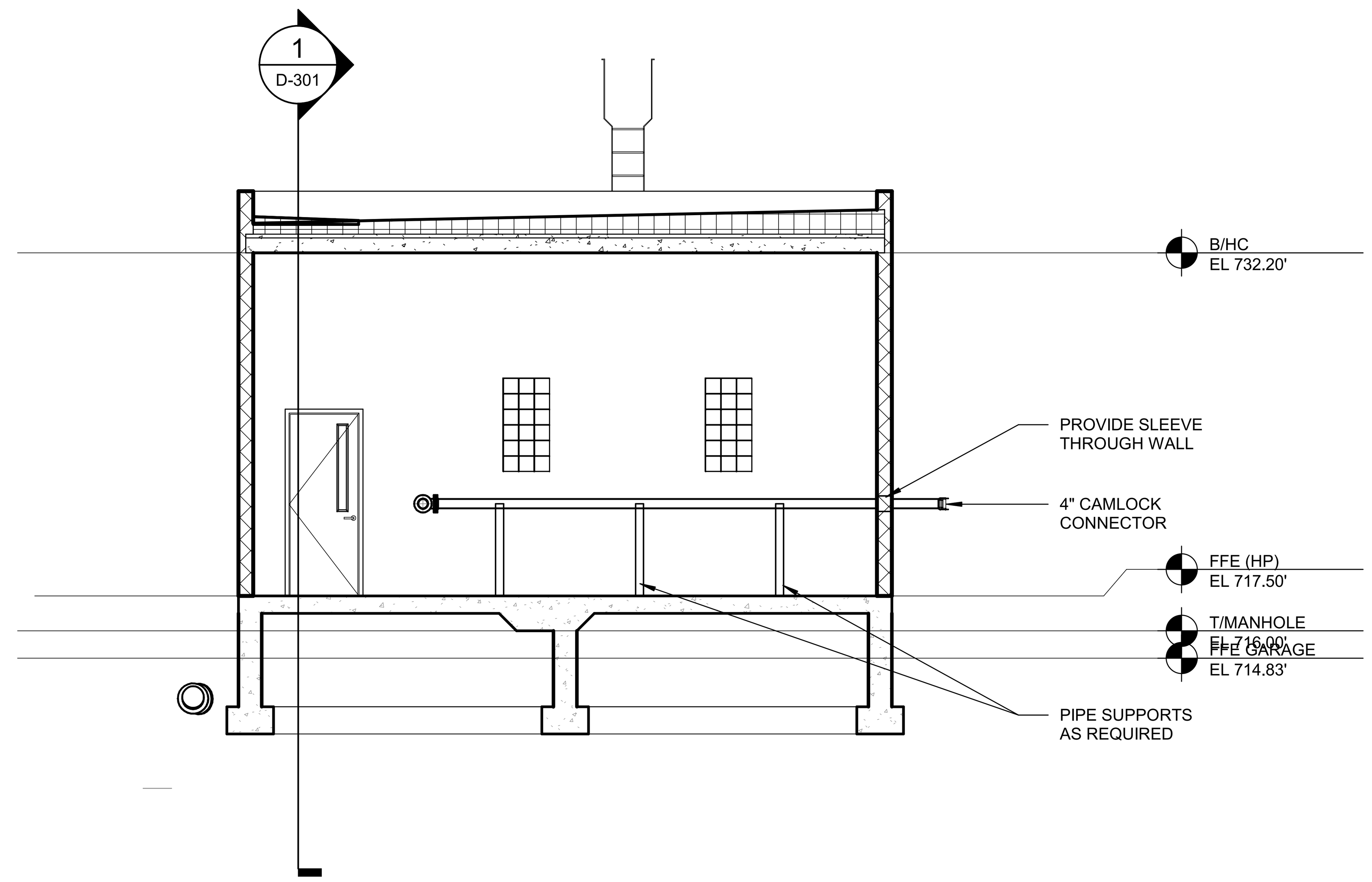
DIGESTER BUILDING FLOOR PLAN

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

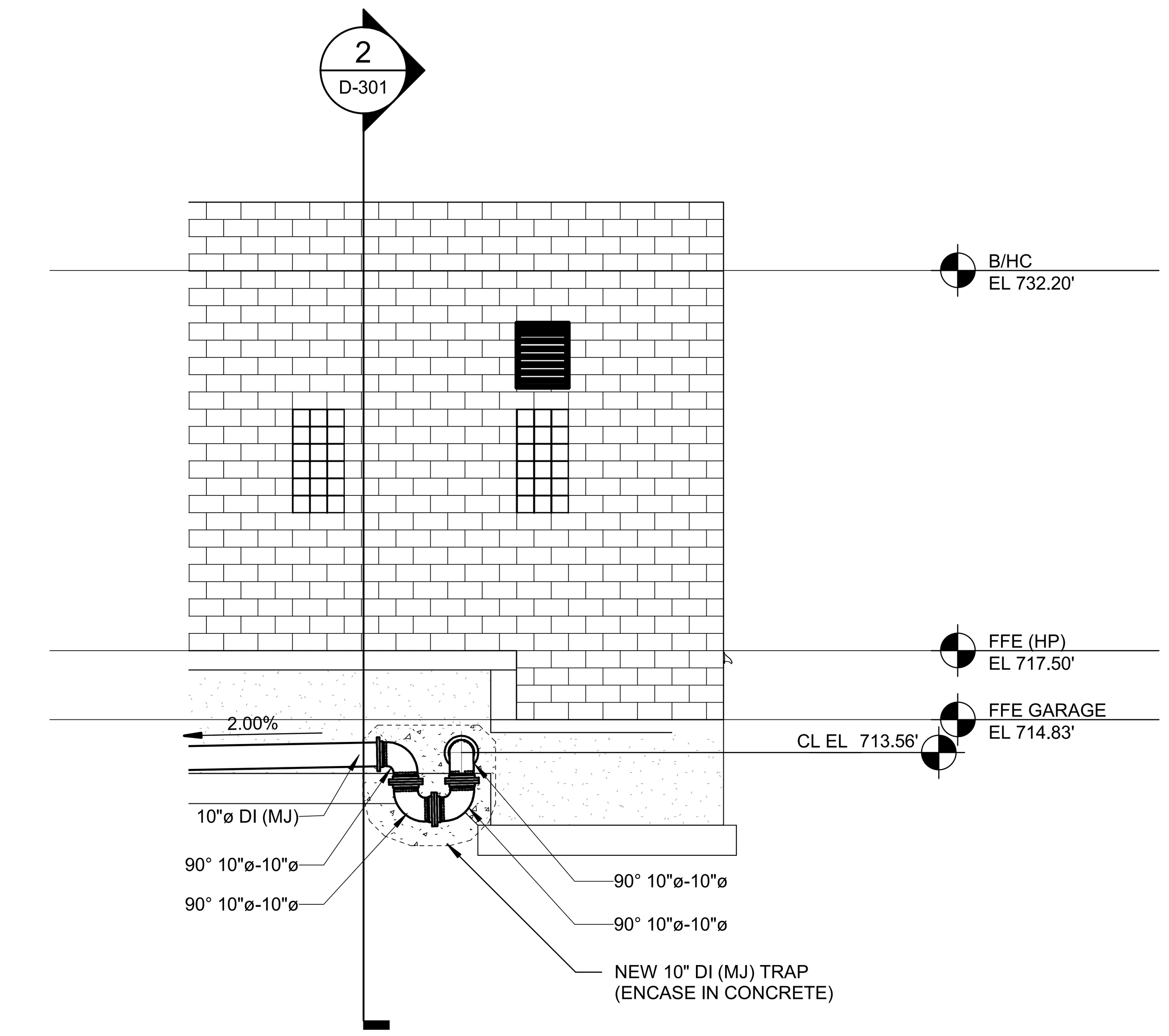
JOB NO. COF1076-01F

SHEET D-102

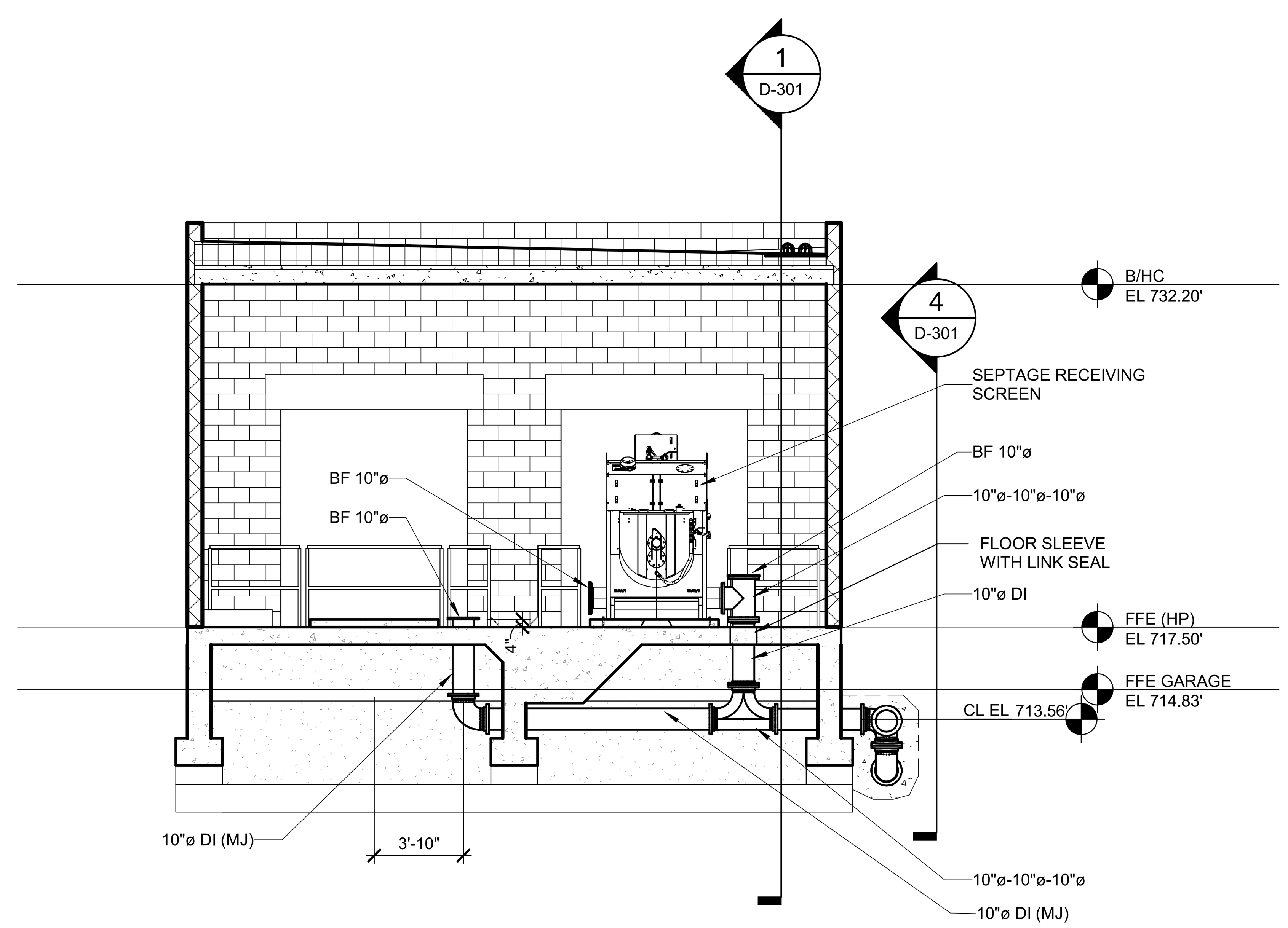
NOTES:
1. COAT ALL EXPOSED PROPOSED PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00.



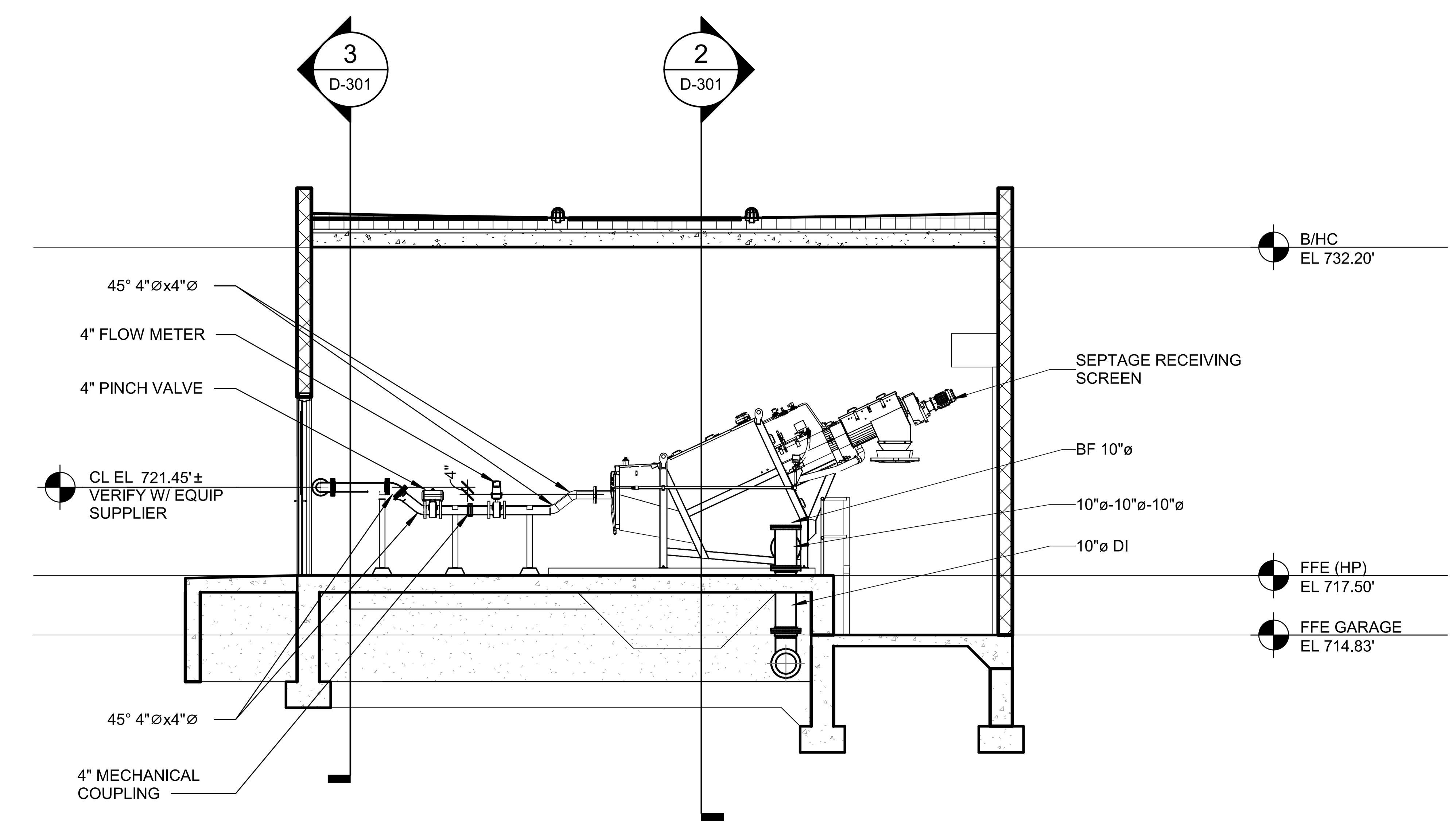
3 D-101 WASTE UNLOADING BUILDING - SECTION LOOKING SOUTH
SCALE: 3/16" = 1'-0"



4 D-101 WASTE UNLOADING BUILDING - SECTION LOOKING EAST AT NEW TRAP
SCALE: 3/16" = 1'-0"



2 D-101 WASTE UNLOADING BUILDING - SECTION LOOKING NORTH
SCALE: 3/16" = 1'-0"



1 D-101 WASTE UNLOADING BUILDING - SECTION LOOKING EAST
SCALE: 3/16" = 1'-0"

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

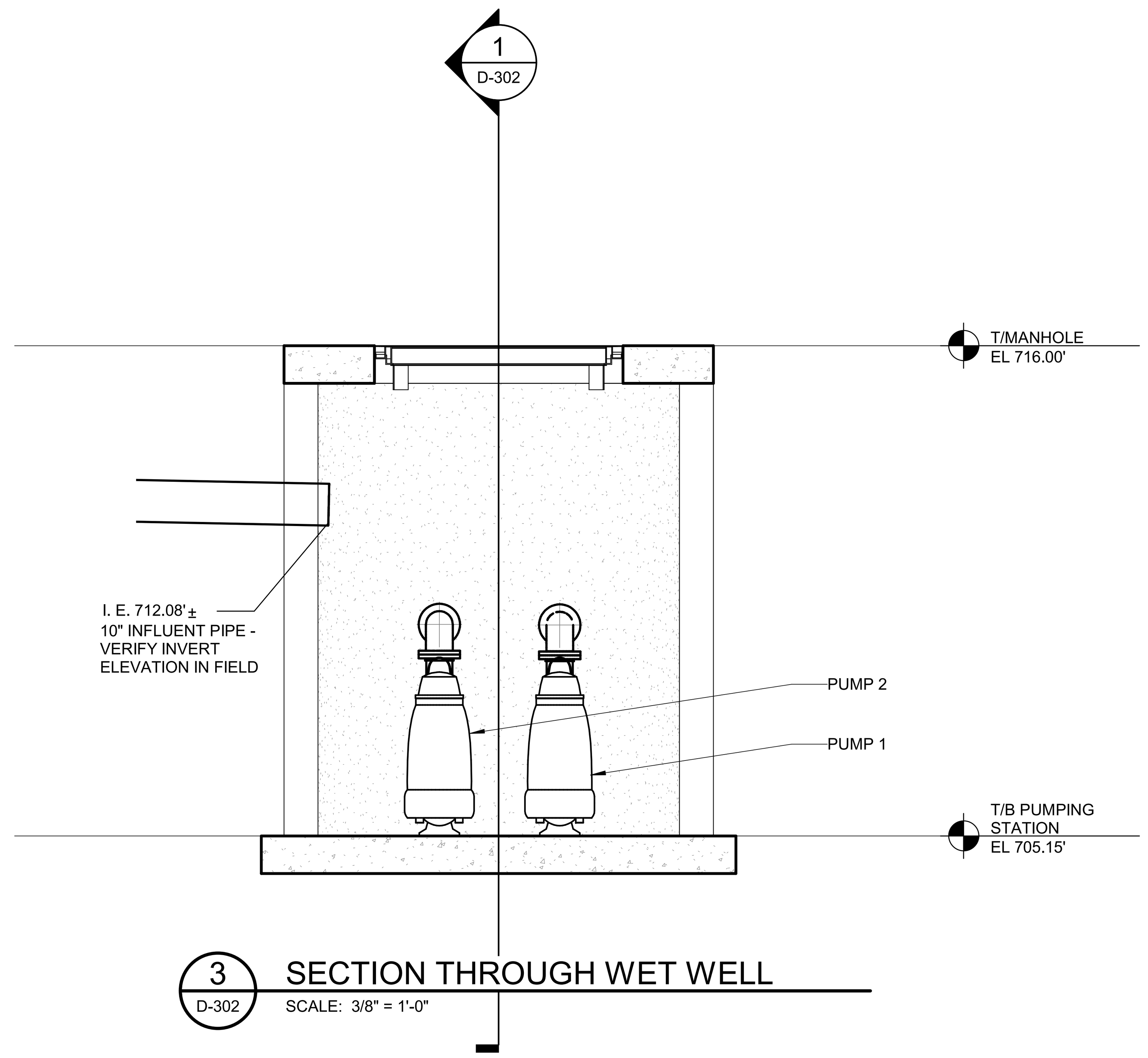
WASTE UNLOADING BUILDING SECTIONS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

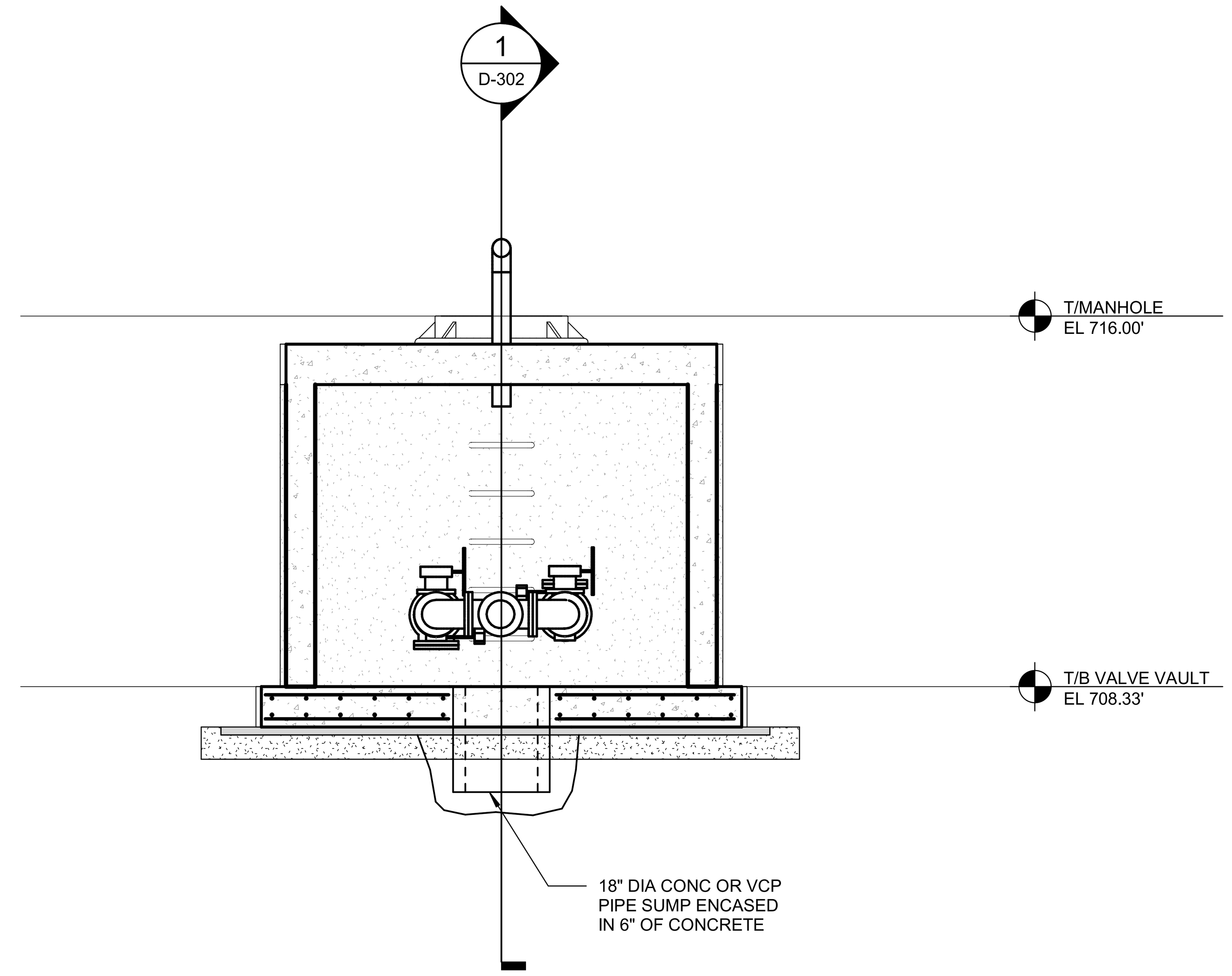
JOB NO. COF1076-01F

SHEET
D-301

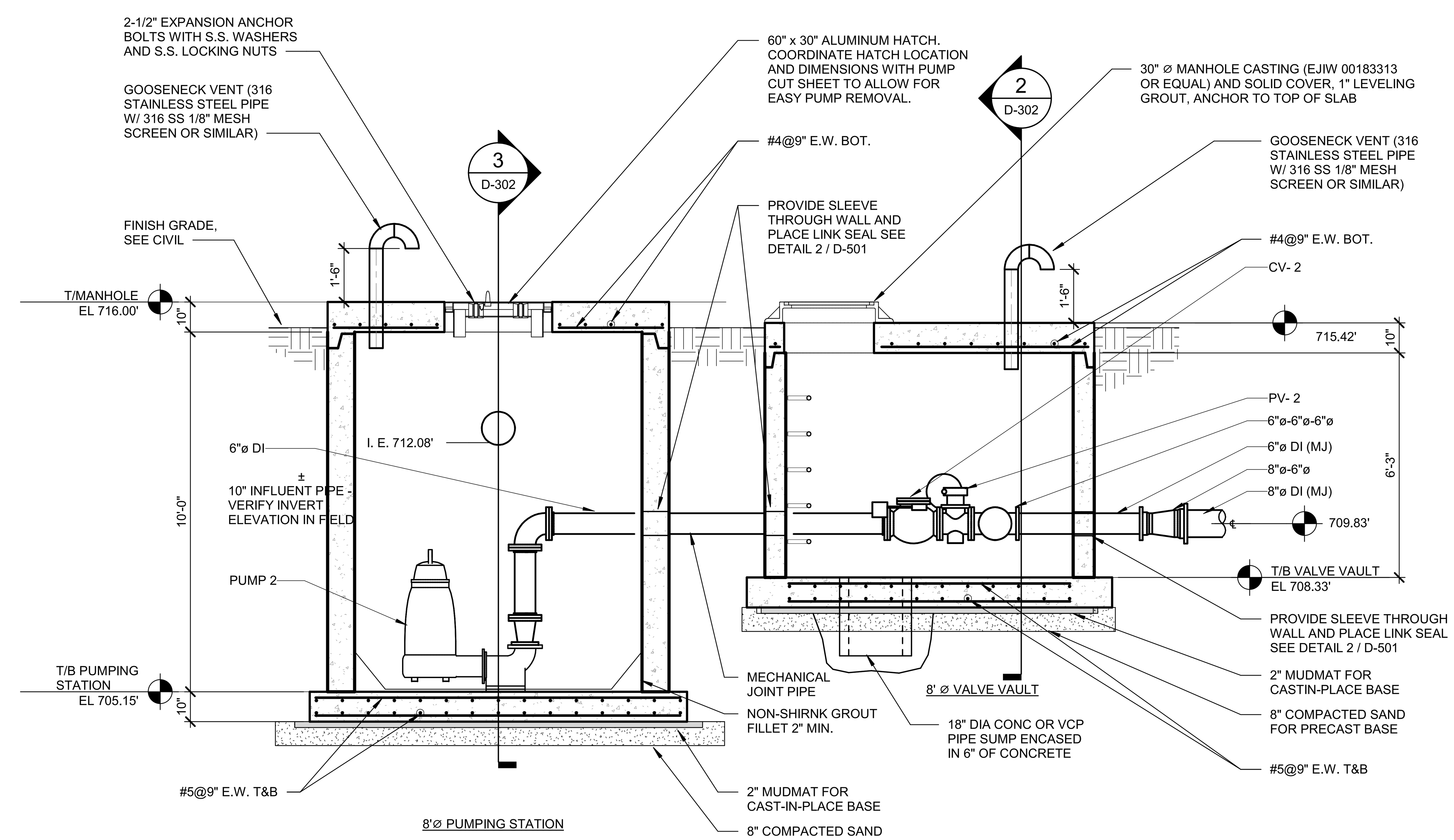
NOTES:
1. COAT ALL PROPOSED WET WELL AND VAULT PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00.



3 D-302 SECTION THROUGH WET WELL
SCALE: 3/8" = 1'-0"



2 D-302 SECTION THROUGH VALVE VAULT
SCALE: 3/8" = 1'-0"



1 D-302 SECTION THROUGH WET WELL AND VALVE VAULT
SCALE: 3/8" = 1'-0"

NOTES:

1. DIMENSIONS MARKED "X" ARE UNKNOWN AND ARE TO BE DETERMINED BY THE EQUIPMENT FURNISHED.
2. NO GROUND BURIED FLANGES.
3. ALL HATCHES TO BE LOCKABLE BY PADLOCK AND FLUSH WITH TOP SLAB ELEVATIONS.
4. ALL PIPING SUPPORTS AND MOUNTING HARDWARE SHALL BE STAINLESS STEEL IN THE WETWELL AREA.
5. 8'⌀ PUMPING STATION PRECAST MANHOLE SECTIONS (SEE SPECIFICATIONS).
6. 6'⌀ VALVE VAULT PRECAST MANHOLE SECTIONS (SEE SPECIFICATIONS).

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CITY OF FLINT
WPCF WASTE UNLOADING STATION
PUMP STATION AND VALVE VAULT SECTIONS AND DETAILS

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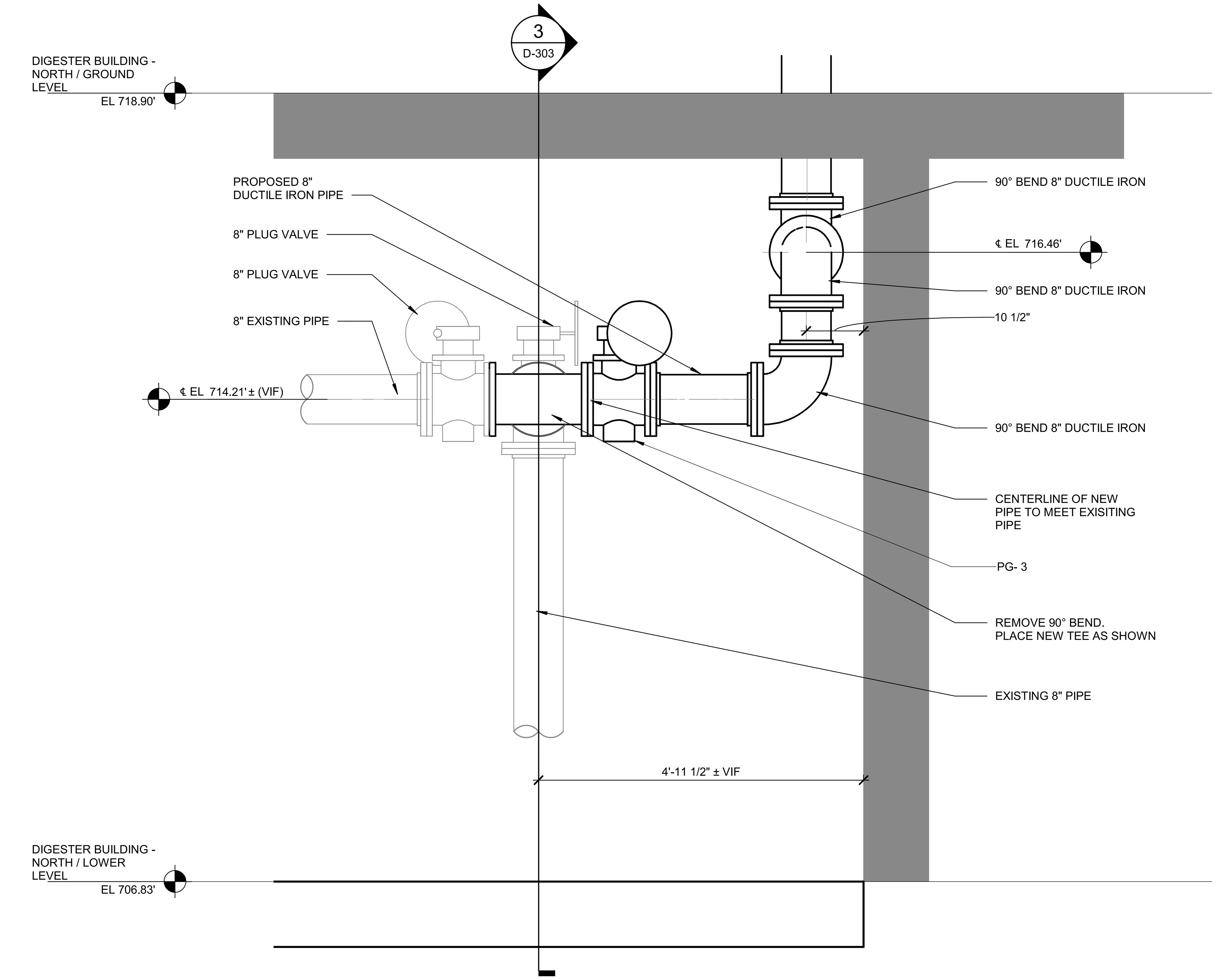
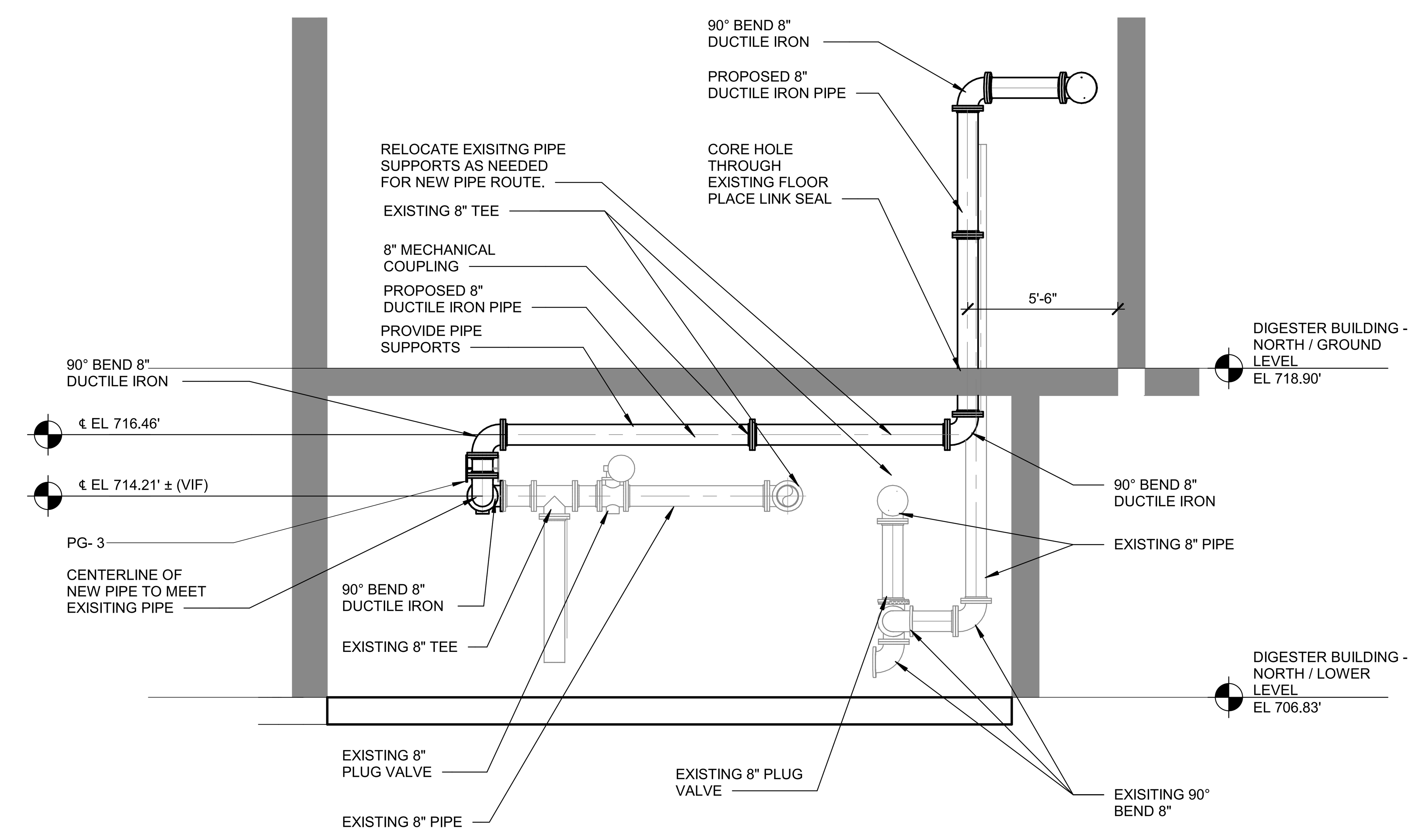
JOB NO. COF1076-01F

SHEET D-302

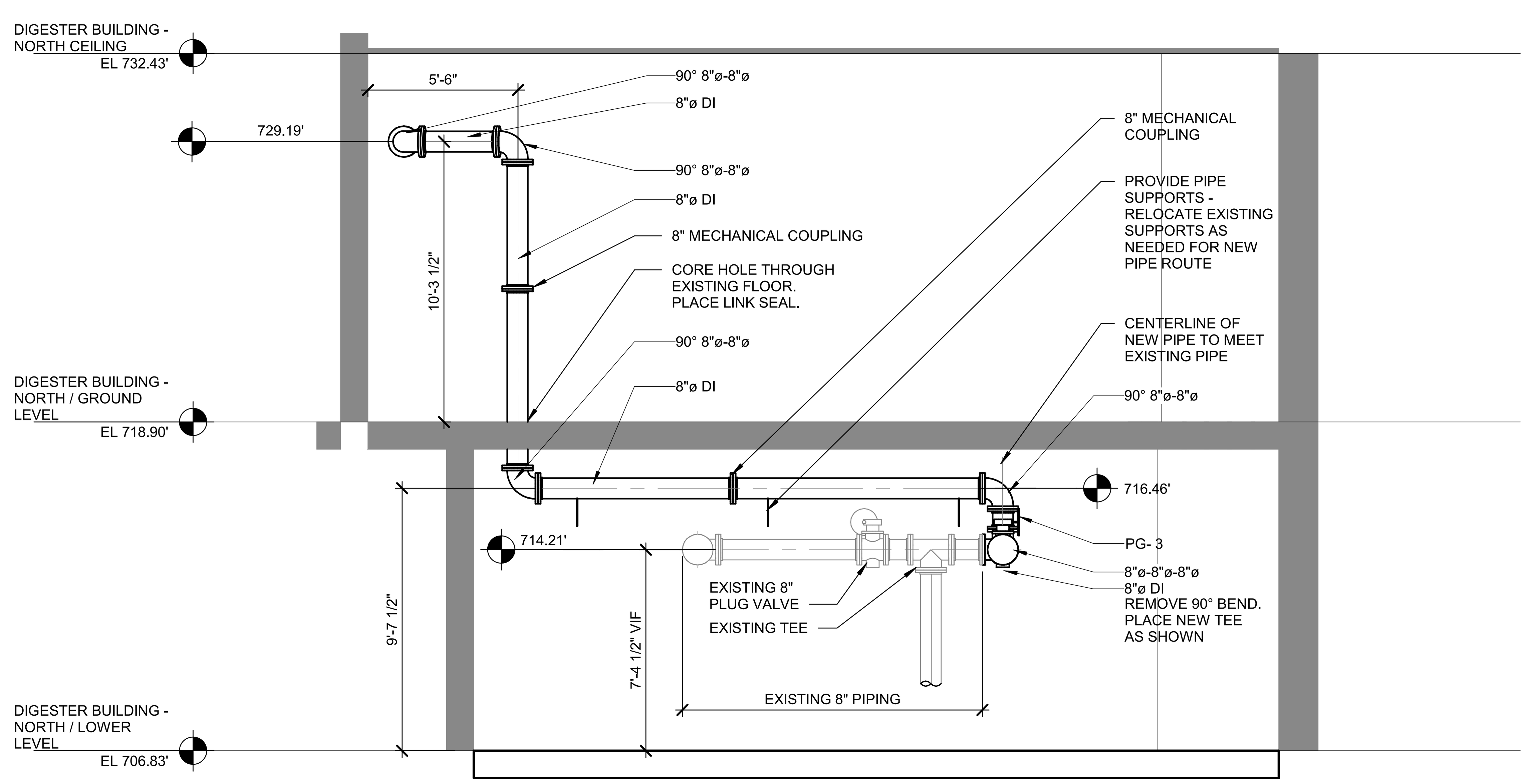
NOTES:
1. COAT ALL EXPOSED PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00



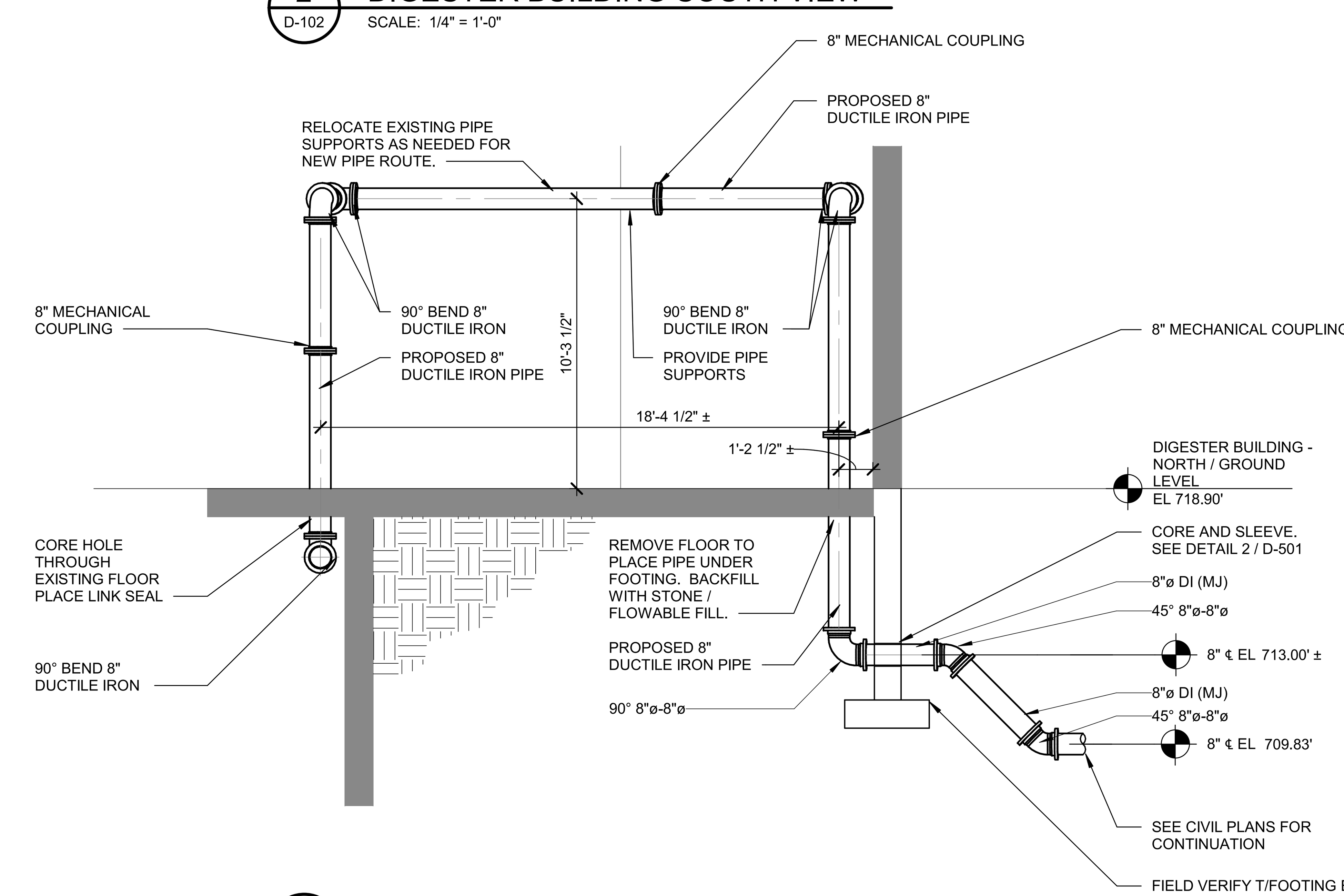
4 D-102 **DIGESTER BASEMENT PIPE CONNECTION**
SCALE: 3/4" = 1'-0"



2 D-102 **DIGESTER BUILDING SOUTH VIEW**
SCALE: 1/4" = 1'-0"



3 D-102 **DIGESTER BUILDING NORTH VIEW1**
SCALE: 1/4" = 1'-0"



1 D-102 **DIGESTER BUILDING WEST VIEW**
SCALE: 1/4" = 1'-0"

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CITY OF FLINT
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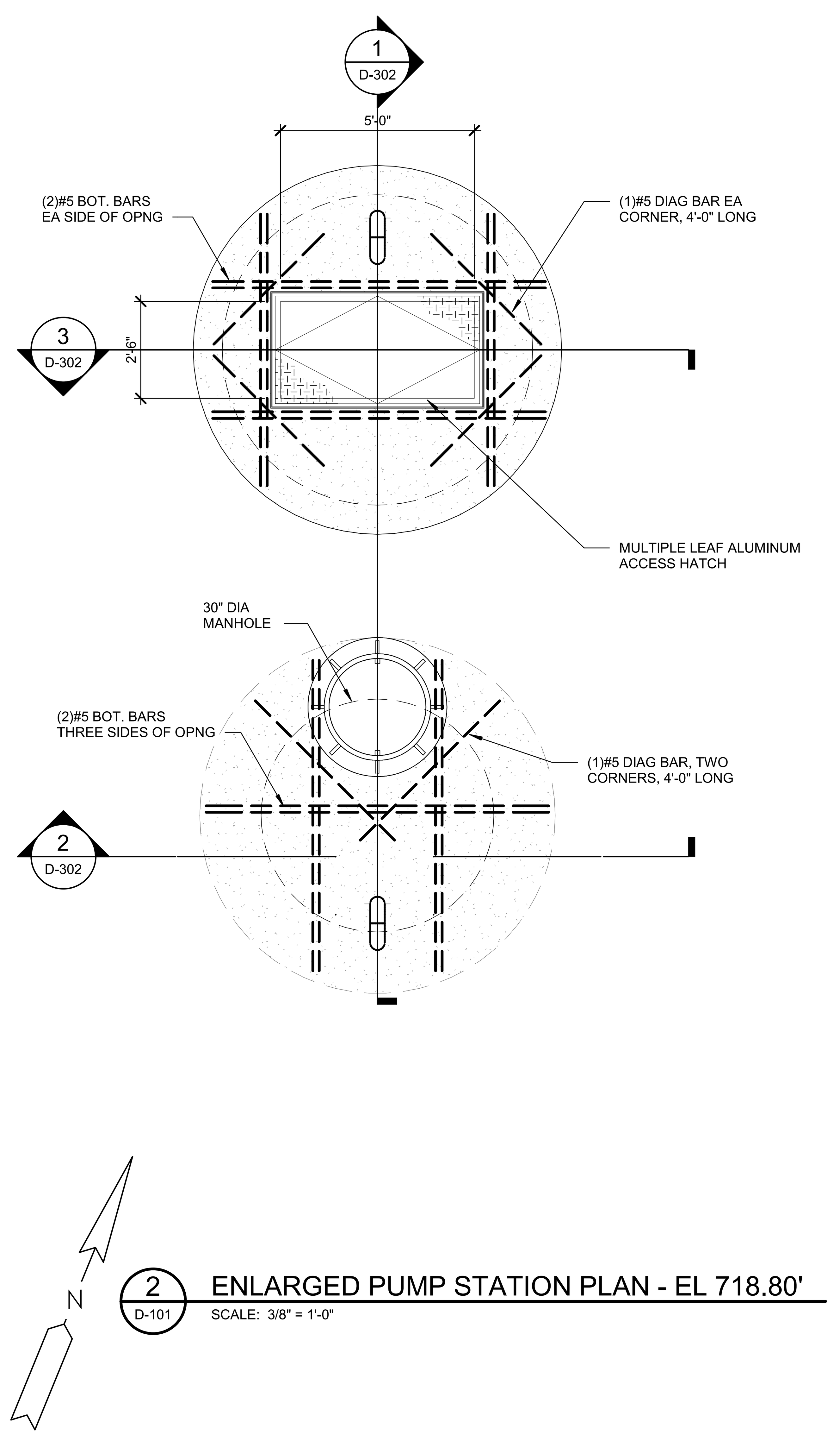
DIGESTER BUILDING SECTIONS AND DETAILS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

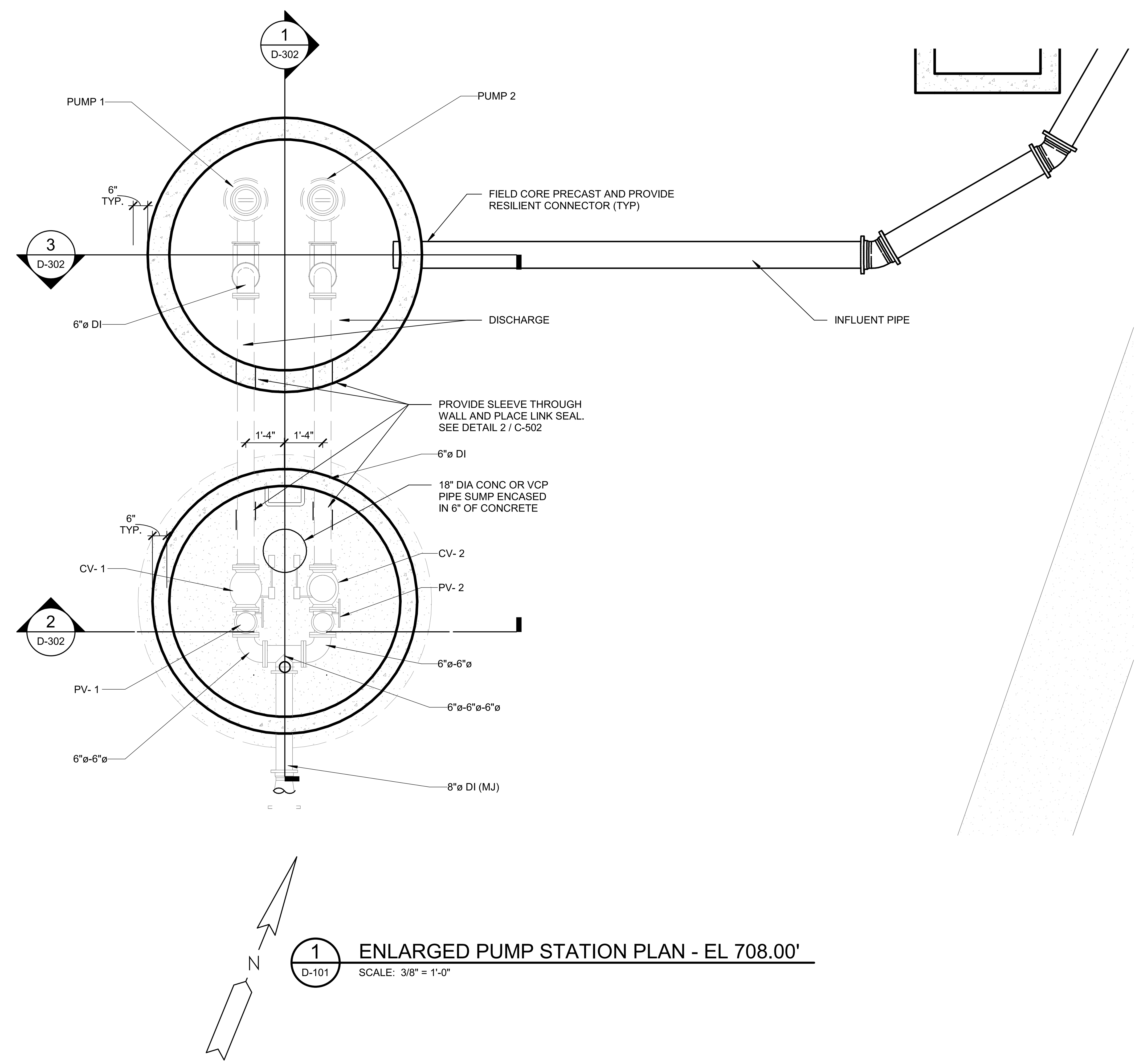
JOB NO. COF1076-01F

SHEET D-303

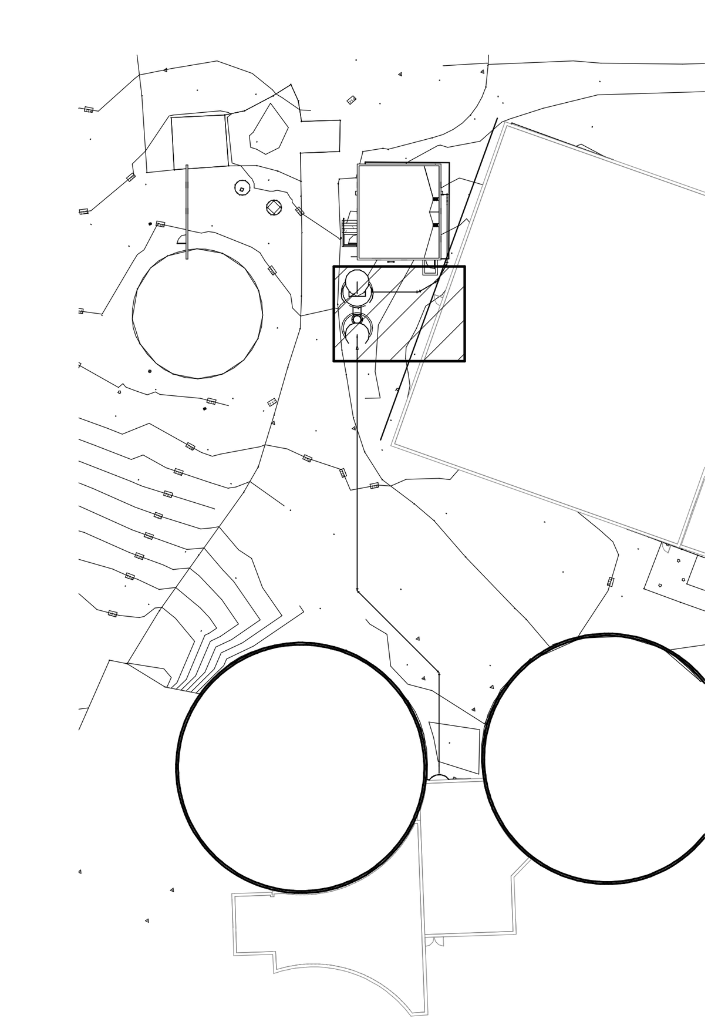
NOTES:
1. COAT ALL PROPOSED WET WELL AND VAULT PIPING AND RELATED APPURTENANCES IN ACCORDANCE WITH SECTION 09 96 00.



2 D-101 ENLARGED PUMP STATION PLAN - EL 718.80'
SCALE: 3/8" = 1'-0"



1 D-101 ENLARGED PUMP STATION PLAN - EL 708.00'
SCALE: 3/8" = 1'-0"



KEY PLAN
NOT TO SCALE

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

CITY of FLINT MICHIGAN

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www.wadetrim.com

HRC
HUBBELL, ROTH & CLARK, INC
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

PUMP STATION ENLARGED PLANS

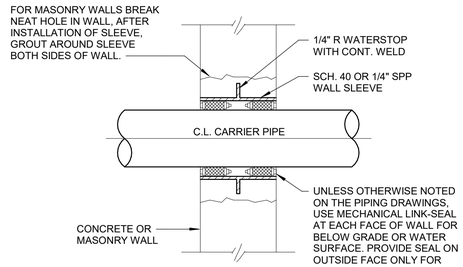
ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

JOB NO. COF1076-01F

SHEET D-401

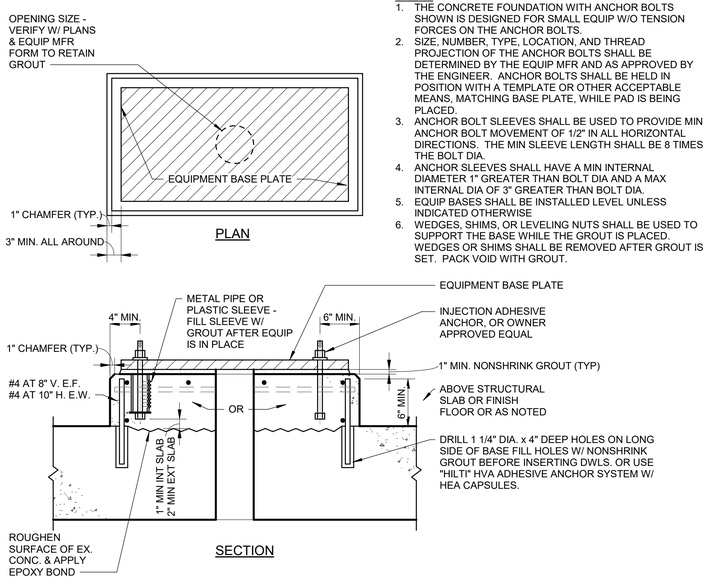
WADE TRIM	PIPE SCHEDULE			
SERVICE	SIZE	MATERIAL	JOINT	TEST PRESSURE
EXPOSED WASTE	4" - 10"	DIP	FL	50 PSI
BURIED WASTE	4" - 10"	DIP	MJ	50 PSI
BURIED WATER	4 "- 6"	DIP	MJ	100 PSI

WADE TRIM	VALVE SCHEDULE				
TYPE	SIZE	QUANTITY	JOINT	OPERATOR	LOCATION
PLUG	6"	2	FL	HANDWHEEL / GEAR	SUBMERSIBLE PUMP STATION
PLUG	8"	1	FL	CHAINWHEEL / GEAR	DIGESTER BUILDING - LOWER LEVEL
SWING CHECK	6"	2	FL	OUTSIDE LEVER	SUBMERSIBLE PUMP STATION
PINCH	4"	1	FL	MOTOR	SCREEN ROOM - BY SCREEN MANUFACTURER



TYPICAL PIPE/DUCT SLEEVE IN EXTERIOR WALL

NO SCALE



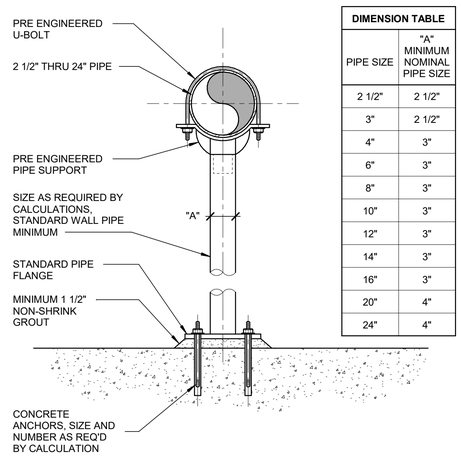
NOTES:
1. THE CONCRETE FOUNDATION WITH ANCHOR BOLTS SHOWN IS DESIGNED FOR SMALL EQUIP W/O TENSION FORCES ON THE ANCHOR BOLTS.
2. SIZE, NUMBER, TYPE, LOCATION, AND THREAD PROJECTION OF THE ANCHOR BOLTS SHALL BE DETERMINED BY THE EQUIP MFR AND AS APPROVED BY THE ENGINEER. ANCHOR BOLTS SHALL BE HELD IN POSITION WITH A TEMPLATE OR OTHER ACCEPTABLE MEANS, MATCHING BASE PLATE, WHILE PAD IS BEING PLACED.
3. ANCHOR BOLT SLEEVES SHALL BE USED TO PROVIDE MIN ANCHOR BOLT MOVEMENT OF 1/2" IN ALL HORIZONTAL DIRECTIONS. THE MIN SLEEVE LENGTH SHALL BE 8 TIMES THE BOLT DIA.
4. ANCHOR SLEEVES SHALL HAVE A MIN INTERNAL DIAMETER 1" GREATER THAN BOLT DIA AND A MAX INTERNAL DIA OF 3" GREATER THAN BOLT DIA.
5. EQUIP BASES SHALL BE INSTALLED LEVEL UNLESS INDICATED OTHERWISE
6. WEDGES, SHIMS, OR LEVELING NUTS SHALL BE USED TO SUPPORT THE BASE WHILE THE GROUT IS PLACED. WEDGES OR SHIMS SHALL BE REMOVED AFTER GROUT IS SET. PACK VOID WITH GROUT.

3 TYP — TYPICAL CONCRETE EQUIPMENT PAD

NOT TO SCALE

2 TYP — TYPICAL PIPE/DUCT SLEEVE IN EXTERIOR WALL

NOT TO SCALE



DIMENSION TABLE	
PIPE SIZE	"A" MINIMUM NOMINAL PIPE SIZE
2 1/2"	2 1/2"
3"	2 1/2"
4"	3"
6"	3"
8"	3"
10"	3"
12"	3"
14"	3"
16"	3"
20"	4"
24"	4"

NOTE:
SUBMIT FINAL DESIGN AND CALCULATIONS FOR SUPPORT AND ANCHORAGE AS SPECIFIED

1 TYP — PIPE SUPPORT - SADDLE PEDESTAL_NON-ADJUSTABLE

NOT TO SCALE

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

DETAILS AND SCHEDULES

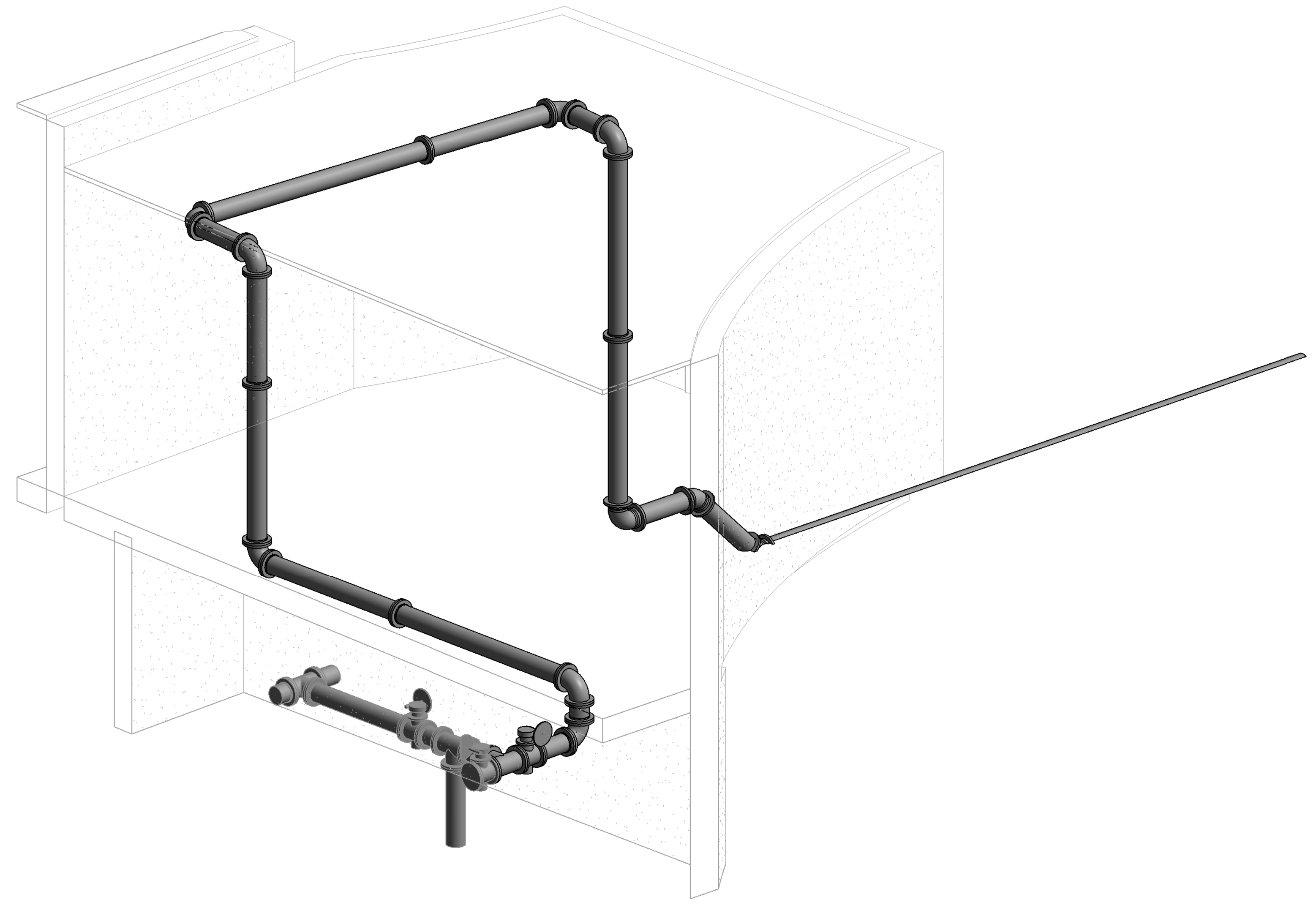
ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF1076-01F

SHEET D-501

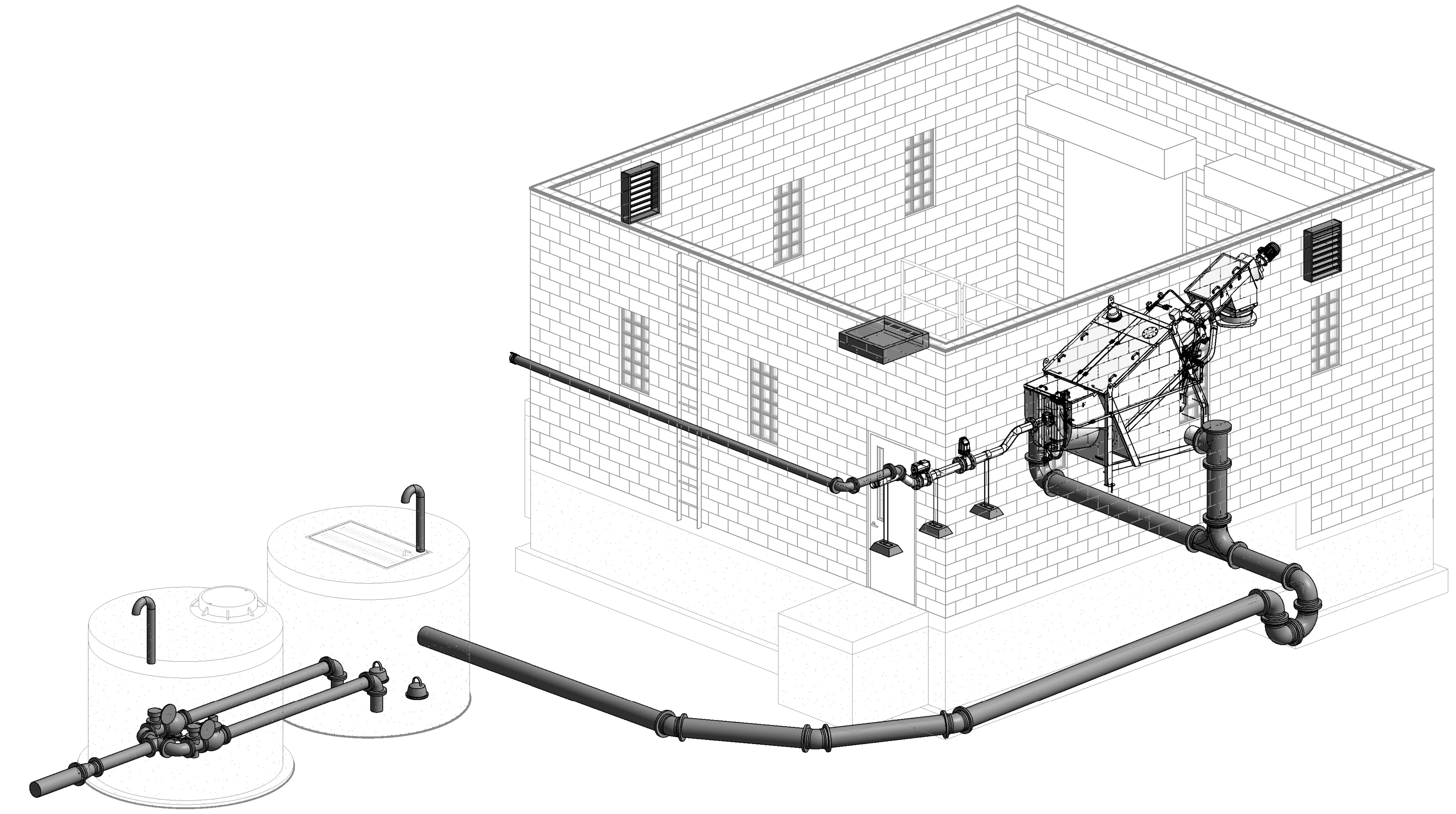
PLOTTED 7/6/2023 7:14:38 PM

BIM 360://COF1076-7-WPCFWU_WT_D_R21.rvt



3D ISO VIEW - DIGESTER BUILDING

NOT TO SCALE



3D ISO VIEW - SOLIDS UNLOADING AND PUMP STATION

NOT TO SCALE

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

3D REPRESENTATIONS

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET D-904

ABBREVIATIONS - HVAC

%RH	RELATIVE HUMIDITY
A/C GAS	AIR CONDITIONING REFRIGERANT
ACC	AIR COOLED CONDENSER
ACCU	AIR COOLED CONDENSING UNIT
ACD	ACCESS DOOR
ACP	ACCESS PANEL
AD	AUTOMATIC DAMPER
AD/PR	ACCESS DOOR / PRESSURE RELIEF
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AP	ALARM PANEL
APD	AIR PRESSURE DROP
AUX	AUXILLIARY
B	BOILER
BACNET	BUILDING AUTOMATION & CONTROLS NETWORK
BCU	BLOWER COIL UNIT
BF	BOOSTER FAN
BOD	BOTTOM OF DUCT
BOI	BOTTOM OF INSULATION
BOP	BOTTOM OF PIPE
BOT	BOTTOM
C	COMMON
CA	COMBUSTION AIR
CAV	CONSTANT AIR VOLUME
CC	CABINET CONVECTOR
CC	COOLING COIL
CD	CEILING DIFFUSER
CE	CEILING EXHAUSTER
CEF	CENTRIFUGAL FAN
CF	CABINET FAN
CLG	CEILING
CONC	CONCRETE
COND	CONDENSATE
CONT	CONTINUATION
CONTR	CONTRACTOR
CRD	CORROSION RESISTANT DUCT
CUH	CABINET UNIT HEATER
CV	CONTROL VALVE
CWF	CENTRIFUGAL WALL FAN
DB	DECIBEL
DF	DUCT FURNACE (GAS FIRED)
DG	DOOR GRILLE
DH	DOOR HEATER
DIA	DIAMETER
DN	DOWN
DSF	DESTRATIFICATION FAN
DWG	DRAWING
DX	DIRECT EXPANSION
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EBR	ELECTRIC BASEBOARD RADIATION
EC	ELECTRICAL CONTRACTOR
EDB	ENTERING DRY BULB
EDH	ELECTRIC DUCT HEATER
EF	EXHAUST FAN
EG	EXHAUST GRILLE
EH	ELECTRIC HUMIDIFIER
EH	EXHAUST HOOD
EHC	ELECTRIC HEATING COIL
EJ	EXPANSION JOINT
EL	ELEVATION
EL	EXHAUST LOUVER
ELECT	ELECTRICAL
EP	EXHAUST PLENUM
ER	EXHAUST REGISTER
ESP	EXTERNAL STATIC PRESSURE
EUH	ELECTRIC UNIT HEATER
EWB	ENTERING WET BULB
EWH	ELECTRIC WATER HEATER
EWT	ENTERING WATER TEMPERATURE
F	FILTER
FAT	FINAL AIR TEMPERATURE
FCU	FAN COIL UNIT
FD	FLOOR DRAIN
FF	FORCE FLOW CONVECTOR
FFE	FINISHED FLOOR ELEVATION
FL	FLOOR
FM	FLOW METER
FO	FLOOR OPENING
FS	FREEZE STAT
FT	FINNED TUBE RADIATION
FVV	FAN POWERED VAV BOX
FW	FIRE WATER
GC	GENERAL CONTRACTOR
GUH	GAS UNIT HEATER
GV	GRAVITY VENTILATOR
GWH	GAS WATER HEATER
HC	HEATING COIL
HCU	HEATING & COOLING UNIT
HD	HEAT DETECTOR
HORIZ	HORIZONTAL
HRC	HEAT RECOVERY COIL
HRP	HEAT RECOVERY PUMP

ABBREVIATIONS - HVAC

HRU	HEAT RECOVERY UNIT
HTX	HEAT EXCHANGER
HUH	HYDRONIC UNIT HEATER
HUM	HUMIDIFIER
HV	HEATING AND VENTILATING UNIT
HVAC	HEATING, VENTILATING & AIR CONDITIONING UNIT
HZ	HERTZ
ID	INSIDE DIAMETER
IE	INVERT ELEVATION
IF	INLINE FAN
IH	INTAKE HOOD
KW	KILOWATT
LAT	LATENT
LDB	LEAVING DRY BULB
LWB	LEAVING WET BULB
LWT	LEAVING WATER TEMPERATURE
MAU	MAKEUP AIR UNIT
MAX	MAXIMUM
MB	MIXING BOX
MC	MECHANICAL CONTRACTOR
MCC	MOTOR CONTROL CENTER
MID	MIDDLE
MIN	MINIMUM
MOD	MOTOR CONTROL DAMPER
N/A	NOT APPLICABLE
NC	NORMALLY CLOSED
NG	NATURAL GAS
NGV	NATURAL GAS VENT
NIC	NOT IN CONTRACT
NK	NECK
NO	NORMALLY OPEN
NPW	NON-POTABLE WATER
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OAIL	OUTSIDE AIR INTAKE LOUVER
OAK	OUTSIDE AIR INTAKE
OD	OUTSIDE DIAMETER
P	PUMP
PH	PENTHOUSE
PHC	PREHEAT COIL
PRV	PRESSURE REDUCING VALVE
RA	RETURN AIR
RAG	RETURN AIR GRILLE
RAR	RETURN AIR REGISTER
RF	ROOF FAN
RF	RETURN FAN
RH	RELIEF HOOD
RV	ROOF VENTILATOR
SA	SUPPLY AIR
SAD	SUPPLY AIR DIFFUSER
SD	SMOKE DETECTOR
SDI	SMOKE DETECTOR IONIZATION
SF	SUPPLY FAN
SM	SHEET METAL
SP	STATIC PRESSURE
SPEC	SPECIFICATIONS
SQ	SQUARE
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
SST	SATURATED SUCTION TEMPERATURE
SUH	STEAM UNIT HEATER
SUMPP	SUMP PUMP
TA	TRANSFER AIR
TAG	TRANSFER AIR GRILLE
TCC	TEMPERATURE CONTROL CONTRACTOR
TCP	TEMPERATURE CONTROL PANEL
TD	TEMPERATURE DIFFERENCE
TEMP	TEMPERATURE
TOD	TOP OF DUCT
TOP	TOP OF PIPE
TOS	TOP OF STEEL
TSP	TOTAL STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
V	VENT
VAV	VARIABLE AIR VOLUME
VEL	VELOCITY
VERT	VERTICAL
VFD	VARIABLE FREQUENCY DRIVE
VP	VELOCITY PRESSURE
VTR	VENT THROUGH ROOF
VU	VENTILATION UNIT
W	WIDTH
WCC	WATER COOLED CONDENSING UNIT
WCO	WALL CLEANOUT
WD	WALL DIFFUSER
WF	WALL FAN
WG	WALL GRILLE
WMS	WIRE MESH SCREEN
WO	WALL OPENING
WPD	WATER PRESSURE DROP

DUCTWORK LEGEND

DOUBLE LINE	RECTANGULAR DUCT	DOUBLE LINE	ROUND DUCT
12X6	DUCT SIZE (INSIDE DIMENSIONS) FIRST FIGURE IS SIDE SHOWN	12"ø	DUCT SIZE (DIAMETER)
24x12	SUPPLY DUCT		FLEXIBLE DUCT
24x12	RETURN DUCT		DUCT TURNING TOWARD VIEWER
12x12	EXHAUST DUCT		DUCT TURNING AWAY FROM VIEWER
	FLEXIBLE CONNECTION IN DUCTWORK		ROUND ELBOW
	SUPPLY DUCT TURNING TOWARD VIEWER RECTANGULAR ELBOW		MITER ELBOW
	SUPPLY DUCT TURNING TOWARD VIEWER RADIUS ELBOW		
	SUPPLY DUCT TURNING AWAY VIEWER RECTANGULAR ELBOW		MITER ELBOW W/TURNING VANES
	SUPPLY DUCT TURNING AWAY VIEWER RADIUS ELBOW		VOLUME DAMPER
	RETURN DUCT TURNING TOWARD VIEWER RECTANGULAR ELBOW	M	M - MOTORIZED DAMPER
	RETURN DUCT TURNING TOWARD VIEWER RADIUS ELBOW		BG - BLAST GATE
	RETURN DUCT TURNING AWAY VIEWER RECTANGULAR ELBOW		
	RETURN DUCT TURNING AWAY VIEWER RADIUS ELBOW	20°MAX.	TRANSITION
	EXHAUST DUCT TURNING TOWARD VIEWER RECTANGULAR ELBOW		SQUARE TO ROUND TRANSITION
	EXHAUST DUCT TURNING TOWARD VIEWER RADIUS ELBOW		BELLMOUTH CONNECTION
	EXHAUST DUCT TURNING AWAY VIEWER RECTANGULAR ELBOW		TEE CONNECTION
	EXHAUST DUCT TURNING AWAY VIEWER RADIUS ELBOW		Y CONNECTION
	DUCT ELBOWS		Y-SPLIT (EQUAL SIZE ONLY)
	ELBOW WITH TURNING VANES		
	RADIUS ELBOW W/VANES		
20°MAX. / 30°MAX.	TRANSITION IN DIRECTION OF AIR FLOW		
M	VOLUME DAMPER		
	M - MOTORIZED DAMPER		

T	AIR FLOW, TRANSFER
	AIR FLOW, SUPPLY, OUTSIDE AIR
	AIR FLOW, EXHAUST, RETURN
L	LOUVER IN DOOR
U	UNDERCUT DOOR
	LINDIF
	INLET VANES
H	HUMIDISTAT - WALL MOUNTED
T	THERMOSTAT - WALL MOUNTED
	THERMOSTAT - UNIT MOUNTED
F	FIRE DAMPER 1 1/2 HOUR RATING
F	FIRE DAMPER 2 HOUR RATING
TT	TEMPERATURE TRANSMITTER
H	HUMIDIFICATION SENSOR
CO2	CARBON DIOXIDE SENSOR

SD	SMOKE DETECTOR
P	PRESSURE SENSOR
BDD	BACKDRAFT DAMPER
	FAN
+	HEATING COIL
−	COOLING COIL

GENERAL HVAC NOTES

A	REFER TO SPECIFICATION SECTIONS FOR SPECIFIC MATERIAL AND INSTALLATION DATA
B	COORDINATE THIS WORK WITH WORK BY OTHER CONTRACTORS
C	COORDINATE ALL WALL AND ROOF PENETRATIONS WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS
D	COORDINATE AIR DEVICE PLACEMENT WITH LIGHTS AND CEILINGS
E	MODIFICATIONS IN DUCT ROUTINGS MUST BE APPROVED BY OWNER'S REPRESENTATIVE
F	INSTALL VOLUME DAMPERS AT ALL AIR DEVICE BRANCH CONNECTIONS
G	COORDINATE WITH TEST AND BALANCE CONTRACTOR TO ENSURE PROPER PLACEMENT OF VOLUME DAMPERS
H	PROVIDE ACCESS DOORS AT ALL FIRE DAMPERS AND OUTSIDE AIR FLOW MEASURING STATIONS
J	DUCT ELBOWS: 1. RECTANGULAR DUCT ELBOWS MAY BE RADIUS OR MITERED AND SHALL COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", FIGURE 4-2, "RECTANGULAR ELBOWS". 2. ROUND DUCT ELBOWS MAY VARY IN RADIUS-TO-DIAMETER RATIO, BUT MUST COMPLY WITH SMACNA'S "HVAC DUCT CONSTRUCTION STANDARDS - METAL AND FLEXIBLE", FIGURE304, "ROUND DUCT ELBOWS".
K	APPROXIMATE. SEE EQUIPMENT CERTIFIED DRAWINGS FOR EXACT DIMENSIONS
L	PROVIDE FIRE STOPPING AROUND ALL PENETRATIONS THROUGH FIRE RATED WALLS AND ROOFS
M	DUCTWORK SHALL BE STAINLESS STEEL, CONSTRUCTED PER LATEST EDITION OF THE SMACNA AND ASHRAE STANDARDS. ALL DUCTWORK JOINTS AND LONGITUDINAL SEAMS SHALL BE SEALED SMACNA CLASS "A". INSULATED, CLASS 1 FLEXIBLE DUCTWORK SHALL BE USED FOR CONNECTIONS FROM LOW AND MEDIUM PRESSURE TRUNK DUCTWORK TO ALL FAN TERMINAL UNITS AND DIFFUSERS. 1. PROVIDE END CAPS, AS REQUIRED, NOT SPECIFICALLY CALLED OUT ON DRAWINGS 2. ALL DUCT SIZES ARE IN INCHES
N	COORDINATE AND FIELD VERIFY LOCATION AND SIZES OF DUCTWORK. LOUVER AND DUCT ACCESSORIES WITH ACTUAL OPENINGS PROVIDED BY OTHERS
P	VERIFY ALL DIMENSIONS PRIOR TO FABRICATION OF PLENUMS, DUCTWORK, DUCT HANGERS/ SUPPORTS
Q	DENOTES EQUIPMENT, PIPE & DUCT AREAS OF DEMOLITION.
R	UNIT HEATERS TO BE INSTALLED 8'-0" A.F.F. UNLESS NOTED OTHERWISE.
S	ALL UNUSED PORTIONS OF LOUVERS FOR MECHANICAL EQUIPMENT OPENINGS SHALL BE BLOCKED-OFF USING INSULATED SHEET METAL PANELS UNLESS OTHERWISE INDICATED.
T	LINE ALL SUPPLY AND RETURN DUCT THE FIRST 15' FROM THE AIR HANDLER
U	COORDINATE LOCATION OF THERMOSTATS WITH LIGHT SWITCHES. LOCATE THERMOSTAT ON SAME WALL AS SWITCH.

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

HVAC GENERAL NOTES, SYMBOLS, AND ABBREVIATIONS

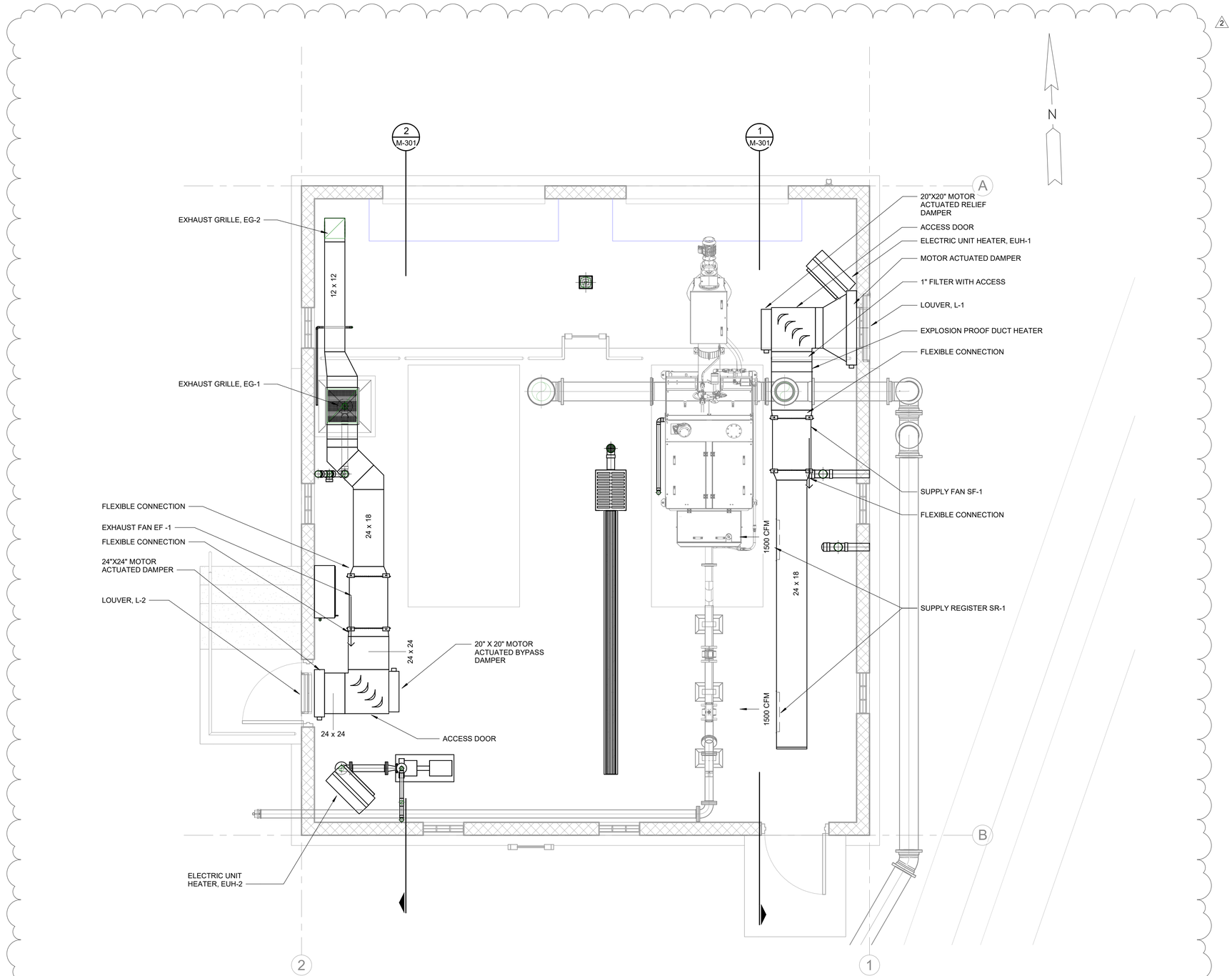
ISSUED FOR: BIDS | DATE: 2023.06.24 | BY: TSW

JOB NO. COF10760-1F

SHEET M-001

PLOTTED: 7/10/2023 11:17:53 AM

BIM 360://COF-1076-7-WPCF/WU_WT_M_R21.rvt



HVAC PLAN

SCALE: 3/8" = 1'-0"

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1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

HVAC PLAN

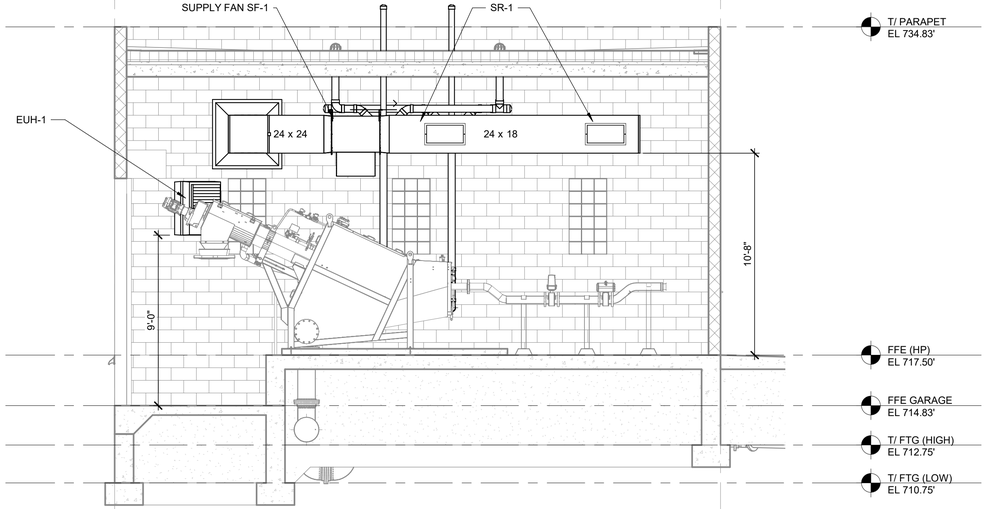
ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF10760-1F

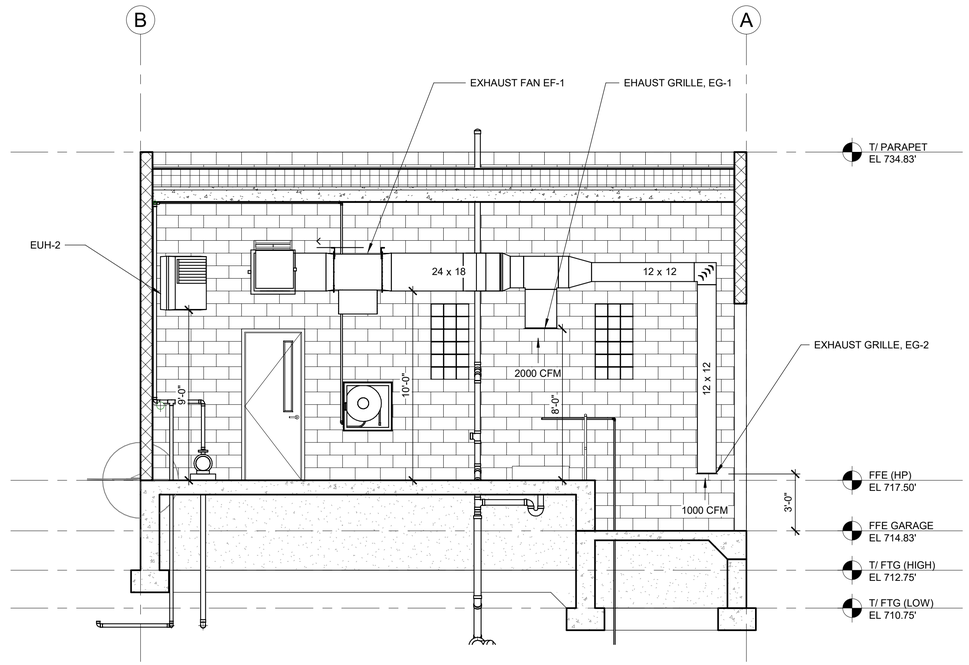
SHEET M-101

PLOTTED: 7/10/2023 11:18:16 AM

BIM 360://COF1076-7-WPCF/WU_WT_M_R21.rvt



1 M-301 SECTION 1
SCALE: 1/4" = 1'-0"



2 M-301 SECTION 2
SCALE: 1/4" = 1'-0"

REV#	DATE	DESCRIPTION	BY
1	2023.07.08	ADDENDUM 1	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

HVAC SECTIONS

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF10760-1F

SHEET
M-301

PLOTTED: 7/10/2023 11:18:29 AM

BIM 360://COF1076-7-WPCFWU_WT_M_R21.rvt

FAN SCHEDULE

TAG	QUANTITY	LOCATION	SERVICE	CFM	ESP (IN W.G.)	DRIVE	MOTOR	MANUFACTURER	MODEL	REMARKS
EF-1	1	WASTE UNLOADING	EXHAUST	3000	1.0	BELT	3 HP 460V, 3 PHASE	GREENHECK	QEI-16	ALL
SF-1	1	WASTE UNLOADING	SUPPLY	3000	1.0	BELT	3 HP 460V, 3 PHASE	GREENHECK	QEI-16	ALL

REMARKS:
1. PROVIDE NEMA 7 AND 9 DISCONNECT SWITCH PREWIRED.
2. PROVIDE INDUSTRIAL EPOXY COATING, GRAY
3. ALUMINUM MOTOR COVER
4. STAINLESS STEEL SHAFT
5. ALUMINUM HOUSING
6. TEFC PREMIUM EFFICIENCY MOTOR
7. GRIP NOTCH BELTS
8. ONE SPARE SET OF BELTS
9. BEARING AND GREASE FITTING
10. WIRING PIGTAIL
11. SPRING ISOLATORS
12. EXTENDED LUBE LINES
13. 2 YEAR WARRANTY
14. ALL STAINLESS STEEL FASTENERS
15. AUTO BELT TENSIONER
16. DUCT MOUNTED SMOKE DETECTOR, 120V

AIR DISTRIBUTION SCHEDULE

TAG	DESCRIPTION	SIZE	MATERIAL	SS DAMPER	BORDER FRAME TYPE	MAX. PRESSURE DROP	MAX N.C.	MANUFACTURERER	MODEL
SR-1	RECTANGULAR SUPPLY REGISTER SHALL BE OPERABLE FROM FACE OF DIFFUSER	24" X 12"	316 SS	YES	DUCT MOUNT	0.10	30	TITUS	300RS-SS
EG-1	1/2" X 1/2" X 1/2" EGGCRATE TYPE EXHAUST AIR GRILLE	20" X 18"	316 SS	YES	DUCT MOUNT	0.10	30	TITUS	50R-SS
EG-2	1/2" X 1/2" X 1/2" EGGCRATE TYPE EXHAUST AIR GRILLE	12" X 12"	316 SS	YES	DUCT MOUNT	0.10	30	TITUS	50R-SS

WALL MOUNTED LOUVER SCHEDULE

TAG	QUANTITY	SIZE	MATERIAL	CFM	MAX VELOCITY	MAX. PRESSURE DROP (IN W.G.)	FREE AREA (SQ FT)	BLADE ANGLE	FRAME DEPTH	MANUFACTURER	MODEL	REMARKS
L-1	1	36" x 38"	EXTRUDED ALUMINUM	2860	1120	0.10	2.69	45	4"	RUSKIN	ELF445DXH	1,2,3,4
L-2	1	36" X 36"	EXTRUDED ALUMINUM	2860	1120	0.10	2.69	45	4"	RUSKIN	ELF445DXH	1,2,3,4

REMARKS:
1. FINISH COLOR SELECTED BY OWNER. COORDINATE WITH ARCHITECT.
2. PROVIDE SILL EXTENSION.
3. PROVIDE ALUMINUM BIRD SCREEN.

ELECTRICAL UNIT HEATER SCHEDULE

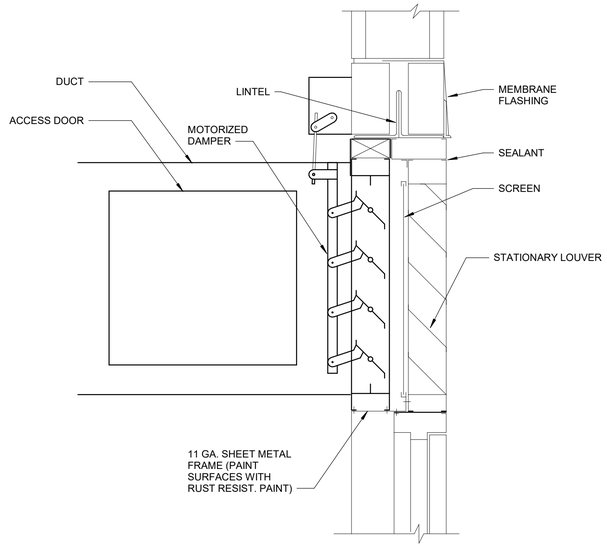
TAG	LOCATION	VOLTS/PHASE	HEATING	MANUFACTURER	REMARKS
EUH-1,2	WASTE UNLOADING	480/3	20 kW (EACH)	MODINE	EXPLOSION PROOF

HEATING AND VENTILATING SEQUENCE

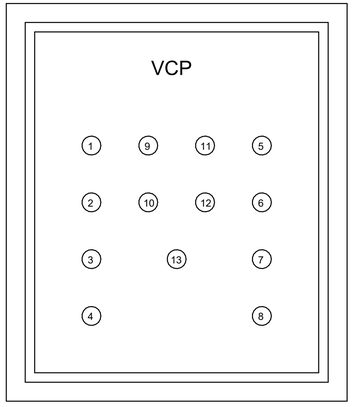
1. SF-1 AND EF-1 WILL PROVIDE 12 ACH WHEN OCCUPIED.
2. SF-1 AND SF-1 MOTOR ACTUATED DAMPER ARE INTERLOCKED WITH EF-1 AND EF-1 MOTOR ACTUATED DAMPER.
3. SF-1 AND EF-1 SET TO AUTO: SF-1 AND EF-1 MOTOR ACTUATED DAMPERS OPEN, SF-1 AND EF-1 ENERGIZE.
4. IN THE EVENT SF-1 OR EF-1 IS NOT FUNCTIONAL, THE CORRESPONDING BYPASS MOTOR ACTUATED DAMPER WILL OPEN, ALLOWING AIR TO ENTER OR EXIT THE SPACE WITH ONLY ONE FAN BEING OPERATIONAL.
5. WHEN THE SPACE IS UNOCCUPIED, SF-1 AND EF-1 WILL ENERGIZE WHEN THE TEMPERATURE IN THE ROOM REACHES 90 DEG F TO CIRCULATE AIR.
6. WHEN THE SPACE DROPS TO 55 DEG F, EUH-1, EUH-2, AND THE DUCT HEATER WILL ENERGIZE, PROVIDING HEATING.
7. EUH-1, EUH-2 AND THE DUCT HEATER WILL TURN OFF WHEN THE TEMPERATURE IN THE SPACE RISES TO 70 DEG F.

HEATING AND VENTILATING NOTES

1. CONTRACTOR TO SUBMIT DUCTWORK LAYOUT DRAWING.
2. CONTRACTOR TO SUBMIT PROPOSED WALL OPENING AND WALL SEALING DETAIL, COORDINATING WITH ARCHITECTURAL AND STRUCTURAL.
3. CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR ALL COMPONENTS LISTED IN SCHEDULES AND DRAWINGS.



WALL LOUVER DETAIL
COORDINATE WITH ARCHITECTURAL AND STRUCTURAL



1. SF-1 SMOKE
2. SF-1 FAULT
3. SF-1 RUN
4. SF-1 HOA
5. EF-1 SMOKE
6. EF-1 FAULT
7. EF-1 RUN
8. EF-1 HOA
9. EXHAUST RELIEF OPEN
10. EXHAUST RELIEF CLOSED
11. SUPPLY RELIEF OPEN
12. SUPPLY RELIEF CLOSED
13. ALARM RESET

3 TYP — VENTILATION CONTROL PANEL
NOT TO SCALE

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

HVAC SCHEDULE AND DETAILS

ISSUED FOR: DATE: BY:
BIDS 2023.06.24 TSW

JOB NO. COF10760-1F

SHEET M-601

PLOTTED 7/10/2023 11:18:30 AM
BIM 360://COF10767-WPCF/WU_WT_M_R21.rvt

CIRCUIT BREAKER (CB)
- RATINGS AND NO. OF POLES AS SHOWN.

100AF 80AT 3P OR 20A 3P

30A, 3-POLE DISCONNECT SWITCH

SEPARATELY MOUNTED COMBINATION MOTOR STARTER

FUSED

FUSED CUTOUT

FUSIBLE SWITCH

NON-FUSED SWITCH

DISCONNECT OR DRAWOUT CONNECTION

THERMAL OVERLOAD ELEMENT

THERMAL OVERLOAD RELAY CONTACT — OL

480 VAC 3-PHASE MOTOR

120 VAC 1-PHASE MOTOR

120 VAC 1-PHASE MOTORIZED DAMPER

TRANSFER SWITCH

X - INDICATES TYPE:

ATS - AUTOMATIC
MTS - MANUAL

X

GENERATOR — G

TRANSFORMER

3-PHASE, 3-WIRE DELTA CONNECTION

3-PHASE, 4-WIRE GROUNDED WYE CONNECTION

CONTROL POWER TRANSFORMER (CPT) — CPT

VOLTAGE TRANSFORMER (VT)

CURRENT TRANSFORME (CT)

MOTOR STARTER — MS

CONTROL RELAY — CR

TIMING RELAY — TR

GROUND

LIGHTNING ARRESTER

LOW VOLTAGE SURGE PROTECTIVE DEVICE — SPD

ELECTRICAL CONNECTION

NO ELECTRICAL CONNECTION — OR

NORMALLY-OPEN CONTACT

NORMALLY-CLOSED CONTACT

NORMALLY-OPEN CONTACT FOR ON-DELAY TIMING RELAY

NORMALLY OPEN CONTACT FOR OFF-DELAY TIMING RELAY

NORMALLY-OPEN LIMIT SWITCH

NORMALLY-CLOSED LIMIT SWITCH

NORMALLY OPEN TEMPERATURE SWITCH; CLOSE ON RISING TEMPERATURE

NORMALLY CLOSED TEMPERATURE SWITCH; OPEN ON RISING TEMPERATURE

NORMALLY OPEN FLOW SWITCH; CLOSE ON INCREASING FLOW

NORMALLY CLOSED FLOW SWITCH; OPEN ON INCREASING FLOW

NORMALLY OPEN LEVEL SWITCH

NORMALLY CLOSED LEVEL SWITCH

NORMALLY OPEN PRESSURE SWITCH

NORMALLY CLOSED PRESSURE SWITCH

NORMALLY-OPEN PUSHBUTTON

NORMALLY-CLOSED PUSHBUTTON

TYPICAL SELECTOR SWITCH — OFF, HAND, AUTO

SEAL MOISTURE SENSOR — SM

TEMPERATURE SENSOR — TS

LOCAL CONTROL PANEL — LCP

FIELD WIRING EXTERNAL TO CONTROL PANEL

INTERLOCK

X - INDICATES TYPE:

E - ELECTRICAL;
M - MECHANICAL;
K - KEY

TRANSFORMER — T

JUNCTION BOX — J OR JB

CIRCUIT CONTINUATION

CONDUIT STUBBED OUT AND CAPPED

CONDUIT TURNING UP

CONDUIT TURNING DOWN

HOME RUN TO PANEL, 2#12 + 1#12 GND IN 3/4"C UNLESS OTHERWISE NOTED

ABOVE GROUND CONDUIT RUN

UNDERGROUND CONDUIT RUN

GROUND CABLE

GROUND ROD

FIELD DEVICES

SELECTOR SWITCH — SS

PUSHBUTTON — PB

PRESSURE ELEMENT/PRESSURE INDICATING TRANSMITTER — PE, PT

LEVEL ELEMENT — LE

LEVEL INDICATING TRANSMITTER — LT, LIT

FLOW ELEMENT — FE

FLOW INDICATING TRANSMITTER — FT, FIT

FLOW SWITCH — FS

FLOAT SWITCH — LSH, LSL

LIMIT SWITCH — ZS

SOLENOID VALVE — S

GAS DETECTOR — GE

CONTROL STATION

THERMOSTAT — T T-STAT

MOTORIZED DAMPER — MD, M

PRESSURE SWITCH — PS

SINGLE DATA

SINGLE TELEPHONE

DOUBLE DATA / VOIP

FLOOR MOUNTED DATA

WELDER RECEPTACLE

DUPLEX RECEPTACLE — X

DUPLEX RECEPTACLE GFCI — X

QUAD-DUPLEX RECEPTACLE — X

SIMPLEX RECEPTACLE — X

FLOOR MOUNTED RECEPTACLE — X, X

X - INDICATES TYPE:

GFCI - GROUND FAULT CIRCUIT INTERRUPTER

INDICATING LIGHT — X

PUSH-TO-TEST PILOT LIGHT — X

X INDICATES LENS COLOR:

R - RED
G - GREEN
B - BLUE
Y - YELLOW
W - WHITE
A - AMBER

LIGHTING

PHOTOCELL

CEILING/PENDANT-MOUNTED LUMINAIRE — X, Y

WALL-MOUNTED LUMINAIRE — X, Y

CEILING/PENDANT-MOUNTED LIGHT FIXTURE — X Y, X Y

EMERGENCY LIGHT FIXTURE — X Y

EMERGENCY LIGHT FIXTURE — X, X

WALL MOUNTED EXIT/EMERGENCY LIGHT — X

DOUBLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS — X, X

SINGLE-FACED CEILING OR WALL-MOUNTED EXIT LIGHT; DIRECTIONAL ARROWS (IF REQUIRED) AS INDICATED ON PLANS — X, X

AREA OR ROADWAY LIGHT - POLE-MOUNTED — X, Y

X - INDICATES FIXTURE TYPE PER LIGHTING FIXTURE SCHEDULE OR DETAILS
Y - SWITCH CONTROL

TOGGLE SWITCH — I, S, I, X

X - INDICATES TYPE:

NONE - SINGLE POLE
3 - THREE-WAY
4 - FOUR-WAY
HP - HORSEPOWER RATED
K - KEY SWITCH
P - PILOT LIGHT
L - LIGHTED HANDLE
TE - MANUAL MOTOR STARTER WITH THERMAL ELEMENT
OS - OCCUPANCY SENSOR
DM - DIMMABLE

PANELBOARD (LESS THAN 250V)

PANELBOARD (250V TO 600V)

ELECTRICAL EQUIPMENT ENCLOSURE. AS INDICATED ON PLANS

OCCUPANCY SENSOR CEILING MOUNTED — OS

COMMUNICATION

CELL PHONE REPEATER

OUTDOORS ANTENNA

END OF LINE RESISTANCE PANEL — EOL-P

FIRE ALARM

FIRE ALARM ANNUNCIATOR — FAA

FIRE ALARM CONTROL PANEL — FACP

FIRE ALARM ANNUNCIATOR PANEL — FAAP

FIRE ALARM MANUAL STATION, MH=4'-0" AFF UNO — F

FIRE ALARM CONTACT, TAMPER SWITCH — TS

FIRE ALARM CONTACT, TAMPER SWITCH INSIDE KNOX KEYBOX — TS

FIRE ALARM SMOKE DETECTOR, CEILING MOUNTED — X

X - INDICATES TYPE:

I - IONIZATION TYPE
P - PHOTOELECTRIC TYPE

FIRE ALARM ADDRESSABLE DUCT TYPE SMOKE DETECTOR, MOUNTED ON DUCT

FIRE ALARM HEAT DETECTOR, CEILING MOUNTED

FIRE ALARM BELL WITH PROTECTIVE CAGE, MH= 7'-6" AFG UNO — X

FIRE ALARM SPEAKER, MH=10'-0" AFF UNO — X

FIRE ALARM STROBE, MH=6'-8" AFF UNO — X

FIRE ALARM BELL AND FLASHING LIGHT COMBINATION UNIT, MH=7'-6" AFG UNO — X

FIRE ALARM SPEAKER WITH STROBE, MH=6'-8" AFF UNO — X

X - INDICATES TYPE:

NONE - GENERAL ALARM DEVICE
F - FIRE ALARM DEVICE

INTERFACE UNIT , MH=4'-0" AFF UNO — I/U, AIM

INTERFACE UNIT, CEILING MOUNTED UNO — CM

NOTES:

1. STANDARD ELECTRICAL LEGEND SHEET. NOT ALL SYMBOLS MAY BE USED ON THIS PROJECT.

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

ELECTRICAL SYMBOLS AND ABBREVIATIONS

ISSUED FOR: BIDS — DATE: 2023.06.24 — BY: TSW

JOB NO. COF1076-01F

SHEET E-001

PLOTTED: 7/10/2023 10:36:59 AM

BIM 360://COF1076-7-WPCF/WU_HRC_E_R21.rvt

GENERAL ELECTRICAL NOTES:

(APPLY TO ALL DRAWINGS)

1. THE CONTRACTOR SHALL VISIT THE JOB SITE AND THOROUGHLY CHECK THE FIELD CONDITIONS AND THE EXISTING ELECTRICAL INSTALLATION AND UTILITIES PRIOR TO SUBMITTING HIS BID.

2. OTHER PROJECTS ARE, OR MAY BE, UNDER CONSTRUCTION AT THIS SITE, AND THIS CONTRACTOR SHALL COORDINATE WITH THEM SO AS NOT TO DELAY THEIR SCHEDULES OR IMPEDE THEIR WORK.

3. COORDINATE ALL NEW ELECTRICAL UNDERGROUND WORK WITH NEW AND EXISTING UNDERGROUND UTILITIES BEFORE INSTALLATION.

4. ALL EMPTY CONDUITS SHALL BE PROVIDED WITH A FISH LINE.

5. ALL UNDERGROUND CONDUITS SHALL BE P.V.C., EXCEPT WHERE ENTERING MANHOLES, HANDHOLES, BUILDINGS, LIGHT POLE BASES, AND TRANSFORMER PAD. UNDERGROUND CONDUITS AND/OR DUCTS SHALL BE RIGID GALVANIZED ALUMINUM WITHIN 5'-0" OF THE STRUCTURE. ALL CONDUITS AND/OR DUCTS UNDER BUILDINGS SHALL BE RIGID GALVANIZED STEEL.

6. PROVIDE WATERTIGHT HUBS AT CONDUIT ENTRANCES TO ALL ENCLOSURES MOUNTED OUTDOORS AND AT ALL WATERTIGHT (NEMA TYPE 4 & 4X) ENCLOSURES MOUNTED INDOORS. ALL NEMA TYPE 4 & 4X ENCLOSURES, EXCEPT THOSE IN CORROSIVE AREAS, SHALL BE EQUIPPED WITH A DRAIN/BREATHER FITTING.

7. EXPANSION OR EXPANSION/DEFLECTION FITTINGS SHALL BE PROVIDED FOR ALL CONDUITS CROSSING BUILDING EXPANSION JOINTS.

8. ALL POWER FEEDERS SHALL BE RUN IN INDIVIDUAL CONDUITS, FROM SOURCE TO LOAD, AS INDICATED IN SCHEDULES, WIRING DIAGRAMS, OR BY HOME RUNS ON THE PLANS.

9. ALL CONDUITS SHALL BE ROUTED TO AVOID OPENINGS IN FLOORS, ROOFS, AND WALLS. LADDERS UP WALLS SHALL NOT BE CROSSED BY EXPOSED CONDUIT RUNS. PROVIDE THE MINIMUM CLEAR SPACE REQUIRED BY ALL GOVERNING CODES BETWEEN HANDRAILS AND ALL ELECTRICAL ENCLOSURES AND RACEWAYS, WHICH IN NO CASE SHALL BE LESS THAN 1 1/2" CLEAR.

10. ALL CONDUITS FOR 480VAC POWER FEEDERS, BRANCH CIRCUITS, AND INSTRUMENTATION SHALL BE RUN EXPOSED OVERHEAD, UNLESS SHOWN OTHERWISE ON THE PLANS.

11. ALL ELECTRICAL FLOOR MOUNTED EQUIPMENT SUCH AS MOTORS, CONTROL PANELS, AND METALLIC SUPPORT RACKS SHALL HAVE A #2 (UNLESS OTHERWISE NOTED) BARE GROUND CONDUCTOR TIE BETWEEN THE MOTOR FRAME, ENCLOSURE, OR SUPPORT LEG AND THE BUILDING GROUND SYSTEM.

12. GROUND CONDUCTOR SPLICING AND BONDING SHALL BE ACCOMPLISHED BY THE USE OF EXOTHERMIC WELDING.

13. PROVIDE A GREEN GROUND CONDUCTOR IN ALL SYSTEMS CONDUITS, EXCEPT INSTRUMENT SIGNAL AND ALARM CONDUITS, INCLUDING BRANCH CIRCUIT CONDUITS FOR LIGHTING AND RECEPTACLES. GROUND CONDUCTOR SIZING SHALL BE PER N.E.C. TABLE 250.122 (MINIMUM) WHERE NOT SIZED ON THE DRAWINGS.

14. COORDINATE EXACT LOCATION AND MOUNTING HEIGHTS OF ALL LIGHTING FIXTURES AND ELECTRICAL DEVICES WITH MECHANICAL PIPING AND DUCTWORK BEFORE INSTALLATION.

15. ALL THREADED MECHANICAL CONNECTIONS ON ELECTRICAL EQUIPMENT (CONDUIT, COUPLINGS, JUNCTION BOXES, ETC.) INSTALLED WITHIN WET AREAS, HAZARDOUS AREAS, OR OUTDOORS SHALL BE COATED WITH ANTI-SEIZE COMPOUND PRIOR TO INSTALLATION.

16. ALL WALL AND RACK MOUNTED DISCONNECT SWITCHES, CONTROL PANELS, AND LIGHTING PANELS SHALL BE 5'-6" TO TOP, ABOVE FINISHED FLOOR.

17. ALL WEATHERPROOF (W.P.) DUPLEX RECEPTACLES SHALL BE INSTALLED SUCH THAT COVER DOORS OPEN UPWARD.

18. ALL EXPOSED METALLIC ELECTRICAL EQUIPMENT, PULL BOXES, JUNCTION BOXES, CONDUITS, SUPPORTS, BRACKETS, HANGERS, NUTS, BOLTS, ETC. LOCATED WITHIN HAZARDOUS OR CORROSIVE AREAS, SHALL BE P.V.C. COATED WITH 40 MILS (MIN.) COVERING. WHERE FACTORY P.V.C. COATING IS NOT AVAILABLE OR WHERE P.V.C. COATING WOULD VOID U.L.LISTING OR LABELING, FACTORY OR FIELD COATING WITH A CORROSION RESISTANT, EPOXY PAINT SHALL BE PROVIDED.

19. ALL PENETRATIONS OF FIRE WALLS OR FLOORS SHALL BE SEALED AFTER INSTALLATION OF CONDUIT WITH A FIRE RETARDANT SEALANT THAT IS RATED THE SAME AS THE FIRE WALL OR FLOOR.

20. ALL CONDUITS AND/OR SLEEVES THAT PASS THROUGH WALLS OR FLOORS SEPARATING HAZARDOUS AREAS FROM NON-HAZARDOUS AREAS SHALL BE SEALED GAS-TIGHT WITH NON-METALLIC, NON SHRINK GROUT AFTER CONDUIT IS INSTALLED.

21. ALL WALL MOUNTED ELECTRICAL EQUIPMENT SHALL HAVE A 1/2" (MINIMUM) AIR SPACE BETWEEN WALL AND EQUIPMENT (PROVIDE NON-CORROSIVE SPACERS OR BRACKETS AS REQUIRED).

22. FOR ALL WALL MOUNTED EQUIPMENT WITHIN HAZARDOUS OR CORROSIVE AREAS USE STAINLESS STEEL ANCHORS AND 1/2" STAINLESS STEEL SPACERS ON STAINLESS STEEL ANCHOR BOLTS TO PROVIDE A 1/2" AIR SPACE BETWEEN THE EQUIPMENT AND THE WALL.

23. ALL FLOOR OR PAD MOUNTED ELECTRICAL ENCLOSURES SHALL BE SPACED 1" OUT FROM EXTERIOR WALLS (MINIMUM).

24. FOR ALL 120 VAC LIGHTING AND RECEPTACLE CIRCUITS, RUN 2-#12 (MINIMUM) + #12 GRD., 3/4"C. TO THE LIGHTING PANELBOARD INDICATED, UNLESS NOTED OTHERWISE. SEE THE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS FOR BRANCH CIRCUIT WIRING.

25. FOR EACH INTRINSICALLY SAFE CIRCUIT, RUN 2-#14 AWG (MINIMUM), OR 1 PAIR-#18 FOIL SHIELDED, IN 3/4" R.G.S. (MINIMUM). INTRINSICALLY SAFE (I.S.) CIRCUITS MAY BE RUN WITH OTHER I.S. CIRCUITS IN THE I.S. CONDUIT SYSTEM, BUT SHALL NOT BE RUN IN THE SAME CONDUIT, RACEWAY, WIRE DUCT, ETC., WITH ANY NON-INTRINSICALLY SAFE CIRCUITS, NOR SHALL I.S. CONDUCTORS COME IN CONTACT IN ANY FASHION WITH NON-INTRINSICALLY SAFE CONDUCTORS. I.S. CIRCUIT INSTALLATION SHALL MEET ALL REQUIREMENTS OF THE LATEST REVISIONS OF N.E.C. ARTICLE 504, ANSI/ISA RP-12.06, AND ANSI/UL 913.

26. 4-20 MA, INSTRUMENT SIGNAL AND DC TOTALIZED PULSE CABLES, MAY BE RUN WITH OTHER INSTRUMENT SIGNAL CABLES IN THE INSTRUMENT CONDUIT SYSTEM. INSTRUMENT SIGNALS SHALL NOT BE RUN IN THE SAME CONDUIT WITH ANY OTHER TYPE OF ALARM, CONTROL AND/OR POWER WIRING.

27. DC ALARM WIRING SHALL BE #14 AWG AND MAY BE RUN WITH OTHER ALARM WIRING IN THE ALARM CONDUIT SYSTEM. ALARM WIRING SHALL NOT BE RUN IN THE SAME CONDUIT WITH ANY OTHER TYPE INSTRUMENT SIGNAL, CONTROL, OR POWER WIRING, UNLESS OTHERWISE SHOWN ON THE DRAWINGS.

28. IN AREAS WHERE ELECTRICAL WORK DISTURBS EXISTING SOD, GROUND SHALL BE REGRADED AS REQUIRED AND SOD SHALL BE REPAIRED OR REPLACED, AS REQUIRED, TO RETURN THE SITE TO A CONDITION MEETING OR EXCEEDING THAT PRIOR TO THE BEGINNING OF WORK.

29. ALL SALVAGED MATERIALS SHALL BE TURNED OVER TO THE OWNER OR DISPOSED OF AS DIRECTED BY THE OWNER.

ELECTRICAL ABBREVIATIONS LIST

A	AMPERE, AUTO, OR AMBER	**HTR**	HEATER	**PTZ**	PAN-TILT-ZOOM
AC	ALTERNATING CURRENT	**HV**	HIGH VOLTAGE	**PWR**	POWER
A/C	AIR CONDITIONING	**HZ**	HERTZ	**QTY**	QUANTITY
AF	CIRCUIT BKR FRAME SIZE	**INCAND**	INCANDESCENT	**R**	REMOTE OR RED
A/G	ABOVE GROUND	**IND**	INDICATION	**RAC**	RIGID ALUMINUM CONDUIT
AIC	AMPS INTERRUPTING CAPACITY	**INST**	INSTANTANEOUS	**RECPT**	RECEPTACLE
AL	ALUMINUM	**INSTR**	INSTRUMENT	**REF**	REFERENCE
AM	AMMETER	**I/O**	INPUT/OUTPUT	**REG**	REGULATOR
AMP	AMPERES	**ISO**	ISOLATION	**RGS**	RIGID GALVANIZED STEEL
ANN	ANNUNCIATOR	**JB**	JUNCTION BOX	**RMS**	ROOT MEAN SQUARE
AS	AMMETER SWITCH	**JCT**	JUNCTION	**RTU**	REMOTE TELEMETRY UNIT
AT	CIRCUIT BREAKER TRIP SETTING	**KA**	THOUSAND AMPERES	**RVA**	REDUCED VOLTAGE AUTO TRANSFORMER
ATS	AUTOMATIC TRANSFER SWITCH	**KAIC**	THOUSAND AMPERES INTERRUPTING CAPACITY	**RVSS**	REDUCED VOLTAGE SOFT START
AWG	AMERICAN WIRE GAUGE	**KCMIL**	THOUSAND CIRCULAR MILS	**S**	SPARE
BATT	BATTERY	**KVA**	KILOVOLT AMPERE	**S.S.**	STAINLESS STEEL
BKR	BREAKER	**KW**	KILOWATT	**SA**	SURGE ARRESTOR
BL	BLUE	**L**	LOCAL	**SEQ**	SEQUENCE
BLK	BLOCK OR BLACK	**LCP**	LOCAL CONTROL PANEL	**SF**	SUPPLY FAN
BLWR	BLOWER	**LCS**	LOCAL CONTROL STATION	**SH**	SODIUM HYPOCHLORITE
BRN	BROWN	**LOC**	LOCAL	**SHLD**	SHIELD
C	CONDUIT OR CLOSED CONDUCTOR	**LOR**	LOCAL-OFF-REMOTE	**SIG**	SIGNAL
CAP	CAPACITOR	**LOS**	LOCKOUT STOP PUSHBUTTON	**SP**	SPARE
CB	CIRCUIT BREAKER	**LP**	LIGHTING PANEL	**SP HTR**	SPACE HEATER
CKT	CIRCUIT	**LRA**	LOCKED ROTOR AMPS	**SPD**	SPEED, SURGE PROTECTIVE DEVICE
CLF	CURRENT LIMITING FUSE	**LS**	LEVEL SWITCH	**SPDT**	SINGLE POLE, DOUBLE THROW
CMPT	COMPARTMENT	**LT**	LEVEL TRANSMITTER		
COM	COMMON	**LTG**	LIGHTING	**SPST**	SINGLE POLE, SINGLE THROW
COMM	COMMUNICATION	**LTS**	LIGHTS		
COMP	COMPRESSOR	**LV**	LOW VOLTAGE	**SS**	SOLID STATE
COND	CONDUCTOR	**M**	MOTOR CONTACTOR COIL	**SSL**	SPEED SWITCH LOW
CONT	CONTINUED	**MA**	MILLIAMPERE	**SSW**	SELECTOR SWITCH
CP	CONTROL PANEL OR CHEMICAL PUMP	**MCC**	MOTOR CONTROL CENTER	**STR**	STARTER
CPT	CONTROL POWER XFMR	**MCM**	THOUSAND CIRCULAR MILS	**SW**	SWITCH
CR	CONTROL RELAY	**MCP**	MOTOR CIRCUIT PROTECTOR	**SWBD**	SWITCHBOARD
CT	CURRENT TRANSFORMER	**MFG**	MANUFACTURER	**SWGR**	SWITCHGEAR
CL	CONTROL LOOP	**MH**	METAL HALIDE, MOUNTING HEIGHT OR MANHOLE	**SYS**	SYSTEM
CH	CHANNEL	**MLO**	MAIN LUGS ONLY	**TACH**	TACHOMETER
DCS	DISTRIBUTED CONTROL SYSTEM	**MOV**	MOTOR OPERATED VALVE	**TB**	TERMINAL BLOCK
DISC	DISCONNECT	**MPZ**	MINI-POWER ZONE	**TD**	TIME DELAY
DEMO	DEMOLITION	**MS**	MOTOR STARTER	**TEL**	TELEPHONE
DISTR	DISTRIBUTION	**MTR**	MOTOR	**TERM**	TERMINAL OR TERMINATION
DISCHG	DISCHARGE	**MTS**	MANUAL TRANSFER SWITCH	**TL**	TWIST LOCK
DM	DEMAND METER	**MV**	MEDIUM VOLTAGE	**TR**	TIMING RELAY
DP	DISTRIBUTION PANEL	**N**	NEUTRAL	**TS**	TEMPERATURE SWITCH
DPDT	DOUBLE POLE, DOUBLE THROW	**N/A**	NOT APPLICABLE	**TSP**	TWISTED, SHIELDED PAIR
DPST	DOUBLE POLE, SINGLE THROW	**NC**	NORMALLY CLOSED	**TSTAT**	THERMOSTAT
DSD	DUCT SMOKE DETECTOR	**NEMA**	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION	**TTC**	TELEPHONE TERMINAL CABINET
E	EMERGENCY			**TVSS**	TRANSIENT VOLTAGE SURGE SUPPRESSOR
EMERG	EMERGENCY			**TYP**	TYPICAL
EMT	ELECTRICAL METALLIC TUBING			**UC**	UNDER COUNTER
ENCL	ENCLOSURE			**UG**	UNDERGROUND
ETM	ELAPSED TIME METER	**NF**	NON-FUSIBLE	**UH**	UNIT HEATER
EP	EXPLOSION	**NIC**	NOT IN CONTRACT	**UNO**	UNLESS NOTED OTHERWISE
EF	EXHAUST FAN	**NL**	NIGHT LIGHT	**UPS**	UNINTERRUPTIBLE POWER SUPPLY
EWS	EYE WASH STATION	**NO**	NORMALLY OPEN	**UTIL**	UTILITY
F	FREQUENCY OR FUSE	**NP**	NAMEPLATE	**V**	VOLTAGE OR VOLTS
FDR	FEEDER	**NTS**	NOT TO SCALE	**VA**	VOLT AMPERES
FLA	FULL LOAD AMPERES	**O**	OPEN OR OFF	**VAR**	VOLT-AMPERE REACTIVE
FLUOR	FLUORESCENT	**OL**	OVERLOAD	**VFD**	VARIABLE FREQUENCY DRIVE
FO	FIBER OPTIC	**ORN**	ORANGE	**VM**	VOLTMETER
FT	FLOW TRANSMITTER	**P**	POLE	**VS**	VOLTMETER SWITCH
FVR	FULL VOLT. REVERSING	**PA**	PUBLIC ADDRESS	**VP**	VAPOR PROOF
FVNR	FULL VOLTAGE NON-REVERSING	**PB**	PUSHBUTTON OR PULLBOX	**W**	WATT OR WIRE
G	GROUND	**PC**	PHOTOCELL	**W/**	WITH
GEN	GENERATOR	**PF**	POWER FACTOR	**W/O**	WITHOUT
GFCI	GROUND FAULT CIRCUIT INTERRUPTER	**PH**	PHASE	**WH**	WHITE
GND	GROUND	**PL**	PILOT LIGHT	**WHM**	WATT HOUR METER
GRN	GREEN	**PLC**	PROGRAMMABLE LOGIC CONTROLLER	**WP**	WEATHER-PROOF
H	HAND	**PNL**	PANEL	**WT**	WEIGHT
HC	HAND CONTROL	**PMP**	PUMP	**WTR**	WATER
HD	HEAT DETECTOR	**PP**	POWER PANEL OR PROCESSOR PANEL	**XFMR**	TRANSFORMER
HH	HANDHOLE			**XMTR**	TRANSMITTER
HID	HIGH INTENSITY DISCHARGE	**POS**	POSITION	**XP**	EXPLOSION PROOF
		POT	POTENTIAL	**Y**	YELLOW
HOA	HAND-OFF-AUTOMATIC	**PR**	PAIR	**ZS**	POSITION (LIMIT) SWITCH
HOR	HAND-OFF-REMOTE	**PRI**	PRIMARY	∠	ANGLE
HP	HORSEPOWER	**PS**	PRESSURE SWITCH OR POWER SUPPLY	@	AT
HPS	HIGH PRESSURE SODIUM	**PT**	POTENTIAL TRANSFORMER OR PRESSURE TRANSMITTER	Δ	DELTA
HS	HAND SWITCH			°	DEGREES
				'	FEET
				"	INCHES
				#	NUMBER
				Ø	PHASE
				CL	CENTER LINE
				P	PLATE

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

WADE TRIM
555 South Saginaw Street, Suite 201
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

GENERAL NOTES AND ABBREVIATIONS

ISSUED FOR: BIDS | DATE: 2023.06.24 | BY: TSW

JOB NO. COF1076-01F

SHEET E-002

PLOTTED: 7/10/2023 10:37:00 AM

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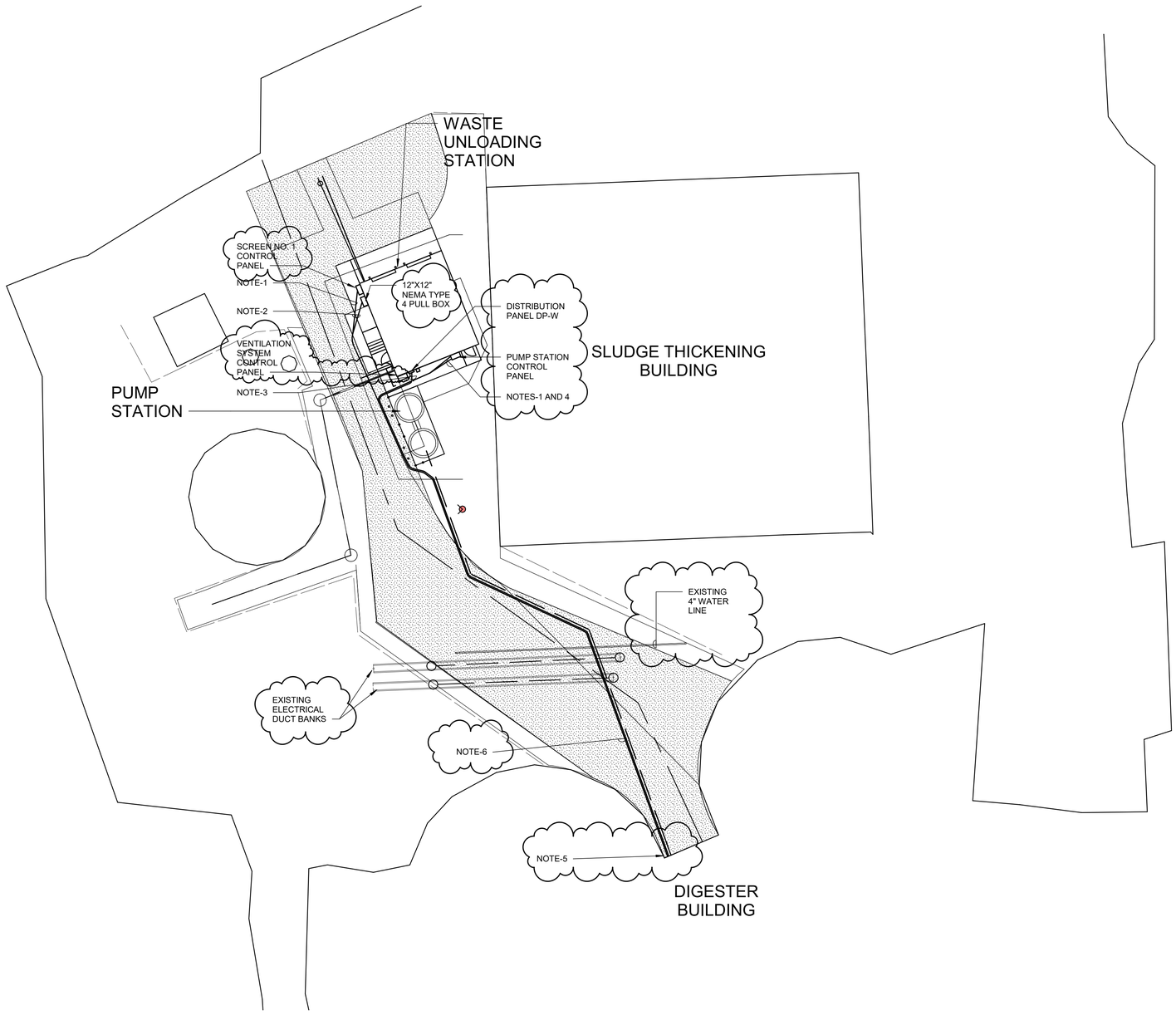

ELECTRICAL SITE PLAN

SCALE: 1" = 20'-0"

PLAN NOTES:

1. 4-STRAND FIBER-OPTIC CABLE, 1 1/4"C. TO NEW FIBER OPTIC SWITCH IN DIGESTER BUILDING.
2. 1 1/4"C. SPARE, EMPTY WITH PULL ROPE.
3. 3-#1/0 + 1-#6 GRD., 1 1/2"C. TO NEW CIRCUIT BREAKER IN MCC-XP3.
4. 3-#4 + 1-#8 GRD., 1"C. TO NEW CIRCUIT BREAKER IN MCC-XP3.
5. ROUTE CONDUITS BELOW WALL OF DIGESTER BUILDING THEN UP THROUGH FLOOR ALONG WALL AND OVERHEAD TO CONTROL PANEL AND MCC. COORDINATE INSTALLATION WITH NEW PROCESS PIPING AT BUILDING ENTRANCE.
6. ROUTE CONDUITS IN TRENCH ADJACENT TO NEW PROCESS PIPING. FIELD VERIFY ALL EXISTING UNDERGROUND UTILITIES. COORDINATE INSTALLATION WITH NEW PIPING.

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CITY OF FLINT
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ELECTRICAL SITE PLAN

ISSUED FOR:	DATE:	BY:
BIDS	2023.06.24	TSW

JOB NO. COF1076-01F

SHEET E-101

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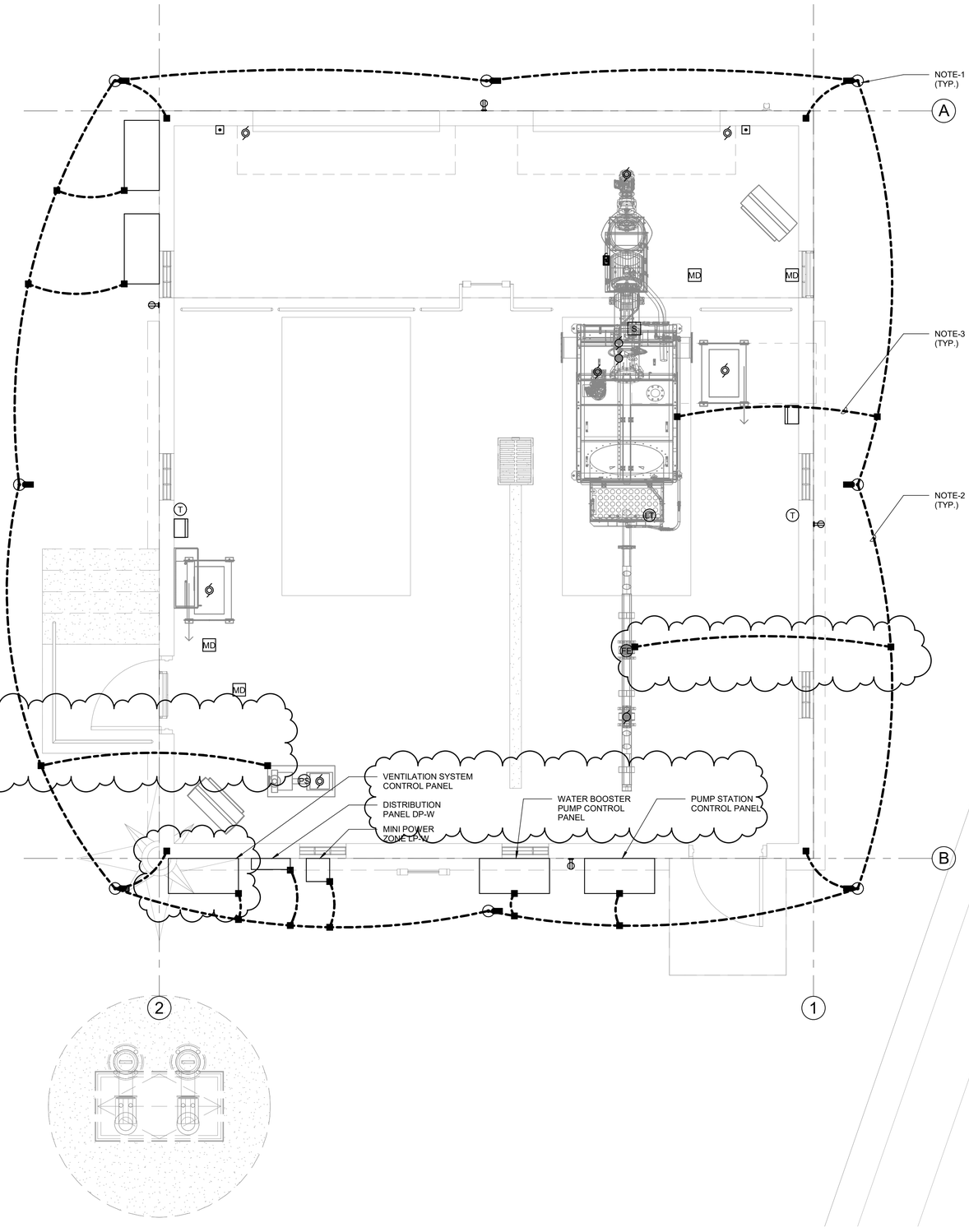

WASTE UNLOADING STATION ELECTRICAL GROUNDING PLAN

SCALE: 3/8" = 1'-0"

PLAN NOTES:

1. 3/4" DIAM. X 10' COPPER-CLAD GROUND ROD.
2. #4/0 BARE COPPER GROUND CONDUCTOR.
3. #2 BARE COPPER GROUND CONDUCTOR.

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION GROUNDING PLAN

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF1076-01F

SHEET E-102

PLOTTED 7/10/2023 10:37:15 AM

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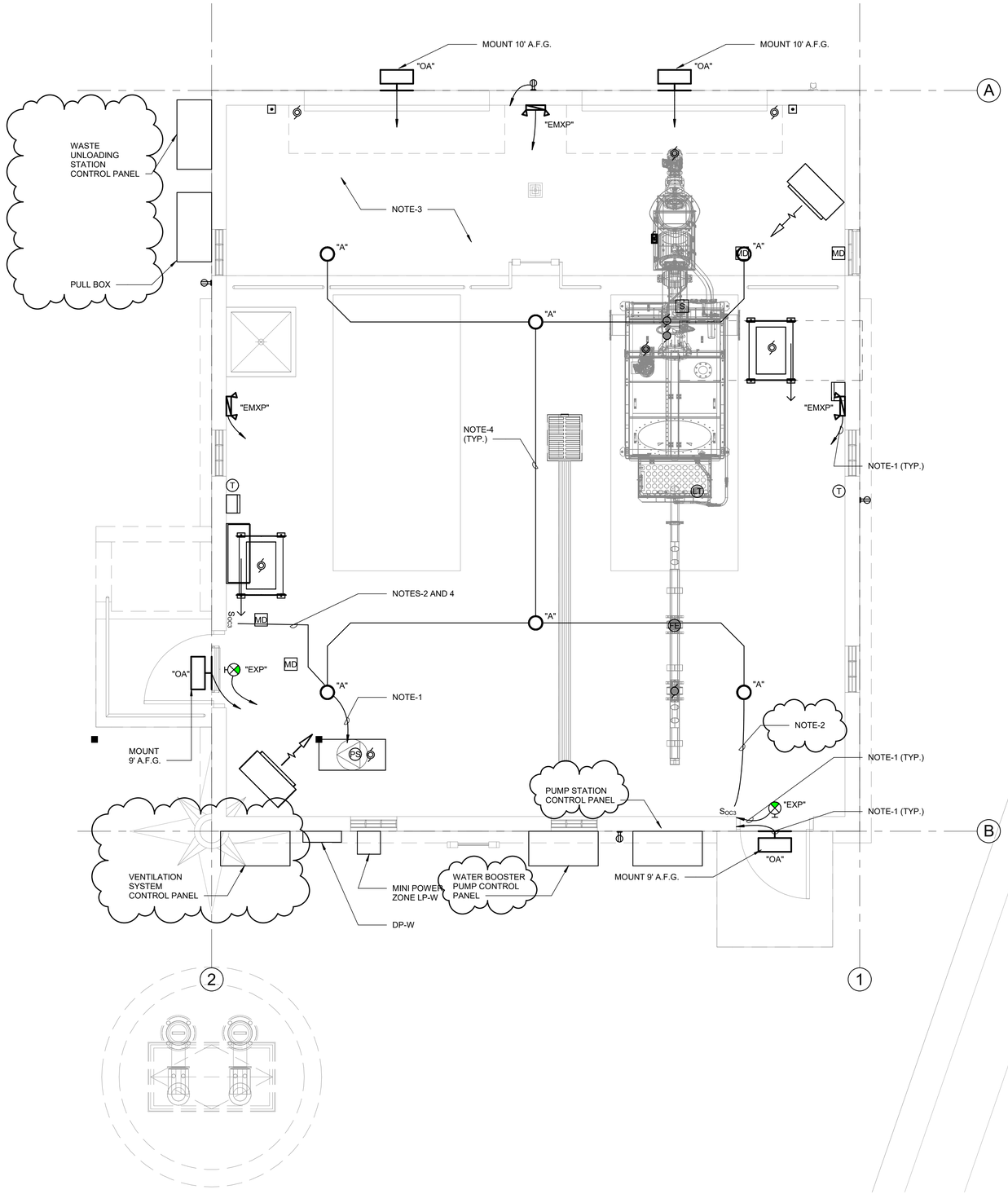

WASTE UNLOADING STATION ELECTRICAL LIGHTING PLAN

SCALE: 3/8" = 1'-0"

PLAN NOTES:

1. 2-#12 + #12, 3/4"C. TO LP-W.
2. INSTALL ADDITIONAL #12 WIRE FOR SWITCHES AS REQUIRED.
3. THIS AREA IS CLASS 1, DIV. 1, INSTALL CONDUIT, WIRE, AND EQUIPMENT TO MEET NEC REQUIREMENTS.
4. 2-#12 + 1-#12 GRD., 3/4"C.

REV#	DATE	DESCRIPTION	BY
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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION LIGHTING PLAN

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SHEET E-103

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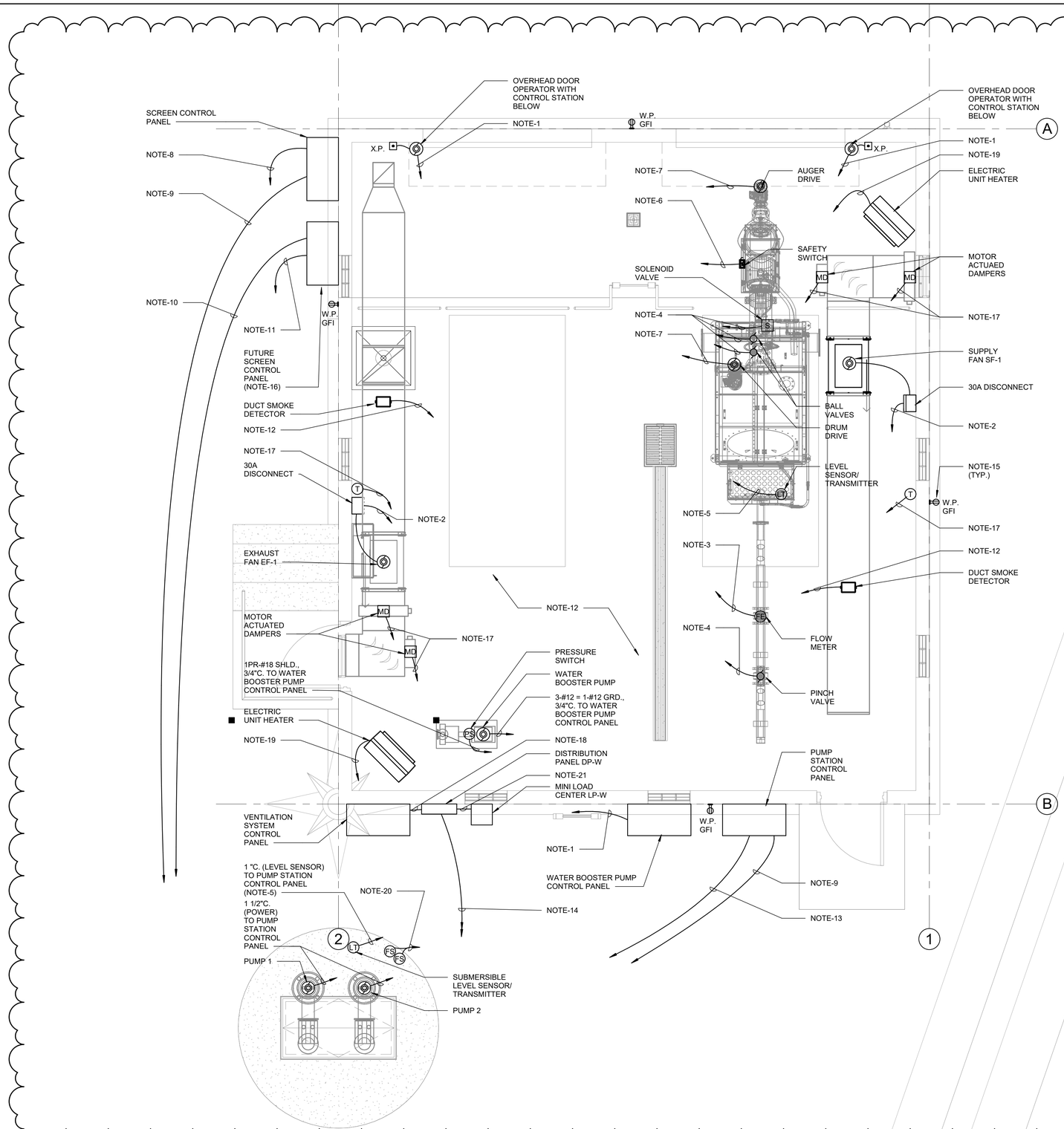

PLAN NOTES:

1. 3-#12 + 1-#12 GRD., 3/4"C. TO DP-W.
2. 3-#12 + 1-#12 GRD., 3/4"C. TO VENTILATION SYSTEM CONTROL PANEL.
3. 2PR-#18 SHLD., 3/4"C. TO SCREEN CONTROL PANEL.
4. 2-#12+ 1-#12 GRD., 3/4"C.TO SCREEN CONTROL PANEL.
5. 2PR-#18 SHLD., 3/4"C. (INTRINSICALLY SAFE) TO SCREEN CONTROL PANEL.
6. 2-#14, 3/4"C. TO SCREEN CONTROL PANEL.
7. 3-#12 + 1-#12 GRD., 3/4"C. TO SCREEN CONTROL PANEL.
8. 3-#12 + 1-#12 GRD., 1"C. TO DP-W.
9. 4-STRAND F.O. CABLE, 1 1/4"C. TO F.O. SWITCH IN NEW CONTROL PANEL LOCATED IN DIGESTER BUILDING.
10. 1 1/4"C. SPARE (EMPTY WITH PULL ROPE) TO CONTROL PANEL LOCATED IN DIGESTER BUILDING.
11. 1"C. SPARE (EMPTY WITH PULL ROPE) TO DP-W.
12. THIS AREA IS CLASS 1, DIV. 1, INSTALL CONDUIT, WIRE, AND EQUIPMENT TO MEET NEC REQUIREMENTS.
13. 3-#4 + 1-#8 GRD., 1"C. TO MCC IN DIGESTER BUILDING.
14. 3-#1/0 + 1-#6 GRD., 1 1/2"C. TO MCC IN DIGESTER BUILDING.
15. FURNISH AND INSTALL 2-#12 + 1-#12 GRD., 3/4"C. FROM GFI RECEPTACLE TO LP-W.
16. FURNISH AND INSTALL 12" X 12" NEMA TYPE 3R PULL BOX FOR TEMPORARY CONNECTION OF CONDUITS.
17. 2-#12 + 1-#12 GRD., 3/4"C. TO VENTILATION SYSTEM CONTROL PANEL.
18. 3-#10 + 1-#10 GRD., 3/4"C.
19. 3-#8 + 1-#10 GRD., 3/4"C. TO DP-W.
20. FLOAT SWITCH CABLES, 1 1/2"C. TO PUMP STATION CONTROL PANEL.
21. 2-#10 + 1-#10 GRD., 3/4"C.

WASTE UNLOADING STATION ELECTRICAL POWER PLAN

SCALE: 3/8" = 1'-0"

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

WASTE UNLOADING STATION ELECTRICAL PLAN

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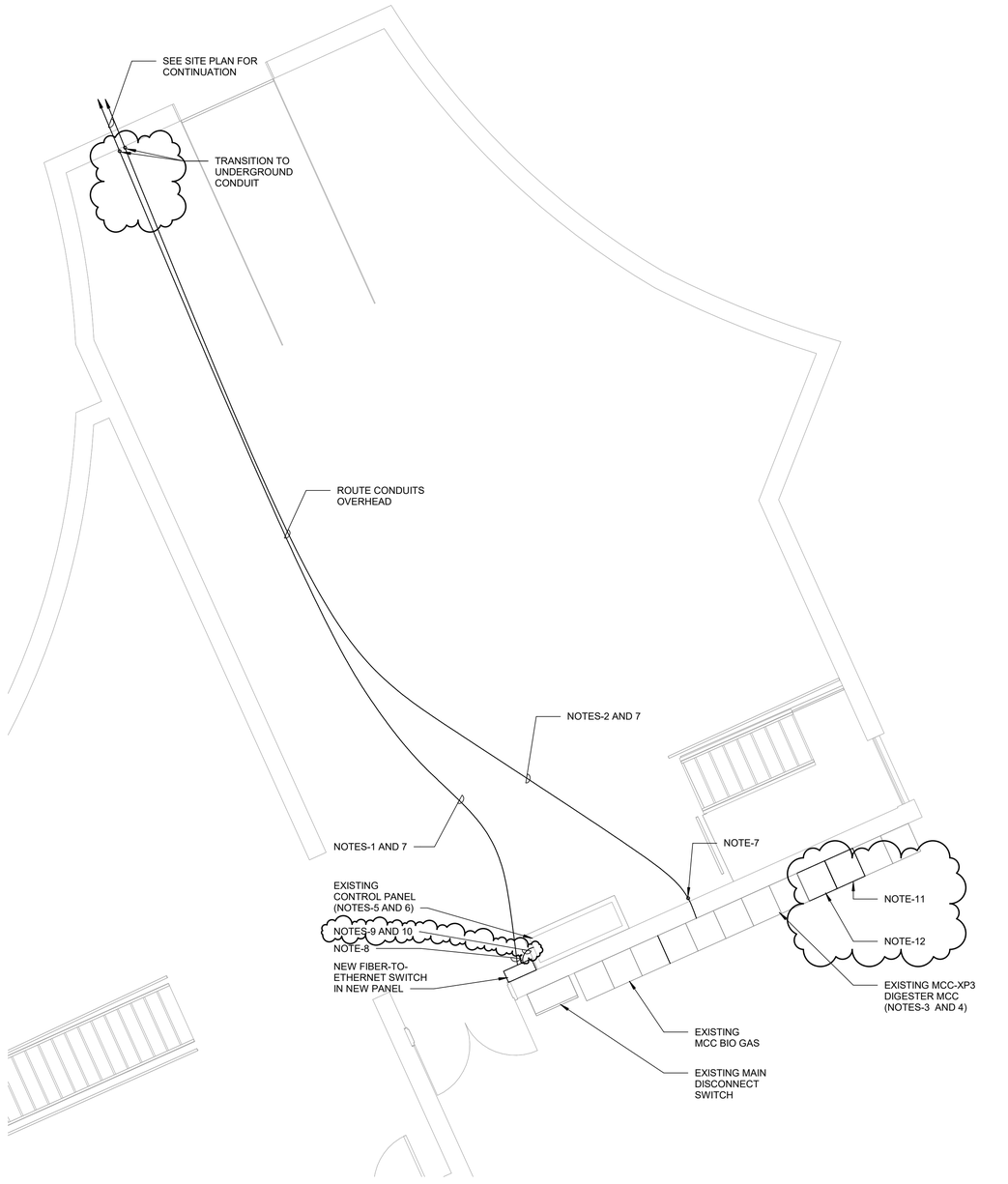

PARTIAL DIGESTER BUILDING ELECTRICAL PLAN

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

PLAN NOTES:

1. 2-1 1/4"C. WITH 4-STRAND FIBER OPTIC CABLE IN EACH + 1 -1 1/4"C. SPARE, EMPTY WITH PULL ROPE.
2. 3-#4 + 1-#8 GRD., 1"C. + 3-#1/0 + 1-#6 GRD., 1 1/2"C.
3. IN MCC-XP3, FURNISH AND INSTALL NEW MCC BUCKET WITH NEW 75A, 3-POLE CIRCUIT BREAKER TO FEED SUBMERSIBLE PUMP STATION.
4. IN MCC-XP3, FURNISH AND INSTALL NEW MCC BUCKET WITH NEW 150A, 3-POLE CIRCUIT BREAKER TO FEED DP-W.
5. CONNECT NEW FIBER OPTIC CABLES TO NEW FIBER OPTIC-TO-ETHERNET SWITCH IN NEW CONTROL PANEL.
6. IN EXISTING CONTROL PANEL REMOVE AND REPLACE EXISTING FIBER OPTIC-TO-ETHERNET SWITCH. NEW SWITCH TO HAVE 8-ETHERNET AND 8-FIBER OPTIC PORTS MINIMUM.
7. CORE THROUGH WALL FOR INSTALLATION OF NEW CONDUITS. SEAL AROUND CONDUITS WITH NON-METALLIC NON-SHRINK GROUT TO MATCH EXISTING.
8. CAT. 6 CABLE, 3/4"C. CONNECT NEW FIBER-TO-ETHERNET SWITCH TO EXISTING SWITCH.
9. FURNISH AND INSTALL CAT6 JUMPER, 3/4"C. TO EXISTING ETHERNET SWITCH IN EXISTING PANEL.
10. INSTALL 2-#12 + 1-#12 GRD., 3/4"C. FROM EXISTING POWER DISTRIBUTION IN EXISTING C.P. TO NEW FIBER-TO-ETHERNET SWITCH PANEL.
11. INSTALL NEW MCC BUCKET AND 80A, 3-POLE CIRCUIT BREAKER FOR SUBMERSIBLE PUMP STATION IN THIS SECTION.
12. INSTALL NEW MCC BUCKET AND 150A, 3-POLE CIRCUIT BREAKER IN THIS SECTION, TO FEED DP-W.

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CITY OF FLINT
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DIGESTER BUILDING ELECTRICAL PLAN

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF1076-01F

SHEET E-105

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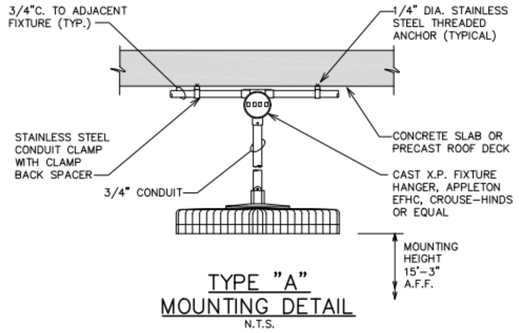


TYPE "A" MOUNTING DETAIL

N.T.S.

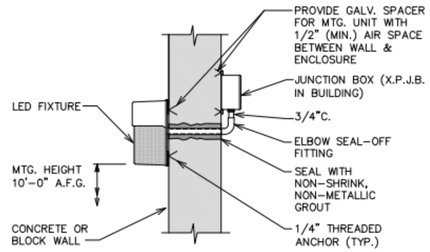
LIGHTING FIXTURE SCHEDULE

TYPE	LAMP	OPERATING VOLTAGE	DESCRIPTION	MFR. CAT. NO.
"A"	90 WATT LED 4,500K	120V.	INDUSTRIAL HGH BAY LED FIXTURE, CAST ALUMINUM, PENDANT MOUNTED RATED FOR HAZARDOUS AREA, CLASS 1, DIVISION 1 AND APPROVED BY INDEPENDENT TESTING AGENCY FOR THAT AREA	DIALIGHT-SAFESIGHT SERIES HEC: HEC-7MC2AD
"OA"	32 WATT LED 5000K	120V.	WALL MOUNTED OUTDOOR LED FIXTURE, DIE CAST ALUMINUM, CONSTANT VOLTAGE DRIVER, REMOVABLE HINGED DOOR FRAME WITH CAPTIVE FASTENERS. TYPE IV DISTRIBUTION, BRONZE POLYESTER POWDER COAT FINISH, UL LISTED FOR WET LOCATIONS, PHOTO CONTROL, IP66 RATED, WITH SURGE SUPPRESSION	HUBBELL: PGM3-180L-5K-035-U-DB-PC OR APPROVED EQUAL
"EXP"	LED	120V.	LED EXIT SIGN SUITABLE FOR USE IN CLASS 1, DIVISION 1, HAZARDOUS AREA WITH ALUMINUM BODY, ACRYLIC EDGE LIT SIGN, BATTERY BACKED WITH SELF DIAGNOSTICS	AZZ: XPEX-1-R-DT-WP-EM-SD OR APPROVED EQUAL
"EMXP"	LED	120V.	EMERGENCY LIGHTING UNIT WITH TWO (2) LED ADJUSTABLE HEADS SUITABLE FOR USE IN CLASS 1, DIVISION 1, HAZARDOUS AREA, WITH ALUMINUM BODY, STAINLESS STEEL HARDWIRE, SUITABLE FOR WET LOCATIONS	AZZ: XPEL-U-2-O-M OR APPROVED EQUAL

FIXTURE SCHEDULE NOTES:

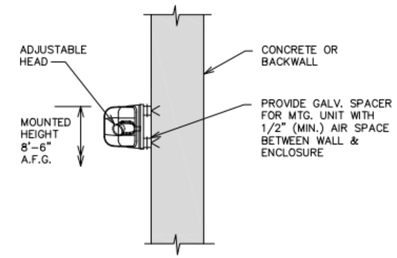
* ALL LED FIXTURES MUST HAVE SURGE SUPPRESION

** IF CATALOG NUMBER DOES NOT MEET THE FOLLOWING CRITERIA, THE CONTRACTOR OR MFR. SHALL REVISE CATALOG NUMBER AS REQUIRED.



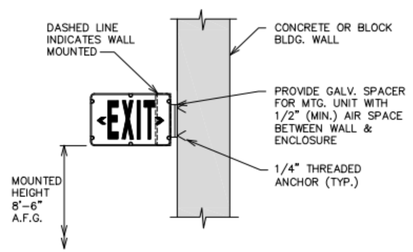
TYPE "OA" HAZARDOUS AREA MOUNTING DETAIL

N.T.S.



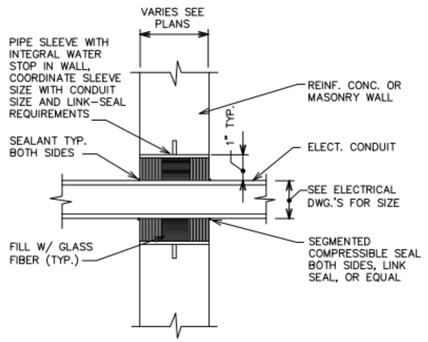
EMERGENCY LIGHTING FIXTURE TYPE "EMXP" MOUNTING DETAIL

N.T.S.



EXIT LTG. FIXTURE TYPE "EXP" MOUNTING DETAIL

N.T.S.



TYPICAL CONDUIT PENETRATION THRU NEW WALL ABOVE & BELOW GRADE

N.T.S.

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

LIGHTING DETAILS

ISSUED FOR: BIDS DATE: 2023.06.24 BY: TSW

JOB NO. COF1076-01F

SHEET E-501

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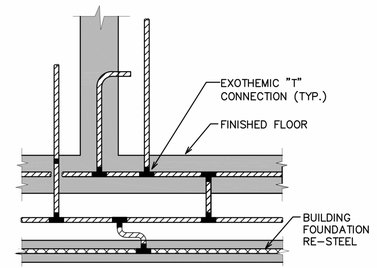
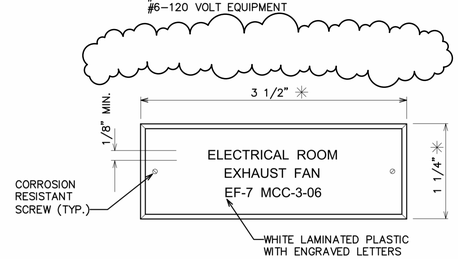


GROUND CONDUCTOR DETAIL
N.T.S.

NOTES:

A. ALL FLOOR OR WALL MOUNTED EQUIPMENT SUCH AS CONTROL PANELS, DISC. SWITCHES, LIGHTING PANELS, POWER DISTRIBUTION PANELS, AND LIGHTING TRANSFORMERS (INCLUDING PACKAGE EQUIPMENT FURNISHED AND INSTALLED BY OTHERS) SHALL HAVE A GROUND CONDUCTOR TIE BETWEEN THE EQUIPMENT AND THE GROUND MAT

B. MINIMUM GROUND CONDUCTOR SIZES:
#4/0–GROUND LOOP IN OR BELOW FLOOR SLAB AND ALL MAJOR RISERS
#2–480 VOLT EQUIPMENT
#6–120 VOLT EQUIPMENT



✳ SMALLER SIZES MAY BE USED INDICATED; SEE SPECIFICATIONS

NAMEPLATE DETAIL
FULL SCALE

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WPCF WASTE UNLOADING STATION

POWER DETAILS

ISSUED FOR: BIDS | DATE: 2023.06.24 | BY: TSW

JOB NO. COF1076-01F

SHEET E-502

PLOTTED 7/10/2023 10:37:47 AM
BIM 360://COF1076-7-WPCF/WU_HRC_E_R21.rvt

DP-F

Location:
Supply From:
Mounting: Surface
Enclosure: Type 3R
Notes:

Volts: 480V
Phases: 3
Wires: 3
Bus:

A.I.C. Rating:
Mains Type:
Mains Rating: 125 A
MCB Rating: 125 A

CKT	Circuit Description	Trip	P	Wire Size	A		B		C		Wire Size	P	Trip	Circuit Description	CKT
1	RECEIVING SCREEN CONTROL PANEL	20 A	3	3-#12, 1-#12, 1-#12	1.16	5.00					3-#8, 1-#10	3	40 A	ELECTRIC UNIT HEATER EUH-1	2
3							1.16	5.00							4
5									1.16	5.00					6
7	VENTILATION SYSTEM CONTROL PANEL	30 A	3	3-#10, 1-#10	1.16	5.00					3-#8, 1-#10	3	40 A	ELECTRIC UNIT HEATER EUH-2	8
9							1.16	5.00							10
11									1.16	5.00					12
13	EAST OVERHEAD DOOR OPERATOR	20 A	3	3-#12, 1-#12, 1-#12	0.44	0.75					2-#10, 1-#10	2	30 A	MINI LOAD CENTER LP-W	14
15							0.44	0.63							16
17									0.44	0.00	3-#12, 1-#12, 1-#12	3	20 A	FUTURE SCREEN CONTROL PANEL	18
19	WEST OVERHEAD DOOR OPERATOR	20 A	3	3-#12, 1-#12, 1-#12	0.44	0.00									20
21							0.44	0.00							22
23									0.44	2.49	3-#12, 1-#12, 1-#12	3	20 A	WATER BOOSTER PUMP CONTROL PANEL	24
25	Spare	20 A	3	--	0.00	2.49									26
27							0.00	2.49							28
29									0.00	0.00	--	3	20 A	Spare	30
31	Spare	20 A	3	--	0.00	0.00									32
33							0.00	0.00							34
35									0.00	--	--	1	--	Space	36
37	Space	--	1	--	--	--					--	1	--	Space	38
39	Space	--	1	--			--	--			--	1	--	Space	40
41	Space	--	1	--					--	--	--	1	--	Space	42
		Total Load:			15.68 kVA		15.57 kVA		14.96 kVA						
		Total Amps:			57 A		57 A		54 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Equipment	0 VA	0.00%	0 VA		
Heating	30000 VA	100.00%	30000 VA	**Total Conn. Load:**	46218 VA
Lighting	6 VA	100.00%	6 VA	**Total Est. Demand:**	47206 VA
Lighting - Dwelling Unit	300 VA	100.00%	300 VA	**Total Conn.:**	56 A
Lighting - Exterior	280 VA	125.00%	350 VA	**Total Est. Demand:**	57 A
Motor	17124 VA	105.83%	18122 VA		
Other	90 VA	100.00%	90 VA		
Power	720 VA	100.00%	720 VA		

LP-W

Location:
Supply From: DP-F
Mounting: Surface
Enclosure: Type 3R
Notes:

Volts: 208V/120V Single
Phases: 1
Wires: 3

A.I.C. Rating:
Mains Type: MCB
Mains Rating: 50 A
MCB Rating: 50 A

CKT	Circuit Description	Trip	P	Wire Size	A		B		Wire Size	P	Trip	Circuit Description	CKT
1	LIGHTS - INTERIOR	20 A	1	1-#12, 1-#12, 1-#12	0.09	0.31			1-#12, 1-#12, 1-#12	1	20 A	EXIT AND EMERG. LGTS	2
3	LIGHTS - EXTERIOR	20 A	1	1-#12, 1-#12, 1-#12			0.28	0.36	1-#12, 1-#12, 1-#12	1	20 A	RECEPTACLES - S & W...	4
5	RECEPTACLES - N & E...	20 A	1	1-#12, 1-#12, 1-#12	0.36	0.00			--	1	20 A	Spare	6
7	Spare	20 A	1	--			0.00	0.00	--	1	20 A	Spare	8
9	Spare	20 A	1	--	0.00	0.00			--	1	20 A	Spare	10
11	Space	--	1	--			--	--	--	1	--	Space	12
13	Space	--	1	--	--	--			--	1	--	Space	14
15	Space	--	1	--			--	--	--	1	--	Space	16
	Total Load:				0.75 kVA		0.63 kVA						
	Total Amps:				7 A		6 A						

Load Classification	Connected Load	Demand Factor	Estimated Demand	Panel Totals	
Lighting	6 VA	100.00%	6 VA		
Lighting - Dwelling Unit	300 VA	100.00%	300 VA	**Total Conn. Load:**	1379 VA
Lighting - Exterior	280 VA	125.00%	350 VA	**Total Est. Demand:**	1448 VA
Other	90 VA	100.00%	90 VA	**Total Conn.:**	7 A
Power	720 VA	100.00%	720 VA	**Total Est. Demand:**	7 A

REV#	DATE	DESCRIPTION	BY
2	2023.07.08	ADDENDUM 1	TSW
1	2023.06.24	ISSUED FOR BIDS	TSW

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

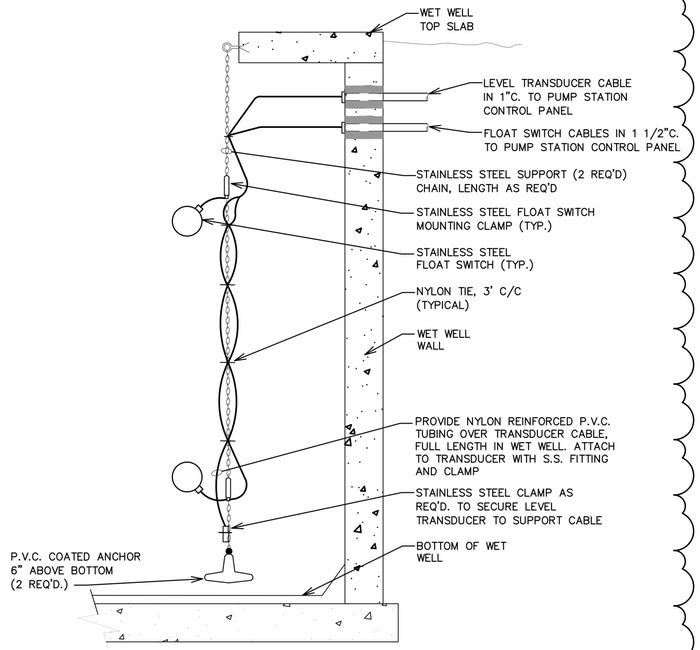
PANEL SCHEDULES

ISSUED FOR: BIDS
DATE: 2023.06.24
BY: TSW

JOB NO. COF1076-01F

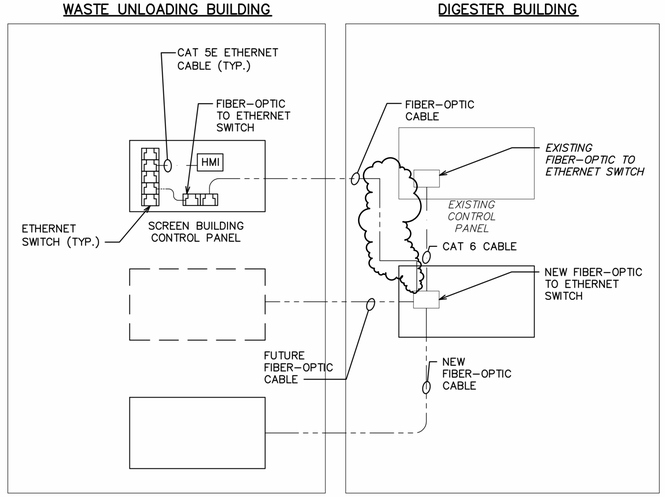
SHEET
E-601

PLOTTED: 7/10/2023 10:37:47 AM
BIM 360://COF1076-7-WPCFWTU_HRC_E_R21.rvt



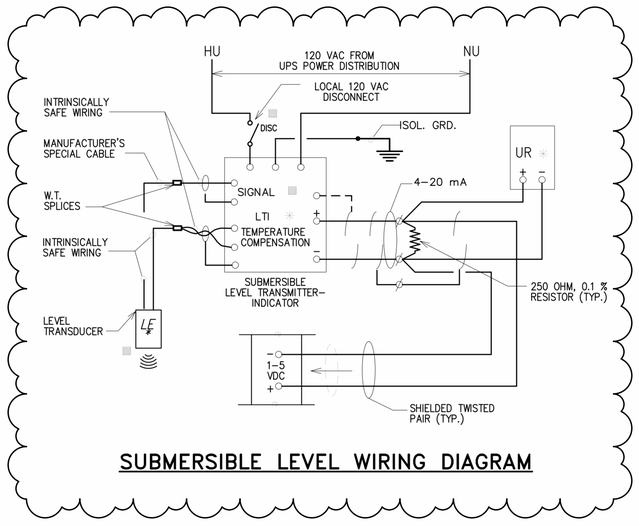
WET WELL FLOAT SWITCH AND LEVEL TRANSDUCER MOUNTING

N.T.S.

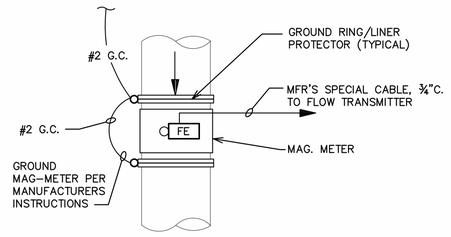


COMMUNICATIONS RISER DIAGRAM

NO SCALE

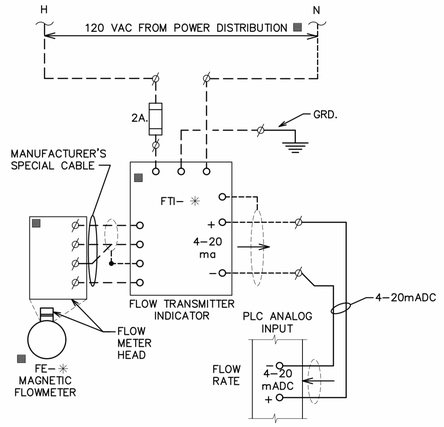


SUBMERSIBLE LEVEL WIRING DIAGRAM



TYPICAL MAGNETIC FLOW METER INSTALLATION DETAIL

N.T.S.



MAGNETIC FLOWMETER WIRING DIAGRAM (TYPICAL)

ALL DEVICES LOCATED IN CONTROL PANEL UNLESS OTHERWISE INDICATED BY ■

(MAGNETIC FLOWMETERS INSTALLED BELOW GRADE SHALL HAVE POTTED/SEALED HEADS, AND BE RATED SUITABLE FOR OCCASIONAL SUBMERGENCE; AS NOTED ON THE DRAWINGS)

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CITY OF FLINT
WPCF WASTE UNLOADING STATION

POWER WIRING DIAGRAMS

ISSUED FOR: BIDS | DATE: 2023.06.24 | BY: TSW

JOB NO. COF1076-01F

SHEET E-602

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