



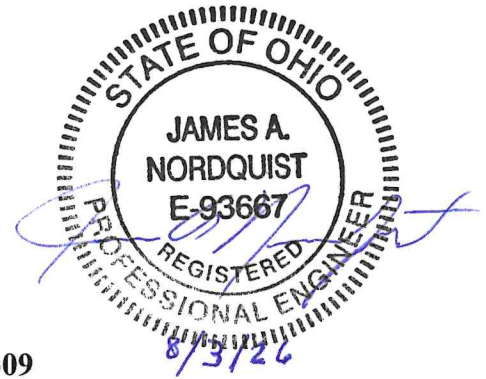
COMPLEX PROJECTS  
REQUIRE RESOLVE  
THRASHER'S GOT IT

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION

ADDENDUM #1

AUGUST 3, 2026

THRASHER PROJECT #T20-11309



TO WHOM IT MAY CONCERN:

The following are clarifications and responses to questions posed by contractors for the above-referenced project.

**A. SPECIFICATIONS**

1. Replace Specification 443140 with the one provided in this addendum.

**B. DRAWINGS**

1. Added – Sheet D3
2. Added – Sheet D4
3. Added – Sheet D5
4. Added – Sheet ES1
5. Added – Sheet ES2
6. Added – Sheet E1
7. Added – Sheet E2
8. Added – Sheet E3

**C. QUESTIONS AND RESPONSES**

**1. QUESTION**

Vulcan is asking if you are able to use the attached specification they provided?

**RESPONSE**

See Specifications section above.

**2. QUESTION**

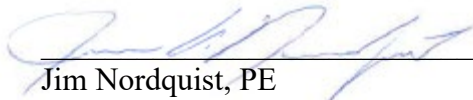
I don't see sheets D3-D5, ES1-ES3, and E1-E3 in this rebid package. Did they get cut off?

**RESPONSE**

See Drawings section above.

If you have any questions or comments, please feel free to contact me at your earliest convenience at [jnordquist@thethrashergroup.com](mailto:jnordquist@thethrashergroup.com). The deadline for questions is **Tuesday, August 18 at 4:00 pm**. Questions received after the deadline may not be answered. As a reminder, bids will be received until 1:00 p.m. on August 26, 2026, at the Village Administrator's Office located at 215 West St, Caldwell, OH 43724. Good luck to everyone and thank you for your interest in the project.

Sincerely,  
THE THRASHER GROUP, INC.

A handwritten signature in blue ink, appearing to read "Jim Nordquist", is written over a horizontal line.

Jim Nordquist, PE  
Sr. Project Manager

Village of Caldwell  
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**SECTION 443140  
MULTIPLE RAKE LINK STYLE BAR SCREEN**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Furnish and install One (1) fully automatic front-cleaning, front-return link driven multiple rake bar screen for collecting and removing debris from the incoming wastewater flow.
- B. The multiple rake bar screen shall be provided complete with all accessories, spare parts, mounting anchor bolts, and other appurtenances as specified and as may be required for a complete operational system.
- C. It shall be the Contractor's responsibility to ensure that the multiple rake bar screen and appurtenances furnished and installed shall be compatible with and have the necessary operating clearances to the structural elements and associated equipment shown on the Contract Drawings.
- D. Related Sections:
  - 1. Washing Press – Specification Section 443140.01

**1.02 REFERENCES**

- A. American Gear Manufacturers Association (AGMA)
- B. National Electrical Manufacturers Association (NEMA)
- C. American Federation of Bearing Manufacturers Association (AFBMA)
- D. American Society for Testing and Materials (ASTM)
- E. American Welding Society (AWS)
- F. Steel Structures Painting Council, American National Standards Institute (SSPC)
- G. Underwriters Laboratory (UL)

**1.03 SUBMITTALS**

- A. Shop Drawing Submittals shall include at least the following:
  - 1. Certified shop and erection drawings showing important details of construction dimensions, anchor bolt locations, and field connections.
  - 2. Descriptive literature, bulletins, and catalogs of the equipment, including details of the motor, gear reducer, and lubrication points.
  - 3. Installation, operation, and start-up procedures including lubrication requirements.
  - 4. Motor Manufacturer's data sheets and drawings.
  - 5. Total weight of the equipment including the weight of the single largest item.
  - 6. A list of spare parts that are supplied with the equipment.

**1.04 OPERATION AND MAINTENANCE MANUALS**

- A. Submit operations and maintenance manuals in three ring binders for the equipment in compliance with the Contract documents. Manuals shall include:

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1. Contact name, address, and telephone number of the equipment Manufacturer's Service Department and Parts Department.
2. Descriptive literature, including illustrations, covering the operational features of the equipment, specific for the particular installation, with all inapplicable information omitted or marked out.
3. Operation, maintenance, and troubleshooting information.
4. Complete maintenance parts list.
5. Complete connection, interconnecting, and assembly diagrams.
6. Approved shop drawings including complete electrical information.

**1.05 QUALITY ASSURANCE**

- A. The materials covered by these specifications are intended to be standard equipment of proven reliability and as manufactured by a reputable Manufacturer having experience in the production of screening equipment. The equipment furnished shall be designed and constructed in accordance with the best practices and methods and shall operate satisfactorily when installed as shown on the Contract Drawings and operated per the Manufacturer's recommendations.
- B. The Manufacturer shall have designed and manufactured rake type bar screens for a minimum of ten (10) years with a minimum of twenty-five (25) installations.
- C. The design is based on a Model VKR- Multi-Rake Link Style Bar Screen as manufactured by Vulcan Industries, LLC. of Missouri Valley, Iowa.

**1.06 DESIGN REQUIREMENTS**

- |    |                      |                            |
|----|----------------------|----------------------------|
| A. | Number of Units      | One (1)                    |
| B. | Average Daily Flow   | MGD each                   |
| C. | Peak Hourly Flow     | 3.0 MGD each               |
| D. | Flow Channel Width   | 1'-6"                      |
| E. | Flow Channel Depth   | 3'-9"                      |
| F. | Discharge Height EL. | *721.78'                   |
| G. | Operating Floor EL.  | *719.75'                   |
| H. | Channel Top EL.      | *719.75'                   |
| I. | Invert EL.           | *716.00'                   |
| J. | Bar Rack Spacing     | 1/2-inch                   |
| K. | Setting Inclination  | 75 degrees from horizontal |

\* Reference elevations only.

**1.07 STORAGE AND HANDLING OF EQUIPMENT**

- A. The Contractor shall store and temporarily support equipment prior to installation in strict accordance with the Manufacturer's recommendations and instructions. Protect all exposed surfaces. Keep records of the storage parameters and the dates that storage procedures were performed. The Contractor shall be responsible for work, equipment, and materials until inspected, tested and finally accepted.



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- B. Protect the equipment from being contaminated by dust, dirt, vibration and moisture.
- C. Temporarily connect equipment with built in motor space heaters to a power source and keep heaters in operation. Rotate all shafts that have bearings on at least a monthly basis.
- D. The unit shall be erected and lubricated in strict accordance with the instructions of the Manufacturer's field Engineer.

**PART 2 - PRODUCTS**

**2.01 MANUFACTURERS**

- A. Acceptable Manufacturers are as listed.
  - 1. Model VKR-18 Multi-Rake Link Style Bar Screen as manufactured by Vulcan Industries, LLC. of Missouri Valley, Iowa.
- B. Basis of design is Vulcan Industries, LLC. Contractors proposing substitute or equal manufacturers shall be responsible for all costs for revisions associated with system including, but not limited to, redesign of engineering, structural, mechanical, electrical, civil, and controls.

**2.02 GENERAL**

- A. The equipment furnished shall clean and remove debris from the incoming wastewater by means of a bar rack, installed in a concrete channel designed to retain debris. The bar rack shall be cleaned by multiple rakes engaging the upstream side bar rack from the bottom of the channel and removing the debris. The link system shall have jam evasion capability by flexing around and collecting large objects without overloading and shutting down the unit. The link system shall be such that it bends in one direction only which allows it to become its own lower sprocket and frame and shall have a 1,000-pound lifting capacity. The debris shall be lifted above the top of the channel and discharged through the downstream side to a screenings washing press.
- B. The mechanically cleaned bar screen shall have a head sprocket only, with no sprockets, bearings, or similar drive components under water. Equipment featuring reciprocating rake arms or lower bearings/sprockets/tracks below the water are not acceptable. Cleaning mechanisms that utilize shock absorbers, springs or other dampening or hydraulic actuators shall not be acceptable.
- C. The mechanically cleaned multiple rake bar screen system shall be fully automatic and shall consist of the following components:
  - 1. Bar Rack
  - 2. Frame, Supports and Guides
  - 3. Dead Plate
  - 4. Drive Machinery
  - 5. Discharge Chute
  - 6. Anchor Bolts
  - 7. Wiper Assembly
  - 8. Rake & Link System Assembly
  - 9. Electrical Controls and Control Panel

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10. In addition, any other components required to provide a system, which will be capable of fully performing the functions specified.
- D. Designs employing the use of cables, threaded stems, hydraulic cylinders to remove debris from the channel and units utilizing a proximity or limit switch for reverse cycles shall not be acceptable. Equipment designs utilizing greater than ½ horsepower motors or the use of two or more motors to complete a screen cleaning cycle are not acceptable. All platforms, ladders or other safety devices required, as a part of this equipment design shall be in accordance with applicable OSHA regulations.
- E. The design shall be such to ensure that all Manufacturer recommended preventive maintenance to the bar screen can be accomplished at the operating floor level.
- F. All equipment shall be designed and built for 24-hour intermittent service and for moderate shock without overheating, excessive vibration or strain.

**2.03 FRAME ASSEMBLY**

- A. The side frames shall be formed from plate with engineered bends and provided with bracing to form a rigid assembly capable of withstanding all operating forces when installed in accordance with Manufacturer's instructions.
- B. The frame shall be manufactured of 316 stainless steel plate, having a minimum thickness of 1/4-inch. The frame shall have a minimum width of 8-inches and extend fully from the top of the channel to the top of the bar screen assembly. The side frames shall be attached to a flush bottom base plate manufactured of 316 stainless steel plate, having a minimum thickness of 1/4-inch.
- C. Each side frame shall include rake head return guides integral to the frame to ensure proper alignment of the rake teeth into the bar rack. The return guides shall be manufactured of 316 stainless steel.
- D. The screen shall be provided with two (2) support stands connected to the side frames to support the screen at the installed angle of inclination. The support stands shall be constructed of 316 stainless steel members sized to adequately support the screen.

**2.04 LINK AND RAKE HEAD ASSEMBLY**

- A. The rake and link assembly shall consist of multiple rakes attached to the links. The link system shall be manufactured from cast type CF8M stainless steel. Each link shall weigh a minimum of 6-pounds. All mating surfaces shall be fully machined to close tolerances to prevent side and back bowing of the link system. Link pins shall be a minimum 0.75-inch diameter and shall be manufactured from 316 stainless steel, with snap rings and washers.
- B. Rake heads shall be spaced 21-inches apart. The rakes shall travel at no greater than 18-inches per minute at 25% of full motor speed. All rakes shall have teeth that penetrate the bar rack a minimum 80% of the bar rack bar depth, with rakes alternating between 0.375-inch thick 316 stainless steel and 0.75-inch thick UHMW or nylon construction.

**2.05 DRIVE ASSEMBLY**

- A. The bar screen shall be provided with an integrated drive assembly consisting of a Class 1, Division 1, Groups C & D explosion-proof AC induction type electric motor and helical worm gear reducer. The drive motor and gear reducer shall be mounted on the drive shaft and the frame. The drive shaft shall be supported by a flanged bearing mounted on

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- the external side of the frame opposite the drive assembly. The bearing shall be a grease-able, self-aligning, ball bearing type.
- B. The electric motor shall be close-coupled to the reducer. The motor shall be a 0.5 horsepower, 1,800 RPM base speed with a service factor of 1.0. The motor shall be U.L. listed and have a 4/1 speed range with a 56C frame size. Electrical characteristics shall be 230/460 volt, 3-phase, 60 Hertz, Class F/B rise insulation, 40-degree C Ambient, inverter duty.
  - C. The gear reducer shall be a shaft mounted, right angle type with helical worm gearing with a total ratio of 837:1, capable of 0.50 to 2.1 output RPM with an 11,000 in. lb. output torque. The gear reducer output shaft speed shall be controlled by a variable frequency drive. The gear reducer shall have a minimum 1.0 or greater service factor based on the motor input horsepower. The gear reducer shall be capable of elevating the weight of the rake and link assembly plus its maximum calculated debris load
  - D. Gear reducer shall have a cast iron housing with ball or roller bearings throughout with all moving parts immersed in oil.
  - E. Helical gears shall be of alloy steel with threads precision ground and polished after casehardening.
  - F. Gear shafts shall be of high strength alloy steel ground to required tolerances.
  - G. The worm gear shall be high strength alloy bronze.
  - H. All ball or roller bearings shall be rated and manufactured by a member of the Antifriction Bearing Manufacturer's Association. At least one bearing on each shaft shall be of the combined radial and thrust type.
  - I. Gear reducer units shall meet the standards of the AGMA for such equipment under moderate shock, 24-hour service.
  - J. The output capacity of the gear reducer shall be equal to the motor horsepower less reducer losses at the rated service factor.
  - K. The drive sprockets shall be manufactured from 316 stainless steel and key mounted onto a 316 stainless steel drive shaft. No other materials of construction shall be acceptable. The drive sprockets shall consist of two (2) side plates firmly keyed to the drive shaft, with four (4) 1-inch diameter drive pins configured such that they engage the link system to drive the rakes.

**2.06 BAR RACK**

- A. The bar screen shall be provided with a removable bar rack. The bar rack shall consist of equally spaced, parallel bars having 1/2-inch clear spacing between each bar. The bars shall be straight and inclined at 75 degrees above the horizontal plane.
- B. The bottom of the bars shall be attached to a flush bottom, base plate. The bar rack shall extend from the base plate to the connection point on the dead plate.
- C. The bottom of the bar rack shall be provided with an integral angled plate, which shall allow each rake head to fully engage the bottom most portion of the bar rack prior to reaching the inclined section of the bars to ensure debris accumulation is minimal.
- D. Bar racks requiring a recess in the bottom of the flow channel shall not be allowed.

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- E. The inclined section of the bar rack shall consist of trapezoidal parallel bars that shall be 1/4-inch thick by 1/8-inch thick by 13/16-inches deep. Bar stiffeners shall be placed on the downstream side of the bar rack bars to prevent distortion and shall not interfere with the operation of the cleaning rakes. The bars shall extend to the top of the channel.
- F. The bar rack shall be manufactured of 316 stainless steel.

**2.07 DEAD PLATE**

- A. The bar screen shall be provided with a fixed dead plate extending from the upper portion of the bar rack connection to the screenings discharge point.
- B. The plate shall be flat without undulation so that the rake head teeth will ride no closer than 1/16-inch from the dead plate and no further than 1/4-inch from the dead plate. It shall be securely fastened to the side frames.
- C. The dead plate shall be manufactured of 316 stainless steel having a minimum thickness of 1/4-inch.
- D. Designs in which the dead plate does not extend to the point of discharge shall not be acceptable.

**2.08 DISCHARGE CHUTE**

- A. The rakes shall be designed to reach a predetermined discharge height above the floor elevation. A directing (discharge) chute positioned a minimum 45 degrees from horizontal and located at the top of the dead plate shall be a part of each bar screen and shall be manufactured of 316 stainless steel having a minimum thickness of 1/8-inch.
- B. A full discharge chute enclosure shall be provided. The enclosure shall be manufactured of 14-gauge 316 stainless steel and shall be provided with an access door to facilitate wiper replacement.

**2.09 WIPER ASSEMBLY**

- A. A pivoting wiper mechanism will be positioned at the point of discharge and shall have a replaceable ultra-high molecular weight polyethylene (UHMW) wiper blade. The wiper arms shall pivot via a set of greaseable flanged bearings.
- B. During each cycle, the wiper blade shall contact the rake heads at its inner surface during upward travel and shall scrape the debris off the end of the rake head and through the discharge chute. The entire wiper mechanism including the wiper arms shall be fully contained inside the framework of the bar screen. The design shall be such that the rake head repositions the wiper mechanism.
- C. The wiper mechanism, excluding the wiper blade, shall be manufactured of 316 stainless steel. No moving parts shall extend beyond the framework or the discharge chute.
- D. The grease fittings for the wiper arms shall be extended and secured to the side frames in an area where they can be easily accessed by plant personnel.

**2.10 FRAME ENCLOSURES**

- A. The bar screen shall be provided with removable enclosure panels on the upstream portions of the bar screen above the operating floor.

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- B. The panels shall be manufactured of 20-gauge 316 stainless steel held in place by latches. Each panel shall be provided with two (2) handles for panel removal / replacement. All handles and latches shall be 316 stainless steel.

**2.11 CONTROLS / INSTRUMENTATION**

- A. The control system, both local and main, shall be designed and manufactured by the bar screen Manufacturer.
- B. Local Controls
  - 1. One (1) NEMA 7 local control station with HAND-OFF-AUTO selector switch and a mushroom head EMERGENCY STOP push-button. The local control station shall be mounted on the side frame unless otherwise specified.
  - 2. Two (2) channel mounted ultra-sonic differential level transducers with cable. Transducers shall be shipped loose for field installation and field wiring by others.
- C. Main Control Panel
  - 1. Furnish one (1) main control panel for the bar screen and associated washing press. The main control panel shall be totally enclosed, front access type with top/side/bottom entry. All controls shall be manufactured by a U.L. listed control panel facility and shall bear a U.L. label.
  - 2. Construction of the main control panel shall be NEMA 4X, 316L stainless steel construction with indicating devices and switches mounted on the front door.
  - 3. Main control panel wiring shall be neatly cabled and supported in nonflammable wiring raceways. Wiring shall be minimum 16-gauge MTW stranded wire.
  - 4. The main control panel wiring shall contain all power and control devices shown on the drawings (wiring diagrams), which shall include, but not be limited to, the following:
    - a. One (1) control power ON-OFF selector switch.
    - b. One (1) white pilot light for control power.
    - c. One (1) red pilot light for "Screen Running" indication.
    - d. One (1) amber pilot light for "Over Current" indication.
    - e. One (1) momentary "Reset" push-button for over current reset.
    - f. Spare contact for remote indication of "Over Current" condition.
    - g. PLC based adjustable repeat cycle timer to automatically initiate operation of the bar screen.
    - h. Control relays, wiring and circuitry required to implement the control logic.
    - i. One (1) variable frequency drive unit – Allen Bradley Powerflex 525.
    - j. One (1) circuit breaker.
    - k. One (1) elapsed time meter.
    - l. One (1) line reactor.
    - m. One (1) surge arrestor.
    - n. One (1) 480 VAC to 120 VAC step-down control power transformer.
    - o. One (1) Milltronics HydroRanger 200 HMI ultrasonic differential level controller.

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5. All selector switches, pushbuttons and pilot lights shall be NEMA rated components. IEC rated components are not acceptable.

**2.12 SEQUENCE OF OPERATION**

- A. The bar screen shall be manually operable from local control station.
- B. During normal operation, the traveling rakes shall operate in a continuous up and down direction at a normal speed of 1.5 ft/min. During predetermined high differential level conditions, the rakes shall operate in a continuous up and down direction at a high speed of 6 ft/min.
- C. With the HAND-OFF-AUTO selector switch in the HAND position, the bar screen shall run in a normal, continuous up and down direction. In the AUTO position, the bar screen shall be automatically started based on a timed function as described below:
  1. The bar screen shall be cycled on and off by remote control signals from the main control panel repeat cycle timer. Cycle frequency and duration times shall be set through the local timer.
  2. Normal timer start shall be overridden by a demand signal generated from a high-level float switch. The high-level float switch shall be located in the channel upstream from the screen. Once the float switch has closed, a signal in the form of a dry contact closure is generated to start the screen in high speed. Once directed to start, the screen will continue to operate at high speed until the water level is reduced to a normal operating level.
- D. Control logic shall be included within the VFD to provide overload protection in case of screen blockage that would stall the raking mechanism. If a blockage were encountered, the controls would stop the raking mechanism.

**2.13 FASTENERS**

- A. All fasteners shall be 316 stainless steel unless otherwise indicated in this specification. All threaded fasteners shall be coated with a nickel based anti-seize thread lubricant prior to assembly.

**2.14 ANCHOR BOLTS**

- A. Anchor bolts shall be provided by the Manufacturer.
- B. All anchor bolts shall be 316 stainless steel unless otherwise indicated in this specification. Anchor bolts shall be ample size and strength for the purpose intended and as shown on the Contract Drawings.

**2.15 LUBRICATION**

- A. Equipment shall ship completely lubricated, ready for commissioning.
- B. The Manufacturer shall state in the operating manual the amount of and specification for any lubricant required.

**2.16 PROTECTIVE COATINGS**

- A. Stainless steel and plastic components shall not be coated. The stainless steel structural components shall be passivated per the methods described in ASTM A380-99, after fabrication to remove embedded iron, surface rust and weld burn.

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- B. All other surfaces shall be solvent cleaned to remove dirt, oil and foreign materials. Cleaned surfaces shall be coated with one (1) coat of TNEMEC Series N69-1212 primer, or equal, to attain a minimum dry film thickness of 3-5 mils. The motor and gear reducer shall be finish coated with one (1) coat TNEMEC Endura-Shield, or equal, to attain a total minimum dry mil thickness of 3-5 mils. The finish coat shall be red in color and semi-gloss in finish, unless otherwise specified.
- C. Non-stainless steel control panels shall have Manufacturer's standard paint finish.

**2.17 SPARE PARTS**

- A. The Manufacturer shall furnish the following spare parts as the total amount of spare parts for this specification section.
  - 1. One (1) wiper blade
  - 2. One (1) drive clevis pin
  - 3. Ten (10) snap/retaining rings
  - 4. Four (4) link clevis pins
  - 5. One (1) snap ring tool
  - 6. One (1) 3 oz. tube Never-Seez
- B. All spare parts shall be properly packaged, labeled and stored where directed by the Owner or Engineer.

**PART 3 - EXECUTION**

**3.01 TESTING**

- A. The screen shall be factory assembled and factory run tested. The main control shall also be factory tested. If the screen is manufactured outside of the United States, the screen shall be factory tested at the point of manufacture and factory tested a second time as a complete assembly (including the motor and control panel) in the United States prior to shipment to the jobsite.
- B. The screen shall also be field tested after erection in the presence of the Owner and Engineer to confirm and verify the structural and mechanical compliance to the specification. The field acceptance test shall include demonstrating that the rake teeth properly engage the bar rack along the length of the bar rack and that the screen can be run continuous for 4-hours without overheating, binding, or show other signs of misalignment.

**3.02 INITIAL START-UP AND TRAINING**

- A. The Contractor shall provide the services of a factory-employed service technician who shall adequately inspect the installation, test the equipment furnished under this Contract and instruct the Owner's operating personnel in its maintenance and operation. Factory personnel are required. Manufacturer's representatives are not deemed acceptable to provide the start-up service. The services of the technician shall be provided as follows:
  - 1. One (1) trip of one (1) day of service to supervise the installation of the bar screen (if required).

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2. One (1) trip of two (2) days of service to inspect and certify the installation prior to startup and instruct Owner's personnel in proper operation and maintenance of the equipment.

**3.03 WARRANTY**

- A. The Manufacturer shall warrant that the supplied equipment shall be free from defects in material and workmanship and that it will replace or repair, F.O.B. its factory, any part or parts, which examination shall show to have failed under normal use and service by the user within eighteen (18) months following initial shipment or twelve (12) months following operation start up, whichever occurs first.



LAYOUT TAG: D3 GENERAL DETAILS  
CAD FILE: R:\020\120-11309 - Village Of Caldwell - Prison Pump Station\300 - Design\2- Design Drawings\Contract #1 Or Plan Set\CI-010-SHT-D3.dwg  
PLOT DATE/TIME: 8/3/2026 11:38 AM

THRUST BLOCKING

1. THE THRUST BLOCKING SHALL BE FORMED AGAINST A SOLID TRENCH WALL. THE FITTING AREAS SHALL BE EXCAVATED BY HAND BECAUSE MECHANICAL EQUIPMENT WILL DAMAGE THE BEARING SURFACE OF THE TRENCH WALL.
2. THE SIZE AND TYPE OF THRUST BLOCK DEPENDS ON THE PIPE SIZE, LINE PRESSURE, TYPE OF FITTING, DEGREE OF BEND AND TYPE OF SOIL. IN MOST CASES, THE SIZE AND TYPE OF THRUST BLOCK WILL BE DETERMINED BY THE ENGINEER. THRUST BLOCK SIZE MAY BE CALCULATED BY THE PROCEDURES SHOWN AT RIGHT.

THRUSTS IN SOFT UNSTABLE SOILS

1. IN SOFT, UNSTABLE SOILS SUCH AS MUCK OR PEAT, THRUSTS ARE RESISTED BY RUNNING CORROSION-RESISTANT TIE-RODS TO SOLID FOUNDATIONS OR BY REMOVING THE SOFT MATERIAL AND REPLACING IT WITH BALLAST OF SUFFICIENT SIZE AND WEIGHT TO RESIST THRUSTS DEVELOPED.

UPWARD THRUSTS AT FITTINGS

1. WHERE A FITTING IS USED TO MAKE A VERTICAL BEND, ANCHOR THE FITTING TO A THRUST BLOCK BRACED AGAINST THE UNDISTURBED SOIL. THE THRUST BLOCK SHALL HAVE ENOUGH RESISTANCE TO WITHSTAND UPWARD AND OUTWARD THRUSTS AT THE FITTING.

SIDE THRUST ON CURVES

1. AN OUTWARD PRESSURE EXISTS ON ALL DEFLECTIONS FROM A STRAIGHT LINE. GOOD SOIL, PROPERLY TAMPED, IS SUFFICIENT TO HOLD SIDE THRUST UNLESS SOIL CONDITIONS ARE UNSTABLE. IN THAT CASE, TO ANCHOR AGAINST THIS SIDE THRUST, THE BLOCKING SHOULD BE PLACED AGAINST THE PIPE ON EACH SIDE OF THE COUPLING. DO NOT THRUST BLOCK THE COUPLING ITSELF.

SIDE THRUST

| PIPE SIZE<br>INCHES | SIDE THRUST<br>POUNDS PER DEGREE |
|---------------------|----------------------------------|
| 1 1/2"              | 5.1                              |
| 2"                  | 7.9                              |
| 2 1/2"              | 11.6                             |
| 3"                  | 17.1                             |
| 3 1/2"              | 22.4                             |
| 4"                  | 28.3                             |
| 5"                  | 43.1                             |
| 6"                  | 60.8                             |
| 8"                  | 103.0                            |
| 10"                 | 160.0                            |
| 12"                 | 225.0                            |

BASED ON SIDE THRUST PER 100 POUNDS PER SQUARE INCH (PSI)  
PRESSURE PER DEGREE OF DEFLECTION

MULTIPLY SIDE THRUST POUNDS BY DEGREE  
OF DEFLECTION TIMES POUNDS OF PRESSURE  
DIVIDED BY 100 TO OBTAIN TOTAL SIDE  
THRUST IN POUNDS.

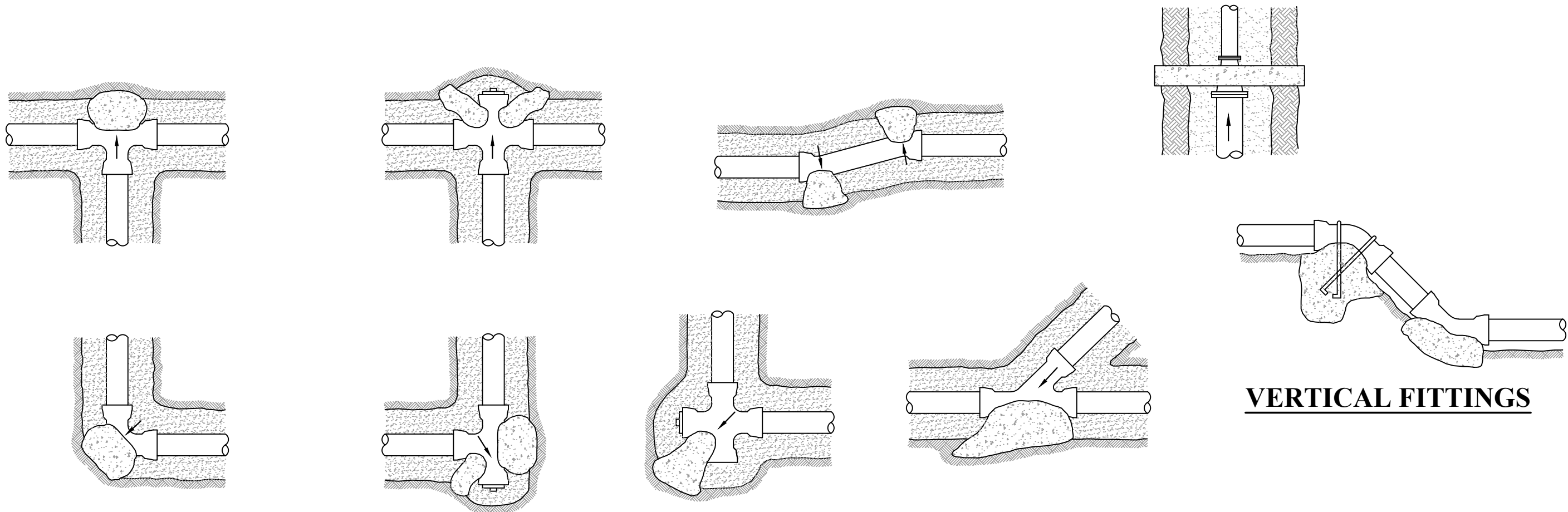
STEP No. 1:

MULTIPLY THE PRESSURE LEVEL DESIRED  
FOR TESTING BY THE APPROPRIATE VALUE  
SHOWN IN THE FOLLOWING TABLE:

| PIPE SIZE | TEE OR CAP | 90° BEND | 45° BEND | 22 1/2° BEND | 11 1/4° BEND |
|-----------|------------|----------|----------|--------------|--------------|
| 1.5"      | 2.65       | 3.75     | 2.03     | 1.03         | 0.52         |
| 2"        | 4.71       | 6.66     | 3.61     | 1.84         | 0.92         |
| 2.5"      | 7.36       | 10.41    | 5.64     | 2.87         | 1.44         |
| 3"        | 10.60      | 14.99    | 8.12     | 4.14         | 2.08         |
| 3.5"      | 14.43      | 20.41    | 11.05    | 5.63         | 2.83         |
| 4"        | 18.85      | 26.66    | 14.43    | 7.35         | 3.70         |
| 5"        | 29.45      | 41.65    | 22.54    | 11.49        | 5.77         |
| 6"        | 42.41      | 59.98    | 32.46    | 16.55        | 8.31         |
| 8"        | 75.40      | 106.63   | 57.71    | 29.42        | 14.78        |
| 10"       | 117.81     | 166.61   | 90.17    | 45.97        | 23.09        |
| 12"       | 169.65     | 239.92   | 129.84   | 66.19        | 33.26        |
| 14"       | 230.91     | 326.55   | 176.73   | 90.10        | 45.27        |
| 16"       | 301.59     | 426.52   | 230.83   | 117.68       | 59.12        |
| 18"       | 381.70     | 539.81   | 292.14   | 148.93       | 74.83        |
| 21"       | 519.54     | 734.74   | 397.64   | 202.71       | 101.85       |
| 24"       | 678.58     | 959.66   | 519.37   | 264.77       | 133.03       |

BASED ON POUNDS THRUST PER PSI WORKING PRESSURE

| REDUCER<br>SIZE |        |
|-----------------|--------|
| 4" X 2"         | 14.14  |
| 4" X 3"         | 8.25   |
| 6" X 3"         | 31.81  |
| 6" X 4"         | 23.56  |
| 8" X 4"         | 56.55  |
| 8" X 6"         | 32.99  |
| 10" X 4"        | 98.96  |
| 10" X 6"        | 75.40  |
| 10" X 8"        | 42.41  |
| 12" X 4"        | 150.80 |
| 12" X 6"        | 127.23 |
| 12" X 8"        | 94.25  |
| 12" X 10"       | 51.84  |
| 16" X 6"        | 259.18 |
| 16" X 8"        | 226.19 |
| 16" X 10"       | 183.78 |
| 16" X 12"       | 131.95 |
| 18" X 8"        | 306.31 |
| 18" X 10"       | 263.89 |
| 18" X 12"       | 212.06 |
| 18" X 14"       | 150.80 |
| 18" X 16"       | 80.11  |
| 20" X 10"       | 353.43 |
| 20" X 12"       | 301.59 |
| 20" X 14"       | 240.33 |
| 20" X 16"       | 169.65 |
| 20" X 18"       | 89.54  |
| 24" X 12"       | 508.94 |
| 24" X 14"       | 447.68 |
| 24" X 16"       | 376.99 |
| 24" X 18"       | 296.88 |
| 24" X 20"       | 207.35 |



HORIZONTAL FITTINGS

CONCRETE THRUST BLOCK DETAILS

NOT TO SCALE

VERTICAL FITTINGS

STEP No. 2:

DETERMINE THE BEARING STRENGTH OF THE SOIL  
FROM THE TABLE BELOW:

SOILS AND SAFE BEARING LOADS LBS SQ. FT.

|                                               |        |
|-----------------------------------------------|--------|
| SOUND SOILS                                   | 10,000 |
| CEMENTED GRAVEL AND<br>SAND DIFFICULT TO PICK | 4,000  |
| COURSE AND FINE<br>COMPACT SAND               | 3,000  |
| MEDIUM CLAY THAT CAN<br>BE SPADED             | 2,000  |
| SOFT CLAY                                     | 1,000  |

CONTACT ENGINEER IF BEARING STRENGTH OF SOIL IS LESS THAN 1,000 PSF

STEP No. 3:

DIVIDE THE TOTAL THRUST OBTAINED IN STEP 1  
BY THE BEARING STRENGTH OF SOIL THIS GIVES  
THE SQUARE FEET OF THE AREA NEEDED.

THRUST BLOCK GENERAL NOTES:

1. ALL CONCRETE THRUST BLOCKING SHALL MEET 3000 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. ALL FITTINGS SHALL BE WRAPPED WITH 4 MIL PLASTIC PRIOR TO PLACING CONCRETE THRUST BLOCK.

ADDENDUM #1

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION

GENERAL DETAILS

SHEET No.

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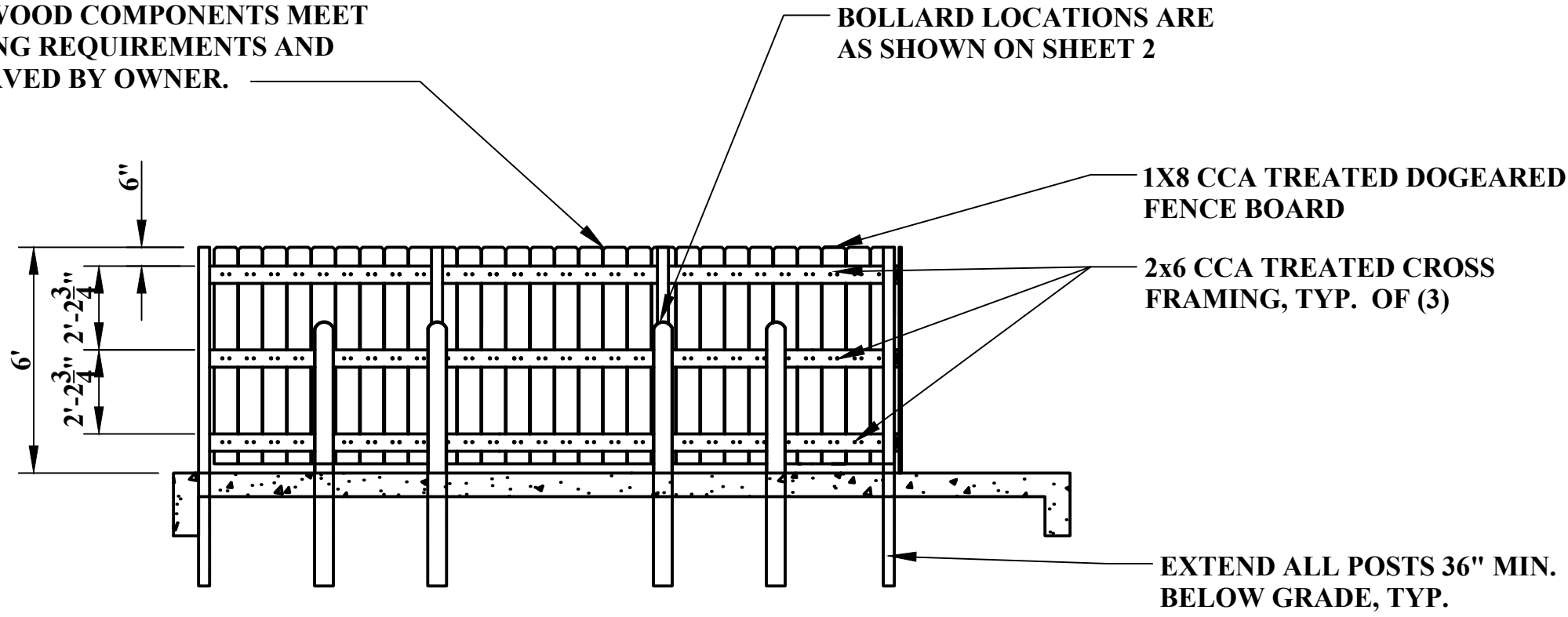
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| CHECKED: A. FECHKO DATE: 04/2026     |
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| SURVEY DATE:                         |
| SURVEY BY:                           |
| FIELD BOOK No.:                      |



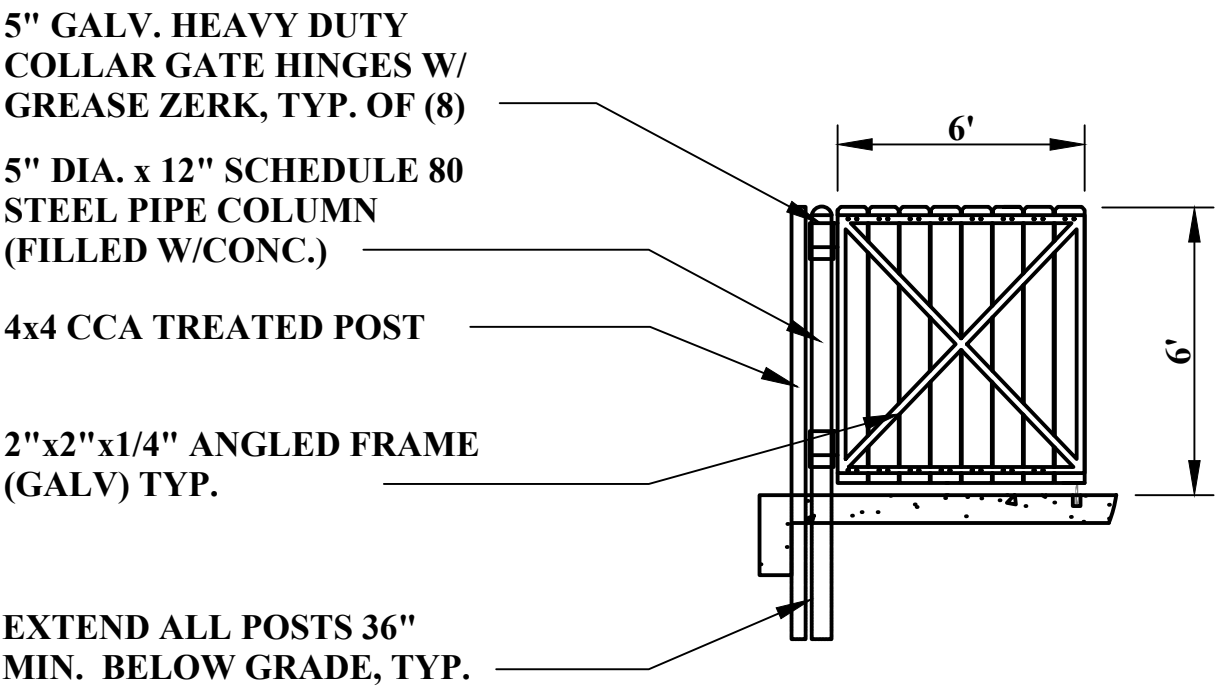
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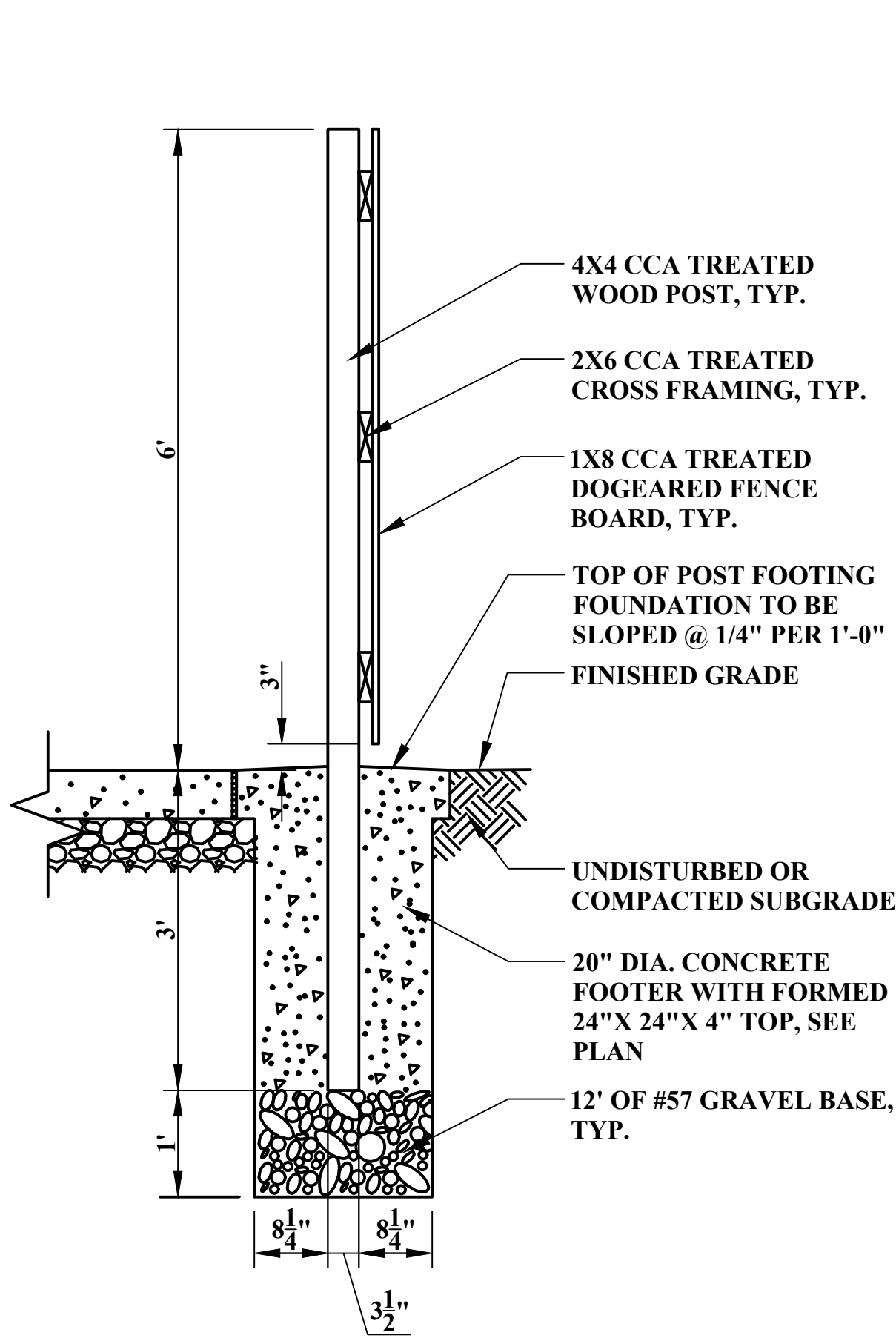
PROVIDE PERMA-CHINK (LIFE LINE ULTRA 7, CHESTNUT 365) WATERPROOF SEALER. CONTRACTOR SHALL RETURN TO APPLY THE FINISH STAIN A MINIMUM OF 6 MONTHS AND MAXIMUM OF 8 MONTHS AFTER INSTALLATION OF TREATED WOOD. AS LONG AS THE TREATED WOOD HAS WEATHERED AND WATER ABSORBS PER THE STAIN MANUFACTURER'S INSTRUCTIONS. STAIN MAY BE APPLIED EARLIER IF ALL WOOD COMPONENTS MEET MOISTURE TESTING REQUIREMENTS AND TESTS ARE OBSERVED BY OWNER.



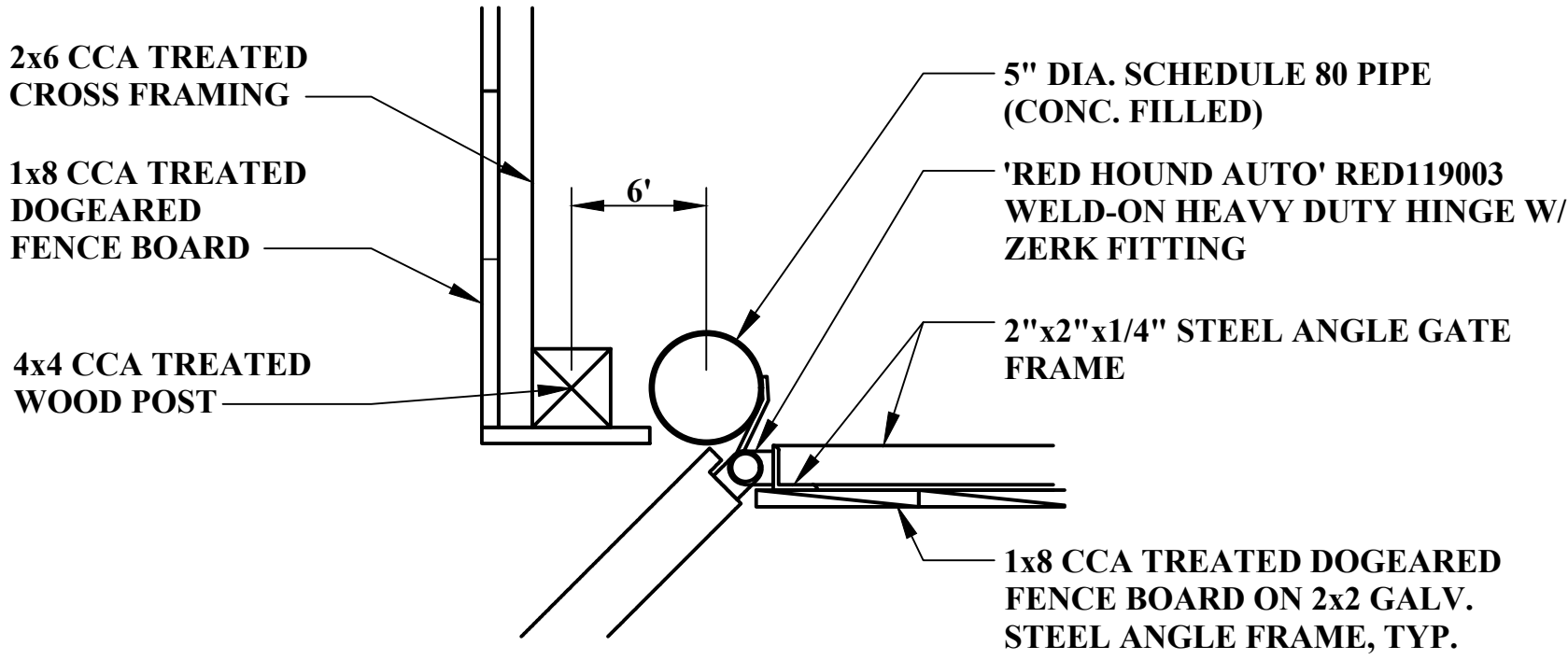
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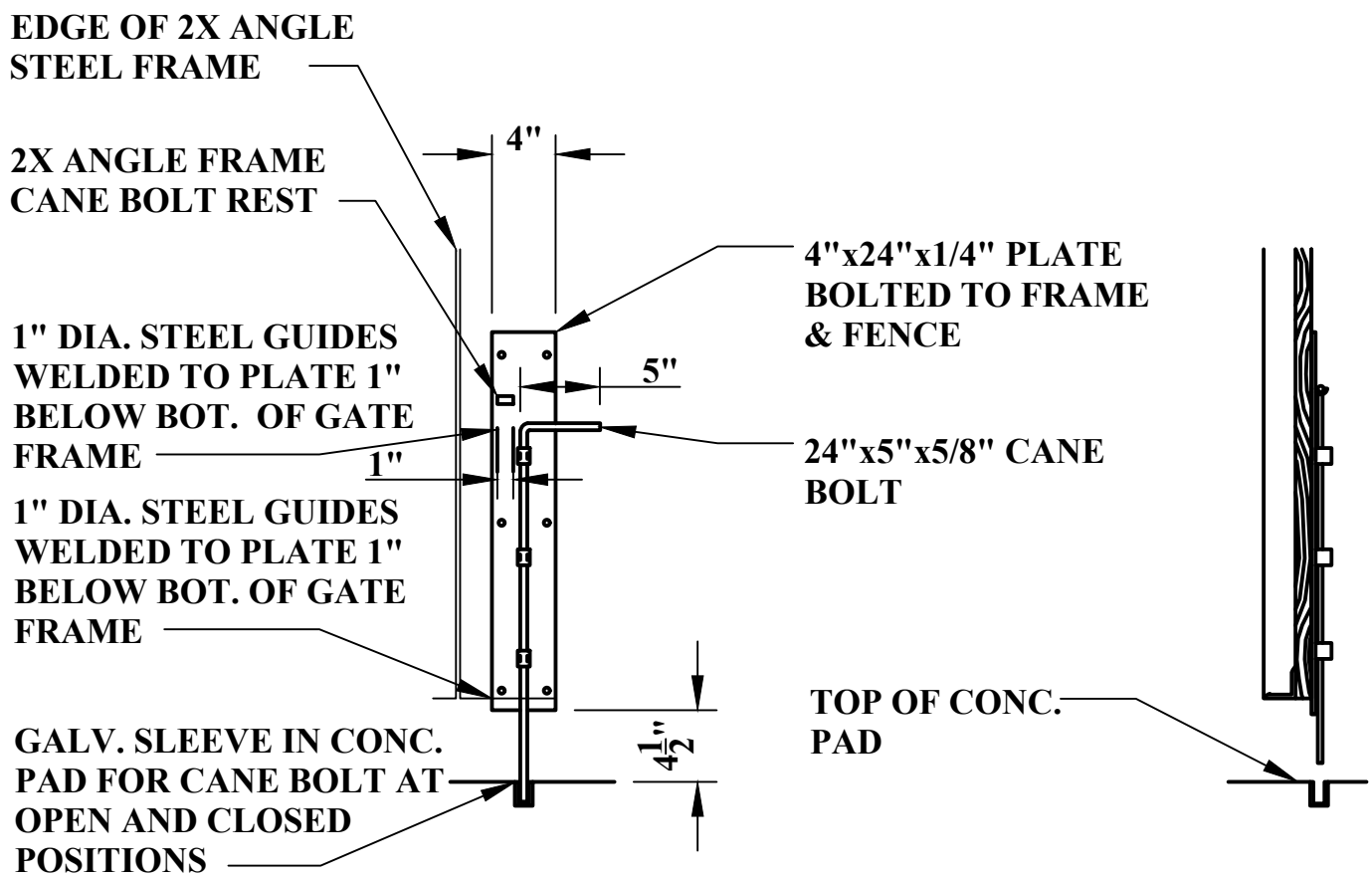
GATE DETAIL  
NOT TO SCALE



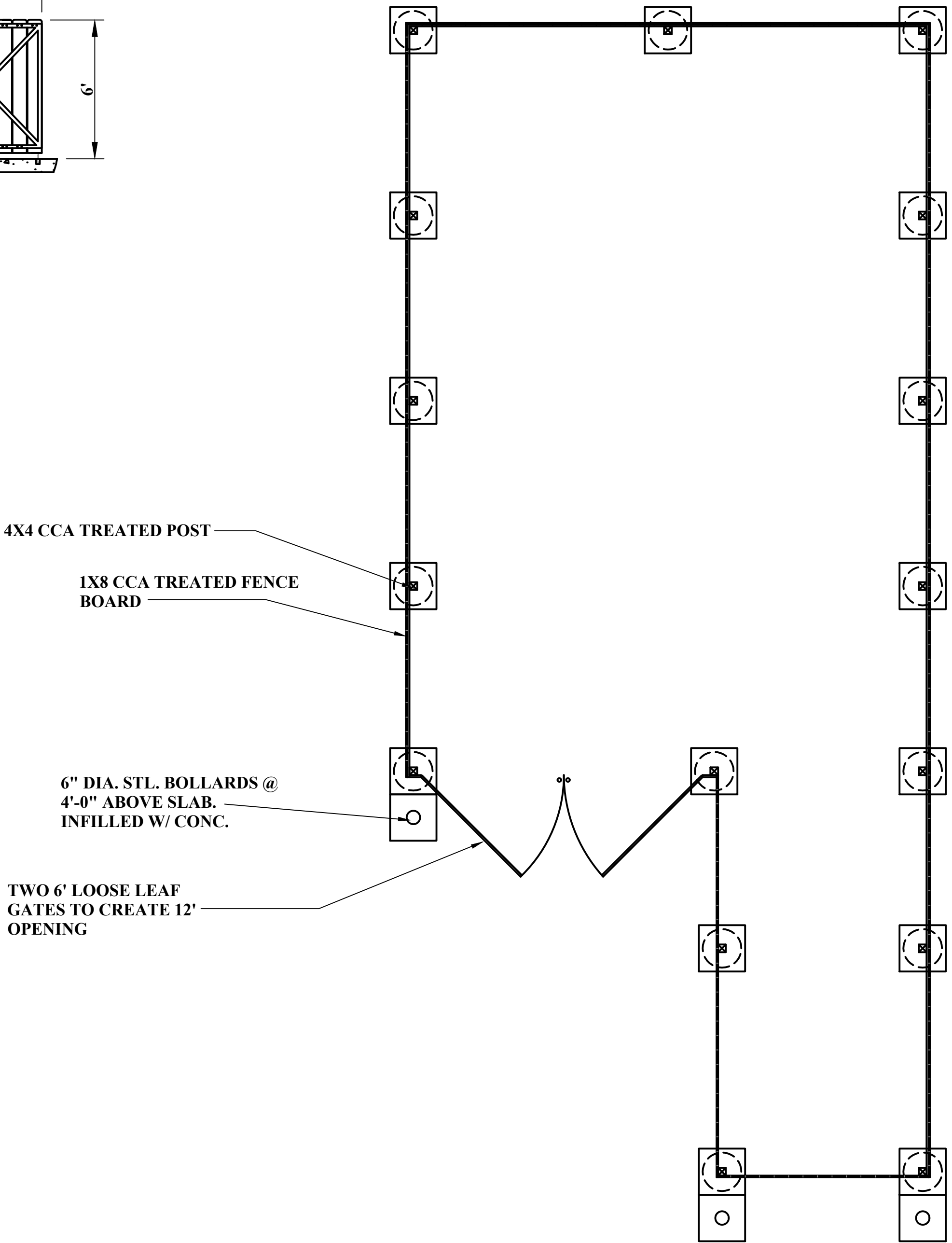
TYPICAL POST DETAIL  
NOT TO SCALE



DOOR HINGE DETAIL  
NOT TO SCALE



CANE BOLT (1 PER GATE)  
NOT TO SCALE



FENCE PLAN  
NOT TO SCALE

ADDENDUM #1

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION

GENERAL DETAILS

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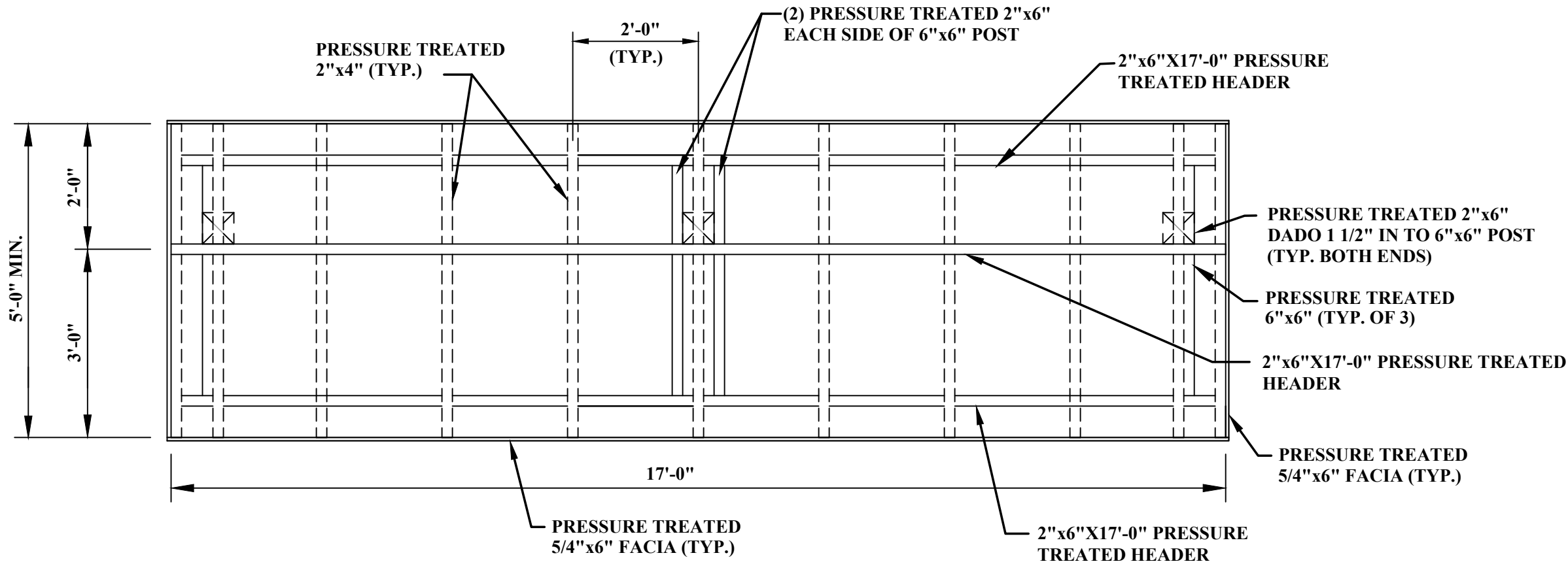
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| APPROVED: J. NORDQUIST | DATE: 04/2026 |
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| SURVEY BY:             |               |
| FIELD BOOK No.:        |               |



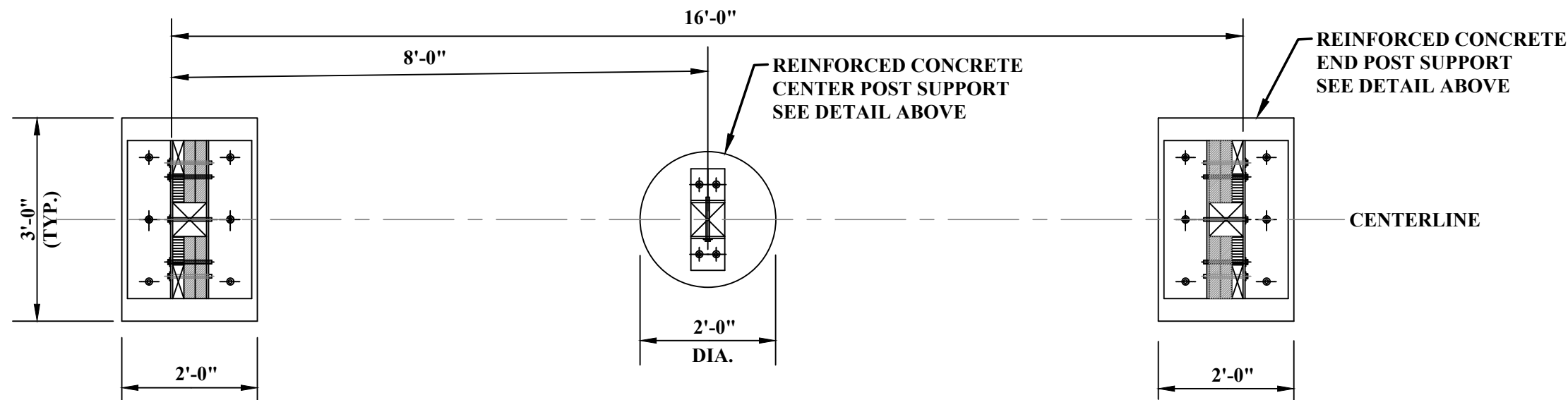
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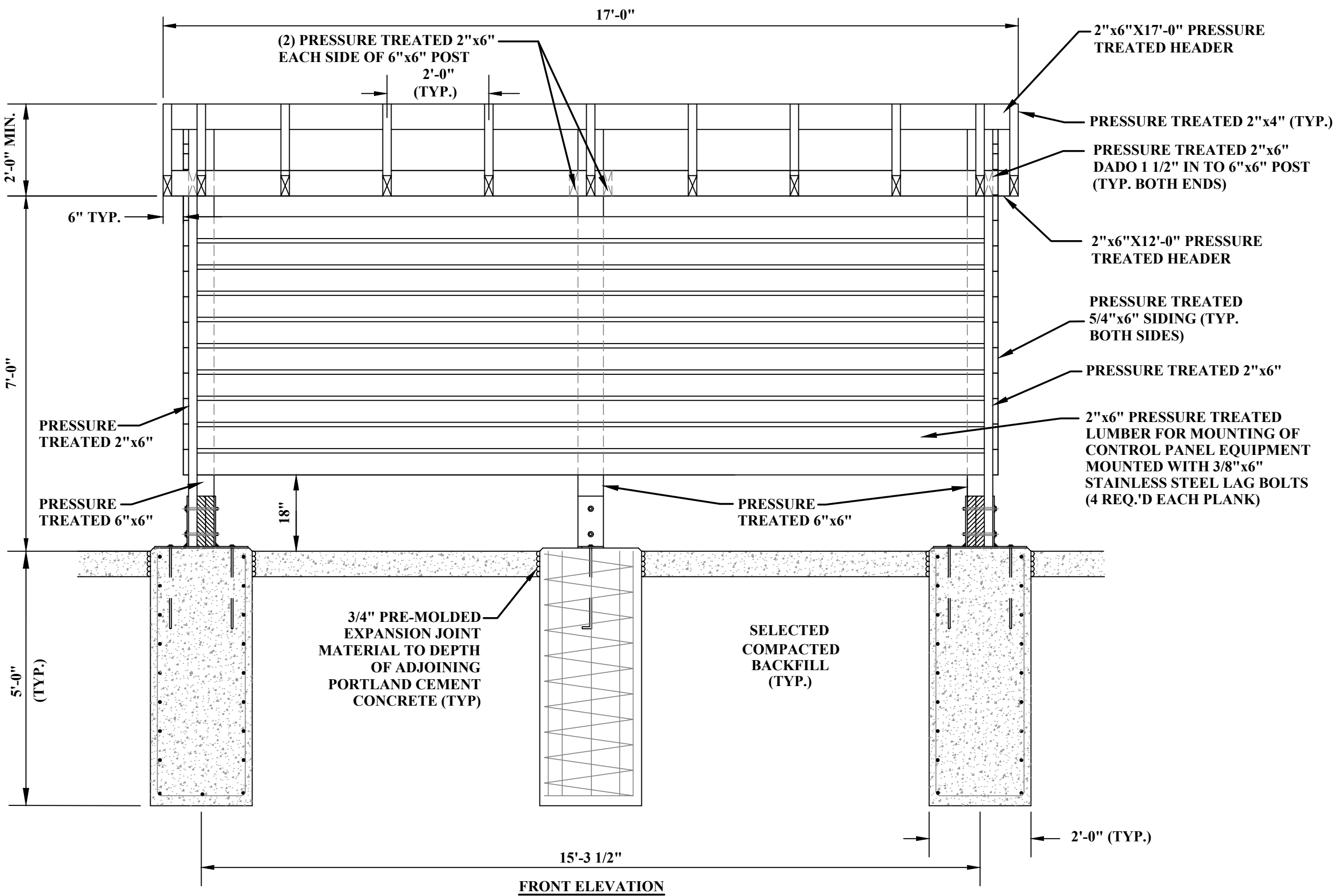
LAYOUT TAB: 05 GENERAL DETAILS  
CAD FILE: R:\020\120-11309 - Village Of Caldwell - Prison Pump Station\300 - Design\2. Design Drawings\Contract #1 Or Plan Set\CI-010-SHT-D5.dwg  
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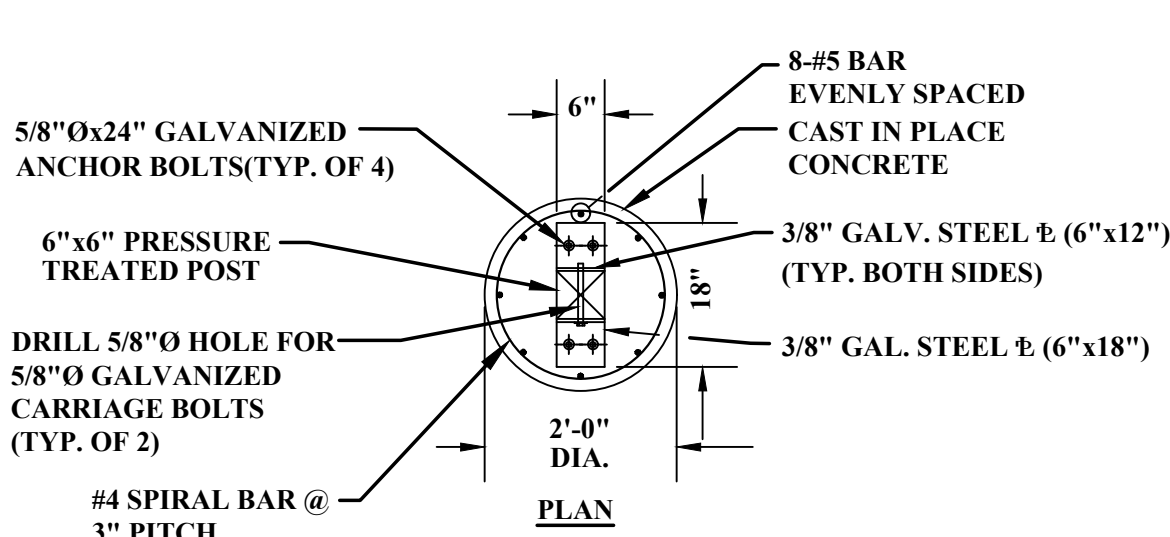
**CONTROL PANEL SHELTER - ROOF PLAN**  
SCALE: N.T.S.



**CONCRETE BASE LAYOUT**  
SCALE: N.T.S.

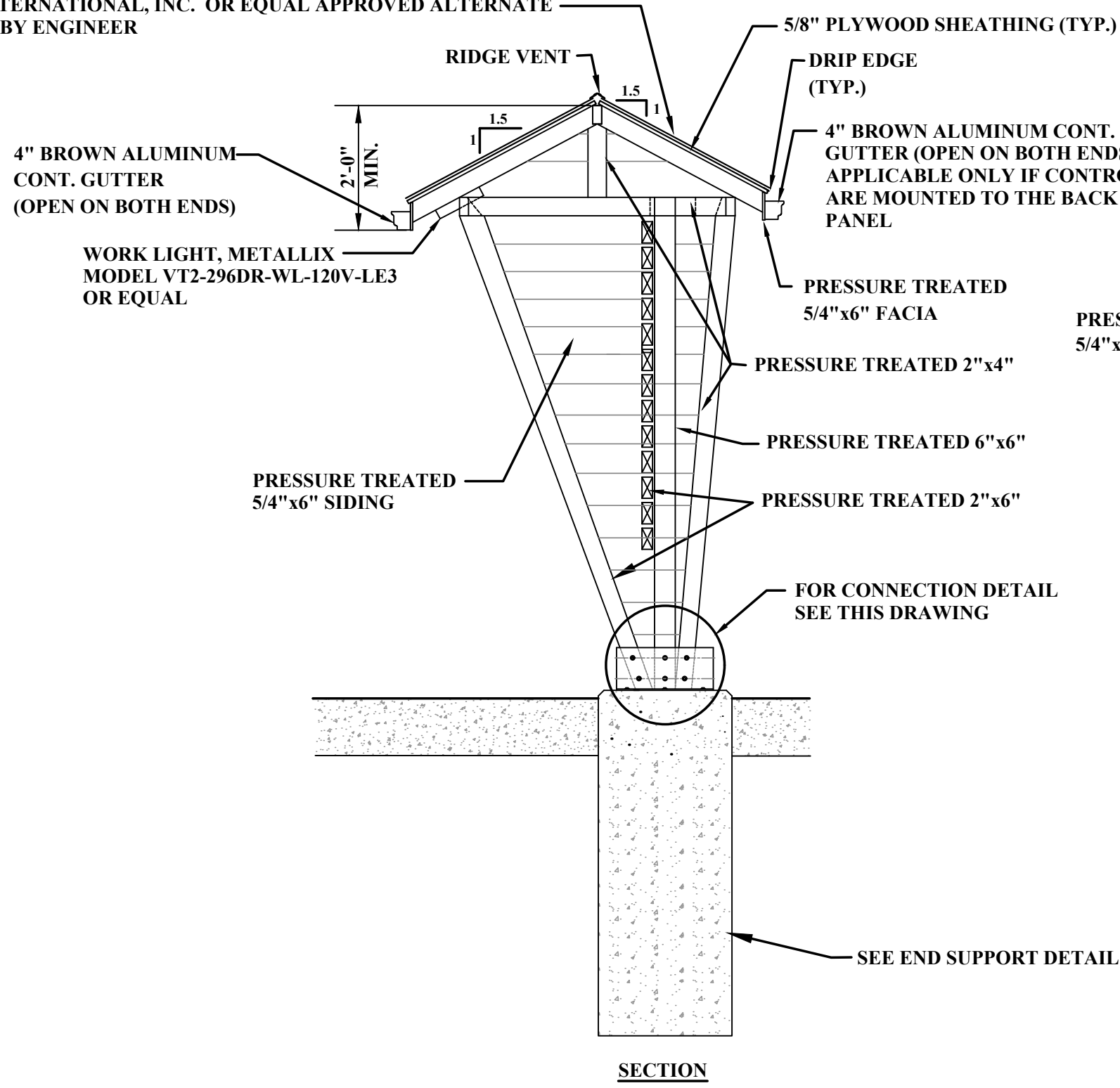


**CONTROL PANEL SHELTER**  
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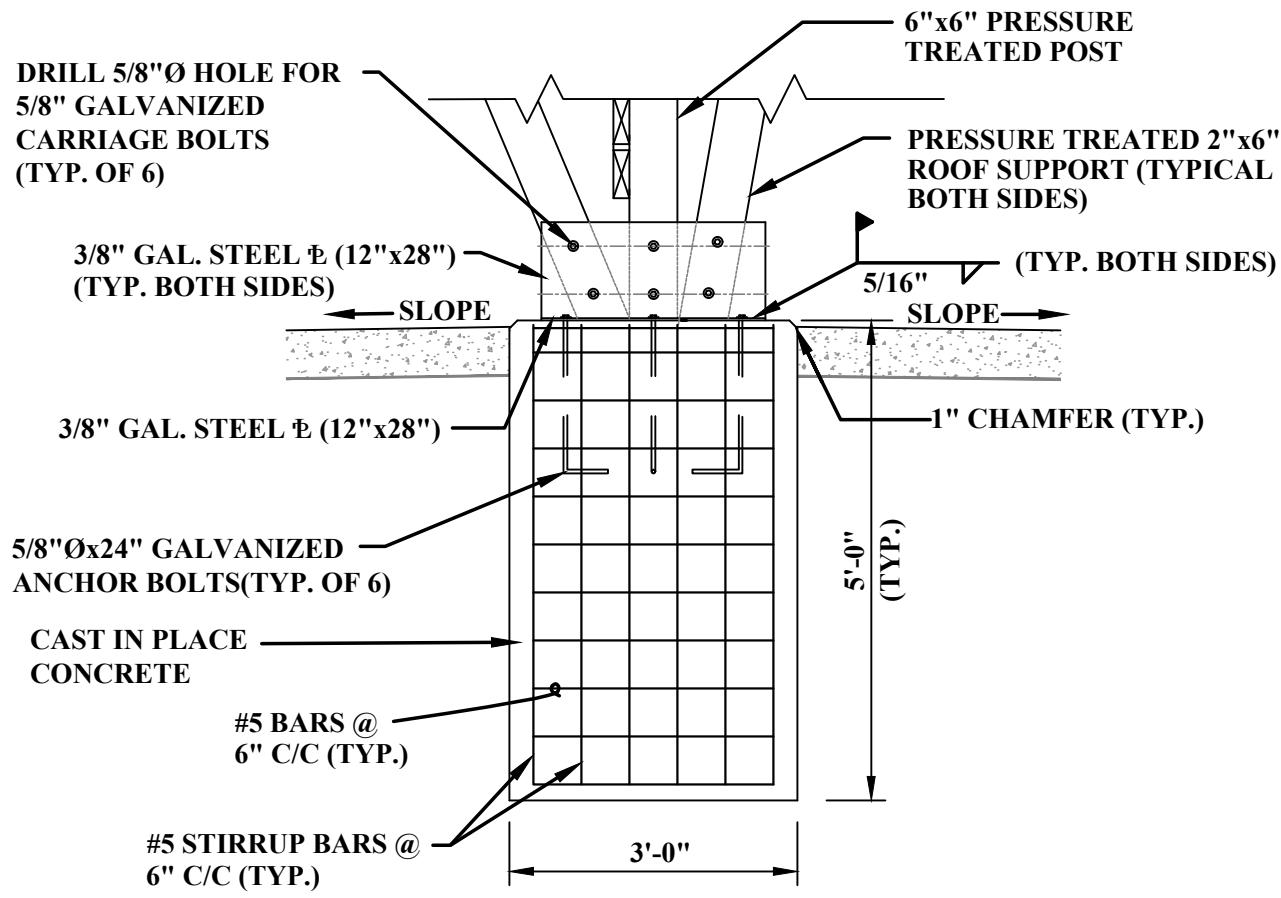
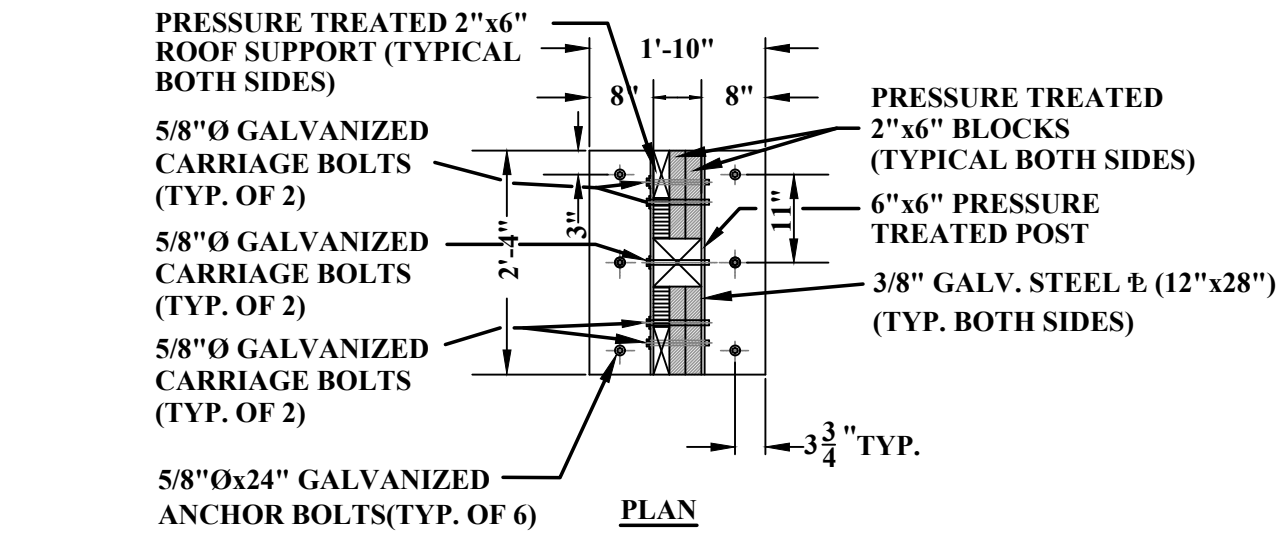


**CENTER POST SUPPORT DETAIL**  
SCALE: N.T.S.

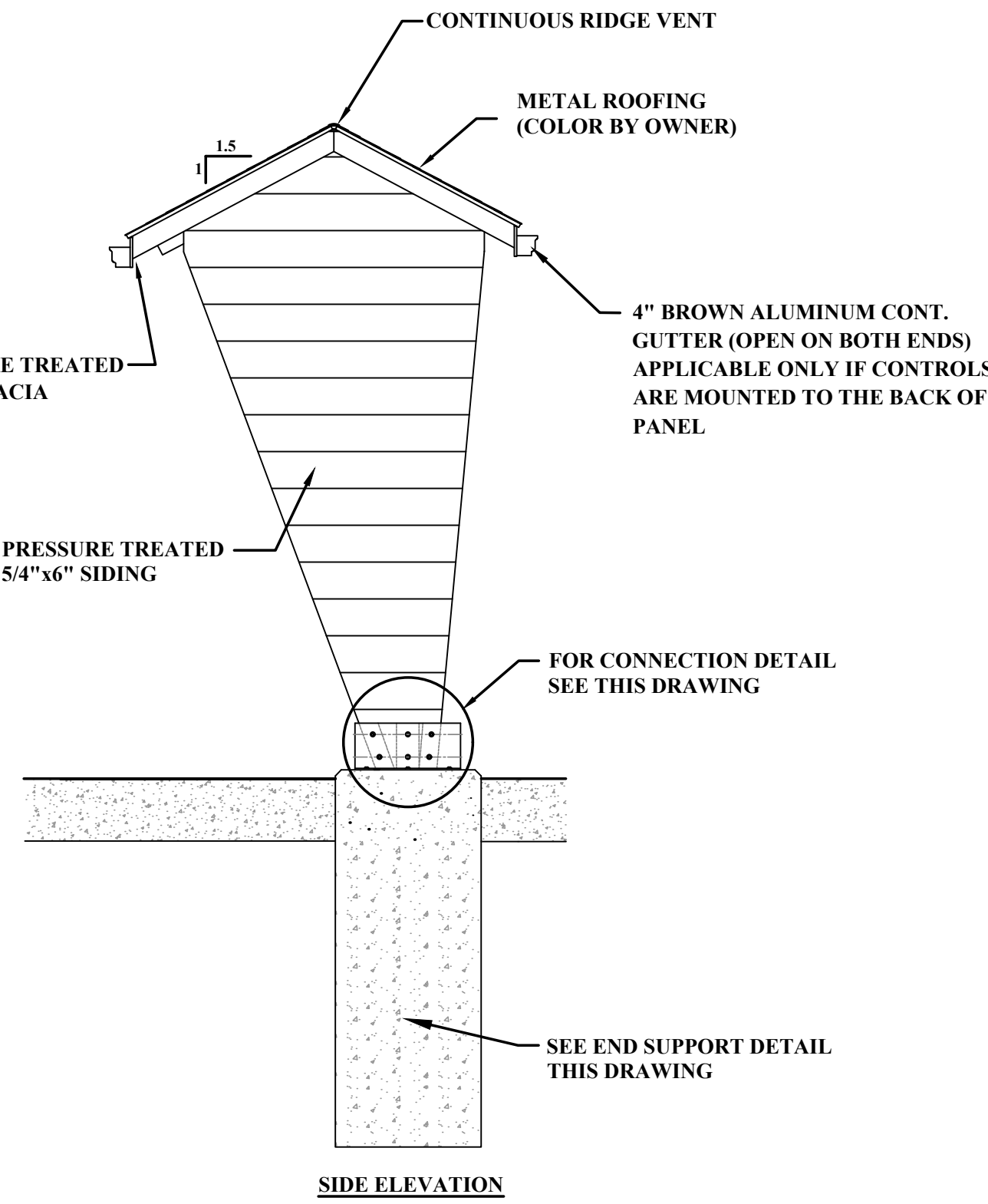
METAL ROOF W/ ALUMINUM FACIA AND SOFFIT SYSTEM BY McELROY METAL, INC. OR ATAS INTERNATIONAL, INC. OR EQUAL. ROOF COLOR TO BE BROWN SOFFIT, FACIA AND TRIM TO BE WHITE. STYLE TO BE MULTI-RIB PANEL (24 GA.) WITH MOISTURE-LOC BY McELROY METAL, INC. OR ATAS INTERNATIONAL, INC. OR EQUAL APPROVED ALTERNATE AND APPROVED BY ENGINEER



**SECTION**



**END POST SUPPORT DETAIL**  
SCALE: N.T.S.



**SIDE ELEVATION**

**GENERAL NOTE:**

1. CONTRACTOR TO SUBMIT CONTROL PANEL LAYOUT WITH SUBMITTAL PACKAGE PRIOR TO ORDERING MATERIAL.

| ROOF TRUSS DESIGN INFORMATION              |
|--------------------------------------------|
| WIND LOAD = 10.5 psf<br>SNOW LOAD = 36 psf |
| DESIGN LOADS                               |
| LIVE LOADS = 60 psf<br>DEAD LOADS = 40 psf |

**ADDENDUM #1**

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION

GENERAL DETAILS

SHEET No.

**D5**

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| <b>T20-11309</b> |



LAYOUT TAB: ES1 EROSION AND SEDIMENT CONTROL DETAILS  
CADD FILE: R:\020\120-11309 - Village Of Caldwell - Prison Pump Station\300 - Design\2- Design Drawings\Contract #1 - Or Plan Set\CI-020-SHT-ES1.dwg  
PLOT DATE/TIME: 8/13/2026 11:37 AM

GENERAL NOTES

THE LOCATION AND TIMING OF ALL EROSION AND SEDIMENT CONTROL ITEMS SHALL BE FIELD ADJUSTED TO PREVENT SIGNIFICANT IMPACTS ON RECEIVING WATERS. IMPLEMENTATION OF THIS STORM WATER POLLUTION PREVENTION PLAN SHALL CONTINUE THROUGHOUT THE DURATION OF THE PROJECT OR UNTIL SUCH TIME THAT THE DISTURBED AREAS ARE PERMANENTLY STABILIZED.

THE CONTRACTOR IS FULLY RESPONSIBLE FOR SOIL SEDIMENT POLLUTION FROM THE SITE AND PROPER PLACEMENT AND MAINTENANCE OF EROSION CONTROL ITEMS IN ACCORDANCE WITH THE OHIO DEPARTMENT OF NATURAL RESOURCES' (ODNR'S) MANUAL OF RAINWATER AND LAND DEVELOPMENT, LATEST EDITION. INSTALL EROSION CONTROL MEASURES PRIOR TO CONSTRUCTION IN AREAS REQUIRING SUCH MEASURES.

REFER TO SPECIFICATION SECTION 31 25 00 – EROSION AND SEDIMENTATION CONTROL FOR ADDITIONAL EROSION CONTROL REQUIREMENTS.

PROVIDE SILT FENCE FOR ALL CONSTRUCTION ACTIVITY ADJACENT TO SURFACE WATERS OF THE STATE (I.E. STREAMS, CREEKS, WETLANDS AND WATER COURSES IDENTIFIED ON THE PLANS)

PROVIDE INLET PROTECTION TO PREVENT SEDIMENT LADEN WATER FROM ENTERING STORM DRAIN SYSTEMS. INLETS PROTECTION SHALL BE INSTALLED IN ACCORDANCE WITH EITHER THE "TEMPORARY" OR THE "SILT SACK DETAIL".

PROVIDE SILT FENCE AND DIVERSIONS AS NEEDED TO INTERCEPT SHEET FLOW RUNOFF FROM DENUDED AREAS AND TO PROTECT ADJACENT PROPERTIES AND WATER RESOURCES FROM SEDIMENT TRANSPORTED VIA SHEET FLOW.

THE CONTRACTOR SHALL CHECK TEMPORARY AND PERMANENT EROSION CONTROL FOR ADDITIONAL EROSION CONTROL FEATURES EVERY 7 DAYS OR WITHIN 24 HOURS OF ANY RAINFALL OF MORE THAN 0.5" AS PER THE OHIO DEPARTMENT OF TRANSPORTATION (ODOT) ITEM 670. ANY PROBLEMS FOUND DURING THE INSPECTION SHOULD BE CORRECTED IMMEDIATELY. A COPY OF THE WEEKLY INSPECTION REPORTS SHALL BE MADE AVAILABLE TO THE OHIO EPA SHOULD THEY REQUEST THEM.

THE OHIO EPA MAY INSPECT THE PROJECT AT ANY TIME.

A COPY OF THE OHIO EPA STORMWATER PERMIT, IF REQUIRED, MUST BE DISPLAYED IN A NOTICEABLE LOCATION.

ESTABLISHMENT OF PERMANENT GROUND COVER SHALL CONFORM TO THE CONTRACT DOCUMENTS FOR SEEDING AND MULCHING.

IF SMALL RILLS OR GULLIES DEVELOP, TEMPORARY DIVERSIONS OF EARTH FILL OR STRAW BALES SHOULD BE INSTALLED UNTIL SATISFACTORY SEEDING IS ESTABLISHED.

ADJACENT ROADS SHALL BE KEPT FREE OF DIRT AND DEBRIS AT ALL TIMES.

WHEREVER PRACTICAL, IT IS RECOMMENDED THAT FINAL SITE GRADING BE ACCOMPLISHED AS SOON AS POSSIBLE. IMMEDIATELY AFTER THE FINAL GRADING IS COMPLETED THE AREA SHALL BE PERMANENTLY SEEDED AND MULCHED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS FOR SEEDING AND MULCHING AND MAINTAINED TO MINIMIZE SEDIMENT RUNOFF.

STABILIZATION REQUIREMENTS

1. PERMANENT STABILIZATION

AREAS REQUIRING PERMANENT STABILIZATION  
ANY AREAS THAT WILL LIE DORMANT FOR MORE THAN ONE YEAR  
WITHIN 7 DAYS OF MOST RECENT DISTURBANCE

ANY AREAS WITHIN 50 FEET OF A SURFACE WITHIN 2 DAYS OF REACHING FINAL GRADE WATER OF THE STATE AND AT FINAL GRADE

ANY OTHER AREAS AT FINAL GRADE  
WITHIN 7 DAYS OF REACHING FINAL GRADE WITHIN THAT AREA

2. TEMPORARY STABILIZATION

AREA REQUIRING TEMPORARY STABILIZATION  
ANY DISTURBED AREAS WITHIN 50 FEET OF A SURFACE WATER OF THE STATE AND NOT DISTURBANCE AT FINAL GRADE  
WITHIN 2 DAYS OF THE MOST RECENT IDLE FOR MORE THAN 21 DAYS

FOR ALL CONSTRUCTION ACTIVITIES, ANY DISTURBED AREAS THAT WILL BE DORMANT FOR MORE THAN 21 DAYS BUT LESS THAN ONE YEAR, AND NOT WITHIN 50 FEET OF A SURFACE WATER OF THE STATE  
WITHIN 7 DAYS OF THE MOST RECENT DISTURBANCE IN THE AREA

DISTURBED AREAS THAT WILL BE IDLE OVER PRIOR TO ONSET OF WINTER WEATHER WINTER

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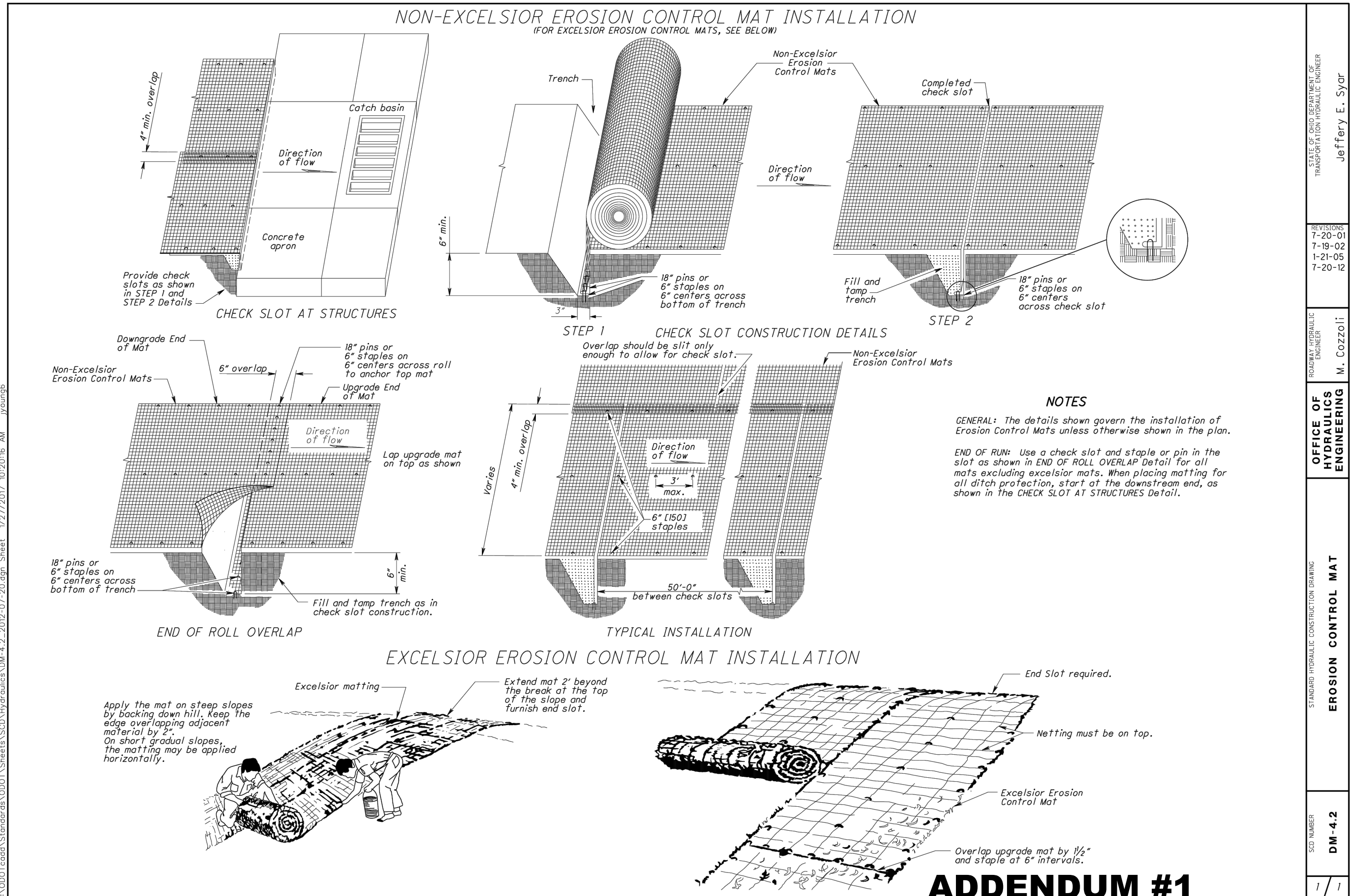
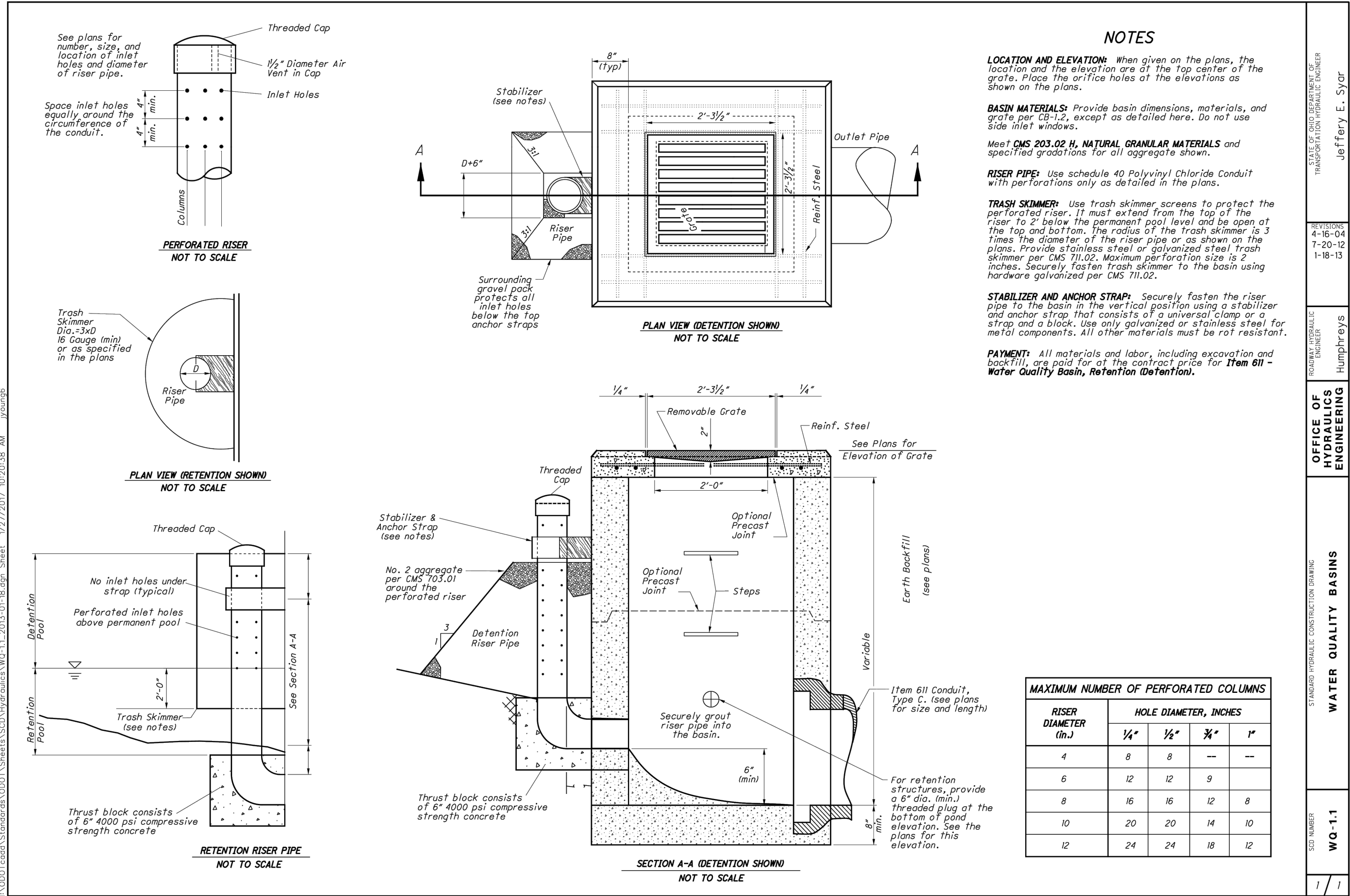
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| <b>T20-11309</b> |

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION  
**EROSION AND SEDIMENT CONTROL DETAILS**

|            |
|------------|
| SHEET No.  |
| <b>ES1</b> |



ADDENDUM #1







PLOT DATE/TIME: 8/3/2026 11:41 AM

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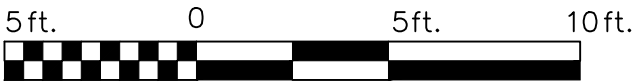
GENERAL NOTES:

1. ALL WORK SHALL BE COORDINATED WITH THE CONSTRUCTION SEQUENCE OF EVENTS. SEE SPECIFICATION SECTION 011000.
2. ALL ELECTRICAL CONTROL PANEL COMPONENTS REMOVED SHALL BE REVIEWED WITH OWNER PRIOR TO DISPOSAL. THE OWNER SHALL HAVE THE OPPORTUNITY TO SALVAGE ANY EQUIPMENT REMOVED.
3. ALL ITEMS SHALL BE DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
4. CONTRACTOR SHALL COORDINATE WITH THE POWER COMPANY FOR A DISCONNECT AND RECONNECT WORK ORDER.
5. ALL WORK ASSOCIATED WITH THE SERVICE SHALL BE COORDINATED AND APPROVED WITH THE POWER COMPANY.
6. EXISTING TRANSFORMER AND METER ARE TO REMAIN AND BE REUSED.

ELECTRICAL DEMOLITION NOTES:

- (A) REMOVE EXISTING CABLES FROM TRANSFORMER TO MAIN DISCONNECT. EXISTING CONDUIT STUB OUT TO REMAIN FROM TRANSFORMER. THE CONDUIT STUB OUT SHALL BE REUSED FOR CONNECTING NEW CONDUIT TO NEW DISCONNECT.
- (B) EXISTING UNDERGROUND CONDUIT AND CABLES TO BE REMOVED FROM STUB OUT TO MAIN DISCONNECT.
- (C) EXISTING MAIN DISCONNECT TO BE REMOVED.
- (D) EXISTING GENERATOR INLET TO BE REMOVED.
- (E) EXISTING PUMP CONTROL PANEL AND ASSOCIATED CONDUITS AND CABLES TO BE REMOVED.

LEGEND



ADDENDUM #1

|                                                                                                                                                                                                                 |     |       |              |
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VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION  
  
ELECTRICAL DEMOLITION PLAN

|           |
|-----------|
| SHEET No. |
| <b>E1</b> |



CONDUIT AND CONDUCTORS SCHEDULE

| CONDUIT NO. | USE     | SERVING             | CONDUIT |        | CONDUCTORS SIZE/CONDUIT |        | FROM                      | CIRCUIT NO. | NOTES |
|-------------|---------|---------------------|---------|--------|-------------------------|--------|---------------------------|-------------|-------|
|             |         |                     | NO.     | SIZE   | WIRE                    | GROUND |                           |             |       |
| P-1         | POWER   | DISCONNECT          | 1       | 3"     | 4-4/0                   | -----  | POWER COMPANY TRANSFORMER | ----        | 2     |
| P-2         | POWER   | POLE LIGHT          | 1       | 3/4"   | 2-#12                   | 1-#10  | MINI POWER ZONE           | MPZ-4       | ---   |
| P-3         | POWER   | PUMP #1             | 1       | 1 1/4" | 3-#4                    | 1-#8   | PUMP CONTROL PANEL        | ----        | ---   |
| P-4         | POWER   | PUMP #2             | 1       | 1 1/4" | 3-#4                    | 1-#8   | PUMP CONTROL PANEL        | ----        | ---   |
| P-5         | POWER   | ATS                 | 1       | 2 1/2" | 4-4/0                   | 1-#4   | GENERATOR                 | ----        | ---   |
| P-6         | POWER   | GENERATOR           | 1       | 2"     | 4-#10                   | 2-#10  | MINI POWER ZONE           | MPZ-9&11    | ---   |
| C-1         | CONTROL | TRANSDUCER & FLOATS | 1       | 1 1/4" | -----                   | -----  | PUMP CONTROL PANEL        | ----        | 1     |
| C-2         | CONTROL | GENERATOR           | 1       | 1"     | -----                   | -----  | ATS CONTROLS              | ----        | 1     |

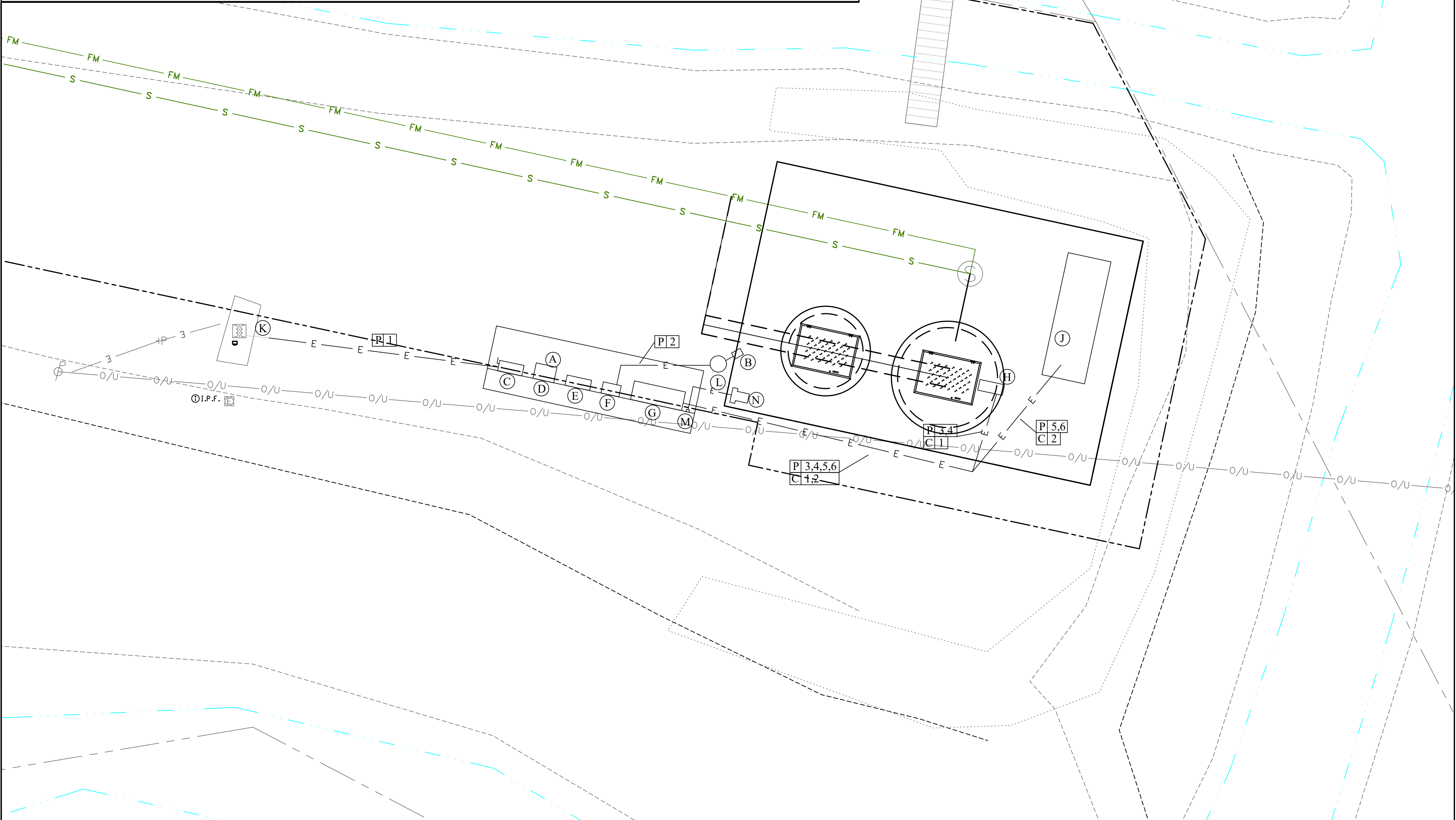
NOTES:  
1. CONDUIT WITH CONTROL CONDUCTOR PER MANUFACTURER SPECIFICATIONS.  
2. INSTALLED PER POWER COMPANY SPECIFICATIONS.

ELECTRICAL SITE PLAN NOTES :

- (A) PANELBOARD.
- (B) POLE LIGHT.
- (C) DISCONNECT SWITCH.
- (D) AUTOMATIC TRANSFER SWITCH.
- (E) TELEMTRY PANEL.
- (F) MINI POWER ZONE. PANEL "MPZ".
- (G) PUMP CONTROL PANEL.
- (H) WET WELL JUNCTION BOX.
- (J) GENERATOR.
- (K) EXISTING SERVICE CONDUIT STUB OUT.
- (L) LIGHT POLE.
- (M) LIGHT SWITCH AND GFCI OUTLET WITH WEATHERPROOF COVERS.
- (N) HIGH-FLOW LOW PRESSURE COMPRESSED AIR BLOWER.

GENERAL ELECTRICAL NOTES :

- SEE SHEET E3 FOR CONDUIT AND CONDUCTOR DETAILS.
- CONTRACTOR SHALL COORDINATE ALL SERVICE POWER DISCONNECT AND RECONNECT WORK WITH THE POWER COMPANY. CONTRACTOR SHALL COMMUNICATE WITH THE POWER COMPANY AND ISSUE A WORK ORDER REQUEST FOR DISCONNECT AND RECONNECT FOR THE EXISTING SERVICE.
- ALL SERVICE POWER CONSTRUCTION SHALL BE INSTALLED PER POWER COMPANY SPECIFICATIONS.



ADDENDUM #1



|                                                                                                                                                                                                                 |     |       |              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------|--------------|
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| 1                                                                                                                                                                                                               | J.S | 08/26 | ADDED SHEETS |
|                                                                                                                                                                                                                 |     |       |              |
|                                                                                                                                                                                                                 |     |       |              |
|                                                                                                                                                                                                                 |     |       |              |
|                                                                                                                                                                                                                 |     |       |              |
|                                                                                                                                                                                                                 |     |       |              |
| NO.                                                                                                                                                                                                             | BY  | DATE  | DESCRIPTION  |



|                        |               |
|------------------------|---------------|
| SCALE: AS SHOWN        |               |
| DRAWN: C. ZAHARIA      | DATE: 03/2026 |
| CHECKED: A. FECHKO     | DATE: 04/2026 |
| APPROVED: J. NORDQUIST | DATE: 04/2026 |
| SURVEY DATE:           |               |
| SURVEY BY:             |               |
| FIELD BOOK No.:        |               |

**THRASHER**  
THE THRASHER GROUP INC.  
CIVIL • ENVIRONMENTAL • CONSULTING • FIELD SERVICES  
1000 CORPORATE LANDING, CHARLESTON, WV 25311  
PHONE (304) 343-7601 • FAX (304) 343-7604

|                  |
|------------------|
| PHASE No.        |
| CONTRACT No.     |
| PROJECT No.      |
| <b>T20-11309</b> |

VILLAGE OF CALDWELL  
NOBLE COUNTY, OHIO  
PRISON PUMP STATION  
  
ELECTRICAL SITE PLAN

|           |
|-----------|
| SHEET No. |
| <b>E2</b> |



|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|--------------------------------|--|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------|-----------|---|---|----------------------------|-----------|----------|-------------------------|---------------------------------------------------------|--------------|-----|---------------------------|------|---------------------------------|--|---------|--|
|                                |  | (Mini-Power Zone) Panel: MPZ        |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | NEMA-1                              |                                                                                                                                                                                                                                                                                                                          |                   |          | NEMA-3R   |   |   |                            | X         |          | NEMA-4X Stainless Steel |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Location: PANELBOARD                |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Primary                             |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | Secondary                  |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | 480 Volts, 3 Phase, 3 Wire          |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | 208 Volts, 3 Phase, 4 Wire |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Main Breaker: 20 Amps               |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | Main Breaker: 40 Amps      |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Mini. Interrupting Capacity: 42,000 |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | Amps Sym                   |           |          | 15 KVA Transformer      |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Flush Mount                         |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | X Surface Mount            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | Provide if checked:                 |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | Isolated Ground Bus        |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
|                                |  | X Equipment Ground Bus              |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   | X SURGE PROTECTION DEVICE  |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
| Serving                        |  | Load (Watts)                        |                                                                                                                                                                                                                                                                                                                          | Sub-Feed Lugs     |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      | Load (Watts)                    |  | Serving |  |
|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          | Through-Feed Lugs |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |
| SURGE PROTECTION DEVICE        |  | Cond. Size 2                        | Wire Size 1                                                                                                                                                                                                                                                                                                              | O/B Trip Amps     | Cir. No. | Key Notes | A | B | C                          | Key Notes | Cir. No. | C/B Trip Amps           | Wire Size 1                                             | Cond. Size 2 | 650 | CANOPY LIGHTS AND OUTLETS |      |                                 |  |         |  |
|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          | 3P30              | 1        |           | X |   |                            |           | 2        | 1P20                    | #12                                                     | 3/4          |     |                           |      |                                 |  |         |  |
|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          |                   | 3        |           |   |   |                            |           | X        | 4                       | 1P20                                                    | #12          |     |                           | 3/4  |                                 |  |         |  |
|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          |                   | 5        |           |   |   | X                          |           | 6        |                         |                                                         |              | 400 | POLE LIGHT                |      |                                 |  |         |  |
| TELEMETRY PANEL                |  | 1200                                | 3/4"                                                                                                                                                                                                                                                                                                                     | #12               | 1P20     | 7         |   | X |                            |           | 8        |                         |                                                         |              |     |                           |      |                                 |  |         |  |
| GENERATOR BATTERY CHARGER      |  | 500                                 | 3/4"                                                                                                                                                                                                                                                                                                                     | #10               | 1P20     | 9         |   |   | X                          |           | 10       |                         |                                                         |              |     |                           |      |                                 |  |         |  |
| GENERATOR BLOCK HEATER         |  | 1500                                | 3/4"                                                                                                                                                                                                                                                                                                                     | #10               | 1P20     | 11        |   |   |                            | X         | 12       |                         |                                                         |              |     |                           |      |                                 |  |         |  |
| Total Load-Odd Circuit (Watts) |  | 3200                                | 1. All wire size: #12 AWG minimum except as noted.<br>2. All conduit size: 3/4 inch minimum except as noted.<br>3. Ground fault interrupting circuit breaker.<br>4. Spare circuit breaker.<br>5. Space only.<br>6. Shunt-trip circuit breaker.<br>7. Arc-fault circuit breaker.<br>8. Solenoid operated circuit breaker. |                   |          |           |   |   |                            |           |          |                         | 9. Breaker lock-on clip<br>10. Tamper-resistant outlets |              |     |                           | 1050 | Total Load-Even Circuit (Watts) |  |         |  |
| Total Load-Panel (Watts)       |  | 4250                                |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           | 11.8 | Total Connected Full Load Amps  |  |         |  |
|                                |  |                                     |                                                                                                                                                                                                                                                                                                                          |                   |          |           |   |   |                            |           |          |                         |                                                         |              |     |                           |      |                                 |  |         |  |

ELECTRICAL RISER NOTES:

- (A) 277/480V, 3 PHASE, 200A POWER FROM THE EXISTING TRANSFORMER.

(B) 3" CONDUIT WITH 4-4/0 CABLES FROM EXISTING TRANSFORMER. CONNECT NEW CONDUIT TO THE EXISTING SERVICE CONDUIT STUB OUT.

(C) DISCONNECT: 3P-200A, 277/480V, 3Ø, 4W HEAVY DUTY NEMA-4X STAINLESS STEEL SERVICE RATED DISCONNECT PER POWER COMPANY SPECIFICATIONS.

(D) AUTOMATIC TRANSFER SWITCH-"ATS": 3P-200A, 277/480V, 3Ø, 4W NEMA-4X STAINLESS STEEL WITH CONTROLS.

(E) 2 1/2" CONDUIT WITH 4-4/0 CABLES AND 1-#4 GROUND.

(F) 2" CONDUIT WITH COMMUNICATION WIRES PER GENERATOR MANUFACTURER SPECIFICATIONS.

(G) 2" CONDUIT WITH 4-#10 WIRES AND 2-#10 GROUNDS FOR BLOCK HEATER AND BATTERY CHARGER.

(H) LIGHT SWITCH AND GFCI OUTLET WITH WEATHERPROOF COVERS.

(J) 3/4" CONDUIT WITH 2-#12 WIRES AND 1-#12 GROUND.

(K) CANOPY LIGHT: LITHONIA CSVTL48ALO3MVOLTSWW380CRI VAPOR TIGHT LED FIXTURE.

(L) #4 COPPER GROUND WIRE.

(M) GROUND RODS WITH CLAMPS PER POWER COMPANY SPECIFICATIONS.

(N) 100KW, 277/480V, 3 PHASE, STATIONARY DIESEL GENERATOR. SEE SPECIFICATIONS FOR DETAILS.

(P) CONCRETE PAD PER GENERATOR MANUFACTURER SPECIFICATIONS.

(R) TELEMETRY PANEL WITH ANTENNA. SEE SPECIFICATIONS FOR DETAILS.

(S) MINI POWER ZONE "MPZ". SEE PANEL SCHEDULE AND SPECIFICATIONS FOR DETAILS.

(T) PUMP CONTROL PANEL WITH VFD'S. SEE SPECIFICATIONS FOR DETAILS. PANEL MAY BE WALL MOUNTED IF ENCLOSURE SIZE AND WEIGHT PERMITS.

(U) 1 1/4" CONDUIT WITH 3-#4, 1-#8 GROUND.
- (V) 1 1/4" CONDUIT WITH CONTROL CONDUCTORS PER MANUFACTURER.

(W) SEAL-OFF FITTINGS.

(X) NEMA 4X STAINLESS STEEL JUNCTION BOX. A-24H2408 SS LP WITH STAND.

(Y) 25' PRESSURE TREATED LIGHT POLE.

(Z) DRIP LOOP.

(AA) POLE LIGHT: HUBBELL # DDL-140L-1 LED.

(BB) WEATHERPROOF HEAD.

(CC) ANTENNA SHALL BE PLACE SUCH THAT MAXIMUM SIGNAL IS OBTAINED.

(DD) 1" CONDUIT WITH COAX CABLE PER MANUFACTURER'S SPECIFICATIONS.

(EE) 3/4" CONDUIT WITH 4-#10 WIRES AND 1-#10 GROUND FOR PRIMARY MPZ POWER.

(FF) CONCRETE PAD. SEE SPECIFICATIONS AND DETAIL SHEETS FOR DIMENSIONS.

START STEPS FOR GENERATOR:

- STEP-1: (0 SEC. DELAY)

STEP-2: (10 SEC. DELAY)

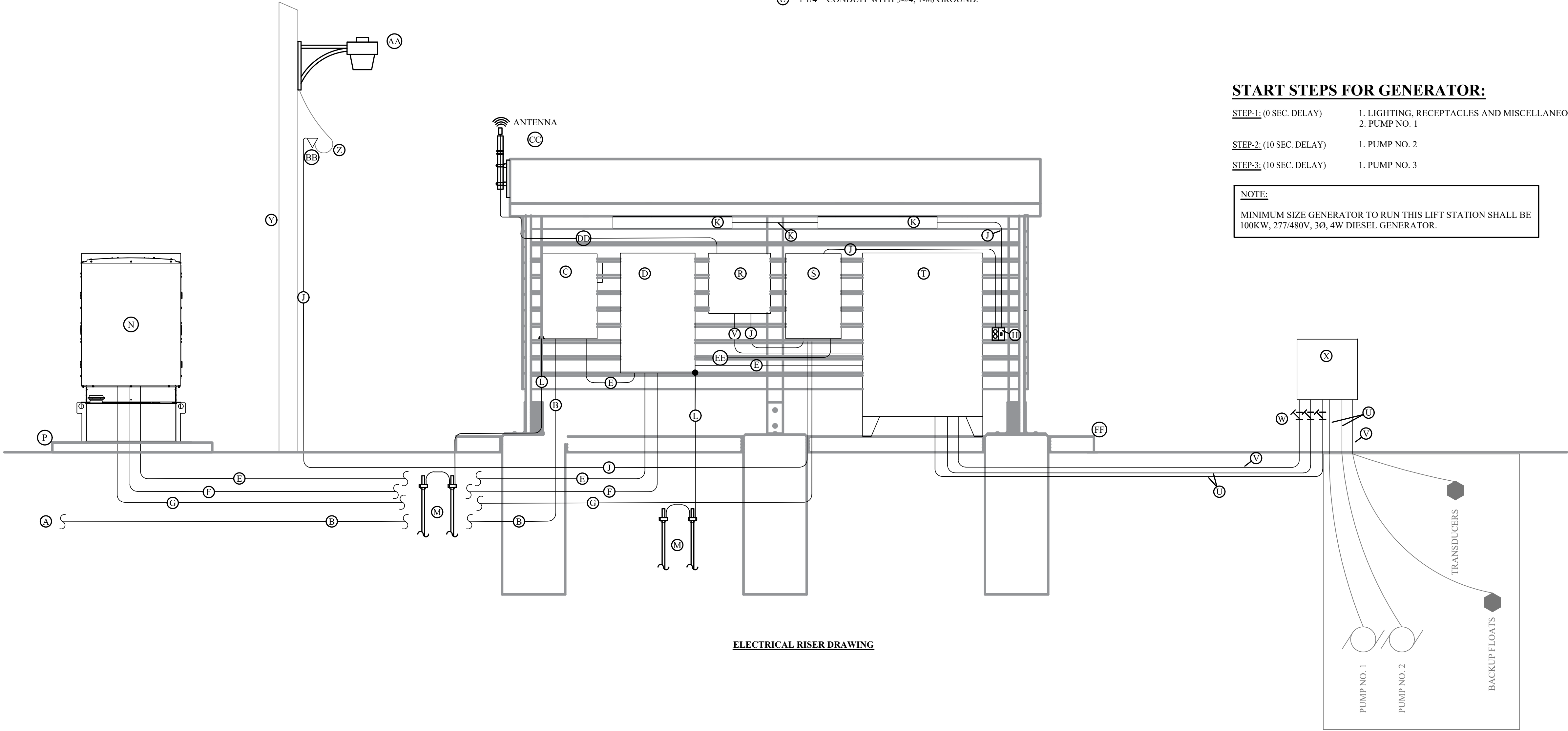
STEP-3: (10 SEC. DELAY)
1. LIGHTING, RECEPTACLES AND MISCELLANEOUS

2. PUMP NO. 1

1. PUMP NO. 2

1. PUMP NO. 3

NOTE:  
MINIMUM SIZE GENERATOR TO RUN THIS LIFT STATION SHALL BE 100KW, 277/480V, 3Ø, 4W DIESEL GENERATOR.



ADDENDUM #1

|                                                                                                                                                                                                                 |     |     |       |              |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      |                          |  |                                                                  |                            |
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|                                                                                                                                                                                                                 |     |     |       |              |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      | CONTRACT No.             |  |                                                                  |                            |
|                                                                                                                                                                                                                 |     |     |       |              |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      | PROJECT No.              |  |                                                                  |                            |
|                                                                                                                                                                                                                 |     |     |       |              |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      | T20-11309                |  |                                                                  |                            |
|                                                                                                                                                                                                                 |     |     |       |              |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      | ELECTRICAL RISER DIAGRAM |  |                                                                  |                            |
|                                                                                                                                                                                                                 | NO. | BY  | DATE  | DESCRIPTION  |                                                                                       |                                                                                                                                                                                          |                                                                                                                                                                                                                                                                      |                          |  |                                                                  |                            |