



**DESIGN AND CONSTRUCTION GROUP
THE GOVERNOR NELSON A. ROCKEFELLER
EMPIRE STATE PLAZA
ALBANY, NY 12242**

ADDENDUM NO. 1 TO PROJECT NO. 45964

**CONSTRUCTION, HVAC, AND ELECTRICAL WORK
REPLACE FUEL OIL TANKS AND MODIFY BOILER CONTROLS
ELMIRA CORRECTIONAL FACILITY
1879 DAVIS STREET
ELMIRA, NY**

March 12, 2021

<p>NOTE: This Addendum forms a part of the Contract Documents. Insert it in the Project Manual. Acknowledge receipt of this Addendum in the space provided on the Bid Form.</p>
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HVAC WORK SPECIFICATIONS

1. SECTION 231323 ABOVE GROUND FUEL STORAGE TANKS AND FUEL SYSTEMS:
Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 231323 – 1 thru 231323 – 9) noted “Printed 1/8/2021”.
2. SECTION 232123 PUMPS: Discard the Section bound in the Project Manual and substitute the accompanying Section (pages 232123 – 1 thru 232123 – 11) noted “Printed 1/8/2021”.

CONSTRUCTION WORK DRAWINGS

3. Revised Drawing:
 - a. Drawing No. C-502, noted “ADDENDUM 1 3/8/21” accompanies this Addendum and supersedes the same numbered originally issued drawing.

END OF ADDENDUM

Erik T. Deyoe, P.E.
Director, Division of Design
Design & Construction

SECTION 231323

ABOVE GROUND FUEL STORAGE TANKS AND FUEL SYSTEMS

PART 1 GENERAL

1.01 REFERENCES

- A. NFPA 30 - Flammable and Combustible Liquids Code.
- B. NFPA 30A - Automotive and Marine Service Station Code.
- C. NFPA 31 - Oil Burning Equipment.
- D. NFPA 70 - National Electric Code.
- E. API 1615 - Installation of Underground Liquid Storage Systems.
- F. Underwriter's Laboratories (UL).
- G. ETL Testing Laboratories (ETL).
- H. Steel Tank Institute (STI).
- I. Factory Mutual Engineering and Research (FM).
- J. NYS Department of Environmental Conservation Regulations.
- K. US Environmental Protection Agency Regulations.

1.02 DEFINITIONS

- A. Fuel System for No. 2 Fuel Oil: Fuel storage tanks including leak containment and detection for tanks and underground piping, overfill prevention, high level alarm, gage system, and required accessories to connect to fuel burning apparatus.

1.03 SUBMITTALS

- A. Waiver of Submittals: The "Waiver of Certain Submittal Requirements" in Section 013300 does not apply to this Section.
- B. Submittals Package: Submit the Product Data, and Quality Control Submittals specified below at the same time as a package.
- C. Product Data: Catalog sheets, specifications, illustrations, wiring diagrams, CARB Stamp (where applicable), and installation instructions for each item specified for each type of system.
- D. Quality Control Submittals:

1. Tank Installation Contractor's Qualifications Data:
 - a. Name of Contractor, business address and telephone number.
 - b. Names and addresses of 3 similar projects that the Contractor has worked on during the past 5 years.
2. Pipe Installer's Qualifications Data:
 - a. Name of each person who will be performing the Work and their employer's name, business address and telephone number.
 - b. Names and addresses of 3 similar projects that each person has worked on during the past 5 years.
 - c. Copy of certification from pipe manufacturer(s).
3. Factory Test Certificate: For each tank.
4. Company Field Advisor Data:
 - a. Name, business address and telephone number of Company Field Advisor secured for the required services.
 - b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
 - c. Services and each product for which authorization is given by the Company, listed specifically for this project.

1.04 QUALITY ASSURANCE

- A. Qualifications:
 1. Tank Installation Contractor: The firm performing the Work of this Section shall have been regularly engaged in the installation and maintenance of above ground fuel storage tanks for a minimum of 5 years, and shall have completed 3 similar projects.
 2. Pipe Installer: Individual with minimum 5 years experience in installing fuel piping, have worked 3 similar projects, and shall be certified by pipe manufacturer of the type of pipe being installed.
- B. Listings: Components of the system(s) for which Underwriters' Laboratories, Inc. (UL) provides product listing service, shall be listed and bear the listing mark.
- C. Regulatory Requirements:
 1. Systems for storing No. 2 fuel oil shall comply with the applicable requirements of UL 58, NFPA 30 and NFPA 31.
 2. New York State Department of Environmental Conservation Bulk Storage Regulations 6 NYCRR Parts 613.
 3. New York State Department of Environmental Conservation Petroleum and Volatile Organic Liquid Storage and Transfer 6 NYCRR Part 229.
 4. New York State Department of Environmental Conservation Dispensing Site and Transport Vehicles 6 NYCRR Part 230.
- D. Company Field Advisor:
 1. Secure the services of a Company Field Advisor of the manufacturer of the leak and overfill monitoring system for a minimum of 6 hours for the following:
 - a. Inspect installation and witness initial startup of system.

- b. Train facility personnel in the operation and maintenance of the system (minimum of two 2-hour training sessions). Schedule training sessions with the Director's Representative.
 2. Secure the services of a Company Field Advisor of the manufacturer of the fuel management system for a minimum of 6 hours for the following:
 - a. Inspect installation and witness initial startup of system.
 - b. Train facility personnel in the operation and maintenance of the system (minimum of two 2-hour training sessions). Schedule training sessions with the Director's Representative.

1.05 WARRANTY

- A. Warranty: Twenty-year manufacturer's warranty for each tank.

1.06 MAINTENANCE

- A. Spare Parts:
 1. Two keys for each padlock.
- B. Special Tools:
 1. One stick gage and two calibration charts for each fuel tank.
 2. Two tools for each type and size vandal resistant fastener.

PART 2 PRODUCTS

2.01 DOUBLE WALL STEEL PROTECTED FUEL STORAGE TANKS (TYPE DWS-1)

- A. Tanks shall be listed as secondary containment in accordance with UL 2085, and shall be marked for fire resistance, and protected from vehicle impact and projectile hazards.
- B. Type: Double wall steel interior tank with minimum 3-inch interstitial space filled with lightweight, porous, monolithic insulation material.
 1. Exterior Protective Coating: Conforming to Steel Tank Institute Standards.
 - a. Surface Preparation: SSPC-SP6 grit blast.
 - b. Primer: Corrosion resistant epoxy or urethane in accordance with UL 2085 requirements.
 - c. Top Coat: Epoxy or urethane in accordance with UL 2085 requirements.
- C. Acceptable Tanks:
 1. Fireguard Thermally Protected Tank by Highland Tanks, Manheim, PA, (717) 664-0600.
 2. Fireguard Thermally Protected Tank by Modern Welding Company, Newark, OH, (740) 344-9425.
 3. Hoover Vault Tank by Containment Solutions, Conroe, TX 77301, (800) 537-4730.

2.02 TANK ACCESSORY PACKAGE

- A. Stair/Platform Assembly:
1. Stairs and railings shall meet OSHA Standard 29 CFR Ch. XVII, Paragraph 2910.24.
 2. Assemblies shall be painted with Safety Yellow Epoxy.
 3. Provide right and left hand stairs/platform assemblies with railings as show on Drawing Details.
 4. Stair/Platform Assembly shall be as shown on the Contract Drawings.
- B. Gaging Equipment:
1. Stick Gage Port (Furnished with all tanks): Accessible from stair/platform assembly.
 2. Mechanical Gaging: Field adjustable float type gage with minimum 4-1/2 inch dia. display face, vapor tight construction, and stainless steel float; 818 Clock Gage by Morrison Bros., Dubuque, IA.
 3. Electronic Gaging: Magnetostrictive probe which include temperature sensors and both product and water floats capable of sensing product level to nearest 0.001 inch.
 - a. Acceptable Manufacturers: Intelligent Controls Inc., Saco, ME, (800) 225-9787; Veeder Root, Simsbury, CT, (800) 873-3313 or OMNTEC, Ronkonkoma, NY, (516) 467-5787.
 - b. Upon demand, the system shall indicate water level, product level, and average product temperature.
 - c. System shall sense and alarm leakage rates greater than 0.2 gal/hr.
- C. Venting:
1. Vent primary tank with normal and emergency venting (NFPA 30 and UL 2085 test configuration. Vent interstitial space with emergency venting only.
 2. Vent Caps:
 - a. Fuel Oil: Open type with 30 or 40 mesh screen; OPW 23, EMCO Wheaton AH10, EBW 800, Morrison Bros. 354, or EBW 800 series.
 3. Emergency Vent: Aluminum body with cast iron lid, zinc plated steel shaft, and Buna-N O-ring; OPW 201 or EBW803.
 - a. Conforming to NFPA 30, and UL 2085 test configuration.
- D. Tank Identification:
1. Type: Two layer etched plastic or metal permanently attached to the tank.
 - a. Decals or stenciling is not acceptable.
 2. Signs shall include the following information:
 - a. Manufacturer's statement that tank conforms with Bulk Storage Regulation 6 NYCRR Part 613.
 - b. Standards of Design by which tank was manufactured.
 - c. List of products and additives which may be permanently stored in tank.
 - d. Year in which tank was manufactured.
 - e. Unique identification number.
 - f. Dimensions, design capacity, working capacity, and tank model number.

- g. Name of tank manufacturer and installer.
 - h. Tank manufacturer and date of tank installation.
- E. Fill Limiting Valve:
- 1. Tanks 6000 gallons and up: Clay & Bailey F-35 or Morrison Bros 9095AA. (includes adapter), EBW 709 Warden, or OPW 61FSTOP.
 - a. Drop tube as required.
 - b. Adapter: OPW 633-T, EMCO Wheaton A30; 3 inch size.
 - c. Cap: OPW 634-TT, EMCO Wheaton A97, EBW 774, or Morrison Bros. 305C.
- F. Fill Port Spill Container:
- 1. Type: Stainless steel and lockable door with drain valve, hand pump, and check valve; Fairfield Industries ARFP-3-REAR or approved equal.
 - a. Minimum Size: 10 gallon.
 - 2. Lock: Master Lock 911-DKA.
 - 3. Spill containment fill port assemblies shall be furnished and installed for the AST system where indicated on Contract Drawings. The spill containment fill box shall be provided with all accessories and installed in accordance with manufacturer's instructions.
 - 4. Each spill containment shall have its cover permanently marked and painted to conform to the API Color and Symbol Code.
- G. Stickport:
- 1. Provide a port for manually gaging the tank including a lockable vapor tight twist off cap; Morrison Bros. 178X, EBW706, or OPW 83-0066.
 - 2. All tanks shall be provided with a stick gage.

2.03 TANK GAGING, LEAK AND OVERFILL MONITOR SYSTEM

- A. Tank Gaging Monitor:
- 1. Provide and install one common remote tank gauging and leak detection system for all tanks that can simultaneously monitor product levels, water levels, temperatures, and leaks in up to sixteen tanks. System shall be UL listed and provide intrinsically safe outputs for use in Class 1, Group C & D Hazardous Locations when wired in accordance with manufacturers control drawing. System shall also be Third Party Certified and listed to meet EPA leak detection requirements. Locate monitoring console where shown on project drawings.
 - 2. Central Processing and Indicating Instrument – Controller shall have a backlit 7-inch color touchscreen display and 32-character thermal printer. System must be capable of driving single or multi-tank 12 VDC NEMA 4 X remote audiovisual high-level alarms and/or remote displays. System must be capable of providing up to three individually programmed isolated relay contacts for any alarm event. System shall also be capable of serving up a web page making current inventory, sensor status and alarms available from a web browser or smart phone.
 - 3. Controller shall be as manufactured by OMNTEC Mfg., Inc. Model No. OEL8000IIIIXP. The main console will be preprogrammed by the factory and field adjusted as required. It shall be capable of handling up to 16 MTG probes and 64 BX series leak sensors. Console shall be equipped

with (1) RS-232 port, (1) RS-485 port, Ethernet, E-mail and Text capability for communication. Panel shall come equipped with three LED lights for Ok, Warning, and Alarm status. Alarms shall be displayed visually on a 7" color touch screen with wide viewing angle as well as Warning and Alarm lights on face of panel. System shall have an 85dB piezoelectric horn for audible alarm indication.

4. Panel shall be compact in size not to exceed 15.21" (w) 7.73" (h) 8.67" (d) and constructed of powder coated industrial steel for indoor mounting. The complete leak /level gauging system shall include a one year parts warranty and shall be manufactured by OMNTEC Mfg. Inc. Ronkonkoma, NY (631-981-2001) or equal.

B. The Liquid Level Probe

1. Shall consist of a 316 grade stainless steel IP68 rated rigid model MTG level probes or model MTG-F Kynar flexible level probes where overhead clearance is not available. Probe shall use magnetostrictive technology with 6 temperature sensing devices and an accuracy of .01 inches in inventory mode and .001 inches in leak detection mode. Probe shall simultaneously provide product levels, water levels, and temperature within the storage tanks.
2. The level probe shall be installed in an accessible 4" NPT male riser pipe. Probe shall include a 4" cap with integral cable gland, floats, and installation kit. (2" NPT option available upon request) All splices must use supplied SK-4 splice kits. Field wiring from probe to controller must be OMNTEC EC-2 or Belden 8761 cable in suitable conduit. Level probes shall be as supplied by OMNTEC Mfg., Inc.

C. Product Discriminating Smart Leak Sensors

1. All leak sensors shall be microprocessor based and capable of recognizing its unique serial number, part number, and function. Up to 16 sensors shall be capable of being installed on (1) four conductor cable back to the main controller. The sensors principle of operation shall be electro optic for liquid detection and conductivity to discriminate fuel and water. Sensors shall be remotely testable from console via touch screen Test button icon. Sensors shall be capable of detecting liquid at any angle. Float technology will not be accepted. Interstitial sensors shall be model # BX-PDWS for steel tank interstitials. Containment sump sensors shall be part number BX-PDS. See project drawings for location and quantities of sensors required. All sensors are to be wired thru rigid conduits using OMNTEC EC-4 cable or equivalent 22 gauge four conductor twisted, two pair, shielded cable with drain. Do not run OEL8000IIIIXP intrinsically safe low voltage wiring in the same conduit with any other wiring. All sensors shall be as manufactured by OMNTEC Mfg., Inc.

D. Overfill Station

1. Provide near each tank fill terminal as shown on project drawings a low voltage audio/visual NEMA 4X overfill alarm and silencing station. Remote annunciator light shall illuminate and horn shall sound when the liquid level in the tank rises above a pre-programmed high level point. The horn will remain on until the silence button is pressed or can be

programmed to time out. Visual light will remain lit until the level in the tank drops below the high level point. Remote annunciator shall be RAS series for single or multi-tanks and shall be manufactured by OMNTEC Mfg., Inc.

- E. Communication Capabilities
 - 1. Modbus via RS-232, RS-485, OR TCP/IP
 - 2. Up to 32 120 VAC 5 amp dry contact relays using the XB-RB8 relay output board.
 - 3. 4-20mA output for level via X232-422-* (* denotes number of outputs)
 - 4. BACnet via C232-BAC (must specify TCP/IP or MSTP)

- F. Additional Accessories
 - 1. Provide a 7" color touch screen graphic remote display (Part Number RD7CTS) as manufactured by OMNTEC Mfg., Inc. Display must utilize industry standard protocol for use with most Automatic Tank Gauge monitoring systems. The remote ATG monitor shall display current tank inventory and leak sensor alarms in up to 8 tanks and shall dynamically switch to the tank that is being delivered to. Display shall come equipped with three LED lights on panel face for Ok, Warning, and Alarm Status. Alarms shall be displayed visually on a 7" color touch screen with wide viewing angle as well as Warning and Alarm lights on face of panel. System shall have 85dB piezoelectric horn for audible alarm indication. Enclosure shall be powder coated industrial steel for indoor mounting. Must be capable of flush mount or recess mounting as required. Enclosure shall be compact in size, not to exceed (H) 7.63" (W) 8.08" (D) 3.20".

System must operate on 120/240 VAC or 12VDC via hard wired or power cord kit (Part Number RD-PCK)

Provide a wireless link that will allow 500' of communication between main ATG and RD7CTS (Part Number WRS-232) as manufactured by OMNTEC Mfg., Inc. Contractor shall also supply (2) WRS-232R repeaters for distances greater than 500'.

2.04 TANK HEATERS

- A. Acceptable Manufacturers:
 - 1. Watlow Industries, Lockport, NY.
 - 2. Chromalox, Pittsburgh, PA.

- B. Flanged Heater: 5,625-watt heater assembly, 4-inch size.
 - 1. Element Sheath: (6) incoloy elements.
 - 2. Thermocouple:
 - a. Process: Type J, located in thermowell for process sensing.
 - b. Limit: Type J, attached to element sheath for over temperature sensing.
 - 3. Control Panel (Remote): NEMA 4, with electronic PID controller for controlling process temperature, electronic digital controller for high limit protection, mechanical relays for limit power switching,

electronic/mechanical hybrid relay for main power switching, silicone rubber heater with integral thermostat for freeze protection, red strobe light for high limit alarm, control circuit fusing, and reset switch for limit control mounted on door.

4. Electrical Requirements: 240 volt, single phase.
 - a. Heater Watt Density for No. 2 Fuel Oil: 23 watts/sq. inch.

2.05 FUEL FOR TESTING

- A. Coordinate with the Facility thru the Director's Representative for the delivery of a full tank of each appropriate fuel type for testing to verify that fuel transfer equipment, instrumentation, and boiler equipment is operating properly.
 1. The Facility shall pay for delivery of fuel.

2.06 FASTENERS

- A. Vandal Resistant Fasteners: Stainless steel, allen or torx head, both with center post.

PART 3 EXECUTION

3.01 PREPARATION

- A. Testing Prior to Installation:
 1. Before placing the tank in place, plug all openings and pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
 2. Tanks should not be pressurized beyond manufacturer's specified limits.
 3. The tank must hold the test pressure for 30 minutes.
 4. Check fitting connections, and seams in tank by applying a soap suds solution.
 5. Reject any leaking tanks.

3.02 INSTALLATION

- A. Install the Work of this section in accordance with the item manufacturer's printed installation instructions, unless otherwise shown or specified.
- B. Dispenser: Install dispenser and accessories in accordance with manufacturer's printed installation instructions unless otherwise directed.
 1. Mount splitter fitting high enough to prevent the hose from touching the concrete when the nozzle is hung in its' housing.
 2. Overlap hose mast vapor recovery clamp on the hose mast a minimum of 6 inches to act as a whip hose for the breakaway coupling. Install breakaway coupling on nozzle side of clamp.

3.03 TANK ACCESSORIES

- A. Fuel Identification: Attach laminated plastic nameplate to each tank fill pipe to identify the fuel in the tank.

- B. Tank Identification: Affix tank identification label, or plate permanently to tanks and fill ports.
- C. Install padlocks on all lockable caps on fill piping.
- D. Terminate vent lines with vent caps.
- E. Overfill Alarm Device Sign: Mount sign adjacent to alarm horn in a location easily readable from ground level.
- F. Vent Caps:
 - 1. Install vent caps at end of vent piping minimum of 15 feet above finished grade.
- G. Spill Containment Fill Port:
 - 1. Spill containment fill port assemblies shall be furnished and installed for the AST system where indicated on Contract Drawings. The spill containment fill box shall be provided with all accessories and installed in accordance with manufacturer's instructions.

3.04 FIELD QUALITY CONTROL

- A. Testing: After installation of tank and piping, test the system in the presence of the Director's Representative, as follows:
 - 1. Piping: Before painting or backfilling, plug ends and test with air at 5 psi and hold for two hours without leaking.
 - 2. Tanks: Pressure test tank in accordance with manufacturer's printed test instructions, unless otherwise specified.
 - a. Tanks should not be pressurized beyond manufacturer's specified limits.
 - b. The tank must hold the test pressure for 30 minutes.
 - c. Check fitting connections, and seams in outermost tank by applying a soap suds solution.
 - 3. Product Level and Overfill Protection:
 - a. The Facility through the Director's Representative will arrange for delivery of product as needed to test high-level alarm, and fill limiting valve.
 - b. During the filling process the Director's Representative will monitor and record the low level alarm, quantity of product as compared to reading on the Control Panel, the overfill alarm, and will test the overfill valve.
 - c. Make required repairs and final adjustments.
 - 4. Fuel System for No. 2 Fuel Oil:
 - a. After reconnecting all piping, burning apparatus and tanks, and when directed, perform a system acceptance test in the presence of the Director's Representative to demonstrate that the fuel system is operating properly.
 - b. Make required repairs and final adjustments.

END OF SECTION

SECTION 232123

PUMPS

PART 1 GENERAL

1.01 SUBMITTALS

- A. Product Data: Catalog sheets and installation instructions for each type or size pump.
- B. Schedule: Pump schedule showing pump specifications and application.
- C. Quality Control Submittals:
 - 1. Performance curves for each pump, showing gpm, brake HP and efficiency from free delivery to shut-off. Chart curves on manufacturer's factory tests shall be conducted in accordance with the recommended procedures of the Hydraulic Institute, and certified thereto by the manufacturer.
 - 2. Subject boiler feed pumps and boiler return pumps to a cold water test at the manufacturer's factory. Submit certified test curves on the test results, conducted in accordance with Hydraulic Institute Standards, Centrifugal Pump, Section VIII Test Code, at a minimum of 4 points, in addition to the design point. Certified test curves shall indicate the following:
 - a. Head vs. Capacity.
 - b. Efficiency vs. Capacity.
 - c. BHP vs. Capacity.
 - d. NPSHR vs. Capacity.
 - 3. Include parallel pump curve and system curve for parallel operating pumps. Design flow does not include standby pump (if any).
 - 4. Certificates: Affidavit required under QUALITY ASSURANCE Article.
 - 5. Company Field Advisor Data:
 - a. Name, business address and telephone number of Company Field Advisor secured for the required services.
 - b. Certified statement from the Company listing the qualifications of the Company Field Advisor.
 - c. Services and each product for which authorization is given by the Company, listed specifically for this project.

1.02 QUALITY ASSURANCE

- A. Company Field Advisor: Secure the services of a Company Field Advisor from pump manufacturer for a minimum of 16 working hours for the following:
 - a. Render advice regarding installation and final adjustment of the system.
 - b. Render advice on the suitability of each item for this particular application.
 - c. Witness final system acceptance test, then certify with an affidavit that the system is installed in accordance with the Contract Documents and is operating properly.

- d. Train facility personnel on the operation and or maintenance of the system (Minimum of two 8-hour sessions).
- e. Explain available service programs to facility supervisory personnel for their consideration.

1.03 MAINTENANCE

- A. Spare Parts: Deliver one spare set of mechanical seals for each size and type of pump equipped with mechanical seals, to the Director's Representative, who will sign receipt for same. Furnish seals of type as required for the particular pump application and the chemical water treatment being utilized. Suitably box and label spare seals as to their usage.

PART 2 PRODUCTS

2.01 PUMPS - GENERAL

- A. Design pumps to operate continuously without overheating bearings or motors at every condition of operation on the pump curve, or produce noise audible outside the room or space in which installed.
- B. Equip pumps complete with electric motor and drive assembly, unless otherwise indicated. Design pump casings for the indicated working pressure and factory test at 1-1/2 times the designed pressure.
- C. Provide pumping apparatus as complete factory assembled and prewired packaged units, each complete with integral pump controls and electric control panel.
- D. Pumps of the same type shall be the product of a single manufacturer, with pump parts of the same size and type interchangeable.
- E. Provide oil lubricated pumps with constant level oilers, with the exception of in-line circulating and close coupled pumps.
- F. Equip base mounted pumps with OSHA compliant metal guards over the moving drive assembly. Fabricate from expanded galvanized metal or galvanized sheet metal. Secure guards as required and approved.

2.02 FUEL OIL PUMPS

- A. Acceptable manufacturers subject to compliance with the specifications:
 - 1. Preferred Utilities.
 - 2. Viking Pump.
 - 3. IMO Pump.
- B. Temporary Pumps
 - 1. Provide a duplex pump and straining set that is factory assembled with components piped and mounted on a common base plate. Pipe shall be

schedule 40 ASTM A-53 Grade "A" with ANSI B16.3 Class 150 malleable iron threaded fittings. Base plate shall include minimum 3" steel side rails and be continuously welded out of minimum 1/4" plate steel for containment. Provide a 1/2" containment basin plugged drain connection. The basin shall also be sized to contain potential leaks from all factory installed piping and components. The Semi-Automatic Fuel Oil Transfer Pump and Straining Set shall be Preferred Utilities Mfg. Corp, Danbury, CT Model SATPS-206-1254, rated at 1000 GPH of No. 2 oil against a discharge pressure of 100 PSIG.

2. Positive Displacement Pumps

The pump set shall include two (2) positive displacement internal gear rotary type pumps, with cast iron housing and self-adjusting mechanical, carbon ring seals. The pump shall be capable of developing 25" Hg. Vacuum at 0 PSIG discharge pressure as factory tested. However, for normal operation the vacuum shall not exceed 15" Hg. Pump and motor combination to be rigidly, direct mounted to ASTM-A36 channel. Pumps that have aluminum, brass, or bronze housings or rotors are not acceptable. Packing gland equipped pumps, close-coupled pumps, Carbonator shaft mounted pumps or centrifugal pumps are not acceptable.

3. Motors

The pump set shall include two (2) TEFC, rigid base, standard NEMA frame motors. Motors sized to develop no less than 2 HP at 1140 RPM using 208V, 3 P, 60 Hz electrical service. Motor shall have copper windings; a dynamically balanced rotor, ball bearings and a heavy gauge steel NEMA frame.

4. Pump and Motor Assembly

The pumps shall be connected to the piping in the set through stainless steel flexible metallic braided jackets, and the pump and motor assemblies shall be welded to the base plate. Pumps and motors shall be mounted on an ASTM-A36 structural steel channel and equipped with flexible coupling and full OSHA approved coupling guard. Pumps and motors shall be mounted with bolts threaded into the steel channel for ease of maintenance. Mounting bolts shall not penetrate the secondary containment basin.

5. Pump Isolation and Check Valves

The pump set shall include four (4) pump isolation valves located on the suction and discharge side of each pump. Isolation valves will allow off-line pump maintenance without system loss of availability. Isolation valves shall be ball type, rated 600 WOG, include stainless steel ball and Teflon seat. Valves to provide full flow while open and positive shutoff when closed. Additionally, two (2) class 125 # swing check valves shall be included, one (1) located on the discharge of each pump.

6. Fuel Oil Strainer

Provide and mount two (2) simplex strainers with 40 mesh baskets, one (1) located on the suction side of each pump.

7. Relief Valves

The pump set shall include a relief valve downstream of each pump sized to relieve the full outlet flow of the pump without causing the pump motor to overload or any component's pressure rating to be exceeded if the discharge is inadvertently valved off. Relief valves must be externally mounted from the pumps and piped to the return

line in the field according to NFPA 30. Pump internal relief valves shall not be accepted. Relief valves shall be similar to Preferred Model R.

8. Compound and Pressure Gauges

The pump set shall include a compound gauge on the common suction header feeding the pumps. The gauge shall read 30" vacuum -15 psig. A second pressure gauge shall be included on the discharge side of each pump. Each gauge shall be equipped with an isolation ball valve.

9. Pump Set Control Cabinet

Provide a complete pre-wired and factory tested control cabinet to ensure job site reliability. The pump set and control cabinet shall be the product of one manufacturer for single source responsibility. The control cabinet shall be constructed to NEMA 4 standards. Doors shall be fully gasketed with a turned edge, piano hinges, and a three-point lockable latching mechanism. Cabinet interior shall be primed and finished in a white gloss, chemical resistant enamel. Cabinet exterior shall be primed and finished in durable, chemical resistant, textured gray enamel, suitable for industrial environments. All control wiring shall be terminated at a numbered terminal strip to facilitate field connections to remote equipment. All switches shall have maintained contacts. All cabinet front devices shall be identified by black phenolic labels with engraved white lettering. Cabinet shall consist of, but not limited to the following:

1. Magnetic motor starters with overload protection.
2. Motor circuit breakers
3. "hand-off-Auto" switch for each pump
4. Pump selector switch for selection of lead pump
5. Power indication light
6. Pump running indicating lights

10. Quality Assurance

The Control Cabinet shall be manufactured and labeled in accordance with UL508A (CSA C22.2 #14 for use in Canada). Simply supplying UL recognized individual components are not sufficient. The assembled control cabinet, as a whole, must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized Trade Union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL508A wiring methods inspection and label or lack of a Trade Union label will be grounds for rejection.

11. Factory Testing

Pump Sets must be fully tested prior to shipment as follows: testing shall include both a pressure and vacuum testing period. First, the complete pump set shall be pressure tested to rated pressure using an air pressure source. The test shall confirm that the pump set piping system can maintain rated pressure for 4 hours. Next, the complete pump set shall be brought to a vacuum greater than 25"Hg. The test shall confirm that the pump set piping system can maintain vacuum for 4 hours. Following

a pressure and vacuum test the pump set shall be given a full operational test. The pump set shall be connected to a fuel oil supply and return. The pump set shall be operated normally. Motor amps shall be noted at no load and full load for each motor. The motor amps shall be within 10% of rated motor amps. During the test the relief valve shall be set and tested. Operation of pump set instrumentation shall be tested. A copy of the test procedures shall be sent to the consulting engineer and owner. The owners and or the consulting engineer, at their discretion, shall observe this and all other tests. A certificate of factory testing, together with a copy of the wiring and arrangement diagrams shall be placed in the control cabinet prior to shipment.

C. Permanent Pumps:

1. Provide and install a factory assembled "Packaged" Automatic Fuel Oil Transfer and Monitoring System to ensure a reliable supply of fuel oil to the boilers included in this project. System to be factory fabricated/tested and certified as a complete unit. Field assembled units are not acceptable. Labels of nationally recognized Trade Unions shall cover all wiring and piping.
2. The system shall include automatic pump set lead/lag, storage tank level monitoring, leak monitoring, LCD operator display, manual back-up stations, time and date stamped alarm and event summary, and the system shall include the capability to simultaneously communicate with a Data Acquisition System (DAS), building Automation System (BAS), or Building Management System (BMS) via Modbus protocol, and dial out to an alphanumeric pager system via field installable plug-in option modules in the future. The control system shall be a microprocessor based design with field expandable plug-in Input/Output modules.
3. Provide a duplex pump and straining set that is factory assembled with components piped and mounted on a common base plate. Pipe shall be schedule 40 ASTM A-53 Grade "A" with ANSI B16.3 Class 150 malleable iron threaded fittings. Base plate shall include minimum 3" steel side rails, and be continuously welded out of minimum 1/4" plate steel for containment. If the pump set base footprint exceeds 31"x 66", only 3/8" steel plate can be used. Using less than these plate steel thicknesses is grounds for rejection. Base pan assembly shall have inverted steel channel supports welded to the bottom of the base pan for anchoring. Provide a 1/2" containment basin plugged drain connection. The basin shall also be sized to contain potential leaks from all factory installed piping and components. The Automatic Fuel Oil Transfer Pump and Straining Set shall be Preferred Utilities Mfg. Corp, Danbury, CT Model ATPS-206, or approved equal. Pump set shall be rated at 1000 GPH of No. 2 oil against a discharge pressure of 100 PSIG.
4. Positive Displacement Pumps
The pumpset shall include two (2) positive displacement internal gear rotary type pumps, with cast iron housing and self-adjusting mechanical, carbon ring seals. The pump shall be capable of developing 25" Hg. Vacuum at 0 PSIG discharge pressure as factory tested. However, for normal operation, vacuum shall not exceed 15" Hg. Pump and motor combination to be rigidly, direct mounted to ASTM-A36 channel. Pumps that have aluminum, brass, or bronze housings or rotors are not acceptable. Packing gland equipped pumps,

close-coupled pumps, Carbonator shaft mounted pumps or centrifugal pumps are not acceptable.

5. Motors

The pumpset shall include two (2) TEFC, rigid base, standard NEMA frame motors. Motors sized to develop no less than 2 HP at 1140 RPM using 208 V, 3 P, 60 Hz electrical service. Motor shall have copper windings; a dynamically balanced rotor, ball bearings and a heavy gauge steel NEMA frame.

6. Pump and Motor Assembly

The pumps shall be connected to the piping in the set through stainless steel flexible metallic braided jackets, and the pump and motor assemblies shall be welded to the base plate. Pumps and motors shall be mounted on an ASTM-A36 structural steel channel and equipped with flexible coupling and full OSHA-approved coupling guard. Pumps and motors shall be mounted with bolts threaded into the steel channel for ease of maintenance. Mounting bolts shall not penetrate the secondary containment basin.

Flexible coupling general: the pump shall be connected to the motor by an elastomeric jaw type flexible coupling that does not require lubrication. The coupling wear member shall be replaceable without disturbing the alignment of either the pump or motor. Sizing of the flexible coupling shall be based on motor horsepower and rpm. Materials of construction: the coupling body shall be sintered iron and cast iron. The elastomeric wear member shall be NBS rubber.

7. Pump Isolation and Check Valves

The pumpset shall include four (4) pump isolation valves located on the suction and discharge side of each pump. Isolation valves will allow off-line pump maintenance without system loss of availability. Isolation valves shall be ball type, rated 600 WOG, include stainless steel ball and Teflon seat. Valves to provide full flow while open and positive shutoff when closed. Additionally, two (2) class 125 # swing check valves shall be included, one (1) located on the discharge of each pump.

8. Fuel Oil Strainer

The pumpset shall include one (1) factory install duplex strainer, basin mounted, on the suction side of the pumps. Strainer to be sized for less than 1/2 psi of mercury drop through a clean strainer basket with the maximum anticipated flow in the suction line. Strainer shall be one-piece cast iron body and shall be suitable for 200 psi. Strainer baskets shall be 40-mesh stainless steel. Strainer shall come complete with lever wrench handle and be bolted in place without bolting through pan. Strainer shall be Preferred Model 72, or approved equal.

- a) Strainer shall be equipped with a factory mounted and wired differential pressure switch to indicate that the basket needs to be cleaned. Indicating scale plate shall be three-position color-coded for easy indication of strainer basket flow status. Switch shall provide indication on the main pump set control cabinet to alert operators.

9. Relief Valves

The pumpset shall include a relief valve downstream of each pump sized to relieve the full outlet flow of the pump without causing the pump motor to overload or any component's pressure rating to be exceeded if the discharge is inadvertently valved off. Relief valves must be externally mounted from the pumps and piped to the return line in the field according to NFPA 30. Pump internal relief valves shall not be accepted. Relief valves shall be Preferred Model R, or approved equal.

10. Compound and Pressure Gauges

The pumpset shall include a compound gauge on the common suction header feeding the pumps. The gauge shall read 30" vacuum -15 psig. A second pressure gauge shall be included on the discharge side of each pump. Each gauge shall be equipped with an isolation ball valve.

11. Containment Basin Leak Detection Switch

Provide a factory mounted and wired, float-operated containment basin leak detection switch, to shut off the pumps and energize an audible and visual alarm should a leak be detected. The leak sensor shall be a plasma-welded stainless steel construction. The leak sensor shall be internally mounted within the pump basin. Electrical connections shall be contained in a factory installed weatherproof junction box.

12. Pump Set Control Cabinet

Provide two fuel oil management control cabinets factory mounted on the fuel oil pump set. One cabinet shall include all the motor voltage components and shall include a disconnect switch that must be opened before the enclosure door can be opened. The other enclosure shall house the low voltage (120V or less) control hardware. The control cabinets shall be completely pre-wired and factory programmed and tested to ensure job site reliability. The pump set and control cabinets shall be the product of one manufacturer for single source responsibility. Cabinets to be manufactured by nationally recognized trade union personnel and is approved by a nationally recognized independent testing laboratory, equal to UL 508A. Provide a factory assembled NEMA 4 rated steel enclosure with operator interface keypad mounted on the door. All PLC indicators, manual back-up control switches and indicators must be protected from unauthorized operation by a door. Pump set control cabinet shall have undergone, and passed, seismic shake table testing, and shall hold Office of Statewide Health Planning and Development (OSHDP) Special Seismic Certification Preapproval (OSP) status, to ensure and maintain structural integrity and full functionality during or after a seismic event. Pump set control cabinet shall be Preferred Utilities Mfg. Corp. unit, per OSHDP OSP Application Number OSP-0361-10, or approved equal.

13. Control and Interface

- a) Supply a distributed control system composed of up to ten individual microprocessor-based PLCs communicating via a redundant master-less digital network. Individual controllers shall be programmed using function block language. Devices mounted in close proximity to each controller shall be hard-wired to the controller's analog

inputs, analog outputs, digital inputs, or relay outputs. Multiple controllers shall communicate digitally using a pair of redundant two-wire communication networks. If either communication network loses communication, the other network will resume communication and provide uninterrupted control to the entire network. If any controller, or node, in the network shuts down or stops communicating, an alarm will sound and the other controllers will continue to operate. The control system logic and calibration data shall be stored in a non-volatile memory that does not require battery backup.

- b) Each microprocessor controller shall include, but not be limited to, the following inputs and outputs:
 - i. (24) 120 VAC digital inputs
 - ii. (5) 2 A relay outputs
 - iii. (5) 1/2 HP (10 A) relay outputs
 - iv. (8) loop-powered 4-20 mA analog inputs
 - v. (3) 4-20 mA analog outputs
- c) Each microprocessor controller may be equipped with a 4" color touchscreen Operating Interface Terminal (OIT). The touchscreen communicates to the controller via RS-485 Modbus protocol. The touchscreens shall be pre-programmed at the factory with graphic pages for operation, setup, trouble-shooting, and alarm indication. Each touchscreen shall be capable of displaying information from any of the controllers in the distributed control system. The touchscreens can communicate to an external controller, building automation system, or energy management system via RS-485 Modbus, Ethernet TCP/IP, or BacNet IP protocol.

14. Alarm and event Logs

The control system shall include a 200 alarms, events and operator actions memory minimum. Provide an alarm display page for viewing the most recent 8 alarms/events with scrolling capability to view the complete 200-point alarm/event memory. Each event and alarm condition must be displayed with a distinct, descriptive, English language description and time and date stamp. New alarms shall trigger the common alarm output relay. Events shall be recorded, but shall not trigger an alarm. A dedicated alarm silence button shall silence the alarm output. The control system shall record and annunciate the following alarms: Pump Thermal Overload, Pump Loss Of Flow, Pump Set Failure, Riser leak, Containment pipe leak (each sensor), main tank overflow. The control system shall record the following events: Pump Started, Pump Control Switch in "Off" position, Pump Set Prime Test OK, return pump and levels switches Test OK, and Pump Selected as Lead.

15. Fuel Pump Alternation and Lead-Lag Operation

Provide lead-lag fuel pump operation. Lead pump can be selected via the OIT touch screen on the pump set control panel.

16. Automatic Pump Prime and Suction Line Integrity Safety Check Test.
The control system shall include a battery backed, real time clock and must be capable of automatically energizing the lead pump once every day. This safety check is to verify the suction piping integrity, pump prime, and to verify pump operation. Once the lead pump has proven satisfactory operation, the lag pump shall be energized and run through the same test. These tests shall be recorded in the controller memory with a Time/Date stamp for later verification or diagnosis. If either lead or lag pump fails any of these tests, the control system shall generate an audible and visual alarm and log the "Failed Pump" condition.
17. Pump Automatic Sequencing Flow Switch
Provide a time delayed flow-sensing switch on the discharge of the pump set to bring on the lag pump should the lead pump fail to maintain flow. Flow switch shall be vane operated to actuate a single double throw snap switch. Switch shall be ship loose for alarm and backup pump operation. Switch shall be rated for 1450 psig. Provide a flow switch outlet isolation valve for maintaining the flow switch without draining the fuel system.
18. Main Tank Selection 3-way valves
Provide the main oil storage Tank Selector Valve. It shall have a handle for manual operation. The tank selector valve is to provide a safe operating system by means of isolating the tank in operation from the tank in standby. This Tank Selector Valve shall be Preferred Utilities model 1204-13034, or approved equal.
19. Quality Assurance
The Control Cabinet shall be manufactured and labeled in accordance with UL508A. Simply supplying UL recognized individual components are not sufficient. The assembled control cabinet, as a whole, must be inspected for proper wiring methods, fusing, etc., and must be labeled as conforming to UL508A. Inspection and labeling shall be supervised by UL or other OSHA approved Nationally Recognized Test Lab (NRTL). The system must be manufactured by a nationally recognized Trade Union (I.B.E.W. or similar trade union). Lack of an NRTL certified UL508A wiring methods inspection and label or lack of a Trade Union label will be grounds for rejection.
20. Factory Testing
Pump Sets must be fully tested prior to shipment as follows: testing shall include both a pressure and vacuum testing period. First, the complete pump set shall be pressure tested to rated pressure using an air pressure source. The test shall confirm that the pump set piping system can maintain rated pressure for 4 hours. Next, the complete pump set shall be brought to a vacuum greater than 25"Hg. The test shall confirm that the pump set piping system can maintain vacuum for 4 hours. Following a pressure and vacuum test the pump set shall be given a full operational test. The pump set shall be connected to a fuel oil supply and return. The pump set shall be operated normally. Motor amps shall be noted at no load and full load for each motor. The motor amps shall be within 10% of rated motor amps. During the test the relief valve shall be set and tested. Operation of pump set instrumentation shall be tested. A copy of the test procedures shall be sent to the consulting engineer and owner. The owners and or the consulting engineer, at their

discretion, shall observe this and all other tests. A certificate of factory testing, together with a copy of the wiring and arrangement diagrams shall be placed in the control cabinet prior to shipment.

2.03 CHARTS AND DIAGRAMS

- A. Lubrication Charts: Card holder with aluminum or stainless steel frame, clear acrylic front, and sheet aluminum card backing plate. Minimum size card 8 x 10 inches. Illustrate or type the manufacturer's recommendations for lubrication of each type pump.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install in-line circulating pumps between pipe flanges in piping systems. Install overhead pipe supports, both sides of in-line pumps, installed in horizontal piping runs.
- B. Install close-coupled, base mounted and all floor supported pumps or pumping apparatus on concrete pump foundations, or vibration isolating bases, or both, all as noted on drawings or specified. Level, align and true the equipment utilizing steel shims. Bolt to construction and grout, when grouting holes are provided in bases.

3.02 FIELD QUALITY CONTROL

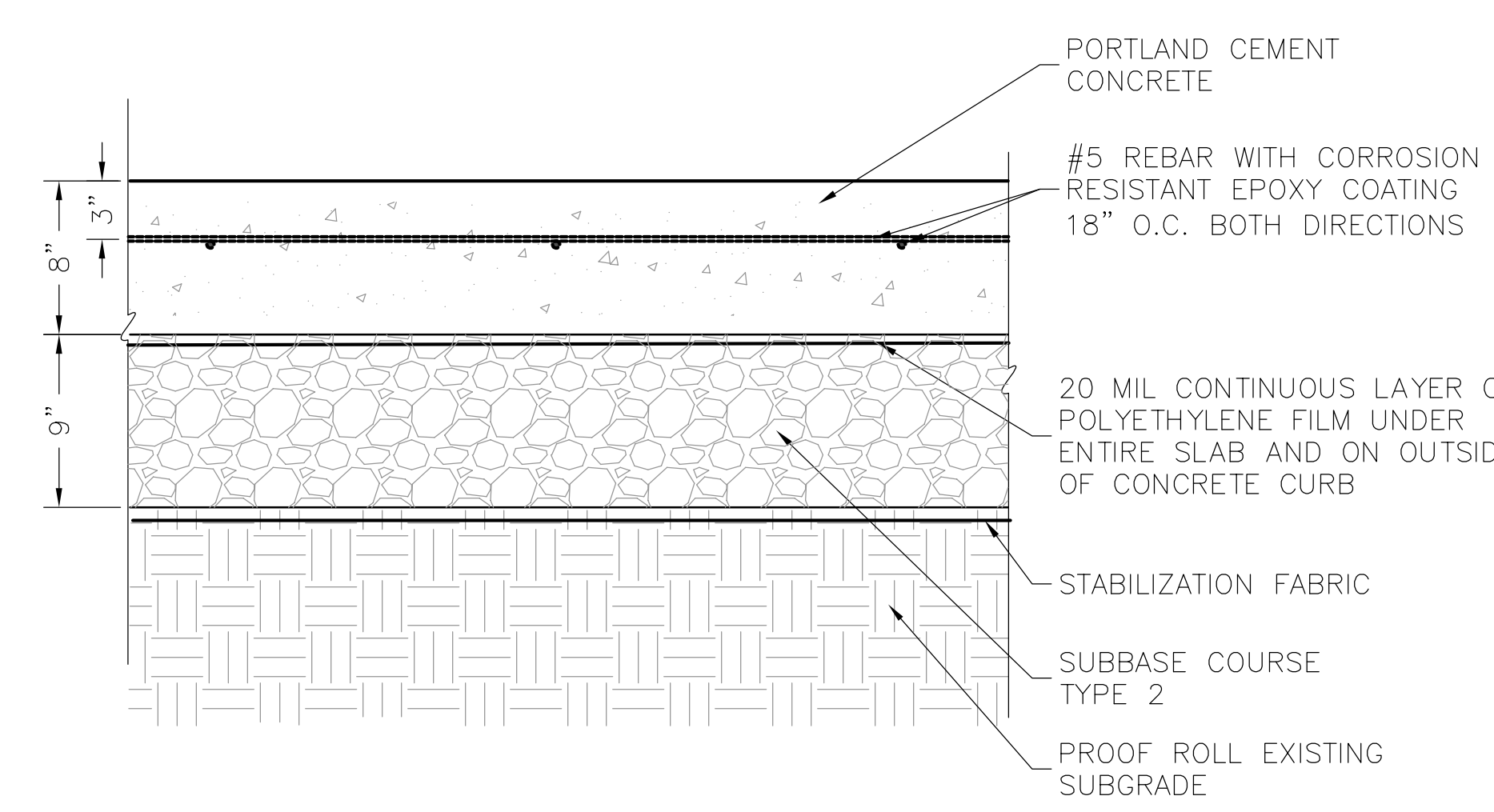
- A. Preliminary System Tests:
 - 1. Preparation: Have the Company Field Advisor adjust the completed system and then operate it long enough to assure that it is performing properly.
 - 2. Run a preliminary test for the purpose of:
 - a. Determining whether the system is in a suitable condition to conduct the acceptance test.
 - b. Checking control equipment.
 - c. Training Facility personnel.
- B. System Acceptance Test:
 - 1. Preparation: Notify the Director's Representative at least 3 working days prior to the test so arrangements can be made to have a Facility Representative witness the test.
 - 2. Make the following tests:
 - a. Individually test control devices.
 - b. Test alarm indicating devices.
 - c. Test each system function step by step.
 - 3. Supply equipment necessary for system adjustment and testing.
 - 4. Submit a typewritten report of the test results, signed by the Company Field Advisor and the Director's Representative. Enclose a copy of the

report in a metal frame covered with clear acrylic glazing and mount it adjacent to the pump control panel.

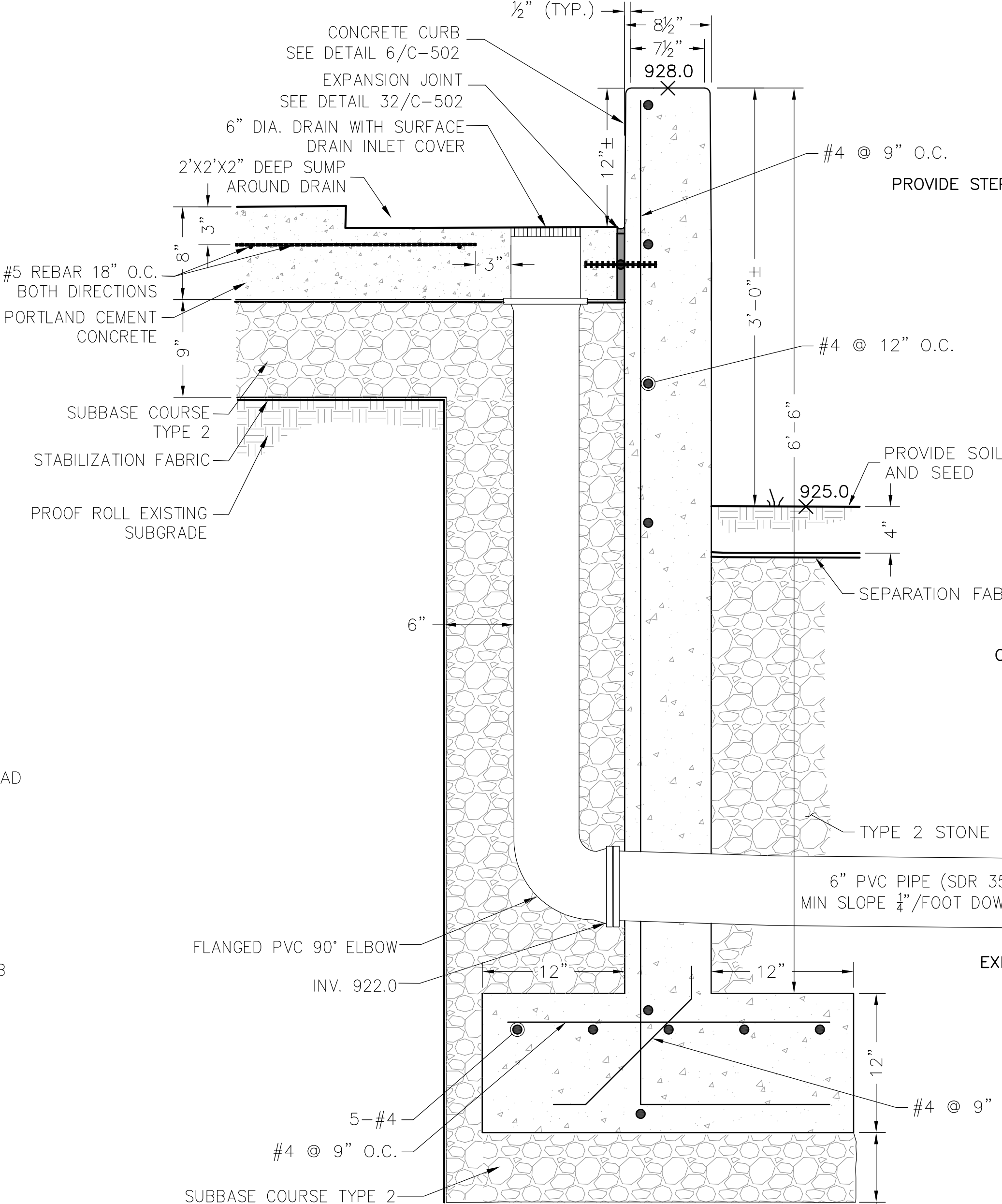
END OF SECTION



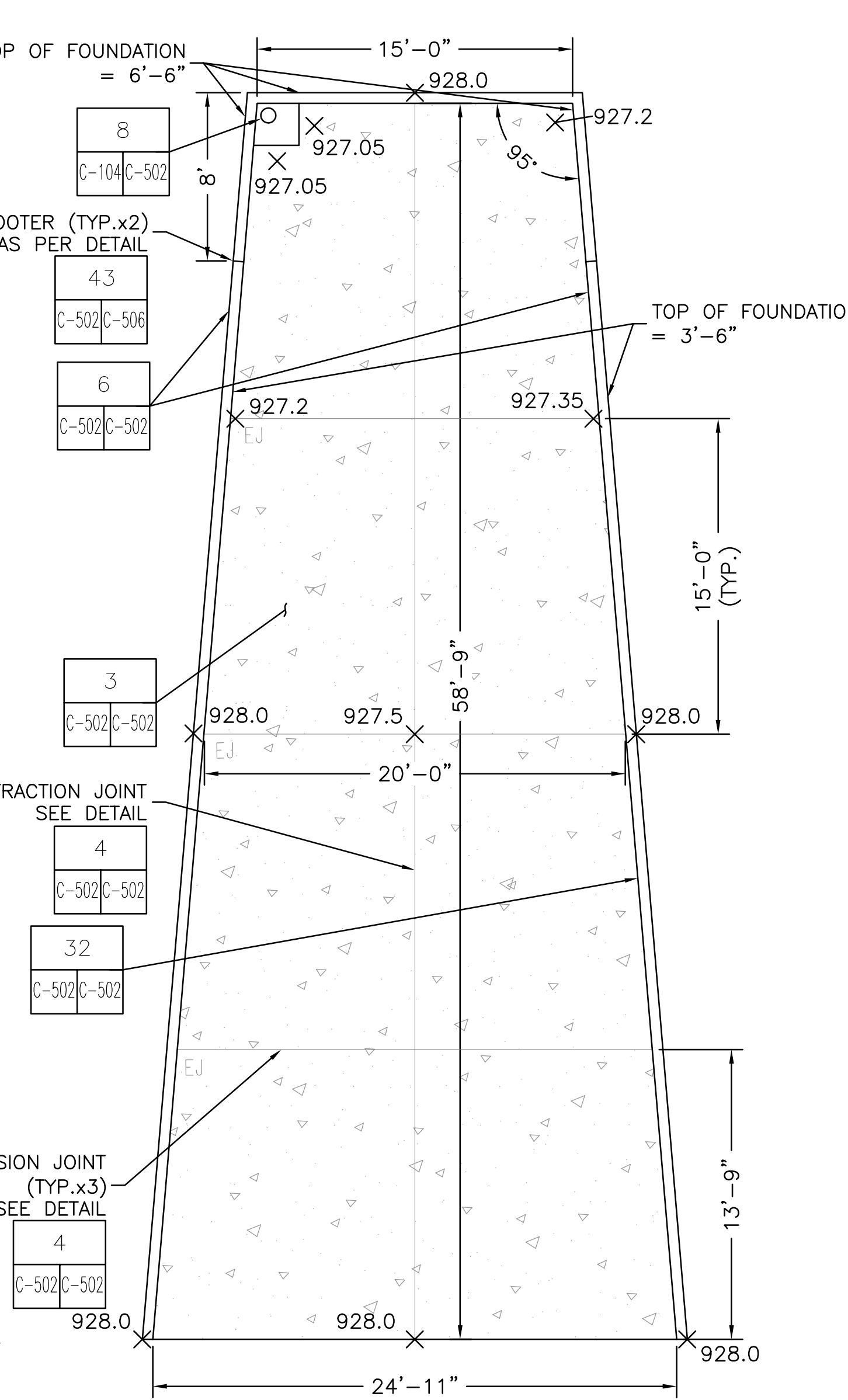
CONTRACT: **CONSTRUCTION**
TITLE: **REPLACE FUEL OIL TANKS AND MODIFY BOILER CONTROLS POWER HOUSE BUILDING**
LOCATION: **ELMIRA CORRECTIONAL FACILITY 1879 DAVIS STREET ELMIRA, NEW YORK 14901**
CLIENT: **DEPARTMENT OF CORRECTIONS AND COMMUNITY SUPERVISION**



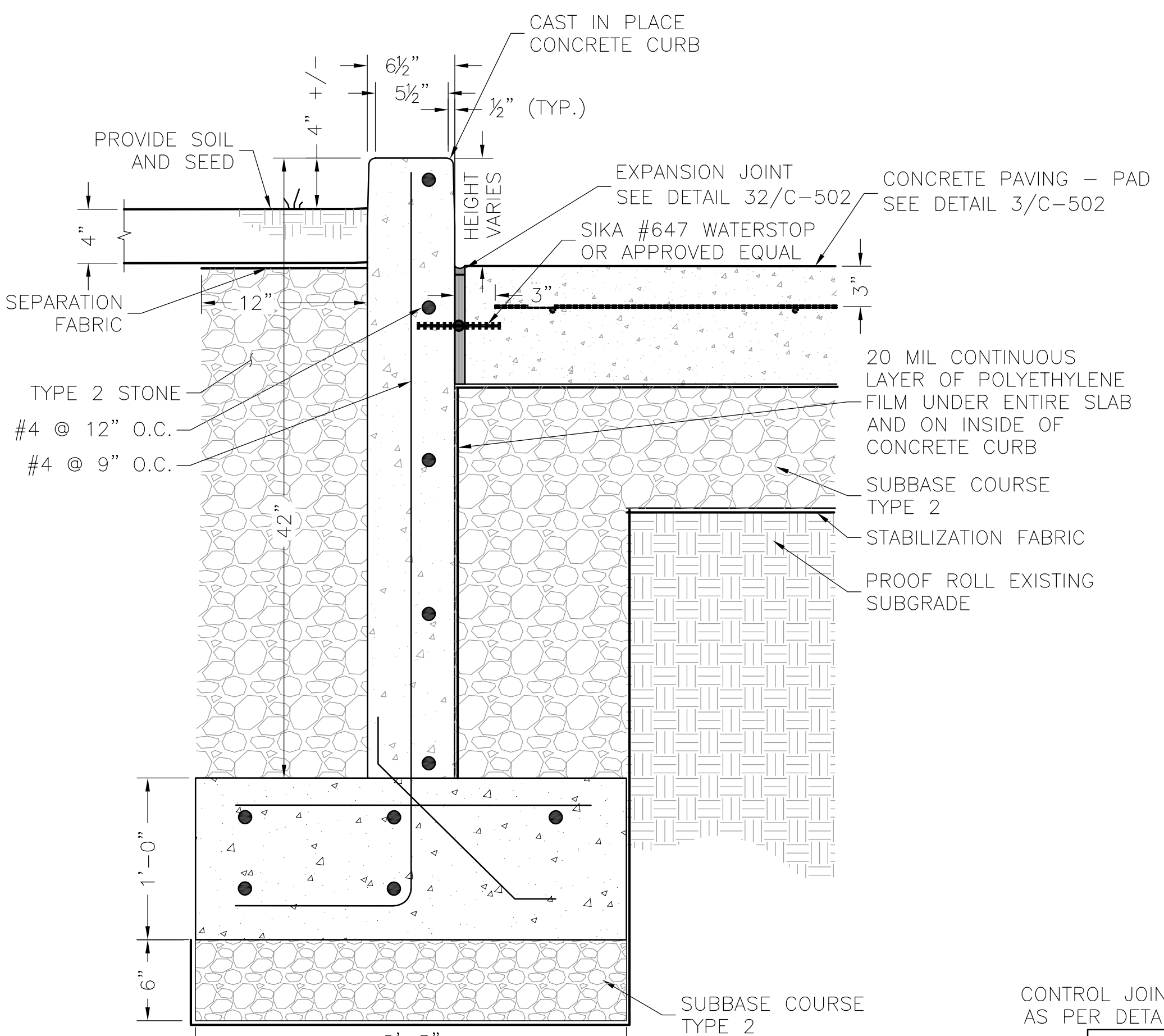
3 CONCRETE PAD
SCALE IN FEET



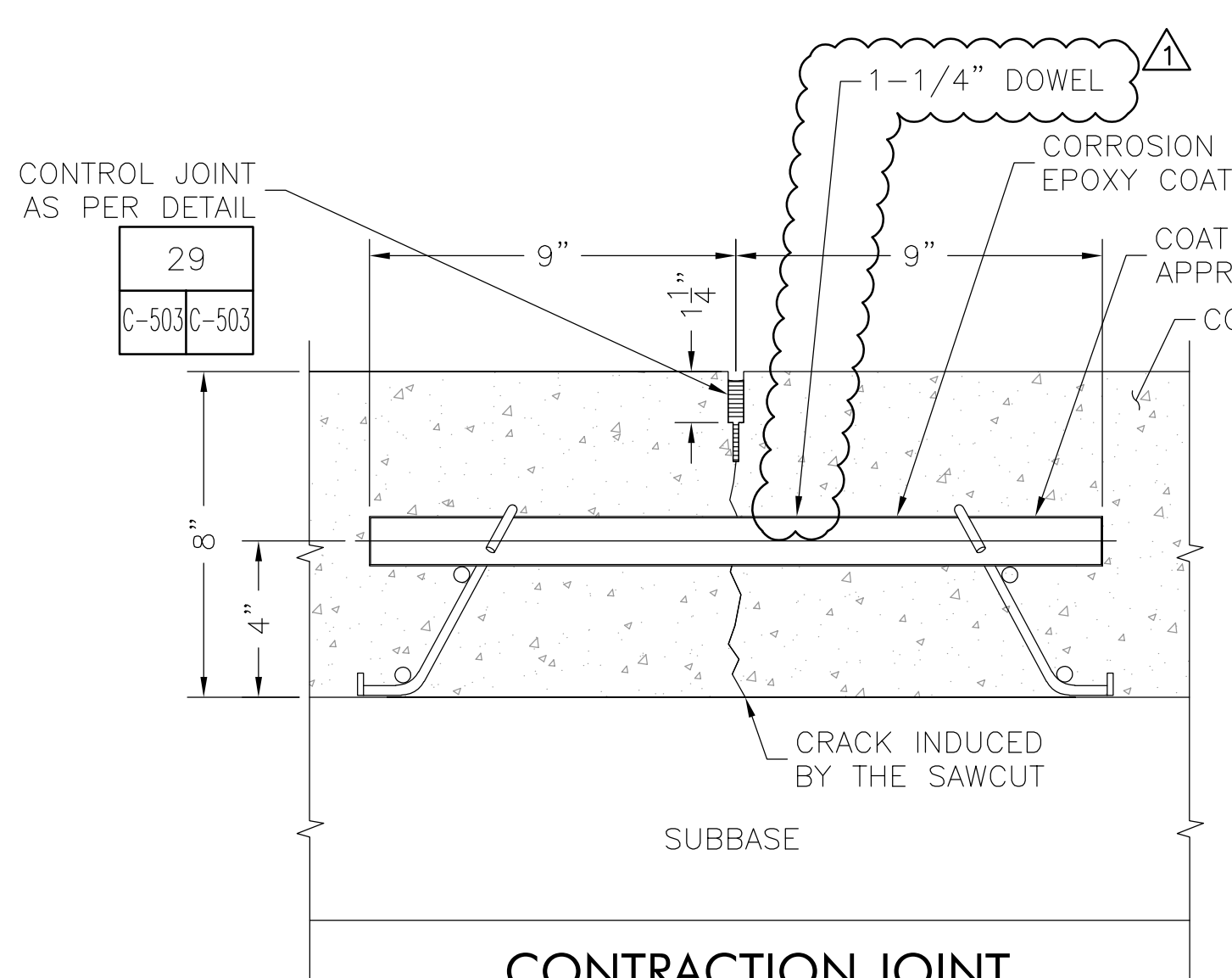
8 DRAIN AND CURB
SCALE IN FEET



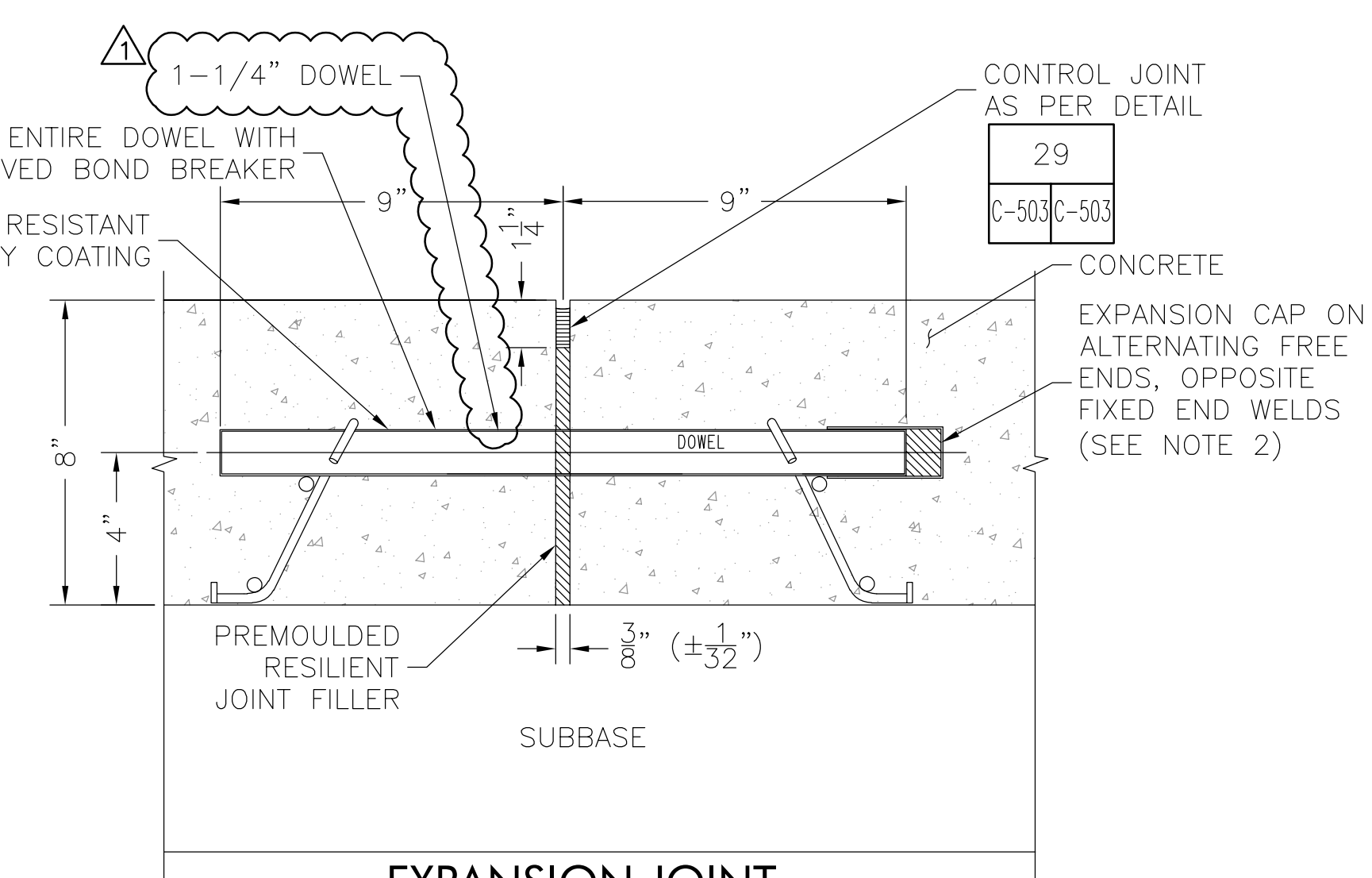
2 CONTAINMENT PAD DETAIL
SCALE IN FEET



6 CAST IN PLACE CONCRETE CURB
SCALE IN FEET

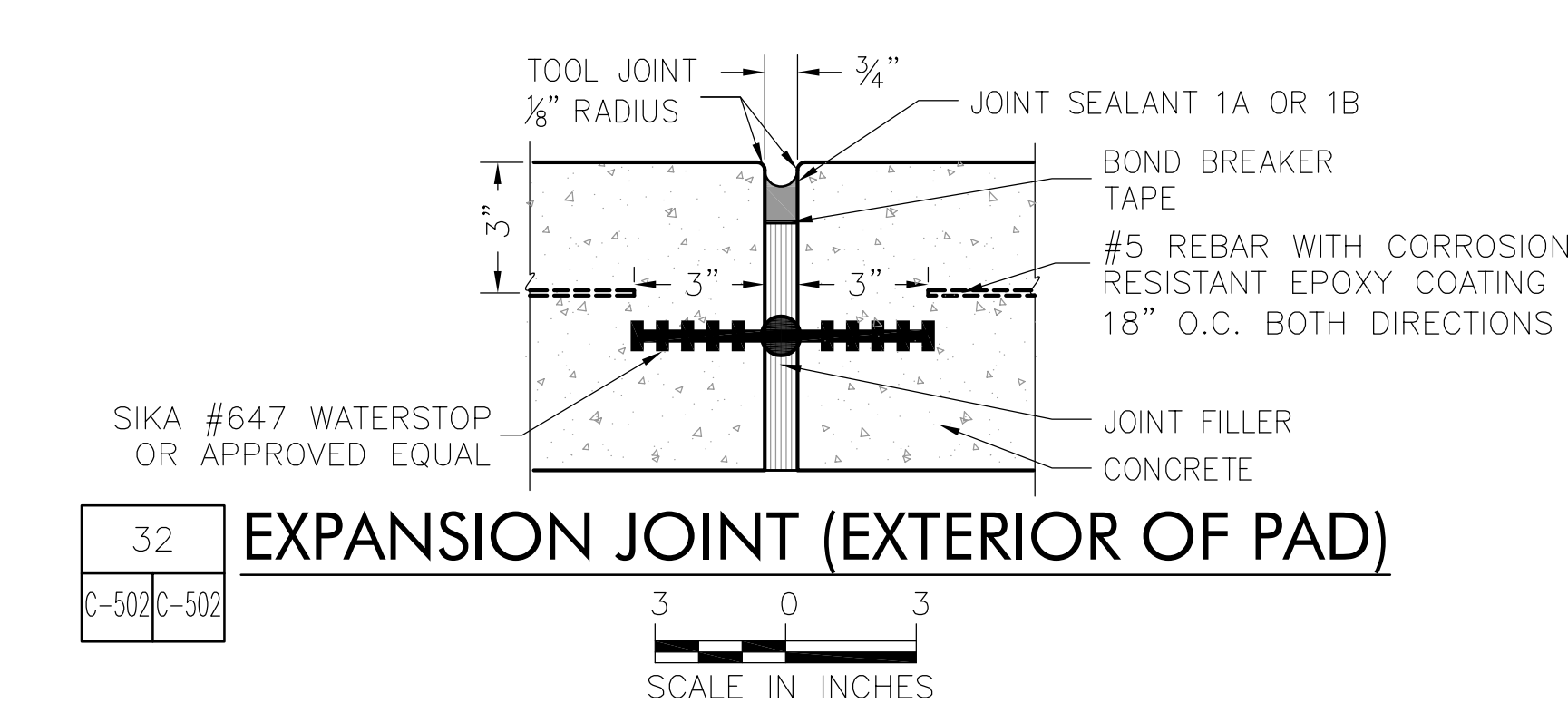


4 EXPANSION JOINT (INTERIOR OF PAD)
SCALE IN INCHES



EXPANSION JOINT (UTILIZING ISOLATION CONDITION SHOWN)

- NOTES:
- DO NOT TAP EXPANSION CAPS ONTO DOWELS.
 - CUT ENDS OF DOWELS DO NOT NEED TO BE COATED.



32 EXPANSION JOINT (EXTERIOR OF PAD)
SCALE IN INCHES

Mar 08 2021 - 10:58am
 V:\NYS\18-209-0295 NYS005 - Environmental Remediation Design\LiRo TK 07 Elmira CF 45964 065 WD 07\Addendum 1\C-502.dwg
 36x24 PLOT SHEET

MARK	DATE	DESCRIPTION
△	3/8/21	ADDENDUM 1
	5/14/20	BID DOCUMENTS
PROJECT NUMBER:	45964 - C	
DESIGNED BY:	M. GUTMANN	
DRAWN BY:	A. KELLY	
FIELD CHECK:		
APPROVED:	M. WESOLOWSKI	
SHEET TITLE:	TRANSFER CONTAINMENT PAD DETAILS	
DRAWING NUMBER:	C-502	
SHEET	15	of 36