

Addendum 7

City of Canton, Ohio
Purchasing Department
218 Cleveland Ave. SW, 4th floor
Canton, Ohio 44702

Sugarcreek Water Treatment Plant and Wellfield Improvements

Item/Project

Water Department

Responsible Department

Thursday June 9, 2022 at 2:00 PM local time

Bids Due On or Before

Bid Proposal Submitted By:

Company Name

Street Address

City

State

Zip

Contact Person

Phone No.

Email Address

Addendum No. 7
June 6, 2022

APPENDIX D SPECIFICATIONS

1. **Page 1206-1207, Section 28 16 00 – Closed Circuit Television Systems.** For Part 2.6 A 2. a. IP Camera. REPLACE with the following table:
a. IP Cameras

Item Quantity Description -	Features
4 - 4 MP dome type PTZ Indoor/Outdoor Cameras 1- spare Indoor/Outdoor dome camera	Dome Indoor/Outdoor PTZ Camera 1. Megapixel 4MP high definition resolution 2. Auto/Manual zoom 3. Low Light 0.1 LUX Color 4. 2592*1520 resolution 5. 30 frames per seconds @ all resolutions 6. Minimum 25X Optical / 16X Digital 7. Pan 355 degree. Tilt 90-degree down 15 degree up. 8. Viewing distance 0-165 feet
16 - 4MP outdoor dome type PTZ cameras 1 - spare outdoor dome PTZ camera	Dome Type Outdoor PTZ Cameras 1. Megapixel 4MP high definition resolution 2. Auto/Manual zoom 3. Low Light 0.1 LUX Color 4. 2592*1920 resolution 5. 30 frames per seconds @ all resolutions 6. Minimum 25X Optical / 16X Digital 7. Pan 355 degree. Tilt 90-degree down 15 degree up. 8. Viewing distance 10-300 feet

Equipment Features:
1. External GB SD card slot, Support Max 128GB Micro SD card.
2. Embedded infrared LEDs for night vision range up to 50 meters (165 feet)
3. Power: Power-over-Ethernet (P-o-E)
4. Communications: CAT 5 through fiberoptic link.
5. Operating Environment: -20°C~+60 °C (-4°F~+140°F), Humidity 10%~90%, non-condensing
Manufacturers:
1. Tyco Security Products
2. Hanwha Techwin America
3. Approved Equal

2. **Page 1211 and 1212, Section 28 16 00 – Closed Circuit Television Systems.** Part 2.6 B Functional Description, DELETE Items 19-28 and 32-33. These features are not required.
3. **Pages 1379-1388, Section 33 56 13 – Diesel Fuel Aboveground Storage Tank Systems.** REPLACE with the attached Section (16 pages). The specification was revised. Sheet PL-4 and I-33 will be reissued in the last addendum. These revisions provide details for the Contractor to furnish and install new pumps, piping, valves, and controls from the new aboveground storage tank to the existing day tank in the generator building.
4. **Page 1526, Section 40 91 01 – Pressure Measurement.**
 - Part 4. B – Pressure Switches reissued in Addendum No. 3, DELETE the high service pumps pressure switches low and high with Tag No. PSL-781, PSH-781, PSL-782, PSH-782, PSL-783, PSH-783, PSL-784, PSH-784, PSL-785, and PSH-785 from the table. These pressure switches are not required.
5. **Page 1761, Section 46 33 01 – Liquid Chemical Feed Equipment.** Part 3.9 A. Equipment Schedule.
 - Under row Discharge Pressure (psi) for the Hydrofluosilicic Acid (Fluorosilicic Acid) column, REPLACE “100” with “50”.
 - Under row Discharge Pressure (psi) for the Sodium Bisulfite* column, REPLACE “125” (Revised in Addendum No. 2) with “50”.

APPENDIX D: DRAWINGS

6. **Sheet C-11, Fuel Storage Tank Civil Enlarged Plan – Section.** REPLACE with the attached C-11. A piping schematic for the Aboveground Fuel Tank is included in the revised sheet to show the fuel supply and return lines to be provided in a concrete encased double containment system. A ladder and a weatherproof enclosure for a fuel supply pump were added.

7. **Sheet C-15, WTP Civil Existing Yard Piping Plan.**
 - For Pipe Legend Note 38, REPLACE “*Underground fuel storage tank.*” with “Existing 2,500-gallon underground fuel storage tank shall be removed and remedied by Owner/Engineer as described in Section 33 56 13.”
 - For Pipe Legend Note 50, for the fuel oil supply REPLACE “2”/3” FRP (II/IIA)” with “3/4” schedule 40 steel / 3-1/2” FRP Double Containment Pipe System Encased in Concrete”.
 - For Pipe Legend Note 51, for the fuel oil overflow REPLACE “2”/3” FRP (II/IIA)” with “1” schedule 40 steel / 4-1/2” FRP Double Containment Pipe System Encased in Concrete”.
 - At the generator building, ADD arrow and symbol for Pipe Legend Note 54.
 - In the Pipe Legend, ADD “54. Existing day tank and piping shall be modified and existing fuel supply pump removed by the Contractor as shown on C-11.”

8. **Sheet C-16, WTP Civil Proposed Yard Piping Plan.**
 - For Pipe Legend Note 50, for the fuel oil supply REPLACE “2”/3” FRP (II/IIA)” with “3/4” schedule 40 steel / 3-1/2” FRP Double Containment Pipe System Encased in Concrete”.
 - For Pipe Legend Note 51, for the fuel oil overflow REPLACE “2”/3” FRP (II/IIA)” with “1” schedule 40 steel / 4-1/2” FRP Double Containment Pipe System Encased in Concrete”.

9. **Sheet P-25, Main Building Process Filter Gallery Annex Plan.**
 - At the note that state 1 ½” NPW line connecting to Backflow Preventer that is east of Door 106, ADD arrow and symbol for Coded Note 22.
 - In the Coded Notes, ADD “22. Remove and replace existing double backflow preventer with new primary and bypass units as shown on PL-8 (Coded Note 22).”

10. **Sheet P-32 – Main Building Process Storage Rm Phasing Plan.** REPLACE with attached P-32. Added chlorine solution line alignment to the West Aerator Building.

11. **Sheet SD-12, Process Standard Details Plate and Guides.** For Pump Pressure Gauge Detail, REPLACE with attached Sketch SD-12. Added pressure switch/ pressure indicator manifold piping.

12. **Sheet PL-4, Filter Building First Floor Plan Plumbing Demolition.** ADD the following to Note 8, “See Sheet C-11 and C-15 for details.”

13. **Sheet PL-8, Filter Building First Floor Plan Plumbing.** For Coded Note 22, ADD the photo below to show existing backflow preventers in the Filter Gallery Annex that are being removed and replaced.



14. **Sheet E-5, Enlarged WTP Electrical Renovation Site Plan.**
- At the signal conduit (S) between the new aboveground fuel storage tank and the generator building, ADD arrow and symbol for Keynote 3.
 - Add the following keynote: “3. Install and wire the new fuel storage tank vendor supplied remote fuel control panel to the fuel tank level switches and the fuel supply pump. All wiring at the fuel storage tank and the day tank shall be per NEC Art. 501. Provide two additional underground 1” conduits in duct bank G/E-6 between the fuel storage tank and the fuel storage tank control panel inside the generator room as follow:
 - (1) 1” conduit with 2 #10, 1 #10G between the remote fuel storage tank fuel return pump/remote control panel and the 208/120V power panel P1 inside the main electric room utilizing the spare 20A/1P branch breaker as required. Provide a local NEMA 7 (explosionproof) single pole, horsepower rated switch for the ½ horsepower, 115V, single phase fuel return pump with XP flexible conduit as required.
 - (1) 1” conduit with 12 #14 wires between the remote fuel control panel and the fuel storage tank control panel inside the generator room.”
15. **Sheet E-53, High Service Pump RM Electrical Renovation Power Plan.**
- In the generator room next to new Fuel Storage Tank Control Panel, ADD pump symbol and note for “New fuel return pump”.
 - For Coded Note 25 ADD the following notes: “The new homerun circuit P1-41 and the new manual switch shall remain and be reused for the new return pump as required. Provide 3/4” conduit with 6 #14 (intrinsically safe wiring) between the day tank new vendor supplied level switches and the adjacent new vendor supplied fuel storage tank control panel.”
16. **Sheet E-55 – Filter Gallery Electrical Renovation 2nd Floor Power Plan El. 979.5.** For Key Note 2, ADD the following, “For each Filter Cell there are 4 air drops to be provided by the vendor as part of the new Air Scour System. For each air drop there is a low pressure switch to detect leakage in the secondary containment piping; these are furnished by the vendor but installed by the Contractor.”
17. **Sheet E-57 – Filter Gallery Electrical Renovation Power Plan El. 975.** DELETE chlorine residual analyzers AIT 421 and AIT 426.
18. **Sheet I-33 – Generator P&ID.** REPLACE with attached I-33. Drawing was revised to show work at new 3,000 gallon aboveground storage tank and the existing day tank in the generator building including vendor supplied control panel, pump, instruments and controls. Electrical Contractor shall provide conduit and wiring to vendor supplied equipment, instruments, and controls.
19. **Sheet DC-7, Dechlorination Bldg Mechanical Plan – Details.**
- For Plumbing Note 1, for the backflow preventer REPLACE “1- 1/2” ” with “3/4” ”.
 - For Plumbing Note 2, for the electric water heater REPLACE “1- 1/2” ” with “1/2” ”.
 - For Plumbing Note 3, for the potable water line REPLACE “1- 1/2” ” with “1” ”.
 - For Plumbing Notes, DELETE Note 11 and RENUMBER 12 to 11.

20. **Sheet DC-9, Electrical Site Plan and Details.**

- Add the following General Notes:

“General Notes

1. Proposed Ductbank B shall include new conduit and wiring from Transformer T9 in the Main Building to the new Dechlorination Building. There is one proposed hand hole and two existing hand holes along alignment. Handhole HH-2 and HH-3 are existing to remain.
2. The light poles shown in the site plan are existing to remain.
3. Flow Switches 100, 200, and 300 shown in Lagoons are existing to remain.”

SECTION 33 56 13

DIESEL FUEL ABOVEGROUND STORAGE TANK SYSTEMS

[ADDENDUM NO. 7]

PART 1 GENERAL

1.1 RELATED DOCUMENTS

- A. **All material and installation sections** relating to site preparation, painting, concrete, and other related work not specified herein are covered in appropriate sections of these specifications.

1.2 DESCRIPTION OF WORK

- A. **This section describes requirements for providing** the equipment, labor, and materials necessary to furnish and install aboveground petroleum storage tank system utilizing a 2-hour fire-rated aboveground steel tank with concrete encasement. The scope of work shall include:
1. Furnishing and installing new piping and valves from the fuel storage tank to the existing day tank in the Generator Building and installing necessary valves and piping to connect new double containment supply and reverse flow return lines from the day tank back to the fuel storage tank.
 2. The new system shall include the reverse flow pump, emergency fire-link shutoff valve installed in the supply line to the day tank, and a reverse flow return pump mounted on a new shelf with brackets on the wall of the generator building, solenoid shutoff valve, check valves, and necessary piping and accessories to connect day tank return fuel line back to the new aboveground fuel storage tank.
 3. Remote control panel, master control panel, level controls, and switches, alarm lights, horns, shall be furnished and installed to provide a complete and operable system to supply fuel to the existing 1750 KW generator from the existing day tank. Instrumentation, controls, conduit, power, and control wiring shall be integrated with existing wiring and controls for the day tank and generator.
- B. **Requirements include furnishing and installing** all equipment and accessories necessary to make complete systems for the storage and dispensing of diesel fuel.
- C. **Unless otherwise specified**, equipment furnished under this section shall be fabricated and installed in compliance with the instructions of the manufacturer.
- D. **Ensure that all equipment**, accessories, and installation materials comply with the specification and that adequate provision is made in the tank design and fabrication for mounting the specified system equipment and accessories.
- E. **Be solely responsible** for construction means, methods, techniques, sequences, and procedures and for safety precautions and programs.
- F. **Provide all labor, equipment, and materials** required to provide a complete and functional system.
- G. **To avoid delays in construction**, ensure that all components of the system are available at the time of installation.

- H. **Coordinate work with other work** being performed at the construction site and minimize interference with the Owner's normal activities which may continue during construction.
- I. **Obtain necessary permits**, arrange for inspections, and obtain approval of the appropriate authority having jurisdiction over the work described.

1.3 QUALITY ASSURANCE

- A. **The manufacture and installation** of aboveground storage tank systems described in this section shall adhere to the following standards and regulatory requirements.
 1. Standard for Insulated Secondary Containment – Protected Type Aboveground Storage Tanks, Standard Underwriters' Laboratories, Inc. (UL) 2085; Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids, Standard UL 142; Control Equipment for Use with Flammable Liquid Dispensing Devices, UL 1238; Pipe Connectors for Flammable and Combustible Liquids and LP-Gas, UL 567; Power-Operated Dispensing Devices for Petroleum Products, UL 87; Valves for Flammable Fluids, UL 842; UL Listed Non-Metal Pipe, UL 971; Underwriters Laboratories Inc., 333 Pfingsten Road, Northbrook, Illinois 60062. (847) 272-8800.
 2. Protected Aboveground Tanks for Motor Vehicle Fuel-Dispensing Stations Outside Buildings, Appendix II-F, Uniform Fire Code, 1997, International Fire Code Institute.
 3. Standard for Thermally Insulated Aboveground Storage Tanks, F941; Fireguard Installation & Testing Instructions for Thermally Insulated, Lightweight, Double-Wall Fireguard Aboveground Storage Tanks, R942; Recommended Practice for Corrosion Protection of Underground Piping Networks Associated with Liquid Storage and Dispensing Systems, R892; Steel Tank Institute, 570 Oakwood Road, Lake Zurich, Illinois 60047. (847) 438-8265.
 4. CAN/ULC - (ORD - C 142.5), Standard for concrete encased aboveground tank assemblies for flammable and combustible liquids.
 5. Flammable and Combustible Liquids Code, National Fire Protection Association (NFPA) 30, National Fire Protection Association.
 6. Automotive and Marine Service Station Code, NFPA 30A, National Fire Protection Association.
 7. National Electric Code, NFPA 70, National Fire Protection Association.
 8. National Fire Prevention Code, Building Officials and Code Administrators (BOCA).
 9. Occupational Safety and Health Standards, particularly Flammable and Combustible Liquids, 29 Code of Federal Regulations (CFR) 1910.106, Personal Protective Equipment 29 CFR 1910 Subpart I, Excavations 29 CFR 1926.650 Subpart P, U.S. Department of Labor, Occupational Safety and Health Administration (OSHA), Washington, D.C.
 10. Clean Water Act and Oil Pollution Act of 1990, Spill Prevention, Control, and Countermeasure (SPCC) Plans, 40 CFR 112, 113, and 114.

11. Applicable state and local regulations and ordinances.
- B. **In case of differences between building codes**, state laws, local ordinances, utility company regulations, and contract documents, the most stringent shall govern.
- C. **The codes and standards listed** are the latest as of this publication. Codes and standards are continuously updated. The Contractor shall confirm the construction standard edition enforced by the authority having jurisdiction.

1.4 SUBMITTALS

- A. **Provide shop drawings** of the following system components for approval before commencing construction.
 1. Shop drawings of the tank by the tank manufacturer.
 2. Assembly and installation drawings.
 3. Ladder for new 3,000- gallon fuel storage tank.
 4. Fuel management system electrical drawings.
- B. **Provide product data sheets** and descriptive material for major components to be provided.
 1. Tank.
 2. Pumps, valves, and fittings.
 3. Fuel management system master and remote-control panel, instruments and controls, and accessories.

1.5 JOB CONDITIONS

- A. **Existing Diesel Underground Storage Tank (UST)**
 1. The new Aboveground Storage Tank (AST) shall be installed prior to the removal of the existing UST. The existing 2,500-gallon UST will be removed per the drawings by an UST Removal Contractor under a separate contract by the Owner/Engineer. The existing UST is regulated by the Bureau of Underground Storage Tank Regulations (BUSTR).
 2. The following will be completed by Owner, Engineer, or UST Removal Contractor:
 - a. All UST contents (diesel fuel) will be emptied by the Owner prior to performing the UST removal.
 - b. Removal and disposal of the concrete pad will be completed by the UST Removal Contractor.
 - c. Removal of the existing UST through an UST Removal Contractor and sampling as required by BUSTR's Technical Guidance Manual.
 - d. Coordination of work based on the General Contractor's approved construction schedule.
 - e. Handling of petroleum contaminated soil from the site. Remaining soil, if not contaminated, will be used as backfill and the existing concrete tie down pad will remain.

- f. Additional backfill will be required to complete the work and extra material shall be coordinated and provided by the Contractor. A temporary stockpile of excavated tank cavity and pipeline fill material location will be coordinated with the Contractor prior to the work.
 - g. Backfilling the void remaining to 100 PCT compaction at 6" to 8" lifts.
 - h. All removal permits, environmental sampling and reporting required.
3. The following will be required by the General Contractor
- a. Installation of the new Aboveground Storage Tank (AST) prior to removal of the existing UST.
 - b. Coordination with the Owner and Engineer to schedule the proposed work to remove the UST.
 - c. Locating and marking of all underground utilities.
 - d. Removal/abandonment of the existing piping from the existing UST to the Generator Room. The UST Removal Contractor will remove any piping within the limits of their excavation.
 - e. Provide sufficient backfill stockpile, conforming to Division 31 Specifications, for the additional material necessary to complete backfill of the void left by the UST. Location of the stockpile shall be coordinated prior to work. Compaction of the backfill will be completed by the UST Removal Contractor.
 - f. The Contractor shall perform restoration that includes grading and seeding work that meets the requirements of Contract Documents.

1.6 DELIVERY, STORAGE, AND HANDLING

- A. Not used.

1.7 SPECIAL WARRANTY

- A. Provide insurance as specified.
- B. Provide the following guarantees/warranties.
 - 1. Equipment manufacturer's standard warranties.
 - 2. Additional guarantees/warranties as specified.

1.8 DEFINITIONS

- A. **Authority having jurisdiction is the local fire marshal**, building official, health department, electrical inspector, or other having statutory jurisdiction over the project.
- B. **FRP is an abbreviation** for fiberglass-reinforced plastic.
- C. **Install means the Contractor shall perform** all work required to place the equipment specified in operation, including installation, testing, calibration, and start-up.

- D. **Interstitial refers to the space between** primary and secondary containment of tanks as well as containment sumps and piping.
- E. **Leak mode testing refers to testing** the integrity of the tanks and in accordance with the test device manufacturer's instructions and U.S. Environmental Association (EPA) technical standards.
- F. **Liquid tight means prevention of the release** of product from contained spaces into the surrounding soil or the infiltration of ground or surface water into a contained space.
- G. **STI is the Steel Tank Institute**, 570 Oakwood Drive, Lake Zurich, Illinois 60047, (847) 438-8265.

1.9 CONSTRUCTION DOCUMENTATION

- A. **At contract close-out, provide three sets** of the tank installation instructions.
- B. **Provide three sets** of manufacturer's system component operation and maintenance manual instructions.
- C. **Provide record** (as-built) drawings and photographs of the completed tank system in place.
- D. **Provide copies of all testing** and inspection reports to the Owner prior to substantial completion.

PART 2 PRODUCTS

2.1 FIRE-RATED ABOVEGROUND STORAGE TANK(S)

- A. **The storage tank** shall be Fireguard concrete encased aboveground tank for the storage of petroleum products at near atmospheric pressure. Number, size, and weight of tank shall be as follows:
 1. 3,000-gallon capacity (nominal), cylindrical tank for diesel storage with access ladder to top of tank from grade, and provisions for installation of required level controls, vents, filling devices, nozzles, and fittings to install and mount instrumentation and controls, piping, and fittings to connect supply and return double containment piping from the new fuel storage tank to the existing day tank in the Generator Building.
 2. The primary and secondary tanks shall be manufactured in accordance with STI publication No. F941, "Standard Thermally Insulated Aboveground Storage Tanks."
 3. The listed assembly shall meet the requirements for "protected" tank as defined by the Uniform Fire Code (UFC) Appendix II-F, and "fire-resistant" tanks as defined by UL including impact resistance, ballistics protection, and hose stream resistance criteria.
 4. The tank shall consist of an inner steel wall, encased by lightweight thermal insulation material, and an outer steel wall.
 5. The outer steel wall shall be UL 2085-listed for secondary containment and capable of providing a minimum 110 percent containment of the primary storage tank's content.
 6. A legible UL 2085 label shall be affixed to the side of the aboveground storage tank(s).

7. Steel outer wall of the tank shall be coated to prolong weather resistance and to further reduce maintenance needs.
 8. The storage tank and supports shall be delivered as a complete UL-listed unit.
 9. The storage tanks and supports shall meet all the requirements for Seismic Zone applicable per Uniform Building Code requirements.
- B. **Tank shall be designed for use** aboveground and include integral secondary containment, and thermal insulation that provides a minimum 2-hour fire rating.
1. Provide a porous, lightweight monolithic thermal insulation material in the tank's interstitial space.
 2. The thermal insulating material shall allow liquid to migrate through the interstice to the monitoring point.
 3. The thermal insulating material shall not be exposed to weathering and shall be protected by the concrete secondary containment outer wall.
 4. Thermal insulation material shall be installed at the factory and be in accordance with American Society for Testing and Materials (ASTM) Standards C 332 and C 495.
- C. **Tank shall be provided** with the following warranties.
1. 30-year limited warranty against leakage from the secondary containment tank, and failure of the primary tank caused by cracking, breakup, or collapse.
 2. 30-year warranty that the tank was fabricated in accordance with requirements of UL 2085 and UL 142, aboveground storage tank manufacturing standards.
 3. 1-year warranty against failure due to defective materials and workmanship for 1 year following the date of delivery of the tank to the job site.
- D. **Register each tank** and serial number with STI in accordance with instructions provided by the manufacturer with the tank.

2.2 VENTING REQUIREMENTS

- A. **Provide one normal atmospheric vent for the primary tank.**
1. Vents may discharge upward or laterally, protected from intrusion of rain.
 2. Tanks located in Stage II Vapor Recovery-mandated air quality areas shall be provided with pressure/vacuum vents.
 3. Vents for tanks containing Class 1 liquids shall terminate at least 12 feet above ground level and be located at least 5 feet from building openings.
 4. Vent installation shall comply with applicable sections of the fire and mechanical codes, including but not limited to NFPA 30A (2-4.5.e), NFPA 30 (2-3.5), UFC (7902.1.10), and BOCA (F-3201.1).
 5. Accepted manufacturers and part numbers: OPW No. 23 or 523V.

- B. **Provide one emergency primary tank vent per compartment.**
 - 1. Vent size shall be determined by the tank configuration, the primary tank capacity, and the product stored.
 - 2. Emergency venting shall comply with provisions of NFPA 30A (2-4.5.f), NFPA 30 (2-3.6), UFC (7902.2.6), and BOCA 9F-3201.1).
 - 3. Accepted manufacturers and part numbers: Morrison No. 244I.
- C. **Provide one emergency vent** for each secondary containment tank interstice.
 - 1. The venting capacity is determined by the tank configuration, secondary tank capacity, and the product stored.
 - 2. Emergency venting shall comply with provisions of NFPA 30A (2-4.5), NFPA 30 (2-3.6), UFC (7902.2.6) and (Appendix II-F 5.3), BOCA (F-3201.1), UL 142, and UL 2085.
 - 3. Vents shall be located as close to the center of the tank as possible.
 - 4. Accepted manufacturers and part numbers: Morrison No. 244I.

2.3 TANK FILLING AND OVERFILL PREVENTION COMPONENTS

- A. **For tank with top fill assembly**, provide one lockable tight fill cap, adapter, fill pipe, and drop tube per tank.
 - 1. The bottom of the fill drop tube shall be cut at a 45-degree angle with the open end facing the long dimension of the tank.
 - 2. Terminate drop tube 6 inches from the bottom of the tank.
 - 3. Comply with provisions of NFPA 30 (2-4.6.3 and 2-4.6.4) and UFC Appendix II-F 95.6).
- B. **Provide a spill container** with cover and lockable hasp to contain product spills from the fill hose. Spill containment shall comply with UFC Appendix II-F (5.7).
 - 1. Fill pipe spill container shall have a capacity of not less than 5 gallons.
 - 2. Provide a means for returning collected product to the storage tank.
- C. **Provide overfill prevention equipment** which complies with the requirements of NFPA 30A (2-4.6.1) and which incorporates the following features.
 - 1. An audible alarm which will sound when the product level in the tank has reached 90 percent of tank capacity.
 - 2. A positive shut-off fill limiter which will stop the flow of liquid into the tank when product level reaches 95 percent of tank capacity.
 - 3. The limiting device shall be rated to accept the fill flow rate and pressure.
 - 4. Acceptable Manufacturers. Audible alarm, Morrison 918 clock gauge/overfill alarm; overfill prevention valve, OPW 61 F-Stop Model No. 2000.

2.4 MONITORING AND GAUGING SYSTEM

A. **3,000 Gallon Fuel Storage Tank Control Systems**

1. New 3,000-gallon Fuel Tank shall be provided with access manway, piping sumps, dispenser pan, nozzles, piping, fitting, and brackets to mount instruments for monitoring and controlling tank filling operations, tank levels, and piping to install interstitial containment leak detection sensor.
2. Provide Fuel Tank Remote Electronic Tank Display Panel Model EDT 1000 by Pneumercator or equal mounted to side of storage tank adjacent to fill station.
3. Provide LS600LD Float System for interface and level.
4. High float emergency fill sensor, and Dispenser Pan
 - a. Technology: Magnetostrictive, Dual Float, w/ reflection resolution doubling
 - b. Accuracy (Minimum): MP46x:
 - 1) Product Level: 0.01"; Water Level: 0.01"; Temp 0.001° F
 - c. Materials: Shaft: 316 SS or Kynar
 - 1) Floats: Urethane, 316 SS, Buna-N, or Kynar-coated
 - d. Mounting: In-Tank Leak Testing: 4" diameter riser
 - e. Temperature Sensing: 5 Thermistors in shaft, 1 in probe head
 - f. Location Approval: UL Class I, Div 1, Groups C and D
 - g. Operating Temperature: -40° to +175°F (-40° to +80° C)
 - h. Operating Pressure: 150 PSIG 316SS,
 - i. Field Wiring: 22AWG, 2-Conductor twisted pair w/ shield
 - j. Belden 8441, Belden 8761, Alpha 1736C or equal
 - k. Pneumercator Models: MP45xS Series rigid SS max. length 24',
5. Interstitial Leak Sensor . The Fuel Management System shall accept a signal from a level sensor mounted on fitting that is provided to monitor and detect leakage in the interstitial space of the fuel tank to, Interstitial Leak Sensor shall be Pneumercator Model LS600 LSBN or equal. Install through pipe fitting to monitor containment space of between fuel tank and containment vessel. Leak detection alarm shall be triggered and alarmed in FTMS tank and wire to control panel. Display on master fuel management system, and alarm if leakage is detected.

B. **Fuel Tank Management Systems (FTMS)**

1. Furnish and install a Fuel Tank Management System for operation of the new fuel storage tank by Pneumercator TMS 2000 Tank or approved equal. Controller shall monitor the leakage in the interstitial space of the fuel tank containment system. The control panel shall be located in the Generator Building adjacent to the Day Tank, and interface with the Remote-Control Panel at the storage tank. A printer shall be provided

and accept inputs and provide outputs for tank levels and alarms in the fuel and day tank.

- a. Tanks: 2 Fuel Storage Tanks w/ Printer
- b. Operating Temperature: 10° to +140° F (-20° to +60° C)
- c. Humidity: 95% Non-condensing
- d. Enclosure Rating: Locking 4 or NEMA 4X(316 S.S.)
- e. Power Requirements: 115/230 VAC ±15% Switchable, 50-60Hz,
- f. Memory: Configuration/Setup Data – EEPROM, 50-year data retention, no batteries
- g. Log Reports and Real-Time Clock – Lithium Battery-Backed
- j. RAM, 5–10-year data retention
- k. Audible Alarm: 85db
- l. Display: 9-Character, Super-Bright Sunlight-Readable LED Data Display, Readable from 25'
- m. Ultra-High Intensity Alarm LEDS, Visible from 75'
- n. Communications: RS232 Included Standard, RJ-13 Jack
 1. Probe / Sensor Capacities:, 8/32 (Probes/Sensors)
- o. All Sensor Inputs Supervised-Wiring-Ready
 1. I / O, Non-Haz.: Expansion Options (2 slots available):
- p. 8 Relays, 1 Form A, Rated 5A @120, 5A @240 VAC, w/ 8 Opto-Isolated Inputs

C. Remote Fuel Tank Monitoring System

1. The Remote Fuel Tank Display shall be mounted to the 3,000 -gallon Fuel Tank Fill Station for operator viewing.
2. Enclosure Construction: Cast Aluminum, Epoxy Powder Coat Paint Finish, Gasketed Cover w/Captive SS Screws Operating Temperature: - 40 °F to 160 °F (-40 °C to 70 °C) Humidity: 95% Non-condensing
3. Enclosure Rating: NEMA 4X (IP56), Watertight and Corrosion-proof
4. Power Requirements: 120 240 VAC Switchable, 50-60 Hz, 5 W Max.
5. Audible Alarm: 100 db
6. Display: 9-Character, Ultra-Bright Sunlight-Readable LED Display, 0.56" (14 mm)
7. Ultra-Bright Intensity Alarm LEDS, Visible from 75' (22.9 m)
8. Display Data: Gross/Net Volumes, Percent Volume, Ullage, Product Level, Water Level, Product Temperature, Tank Name, Tank ID, Tank Alarms
9. Communications: RS-485 TMS Expansion/Peripheral Bus Included Standard, Plug-in Terminal Block,
10. Used to connect ETD1000 to the TMS

11. Field Wiring: 24AWG, single twisted-pair conductors w/ shield
 12. Belden 9841(PVC), 89841(FEP) or equivalent
- D. Day Tank – Modifications to Pumps, Piping, and Valves
1. Remove existing day tank supply pump.
 2. Install new Supply Piping Accessories emergency fuel shutoff valve
 3. Install one 918C gauge, one 924LS sensor, and one 918D Dual channel alarm in the existing Day Tank, Morrison Bros. Company or Approved Equal.
 4. The existing day tank is installed in the Generator Room is a Tramont Model 2000 Plus Tank Management System Serial No. 107500 used for supplying diesel fuel to the existing 1750 KW generator will be modified to work with the new above round fuel storage tank.
 5. A new reverse flow pump, piping, valves, and accessories shall be installed on the existing piping at the day tank including the emergency shutoff valve on the supply to the day tank consisting of emergency shut-off valve with fusible link to close when fire is detected.
 6. The existing fuel supply pump to the generator installed at the day tank is a UTRS – 200 Serial No. 29911Serial Number 1075007 shall remain.
- E. New Fuel Tank Pump
1. Furnish and install a new diesel supply pump mounted to the top of the new 3,000- gallon fuel storage tank. Provide a weather housing to protect the pump and controls, with lockable hasp.
 2. Remove old supply pump, piping, and valves between existing underground fuel tank and day tank generator building. Coordinate work with tank remediation contractor who will remove tank and underground piping up to the existing pump at the day tank.
 3. Furnish and install above ground conduit, wiring, and signal cable for the new supply pump, level controls, alarms devices, and Remote-Control panel at Storage Tank., electrical conduit, power, and control wiring in buried conduit under roadway and encased in concrete.
 4. Furnish and install the following Fuel Supply Pump and controls:
 - a. 2 gpm Pump and 1/3 HP Motor, 120VAC, Viking brand, cast iron, 100 PSI diesel fuel supply to the existing day tank
 - b. Galvanized Steel Base for mounting single pump and motor
 - c. Weather protective Enclosure for Single Pump and Motor mounted on the top of 3,000-gallon fuel storage tank.
 - d. Provide one Emergency Shutoff Valve with fusible link to shut off flow to the day tank in the event of a fire or excessive temperatures, Morrison Model 346 DI Series External Emergency Valve or equal. The fusible link holds the spring-actuated poppet in the open position. The valve is mounted on

the supply pipe to the day tank and is the first valve inside the building.

5. Fuel Gauge Storage Tank Gauge and Monitoring System for Tank Level Control and Interstitial Leakage Monitoring System fuel
 - a. Furnish and install a tank gauge with a gauge with high level alarm and an interstitial alarm. with alarm for overfill prevention.
 - b. Furnish and install **an above ground tank gauge and probe** designed for AST applications. It shall have performance characteristics permitting continuous gauging accuracy of +/- 0.0005 inches for product, +/- 0.001 for water and +/- 0.001 degrees F. for (relative) temperature. The probe shall contain one (1) temperature sensor along its length for volumetric temperature compensation.
 1. Probes (12" to 30") shall require a one and one half (1.5) inch Buna-n product float, a six (6) foot leader cable with watertight connector, and two (2) centering rings for riser mounted applications.
 2. Probes (36" to 288") shall require a product and water float kit (either 2" SS or 4" urethane), a six (6) foot leader cable with watertight connector, and two (2) centering rings for riser mounted applications or a ¾" x 2" compression fitting kit for direct tank mounting.
 3. Probe shall be Pneumercator **Model MP461C** for flexible lengths from 12 to 150 inches or approved equal
 - c. Overfill Protection of Fuel Storage Tank:
 1. Furnish and install one 924LS adjustable high-level sensor for overfill protection, and Pneumercator **Model MP461C** for flexible lengths from 12 to 150 inches or approved equal
 - d. Interstitial Space Non-Discriminating Type Liquid Leak Sensor (Solid State):
 1. Furnish and install one Non-Discriminating Leak Sensor shall be a thin cylindrical design utilizing electro-optical technology for detecting liquids in dry areas such as piping sumps, dispenser pans, containment areas and the interstitial spaces of double wall steel and fiberglass tanks. The sensor assembly shall provide a twenty-five (25) foot, 2-conductor, #22 AWG gage wire cable. The supervised wiring feature shall be standard and shall detect Open or Short-circuited conditions in the sensor field wiring.
 2. Leak sensor shall be (non-Discriminating type) Pneumercator Model ES 825-100F or approved equal.

3. Wire all level controls to the dual box alarm, and wire tanks depth n alarm signals to Remote Tank Monitoring System installed at new fuel storage Tank and wired back to master tank control and monitoring system in Generator Building.
- F. New Return Pump System to Aboveground Fuel Storage Tank and Accessories
1. The existing piping at the Day Tank in the Generator Building will be modified to install new return pump and piping from Fuel Day Tank to aboveground 3,000 gall fuel storage tank. A new shelf shall be constructed of steel and fastened to wall above the existing Day Tank.
 2. Furnish and install Reverse Flow Return Pump Pumping System to day tank system, including:
 - a. Vertical bracket designed to be added to motor mount on existing tank, for reverse pump installation
 - b. Inspection plate, TRS with fitting for sensor mounting in center & 1/8" tap for optional critical high switch.
 - c. 4 GPM Pump and 1/2 HP Motor, 120VAC, 100PSI
 - d. Critical High, Emergency Shutdown. Includes critical high switch and yellow plug-in relay
 - e. Solenoid Valve, 120 VAC, 1/2" NPT, N. C., ships loose - customer to install on inlet of supply pump
 - f. Fuel Strainer, 3/4" NPT - ships loose - customer to install prior to solenoid on supply inlet
 - g. Relay, Reverse Pump, 20-amp relay @ 120V, for use with up to 1/2HP, 120V motor
 - h. Check Valve, 1/2" NPT, install on reverse pump outlet
 - i. Side Mounted Reverse Pump Dip Tube Assembly (for day tanks only)
 - j. Wire to new Fuel Tank Management System Master Control Panel in Generator Room to control fuel supply pump at fuel storage tank and return reverse flow pump at day tank, including all pumps, level controls, alarms, Remote and Local Fuel Management System Control Panels.

2.5 PIPING

- A. **Aboveground piping shall be** Schedule 40 steel pipe with standard (150-pound) malleable iron fittings.
1. Above ground piping shall be protected from exposure to outdoor conditions with insulated pipe in UV stabilized FRP containment pipe..
 2. Low melting point materials may not be used above ground.
 3. All above ground piping fuel lines shall be insulated with plastic-covering that is UV-resistant wrap

- B. Buried piping shall be in Schedule 40 steel pipe with standard (150-pound) malleable iron fittings. The pipe shall be installed in a double-wall containment pipe made of fiberglass as manufactured by Tricon Piping System or equal.
 - 1. Fuel Supply piping from storage tank to Generator Building shall be 3/4" schedule steel pipe in 3.5" FRP carrier pipe
 - 2. Reverse return fuel piping from Generator Building to fuel storage tank shall be 1" schedule steel pipe in 3.5" FRP carrier pipe

2.6 REVERSE RETURN PUMPING EQUIPMENT, VALVES, AND FITTINGS FOR FUEL-DAY TANK APPLICATIONS

- A. **Provide a UL-listed electric reverse flow fuel oil return pump** with meter, pulser, hose, breakaway, swivel, and automatic nozzle, mounted on the top of the tank. Assembly shall be in full accordance with NFPA 30A, UFC 5202, BOCA F-3207.
 - 1. The dispenser and its components shall be UL listed for the purpose intended.
 - 2. The dispenser shall comply with the requirements of NFPA 30A (4-2.5, 4-2.7), UFC (5201 and 5202) and BOCA (F-3201.1 and 3207).
 - 3. Provide the necessary mounting parts and piping in accordance with NFPA 30 A (2-4.6.6), UFC (5201 and 5202).
 - 4. Acceptable manufacturers: pump, Tuthill Fill-Rite Model FR701x375; pulser, OPW Fuel Management Systems Model 800F.

2.7 PUMP CONTROLS

- A. **Provide electrical disconnection of all conductors** to the Reverse Flow Fuel Return Pump in accordance with NFPA Codes 30, 30A, and 70.
 - 1. Locate the emergency shut-off in an accessible area, at least 20 feet but not more than 100 feet from the dispenser. Confirm the final location with the Owner prior to installation.
 - 2. Provide a local Hand-Off-Auto switch in NEMA 4X box for pump control. In Auto, level sensors control pump when tank is filling. Hand shall be used for testing pump operation.
 - 3. Integrate pump controls with operation of existing fuel tank supply and day tank controls.

PART 3 EXECUTION

3.1 GENERAL

- A. Familiarity with the Site
 - 1. Become familiar with the location of all public utility facilities and structures that may be found in the vicinity of the construction.
 - 2. Conduct operation to avoid damage to the utilities or structures. Should any damage occur due to operations, make repairs at own expense in a manner acceptable to Owner.

3. Meet all requirements established by the agencies for utility work, as well as work affecting utilities and other government agencies.

3.2 TANK HANDLING, STORAGE, AND INSTALLATION

- A. **Handle, life, store, and secure tanks** in accordance with the manufacturer's instructions.
- B. **Unload with equipment having sufficient** lifting capacity to avoid damage to the tank. Securely store the tank at the job site.
- C. **Install the tank and associated equipment** in accordance with the fire safety codes, regulations, standards, and manufacturer's instructions including:
 1. Federal, state, and local fire safety, occupational health, and environmental regulations.
 2. STI installation instructions for Fireguard aboveground tanks (publication No. R942, "Installation and Testing Instructions for Thermally Insulated Lightweight Double-Wall Fireguard Aboveground Storage Tanks").
 3. The installation instructions of other system component manufacturers.
 4. The construction documents and associated drawings.
 5. "Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling," PEI/RP 200, Petroleum Equipment Institute.
- D. **Advise the Owner of any shipping** or handling damage encountered.
- E. **Make no modifications** to any tank without the prior written approval of the manufacturer and Engineer. This includes any welding on tank shells, adding penetrations in the tank structure, or repairing damage which might affect the integrity of the inner or outer tank.

3.3 CORROSION PROTECTION

- A. **Protect any portion of the fueling system** in contact with the soil from corrosion in accordance with sound engineering practice and in accordance with NFPA 30A (2-4.8).
- B. **Protect exposed piping and equipment** from corrosion by painting or wrapping it with a coating which is compatible with the product stored and the conditions of the exposure.

3.4 EQUIPMENT INSTALLATION

- A. **Install tank, dispensers,** piping, and equipment in accordance with the manufacturer's installation instructions, industry standard recommended practices, and federal, state, and local regulations.
- B. Calibration and start-up of equipment shall be performed by factory-trained qualified personnel.

3.5 TESTING

- A. **Test all installed systems** for liquid tightness and proper operation, including:
 1. Preinstallation inspection of all materials.
 2. Product, containment, and vent piping during construction.

- B. **Test each component of the system** for calibration, tightness, and proper operation in accordance with the instructions of the component manufacturer.
- C. **Document testing** and have it witnessed by the Owner.
 - 1. Record the date and time of the test, the name of the tester and his affiliation with the project, and the names of each individual witnessing the test.
 - 2. Record the test method, duration, and results.
 - 3. Provide a record of the testing to the Owner at the time of system start-up.
- D. Testing shall be witnessed by the Owner.
 - 1. The Owner shall witness tank delivery and setting in place, anchoring, piping backfilling, piping tests, final precision testing, and system start-up.
 - 2. The Owner shall indicate approval of all testing witnessed in writing.
- E. **Perform tests in conformance** with the manufacturers' instructions, state laws, and the quoted industry standards, particularly PEI/RP200 and PER/RP100.
 - 1. If a conflict exists between test protocols, perform the most stringent test.
 - 2. Resolve any conflict which affects manufacturers' warranties before beginning construction.
 - 3. Document all tests in writing, signed by the individuals who performed and witnessed the test.
- F. **Demonstrate the operation** of all systems to the Owner at the time of the final start-up test.
 - 1. Provide 1 day of instruction on the proper operation and maintenance of all components.
 - 2. Demonstrations shall include, but are not limited to, pump operation, monitoring and gauging systems, fuel filter replacement, and leak detection.

3.6 TESTING PRIMARY AND SECONDARY TANKS

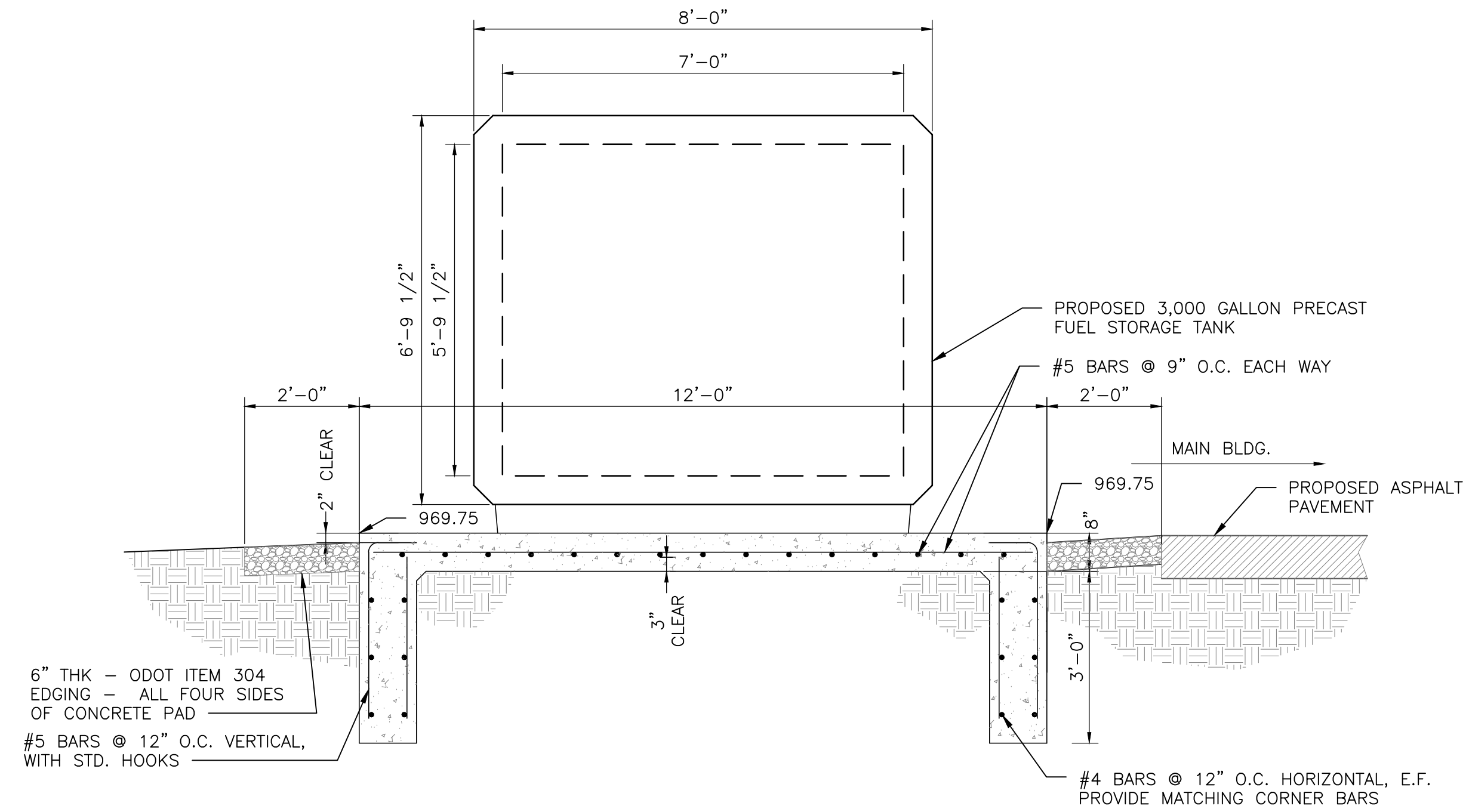
- A. **Conduct air pressure testing** of the inner tank and secondary containment tank on-site, in the presence of the Owner, before placing the tank in service.
- B. **Refer to manufacturer's manual** for complete procedural details.
- C. **Other integrity tests may be required** by the local authority having jurisdiction.

3.7 TEST DOCUMENTATION AND REPORTING

- A. **Document all testing** and provide copies to the Owner and authorities having jurisdiction. Test records shall include:
 - 1. Date and time of test.
 - 2. Name of tester.
 - 3. Names of any inspectors present.
 - 4. Test procedure followed.

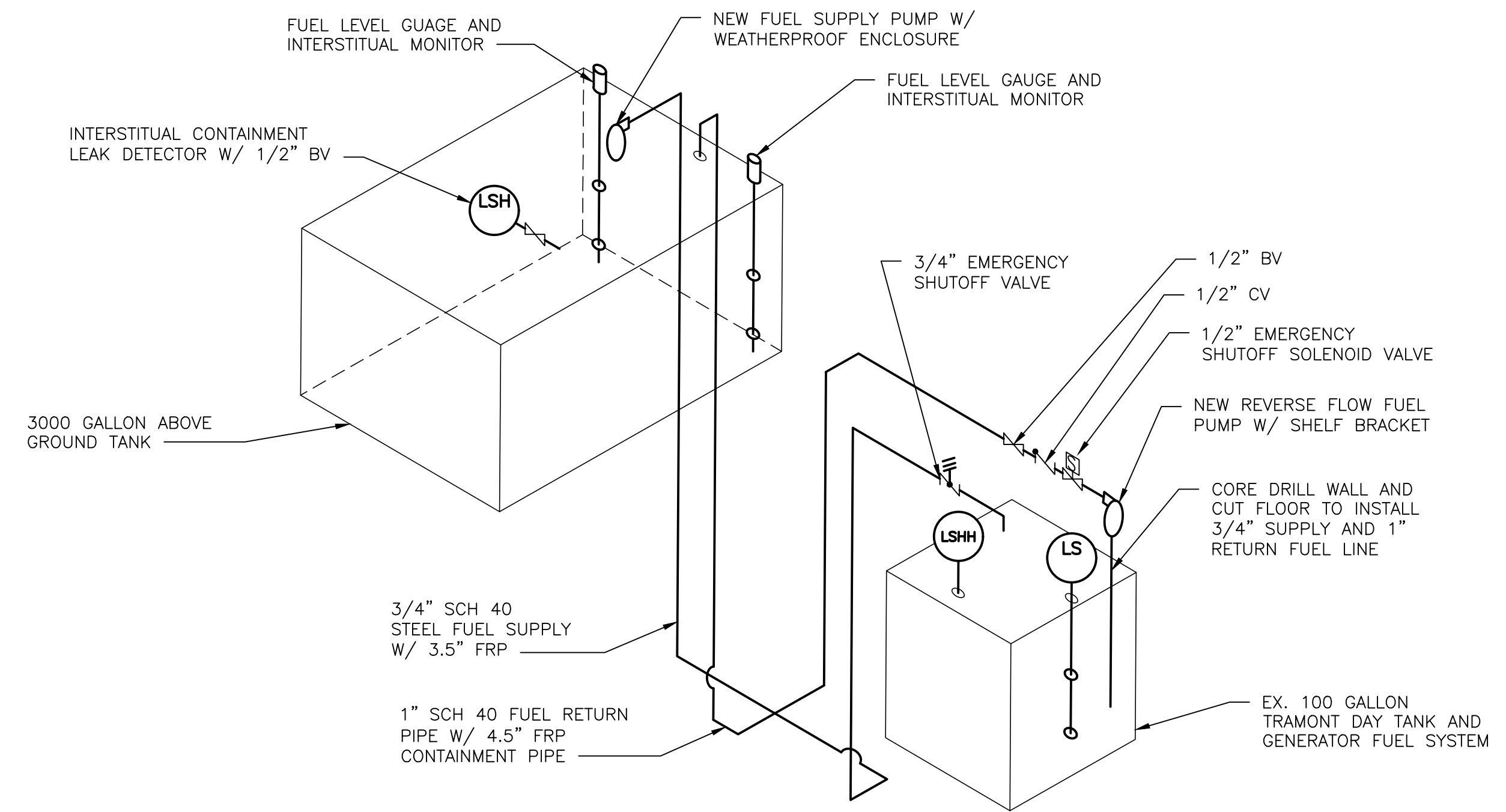
5. Test results.
- B. **Provide documentation for all testing** with contract close-out documentation to the Owner.
 - C. **Ensure that future testing** is not impaired. The Contractor may be requested to demonstrate the tests as a part of the final approval process.
 1. Inspection of tank interstices.

END OF SECTION



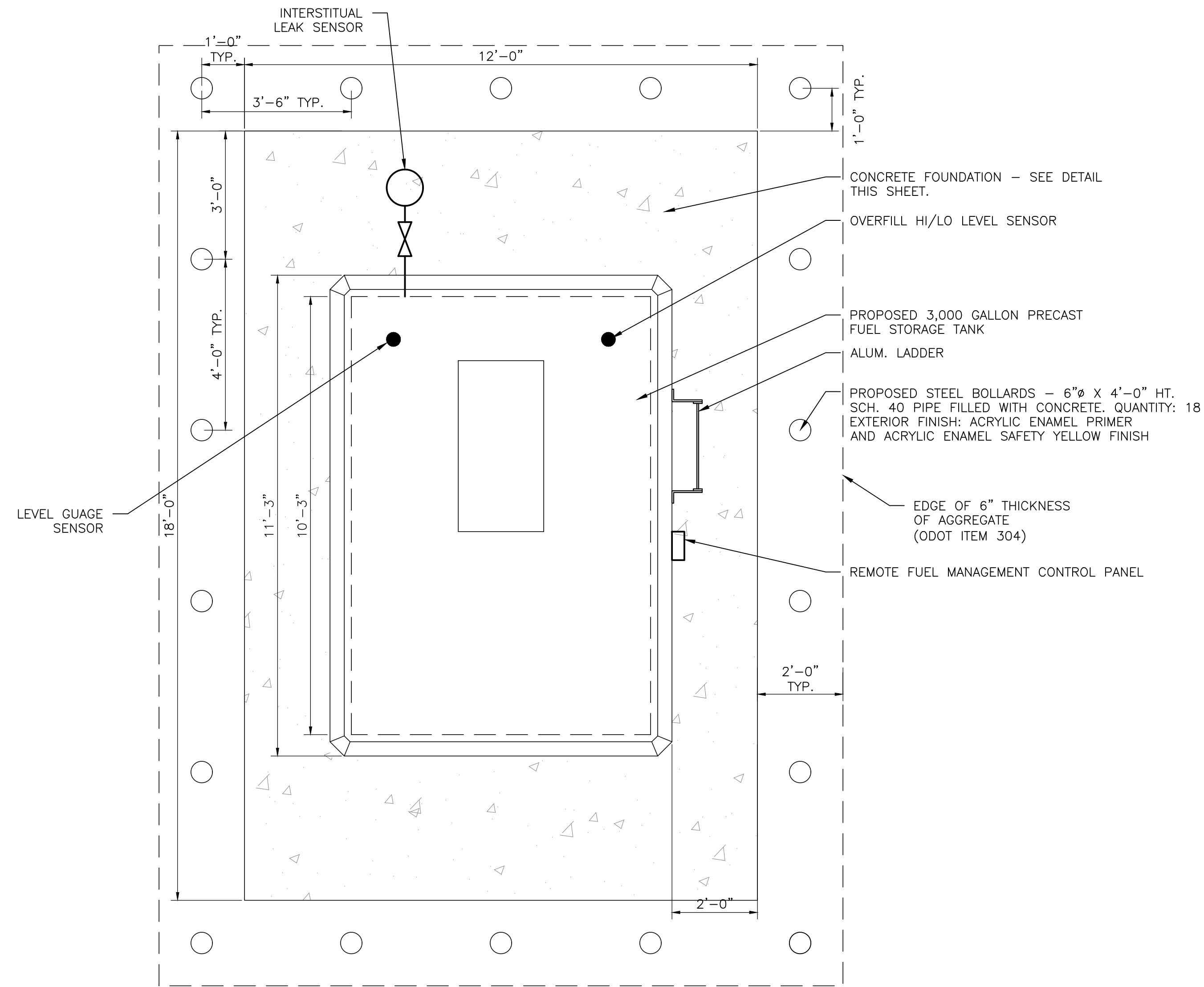
PROPOSED FUEL TANK FOUNDATION SECTION

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



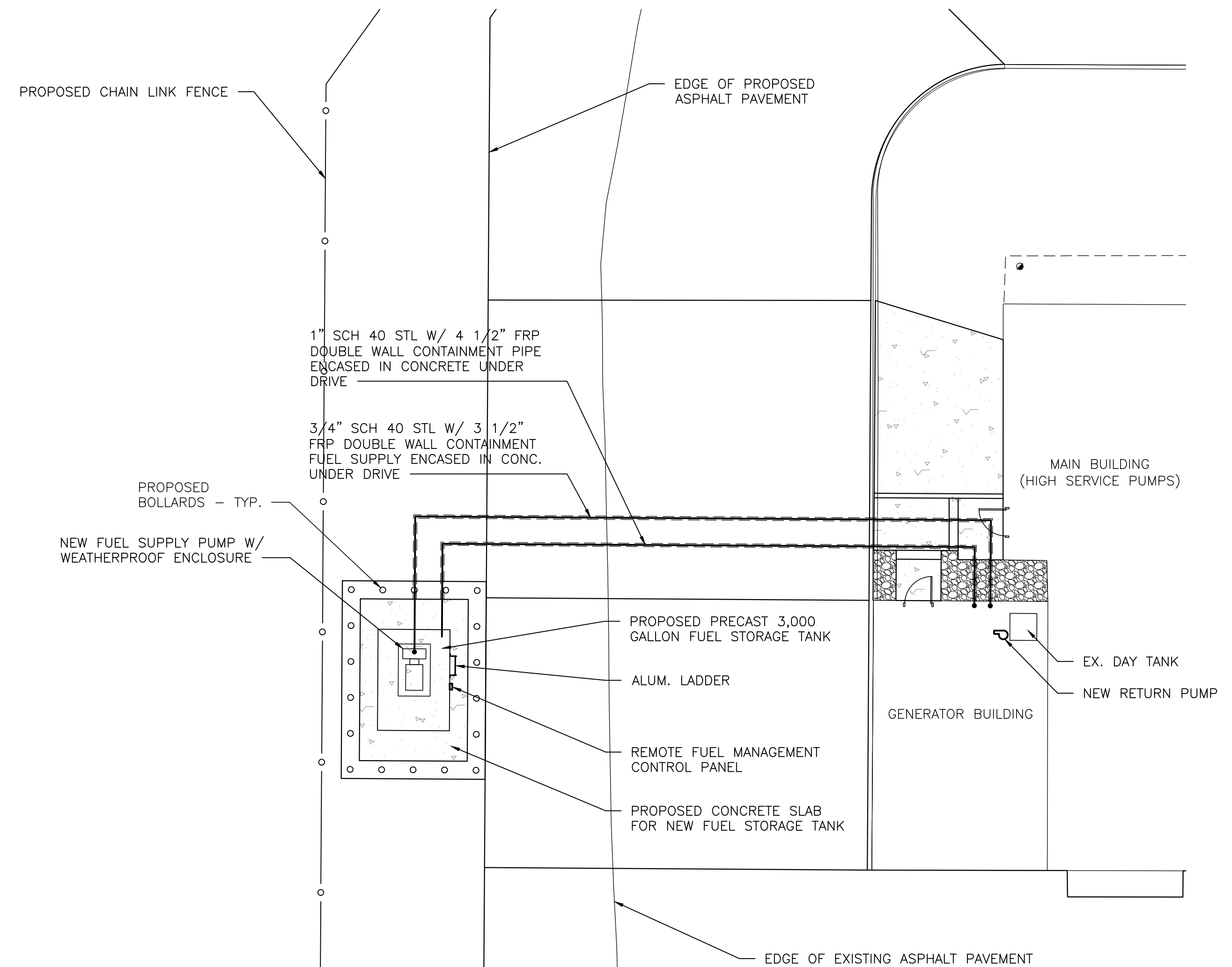
FUEL MANAGEMENT SYSTEM PIPING SCHEMATIC DIAGRAM

SCALE: NONE



PROPOSED FUEL TANK PLAN

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



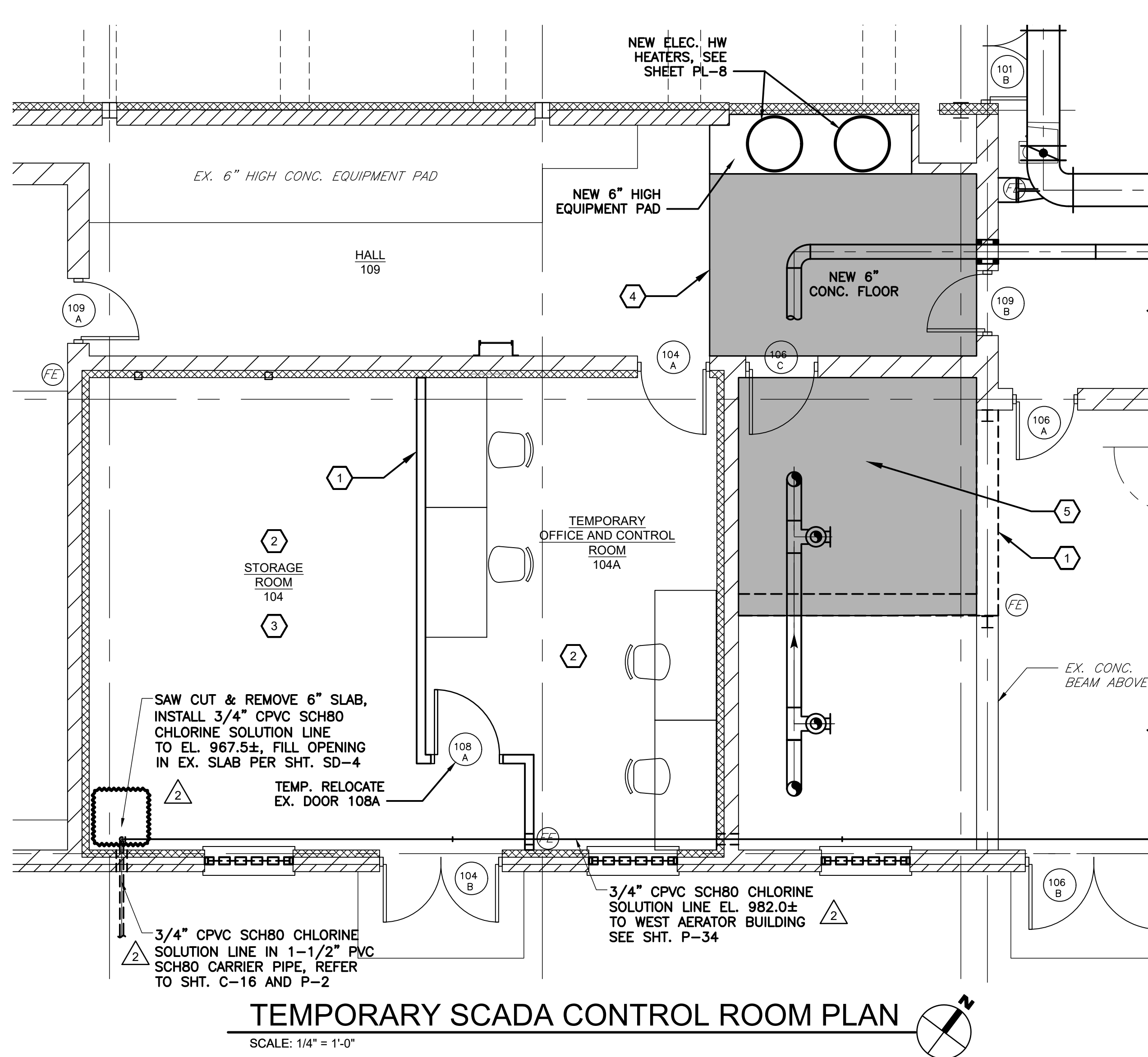
PROPOSED FUEL TANK LOCATION

SCALE: 1" = 10'

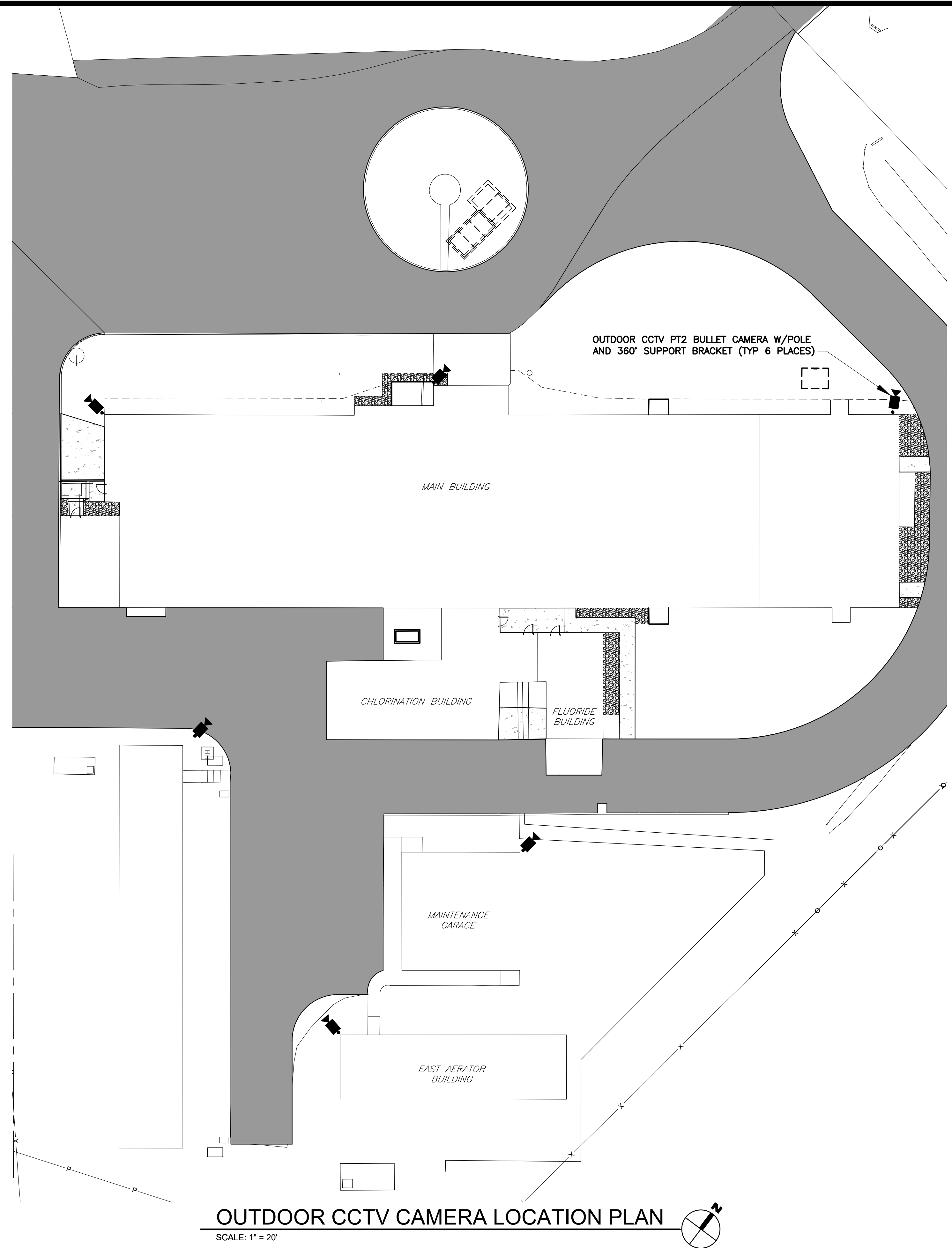
NO.	DESCRIPTION	DATE
1	BID SET	04/2022

JOB NO:	PR58982
DATE:	APR 2022
DESIGNED BY:	SDS
DRAWN BY:	SDS
CHECKED BY:	MMK
APPROVED BY:	CMS
SCALE:	AS NOTED

FUEL STORAGE TANK CIVIL ENLARGED PLAN-SECTION



- # CODED NOTES:
1. NEW TEMPORARY WALL FOR CONTROL ROOM.
 2. REMOVE GYPSUM CEILING IN STORAGE ROOM 104.
 3. REPAIR CRACKS IN CONC. FLOOR AND EPOXY COAT AFTER TEMP. CONTROL ROOM REMOVED.
 4. SAW CUT EX. 6" CONC. FLOOR AND INSTALL NEW 6" CONC. FLOOR TO MATCH ELEVATIONS AT DOORS.
 5. REMOVE CLAY TILE BLOCK FLOOR AND COVE IN EX. BATTERY ROOM. REPAIR CONCRETE FLOOR AND EPOXY COAT NEW MECHANICAL ROOM.



BURGESS & NIPLÉ
 100 WEST ERIE STREET
 PAINESVILLE, OHIO 44077

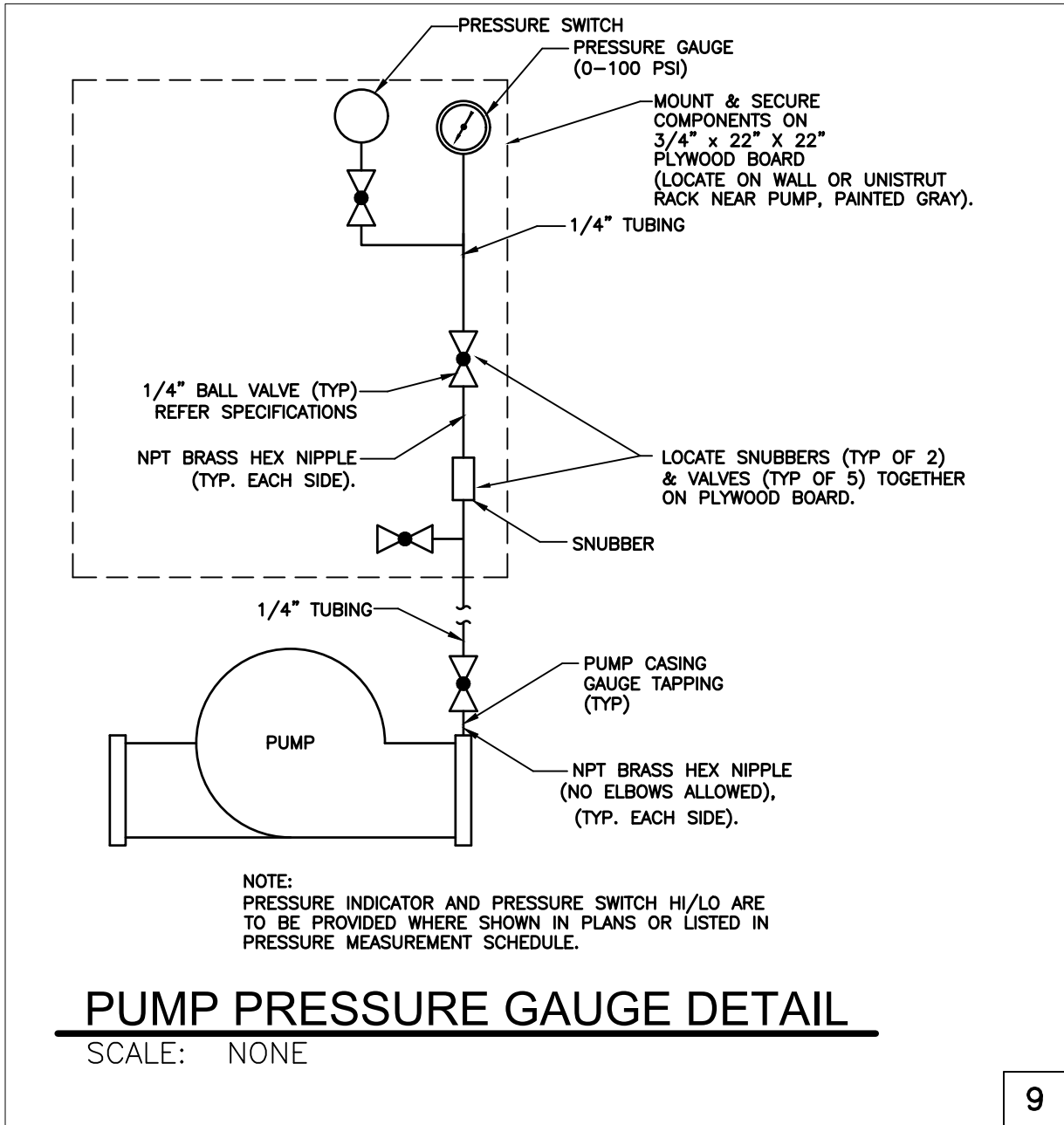
CITY OF CANTON, OHIO
 WATER DEPARTMENT
 SUGAR CREEK
 WATER TREATMENT PLANT &
 WELLFIELD IMPROVEMENTS

NO.	DESCRIPTION	DATE
2	ADDENDUM NO. 7	06/2022
1	BID SET	04/2022

JOB NO: PR58982
 DATE: APR 2022
 DESIGNED BY: KAS
 DRAWN BY: KAS
 CHECKED BY: MMK
 APPROVED BY: CMS
 SCALE: AS NOTED

MAIN BUILDING
 PROCESS STORAGE RM
 PHASING PLAN

P-32
 SHEET: OF



CHECKED BY:
CMS

DRAWN BY:
RMP

NO.	DESCRIPTION	QUANTITY	UNIT
1	1/4" NPT BRASS HEX NIPPLE	2	EA
2	1/4" BALL VALVE	1	EA
3	1/4" TUBING	10	FT
4	3/4" X 22" X 22" PLYWOOD BOARD	1	EA
5	SNUBBER	2	EA
6	PUMP CASING GAUGE TAPPING	1	EA
7	PRESSURE GAUGE (0-100 PSI)	1	EA
8	PRESSURE SWITCH	1	EA

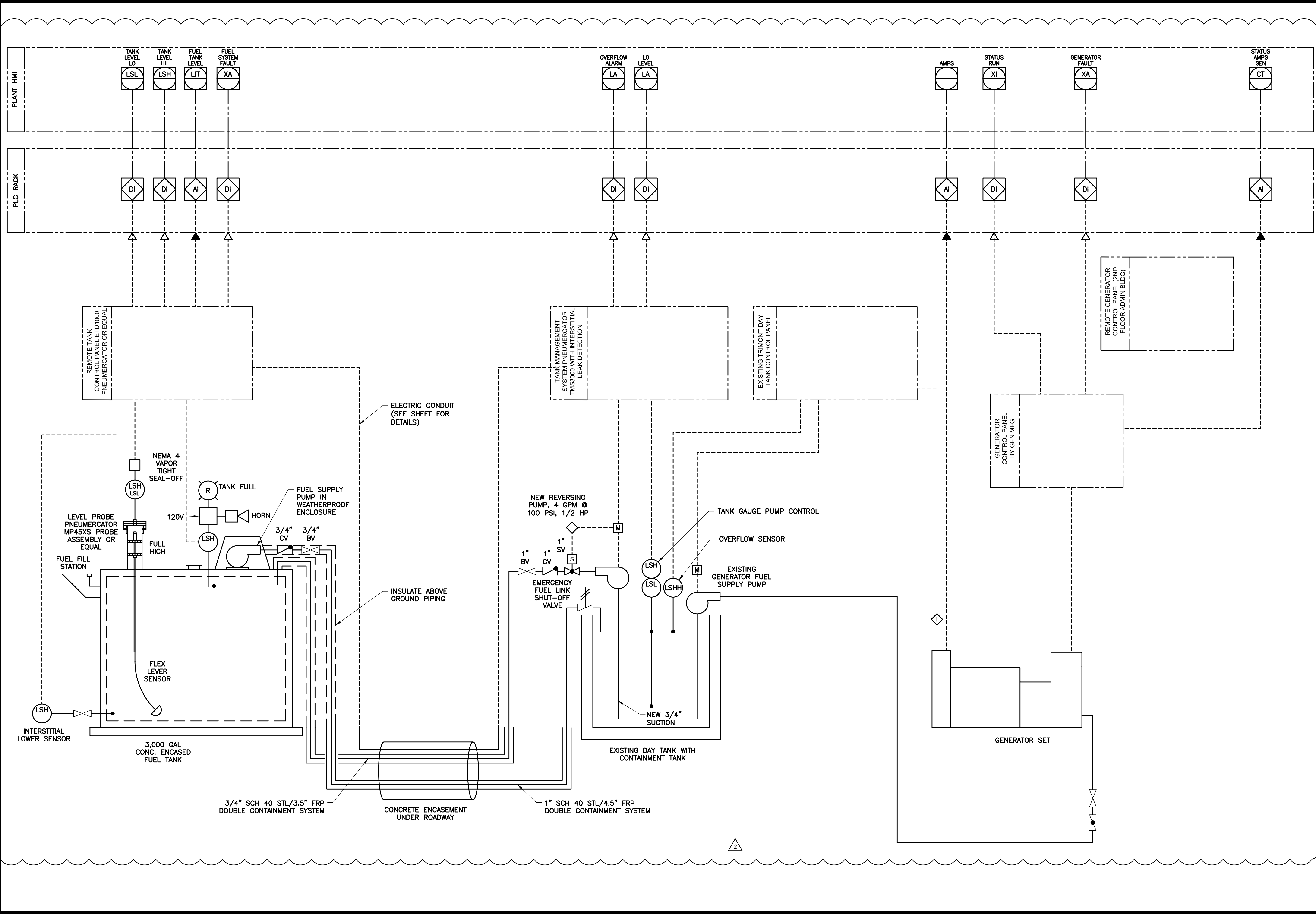
2 ADDENDUM 7

CITY OF CANTON, OHIO
WATER DEPARTMENT
SUGAR CREEK
WATER TREATMENT PLANT
PROCESS STANDARD DETAILS
SD-12

SCALE: NOT TO SCALE

PLOTTED: 06/06/2022 12:26:57 PM

P:\PR58982\Cadd\Sheets\33 GENERATOR P&ID.dwg 6/6/2022 12:26:22 PM Randy Podmore



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 100 WEST ERIE STREET
 PAINESVILLE, OHIO 44077

CITY OF CANTON, OHIO
 WATER DEPARTMENT
 SUGAR CREEK
 WATER TREATMENT PLANT &
 WELLFIELD IMPROVEMENTS

REVISIONS		
NO.	DESCRIPTION	DATE
2	ADDENDUM NO. 7	06/06/22
1	BID SET	04/2022

JOB NO: PR58982
 DATE: APR 2022
 DESIGNED BY: KAS
 DRAWN BY: KAS
 CHECKED BY: MMK
 APPROVED BY: CMS
 SCALE: NONE

GENERATOR P&ID