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Addendum #1

DATE: *June 13, 2025*

SUBJECT: *RFP E-2425-013 - SMS Underground Storage Tank Replacement Project*

To be considered as part of the contract drawings and specifications and all other contract documents for the project referenced above; superseding previously issued Drawings, Specifications, Bidding Requirements, and Contract Documents, to the extent modified by this Addendum. Bidders are advised that this Addendum must be acknowledged in the appropriate space provided on the bid form.

The following items are listed in this Addendum:

I. Specification Edits
II. Plan Edits
III. Attachments

I. SPECIFICATION EDITS

- DELETE and REPLACE the following Specifications with the attached revised Specifications (revisions noted):
  - SECTION 28 40 00 – TANK GAUGING INSTRUMENTATION AND CONTROLS
  - SECTION 33 56 13 – UNDERGROUND FUEL STORAGE TANK

II. PLAN EDITS

- DELETE and REPLACE the following drawings with the attached revised plans (revisions noted):
  - C101 – UST REPLACEMENT PLAN
  - C201 – UST DETAILS

III. ATTACHMENTS

- REPLACEMENT SPECIFICATIONS:
  - SECTION 28 40 00 – TANK GAUGING INSTRUMENTATION AND CONTROLS
  - SECTION 33 56 13 – UNDERGROUND FUEL STORAGE TANK

- REPLACEMENT PLANS:
  - C101 – UST REPLACEMENT PLAN
  - C201 – UST DETAILS

END OF ADDENDUM #1

SECTION 28 40 00

TANK GAUGING INSTRUMENTATION AND CONTROL

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. The Contractor shall furnish all labor, materials, tools, and equipment, to install all instrumentation and controls associated with the fuel oil UST and related work, as specified herein, and as required by the Contract Documents.

1.02 QUALITY ASSURANCE:

A. Installation of all systems shall be performed by a Contractor who possesses an Installer's License and is certified by the equipment manufacturer. The Contractor shall have a minimum of five years of experience.

B. The Contractor shall purchase the systems from a manufacturer approved by the Engineer. The manufacturer shall maintain a service depot within 75 miles of the facility. The service depot must be capable of timely delivery of parts and service personnel for servicing the system at any time. The manufacturer shall furnish required supervision, as required by the Engineer for the installation of the systems and shall furnish an experienced installation and maintenance worker for the supervision of personnel in the initial operation and maintenance of the systems.

C. The Contractor shall install compatible components and shall perform all modifications necessary for the proper operation and guarantee of the equipment. The Engineer reserves the right to require the Contractor to make such tests, during the installation and upon the completion thereof, as may be necessary to demonstrate that the work and equipment, as installed, complies with the Contract Specifications and requirements provided herein. The Contractor shall provide all labor, instruments, and apparatus required for such tests. If any of the work or equipment fails to meet the Contract Requirements or to function properly, the defects shall be rectified at the Contractor's own expense by readjusting, or by removing and replacing the faulty work or equipment until, under test, the requirements are met. The Engineer reserves the right to check the Contractor's instruments or to furnish its own instruments.

1.03 REFERENCES:

A. All instrumentation and control equipment shall comply with the following standards and all other applicable Federal, State, and local and most recent Building Code requirements, including revisions to the date of Contract:

NFPA	National Fire Protection Association
ANSI	American National Standards Institute
ASTM	American Society of Testing Materials (ASTM International)
ASME	American Society of Mechanical Engineers
NEC	National Electric Code
ISA	Instrumentation Society of America
NEMA	National Electrical Manufacturers Association
IEEE	Institute of Electrical and Electronic Engineers
API	American Petroleum Institute

1.04 SUBMITTALS: IN ACCORDANCE WITH THE REQUIREMENTS OF SECTION 01 33 23 SUBMITTALS, SUBMIT THE FOLLOWING:

A. Shop drawings:

1. Wiring and schematic diagrams certified by the manufacturer to meet NFPA/NEC explosion proof requirements and any other details required to demonstrate that the system has been coordinated and will function properly as a unit. Site specific, sealed electrical drawings shall be furnished by the manufacturer.

2. Equipment and instrument list, including size, input/output types, expected range of operation, utility requirements, and materials of construction. A Bill of Materials also shall be included and keyed to the drawings. The Bill of Materials shall provide sufficient information to determine compliance with the Contract Drawings and Specifications.

3. Drawings showing the proposed layout and anchorage of equipment and appurtenances, and equipment relationship to other parts of work, including clearances for maintenance and operation.

4. Manufacturers' descriptive and technical literature, including catalog cuts.

5. Legends for name plates.

6. Equipment certifications and test reports.

B. Operating and maintenance instructions shall be provided for each different type of control, instrument, and system.

1. Operating instructions outlining the procedures required for equipment and system start-up, operation, and shut-down. The instructions shall include the manufacturer's name, model number, service manual, parts list, and a brief description of all equipment and their basic operating features.

2. Maintenance instructions listing routine maintenance procedures, possible breakdown and repairs, and troubleshooting guide.

C. Performance Test Reports: Upon completion and testing of the installed system, test reports shall be submitted showing that all field tests are performed to adjust each component and that all field tests are performed to prove compliance with the specified performance criteria. Each test report shall indicate the final position of the controls.

1.05 MANUFACTURER'S SERVICES:

A. The Contractor shall provide the services of a manufacturer's engineering consultant who is experienced in the installation, adjustment, and operation of the instruments and controls to be provided, and who shall supervise the installation, adjustment, and testing of the equipment.

B. The leak detection/inventory control system shall include a minimum one-year warranty from the date of substantial completion.

1.06 FIELD TRAINING:

A. The Contractor shall provide a field training course for the Owner and its designated operating staff. Training shall be provided for a total of 4 hours of normal working time and shall be completed prior to the system's final acceptance by the Owner. Field training shall cover all of the items contained in the operating and maintenance manuals.

PART 2 - PRODUCTS

2.01 GENERAL SYSTEM SPECIFICATIONS:

A. Description

1. A continuous monitoring and leak detection system shall meet the performance specifications and functions of the Veeder-Root Company TLS4 AST Monitoring system or approved equal.

2. The storage tank monitoring system shall meet all applicable standards and regulatory agency requirements including, but not limited to, the standards and requirements of the following:

a. American National Standards Institute (ANSI)
b. American Petroleum Institute (API)
c. American Society for Testing and Materials (ASTM International a.k.a. ASTM)
d. Environmental Protection Agency (EPA)
e. National Bureau of Standards (NBS)
f. National Electrical Code (NEC)

g. National Fire Protection Agency (NFPA)
h. Underwriters Laboratories Inc. (UL)
i. Canadian Standards Association (CSA)
j. Canadian Underwriters Laboratories Inc. (cUL)
k. Federal Communications Commission (FCC)
l. Connecticut Department of Energy and Environmental Protection (CTDEEP)

3. The storage tank monitoring system shall meet all applicable standards to operate in a Class 1 Division 1 Group D hazardous location.

B. System Security

1. The system shall allow setup of users with different levels of security, limiting access to unauthorized personnel to areas such as Setup and Diagnostics. System Security will require login credentials for access to the GUI, Web- Enabled, and RS-232 communication. System Security will automatically log a user out after 15 minutes of inactivity.

2. The system shall have three predefined roles: Administrator, Operator, and Regulator with the following access permissions:

a. Administrator: Able to edit console configuration, perform software upgrades, generate reports, and start various diagnostics tests. Also, able to create new roles and users.

b. Operator: Able to view and generate reports and perform certain manual functions, like a manual delivery.

c. Regulator: Able to print and review console reports.

3. The system shall have the ability to create custom roles, allowing the administrator to select access to: Diagnostics, Reports, Setup, System Status, and System Administration.

2.02 ENVIRONMENTAL COMPLIANCE SPECIFICATIONS:

A. In-Tank Leak Detection

1. Static Leak Detection (SLD)

a. The system shall utilize Magnetostrictive probes with six thermistors for liquid level measurement, in-tank leak detection and temperature measurement.

b. The tank gauge shall be capable of performing a static tank tightness test to an accuracy of 0.1 GPH with at least a 98% probability of detection [P (D)] and no more than 1% probability of false alarm [P (FA)].

c. The system shall have the ability to automatically run a static leak test, by monitoring the activity of the submersible pump. Depending on the idle time between pumping cycles, the system will automatically run a 3.0 GPH test, a 0.2 GPH test or a 0.1 GPH test. Each successive test will start automatically upon completion of the previous test. If a dispensing transaction or a delivery takes place, the system will automatically disable the test until the next appropriate idle period.

d. The system shall be capable of performing a 0.2 GPH or 0.1 GPH test to start automatically or manually and have the ability to run a quick leak test. This quick static leak test will take one hour, and commence 30 minutes after the last dispensing cycle, or five hours from the last delivery, whichever is greater. The minimum time for a 0.2 GPH static test shall be two hours and three hours for a 0.1 GPH static leak test.

e. The system shall post a warning and or alarm after a specified number of days have passed (0-30) since the last leak test was run or successfully passed.

2. Continuous Statistical Leak Detection (CSLD)

a. The system shall have the ability to conduct automatic CSLD tests without the need to shut down tanks for scheduled test times.

b. The system, when operated in CSLD mode, shall be third-party certified for statistical leak detection in single tanks up to 45,000 gallons and 37,000 gallons on manifold tanks. The test shall meet or exceed U.S. EPA standards with a 99% probability of detecting a 0.2 GPH leak and less than a 0.1% probability of false alarm. It shall meet Federal, State and local compliance requirements for monthly monitoring.

c. The system shall be capable of dynamically qualifying the idle time data and selecting the best available data to perform a 0.2 GPH tank tightness evaluation. During each idle period an evaluation will be performed and the data will be added to the database. The system shall employ the use of dynamic feedback variables in the algorithm to evaluate the noise factor patterns associated with a tank, thus tailoring the algorithms to each individual tank.

B. Interstitial Leak Detection

~~1. Dry Monitoring~~

~~a. The system shall be able to perform automatic, continuous leak sensing in the dry interstitial space (annulus) of a double-wall tank, to detect a breach in the inner or outer shell. The system shall differentiate between hydrocarbons and water, and provide an indication of a fuel alarm or a liquid alarm.~~

~~b. The system shall have the ability to sense the presence of hydrocarbons and/or liquid and provide an alarm for worst-case condition (fuel). The system shall have the ability to continuously monitor the integrity of the sensor for an open condition, alarm condition, or normal operating condition.~~

~~c. Provide monitoring sensors to monitor tank's interstitial space.~~

1. Monitoring System

a. The system shall perform monitoring of the interstitial space (annulus) of the double-walled tank such that the inner and outer walls are continuously monitored using a brine system.

b. The system shall have the ability to monitor the integrity of the inner or outer walls and provide an alarm in the event of a breach in either wall.

2.03 REPORTING:

A. Generation

1. The system shall have the ability to generate reports from the GUI, Web-enabled, or via a RS-232 command (display/computer format). These reports will provide the same information independent of how the report request is generated. The system shall have the ability to store up to three years' worth of report data.

2. Reports can be scheduled to auto generate on date and time and have selectable date range for data review.

B. Output

1. All reports shall be available from a network printer, fax, modem, email or from a polling computer. A four-line, twenty-character customer location header to identify the site must be user-programmable. The header must appear automatically on inventory status reports, leak detection reports and automatic delivery reports each time they are printed.

C. Alarm

1. The system shall have the capability to generate an Active Alarm Report, Alarm History Report and Priority/Non-Priority Report. The console shall continuously

monitor all probes and sensors, reporting not only normal operating conditions, but also system malfunctions or failures.

2. System shall accept input from an external acknowledge switch to acknowledge the alarm and silence the buzzer.

3. System shall have the ability to print out the alarm when the alarm is generated and E-mail alarm conditions to designated personnel.

D. Environmental

1. The system shall provide the following reports related to Environmental Compliance.

a. Combined Tank Test shall provide a report of both SLD and CSLD test results. This report will only show tests that have successfully passed.

b. Sensor History shall provide reports anytime a sensor has gone into an alarm and when the alarm cleared. The report shall also indicate the type of alarm. The report shall report "Normal" if the sensor has never been in alarm.

c. Sensor History provides proof of compliance to regulators. This report can be generated on a daily, weekly, or monthly basis or as programmed by the end-user.

d. Sensor Status shall report the current status of all enabled sensors.

E. Units of Measure

1. The system shall monitor inventory in U.S., Metric or Imperial units for up to four above ground and underground tanks; and produce a combination of automatic and manual inventory reports for each tank, which includes the following information:

a. Tank identification
b. Fuel volume / height
c. Temperature-compensated fuel volume
d. Ullage
e. Water height / volume
f. Fuel temperature
g. Time and date

F. Inventory

1. The system shall provide an inventory history of up to 720 records per tank.

2. The system shall be able to monitor underground and above ground storage tanks in single or manifold configurations.

3. The system shall be able to monitor (measure) API listed products including, but not limited to motor fuels, LPG, methanol and alcohol blends. The system shall be able to measure density for gasoline and diesel.

4. The system shall have the ability to generate a power outage inventory report. This report shall track inventory levels before and after power outage, any variation in volume shall indicate tank activity during the outage.

5. The system shall have the ability to set User Ullage from 90% to 100% of Maximum Volume.

G. Delivery

1. The system shall automatically generate an inventory increase report (Delivery) when a delivery of product to a tank has taken place. The report shall include the time and date of the delivery, the starting volume in the tank, the ending volume in the tank, the starting temperature of the fuel, the ending temperature of the fuel, and the inventory increase amount. The system shall have the ability to generate a power outage delivery report in the event power is lost during a delivery. This report will be automatically generated once the power is restored.

2. The system shall have the ability to generate a ticketed delivery reports using the BIR data and customer's Bill of Lading.

3. The information shall be available in U.S., Metric or Imperial units. The system shall have the ability to store up to three years of inventory increase reports. The system shall provide an automatic delivery report, programmed to print from 1 to 99 minutes after a bulk delivery to a tank is complete.

H. Timed Sudden Loss

1. The system shall be able to detect sudden losses in the tanks when not dispensing and generate alarms when the threshold has been exceeded. Timed Sudden Loss shall not require pump sense and is programmable for seven individual time periods or shall be able to be manually started and stopped. Timed Sudden Loss shall be able to be reset once an alarm is posted.

2.04 SYSTEM PROGRAMMING:

A. Interface

1. The system shall be able to be programmed via the 7-inch color touch screen or using Web-Enabled (Remote Access).

2. The system shall have an Acknowledge switch for consoles without the touch screen.

B. Online Context Help

1. The system will provide an online context help to assist with programming. The system shall also have Table of Context search capabilities.

C. Setup Wizard

1. The system shall be able to be programmed using a Setup Wizard from either the touch screen or Web-Enabled. The Setup Wizard will navigate through a comprehensive routine to ensure all fields are properly configured.

D. Languages

1. The system will support the following languages: Arabic, Chinese, English, Finnish, French, German, Hebrew, Hindi, Italian, Korean, Portuguese, Polish, Russian, and Spanish.

E. Security

1. The system shall provide the use of a security code to prohibit unauthorized entry to the systems set-up parameters. The system security code shall be entered through the user interface or through the external communications interface. The security code shall have the capability of containing alpha or numeric characters.

F. Set-Up

1. The system will maintain programming and reports in the event of a power loss. The system will be connected to the Owner's computer network/server so that anyone that has access to the network, and has authorization, may view the system status and receive alarm condition email alerts.

2. Set-up parameters shall include but not limited to the following:

a. Automatic Events
b. Communication
c. Custom Alarms
d. Date and Time
e. Delivery
f. Devices
g. Display
h. Headers
i. Inventory

j. Overview
k. Printers
l. System
m. Tank
n. Tank Chart

G. Email

1. The system shall have the ability to send emails using SMTP protocol in response to any console alarm or at a pre-programmed time.

2. The system shall store email contacts in a system address book.

3. The Contractor shall connect the tank monitoring system to the Owner's server so that it can be accessed by the Owner's employees at desktop computers and so email notifications of alarm conditions can be received.

H. Backup

1. The system shall have the ability to perform database backups and restore via a USB thumb drive.

I. Software Upgrades

1. Remote Software Download

a. The system shall have the ability to perform Remote Software Downloads, where new software is automatically downloaded to the system and stored until activated. Activation shall complete the Software Upgrade process.

2. Thumb Drive Download

a. The system shall have the ability to perform Software Upgrades, where new software is downloaded and activated via a thumb drive to the system. The Owner shall also be able to download the data from the system locally using a thumb drive.

J. Custom Alarms

1. The system shall allow all system alarms to be programmed with a custom message up to 19 characters long. Each Custom Alarm shall have the ability to activate or suppress the console alarm beeper, LED indicators, and be displayed on the GUI and in the Alarm Reports.

K. Favorites

1. The system shall allow commonly used GUI screens to be saved under the Favorite's icon for quick and easy navigation. The system shall allow for editing and deleting of saved locations in Favorites.

2.05 DIAGNOSTICS:

A. All diagnostic information shall be generated by the system itself. The system shall not allow the user to change or enter diagnostic information in any way, except for Density Offset Diagnostic. The system will provide an intuitive online help to assist with diagnostics. The following diagnostic information shall be included in the system:

1. Boot-up

a. The system shall include built-in Boot-up diagnostics, which will display where in the sequence the console is currently at.

2. System

a. System Diagnostics shall include: Module, RS-232, and power reset history.

b. Module Diagnostics shall display the hardware configuration to include board serial number and firmware revision.

c. RS-232 Communication monitoring to include bytes transmitted/ received, parity errors, overruns, and framing errors.

d. Power Reset history will monitor when the console was powered down and up.

3. Probe

a. Probe diagnostics shall include probe type, serial number, probe length, factory calibrations, probe options, and communication status.

4. Tank Test

a. Tank Test shall include test results for both SLD and CSLD.

1) <u>SLD</u>

I. SLD diagnostics shall include the following: In-Progress, Last Test, and History

i. In Progress shall display current test status, test type, test result, start time, start volume, leak rate, and threshold.

ii. Last Test shall display the start date and time, test results and reason if the test did not pass for the previous SLD test.

iii. History shall display all previous test results with start date and time, test results, duration, leak rate, tank volume, and %volume.

II. SLD diagnostics shall include the ability to perform a manual tank test.

2) CSLD

I. CSLD diagnostics shall include Test Status, Rate Test, Rate Table, and CSLD State Changes.

i. Test Status shall display the current status of the CSLD test and how long the test has been in the current status.

ii. The Rate Test shall display the overall status of the CSLD tank test based on an evaluation of all CSLD test results stored in the Rate Table. This diagnostic shall include compensated and uncompensated leak rate, total test time, average volume during tests, total count of test records and count of acceptable test records.

iii. Rate table shall store the previous 28 days or 80 test results. The rate table shall display the date and time of the test, leak rate, temperature readings of the fuel and ambient air in the tank, the evaporation rate in the tank, the volume of the last delivery and test interval.

iv. Monthly shall display any change of state of the status of CSLD. Change of state shall include a failed test, warning, passed test, no data, increase or no idle data.

5. Manual Calibration

a. The system shall have the ability to perform a manual tank calibration by either using a meter drop or meter dispense method, where fuel is either delivered or dispensed from the tank in a controlled measured amounts.

6. Sensor

a. Sensor diagnostics shall display the sensor type, category, and sensor status.

2.06 PRODUCT SPECIFICATIONS/CAPACITIES:

A. Console

1. The console shall be of a modular design that allows for the installation and expansion of console hardware and additional optional features in the future. The console shall support up to twelve intrinsically safe wiring ports, two high-power dry contacts, one low voltage external input and up to three communication devices (five ports).

2. The console shall be equipped with 7-inch Full WVGA LCD touch screen display with an aspect ratio of 16:9, for on-site viewing of information, programming, operating and reporting functions. The touch screen shall be self-calibrating.

3. The front panel shall have three indicators to provide a visual indication of power on, warning and alarm conditions along with an internal audible alarm.
4. The console shall be capable of printing to a USB or network printer. Reports shall be printed in rows/columns format.

5. The console shall be equipped with the ability to communicate directly with an external POS terminal, printing device or PC. The system shall also have the ability to communicate with a remote device via serial, telephone lines, satellite or Ethernet.

6. The system shall store console setup and compliance data in non-volatile memory and have a battery backup for data storage in volatile memory.

7. The console shall be wall mounted using internal mounting holes and be equipped with four 3/4-inch to 1-inch conduit knockouts on the top and the bottom of the monitor for conduit entry into the monitor. One conduit entry (top and bottom) shall be designed for access to the universal module.

8. The overall dimensions shall be 8-inch by 13-inch by 3.5-inch.

9. The console shall have an internal quick-disconnect connector for 120/240 VAC wiring to the console for ease of installation, service and troubleshooting.

10. The console shall have an operational temperature range of 32° F (0° C) to 109° F (40° C) and shall be mounted in an area protected from severe vibrations, humidity, rain, and other conditions that could harm computerized electronic equipment.

11. The overfill alarm with acknowledgment switch shall be the audible horn and flashing light type. The overfill alarm shall be supplied with an alarm acknowledgement switch, and shall be weather proof for outdoor use. Alarm electronics shall be capable of operating from -40 degrees F. The alarm and acknowledgement switch shall be as manufactured by Veeder-Root, of Simsbury, Connecticut, or approved equal.

12. Remote alarms shall also be provided as indicated on the drawings.

13. Two tank stick gauges shall be provided to manually monitor each tank (one per tank).

B. Modules

1. The tank monitoring system shall incorporate a modular design to allow the factory installation of system features to meet specific application requirements, as well as field installation/modification of features at a later date to meet changing business, environmental compliance or regulatory requirements.

2. Universal Sensor Input Output Module (USMIO)

a. Shall support probes and sensors up to:

1) Twelve (12) two-wire; six (6) three-wire inputs.

b. Shall support two dry contact output relays
c. Shall support one low voltage inputs (<=12Vdc)

3. The system shall have the ability to contain up to five modules. The modules shall consist of standard communication and optional communication modules.

4. Standard Communication Modules shall include:

a. Ethernet interface module: provides connectivity to local and wide area networks

b. Dual Ethernet interface module: provides connectivity to local and wide area networks (LAN/WAN). Each interface is a separate Ethernet connection providing two distinct networks.

c. Dual USB interface module: supports USB thumb drive

d. RS-232 dual interface module: provides two 9-pin D-connectors for data transmission to POS terminal or computer. Supports RS-232, satellite, Electronic Dispenser Interface Module (EDIM).

e. Optional Communication Modules shall include (Each system can accept up to two optional modules.):

f. Dual Ethernet interface module: provides connectivity to local and wide area networks (LAN/WAN). This interface is a separate Ethernet connection providing two distinct networks.

g. Current Loop Dispenser Interface Module (CDIM)

C. Manufacturer's Support/Field Service

1. The manufacturer shall provide technical phone support available to customers from 8:00 a.m. to 7:00 p.m. EST, Monday thru Friday.

2. The manufacturer shall maintain a nationwide field service staff to provide on-site customer support and training, as well as overseeing installation of tank monitoring system by installation contractor. The distributor/contractor field service representative shall be available for on-site training of company maintenance personnel on installation, programming and troubleshooting of tank monitoring system.

3. The manufacturer shall supply a formal list of all Authorized Distributors and Service Contractors for sales, installation, training and support.

4. The manufacturer shall require and provide mandatory certification training for all of its authorized distributors and service contractors/installers. The certification program shall consist of two certification levels covering installation, setup/operation and service/troubleshooting of the manufacturer's ATG monitoring systems. The manufacturer shall offer re-certification training to keep contractors/installers current with updated information.

D. Manuals

1. The manufacturer shall supply product documentation that addresses the following categories as additional support:

a. Site preparation and installation instructions
b. System setup instructions (via on-line help)
c. System operating instructions (via on-line help)
d. Individual sensor installation instructions
e. Probe installation instructions
f. Individual module installation instructions
g. Product data sheets
h. Troubleshooting and repair manuals
i. Wiring diagrams which include the following:

1) Identification of all devices and equipment terminals, and all external connection terminal blocks.
2) All external wiring connections with approved wire colors and circuit designations.
3) Serial communications manuals

E. System Warranty

1. The tank monitoring system shall be warrantied for a period of one year from date of Substantial Completion. The warranty is to include parts and labor, with all warranty work performed on site by an authorized manufacturer's representative.

F. Warranty Registration and Checkout Form (WRACO)

1. The manufacturer shall require that all ATG monitoring systems be started up by an authorized distributor. The startup shall consist of installation checkout, operation checkout and customer training on use of the equipment.

2. The manufacturer shall supply a WRACO to properly document the site information.

   a. Installation location
   b. Installer
   c. Equipment identification
   d. Tank information
   e. Leak detector information
   f. Start-up distributor information
   g. Customer approval

3. Upon receipt of the WRACO, the manufacturer will initiate the system warranty and input the data into a site database.

4. The manufacturer shall offer Authorized Distributors pre-selected parts kits to service AST monitoring systems.

5. Delivery: the manufacturer shall have the ability to ship tank monitoring systems in three (3) working days from the time that an order is entered into the computerized system to the ship date.

6. ISO-9000: the manufacturer shall maintain an ISO-9001 rating ensuring quality management of design, manufacturing, training and technical documentation.

2.07 LEAK DETECTION AND INVENTORY CONTROL SYSTEM:

~~A. The following is a summary of leak and inventory control for the fuel oil tank:~~

~~1. One (1) magnetostrictive technology type, stainless steel inventory control and in-tank leak testing probe assembly.~~

~~2. One (1) annular space liquid sensing probe for interstitial space.~~

~~3. The annular space liquid sensing probe shall be capable of detecting liquids in the interstitial space between tank walls. The probe shall meet NEC, NFPA, and UL requirements for hazardous locations. Probe electronics shall be capable of operating from -20 degrees Celsius to +70 degrees Celsius.~~

A. The following is a summary of leak and inventory control for the fuel oil tank:

1. One (1) magnetostrictive technology type, stainless steel inventory control and in-tank leak testing probe assembly.

2. One (1) annular space monitoring system (dual point hydrostatic reservoir sensor for brine filled annular space, or approved equal).

3. The annular space monitoring system shall be capable of continuously monitoring the interstitial space between tank walls. The equipment shall meet NEC, NFPA, and UL requirements for hazardous locations. System shall be capable of operating from -25 degrees Celsius to +50 degrees Celsius.

4. Two (2) magnetostrictive liquid sensing probes, including one (1) in the piping sump and one (1) in the transition sump located inside the building.

B. Third-Party Certification: the manufacturer shall supply third-party documentation for all products, certifying that performance meets or exceeds EPA and CTDEEP requirements.

PART 3 - EXECUTION

3.01 GENERAL:

A. Installation of all equipment shall be in accordance with building codes, and the NFPA, NEC, and NEMA codes. The Contractor shall furnish and install all required conduit sealing fittings, explosion proof accessories, and NEMA Type 7 enclosures where indicated on the Contract Drawings, or where required by Code, or both.

B. The locations shown for instrumentation and control equipment on the Contract Drawings are approximate. The Contractor shall locate the new TLS-4 controller in the location of the existing tank monitoring system panel. All power and control wiring and connections not specifically indicated on the Contract Drawings, but required for the proper operation of equipment shall be made by the Contractor in accordance with these Specifications. All electrical control and instrumentation equipment installed in Class 1 hazardous locations shall be installed in NEMA Type 7 enclosures. Conduits and wire ways leading to and from these areas shall be provided with sealing fittings. All non-conducting metal parts of switches and controls shall be rust-proofed by galvanizing, cadmium plating, baked enamel or by the use of a non-corroding metal. Springs, wherever used, shall be a phosphor bronze.

C. Each leak detection inventory control system shall be installed, programmed and adjusted in accordance with the manufacturer's instructions so that all components function properly. Each overfill alarm and alarm acknowledgement switch shall be programmed and adjusted so that the alarm is activated at 90 percent of the tank capacity, unless noted otherwise.

D. All electrical work for tank gauging, instrumentation and controls shall be by a Connecticut Licensed Electrician.

3.02 TESTING:

A. General: All equipment (hardware and software) shall be factory and field tested to demonstrate that it provides the specified functions.

B. The factory and onsite test procedures shall be submitted to the Engineer for approval prior to starting the actual tests.

C. The onsite testing shall include checking of cables, testing of system subassemblies and checking of connections for each component and for the entire instrumentation and control system.

D. The Contractor shall notify the Engineer in writing that he is ready and desires to start the on-site system testing. The Engineer will authorize start of the testing at a mutually-agreed starting date.

E. Shop Testing: All activating devices, instruments and assemblies furnished under this item shall be set up in the shop of the manufacturer and tested over the full range of the equipment. The equipment shall satisfactorily perform all the functions within the requirements of the Specifications.

F. Field Testing: All instruments and systems shall be field tested to ensure conformance with the Specifications. Control systems shall receive dynamic loop tests which shall conform to the intent of ANSI: MC4.1 (ISA-S26). The control systems and equipment shall include provisions for such testing.

G. Input signals for equipment control shall be simulated for at least five signal values from 0 to 100 percent signal, with corresponding equipment response to be manually recorded, and adjustments made as required. Output signals from the equipment shall be read for at least five signal values from 0 to 100 percent of the meaningful process values, and adjustments shall be made as required.

H. All instruments used for control functions shall be tested with the final elements in the circuit in addition to simulated control methods. The Contractor shall adjust instruments and/or final elements to obtain the best working conditions for a dynamic system. The Specifications and Drawings show the general intent of the work only and not all system components are specified. The Contractor shall provide all materials, equipment, and

labor needed to provide a complete and operable and code compliant permitted system, and in accordance with manufacturer recommendations. All components of the system shall be explosion proof as needed.

END OF SECTION

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SECTION 33 56 13

UNDERGROUND FUEL STORAGE TANK

PART 1 - GENERAL

1.01 WORK INCLUDED:

A. This Section covers furnishing and installation of one (1) 12,000-gallon fuel oil. double walled, reinforced fiberglass underground storage tank (UST), anchoring deadmans and hold down straps, water tight containment sumps, locking type grade manholes, fill piping with spill containment (capable of returning product to the UST), vent piping with vent caps, associated double wall fuel piping, and all materials and accessories necessary to make a complete installation ready for use as described herein and as indicated on the Drawings.

B. The Contractor shall furnish the labor, materials, equipment, appliances, services and hauling, and perform operations in connection with the construction and installation of the fuel oil tank installation. Work shall be as herein specified and as denoted on the accompanying Drawings.

1.02 RELATED WORK:

A. Section 00 31 43, PERMITS

B. Section 01 33 23, SUBMITTALS

C. Section 31 23 19, DEWATERING

E. Section 31 00 00, EARTHWORK

F. Section 03 30 00, CAST IN PLACE CONCRETE

1.03 QUALITY ASSURANCE:

A. Installation Contractor shall be certified in writing by the manufacturer. The Contractor shall, prior to any installation, submit copies of such certification to the Local Fire Chief and Building Inspector and to the Engineer.

B. All additional certificates and test reports specified herein shall be submitted to the Engineer.

C. Tank shall be double wall fiberglass, UL labeled, constructed to meet governing standards with certification plate (UL Label) affixed and manufactured in the USA.

D. Tank shall be designed and manufactured of reinforced fiberglass plastic (FRP) or its equivalent in accordance with approved engineering standards and in accordance with the Connecticut State Uniform Fire Prevention, Connecticut UST Regulations, and Building Codes.

E. The tank shall be equipped with an overfill prevention device in accordance with NFPA 30.

F. The Contractor shall notify Owner in advance of setting date of UST for Owner and Engineers to view pre-installation testing and back filling.

G. All underground piping shall be installed with secondary containment.

H. The UST, equipment, and piping materials shall be physically inspected and air tested before being installed. Any defects observed shall be immediately brought to the attention of the Engineer. It shall be the sole responsibility of the Contractor to correct any deficiencies with the manufacture, in strict accordance with manufacturer's' recommendations, at no additional cost to the Owner.

I. The Contractor shall have the responsibility of notifying and coordinating with all local and state officials, including the Local Fire Department and Building Department. The Contractor shall obtain all inspections and permits per Section 00 31 43, and as needed to perform the work. The Contractor shall provide a written site safety plan.

J. The system shall be explosion proof and grounded in accordance with state and manufacturer's requirements.

1.04 REFERENCES:

A. The following standards form a part of this specification and indicate the minimum standards required:

American National Standards Institute (ANSI)

ANSI B1.20.1 General Purpose Pipe Threads

American Society for Testing Materials (ASTM)

ASTM D1248 Polyethylene Plastic Molding and Extension Materials

ASTM D1785 Polyvinyl chloride (PVC) Plastic Pipes, Schedules 40, 80 and 120

ASTM D3299 Filament-wound Glass-Fiber-Reinforced Thermoset Resin Chemical-Resistant Tanks

ASTM D4021-86 Glass Fiber Reinforced Polyester Underground Petroleum Storage Tanks

ASTM A53 Pipe, steel, black and hot-dipped, zinc coated welded and seamless

ASTM D2996	Filament Wound Reinforced Thermosetting Resin in pipe

Underwriters Laboratories, Inc.

UL 1316	Glass fiber Reinforced Plastic Underground Storage Tanks for Petroleum Products.
UL 971	Non metallic pipe and UL Standard 567-89 pipe connections for flammable and combustible LP gas

National Fire Protection Association (NFPA)

NFPA 30	Flammable and Combustible Liquids Code
NFPA 31	Standards for Installation of Oil Burning Equipment
NFPA 70	National Electrical Code

Connecticut

CSFSC	Connecticut State Fire Safety Code
CSFPC	Connecticut State Fire Prevention Code

Underground Storage Tank Regulations, Regulations of Connecticut State Agencies (RCSA) section 22a-449 (d)-1 (effective date May 7, 2025)

B. The tank and piping shall be properly installed in accordance with the manufacturer's instructions and either "Petroleum Equipment Institute Publication RP100-90; Recommended Practices for Installation of Underground Liquid Storage Systems" or "American Petroleum Institute Publication 1615-87; Installation of Underground Petroleum Storage Systems." The contractor shall be certified by the tank/equipment manufacturer in writing to install the tank/equipment.

C. Where differences exist between standards, the Contractor shall use the most conservative. If in doubt, describe differences in writing to the Engineer for his approval before performing the work.

D. 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.

1.05 SUBMITTALS: IN ACCORDANCE WITH THE REQUIREMENTS OF GENERAL SPECIFICATIONS, SUBMIT THE FOLLOWING:

A. Six (6) complete sets of shop drawings, details, data sheets, and other descriptive drawings and materials as may be required to fully describe the equipment proposed and verify conformance with the contract documents shall be submitted to the Engineer. Drawings shall include all critical dimensions, locations of fittings and accessories, i.e.: man-way, hold-down straps, secondary containment collar, etc.

B. Shop drawings of the tank(s) by the tank manufacturer including product data sheets and descriptive material for major components to be provided, including proposed hold-down straps.

C. Assembly and installation drawings, including buoyancy calculations demonstrating that concrete deadman and hold-down straps will hold tank in place if tank is completely submerged, and cut sheets/calculations demonstrating that tank, manholes, and piping/appurtenances will be protected from HS-20 live wheel load, stamped by a Connecticut Professional Engineer.

D. Contractor shall submit six (6) copies of manufacturer's literature including six (6) copies of manufacturer's current installation instructions to the Engineer.

E. Contractor shall submit detailed tank top equipment layout sketch, demonstrating where all equipment will be placed. This equipment includes sumps, piping, tank gauging equipment, leak sensors, pumps, valves, fill ports, spill buckets, and piping, etc.

F. Submittals shall be delivered to the Engineer within 10 days of Notice to Proceed. The Engineer shall review the drawings and return them to the Contractor approved, or with appropriate comments, as described in Section 01 33 23 – Submittals Procedures.

G. Contractor shall submit a valid certification from the tank manufacturer showing that the Contractor is a qualified installer trained in accordance with the tank's manufacturer installation requirements and as required for a valid tank warranty.

H. After installation the contractor shall submit the manufacturer's tank installation checklist properly completed by the Contractor and the Owner's representative to the engineer to verify proper installation of the tank. Contractor shall submit to the manufacturer and ensure tank warranty is obtained.

PART 2 - PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS:

A. The 12,000-gallon underground storage tank shall be double-walled reinforced fiberglass, with 42-inch collars, as manufactured by Containment Solutions, Inc., Conroe, Texas; Xerxes Corporation, Minneapolis, Minnesota; or approved equal. Tank shall be UL 1316 listed.

B. Sumps shall be Fiberlite Model S15, 42" sump as manufactured by Fibrelite Corporation, Pawcatuck, CT, OPW or approved equal.

C. Overfill Prevention and Containment Box Assembly: Fibrelite Corporation, Pawcatuck, CT, or approved equal.

D. Primary Product Pipe: Franklin Electric XP Flexible Pipework, Smith Fibercast, Ameron, or approved equal.

E. Secondary Product Pipe: Franklin Electric XP Flexible Pipework, Smith Fibercast, Ameron, or approved equal.

F. Grade Manholes: Fibrelite Corporation, Pawcatuck, CT, OPW, or approved equal.

G. Island Forms: Universal Valve, Burtco, Inc., or approved equal.

2.02 FUEL OIL STORAGE TANK:

A. Provide one (1) 12,000-gallon double wall fiberglass reinforced plastic underground storage tank (UST) with fittings and accessories as denoted on the Drawings. The UST shall have one 44" diameter manway per Drawings.

B. Loading Conditions: UST shall meet the following Design Criteria:

1. External Hydrostatic Pressure: Buried in ground with seven feet of overburden over the top of the tank. The tank excavation fully flooded and a safety factor of 5:1 against general buckling.

2. Surface Loads: When installed according to manufacturer's installation instructions, tank shall withstand surface HS-20 axle loads. (32,000 lbs./axle).

3. Internal Load: Tank shall withstand 5-PSI air pressure test with 5-to-1 safety factor. Test prior to installation.

4. Tank shall be designed to support accessory equipment as denoted on Drawings when installed according to manufacturer's recommendations and limitations.

C. Tank must be vented, as it is designed for operation at atmospheric pressure only, except for use with vapor recovery systems at a pressure or vacuum of approximately 1-PSI.

D. Tank shall be capable of storing liquids with specific gravity of up to 1.1.

E. Tank shall be capable of storing diesel fuel, gasoline, alcohol blended gasoline oxygenated fuels (up to 20% MTBE), with or without water bottom, at ambient underground temperatures not to exceed 150^{o} F at the tank's interior face.

F. Tank shall be chemically inert to petroleum products.

G. Tank shall be warrantied for 30 years against failure due to internal/external corrosion and,

when properly installed, structural failure.

H. Provide glass fiber-reinforced plastic anchor straps for each tank shown. Number and locations of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding the buoyancy load for tank diameter when tank is fully submerged and empty.

I. Threaded fittings on the UL labeled tank shall be of a material of construction consistent with the requirements of the UL label. Fittings to be supplied with cast iron plugs. Standard threaded fittings are 4" in diameter and shall be half couplings. Reducers are to be used for smaller sizes where specified and provided by Contractor. See Drawings for size and locations of fittings.

J. The tank laminate shall consist of granular inert material (silane treated silica) with less than 1 percent moisture content. Pure resin laminate is not acceptable.

K. Nominal capacity of the fuel oil tank shall be 12,000 gallons.
Nominal outside diameter of tank shall be 8 feet.

~~L. Tank shall have a space between the inner and outer shell walls to allow for the free flow and containment of all leaked fuel from the primary tank. The space will also allow for insertion of a monitoring device through a monitoring fitting.~~

L. Tank shall have a space between the inner and outer walls that allows for continuous interstitial monitoring of the inner and outer walls (i.e., brine system)

~~M. Tank shall have two monitor test fittings, one near each end of the tank. Each test fitting shall consist of a 2-inch NPT fitting on the inner tank wall and a 6-inch NPT fitting directly above on the outer tank wall.~~

M. An overfill protection float valve shall be installed in the tank.

N. Tank shall be provided with welded reinforced threaded openings or integrally cast flanges for all pipe connections.

O. Tank shall be equipped with a non-metallic striker plate at least 24“ x 24” in area, and at least 1/4-inch thick, and attached to the bottom of the tank under each manway. A 12” x 12” non-metallic striker plate at least 1/4-inch thick shall be placed at the bottom of each opening (other than a manway).

2.03 CONTAINMENT COLLAR

A. Provide fiberglass reinforced plastic secondary containment collar (42”) with fittings and accessories as denoted on the Drawings.

B. Tank Containment Sump:

1. Containment sump assemblies shall be provided over tank manways. The Drawings show the type, number, size, and location of sump assemblies required for each tank. Each containment sump assembly shall be Fibrelite Standard Plus Model Access Chamber, as manufactured by Fibrelite Corporation of Pawcatuck, CT, OPW, Xerxes, or approved equal.

2. Each containment sump assembly shall be constructed of resin transfer molded composite FRP. Each containment sump assembly shall consist of a composite sump, a composite internal sump lid, and an integrated composite manhole cover, frame and skirt over the sump. Each manhole cover, frame, and skirt, shall be sealed to the sump but shall not transfer surface loads from the manhole cover and frame to the sump. Each sump base shall be constructed to facilitate entry of piping and conduit.

3. Each containment sump assembly shall be watertight, with a watertight sump and an integrated watertight manhole cover and frame. Each manhole shall be watertight with an integral seal in the manhole cover to prevent the entry of water when the manhole cover is in the frame. Each sump shall include a removable reservoir for collecting water entering when manhole cover is removed in wet conditions.

4. Each opening in the sump base, including openings for piping and electrical conduits, shall be provided with entry boots that secure the piping or conduit to the sump base. Each entry boot shall fasten entirely from the inside of the sump, and shall be replaceable entirely from the inside of the sump after the sump is installed in the ground. All entry boot kits shall be third party tested for prolonged exposure to petroleum products. All entry boot kits shall be provided by the sump manufacturer.

5. Each containment sump assembly shall include appropriate fittings, adapters, and bonding agents for watertight installation on the sump collar of the fiberglass tank as shown on the Drawings. The containment sump shall be designed for installation on the tank manway cover without compromising the integrity of the sump assembly.

6. Each containment sump assembly shall be tested at different stages of installation to verify the integrity of the sump assembly, including all piping and conduit entry boots, the tank manway, and the manhole cover and frame assembly. This testing method shall be designed for verifying sump integrity after placing of backfill, and when tank top slab is installed and installation is complete. The sump manufacturer shall provide a testing method that employs instruments and procedures that yield reproducible results that will ensure that sump assembly installation is watertight. The sump manufacturer shall provide a factory-trained technician to test the sump.

2.04 MANHOLE ASSEMBLY

A. Manhole cover, frame, and skirt assemblies shall be provided in the tank top slab over tank openings. The Drawings show number, size, and location of manhole assemblies required for each tank top slab. A locking device shall be provided for each manhole.

Each manhole assembly shall be a Fibrelite Composite Manhole, as manufactured by Fibrelite Corporation, or approved equal by OPW or Fairfield Industries.

B. Cover: Each manhole cover and frame shall be suitable for use under HS-20 live loads. Frame and cover system shall be cast into the tank concrete cover pad to prevent transference of surface loads to the sump/UST. Where applicable, each cover shall be provided with a FRP inscription and shall be color-coded to conform to the American Petroleum Institute Color and Symbol Code. The surface resistivity of each cover shall be less than $1x10^8$ Ohms to prevent the buildup of static charge.

C. Frame: Each manhole frame shall be designed so that the manhole cover will fit securely and not spin in the frame. Each frame shall incorporate a physical water check system to prevent surface water from entering the manhole. The frame shall be of composite FRP, flush mounted to grade and water tight.

D. Skirt: Each manhole shall be constructed of fiberglass and colored to match the cover. The skirt shall extend to within two inches of the manhole cover. Each skirt will be supplied with a stabilizer rod kit for concrete installation. The rod kit shall be made of stainless steel.

E. Handle: Each manhole cover lifting handle shall be provided by the sump manufacturer and formed with 1-1/8-inch stainless steel tubing with alloy casting for the key and a plastic grip. Each handle shall include a foot lever tool and a locking tool. A handle shall be furnished for each individual manhole cover.

2.05 SPILL CONTAINMENT FILL BOX ASSEMBLY

A. Below Grade Spill Containment Fill Box Assembly:

1. Spill Containment Fill Box:

a. Below grade spill containment fill box shall be OPW 101BG-2100 series or approved equal, capable of withstanding a 150-psi line test.

b. Spill containment fill box shall have a capacity of no less than fifteen (15) gallons for containment of product spilled during the coupling and uncoupling of the fill hose and all related tank filling operations. Each spill containment fill box shall be provided with an automatic drain, test plug assembly, lockable fill cap, bronze fill adapter, and a No. 20-mesh brass screen.

c. An FRP product ID tag shall be provided with the spill containment fill box and inscribed as follows:

Fuel Oil
12,000-Gallons
Tank No. 1

2. Spill Containment Fill Box Manhole Covers and Frames:

   a. Cover: Manhole cover and frame shall be suitable for use under HS-20 live loads. Frame and cover system shall be cast into the tank concrete cover pad to prevent transference of surface loads to the sump/UST. Cover shall be steel, provided with inscription, and shall be color-coded to conform to the American Petroleum Institute Color and Symbol Code.

   b. Frame: Manhole frame shall be designed so that the manhole cover will fit securely and not spin in the frame. The manhole frame shall incorporate a physical water check system to prevent surface water from entering the manhole.

   c. Skirt: Manhole skirt shall be constructed of fiberglass and colored to match the cover with which it will be used. The skirt shall extend within two inches of the manhole cover. The skirt will be supplied with a stabilizer rod kit for concrete installation. Rod kit shall be made of stainless steel.

   d. Handle: Manhole cover lifting handle shall be provided by the sump manufacturer and formed with 1-1/8-inch stainless steel tubing with alloy casting for the key and a plastic grip. The handle shall include a foot lever tool and a locking tool.

2.06 TANK OVERFILL PREVENTION VALVE

A. Overfill prevention valve shall be provided as shown on the Drawings, and shall be Universal Model 39 as manufactured by Universal Valve, or approved equal.

B. Shut off valves shall be provided to operate in two stages: when product level rises to 95% of tank capacity, the valve mechanism shall close to regulate flow to approximately 5 gpm through a bypass valve. When the tank level rise to 98% of tank capacity, the bypass valve shall close allowing no additional product to enter tank.

C. Shut off valve shall be manufactured with a groove that runs the length of the valve, to allow the gauging stick to enter and exit the tank with no resistance.

D. Shutoff valves shall be completely automatic in operation. There shall be no pre-checks to perform, no resets, and no overrides to be broken.

2.07 TANK FILL PORT DROP TUBE

A. Fill port drop tube shall be equipped with a metal top seal adapter, as manufactured by Universal Valve or approved equal.

B. Fill port drop tube shall extend to within 4” of the tank bottom and shall be equipped with a lockable metal top seal fill cap, as manufactured by Universal Valve or approved equal

2.08 VENT PROTECTOR

A. Vent protector shall have rain cap and insect screen.

B. Minimum free area to be equal to the cross-sectional area of the vent pipe.

C. Screen not to be finer than thirty mesh.

D. Construction: Stainless Steel, threaded

E. Manufacturer: Universal Valve, or approved equal

2.09 GAUGE AND SENSOR MANHOLE

A. Manufacturer: Morrison Bros model 418TM-1200AM as manufactured by Morrison Bros, or approved equal.

B. Manhole shall be equipped with bolt down gasketed seal for cover and stainless steel stabilizer kits.

C. Manhole cover and frame shall be suitable for HS-20 live loads. Frame and cover shall be cast into the concrete cover pad to prevent transference of surface loads to the sump/UST.

D. Manhole cover system shall meet same general requirements of the spill containment fill box assembly.

2.10 TANK FITTINGS AND ACCESSORIES

A. A 2-inch diameter pipe shall be provided in the secondary vessel to mount monitoring probe for tank leak detection.

B. Lifting lugs of adequate size and capacity shall be provided.

C. The tank shall be supplied with hold down straps and isolation pads with sizes and quantities per manufacturer's recommendation.

2.11 PIPING SYSTEM:

A. Buried 2 inch inside diameter suction/supply and return piping be double wall, UL 971A & 1369 listed for use both below ground and above ground, and conform to NFPA Standard No. 30. Supply and return piping shall be Brugg Flexwell, OmegaFlex DoubleTrac, or approved equal. Where required, contractor shall be certified by the manufacturer in writing to install piping. A flexible connector shall be installed at locations where piping changes direction from horizontal to vertical, in accordance with regulations and manufacturers recommendations.

B. Pipe and fittings that are not buried or part of the double wall piping system described above shall be steel or malleable iron. Pipe joints shall be threaded pipe and fitting threads and shall conform to ANSI B1.20.1.

C. All fittings shall be Schedule 80, minimum.

D. Brass seated unions shall be installed where deemed necessary by the Engineer for future maintenance and repairs.

E. Vent pipes shall be installed as shown on the drawings. Underground vent pipes shall be single walled FRP piping. They shall be not less than 1-1/4-inches or less than the fill pipe in diameter, and shall be carried up to a point not less than 12 feet above the ground level at the filling point of the tank, shall terminate not less than 5 feet from any door or window opening, and shall be fitted with an approved weather hood screened with noncorrosive wire not coarser than 30 mesh.

F. All metallic piping, fittings, and valves used in connection with approved nonmetallic piping, fittings, and valves shall be grounded in accordance with local and state regulations, and manufacturer's recommendations.

2.12 ACCESSORIES:

A. An electric level gauge and monitoring system shall be provided for each tank, with remote reading located as shown on the drawings, and in Section 28 40 00, Tank Gauging, Instrumentation and Control.

B. A 20-foot hardwood dipstick shall be provided for each tank/compartment for local level readings.

PART 3 - EXECUTION

3.01 INSTALLATION:

A. The tank shall be installed in accordance with manufacturer's recommendations and in accordance with Federal, State, and local regulations. The contractor shall be certified by the tank/equipment manufacturer in writing, and shall have all appropriate licenses, qualifications necessary to perform the work. Tank systems shall be H-20 wheel load rated.

B. The double-walled fuel piping shall be laid on a constant minimum slope of 0.01 feet per foot toward the tank. The containment pipe shall be installed on firm, compacted sand or manufacturer approved backfill with a minimum depth of cover, as shown on the drawings. The Contractor shall exercise the necessary precautions to prevent accumulation of dirt or trash in the pipe during the course of construction. Pipe systems shall be H-20 wheel load rated.

C. Monitoring systems shall be installed as indicated in Section 28 40 00, Tank Gauging Instrumentation and Controls.

D. Contractor shall be responsible for paying for and obtaining all necessary permits and approvals necessary for a complete and operable system.

E. After initial installation of the tank, the tank installation checklist supplied by the manufacturer must be properly completed by the Contractor and the Owner's representative. The contractor shall provide the Owner and Engineer with a copy of the completed checklist to verify proper installation of the tank. Contractor shall submit to the manufacturer and ensure tank warranty is obtained.

F. Contractor shall install and test underground storage tank, piping, sumps, equipment, and all applicable appurtenances in accordance with Connecticut UST Regulations, and within 30 days after installation shall provide the Owner with all certifications, as built plans, manufacturer's installation checklists, and other documentation as necessary to meet record keeping and registration requirements outlined in the UST Regulations.

3.02 TESTS:

A. Prior to backfilling, the tank and piping shall be inspected for damage, external defects, and tightness by the Contractor in accordance with the Connecticut State Fire Codes and Connecticut Underground Storage Tank Regulations.

B. Tank, sump, spill bucket, ~~and~~ pipe and all applicable testing shall be performed in accordance with the Connecticut State Fire Codes and Connecticut Underground Storage Tank Regulations, which includes tank and piping testing following installation, backfilling and all surfacing to grade work. Testing shall be approved by the head of the local fire department.

C. In addition to the tank and pipe testing by the Contractor, the Contractor shall be responsible for hiring a third party inspector, approved for such inspections by the Connecticut, to inspect the UST and associated piping and submit the necessary documentation to the Fire Department, Building Department, and the DEEP in accordance with Connecticut State Codes.

D. The tank shall be tested by air pressure at not less than 3 pounds per square inch (psi) and not more than 5 psi before concealment.

E. The piping shall be tested hydrostatically or by air pressure to 150 percent of the maximum anticipated pressure of the system but not less than 50 psig at the highest point of the system.

F. All equipment necessary to perform the required tests shall be furnished by the Contractor. Contractor is responsible for coordinating the testing with the fire department and obtaining necessary approval to allow the system installation and operation.

3.03 All manhole and gauge/sensor manhole covers shall be API color coded.

END OF SECTION

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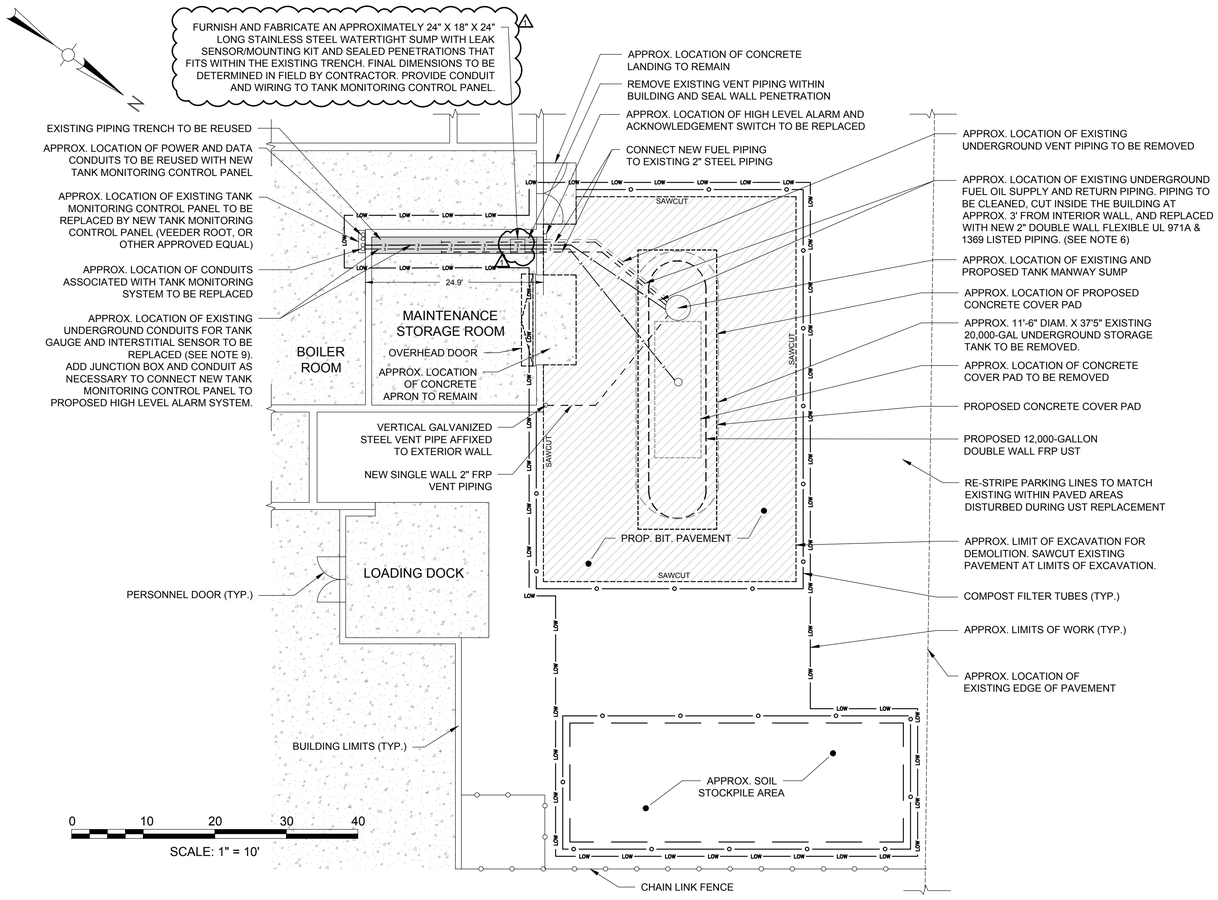
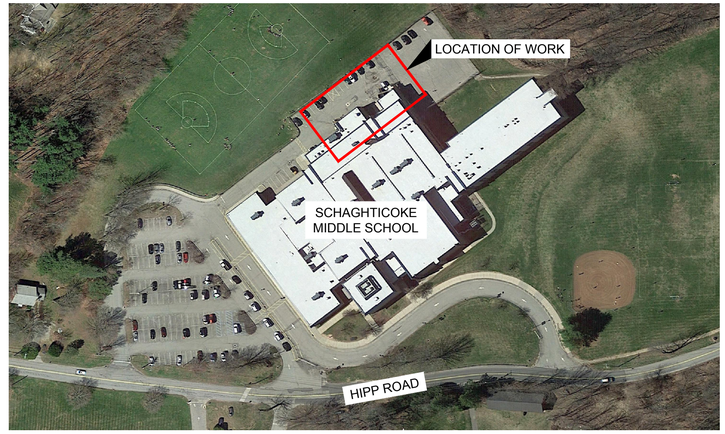


1 UST REPLACEMENT PLAN LAYOUT
SCALE: 1"=10'

UST REPLACEMENT NOTES:

1. THIS SITE PLAN HAS BEEN PREPARED IN ACCORDANCE WITH FIELD MEASUREMENTS TAKEN BY WESTON & SAMPSON ON JANUARY 10, 2025.
2. UNDERGROUND STORAGE TANK (UST) REMOVAL TO INCLUDE (1) 20,000-GALLON UST, TANK CONCRETE COVER PAD, SUMPS, PIPING AND ASSOCIATED CONDUITS.
3. THE LOCATION OF EXISTING PIPES, CONDUITS, UTILITY SERVICES OR OTHER UNDERGROUND STRUCTURES IS NOT WARRANTED TO BE CORRECT, NOR IS IT WARRANTED THAT ALL UNDERGROUND PIPES OR STRUCTURES ARE SHOWN. THE CONTRACTOR SHALL HAVE NO CLAIM ON THAT ACCOUNT SHOULD THEY BE OTHER THAN THAT SHOWN, AND SHALL PERFORM TEST PITTING AS NECESSARY TO LOCATE THESE ITEMS.
4. THE CONTRACTOR SHALL SUBMIT ONLINE AT WWW.CBYD.COM OR CALL "CALL BEFORE YOU DIG" (CBYD) AT 1-800-922-4455 OR 811 AT LEAST 72 HOURS, SATURDAYS, SUNDAYS, AND HOLIDAYS EXCLUDED, PRIOR TO GROUND DISTURBANCE AT ANY LOCATION. A COPY OF THE (CBYD) PROJECT REFERENCE NUMBER(S) SHALL BE GIVEN TO THE OWNER AND ENGINEER PRIOR TO EXCAVATION.
5. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING AND MONITORING DAMAGES TO ADJACENT VEGETATION, STRUCTURES, PAVED AREAS, CURBING AND SIDEWALKS. ANY DAMAGE OR DISTURBANCE SHALL BE RESTORED TO ORIGINAL CONDITION BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL HAVE A LICENSED ELECTRICIAN MAKE SYSTEM SAFE FOR DISCONNECT AND REMOVAL OF ASSOCIATED WIRING AND CONDUITS PRIOR TO REMOVAL.
7. CONTRACTOR SHALL PLACE ADDITIONAL EROSION/SEDIMENTATION CONTROL MEASURES BEYOND WHAT IS SHOWN (COMPOST FILTER TUBES) IF NECESSARY TO CONTROL SEDIMENTATION WITHIN THE LIMIT OF WORK.
8. CONTRACTOR SHALL REMOVE AND DISPOSE OF THE UST SYSTEM IN ACCORDANCE WITH SPECIFICATION SECTION 02 65 00 - REMOVAL AND DISPOSAL OF UNDERGROUND STORAGE TANKS. CONTRACTOR SHALL REMOVE AND DISPOSE OF EXISTING UST COVER PAD.
9. CONTRACTOR SHALL REMOVE AND DISPOSE OF TANK MONITORING SYSTEM COMPONENTS, INCLUDING PROBES, CABLING, AND ALL CONDUIT THAT ARE NOT BEING REUSED FOR POWER, AND SHALL PATCH ANY HOLES IN MASONRY WITH MORTAR.
10. CONTRACTOR'S CT LICENSED ELECTRICIAN SHALL IDENTIFY EXISTING DATA CONDUITS BETWEEN EXISTING UST AND TANK MONITORING SYSTEM. ALL BELOW GROUND PORTIONS, ABOVEGROUND PORTIONS, AND WIRING WITHIN THESE CONDUITS SHALL BE REMOVED AND REPLACED. NEW CONDUITS SHALL BE 1" GALVANIZED RIGID METAL STEEL CONDUIT FOR ABOVEGROUND AND 1" SCH 80 PVC FOR UNDERGROUND. WIRING SHALL BE SELECTED AND INSTALLED BY THE CONTRACTOR IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH CT ELECTRICAL AND BUILDING CODES, AND LOCAL AUTHORITY HAVING JURISDICTION.
11. CONTRACTOR SHALL ASSIST ENGINEER WITH COLLECTION OF CONFIRMATORY SAMPLES FROM THE UST AND FUEL PIPE EXCAVATIONS. BACKFILL OR ANY OTHER WORK WITHIN THESE EXCAVATIONS SHALL NOT PROCEED UNTIL APPROVED BY THE ENGINEER.
12. ENGINEER AND OWNER MAY DETERMINE EXCAVATION OF PETROLEUM-IMPACTED SOIL IS REQUIRED. AS NECESSARY, A CT-PERMITTED SPILL CLEANUP CONTRACTOR SHALL EXCAVATE AND STOCKPILE CONTAMINATED SOIL PER ENGINEER DIRECTION AND IN ACCORDANCE WITH SECTION 02 61 13 - EXCAVATION AND STOCKPILING OF CONTAMINATED MATERIALS. CONTRACTOR SHALL TRANSPORT AND DISPOSE OF CONTAMINATED SOIL IN ACCORDANCE WITH SECTION 02 61 00 - TRANSPORTATION AND DISPOSAL OF CONTAMINATED MATERIAL.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EXCAVATION AND BACKFILL FOR THE REMOVAL AND DISPOSAL OF UST, EXISTING FUEL PIPES, AND CONDUITS ASSOCIATED WITH THE UST REMOVAL.
14. CONTRACTOR SHALL DRAIN FUEL LINES OR OTHERWISE IMPLEMENT SPILL CONTROL MEASURES TO PREVENT FUEL SPILLING FROM PIPING DURING REMOVAL AND INSTALLATION OF FUEL PIPING.
15. NEW PAVEMENT AND CONCRETE UST COVER PAD SHALL MATCH EXISTING GRADES AND SHALL NOT DISRUPT STORMWATER FLOW OR RESULT IN PONDING IN THE RESTORED AREA.
16. UST, PIPING, CONDUIT, AND ALL APPURTENANCES SHALL BE INSTALLED TO MEET H20 WHEEL LOAD RATING AND MANUFACTURER'S REQUIREMENTS.
17. CONTRACTOR SHALL COORDINATE WITH NEW MILFORD PUBLIC SCHOOLS TO LIMIT DISRUPTION TO SCHOOL OPERATIONS AND SHALL PROVIDE A SCHEDULE OF ALL ANTICIPATED WORK.
18. ANY DISCREPANCIES OR CONFLICTS BETWEEN THE DRAWINGS AND EXISTING CONDITIONS, EXISTING CONDITIONS TO REMAIN, TEMPORARY CONSTRUCTION AND PERMANENT CONSTRUCTION SHALL BE BROUGHT TO THE ATTENTION OF THE OWNER AND ENGINEER BEFORE PROCEEDING. ITEMS ENCOUNTERED IN AREAS OF EXCAVATION THAT ARE NOT INDICATED ON THE DRAWINGS, BUT ARE VISIBLE ON SURFACE, SHALL BE THE CONTRACTOR'S RESPONSIBILITY AND SHALL BE REMOVED AT NO ADDITIONAL COST TO THE OWNER AFTER APPROVAL.
19. ALL BIDDERS ARE REQUIRED TO INSPECT THE PROJECT SITE IN ITS ENTIRETY PRIOR TO SUBMITTING THEIR BID, AND BECOME FAMILIAR WITH ALL CONDITIONS THAT MAY AFFECT THEIR BID. CONTRACTOR AND SUB-CONTRACTOR SHALL BE FAMILIAR WITH ALL DRAWINGS AND SPECIFICATIONS PRIOR TO COMMENCING THE CONSTRUCTION.



2 AERIAL - SITE LOCATION
SCALE: N.T.S.

PHOTO 1
EXISTING 20,000-GAL. UST

PHOTO 2
EXISTING TANK MANWAY SUMP

REPLACE EXISTING VALVES IN KIND. CONTRACTOR SHALL SUBMIT PRODUCT AND LAYOUT SKETCH TO ENGINEER PRIOR TO INSTALLATION.

PHOTO 3
EXISTING TANK MANWAY SUMP AND UST SYSTEM PIPING

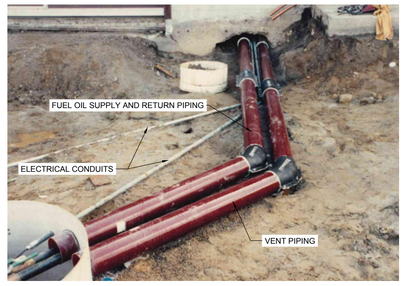
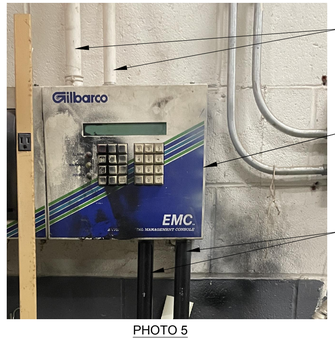


PHOTO 4
EXISTING UST SYSTEM PIPING AND CONDUIT



REUSE EXISTING ELECTRICAL CONDUITS FOR POWER AND DATA LINES TO NEW TANK MONITORING CONTROL PANEL

EXISTING TANK MONITORING CONTROL PANEL TO BE REPLACED

REPLACE EXISTING CONDUITS TO TANK AREA FOR TANK GAUGE, INTERSTITIAL/SUMP SENSORS, AND HIGH LEVEL ALARM.

PHOTO 5
EXISTING TANK MONITORING SYSTEM

3 EXISTING CONDITIONS PHOTOS
SCALE: N.T.S.

Project:
UNDERGROUND STORAGE TANK REPLACEMENT PROJECT

NEW MILFORD PUBLIC SCHOOLS

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Consultants:

Seal:

Revisions:

Rev	Date	Description
1	6/13/2025	ADDENDUM NO. 1

Issued For:

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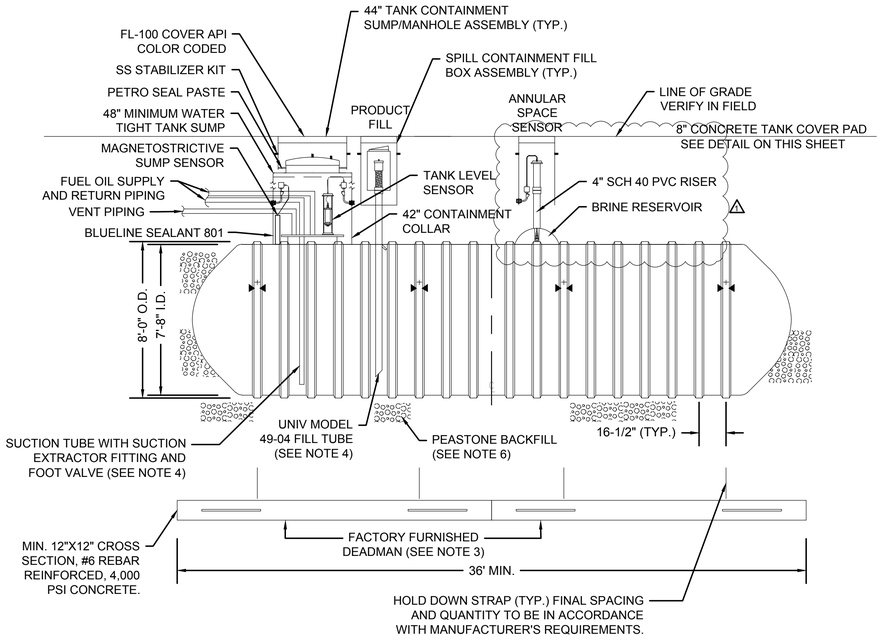
Date:	APRIL 18, 2025
Drawn By:	NCH
Reviewed By:	ZDW
Approved By:	RJC
W&S Project No:	ENG24-1730

Drawing Title:

UST REPLACEMENT PLAN

Sheet Number:

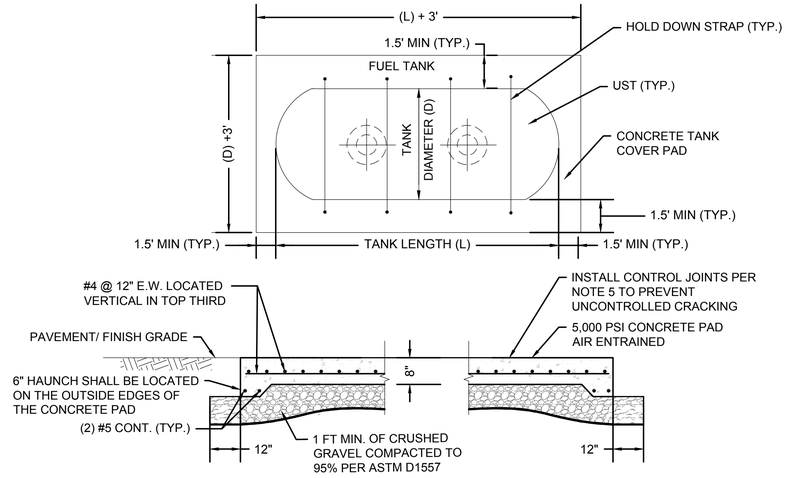
C101



NOTES:

1. TANK SHALL HAVE 3'-6" MIN. COVER IN RELATION TO THE LOWEST SURFACE ELEVATION ABOVE THE TANK.
2. CONTRACTOR SHALL PROVIDE UNDERGROUND STORAGE TANK IN A WORKMAN LIKE MANNER AND SHALL PROVIDE A COMPLETE AND OPERABLE SYSTEM.
3. CONTRACTOR SHALL PROVIDE DEADMAN(S) AND STRAPS TO HOLD DOWN TANK IN ACCORDANCE WITH SECTION 33 56 13 AND THE MANUFACTURER'S RECOMMENDATIONS.
4. FILL AND SUCTION TUBES SHALL EXTEND TO WITHIN 4" OF THE TANK BOTTOM.
5. TANK VENT SHALL BE ROUTED TO BUILDING AS SHOWN ON C101.
6. TANK SHALL BE BEDDED IN AND WRAPPED ALL AROUND WITH 1 FOOT MINIMUM OF PEA STONE BACK FILL, OR OTHER MANUFACTURER-APPROVED BACK FILL, PER MANUFACTURER'S REQUIREMENTS, ALL THE WAY UP TO DENSE GRADED CRUSHED STONE LAYER BELOW UST COVER PAD. DEPTH OF BEDDING BELOW TANK SHALL BE ADJUSTED TO 18" MINIMUM FOR WET HOLE INSTALLATION, AS APPLICABLE, AND PER MANUFACTURER'S REQUIREMENTS. BOTTOM AND SIDES OF EXCAVATION SHALL BE WRAPPED IN NON-WOVEN GEOTEXTILE FABRIC MEETING TANK MANUFACTURER'S INSTALLATION REQUIREMENTS.
7. CONTRACTOR SHALL DE-WATER THE EXCAVATION AS SPECIFIED.
8. CONTRACTOR TO PROVIDE EXCAVATION SUPPORT FOR CONSTRUCTION OF UST IN ACCORDANCE WITH SECTION 31 50 00 - SUPPORT OF EXCAVATION.
9. SPILL CONTAINMENT FILL AND ANNULAR SPACE SENSOR MANHOLE, SHALL BE SUPPLIED WITH H-20 RATED STEEL OR CAST IRON COVERS.
10. TANK CONTAINMENT SUMP/MANHOLE ASSEMBLY FRAME INSIDE DIAMETER SHALL BE WIDER THAN CONTAINMENT COLLAR TO ENSURE THAT NO VEHICLE LOADS ARE DISTRIBUTED ONTO THE COLLAR/TANK.

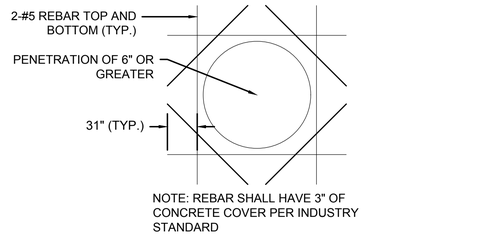
1 PROPOSED 12,000-GALLON FIBERGLASS FUEL OIL TANK
SCALE: N.T.S.



NOTES:

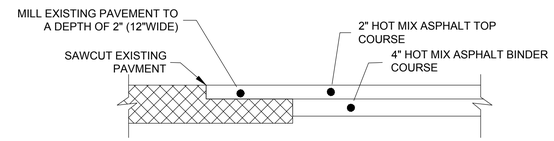
1. MINIMUM PAD DIMENSIONS/SPACING ARE SHOWN IN THE ABOVE DETAIL. DIMENSIONS SHALL BE CONFIRMED IN THE FIELD AS REQUIRED BY THE CONTRACTOR.
2. SEE TANK COVER PAD MANHOLE OPENING DETAIL FOR ADDITIONAL REINFORCEMENT AT MANHOLE OPENING IN PAD.
3. CONCRETE PAD SHALL BE CROWNED LOCALLY SURROUNDING COVER PAD PENETRATIONS TO PREVENT WATER FROM ENTERING SUMPS. CROWNS SHALL BE IN ACCORDANCE WITH COVER MANUFACTURER REQUIREMENTS.
4. CONCRETE PAD SHALL BE 5,000 PSI AND COATED WITH CHLORIDE RESISTANT SEALANT. SEE SECTION 03 30 00 - CAST IN PLACE CONCRETE FOR ADDITIONAL REQUIREMENTS.
5. CONTRACTOR SHALL PROVIDE CONTROL JOINTS AT HALF THE WIDTH OF THE PAD IN BOTH DIRECTIONS.
6. CONTRACTOR SHALL REVIEW FINAL APPROVED TANK MANUFACTURER'S BACKFILL REQUIREMENTS ABOVE TANK AND CONFIRM NO CONFLICTS WITH DETAIL.

2 CONCRETE TANK COVER PAD DETAIL
SCALE: N.T.S.



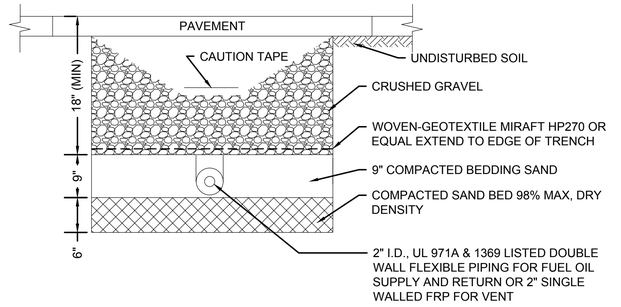
NOTE: REBAR SHALL HAVE 3" OF CONCRETE COVER PER INDUSTRY STANDARD

3 TANK COVER PAD MANHOLE OPENING DETAIL
SCALE: N.T.S.



NOTES:
1. CUT KEYWAY AT ENDS OF ALL PAVING WHERE NEW PAVING MEETS EXISTING PAVING.
2. TACK COAT BETWEEN EXISTING AND PROPOSED PAVEMENT.

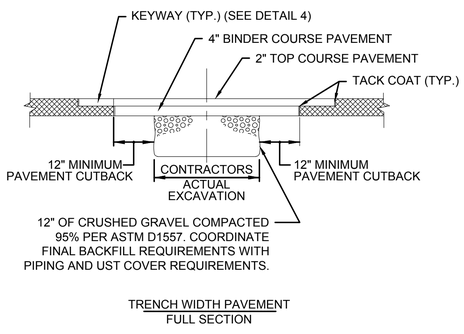
4 KEYWAY DETAIL
SCALE: N.T.S.



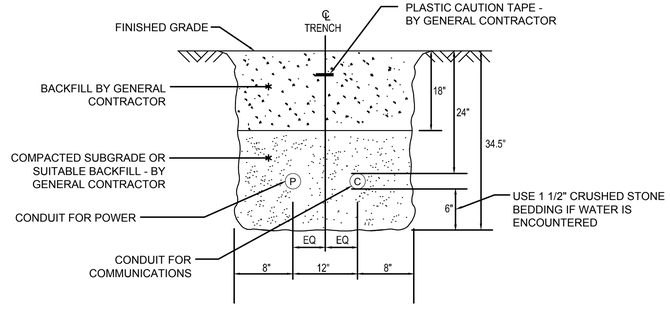
NOTES:

1. PITCH FUEL AND VENT PIPING BACK TOWARDS TANK AT A 1% SLOPE.
2. GENERAL TRENCH BEDDING AND BACKFILL REQUIREMENTS SHOWN SHALL BE ADJUSTED AS NECESSARY TO MEET MANUFACTURER INSTALLATION REQUIREMENTS. CONTRACTOR SHALL SUBMIT FINAL BEDDING/BACKFILL PLAN TO ENGINEER FOR REVIEW PRIOR TO CONSTRUCTION.
3. 24" MINIMUM COVER TO BE PROVIDED FROM TOP OF PIPE TO SURFACE ELEVATION.
4. CONTRACTOR SHALL CONTACT ENGINEER AT LEAST 1 WEEK IN ADVANCE OF BACKFILLING OVER PIPES FOR ENGINEER TO OBSERVE INSTALLATION.

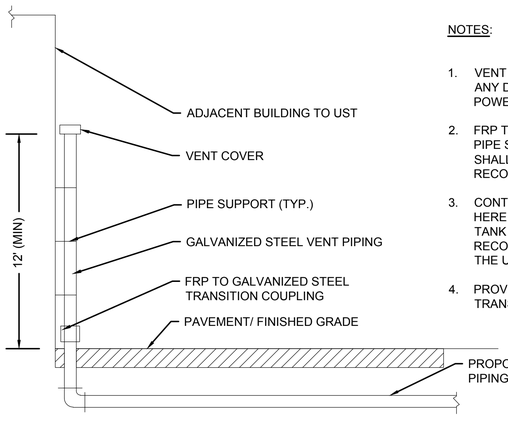
7 PIPING TRENCH DETAIL
SCALE: N.T.S.



5 PAVEMENT REPLACEMENT DETAIL
SCALE: N.T.S.



6 DIRECT BURIED CONDUIT DETAIL
SCALE: N.T.S.



NOTES:

1. VENT PIPE SHALL NOT TERMINATE LESS THAN 5 FEET FROM ANY DOOR OR WINDOW OPENING AND AT LEAST 15 FEET FROM POWERED VENTILATION AIR INTAKE DEVICES.
2. FRP TO GALVANIZED STEEL PIPE TRANSITION COUPLING AND PIPE SUPPORT BRACKETS FOR ATTACHMENT TO BUILDING SHALL BE IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
3. CONTRACTOR SHALL INSTALL NEW VENT PIPES AS SHOWN HERE AND ON C101. NEW VENT PIPE SHALL ATTACH TO NEW TANK IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS. VENT PIPE SHALL PITCH BACK TOWARD THE USTs AT A 1% SLOPE.
4. PROVIDE FLEXIBILITY WHERE HORIZONTAL PIPING TRANSITIONS TO VERTICAL WITH A 4' MIN DOGLEG.

8 VENT PIPING DETAIL
SCALE: N.T.S.

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Drawing Title:

UST DETAILS

Sheet Number:

C201

Addendum RFP E2425-013

Questions and Answers

1) Is a Bid Bond required for this RFP ?

No, no Bid Bond is required with these Bid responses.

2) Will Performance and Payment Bonds be required for this project ?

Yes, per the bid , “The selected Contractor shall furnish a performance bond and a payment bond in an amount at least equal to one hundred percent (100%) of the contract prices.”

3) Will Weston & Sampson be conducting closure samples ?

Yes, as stated at the mandatory site visit Weston & Sampson will be handling closure samples.