ADDENDUM #M1

March 25, 2026

DEPARTMENT OF CORRECTIONS AND REHABILITATION
NORTH DAKOTA STATE PENITENTIARY
FUEL STORAGE REPLACEMENT

BISMARCK, ND

COMMISSION NO. 25585

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THIS ADDENDUM SHALL BECOME A PART OF THE PLANS AND SPECIFICATIONS AND ITS RECEIPT SHALL BE NOTED ON THE BID FORM.

ATTACHMENTS: This Addendum includes the following attachments:

1. Drawings:
    a. M103 – Mechanical Demolition & Remodel Plans
    b. M500 – Mechanical Schedules & Details
    c. M501 – Mechanical Details
2. Specification Section:
    a. 230500 – HVAC General Provisions
    b. 230990 – HVAC Sequence of Operations

DRAWING ITEMS

1. Drawing M103 – Mechanical Demolition & Remodel Plans
    a. Added notes and information regarding the existing tank monitoring audio/visual tank alarms.
2. Drawing M500 – Mechanical Schedules & Details:
    a. Modified detail M500/6 to reflect an updated fuel oil tank manufacturers cutsheet.
3. Drawing M501 – Mechanical Details:
    b. Added this drawing sheet which contains additional fuel oil tank details M501/1, M501/2, M501/3, M501/4.

SPECIFICATION ITEMS

1. Specification Section 230500 – HVAC General Provisions:
    a. Omitted paragraph 230500.1.4 Contingency in its entirety.
2. Specification Section 230990 – HVAC Sequence of Operations:
    a. Modified the Sequence for the Fuel Oil Tank Monitoring System.

CONTINGENT UPON MEETING ALL SPECIFICATIONS, FOLLOWING ITEMS ARE ACCEPTABLE FOR BIDDING:

PARAGRAPH	ITEM	MANUFACTURER
N/A	N/A	N/A

ADDENDUM #M1

PART 1 - GENERAL

1.1 SUMMARY

A. Specification Format

1. These Specifications are written in imperative and abbreviated form. This imperative language of the technical sections is directed at the Contractors, unless specifically noted otherwise. Incomplete sentences shall be completed by inserting "shall", "the Contractor shall", and "shall be", and similar mandatory phrases by inference in the same manner as they are applied to notes on the Drawings. The words "shall be" shall be supplied by inference where a colon (:) is used within sentences or phrases. Except as worded to the contrary, perform all indicated requirements whether stated imperatively or otherwise.
2. Three Part Format
    a. "Part 1 - General": Covers those areas which relate to the Work, and which define the general administrative and technical requirements specific to a particular section.
    b. "Part 2 - Products": Defines, in detail, the acceptance equipment and materials to be incorporated into the Work.
    c. "Part 3 - Execution": Describes, in detail, the manner in which items covered by Part 2 are to be incorporated into the Work.
3. Where Codes, Specifications and Drawings are in conflict, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies immediately to the Engineer prior to commencing related work.

B. Definitions:

1. Furnish: Supply equipment as required by these Drawings and Specifications, delivered to the job site for installation or use by others.
2. Install: Fix in position for total operational use all apparatus as shown, specified or required. Provide all miscellaneous fittings and wiring supplies.
3. Or Approved Equal: Equipment or materials selected by Contractor subject to Engineer's acceptance.
4. Or Equivalent: Equipment or materials selected by Contractor matching the function and performance of equipment or materials listed.
5. Provide: Furnish and install in place, total and operational.
6. Complete/Completely: All pipes, fittings, ducts, wiring supplies, and accessories provided for the noted equipment from the equipment to the mains or noted termination points.

1.2 SCOPE OF WORK

A. The work covered by this Division consists in furnishing all labor, equipment, accessories and materials and in performing all operations necessary for the installation of the HVAC systems, in strict accordance with Division 23 of this Specification and applicable Drawings and subject to the terms and conditions of the Contract.

B. Work of this Division is subject to requirements of Instructions to Bidders, General Conditions, Supplementary Conditions, Division One, and all other sections of this Specification.

C. Examine site and all Contract documents prior to submittal of bid.

1. Submittal of a Bid shall indicate the Contractor has examined the Site and Drawings and has included all required allowances in this Bid. No allowance shall be made for errors resulting from the Contractor's failure to visit job sites and to review Drawings.

D. Division 23 Work: Includes, but is not limited to, providing the following:

1. Fuel Oil Piping System: Piping, Labels, Supports & Piping Accessories.
2. Above Ground Fuel Oil Tank, Accessories and Appurtenances: Tank, Piping associated with the tank, Fuel plant equipment, cooling equipment.

1.3 ALTERNATES

A. Alternate 1

1. Under Add Alternate Bid #1 on the Bid Form, state the Contract Sum to extend the existing Franklin Fueling Systems fuel tank monitoring system that had monitored the tank levels and leak detection of the existing below grade fuel tanks that are being removed under the scope of this project to the new single above ground tank. See the drawings for additional information.

1.4 SUBMITTALS

A. General:

1. Preferred Submittal Format: PDF, unless otherwise noted.
2. Preferred Submittal Nomenclature: Unless otherwise noted, PDF submittals are to be named according to the following:
   a. [Specification Section Number] – [Specification Name or Equipment Included]
3. Distribution: Unless otherwise noted, direct all correspondence concerning Division 23 submittals to:

MATT FISCHER
PRAIRIE ENGINEERING, P.C.
619 RIVERWOOD DRIVE, SUITE 205
BISMARCK, ND 58504
mfischer@prairieengineeringpc.com

B. Substitution and Prior Approval to Quote:

1. Format and Content: Complete descriptive technical data on the proposed item consisting of model numbers, type, size and performance characteristics.
2. Submission Timing: Minimum of 192 hours (eight days) prior to bid opening.
   a. Substitutions will not be permitted after bid opening except where such substitution is considered by the Engineer to be in the best interest of the Owner.
3. Bidder Notification: Prior to bid opening via Addenda, sent to all planholders.

4. Contractor Responsibility: This contractor will be responsible for all coordination, construction costs, and Architectural/Engineering design fees required to substitute equipment that has different characteristics than designed including weights, physical dimensions, clearances, mechanical characteristics, electrical characteristics, and other characteristics deemed important to the design by the Architect/Engineer.
5. Alternative Format: Printed paper, two copies; Self-addressed, stamped envelope required for return reply.

C. Schedule of Values

1. Distribution: One copy to Engineer.
2. Format and Content: When included with the Bid, at minimum the following categories shall be indicated:
   a. "Project mobilization"
   b. "Start-up and Commissioning"
   c. "Demolition"
   d. "Excavation and Backfill"
   e. "Insulation"
   f. "Test and Balance"
   g. "Building Automation System"
   h. "Fire Sprinkler System"
   i. "Geothermal Wellfield"
   j. "Piping Systems" (all hot/chilled/geothermal piping, valves, fittings, hangers, installed in place)
   k. "Sheet Metal" (all ductwork, lining, dampers, hangers, installed in place)
   l. "Terminal Units" (unit heaters, grilles, diffusers, radiation, installed in place)
   m. "Hydronic Distribution Equipment" (all pumps, boilers, chillers, heating/cooling coils, installed in place)
   n. "Air Distribution Equipment" (all fans, air handlers, heat pumps, VAVs, installed in place)
3. Submission Timing: Prior to first payment application.

D. Shop Drawings

1. Distribution: Engineer via the Prime Contractor for each item indicated.
2. Format and Content: Include catalog numbers, performance data, dimensions and other descriptive information.
   a. Contractor Review: Dated and signed cover sheet or review stamp for each Shop Drawing file to indicate thorough review. **Email message text not acceptable.**
   b. Submit a separate shop drawing file for each Specification Section including only the items within that Section.
   c. Non-Conforming: Returned to Contractor without review.
3. Submission Timing: Prior to delivery of materials to job site.

E. Record Drawings

1. Format and Content: Paper copy of Drawings project site.
   a. As work progresses, Contractor's field supervisor shall mark Record Drawings in red pencil to indicate actual conditions of installation.
   b. Give particular attention to marking actual locations of underground piping.
   c. Affix all addendum and change order descriptions to appropriate record drawing sheet, utilizing spray adhesive.
   d. Make Record Drawings available to Engineer during project visitation.
2. Submission Timing: Close of project with Record Manuals.

F. Spare Equipment and Devices

1. Distribution: Owner.
2. Format and Content: List quantities on contractor letterhead or invoice, obtain signature of Owner's representative acknowledging receipt, and include with each Record Manual.
3. Submission Timing: Close of project with Record Manuals.

G. Operation and Maintenance Manuals

1. Submission Timing: Close of project, as condition of its acceptance.
2. Record Manual information shall be included for all equipment/material where Shop Drawings are required.
3. Format and Content: Two copies, Loose-leaf hardcover binders, **and** in PDF format on CDs or USB drive.
   a. List project name, date, Contractor's name, address and telephone number on exterior label of each Record Manual and CD.
   b. Include an index sheet indicating subcontractor and subcontractor’s phone number and each major piece of equipment, supplier and supplier's telephone number. Provide tabbed dividers indicating major groupings of equipment.
   c. Include a copy of the Shop Drawings.
   d. Include all installation, operation and maintenance data packaged with any equipment.
   e. Include all signed and dated final punch lists from walkthroughs performed by the Engineer.

1.5 APPLICATIONS FOR PAYMENT

A. Refer to Division 1 "Applications for Payment".

B. Provide one additional copy, sent directly to the Engineer.

C. Schedule of Values: At minimum, include items in Submittal article.

1.6 CHANGES TO CONTRACT

A. Any required changes to the contract after bid date shall be in accordance with General Conditions/Division 1 and this section. Where any discrepancies between the sections are encountered, the more restrictive section shall apply.

B. Proposed changes shall be accompanied with complete substantiating documentation.

1. Provide an itemized list of quantities for materials, equipment, and supplies.
   a. Include unit costs for each item and extended price.
   b. Include unit labor for each item and extended time.
2. Provide subcontractor proposals that include the same substantiating documentation.
3. Provide quotations from suppliers for any specially ordered equipment.

C. Material costs shall be actual costs to the contractor, obtaining the materials through normal supply channels, including trade and quantity discounts. Utilizing "suggested pricing" from national pricing organizations for unit costs shall not be accepted. Upon request, the contractor or subcontractor shall submit evidence to substantiate the costs.

D. Labor units shall be industry accepted standard labor hours to perform one unit of work. If the work is being performed in a location that is not considered to be standard working conditions for that specific task, additional labor shall be itemized.

E. Labor rates shall be the actual rate paid for the workman category along with associated labor burden. Labor burden shall consist only of the mandatory fringe benefits, labor taxes, and labor insurances as affected by payroll. The owner reserves the right to reject any labor burden which is inconsistent with other similar contractors or where the fringe benefit cost is in excess of established labor agreements.

F. Allowable markups for contractor and subcontractors: Refer to Division 1. In absence of published allowable markups, as follows:

1. Overhead on work performed by own forces: 12% maximum.
2. Profit on work performed by own forces: 10% maximum.
3. Commission on work performed by Subcontractors: 5% maximum.
4. Sales tax.
5. Bond and permit increases where applicable.
6. No additional markups shall be allowed for:
   a. Field and/or office supervision/administration time.
   b. Tool burden.
   c. Shop burden.
   d. Overhead/Profit applied to work performed by others.
7. Additional costs for travel and subsistence shall only be allowed if the proposal includes a request for extension of the completion date. Furthermore, those costs shall be proportional to the number of working days of the extension.

G. Subcontractors shall compute their costs in the same manner as the contractor. Subcontractors are subject to the same markup constraints as described herein.

H. For changes resulting in credit to the costs, no restocking fees for materials shall be applied by the contractor or subcontractors.

1.7 QUALITY ASSURANCE

A. Qualifications of Installers

1. For installation and testing, use only trained licensed and experienced workmen familiar with items required and manufacturer's recommended methods.
2. In acceptance or rejection of installed work, no allowance will be made for lack of skill on the part of the workmen.

3. Medical Gas Piping Installers shall be certified as Class One Installers and provide proof of certification enclosed within their bid form packet.

1.8 AUTHORITIES AND AGENCIES

A. Materials, workmanship and installation: comply with the latest editions of all applicable codes, local ordinances, industry standards, utility company regulations, insurance carrier requirements and these Specifications.

B. Obtain and pay all permits, inspections, licenses and other charges pertaining to the Work. Upon completion of the Work, furnish proof of acceptance by proper agency having jurisdiction.

C. Codes and standards shall include, but not necessarily be limited to, the following:

1. International Energy Conservation Code (IECC);
2. Uniform Plumbing Code;
3. North Dakota State Building Code;
4. International Building Code (IBC);
5. International Mechanical Code (IMC);
6. International Fuel Gas Code (IFC);
7. National Fire Protection Association (NFPA) – Sections as adopted by authority having jurisdiction.

D. The more stringent provisions shall govern where provisions of pertinent codes and standards conflict with these Specifications or Drawings. Where Codes, Specifications or Drawings differ with one another, the Contractor will be deemed to have bid the more expensive method. Refer all such discrepancies to the Engineer immediately.

1. Pertinent codes and standards shall not be cited to furnish less than specifically shown or specified.
2. Meeting the minimum standards of the above Codes does not permit a lower grade of construction where Plans or Specifications call for workmanship or materials in excess of Code Requirements.

E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

1.9 GUARANTEE AND WARRANTY

A. Except where otherwise noted, contractor shall guarantee materials, workmanship and the proper operation of equipment for a period of one year after Owner's beneficial use of the building or mechanical system. Contractor shall correct all equipment, material and workmanship found to be defective or non-conforming to the contract documents without cost to Owner during that one year period.

B. Guarantee shall include trips to the project site by Contractor to adjust mechanical equipment as required, ensuring it is operating as intended.

C. Specified guarantee shall not relieve Contractor from liability arising from improper installation or non-compliance with applicable codes.

1.10 TEMPORARY FACILITIES

A. Refer to Special Conditions and/or Division 1 for details of temporary facilities.

1.11 NOMENCLATURE

A. Pipe sizes listed are nominal pipe sizes throughout this Division except where otherwise noted.

1.12 ASBESTOS

A. Construction area DOES contain asbestos. Existing insulation on pipe elbows and fittings, structural fire-proofing, floor tiles and various ceiling tiles are known to contain asbestos fibers. The Contractors shall avoid the disturbance of asbestos-containing building components. Contractor is assumed to be knowledgeable about all Federal, State, and Local requirements with respect to asbestos issues. Verify with Owner's "Asbestos Survey and Management Plan" the extent of any existing asbestos within the construction area or elsewhere on site.

B. All asbestos on piping that is to be removed and on boilers will be removed by Asbestos Abatement Contractor prior to this work.

PART 2 - PRODUCTS

2.1 MATERIAL

A. Material and equipment shall be as shown or specified. Provide material not specifically described but required for a complete and proper installation of the Work, subject to the acceptance of the Engineer.

B. Owner will not be liable for material installed in non-compliance with codes, standards, and these Contract Documents.

C. Fire Stop System material shall be by 3M "Fire Barrier", Metacaulk, Hilti, Nelson Firestop Products, or AD Fire. See Division 07 for further details on approved materials.

2.2 ELECTRIC WIRING

A. The Division 23 Contractor shall furnish all motors, special controls and electrical devices as specified herein for proper operation of the equipment furnished.

B. Division 26 Contractor shall furnish and install, as required, disconnects, starters, switches, etc., and do all necessary power and control wiring including the installation of electrical devices such as thermostats, humidistats, remote control panels, etc., furnished separately by Division 23 Contractor, unless otherwise noted in Equipment Specifications or noted in Section 230900.

PART 3 - EXECUTION

3.1 GENERAL

A. Engineer, Architect, or Owner shall not be responsible for the means, methods, techniques, sequences or procedures of construction selected by Contractor.

B. Engineer, Architect, or Owner shall not be responsible for safety precautions and programs incidental to work of Contractor.

C. It is the sole responsibility of Contractor to initiate, maintain, and supervise all safety precautions and programs in connection with the Work.

D. In general, it is intended that ductwork and piping be installed parallel to building lines, unless otherwise shown on the Drawings, and that equipment be located symmetrical with the architectural elements of the building.

E. Division 23 Contractor is to notify the Owners Staff of any work that may involve temporary disabling of the Fire Alarm System at least 1 week prior to the work occurring.

3.2 SURFACE CONDITIONS

A. Prior to work of each Section of Division 23, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Verify that work of this Division may be installed in accordance with all pertinent codes, regulations and standards.

3.3 PRODUCT HANDLING

A. Protection: Use all means necessary to protect the materials of this Division before, during and after installation and to protect the installed work and materials of all other trades.

B. Plugs: Install in ends of uncompleted piping at end of each day or when work stops.

C. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Engineer and at no additional cost to the Owner.

3.4 COORDINATION

A. Order equipment and material in a timely fashion to assure it is on the job site when required.

B. Coordinate installation of material with schedule of other trades to prevent unnecessary delay in construction schedule.

C. Division 23 piping, duct and equipment installations shall comply with National Electrical Code requirements 110.26 "working spaces" and "dedicated spaces". Mechanical ducts and pipes shall not be installed in the space near electrical panels/equipment defined as "working spaces" or "dedicated spaces".

3.5 DISCREPANCIES, CONSTRUCTION CONFLICTS AND DRAWINGS

A. Discrepancies

1. Prior to submitting bid, Contractor shall refer any apparent discrepancies or omissions to Engineer for clarification.
2. The Architect, Engineer or Owner will not be responsible for any oral instructions or modifications to the contract documents prior to opening of bids.
3. Written interpretation or clarification will be made by Addenda.

B. Construction Conflicts

1. Conflicts discovered during construction shall be immediately called to the attention of the Engineer for decision.
2. Do not proceed with installation in area of question until conflict has been fully resolved.

3. When so directed by Engineer, Contractor shall make minor adjustment to avoid interferences with other trades. Such minor adjustments shall be performed at no additional cost to the Architect, Engineer or Owner.

C. Drawings

1. Drawings indicate extent and general layout of mechanical systems for project. Due to small scale, it is not possible to indicate all fittings and accessories that may be required. Provide such fittings and accessories as required to form a complete and operating system in general conformance with Specifications and Drawings.
2. Exact locations, distances, levels and other conditions will be governed by the structure. Field measurements shall take precedence over the Drawings. Use the Drawings and these Specifications for guidance. Secure the Architect's approval for all changes in locations.
3. Verify all measurements at site. No compensation will be made because of difference between locations shown on the Drawings and measurements at the building.
4. Refer to the architectural drawings for dimensions and locations of walls, partitions, doors, windows, ceiling heights, door swings and other details of construction.

3.6 UNDERGROUND UTILITIES

A. Locations of existing underground utilities are based on available site information and are shown approximately. Contractor shall determine exact utility locations before commencing work and shall be responsible for repair of damages resulting from his construction activities to pre-construction condition.

B. Trench and backfill for installation of underground piping to depth shown or required. Remove any accumulated water in excavation by pumping. Shore and brace excavation as required by safety regulations. Provide temporary bridges to maintain normal traffic flow. Excavation and backfill required by mechanical installations shall be accomplished in accordance with Division 31 Specifications by this Contractor.

3.7 REMOVAL AND/OR REUSE OF EXISTING MATERIALS AND EQUIPMENT

A. Existing equipment, which is indicated as being removed and not indicated for reuse, shall remain the property of the Owner, stored as directed. Any material the Owner does not wish to retain shall be removed and disposed by the Contractor.

B. Contractor shall assume in his Bid that existing equipment and materials shown to be reused are in good working condition and can be installed without any repairs. If certain items are found to be in need of repair or in unusable condition, Contractor shall notify the Engineer for decision, however, Contractor shall be responsible for any damage by his personnel to equipment in removal or handling.

C. All refrigeration equipment and piping to be removed or relocated shall have the refrigerant removed prior to removal or demolition. Removal and reclamation of refrigerant shall be done by qualified, trained and certified refrigeration technicians. Certification shall meet all requirements as set forth by Section 608 of the Clean Air Act Amendments. Contractor shall use approved recovery and reclaiming equipment and approved containers for refrigerant storage. Flashing refrigerant gas to atmosphere is strictly prohibited.

D. Material and other equipment removed and to be reused shall be cleaned before reinstallation.

3.8 OFFSETS

A. Where required to allow clearance of electrical conduit and outlet boxes, beams, etc., to avoid interference with work of other trades, to increase head room under mechanical systems or to improve the appearance of mechanical systems work, this Contractor shall offset his mechanical system as directed by the Architect/Engineer.

3.9 CUTTING AND PATCHING

A. Refer to General Conditions. Unless specifically called out to be performed by other Contractors, the Division 23 Contractor shall perform all cutting and patching required for the installation of material and equipment furnished under his Contract.

B. Opening/holes cut to allow passage of ducts and pipes through concrete floor shall be patched by the Contractor doing the cutting unless indicated otherwise on the Drawings.

C. Fire-Barrier Penetrations

1. Pipe penetrations through fire rated walls and floors shall be sealed with a UL classified Fire Stop System. Fire Stops shall be provided in accordance with the appropriate System No. as it relates to pipe size/Material and wall or floor rating/material.
2. See Specification Section 230510 for other Fire-Barrier Penetration requirements.
3. See Section 2 article “Materials” of this Specification for approved fire stop system material.

D. Openings between ductwork and fire rated walls and floors shall be sealed with fire rated caulking or steel collars on both sides of wall or floor.

E. Restore damaged surfaces to their original condition by skilled mechanics of the trade involved. Contractor at fault shall assume all cost.

F. Use only rotary type drilling tools to cut concrete.

G. Do not endanger the stability of the structure. Do not at any time cut or alter work of any other Contractor without Architect's consent.

3.10 FIELD QUALITY CONTROL

A. Perform field tests and inspections. Test new piping and parts of existing piping that have been altered, extended, or repaired.

B. Ceiling Inspection: An above ceiling inspection by the Architect/Engineer shall take place prior to the installation of the ceiling, to ensure that everything is properly sealed, accessible, and fire sealed if required.

C. Low Pressure Hydronic Piping Tests: Maintain constant pressure.

1. Pressure: Minimum of 100 psig.
2. Duration: One hour.

D. Gas Piping Tests:

1. Test gas piping as required by the Authority Having Jurisdiction or the Utility Company.
2. Do not enclose, cover, or put piping into operation until it has been inspected and approved by authorities having jurisdiction.

E. Repair leaks and defects with new materials, and retest piping or portion thereof until satisfactory results are obtained. Piping will be considered defective if it does not pass tests and inspections.

3.11 STARTING AND ADJUSTING

A. Start equipment and operating components to confirm proper operation. Remove malfunctioning units, replace with new units, and retest.

B. Adjust equipment for proper operation. Adjust operating components for proper operation without binding.

C. Test each piece of equipment to verify proper operation. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

D. Hydronic Systems shall be adjusted as follows:

1. The Plumbing and Heating Contractor shall submit a report of the hydronic system balancing certifying the following:
    a. Each flow fitting location by name, the specified GPM and the actual measured GPM.
    b. For each pump, indicate location and service, nameplate, flow and head, actual flow (GPM) and head (Ft.), motor amperage (rated and actual).

E. Air Systems shall be adjusted as follows:

1. The ventilation and/or cooling system installed by this Contractor shall be tested and adjusted by this Contractor to demonstrate that the system performs as intended and that the air quantities, as shown on the Drawings, can be met. Balancing will be primarily done at the fans by adjustment of fan speeds to achieve the desired air flow.
2. Volume dampers, air extractors and splitter dampers shall be adjusted to obtain the required air flow in the branch ductwork. Adjustment of dampers at the neck of registers and diffusers will be done only for final trim balancing of the system. All final air quantities shall be plus or minus 10% of the figures shown on the Drawings.
3. A complete Balancing Report shall be submitted to the Engineer upon job completion to indicate the following:
    a. Register or diffuser location, rated CFM and actual CFM.
    b. Air handler rated and actual CFM, rate and actual motor amperage, fan RPM and system static pressure.
    c. Exhaust or supply fan rated and actual CFM, fan RPM and system static pressure, motor rated and actual amperage.

F. Leak Testing of Ductwork:

1. Leak testing of ductwork shall be performed by Division 23 contractor. The balancing shall provide a Ductwork Leak test kit with fan to the Division 23 contractor prior to ductwork installation for testing during the installation process.

3.12 CLEANING

A. Clean interior of duct and piping systems. Remove dirt and debris as work progresses.

B. The hydronic water systems shall be cleaned as follows:

1. The Division 23 Contractor shall arrange for the services of the local area Chemsearch or Garrett-Callahan water treatment specialist to help with chemically cleaning the new piping systems.
2. Division 23 Contractor shall utilize Garrett-Callahan Formula 247 to degrease, descale and generally clean the piping according to the recommendations of the company specialist. After completion of this work, the Contractor shall add the proper quantity of Garrett-Callahan Formula 12L corrosion inhibitor or provide a Nitrite residual of 500-1000 ppm. Equivalent products by Chemsearch, Dearborn, Brentag, or Agassiz Chemical are acceptable.

C. The boilers and steam system shall be cleaned as follows:

1. This Contractor shall furnish, at his expense, trisodium phosphate, one pound for each fifty (50) gallons of water in the heating system. Fill, vent and circulate the system with this solution with the boiler being operated so as to produce design temperature. Equivalent Industrial Alkaline Cleaner products in liquid or powder form by Dearborn, Pristine Hydro-chemical, Agassiz Chemical or Stein's Inc. are acceptable. After circulation for a few hours, the system should be drained completely and refilled with fresh water and proper glycol concentration, if specified. The system, when refilled, should give an alkaline reading (PH between 7 and 8). The Contractor shall, at his expense, provide a test kit for determining the PH of the water.

3.13 INSTRUCTIONS

A. Provide written and oral operating and maintenance instructions to Owner's representatives. The oral instructions shall be given before the Owner occupies the buildings. Instructions to include **all** building's mechanical systems and equipment.

B. Copies of written operating and maintenance instructions shall be included with each Record Manual.

C. Division 23 Contractor shall coordinate with Owner at Owner's convenience, formal instruction time for contractor personnel to instruct Owner's Representatives on all equipment. Provide similar equipment supplier's instructions where specified thus.

D. Formal instructions shall be video recorded when required by other Sections of this Specification by this Contractor. Format shall be DVD. Formal instruction to be included with each Record Manual, being referenced to and a part of the Manual.

3.14 CLEAN UP

A. Each Contractor shall be responsible for cleaning up after his work, including the removal of all scrap material left on the job by his men or Subcontractors. This will include the removal of all pipe and sheet metal cuttings, pieces of sheet metal, pipe, and insulation and other debris.

B. Clean all heating units, clean and straighten fins on all coils, clean scale, dirt or debris off piping, motors, etc., oil or grease all motors, fan bearings, pump gear boxes, etc., and leave in a clean best possible working condition. Install clean filters in ventilation system prior to turning job over to Owner.

C. After all tests have been made and the mechanical systems are operating properly, this Contractor shall go over the entire system and remove labels from all mechanical equipment.

D. All equipment having finished paint surfaces shall be examined upon completion for scratches and other damage. Touch up all surfaces as required with paint of color to match factory finish.

E. Perform all cleaning as required by other Sections of Division 23.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes control sequences for monitoring the new outdoor above ground fuel oil tank level and interstitial leak detection monitoring.

B. See Section 230900 "HVAC Controls" for control equipment and devices and for submittal requirements

1.2 ABBREVIATIONS

A. The following abbreviations may be used in this specification.

1. ATC: Automatic temperature controls contractor.
2. BAS: Building automation system.
3. DAT: Discharge air temperature.
4. SAT: Supply air temperature.
5. RAT: Return air temperature.
6. OAT: Outdoor ambient temperature.
7. SWT: Supply water temperature.
8. RWT: Return water temperature.
9. CWS: Chilled water supply.
10. CWR: Chilled water return.
11. HPS: Heat pump supply water.
12. HPR: Heat pump return water.
13. VFD: Variable frequency drive.
14. Occ/Unocc: Occupied/Unoccupied.
15. Temp: Temperature.
16. User adj: User adjustable.

PART 2 - PRODUCTS (N/A)

PART 3 - EXECUTION

3.1 ALARM MANAGEMENT AND CONTROL

A. Description: Prioritization of alarms according to category.

B. Alarm Categories:

1. Faults: Highest priority alarm. Unit shutdown until condition is gone and fault is manually cleared.
2. Problems: Unit operation is modified to compensate and alarm automatically clears when the condition is gone.
3. Warnings: Lowest priority alarms. Alarm is indicated to alert operator of condition that needs attention.

C. Alarm Annunciation: Provide page to display all alarms from all equipment for operator to check on regular basis.

1. Faults: Screen message text, email, pagers, graphic with flashing alarm objects, SMS texting, and/or other method selected by owner.

2. Problems: Screen message text, flashing graphic, and/or other method selected by owner.
3. Warnings: Flashing graphic on equipment page.

3.2 OUTDOOR 15,000 GALLON FUEL OIL TANK - (ADDENDUM #1)

A. Description: Fuel oil tank level monitoring and interstitial leak detection monitoring.

1. The owner has an existing Franklin Fueling Systems fuel tank monitoring system that is currently in service and is monitoring their existing (3) three 500 gallon below grade tanks. This contractor or a contractor that is familiar and qualified to work on these types of systems shall disconnect and salvage the existing monitoring devices in the existing tanks prior to demolition of those tanks and provide monitoring for the new 15,000 gallon above ground tank being provided under the scope of this contract.
2. Provide sensors, relays and conductors/wiring as required to connect into the associated devices either salvaged from the removed tanks and reinstalled or as new either provided with the new tank or provided by this contractor.
3. Provide reprogramming/recalibration of the existing head end system as required to work with the one single new larger fuel oil tank in lieu of the previous three smaller tanks.

B. Emergency Interstitial leak detection Sequence: Monitor interstitial space fuel detector provided with the tank, coordinate with the tank supplier to ensure they provide a sensor capable of operation with this fuel tank monitoring system.

1. Condition: Interstitial space detector indicates presence of fuel oil. Action: Trigger Problem alarm.
2. Condition: Interstitial space detector indicates no presence of fuel oil. Action: Indicate no leak detected.

C. Tank Level Sequence: Monitor the level of the tank via a new tank level indicator or a salvaged tank level indicator coordinate with the tank supplier to ensure there is a location to install and mount the level indicator device.

1. Condition: Monitor the level of the tank. Action: Display tank Level.
2. Condition: Tank gets to 1/4 contents left in tank. Action: Trigger problem Alarm.

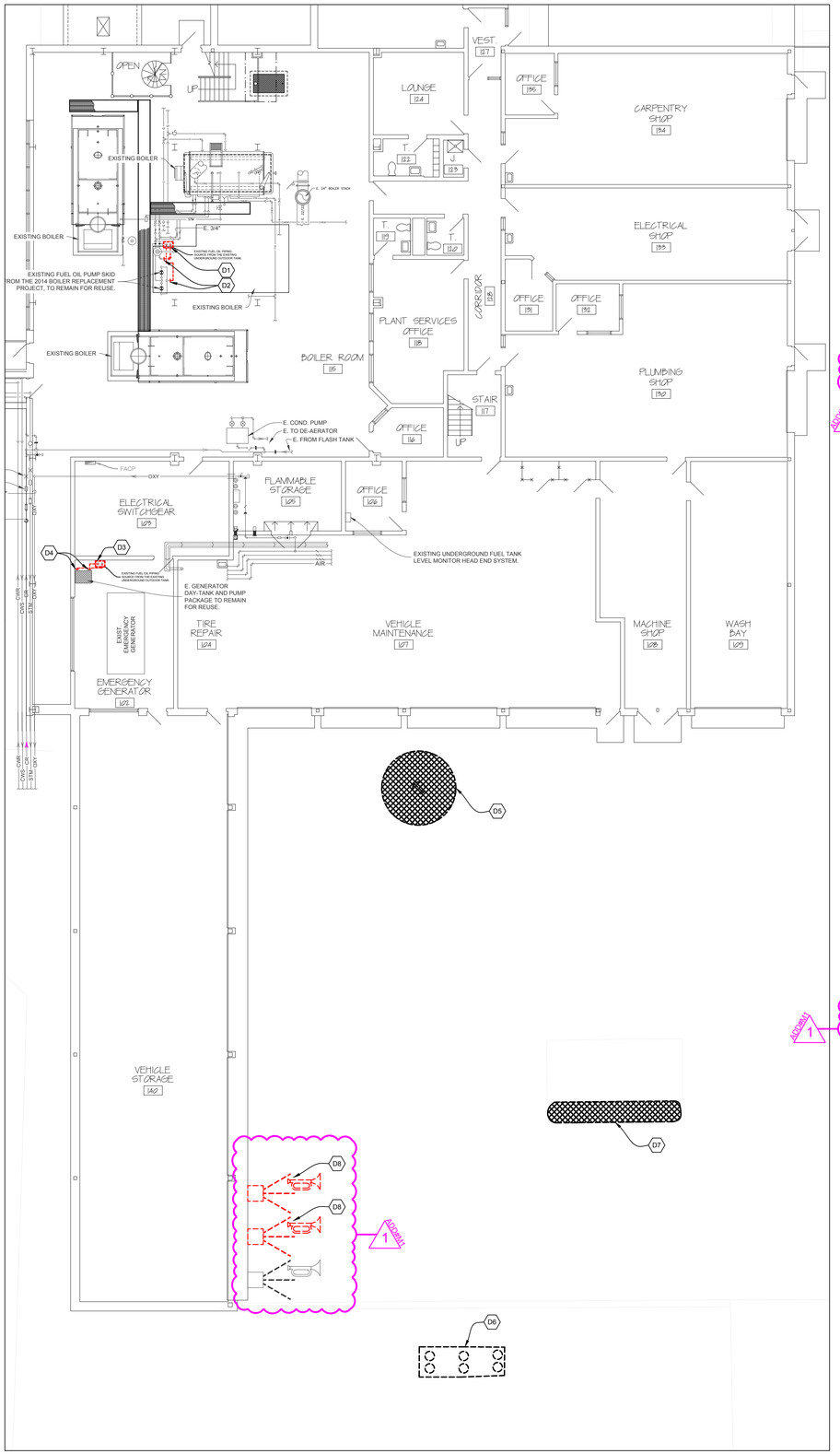
D. Digital ead End User Interface Display:

1. Tank Leak/No Leak.
2. Tank Level
3. Leak Alarm.
4. Low Tank Alarm.

E. Remote audio/visual indicators located on the southeast corner of the existing unheated storage building:

1. Disconnect and remove audio/visual indicators and associated signage no longer needed and turn over to the owner.
2. Reuse/reconnect into one of the audio/visual indicators for the new above ground tank and provide updated signage as required for the new tank.

END OF SECTION



MECHANICAL DEMOLITION KEYNOTES

D1 DISCONNECT THE EXISTING BOILER FUEL OIL SUPPLY AND FUEL OIL RETURN PIPING WHERE IT COMES UP THRU THE EXISTING CONCRETE FLOOR FROM BELOW GRADE AND WAS ROUTED TO THE EXISTING 14,500 GALLON FUEL TANK, BEING REMOVED BY OTHERS UNDER THIS PROJECT. VACUUM OUT ANY REMAINING FUEL OIL AND DISPOSE OF ACCORDING TO LOCAL REQUIREMENT. CAP THE PIPING AT THE FLOOR LEVEL AND TAG PIPING AS **"FUEL OIL ABANDONED-IN-PLACE 2026"** SEE THE MECHANICAL SITE DEMOLITION PLAN FOR FUEL OIL PIPING ABANDONMENT/REMOVAL ON THE EXTERIOR OF THE BUILDING IN CONJUNCTION WITH EXISTING BELOW GRADE FUEL OIL TANK REMOVAL.

D2 REMOVE THE EXISTING FUEL OIL PIPING TO APPROXIMATE LOCATIONS INDICATED ON THE PLAN FOR RECONNECTION WITH NEW FUEL OIL PIPING. VERIFY EXACT LOCATIONS WITH ACTUAL CONDITIONS.

D3 DISCONNECT THE EXISTING EMERGENCY GENERATOR FUEL OIL SUPPLY AND FUEL OIL RETURN PIPING WHERE IT COMES UP THRU THE EXISTING CONCRETE FLOOR FROM BELOW GRADE AND WAS ROUTED TO THE EXISTING 14,500 GALLON FUEL TANK, BEING REMOVED BY OTHERS UNDER THIS PROJECT. VACUUM OUT ANY REMAINING FUEL OIL AND DISPOSE OF ACCORDING TO LOCAL REQUIREMENT. CAP THE PIPING AT THE FLOOR LEVEL AND TAG PIPING AS **"FUEL OIL ABANDONED-IN-PLACE 2026"** SEE THE MECHANICAL SITE DEMOLITION PLAN FOR FUEL OIL PIPING ABANDONMENT/REMOVAL ON THE EXTERIOR OF THE BUILDING IN CONJUNCTION WITH EXISTING BELOW GRADE FUEL OIL TANK REMOVAL..

D4 REMOVE THE EXISTING GENERATOR FUEL OIL PIPING SERVING THE EXISTING DAY-TANK/PUMP PACKAGE TO APPROXIMATE LOCATIONS INDICATED ON THE PLAN FOR RECONNECTION WITH NEW FUEL OIL PIPING. VERIFY EXACT LOCATIONS WITH ACTUAL CONDITIONS.

D5 EXISTING BELOW GRADE 500 GALLON WASTE OIL TANK WILL HAVE ANY WASTE OIL EVACUATED AND THE TANK WILL REMAIN IN PLACE AND BE FILLED WITH INERT MATERIAL BY DIV. 31.

D6 EXISTING BELOW GRADE THREE (3) 500 GALLON PETROLEUM TANKS SERVING THE FUEL DISPENSING ISLAND REMOVED BY DIV. 31.

D7 EXISTING FUEL ISLAND DISPENSER FUEL PUMPS REMOVED BY DIV. 31.

D8 UNDER ADD **ALTERNATE #1** THE MC/ATC SHALL OMIT THE EXISTING AUDIO/VISUAL ALARMS NO LONGER NEEDED.

ADDEND 1

MECHANICAL KEYNOTES

M1 ROUTE NEW 1" FUEL OIL SUPPLY/RETURN PIPING AS REQUIRED TO CONNECT INTO THE EXISTING FUEL OIL PIPING TO FEED THE EXISTING BOILERS AT THE APPROXIMATE LOCATION INDICATED ON THE PLAN. VERIFY THE EXACT LOCATION OF THE RECONNECTION WITH ACTUAL SITE CONDITIONS, PROVIDE SHUT-OFF VALVES & FLEX CONNECTORS IN BOTH FUEL OIL SUPPLY/RETURN PIPING AND A CHECK VALVE IN THE FUEL OIL SUPPLY PIPING CONNECTION.

M2 ROUTE NEW 1" FUEL OIL SUPPLY/RETURN PIPING AS REQUIRED TO CONNECT INTO THE EXISTING FUEL OIL PIPING TO FEED THE EXISTING EMERGENCY GENERATOR DAY TANK/PUMP PACKAGE AT THE APPROXIMATE LOCATION INDICATED ON THE PLAN. VERIFY THE EXACT LOCATION OF THE RECONNECTION WITH ACTUAL SITE CONDITIONS, PROVIDE SHUT-OFF VALVES & FLEX CONNECTORS IN BOTH FUEL OIL SUPPLY/RETURN PIPING AND A CHECK VALVE IN THE FUEL OIL SUPPLY PIPING CONNECTION.

M3 EVACUATE ANY EXISTING FUEL OIL IN THE EXISTING BELOW GRADE FUEL OIL PIPING AND CAP PIPING AND TAG THE PIPING IS INDICATED IN THE DEMOLITION NOTES.

M4 NEW FUEL TANK, TANK ACCESSORIES, AND ALL ASSOCIATED FUEL OIL PIPING SHALL BE BY THE M.C. SEE DETAILS AND SCHEDULE FOR ADDITIONAL INFORMATION. COORDINATE THE TANK INSTALL AND TIMING WITH THE G.C. ALL SITE WORK, EXCAVATION, CONCRETE, BOLLARDS ETC IS BY THE G.C. THE M.C. SHALL COORDINATE ALL ELECTRICAL POWER REQUIREMENTS WITH THE E.C.

M5 PIPE SUPPORTS LOCATED ON THE CONCRETE MOW STRIP. COORDINATE EXACT LOCATION WITH ACTUAL SITE CONDITIONS. ROUTE PIPING OVER THE TOP OF THE NEW RETAINING WALL. SEE THE PIPE SUPPORT DETAIL FOR ADDITIONAL INFORMATION.

M6 ROUTE PIPING FUEL OIL PIPING UP THE SIDE OF THE EXISTING POURED CONCRETE WALL SECURE TO WALL WITH UNI-STRUT. PENETRATE THRU THE WALL AT A HEIGHT ABOVE THE EXISTING OVERHEAD DOOR TRACK AND SUPPORT PIPING FROM THE STRUCTURE. COORDINATE HEIGHT OF PIPING WITH ACTUAL EXISTING CONDITIONS. SEAL PIPE PENETRATIONS WEATHER TIGHT

M7 PENETRATE THRU THE EXISTING BRICK/CONCRETE BLOCK WALL WITH THE NEW FUEL OIL PIPING, SEAL PENETRATION WITH APPROVED UL LISTED FIRE CAULK SYSTEM.

M8 PENETRATE THRU THE EXISTING CONCRETE BLOCK WALL WITH THE NEW FUEL OIL PIPING, SEAL PENETRATION WITH APPROVED UL LISTED FIRE CAULK SYSTEM.

M9 ROUTE ALL FUEL OIL PIPING TO THE APPROPRIATE TANK CONNECTION LOCATIONS. INSTALL ALL THE TANK ACCESSORIES (TANK FILL, HOSE REEL, VEHICLE/TRACTOR FILL NOZZLE ETC.) NOT ALREADY FACTORY INSTALLED. INSTALL AS REQUIRED PER THE INSTALLATION INSTRUCTION TO MAKE THE TANK AND ALL THE FUEL SYSTEMS A FULLY OPERATIONAL SYSTEM FOR TURN KEY OPERATION AND TURN OVER TO THE OWNER. BLEED ALL THE FUEL OIL PIPE TO ENSURE ALL AIR IS PURGED FROM ALL THE PIPING SYSTEMS PRIOR TO TURN OVER TO THE OWNER.

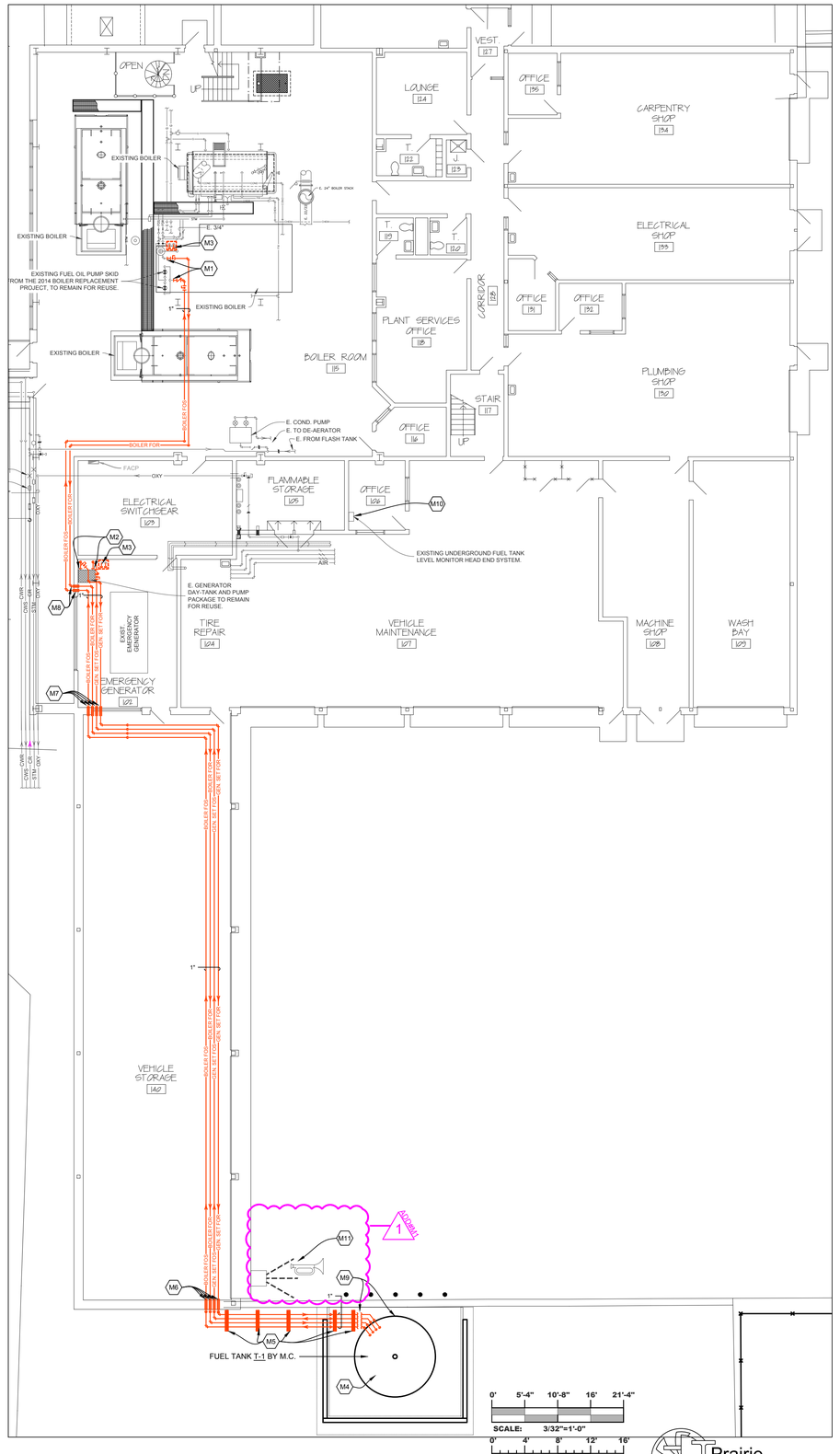
M10 UNDER ADD **ALTERNATE #1** THE MC/ATC SHALL WORK WITH THE THE OWNER AND SUPPLIER/MANUFACTURER OF THE ORIGINAL TANK LEVEL/LEAK DETECTION MONITOR TO DISCONNECT/OMIT THE TANK MONITORING FOR THE BELOW GRADE TANKS THAT ARE BEING EITHER REMOVED OR FILLED WITH INERT MATERIAL AND ROUTE NEW WIRING/CONDUCTORS/CONDUIT TO THE NEW ABOVE GROUND FUEL OIL TANK AND PROVIDE THE SENSORS, WIRING AND REPROGRAMMING OF THE HEAD END AS REQUIRED TO MONITOR THE LEVEL AND DOUBLE WALL TANK INTERSTITIAL SPACE LEAK DETECTION UNDER THE SCOPE OF THIS CONTRACT. INSTALL ALL CONDUIT/WIRING TO MEET ALL APPLICABLE CODES. SEE SPECIFICATION SECTION 230990 FOR ADDITIONAL INFORMATION.

M11 UNDER ADD **ALTERNATE #1** THE MC/ATC SHALL OMIT THE EXISTING AUDIO/VISUAL ALARMS NO LONGER NEEDED AND RECONNECT INTO ONE OF THE ALARMS FOR REUSE WITH THE NEW ABOVE GROUND TANK T-1

ADDEND 1

GENERAL MECHANICAL NOTES

A	COORDINATE ALL WORK WITH THE SCHEDULE OF REMOVAL IN THE SPECIFICATION OF DIVISION 31. COORDINATE ALL WORK WITH THE OWNER AND ALLOW THE OWNER 2 WEEKS NOTICE PRIOR TO SHUT DOWN OR DISCONNECTION OF ANY FUEL OIL SERVICE TO THE BOILERS OR THE EMERGENCY GENERATOR.
B	THIS CONTRACTOR SHALL COORDINATE HIS WORK WITH THE OTHER CONTRACTORS ON THE PROJECT AND INSTALL MECHANICAL SYSTEMS IN A MANNER WHICH WILL CONFORM TO STRUCTURE, KEEP PASSAGEWAYS AND OPENINGS CLEAR, PRESERVE HEAD ROOM, CLEAR LIGHT FIXTURES AND NOT COVER UP JUNCTION BOXES..
C	INSTALL PIPING TO PROVIDE THE MAXIMUM CLEAR HEIGHT UNDERNEATH UNLESS OTHERWISE NOTED.
D	THIS CONTRACTOR SHALL FIELD VERIFY LOCATIONS FOR ALL PIPING FOR THE INSTALLATION PRIOR TO FABRICATION.
E	THIS CONTRACTOR SHALL MAKE OFFSETS IN PIPING TO AVOID INTERFERENCE WITH OTHER TRADES, AT NO ADDITIONAL COST TO THE OWNER, WHEN SO DIRECTED BY THE ARCHITECT/ENGINEER.
F	PIPE ROUTING IS SHOWN WITH AN EXAGGERATED SPACING FOR CLARITY. ACTUAL PLACEMENT OF PIPING SHOULD BE DONE COLLECTIVELY AND IN SUCH A MANNER AS NOT TO CONFLICT WITH LOCATION SENSITIVE COMPONENTS SUCH AS LIGHT FIXTURES.
G	PROVIDE FIRE-STOP AROUND PIPE AND/OR DUCT PENETRATIONS THROUGH FIRE RATED FLOORS AND WALLS.
H	COORDINATE ALL EXISTING WALL PENETRATIONS AND SLEEVES WITHALL EXISTING CONDITIONS AND ADJUST LOCATIONS AS REQUIRED TO INTERFRENCE OR ROUTING OVER THE TOP OF ANY ELECTRICAL PANELS OR TRANSFORMERS OR EQUIPMENT.
I	PLUMBING CONNECTIONS TO EQUIPMENT SHALL BE PROVIDED WITH SHUT-OFF VALVES AND UNIONS TO FACILITATE SERVICING.



1 **MECHANICAL DEMOLITION PLAN**

SCALE: 3/32" = 1'-0"

2 **MECHANICAL REMODEL PLAN**

SCALE: 3/32" = 1'-0"

SCALE: 3/32"=1'-0"

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

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

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FUEL STORAGE REPLACEMENT

DOCR - NDSP - CENTRAL HEATING PLANT
3100 RAILROAD AVE, BISMARCK, ND 57501

Project No. 25585

I hearby certify that this plan, specifications, or report was prepared by me or under my direct supervision and that I am a duly Registered Engineer under the laws of the State of North Dakota.

REVISION SCHEDULE

REV. 1 - ADDENDUM #M1	MARCH 25, 2026

Issue Date MARCH 09, 2026
Drawn By | Checked By MJF | BAW

MECHANICAL DEMOLITION & REMODEL PLANS

M 103

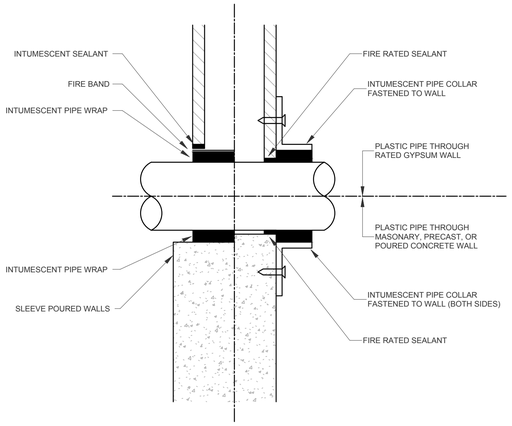
Sheet No.

231300 - FUEL OIL TANK SCHEDULE

SCHEDULE NOTES:

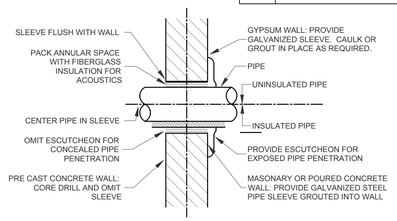
1. TANK SHALL BE A THERMALLY INSULATED W/FIREGUARD PRODUCT, VERTICAL DOUBLE-WALL FIRE PROTECTED LIGHTWEIGHT STEEL ABOVE GROUND STORAGE TANK.
2. A LIGHTWEIGHT MONOLITHIC THERMAL INSULATION MATERIAL SHALL BE PLACED IN THE TANK'S INTERSTITIAL SPACE BY THE MANUFACTURER. THE THERMAL INSULATING MATERIAL SHALL ALLOW LIQUID TO MIGRATE THROUGH THE INTERSTITIAL SPACE TO THE MONITORING POINT, INSULATING MATERIAL SHALL NOT BE EXPOSED TO WEATHERING AND SHALL BE PROTECTED BY THE STEEL SECONDARY CONTAINMENT OUTER WALL.
3. PROVIDE WITH FUEL DISPENSING KIT OPTION COMPLETE WITH VALVES, PSI RELIEF, FILTER HEAD AND ASSOCIATED FILTERS, PIPE AND ALL FITTINGS, 1" PIPE/HOSE SIZE.
4. PROVIDE WITH HOSE STORAGE KIT OPTION COMPLETE WITH 1" REELCRAFT SPRING REWIND REEL ASSEMBLY, 4' FLEX HOSE, HOSE BUMBER, ASSOCIATED MOUNTING BRACKETS/HARDWARE & PIPE FITTINGS.
5. PROVIDE WITH FILL KIT OPTION COMPLETE WITH OVERFLOW PROTECTION, 2" PIPE SIZE, FILL BOX ASSEMBLY, MOUNTING FLANGE ASSEMBLY AND HARDWARE, NOZZLE HOLDER AND HARDWARE, LEG ASSEMBLY AND HARDWARE, FLANGE GASKET AND BOLT KIT, SWING CHECK VALVE, FILL LINE BALL VALVE, QUICK COUPLER AND CAP, DRAIN BALL VALVE AND CAP, & ALL ASSOCIATED PIPE/FITTINGS.
6. PROVIDE WITH AN ANALOG FLOW METER WITH VISUAL INDICATION OF THE AMOUNT OF GALLONS DISPENSED INSTALL ALONG WITH THE FUEL DISPENSING KIT.
7. PROVIDE AN ADDITIONAL TWO (2) SETS OF 1" FUEL OIL SUPPLY, FUEL RETURN TANK CONNECTION POINTS TO CONNECT THE BOILER FUEL OIL SYSTEM AND THE EMERGENCY GENERATOR FUEL OIL SUPPLY AND RETURN PIPING.
8. PROVIDE WITH A 2 HORSEPOWER SUBMERSIBLE PUMP TO SERVE THE FUEL DISPENSING KIT W/ANTI-SIPHON DEVICE. PROVIDE WITH PRE-WIRED PRE-MOUNTED TANK SWITCH.
9. PROVIDE WITH LEAK DETECTION MONITOR SUITABLE FOR USE WITH FIREGUARD TANK, PROVIDE WITH MANUAL TANK GAUGE APPROPRIATE FOR THE TANK HEIGHT.
10. PROVIDE WITH ALL TYPICAL AND REQUIRED TANK VENTING (WORKING VENT, PRIMARY & SECONDARY EMERGENCY VENTS), MANWAY AND ASSOCIATED COVER, & LIFTING LUGS APPROPRIATE FOR TANK WEIGHT AND SIZE FOR SAFE TANK PLACEMENT.
11. PROVIDE ALL THREADING MOUNTING HOLES OR WELDED HANGERS THAT ARE REQUIRED TO MOUNT ALL OF THE SCHEDULED TANK ACCESSORIES SO THAT THEY ARE FACTORY MOUNTED/INSTALLED AND PAINTED AND READY TO ACCEPT THE ACCESSORIES.

MARK	MANUFACTURER	VOLUME (GALLONS)	U.L. LISTING	NFPA STANDARDS	STEEL TANK INSTITUTE STANDARD	TANK TYPE	INTERSTITIAL LEAK DETECTION MONITORING	FIRE RATING	BALLISTICS & IMPACT PROTECTION	TANK COLOR	NOTES
T-1	TRUE NORTH STEEL	15,000	2085	30 & 30A	F941	VERTICAL, DOUBLE WALL, ABOVEGROUND	YES	2 HOUR MINIMUM	YES, PER UL 2085	STANDARD WHITE	ALL

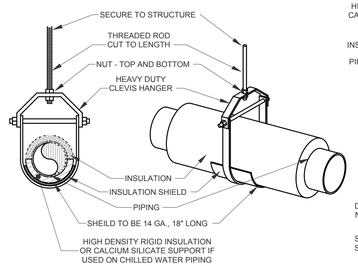


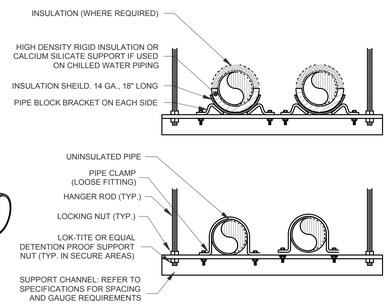
DETAIL NOTES:
1. DETAILS ARE TYPICAL OF BOTH SIDES OF THE RATED WALL.
2. FOR METAL PIPING: PROVIDE SLEEVES AND FIRE RATED SEALANT AS REQUIRED.
3. FOR INSULATED PIPING;P PROVIDE NON-FLAMMABLE INSULATION UNINTERRUPTED THROUGH THE RATED WALL WITH FIRESTOPPING MEANS INSTALLED ON THE OUTSIDE OF THE INSULATION.

1 **PIPE PENETRATION RATED WALL DETAIL**



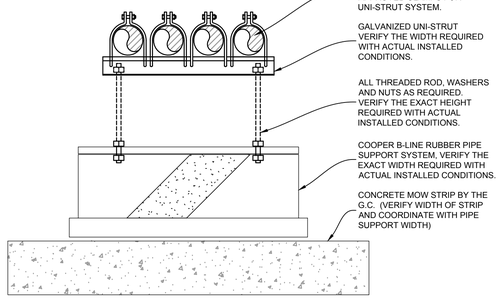
2 **PIPE PENETRATION NON-RATED WALL DETAIL**





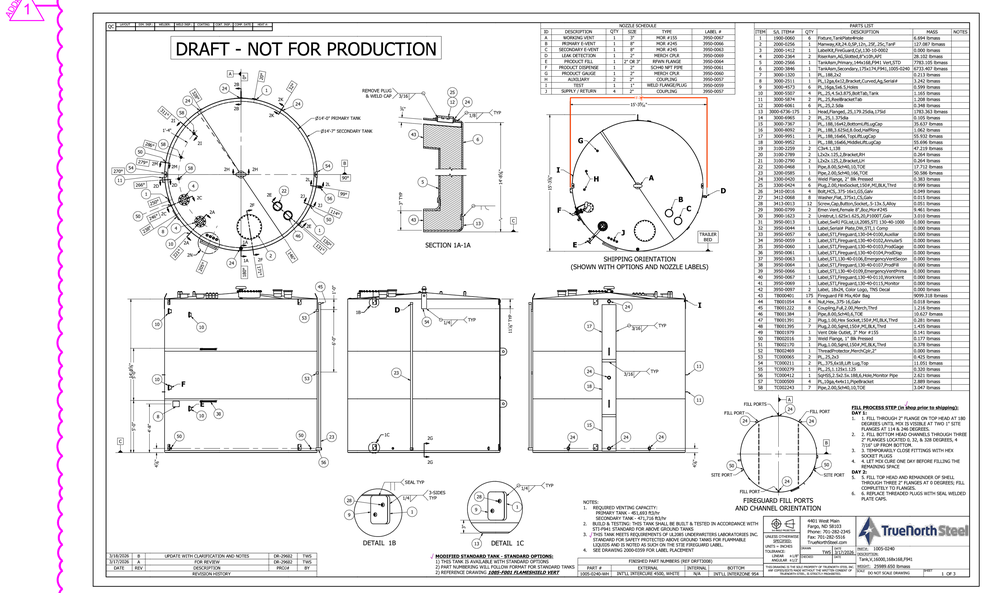
3 **PIPE HANGER DETAIL**

4 **PIPE TRAPEZE HANGER DETAIL**

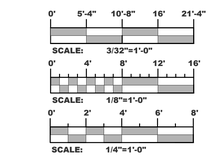


5 **OUTDOOR FUEL OIL PIPE SUPPORT DETAIL**

ADDENDUM 1



6 **FUEL OIL TANK MANUFACTURER CUTSHEET**



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REVISION SCHEDULE

REV. 1 - ADDENDUM #M1	MARCH 25, 2026

Issue Date MARCH 09, 2026
Drawn By | Checked By MJF | BAW

MECHANICAL SCHEDULES DETAILS

M 500

Sheet No.

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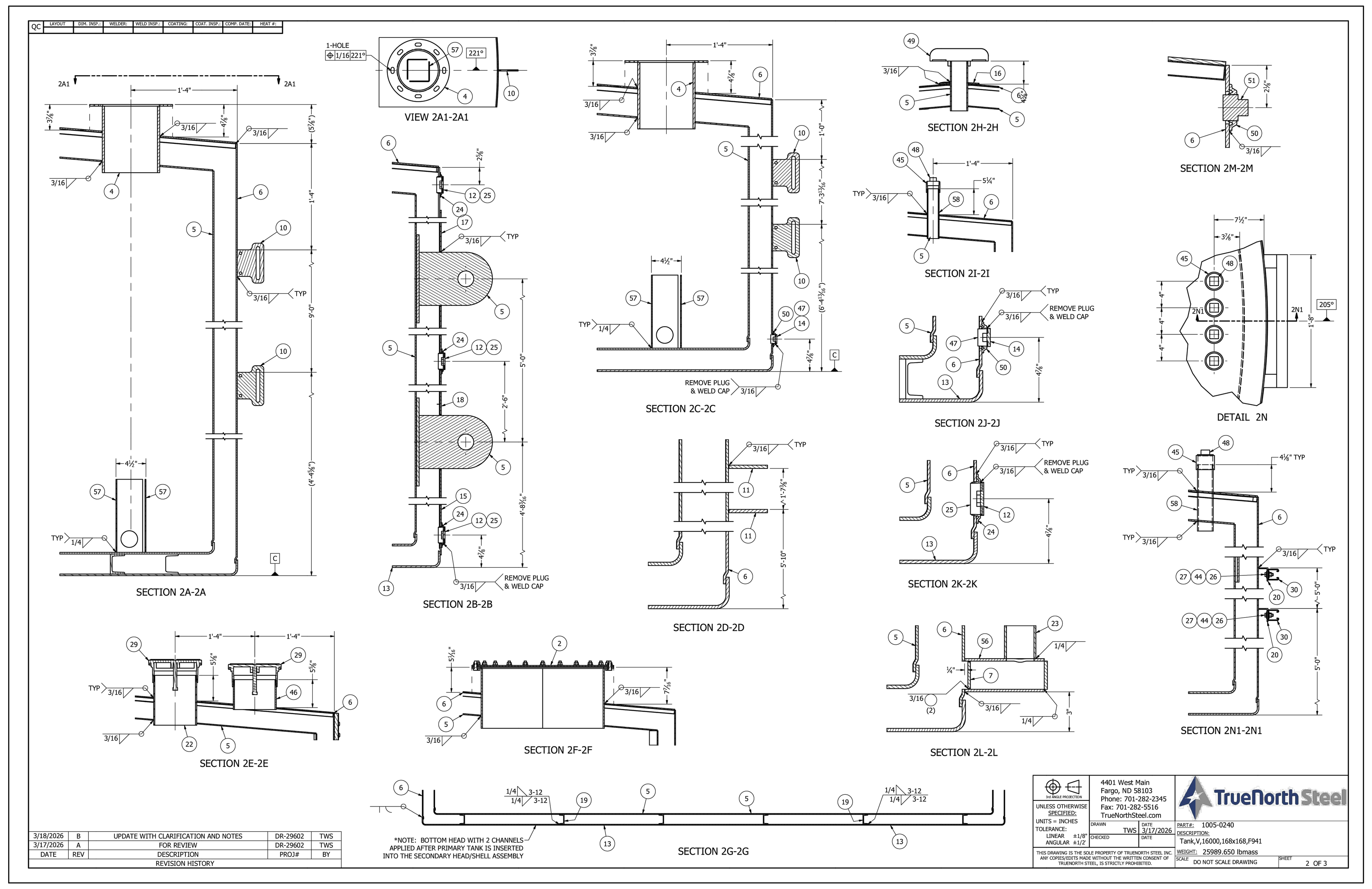
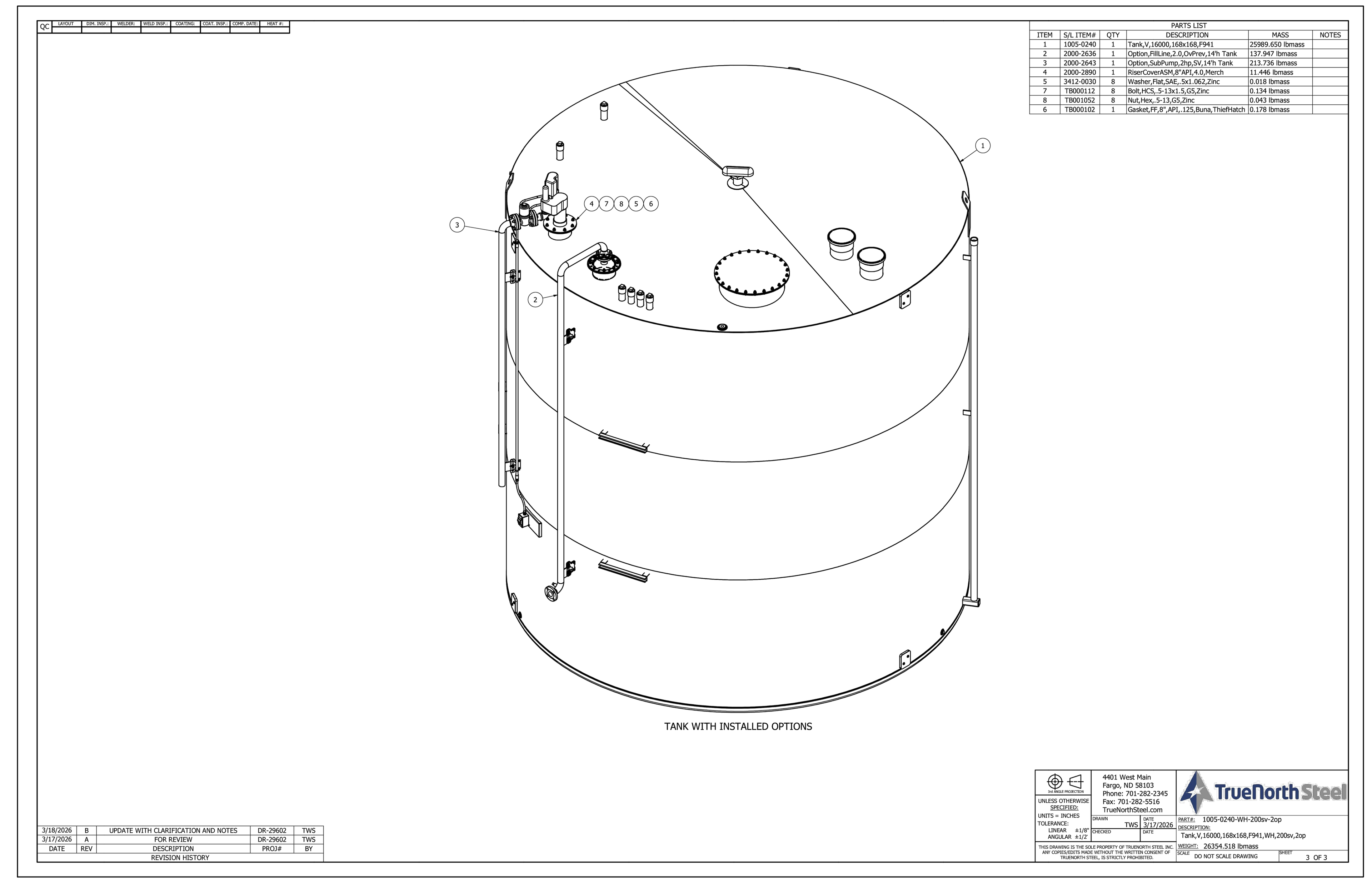
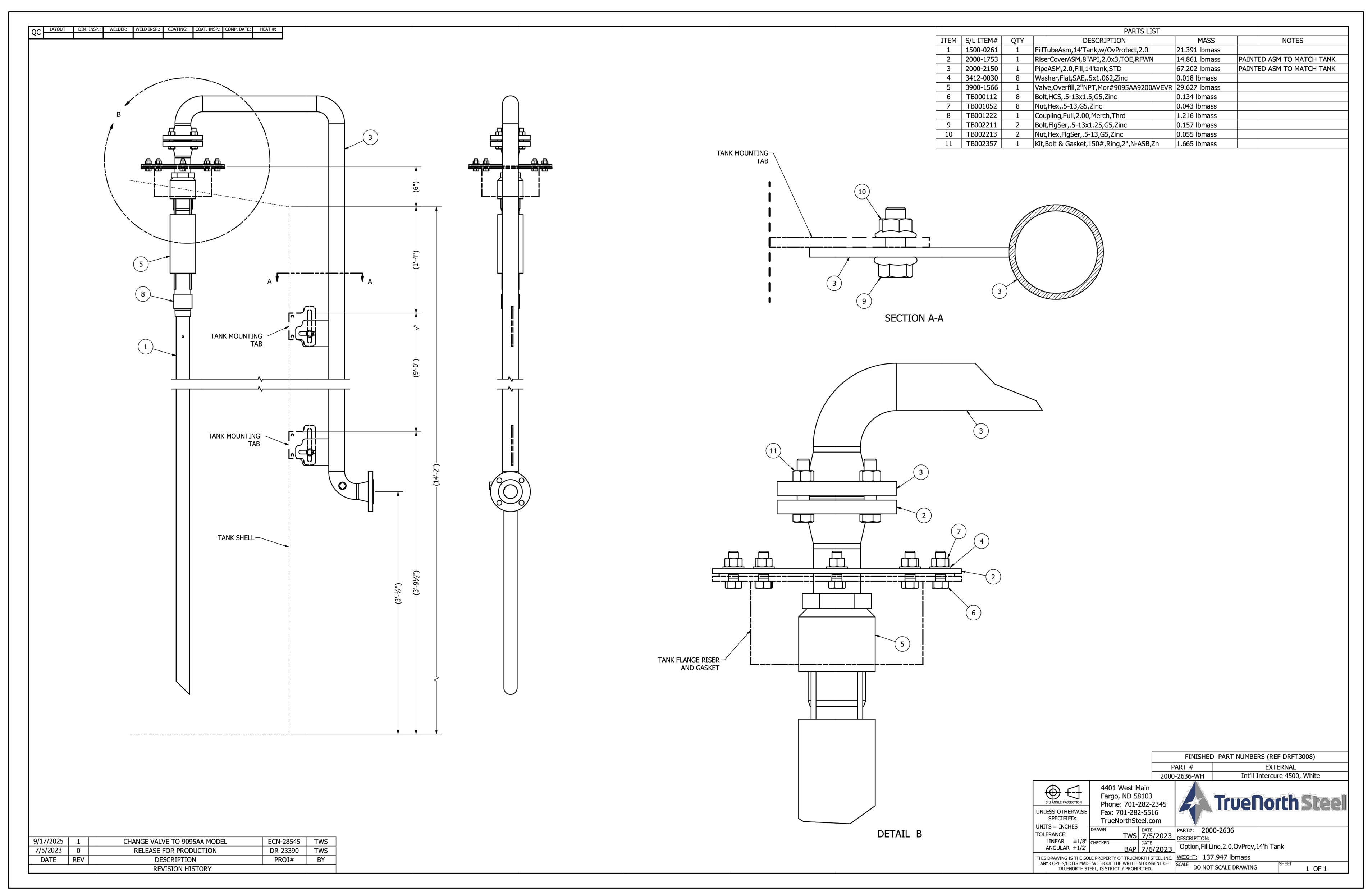


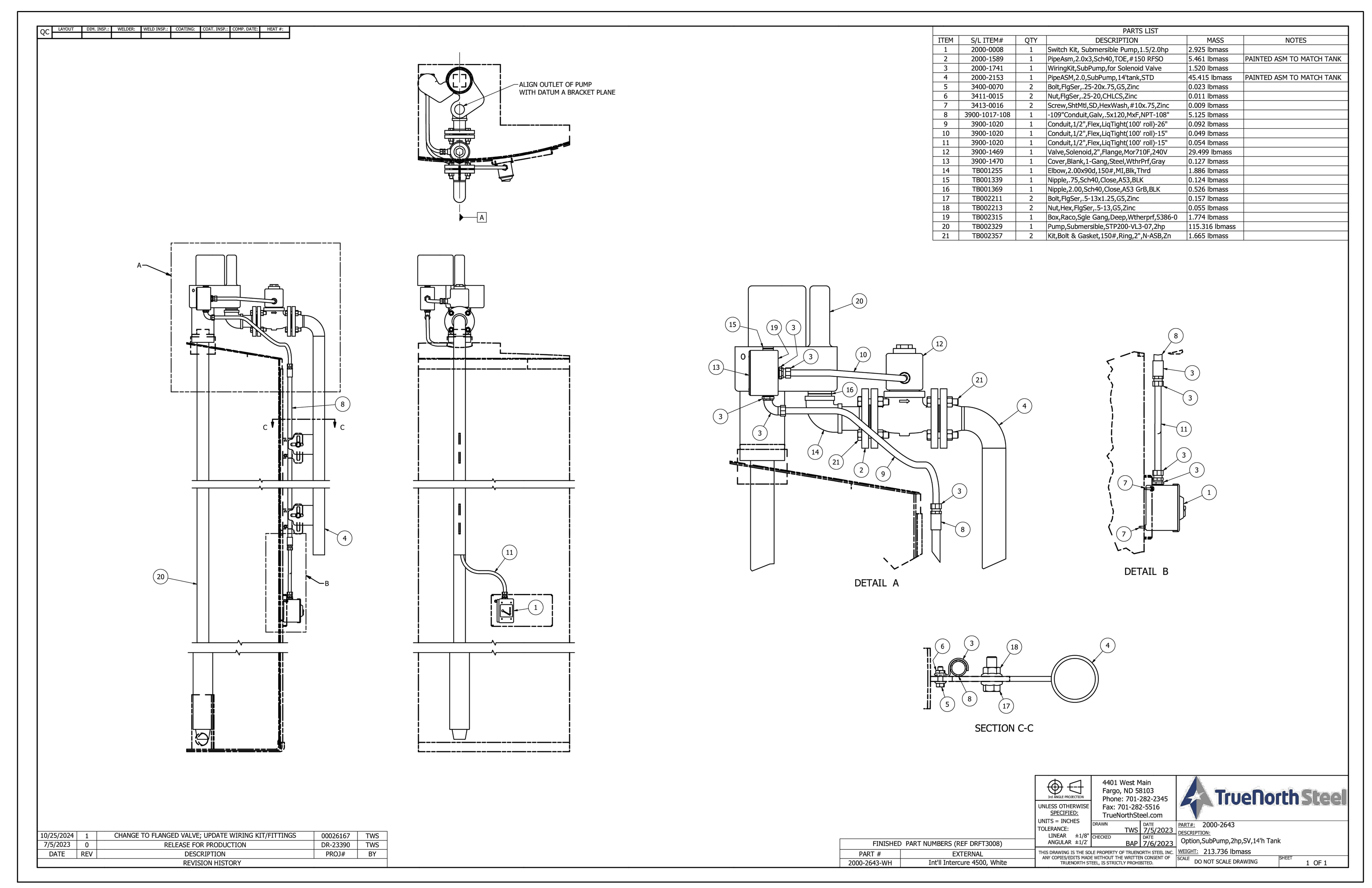
1 FUEL OIL TANK MANUFACTURER CUTSHEET



2 FUEL OIL TANK MANUFACTURER CUTSHEET



3 FUEL OIL TANK MANUFACTURER CUTSHEET



4 FUEL OIL TANK MANUFACTURER CUTSHEET

0' 5'-4" 10'-8" 16' 21'-4"
SCALE: 3/32"=1'-0"

0' 4' 8' 12' 16'
SCALE: 1/8"=1'-0"

0' 2' 4' 6' 8'
SCALE: 1/4"=1'-0"

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ADD#M1 1

MECHANICAL DETAILS

M 501

Sheet No.