

**Part 1            ADDENDUM NO.1**

**1.1                General**

- .1            This Addendum is issued prior to tender closing and shall become an integral part of the Tender, Specifications, Drawings and Contract Documents for this project.
- .2            In the event of conflicts between the various Contract Documents, the order of precedence shall be as stipulated in the General Conditions of the Contract, except that this Addendum shall take overall precedence.

**Part 2            Drawings**

- .1            The new ramp for the detachment is to be removed from the tender package. Delete ramp drawings A0.0, A0.1, A1.0, A2.0, A2.1 and S1 from the tender package.
- .2            Remove drawing M3.0 for Residence V002 and replace with the attached drawing M3.0
- .3            Remove drawing M3.0 for Residence V120 and replace with the attached drawing M3.0

**Part 3            Modifications and Clarifications**

- .1            All stainless steel clevis hangers are to be removed and replace with galvanized clevis hangers sizes as per drawings.
- .2            All tank stands and supports are to be galvanized.
- .3            It should be noted that the support details on sheet S4 may have to be site modified due to local conditions. Allow for the site adjustment of the tank of 2’-0” in any direction.
- .4            On drawing S3 Details A,B,C,D,E Galv. HSS 2 ½”x2 ½” x ¼” Collar to be changed to Galv. 2 ½” x 2 ½” x 1/8” to allow for the 2”x2”x1/4” vertical member to slide in more easily. Verify the fit prior to welding.
- .5            Structural steel supplier to ensure that all steel sections dry fit together prior to welding the frame or pipe supports.
- .6            There are no architectural drawings with the tender package. Contractor is to co-ordinate with mechanical drawings.

**Part 4            Specifications**

**4.1                Remove and Replace following specification sections with attached versions**

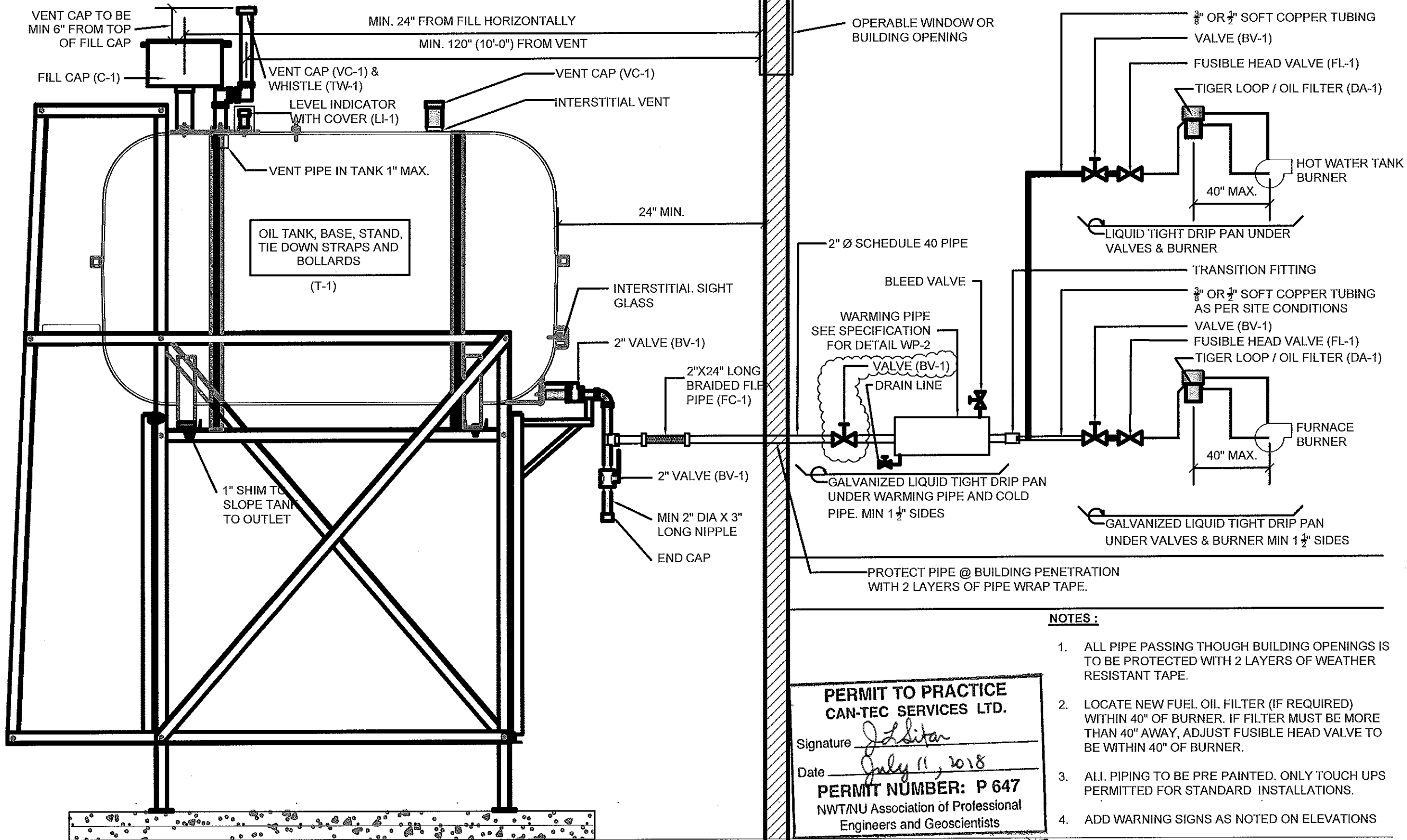
- .1            00 01 10 Table of Contents
- .2            01 11 00 Summary of Work

- .3 01 78 00 Closeout Submittals
- .4 02 41 99 Demolition for Minor Works
- .5 10 14 00 Signage
- .6 23 11 13 Fuel Oil Piping

**4.2 Insert new specification sections**

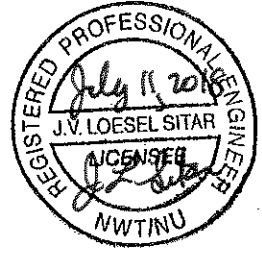
- .1 01 35 43 Environmental Procedures

**END OF SECTION**



**PERMIT TO PRACTICE**  
**CAN-TEC SERVICES LTD.**  
 Signature *J. Loesel*  
 Date *July 11, 2018*  
**PERMIT NUMBER: P 647**  
 NWT/NU Association of Professional  
 Engineers and Geoscientists

- NOTES :**
1. ALL PIPE PASSING THOUGH BUILDING OPENINGS IS TO BE PROTECTED WITH 2 LAYERS OF WEATHER RESISTANT TAPE.
  2. LOCATE NEW FUEL OIL FILTER (IF REQUIRED) WITHIN 40" OF BURNER. IF FILTER MUST BE MORE THAN 40" AWAY, ADJUST FUSIBLE HEAD VALVE TO BE WITHIN 40" OF BURNER.
  3. ALL PIPING TO BE PRE PAINTED. ONLY TOUCH UPS PERMITTED FOR STANDARD INSTALLATIONS.
  4. ADD WARNING SIGNS AS NOTED ON ELEVATIONS



**1** SCHEMATIC - TANK PIPING & ACCESSORIES  
 M3.0 SCALE: NTS



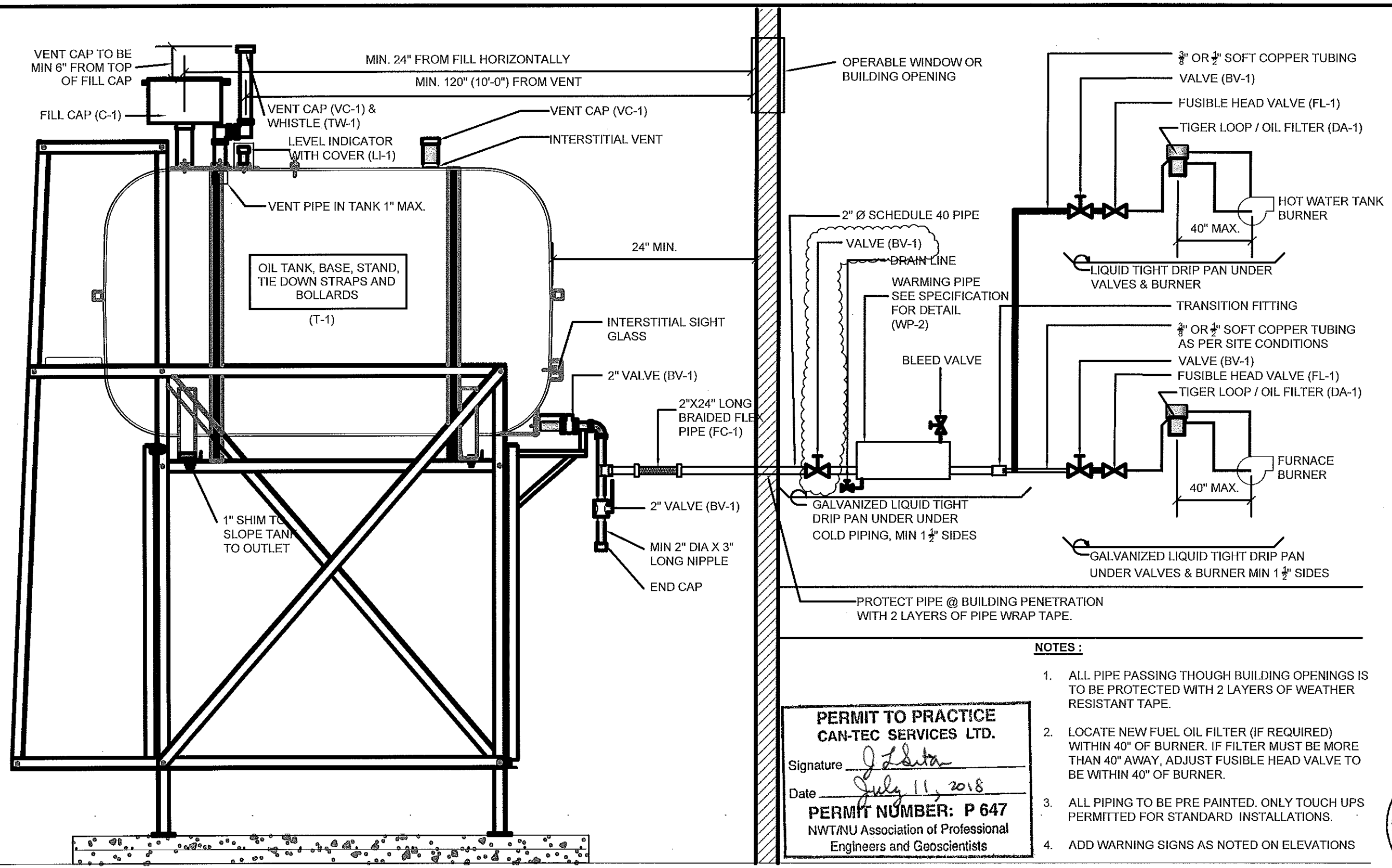
PROJECT TITLE:  
 RCMP "V" DIVISION OIL TANK REPLACEMENT - KUGAARUK  
 V120 - RESIDENCE, KUGAARUK  
 SHEET TITLE:  
 SCHEMATIC - TANK, PIPING & ACCESSORIES  
 PROJECT NUMBER:  
 16-028-14-30

01	Issued for Addendum NO. 1	18 07 11	Jls
00	ISSUED FOR TENDER	18 03 23	JLS
REV. #	REVISION	DATE (YY MM DD)	REV. BY

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SCALE:  
 AS NOTED  
 DATE (YY MM DD):  
 17 03 03

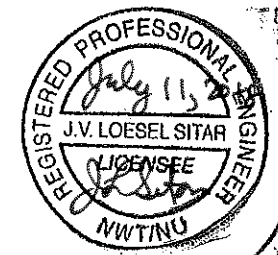
DRAWING NUMBER:  
**M3.0**  
 REVISION NUMBER:  
 01



**NOTES :**

1. ALL PIPE PASSING THOUGH BUILDING OPENINGS IS TO BE PROTECTED WITH 2 LAYERS OF WEATHER RESISTANT TAPE.
2. LOCATE NEW FUEL OIL FILTER (IF REQUIRED) WITHIN 40" OF BURNER. IF FILTER MUST BE MORE THAN 40" AWAY, ADJUST FUSIBLE HEAD VALVE TO BE WITHIN 40" OF BURNER.
3. ALL PIPING TO BE PRE PAINTED. ONLY TOUCH UPS PERMITTED FOR STANDARD INSTALLATIONS.
4. ADD WARNING SIGNS AS NOTED ON ELEVATIONS

**PERMIT TO PRACTICE**  
**CAN-TEC SERVICES LTD.**  
 Signature *J. Loesel*  
 Date *July 11, 2018*  
**PERMIT NUMBER: P 647**  
 NWT/NU Association of Professional  
 Engineers and Geoscientists



01 SCHEMATIC - TANK, PIPING & ACCESSORIES : ON STAND  
 M3.0 SCALE: NTS



PROJECT TITLE:  
 RCMP "V" DIVISION OIL TANK REPLACEMENT - KUGAARUK  
 V002 - RESIDENCE, KUGAARUK NU  
 SHEET TITLE:  
 SCHEMATIC - TANK, PIPING & ACCESSORIES  
 PROJECT NUMBER:  
 16-028-14-30

REV. #	REVISION	DATE (YY MM DD)	REV. BY
01	Issued for Addendum No. 1	18 07 11	jls
00	ISSUED FOR TENDER	18 03 23	JLS

REV. #	REVISION	DATE (YY MM DD)	REV. BY

SCALE:  
 AS NOTED  
 DATE (YY MM DD):  
 18 03 23

DRAWING NUMBER:  
**M3.0**  
 REVISION NUMBER:  
 01

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- A2.0 Main Floor Plan
- A3.0 Elevations
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- A4.0 Window Sections and Details
- A4.1 Details
- A4.2 Details
- A4.3 Details
- A8.0 Door and Window Schedule
  
- M1.0 Mechanical – Main Floor Plan
  
- E1.0 Electrical – Main Floor Plan

**House V120**

A0.0 Title Page  
A1.0 Demolition Plan  
A2.0 Main Floor Plan  
A3.0 Elevations  
A3.1 Elevations  
A4.0 Window Sections and Details  
A4.1 Details  
A4.2 Details  
A4.3 Details  
A8.0 Door and Window Schedule

M1.0 Mechanical

E1.0 Electrical

### **Fuel Tank Drawings**

#### **V002 – Residence**

M1.0 DEMOLITION PLAN  
M1.1 CONSTRUCTION PLAN  
M2.0 TANK ELEVATIONS  
M2.1 2" FUEL LINE SUPPORT DETAIL  
M3.0 SCHEMATIC

#### **V120 – Residence**

M1.0 DEMOLITION PLAN  
M1.1 CONSTRUCTION PLAN  
M2.0 TANK ELEVATIONS  
M2.1 2" FUEL LINE SUPPORT DETAIL  
M3.0 SCHEMATIC

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**END OF TABLE**



**Part 1            General**

**1.1                WORK COVERED BY CONTRACT DOCUMENTS**

- .1        Work of this Contract comprises the renovations to house V002 and V120 in Kugaaruk Nunavut. This work includes; labour, materials and shipping of materials, in accordance with the contract documents and as further described herein.

**1.2                SCOPE OF WORK – RESIDENCE V002**

- .1        Remove and replace windows
- .2        Remove and replace exterior doors
- .3        Remove existing exterior stairs and install new exterior vestibule
- .4        Install new blinds on all windows
- .5        Install new skirting
- .6        Paint exterior entry deck and stairs
- .7        Install new furnace
- .8        Install new fuel tank and fuel piping
- .9        Install new arctic vent
- .10      Install new generator panel and exterior generator connection.

**1.3                SCOPE OF WORK – RESIDENCE V120**

- .1        Remove and replace windows
- .2        Remove and replace exterior doors
- .3        Remove existing exterior stairs and install new exterior vestibule
- .4        Install new blinds on all windows
- .5        Install new skirting
- .6        Paint exterior entry deck and stairs
- .7        Install new furnace
- .8        Install new fuel tank and fuel piping
- .9        Install new arctic vent
- .10      Install new generator panel and exterior generator connection.

**1.4                WINDOW BLINDS**

- .1        Standard of Acceptance:
  - .1        Levelor Roller Blackout blinds, c/w cassette valence, clutch control system, color to be contemporary blackout white.
  - .2        Sunproject dual shade, c/w 1 sun shade and 1 blackout shade, color to be from manufacturers standard set.

## 1.5 SITE VERIFICATION

Upon award of the contract contractor is to schedule a site trip to site verify all sizes and dimensions. No additional fees will be considered for materials brought onto site of the wrong size.

## 1.6 MOCKUP

- .1 The entire steel ramp system and a section of steel grating (see structural drawings for details) is to be mocked up at a location of the General Contractors choosing for review by the Architect and Structural Engineer.
- .2 Wood footing system does not have to be mocked up
- .3 Once the steel ramp system has been reviewed and approved in writing by the structural engineer and architect can the ramp be broken down and shipped to site.

## 1.7 WORK SEQUENCE

- .1 Buildings will remain occupied during the renovation.
- .2 Co-ordinate Progress Schedule with Departmental Representative, Consultant and Local Commander
- .3 Maintain fire access/control at all times.
- .4 The work on the facility building will be done in phases one phase being completed and certified prior to the second phase being started.

## 1.8 PROTECTION OF BUILDING

- .1 The contractor is to document photo the condition of the existing exterior of the building and all surrounding areas at takeover of the area of work and supply a digital copy to the consultant within five days of coming to site.
- .2 The contractor is responsible for the protection of all damage caused during the construction process and it will be the responsibility of the contractor to make good to the acceptance of the Project Manager and Consultant.

## 1.9 CONTRACTOR USE OF PREMISES

- .1 Limit use of premises for storage, and for access to allow:
  - .1 Owner Occupancy
  - .2 Work by other Contractors
  - .3 Public Usage
- .2 Keep clear products or equipment which may **interfere** with operation of Building or other contractors.
- .3 Assume responsibility for the protection and safekeeping of products under this contract.
- .4 Co-ordinate use of premises under direction of Consultant and Departmental Representative.
- .5 Obtain and pay for use of additional storage or work areas needed for operations under this Contract as required.
- .6 Ensure safe practices and work area to prevent injury or damage to portions of existing work which remain.

- .7 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Consultant.

**1.10 OWNER OCCUPANCY**

- .1 Facility building will be occupied during construction.
- .2 Co-Operate with Owner in scheduling operations to minimize conflict and to facilitate owner usage.

**1.11 EXISTING SERVICES**

- .1 Notify Consultant and utility companies of intended interruption of services and obtain required permission. Pay fees and obtain certificates and permits required.
- .2 Where Work involves breaking into or connecting to existing services, give 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to pedestrian, vehicular traffic and tenant operations.
- .3 Provide alternative routes for personnel and vehicular traffic (if required).
- .4 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.
- .5 Submit schedule to and obtain approval from Consultant and building operations for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
- .6 Provide temporary services when directed by Consultant or as required to maintain critical building and tenant systems.
- .7 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.
- .8 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .9 Protect, relocate or maintain existing active services. When inactive services are encountered, inform consultant and owner prior to capping off in manner approved by authorities having jurisdiction.
- .10 Record locations on as-built drawings of maintained, re-routed and abandoned service lines.
- .11 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures

**1.12 DOCUMENTS REQUIRED**

- .1 Maintain at job site, one copy each document as follows:
  - .1 Contract Drawings.
  - .2 Specifications.
  - .3 Addenda.
  - .4 Reviewed Shop Drawings.
  - .5 List of Outstanding Shop Drawings.

- .6 Change Orders.
- .7 Other Modifications to Contract.
- .8 Field Test Reports.
- .9 Copy of Approved Work Schedule.
- .10 Health and Safety Plan and Other Safety Related Documents.
- .11 Other documents as specified.

**1.13 CODES AND STANDARDS**

- .1 Materials shall be new and work shall conform to the minimum applicable standards of the Canadian General Standards board, the Canadian Standards Association, The National Building Code of Canada 2010, and all applicable Territorial and Municipal codes, and all standards listed below. In the case of conflict or discrepancy the most stringent requirement shall apply.
- .2 Meet or exceed requirements of contract documents, specified standards, codes and referenced documents.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1           General**

**1.1           RELATED REQUIREMENTS**

- .1       Section 02 41 99 - Demolition for Minor Works.

**1.2           REFERENCES**

- .1       Definitions:
  - .1       Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.
  - .2       Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.
- .2       References:
  - .1       NU/NWT Spill Report.

**1.3           ACTION AND INFORMATIONAL SUBMITTALS**

- .1       Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2       Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Project Manager.
- .3       Environmental Protection Plan must include overview of known or potential environmental issues to be addressed during construction.
- .4       Address topics at level of detail commensurate with environmental issue and required construction tasks.
- .5       Include in Environmental Protection Plan:
  - .1       Name of person responsible for ensuring adherence to Environmental Protection Plan.
  - .2       Name and qualifications of person responsible for manifesting hazardous waste to be removed from site.
  - .3       Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
  - .4       Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
  - .5       Used Oil Disposal Plan identifying methods and locations for disposal of used oil and sludge, oil-contaminated water, and used oil tanks and piping. The plan should detail compliance with Federal, Territorial, and Municipal laws and regulations. Refer to Section 02 41 99 - Demolition for Minor Works for details.
  - .6       Waste Water Management Plan identifying methods and procedures for discharge of waste waters which are directly derived from construction activities,

such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

**1.4 FIRES**

- .1 Fires and burning of rubbish on site is not permitted.
- .2 Where fires or burning is permitted, prevent staining or smoke damage to structures, materials or vegetation which is to be preserved.
  - .1 Restore, clean and return to new condition stained or damaged work.
- .3 Provide supervision, attendance and fire protection measures as directed.

**1.5 SITE CLEARING AND PLANT PROTECTION**

- .1 Protect trees and plants on site and adjacent properties as indicated.
- .2 Protect trees and shrubs adjacent to construction work, storage areas and trucking lanes, and encase with protective wood framework from grade level to height of 2 m minimum.
- .3 Protect roots of designated trees to dripline during excavation and site grading to prevent disturbance or damage.
  - .1 Avoid unnecessary traffic, dumping and storage of materials over root zones.
- .4 Minimize stripping of topsoil and vegetation.
- .5 Restrict tree removal to areas designated by Consultant.

**1.6 NOTIFICATION**

- .1 Project Manager will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Project Manager of proposed corrective action and take such action for approval by Project Manager.
  - .1 Take action only after receipt of written approval by Project Manager.
- .3 Project Manager will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3            Execution**

**3.1                CLEANING**

- .1    Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1        Leave Work area clean at end of each day.
- .2    Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .3    Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .4    Waste Management: separate waste materials for re-use/recycling in accordance with Section 02 41 99 - Demolition for Minor Works.
  - .1        Remove recycling containers and bins from site and dispose of materials at appropriate facility.

**END OF SECTION**

## TANK INSTALLATION SUMMARY

### Tank Location:

Community: \_\_\_\_\_

Building Address: \_\_\_\_\_

Date of Installation: \_\_\_\_\_

Temperature and Weather of Installation: \_\_\_\_\_

Name of Installer: \_\_\_\_\_

### Tank Information:

Type of Tank: \_\_\_\_\_

Tank Clearances:

Front:\_\_\_\_\_ Right Side:\_\_\_\_\_ Left Side:\_\_\_\_\_ Rear :\_\_\_\_\_

Tank Serial Number: \_\_\_\_\_

Stand Type: \_\_\_\_\_

Tank Warrantee Start Date: \_\_\_\_\_

### Piping and Accessories Installed:

		Photo Provided
Shut Off Valve at Tank:	_____	_____
Drip Leg and Valve	_____	_____
Flex Connection	_____	_____
Vent Cover	_____	_____
Interstitial Vent Cover	_____	_____
Vent whistle	_____	_____
Fill Cover	_____	_____
Gauge and Protector	_____	_____
Exterior Caulking Installed	_____	_____
Two layers pipe tape at wall entry	_____	_____
Touch Up Paint for all Fittings	_____	_____
Minimum 24" Clearance to tank	_____	_____
Vent Clearance to Window/openings	_____	_____
Fill Clearance to Windows/openings	_____	_____

### Interior Piping Installed

Photo Provided



Interior Shut-off Valves \_\_\_\_\_  
Warming Pipe \_\_\_\_\_  
De-aerator (tiger loop) \_\_\_\_\_  
Filter \_\_\_\_\_  
Fusible Head Valve: \_\_\_\_\_  
  
Interior Piping: \_\_\_\_\_

Type: \_\_\_\_\_ Length: \_\_\_\_\_ Photo Provided: \_\_\_\_\_

**Photos**

Photo Provided

Complete elevation with tank \_\_\_\_\_  
  
Close up of tank:  
Front: \_\_\_\_\_  
Right side \_\_\_\_\_  
Left Side \_\_\_\_\_  
Rear: \_\_\_\_\_

Interior Piping Changes: \_\_\_\_\_  
New fittings \_\_\_\_\_  
New Spill Kit \_\_\_\_\_  
Supplied Spill Report Document \_\_\_\_\_

Provide Laminated 8.5"x11" Colour Print of Emergency Spill Response Procedures. To be placed inside oil spill kit. \_\_\_\_\_

Submitted By: \_\_\_\_\_ Date: \_\_\_\_\_

**Part 1           General**

**1.1               REFERENCES**

- .1       Canadian Standards Association (CSA International)
  - .1       CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.

**1.2               SUBMITTALS**

- .1       Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures 01 00 10 - General Instructions.

**1.3               SITE CONDITIONS**

- .1       Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
  - .1       Do not proceed until written instructions have been received from Consultant.

**Part 2           Products**

**2.1               NOT USED**

- .1       Not used.

**Part 3           Execution**

**3.1               PREPARATION**

- .1       Inspect site with Consultant and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2       Locate and protect utilities. Preserve active utilities traversing site in operating condition.
- .3       Notify and obtain approval of utility companies before starting demolition.

**3.2               PROTECTION**

- .1       Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.
- .2       Keep noise, dust, and inconvenience to occupants to minimum.
- .3       Protect building systems, services and equipment.

- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.

### **3.3 SALVAGE**

- .1 Refer to demolition drawings and specifications for items to be salvaged for reuse.
- .2 Items to be stored in weather tight enclosure to ensure that no damaged is caused prior to re-installation

### **3.4 SITE REMOVALS**

- .1 Remove items as indicated.

### **3.5 DEMOLITION**

- .1 Remove parts of existing building to permit new construction.
- .2 Trim edges of partially demolished building elements to tolerances as defined by Consultant to suit future use.

### **3.6 DISPOSAL**

- .1 Dispose of removed materials, except where specified otherwise, in accordance with authority having jurisdiction.
- .2 Used oil, oil tanks, and piping.
  - .1 Remove oil, sludge, and contaminated water from tanks and piping.
  - .2 Remove vapour from tanks.
  - .3 Cut into the side of the oil tank to prevent its re-use.
  - .4 Dispose of oil/sludge, tanks, and piping as per local authority and provide documentation to that effect.
  - .5 Provide documentation including names of personnel performing removal and of personnel certifying that the above steps have been performed.

**END OF SECTION**

**Part 1        General**

**1.1            REFERENCES**

- .1    Aluminum Association, Inc. (AAI)
  - .1        AAI DAF45-03, Designation System for Aluminum Finishes.
- .2    ASTM International Inc.
  - .1        ASTM A653/A653M-07, Standard Specification for Steel Sheet, Zinc-Coated, (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
  - .2        ASTM B32-04, Standard Specification for Solder Metal.
  - .3        ASTM B456-03, Standard Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.
- .3    Canadian General Standards Board (CGSB)
  - .1        CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
  - .2        CAN/CGSB-1.88-92, Gloss Alkyd Enamel, Air Drying and Baking.
  - .3        CGSB 31-GP-107Ma-90, Non-Inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
  - .4        CGSB 41-GP-6M-1983, Sheets, Thermosetting Polyester Plastics, Glass Fibre Reinforced. Reaffirmation of September 1976.
- .4    Canadian Standards Association (CSA International)
  - .1        CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  - .2        CSA W47.2-M1987(R2008), Certification of Companies for Fusion Welding of Aluminum.
  - .3        CSA W59-03, Welded Steel Construction (Metal Arc Welding).
  - .4        CSA W59.2-M1991(R2003), Welded Aluminum Construction.
- .5    Canadian Sheet Steel Building Institute (CSSBI)
  - .1        CSSBI SSF 6-1995, Sheet Steel Facts #6, Metallic Coated Sheet Steel for Structural Building Products-July 1995.
- .6    Green Seal Environmental Standards
  - .1        Standard GS-11-2008, 2nd Edition, Paints and Coatings.
  - .2        Standard GS-36-00, Commercial Adhesives.
- .7    Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1        Material Safety Data Sheets (MSDS).
- .8    The Master Painters Institute (MPI)
  - .1        Architectural Painting Specification Manual - February 2004.
    - .1            MPI #76, Quick Dry Alkyd Metal Primer.

- .2 MPI #96, Quick Dry Enamel Gloss.

## **1.2 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-Installation Meetings: convene pre-installation meeting one week prior to beginning work of this Section in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.
  - .3 Co-ordination with other building subtrades.
  - .4 Review manufacturer's installation instructions and warranty requirements.

## **1.3 ACTION SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Shop Drawings:
  - .1 Submit shop drawings and catalogue sheets.
  - .2 Indicate materials, thicknesses, sizes, finishes, colours, construction details, removable and interchangeable components, electrical components specifications and power loads, wiring terminal box locations, lamp centres and overlaps, access panels, mounting methods, schedule of signs.
  - .3 Submit drawn-to-scale details for individually fabricated or incised lettering indicating word and letter spacing.
- .3 Samples:
  - .1 Submit duplicate representative sample of each type sign, sign image and mounting method including, but not limited to: graphics, cast letters, sign box installation method, channel letters, and wall plates fixed mounting installation method.

## **1.4 INFORMATIONAL SUBMITTALS**

- .1 Product Data:
  - .1 Submit manufacturer's printed product literature panel signage or components, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
- .2 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence, cleaning procedures.

## **1.5 CLOSEOUT SUBMITTALS**

- .1 Provide operation and maintenance data for illuminated signs for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

## **1.6 QUALITY ASSURANCE**

- .1 Welding Certification in accordance with CSA W47.2.

## 1.7 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

## Part 2 Products

### 2.1 MATERIALS

- .1 Aluminum extrusions: to designation AA 6063-T5 AA 6006-T5.
- .2 Sheet aluminum: anodizing quality.
- .3 Prefinished sheet aluminum: plain utility sheet with manufacturer applied baked enamel finish.
- .4 Electrical components: CSA approved.
- .5 Welding materials: to CSA W59.
- .6 Solder: to ASTM B32, Type Sn50.
- .7 Self-stick foam tape: 1.6 mm thick, 352.4 kg/m<sup>3</sup> density polyurethane open-cell foam tape for sign purposes, with synthetic self-stick adhesive on both sides.
  - .1 Width: to suit sign sizes.
- .8 Bituminous paint: to MPI EXT 5.4D.

### 2.2 TANK SIGNAGE

- .1 Screen print on steel or aluminum with reflective sheeting finish.
  - .1 WHMIS Label 1202 10 ¾" x 10 ¾"
  - .2 Spill Report sign 10" x 14"
  - .3 No Smoking Sign 10" x 14"
- .2 Supply Shop drawing for each sign for approval
- .3 Wording as per schedule. Location as per drawings.
- .4 U-Channel post: Hot dipped galvanized rolled high tensile steel, length to suit, pre-pierce with 10 mm holes at 25 mm orc.
- .5 Tamper-proof bolts and nuts: steel zinc plated bolts with cone shaped fluted aluminum nuts.

### 2.3 FABRICATION

- .1 Fabricate signs in accordance with details, specifications and shop drawings.
- .2 Build units square, true, accurate to size, free from visual or performance defects.
- .3 Fit and securely join sections to obtain tight, closed joints.
- .4 Allow for thermal movement without distortion of components.
- .5 Exposed fasteners permitted where indicated where approved by Consultant and to be inconspicuous and same color and finish as base material or as noted.

- .6 Polish exposed edges of metal to smooth, slightly convex profile.
- .7 Do steel welding to CSA W59 and aluminum welding to CSA W59.2.
  - .1 Finish exposed welds flush and smooth.
- .8 Apply bituminous paint to aluminum in contact with dissimilar metals, concrete or masonry.
- .9 Manufacturer's nameplates on sign surface permitted in non-visible locations in completed work.

### **Part 3 Execution**

#### **3.1 INSTALLATION**

- .1 Manufacturer's Instructions: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.
- .2 Erect and secure signs plumb and level at elevations indicated.
- .3 Comply with sign manufacturer's installation instructions and approved shop drawings.
- .4 Mechanical attachment:
  - .1 To concrete or solid masonry: use lag screws and expansion bolts or screws and fibre plugs, as appropriate for stresses involved.
  - .2 To hollow masonry: use toggle bolts or equivalent.
  - .3 To steel: use bolts with nut and lock washers, self-tapping screws.
    - .1 Do steel welding to CSA W59 and aluminum welding to CSA W59.2.
    - .2 Finish exposed welds flush and smooth.
  - .4 To wood: use screws.
  - .5 Secure into framing members behind stud walls or above ceilings.
  - .6 Mechanical fasteners on exterior: non-staining, non-ferrous type.
  - .7 Fabricate special fasteners as required for installation conditions.
  - .8 Mechanical fasteners and methods of attachment subject to Consultant's approval.
    - .1 Obtain Consultant's approval before fixing to structural steel.
- .5 Adhesive attachment:
  - .1 Use self-stick adhesive foam tape to manufacturer's instructions to fix sign and prevent "rocking".
  - .2 Keep tape maximum 1.6 mm from edges.

#### **3.2 FIELD QUALITY CONTROL**

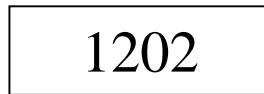
- .1 Manufacturer's Field Services:
  - .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

**3.3 CLEANING**

- .1 Proceed in accordance with Section 01 74 11 - Cleaning.
  - .1 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
  - .2 Leave signs clean.
  - .3 Remove debris from interior of sign boxes.
  - .4 Touch up damaged finishes.

**Part 4 SCHEDULE**

- .1 WHMIS Label



- .2 Spill Report Sign



- .3 No Smoking Sign





**END OF SECTION**

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1        Pipe and pipe fittings.
- .2        Valves.
- .3        Fuel oil storage tanks.
- .4        Accessories.

**1.2                RELATED SECTIONS**

- .1        Section 01 10 13 - Summary of Work
- .2        Section 01 20 13 - Price and Payment Procedures
- .3        Section 01 33 00 - Administrative Requirements.
- .4        Section 01 61 00 - Common Product Requirements.
- .5        Section 01 78 10 - Execution Requirements.
- .6        Section 08 31 13 - Access Doors And Frames.
- .7        Section 09 91 10 - Painting.
- .8        Section 23 05 16 - Piping Expansion Compensation.
- .9        Section 23 05 29 - Supports And Anchors.
- .10      Section 23 05 53 - Mechanical Identification.
- .11      Section 26 05 80 - Equipment Wiring: Electrical characteristics and wiring connections.
- .12      Section 31 23 18 - Trenching.
- .13      Section 31 23 23 - Backfilling.

**1.3                REFERENCES**

- .1        ANSI B31.1 - Power Piping.
- .2        ANSI B31.4 - Liquid Petroleum Transportation Piping Systems.
- .3        ANSI B31.9 - Building Service Piping.
- .4        API Spec 12P - Fibreglass Reinforced Plastic Tanks.

- .5 API 650 - Welded Steel Tanks for Oil Storage.
- .6 API 2000 - Venting Atmospheric and Low Pressure Storage Tanks.
- .7 ASME - Boiler and Pressure Vessel Code.
- .8 ASME SEC IX - Welding and Brazing Qualifications.
- .9 ASME B16.3 - Malleable Iron Threaded Fittings.
- .10 ASME B16.18 - Cast Copper Alloy Solder-Joint Pressure Fittings.
- .11 ASME B16.22 - Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings
- .12 ASME B16.26 - Cast Copper Alloy Fittings for Flared Copper Tubes.
- .13 ASME B36.10 - Welded and Seamless Wrought Steel Pipe.
- .14 ASTM A53/A53M - Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
- .15 ASTM A234/A234M - Piping Fittings of Wrought-Carbon Steel and Alloy Steel for Moderate and High Temperature Service.
- .16 ASTM B88 - Seamless Copper Water Tube.
- .17 AWS A5.8 - Filler Metals for Brazing and Braze Welding.
- .18 AWWA C105 - Polyethylene Encasement for Ductile Iron Pipe Systems.
- .19 CSA B139.2-15 Installation code for oil-burning equipment for residential and small commercial buildings
- .20 CAN/ULC –S670 Standard for Aboveground non-metallic tanks for fuel oil and other combustible liquids
- .21 CAN/ULC –S670, 677, 652, 601, 602, 653, or 655
- .22 Factory Mutual Class 7440 – fusible links
- .23 NFPA 30 - Flammable and Combustible Liquids Code.
- .24 NFPA 31 - Installation of Oil-Burning Equipment.
- .25 ULC/ORD –C842 Guide for the Investigation of Valves for Flammable and Combustible Liquids.
- .26 ULC/ORD –C536 Flexible Metallic Hose
- .27 UL 80 - Steel Tanks for Oil-Burner Fuel.
- .28 UL 142 - Steel Aboveground Tanks for Flammable and Combustible Liquids.

- .29 UL 1316 - Glass Fibre Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol Gasline Mixtures.

#### **1.4 SUBMITTALS FOR REVIEW**

- .1 Section 01 33 00: Procedures for submittals.
- .2 Product Data: Provide data on pipe materials, pipe fittings, valves and accessories. Provide manufacturers catalogue information. Indicate valve data and ratings.
- .3 Shop Drawings: Indicate tanks, system layout, pipe sizes, location, and elevations. For fuel oil tanks, indicate dimensions and accessories including manholes and hold down straps.

#### **1.5 SUBMITTALS FOR INFORMATION**

- .1 Section 01 33 00: Procedures for submittals.
- .2 Certificates: Certify that tanks/pumps/valves meet or exceed specified requirements.

#### **1.6 SUBMITTALS AT PROJECT CLOSEOUT**

- .1 Section 01 78 10: Closeout submittals.
- .2 Project Record Documents: Record actual locations of piping system, storage tanks, and system components.
- .3 Maintenance Data: Include installation instructions, spare parts lists.
- .4 Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

#### **1.7 QUALITY ASSURANCE**

- .1 Welding Materials and Procedures: Conform to ASME Code.
- .2 Welders Certification: To ASME SEC IX and CSA.
- .3 Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.
- .4 Installer Qualifications: Company specializing in performing the work of this section with minimum five years documented experience.
- .5 Valves: Manufacturer's name and pressure rating marked on valve body.
- .6 Piping, flanges, unions, couplings: Manufacturer's name and pressure rating marked on body.

#### **1.8 REGULATORY REQUIREMENTS**

- .1 Conform to CSA B139.1-15 and CSA B139.2-15 for installation of fuel oil system.

- .2 Provide certificate of compliance from authority having jurisdiction indicating approval of installation of fuel oil system.
- .3 Products Requiring Electrical Connection: Listed and classified by CSA as suitable for the purpose specified and indicated.

## **1.9 DELIVERY, STORAGE, AND PROTECTION**

- .1 Section 01 61 00: Transport, handle, store, and protect products.
- .2 Protect piping and fittings from soil and debris with temporary end caps and closures. Maintain in place until installation.

## **1.10 WARRANTY**

- .1 Section 01 78 10.
- .2 Provide thirty-year manufacturer warranty for oil tank against defects and corrosion.

## **1.11 EXTRA MATERIALS**

- .1 Section 01 78 10.
- .2 Provide two repacking kits for each size valve.
- .3 Provide two oil filters for each boiler or furnace.
- .4 Provide dipstick and water finding paste.
- .5 Provide spill kit for each tank.

## **Part 2 Products**

### **2.1 ABOVE GROUND PIPING**

- .1 Copper Tubing: ASTM B88M, Type K,L,M, hard drawn.
  - .1 Fittings: ASME B16.18, cast copper alloy or ASTM B16.22 wrought copper and bronze.
  - .2 Joints: AWS A5.8 Classification BCuP-3 or BCuP-4 silver braze.
- .2 Copper Tubing: ASTM B88M, Type K,L, annealed.
  - .1 Fittings: ASME B16.26, cast bronze.
  - .2 Joints: Flared.
- .3 Steel Pipe: ASTM A53 or ASME B36.10, Schedule 40 black.
  - .1 Fittings: ASTM B16.3, malleable iron, or ASTM A234/A234M, wrought carbon steel and alloy steel welding type.
  - .2 Joints: NFPA 30, threaded or welded to ASME 16.3 or ASME 16.39.

- .4 No compression fittings. No union requiring packing or gaskets. No right and left couplings. No solder or braze materials with a MP<538C.
- .5 Pipe jointing compound – CAN/ULC-S642. Suitable for fuel oil.

## 2.2 PIPE HANGERS AND SUPPORTS

- .1 Hangers for Pipe Sizes 15 to 40 mm, Carbon steel, adjustable swivel, split ring.
- .2 Hangers for Pipe Sizes 50 mm and Over: Carbon steel, adjustable, clevis.
- .3 Multiple or Trapeze Hangers: Steel channels with welded spacers and hanger rods.
- .4 Wall Support for Pipe Sizes to 80 mm: Cast iron hook.
- .5 Vertical Support: Steel riser clamp.
- .6 Floor Support: Cast iron adjustable pipe saddle, lock nut, nipple, floor flange, and concrete pier or steel support.
- .7 Copper Pipe Support: Carbon steel ring, adjustable, copper plated.

## 2.3 FLANGES, UNIONS, AND COUPLINGS

- .1 Pipe Size 50 mm and Under:
  - .1 Ferrous pipe: 1034 kPa (150 psi) malleable iron threaded unions.
  - .2 Copper tube: 1034 kPa (150 psi) bronze unions with brazed joints. No solder or braze materials with a MP<538C.
- .2 Pipe jointing compound – CAN/ULC-S642. Suitable for fuel oil.

## 2.4 BALL VALVES (BV-1)

- .1 Manufacturer: Kitz 68A
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Morrison Bros.
  - .2 Toyo
  - .3 Substitutions: [Refer to Section 01 62 00.]
- .3 Class 600 WOG, bronze, full bore, forged brass ball, brass gland and PTFE Teflon seats, steel lever handle, solder or threaded ends.
- .4 Exterior valves suitable for cold temperatures to -40C (-40F).
- .5 Conforms to ULC/ORD-C482.

## 2.5 CHECK VALVES (CV-1)

- .1 Manufacturer: Beckett Model 12430, 12440

- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Morrison Bros.
  - .2 Kitz Fig 22
  - .3 Substitutions: [Refer to Section 01 62 00.]
- .3 MSS SP-80, Class 125, bronze body and cap, bronze swing disc, threaded ends.

**2.6 FLEXIBLE CONNECTORS (FC-1)**

- .1 Manufacturer: OPW Model Stainless Steel Flex Connectors.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: [Refer to Section 01 62 00.]
- .3 Bronze inner hose and braided exterior sleeve, suitable for temp rating -40F to 105F. Max operating pressure 1375kPa (200 psi) CWP.
- .4 ULC/ORD C536 Flexible Metallic Hose.

**2.7 DEAERATOR (DA-1)**

- .1 Manufacturer: Westwood Products: Tigerloop Ultra with screw-on oil filter
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: Not permitted.
- .3 Temp rating -7C to 40C (20F-105F). Max operating pressure 55 kPa (8psi). Max nozzle capacity 75.8 L/min (20GPH).

**2.8 FUSIBLE LINKS (FL-1)**

- .1 Manufacturer: Firomatic.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: Not permitted.
- .3 Max temp rating 74C (165F).
- .4 ULC 842 listed.

**2.9 TANK WHISTLE (TW-1)**

- .1 Manufacturer: Beckett.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: [Refer to Section 01 62 00.]
- .3 Lockable, with screen on vent cover.



**2.10 SPILL KITS (SK-1)**

- .1 Manufacturer: SPC Oil Only Spill Kits
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Enpac
  - .2 Substitutions: [Refer to Section 01 62 00.]
- .3 20Gal capacity.

**2.11 VENT CAPS (VC-1)**

- .1 Manufacturer: Beckett. Model: Zinc-plated mushroom vent cap.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: [Refer to Section 01 62 00.]
- .3 Zinc plated cast iron, with screen.

**2.12 FILL CAP WITH SPILL CONTAINER (C-1)**

- .1 Manufacturer: Morrison Bros Model 517 Series 3.5 Gallon AST Spill container
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: [Refer to Section 01 62 00.]
- .3 3.5 Gal capacity, hinged lockable cover.
- .4 Meets CAN-ULC-S663-11.

**2.13 LEVELOMETER (LI-1)**

- .1 Manufacturer: K TECH LEVELOMETER Model Midget Model 277 Pneumatic Indicator
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 King Tank Gauges.
  - .2 Rocket Wireless Gauge.
  - .3 Substitutions: [Refer to Section 01 62 00.]
- .3 ULC/ORD-C180-97 listed.

**2.14 OIL FILTER**

- .1 Manufacturer: Canadian General Filters
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: [Refer to Section 01 62 00.]
- .3 Suitable for oil burner.

**2.15 WARM-UP PIPE (WP-1,2)**

- .1 Shop manufactured. See sketch SK-1 and SK-2 in Appendix A.
- .2 WP-1: Schedule 40 pipe, 250mm (10") dia., 600mm (24") long, 31L.
- .3 WP-2: Schedule 40 pipe, 100mm (4") dia., 600mm (24") long, 5L.
- .4 With 25mm (1") drain valve and air bleed valve. (BV-1)

**2.16 ABOVEGROUND FUEL STORAGE TANKS (T-1)**

- .1 Manufacturer: Vilco D252.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: Not permitted.
- .3 Tank: CAN/ ULC-S670, double wall, fibreglass, oval with integral molded support feet, tappings for accessories, threaded connections.
- .4 Capacity: 1136 L. (250 gallons).

**2.17 INDOOR DOUBLE-WALL STORAGE TANKS (T-2)**

- .1 Manufacturer: Steelcraft.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 DTE Industries
  - .2 Clemmersteel
  - .3 Roth
  - .4 Regal Tanks
  - .5 Substitutions: [Refer to Section 01 62 00.].
- .3 Tank: CAN/ ULC-S602, double wall steel construction, tappings for accessories, threaded connections. Vacuum monitored, or contained type designed to contain at least 100% of tank volume with monitoring (as per CSA B139.1.1-15 Section 6.2). Sizes as per drawings.

**2.18 FUEL OIL PUMPS**

- .1 Manufacturer: Viking Model FH-432X.
- .2 Other acceptable manufacturers offering equivalent products:
  - .1 Substitutions: Not permitted.
- .3 Casing: Bronze, rated for 860 kPa (125 psi) working pressure with integral pressure relief valve.
- .4 Impeller: Bronze gears, positive displacement.
- .5 Drive: Direct connected with flexible coupling.

- .6 Accessories: Adjustable pressure control valve, bleed valve, mechanical seal.
- .7 ULC listed for fuel oil.

### **Part 3 Execution**

#### **3.1 EXAMINATION**

- .1 Section 01 10 13: Verification of existing conditions before starting work.
- .2 Verify that excavations are to required grade, dry, and not over-excavated.

#### **3.2 PREPARATION**

- .1 Ream pipe and tube ends. Remove burrs.
- .2 Remove scale and dirt, on inside and outside, before assembly.
- .3 Prepare piping connections to equipment with flanges or unions.

#### **3.3 INSTALLATION**

- .1 Install to manufacturer's instructions, stamped drawings, and CSA B139.2-15.
- .2 Provide non-conducting dielectric connections wherever jointing dissimilar metals.
- .3 Install piping using fittings manufactured to ANSI standards. Provide threaded fittings, except use welded fittings where piping is concealed.
- .4 Route piping in orderly manner and maintain gradient.
- .5 Install piping to conserve building space and not interfere with use of space.
- .6 Group piping whenever practical at common elevations.
- .7 Install piping to allow for expansion and contraction without stressing pipe, joints, or connected equipment.
- .8 Provide clearance for installation of insulation and access to valves and fittings.
- .9 Provide access where valves and fittings are not exposed. [Coordinate size and location of access doors with Section 08 31 13.]
- .10 Where pipe support members are welded to structural building framing, scrape, brush clean, weld, and apply one coat of zinc rich primer.
- .11 Where pipe travels through buildings walls, use pipe sleeves or wrap pipe with two layers or pipe wrap.
- .12 Prepare pipe, fittings, supports, and accessories not prefinished, ready for finish painting. Refer to Section 09 91 10.

- .13 Identify piping systems including underground piping. refer to Section 23 05 53.
- .14 Install valves with stems upright or horizontal, not inverted.
- .15 Protect piping systems from entry of foreign materials by temporary covers, completing sections of the work, and isolating parts of completed system.
- .16 Test system in accordance with CSA B139.2-15 Section 11.3 and authority having jurisdiction. Isolate tank from piping during tests. Clean strainers and filters after testing and provide new filter upon handover.

### **3.4 FUEL TANK INSTALLATION**

- .1 Install tanks and associated piping to manufacturer's instructions, stamped drawings, and CSA B139.2-15.
- .2 Test tank as per manufacturer's instructions. Upon delivery, perform pneumatic testing as per manufacturer's instructions.
- .3 Mount aboveground tanks on foundation or stands as indicated on drawings.
- .4 Clean and flush day tank/warming tank prior to delivery to site. Seal until pipe connections are made.
- .5 Fill tanks at project turn-over with appropriate fuel. Do not transfer oil from old tank to new tank. At first fill, perform hydrostatic test of tank as per CSA B139.2-15 section 6.9.
- .6 Ensure level gauges have leak-proof and vapour-proof connections. Calibrate level gauges.

**END OF SECTION**