PART 1 - GENERAL

1.1 REFERENCES

.1 American Society of Mechanical Engineers (ASME).

.1 ASME-B16.3-2006, Malleable-Iron Threaded Fittings: Classes 150 and 300.

.2 ASME-B16.9-2007, Factory-Made Wrought Steel Buttwelding Fittings.

.2 ASTM International.

.1 ASTM A47/A47M-99(2004), Standard Specification for Ferritic Malleable Iron Castings.

.2 ASTM A53/A53M-07, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.

.3 ASTM B61-08, Standard Specification for Steam or Valve Bronze Castings.

.4 ASTM B75M-99(2005), Standard Specification for Seamless Copper Tube Metric.

.3 Canadian Environmental Protection Act (CEPA).

.1 CCME PN 1326-2008, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems for Petroleum Products and Allied Petroleum Products.

.4 Canada Green Building Council (CaGBC).

.1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum 2007).

.2 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.

.5 CSA International.

.1 CSA-B139-09, Installation Code for Oil Burning Equipment.

.2 CSA-B140.0-03, Oil Burning Equipment: General Requirements.

.3 CSA-C282-05, Emergency Electrical Power Supply for Buildings.

.6 Green Seal Environmental Standards (GSES).

.1 Standard GS-11-2008, 2nd Edition, Paints and Coatings.

.7 Health Canada / Workplace Hazardous Materials Information System (WHMIS).

.1 Material Safety Data Sheets (MSDS).

.8 Manufacturers Standardization Society of the Valve and Fitting Industry (MSS).

.1 MSS-SP-80-08, Bronze Gate, Globe, Angle and Check Valves.

.9 National Association of Corrosion Engineers (NACE).

.1 NACE SP0169-2007, Control of External Corrosion on Underground or Submerged Metallic Piping Systems.

.10 National Fire Code of Canada (NFCC 2005).

.11 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards

.1 SCAQMD Rule 1113-A2007, Architectural Coatings.

.12 Underwriter's Laboratories of Canada (ULC).

.1 CAN/ULC S603.1-03, External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids.

.2 ULC ORD-C107.12-1992, Line Leak Detection Devices for Flammable Liquid Piping.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meeting:

.1 Convene pre-installation meeting one week prior to on-site installations.

.1 Verify project requirements.

.2 Review installation conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

.1 Provide manufacturer's printed product literature, specifications and datasheets for piping, fittings and equipment and include product characteristics, performance criteria, physical size, finish, and limitations.

.1 Indicate on manufacturer's catalogue literature the following: Valves.

.3 Indicate VOC's for adhesive and solvents during application and curing.

.4 Test Reports:

.1 Submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.

.5 Certificates:

.1 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.6 Manufacturers' Instructions: Provide manufacturer's installation instructions.

1.4 CLOSEOUT SUBMITTALS

.1 Submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.5 QUALITY ASSURANCE

.1 Ensure piping is installed by company and individuals authorized by authority having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Deliver, store, and handle materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.

.2 Delivery and Acceptance Requirements:

.1 Deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

PART 2 - PRODUCTS

2.1 FILL VENT AND CARRIER PIPE

.1 Materials as per CSA-B139 Standard.

.2 Steel: To ASTM A53/A53M Standard, Schedule 40, continuous weld or electric resistance welded, screwed.

.3 Soft copper type ‘‘K’’ with flared connections (for engine hook-up from day tank)

2.2 STEEL PIPE COATING

.1 Epoxy Paint: In accordance with manufacturer's recommendations.

.2 Primers, Paints and Coating: In accordance with manufacturer's recommendations for surface conditions.

2.3 JOINTING MATERIAL

.1 Screwed Fittings: Teflon tape.

2.4 FITTINGS

.1 Steel:

.1 Malleable iron: Screwed, banded, Class 150 to ASME-B16.3 Standard.

.2 Welding: Buttwelding to ASME-B16.9 Standard.

.3 Unions: Malleable iron, brass to iron, ground seat, screwed, to ASTM A47/A47M Standard.

.4 Nipples: Schedule 40, to ASTM A53/A53M Standard.

2.5 BALL VALVES

.1 NPS 2 and under: Bronze body, screwed ends, TFE seal, hard chrome ball, 4 MPa, WOG.

2.6 SWING CHECK VALVES

.1 NPS 2 and under, screwed: To MSS-SP-80 Standard, Class 125, 860 kPa, bronze body, bronze swing disc, screw in cap, and regrindable seat.

PART 3 - EXECUTION

3.1 APPLICATION

.1 Manufacturer's Instructions: Comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PIPING

.1 Install piping in accordance with Section 23 05 05 - Installation of Pipework, supplemented as specified.

.2 Install oil piping system in accordance with CSA-B139 Standard.

.3 Slope piping down in direction of storage tank, unless otherwise indicated.

.4 Above ground piping to be protected from physical impact due to impact.

.5 Piping Inside Building:

.1 Ensure piping in solid flooring is installed to CSA-B139 Standard.

.2 Use approved fitting to CSA-B139 Standard for steel piping.

.6 Fill, vent, suction and return piping outside building:

.1 Steel piping throughout, except at tanks where electrically isolating fittings are used.

.2 Grading: Slope piping at 1% minimum back to tanks.

.7 Piping at Tanks:

.1 Suction: Terminate 50 mm from bottom of tank with foot valve.

.2 Return: Terminate 50 mm from bottom of tank with return bend.

.3 Comply with CSA-B139 Standard for piping for venting at tanks including venting whistle.

.4 Fill pipes: Install to comply with CSA-B139 Standard.

.1 Include liquid tight tamperproof cover.

.8 Clearly label piping runs in legible form indicating;

.1 Piping product content.

.2 Direction of flow.

3.3 VALVES

.1 Install valves with stems upright or horizontal unless approved otherwise by Departmental Representative.

.2 Install ball valves at branch take-offs to isolate pieces of equipment and as indicated.

.3 Install swing check valves on discharge of pumps and as indicated.

3.4 OVERFILL AND SPILL PROTECTION

.1 To CSA-B139 Standard.

3.5 FIELD QUALITY CONTROL

.1 Site Tests/Inspection:

.1 Test system to CSA-B139 and CSA-B140.0 Standards and authorities having jurisdiction.

.2 Isolate tanks from piping pressure tests.

3.6 CLEANING

.1 Clean in accordance with Section 23 08 02 - Cleaning and Start-Up of Mechanical Piping Systems and manufacturer's written recommendations, supplemented as follows:

.1 Flush after pressure test with No. 2 fuel oil for a minimum of two hours. Clean strainers and filters.

.2 Dispose of fuel oil used for flushing out in accordance with requirements of authority having jurisdiction.

.3 Ensure vents from regulators, control valves are terminated in approved location and are protected against blockage and damage.

.4 Ensure entire installation is approved by authority having jurisdiction.

.5 Clean in accordance with Section 01 74 11 - Cleaning.

.1 Remove surplus materials, excess materials, rubbish, tools, and equipment.

END OF SECTION