

Part 1 General

1.1 RELATED REQUIREMENTS

- .1 Section 03 30 00 – Cast-In-Place Concrete.
- .2 Section 23 11 13 – Facility Fuel-oil Piping.
- .3 Section 31 23 33.01 – Excavating, Trenching and Backfilling.

1.2 REFERENCE STANDARDS

- .1 Canadian Environmental Protection Act (CEPA)
 - .1 SOR/2008-197 – Storage Tank Systems for Petroleum Products and Allied Petroleum Products Regulation.
- .2 Canadian Council of Ministers of the Environment (CCME).
 - .1 CCME PN1326- 2003, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum Products and Allied Petroleum Products.
- .3 Canadian Standards Association (CSA).
 - .1 CAN/CSA-B139-19, Installation code for oil-burning equipment.
- .4 National Research Council Canada (NRC)
 - .1 National Fire Code of Canada 2015 (NFC).
- .5 Transport Canada (TC).
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 Underwriters' Laboratories of Canada. (ULC).
 - .1 ULC-S615-2014, Standard for Fibre Reinforced Plastic Underground Tanks for Flammable and Combustible Liquids.
 - .2 CAN/ULC S661-10(R2016), Standard for Overfill Protection Devices for Flammable and Combustible Liquid Storage Tanks.
 - .3 CAN/ULC S663-11(R2016), Standard for Spill Containment Devices for Flammable and Combustible Liquid Aboveground Storage Tanks
 - .4 CAN/ULC S664-17, Standard for Containment Sumps, Sump Fittings, and Accessories for Flammable and Combustible Liquids.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Indicate tank manufacturer, details of construction, and demonstrate equipment certifications and approvals.

1.4 CLOSEOUT SUBMITTALS

- .1 Submit operation and maintenance data for tank appurtenances for incorporation into manual specified in Section 1 78 00 - Closeout Submittals.
- .2 Include following:
 - .1 Results of post installation tank pressure testing.
 - .2 Results of tank sump hydrostatic testing.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Divert unused metal and wiring materials from landfill to metal recycling facility.
- .3 Divert unused concrete materials from landfill to local facility as approved by Departmental Representative.

Part 2 Products

2.1 FIBREGLASS REINFORCED PLASTIC TANK

- .1 1 – 5000L, double-walled tank.
- .2 Constructed to ULC-S615-14.
- .3 Dry interstice
- .4 Connections: as indicated on design drawings, threaded steel riser pipes to be coated with mastic compound prior to backfill.
- .5 Manholes at grade level: as indicated on design drawings.
- .6 Tank sump as indicated on the design drawings, complete with liquid tight below grade cover and grade level access manway poured into tank slab. Constructed to: CAN/ULC S664-17
- .7 Backfill: as indicated on design drawings and as per tank manufacturers recommended installation procedures.

2.2 TANK ANCHORAGE

- .1 Supply concrete deadmen by tank manufacturer.
- .2 Supply turnbuckles, hold down straps and anchor bolts by tank manufacturer.

2.3 PIPING, VALVES AND FITTINGS

- .1 In accordance with: Section 23 11 13 - Facility Fuel-Oil Piping.

2.4 LEVEL GAUGING

- .1 Supply tank gauging stick to manufacturer's standard.

- .2 Electronic solid-state combination tank level sensor and leak detector: console containing visual LED display and printer algorithms to automatically compute required operations. System to be programmable for:
 - .1 Inventory reporting with following features.
 - .1 Litres of fuel remaining.
 - .2 Temperature of fuel.
 - .3 Millimeters of water in bottom of tank.
 - .4 Millimeters of fuel in tank.
 - .2 Fuel delivery report.
 - .3 Tank interstitial space leak detection.
 - .1 Fits into tank annulus with minimum interwall gap of 13 mm.
 - .2 Provide length of leader cable so as to position probe in the bottom of the tank gap annulus.
 - .4 Observation well vapour monitoring
 - .5 Visual and audible alarm for:
 - .1 Overfill.
 - .2 Low product.
 - .3 High water.
 - .4 Theft.
 - .5 Leaks.
 - .6 Probe diagnostics.
 - .7 Leak tests.
 - .8 Probes and sensors: factory calibrated and pre-set, but tested on site.
 - .9 Ancillary devices:
 - .1 Interface capability with remote facility for monitoring and inventory reconciliation.
 - .10 Security key lock system to select normal operation, setup to enter or change system and tank parameters or operation, or diagnostics to check systems hardware and software

2.5 LEAK DETECTION SYSTEM

- .1 As per Section 23 11 13 – pump controller leak detection
- .2 Observation well.
 - .1 100 mm diameter PVC slotted pipe.
 - .2 Locking cap clearly marked, Observation Well.
 - .3 Liquid-proof cap.
 - .4 Secured to prevent unauthorized access and tampering.
 - .5 Do not glue.

2.6 OVERFILL PREVENTION DEVICES

- .1 Overfill protection devices to: CAN/ULC-S661-10(R2016).

- .2 Tank fill with automatic shutoff.
 - .1 Liquid and vapour-tight fill pipe connection
 - .2 Pressure fill
 - .3 50mm filling connection to sense product level in tank and shut off flow of petroleum product at 95%.
- .3 Electronic overfill alarm
 - .1 Mounted to exterior of building in tank fill area
 - .2 Audible and visual alarm complete with silence button
 - .3 120VAC, receives power from tank level monitoring console, to sound alarm at 90% tank volume.

2.7 PRODUCT TRANSFER AREA SPILL CONTAINMENT DEVICE

- .1 Product Transfer Area Containment Box: as indicated on design drawings and in section 23 11 13.
- .2 Thread-on spill containment device inside Product Transfer Area Containment Box to: ULC S663-11(R2016).
- .3 Liquid and vapour-tight fill pipe connection (camlock with cross bar) with dust cap: 50mm.

2.8 DIP PORT

- .1 Thread on spill containment device to ULC S663-11(R2016).
- .2 Liquid and vapour-tight 32mm (1.25") diameter opening camlock with dust cap.
- .3 Labelled with decal indicating "Dip port – do not fill"

Part 3 Execution

3.1 INSTALLATION

- .1 Install tank in accordance manufacturer's recommendations.
- .2 Install tank in accordance with CEPA SOR/2008-197 CAN/CSA-B139, National Fire Code of Canada CCME PN1326, and manufacturers recommendations.
- .3 Position tank using lifting lugs and hooks, and where necessary use spreader bars. Do not use chains in contact with tank walls.
- .4 Install tanks using trained installers. Installation will be supervised by Departmental Representative.
- .5 Provide certification of installation to Departmental Representative.

3.2 FIELD QUALITY CONTROL

- .1 Test tank, submersible pump sump and transition sumps for leaks in presence of Departmental Representative.

3.3 LEVEL GAUGE SYSTEM

- .1 Provide leak and vapour proof caulking at connections.
- .2 Shield capillary and tubing connections in heavy duty 50 mm polyethylene pipe.
- .3 Calibrate system.

3.4 LEAK DETECTION SYSTEM

- .1 Install in accordance with manufacturer's recommendations.

3.5 OVERFILL PREVENTION DEVICES

- .1 Install in accordance with manufacturer's recommendations.

3.6 CLEANING

- .1 Clean in accordance with manufacturer's written recommendations, supplemented as follows:
- .2 Ensure entire installation is approved by authority having jurisdiction.
- .3 Clean in accordance with Section 01 74 11 Cleaning.
- .4 Remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION