

## **PART 1 GENERAL**

- |  |    |   |
|--|----|---|
| <u>1.1 References</u>                          | .1 | Canadian Council of Ministers of the Environment (CCME).  |
|  | .1 | CCME-PN1326-2004, Environmental Code of Practice for Aboveground and Underground Storage Tank Systems Containing Petroleum and Allied Petroleum Products. |
|  | .2 | Canadian Environmental Protection Act, 1999 (CEPA 1999).  |
|  | .1 | Storage Tanks Systems for Petroleum Products and Allied Petroleum Products Regulations (SOR/2008-197).  |
|  | .3 | Department of Justice Canada (Jus).   |
|  | .1 | Canadian Environmental Protection Act, 1999 (CEPA).   |
|  | .4 | Canadian Standards Association (CSA)/CSA International.   |
|  | .5 | National Research Council/Institute for Research in Construction.   |
|  | .1 | NRCC 38727, National Fire Code of Canada (NFC) - 2010.  |
|  | .6 | Transport Canada (TC).  |
|  | .1 | Transportation of Dangerous Goods Act, 1992 (TDGA).   |
|  | .7 | Underwriters' Laboratories of Canada (ULC).   |
|  | .1 | ULC-S601-2007, Aboveground Horizontal Shop Fabricated Steel Tanks.  |
|  |    | CAN/ULC-S661-10, Standard for Overfill Protection Devices for Flammable and Combustible Liquid Storage Tanks.   |
|  | .2 | CAN/ULC-S663-11, Standard for Spill Containment Devices for Flammable Liquid and Combustible Liquid Aboveground Storage Tanks.                            |
| <u>1.2 Action and Informational Submittals</u> | .1 | Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.  |

- .2 Indicate details of construction, appurtenances, installation, and leakage detection system.
- .3 Shop drawings to detail and indicate following as applicable to project requirements. Submit manufacturers product data to supplement shop drawings.
  - .1 Size, materials and locations of ladders, ladder cages, catwalks and lifting lugs.
  - .2 Tanks capacity.
  - .3 Size and location of fittings.
  - .4 Environmental compliance package accessories.
  - .5 Decals, type size and location.
  - .6 Accessories: provide details and manufacturers product data.
  - .7 Size, material and location of manholes.
  - .8 Size, materials and locations of railings, stairs, ladders and walkways.
  - .9 Finishes.
  - .10 Electronic accessories: provide details and manufacturers product data.
  - .11 Piping, valves and fittings: type, materials, sizes, piping connection details, valve shut-off type and location,
  - .12 Spill containment: provide description of methods and show sizes, materials and locations for collecting spills at connection point between storage tank system and delivery truck, rail car, or vessel.
  - .13 Anchors: description, material, size and locations.
  - .14 Level gauging: type and locations, include:
    - .1 Number of probes required and sizes.
    - .2 Provide details and manufacturer's product data.
  - .15 Ancillary devices: provide details and manufacturer's product data.

- .16 Leak detection system, type and locations, and alarm system.
- .17 Grounding and bonding: provide details of design, type, materials and locations.
- .18 Corrosion protection: provide details of design, type, materials and locations.
- .19 Field-erected AST overfill-protection systems: provide details of design, type, materials and locations.
- .20 Containment system for spills, overfills and storm runoff water: provide details, materials used, and locations.
- .21 Vent piping and vent covers.
- .4 Provide maintenance data for tank appurtenances and leakage detection system for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

### 1.3 Waste Management and Disposal

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/ Demolition Waste Management And Disposal.
- .2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.
- .4 Separate for reuse and recycling and place in designated containers Steel, Metal, and Plastic waste in accordance with Waste Management Plan.
- .5 Place materials defined as hazardous or toxic in designated containers.
- .6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .7 Clearly label location of salvaged

material's storage areas and provide barriers and security devices.

- .8 Ensure emptied containers are sealed and stored safely.
- .9 Divert unused metal materials from landfill to metal recycling facility as approved by Departmental Representative.
- .10 Dispose of unused paint or coating material at an official hazardous material collections site as approved by Departmental Representative.
- .11 Do not dispose unused material into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.
- .12 Fold up metal banding, flatten and place in designated area for recycling.

## **PART 2 PRODUCTS**

### **2.1 Tanks:** **Conventional Steel**

- .1 Horizontal tanks: to ULC-S601, one 13,600 litre, round double-wall, vacuum monitored, skid mounted AST for diesel fuel, and one 9,100 litre, round double-wall, vacuum monitored, skid mounted AST for gasoline. Tanks to be complete with extended skids and sumps to accommodate mounting of dispensers, 38 mm supply connections, and piping to dispenser sumps. Piping to include a manual ball valve shut-off and anti-syphon valve in the supply piping at the tank connections.
  - .1 Provide one external coat of red oxide primer to MPI #23, and two coats white epoxy enamel. Provide 100mm black lettering indicating tank contents on both sides and end of tank behind stairs.
  - .2 Provide factory mounted ladder, platform, and hand hold to permit filling.
- .2 Connections and accessories: both tanks are to be complete with the following:

- .1 Appropriately sized vent pipe to extend to an elevation 2.0 m above the adjacent grade. Vent to be complete with vent whistle at 90% tank capacity and 180° downturn and screen, for weather proof installation. Contractor to verify correct height and operation of vent whistle during first filling.
- .2 Emergency vent to be vapour-tight and spring loaded.
- .3 Interstitial relief vent.
- .4 Interstitial vacuum monitoring gauge.
- .5 50 mm fill pipe with kamlock fitting and spill containment box to ULC-S663, lockable cover, and overfill prevention valve to ULC-S661 to shut down flow when tank volume reaches 95% of tank capacity. Fill pipe to have drop tube internal to tank which is to terminate 150 mm above interior bottom of tank. Lamacoid tag attached to cover indicating contents and capacity. Contractor to verify correct operation of overfill prevention valve during first filling.
- .6 Dip stick and laminated dip chart, 25mm dip port with kamlock fitting located within spill containment box.
- .7 Level gauge:
  - .1 Numerical indicating level gauge reading in metric, 25 mm high black numbers on white background, aluminum powder coated body, stainless steel float and cable, drop tube, vapour tight, acetal gears, stainless steel hardware, tempered borosilicate lense, 49°C to -40°C temperature rating, UL listed.
  - .2 Contractor to verify gauge calibration with dip stick during commissioning. Provide calibration report to Departmental Representative.
  - .3 Provide new water and UV resistant tank level gauge chart

affixed to tank showing  
remaining tank capacity in  
Litres and US Gallons at 1.0 cm  
increments

.8 Anti-syphon valve:

- .1 Cast iron body, brass poppet and seat, stainless steel spring, suitable for fuel oil use.
- .2 Hydrostatic head pressure: 1.5 m to 3 m.
- .3 Anti-syphon valve shall include a pressure relief valve to relieve thermal expansion.

.9 Anti-syphon valve is to be installed with pressure relief bypass line as shown on drawing

.3 Dispenser sumps are to be supplied with a threaded drain and plug, and be constructed to accommodate the associated dispenser. Sumps are also to be weatherproof and designed to prevent exterior precipitation and debris from entering the sumps.

.4 Tank bungs to match arrangements shown on drawing.

2.2 Pump  
Dispensers and  
Piping

---

- .1 Heavy duty commercial type unit with single hose and nozzle. High pump capacity of 1.4 L/s with 746 W explosion proof motor. Pump to be equipped with zero start indicator, registering to tenths of a Litre, totalizing indicator, 100 to 1 pulser with communication cable hook-up and a switch detect, internally luminated dial. The hose should be 7.5 m of 25 mm dia. I.D. complete with post-mounted high hose retractor, anti-static hoses termination in non-automatic swivel connection nozzle with hand warmer, shear shut-off valve and adaptor coupling. The hose should be suitable for use in arctic conditions. Provide for locking device to lock nozzles to cabinet in shut-off positions, with padlock and two keys. Shop painted medium green. Nozzle is not to be equipped with hands-free clip or mechanism.

- .2 Acceptable model: Gasboy 9153 or equivalent.
- .3 Pipe and fittings:
  - .1 Steel, schedule 40 to ASTM A53, painted similar to tank piping.
  - .2 Fittings, threaded, 1 MPa rating, malleable iron, galvanized.
  - .3 Accessories: emergency shear valve mounted near base of dispenser. Valve to close in the event of fire (fusible link melts at 74°C) or the dislodging of the dispenser.
  - .4 Provide at least two portable fire extinguishers, each having a rating of not less than 10 B:C. Provide removable covering for protection against elements.

#### 2.3 Grounding and Bonding

- .1 Ground tank assembly to Canadian Electrical Code.

#### 2.4 Leakage Detection System

- .1 Double-wall tank interstitial vacuum monitoring system.
  - .1 Local vacuum gauge at tank. Indicate normal vacuum level on gauge following completion of construction.

#### 2.5 Product Transfer

- .1 ASTs with normal vent and separate emergency vent.
  - .1 Liquid- and vapour-tight connection on fill pipes for flammable products.

#### 2.6 Spills, Overfills and Storm Runoff Water

- .1 Contained, treated and disposed of in accordance with applicable provincial or territorial regulations, guidelines and policies.

### **PART 3 EXECUTION**

#### 3.1 Installation

- .1 Install tanks in accordance with National Fire Code of Canada and manufacturer's recommendations and CCME PN 1326.

- .2 Fuel from the removed tanks is to be transferred to the new tanks according to the following procedure:
  - .1 Contractor is responsible to transfer fuel in the storage tanks to a temporary storage tank, remove the existing storage tank system, install the new storage tank system and then transfer the fuel into the new system. Tanks are not to be lifted with liquid inside.
  - .2 Contractor must use an intrinsically safe pump designed to transfer flammable liquids.
  - .3 Contractor must have on site at all times a spill kit.
  - .4 Contractor must have two persons involved in the transfer of all flammable products.
  - .5 Contractor must pump fuel through a 10 micron or smaller filter at all times.
  - .6 When transferring fuel from an existing storage tank the Contractor shall not pump fuel from within 10 cm of the bottom of the tank. The bottom 10 cm of liquid/sludge/solids remaining in the tank is to be removed and disposed of by the Contractor.
  - .7 Contractor must provide documentation from the disposal facility for the bottom liquid/sludge/solids.
  - .8 Contractor must inform the Departmental Representative of the volume of fuel transferred for each of the two systems.
- .3 Position tanks using lifting lugs and hooks, and where necessary use spreader bars. Do not use chains in contact with tank walls.
- .4 Tank skids are to be securely anchored to the existing concrete slab.
- .5 Install tanks using licensed and trained installers.
- .6 Install new bollards and signage around



tank as shown on drawing.

- .7 Provide certification of installation to Departmental Representative.
- .8 Filling procedure for tank and use of dispenser to be demonstrated and proven upon installation, to Departmental Representative satisfaction.
- .9 Contractor to verify correct operation of all level gauges during first filling. Fill the tank roughly halfway and dip the tank. Level gauge should be within +/- 5 cm of actual reading. Submit verification results to Departmental Representative for approval.
- .10 Contractor to verify correct operation of all vent whistles during first filling. Fill the tank until the vent whistle stops whistling and then immediately dip the tank. Vent whistle should stop whistling at around 90% capacity. Submit verification results to Departmental Representative for approval.
- .11 Contractor to verify correct operation of all overfill prevention valves during first filling. Fill the tank until OPD activates and then, once pressure has dropped, dip the tank. OPD should active at around 95% capacity. Submit verification results to Departmental Representative for approval.
- .12 New EC registration number lamicoid tag (provided by Departmental Representative) for the new system must be clearly visible on the inside of spillbox and the tank ID displayed on tank prior to first fill.
- .13 Ensure as-built drawings, stamped and dated by a professional engineer registered or licensed in Newfoundland and Labrador, are on site before the first transfer of fuel into the new system.

### 3.2 Field Quality Control

- .1 Test tank for leaks to requirements of and in presence of authority having jurisdiction.

<u>3.3 Touch-Up</u>	.1	Where coating is damaged, touch-up with original coating material.
---------------------	----	--

<u>3.4 Leak Detection System</u>	.1	Install in accordance with manufacturer's recommendations.
----------------------------------	----	--

**END OF SECTION**