ENGINEERED DRAWINGS FOR PETROLEUM STORAGE TANKS

The following is intended to be used as a guideline for information required to appear on engineered drawings involving petroleum storage tank installations. All sections on Page 1 must be completed for each installation. Facility Design will reference a Section # in the column to the right and those sections must be completed for the type of facility being designed.

Facility Name:		Permit App. # : PTMAA Site # :
Facility Location:		
FACILITY DESIGN: (Check one or more of the following)		**Sections Requiring Completion**
	Aboveground Storage Tank(s) with no piping or dispensers; ie. used oil or API tanks, pumps mounted on tanks.	**Section 2**
	Aboveground Storage Tank(s) with aboveground piping and dispensers	**Section 3**
	Aboveground Storage Tank(s) with underground piping and dispensers	**Section 4**
	Aboveground Storage Tank(s) for indoor storage	**Section 5**
	Underground Storage Tanks(s) with no piping and with or without dispensers	**Section 6**
	Underground Storage Tanks(s) with underground piping and dispensers	**Section 7**
TYPE OF FACILITY: (check all that apply)		
	Retail	**Section 8**
	Cardlock	**Section 8**
	Bulk Plant	**Section 8**
	Commercial	**Section 8**
DECLARATION		
Installation of tanks, lines, vents and equipment conforms to the current edition of the Alberta Fire Code and municipal bylaws		
SECTION 1: General Information		
Details must be provided for each of the following for all proposed installations.		
1.	Storage tank(s) ULC or API construction standard(s) must be stated on drawings	
2.	Fire extinguishers (rating, size and quantity)	
3.	Method/evidence of controlling spills at tank loading and/or vehicle fuelling	
4.	Capacity of each storage tank compartment and contents	
5.	Yard lights at least 3 meters from any tank vent opening	

SECTION 2: Aboveground Storage Tank(s) With No Piping		
1.	Tank distance to buildings and property lines	
2.	Tank contents	
3.	Spacing between tanks	
4.	Distance to any propane tanks or natural gas onsite	
5.	Support detail if tank is elevated >300mm (material, 2 hour fire rating)	
6.	Valve detail (type and construction standards)	
7.	Provision of collision protection (type of barrier used, spacing between each and to tank wall)	
8.	Type of secondary containment (dike or doublewall)	
9.	Dike construction detail (ULC standard for liner/impermeability rating to be met)	
10.	Dike construction detail (non-combustible materials; earth, steel, concrete, liner)	
11.	Containmnent liner installed in accordance with Alberta Fire Code and manufacturer's specifications	
12	Capacity of secondary containment (calculation for 110% containment must be provided for dikes)	
13.	Distance of tank wall to dike wall	
14.	Provision for removing liquid from secondary containment	
15.	Statement instructing proper preparation of foundation to accept weight of loaded tank	
16.	Applicable signage (emergency, no smoking, ignition off, tank contents)	
17.	Used oil tanks have a fixed suction tube for product removal	
18.	Vent location and height, discharge outlet must be 1.5m from any building opening	
19.	Evidence of bonding and grounding against static charges	
20.	Tank with a mounted pump: Evidence that the fuel dispensing equipment conforms to CSA B346-M, provide make & model# of pump)	
21.	Delivery hose conforms to CAN/ULC-S612M	
22.	Evidence of remote placement for emergency shutdown button must be shown on drawing	

SECTION 3: Aboveground Storage Tank(s) with Aboveground Piping and Dispensers		
1.	Tank distance to buildings and property lines	
2.	Tank contents	
3.	Spacing between tanks	
4.	Distance to any propane tanks or natural gas onsite	
5.	Support detail if tank is elevated >300mm (material, 2 hour fire rating)	
6.	Valve detail (type and construction standards)	
7.	Provision of collision protection (type of barrier used, spacing between each and to tank wall)	
8.	Type of secondary containment (dike or doublewall)	
9.	Dike construction detail (non-combustible materials; earth, steel, concrete, liner)	
10.	Dike construction detail (ULC standard for liner/impermeability rating to be met)	
11.	Containmnent liner installed in accordance with Alberta Fire Code and manufacturer's specifications	
12.	Capacity of secondary containment (calculation for 110% containment must be provided for dikes)	
13.	Distance of tank wall to dike wall	
14.	Provision for removing liquid from secondary containment	
15.	Evidence of bonding and grounding against static charges	
16.	Statement instructing proper preparation of foundation to accept weight of loaded tank	
17.	Applicable signage (emergency, no smoking, ignition off, tank contents)	
18.	Used oil tanks have a fixed suction tube for product removal	
19.	Vent location and height, discharge outlet must be 1.5m from any building opening	
20.	Evidence of anti-syphon provision	
21.	Identify the standard the metallic piping conforms to API, ASTM, or CSA	
22.	Drawing to show schematic for piping layout	
23.	Pumping system (suction or pressure)	
24.	Under dispenser sump ULC standards (ULC #)	
25.	Island height and/or type of dispenser collision protection	
26.	Evidence of dispensers fitted with shear valves	
27.	Dispenser distance to: (Property lines, right-of-ways, building openings, NG dispensers, LPG dispensers, manhole/sewer openings, fixed source of ignition)	
22.	Evidence of remote placement for emergency shutdown button must be shown on drawing	

SECTION 4: Aboveground Storage Tank(s) with Underground Piping and Dispensers		
1.	Tank distance to buildings and property lines	
2.	Tank contents	
3.	Spacing between tanks	
4.	Distance to any propane tanks or natural gas onsite	
5.	Support detail if tank is elevated >300mm (material, 2 hour fire rating)	
6.	Valve detail (type and construction standards)	
7.	Provision of collision protection (type of barrier used, spacing between each and from tank wall)	
8.	Type of secondary containment (dike or doublewall)	
9.	Dike construction detail (ULC standard for liner/impermeability rating to be met)	
10.	Dike construction detail (non-combustible materials; earth, steel, concrete, liner)	
10.	Containmnent liner installed in accordance with Alberta Fire Code and manufacturer's specifications	
11.	Capacity of secondary containment (calculation for 110% containment must be provided for dikes)	
12.	Distance of tank wall to dike wall	
13.	Provision for removing liquid from secondary containment	
14.	Statement instructing proper preparation of foundation to accept weight of loaded tank	
15.	Applicable signage (emergency, no smoking, ignition off, tank contents)	
16	Evidence of bonding and grounding against static charges (Class I, Bulk, Marine only)	
17	Used oil tanks have a fixed suction tube for product removal	
18	Vent location and height of vent pipe, discharge outlet to be 1.5m from building openings	
19	Underground piping material (metallic, fibreglass, thermoplastic)	
20.	Underground piping construction standard (ULC/API/ASTM)	
21.	Drawing to show schematic for piping layout (from foundations; sand/gravel fill for top/sides and underfill)	
22.	Transition sump construction standard (ULC #)	
23.	Pumping system (suction or pressure)	
24.	Line leak detection method(s)	
25.	Under dispenser sump ULC standards (ULC #)	
26.	Island height and/or type of dispenser collision protection	
27.	Evidence of dispensers fitted with shear valves	
28.	Dispenser distance to: (Property lines, right-of-ways, building openings, NG dispensers, LPG dispensers, manhole/sewer openings, fixed source of ignition)	

SECTION 5: Aboveground Storage Tank for Indoor Storage		
1.	Type of secondary containment (doublewall, dike or room)	
2.	Dike construction detail (non-combustible materials; earth, steel, concrete, liner)	
3.	Capacity of secondary containment (calculation for 110% containment must be provided for dikes)	
4.	Tank contents	
5.	Spacing between tanks	
6.	Supports detail if tank elevated >300mm (material, 2 hour fire rating)	
7.	Valve detail - located near the tank on remote fill lines; connections are liquid/vapour tight	
8.	Applicable signage (emergency, no smoking, ignition off, tank contents)	
9.	Used oil tanks have a fixed suction tube for product removal	
10.	Remote filling done outside ____; 1.5 m from building openings _____; free of ignition sources	
11.	Venting: all vented outside ____; 1.5m from building openings ____;	Emergency vent vented outdoors ___
11.	AFC 4.3.12.4-Storage quantity meet levels: product - (F / C); Litres_____; Floor level-main, basement; level >2 floor;	
12.	Connections to oil burning equipment to comply with CSA-B139-04 "Installation Code for Oil-Burning Equipment"	
13.	Evidence of bonding and grounding against static charges	
14.	Dedicated Rooms for Tanks -distance between walls/tanks; explosion venting for Class 1 products; fire extinghishers	
15.	Openings other than fill pipe - vapor tight caps, spring loaded check valve for preventing overflows/overpressurizing of vapors	

SECTION 6: Underground Storage Tank(s) with No Piping		
1.	Tank distance to property line and building foundation	
2.	Tank contents	
3.	Spacing between tanks	
4.	Containment liner is installed in accordance with Alberta Fire Code and manufacturer's specifications (if applicable)	
5.	Applicable signage (emergency, no smoking, ignition off, etc)	
6.	Used oil tanks have a fixed suction tube for product removal	
7.	Vent location/height	
8.	Corrosion protection type (if steel on external wall of tank)	
9.	Evidence of overfill device	
10.	Evidence of spill containment on fill tube	
11.	Method of site leak detection	
12.	Statement that tank is to be installed in accordance with manufacturer's instructions (Groundcover = 600mm, if traffic area groundcover = 1m)	
13.	Island height and/or type of dispenser collision protection	

SECTION 7: Underground Storage Tank(s) with Underground Piping and Dispensers		
	Class A Site: ___Yes ___No Secondary Containment: ____ Tank ____Piping	
1.	Tank distance to property line and building foundation	
2.	Tank contents	
3.	Spacing between tanks	
4.	Containment liner is installed in accordance with Alberta Fire Code and manufacturer's specifications (if applicable)	
5.	Applicable signage (emergency, no smoking, ignition off)	
6.	Used oil tanks have a fixed suction tube for product removal	
7.	Vent location/height	
8.	Corrosion protection type (if steel on external wall of tank)	
9.	Evidence of overfill device	
10.	Evidence of spill containment on fill tube	
11.	Method of site leak detection	
12.	Statement that tank is to be installed in accordance with manufacturer's instructions	
13.	Underground piping material (metallic, fibreglass, thermoplastic)	
14.	Underground piping construction standard (ULC, API/ASTM #)	
15.	Corrosion protection type on steel piping	
16.	Pumping system (suction or pressure)	
17.	Line leak detection method(s)	
18.	Tank containment sump and under dispenser sump construction specifications (ULC #)	
19.	Island height and/or type of dispenser collision protection (island height >100mm)	
20.	Evidence of dispensers fitted with shear valves	
21.	Drawing to show schematic for piping layout (distance from foundations; sand/gravel fill for top/sides; appropriate underfill on distubed soils)	
22.	Dispenser distance to: (Property lines, right-of-ways, building openings, NG dispensers, LPG dispensers, manhole/sewer openings, fixed source of ignition)	

SECTION 8: APPLICATION SPECIFIC QUESTIONS		
RETAIL		
1.	If self-serve, evidence for provision for line-of-sight and distance to shut-off devices	
2.	If self-serve, evidence for provision for two-way communication	
3.	Evidence that delivery hose/nozzle conforms to requirements listed in Subsection 4.6.5 of the Code (hose length ≤4.5m; retractable ≤6m)	
4.	Evidence that the fuel dispensing equipment conforms to CSA-B346-M (Section 4.6.3 of the Code)	
5.	Tank maximum capacity = 80,000L; aggregate capacity = 200,000L	
CARDLOCK/COMMERCIAL		
1.	Location and signage for emergency shutdown of dispensers	
2.	Evidence of remote placement for emergency shutdown button	
3.	Signage for emergency contacts, operating instructions	
4.	Location of telephone or other means to contact emergency personnel	
5.	Evidence that delivery hose/nozzle conforms to requirements listed in Subsection 4.6.5 of the Code (hose length ≤4.5m; retractable ≤6m)	
6.	Evidence that the fuel dispensing equipment conforms to CSA-B346-M (Section 4.6.3 of the Code)	
7.	Tank maximum capacity = 80,000L; aggregate capacity = 200,000L	
RETAIL UNATTENDED SELF-SERVE FACILITIES		
1.	a video recording surveillance system connected to a monitoring facility	
2.	emergency shut-off switches at the dispenser island	
3.	master emergency shut-off switch located >6m and <10 meters from dispensing	
4.	telephone or other means for contacting fire department	
5.	audible alarm actuated by the emergency shut-off switches	
6.	strobe light actuated by the emergency shut-off switch	
7.	dispenser cabinets/panels monitored with intrusion alarms connected to the monitoring facility	
8.	pump controls/accessory buildings protected with security alarms, smoke detectors connected to monitoring facility	
9.	electronic storage tank monitoring for inventory control.	
10.	dispensers allow maximum 100L for dispensing at one time	
Signage:		
11.	the location and use of the emergency shut-off switches	
12.	the user must stay outside their vehicle in view of the fuelling nozzle during dispensing	
13.	emergency instructions in the event of an accident or spill, and	
14.	telephone numbers for the fire department.	

BULK PLANT		
1.	Evidence of distances for loading fill stem to tanks, buildings and property line	
2.	Layout and details for fencing requirements to separate dispensing area from the bulk storage operations area (fence height, gates, materials construction)	
3.	Spill control at bulk loading/unloading area	
4.	Minimum of two 40-B:C fire extinguishers	
For facilities constructed near railway operations:		
5.	Minimum distances for tanks and loading structures to railway line conforms to General Order No. O-32 "Flammable Liquids Bulk Storage Regulations" published by Transport Canada	
6.	For product transfers from/to railway tank cars, bonding/grounding in conformance with CTC 1982-8 RAIL "Railway Prevention of Electric Sparks Regulation" published by Transport Canada	

AFC 4.3.7.4 Conditions for Clearance on DW Tanks (601H and 630V)		
1	Spill containment - ULC 663 for PSTs	
2	Overfill prevention ULC 661 for PSTs	
3	Under dispenser sumps ULC/ORD-C107.21 if a fuel dispenser is used	
4	has a means for detecting leaks in the interstitial space	
5	Vaccuum gauges are inspected every 7 days for any loss of pressure in the interstitial space	
6	capacity is <50,000 litres	
7	all piping connections are made above the normal maximum liquid level	
8	has a means to prevent releases by siphon flow (anti-syphon)	
9	delivery operator has a means for determing the levels in the tank	
10	has collision protection	
Conditions for Oversize Tanks Fire Code Variance		
1	Maximum capacity is 80,000 L; aggregate capacity is 200,000 L	
2	ULC-655 protected tank can exceed 80,000L but maxiumum capacity allowed is 200,000L	
3	Spill containment - ULC 663 for PSTs	
4	Overfill prevention ULC 661 for PSTs	
5	Tight fill adapters on all fill openings	
6	Remote bottom fill openings equipped with check valves to prevent siphoning from the tank and a manual shut-off valve on the delivery line	
7	Under dispenser sumps ULC/ORD-C107.21 if a fuel dispenser is used	
8	has a means for detecting leaks in the interstitial space	
9	Vaccuum gauges are inspected every 7 days for any loss of pressure in the interstitial space	
10	all piping connections are made above the normal maximum liquid level	
11	has a means to prevent releases by siphon flow (anti-syphon)	
12	delivery operator has a means for determing the levels in the tank	
13	has collision protection	
14	Dispensers shall be 6 meters from tank and if aboveground piping is used it shall be protected from damages	