

Underground Storage Tank Requirements Check Sheet



STORAGE TANK PERMIT

Div C, 2.2.3.1.(5)

No person shall install, remove, alter or repair any part of a storage tank system unless a storage tank permit has been obtained from Edmonton Fire Rescue Services.

Permit Requirements:

- 1) A detailed scope of work.
- 2) All installations, removals, repairs or replacements of any storage tank system, in whole or in part, must meet all requirements of the NFC(AE).
- 3) The name and certification number of the individual that will be on site during the proposed scope of work must be included in the storage tank permit application.
- 4) All relevant documents must be included with the storage tank permit application, including but not limited to storage tank specification sheets, site maps with clearances, engineered drawings, applications for variance where applicable, etc.
- 5) Engineered drawings that bear the stamp and seal of a licensed engineering professional registered to practice in Alberta are required if any of the following apply:
 - a) Any underground installation/repair of a storage tank system in part or in whole, including tank(s), lines, etc.
 - b) Any in-building installation/repair of a storage tank system in part or in whole, including tank(s), lines, pumps, catch basins, etc.
 - c) Any installation/repair of an aboveground storage tank system where an individual tank exceeds 8,000 L or the aggregate capacity of all tanks exceeds 20,000 L.

***Permits will only be issued by the reviewing Fire Safety Codes Officer with Edmonton Fire Rescue Services if all required information and documents are provided and the proposed scope of work in its entirety meets the requirements of the National Fire Code - 2023 Alberta Edition [NFC(AE)] Any permit application that is incomplete or missing the required information and documents may be subject to cancellation or refusal.**

CERTIFIED PETROLEUM MECHANIC

Div C, 2.2.3.1

- 1) Only individuals approved by the Provincial Fire Administrator are permitted to install, remove, repair or maintain aboveground or underground storage tank systems.
- 2) Approved persons are considered qualified to install, remove, repair and maintain aboveground and ,underground storage tank systems when they have received certification from
 - a) The Canadian Petroleum Contractors Association (CPCA),
 - b) The Technical Standards and Safety Authority (TSSA), and
 - c) The Petroleum Tank Management Association of Alberta (PTMAA) (*see Note A-2.2.3.1.(2)(c)*)

Note A-2.2.3.1.(2)(c). - PTMAA certification will no longer be recognized after December 31, 2025. Anyone who has certification through PTMAA will need to gain their certification through the CPCA or TSSA before December 31, 2025.

STORAGE TANK REGISTRATION

Aboveground storage tanks with a capacity greater than or equal to 2,500 Litres and all underground storage tanks must be registered annually with Edmonton Fire Rescue Services.

The information below lists the most common requirements related to underground flammable liquid and combustible liquid storage tank systems. **Include all applicable information listed below in your documentation and refer to the [National Fire Code - 2023 Alberta Edition](#) to ensure all code requirements have been met.**

UNDERGROUND STORAGE TANK SYSTEMS - GENERAL

STORAGE TANK CONSTRUCTION STANDARDS - *NFC(AE), Div B, 4.3.1.2.*

- ☐ The storage tank(s) shall be double-walled and designed to an approved CAN/ULC standard for use in the underground storage of flammable and combustible liquids as per the NFC(AE).

LOCATION AND CLEARANCES - *NFC(AE), Div B, 4.3.8.2.*

- ☐ Underground storage tanks shall be separated by a horizontal distance of not less than:
 - ☐ 600 mm from adjacent underground tanks or structures,
 - ☐ 1 m from a building foundation or street line, and
 - ☐ 1.5 m from property lines

GROUND COVER - *NFC(AE), Div B, 4.3.8.3.*

- ☐ Underground storage tanks shall be installed with not less than 600 mm of ground cover when not exposed to vehicular traffic.
- ☐ Underground storage tanks that are exposed to vehicular traffic must have ground cover that:
 - ☐ Is a minimum of 1 m to finished ground level, or
 - ☐ 150 mm reinforced concrete slab or 200 mm unreinforced concrete slab over 450 mm of ground cover and extends 300 mm beyond the storage tank.

FILLING - *NFC(AE), Div B, 4.3.8.7.*

- ☐ Flammable liquids or combustible liquids shall not be placed in an underground storage tank until
 - ☐ The fill pipe and vent lines have been installed in the tank, and
 - ☐ All other openings have been sealed.

ANCHORAGE - *NFC(AE), Div B, 4.3.8.9.*

- ☐ Underground storage tanks shall be protected against hydrostatic forces which can cause the uplift of tanks once they are empty by the use of anchors and ground straps.

SUMPS - *NFC(AE), Div B, 4.3.9.*

- ☐ A dispenser sump shall be provided under a dispenser.
- ☐ A spill containment sump shall be provided at every underground storage tank fill point.
- ☐ A transition sump shall be provided for all underground mechanical pipe connections.
- ☐ A turbine sump shall be provided for all underground turbine pump assemblies.
- ☐ All sumps shall conform to CAN/ULC-S664, "Standards for Containment Sumps, Sump Fittings, and Accessories for Flammable and Combustible Liquids."
- ☐ Dispenser Sumps, turbine sumps and transitions sumps shall be provided with an electronic leak detection device.

LEAK DETECTION MONITORING (SUMPS) - NFC(AE), Div B, 4.3.9.3.

- ☐ Where dispenser sumps, turbine sumps and transition sumps are installed in an underground storage tank system, they shall be provided with an electronic monitoring device to indicate the presence of liquid.

CORROSION PROTECTION - NFC(AE), Div B, 4.3.10.

- ☐ Underground steel storage tanks and integral fittings subject to corrosion shall be:
 - ☐ Protected in conformance with CAN/ULC-S603.1, "Standard for External Corrosion Protection Systems for Steel Underground Tanks for Flammable and Combustible Liquids," or
 - ☐ Protected by impressed current in conformance with NACE SPO285, "Corrosion Control of Underground Storage Tank Systems by Cathodic Protection".

VENT CLEARANCES AND REQUIREMENTS - NFC(AE), Div B, 4.3.11.

- ☐ Vent pipe outlets from underground storage tanks shall be located not less than:
 - ☐ 3.5 m above adjacent ground for Class I liquids,
 - ☐ 2.0 m above adjacent ground for Class II and IIIA liquids,
 - ☐ 1.5 m from building openings,
 - ☐ 7.5 m from any dispenser, and
 - ☐ Protected against mechanical damage (collision protection).

LOCATION AND ARRANGEMENT OF PIPING - NFC(AE), Div B, 4.5.6.5.(2)

- ☐ Underground piping shall be located not less than 300 mm from any building except where the piping enters the building as permitted in 4.5.6.8.

INSTALLATION OF UNDERGROUND PIPING - NFC(AE), Div B, 4.5.6.6.

- ☐ Underground piping shall be supported on
 - ☐ Undisturbed or compacted soil, or
 - ☐ Not less than 150 mm of clean sand, pea gravel or clean crushed stone, and
- ☐ Backfilled on the top and sides with not less than:
 - ☐ 300 mm of pea gravel or clean crushed stone, or, clean sand.

UNDERGROUND STORAGE TANKS - DISPENSING

STORAGE TANK SYSTEM DISPENSING REQUIREMENTS

Any underground storage tank system that includes a dispensing system must meet the requirements above along with the following dispensing requirements

DISPENSERS - NFC(AE), Div B, 4.6.3.

- ☐ Fixed dispensers for flammable liquids or combustible liquids shall conform to CSA B346-M "Power Operated Dispensing Devices for Flammable Liquids."

COLLISION PROTECTION - NFC(AE), Div B, 4.6.3.4.

- ☐ Where fixed dispensers are not attached to storage tanks with protection, they shall be protected against collision damage by:
 - ☐ A concrete island not less than 100 mm high, or
 - ☐ Posts or guardrails (jersey barriers, lego blocks, etc)

LOCATION AND CLEARANCES - NFC(AE), Div B, 4.6.3.3.

- ☐ Fixed dispensers locations shall be not less than:
 - ☐ 3 m from any right-of-way and any property line,
 - ☐ 6 m horizontally from any fixed source of ignition,
 - ☐ 6 m horizontally from any LPG cylinder or storage tank,
 - ☐ 3 m from any building openings, other than those that serve as shelter for operating personnel,
 - ☐ 6 m from any manhole or sewer opening

DELIVERY HOSE AND NOZZLES - NFC(AE), Div B, 4.6.5.

- ☐ Delivery hose shall conform to CAN/ULC-S612, "Standards for Hose and Hose assemblies for Flammable and Combustible liquids.
- ☐ The maximum length for a hose through which flammable liquids and combustible liquids are dispensed is 4.5 m. This can be extended to 6 m with a retracting mechanism.
- ☐ Every hose nozzle valve through which a Class I or II liquid is dispensed into a vehicle shall be automatic closing and conform to CAN/ULC-S620, "Standard for Hose Nozzle Valves for Flammable and Combustible Liquids."
- ☐ A hose nozzle valve shall be constructed so that:
 - ☐ If equipped with a hold-open device, it shall
 - a) Allow automatic dispensing,
 - b) Automatically shut off when vehicle tank is full, and
 - c) Shut off if the nozzle is dropped or falls from the fill pipe.

SHUT-OFF DEVICES - NFC(AE), Div B, 4.6.4.1.

- ☐ A device to shut off power to all dispensers and pumps shall be clearly marked and provided at a location not less than 6 m and not more than 30 m away from dispensers and pumps.

SIGNAGE - NFC(AE), Div B, 4.6.8.8.

- ☐ A clearly visible weatherproof sign must be provided for each of the following:
 - ☐ Emergency shut-off device locations;
 - ☐ Operating instructions;
 - ☐ No Smoking;
 - ☐ Ignition must be turned off during refueling
 - ☐ Emergency instructions with emergency contact numbers.

SPILL KITS - NFC(AE), Div B, 4.1.6.3.(3)(b)

- ☐ A non-combustible spill kit with tight fitting lid shall be provided at or near the dispensing station that includes absorbent material to clean up any spilled flammable or combustible liquids.

FIRE EXTINGUISHERS - NFC(AE), Div B, 4.6.9.1.

- ☐ At least 2 portable extinguishers with a minimum 40-B-C rating shall be provided at every fuel-dispensing station.

UNDERGROUND STORAGE TANKS - DISPENSING (SELF SERVE)

SELF-SERVICE OUTLETS - NFC(AE), Div B, 4.6.8.2.(6)

- ☐ Self-service outlet means a fuel-dispensing station other than a marine fuel-dispensing station where the public handles the dispenser.
- ☐ Instructions for the operation of dispensers shall be posted in conspicuous locations.
- ☐ Located no more than 25 m from the point of sale location. If any dispenser is located outside the 25 m radius, Edmonton Fire Rescue Municipal Variance EFRS-MV002 will be in effect and all requirements there-in shall be followed.
- ☐ A 2-way communication system shall be provided at each pump island.

UNDERGROUND STORAGE TANKS - DISPENSING (UNATTENDED)

UNATTENDED SELF-SERVICE OUTLETS - NFC(AE), Div B, 4.6.8.2.

- ☐ Unattended self-service outlets shall have:
 - ☐ A video surveillance system that allows for monitoring of accidents, spills, vandalism, etc. that is connected to a monitoring facility.
 - ☐ A manually actuated emergency shut-off switch on either side of the dispensing unit that shuts off that dispenser;
 - ☐ A manually actuated master emergency shut-off device that is located more than 6 m and less than 10 m from the dispensing islands and shuts off power to all dispensers;
 - ☐ Dispensing devices that can only be reset by trained personnel in the event an emergency shut-off device is actuated;
 - ☐ A public access telephone or other means of communication with emergency services;
 - ☐ An audible alarm actuated by the emergency shut-off switch in a visible location;
 - ☐ A strobe light actuated by the emergency shut-off device in a visible location;
 - ☐ Dispensing pump cabinets and panels monitored with an intrusion alarm device connected to a monitoring facility.
 - ☐ Weather resistant signs conspicuously posted in the dispensing area that include operating instructions, instructions in the event of an accident, spill, or other emergency along with emergency phone numbers.
 - ☐ Electronic storage tank monitoring for inventory control.
 - ☐ Dispensing units shall be such that a maximum quantity of 200 L can be dispensed at one time after which the dispensing unit will shut down and further dispensing can only occur when the dispensing unit has been reset.

UNDERGROUND STORAGE TANKS - DISPENSING (CARD LOCK)

CARD OR KEY ACTIVATED DISPENSERS (PUBLIC) - NFC(AE), Div B, 4.6.8.3.

- ☐ Card or key activated equipment and special dispensers open to the general public shall have a minimum of one attendant per 12 hoses that can be operated simultaneously.

CARD OR KEY ACTIVATED DISPENSERS (NON-PUBLIC) - NFC(AE), Div B, 4.6.8.4.

- ☐ Card or key activated dispensers that are not open to the public:
 - ☐ Must follow the requirements of self-serve and unattended fuel stations as well as the following:
 - ☐ Operation of card or key activated dispensers shall be restricted to persons authorized by the supply agent to possess a card or key to operate the dispensers;
 - ☐ Clearly legible operation instructions must be visible at all times and shall be posted at every dispenser island
 - ☐ A telephone or other clearly identified means to notify the fire department shall be provided at a location that is readily accessible to the user;
 - ☐ Emergency instructions, including emergency phone numbers shall be conspicuously posted to advise users in the event of a spill or accident to use the emergency stop device and call 911.

Failure to comply with the National Fire Code (Alberta Edition) can result in fines and even jail time as outlined in the [Safety Codes Act](#).

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Form Approver: Fire Marshal

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