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TITAN II

Recommended Guide Specification

The following items are the critical elements that should be included in the Mechanical (HVAC) Specifications for TITAN® II Underground Storage Tanks.

Furnish and install a 15000 gallon underground steel storage tank, 10’0” inches in diameter by 25’6” inches long with the TITAN® II corrosion control and secondary containment system as manufactured by Highland Tank. The tank shall be built in accordance with UL-58, UL-1746, and TITAN® II specifications.

The tank will have:

A) (\_\_) 4" dia., and (\_\_) 2” dia. threaded NPT fittings as located on drawing.

B) Striker plates required under each opening.

C) TITAN® II Corrosion Control System.

D) TITAN® II HMW Polymer Secondary Containment System

 E) Construction featuring cascading shells to provide enhanced migration of any

 accumulated moisture for complete extraction.

F) Seal welded and coated with epoxy lining (Bottom 60 degrees of the tank)

G) 304 stainless steel monitoring tube.

H) 24” manhole, with up to (5) 4” threaded fittings included as required.

 I ) TITAN® sump base, BRAVO® sump, special Highland green with installation kit.

Options

 A) TITAN® sump base, BRAVO® sump, special Highland green with installation kit.

 B) Tank hold-down method. Strap package shall consist of (select one):

 \_\_\_ Highland Tank Deadmen Anchoring System (includes deadmen and nylon

 straps sized for specific TITAN® II tank).

 \_\_\_ Nylon Hold-Down Straps for use with full concrete pad, including

 turnbuckle, clamps, and galvanized wire cable per strap.

 \_\_\_ Nylon Hold-Down Straps for use with deadman (no turnbuckle, clamps,

 or wire cable included).

 \_\_\_ Standard Steel Hold-Down Straps with (2) turnbuckles per strap.

 \_\_\_ Steel Safety Hold-Down Straps with (2) angle clips and (1) mid-point

 threaded adjustment rod.

 \_\_\_ Steel Deadmen Hold-Down Straps (no turnbuckle, clamps, or wire

 cable included).

The secondary containment tank wall shall be made of High Molecular Weight (HMW) Polymer extruded and applied at the tank factory.

Both the primary storage tanks and secondary containment jacket shall be compatible with gasoline, ethanol, methanol, jet fuel, av-gas, kerosene, diesel fuel, and motor oil at ambient underground temperature or fuel oil stored at temperatures not to exceed 100˚ F.

The primary storage tank shall be contained in a 360˚, air pressure-testable and unbreakable jacket, bonded together and sealed at the fittings.

There shall be an interstital space between the primary and secondary containment jacket to allow 100% fluid migration between the walls under maximum load conditions.

The corrosion control system shall be in strict accordance with TITAN® specifications as applied by a licensee of TITAN® Inc. and shall have a limited 30-year warranty against failure due to exterior corrosion and internal corrosion when used with petroleum products or alcohol. Tank shall bear UL-1746, and TITAN® labels.

The tank excavation shall be free from material that may cause damage to the tank. Care shall be taken during installation that foreign matter is not introduced into excavation or backfill. The bottom of the excavation shall be covered with clean sand or gravel to depth of 12” suitably graded and leveled.

Special Note: If tank is to be placed on a concrete pad for anchoring purposes, the tank must not be placed directly on the pad. A layer of fine or pea gravel, sand or #8 crushed stone (#8 coarse aggregate ASTM D-448) at least 6" deep must be spread evenly over the dimensions of the pad to separate the tank from the pad. If installation area is in a tidal area, the tank “bedding” material should be fine gravel or pea gravel rather than sand.

Tanks shall be shipped, delivered, installed and 3/4 backfilled while maintaining a constant vacuum (12 inches of mercury vacuum) on the interstitial space to assure integrity of both the primary storage tank and secondary containment tank wall simultaneously.

Site Test

Should a site integrity test be required, the vacuum may be released at the site and a 5 PSI air pressure test may be performed to the primary storage tank and an air pressure/soap test may be performed on the secondary tank (pressure no to exceed 1 PSI in accordance with the label instructions on the tank).

Before placing the tank in the excavation, all dirt clods and similar foreign matter shall be cleaned from the tank.

Equipment to lift the tank shall be of adequate size to lift and lower the tank without dragging and dropping to ensure no damage to the tank or the coating. Tanks shall be carefully lifted and lowered by use of cables or chains of adequate length (not less than 30˚ including angle) attached to the lifting lugs provided. A spreader bar should be used where necessary. Under no circumstances are chains or slings around the tank shell permitted.

Special Note: Hold Down Straps - Special care should be exercised when installing hold down straps. Ensure that the straps are separated from the tanks by separating pads made of an inert, insulation dielectric material. The separating pad should be at least 2" wider than the hold down strap width and must be carefully placed anywhere on the tank where hold down straps would come into direct contact with the tank shell.

Backfill consisting of sand, #8 crushed stone (#8 crushed aggregate ASTM D-448) or fine gravel, shall be placed along bottom side of tank by shoveling and tamping to ensure the tank is fully and evenly supported around bottom quadrant. The backfill shall be deposited carefully around tank and to a minimum depth (12” - PEI/RP100-97) over tank to avoid damage to the secondary containment jacket.

Tank shall be manufactured by Highland Tank, Stoystown, PA; Manheim, PA; Clarkston, MI; or Greensboro, NC.