

TANK INSTALLATION

Proper installation of the tank is absolutely critical for maintaining structural integrity and watertightness. Many of the problems experienced with leakage can be attributed to incorrect installation procedures. In addition to damage to the tank, improper installation techniques could be a safety hazard.

Site Conditions

The installation site must be accessible to large, heavy trucks weighing up to 80,000 pounds. The construction area should be free of trees, branches, overhead wires or parts of buildings that could interfere with the delivery and installation of the on-site wastewater tank. Most trucks will need to get within 3 to 8 feet of the excavation to be unloaded.

Excavation

Prior to excavation, identify and locate all buried utilities. Follow OSHA regulations governing excavation work at all times. Excavations should be sloped to comply with all construction safety requirements.

Bedding

Proper use of bedding material is important to ensure a long service life of an on-site wastewater treatment system. Use imported bedding material as necessary to provide a uniform bearing surface. A good base should ensure that the tank would not be subjected to adverse settlement. Use a minimum of 4 inches thickness of sand or granular bed overlying a firm and uniform base unless otherwise specified. Tanks should not bear on large boulders or rock edges.

Sites with silty soils, high water tables or other “poor” bearing characteristics must have specially designed bedding and bearing surfaces. In the presence of high water tables, structures should be properly designed to resist floatation.

Proper compaction of the underlying soils and bedding material is critical to eliminate later settlement, which can ultimately occur in all tank installations regardless of the tank material. Potential tank settlement is measurable, predictable and preventable. Proper evaluation of the original soil, bedding materials, water table, backfill materials and potential soil bearing stresses reduces the likelihood of later tank settlement. Set the tanks level to provide the proper elevation drop from the inlet to the outlet.

Worker safety is of primary importance. If it is necessary to have a worker enter the excavation to check elevation or compact bedding materials, use proper excavation methods that will prevent the sidewalls from collapsing. Alternatively, trench boxes may also be used if necessary.

Tank Placement

Prior to placement in the excavation, confirm the tank's orientation. Check the bedding material and ensure that inlet penetrations face the residence. After placement, check that the tank is level. The slope of the sewer line and tank elevation should meet local plumbing and building codes.

Lifting Devices

Verify lifting apparatus such as slings, lift bars, chains and hooks for capacity, and ensure an adequate safety factor for lifting and handling products. The capacity of commercial lifting devices must be marked on the devices.

All lifting devices and apparatus should meet OSHA requirements documented in “Code of Federal Regulations” Title 29 Part 1926. Other applicable codes and standards are ANSI A10.9 and ASTM C857, C890 and C913.

A factor of safety of at least 4 is recommended for lifting devices. Manufacturers of standard lifting devices should provide test data to allow selection of appropriate loading.

Because of their brittle nature, do not use reinforcing bars as lifting devices. Use smooth bars made of steel conforming to ASTM A36 instead.

A factor of safety of at least 5 is recommended for lifting apparatus, such as chains, slings, spreader beams, hooks and shackles.

Joint Seals

For two-piece tanks, use high-quality preformed joint seals. Surfaces should be clean. Ensure seals meet minimum compression and other installation requirements as prescribed by the seal manufacturer and detailed herein. During the time of installation, ambient temperatures below 50 F sometimes affect the compressibility of the sealant. Care must be taken to determine that tank sections installed on site have been properly sealed. Inspecting the joint area to determine that the tank sections have been properly seated helps prevent soil materials from entering the joint area during backfilling operation. Properly seal manholes and risers to prevent infiltration.

Backfilling

Place backfill in uniform layers less than 24 inches thick. Backfill should be free of any large stones (greater than 3 inches in diameter) or other debris.

Figure 3 — Basic principles of bedding, tank placement and backfilling

