

This module discusses the construction of underground storage tank piping. Piping, like tanks, can be constructed of several different materials and can be single-walled or double-walled. The piping construction and design affects what regulations apply to the piping.

Product piping refers to underground piping from the tank to the dispenser, generator or boiler that routinely contains product. Fill pipes, vent pipes and tank risers will be discussed in other modules.



Piping Material

Piping is constructed of metal or non-metal material such as fiberglass reinforced plastic or flexible plastic. Piping constructed of metal must be corrosion protected.



Flexible plastic piping



Non-flexible fiberglass reinforced plastic piping

Metal Piping

Metal piping exists at many older facilities but is not common at newer facilities. All metal piping must be protected from corrosion.

Many piping systems use stainless steel flex connectors that are located within the dispenser or turbine sumps. Stainless steel does rust, and if it is in contact with the soil, it requires corrosion protection.



Stainless Steel Flex Connector

Single-Walled Piping

Since January 1, 2009, the North Dakota Underground Storage Tank (UST) Rules require all new or replaced product piping to be secondarily contained (double-walled). The one exception is properly sloped safe suction piping systems.

Leaks associated with existing single-walled pressurized piping go straight into the ground. For this reason, it is particularly important that tank owners and operators pay close attention to leak detection and monitoring requirements on single-walled piping.

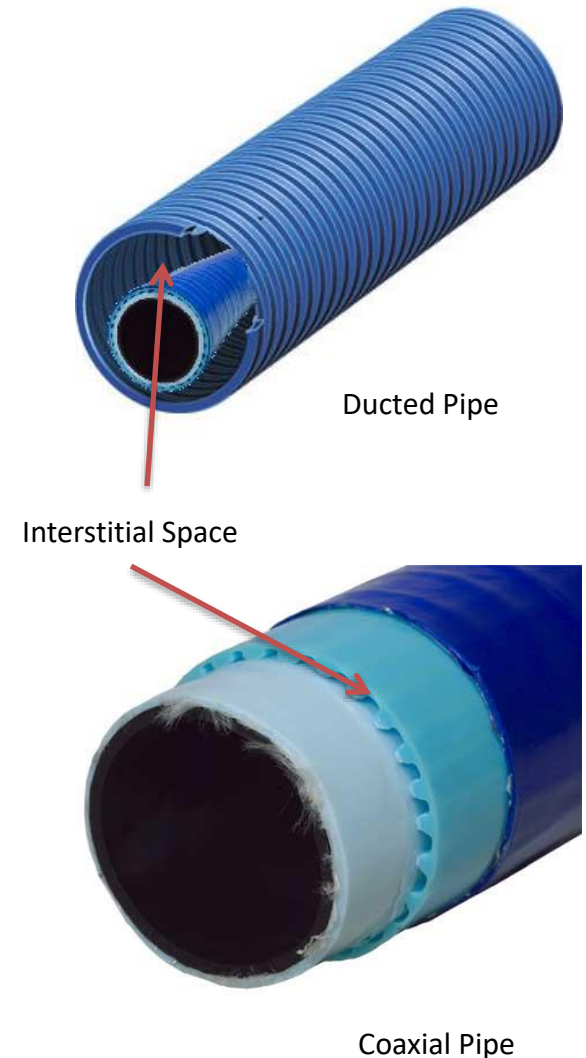
Leak detection requirements for single-walled piping depends on the type of pumping. If the piping system uses suction pumps, refer to the Suction Pumping Systems module. If the piping system uses submersible pumps (pressurized system), refer to the Pressurized Pumping Systems module.

Double-Walled Piping

Double-walled piping systems consist of pipes within pipes and are designed to prevent releases into the environment by containing leaked fuel in the “interstitial space” created between the two walls of the pipe.

Double-walled piping systems fall into one of two categories:

- **Ducted pipe** has a larger diameter outer pipe and a smaller-diameter inner pipe. If flexible piping is used to construct the ducted system, the inner pipe slides inside the outer pipe so the inner pipe can be removed and replaced without excavation.
- **Coaxial pipe** has an outer wall that fits snugly over the inner pipe. The two walls of coaxial pipe are manufactured together at the factory and installed as a unit. In some cases, coaxial pipe is installed within a larger-diameter duct to permit replacement of the coaxial pipe without excavation.



Double-Walled Piping

To ensure that all fuel-carrying components of a piping system are contained, a double-walled piping system includes liquid-tight containers known as “sumps” that are located beneath the dispensers and where the piping connects to the pumps at the tank top (turbine sumps). Sumps are open to the primary piping and collect the leaked product where it can be detected by a sensor. Any liquid, water or fuel, found in the sumps should be considered a problem and needs to be addressed.

Unlike double-walled tanks that are constructed in a factory under controlled conditions, double-walled piping systems are assembled in the field and are more susceptible to leaks from improperly fitted elbows and other connections.

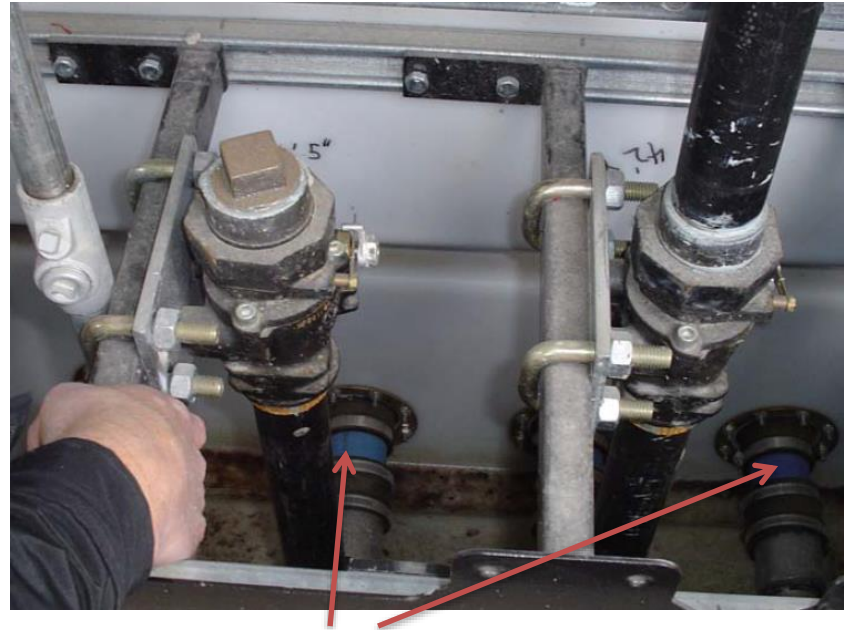
Since January 1, 2009, double-walled piping has been required for all new and replacement piping that routinely contains fuel, except for properly sloped suction systems.

Piping Identification

Although nearly all product piping is buried, you can generally determine what type of piping you have by looking in the dispenser or tank top sump. If you have a generator or boiler, you can see where the piping enters the room or building where the generator or boiler is located



Tank top sump showing fiberglass piping.



Under dispenser sump showing plastic piping.