UST System Design
Part II
UST System Design

Specific Examples

- European Suction Piping
- Tank Manifolds (Siphon Bars)
- Piping Manifolds
- Transition Sumps
- Marinas
UST System Design

Specific Examples

• Emergency Generators
• Remote Fills
• UST Anchoring
• Replacement of UST System Components
• Extension of Existing Piping
European suction-style piping must meet the same requirements as regular product piping.

Ball valves or other means of isolation need to be installed to allow line tightness tests to be conducted.
Siphon bars must meet the same requirements as regular product piping.

Ball valves or other means of isolation need to be installed to allow line tightness tests to be conducted.

All single-walled or metal components, including copper tubing used to maintain siphon must be contained.

Tank Manifold (Siphon Bar) Design
Siphon bars must meet the same requirements as regular product piping.

Ball valves or other means of isolation need to be installed to allow line tightness tests to be conducted.

Copper tubing used to maintain siphon must be contained within double-walled UL971 pipe.
For mechanical ALLDs to work properly, only one STP can be running at a time.
A solenoid must be installed to allow the proper operation of the ALLD.

Ball valves or other means of isolation need to be installed to allow proper line tightness tests to be conducted.
Reminder: If cabinet-style dispensers are installed, they must have UDC.

Consider consulting PEI/RP1000 “Recommended Practices for the Installation of Marina Fueling Systems”
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Remote fills must meet the same requirements as regular product piping.
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Overfill Prevention (Ball Float)

90%
12,000 gallon – 10’ diameter Xerxes DW FRP tank

- **100% Volume**: 11,904 gallons
- **90% Volume**: 11,904 – 1,190 gallons = 10,714 gallons
- **Length of Ball Float**: ~19-3/4” – 98-5/8”

### Overfill Prevention (Ball Float)
UST System Design

Anchoring

**UST system designs must be engineered to prevent tanks from becoming buoyant**

- Concrete deadmen
- Concrete hold-down pad
- Overburden
Tank buoyancy calculations should be made assuming an empty tank that is completely submerged.
Importance of Proper Anchoring
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Monitored UDC sumps required when you replace:

• Shear valves
• Flex connectors
• Other ancillary equipment
Monitored containment sumps required when you replace:

- Submersible turbine pumps
- Flex connectors
- Other ancillary equipment
Secondary containment requirements apply to new components installed

Hint: Hydrostatically test containment sumps that will be used as part of the leak detection system prior to beginning

Extension of Existing Piping
Replacement of Existing Piping
Secondary containment requirements apply to new components installed.

Replacement of Existing Piping
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Secondary containment requirements apply to new components installed.
Reminder: All metal or single-walled components must be installed within monitored containment sumps.

Secondary containment requirements apply to new components installed.
North Carolina Department of Environment and Natural Resources
Underground Storage Tank Section

Questions?