



Maryland
Department of
the Environment

FACTS ABOUT: MARINA PIPING

Petroleum piping systems at marinas are unique and typically transition from underground on land to aboveground over the water on piers and docks. In addition, marinas may have both over the water and on land dispensing systems.

GENERAL MARINA DO's AND DON'Ts

- DO submit a work plan to Maryland Department of the Environment (MDE) for approval prior to installing or upgrading piping systems associated with piers or docks. See Marina Piping Work Plans section below.
- DO notify MDE in writing a minimum of 5-days before beginning the installation of a new or replacement underground storage tank (UST) system.
- DO register all UST systems with MDE regardless of the capacity or petroleum substance stored.
- DO obtain an oil operations permit with MDE for a facility with the cumulative aboveground oil storage capacity of 10,000 gallons or more and/or used oil storage capacity of 1,000 gallons or more.
- DO obtain a State Wetlands Permit to construct aboveground storage tank (AST) systems within the 100-year flood plain. The construction of ASTs, dikes, or walls within the tidal wetlands or within the 100-year flood plain is prohibited unless a State Wetlands Permit is first obtained from the Department.
- DO install an appropriate anchoring system for an AST if located in an area subject to flooding or subject to high winds and for an UST if located in a high groundwater area or a mapped flood zone.
- DO NOT apply the *40% Rule* as defined in Code of Maryland Regulations (COMAR) to the replacement or upgrade of the aboveground portion of marina piping.
- DO NOT use galvanized pipe or fittings for kerosene or diesel fuel applications either underground or aboveground. PEI/RP100 and PEI/RP1000.
- DO install or upgrade underground piping associated with an AST system in a UL listed or MDE approved secondary containment system that is connected in a liquid tight containment sump.
- DO install an anti-siphon valve or normally closed solenoid valve adjacent to and downstream of the block ball valve at the tank outlet if any portion of the above or below grade piping is at a lower elevation than the product in the tank at any point.
- DO install a line leak detector for pressurized piping. If an anti-siphon valve is installed at the tank, the line leak detector must be installed immediately downstream of the anti-siphon valve. The line leak detector must be certified to function with the type of fuel stored and material, length, and diameter of the underground piping. The line leak detector must monitor the underground portion of the piping. For mechanical line leak detectors, install a time delay



on a normally closed solenoid valve installed in the onshore transition sump. If an electronic line leak detector is installed, electrically wire the normally closed solenoid valve in the onshore transition sump so that the valve will be closed during the line leak detector test period.

- DO install double walled piping, continuously monitored containment sumps, a pressure regulating valve at the pump, and an anti-siphon valve at the tank if a suction pump is used to dispense product and located at a lower elevation than the product in the tank at any point.
- DO install continuously monitored containment sumps, maintain a uniform pipe slope of a minimum of 1/8 inch rise for each lateral foot from the tank top to the end of the piping run for as much of the piping as feasible, and minimize the number of times the direction of the piping slope changes.
- DO install a fully ported ball valve and safety break valve in accordance with manufacturer's specifications at a stable point just onshore of where the piping transitions to over the water. Install the valves in a continuously monitored containment sump if the valves are below ground or not visible. The piping must be straight and in line with the safety break in the sump so that any tensional stress placed on the piping will produce a force parallel to the long axis of the safety break.
- DO install piping to provide flexibility to accommodate small-scale movement due to wave action and movement of people on the dock or pier and larger-scale movement due to seasonal water level variations or periodic tidal changes.
- DO install for each pipeline a readily accessible and labeled shut-off valve located on shore, near the approach to the wharf, pier, or dock and outside any diked area. Access to the shut-off valve should not require any special tools or a lid that is bolted closed.
- DO install valves and fittings to permit draining of marina piping for marinas in colder climates, with a seasonal operation or extended idle periods, or in an area subject to hurricanes or imminent severe weather.
- DO install dispensers and dispenser nozzle receptacles that turn off power to the pump when the dispensing nozzle is replaced, hung up, or stowed.
- DO NOT use hold open devices on dispenser nozzles serving marine craft.
- DO install a means to secure the dispensing hose using a hose reel (or other approved method) to protect it from damage when the length exceeds 18 feet. A breakaway device is not required on a dispensing hose of a dispenser that only serves marine craft.
- DO install a securely anchored double poppet emergency shutoff valve (shear valve) in accordance with manufacture instructions at the base of any dispenser connected to a pressurized piping system.
- DO install containment sumps beneath dispensers located on a pier, dock, wharf, or bulkhead.
- DO install clearly identified emergency electrical disconnects on each marine wharf that are readily accessible in case of fire or physical damage at any dispensing unit. The disconnects shall be interlocked to shut off power to all pump motors, fuel dispensing devices, solenoid valves, and electrical circuits in classified areas from any individual location and shall be manually reset only from a master switch. Locate emergency electrical disconnects no closer than 20 feet and no further than 100 feet from each dispensing device and on land within 10 feet of the bulkhead and near the fueling pier. Identify each disconnect by an approved sign stating **EMERGENCY PUMP SHUTOFF** in two-inch red capital letters.

COMPLIANCE TESTING

The following scenarios are unique to marina UST systems. For specific questions or for additional clarification, please contact the Oil Control Program at 410-537-3442.

- Aboveground containment sumps on a dock or pier must be tested in accordance with *Maryland Containment System Testing Protocol* upon installation and maintained liquid tight but routine testing is not required.
- For pressurized piping, the line leak detector is only required to cover the underground portion of the product piping. When an electronic solenoid valve that isolates the underground piping is installed in the bulkhead transition sump, the tester can perform a line leak detector 3.0 gallon per hour (gph) operability test for the section of piping between the tank top and solenoid valve. If no solenoid valve is installed, the line leak detector must monitor the entire piping system, underground and aboveground, and the line leak detector 3.0 gph operability test must be conducted from the furthest dispenser.
- An initial precision tightness test following a new piping install/upgrade must include the entire piping system, underground and aboveground.
- With the exception of the initial precision tightness test, the aboveground portion of marina product piping is not required to be precision tightness tested if an electronic solenoid valve is properly installed in an appropriate location. When an electronic solenoid valve that isolates the underground piping is installed, the tester can perform a precision tightness test of the piping between the tank top and solenoid valve. If no solenoid valve is installed, the precision tightness test must include the entire piping system, underground and aboveground.
- The interstice of underground double walled pipe must be tested in accordance with the piping manufacturer's testing protocol at the time of installation and every 5 years thereafter.
- Double-walled storage system (tank and/or piping) installed on or after Jan 12, 2009 must use interstitial monitoring for a method of release detection.

MARINA PIPING WORK PLANS

For all UST systems and AST systems with underground piping, owners and operators are required to submit plans for piping systems associated with piers or docks for approval by MDE before the start of installation. This is highly recommended for AST systems with all aboveground piping. The plan submitted for approval must include but is not limited to the following:

- Detailed description of all proposed upgrades and installation of piping system activities.
- Name and contact information for the Maryland certified UST system technician overseeing the installation/upgrade.
- Make, model, and material of construction of proposed USTs and ASTs and all USTs or ASTs to remain in service to include whether the tanks are single or double walled.
- Length, diameter, make, model, and material of construction of the proposed product piping and all existing piping to remain in service to include whether the piping is single or double walled. Include distances between system components such as the distance between containment sumps (i.e. tank top to bulkhead sump and from bulkhead sump to each dispenser sump).
- Location of all piping transitions.
- Location of all containment sumps.
- Location of all containment sump sensors and identifying those programmed for positive shut down.

- Location of all shut-off valves, safety breaks, solenoid valves, pressure relief valves, anti-siphon valves, suction pumps, submersible turbine pumps, and emergency-stop controls or disconnects.
- Verification that the slope of the underground piping rises a minimum of 1/8 inch for each lateral foot from the tank top to the end of the piping run.
- Location of all piping slope changes.
- Make and model of all line leak detectors and verification from the manufacturer or certification from a third party as to its applicability to the marina storage system. The verification/certification must indicate the line leak detector will function with the type of fuel stored and material, length, and diameter of the piping and include the maximum length and volume of pipe for which the line leak detector is rated.
- Location of all fixed and floating piers, docks, and wharfs.
- Anticipated range of motion of the dock, pier, and piping due to wave action, movement of people on the dock or pier, seasonal water level variations, and periodic tidal changes.
- Location of all continually or periodically submerged piping.
- Type of piping supporting and securing hardware.
- Detailed plan for draining, disconnecting and/or storing the piping for the off season (as applicable).
- Location of all dispensers.
- Location of each hose reel.
- Site sketch.
- Other pertinent system components.

MARINA PIPING INSTALLATION

Marina piping must be installed in accordance with the piping manufacturer's specifications, COMAR, Petroleum Equipment Institute, best engineering practices, and the National Fire Protection Association. Any underground piping that is installed, upgraded, or replaced on or after January 26, 2005 must be installed in a UL listed or MDE approved secondary containment system that is connected in a liquid tight containment sump. Any aboveground piping that is installed, upgraded, or replaced on or after February 18, 2002 and located on, along, or under a pier, dock, or wharf must meet the following criteria:

- Be approved by the piping manufacturer for aboveground, over water, and/or underwater use in a marina application. MDE recommends the above ground pipe be double-walled construction provided by the manufacturer or field installed in secondary containment system approved by MDE that terminates in a containment sump.
- Be rated to withstand a corrosive environment, resistant to ultraviolet radiation and fire, and protected against physical damage.
- Be installed to prevent chafing, pinching, kinking, and crushing.
- Be installed to prevent releases due to structural failure, stress, corrosion, ultraviolet radiation, heat, cold, movement, etc.
- Provide for flexibility for the anticipated range of motion of the dock, pier, and piping due to waves, movement of people on the dock or pier, etc.
- Be properly supported at least every 10 feet or in accordance with the manufacturer's specifications.
- Be spaced a distance greater than or equal to the diameter of the pipe or pipe sleeve.
- Be accessible for inspection and maintenance.

ADDITIONAL REFERENCES

The following documents are excellent resources for designing, installing, and maintaining marina AST and UST systems:

- *Petroleum Equipment Institute Recommended Practice PEI/RP 1000-14 Recommended Practices for the Installation of Marina Fueling Systems*
- *PEI/RP100-17 Recommended Practices for Installation of Underground Liquid Storage Systems*
- *National Fire Protection Association NFPA 30, 2018 Edition, Flammable and Combustible Liquids Code*
- *NFPA 30A, 2018 Edition, Code for Motor Fuel Dispensing Facilities and Repair Garages*

CONTACTS

For further information on marina AST and UST systems, please contact the Oil Control Program at (410) 537-3442 or (800) 633-6101 ext. 3442.

To report UST system precision test failures, releases of regulated substances, suspected releases of regulated substances, and evidence of a discharge, contact MDE during normal business hours at 410-537-3442 or after hours at 866-633-4686.

****DISCLAIMER****

The storage of petroleum products and the installation, maintenance, and inspection of storage systems is a hazardous endeavor. Only experienced and certified storage tank personnel should perform the actions as outlined in this fact sheet.

This fact sheet has been provided for informational purposes. This document is not intended nor should it be interpreted to be a regulation, as defined in Section 10-101, State Government Article. MDE encourages you to read and understand the regulations that govern the operation of aboveground and underground storage systems found in Code of Maryland Regulations 26.10. "Oil Pollution and Tank Management."