PERMA-PIPE, Inc.

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IMPORTANT NOTICE
PRODUCT INSTALLATION AND USE

PERMA-PIPE's preinsulated and prefabricated piping products are carefully designed to provide long trouble free operation when properly installed, tested, operated, and maintained. Refer to PERMA-PIPE's Installation Instruction(s) and engineering documentation for important and detailed installation, testing, operating and maintenance instructions and information. Contact PERMA-PIPE for assistance if needed.

Failure to install, test, operate, and maintain PERMA-PIPE's products in accordance with PERMA-PIPE's Installation Instruction(s) and engineering documentation can result in damage to the product, reduced service life, costly repairs, irreparable damage, hazardous conditions, personnel injury, and / or property or equipment damage and will void PERMA-PIPE's warranty.

Many common causes of problems are listed below. This list is not all inclusive, refer to PERMA-PIPE's Installation Instruction(s) and engineering documentation for additional information.

All Systems

- Keep all insulation dry during installation and operation. Wet insulation is thermally inefficient and will degrade with prolonged exposure to water and moisture.
- Operate the piping system within the design temperature, pressure and other design conditions.
- Review alterations to the design of the piping system with PERMA-PIPE or a qualified piping system designer prior to making alterations.
- Conduct periodic maintenance to ensure the system is operating properly, is in good condition and to maximize its service life. Promptly make all necessary repairs to prevent degradation to the system and reduced service life.

Conduit and Containment (Air Space) Systems

- Keep the annular air space dry during installation and operation. If the annular air space becomes wet it must be dried immediately to prevent reduced service life or severe damage to the conduit / containment system. Corrosion of the service pipe, conduit / containment pipe, leak detection pull cable (if the system has cable leak detection) and degradation to the insulation system will occur when the annular space of a conduit / containment system is wet.
- Do not operate a conduit system with a wet annular space at high temperatures. This will cause degradation of the insulation system and conduit coating which can result in costly repairs and in severe cases result in irreparable damage.
- Gland seals must be properly adjusted to provide a seal against the service pipe. Gland seals must be aligned with connecting piping so axial movement of the service pipe is not restricted and binding does not occur.
- Install end seal vent and drain piping in accordance with the Installation Instructions to allow proper venting and draining of the conduit / containment air space while preventing water or moisture from entering the air space.
- Install the system with a proper slope so any fluid accumulation in the air space can be drained.

Insulated and Jacketed Systems

- Keep insulation dry during installation and operation. Water or moisture in the insulation and on the service pipe will cause degradation of the insulation and corrosion of the service pipe.
- Verify field joint jacket closures are properly completed. Poorly completed field joint jacket closures will allow water and moisture into the insulation and onto the service pipe.
- Repair any damage to the insulation jacket that could allow water or moisture into the insulation or onto the service pipe.
- For underground systems, install external expansion pads in accordance with design requirements to prevent overstressing of the piping system due to thermal expansion.

Underground Systems

- Keep trenches dry during installation, dewater open trenches as required. Be aware and plan accordingly for weather conditions.
- Holiday test all direct buried steel coatings to ensure there are no holidays that will result in future corrosion and reduced service life. Repair all holidays and coating damage in accordance with PERMA-PIPE's Installation Instructions before backfilling.
- Do not backfill prior to completing all service pipe and conduit / containment tests. Backfilling prior to testing can result in costly re-excavation and is not PERMA-PIPE's responsibility.
- For direct buried thin coated steel conduit / containment systems install and maintain a cathodic protection system to protect the steel from corrosion.
- Bed the trench, backfill and compact in accordance with PERMA-PIPE's installation Instructions to prevent damage to the piping system coating or jacket or problems caused by soil settlement.
- Keep manholes dry. Install and maintain sump pumps in manholes. Avoid locating manholes at low points where water will drain into them. Do not allow piping system end seals to be below water.