



Coffee Break Training - Fire Protection Series

Access and Water Supplies: Protecting Underground Water Pipe

No. FP-2010-4 January 26, 2010

Learning Objective: The student shall be able to identify means to protect underground water mains from physical damage or obstruction.

Underground water mains are a crucial part of many water-based fire protection systems, and must be installed and tested in a way that assures their reliability.

Generally, pipe should not be run under buildings but there may be circumstances where that is unavoidable. In those cases, the predominant installation criteria for private water lines, National Fire Protection Association (NFPA) 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, allows it when special precautions are taken.

These precautions include:

- arching the foundation walls over the pipe;
- running pipe in covered trenches, or;
- providing valves to isolate sections of pipe under buildings.

Fire service mains should be permitted to enter the building adjacent to the foundation, and where they do, the latter two bullet points need not apply.

When a trench is excavated and pipe laid in it, backfill should be tamped in layers or puddled under and around pipes to prevent settlement or lateral movement. The backfill should be clean and not contain ashes, cinders, refuse, organic matter, or other corrosive materials.

Rocks should not be placed in trenches, and frozen earth should not be used for backfilling. In trenches cut through rock, tamped backfill should be used for at least 6 inches (150 mm) under and around the pipe and for at least 2 feet (0.6 m) above the pipe.

Once installed, and before use, all piping and attached appurtenances subjected to system working pressure should be hydrostatically tested at 200 psi (13.8 bar) or 50 psi (3.5 bar) in excess of the system working pressure, whichever is greater, and should maintain that pressure at ± 5 psi (0.35 bar) for 2 hours.

Where it is impracticable to bury pipe, pipe should be permitted to be laid aboveground, provided that the pipe is protected against freezing and mechanical damage.

For additional information, refer to NFPA 24, *Standard for the Installation of Private Fire Service Mains and Their Appurtenances*, Chapter 10.



This metalized polyethylene tape will be buried with the water main to provide a warning to anyone who might excavate near it.



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