

Guidance for R309-550. Facility Design and Operation: Transmission and Distribution Pipelines.

R309-550-5. Water Main Design.

Distribution System Pressure.

- *The normal working pressure in the distribution system should be between 60 and 100 psi. The requirement for PRV's to be installed when pressures exceed 150 psi only applies to new water pipelines. Systems should implement an operation program to protect water users from excessive pressures.*

Minimum Water Main Size.

- *Generally, velocity in a water main should not exceed 5 fps. Mains should be designed with sufficient excess capacity to provide for anticipated future connections.*

Fire Protection - Design of the Distribution System.

- *The State Fire Marshall's office has stated that "The State- adopted fire code recognizes that water mains intended for firefighting need not become subject to retroactive fire flow requirements. As such, an existing system is considered code compliant as long as it is maintained properly and new construction does not alter the fire flow requirement. Water companies are encouraged to make improvements incrementally to avoid a possible moratorium on development due to lack of water, i.e., fire flow."*

Fire Protection - Location of Fire Hydrants.

- *Generally, individual hydrant spacing may range from 200 to 500 feet depending on the area being served. The planning of hydrant locations should be a cooperative effort between the water utility and local fire officials.*

Geologic Considerations.

- *Water supply conduits and major service lines crossing known fault areas should be either designed to accommodate significant differential movement of the ground, or be valved immediately above and below the points of the fault crossing to allow control of water flow, in case of pipe rupture during an earthquake event.*
- *Water systems should be designed to provide alternative flow paths for major conduits in regions of known geologic hazards.*

Water Mains and Other Sources of Contamination.

- *It is recommended that utility lines are clearly identified and visually different from one another. Consideration should be given to providing appropriate separation between water and other utilities for operational and contamination reasons.*

R309-550-6. Component Materials and Design.

Asbestos and Lead.

- *The Community Fire Safety Act of 2013 exempts fire hydrants from the lead free requirements of Section 1417.*

R309-550-7. Separation of Water Mains and Transmission Lines from Sewers.

Basic Separation Standards – Warning Tape.

- *Consideration should be given to placing warning tape above the water lines and/or sewer lines*

R309-550-8. Installation of Water Mains.

Standards – Tracer Wire.

- *Consideration should be given to placing tracer wire on plastic pipe to permit location of the pipe by available detection equipment.*

Burial Cover.

- *Pipe should be buried at least 12 inches below maximum expected frost penetration. The following is a list of reported pipe burial depths in Utah that may serve as a guide in this respect:*
 - (A) Logan - 5ft.*
 - (B) Salt Lake City - 3.5 ft. (5 ft. in high benches)*
 - (C) Alta/Snowbird - 6 ft. (7 ft. if under roadway)*
 - (D) St. George - 3ft.*
 - (E) Park City - 5ft. (7 ft. above 7000 ft. elevation)*
 - (F) Richfield - 4 ft.*
 - (G) Moab - 4 ft.*

Surface Water Crossings.

- *Surface water crossings, whether over or under water, present special problems. The Division should be consulted before final plans are prepared.*

R309-550-9. Cross Connections and Interconnections.

System Interconnections.

- *In some situations, hydraulic modeling or capacity development calculations may be required when proposing a system interconnect.*

R309-550-10. Water Hauling.

Water Hauling Guidelines.

- *Guidelines for water hauling are available from the Division.*

R309-550-11. Service Connections and Plumbing.

Individual Home Booster Pumps.

- *Public water systems are being required to develop and operate a program to protect their systems from contaminations. An individual home booster pump, if installed so that the suction side of the pump draws directly from the system's water main rather than through an intermediate holding tank, may reduce the pressure in the main to less than 20 psi (perhaps even creating a vacuum). This will increase the potential for contaminated water to enter the distribution system through minor undetected leaks that may exist.*
- *We cannot regulate the individual homeowner, but we do not want to encourage public water systems to proliferate the use of such pumps. Rule R309-105-6(2)(b) ("exceptions") will still be available for individual cases where there is no other acceptable alternative. Each public water system should review language included in their service agreements with customers and perhaps modify them as needed to make it clear to the homeowner and plumbing inspector that such pumps are not allowed, without the permission of the public water system and authorized by the Director.*
- *Fire sprinkler systems are increasingly required by local fire protection agencies for new buildings, including residential units. As the number of these systems increases, there will likely be instances where the water main pressure is inadequate to operate fire sprinklers at the desired flow rate. The fire sprinkler industry has developed booster pumps integral with the sprinkler piping to meet low pressure circumstances. These integral booster pumps will only operate during fire emergencies and will not affect normal distribution system pressures. During a fire emergency, the pump should not decrease line pressure any more than a fire hydrant. Accordingly, the Division considers these fire sprinkler booster pumps outside the intent of R309-550-11(3), and does not require their installation to be approved by the Division Director, if their installation conforms to the Utah adopted Plumbing Code and National Fire Protection Association (NFPA) 13 D, Standard for the Installation of Sprinkler Systems in one and two-family dwellings and manufactured homes.*

R309-550-13. Operation and Maintenance.

Contingency Planning for Emergencies.

- *Water systems are encouraged to develop contingency plans for obtaining pipe and appurtenances in an emergency. The stockpiling of material should be considered.*