

Chapter 10

Water Mains

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Chapter 10 Water Mains

10.1 General

10.1.1 Design: The design for water main facilities shall be in conformance with this chapter. Where design information is not provided herein, the most current edition of the following standards shall be used:

1. *Recommended Standards for Water Works*, Great Lakes—Upper Mississippi River Board of State and Provincial Public Health and Environmental Managers (Ten State Standards).
2. Requirements and Standards of the South Dakota Department of Environment and Natural Resources.
3. *American Water Works Association Standards*.
4. *South Dakota Plumbing Code*.
5. *Uniform Plumbing Code*.
6. *International Fire Code* and referenced NFPA Standards.

10.1.2 Construction Standards. Construction standards shall be the most recent revision of the City of Huron Supplemental Standard Specifications and Standard Plates together with the latest addenda. All details, materials, and water appurtenances shall conform to these standards.

10.1.3 Where a conflict occurs between the above standards, the most restrictive requirement shall apply.

10.1.4 When supply is available, an average daily water flow rate of 1,500 gallons per minute with a residual pressure of 20 psi at the most remote hydrant shall be maintained for all residential developments. Multifamily, commercial, and industrial developments shall be designed according to acceptable methods to determine their water flow demands.

10.1.5 Water main, a minimum of 12 inches in diameter, shall be installed in a one-half-mile grid pattern.

10.1.6 Minimum size water main shall be 6 inches in diameter.

10.1.7 Minimum depth of cover, as measured from the top of the pipe to the finished surface elevation, shall be 6 feet. Minimum depth of cover to the highest point in service lines shall be 5 feet 6 inches. Where an adjustment is required in order to pass under another utility, the length of the deeper main shall be kept to a minimum, and bends shall be used to achieve the desired offset. The existing main may be lowered in place, if this method is practical and acceptable to the City Engineer.

10.1.8 Disinfection, bacteriological, and hydrostatic tests shall be required in accordance with requirements of the City of Huron Supplemental Standard Specifications for Water Main Construction—Section 300.

10.1.9 Water mains shall be located so as to best conform to the layout of the existing facilities. In streets where no pattern has been established, mains shall generally be located 10 feet north or south of the center line. A minimum horizontal separation of 10 feet shall be provided between water mains and sanitary and storm sewers except as allowed in the Ten States Standards and as noted in Chapter 4 of the City of Huron Engineering Design Standards for Public Improvements— Utility Locations and City Utility Easements.

Water mains shall be at least 20 feet away from buildings and under paved areas whenever possible.

10.1.10 Transmission water mains (12 inches and greater) constructed under drainage structures when single or multiple pipe dimensions exceed 4 feet in width shall be installed using the following guidelines:

1. If the water main will pass under the culverts or closer than 10 feet from the drainage structure, water main shall be constructed with a steel encasement. Encasement shall end 10 feet from the outside edge of the drainage structure and shall have a minimum wall thickness of 0.188 inch.
2. If the water main is routed around the drainage structure, the pipe system shall be installed 15 feet away (either upstream or downstream) from the outside edge of the structure. If necessary, the owner will provide public water main easements for the maintenance of the system.
3. Valves must be provided on each side of the drainage channel or creek to the maximum extent practicable; the means to provide for future access to water for development must be provided if the water main is taken off line.

10.1.11 Finish grades for all hydrants shall be shown on the plans.

10.1.12 No pipe smaller than 6 inches in diameter shall be installed as a fire service main. A domestic service water line may not be connected to the fire service main unless approved. For mains that do not supply hydrants, sizes smaller than 6 inches may be used if supply is proven adequate for the system.

10.1.13 Fire service mains and appurtenances shall be installed in accordance with current edition of *NFPA 24: Standard for the Installation of Private Fire Service Mains and Their Appurtenances*.

10.2 Fire Hydrants

- 10.2.1** Fire hydrants shall be on the same side of the street as the water main. They shall be spaced not more than 500 feet along the centerline of the street.
- 10.2.2** Spacing of hydrants around multiple family, commercial, or manufacturing establishments shall be considered as individual cases and shall be determined by consultation with the Fire Chief.
- 10.2.3** Hydrants shall be located on the road right-of-way 3 to 5 feet from the back of curb for sidewalk adjacent to boulevards and on a lot line whenever possible. Fire hydrants installed in locations with curbside sidewalk shall be located 3-5 feet behind the sidewalk and on a lot line whenever possible.
- 10.2.4** Fire hydrants shall be installed on the end of all dead-end mains. If the main terminates in a cul-de-sac, the fire hydrant shall be installed to meet clear space requirements as outlined in 10.2.6.
- 10.2.5** Flushing hydrants installed for testing purposes shall be removed once testing has been completed. If the flushing hydrants will remain in place for the duration of a winter season, they shall be installed behind the proposed curb and gutter.
- 10.2.6** A minimum of 3-foot clear space shall be maintained around the circumference (outside) of fire hydrants, except as otherwise required or approved by the Fire Chief. Light poles, posts, fences, vehicles, vegetative growth, trash, storage, mailboxes, and other materials shall not be placed or kept near fire hydrants in a manner that would prevent such fire hydrants from being immediately discernible and/or usable.
- 10.2.7** When fire hydrants are located outside City ROW and are subject to impact by motor vehicles, guard posts, curb and gutter, or other approved means shall be provided for hydrant protection.

10.3 Valves

- 10.3.1** In general, valves on cross connecting mains shall be located so that no single break requires more than 500 feet to be out of service. Valves on water main 12 inches in diameter and larger shall be spaced not more than one-fourth mile apart. Valves shall be arranged so that any section can be isolated by closing not more than four valves.
- 10.3.2** Valves shall be located such that they will not be in the sidewalk line or in driveways.
- 10.3.3** All valves shall be installed with valve boxes.
- 10.3.4** Valves shall be placed on all dead-end mains for future extension, unless no services are planned and re-chlorination can be completed without interruption of water service.

- 10.3.5** Perpendicular connections to existing mains shall be by means of a smith tap and tapping valve.
- 10.3.6** Valves and curb stops for domestic services shall be installed at least 20 feet away from the building. If the domestic service comes off of the fire line, both services shall have a shutoff downstream of the location where the services separate.
- 10.3.7** Valves 12 inches in diameter and greater shall be installed with two restrainer devices per valve.
- 10.3.8** Post Indicator Valves (PIV)—A PIV will be required on all fire service lines into a building as dictated by the fire code. The Fire Chief shall be permitted to waive this requirement.

Wall indicator valves may be used when approved by the Fire Chief Division.

10.4 Meters

- 10.4.1** Water meters will be initially paid for by the resident. Ownership of the meter will remain with the City of Huron.
- 10.4.2** Master meters for main line metering of industrial, commercial, and multifamily residential complexes shall be subject to the approval of the Huron Water department. Authorization must be obtained from the Huron Water department to allow the use of a master meter in lieu of individual meters. Metering systems shall be reviewed on an individual basis and shall include such auxiliary equipment as deemed necessary by the Huron Water department and may be required to provide heat, electrical power, and adequate ventilation. All master meter assemblies must also be constructed with adequate backflow prevention assemblies.

10.5 Cross-Connection Control and Backflow Prevention

- 10.5.1** The City of Huron potable water system shall be protected from all cross connections by a backflow prevention assembly in accordance with the City of Huron Plumbing Code and approved by the City of Huron Water Department.

10.6 Lawn Irrigation Systems

- 10.6.1** Irrigation heads shall be located and maintained so as not to spray over or onto any impervious surface.
- 10.6.2** New lawn irrigation systems shall be installed with rain sensors that automatically shut off the system after 1/4 inch of rainfall has occurred.

10.7 Service Lines

- 10.7.1** All platted lots of a proposed subdivision are to front on and have a separate water service to a public water main without crossing any adjacent properties.

- 10.7.2** Apartments and over/under duplexes, triplexes, etc., need to be individually metered and need separate service lines.
- 10.7.3** Residential service lines shall be constructed to the property line as a part of the street construction project.
- 10.7.4** Commercial and industrial service lines may be constructed to the property line if the service line size is known.
- 10.7.5** All service lines shall be marked by a steel fence post or an approved marker. The steel fence post should be painted blue on the top 1-foot portion of the marker. The marker should be placed near the curb stop or at the termination point of the service stub-in. The service line marker shall remain in place and be maintained by the property owner until the service line is extended into the property to serve a house, building, or other structure. The property owner will be responsible for replacing damaged markers.
- 10.7.6** If newly developing separate platted properties are replatted to a single unit, any additional water services that were previously installed shall be removed to the corporation stop on the City main at the expense of the owner, provided the final lift of asphalt or final surfacing has not been installed.
- 10.7.7** Polyethylene (PEX) pressure pipe and tubing will be acceptable for use as water service piping between the curb stop or valve and the water meter, except as defined in the *Uniform Plumbing Code*. PEX tubing will not be permitted within the City ROW or dedicated public water main utility easement, unless approved by the City Engineer.
- 10.7.8** Water service connections 2 inches and smaller will not be permitted on water mains 16 inches and larger unless otherwise approved by the City Engineer.
- 10.7.9** The criteria for sizing and constructing Type K Soft Copper Water Services for single-family residential homes from the City main to the curb stop or shutoff valve shall be:
- Those dwellings that have a plumbing fixture load which requires a demand of 40 Fixture Units (FU) or less are allowed to be sized with a minimum 1-inch service.
 - Those dwellings that have a plumbing fixture load which requires a demand of greater than 40 FU shall be sized with a minimum 1 1/4-inch service.

Reference Appendix A of the most current edition of the *Uniform Plumbing Code* for FU allocations to various fixture demands

Service sizes shall be detailed within the Construction Drawings for review and approval.

10.8 Material Specifications

10.8.1 Material specifications are included in the Supplemental Standard Specifications for Water Main Construction—Section 300. All ductile iron pipe and fittings shall be encased in polyethylene regardless of soil conditions.

10.9 Manufactured Home Parks

10.9.1 New manufactured home parks will be allowed to have individually metered services if the distribution system within the park is built to meet the City of Huron Standards. Maintenance and access easements granted to the City for the water main and the service lines to the curb stop are also required.

10.9.2 If individually metered homes are not desired, a metering structure is required for each water main entrance into the park per 10.4.2. If a metering structure is used, the distribution system within the park will be considered private and will not be maintained by the City.