



## What you need to know about utility service connections in the 2015 Minnesota Plumbing Code

### Building Sewer Installation

1. A building sewer starts at 2 feet outside a building.
2. Sanitary building sewer must connect to a public sewer when available (see section 713.4).
3. Cleanouts must be provided at intervals not to exceed 100 feet for sanitary and storm sewers (see sections 719.0 and 1101.12). Where permitted by the administrative authority, manholes may be used in lieu of cleanouts at intervals not exceeding 300 feet (see section 719.6).
4. When possible, sanitary building sewers must be sloped uniformly at least 1/4 inch foot (2%). A minimum slope of 1/8 inch per foot (1%) is permitted for sizes of 4-inch and 6-inch (see 718.1) when they meet at least one of the following conditions:
  - a) Due to the depth of street sewer or private sewage system connection.
  - b) Arrangements of the building structures restrictions.
  - c) A minimum of 2 feet per second self cleansing velocity is maintained at all times to prevent settling or forming of wastewater and sewage. Low flow fixtures in the drainage system must be considered in determining the minimum velocity of 2 feet per second.
5. Material installed within 2 feet of a building must be of materials approved for use inside of or within a building.

### Disinfection and Testing

1. Water system disinfection and testing requirements of water and sewer piping remain consistent requirements as with the previous plumbing code.
2. See sections 609.4, 712.0, 723.0, and 1109.0 for testing requirements for water and sewer services.
  - a) All sanitary building sewers must be test and be gastight or watertight (section 723.0).
  - b) All portions of the storm sewer system located within 10 feet of the building or building waterline must be tested by the use Hydrostatic Test Method from CEAM (1109.0)
  - c) Water supply system must be tested to prove tight.
3. Concrete manholes and sewer lines shall be tested by negative pressure per ASTM C1412-13, ASTM C1244-11, or hydrostatically.
4. Water system disinfection must meet the requirements of section 609.9.

### Drainile Material

The table below lists code approved materials for subsoil drain pipe and fittings. For more information, see Minnesota Rules, Chapter 4714, section 1102.5.

DRAINTILE MATERIAL	REFERENCED STANDARD(S)
Asbestos Cement	ASTM C 444, ASTM C 508 ASTM C 966
PE	ASTM F 405
PVC	ASTM D 2729
Vitrified Clay (Extra strength)	ASTM C 4, ASTM C 700

### Isolation Distances and Crossings (Water and Sewer):

1. *Contamination Source:* The water pipe must be installed at least 10 feet horizontally from any manhole, septic systems, catchbasin, or other source of contamination, measured from the outer edge of the pipe to the outer edge of the contamination source.
2. *Water and Sewer Separation:* A minimum horizontal separation of 10 feet should be maintained between the water pipe and any sewer, whenever possible.

3. *Trench*: No building sewer pipe may be in a common trench with water pipe unless the sewer pipe material is approved for use within a building (see Minnesota Rules, Chapter 4714, Sections 609.2 and 720.1). When water pipe is in a common trench with a sewer of clay or material not approved within a building:
  - a) The bottom of the water pipe must be at least 12 inches above the top of the sewer.
  - b) The water pipe must be on a solid shelf with a clear horizontal distance of 12 inches from the sewer.
4. *Water and Sewer Crossings*: The bottom of water pipe crossing a building sewer of clay, concrete, PVC ASTM D3034, HDPE D2306, or materials not approved for use within a building must have the water pipe installed at least 12 inches above the top of the sewer. If not possible,
  - a) Provide a 10 feet horizontal separation, or
  - b) provide materials approved for use within buildings.

**Material (Sanitary and Storm)**

Materials for both sanitary and storm sewers can be found in Table 701.1 of Minnesota Rules, Chapter 4714. Joints, connections, and installation method must also be in accordance the code and manufacturer’s installation instructions.

BUILDING SEWER MATERIAL	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
ABS (Schedule 40)	ASTM D 1527, ASTM D 2661, ASTM D 2680, ASTM F 628	ASTM D 2661, ASTM D 2680
Asbestos-Cement	ASTM C 14, ASTM C 428	—
Cast-Iron	ASTM A 74, ASTM A 888, CISPI 301	ASME B16.12, ASTM A 74, ASTM A 888, CISPI 301
Co-Extruded ABS (Schedule 40)	ASTM F 1488	ASTM D 2661, ASTM D 2680
Co-Extruded PVC (Schedule 40)	ASTM F 891, ASTM F 1488	ASTM D 2665, ASTM F 794, ASTM F 1866
Copper (Type DWV)	ASTM B 75, ASTM B 251, ASTM B 302, ASTM B 306	ASME B16.23, ASME B16.29
Polyethylene	ASTM F 714	ASTM D 2683, ASTM D 3261, ASTM F 1055, ASTM F 2206
PVC (Schedule 40)	ASTM D 1785, ASTM D 2665, ASTM F 794	ASTM D 2665, ASTM F 794, ASTM F 1866
Stainless Steel 316L	ASME A112.3.1	ASME A112.3.1
Vitrified Clay (Extra strength)	ASTM C 700	ASTM C 700

*Other Notable Materials and Alternates:*

1. Plastic PVC pipe meeting ASTM D3034 is an acceptable alternate material for gravity building sewer. Installation must be on a continuous granular bed that meets ASTM D2321 and separation is provided from water supply service line under section 720.0. The local administrative authority may have additional requirements and must be consulted prior to installation.
2. Reinforced concrete (RCP) storm sewer pipe meeting ASTM C76 is an acceptable alternate material for building storm sewers and yard drainage applications. Installation must meet the requirements of Installation Standard 1, section 3.6, and separation is provided from water supply service line under section 720.0. Water-tight joints shall be provided by gaskets provided by the manufacturer and installed in accordance with the manufacturer’s instructions. The local administrative authority may have additional requirements and must be consulted prior to installation.
3. High-density polyethylene (HDPE) sewers:
  - a. HDPE pipe meeting ASTM F714 may be used for pressurized sewers and must be installed per Minnesota Rules, Chapter 4714, Table 701.1, and Installation Standards 1, and separation from water

supply service line meets section 720.0. All changes in directions must be through approved drainage fittings or through manhole connections. Heat fusion joints must be utilized per the manufacturer's installation instructions, and ASTM D2659 or ASTM D3261.

- b. HDPE pipe meeting ASTM F2306 is an acceptable material under section 301.2 for installation of gravity building storm sewers and yard drainage. Installation must be on a continuous granular bed that meets ASTM D2321 and separation from water supply service line meets section 720.0. The local administrative authority may have additional requirements and must be consulted prior to installation.

### Material (Building Water Supply Service)

1. Supply piping connected to municipal main must be pressure rated for the application (150 psi). Supply piping connected to private water supply must be pressure rated must be for the application (100 psi).
2. See Minnesota Rules, Chapter 4714, for additional requirements for proper installation, joints, and connections of all materials listed.
  - a) Approved materials for water supply service lines installed **outside** of buildings:

WATER SUPPLY SERVICE MATERIAL	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Polyethylene (PE)	ASTM D 2239, ASTM D 2737, ASTM D 3035, AWWA C901, CSA B137.1	ASTM D 2609, ASTM D 2683, ASTM D 3261, ASTM F 1055, CSA B137.1
PVC	ASTM D 1785, ASTM D 2241, AWWA C900	ASTM D 2464, ASTM D 2466, ASTM D 2467, ASTM F 1970

Installation must be in accordance with the manufacturer's installation instructions and applicable Installation Standard 7 or 8."

- b) Approved materials can be used in **both** water supply services to buildings and water distribution system for use within buildings:

WATER MATERIAL	REFERENCED STANDARD(S) PIPE	REFERENCED STANDARD(S) FITTINGS
Brass	ASTM B 43, ASTM B 135	—
Copper	ASTM B 42, ASTM B 75, ASTM B 88, ASTM B 251, ASTM B 302, ASTM B 447	ASME B16.15, ASME B16.18, ASME B16.22, ASME B16.26
CPVC	ASTM D 2846, ASTM F 441, ASTM F 442	ASTM D 2846, ASTM F 437, ASTM F 438, ASTM F 439, ASTM F 1970
Ductile-Iron	AWWA C151	ASME B16.4, AWWA C110, AWWA C153
Galvanized Steel	ASTM A 53	—
Malleable Iron	—	ASME B16.3
PE-AL-PE	ASTM F 1282, CSA B137.9	ASTM F 1282, ASTM F 1974, CSA B137.9
PE-RT	ASTM F 2769	ASTM F 1807, ASTM F 2098, ASTM F 2159; ASTM F 2735, ASTM F 2769
PEX	ASTM F 876, ASTM F 877, CSA B137.5	ASSE 1061, ASTM F 877, ASTM F 1807, ASTM F 1960, ASTM F 1961, ASTM F 2080, ASTM F 2159, ASTM F 2735, CSA B137.5
PEX-AL-PEX	ASTM F 1281, CSA B137.10, ASTM F 2262	ASTM F 1281, ASTM F 1974, ASTM F 2434, CSA B137.10
Polypropylene (PP)	ASTM F 2389, CSA B137.11	ASTM F 2389, CSA B137.11
Stainless Steel	ASTM A 269, ASTM A 312	—