

Chapter 7

Plumbing Connections

7-1 General

- All plumbing equipment and installations must be designed, constructed, and installed in accordance with this code and where not specific, to the applicable provisions of the Oregon Plumbing Specialty Code.
- Alternate methods permitted in the Oregon Plumbing Specialty Code, but not mentioned in this code may be permitted if acceptable to the building official. See Section 1-3.9.
- All plumbing equipment, materials, devices, appliances, and fittings must be listed and labeled for its intended use, and installed according to this code and where not specific, to the Oregon Plumbing Specialty Code.
- For the purposes of inspection, all plumbing connections must be accessible for inspection by the building official, including excavations containing plumbing equipment.

Note: Certain piping under the manufactured dwelling may be subject to the requirements established by HUD under 24 CFR 3280 (MHCSS) and may be different than the requirements of the Oregon Plumbing Specialty Code.

7-2 Water Distribution System

Water Connections

- The building water supply piping must be new and made of approved material in accordance with Table 7-2.1.
- Piping must be supported at:
 - 3 foot intervals for rigid piping (PVC or CPVC).
 - 32 inches for flexible tubing (PB or PEX).
- If the local water pressure exceeds 80 PSI an approved pressure regulator is required.
- The water supply piping must be a minimum 3/4 inch inside diameter.
- An accessible full way shutoff valve must be installed on the water supply within 5 feet of the manufactured dwelling. It may be underneath or adjacent to the dwelling. (This valve on the water meter may not serve as the shut off valve for the manufactured dwelling)
- When a backflow device (check valve) is installed an approved expansion tank is required. Expansion tanks must be adequately supported.

Note: Water supply piping within 30 lineal feet of the manufactured dwelling may be installed by a licensed manufactured dwelling installer or limited installer. Water supply piping greater than 30 lineal feet from the manufactured dwelling must be installed by a licensed plumbing contractor.

Note: Water supply piping size may need to be increased from 3/4 inch inside diameter piping where the maximum length necessary to reach the water meter exceeds 100 lineal feet from the manufactured dwelling.

Table 7-2.1 Approved Water Piping Materials

Approved Materials	Reference Standard
Acrylonite Butadine Styrene (ABS)	ASTM D 2282 or ASTM D 1527
Chlorinated Polyvinyl Chloride (CPVC)	ASTM D 2846
Cross-linked Polyethylene (PEX)	ASTM F 877 or ASTM F 876
Flexible Connector	ASME A 112.18.6
Polyethylene (PE)	ASTM D 2239
Polyvinyl Chloride (PVC)	ASTM D 1785 or ASTM D 2241
Steel Hot Dipped Zinc Coated	ASTM A 53

NOTES:

- (1) See the **Oregon Plumbing Specialty Code** for a more comprehensive list of approved piping material.
- (2) Piping must be labeled or marked by the manufacturer to indicate that the material conforms to that specific standard.
- (3) ABS, PVC and PE may only be installed up to the building water supply line; they are not approved for installations under the home.

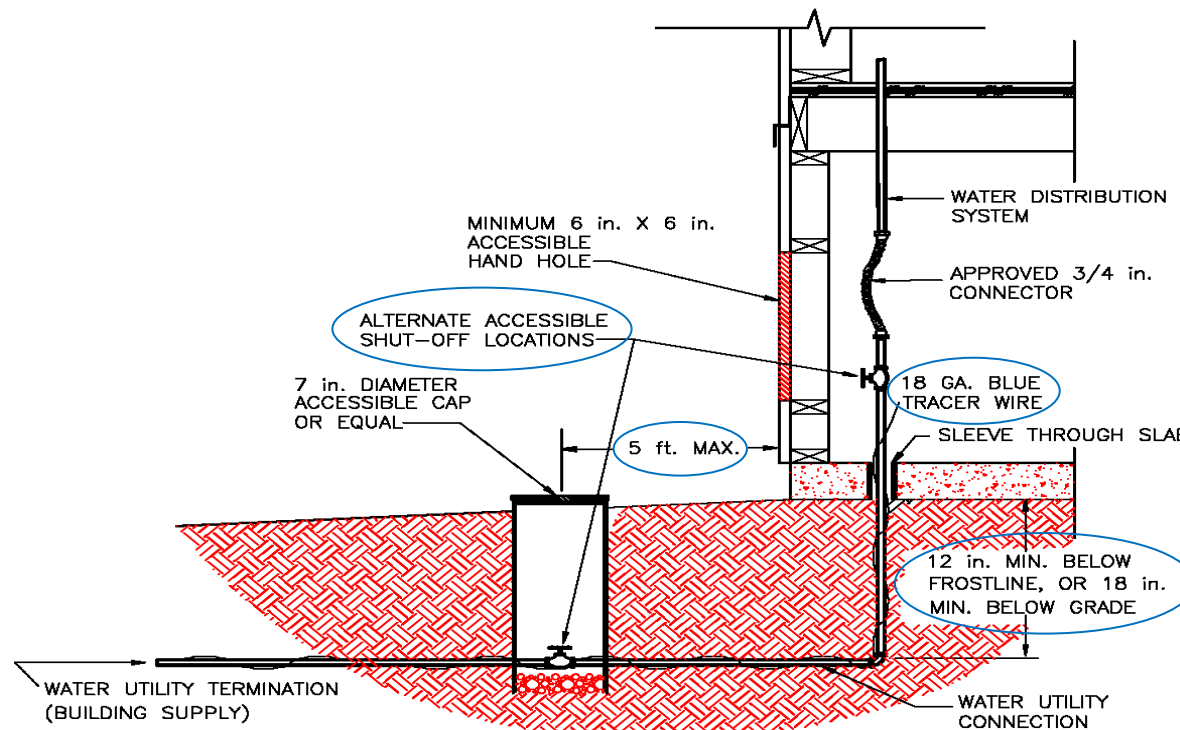


Figure 7-2.1 Typical Main Water Supply Connection

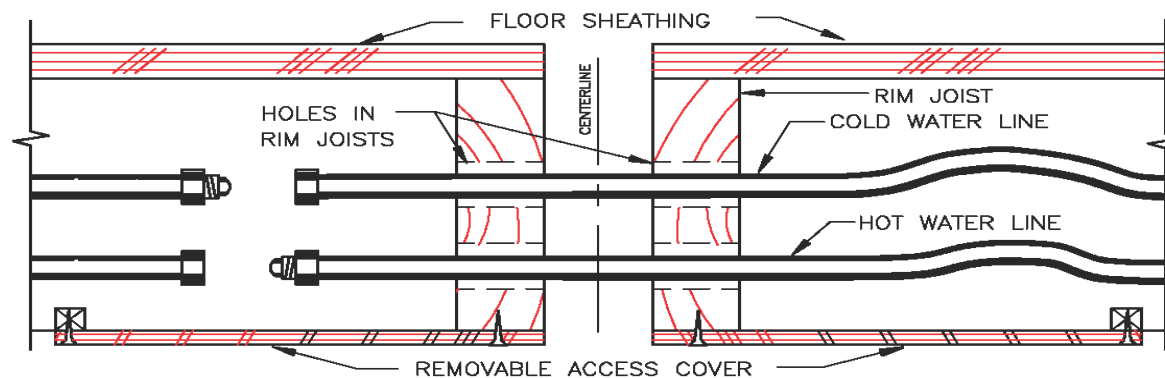
7-3 Underground Installations

Water supply piping must be installed in trenches according to the following:

- All water supply piping outside the manufactured dwellings under-floor area must be installed underground. See Figure 7-2.1
- Piping must be buried a minimum of 18 inches below grade and must also be at least 12 inches below the frost line. See Table 3-2.1 for frost penetration depths. See Figure 7-2.1
- Non-metallic piping must have a blue 18 gage tracer buried in the trench the entire length of the pipe. The end of the tracer must be left above finished grade. See Figure 7-2.1

7-4 Water Line Crossover Connections

- Multisection manufactured dwellings with water supply piping in more than one section must have the crossover connections completed with connectors according to one of the following:
 - Supplied by the manufacturer.
 - With approved flexible water connector sized no less than the water lines being connected.
 - With other approved materials listed in Table 7-2.1.
- Crossover connections must be protected from freezing with pipe insulation.



NOTE: CONCEALED PLUMBING CONNECTIONS SHALL BE VISIBLE DURING TESTS. ACCESS PANELS AND INSULATION SHALL BE REPLACED AND SECURED AFTER ALL PLUMBING TESTS ARE COMPLETED.

Figure 7-4.1 Typical Water Line Crossover Connection

Protection

Exposed sections of water supply piping in the under-floor area must be protected from freezing by either wrapping the piping with pipe insulation, or installing an electric heat tape listed and approved for manufactured dwelling use.

7-5 Water Distribution System Testing

Water Test

- Upon completion of the water supply connection and marriage line crossover connection, the manufactured dwelling must be tested by pressuring all the water lines with water from the site's water supply or using air at 80 PSI for a minimum of 15 minutes without loss of pressure or evidence of leakage.
- If the water lines are made of CPVC, the test pressure must be reduced to 30 PSI.

Test Failures

Upon failure of the water test, check all applicable field connections, repair any leaks, and repeat the applicable test until the system passes. If tests continue to fail, notify factory authorized service personnel and report failures. The site's water supply must remain off, except for further testing, until all leaks have been repaired.

7-6 Drainage System

Drain Piping

- Drain piping under the home must be installed according to the manufacturer's installation instructions and the HUD Code.
- The building drain piping must be made of approved materials as listed in Table 7-6.1, and supported according to this code.
- Drain piping must be free from defect and be installed with acceptable workmanship.

Note: Certain piping under the manufactured dwelling may be subject to the requirements established by HUD under 24 CFR 3280 (MHCSS) and may be different than the requirements of the Oregon Plumbing Specialty Code.

Table 7-6.1 Approved Drain Piping Materials

Approved Materials	Reference Standard
Acrylonite Butadine Styrene (ABS)	ASTM D 2661 or ASTM F 628
Polyvinyl Chloride (PVC)	ASTM D 2665 or ASTM D 891
NOTES: (1) See the Oregon Plumbing Specialty Code for a more comprehensive list of approved piping material. (2) Piping must be labeled or marked by the manufacturer to indicate that the material conforms to that specific standard.	

Drain Piping Connection

The installation and connection of the manufactured dwelling drain outlet to the sewer must comply with this code and where not specific to the Oregon Plumbing Specialty Code. See Figure 7-6.2.

- Piping must be installed to provide a minimum 1/4 inch per foot grade in all horizontal drain piping. See Figure 7-8.1
- When a cleanout is installed at the upper end of the run, the grade may be reduced to 1/8 inch per foot. See Figure 7-8.1
- Appropriate sized directional fittings must be used for all changes in direction.
- Piping must be installed without undue strains, stresses, and must have provisions for expansion and contraction.
- Piping must be supported at 4 feet on-center for rigid drain piping (ABS or PVC). Horizontal piping under the home does not require vertical rigid support. See Figure 7-8.1

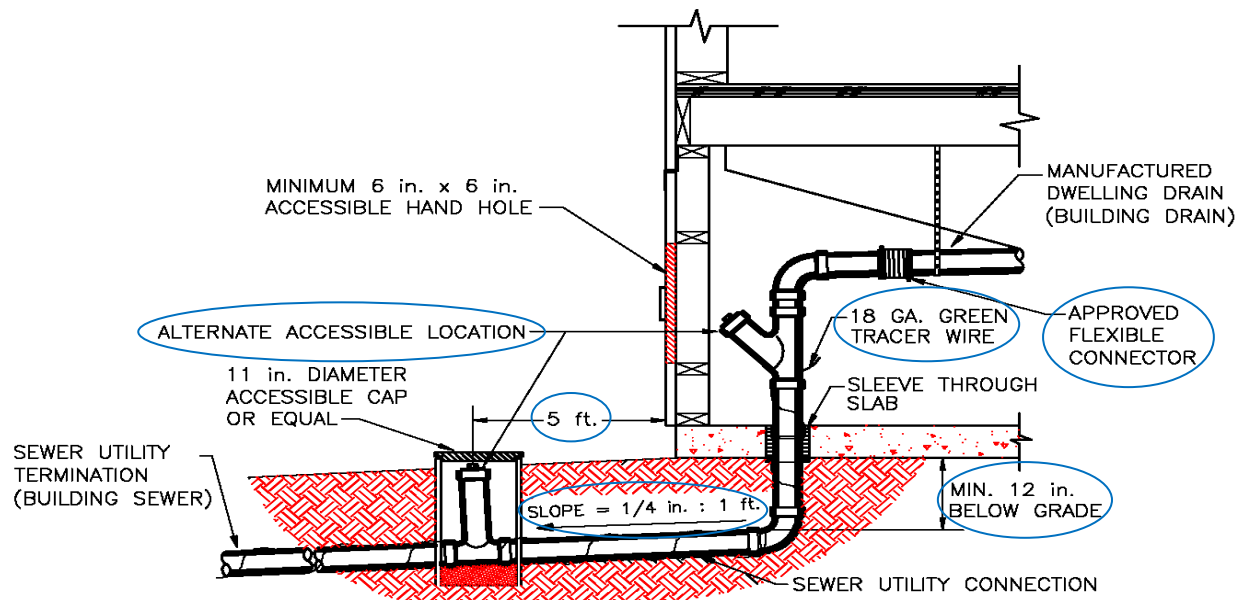


Figure 7-6.2 Typical Drain Line Connection

Drain Piping Cleanouts

A drain piping cleanout fitting must be installed in the drain piping system either under home or within 5 feet of the home. See Figure 7-6.2.

- The cleanout fitting must be a directional fitting when installed above ground, or a two-way cleanout fitting when installed underground.
- The cleanout must have 18 inches of clearance directly in front of the cleanout opening without removing any permanent construction.

7-7 Underground Installations

- Drainage piping must not be above ground outside the buildings under floor area.
- Drainage piping installed outside the manufactured dwelling must be installed in underground according to the following:
 - Buried a minimum of 12 inches below grade. See Figure 7-6.2
 - Graded at 1/4 inch per foot. See Figure 7-6.2
 - Drainage piping installed deeper than and parallel to footings must be set away from the footing at a minimum of 45 degrees. See Figure 7-7.1.
 - Non-metallic drainage piping must have a green 18 gage tracer wire buried in the trench the entire length of the pipe. The end of the tracer wire must be left above finished grade at the cleanout next to the manufactured dwelling. See Figure 7-6.2

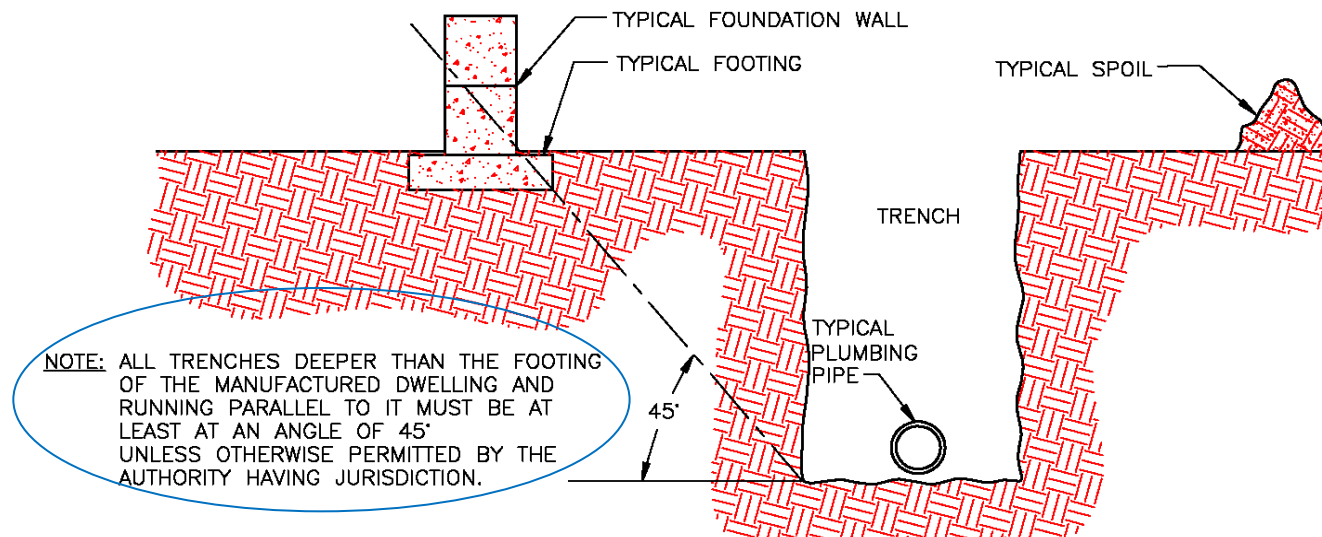


Figure 7-7.1 Typical Footing Setback from Trench

7-8 Drain Piping Crossover Connections

Drain line crossover connections in multisection manufactured dwellings must be connected in accordance with one of the following. See Figure 7-8.1

- With the materials supplied by the manufacturer and installed according to the manufacturer's installation instructions.
- With approved pipe and fitting connectors of the same diameter as the pipes and fittings being connected and not less than schedule 40 DWV (Drain, Waste, and Vent).
- With approved shielded flexible connectors.

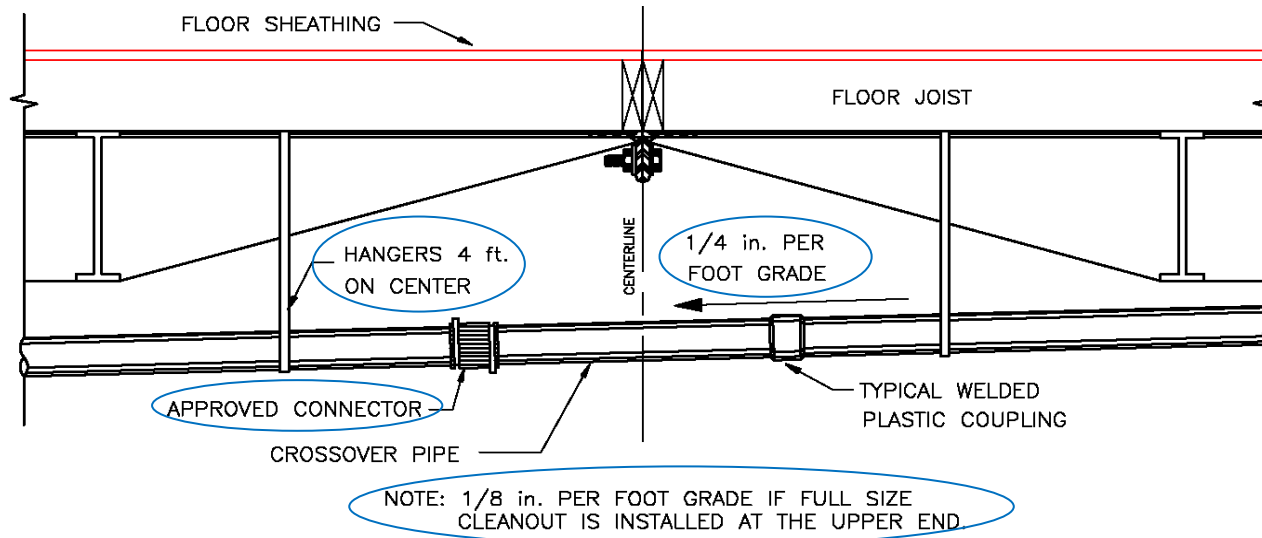


Figure 7-8.1 Typical Drain Line Support and Crossover Connection

7-9 Drainage System Testing

Drainage Test

- Upon completion of the building drain connection and marriage line crossover connection, the drainage system must be rechecked for leaks according to the following:
- Remove all access panels to all p-traps, cleanouts, and fixture drain connections inside the walls and floor.
 - Test each fixture or receptor, including the washer standpipe, for a minimum of 3 minutes by letting water flow through the fixture or receptor at the normal operating pressure.
 - If water under pressure is not available, test each fixture and receptor by pouring at least 3 gallons of water into each fixture and receptor.
 - Visually check each p-trap, cleanout, and fixture or receptor connection for leaks during the test.
 - After the test has been successfully completed, replace all insulation and access panels in floors and walls.

Test Failures

Upon failure of any of the tests, check all applicable field connections, repair any leaks, and repeat the applicable test. If tests continue to fail, notify factory authorized service personnel immediately and report failures. The site's water supply must remain off, except for further testing, until all leaks have been repaired.

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