

SECTION 15140 - DOMESTIC WATER PIPING

PART 1 - GENERAL

SUMMARY

This Section includes domestic water piping from locations indicated to fixtures and equipment inside the building.

QUALITY ASSURANCE

Piping materials shall bear label, stamp, or other markings of specified testing agency.

Comply with NSF 61, "Drinking Water System Components-Health Effects; Sections 1 through 9," for potable domestic water piping and components.

PART 2 - PRODUCTS

PIPING MATERIALS

Transition Couplings: Coupling or other manufactured fitting the same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

Soft Copper Tube: **ASTM B 88, Types K and L** (ASTM B 88M, Types A and B), water tube, annealed temper.

Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.

Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.

Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

Hard Copper Tube: **ASTM B 88, Types L**, water tube, drawn temper.

Copper Pressure Fittings: ASME B16.18, cast-copper-alloy or ASME B16.22, wrought-copper, solder-joint fittings. Furnish wrought-copper fittings if indicated.

Bronze Flanges: ASME B16.24, Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.

Copper Unions: MSS SP-123, cast-copper-alloy, hexagonal-stock body, with ball-and-socket, metal-to-metal seating surfaces and solder-joint or threaded ends.

PART 3 - EXECUTION

PIPING APPLICATIONS

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Transition and special fittings with pressure ratings at least equal to piping rating may be used in applications below, unless otherwise indicated.

Flanges may be used on aboveground piping, unless otherwise indicated.

Domestic Water Piping: Use the following piping materials for each size range:

NPS 1-1/2 (DN 40) and Smaller: Hard copper tube, [Type L (Type B)] [Type M (Type C)]; copper pressure fittings; and soldered joints.

NPS 2 (DN 50): Hard copper tube, [Type L (Type B)] [Type M (Type C)]; copper pressure fittings; and soldered joints.

VALVE APPLICATIONS

Drawings indicate valve types to be used. Where specific valve types are not indicated, the following requirements apply:

Shutoff Duty: Use bronze ball or gate valves for piping **NPS 2 (DN 50)** and smaller. Use cast-iron butterfly or gate valves with flanged ends for piping **NPS 2-1/2 (DN 65)** and larger.

Drain Duty: Hose-end drain valves.

PIPING INSTALLATION

Install domestic water piping level with 0.25 percent slope downward toward drain and plumb.

Fill water piping. Check components to determine that they are not air bound and that piping is full of water.

Check plumbing equipment and verify proper settings, adjustments, and operation. Do not operate water heaters before filling with water.

Check plumbing specialties and verify proper settings, adjustments, and operation.

JOINT CONSTRUCTION

Soldered Joints: Use ASTM B 813, water-flushable, lead-free flux; ASTM B 32, lead-free-alloy solder; and ASTM B 828 procedure, unless otherwise indicated.

VALVE INSTALLATION

Install sectional valve close to water main on each branch and riser serving plumbing fixtures or equipment. Use ball or gate valves for piping **NPS 2 (DN 50)** and smaller.

Install shutoff valve on each water supply to equipment and on each water supply to plumbing fixtures without supply stops. Use ball or gate valves for piping **NPS 2 (DN 50)** and smaller.

HANGER AND SUPPORT INSTALLATION

Install hangers for copper tubing with the following maximum horizontal spacing and minimum rod diameters:

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NPS 3/4 (DN 20) and Smaller: 60 inches (1500 mm) with 3/8-inch (10-mm) rod.

NPS 1 and NPS 1-1/4 (DN 25 and DN 32): 72 inches (1800 mm) with 3/8-inch (10-mm) rod.

Install supports for vertical copper tubing every 10 feet (3 m).

Support piping and tubing not listed above according to MSS SP-69 and manufacturer's written instructions.

CONNECTIONS

Drawings indicate general arrangement of piping, fittings, and specialties.

Install piping adjacent to equipment and machines to allow service and maintenance.

Connect domestic water piping to service piping with shutoff valve, and extend and connect to the following:

Plumbing Fixtures: Cold- and hot-water supply piping in sizes indicated, but not smaller than required by plumbing code.

Equipment: Cold- and hot-water supply piping as indicated, but not smaller than equipment connections. Provide shutoff valve and union for each connection.

FIELD QUALITY CONTROL

Inspect domestic water piping as follows:

Do not enclose, cover, or put piping into operation until it is inspected and approved by authorities having jurisdiction.

During installation, notify authorities having jurisdiction at least 24 hours before inspection must be made. Perform tests specified below in presence of authorities having jurisdiction:

Roughing-in Inspection: Arrange for inspection of piping before concealing or closing-in after roughing-in and before setting fixtures.

Final Inspection: Arrange for final inspection by authorities having jurisdiction to observe tests specified below and to ensure compliance with requirements.

Reinspection: If authorities having jurisdiction find that piping will not pass test or inspection, make required corrections and arrange for reinspection.

Reports: Prepare inspection reports and have them signed by authorities having jurisdiction.

Test domestic water piping as follows:

Test for leaks and defects in new piping and parts of existing piping that have been altered, extended, or repaired. If testing is performed in segments, submit separate report for each test, complete with diagram of portion of piping tested.

Leave uncovered and unconcealed new, altered, extended, or replaced domestic water piping until it has been tested and approved. Expose work that was covered or concealed before it was tested.

Cap and subject piping to static water pressure of 50 psig (345 kPa) above operating pressure, without exceeding pressure rating of piping system materials. Isolate test source and allow to stand for four hours. Leaks and loss in test pressure constitute defects that must be repaired.

Repair leaks and defects with new materials and retest piping or portion thereof until satisfactory results are obtained.

Prepare reports for tests and required corrective action.

CLEANING

Clean and disinfect potable domestic water piping as follows:

Purge new piping and parts of existing domestic water piping that have been altered, extended, or repaired before using.

Use purging and disinfecting procedures prescribed by authorities having jurisdiction or, if methods are not prescribed, procedures described in either AWWA C651 or AWWA C652 or as described below:

Flush piping system with clean, potable water until dirty water does not appear at outlets.

Fill and isolate system according to either of the following:

Fill system or part thereof with water/chlorine solution with at least 50 ppm (50 mg/L) of chlorine. Isolate with valves and allow to stand for 24 hours.

Fill system or part thereof with water/chlorine solution with at least 200 ppm (200 mg/L) of chlorine. Isolate and allow to stand for three hours.

Flush system with clean, potable water until no chlorine is in water coming from system after the standing time.

Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedures if biological examination shows contamination.

Prepare and submit reports of purging and disinfecting activities.

Clean interior of domestic water piping system. Remove dirt and debris as work progresses.

END OF SECTION 15140