SECTION 220523.15 - GATE VALVES FOR PLUMBING PIPING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY
         1. Section Includes:

Bronze gate valves.

Iron gate valves.

Chainwheels.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. CWP: Cold working pressure.
        2. NRS: Nonrising stem.
        3. OS&Y: Outside screw and yoke.
        4. RS: Rising stem.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).

Retain subparagraph below if products come into contact with potable water.

Certification that products comply with NSF 61 and NSF 372.

* + - 1. DELIVERY, STORAGE, AND HANDLING

Information in this article is paraphrased from MSS publications.

* + - * 1. Prepare valves for shipping as follows:

Protect internal parts against rust and corrosion.

Protect threads, flange faces, grooves, and weld ends.

Set gate valves closed to prevent rattling.

* + - * 1. Use the following precautions during storage:

Maintain valve end protection.

Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.

* + - * 1. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

1. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products.

* + - 1. GENERAL REQUIREMENTS FOR VALVES

Plumbing valve applications specified in this Section are limited to NPS 12 (DN 300). Many valves specified are available in larger sizes.

* + - * 1. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
        2. ASME Compliance:

ASME B1.20.1 for threads for threaded end valves.

ASME B16.1 for flanges on iron valves.

ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

Valve solder-joint connections are common in smaller sizes of plumbing piping. Soldering and brazing methods used to achieve required pressure-temperature ratings may damage internal valve parts. Special installation requirements for soldered valves may make threaded valves more cost-effective.

Caution: Use solder with melting point below 840 deg F (454 deg C).

ASME B16.18 for solder joint.

ASME B31.9 for building services piping valves.

Retain "NSF Compliance" paragraph below if products come into contact with potable water.

* + - * 1. NSF Compliance: NSF 61 and NSP 372 for valve materials for potable-water service.
        2. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.

Caution: Revise pressure ratings and insert temperature ratings in valve articles if valves with higher ratings are required. Valves larger than NPS 12 (DN 300) typically have a lower pressure rating than smaller valves. Verify pressure requirements for large valves.

* + - * 1. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
        2. Valve Sizes: Same as upstream piping unless otherwise indicated.
        3. RS Valves in Insulated Piping: With 2-inch stem extensions.
        4. Valve Bypass and Drain Connections: MSS SP-45.
      1. BRONZE GATE VALVES

Retain one or more of the four "Bronze Gate Valves" paragraphs below if bronze gate valves are required. MSS SP-80 covers bronze gate valves from NPS 1/4 to NPS 3 (DN 8 to DN 80).

* + - * 1. Bronze Gate Valves, NRS, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9545) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457114948).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199184).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457114938).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457114943).

[Stockham; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457114939).

[WATTS](http://www.specagent.com/Lookup?uid=123457114947).

Oe equal.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 200 psig.

Body Material: Bronze with integral seat and screw-in bonnet.

Ends: Threaded or solder joint.

Stem: Bronze.

Disc: Solid wedge; bronze.

Packing: Asbestos free.

Handwheel: Malleable iron, bronze, or aluminum.

* + - * 1. Bronze Gate Valves, RS, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9546) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457114962).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199186).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457114955).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457114952).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457114958).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457114959).

[Stockham; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457114954).

[WATTS](http://www.specagent.com/Lookup?uid=123457114961).

Or equal.

Description:

Standard: MSS SP-80, Type 2.

CWP Rating: 200 psig.

Body Material: Bronze with integral seat and screw-in bonnet.

Ends: Threaded or solder joint.

Stem: Bronze.

Disc: Solid wedge; bronze.

Packing: Asbestos free.

Handwheel: Malleable iron, bronze, or aluminum.

* + - * 1. Bronze Gate Valves, NRS, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9547) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457114991).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199188).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199189).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457114986).

[Stockham; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199191).

[WATTS](http://www.specagent.com/Lookup?uid=123457114990).

Or equal.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 300 psig.

Body Material: Bronze with integral seat and union-ring bonnet.

Ends: Threaded.

Stem: Bronze.

Disc: Solid wedge; bronze.

Packing: Asbestos free.

Handwheel: Malleable iron, bronze, or aluminum.

* + - * 1. Bronze Gate Valves, RS, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9548) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457115002).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199192).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457114995).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199193).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457114998).

[Stockham; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457114994).

[WATTS](http://www.specagent.com/Lookup?uid=123457115001).

Or equal.

Description:

Standard: MSS SP-80, Type 2.

CWP Rating: 300 psig.

Body Material: Bronze with integral seat and union-ring bonnet.

Ends: Threaded.

Stem: Bronze.

Disc: Solid wedge; bronze.

Packing: Asbestos free.

Handwheel: Malleable iron, bronze, or aluminum.

Press-end connections are not suitable for flammable gas service.

* + - * 1. Bronze Gate Valves, Press Ends:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=13428) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457115043).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457115036).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457115039).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457115040).

Or equal.

Description:

Standard: MSS SP-80 and MSS SP-139.

CWP Rating: Minimum 200 psig.

Body Material: Bronze with integral seat and union-ring bonnet.

Ends: Press.

Press Ends Connection Rating: Minimum 200 psig.

Stem: Brass or bronze [**rising**] [**non-rising**].

Disc: Solid wedge; bronze.

Packing: Graphite.

Port: Full.

Handwheel: Malleable iron, bronze, or aluminum.

* + - 1. IRON GATE VALVES

Retain one of the four "Iron Gate Valves" paragraphs below if iron gate valves are required. MSS SP-70 covers iron gate valves from NPS 2 to NPS 48 (DN 50 to DN 1200). Valves specified in this article are from NPS 2-1/2 to NPS 12 (DN 65 to DN 300).

* + - * 1. Iron Gate Valves, NRS, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9549) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457115018).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199196).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457115004).

Or equal.

Description:

Standard: MSS SP-70, Type I.

CWP Rating: 200 psig.

Body Material: Gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Disc: Solid wedge.

Packing and Gasket: Asbestos free.

* + - * 1. Iron Gate Valves, OS&Y, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9550) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457114978).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199202).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457114969).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457114973).

[WATTS](http://www.specagent.com/Lookup?uid=123457114977).

Or equal.

Description:

Standard: MSS SP-70, Type I.

CWP Rating: 200 psig.

Body Material: Gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Disc: Solid wedge.

Packing and Gasket: Asbestos free.

* + - * 1. Iron Gate Valves, NRS, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9551) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457115023).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199210).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199213).

Or equal.

Description:

Standard: MSS SP-70, Type I.

CWP Rating: 500 psig.

Body Material: Gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Disc: Solid wedge.

Packing and Gasket: Asbestos free.

* + - * 1. Iron Gate Valves, OS&Y, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9552) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457115032).

[Crane Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199217).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457115027).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457115028).

[Victaulic Company](http://www.specagent.com/Lookup?uid=123457199221).

[WATTS](http://www.specagent.com/Lookup?uid=123457115031).

Or equal.

Description:

Standard: MSS SP-70, Type I.

CWP Rating: 500 psig.

Body Material: Gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Disc: Solid wedge.

Packing and Gasket: Asbestos free.

* + - 1. CHAINWHEELS

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9516) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Babbitt Steam Specialty Co](http://www.specagent.com/Lookup?uid=123457114980).

[Roto Hammer Industries; Rotork](http://www.specagent.com/Lookup?uid=123457114981).

[Trumbull Industries](http://www.specagent.com/Lookup?uid=123457114982).

Or equal

Retain option in "Description" paragraph below if chainwheel does not mount directly to valve stem or gearbox shaft.

* + - * 1. Description: Valve actuation assembly with sprocket rim, chain guides, chain[**, and attachment brackets for mounting chainwheels directly to hand wheels**].

In "Sprocket Rim with Chain Guides" subparagraph below, consider specifying aluminum or zinc or epoxy coatings for corrosive operating conditions. Bronze should be specified for severe operating conditions. See the Evaluations.

Sprocket Rim with Chain Guides: [**Ductile iron**] [**Ductile or cast iron**] [**Cast iron**] [**Aluminum**] [**Bronze**], of type and size required for valve.[**Include zinc or epoxy coating.**]

In "Chain" subparagraph below, choose chain material appropriate for chosen sprocket rim material.

Chain: [**Hot-dip galvanized steel**] [**Brass**] [**Stainless steel**], of size required to fit sprocket rim.

1. EXECUTION
   * + 1. EXAMINATION
          1. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
          2. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
          3. Examine threads on valve and mating pipe for form and cleanliness.
          4. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
          5. Do not attempt to repair defective valves; replace with new valves.
       2. VALVE INSTALLATION
          1. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
          2. Locate valves for easy access and provide separate support where necessary.
          3. Install valves in horizontal piping with stem at or above center of pipe.
          4. Install valves in position to allow full stem movement.
          5. Install chainwheels on operators for gate valves [**4 inch**] <**Insert size**> and larger and more than [**96 inches**] <**Insert dimension**> above floor. Extend chains to [**60 inches**] <**Insert dimension**> above finished floor.
          6. Install valve tags.
       3. ADJUSTING
          1. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.
       4. GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

The Section Text is arranged to provide bronze valves in NPS 2 (DN 50) and smaller and iron valves from NPS 2-1/2 to NPS 24 (DN 65 to DN 600).

Caution: Verify that valve classes and pressure-temperature ratings are adequate for system fluid. Repeat each category listing if necessary and insert required pressure range for each listing. Indicate location of each different pressure system on Drawings.

Retain and revise valve applications in paragraphs and schedules below. Coordinate with valves specified in Part 2.

* + - * 1. Use gate valves for shutoff service only.
        2. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
        3. For Grooved-End [**Copper Tubing**] [**and**] [**Steel Piping**]: Valve ends may be grooved.
      1. LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 PSIG OR LESS)
         1. Pipe 2 inch and Smaller: Bronze gate valves, [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.
         2. Pipe 2-1/2 inch and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 150**] with flanged ends.
      2. HIGH-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (150 TO 200 PSIG)
         1. Pipe 2 inch and Smaller: Bronze gate valves [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.
         2. Pipe 2-1/2 inch and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 250**] with flanged ends.
      3. DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE
         1. Pipe 2 inch and Smaller:

Retain first or second subparagraph below.

Bronze gate valves, [**NRS**] [**RS**], [**Class 125**] [**Class 150**] with [**soldered**] [**threaded**] ends.

Bronze gate valves, press ends.

* + - * 1. Pipe 2-1/2 inch and Larger: Iron gate valves, [**NRS**] [**OS&Y**], [**Class 125**] [**Class 250**] with flanged ends.

END OF SECTION 220523.15