SECTION 230523 - GENERAL-DUTY VALVES FOR HVAC PIPING

This Section includes ball, butterfly, check, gate, and globe valves used in HVAC piping systems.

This Section includes valves common to more than one section in this Division. Specialty valves, such as valves used in refrigeration systems, are included with applicable section. Special function valves, such as relief valves, pressure reducing valves, and flow control valves are located in applicable piping section.

This section is intended to be used as standalone section to specify valves for entire Division. When this section is used, suggest deleting valve specifications in individual piping system specification sections and reference this section.

This Section includes performance, proprietary, and descriptive type specifications. Edit to avoid conflicts among requirements.

This Section includes the term Architect/Engineer. "Architect" is used in AIA contract documents; "Engineer" is used in EJCDC contract documents. Retain appropriate term.

See the Drawing Coordination Considerations for information needed to coordinate this specification Section with the Drawings.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes:

Gate valves.

Globe valves.

Ball valves.

Plug valves.

Butterfly valves.

Check valves.

* + - * 1. Related Sections:

Section 230503 - Pipes and Tubes for HVAC Piping and Equipment: Product and installation requirements for piping materials applying to various system types.

Section 230529 - Hangers and Supports for HVAC Piping and Equipment: Product and installation requirements for pipe hangers and supports.

Section 230700 - HVAC Insulation: Product and installation requirements for insulation for valves.

Section 231113 - Facility Fuel-Oil Piping: Product and installation requirements for [**piping,**] [**piping specialties,**] and equipment used in fuel oil piping systems.

Section 231123 - Facility Natural-Gas Piping: Product and installation requirements for [**piping,**] [**piping specialties,**] and equipment used in natural gas piping systems.

Section 231126 - Facility Liquefied-Petroleum gas Piping: Product and installation requirements for [**piping,**] [**piping specialties,**] and equipment used in LPG piping systems.

Section 232113 - Hydronic Piping: Product and installation requirements for piping used in hydronic piping systems.

Section 232116 - Hydronic Piping Specialties: Product and installation requirements for piping specialties used in hydronic piping systems.

Section 232213 - Steam and Condensate Heating Piping: Product and installation requirements for piping used in steam and steam condensate piping systems.

Section 232216 - Steam and Condensate Piping Specialties: Product and installation requirements for piping specialties used in steam and steam condensate, piping systems.

Section 232300 - Refrigerant Piping: Product and installation requirements for valves and piping specialties used in refrigeration systems.

Section 232416 - Internal-Combustion Engine Exhaust Piping: Product and installation requirements for piping used in engine exhaust piping systems.

Section 235613 - Heating Solar Collectors: Product and installation requirements for valves used in solar heating systems.

* + - 1. REFERENCES

List reference standards included within text of this section. Edit the following for Project conditions.

* + - * 1. ASTM International:

ASTM A216/A216M - Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service.

ASTM D1785 - Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120.

ASTM D4101 - Standard Specification for Propylene Injection and Extrusion Materials.

* + - * 1. Manufacturers Standardization Society of the Valve and Fittings Industry:

MSS SP 67 - Butterfly Valves.

MSS SP 70 - Cast Iron Gate Valves, Flanged and Threaded Ends.

MSS SP 71 - Cast Iron Swing Check Valves, Flanged and Threaded Ends.

MSS SP 78 - Cast Iron Plug Valves, Flanged and Threaded Ends.

MSS SP 80 - Bronze Gate, Globe, Angle and Check Valves.

MSS SP 85 - Cast Iron Globe & Angle Valves, Flanged and Threaded.

MSS SP 110 - Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends.

* + - * 1. Underwriters Laboratories Inc.:

UL 842 - Valves for Flammable Fluids.

* + - 1. SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

* + - * 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).
				4. Section 013300 - Submittal Procedures: Requirements for submittals.
				5. Product Data: Submit manufacturer’s catalog information with valve data and ratings for each service.
				6. Manufacturer's Installation Instructions: Submit hanging and support methods, and joining procedures.
				7. Manufacturer's Certificate: Certify products meet or exceed specified requirements.
			1. CLOSEOUT SUBMITTALS
				1. Section 017000 - Execution and Closeout Requirements: Requirements for submittals.
				2. Project Record Documents: Record actual locations of [**valves**] <**\_\_\_\_\_\_\_\_**>.
				3. Operation and Maintenance Data: Submit installation instructions, spare parts lists, exploded assembly views.
			2. QUALITY ASSURANCE
				1. Perform Work in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standard.

Include the following paragraph only when cost of acquiring specified standards is justified.

* + - * 1. Maintain [**one copy**] [**<\_\_\_\_\_\_\_\_> copies**] of [**each**] document on site.
			1. QUALIFICATIONS
				1. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years [**documented**] experience.
				2. Installer: Company specializing in performing work of this section [**with minimum <\_\_\_\_\_\_\_\_> years [documented] experience**] [**approved by manufacturer**].
			2. PRE-INSTALLATION MEETINGS
				1. Section 013000 - Administrative Requirements: Pre-installation meeting.
				2. Convene minimum [**one**] <**\_\_\_\_\_\_\_\_**> week prior to commencing work of this section.
			3. DELIVERY, STORAGE, AND HANDLING
				1. Section 016000 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.
				2. Accept valves on site in shipping containers with labeling in place. Inspect for damage.
				3. Provide temporary protective coating on cast iron and steel valves.
			4. ENVIRONMENTAL REQUIREMENTS
				1. Section 016000 - Product Requirements: Environmental conditions affecting products on site.
				2. Do not install valves underground when bedding is wet or frozen.
			5. WARRANTY

This article extends warranty period beyond one year. Extended warranties increase construction costs and Owner enforcement responsibilities. Specify warranties with caution.

* + - * 1. Section 017000 - Execution and Closeout Requirements: Requirements for warranties.
				2. Furnish [**five**] <**\_\_\_\_\_\_\_\_**> year manufacturer warranty for valves excluding packing.
			1. EXTRA MATERIALS
				1. Section 017000 - Execution and Closeout Requirements: Requirements for extra materials.
				2. Furnish [**two**] <**\_\_\_\_\_\_\_\_**> packing kits for each size valve.
1. PRODUCTS

The valves listed in Part 2 Products below need to be specifically rated for these services in which they will be used. Coordinate each valve's requirements with services specified in Part 3 Execution of this specification.

* + - 1. GATE VALVES

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=7944&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9748) Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

[American Valve, Inc](http://www.specagent.com/Lookup?uid=123457199087).

[Apollo Valves; a part of Aalberts Integrated Piping Systems](http://www.specagent.com/Lookup?uid=123457199099).

[Crane Fluid Systems; Crane Co](http://www.specagent.com/Lookup?uid=123457199250).

[Jenkins Valves; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199088).

[KITZ Corporation](http://www.specagent.com/Lookup?uid=123457199092).

[Lance Valves](http://www.specagent.com/Lookup?uid=123457199251).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457199094).

[Powell Valves](http://www.specagent.com/Lookup?uid=123457199096).

[Red-White Valve Corp](http://www.specagent.com/Lookup?uid=123457199097).

[Stockham; a Crane Co. brand](http://www.specagent.com/Lookup?uid=123457199090).

[WATTS; A Watts Water Technologies Company](http://www.specagent.com/Lookup?uid=123457199098).

Approved equivalent.

* + - * 1. Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

The following 2 valves may be used in low pressure steam systems.

* + - * 1. [**GA-1**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 125**] [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze body, bronze trim, [**threaded**] [**union**] bonnet, [**non-rising**] [**rising**] stem, [**lock-shield stem**] [**hand-wheel**], inside screw [**with back-seating stem**], [**solid**] [**split**] wedge disc, [**alloy seat rings,**] [**solder**] [**or**] [**threaded**] ends.
				2. [**GA-2**] 2-1/2 inches (65 mm) and Larger: MSS SP 70 “Cast Iron Gate Valves, Flanged and Threaded Ends”, [**Class 125**] <**\_\_\_\_\_\_\_\_**>, cast iron body, bronze trim, bolted bonnet, [**rising**] [**non-rising**] stem, hand-wheel, outside screw and yoke, solid wedge disc with bronze seat rings, flanged ends. Furnish chain-wheel operators for valves 6 inches (150 mm) and larger mounted over 8 feet (2400 mm) above floor.

The following 2 valves are intended for use in steam systems between 16 psi (110 kPa) and 125 psi (860 kPa).

* + - * 1. [**GA-3**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 200**] <**\_\_\_\_\_\_\_\_**>, bronze body, bronze trim, union bonnet, rising stem, hand-wheel, solid wedge disc, stainless steel rings, threaded ends.
				2. [**GA-4**] 2-1/2 inches (65 mm) and Larger: MSS SP 70 “Cast Iron Gate Valves, Flanged and Threaded Ends”, [**Class 200**] [**Class 250**] <**\_\_\_\_\_\_\_\_**>, [**cast iron**] [**carbon steel**] body, bronze trim, bolted bonnet, rising stem, hand-wheel, outside screw and yoke, solid wedge disc, flanged ends. Furnish chain-wheel operators for valves 6 inches (150 mm) and larger mounted over 8 feet (2400 mm) above floor.
			1. GLOBE VALVES

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=8006&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9678) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[American Valve, Inc](http://www.specagent.com/Lookup?uid=123457207446).

[Crane Fluid Systems; Crane Co](http://www.specagent.com/Lookup?uid=123457207465).

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457207447).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457207448).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457207449).

[WATTS; A Watts Water Technologies Company](http://www.specagent.com/Lookup?uid=123457207466).

Approved equivalent.

* + - * 1. Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

The following 2 valves can be used in low pressure steam systems.

Use Buna-N disc for water, oil, and gas services. Use teflon disc for steam services.

* + - * 1. [**GL-1**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 125**] [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze body, bronze trim, [**threaded**] [**union**] bonnet, hand wheel, [**Buna-N**] [**teflon**] composition disc, [**solder**] [**or**] [**threaded**] ends.
				2. [**GL-2**] 2-1/2 inches (65 mm) and Larger: MSS SP 85 “Cast Iron Globe & Angle Valves, Flanged and Threaded”, [**Class 125**] <**\_\_\_\_\_\_\_\_**>, cast iron body, bronze trim, hand wheel, outside screw and yoke, flanged ends. Furnish chain-wheel operators for valves 6 inches (150 mm) and larger mounted over 8 feet (2400 mm) above floor.

The following 2 valves are intended for use in steam systems between 16 psi (110 kPa) and 125 psi (860 kPa).

* + - * 1. [**GL-3**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 200**] <**\_\_\_\_\_\_\_\_**>, bronze body, bronze trim, union bonnet, rising stem, hand wheel, renewable stainless steel seat ring and disc, threaded ends.
				2. [**GL-4**] 2-1/2 inches (65 mm) and Larger: MSS SP 85 “Cast Iron Globe & Angle Valves, Flanged and Threaded”, [**Class 150**] <**\_\_\_\_\_\_\_\_**>, [**cast iron**] [**ASTM A216/A216M, cast carbon steel**] body, bronze trim, bolted bonnet, [**rising stem**] hand wheel, outside screw and yoke, flanged ends. Furnish chain-wheel operators for valves 6 inches (150 mm) and larger mounted over 8 feet (2400 mm) above floor.
			1. BALL VALVES

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=7945&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9691) Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

NIBCO INC.

[WATTS; A Watts Water Technologies Company](http://www.specagent.com/Lookup?uid=123457188359).

Approved equivalent.

* + - * 1. Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

The following valve is economy type ball valve.

* + - * 1. [**BA-1**] 2 inches (50 mm) and Smaller: MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, [**400 psi (2760 kPa) WOG**] [**600 psi (4140 kPa) WOG**] <**\_\_\_\_\_\_\_\_**>, [**one**] [**two**] piece bronze body, chrome plated brass ball, [**regular**] [**full**] port, teflon seats, blow-out proof stem, [**solder**] [**or**] [**threaded**] ends [**with union**], [**lever handle**] [**wing or tee handle**] [**locking lever handle**] [**extended lever handle**] [**round handle**] [**oval handle**] [**with balancing stops**].
				2. [**BA-2**] 2 inches (50 mm) and Smaller: MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze, two piece body, [**chrome plated bronze**] [**type 316 stainless steel**] ball, [**regular**] [**full**] port, teflon seats, blow-out proof stem, [**solder**] [**or**] [**threaded**] ends [**with union**], [**lever handle**] [**wing or tee handle**] [**locking lever handle**] [**extended lever handle**] [**round handle**] [**oval handle**] [**with balancing stops**].

The following is 3-piece repairable ball valve.

* + - * 1. [**BA-3**] 2 inches (50 mm) and Smaller: MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze, three piece body, [**chrome plated bronze**] [**type 316 stainless steel**] ball, [**regular**] [**full**] port, teflon seats, blow-out proof stem, [**solder**] [**or**] [**threaded**] ends, [**lever handle**] [**wing or tee handle**] [**locking lever handle**] [**extended lever handle**] [**round handle**] [**oval handle**] [**with balancing stops**].

The following ball valve may be used in low pressure steam systems.

* + - * 1. [**BA-4**] 2 inches (50 mm) and Smaller: MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze, [**two**] [**three**] piece body, type 316 stainless steel ball with vent hole, full port, reinforced teflon seats, stainless steel stem, threaded ends, [**lever handle**] [**wing or tee handle**] [**locking lever handle**] [**extended lever handle**] [**round handle**] [**oval handle**] [**with balancing stops**].

The following is ball valve with stainless steel body and trim.

* + - * 1. [**BA-5**] 2 inches (50 mm) and Smaller: MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, [**Class 150**] <**\_\_\_\_\_\_\_\_**> Stainless steel, [**two**] [**three**] piece body, stainless steel ball, [**teflon**] [**reinforced teflon**] seats and stuffing box ring, threaded ends, [**lever handle**] [**wing or tee handle**] [**locking lever handle**] [**extended lever handle**] [**round handle**] [**oval handle**] [**with balancing stops**].

The following is ball valve with PVC body and trim.

* + - * 1. [**BA-6**] 2 inches (50 mm) and Smaller: 150 psi (1035 kPa) at 73 degrees F (55 degrees C) water temperature, maximum service temperature: 140 degrees F (60 degrees C) ASTM D1785 “Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120” PVC body and ball, double lever handle, [**EPDM**] [**fluorocarbon**] seals, teflon seats, [**regular**] [**full**] port, [**single**] [**double**] union type with [**socket**] [**threaded**] ends.

The following is ball valve with CPVC body and trim.

* + - * 1. [**BA-7**] 2 inches (50 mm) and Smaller: 150 psi (1035 kPa) at 73 degrees F (55 degrees C) water temperature, maximum service temperature: 210 degrees F (100 degrees C), ASTM D1785 “Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120” CPVC body and ball, double lever handle, [**EPDM**] [**fluorocarbon**] seals, teflon seats, [**regular**] [**full**] port, [**single**] [**double**] union type with [**socket**] [**threaded**] ends.

The following 2 valves are ball valves with polypropylene body and trim.

* + - * 1. [**BA-8**] 2 inches (50 mm) and Smaller: 150 psi (1035 kPa) at 100 degrees F (40 degrees C) water temperature, maximum service temperature 180 degrees F (82 degrees C), ASTM D4101 “Standard Specification for Propylene Injection and Extrusion Materials” natural polypropylene body and ball, double lever handle, [**EPDM**] [**fluorocarbon**] seals, teflon seats, [**regular**] [**full**] port, [**single**] [**double**] union type with [**socket**] [**threaded**] ends.
				2. [**BA-9**] 2 inches (50 mm) and Smaller: 150 psi (1035 kPa) at 73 degrees F (55 degrees C) water temperature, maximum service temperature: 180 degrees F (82 degrees C), ASTM D4101 “Standard Specification for Propylene Injection and Extrusion Materials” black polypropylene body and ball, double lever handle, [**EPDM**] [**fluorocarbon**] seals, teflon seats, [**regular**] [**full**] port, [**single**] [**double**] union type with [**socket**] [**threaded**] ends.

The following ball valves are UL listed for fuel and gas service.

* + - * 1. [**BA-10**] 1/4 inch (6 mm) to 1 inch (25 mm): MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 “Valves for Flammable Fluids” listed for flammable liquids and LPG, full port.
				2. [**BA-11**] 1-1/4 inch (32 mm) to 3 inch (76 mm): MSS SP 110 “Ball Valves Threaded, Socket-Welding, Solder Joint, Grooved and Flared Ends”, Class 125, two piece, threaded ends, bronze body, chrome plated bronze ball, reinforced teflon seats, blow-out proof stem, lever handle, UL 842 “Valves for Flammable Fluids” listed for flammable liquids and LPG, conventional port.
			1. PLUG VALVES

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=7946&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. [Manufacturers:](http://www.specagent.com/Lookup?ulid=9892) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flowserve Corporation](http://www.specagent.com/Lookup?uid=123457199380).

[National Oilwell Varco](http://www.specagent.com/Lookup?uid=123457199381).

[Nordstrom Valves, Inc](http://www.specagent.com/Lookup?uid=123457199382).

Approved equivalent.

* + - * 1. Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

* + - * 1. [**PL-1**] 2 inches (50 mm) and Smaller: MSS SP 78 “Cast Iron Plug Valves, Flanged and Threaded Ends”, [**Class 150**] [**Class 300**], [**semi-steel**] <**\_\_\_\_\_\_\_\_**> construction, [**round**] [**square**] [**rectangular**] port, [**full pipe area**] [**regular opening**], pressure lubricated, teflon packing, threaded ends. Furnish one plug valve wrench for every ten plug-valves with minimum of one wrench.
				2. [**PL-2**] 2-1/2 inches (65 mm) and Larger: MSS SP 78 “Cast Iron Plug Valves, Flanged and Threaded Ends”, [**Class 150**] [**Class 300**], [**semi-steel**] <**\_\_\_\_\_\_\_\_**> construction, [**round**] [**square**] [**rectangular**] port, [**full pipe area**] [**regular opening**], pressure lubricated, teflon packing, flanged ends. Furnish [**wrench-operated**] [**worm gear-operated**].
			1. BUTTERFLY VALVES

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=7947&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

Milwaukee

Nibco

Watts

Approved equivalent.

* + - * 1. Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

Use stainless steel disc for swimming pool applications. Use Buna N (Nitrile rubber) seats in compressed air applications.

* + - * 1. [**BF-1**] 2-1/2 inches (65 mm) and Larger: MSS SP 67 “Butterfly Valves”, [**Class 150**] [**Class 200**] [**Class 250**] <**\_\_\_\_\_\_\_\_**>.

Body: Cast or ductile iron, [**wafer**] [**lug**] [**or**] [**grooved**] ends, stainless steel stem, extended neck.

Disc: [**Nickel-plated ductile iron**] [**Aluminum bronze**] [**Elastomer coated ductile iron**] [**Chrome plated ductile iron**] [**or**] [**stainless steel**].

Seat: Resilient replaceable [**EPDM**] [**Buna N**] [**neoprene Viton**].

Handle and Operator: [**10 position lever handle.**] [**Infinite position lever handle with memory stop.**] [**Hand-wheel and gear drive.**] [**Furnish gear operators for valves 8 inches (200 mm) and larger, and chain-wheel operators for valves mounted over 8 feet (2400 mm) above floor.**]

The following is butterfly valve with PVC body and trim.

* + - * 1. [**BF-2**] 2 inches (50 mm) through 10 inches (250 mm): 150 psi (1035 kPa) at 73 degrees F (55 degrees C) water temperature, maximum service temperature: 140 degrees F (60 degrees C), [**one**] [**two**] piece body, ASTM D1785 “Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120” PVC, lug type flange facing, disc encapsulated with EPDM, stainless steel shaft, locking lever handle.

The following is butterfly valve with CPVC body and trim.

* + - * 1. [**BF-3**] 2 inches (50 mm) through 10 inches (250 mm): 150 psi (1035 kPa) at 73 degrees F (55 degrees C) water temperature, maximum service temperature 210 degrees F (100 degrees C), [**one**] [**two**] piece body, ASTM D1785 “Standard Specification for Poly (Vinyl Chloride) (PVC) Plastic Pipe, Schedules 40, 80, and 120” CPVC, lug type flange facing, disc encapsulated with EPDM, stainless steel shaft, locking lever handle.

The following is butterfly valve UL listed for use in gas systems.

* + - * 1. [**BF-4**] 2 inches (50 mm) and Smaller: MSS SP 67 “Butterfly Valves”, 175 psi (1200 kPa), bronze body, Viton seals, stainless steel trim, [**lever**] [**tee**] [**oval**] handle UL 842 “Valves for Flammable Fluids” listed for gas service, [**threaded**] [**soldered**] ends, full port.
			1. CHECK VALVES
				1. Horizontal Swing Check Valves:

In this paragraph, list manufacturers acceptable for this Project.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=8008&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

Milwaukee

Nibco

Watts

Approved equivalent.

Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

The following 2 check valves can be used in low pressure steam systems. Use Buna-N type disc in water-oil-gas applications and teflon disc in steam applications.

[**CK-1**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 150**] <**\_\_\_\_\_\_\_\_**>, bronze body and cap, bronze seat, [**Buna-N**] [**teflon**] disc, [**solder**] [**or**] [**threaded**] ends.

[**CK-2**] 2-1/2 inches (65 mm) and Larger: MSS SP 71 “Cast Iron Swing Check Valves, Flanged and Threaded Ends”, [**Class 125**] <**\_\_\_\_\_\_\_\_**>, cast iron body, bolted cap, bronze or cast iron disc, [**renewable disc seal and seat,**] flanged ends.

The following 2 valves are intended for use in steam systems between 16 psi (110 kPa) and 125 psi (860 kPa).

[**CK-4**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 200**] <**\_\_\_\_\_\_\_\_**>, bronze body and cap, Y-pattern, bronze regrinding disc, [**solder**] [**or**] [**threaded**] ends.

[**CK-5**] 2-1/2 inches (65 mm) and Larger: MSS SP 71 “Cast Iron Swing Check Valves, Flanged and Threaded Ends”, [**Class 250**] <**\_\_\_\_\_\_\_\_**>, cast iron body, bolted cap, bronze or cast iron disc, flanged ends.

* + - * 1. Spring Loaded Check Valves:

In this paragraph, list manufacturers acceptable for this Project.

[Manufacturers](http://www.specagent.com/LookUp/?ulid=8007&mf=04&src=wd):

Substitutions: [Section 016000 - Product Requirements] [Not Permitted].

Manufacturers: Subject to compliance with requirements, [provide products by the following] [provide products by one of the following] [available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following]:

Milwaukee

Nibco

Stockham

Approved equivalent.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Furnish materials in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.

Edit the following descriptive specifications to identify project requirements and to eliminate conflicts with manufacturers' products specified above.

[**CK-6**] 2 inches (50 mm) and Smaller: MSS SP 80 “Bronze Gate, Globe, Angle and Check Valves”, [**Class 250**] <**\_\_\_\_\_\_\_\_**>, bronze body, in-line spring lift check, silent closing, [**Buna-N**] [**teflon**] disc, integral seat, [**solder**] [**or**] [**threaded**] ends.

[**CK-7**] 2-1/2 inches (65 mm) and Larger: MSS SP 71 “Cast Iron Swing Check Valves, Flanged and Threaded Ends”, [**Class 125**] <**\_\_\_\_\_\_\_\_**>, [**wafer**] [**globe**] style, cast iron body, bronze seat, center guided bronze disc, stainless steel spring and screws, flanged ends.

1. EXECUTION
	* + 1. EXAMINATION
				1. Section 013000 - Administrative Requirements: Verification of existing conditions before starting work.
				2. Verify piping system is ready for valve installation.
			2. INSTALLATION
				1. Install valves with stems upright or horizontal, not inverted.
				2. Install brass male adapters each side of valves in copper piped system. Solder adapters to pipe.
				3. Install 3/4 inch (20 mm) [**gate**] [**ball**] valves with cap for drains at main shut-off valves, low points of piping, bases of vertical risers, and at equipment.
				4. Install valves with clearance for installation of insulation and allowing access.
				5. Provide access where valves and fittings are not accessible. [**Coordinate size and location of access doors with Section 083113.**]
				6. Refer to Section [**230529**] <**\_\_\_\_\_\_\_\_**> for pipe hangers.
				7. Refer to Section [**230700**] <**\_\_\_\_\_\_\_\_**> for insulation requirements for valves.
				8. Refer to Section [**230503**] <**\_\_\_\_\_\_\_\_**> for piping materials applying to various system types.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

Use the following statements when valves are specified in this section but installation requirements are included with applicable piping system section.

* + - * 1. For installation of valves in [**hot water,**] [**chilled water,**] [**steam and steam condensate**] piping systems refer to Section [**232213**] <**\_\_\_\_\_\_\_\_**>.
				2. For installation of valves in fuel oil systems refer to Section [**231113**] <**\_\_\_\_\_\_\_\_**>.
				3. For installation of valves in natural gas systems refer to Section [**231123**] <**\_\_\_\_\_\_\_\_**>.
				4. For installation of valves in LPG systems refer to Section [**231126**] <**\_\_\_\_\_\_\_\_**>.

\*\*\*\*\*\* [OR] \*\*\*\*\*\*

* + - * 1. Install Work in accordance with [**State**] [**Municipality**] of <**\_\_\_\_\_\_\_\_**> [**Highways**] [**Public Work's**] standards.
			1. VALVE APPLICATIONS
				1. Install [**shutoff**] [**and**] [**drain**] valves at locations indicated on Drawings in accordance with this Section.
				2. Install [**ball**] [**butterfly**] [**or**] [**gate**] valves for shut-off and to isolate equipment, part of systems, or vertical risers.
				3. Install [**ball**] [**butterfly**] [**or**] [**globe**] valves for throttling, bypass, or manual flow control services.
				4. Install spring loaded check valves on discharge of water pumps.
				5. Install lug end butterfly valves adjacent to equipment when functioning to isolate equipment.

The following statements include application requirements for specific system edit to meet project requirements.

* + - * 1. Install [**ball**] [**butterfly**] [**and**] [**gate**] valves [**in heating water systems**] [**in chilled and condenser water systems**] [**in heating, chilled and condenser water systems**] for shut-off service.
				2. Install butterfly valves [**in heating water systems**] [**in chilled and condenser water systems**] [**in heating, chilled and condenser water systems**] interchangeably with gate and globe valves.
				3. Install [**calibrated ball**] [**and**] [**globe**] valves [**in heating water systems**] [**in chilled and condenser water systems**] [**in heating, chilled and condenser water systems**] for throttling service.

The valves listed in the next 3 paragraphs need to be specifically rated for these services. Coordinate with requirements for each valve in Part 2 Products of this specification.

* + - * 1. Install [**butterfly**] [**and**] [**plug**] valves in [**natural**] [**propane**] gas systems for shut-off service.
				2. Install [**ball**] [**and**] [**gate**] valves in fuel oil systems for shut-off service.
				3. Install [**ball**] [**and**] [**globe**] valves in fuel oil systems for shut-off service.
			1. SCHEDULES

Include schedules when identifying valves applicable to system. Assign number to each valve. Numbers can be assigned numerically or by valve type such as gate valve GA-1, globe valve GL-1, ball valve BA-1, plug valve PL-1, butterfly valve BF-1 and check valve CK-1. Coordinate schedule in conjunction with identification method used on Drawings.

Consider the following examples when developing Project schedule.

* + - * 1. Valve Service:

In following Subparagraphsubparagraphs indicate whether service is "shutoff," "throttling," or "check."

Heating Hot Water: <**\_\_\_\_\_\_\_\_**>.

Chilled Water: <**\_\_\_\_\_\_\_\_**>.

END OF SECTION 230523