SECTION 400567 - SPECIALIZED PRESSURE AND FLOW-CONTROL VALVES

Note that this section has only been edited for NYSOGS standardization and has not been technically edited. The designer shall make all technical edits specific to the project for this section.

This Section specifies pressure-reducing valves (PRV) and pressure-sustaining valves for use in water and wastewater treatment plants.

For water and wastewater treatment projects, valving is typically defined by using a valve schedule, which describes valve types and characteristics as required for that system. A sample valve schedule is provided in Section 400551.

When selecting valve materials for corrosive fluids, consult with valve manufacturer and select materials based on specific application.

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

Pressure-reducing valves.

Pressure-sustaining valves.

* + - * 1. Related Requirements:

List other Sections directly related to or affecting Work of this Section. Include Sections specifying information expected to be found in this Section as well as Sections required to describe complete system or assembly requirements.

Section 400551 - Common Requirements for Process Valves: Basic materials and methods related to valves commonly used for process systems.

* + - 1. REFERENCE STANDARDS

List reference standards included within text of this Section, with designations, numbers, and complete document titles.

* + - * 1. American Water Works Association:

AWWA C111 - Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings.

* + - * 1. ASME International:

ASME B1.20.1 - Pipe Threads, General Purpose, Inch.

ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250.

ASME B16.5 - Pipe Flanges and Flanged Fittings: NPS 1/2 through NPS 24 Metric/Inch Standard.

ASME B16.11 - Forged Fittings, Socket-Welding and Threaded.

ASME B16.42 - Ductile Iron Pipe Flanges and Flanged Fittings: Classes 150 and 300.

* + - * 1. ASTM International:

ASTM A536 - Standard Specification for Ductile Iron Castings.

ASTM B61 - Standard Specification for Steam or Valve Bronze Castings.

ASTM B62 - Standard Specification for Composition Bronze or Ounce Metal Castings.

* + - * 1. NSF International:

NSF 61 - Drinking Water System Components - Health Effects.

NSF 372 - Drinking Water System Components - Lead Content.

* + - 1. COORDINATION
         1. Coordinate Work of this Section with process piping Work.
      2. PREINSTALLATION MEETINGS
         1. Convene minimum [**one week**] [**<\_\_\_\_\_\_\_\_> weeks**] prior to commencing Work of this Section.
      3. SUBMITTALS

Only request submittals needed to verify compliance with Project requirements.

Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.

* + - * 1. Manufacturer’s installation instructions shall be provided along with product data.
        2. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
        3. Product Data: Submit manufacturer information, indicating materials of construction and compliance with indicated standards.
        4. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate Paragraphs for additional certifications.

* + - * 1. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
        2. Source Quality-Control Submittals: Indicate results of [**shop**] [**factory**] tests and inspections.
        3. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        4. Qualifications Statements:

Coordinate following Subparagraphs with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer and installer.

Submit manufacturer's approval of installer.

* + - 1. QUALITY ASSURANCE

Include this Article to specify compliance with overall reference standards affecting products and installation included in this Section.

* + - * 1. Materials in Contact with Potable Water: Certified to NSF 61 and NSF 372.

In following Paragraph insert "State of New York Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

* + - * 1. Perform Work according to <**\_\_\_\_\_\_\_\_**> standards.

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

* + - * 1. Maintain <**\_\_\_\_\_\_\_\_**> [**copy**] [**copies**] of each standard affecting Work of this Section on Site.
      1. QUALIFICATIONS

Coordinate following Paragraphs with requirements specified in SUBMITTALS Article.

* + - * 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 [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience [**and approved by manufacturer**].
      1. DELIVERY, STORAGE, AND HANDLING
         1. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
         2. Store materials according to manufacturer instructions.
         3. Protection:

Protect materials from moisture and dust by storing in clean, dry location remote from construction operations areas.

Provide additional protection according to manufacturer instructions.

* + - 1. EXISTING CONDITIONS
         1. Field Measurements:

Verify field measurements prior to fabrication.

Indicate field measurements on Shop Drawings.

* + - 1. WARRANTY

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

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for [**PRVs**] [**and**] [**pressure-sustaining valves**] against cavitation damage.

1. PRODUCTS
   * + 1. PRESSURE-REDUCING VALVES

PRVs are typically used to reduce process fluid pressure to an adjustable lower level. A PRV is typically self-contained and commonly contains a diaphragm-operated control valve and a main valve.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12530&mf=04&src=wd):

designer to provide two manufacturers and approved equivalent for all listed products.

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

In following Subparagraph insert "State of New York Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.

Insert descriptive specifications below to identify Project requirements and to eliminate conflicts with products specified above.

* + - * 1. Description:

Type: Pilot-operated [**angle**] [**globe**] <**\_\_\_\_\_\_\_\_**> valve.

Outlet Pressure: [**<\_\_\_\_\_\_\_\_> psig) at <\_\_\_\_\_\_\_\_> degrees F**] [**As indicated in valve schedule**].

[**Minimum**] Working Pressure: [**<\_\_\_\_\_\_\_\_> psig at <\_\_\_\_\_\_\_\_> degrees F**] [**As indicated in valve schedule**].

Flow Area: Equal to connecting nominal pipe diameter.

Furnish V-ports for low-flow pressure control.

Operation:

Normally [**OPEN**] [**CLOSED**].

Actuator:

Type: [**Electric**] [**Hydraulic**].

Actuation: Diaphragm.

Control: [**Pilot**] [**Spring**].

Downstream Pressure Set Point:

Zero to [**110**] <**\_\_\_\_\_\_\_\_**> percent.

Field adjustable.

Internal Access: Flanged cover piece.

Furnish piston position indicator.

End Connections:

Threaded.

Comply with ASTM B1.20.1 .

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

End Connections:

Flanged.

Comply with ASME [**B16.1**] [**B16.5**] [**B16.42**].

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

End Connections:

Mechanical joint.

Comply with AWWA C111.

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

End Connections:

Socket welded.

Comply with ASME B16.11.

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

End Connections:

<**\_\_\_\_\_\_\_\_**>.

Comply with <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Materials:

Body:

Ductile iron.

Comply with ASTM A536.

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

Body: [**Carbon**] [**Type <\_\_\_\_\_\_\_\_> stainless**] steel.

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

Body:

Bronze.

Comply with ASTM [**B61**] [**B62**] <**\_\_\_\_\_\_\_\_**>.

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

Body:

<**\_\_\_\_\_\_\_\_**>.

Comply with <**\_\_\_\_\_\_\_\_**>.

Diaphragm: [**EPDM rubber**] <**\_\_\_\_\_\_\_\_**>.

Control Trim:

Fittings: [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**Brass**] <**\_\_\_\_\_\_\_\_**>.

Tubes: [**Nylon**] [**Polypropylene (PP)**] [**Copper**] [**Type <\_\_\_\_\_\_\_\_> stainless steel**] <**\_\_\_\_\_\_\_\_**>.

Valve Components: [**Bronze**] [**Coated carbon steel**] [**Type <\_\_\_\_\_\_\_\_> stainless steel**] <**\_\_\_\_\_\_\_\_**>.

Seals: [**Buna-N**] [**EPDM rubber**] [**Viton**] <**\_\_\_\_\_\_\_\_**>.

Finishes: As specified in Section 400551 - Common Requirements for Process Valves.

* + - 1. PRESSURE-SUSTAINING VALVES

A pressure-sustaining valve permits flow when upstream pressure is above an adjustable set point of a control pilot, and throttles toward CLOSED when upstream pressure falls below an adjustable set point, thus sustaining pressure in upstream zone.

* + - * 1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=9578&mf=04&src=wd):

designer to provide two manufacturers and approved equivalent for all listed products.

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

In following Subparagraph insert "State of New York Department of Transportation," "Municipality of \_\_\_\_\_\_\_\_ Department of Public Works," or other agency as appropriate.

Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.

Insert descriptive specifications below to identify Project requirements and to eliminate conflicts with products specified above.

* + - * 1. Description:

Type: Pilot-operated [**angle**] [**globe**] <**\_\_\_\_\_\_\_\_**> valve.

Outlet Pressure: [**<\_\_\_\_\_\_\_\_> psig) at <\_\_\_\_\_\_\_\_> degrees F** ] [**As indicated in valve schedule**].

[**Minimum**] Working Pressure: [**<\_\_\_\_\_\_\_\_> psig at <\_\_\_\_\_\_\_\_> degrees F**] [**As indicated in valve schedule**].

Flow Area: Equal to connecting nominal pipe diameter.

Furnish V-ports for low-flow pressure control.

Operation:

Normally [**OPEN**] [**CLOSED**].

Actuator:

Type: [**Electric**] [**Hydraulic**].

Actuation: Diaphragm.

Control: [**Pilot**] [**Spring**].

Downstream Pressure Set Point:

Zero to [**110**] <**\_\_\_\_\_\_\_\_**> percent.

Field adjustable.

Internal Access: Flanged cover piece.

Furnish piston position indicator.

End Connections:

Threaded.

Comply with ASTM B1.20.1

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

End Connections:

Flanged.

Comply with ASME [**B16.1**] [**B16.5**] [**B16.42**].

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

End Connections:

Mechanical joint.

Comply with AWWA C111.

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

End Connections:

Socket welded.

Comply with ASME B16.11.

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

End Connections:

<**\_\_\_\_\_\_\_\_**>.

Comply with <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Materials:

Body:

Ductile iron.

Comply with ASTM A536.

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

Body: [**Carbon**] [**Type <\_\_\_\_\_\_\_\_> stainless**] steel.

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

Body:

Bronze.

Comply with ASTM [**B61**] [**B62**] <**\_\_\_\_\_\_\_\_**>.

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

Body:

<**\_\_\_\_\_\_\_\_**>.

Comply with <**\_\_\_\_\_\_\_\_**>.

Diaphragm: [**EPDM rubber**] <**\_\_\_\_\_\_\_\_**>.

Control Trim:

Fittings: [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**Brass**] <**\_\_\_\_\_\_\_\_**>.

Tubes: [**Nylon**] [**Polypropylene (PP)**] [**Copper**] [**Type <\_\_\_\_\_\_\_\_> stainless steel**] <**\_\_\_\_\_\_\_\_**>.

Valve Components: [**Bronze**] [**Coated carbon steel**] [**Type <\_\_\_\_\_\_\_\_> stainless steel**] <**\_\_\_\_\_\_\_\_**>.

Seals: [**Buna-N**] [**EPDM rubber**] [**Viton**] <**\_\_\_\_\_\_\_\_**>.

Finishes: As specified in Section 400551 - Common Requirements for Process Valves.

* + - 1. SOURCE QUALITY CONTROL
         1. Testing PRVs and Pressure-Sustaining Valves:

Leakage Testing:

Test each assembled valve hydrostatically at 1-1/2 times rated working pressure for minimum five minutes.

Test each valve for leakage at rated working pressure against closed valve.

Permitted Leakage: None.

Functional Testing:

Test each valve to verify specified performance.

Include one or both of following Paragraphs to require Director's inspection or witnessing of test at factory.

* + - * 1. Director’s Inspection:

Make completed flow-control valves available for inspection at manufacturer's factory prior to packaging for shipment.

Notify Director’s Representative at least [**seven**] <**\_\_\_\_\_\_\_\_**> days before inspection is allowed.

* + - * 1. Director’s Witnessing:

Allow witnessing of factory inspections and test at manufacturer's test facility.

Notify Director’s Representative at least [**seven**] <**\_\_\_\_\_\_\_\_**> days before inspections and tests are scheduled.

Include following Paragraph if reliance on manufacturer's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance:

If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.

Specified shop tests are not required for Work performed by approved manufacturer.

1. EXECUTION
   * + 1. EXAMINATION
          1. As specified in Section 400551 - Common Requirements for Process Valves.
       2. INSTALLATION
          1. As specified in Section 400551 - Common Requirements for Process Valves.
          2. Install protective strainers upstream of solenoid valves, PRVs, and pressure-sustaining valves.
       3. FIELD QUALITY CONTROL
          1. As specified in Section 400551 - Common Requirements for Process Valves.

END OF SECTION 400567