SECTION 403326 - DIVERTER BULK MATERIALS 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 diverter valve assemblies for regulating flow of bulk material solids from storage bins or silos.

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

Orifice gates.

Roller gates.

Wye lines.

Flex tubes.

Iris valves.

Slide gates.

* + - * 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 055000 - Metal Fabrications: Fasteners, brackets, and other miscellaneous metal fabrications as required by this Section.

Section 400557 - Actuators for Process Valves and Gates: Operating options for specified diverter valves.

Section 403250 - Nonabrasive Materials Piping and Chutes: Conveyance of bulk powders and granular materials.

* + - 1. DEFINITIONS

Limit list of definitions to terms unique to this Section and not provided elsewhere.

* + - * 1. UHMWPE: Ultra-high-molecular-weight polyethylene.
      1. REFERENCE STANDARDS

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

* + - * 1. ASME International:

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

* + - * 1. NSF International:

NSF Standard 61 - Drinking Water System Components - Health Effects.

NSF Standard 372 - Drinking Water System Components - Lead Content.

* + - 1. PREINSTALLATION MEETINGS
         1. Convene minimum [**one week**] [**<\_\_\_\_\_\_\_\_> weeks**] prior to commencing Work of this Section.
      2. 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. Manufacture’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. Product Data: Submit manufacturer's product information for system materials and component equipment.
        5. Shop Drawings:

Indicate system materials and component equipment.

Submit installation and anchoring requirements, including fasteners and other details.

Indicate diverter valve identification number, location, service, type, size, and actuator details.

* + - * 1. 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. Manufacturer Reports: Certify that [**equipment has been installed according to manufacturer instructions**] <**\_\_\_\_\_\_\_\_**>.
        5. Qualifications Statements:014100

Coordinate following Subparagraph with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer and 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 Standard 61 and NSF Standard 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 the Work of this Section on Site.
      1. QUALIFICATIONS

Coordinate following Paragraph 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. Storage: 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 State enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for diverter valves.

1. PRODUCTS
   * + 1. ORIFICE GATES
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13125&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Media: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature: [**180**] <**\_\_\_\_\_\_\_\_**> deg. F

Maximum Operating Pressure/Vacuum: <**\_\_\_\_\_\_\_\_**> psig

* + - * 1. Description:

Self-contained orifice gate for regulating flow of bulk material solids from bin or silo.

Closure: Seals product from atmosphere and is capable of closing through material covering gate seat.

Seal: Replaceable.

Bore Diameter: [**[10] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

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

Seal and Seat: [**Replaceable**] [**nylon**] [**UHMWPE**] [**PTFE**] [**rubber**] <**\_\_\_\_\_\_\_\_**>.

Actuator:

[**Manual chain wheel**] [**Pneumatic**] [**Electric**] [**Hydraulic**].

Furnish [**proximity**] [**limit**] switch.

As specified in Section [**400557 - Actuators for Process Valves and Gates**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

End Connection: Flanged; comply with ASME B16.5.

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

* + - 1. ROLLER GATES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13126&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Media: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature:

Continuous Service: [**180**] <**\_\_\_\_\_\_\_\_**> deg. F

Intermittent Service: [**250**] <**\_\_\_\_\_\_\_\_**> deg. F

* + - * 1. Description:

Self-contained roller gate for regulating flow of bulk material solids from bin or silo by gravity only.

Closure: Seals product from atmosphere and is capable of closing through material covering gate seat.

Opening Size: [**[10] <\_\_\_\_\_\_\_\_> by [8] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

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

Seal and Seat: [**Replaceable**] [**nylon**] [**UHMWPE**] [**PTFE**] [**rubber**] <**\_\_\_\_\_\_\_\_**>.

Actuator:

[**Manual chain wheel**] [**Pneumatic**] [**Electric**] [**Hydraulic**].

Furnish [**proximity**] [**limit**] switch.

As specified in Section [**400557 - Actuators for Process Valves and Gates**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

End Connection: Flanged; comply with ASME B16.5.

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

* + - 1. WYE LINES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13127&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Media: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature: [**180**] <**\_\_\_\_\_\_\_\_**> deg. F .

* + - * 1. Description:

Self-contained multi[**-pipe**] [**-tube**] orifice gate for regulating flow of bulk material solids from bin or silo by gravity or pneumatic conveyance.

Closure: Seals product from atmosphere and is capable of closing through material covering orifice seat.

Configuration: [**Three**] [**Four**] way.

[**Pipe**] [**Tube**] Size: [**[4] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

Valve and [**Pipes**] [**Tubes**]: [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**Carbon steel**] [**Aluminum**] <**\_\_\_\_\_\_\_\_**>.

Seal and Seat:

[**Replaceable**] [**nylon**] [**UHMWPE**] [**PTFE**] [**rubber**] <**\_\_\_\_\_\_\_\_**>.

Abrasion Protection: Metal insert.

Actuator:

[**Hand wheel**] [**Manual chain wheel**] [**Pneumatic**] [**Electric**] [**Hydraulic**].

Furnish [**proximity**] [**limit**] switch.

As specified in Section [**400557 - Actuators for Process Valves and Gates**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

End Connections:

Flanged; comply with ASME B16.5.

Compression type.

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

* + - 1. FLEX TUBES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13128&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Media: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature: [**180**] <**\_\_\_\_\_\_\_\_**> deg. F.

* + - * 1. Description:

Self-contained multitube orifice gate for regulating flow of bulk material solids from bin or silo by gravity or pneumatic conveyance.

Closure: Seals product from atmosphere and is capable of closing through material covering orifice seat.

Configuration: [**Two**] [**Three**] way.

Tube Size: [**[4] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

Valve and Tubes: [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**Carbon steel**] [**Aluminum**] <**\_\_\_\_\_\_\_\_**>.

Seal and Seat: [**Replaceable**] [**nylon**] [**UHMWPE**] [**PTFE**] [**rubber**] <**\_\_\_\_\_\_\_\_**>.

Actuator:

[**Hand wheel**] [**Manual chain wheel**] [**Pneumatic**] [**Electric**] [**Hydraulic**].

Furnish [**proximity**] [**limit**] switch.

As specified in Section [**400557 - Actuators for Process Valves and Gates**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

End Connections:

Flanged; comply with ASME B16.5.

Compression type.

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

* + - 1. IRIS VALVES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13129&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Media: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature: [**150**] <**\_\_\_\_\_\_\_\_**> deg. F

* + - * 1. Description:

Flexible diaphragm, which rotates one fixed end through 180 degrees relative to opposite fixed end to completely open and close.

Closure: Seals product from atmosphere and is capable of closing through material covering iris sleeve.

Opening Size: [**[8] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

Valve: [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**Aluminum**] <**\_\_\_\_\_\_\_\_**>.

Sleeve: [**Buna N rubber**] [**PTFE**] [**Urethane**] <**\_\_\_\_\_\_\_\_**>.

Actuator:

[**Hand lever**] [**Hand wheel**] <**\_\_\_\_\_\_\_\_**>.

As specified in Section [**400557 - Actuators for Process Valves and Gates**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

End Connections: Flanged; comply with ASME B16.5.

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

* + - 1. SLIDE GATES
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=13130&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. Include configuration, size, color, material composition, and other properties needed to describe product.

* + - * 1. Performance and Design Criteria:

Product: [**Powder**] [**Pellets**] [**Granular material**] <**\_\_\_\_\_\_\_\_**>.

Maximum Operating Temperature:

Continuous Service: [**180**] <**\_\_\_\_\_\_\_\_**> deg. F .

Intermittent Service: [**400**] <**\_\_\_\_\_\_\_\_**> deg. F

* + - * 1. Description:

Self-contained slide gate for positive shutoff from bin or silo when maintenance is required downstream.

Closure: Seals product from atmosphere and is capable of closing through material covering gate seat.

Gate Size: [**[10] <\_\_\_\_\_\_\_\_> inches**] [**[10] <\_\_\_\_\_\_\_\_> inches[8] <\_\_\_\_\_\_\_\_> inches**] [**As indicated on Drawings**] [**As indicated in schedule following END OF SECTION**].

Materials:

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

Seal and Seat: [**Nylon**] [**UHMWPE**] [**PTFE**] [**Rubber**] <**\_\_\_\_\_\_\_\_**>.

Actuator:

Hand Crank: [**Cast aluminum**] [**FRP**] <**\_\_\_\_\_\_\_\_**>.

[**Furnish proximity switch.**]

Lifting Nut:

Material: [**Brass**] <**\_\_\_\_\_\_\_\_**>.

Furnish grease fitting.

Furnish polymer bearing pads above and below lifting nut.

Lifting Stem:

Fully lubricated.

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

Configuration: [**Rising**] [**Nonrising**].

* + - * 1. Accessories:

Hardware: Type <**\_\_\_\_\_\_\_\_**> stainless steel.

Stem Covers: Provide rising stem gates with clear [**polycarbonate**] [**methacrylate plastic**] <**\_\_\_\_\_\_\_\_**> covers, capped, vented, and of a length to allow full travel of gate.

* + - 1. SOURCE QUALITY CONTROL
         1. Provide shop inspection and testing of completed assembly.

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

* + - * 1. Director’s Inspection:

Make completed diverter 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 tests 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 that 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. Verify that items provided by other Sections of Work are ready to receive Work of this Section.
       2. INSTALLATION
          1. According to manufacturer instructions.

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

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

* + - * 1. Installation Standards: Install Work according to <**\_\_\_\_\_\_\_\_**> standards.
      1. FIELD QUALITY CONTROL
         1. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than <**\_\_\_\_\_\_\_\_**> [**days**] [**hours**] on Site for installation, inspection, startup, field testing, and instructing Director’s Representative in operation and maintenance of equipment.
         2. Equipment Acceptance:

Adjust, repair, modify, or replace components failing to perform as specified and rerun inspections and tests.

Make final adjustments to equipment under direction of manufacturer's representative.

* + - * 1. Furnish installation certificate from equipment manufacturer's representative attesting that equipment has been properly installed and is ready for startup and testing.
      1. ADJUSTING
         1. Check control functions and adjust as required.
      2. DEMONSTRATION
         1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative.
      3. ATTACHMENTS

When relying on separate schedules, tables, illustrations, or forms to specify product requirements, include list of each attachment. Include identical list of attachments in Project Manual table of contents.

Consider including schedule if Project includes more than solid waste bin.

Insert attachments following END OF SECTION. Consider following example when developing Project schedule.

* + - * 1. Diverter Bulk Materials Valve Schedule:

DV-1:

Type: Flex tube.

Configuration: Three way.

Media: Pellets.

Tube Diameter: 4 inches

Material:

Tubes: Type 316 stainless steel.

Valve: Type 316 stainless steel.

Seal and Seat: Nylon.

Hardware: Type 316 stainless steel.

Actuator: Hand wheel.

End Connections: Flanged.

DV-2:

Type: Wye line.

Media: Powder.

Pipe Diameter: 6 inches

Material:

Tubes: Type 316 stainless steel.

Valve: Type 316 stainless steel.

Seal and Seat: Nylon.

Hardware: Type 316 stainless steel.

Actuator: Hand wheel.

End Connections: Flanged.

END OF SECTION 403326