SECTION 402600 - LIQUID POLYMER PIPING

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 requirements for plant process piping systems transporting liquid polymer and polymer solutions in a water or wastewater treatment plant.

Piping for Site utilities are specified in applicable Division 33 site utilities Sections, and plumbing piping and appurtenances are specified in Division 22.

In process industries such as water and wastewater treatment, piping is typically specified by pipe material. Individual piping systems (for example, sanitary, raw water, and drainage) may be defined on the Drawings by way of a piping schedule, which describes piping components required for that system as well as provides other relevant data such as pressure testing requirements and applicable valve types.

Piping, as well as valve type, fittings, joints, accessories, and other appurtenances, should be indicated in the piping schedule and referenced by pipe material to appropriate Division 40 Section, based on service.

Consult piping and valve manufacturers to select materials based on specific application.

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

Pipes and tubes for conveying liquid polymer and polymer solutions.

Valves for conveying liquid polymer and polymer solutions.

* + - * 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: Miscellaneous metalwork and fasteners as required by this Section.

Section 400506 - Couplings, Adapters, and Specials for Process Piping: Pipe penetrations, restrained joints, flexible connections, expansion joints and loops, and sleeve-type couplings.

Section 400523 - Stainless Steel Process Pipe and Tubing: Stainless-steel pipe, tubes, fittings, joints, and appurtenances.

Section 400531 - Thermoplastic Process Pipe: PVC and polypropylene pipe, fittings, joints, and appurtenances.

Section 400536 - Fiberglass-Reinforced Plastic Process Pipe: FRP pipe, fittings, joints, and appurtenances.

Section 400551 - Common Requirements for Process Valves: Common product requirements for valves for placement by this Section.

Section 400563 - Ball Valves: Valves and accessories.

* + - 1. REFERENCE STANDARDS

List reference standards included within text of this Section, with designations, numbers, and complete document titles. Edit following for Project conditions.

* + - * 1. ASME International:

ASME A13.1 - Scheme for the Identification of Piping Systems.

ASME B31.3 - Process Piping Design.

* + - * 1. NSF International:

NSF 61 - Drinking Water System Components - Health Effects.

NSF 372 - Drinking Water System Components - Lead Content.

* + - 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. Product Data:

Piping: Submit manufacturer information on pipe materials, fittings, and accessories.

Hangers and Supports: Submit manufacturer catalog information, including load capacity.

System Components: Submit manufacturer catalog information including capacity, component sizes, rough-in requirements, and service sizes.

Valves: Submit manufacturer information for actuators with model number and size indicated.

* + - * 1. Shop Drawings:

Piping:

Indicate piping system schematic with general assembly of components and mounting and installation details.

Submit list of wording, symbols, letter size, and color-coding for pipe identification; comply with ASME A13.1.

Submit layout drawings showing piece numbers and location.

Valves: Submit assembly drawings indicating parts list, materials, sizes, position indicators, limit switches, [**control system,**] actuator mounting, wiring diagrams, control system schematics[**, and**] <**\_\_\_\_\_\_\_\_**>.

* + - * 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. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
				3. Qualifications Statements:

Coordinate following Subparagraphs with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer and installer.

Submit manufacturer's approval of installer.

* + - 1. CLOSEOUT SUBMITTALS
				1. Project Record Documents: Record actual locations of piping and valves.
				2. Operation and Maintenance Data: Submit assembly views and replacement part numbers and availability.
			2. 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 372.
				2. Perform Work according to ASME B31.3 for installation of piping systems.

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 State enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for piping and valves.
1. PRODUCTS
	* + 1. PIPES AND TUBES FOR CONVEYING LIQUID POLYMER AND POLYMER SOLUTIONS
				1. Piping: [**Stainless steel as specified in Section 400523 - Stainless Steel Process Pipe and Tubing**] [**, PVC as specified in Section 400531 - Thermoplastic Process Pipe**] [**, PP as specified in Section 400531 - Thermoplastic Process Pipe**] [**, fiberglass, as specified in Section 400536 - Fiberglass-Reinforced Plastic Process Pipe**] [**, and**] [**<\_\_\_\_\_\_\_\_> as specified in Section <\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_>**].

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

* + - * 1. Piping: As indicated [**in piping schedule**] [**on Drawings**].
				2. Tubing: [**Stainless steel as specified in Section 400523 - Stainless Steel Process Pipe and Tubing**] [**, and**] [**<\_\_\_\_\_\_\_\_> as specified in Section <\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_>**].

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

* + - * 1. Tubing: As indicated [**in piping schedule**] [**on Drawings**].
				2. Valves: [**Ball as specified in Section 400563 - Ball Valves**] [**, and**] [**<\_\_\_\_\_\_\_\_> as specified in Section <\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_>**].

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

* + - * 1. Valves: As indicated [**in piping schedule**] [**in valve schedule**] [**on Drawings**].
				2. Valve Service:

Shutoff, Drain, and Isolation:

[**Isolation or drainage of equipment**] [**and**] [**as indicated on Drawings**].

Valve Type for Shutoff Service: [**Ball**] [**As indicated on Drawings**] <**\_\_\_\_\_\_\_\_**>.

Bypass: As indicated on Drawings.

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

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

* + - * 1. Furnish materials according to <**\_\_\_\_\_\_\_\_**> standards.
1. EXECUTION
	* + 1. EXAMINATION
				1. Verify that field dimensions are as indicated on [**Shop**] Drawings.
			2. PREPARATION
				1. Protect materials and equipment from damage and intrusion of water and other materials.
			3. INSTALLATION
				1. As indicated on [**Shop**] Drawings, according to manufacturer instructions, and ASME B31.3.
				2. Use minimum number of joints.
				3. Expansion Joints: In locations where pipe expansion joints are indicated, install pipe alignment guides adjacent to and within [**four**] <**\_\_\_\_\_\_\_\_**> pipe diameters of joint.
				4. Field Fabrication of Fittings: According to manufacturer instructions.
				5. Flexible Couplings and Expansion Joints:

Location:

At connections to equipment and where indicated on [**Shop**] Drawings.

Install pipe alignment guides adjacent to and within [**four**] <**\_\_\_\_\_\_\_\_**> pipe diameters of joint.

As specified in Section 400506 - Couplings, Adapters, and Specials for Process Piping.

* + - * 1. Couplings and Anchors: According to manufacturer instructions.
				2. Provide upstream and downstream clearances [**as indicated on Drawings**] [**according to component manufacturer instructions**].
				3. Orientate valves to permit operation and maintenance access to valve operator and to avoid interferences with other equipment.

\*\*\*\*\*\* [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. Inspection:

Repair damaged piping, or provide new, undamaged pipe.

After installation, inspect for proper supports and interferences.

* + - * 1. Pressure Testing:

As indicated on pipe schedule.

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

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

* + - * 1. Pressure Testing: According to <**\_\_\_\_\_\_\_\_**> standards.
				2. Equipment Acceptance: Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
			1. ADJUSTING
				1. Field-calibrate local indicators at time of piping installation.
			2. CLEANING
				1. Keep piping and valve interiors clean as installation progresses.
			3. DEMONSTRATION
				1. Demonstrate valve operation, routine maintenance, and emergency repair procedures to Director’s Representative.

END OF SECTION 402600