SECTION 463333 - POLYMER BLENDING AND FEED EQUIPMENT

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 components, materials, and accessories for self-contained, liquid-polymer blending units, installed ready to provide blended polymer to process equipment as indicated on Drawings.

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

Polymer blending units and feed systems.

Booster and metering pumps.

Skid-mounted supports, frames, and floor stands.

Valves and piping appurtenances.

Flow meters.

System control panels.

Control features.

* + - * 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 033000 - Cast-in-Place Concrete: Requirements for equipment base pad.

Section 262923 - Variable-Frequency Motor Controllers: Requirements for motor variable-speed drives.

Section 400506 - Couplings, Adapters, and Specials for Process Piping: Equipment connections.

Section 400507 - Hangers and Supports for Process Piping: Piping restraints.

Section 400593 - Common Motor Requirements for Process Equipment: Common requirements for motors required under this Section.

Section 402323 - Potable Water Process Piping: Service piping.

Section 402340 - Sanitary Wastewater Process Piping: Equipment drain and overflow connections.

Section 404213 - Process Piping Insulation: Insulating requirements for piping required by this Section.

Section 404223 - Process Equipment Insulation: Insulating requirements for equipment specified in this Section.

Section [**407113 - Magnetic Flow Meters**] [**407133 - Propeller Flow Meters**] [**Section 407143 - Variable Area Flow Meters**]: Supply water flow rate measurement.

Section 407313 - Pressure and Differential Pressure Gauges: Pressure gages as required by this Section.

* + - 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. National Electrical Manufacturers Association:

NEMA 250 - Enclosures for Electrical Equipment (1000 Volts Maximum).

* + - * 1. NSF International:

NSF 61 - Drinking Water System Components - Health Effects.

NSF 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. 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: Submit manufacturer information, including system materials, component equipment, and performance characteristics.
        5. Shop Drawings:

Submit dimensional drawings and details.

Indicate schedule of equipment components.

Indicate materials of construction.

Submit detailed wiring and control diagrams.

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

Indicate mounting details, and location and elevation of electrical controls and panels.

* + - * 1. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate Paragraphs for additional certifications.

* + - * 1. Manufacturer Instructions: Submit detailed instructions regarding installation requirements, including storage and handling procedures, special field procedures, anchoring, and layout.
        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:

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 installed locations and final orientation of equipment and accessories.
      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 according to NSF 61 and 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 Director’s Representative enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for polymer blending and feed equipment.

1. PRODUCTS
   * + 1. POLYMER BLENDING AND FEED EQUIPMENT
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12569&mf=04&src=wd):

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

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

* + - * 1. Description: Unit process capable of automatic metering, dilution, mixing, activation, and feeding of liquid polymer.
        2. Components:

Polymer Pump:

Type: [**Diaphragm**] [**Progressive cavity**] <**\_\_\_\_\_\_\_\_**>.

Drive: [**Direct**] [**Variable speed, as specified in Section 262923 - Variable-Frequency Motor Controllers**].

Dilution Water Flow Rate: [**30 to 300 gph**] [**<\_\_\_\_\_\_\_\_> to <\_\_\_\_\_\_\_\_> gph**] at [**35 to 50 psig** ] [**<\_\_\_\_\_\_\_\_> to <\_\_\_\_\_\_\_\_> psig**] above pressure at point of use.

Polymer Flow Rate: [**0.5 to 1.0 gph** ] [**<\_\_\_\_\_\_\_\_> to <\_\_\_\_\_\_\_\_> gph**].

Polymer is a non-Newtonian (thixotropic) fluid. A piston-type metering pump may be preferable over a gear-style metering pump. Direct flow measurement may be performed using a calibration column, a thermal flow sensor, or a mass flow meter. Consult manufacturer/supplier for recommendations based on particular service conditions and requirements.

Metering Pump:

Operation: Manual and automatic, with 4- to 20-mA dc pacing signal.

[**Furnish pressure-reducing valve.**]

Water Flow Rate Measurement: [**Magnetic flow meter as specified in Section 407113 - Magnetic Flow Meters**] [**Propeller flow meter as specified in Section 407133 - Propeller Flow Meters**] [**Rotometer as specified in Section 407143 - Variable Area Flow Meters**].

Water Control Valve: Variable orifice.

Flush Cycle: Automatically initiated.

* + - * 1. Operation:

Electrical Characteristics:

As specified in [**Section 262923 - Variable-Frequency Motor Controllers**].

[**\_\_\_\_\_\_\_\_ hp**] [**\_\_\_\_\_\_\_\_ RLA**].

Voltage: <**\_\_\_\_\_\_\_\_**> V, [**single**] [**three**] phase, 60 Hz.

Maximum [**Fuse Size**] [**Circuit Breaker Size**] [**Overcurrent Protection**]: <**\_\_\_\_\_\_\_\_**> A.

Minimum Circuit Ampacity: <**\_\_\_\_\_\_\_\_**>.

Minimum Power Factor: <**\_\_\_\_\_\_\_\_**> percent at rated load.

Motors: As specified in Section 400593 - Common Motor Requirements for Process Equipment.

Control Panel:

Factory mounted.

NEMA 250 Type [**1**] [**4**] <**\_\_\_\_\_\_\_\_**>.

Single-point power connection and grounding lug.

Controls:

Selector Switch: LOCAL-OFF-REMOTE.

Indicator Lights:

RUN.

OFF.

LOW WATER FLOW.

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

Alarms:

LOW WATER FLOW.

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

Communications Interface: <**\_\_\_\_\_\_\_\_**>.

Disconnect Switch: Factory mounted [**in control panel**] [**on equipment**].

Operation Sequences: [**As indicated on Drawings**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Materials:

Frame and Skid: [**Type 304 stainless steel**] [**Type <\_\_\_\_\_\_\_\_> stainless steel**] [**PVC**].

Supports: [**Steel members**] [**Formed-steel channel**] [**Steel pipe and fittings**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Accessories:

Pressure-relief valve.

Pressure Gages: As specified in Section 407313 - Pressure and Differential Pressure Gauges.

Static mixer.

Calibration column.

Piping Supports: As specified in Section 400507 - Hangers and Supports for Process Piping.

Insulation:

Equipment: As specified in Section 404223 - Process Equipment Insulation.

Piping: As specified in Section 404213 - Process Piping Insulation.

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

Perform a factory test of completed control panel by demonstrating operation of control functions, and provide certified test results.

Factory assemble and test each control and alarm function.

Test sequence of operation.

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

* + - * 1. Director’s Inspection:

Make completed polymer blending and feed system 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 fabricator's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance:

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

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

1. EXECUTION
   * + 1. EXAMINATION
          1. Verify that designated areas, clearances, structural requirements, piping, utility connections, and electronic signals are ready to receive equipment.
       2. INSTALLATION
          1. According to manufacturer instructions.
          2. Piping:

Equipment Connections: Provide flexible connectors as specified in Section 400506 - Couplings, Adapters, and Specials for Process Piping.

Harness or anchor flexible connectors as necessary.

* + - * 1. Base Pads:

Material: Concrete, as [**specified in Section 033000 - Cast-in-Place Concrete**].

Minimum Size: [**3-1/2 inches thick and extending 6 inches beyond supported equipment**] [**As indicated on Drawings**].

Using templates furnished with equipment, install anchor bolts and accessories for mounting and anchoring equipment.

* + - * 1. Install insulation as indicated on [**Shop**] 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. Installation Standards: Install Work according to <**\_\_\_\_\_\_\_\_**> standards.
      1. FIELD QUALITY CONTROL
         1. Field Testing:

Test for proper alignment.

Demonstrate operation without undue noise, vibration, or overheating.

[**Director’s Representative**] <**\_\_\_\_\_\_\_\_**> will witness field testing.

* + - * 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 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. DEMONSTRATION
         1. Demonstrate equipment startup, shutdown, routine maintenance, alarm condition responses, and emergency repair procedures to Director’s Representative.

END OF SECTION 463333