SECTION 464111 - RAPID MIXERS

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.

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

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes: Rapid mixers.
          2. 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 400593 - Common Motor Requirements for Process Equipment: Electric motors and their accessories normally supplied as part of equipment assemblies.

* + - 1. REFERENCE STANDARDS

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

* + - * 1. ASTM International:

ASTM A182 - Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service.

ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

* + - * 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. COORDINATION
         1. Coordinate Work of this Section with [**installation of process piping**] <**\_\_\_\_\_\_\_\_**>.
      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.

* + - * 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 requirements, including fasteners and other details.

Indicate mounting 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 regarding 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:

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 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 Owner enforcement responsibilities. Specify warranties with caution.

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

1. PRODUCTS
   * + 1. MIXERS
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=9588&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:

Motorized mixer with variable pitch impeller, mounted atop a tank [**as indicated on Drawings**] to provide chemical mixing in the flow stream.

Drive: [**Gear**] [**Worm gear**] [**Direct**] <**\_\_\_\_\_\_\_\_**>.

Mounting: [**Flange**] [**Adjustable, indexed clamp**] [**Fixed, with vibration isolators**] [**Portable**] <**\_\_\_\_\_\_\_\_**>.

Blade Position on Shaft: Adjustable.

Seal: [**Packing**] [**Single seal**] [**Double seal**] <**\_\_\_\_\_\_\_\_**>.

* + - * 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.

Motor:

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

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

Consider specifying an air motor in hazardous environments.

Air motor.

Control Panel:

Factory mounted.

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

Single-point power connection and grounding lug.

Controls: <**\_\_\_\_\_\_\_\_**>.

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

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

* + - * 1. Materials:

Consult manufacturer and select component materials based on specific application.

Housing: [**Aluminum, ASTM B209** ] <**\_\_\_\_\_\_\_\_**>.

Flanges: [**Type <\_\_\_\_\_\_\_\_> stainless steel, ASTM A182**] <**\_\_\_\_\_\_\_\_**>.

Shaft: <**\_\_\_\_\_\_\_\_**>.

Blades: <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Accessories:

Remote Tachometer:

Display: Digital.

Input: 4 to 20 mA dc.

An angle riser may be used on open-tank mounting configurations for off-center positioning of the mixer.

Angle Riser: Manufacturer's standard.

* + - 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 inspection or witnessing of test at factory.

* + - * 1. Director’s Inspection:

Make completed rapid mixer 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. 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. 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. 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 one rapid mixer.

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

* + - * 1. Rapid Mixer Schedule:

RM-1:

Type: [**Portable**] [**Fixed mount**].

Drive: [**Direct**] [**Gear**].

Number of Blades: <**\_\_\_\_\_\_\_\_**>.

Blade Diameter: <**\_\_\_\_\_\_\_\_**>.

Shaft Length: <**\_\_\_\_\_\_\_\_**>.

RM-2:

Type: [**Portable**] [**Fixed mount**].

Drive: [**Direct**] [**Gear**].

Number of Blades: <**\_\_\_\_\_\_\_\_**>.

Blade Diameter: <**\_\_\_\_\_\_\_\_**>.

Shaft Length: <**\_\_\_\_\_\_\_\_**>.

END OF SECTION 464111