SECTION 462327 - CYCLONE DEGRITTERS

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 includes cyclone degritter equipment and grit slurry feed pump.

In a typical cyclone separator (also called a "hydrocyclone"), grit is transferred from a holding tank to the cyclone separator, which uses a rapid spinning motion to separate grit from lighter organic solids and to discharge them to a storage container or to a classifier for washing and draining. Inlet pressure is a critical control factor for the cyclone grit removal process.

Some manufacturers package a cyclone separator with a grit slurry feed pump and a grit dewatering and classifying unit. If a combined system is desired, edit this Section with reference to Section 462363.

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

Cyclone degritters.

Grit slurry feed pump.

* + - * 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 460548 - Vibration and Seismic Controls for Water and Wastewater Equipment: Vibration isolation and seismic control of grit removal equipment and appurtenances.

Section 460553 - Identification for Water and Wastewater Equipment: Nameplates for equipment specified in this Section.

Section 462363 - Grit Classifying and Washing Equipment: Equipment for separation and dewatering of concentrated grit received from grit removal equipment.

Section 462366 - Grit Storage Containers: Configuration of containers to receive washed grit for offloading.

* + - 1. REFERENCE STANDARDS

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

* + - * 1. American Association of State and Highway Transportation Officials:

AASHTO T 27 - Standard Method of Test for Sieve Analysis of Fine and Coarse Aggregates.

AASHTO T 11 - Standard Method of Test for Materials Finer Than 75-micro m (No. 200) Sieve in Mineral Aggregates by Washing.

* + - * 1. ASTM International:

ASTM B26 - Standard Specification for Aluminum-Alloy Sand Castings.

ASTM A532 - Standard Specification for Abrasion-Resistant Cast Irons.

* + - * 1. National Electrical Manufacturers Association:

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

* + - 1. COORDINATION
         1. Coordinate Work of this Section with Work of other Sections.
      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 product data for system materials and component equipment, including electrical characteristics.
        5. Shop Drawings:

Indicate system materials and component equipment.

Submit wiring and control diagrams, installation and anchoring requirements, fasteners, and other 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:

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 installed cyclone degritter equipment.
      2. MAINTENANCE MATERIAL SUBMITTALS
         1. Spare Parts:

One set of liners.

Two sets of gaskets of each size and type.

* + - * 1. Tools: Furnish special [**wrenches**] <**\_\_\_\_\_\_\_\_**> and other devices required for Director’s Representative to maintain equipment.
      1. QUALITY ASSURANCE

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

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**] [**10**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for cyclone degritter equipment and accessories.

1. PRODUCTS
   * + 1. CYCLONE DEGRITTERS
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12087&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. Performance and Design Criteria:

Design Flow Rate: <**\_\_\_\_\_\_\_\_**> gpm

Maximum Feed Pressure: <**\_\_\_\_\_\_\_\_**> psig

Minimum Pipe Size:

Inlet: [**4**] <**\_\_\_\_\_\_\_\_**> inches

Outlet: [**6**] <**\_\_\_\_\_\_\_\_**> inches

Minimum Velocity: [**8**] <**\_\_\_\_\_\_\_\_**> fps).

Solids:

Removal: <**\_\_\_\_\_\_\_\_**> percent.

Separation: [**150**] [**200**] <**\_\_\_\_\_\_\_\_**> mesh.

* + - * 1. Description:

Material: [**Structural steel plate**] [**or**] [**cast aluminum, ASTM B26** ], with replaceable [**natural**] [**neoprene**] rubber lining.

End Connections: Flanged, 125 lb

Transition Fittings: Flanged.

* + - * 1. Overflow: Furnish quick-disconnect for inspection and cleaning.
        2. Apex:

Valve: [**Cast aluminum, ASTM B26** ] <**\_\_\_\_\_\_\_\_**> housing, with pivoted, quick-opening toggle-clamp operator.

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

Fixed flange with [**cast-iron-alloy**] <**\_\_\_\_\_\_\_\_**> apex section.

* + - * 1. Accessories:

Inlet Pressure Gage:

Type: Diaphragm.

Pressure Range: Zero to 15 psig 0.2-psi

Hardware: Type 316 stainless steel.

* + - 1. GRIT SLURRY FEED PUMP
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12088&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:

Casing: Two piece, with replaceable suction piece.

Type: Cup.

Impeller:

Material: [**Hi-chrome iron, ASTM A532** ] <**\_\_\_\_\_\_\_\_**>.

Type: Recessed, cup type.

Size: [**11-7/8**] <**\_\_\_\_\_\_\_\_**> inches

Wear Plate:

Material: [**Hi-chrome iron, ASTM A532**] <**\_\_\_\_\_\_\_\_**>.

Type: Replaceable.

Seal: [**Manufacturer standard**] [**Slurry flush**].

Suction and Discharge Diameter: [**2**] <**\_\_\_\_\_\_\_\_**> inches.

Wear Plate:

Material: [**Ni-hard iron, ASTM A532** ] <**\_\_\_\_\_\_\_\_**>.

Type: Replaceable.

Bearing life is percent failure at rated hours; for example, L-10 life at 300,000 hours means 10 percent of bearings may be expected to fail at 300,000 hours.

Bearings:

[**Manufacturer standard**] <**\_\_\_\_\_\_\_\_**>.

L-10 Life: [**100,000**] <**\_\_\_\_\_\_\_\_**> hours.

Electrical Characteristics:

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

Control Panel:

Factory mounted.

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

Single-point power connection and grounding lug.

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

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

Control Sequence: [**Automatic**] [**Batch**] [**Manual**].

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

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 <**product name**> 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 headworks installation is ready to receive cyclone degritter equipment.
       2. INSTALLATION
          1. Install cyclone degritter equipment 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. Inspect for proper operation.
         2. Testing:

Operate equipment for 24 continuous hours at indicated design flow rate, and sample cyclone overflow not less than once every four hours.

AASHTO T 11 in following Paragraph is equivalent to ASTM C117.

Dry and test samples according to AASHTO T 27 and AASHTO T 11.

Adjust equipment to achieve 5 percent or less of particles averaging more than <**\_\_\_\_\_\_\_\_**> mesh.

* + - * 1. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than <**\_\_\_\_\_\_\_\_**> days on Site for installation, inspection, field testing, and instructing Director’s Representative's personnel in 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. ADJUSTING
         1. Check control functions and adjust as required.
      2. CLEANING
         1. Blow systems clear of moisture and foreign matter.
      3. DEMONSTRATION
         1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative personnel.

END OF SECTION 462327