SECTION 462316 - CHAIN-AND-FLIGHT GRIT REMOVAL 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 includes chain-and-flight (also referred to as "chain-and-scraper") grit removal equipment and accessories.

Manufacturers found in SpecAgent for this Section were identified as representative and not as an endorsement for meeting the requirements of this Specification.

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

Chain-and-flight grit removal equipment and accessories.

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

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 Society of Mechanical Director’s Representative:

ASME B17.1 - Keys and Keyseats.

ASME B17.2 - Woodruff Keys and Keyseats.

ASME B29.400 - Combination, "H"-Type Mill Chains, and Sprockets.

* + - * 1. ASTM International:

ASTM A108 - Standard Specification for Steel Bar, Carbon and Alloy, Cold-Finished.

* + - 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's 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**] <**\_\_\_\_\_\_\_\_**>.

Certify that installation is completed according to manufacturer's instructions.

Include separate Paragraphs for additional certifications.

* + - * 1. Manufacturer's 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: Indicate that equipment has been installed according to manufacturer's instructions.
				5. Qualifications Statement:

Coordinate following Subparagraph with the requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer.

* + - 1. CLOSEOUT SUBMITTALS
				1. Project Record Documents: Record actual locations of installed grit removal equipment.
				2. Operation and Maintenance Data: Submit maintenance instructions for equipment and accessories.
			2. MAINTENANCE MATERIAL SUBMITTALS
				1. Spare Parts:

Furnish [**one set**] [**two sets**] of manufacturer's recommended spare parts.

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

Furnish [**two**] <**\_\_\_\_\_\_\_\_**> of <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Tools: Furnish special [**wrenches**] <**\_\_\_\_\_\_\_\_**> and other devices required for Director’s Representative to maintain and calibrate 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 the Work of this Section on-Site.
			1. QUALIFICATIONS

Coordinate following Paragraph with the requirements specified in SUBMITTALS Article.

* + - * 1. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum [**three**] <**\_\_\_\_\_\_\_\_**> years' [**documented**] experience.
			1. DELIVERY, STORAGE, AND HANDLING
				1. Deliver materials in manufacturer's packaging, including installation instructions.
				2. Inspection: Accept materials on-Site in original packaging. Inspect for damage.
				3. Store materials according to manufacturer's instructions.
			2. EXISTING CONDITIONS
				1. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.
			3. 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**] [**10**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for chain-and-flight grit removal equipment and accessories.
1. PRODUCTS
	* + 1. CHAIN-AND-FLIGHT GRIT REMOVAL EQUIPMENT
				1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=10994&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:

Chain-and-flight grit collector, consisting of chain and flights (scrapers), shafts, bearings, chain, sprockets, drive assembly, and overload protection[**, to be installed in a horizontal settling channel**].

Flights:

Material: [**Stainless steel**] [**Carbon steel**] [**Aluminum**] [**Fiberglass**] <**\_\_\_\_\_\_\_\_**>.

Spacing: [**4**] <**\_\_\_\_\_\_\_\_**> feet o.c.

Shafting:

Material: [**Stainless steel**] [**Carbon steel**] [**Cold-finished steel, ASTM A108**] <**\_\_\_\_\_\_\_\_**>.

Extend across full width of channel.

Alignment Control: Set collars with set screws.

Bearings:

Type: [**Babbitt-lined, ductile iron**] [**Self-aligning ball-and-socket**] [**Heat-treated ductile iron, self-aligning**].

Non-immersed Shafts: [**Grease lubricated**] <**\_\_\_\_\_\_\_\_**>.

Immersed Shafts: [**Water lubricated**] <**\_\_\_\_\_\_\_\_**>.

Chain:

ASME B29.400, combination Type C102.

Average Ultimate Strength: 36,000 lb. .

Link Material: [**Stainless steel**] [**Corrosion-resistant malleable iron**] <**\_\_\_\_\_\_\_\_**>.

Sprockets:

Material: [**Stainless steel**] [**Fabricated steel**] [**Cast iron**] <**\_\_\_\_\_\_\_\_**>.

Minimum Tensile Strength: 20,000 psi .

Driving Sprockets Connection: Keyed to head shaft, conforming to ASME [**B17.1**] [**B17.2**].

Drive Assembly:

Description: Motor; speed reducer; drive sprocket on output shaft of speed reducer, drive chain from drive sprocket to driven sprocket, shear pin, and OSHA-approved chain guard.

Return Track Angles and Brackets:

Material: [**Stainless steel**] [**Carbon steel**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Performance and Design Criteria:

Design for continuous and intermittent operation.

Dewatering discharge section inclined [**30**] <**\_\_\_\_\_\_\_\_**> degrees upward from horizontal to discharge grit.

* + - * 1. Operation:

Electrical Characteristics:

[**<\_\_\_\_\_\_\_\_> hp**] [**<\_\_\_\_\_\_\_\_> rated load amperes**].

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 460513 - Common Motor Requirements for Water and Wastewater Equipment.

Overload Alarm:

Waterproof, torque-actuated unit or indicating ammeter, designed to indicate driven load continuously.

Annunciate alarm for impending excessive load, and de-energize drive unit when such load is reached.

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

Operation Sequences: <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Accessories:

Stirring flights to improve separation of grit from organic material.

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

* + - 1. SOURCE QUALITY CONTROL

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

* + - * 1. Director’s Inspection: Make completed chain-and-flight grit removal equipment available for inspection at manufacturer's factory prior to packaging for shipment. Notify Director’s Representative at least [**seven**] <**\_\_\_\_\_\_\_\_**> days before inspection is allowed.
				2. 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 when reliance on fabricator's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance: When 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 chain-and-flight grit removal equipment.
			2. INSTALLATION
				1. Install chain-and-flight grit removal equipment according to manufacturer's 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. After installation, inspect and test for proper operation.
				2. 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 personnel in maintenance of equipment.
				3. 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 equipment has been properly installed and is ready for startup and testing.
			1. ADJUSTING
				1. Check control functions and adjust as necessary.
			2. DEMONSTRATION
				1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative personnel.

END OF SECTION 462316