SECTION 462171 - TRASH RAKING 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 grab-style trash raking equipment and accessories.

Trash rakes are typically used for cleaning bar racks at water intake structures. Grab rakes scrape debris collected in bar screens by using a boom that lowers the rake into the water. The rake engages the bar rack and collects debris as it descends and then ascends, dumping debris into receptacles.

Trash rakes are configured for either stationary or mobile operation and may be cable or hydraulically actuated. Modify this Section as appropriate to specify other types or features of trash rakes.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes: Grab-type trash rakes and accessories.
				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 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. National Electrical Manufacturers Association:

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

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

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 Statements:

Coordinate following Subparagraphs with the 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 trash raking 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 trash raking 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 Paragraphs with the 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. Deliver materials in manufacturer's packaging, including application 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 Director’s Representative enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] [**10**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for trash rake equipment and accessories.
1. PRODUCTS
	* + 1. GRAB-TYPE TRASH RAKES
				1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=10969&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. Coordinate rake dimensions and features with bar rack to be raked.

* + - * 1. Description:

Trash rake, consisting of grab rake, boom, support structure, cables, and fasteners.

Support Type: [**Cantilever**] [**U-type**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Rake:

Angle: [**75**] <**\_\_\_\_\_\_\_\_**> degrees.

Overhead Clearance: [**78 inches**] <**\_\_\_\_\_\_\_\_**>.

Support Depth: [**54 inches**] [**10 ft**] <**\_\_\_\_\_\_\_\_**>.

Cleaning Width: [**56 inches**] <**\_\_\_\_\_\_\_\_**>.

Channel Depth: <**\_\_\_\_\_\_\_\_**> feet.

Grab Opening: [**20 inches**] <**\_\_\_\_\_\_\_\_**>.

Traversing Speed: [**100**] <**\_\_\_\_\_\_\_\_**> fpm.

Hoist Speed: [**60**] <**\_\_\_\_\_\_\_\_**> fpm.

Lift Capacity: [**600**] <**\_\_\_\_\_\_\_\_**> lb.

Lift Volume: [**7.4**] <**\_\_\_\_\_\_\_\_**> cu. ft.

* + - * 1. Materials:

Support Structure: [**Epoxy-painted carbon steel**] <**\_\_\_\_\_\_\_\_**>.

Rake Carriage: [**Epoxy-painted carbon steel**] <**\_\_\_\_\_\_\_\_**>.

Rake Grab and Teeth: [**Galvanized steel**] <**\_\_\_\_\_\_\_\_**>.

Cables and Fasteners: [**Type 304 stainless steel**] <**\_\_\_\_\_\_\_\_**>.

* + - * 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.

Control Panel:

Factory mounted.

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

Single-point power connection and grounding lug.

Controls:

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:

Cleaning cycle initiated by operator using [**remote**] [**HMI**] control screen or automatic by [**timer**] [**differential sensors**].

When grab reaches cleaning station, grab automatically opens and descends bar rack in open position.

Grab stops automatically at channel invert.

At channel invert, grab closes and ascends to carriage home position.

Carriage traverses to designated dump position.

Carriage stops at dump position, and grab bucket opens to discharge collected debris.

* + - 1. SOURCE QUALITY CONTROL

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

* + - * 1. Director’s Representative Inspection: Make completed trash raking 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 Representative 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 trash raking equipment.
			2. INSTALLATION
				1. Install trash raking 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. Adjust <**\_\_\_\_\_\_\_\_**>.
				2. Check control functions and adjust as required.
			2. DEMONSTRATION
				1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director's Representative personnel.

END OF SECTION 462171