SECTION 464314 - TRAVELING BRIDGE CLARIFIER 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 traveling bridge clarifier equipment and accessories.

The traveling bridge is guided along rails installed longitudinally on the side walls of a rectangular clarifier. A mechanism that is attached to the bridge scrapes sludge along the bottom of the clarifier to hoppers for later withdrawal. This mechanism is raised as the bridge reverses direction and travels back to its origin. Depending on the design, as the bridge returns, the mechanism may push floating scum into a removal pipe.

Caution: Traveling bridges may not be suitable for outdoor service in northern climates, where wheels or tracks could be subject to icing.

Piping, valving, and accessories are specified in appropriate Sections within Division 40 - Process Integration.

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

Clarifier mechanism.

Sludge collector assembly.

Effluent trough and weir assembly.

Weirs and baffles.

Scum removal system.

* + - * 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 262923 - Variable-Frequency Motor Controllers: Controllers for variable speed motors as required by this Section.

Section 460548 - Vibration and Seismic Controls for Water and Wastewater Equipment: Requirements for vibration and seismic control for equipment specified in this Section.

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

* + - 1. DEFINITIONS

Limit list of definitions to terms unique to this Section and not provided elsewhere.

* + - * 1. FRP: Fiberglass-reinforced plastic.
      1. REFERENCE STANDARDS

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

* + - * 1. American Bearing Manufacturers Association:

ABMA 9 - Load Ratings and Fatigue Life for Ball Bearings.

ABMA 11 - Load Ratings and Fatigue Life for Roller Bearings.

* + - * 1. American Gear Manufacturers Association:

AGMA 6001 - Design and Selection of Components for Enclosed Gear Drives.

* + - * 1. American Society of Mechanical Engineers:

ASME B29.100 - Double-Pitch Roller Chains, Attachments, and Sprockets.

* + - * 1. ASTM International:

ASTM A53 - Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.

* + - 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 clarifier 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 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.
      1. DELIVERY, STORAGE, AND HANDLING
         1. Inspection: Accept traveling bridge clarifier equipment on-Site in original packaging and inspect for damage.
         2. 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.

* + - 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**] [**10**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for traveling bridge clarifier equipment and accessories.

1. PRODUCTS
   * + 1. TRAVELING BRIDGE CLARIFIER EQUIPMENT
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=11707&mf=04&src=wd):

DESIGNER TO PROVIDE TWO MANUFACTURER’S 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: Drive mechanism moves sludge collector assembly carried by bridge, which spans width of rectangular tank and moves longitudinally along tank.
        2. Performance and Design Criteria:

Clarifier Mechanism:

[**Continuous**] [**Intermittent**] use under design load.

No operating mechanisms below or in contact with liquid surface.

Speed: [**Constant, <\_\_\_\_\_\_\_\_> fpm** [**Variable**].

Access Bridge Dead Load: [**50**] <**\_\_\_\_\_\_\_\_**> psf, with deflection limited to [**1/240**] <**\_\_/\_\_**> of span.

* + - * 1. Sludge Collector Assembly:

Scraper Arms: Structural steel.

Scraper Blades:

Material: Steel plate.

Minimum Thickness: 1/4 inch.

Provide squeegees, bolted to underside of scraper arms with 2 inches vertical adjustment.

Blades capable of being raised out of water for servicing.

Squeegees:

Material: [**Bronze**] [**FRP**] [**Stainless steel**] [**Neoprene**].

First following Subparagraph is for metal squeegees, and subsequent Subparagraph is for squeegees constructed of FRP or neoprene.

Minimum Thickness: 1/8 inch

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

Minimum Thickness: 1/4 inch

* + - * 1. Drive Assembly:

Description: Motor, drive assembly bearings, and belt drives[**, chain drives, or both**].

Bearing life is percent failure at rated hours; e.g., L-10 life at 50,000 hours means 10 percent of bearings may be expected to fail at 50,000 hours.

Drive Assembly Bearings:

Type: Ball; comply with ABMA 9.

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

Type: Roller; comply with ABMA 11.

L-10 Life: <**\_\_\_\_\_\_\_\_**> hours.

Gear Shafts and Bolting: Comply with AGMA 6001.

Lubrication:

Type: [**Grease**] [**Oil**].

Grease Fittings: Where not readily accessible, provide extension to accessible location.

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

Oil Reservoir:

Fill port.

Overflow opening.

Oil-level sight glass.

Drain at lowest point.

Chain Drives and Belt Drives:

Chain:

Type: Roller.

Comply with ASME B29.100.

Links: Steel.

Sprockets:

Comply with ASME B29.100.

Material: [**Steel**] [**Cast iron**].

Drive Guards:

Material: Type 316 stainless steel.

Occupational Safety and Health Administration approved.

Drive Wheel:

Description: Rubber tire.

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

Description: Steel wheel running on steel track mounted on top of tank.

* + - * 1. Scum Removal Assembly:

Scum Collector Pipe:

Description: Slotted pipe spanning tank width.

Material: [**Steel**] [**Stainless steel**].

Operator:

Type: Manual operating lever, mounted on collector pipe.

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

Type: Manual-crank type with wormgear.

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

Type: Motorized-crank type with wormgear.

Scum Baffle:

Description: Baffle attached to effluent trough to keep floating scum from reaching effluent weirs.

Material: FRP.

Minimum Thickness: 1/4 inch.

Width: 9 inches, adjustable to 3 inches above maximum water level.

Attach to effluent trough with FRP brackets and stainless-steel bolts.

Scum Trough:

Material: Welded steel.

Minimum Thickness: 1/4 inch.

Provide flanged connection for scum discharge pipe.

Type: Adjustable dipping weir.

Collector Pipe:

Material: Steel construction.

Comply with ASTM A53, Schedule 20 minimum.

Operator:

Type: Manual operating lever, mounted on collector pipe.

Material: Steel pipe.

Minimum Diameter: 1-1/4 inches.

Length: [**Extend minimum 3 feet above top of tank wall**] [**As indicated on Drawings**].

* + - * 1. Walkway and Operating Platform:

Material: [**Raised-pattern, galvanized-steel floor plate**] [**Grating**] [**FRP**].

Minimum Walkway Width: 30 inches.

Double Railing:

Material: [**Galvanized steel**] [**1-1/2-inch -diameter galvanized-steel pipe**].

Minimum Height: 42 inches, on both sides of walkway and around outside of operating platform.

* + - * 1. Effluent Trough:

Material: [**Welded steel**] [**FRP**] <**\_\_\_\_\_\_\_\_**> construction.

Connections: Bolted, with [**neoprene**] <**\_\_\_\_\_\_\_\_**> gaskets.

* + - * 1. Effluent Weir Plates:

Material: [**Steel**] [**FRP**] <**\_\_\_\_\_\_\_\_**> construction.

Minimum Vertical Adjustment: 3 inches

* + - * 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.

Electrical Cable: [**Festooning, with cable on support wire**] [**Cable reel**].

Controls:

Overload Protection: Indicate load on the mechanism continuously, annunciate an alarm if impending excessive load, and stop mechanism if excessive load reached.

Consider providing local alarm only, alarm contacts to existing alarm annunciator, or both.

Alarm: Audible horn or bell, relay, reset button, test circuit, and ON-OFF switch.

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

Alarm: Provide auxiliary contacts in alarm circuit.

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

Operation Sequences:

Intermittent Operation Cycle: Control timer.

[**Provide for variation in travel speed.**]

* + - 1. SOURCE QUALITY CONTROL

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

* + - * 1. Director’s Inspection: Make completed clarifier 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 clarifier is installed and ready to receive traveling bridge clarifier equipment.
       2. INSTALLATION
          1. Install traveling bridge clarifier equipment according to manufacturer's instructions.
          2. Weir Plates: Mount weir plates against double bead of sealant.

\*\*\*\*\*\* [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. Dry Startup: Run equipment without liquid in basins and inspect for:

Alignment of sprockets, chain, flights, and wearing surfaces.

Binding and excessive heat buildup in drive units.

* + - * 1. Wet Startup: Run equipment with wastewater in basins and verify 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 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 module functions and adjust as required.
      2. DEMONSTRATION
         1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative.

END OF SECTION 464314