SECTION 466146 - AUTOMATIC BACKWASH CLOTH FILTER 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 automatic backwash cloth filters and accessories for water or wastewater filtration. Canister-type filter units are included, as well as larger filters that incorporate a modular set of cloth disks on a rotating assembly. Canister-type filters may be pre-mounted on a skid to facilitate installation; modify this Section accordingly if skid-mounted canister-type filters are desired.

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes: Automatic backwash cloth filters 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 262923 - Variable-Frequency Motor Controllers: Execution and product requirements for variable-speed motors specified by this Section.

Section 402323 - Potable Water Process Piping: Piping materials and installation as required for this Section.

Section 460548 - Vibration and Seismic Controls for Water and Wastewater Equipment: Controls 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. Backwashing: A method of cleaning filters by reversing water flow. Clean water counterflows through the filter media and dirty wash-water is directed to the plant drain.
        2. FRP: Fiberglass-reinforced plastic.
        3. PLC: Programmable logic controller.
      1. REFERENCE STANDARDS

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

* + - * 1. National Sanitation Foundation International:

NSF 61 - Drinking Water System Components - Health Effects.

NSF 372 - Drinking Water System Components - Lead Content.

* + - * 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's product data for system materials and component equipment, including electrical characteristics.
        5. Shop Drawings:

Indicate system materials and component equipment.

Submit installation and anchoring requirements, fasteners, and other details.

* + - * 1. Manufacturer's Certificate: Certify that filters 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:

Certify that equipment has been installed according to manufacturer's instructions.

Indicate activities on Site, adverse findings, and recommendations.

* + - * 1. 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 filters.
      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 Director’s Representative to maintain and calibrate bag filters.
      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 to NSF Standard 61 and NSF Standard 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 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. Inspection: Accept materials on Site in manufacturer's original packaging and inspect for damage.
         2. Store materials according to manufacturer's 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's 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 filter housings [**and**] <**\_\_\_\_\_\_\_\_**>.

1. PRODUCTS
   * + 1. AUTOMATIC BACKWASH CLOTH FILTER EQUIPMENT
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=11982&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: Cloth disk filtration system mounted on rotating drums for use in [**channel**] [**tank**].

Filter:

Material: [**Polyester**] <**\_\_\_\_\_\_\_\_**>.

Diameter: <**\_\_\_\_\_\_\_\_**> feet

Pore Size: [**10**] [**100**] [**150**] <**\_\_\_\_\_\_\_\_**> microns.

* + - * 1. Drive Assembly:

Description: Helical wormgear with chain and sprocket.

Rotational Speed: [**<\_\_\_\_\_\_\_\_> rpm**] [**Variable**].

* + - * 1. Backwash System:

Number of Backwash Nozzles per Filter Disk: [**22**] <**\_\_\_\_\_\_\_\_**>.

Operating Pressure: [**112**] <**\_\_\_\_\_\_\_\_**> psig

Backwash Pump: Manufacturer's standard.

[**Furnish backwash spray mechanism.**]

* + - * 1. Performance and Design Criteria:

Flow Rate:

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

Maximum: <**\_\_\_\_\_\_\_\_**> gpm

Flow Conditions: [**Continuous**] [**Intermittent**] [**Batch**].

Differential Pressure at Design Temperature: <**\_\_\_\_\_\_\_\_**> psi

pH:

Maximum: <**\_\_\_\_\_\_\_\_**>.

Minimum: <**\_\_\_\_\_\_\_\_**>.

Design Inlet:

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

Temperature: <**\_\_\_\_\_\_\_\_**> degrees F

Viscosity: <**\_\_\_\_\_\_\_\_**> lbf-s/sq. ft

Suspended Solids: <**\_\_\_\_\_\_\_\_**> mg/L.

Particle Size: <**\_\_\_\_\_\_\_\_**> microns.

Design Effluent:

Suspended Solids: <**\_\_\_\_\_\_\_\_**> mg/L.

Particle Size: <**\_\_\_\_\_\_\_\_**> microns.

Capacity: Size each online and standby unit to treat entire waste stream.

* + - * 1. Operation:

Select one or more of following Subparagraphs appropriate to equipment requirements.

Electrical Characteristics: As specified in [ **Section 262923 - Variable-Frequency Motor Controllers,**] and following:

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

Motors:

[**Variable speed.]**

Control Panel:

Factory mounted.

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

Furnish single-point power connection and grounding lug.

Controls: PLC based.

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

Operation Sequences:

Backwash initiated by level probe as head increases.

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

* + - * 1. Materials:

Tank Frame: [**Type 304 stainless steel**] [**Type 316 stainless steel**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. AUTOMATIC BACKWASH CLOTH FILTER EQUIPMENT, CANISTER-TYPE
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=11983&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: Inlet and outlet piping, filter, backwash outlet[**, piping**] [**, valves**] [**, and**] [**mounting skid**].
        2. Piping: As specified in Division 40.
        3. Valves: As specified in Division 40.
        4. Performance and Design Criteria:

Flow Rate:

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

Maximum: <**\_\_\_\_\_\_\_\_**> gpm

Flow Conditions: [**Continuous**] [**Intermittent**] [**Batch**].

Differential Pressure at Design Temperature: <**\_\_\_\_\_\_\_\_**> psi

pH:

Maximum: <**\_\_\_\_\_\_\_\_**>.

Minimum: <**\_\_\_\_\_\_\_\_**>.

Design Inlet:

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

Temperature: <**\_\_\_\_\_\_\_\_**> degrees F

Viscosity: <**\_\_\_\_\_\_\_\_**> lbf-s/sq. ft

Suspended Solids: <**\_\_\_\_\_\_\_\_**> mg/L.

Particle Size: <**\_\_\_\_\_\_\_\_**> microns.

Design Effluent:

Suspended Solids: <**\_\_\_\_\_\_\_\_**> mg/L.

Particle Size: <**\_\_\_\_\_\_\_\_**> microns.

Capacity: Size each online and standby unit to treat entire flow stream.

* + - * 1. Housing:

Diameter: <**\_\_\_\_\_\_\_\_**> inches

Overall Height: <**\_\_\_\_\_\_\_\_**> inches

Inlet and Outlet Connections: [**Threaded**] [**Flanged**] [**Threaded flanges**] <**\_\_\_\_\_\_\_\_**>.

Vent Connection: [**Threaded**] [**Flanged**] <**\_\_\_\_\_\_\_\_**>.

Gage Connection: [**Threaded**] [**Flanged**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Nominal Rating: [**10**] [**50**] [**100**] [**200**] <**\_\_\_\_\_\_\_\_**> microns.
        2. Filter Surface Area: <**\_\_\_\_\_\_\_\_**> sq. ft
        3. Sample Ports:

Description: Influent and effluent samples.

Design and Placement: According to manufacturer's standard.

* + - * 1. Materials:

Housing: [**Type 304 stainless steel**] [**Type 316 stainless steel**] [**Carbon steel**] [**PTFE**] [**Polypropylene (PP)**] [**FRP**] <**\_\_\_\_\_\_\_\_**>.

Filter: <**\_\_\_\_\_\_\_\_**>.

Bag Support: [**PP**] [**Type 304 stainless steel**] [**Type 316 stainless steel**] <**\_\_\_\_\_\_\_\_**>.

Cover Seal: [**Buna-N**] [**EPDM**] [**PTFE**] <**\_\_\_\_\_\_\_\_**>.

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

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

* + - * 1. Director’s Inspection: Make completed bag filters 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 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 piping connections are ready to receive filters.
       2. INSTALLATION
          1. Installation: 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, startup, 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 that equipment has been properly installed and is ready for startup and testing.
      1. DEMONSTRATION
         1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative.
      2. 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 bag filter or more than one type of filter.

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

* + - * 1. Automatic Backwash Cloth Filter Schedule:

ABF-1:

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

[**Model: <\_\_\_\_\_\_\_\_>.**]

Type: <**\_\_\_\_\_\_\_\_**>.

Location: <**\_\_\_\_\_\_\_\_**>.

Process Fluid: <**\_\_\_\_\_\_\_\_**>.

Material: <**\_\_\_\_\_\_\_\_**>.

Flow Capacity: <**\_\_\_\_\_\_\_\_**>.

ABF-2:

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

[**Model: <\_\_\_\_\_\_\_\_>.**]

Type: <**\_\_\_\_\_\_\_\_**>.

Location: <**\_\_\_\_\_\_\_\_**>.

Process Fluid: <**\_\_\_\_\_\_\_\_**>.

Material: <**\_\_\_\_\_\_\_\_**>.

Flow Capacity: <**\_\_\_\_\_\_\_\_**>.

END OF SECTION 466146