SECTION 465146 - MEMBRANE DIFFUSERS

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 specifies membrane diffusers for use in water and wastewater treatment plants.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes: Membrane diffusers.
				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 465117 - Jet Aeration Equipment: Application for diffusers as specified in this Section.

Section 465121 - Coarse Bubble Diffusers: Bubble-type membrane diffusers for use in water and wastewater treatment plants.

Section 465131 - Flexible Membrane Tube Diffusers: Tube-type membrane diffusers for use in water and wastewater treatment plants.

Section 465133 - Flexible Membrane Disc Diffusers: Disc-type membrane diffusers for use in water and wastewater treatment plants.

Section 465136 - Ceramic Disc Fine Bubble Diffusers: Disc-type ceramic diffusers for use in water and wastewater treatment plants.

List Sections that specify installation of products included in this Section. Indicate specific items.

Section <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>: Placement of membrane diffusers in aeration [**basin**] [**channel**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. REFERENCE STANDARDS

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

LEED requires compliance with specific editions of referenced standards. Consider including publication dates for referenced standards in this Section to ensure that the correct standard is used for LEED compliance.

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

ASCE 2 - Measurement of Oxygen Transfer in Clean Water.

* + - 1. 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 information for system materials and component equipment.
				5. Shop Drawings:

Indicate system materials and component equipment.

Indicate connections and other installation 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 diffusers.
			2. 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 products 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 Owner enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for diffusers.
1. PRODUCTS
	* + 1. MEMBRANE DIFFUSERS
				1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=&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:

Material: [**Polyurethane**] [**EPDM**] <**\_\_\_\_\_\_\_\_**>.

Length: <**\_\_\_\_\_\_\_\_**> inches

Area:

Surface: <**\_\_\_\_\_\_\_\_**> sq. in

Diffusing: <**\_\_\_\_\_\_\_\_**> sq. in

Holes:

Quantity: <**\_\_\_\_\_\_\_\_**>.

Diameter: <**\_\_\_\_\_\_\_\_**> inch

End Connections: [**3/4**] <**\_\_\_\_\_\_\_\_**>-inch NPT male inlet.

Mounting:

Support Grid: [**Welded stainless steel**] [**UV-resistant PVC**] [**Galvanized steel**] <**\_\_\_\_\_\_\_\_**>.

Support Height: Infinitely adjustable.

Connection: Removable from air piping network to facilitate replacement of individual diffuser.

* + - * 1. Performance and Design Criteria:

Air Flow Rate [**from Each Diffuser**]:

Design: <**\_\_\_\_\_\_\_\_**> scfm

Peak: <**\_\_\_\_\_\_\_\_**> scfm

Comply with ASCE 2.

Standard Oxygen Transfer Efficiency: <**\_\_\_\_\_\_\_\_**> to <**\_\_\_\_\_\_\_\_**> percent per foot submergence.

Standard Aeration Efficiency: <**\_\_\_\_\_\_\_\_**> to <**\_\_\_\_\_\_\_\_**> lb. O2 per kWh

Maximum Head Loss: <**\_\_\_\_\_\_\_\_**> inches wc, based on <**\_\_\_\_\_\_\_\_**> feet of submergence.

Integral check valve.

* + - 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 diffuser assembly 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 tests 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 manufacturer's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance:

If manufacturer is approved by authorities having jurisdiction, submit certificate of compliance indicating Work performed at manufacturer's facility conforms to Contract Documents.

Specified shop tests are not required for Work performed by approved manufacturer.

1. EXECUTION
	* + 1. EXAMINATION
				1. Verify that items provided by other Sections of Work are ready to receive Work of this Section.
			2. INSTALLATION
				1. 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. Testing:

Test for proper operation.

Energize system equipment and test operation under supervision of manufacturer's representative and in presence of [**Director’s Representative**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Manufacturer Services: Furnish services of manufacturer's representative experienced in installation of products furnished under this Section for not less than <**\_\_\_\_\_\_\_\_**> [**days**] [**hours**] on Site for installation, inspection, startup, field testing, and instructing Director’s Representative in operation and 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. DEMONSTRATION
				1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative
			2. PROTECTION
				1. Protect membranes from traffic or falling objects until placed into service.

END OF SECTION 465146