SECTION 407636 - SULFUR DIOXIDE ANALYZERS

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 sulfur dioxide analyzing and monitoring equipment.

In the water and wastewater industry, sulfur dioxide may be used for dechlorination. Sulfur dioxide may also be used to remove dissolved oxygen or hydrogen sulfide and to treat chromium wastes.

1. GENERAL
	* + 1. SUMMARY
				1. Section Includes: Sulfur dioxide analyzing and monitoring equipment.
			2. 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. UL:

UL Standards Testing.

* + - 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 information.
				5. Shop Drawings: Indicate materials and equipment, including wiring diagrams and installation requirements.
				6. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

Include separate Paragraphs for additional certifications.

* + - * 1. Test and Evaluation Reports: Indicate certified factory test results.
				2. Manufacturer Instructions: Submit detailed instructions on installation requirements, including storage and handling procedures.
				3. Source Quality-Control Submittals: Indicate results of [**shop**] [**factory**] tests and inspections.
				4. Qualifications Statement:

Coordinate following Subparagraph with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer.

* + - 1. CLOSEOUT SUBMITTALS
				1. Project Record Documents: Record actual locations of equipment and accessories.
			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 Paragraph with 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 materials on Site in manufacturer's original packaging and inspect for damage.
				2. Store materials 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. WARRANTY

This Article extends warranty period beyond one year. Extended warranties may increase construction costs and State enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for sulfur dioxide analyzers.
1. PRODUCTS
	* + 1. SULFUR DIOXIDE ANALYZERS
				1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12740&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:

Certifications: UL [**and**] <**\_\_\_\_\_\_\_\_**>.

Sample Gas Flow Rate: <**\_\_\_\_\_\_\_\_**> cfm.

Range: [**Zero to 100 ppm**] [**<\_\_\_\_\_\_\_\_> to <\_\_\_\_\_\_\_\_> ppm**] [**Zero to 250 mg/cu. m**] [**<\_\_\_\_\_\_\_\_> to <\_\_\_\_\_\_\_\_> mg/cu. m**].

Lower Detectable Limit: [**0.5**] <**\_\_\_\_\_\_\_\_**> ppb.

Linearity: Plus or minus [**1**] <**\_\_\_\_\_\_\_\_**> percent of full scale.

Repeatability: Plus or minus [**1**] <**\_\_\_\_\_\_\_\_**> percent of full scale.

Response Time: Within 120 seconds at lowest range.

Operating Temperature Range: 41 to 104 deg. F .

Electrical Characteristics:

Voltage: <**\_\_\_\_\_\_\_\_**> V, [**single**] [**three**] phase, 60 Hz.

Maximum [**Fuse Size**] [**Circuit-Breaker Size**] [**Overcurrent Protection**]: <**\_\_\_\_\_\_\_\_**> A.

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

Control Panel:

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

Inputs: [**16**] <**\_\_\_\_\_\_\_\_**> [**digital**] [**zero- to 10-V analog**] type.

Outputs:

Selectable voltage.

[**RS232**] [**and**] [**RS485**].

[**TCP**] [**and**] [**IP**].

POWER FAIL indicator.

Error Alarms: <**\_\_\_\_\_\_\_\_**>.

Preset Measurement Ranges: [**Zero to 0.05**] [**Zero to <\_\_\_\_\_\_\_\_>**].

Display: [**Eight**] <**\_\_\_\_\_\_\_\_**>-character digital display.

* + - 1. SOURCE QUALITY CONTROL
				1. Provide shop inspection and testing of completed assembly.
1. EXECUTION
	* + 1. INSTALLATION
				1. According to manufacturer instructions and as indicated on Drawings.

\*\*\*\*\*\* [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. Inspect and test for proper operation.
				2. Equipment Acceptance: Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.
			2. DEMONSTRATION
				1. Demonstrate equipment startup, shutdown, routine maintenance, and emergency repair procedures to Director’s Representative.

END OF SECTION 407636