SECTION 407513 - pH/ORP 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 pH/ORP sensors, analyzers, transmitters, and displays for use in a water or wastewater treatment plant. Testers and field, laboratory, and portable analyzers are included.

pH is a measurement of a solution's acidity or alkalinity and is measured on a scale from zero to 14 where a pH 7 is neutral, less than 7 is acidic, and greater than 7 is alkaline or basic. Oxidation-reduction potential (ORP) measures, in millivolts (mV), the ability of a substance to oxidize or reduce another substance. A positive ORP measurement indicates that the substance is an oxidizing agent, and a negative ORP measurement indicates that the substance is a reducing agent.

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

Field, laboratory, and portable pH/ORP analyzers.

Testers.

* + - * 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 055000 - Metal Fabrications: Fasteners, brackets, and other miscellaneous metal fabrications as required by this Section.

Section 460553 - Identification for Water and Wastewater Equipment: Nameplates.

* + - 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. 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 for system materials and component equipment, including electrical characteristics and connection requirements.
        5. Shop Drawings:

Indicate size and configuration of assembly, mountings, weights, and accessory connections.

Indicate system materials, component equipment, wiring diagrams, and schematics.

* + - * 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. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        3. Manufacturer Reports: Certify that equipment has been installed according to manufacturer instructions.
        4. Qualifications Statement:

Coordinate following Subparagraph with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer.

* + - 1. MAINTENANCE MATERIAL SUBMITTALS
         1. Spare Parts:

Furnish one spare electrode of each type.

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

* + - 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 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 pH/ORP analyzers.

1. PRODUCTS
   * + 1. pH/ORP FIELD ANALYZERS
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12481&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:

Sensor, analyzer, transmitter, display, interconnecting cables, and mounting.

Withstand corrosive solutions to [**150**] <**\_\_\_\_\_\_\_\_**> psig and [**266**] <**\_\_\_\_\_\_\_\_**> degrees F .

Accuracy at [**77**] <**\_\_\_\_\_\_\_\_**> degrees F :

pH: Plus or minus 0.01 pH unit.

ORP: Plus or minus 1 mV.

Repeatability at [**77**] <**\_\_\_\_\_\_\_\_**> degrees F :

pH: Plus or minus 0.01 pH unit.

ORP: Plus or minus 1 mV.

Operating Temperature Range: [**Minus 14**] <**\_\_\_\_\_\_\_\_**> to [**plus 300**] <**\_\_\_\_\_\_\_\_**> degrees F ([.

* + - * 1. Sensors:

Type: Inline, immersion.

Measurement Update Rate: [**One**] <**\_\_\_\_\_\_\_\_**>/sec. to [**one**] <**\_\_\_\_\_\_\_\_**>/10 min.

Wetted Materials: [**Type 316 stainless steel**] [**Glass-fiber-reinforced polypropylene**] <**\_\_\_\_\_\_\_\_**>.

pH Sensors: [**Glass**] <**\_\_\_\_\_\_\_\_**>.

ORP Sensors: [**Gold**] [**Platinum**] <**\_\_\_\_\_\_\_\_**>.

* + - * 1. Ranges:

pH: Zero to 14.

ORP: Minus [**1,400**] <**\_\_\_\_\_\_\_\_**> mV to plus [**1,400**] <**\_\_\_\_\_\_\_\_**> mV.

* + - * 1. Supported Calibration Methods:

Single point standardization.

Single point temperature adjustment.

pH Only:

Two-point, with low and high buffer.

Two-point, with automatic buffer recognition.

Automatic temperature compensation.

* + - * 1. Enclosure:

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

Material: [**Cast aluminum**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. pH/ORP LABORATORY ANALYZERS
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12482&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:

Input Channels: [**One**] [**Two**].

pH Calibration: For use with standard and custom buffers.

Record Logging: Automatic.

Graphic Display: LCD.

PC Interface: USB.

* + - 1. pH/ORP PORTABLE ANALYZERS
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12483&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:

Power: Battery with charger.

pH Calibration: For use with standard or custom buffers.

Record Logging: Automatic.

Menu driven.

Graphic Display: Backlit LCD.

PC Interface: USB.

Enclosure: Waterproof.

* + - 1. pH/ORP TESTERS
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=12484&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:

Range: Plus or minus [**999**] <**\_\_\_\_\_\_\_\_**> mV.

Resolution: [**1**] <**\_\_\_\_\_\_\_\_**> mV.

Accuracy: Plus or minus [**5**] <**\_\_\_\_\_\_\_\_**> mV.

Ambient Conditions:

[**32**] <**\_\_\_\_\_\_\_\_**> to [**122**] <**\_\_\_\_\_\_\_\_**> degrees F

Maximum Relative Humidity (RH): [**95**] <**\_\_\_\_\_\_\_\_**> percent.

Power Supply: Battery with charger.

1. EXECUTION
   * + 1. 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 and calibrate analyzer to demonstrate that it meets specified accuracy requirements.
         2. Equipment Acceptance:

Adjust, repair, modify, or replace components failing to perform as specified and rerun tests.

* + - 1. DEMONSTRATION
         1. Demonstrate operation, routine maintenance, alarm condition responses, and emergency repair procedures to Director’s Representative.

END OF SECTION 407513