SECTION 462516 - API OIL-WATER SEPARATORS

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 API oil-water separators, which are devices designed to separate gross amounts of oil and suspended solids from wastewater effluents according to standards published by the API.

Check state and local requirements regarding installation and permitting of oil-water separator tanks. Add state and local requirements applicable to this Section.

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

API oil-water separators.

Base pad.

Accessories.

* + - * 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 033000 - Cast-in-Place Concrete: Base pad.

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

Section 404642 - Cathodic Process Corrosion Protection: Corrosion mitigation system.

* + - 1. DEFINITIONS

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

* + - * 1. API Oil-Water Separator: An oil-water separator designed to separate oil and suspended solids from wastewater. This type of separator is designed to standards of the American Petroleum Institute (API).
      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 Petroleum Institute:

API 421 has been withdrawn by the API, but it is still referenced by leading oil-water separator manufacturers.

API 421 - Management of Water Discharges: Design and Operation of Oil-Water Separators.

* + - * 1. ASTM International:

ASTM A36 - Standard Specification for Carbon Structural Steel.

* + - * 1. National Fire Protection Association:

NFPA 30 - Flammable and Combustible Liquids Code.

NFPA 30A - Code for Motor Fuel Dispensing Facilities and Repair Garages.

NFPA 70 - National Electrical Code.

* + - * 1. USEPA:

EPA Method 1664A - N-Hexane Extractable Material (HEM; Oil and Grease) and Silica Gel Treated N-Hexane Extractable Material (SGTHEM; Non-Polar Material) by Extraction and Gravimetry.

* + - 1. COORDINATION
         1. Coordinate Work of this Section with [**installation of process piping**] <**\_\_\_\_\_\_\_\_**>.
      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 information for system materials and component equipment, including electrical characteristics and connection requirements.
        5. Shop Drawings: Indicate system materials and component equipment, including dimensions and location of fittings.
        6. Manufacturer's Certificate:

Certify that products meet or exceed specified requirements.

Certify that equipment has been installed according to manufacturer instructions.

Include separate Paragraphs for additional certifications.

Include following Paragraph when Contractor is responsible for designing products or assemblies. List affected products when Section specifies more than one product.

* + - * 1. Delegated Design Submittals: Submit signed and sealed Shop Drawings with design calculations and assumptions for sizing.
        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. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        5. Qualifications Statements:

Coordinate following Subparagraphs with requirements specified in QUALIFICATIONS Article.

Submit qualifications for manufacturer, installer, and licensed professional.

Submit manufacturer's approval of installer.

* + - 1. SUSTAINABLE DESIGN SUBMITTALS
         1. Manufacturer's Certificate:

Certify that products meet or exceed specified sustainable design requirements.

Insert material certifications list below to suit products specified in this Section and Project sustainable design requirements. Specific certificate submittal and supporting data requirements are specified in Section 018113.

Materials Resources Certificates:

Certify source and origin for [**salvaged**] [**and**] [**reused**] products.

Certify recycled material content for recycled content products.

Certify source for regional materials and distance from Project Site.

* + - * 1. Product Cost Data:

Submit cost of products to verify compliance with Project sustainable design requirements.

Exclude cost of labor and equipment to install products.

Provide cost data for following products:

Edit list of material cost data below to suit products specified in this Section and Project sustainable design requirements. Specific cost data requirements are specified in Section 018113.

Salvaged, refurbished, and reused products.

Products with recycled material content.

Regional products.

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

* + - 1. QUALITY ASSURANCE

Include this Article to specify compliance with overall reference standards affecting products and installation included in this Section.

* + - * 1. Comply with ASTM A36/ NFPA 30, NFPA 30A, and NFPA 70.

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**].
        3. Licensed Professional: [**Professional engineer**] <**\_\_\_\_\_\_\_\_**> experienced in design of specified Work and licensed in the State of New York.
      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. 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 Director’s Representative enforcement responsibilities. Specify warranties with caution.

* + - * 1. Furnish [**five**] <**\_\_\_\_\_\_\_\_**>-year manufacturer's warranty for oil-water separators.

1. PRODUCTS
   * + 1. API OIL-WATER SEPARATORS
          1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=9609&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:

Containment Tank: Inlet section with diffusion baffle, separator channel, oil-retention baffle, and outlet section.

Covers: Vapor tight.

Effluent Weir Troughs: Adjustable.

Dewatering Separator: Furnish low-point drains.

* + - * 1. Performance and Design Criteria:

Design Flow Rate: <**\_\_\_\_\_\_\_\_**> gpm.

Process Fluid Temperature Range: <**\_\_\_\_\_\_\_\_**> to <**\_\_\_\_\_\_\_\_**> deg. F

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

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

Process Fluid Density: <**\_\_\_\_\_\_\_\_**> pcf

Average Influent Oil and Grease Concentration: Average <**\_\_\_\_\_\_\_\_**> ppm; maximum <**\_\_\_\_\_\_\_\_**> ppm

Accumulated Oil and Sludge Capacity: <**\_\_\_\_\_\_\_\_**> gal.

Effluent Oil and Grease Concentration: Maximum <**\_\_\_\_\_\_\_\_**> ppm

Tank Design Criteria:

External Hydrostatic Pressure: Buried depth <**\_\_\_\_\_\_\_\_**> feet

Safety Factor: 5:1 against general buckling.

Surface Loads: [**H-20**] <**\_\_\_\_\_\_\_\_**> axle loads.

Internal Load: 5-psig air pressure test with 5:1 safety factor.

* + - 1. SUSTAINABILITY CHARACTERISTICS

Insert sustainable design characteristics in this Article to suit content of this Section and Project sustainable design requirements as specified in Section 018113.

* + - * 1. Material and Resource Characteristics:

Recycled Content Materials: Furnish materials with maximum available recycled content [**including:**] [**.**]

Insert list of materials specified in this Section required to have recycled content.

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

Regional Materials: Furnish materials extracted, processed, and manufactured within 500 miles of Project Site [**including:**] [**.**]

Insert list of materials specified in this Section required to be regional materials.

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

* + - 1. MATERIALS
         1. Aboveground Tank: [**Epoxy-coated steel**] <**\_\_\_\_\_\_\_\_**>.

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

* + - * 1. Belowground Tank: [**Epoxy-coated steel**] [**Concrete**] <**\_\_\_\_\_\_\_\_**>.
        2. Cover: [**Fiberglass**] <**\_\_\_\_\_\_\_\_**>.
      1. ACCESSORIES
         1. Connectors: Corrosion-resistant bolts, washers, and nuts [**as specified in Section 055000 - Metal Fabrications**].
         2. Base Pad:

Cast-in-place concrete of type specified in Section [**033000 - Cast-in-Place Concrete**] <**\_\_\_\_\_\_-\_\_\_\_\_\_\_\_\_\_\_\_**>.

Increase thickness of concrete base to prevent flotation.

Provide tank anchorage devices.

* + - * 1. Cathodic Protection: As specified in Section 404642 - Cathodic Process Corrosion Protection.

Include one or more of following accessories based on Project requirements.

* + - * 1. Access [**doors**] [**and**] [**platforms**].
        2. Double-containment tank.
        3. System Monitoring and Control Instrumentation:

Oil content monitor.

Oil-water interface sensors.

Control panel.

Pressure gages.

HIGH LEVEL alarm.

OIL FLOODED alarm.

Tank level indicator.

Sight glass.

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

* + - * 1. Inlet strainer.
        2. Leak detection system.
        3. Surface skimmer and collection trough.
        4. Mechanical drag conveyor.
      1. SOURCE QUALITY CONTROL
         1. Provide shop inspection and testing of completed assembly.
         2. Hydrostatic Testing:

Prior to applying coatings, perform hydrostatic test at atmospheric pressure by filling separator with water and holding for at least [**four**] <**\_\_\_\_\_\_\_\_**> hours.

No leakage is allowed after [**four**] <**\_\_\_\_\_\_\_\_**> hours by visual inspection.

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

* + - * 1. Director’s Representative Inspection:

Make completed oil-water separator 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 Representative 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 layout, type, and orientation of piping connections.
          2. Verify that oil-water separator is ready for installation.
          3. Verify that excavation base is ready to receive Work of this Section, and that excavations, dimensions, and elevations are as indicated on [**Shop**] Drawings.
       2. INSTALLATION
          1. Bedding:

Place bedding material at trench bottom.

Level materials in continuous layer not exceeding [**6**] [**8**] <**\_\_\_\_\_\_\_\_**> inches.

Maintain optimum moisture content of bedding material to attain required compaction density.

* + - * 1. Form and place cast-in-place concrete base pad.
        2. Establish elevations and pipe inverts for inlets and outlets 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. Inspection: [**Director’s Representative**] will perform visual examination and verification of dimensional measurements.
         2. Hydrostatic Testing:

Adjust effluent overflow weir to elevation specified by manufacturer, and hydrostatically test unit at atmospheric or operational pressure by filling with water and holding for at least [**eight**] <**\_\_\_\_\_\_\_\_**> hours.

No leakage is allowed after [**eight**] <**\_\_\_\_\_\_\_\_**> hours by visual inspection.

Perform hydrostatic test prior to backfilling belowground installations.

* + - * 1. In-Service Testing:

[**Test leak-detection system and verify proper operation.**]

After unit is placed into operation for period of not less than [**30**] <**\_\_\_\_\_\_\_\_**> days, conduct performance test as follows:

Obtain minimum of [**four**] <**\_\_\_\_\_\_\_\_**> influent and effluent samples equally spaced over [**eight**] <**\_\_\_\_\_\_\_\_**>-hour time period.

Test samples for oil and grease according to EPA Method 1664A.

Compare test results with design requirements; if test results do not meet design requirements, modify installation as recommended by manufacturer and rerun test until acceptable results are obtained.

* + - * 1. 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's personnel in 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.

END OF SECTION 462516