SECTION 462513 - COALESCING 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 includes underground, coalescing-type, fiberglass oil-water separators of capacity from 600 gal. to 30,000 gal.

Excavation, bedding, and backfill for Work of this Section are provided under Division 31.

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

1. GENERAL
   * + 1. SUMMARY
          1. Section Includes: <**\_\_\_\_\_\_\_\_**> gal., double-wall, underground, coalescing-type, fiberglass oil-water separator tank 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 055000 - Metal Fabrications: Miscellaneous metalwork and fasteners as required by this Section.

Section 460553 - Identification for Water and Wastewater Equipment: Nameplates for equipment specified in this Section.

* + - 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 the correct standard is used for LEED compliance.

* + - * 1. ASTM International:

ASTM D2996 - Standard Specification for Filament-Wound "Fiberglass" (Glass-Fiber-Reinforced Thermosetting-Resin) Pipe.

* + - * 1. Environmental Protection Agency:

EPA Method 1664 - Oil and Grease.

* + - * 1. Military Specification:

MIL-T-52777A - Tanks, Storage, Underground, Glass Fiber Reinforced Plastic.

* + - * 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. Underwriters Laboratories, Inc.:

UL 1316 - Glass-Fiber-Reinforced Plastic Underground Storage Tanks for Petroleum Products, Alcohols, and Alcohol-Gasoline Mixtures.

* + - 1. COORDINATION
         1. Coordinate Work of this Section with plant piping facilities.
      2. PREINSTALLATION MEETINGS
         1. Convene minimum [**one**] <**\_\_\_\_\_\_\_\_**> [**week**] [**weeks**] prior to commencing Work of this Section.
      3. SCHEDULING
         1. Schedule Work of this Section after excavation and aggregate bedding work and prior to connection of piping work.
      4. 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 complete information concerning materials of construction and fabrication.
        5. Shop Drawings: Submit detailed certified dimensional Shop Drawings showing tank size, layout of accessories, and anchoring system.
        6. Manufacturer's Certificate: Certify that [**products**] <**\_\_\_\_\_\_\_\_**> meet or exceed [**specified requirements**] <**\_\_\_\_\_\_\_\_**>.

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 tank anchoring system.
        2. Test and Evaluation Reports:

Submit certified test results confirming that separator produces specified effluent quality.

Submit certified performance test results for installed tank.

* + - * 1. Manufacturer's Instructions: Submit published installation requirements, including tank handling procedures, anchoring, and layout.
        2. Field Quality-Control Submittals: Indicate results of Contractor-furnished tests and inspections.
        3. Manufacturer Reports: Indicate tank has been installed according to manufacturer's instructions.
        4. 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.

Submit certified list of similar tank installations in service for period of not less than five years.

* + - 1. SUSTAINABLE DESIGN SUBMITTALS
         1. Manufacturer's Certificate: Certify products meet or exceed specified sustainable design requirements.

Edit material certifications list 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 the 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. CLOSEOUT SUBMITTALS
         1. Project Record Documents: Record actual location and final orientation of tank and accessories.
         2. Operation and Maintenance Data: Submit maintenance instructions for tank 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.
        2. Testing:

Provide effluent oil-water testing by EPA-certified independent laboratory using EPA Method 1664.

Submit certificate of analysis for each analysis performed.

Include following Paragraph only when cost of acquiring specified standards is justified.

* + - * 1. Maintain <**\_\_\_\_\_\_\_\_**> [**copy**] [**copies**] of each standard affecting the 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**].
        3. Licensed Professional: [**Professional engineer**] <**\_\_\_\_\_\_\_\_**> experienced in design of specified Work and licensed [**at Project location**] [**in State of <\_\_\_\_\_\_\_\_>**].
      1. DELIVERY, STORAGE, AND HANDLING
         1. Inspection: Accept oil-water separators on-Site and inspect for damage.
         2. Storage:

Store oil-water separators in areas protected from weather, moisture, and damage.

Do not store directly on ground.

* + - * 1. Protect interior or exterior surfaces when handling.
      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 separator.

1. PRODUCTS
   * + 1. PERFORMANCE AND DESIGN CRITERIA
          1. Tank Design Criteria:

External Hydrostatic Pressure:

Buried Depth: <**\_\_\_\_\_\_\_\_**> feet

Safety Factor: 5:1 against general buckling.

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

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

Store liquids with specific gravity of <**\_\_\_\_\_\_\_\_**>.

Store grease and oils at temperatures not to exceed 150 degrees F

Chemically inert to petroleum products.

Influent Flow Rate: <**\_\_\_\_\_\_\_\_**> gpm

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

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

* + - 1. TANK
         1. [Manufacturers](http://www.specagent.com/LookUp/?ulid=10997&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:

Double-wall, fiberglass-reinforced plastic, underground, coalescing-type oil-water separator tank, with fittings and accessories as indicated on Drawings.

Construct tank to conform to ASTM D2996, UL 1316, NFPA 30, NFPA 30A, NFPA 70, and MIL-T-52777A.

Coalescer Plates:

Corrosion resistant.

Removable through accessway, including internal mounting hardware.

Anchor Straps:

Material: [**Glass-fiber-reinforced plastic**] <**\_\_\_\_\_\_\_\_**>.

Capable of withstanding buoyancy load.

Fittings: Meet requirements of UL label.

Tank Laminate:

Granular inert material.

Moisture Content: Less than 1 percent.

Accessway:

Minimum Size: [**22**] <**\_\_\_\_\_\_\_\_**> by [**29**] <**\_\_\_\_\_\_\_\_**> inches.

Configuration: [**Oval**] <**\_\_\_\_\_\_\_\_**>.

* + - 1. TURBINE ENCLOSURES AND ACCESSWAY EXTENSIONS
         1. Description: Fiberglass-reinforced-plastic secondary containment collar, turbine enclosure, and accessway extensions as indicated on Drawings.

Secondary Containment Collar:

Size: [**42**] <**\_\_\_\_\_\_\_\_**>-inch diameter.

Provide containment around accessway.

Enclosure Height: <**\_\_\_\_\_\_\_\_**> feet.

Enclosure Top and Lid Assembly:

Watertight.

Grommets for piping or electrical connections are not acceptable.

Mate accessway extensions with accessway diameter.

* + - 1. OIL-WATER SEPARATOR CONTROL SYSTEM
         1. Description:

Control Panel:

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

Material: [**Epoxy-coated steel**] <**\_\_\_\_\_\_\_\_**>.

Electronic Components: UL-listed.

Power: [**120 VAC**] <**\_\_\_\_\_\_\_\_**>.

Monitoring Sensor Circuit: [**Explosionproof**] <**\_\_\_\_\_\_\_\_**>.

Number of Monitoring Circuits: [**Four**] <**\_\_\_\_\_\_\_\_**>.

Control Panel:

Alarm lights for each circuit.

Warning horn.

Auxiliary dry contacts switch output for each sensing circuit.

Alarm horn silence switch.

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

Locate sensor wires in separate conduit from power wires.

* + - * 1. Oil-Water Interface Float Sensor:

Two separate high-waste oil levels in separator:

Level One: Activate visual alarm.

Level Two: Activate both visual and audible alarms.

* + - * 1. Tank Leak-Detection System and Reservoir Sensor:

Interstitial Space: Between primary and secondary tank walls to allow for free flow of brine-monitoring liquid between tank walls and containment of released product from primary tank.

Hydrostatic Tank Leak-Detection System:

Detect breach in inner or outer tank or both under following conditions:

When inner tank is empty.

When inner tank is partially or completely full and ground water table is below tank bottom.

When inner tank is partially or completely full and tank is partially or completely submerged in ground water.

Hydrostatic Monitoring Fluid:

Non-toxic brine solution shipped in tank interstitial space from manufacturing plant.

Brine: Dyed deep green color to aid in identifying damage to tank.

UL-list tank laminate for compatibility with monitoring fluid.

Use titanium conductance probes to determine monitoring fluid levels in tank-mounted reservoir.

* + - 1. SUSTAINABILITY CHARACTERISTICS

Insert sustainable design characteristics in this Article to suit content of this Section and Project sustainable design requirements specified in Section 018113. The following two Paragraphs contain examples.

* + - * 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. ACCESSORIES
         1. Inlet and Outlet Tees:

Sizes: As indicated on Drawings.

Flanges: Standard ANSI Class 125/150 flanges.

* + - * 1. Manholes:

Material: [**Fiberglass-reinforced plastic**] <**\_\_\_\_\_\_\_\_**>.

Size: As indicated on Drawings.

* + - * 1. Vent Cap and Piping:

Material: [**Fiberglass-reinforced plastic**] <**\_\_\_\_\_\_\_\_**>.

Size: As indicated on Drawings.

* + - * 1. Oil Draw-Off:

Install fitting on tank.

Size: <**\_\_\_\_\_\_\_\_**> [**As recommended by tank manufacturer**].

* + - * 1. Base Pad:

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

Increase thickness of concrete base to prevent flotation, as approved by Director’s Representative.

Provide anchorage in concrete base.

* + - 1. SOURCE QUALITY CONTROL
         1. Testing:

Test and verify detection performance of monitoring system using qualified independent consultant.

Detecting leaks as small as 0.05 gal. per hour with 99.9 percent probability of detection and 1.2 percent probability of false alarm.

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

* + - * 1. Director’s Inspection: Make completed oil-water separators 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 when reliance on fabricator's approved quality-control program is sufficient for Project requirements.

* + - * 1. Certificate of Compliance: When 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 layout and orientation of tank accessories and piping connections are as indicated on [**Shop Drawings**] [**Drawings**].
          2. Verify that excavation base is ready to receive Work and that excavations, dimensions, and elevations are as indicated on [**Shop Drawings**] [**Drawings**].
       2. PREPARATION

Type of correcting materials (fine aggregate, coarse aggregate, or lean concrete) depends on type of subsoil, percolation characteristics, and compaction requirements.

* + - * 1. Correct over-excavation with [**fine aggregate**] [**coarse aggregate**] [**lean concrete**].
        2. Remove large stones or other hard matter impeding consistent backfilling or compaction.
      1. INSTALLATION
         1. Form and place cast-in-place concrete base pad.
         2. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings.
         3. Install separator tank where and as indicated on Drawings, and 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. Testing:

Test leak-detection system and verify proper operation.

After separator tank 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 1664.

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, 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 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 462513