

# **OIL-WATER SEPARATOR**

## **10 PPM DESIGN SPECIFICATION**

### **1.0 DESCRIPTION**

- 1.1 The work described in this section includes installation of factory assembled oil-water separator.
- 1.2 The oil-water separator shall be installed in location indicated on the drawings.

### **1.3 QUALITY ASSURANCE:**

- 1.3.1 **APPLICABLE PUBLICATIONS:** The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only

- 1.3.2 American National Standards Institute (ANSI) Standard:

B16.5-81 Steel Pipe Flanges and Flanged Fittings

- 1.3.3 American Public Health Association (APHA) publication: Standard methods for the Examination of Water and Wastewater

- 1.3.4 American Society for Testing and Materials (ASTM) Standard: A 36-812 Structural Steel

- 1.3.5 United States Environmental Protection Agency (EPA) Publication: Methods for Chemical Analysis of Water and Wastes

- 1.3.6 Underwriter' Laboratories, Inc. (UL) Publications: UL-58 Steel Underground Tanks for Flammable and Combustible Liquids

UL-1746 Underground corrosion control system

UL-525-79 Flame arrestors for use on vents of storage tanks for petroleum oil and gasoline

- 1.3.7 American Petroleum Institute (API) Publications: API Manual on Disposal of Refinery Wastes Volume on Liquid Wastes, Chapt. 3 & 5, Oil-Water Separator Process Design for Oil-Water Separators as applicable.

- 1.3.8 UL-Listed Composite Construction

- 1.3.9 Steel Structures Painting Council (sspc): SSPC-SP 6-63 Commercial Blast Cleaning SSPC-SP 10-63T Near-White Blast Cleaning

### **2.0 SUBMITTALS**

The contractor shall submit \_\_\_\_\_ copies of manufacturer's brochures and shop drawings on each oil-water separator to (owner) (engineer) (contracting officer) for approval ,and \_\_\_\_\_ copies of IOM manuals shall be submitted prior to shipment of separator

### **3.0 OIL-WATER SEPARATOR SPECIFICATIONS**

Oil-Water Separator shall conform to the following requirements:

- 3.1 The oil-water separator shall be designed for the specific project requirements and shall be a factory assembled unit which is a product of a manufacturer regularly engaged in the production of such equipment with similar units operating for a minimum of five years.
- 3.2 The oil-water separator shall be designed in accordance with Chapter 3 and 5 of the American Petroleum Institute (API) Manual on Disposal of Refinery Wastes (Volume on Liquid Wastes, , Latest Edition) and with API Bulletin #1630, First Edition, May, 1979
- 3.3 Construction and thickness of the separator shall be in strict accordance with specifications established in Underwriters' Laboratories, Subject (UL-58 Standard for Steel Underground Tanks) meeting or exceeding requirements for specified depth of burial
- 3.4 Separator shall bear the UL1746 label. Construction shall consist of a steel tank of all welded construction with a minimum of 100 of fiberglass Resin bonded to the exterior wall of the tank. The exterior structure shall show no holidays when using a Tinker & Rasor Model AP-W Holiday Detector set at 35,000 volts. By virtue of the UL listing, separator shall be warranted against external corrosion for 30 years without the need for cathodic protection.
- 3.5 The separator shall be designed for intermittent, variable or continuous flows of water, oil and/or any combination of non-emulsified oil-water mixtures containing up to 200,000 mg/L hydrocarbons and 100% hydrocarbons under spill conditions.
- 3.6 The separator shall process uncontrolled surges of water, oil, or oil/water mixtures ranging from zero flow up to 100% of maximum hydraulic throughput capacity and provide water effluents which meet continuous discharge requirements of 10 PPM or less of oil and grease. The separator shall otherwise meet all Federal, State, and local requirements outlined in this specification, and as follows:
- 3.7 The separator shall be designed in a manner to minimize solids build-up in the oil-water separator chamber, which could reduce the oil-water separation of the unit.
- 3.8 The separator shall be structurally designed to withstand underground soil pressure loads as dictated by the design depth below finished grade as indicated on the drawings, and/or static and dynamic loads for above ground location and installation.
- 3.9 The separator shall process oily water influent by means of continuous gravity flow and by specific gravity differential with enhancement. The separator shall be engineered and sized to handle flows as shown on the drawings.
- 3.10 As indicated on the drawings, the separator shall be \_\_\_\_\_ gallons total volume, cylindrical, with a 24" I.D. access manway to the separation chamber and a rectangular manway of sufficient size as to provide for easy "at-grade" coalescer removal.
- 3.11 The oil-water separator shall consist of a buried steel separation vessel buried as indicated on the drawings.

Inlet shall be a \_\_\_ 150# RF flanged opening with inlet pipe angled to flow against a laminar flow enhancer plate, welded to interior of the separator.

A series of corrugated parallel plates shall be downstream set at a minimum 45 degree angle, spaced every no closer than 1/4" apart and supported by steel supports, welded to a solid steel plate on either side of the separator wall. This series of plates shall be located as close as possible to the inlet end of the separator in order to effect coalescence of the oil particles as soon as possible.

Inlet, outlet and separation compartment shall be vented to the atmosphere. All vents shall terminate at elevations above grade as indicated on the drawings and shall be equipped per governing codes. The top covers of the separator manways shall be removable. Covers shall be completely gasketed. Provide all connections for pipe as shown on the drawings. All maintenance and entry access hardware shall be stainless steel.

The separator shall be furnished with fittings for vent, waste oil pump out, float sensors, and spare fitting for separate oil pump-out for oil removal prior to the oil reaching the \_\_\_\_\_ gallon mark.

The separator shall be furnished with a HydroPack™, removable coalescer. The coalescing media shall consist of a matrix of special interlaced layers of monofilament strands. The multi-monofilament design shall be such that each monofilament is perpendicular to the fluid flow and also perpendicular to each monofilament. The HydroPack™ shall be designed to intercept oil particles of 20 microns in size and produce an effluent quality of 10 PPM or less of oil and grease. These particles shall wick their way to the top of the separator for storage and future removal.

The HydroPack™ shall be a one-piece coalescer housed in a rectangular manway with extension, cover and gaskets, and shall be fitted with a handle for easy removal from surface ground level without the need of removing any liquid from the separator prior to removal.

The outlet pipe shall be \_\_\_\_\_" diameter and extend to within 6" of the bottom of the separator, and be braced to the end of the separator. An \_\_\_\_\_" 150# RF flange shall be provided on the outlet.

- 4.0 CHARACTERISTICS:** The oil-water separator shall be designed for a maximum flow rate of \_\_\_\_\_ g.p.m., and be able to store up to \_\_\_\_\_ gallons of separated oil without affecting the separation quality.

Separator shall be built to UL specifications and bear the UL-1746 Label for corrosion resistant fiberglass/steel composite construction and shall eliminate the need for cathodic protection and periodic monitoring of same.

- 5.0** The separator shall be an **AquaClean** model \_\_\_\_\_.

**[OPTIONAL]**

- 6.0 CONTROLS:** The separator shall be equipped with an alarm system to indicate that that the desired oil capacity has been reached, and the oil should be pumped out. The controls shall consist of a level sensor, intrinsically safe, with NEMA 4 control panel with audio and visual alarm, with silencer.

- 7.0** Unit Shall be built of double-wall construction with an interstitial space for the monitoring of the inner and outer walls of the separator.

- 8.0** Unit Shall be equipped with an inlet shut-off valve that shall close upon the detection of an excessive hydrocarbon accumulation signalling imminent hydrocarbon discharge. The valve shall be a NEMA 4/7 valve with an electric actuator that is operated via a float switch within the separator. Valves on the outlet of the separator are not acceptable.