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ABOVEGROUND OIL/WATER SEPARATORS RECTANGULAR STEEL STORAGE TANKS



ABOVEGROUND OIL/WATER SEPARATORS

Aboveground Oil/Water Separators from Containment Solutions Inc. (CSI) combine a unique rectangular steel tank design with state-of-the-art coalescer technology to provide flow rates comparable to larger units. CSI systems are designed to separate free oils and settleable solids from rainwater runoff and washdown applications via gravity or pumped flow for intermittent, variable, or first flush flows of oil, water, or a combination of non-emulsified oil/water. Systems are installed either at grade or below grade (within a vault) and feature 10ppm effluent discharge, low maintenance and the superior quality you expect from all CSI products.

CSI separators consist of three processing chambers: 1) Primary "Oil and Sediment" Separation Chamber; 2) Secondary "Enhanced Coalescer" Separation Chamber, and 3) Effluent Discharge Chamber. These chambers allow maximum sediment and oil separation, increase retention time and increase surface area for oil separation.

Additional features include a unique inlet/outlet design that minimizes external piping, support feet for convenient off-loading, and a removable top making coalescer units and debris plates accessible. The removable coalescer units are constructed of non-metallic oleophilic materials for enhanced performance.

TYPICAL APPLICATIONS FOR ABOVEGROUND OIL/WATER SEPARATORS

Equipment Washdown/Vehicle Maintenance Facilities

Water from washdown sources are contaminated with oil and/or grease from trucks, cars and other dirty equipment. Either through direct flow or pumping when necessary, CSI separator systems remove free oil and grease to achieve an effluent quality of 10ppm to meet your discharge requirements. The concentrations and types of contaminants determines the allowable flow rate through the system. Because detergents may adversely affect the performance of oil/water separators, quick break detergents must be used if applicable. Specialty application separators are available to meet specific needs such as Mop-up units and Portable units on casters.

Rainwater Runoff

Oil drippings and spills from parking lots, driveways, oil terminals and other vehicular traffic surfaces are being washed into our water supplies by rainwater, creating serious environmental concerns. CSI Oil/Water Separators are designed to meet EPA guidelines for rainwater runoff control.



STANDARD TANK FEATURES

- Superior CSI quality and workmanship
- Rugged steel construction
- Interior epoxy coating
- Exterior epoxy coating
- Removable top and maintenance friendly design
- Removable non-metallic coalescer(s) and debris plates
- Bottom support feet
- Oil pump-out pipe
- Fittings for vent, oil sensor, oil removal, inlet, outlet

OPTIONS

- Pump platform
- Air-operated inlet pumps
- Automatic oil pump-out systems
- Level sensing systems
- Exterior protective Elastomeric Polyurethane coatings (EMPT)
- Double-wall units
- Scavenger tanks
- Effluent pump-out systems

Remediation Systems

CSI Oil/Water Separators remove free oil and grease to achieve an effluent quality of 10ppm to meet discharge requirements with intermittent and variable flows of oil, water or combination of non-emulsified flows of Oil/Water.

Oil/Water Separator Design & Sizing

Since each site is unique, the most environmentally and cost effective approach is to analyze each situation and design the system accordingly. CSI's Technical Support engineers can help determine the appropriate application (equipment washdown, rainwater runoff, major oil spill, etc.) to best fit the technical considerations and specific needs.

The major design parameters include:

<i>Inlet flow rates</i>	<i>Specific gravity of contaminants</i>
<i>Inlet/outlet concentration</i>	<i>Oil storage capacity</i>
<i>Oil spill capacity</i>	<i>Temperature</i>
<i>Effluent quality requirement</i>	

Using the Design/Sizing Questionnaire (Pub. No. OWS2026), the proper system can be designed for your application.

ELECTRONICS / ACCESSORIES (PUMP, VALVE, & PANEL SYSTEM)

Oil/Water Separator monitoring and control systems can be configured to satisfy a wide range of customer requirements. Control panels, sensors, probes and gauges are available for all double-wall, single-wall oil/water separator systems as well as for single-tank or multiple-tank installations. A full line of pump controls, inlet and outlet pumps and waste oil pumps are available. As package units, all that is required is the piping.

PERFORMANCE

All CSI Aboveground Oil/Water Separators are designed and tested in accordance with the following criteria:

<i>U.S. Coast Guard Test Method 46 CFR 162.050</i>	<i>EPA Test Method 413.1 & 413.2</i>
<i>The API Manual on Disposal of Refinery Wastes</i>	<i>API Bulletins No. 421 & 1630 (first edition)</i>
<i>Stokes' Law</i>	<i>UL 142</i>

Based on the operating parameters, the CSI Aboveground Oil/Water Separator can achieve effluent levels of 10ppm

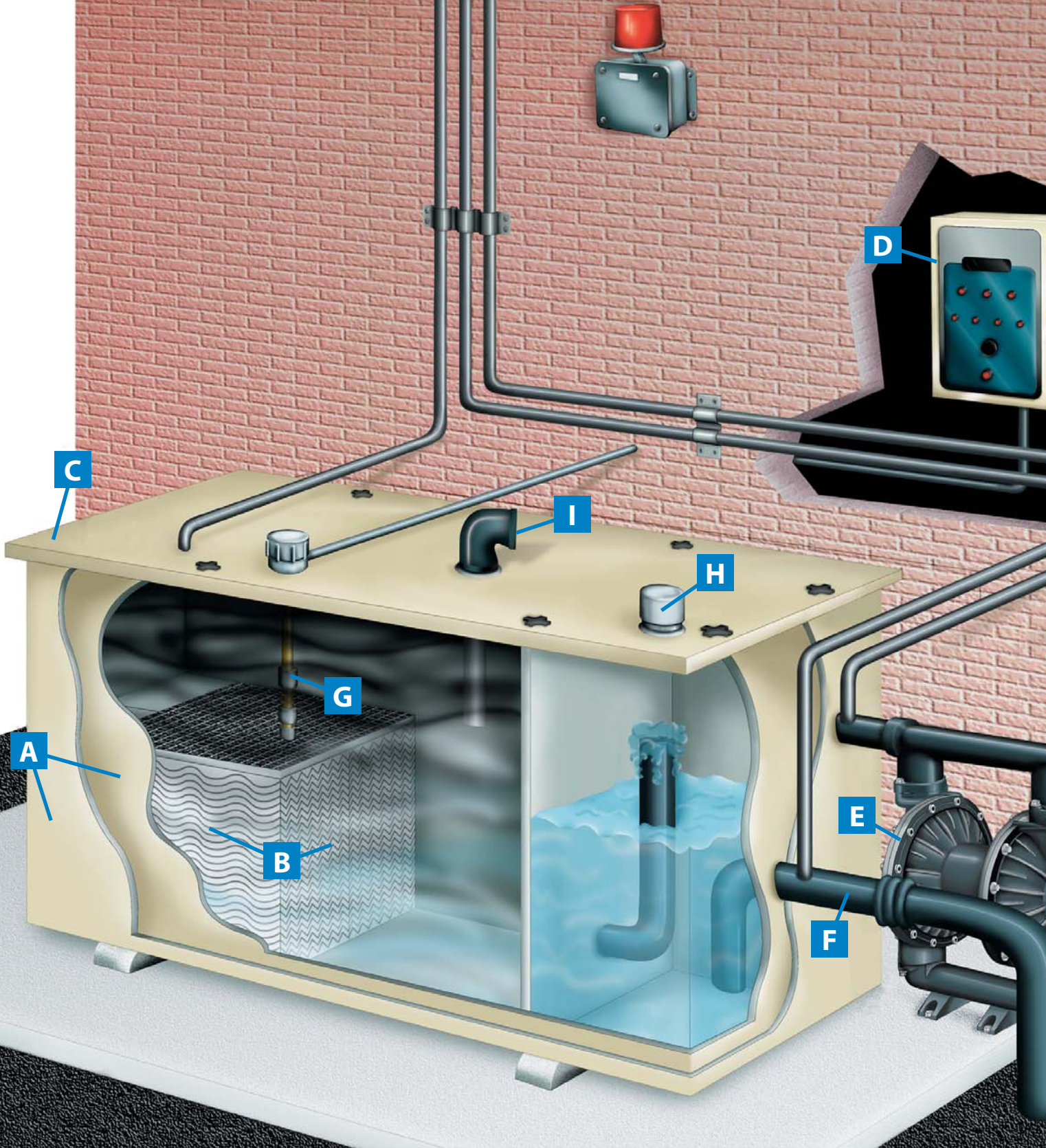


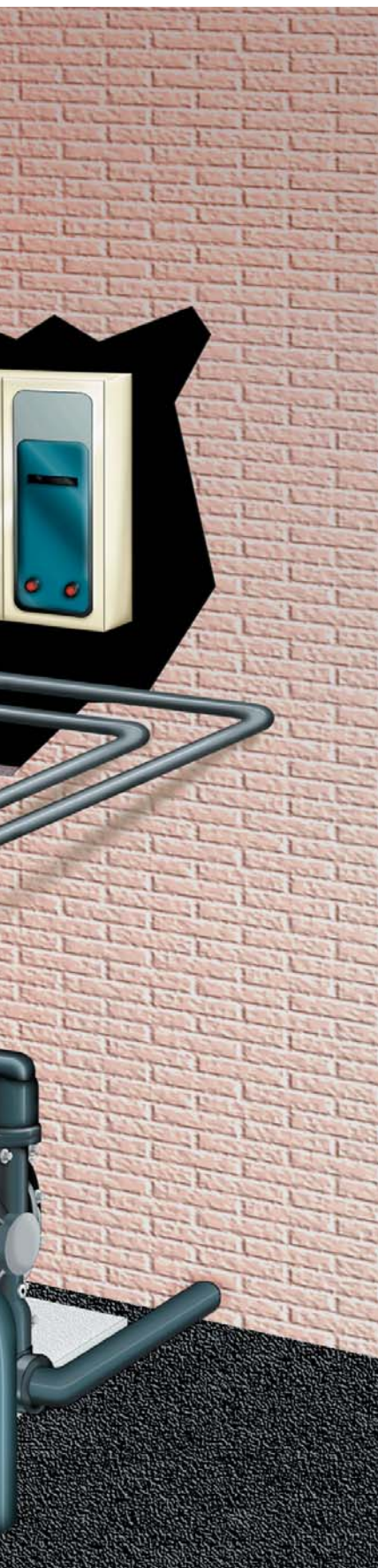
APPLICATION: RAINWATER RUNOFF

Oil drippings and spills from parking lots, driveways, oil terminals and other vehicular traffic surfaces are being washed into our water supplies by rainwater, creating serious environmental concerns.

CSI Oil/Water Separators are designed to meet EPA guidelines for rainwater runoff control.

TYPICAL SEPARATOR SYSTEM OVERVIEW





STANDARD FEATURES

- A. Double-Wall Steel Tank
- B. Enhanced Coalescer Filtering System
- C. Removable Cover w/Fittings
- D. Optional Electronic Monitoring System
- E. Optional Inlet/Outlet Pumps
- F. Effluent Outlet
- G. Waste Oil Level Sensor
- H. Vent
- I. Oil Removal Fitting

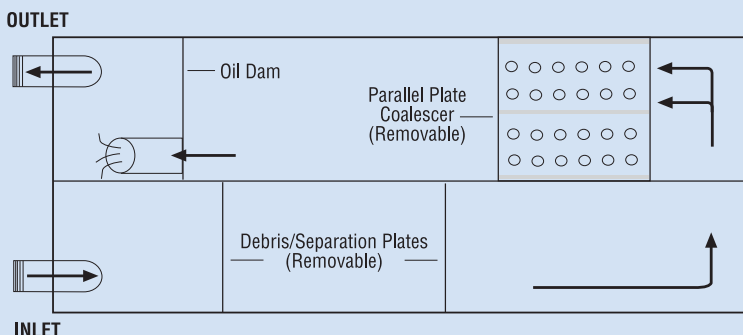
Rectangular Design, by Design

Space-saving design and ease of installation, for an economical solution to above ground storage and treatment. Separators come in single-wall and double-wall tank designs. The all steel construction includes a special interior lining for an extended life and an exterior epoxy coating. An optional elastomeric polyurethane (EMPT) exterior coating is also available.

TANK DIMENSIONS

Model	Flow Rate (gpm)	Nominal Capacity (gallons)	Oil Capacity (gallons)	Emergency Oil Capacity* (gallons)	Inlet / Outlet (sizes)	O.D. Single-Wall Dimension (LxWxH)	Single-Wall Approx. Weight (lbs.)	Double-Wall Approx. Weight (lbs.)
AOWS-10	10	100	40	90	1" / 2"	4' 1" x 2' 1" x 3' 4"	625	1,100
AOWS-25	25	250	90	245	2" / 3"	6' 1" x 2' 1" x 3' 5"	775	1,400
AOWS-50	50	500	120	450	4" / 4"	7' 7" x 3' 1" x 3' 4"	1,225	2,125
AOWS-75	75	750	170	705	4" / 4"	10' 1" x 3' 7" x 3' 4"	2,100	3,350
AOWS-100	100	1,000	240	1,035	6" / 6"	11' 1" x 3' 7" x 4' 4"	2,675	4,475
AOWS-200	200	2,000	360	1,800	8" / 8"	16' 9" x 4' 1" x 4' 4"	4,200	7,025
AOWS-250	250	2,500	500	2,250	8" / 8"	17' 1" x 5' 1" x 4' 4"	4,475	8,025
MOP-10	10	100	40	90	1" / 1"	5' 4" x 1' 5" x 2' 4"	590	925

*Emergency oil spill capacity is 90% of tank volume based on no accumulated oil in vessel at time of spill



ABOVEGROUND OIL/WATER SEPARATOR SPECIFICATIONS

Steel Oil/Water Separator Single-Wall or Double-Wall Specifications

Section 02700: Drainage

Part I: General

1.01 Related Documents

- A. The provisions of the General Conditions, Supplementary Conditions, Sections included under Division 1, General Requirements, and Section _____ of this Division are included as part of this Section as though bound herein.
- B. Refer to details and schedules on the drawings for additional requirements.

1.02 Submittals

- A. Drop-out box: Contractor to furnish and install precast, steel, or fiberglass drop-out box.
- B. Plastic pipe: Contractor to furnish and install all necessary PVC drainage pipe and fittings. Contractor shall install one butterfly valve between the drop-out box and tank inlet, as well as on the effluent pipe.

1.03 Description/Summary

- A. The Contractor shall furnish the labor, materials, equipment, appliances, services and hauling, and perform operations in connection with the construction and installation of the separator. Work shall be as herein specified and as denoted on the accompanying Drawings but not limited to the following general terms of work:
 1. Storm sewers
 2. Sanitary sewers
 3. Catch basin and manholes
 4. Trench drains
 5. Oil/Water separators
- B. Provide _____ gallon(s) aboveground steel oil/water separator tank(s), piping, necessary pumps, venting, vent piping, monitoring equipment, and oil draw-off pump(s) required to make a complete installation ready for use.
- C. The separator shall be a pre-packaged, pre-engineered, ready to install unit. Provided by CSI (Pump, Valve, & Panel System).
- D. The Contractor will provide filling of oil/water separator with clean water prior to startup of the unit..
- E. The Contractor shall mechanically unload the oil/water separator at the job site.

1.04 Governing Standards

- A. National Fire Protection Assoc. (NFPA 30) Flammable and Combustible Liquids Code, (NFPA 30A) Automotive and Marine Service Station Code, (NFPA 70), National Electric Code.
- B. "Petroleum Equipment Institute Publication RP200-92; Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling"
 1. API manual on disposal of refinery wastes
 2. API bulletin no. 421
 3. API bulletin no. 1630 first edition (replaced by API 421)
 4. Coast Guard Specification 46 CFR 162.50 - 46 CFR Chapter 1
 5. EPA Test Method 413.1, Oil and Grease, Total Recoverable (Gravimetric, Separatory funnel Extraction)
 6. EPA Test Method 413.2, Oil and Grease, Total Recoverable (Spectrophotometric, Infrared)

1.05 Quality Assurance

- A. Documentation: The manufacturer must provide documentation proving that the oil/water separator is capable of producing effluent with no more than 10ppm free oil and grease (not dissolved nor chemically emulsified with soaps or detergents) when tested using the Coast Guard test method 46 CFR 162.50. The test inlet oils include both 0.8 and 0.9 specific gravity (approximate) oils.
- B. Oil/Water separator tank shall be constructed to meet UL142 governing standards.
- C. Shop Drawings: Contractor shall submit copies of shop drawings for each OWS tank. Drawings shall include all critical dimensions, locations of fittings and accessories.
- D. All OWS tanks, equipment and piping materials shall be physically inspected and tested before being installed. Any defects observed shall be immediately brought to the attention of Owner. It shall be the sole responsibility of the Contractor to correct any deficiencies with the manufacturer, in strict accordance with manufacturer's recommendations, at no additional cost to the Owner.
- E. Contractor shall submit _____ copies of manufacturer's literature.
- F. Containment Solutions Oil/Water separators will not remove oils with specific gravities greater than 0.95, chemical or physical emulsions, dissolved hydrocarbons, or volatile organic compounds (VOC).
- G. The contractor shall obtain and pay for all permits, tests, inspections, etc. required by the local boards that have jurisdiction over the project. All work shall be executed and inspected in accordance with all local and state codes, rules, ordinances, or regulations pertaining to the particular work involved. Should any changes in the contract drawings and specifications be required to conform to such ordinances, notify the owner at time of submitting bid. After entering into the contract the contractor shall be held responsible for the completion of all work necessary for a complete and approved installation without extra expense to the owner.

Part II: Products

2.01 Aboveground Horizontal Oil/Water Separators

Provide and install _____ Containment Solutions, Inc. _____ gallon capacity Model AOWS- _____ Oil/Water Separator. Separator shall be _____ long x _____ wide x _____ high.

- A. Oil/Water Separator shall be designed in accordance with Stokes Law, and American Petroleum Institute (API) Publication 421, "Monographs on Refinery Environmental Control, Management of Waste Discharges, Design and Operation of Oil/Water Separators" to achieve an effluent quality of 10ppm.
- B. Oil/Water Separator shall be manufactured and tested for leakage prior to shipment.
- C. Oil/Water Separator is designed to separate free oils and settleable solids from rainwater runoff and washdown applications via gravity or pumped flow for intermittent, variable, or first flush flows of oil, water, or combination of non-emulsified oil/water up to _____ gallons per minute. Inflow hydrocarbon specific gravity range shall be from .68 to .95 and in concentrations up to 200,000 mg/l.
- D. The oil/Water Separator shall have an oil storage capacity of _____ gallons and an oil spill capacity of _____ gallons.

- E. Oil/Water Separator shall be designed for aboveground, top at grade level, or belowground (in a vault) installation. Separator shall be rectangular horizontal steel vessel designed for storage of flammable and combustible liquids and have the structural strength to withstand static and dynamic loading under all normal operating conditions. Separator shall be designed to be vented to the atmosphere.
- F. Separator shall consist of a vessel having the inlet and outlet connections on the same end for convenient installation, oleophilic debris plates to promote coalescence of oil and reduce inlet flow velocity.
Separator shall have removable modular inclined parallel plate system consisting of :
 - 1. Dedicated oil removal and solids shedding surfaces to prevent remixing of oil and settleable solids.
 - 2. Horizontally stacked (45° angle) oleophilic polypropylene plates with ¼" to ½" plate separation.
 - 3. Full modular assemblies consisting of a polypropylene base, plate pack, modular form and handles for easy removal and inspection.
- G. Separator shall consist of effluent chamber for increased retention time, oil retention, and separated oil accumulation, effluent transfer pipe(s), and effluent downcomer to allow discharge from clearwell chamber. Separator shall have steel cover(s) with handles, gasket and bolts for easy removal for inspection and service of each chamber.
- H. Inlet and outlet shall be located on the same end of the Oil/Water Separator creating laminar flow characteristics for a distance equal to twice the length of the vessel, as follows:
 - _____ inch diameter (NPT) threaded influent connection.
 - _____ inch diameter (NPT) threaded effluent connection.
- I. Separator shall have top fittings for vent, oil interface level sensor (or waste oil pump control sensor), and waste oil pump out.
- J. Internal surfaces to be commercially prepared and coated with (10 mils DFT) hydrocarbon/water compatible epoxy coating.
- K. External surfaces to be commercially prepared and coated with (10 mils DFT) hydrocarbon/water compatible epoxy coating. Standard color: Desert Sand
 - 1. Optional Exterior Coating of Elastomeric Polyurethane (EMPT).
Standard Color: Desert Sand

2.02 Optional Oil/Water Separator Monitor & Electronic Accessories

- A. Electronic Control Panel shall be constructed of UL-Listed electronic components. The control panel power source is 120 volts A.C. (contractor provided wiring). The sensor monitoring circuit is an intrinsically safe circuit, i.e., the circuit incapable of releasing sufficient electrical or thermal energy to cause ignition of specific hazardous material under "normal" or "fault" operating conditions. The control panel shall be capable of monitoring single or multiple point oil/water interface sensors. Electrical components rating shall be NEMA 3R, 4 or 4X. Control panels shall include:
 - 1. Panel housing materials of corrosion-resistant material (NEMA 3R or 4X) or corrosion-resistant steel (NEMA 4)
 - 2. Alarm lights for each circuit
 - 3. Warning bell
 - 4. Alarm bell silence switch

- B. Oil/Water Interface Sensor
Provide and install single or multiple point sensors designed to provide monitoring of the oil/water interface and to provide accessory control.
- C. Provide pump control systems and pumps:
 - 1. Oil interface control system to activate and deactivate explosion-proof waste oil pump.
 - 2. Influent pump and control system to activate inlet (positive displacement) pump control system to activate and deactivate an explosion-proof effluent discharge pump at pre-determined levels in the well (clearwell).

Part III: Installation

3.01 Installation of Oil/Water Separator

- A. Contractor shall test and install tank according to installation instructions.
- B. Tanks shall be unloaded using appropriate lifting equipment.
- C. Tanks shall be installed in accordance with "Petroleum Equipment Institute Publication RP200-98; Recommended Practices for Installation of Aboveground Storage systems for Motor Vehicle Fueling".

Part IV: Maintenance

4.01 Maintenance of Oil/Water Separator

- A. Close inlet and outlet valves.
- B. Remove cover(s).
- C. Drain, pump out separator.
- D. Remove coalescer packs for cleaning. In some conditions, coalescer packs may be cleaned in place
- E. Maintenance is recommended for continued separator performance at the following times (whichever comes first):
 - 1. Once per year
 - 2. When sludge accumulates to 12" in depth
 - 3. When the effluent water contains high contaminant levels

Part V: Limited Warranty

5.01 Limited Warranty

Warranty shall be Containment Solutions limited warranty in effect at time of delivery.

CONTAINMENT SOLUTIONS MANUFACTURES:

Oil/Water Separators and Interceptors
Underground and Aboveground Storage Tanks
Urea DEF Storage Tanks
Compartment Tanks
ReTank® Retrofit Systems
BTU® - Biofuel Tank Upgrade
Automotive Oil and Lubricant Storage Tanks
Flowtite® Water Tanks
Chemical Storage Tanks
Fiberglass Manholes and Wetwells



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