

# OIL/WATER SEPARATORS

ABOVEGROUND STEEL STORAGE TANKS



**CONTAINMENT**  
SOLUTIONS®

## 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

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.



#### 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

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.

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.

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:

- *Inlet flow rates*
- *Inlet/outlet concentration*
- *Oil spill capacity*
- *Effluent quality requirement*
- *Specific gravity of contaminants*
- *Oil storage capacity*
- *Temperature*

Using the Design/Sizing Questionnaire (Pub. No. OWS 2026), 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:

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

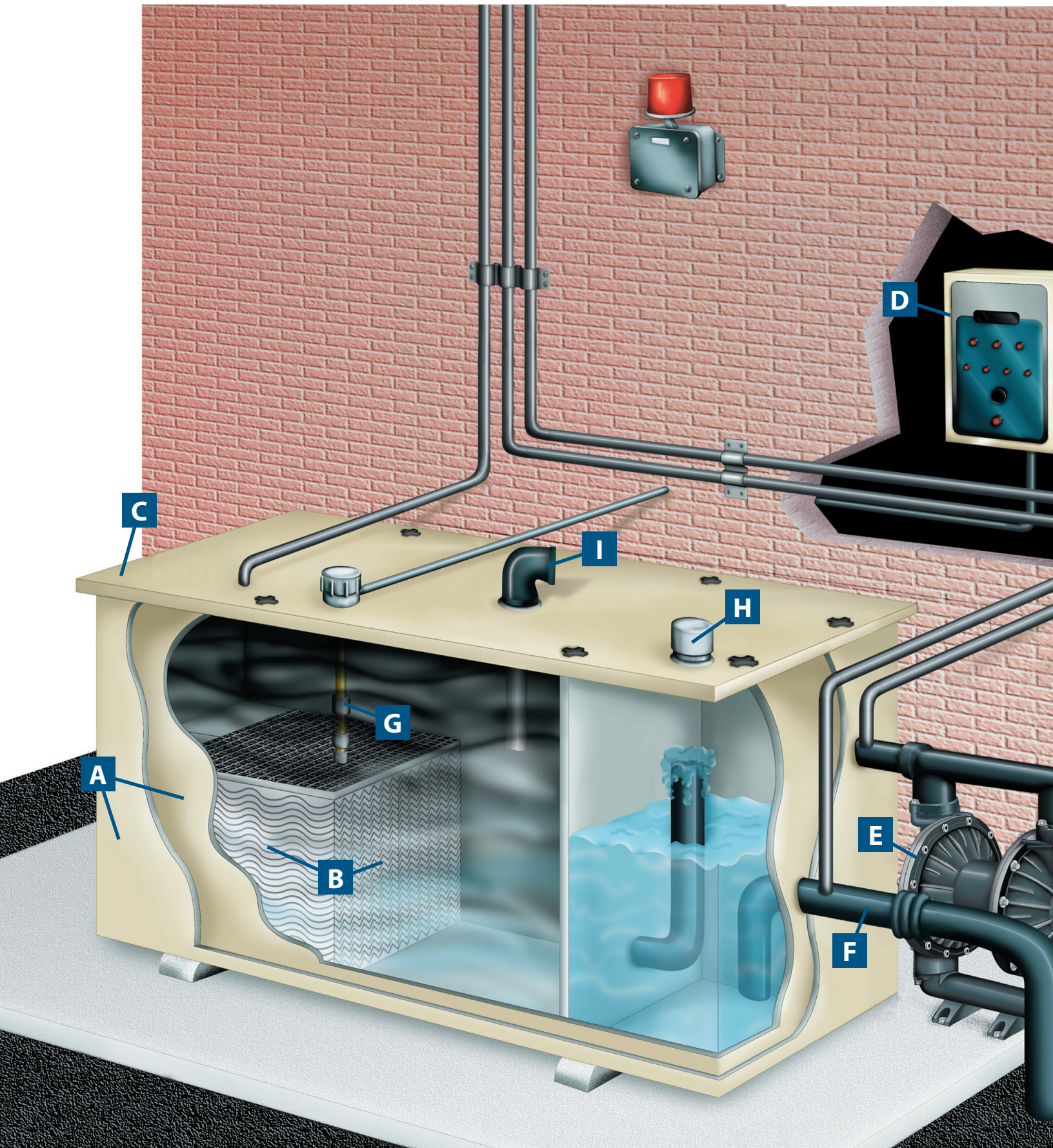
Based on the operating parameters, the CSI Aboveground Oil/Water Separator can achieve effluent levels of 10ppm.



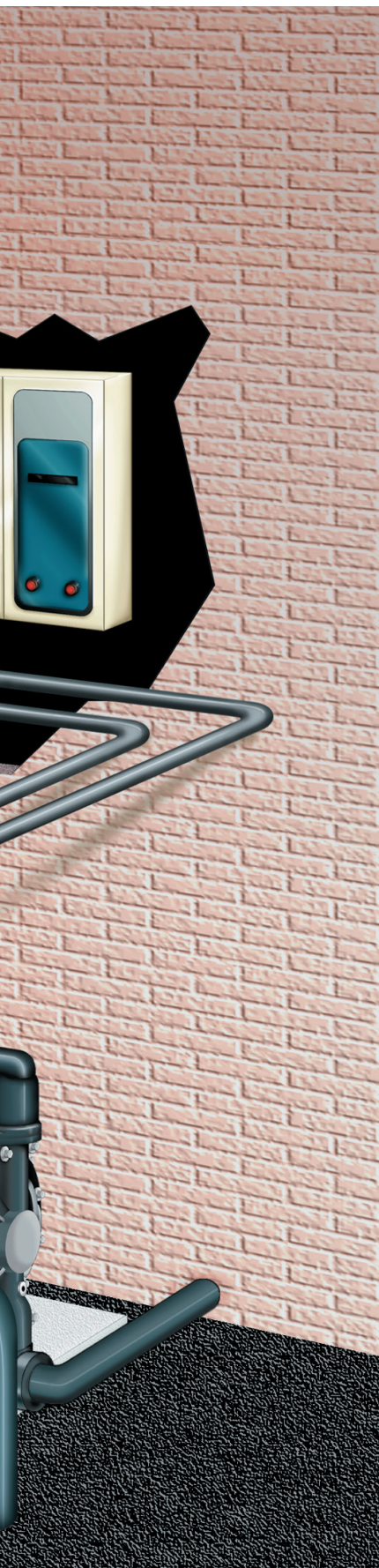
### **APPLICATION: RAINWATER RUNOFF**

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.

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3 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

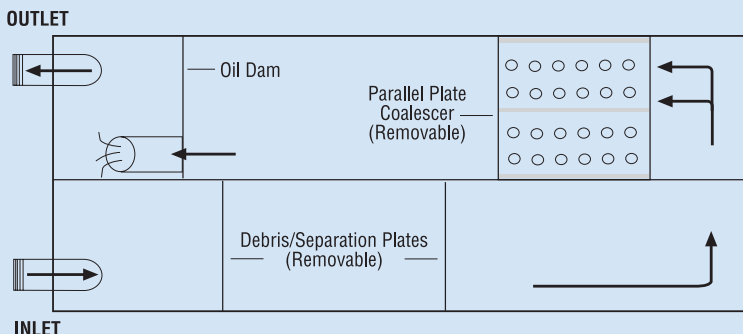
### Rectangular Design, by Design

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.

### STANDARD 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

### SHORT FORM SPECIFICATION

The contractor shall provide aboveground steel oil/water separator, in types (single-wall or double-wall) and sizes as shown on the drawings. The separators shall be manufactured by Containment Solutions. Separators shall be tested and installed according to the current installation instructions (Containment Solutions' Pub. No. OWS 2038) provided with the tank.

### LONG FORM SPECIFICATION

#### 1. GENERAL

##### 1.1. Related Work

- 1.1.1. Drop-out box: Contractor to furnish and install precast or fiberglass drop-out box.
- 1.1.2. Plastic pipe: Contractor to furnish and install all necessary PVC drainage pipe and fittings. Contractor shall install a butterfly valve between the drop out box and tank inlet, as well as one between the outlet of the separator and the effluent pipe.

##### 1.2. Quality Assurance

- 1.2.1. Acceptable Manufacturer: Containment Solutions, Inc., Conroe, TX
- 1.2.2. Governing Standards
  - 1.2.2.1. Applicable sections of U.L. 142 Underwriters Laboratories, Inc. Standard for Steel Aboveground Tanks for Flammable and Combustible Liquids.
  - 1.2.2.2. National Fire Protection Assoc. (NFPA 30) Flammable and Combustible Liquids Code, (NFPA 30A) Automotive and Marine Service Station Code, [NFPA 70) National Electrical Code.
  - 1.2.2.3. Applicable sections of "Petroleum Equipment Institute Publication RP200; Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling".
  - 1.2.2.4. API manual on disposal of refinery wastes
  - 1.2.2.5. API bulletin no. 421
  - 1.2.2.6. API bulletin no. 1630 first edition
  - 1.2.2.7. Coast Guard Specification 46 CFR 162.50 - 46 CFR Chapter 1
  - 1.2.2.8. EPA Test Method 413. 1, Oil and Grease, Total Recoverable (Gravimetric, Separatory Funnel Extraction).
  - 1.2.2.9. EPA Test Method 413.2, Oil and Grease, Total Recoverable (Spectrophotometric, Infrared).

##### 1.3. Submittals

- 1.3.1. Shop Drawings: Contractor shall submit \_\_\_\_ copies of shop drawings for each OWS tank. Drawings shall include all critical dimensions, locations of fittings and accessories.
- 1.3.2. Contractor shall submit \_\_\_\_ copies of manufacturer's literature including \_\_\_\_ copies of manufacturer's current installation and maintenance instructions to the Owner.

## 2. PRODUCTS

### 2.1. Aboveground Horizontal Oil/Water Separators

- 2.1.1. Provide \_\_\_\_\_ gallon(s) aboveground steel oil/water separator tank(s), piping, necessary pumps, venting, vent piping, and monitoring equipment required to make a complete installation ready for use.
- 2.1.2. Product Storage Requirements
  - 2.1.2.1. Oil/Water Separator shall be designed for aboveground, top at grade level, or below ground (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 atmosphere.
  - 2.1.2.2. 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 corrugated parallel plate system consisting of:
    - Dedicated oil removal and solids shedding surfaces to prevent remixing of oil and settleable solids.
    - Horizontally stacked (45° angle) oleophilic polypropylene plates with ¼ to ½" plate separation.
    - Full modular assemblies consisting of a polypropylene base, plate pack, modular form and handles for easy removal and inspection.
  - 2.1.2.3. 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.

# ABOVEGROUND OIL/WATER SEPARATOR SPECIFICATIONS

2.1.2.4. 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.

2.1.2.5. Separator shall have top fittings for vent and oil interface level sensor (or waste oil pump control sensor).

2.1.2.6. Internal surfaces to be commercially prepared and coated with (4 to 8 mils dry film thickness) marine and industrials grade corrosion resistant epoxy. Standard color: Black

2.1.2.7. External surfaces to be commercially prepared and coated with (3 to 5 mils dry film thickness) resistant industrial paint. Standard color: Desert Sand

## 2.1.3. Capability and Dimensional Requirements

2.1.3.1. Separator shall be \_\_\_\_ long \_\_\_\_ wide \_\_\_\_ high.

2.1.3.2. Nominal volume of the separator shall be \_\_\_\_ gallons.

2.1.3.3. Intermittent flow rate shall be \_\_\_\_ GPM.

2.1.3.4. Total spill capacity shall be \_\_\_\_ gallons.

2.1.3.5. Total oil storage capacity shall be \_\_\_\_ gallons.

2.1.3.6. Inlet oil specific gravity shall range between .68 to .95.

2.1.3.7. Inlet oil concentration shall be no more than 200,000 parts per million.

2.1.3.8. Effluent discharge quality shall be \_\_\_\_ ppm free oil and grease.

## 2.2. Accessories

### 2.2.1. Pump Control Systems and Pumps

2.2.1.1. Influent pump and control system to activate inlet (positive displacement) pump at pre-determined levels.

2.2.1.2. Effluent (waste water) pump control system to activate and deactivate an effluent discharge pump at pre-determined levels in the discharge well (clearwell).

### 2.2.2. Oil/Water Separator Electronics

2.2.2.1. Provide control panel and required sensors, probes and gauges as provided by tank manufacturer.

## 3. EXECUTION

### 3.1. Installation of Oil/Water Separator

3.1.1. Tanks shall be unloaded from truck using appropriate lift equipment.

3.1.2. Contractor shall test and install tank according to the current installation and start-up instructions provided with the tank (refer to Containment Solutions Pub. No. OWS 2038).

3.1.3. Tanks shall be installed in accordance with applicable sections of "Petroleum Equipment Institute Publication RP200; Recommended Practices for Installation of Aboveground Storage Systems for Motor Vehicle Fueling".

### 3.2. Maintenance Instructions

3.2.1. Maintenance is recommended for continued separator performance at the following times (whichever comes first):

3.2.1.1. Once per year

3.2.1.2. When sludge accumulates to 12" in depth

3.2.1.3. When the effluent water contains high contaminant levels

3.2.2. See Containment Solutions Pub. No. OWS 2037 for maintenance requirements.

## 4. LIMITED WARRANTY

### 4.1. Limited Warranty

4.1.1. Limited warranty shall be Containment Solutions' limited warranty in effect at time of delivery.

While Containment Solutions has taken every precaution as to the accuracy of content and data presented herein, Containment Solutions cannot be held responsible for the individual interpretation of the data presented, any loss or damage to any property whatsoever, injury or death to any persons whatsoever, or any claims, demands, actions, complaints, proceedings, judgement, losses, damages, compensation, liabilities, costs or charges, however arising from the unauthorized undirected used of this handbook or the data it contains.

**CONTAINMENT SOLUTIONS MANUFACTURES:**

Underground and Aboveground Storage Tanks

Urea DEF Storage Tanks

Automotive Oil and Lubricant Storage Tanks

Flowtite® Water Tanks

Chemical Storage Tanks

Fiberglass Manholes and Wetwells



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