UNDERGROUND OIL/WATER SEPARATORS

FIBERGLASS STORAGE TANKS

CONTAINMENT SOLUTIONS

Containment Solutions, Inc. / System Overview

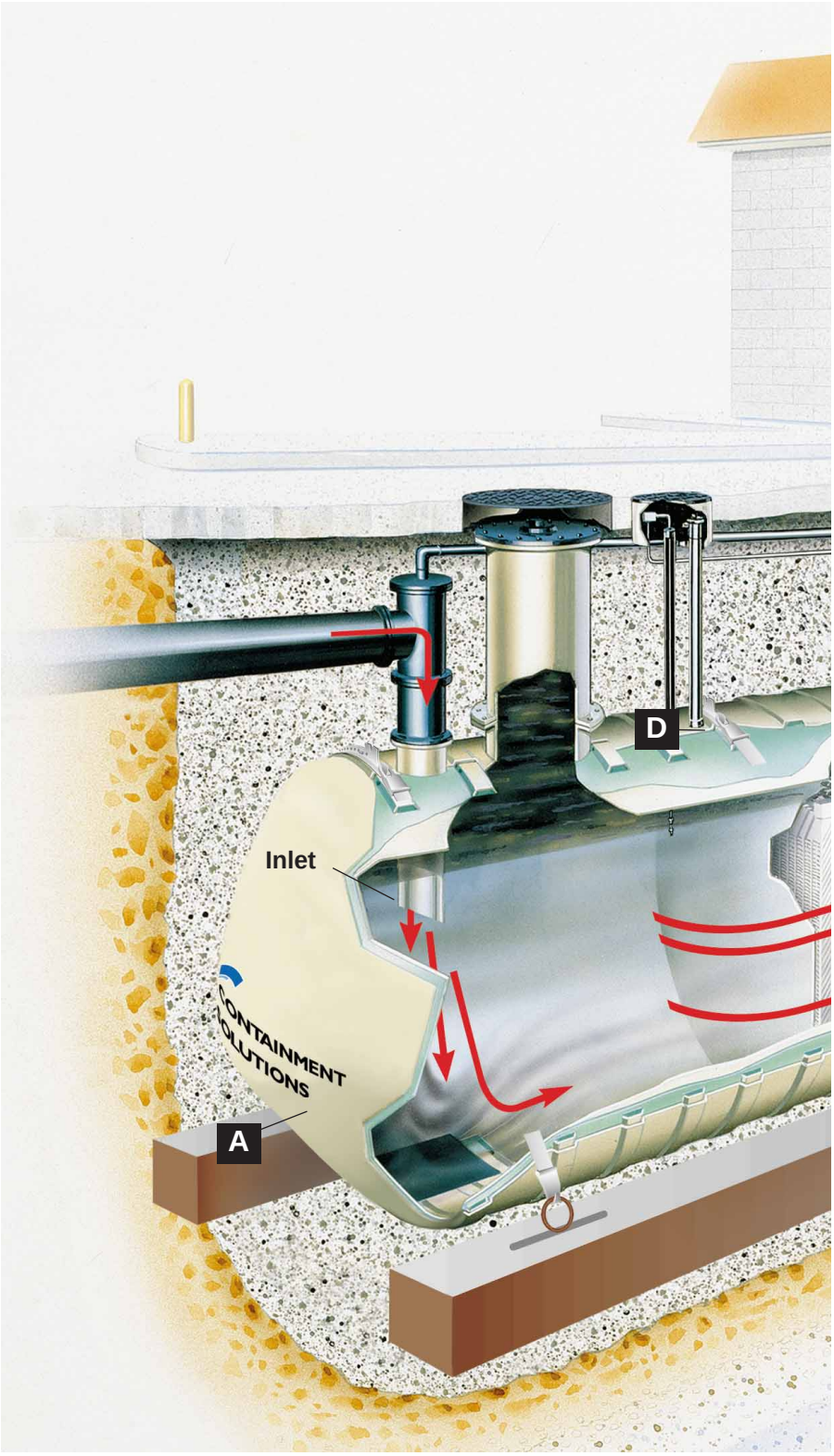
Containment Solutions, Inc. (CSI) provides a full range of products for critical fluids storage and separation for the wide variety of applications necessary in industry today. By combining the resources of Fluid Containment, Inc., the leader in fiberglass underground tank technology, and Hoover Containment, Inc., the leader in steel aboveground fuel storage, we have developed the premier single source supplier for your total fluids system needs. Our goal is to provide innovative Systems Solutions for your critical fluid requirements. In keeping with our goal, Containment Solutions has developed a high-performance state-of-the-art Oil/Water Separator.

Current environmental regulations are a result of the increased awareness and expressed desire by the public to protect and preserve the environment. Our mission was to design, test and manufacture the best Oil/Water Separator possible to meet the current regulations and the needs of industry today.

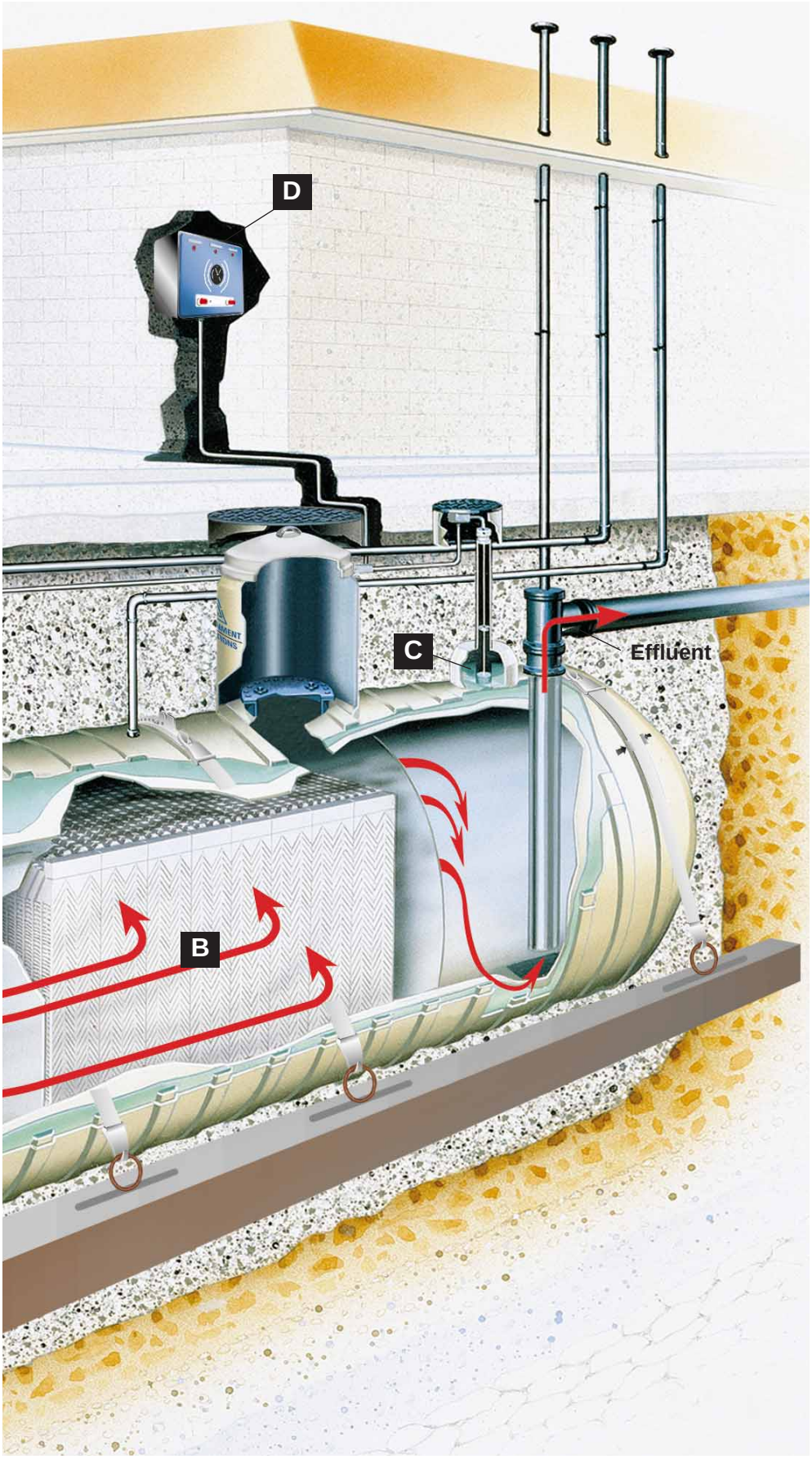
We began our design process using our performance-proven fiberglass underground storage tank. Fiberglass tanks have a reputation for safe, long-term containment of petroleum and related products. Fiberglass tanks will not rust. In over 250,000 tank installations throughout the world, there has not been a single leak due to internal or external corrosion! Our underground tanks are U.L. 1316 listed. To achieve this standard, Containment Solutions fiberglass underground storage tanks have been subjected to sixteen (16) rigorous tests, including structural, performance and compatibility testing.

To our underground storage tank, we add state-of-the-art enhanced oleophilic coalescers in a cross-flow configuration resulting in a technically advanced design!

Containment Solutions' Oil/Water Separators are available in fiberglass single-wall and double-wall design, ranging from 550 gallon to 40,000 gallon capacities.* The double-wall tanks are also available with the exclusive Hydroguard™ Hydrostatic Monitoring System. Also, CSI has a full line of steel aboveground and underground oil/water separators. Contact your CSI representative for additional information.



* Consult your Containment Solutions' Representative for larger sizes.



A. Fiberglass Double-Wall Tank

Rustproof, continuous monitoring, and precision testing capability, with factory installed Hydrostatic monitor and proven performance backed by Containment Solutions.

B. Enhanced Coalescer Oil/Water Separator System

State-of-the-art separating system that provides superior performance, easy to clean coalescing plates and modular construction. Plates can be removed from units for cleaning and/or tank entry. This system can remove free oil to achieve a 10 ppm or 15 ppm effluent quality.**

C. Optional Fiberglass Reservoir

The heart of the double-wall tank Hydrostatic Monitor System. When used with factory installed monitoring fluid, this system can be used as a continuous monitor with precision testing capability.

D. Optional Electronic Monitoring System

Containment Solutions can provide optional electronic equipment that can monitor your double-wall tank and/or the accumulated oil buildup within your tank.

Other Optional Accessories

Containment Solutions can provide additional accessories to complete your underground Oil/Water Separator Tank installation.

Containment Solutions, Inc. Oil/Water Separators are designed to separate free oil and grease and settleable solids from water. The separated oil is retained within the Oil/Water Separator and the clean water is discharged from the Separator. Optional waste oil pump-out systems are available.

Optional Designs Available

- Effluent pump-out systems
- Waste oil pump-out systems

** Conditions differ for every installation. Contact your Containment Solutions' Representative for an evaluation of your particular needs.

Rainwater Runoff & Equipment Washdown

When it comes to your needs for an Oil/ Water Separator Tank, every application can be different. That's why Containment Solutions considers your specific application to ensure that only the right separator will be specified for your job.

Oil/Water Separators are specialty tanks designed to separate oil and grease contaminants from water. After separation, clean water is discharged to a storm sewer, while the separated oil is retained in the tank for proper disposal at a later time.

There are two typical applications for an Oil/Water Separator:

Rainwater Runoff

Environmental concerns are growing because oil drippings and spills from parking lots, driveways, garage floors, oil terminals, or other vehicular traffic surfaces are being washed into our groundwater supplies by rainwater.

For rainwater runoff, the inlet flow conditions may vary considerably based on local weather conditions, site drainage, and how the site is being used (oil concentrations, oil type, spill possibility, etc.).

Equipment Washdown

Water from this source is contaminated with oil and/or grease from trucks, cars, or other dirty equipment. Here also, oil and grease are being washed into our groundwater supplies. In the case of equipment washdown, the input oil level, the flow rate and the use of break detergents may also vary considerably.

Oil/Water Separator Design & Sizing

Since each site's conditions and applications can be quite different, the most environmentally and cost effective approach is to analyze each situation and design the tank accordingly. Each application (rainwater runoff, equipment washdown, major oil spill, etc.) and each site may have different technical considerations and should have an oil/water separator designed accordingly.

The major design parameters needed to choose the correct Containment Solutions Oil/Water Separator for your application are:

- Effluent requirement
- Inlet flow rates
- Specific gravity of product(s) to be separated
- Inlet concentration
- Oil storage capacity requirement
- Oil spill capacity requirement
- Temperature

Use the CSI Design/Sizing Questionnaire (Pub. No. OWS 2009) to assist you in choosing the proper Oil/Water Separator that meets your specific site requirements.

Containment Solutions' technical representatives can analyze the basic information provided by you, the owner, to specify an Oil/Water Separator Tank that meets your specific site requirements.

All Containment Solutions' Oil/Water Separator Tanks are designed and tested in accordance with the following criteria:

- Stokes law
- The API manual on disposal of refinery wastes
- API bulletin no. 1630 first edition
- API bulletin no. 421
- UL-1316
- ASTM D-4021
- EPA Test Methods 413.1 & 413.2
- US Coast Guard 46CFR 162.050

Containment Solutions' aboveground and underground separators have been approved by Metropolitan Dade County, Florida.

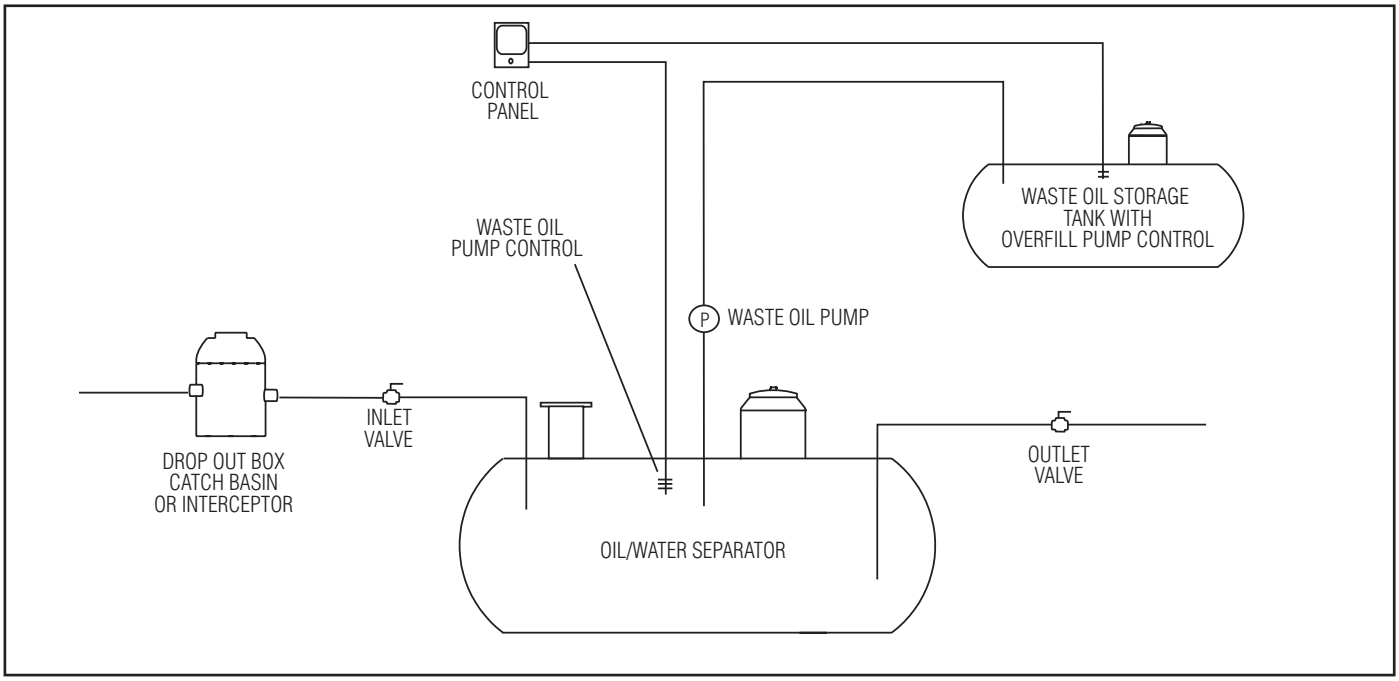
Containment Solutions' Oil/Water Separators Models CSI-10 and CSI-15

To Achieve 10 ppm or 15 ppm Oil Effluent

Models CSI-10 or CSI-15	Nominal Volume Gallons	Nominal Dia (ft)	Single-Wall Tank (SWT) Length	Double-Wall Tank (DWT) Length	Inlet/ Outlet Nozzle Size (in)	Flow Rate (gpm)	Oil Storage Capacity (gal)	Storage & Oil Spill Capacity* (gal)	Single-Wall Tank Weight (lbs)	Double-Wall Tank Weight (lbs)
550	550	4'	9' 8"	9' 9"	4	55	110	440	441	871
1,000	1,000	4'	11' 4"	11' 5"	4	100	200	900	514	1,054
2,000	2,000	6'	13' 8"	13' 9"	5	200	400	1,800	948	2,201
3,000	3,000	6'	16' 0"	16' 1"	6	300	600	2,700	1,046	2,566
4,000	4,000	6'	19' 8"	19' 9"	6	400	800	3,600	1,384	2,984
5,000	5,000	6'	24' 7"	24' 8"	8	500	1,000	4,500	1,705	3,380
6,000	6,000	6'	29' 6"	29' 7"	8	600	1,200	5,400	1,930	3,710
6,000	6,000	8'	19' 5"	19' 6"	8	600	1,200	5,400	2,680	4,575
7,000	7,000	8'	22' 2"	22' 3"	8	700	1,400	6,300	3,025	5,001
8,000	8,000	8'	24' 11"	25' 0"	10	800	1,600	7,200	3,310	5,435
9,000	9,000	8'	27' 8"	27' 9"	10	900	1,800	8,100	3,580	5,801
10,000	10,000	8'	30' 5"	30' 6"	10	1,000	2,000	9,000	3,915	6,300
12,000	12,000	8'	35' 11"	36' 0"	10	1,200	2,400	10,800	4,645	7,300
15,000	15,000	8'	44' 5"	44' 6"	12	1,500	3,000	13,500	5,551	8,870
20,000	20,000	10'	37' 4"	37' 5"	14	2,000	4,000	18,000	6,040	11,000
25,000	25,000	10'	45' 11"	46' 0"	16	2,500	5,000	22,500	7,295	12,920
30,000	30,000	10'	54' 6"	54' 7"	16	3,000	6,000	27,000	8,480	15,180
40,000	40,000	10'	71' 3"	71' 4"	20	4,000	8,000	36,000	11,400	20,030

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

CSI Oil/Water Separators are designed in accordance with Stokes Law, API 1630 and API 421, for the gravity separation of free oils and settleable solids from water, for intermittent and variable flows of oil/water combinations up to 20% oil concentration.



Optional interstitial monitoring for oil/water separator and waste oil storage tank not shown.

CSI also offers UL 2215 listed, performance rated, continuous flow Oil/Water Separators. CSI UL 2215 listed Oil/Water Separators have been tested in accordance with US Coast Guard 46 CFR 162.050. Contact your Containment Solutions' Representative for additional information.

Features

Oil/Water Separators

Each Containment Solutions' Oil/Water Separator tank is built to exacting standards. All are built using the well proven fiberglass tank technology developed by Containment Solutions more than 30 years ago.

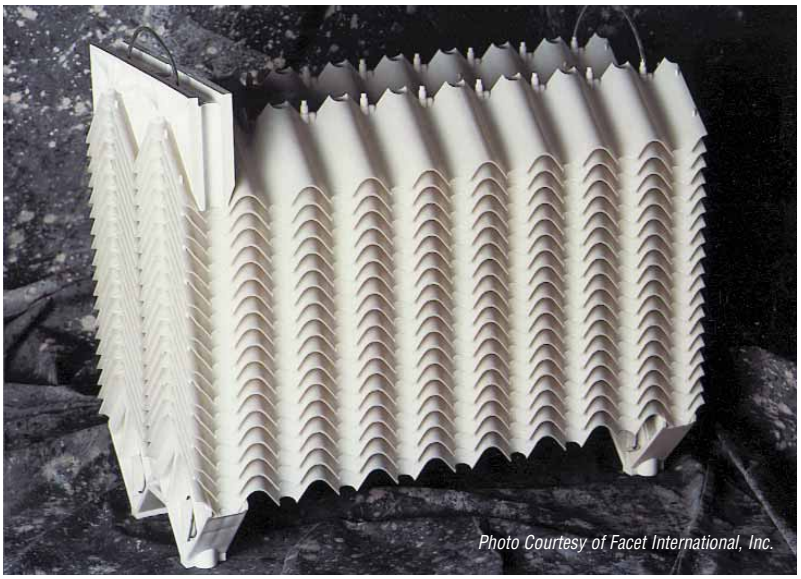


Photo Courtesy of Facet International, Inc.

Oil/Water Separator Features:

- Rustproof construction–All tank walls and internal coalescer components are rustproof.
- Oleophilic coalescer plate packs constructed of polypropylene.
- For ease of maintenance, coalescer plates may be removed for cleaning. However, due to their self-cleaning design, maintenance costs may be reduced.
- Technically advanced coalescer layout. For most sizes, our Oil/Water Separator uses a cross flow design. This design results in a more efficient separating system.

Containment Solutions' Oil/Water Separators Meet or Exceed the Following Performance Claims:

- Removes free floating oils and settleable solids for oil/water mixtures to achieve an effluent quality not to exceed 10 ppm (mg/L) of free hydrocarbons (or 15 ppm if specified).
- Removes free oil droplets required to achieve 10 ppm or 15 ppm effluent quality.
- Includes a 30-year internal and external corrosion warranty.
- Includes a 30-year structural warranty.
- Carries a one-year workmanship and materials warranty on internal separator components and coalescer plates, supports, etc.

In order to meet these performance claims the following restrictions apply:

- Influent must be gravity fed to tank.
- Inlet oil/water mixture temperatures must be between 40°F to 150°F.
- Ambient air temperatures must be between 0°F to 140°F.
- Inlet oil specific gravity range between .68 and .95*.
- Water specific gravity must be equal to or greater than 1.0.
- The tank must be installed underground using Containment Solutions' published installation instructions.
- The tank must be vented at all times.
- The separator must be cleaned out regularly in order to maintain the stated efficiency. Containment Solutions recommends cleaning yearly and inspection after a major event (i.e. large spill, etc.).

Contact your Containment Solutions' Representative for assistance in sizing your Oil/Water Separator. Refer to the Containment Solutions' Design/Sizing Questionnaire.

Standard Fiberglass Oil/Water Separators Intended Use

Standard Fiberglass Oil/Water Separators for typical stormwater runoff, washdown and process applications are intended for the separation of oil/water mixtures containing oils and greases with specific gravities between .68 and .95.* Separators will not separate alcohols, solvents, soapy solutions, chemically emulsified or dissolved hydrocarbons, or volatile organic compounds. Solvents may not be compatible with the tank or coalescer plates and should not be introduced into the tank. Doing so could result in premature tank failure, tank leaks and environmental injury.

The temperature of the liquids entering the separator may not exceed 150°F, or the tank life will be significantly shortened and could cause leaks and environmental injury. Liquid must not be pumped into the tank. Only gravity fed liquid may be introduced into the tank. Pumping liquids into the tank may overpressurize the tank, causing leaks and environmental damage even if vent lines are unrestricted.

Non-emulsified cleaners, such as CSI Cleaner, are recommended for wash applications. Contact your Containment Solutions' Representative for information.

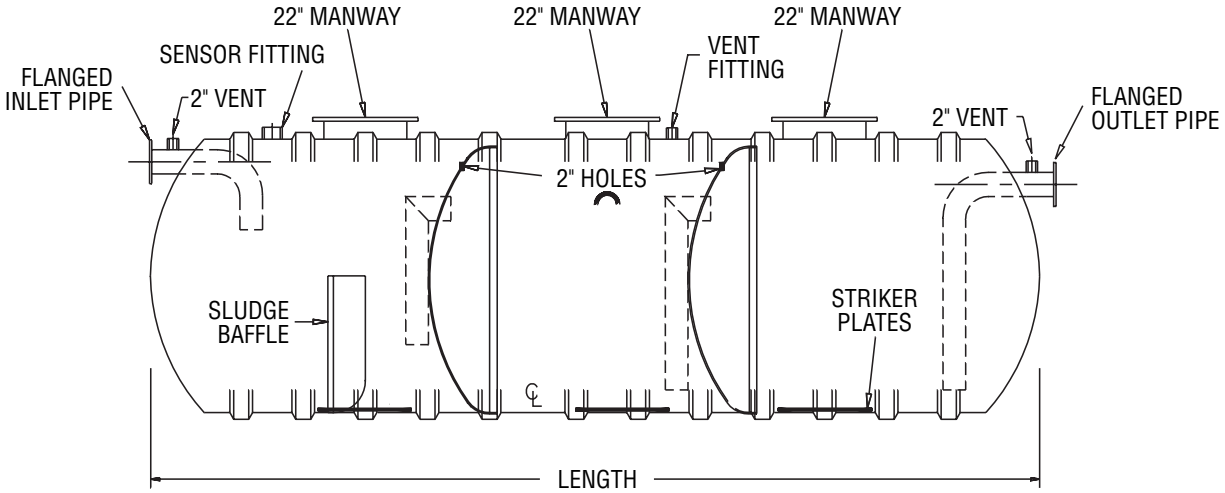
*For higher specific gravities, contact your Containment Solutions' Representative.

Containment Solutions' Interceptors

Containment Solutions, Inc. single, double and triple basin interceptors are constructed of corrosion-resistant fiberglass and manufactured in both single-wall and double-wall models. CSI interceptors are constructed to UL 1316 standards and are warranted for (30) years against external and internal corrosion. CSI interceptors are designed to reduce sand, settleable materials, and free oil and grease from storm water flows, hydrocarbon spills and drain discharges from facilities requiring treatment prior to sewer discharge. CSI interceptors can be used as stand alone units or as the initial stage of a more efficient treatment system utilizing the CSI Oil/Water Separators.

Capacity	Flow Rate (gpm)	Available Basins	Inlet/ Outlet Diameter (in)	Sludge Capacity (Cubic Feet)			Tank Length (ft)	Approx. Single-Wall Weight (lbs)
				Single Basin	Double Basin	Triple Basin		
4ft dia								
550	55	S	4"	33	N/A	N/A	7' 3"	345
1,000	100	S, D	4"	63	30	N/A	11' 1"	470
6ft dia								
2,700	270	S, D	6"	140	70	N/A	13' 10"	890
3,000	300	S, D	6"	180	90	N/A	16' 9"	1,095
4,000	400	S, D, T	6"	222	110	55	19' 8"	1,350
5,000	500	S, D, T	8"	291	145	73	24' 7"	1,625
6,000	600	S, D, T	8"	361	180	90	29' 6"	1,850
8ft dia								
6,000	600	S, D	8"	309	165	N/A	19' 5"	1,870
8,000	800	S, D, T	10"	435	228	126	24' 11"	2,783
10,000	1,000	S, D, T	10"	562	292	166	30' 5"	3,325
12,000	1,200	S, D, T	10"	688	355	207	35' 11"	4,055
15,000	1,500	S, D, T	12"	887	454	266	44' 6"	4,890
10ft dia								
20,000	2,000	S, D, T	14"	1,069	466	352	37' 5"	7,005
25,000	2,500	S, D, T	16"	1,401	634	520	45' 11"	9,000
30,000	3,000	S, D, T	16"	1,737	801	687	54' 6"	9,265
40,000	4,000	S, D, T	20"	2,396	1,131	1,017	71' 3"	10,770

Note: S - Single Basin
D - Double Basin
T - Triple Basin



TRIPLE BASIN INTERCEPTOR SHOWN, DOUBLE AND SINGLE BASIN ALSO AVAILABLE

Warranty

Underground Oil/Water Separators

Containment Solutions, Inc. (CSI) warrants that CSI's new manufactured fiberglass underground oil/water separators (and secondary containment collars, if attached) will meet CSI's published specifications and will be free from material defects in materials and workmanship for a period of one (1) year following date of original delivery by CSI to purchaser. CSI further warrants that if said tank(s) (and collar(s)) are installed, operated and maintained in accordance with our instructions and applicable state and federal regulatory requirements, said tank(s) (and collar(s)):

I. Will not leak for a period of thirty (30) years from date of original purchase due to external corrosion; and

II. Will not leak for a period of thirty (30) years from date of original purchase due to internal corrosion provided the tank is used solely for gravity separation of free oils and settleable solids from stormwater runoff, washdown, hydrocarbon spill and process applications. Applications must be in full compliance with CSI publication OWS 2001. The coverage of this warranty is extended only to those tank usage conditions supplied to Containment Solutions, Inc. at the time of the sale.

III. Will not leak for a period of thirty (30) years from date of original purchase due to structural failure, which shall be defined as spontaneous breaking or collapse, provided the installation is in the United States using proper backfill and is otherwise installed in accordance with our instructions, applicable laws and regulations and (i) installing contractor completes a Containment Solutions, Inc. installation checklist; (ii) the installing contractor has been educated in proper fiberglass tank installation through the use of Containment Solutions, Inc. educational materials; and (iii) the tank is used as stated above. The owner must retain a Containment Solutions' installation check list properly completed by the contractor and the owner's representative. If the tank is exhumed and moved, it must be inspected, repaired (as necessary), and recertified by Containment Solutions, Inc. in order to continue the structural warranty for the balance of 30 years.

CSI's liability under this warranty shall be limited to, at our option, (i) repair of the defective tank (and collar), (ii) delivery of a replacement tank (and collar) to the point of original delivery, or (iii) refund of the original purchase price. A claimant must give CSI the opportunity to observe and inspect the separator prior to removal from the ground or the claim will be barred.

CSI shall not be liable for any labor, other installation costs, indirect or consequential damages or other damages in connection with such tank(s) (and collar(s)) including, without limitation, costs, expenses or liabilities associated with environmental contamination, fires, explosions or any other consequences allegedly attributable to a breach of the warranty or damages under deceptive trade practices or similar consumer protection acts. THE FOREGOING CONSTITUTES OUR EXCLUSIVE OBLIGATION AND WE MAKE NO EXPRESSED OR IMPLIED WARRANTIES, OR ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WHATSOEVER, EXCEPT AS STATED ABOVE.

Refer to published Containment Solutions' Tank Installation Manual (Pub. No. INST 6001), Oil/Water Separator Installation and Start-Up Instructions (Pub. No. OWS 2013), and Oil/Water Separator Operations and Maintenance Manual (Pub. No. OWS 2012).

Accessory Warranty

All single-wall and double-wall tank accessories and monitoring equipment are warranted to be free from material defects in workmanship and materials for a period of one (1) year following date of original delivery by Containment Solutions.

Our liability under this warranty shall be limited to, at our option, (i) repair of the defective unit, (ii) delivery of a replacement unit to the point of original delivery, or (iii) refund of the original purchase price, and we shall not be liable for any labor, other installation costs, indirect or consequential damages or other damages in connections with such tanks.

THE FOREGOING CONSTITUTES OUR EXCLUSIVE OBLIGATION AND WE MAKE NO EXPRESSED OR IMPLIED WARRANTIES, OR ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE WHATSOEVER, EXCEPT AS STATED ABOVE.

Failure to install the tank accessories or monitoring equipment in accordance with the Containment Solutions' installation instructions will void the warranty.

Refer to published Containment Solutions' Installation Manual and OWS Installation and Start-Up Instructions Pub. No. OWS 2013.

Specifications

Standard Specifications
Double-Wall Oil/Water Separators

Double-Wall Oil/Water Separators can include the factory installed Hydrostatic Monitoring System. This system requires that the space between two walls of the double-wall tank be filled with a monitoring fluid (brine) at our factory. Once activated, the system can detect a leak in both walls of your tank. The leak detection performance of the monitoring system has been tested and verified by a qualified independent third party consultant to detect leaks as small as 0.10 gallons per hour from either wall under all groundwater conditions.

This and other monitor systems can be used with your double-wall tank.

Monitoring Capabilities

The following restrictions apply for the various types of double-wall tank monitors:

A. Hydrostatic Tank Monitor–tank burial depth must not exceed 7' from tank top to finish grade. For burial depths greater than 7' please consult your Containment Solutions' Representative. The monitoring cavity must be vented to the atmosphere. The optional reservoir sensor, supplied by Containment Solutions, is designed to automatically vent the monitoring cavity.

B. Liquid sensors–when cavity monitors which detect the presence of a liquid are used, the cavity between the inner and outer tank may be either vented to the atmosphere or sealed.

C. Vacuum monitoring–when interstitial vacuum monitoring is used, the maximum vacuum is 10.2"Hg.

D. Positive air pressure monitoring–when positive air pressure interstitial monitoring is used, the maximum air pressure is 3 psi.

Standard Tank Notes

1. Standard pipe fittings to the primary tank are 4" NPT half-couplings. All tanks include at least one 29" oval or one optional 30" round manway and four fittings to the primary tank.
2. Tank bottom deflector plates are standard under every manway and fitting, except fittings and manways located over coalescer plates.
3. For tanks larger than 4' diameter, if the double-wall tank includes the factory installed Hydrostatic Monitoring System, then a fiberglass reservoir will be installed on top of the tank. The reservoir is used for leak monitoring. The reservoir includes one 4" NPT half-coupling fitting (6" NPT fittings for 10' diameter tanks) mounted on the top of the reservoir allowing access to the cavity between the inner and outer tank walls.

Specifications for Oil/Water Separators (Single-Wall and Double-Wall) Models CSI-10, CSI-15.

Short Form:

The contractor shall provide fiberglass underground Oil/Water Separators, 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 with pea gravel or crushed stone or approved alternate backfill material, according to the current installation instructions (Containment Solutions' Pub. No. OWS 2013 provided with the tank).

Long Form:

Guide Specification: Containment Solutions' Fiberglass Underground Oil/Water Separator.

Part I General

1.01 Related Work Specified In Other Sections

A. Cast-in-place concrete: Section 03300

B. Anchor Bends: Section 05501

C. Plastic Pipe: Section 15064

D. Other related work–such as excavation, concrete or steel piping

1.02 Quality Assurance

A. Acceptable manufacturer–Containment Solutions, Inc., Conroe, Texas.

B. Governing Standards (UL 1316):

1. The API manual on disposal of refinery wastes.
2. API bulletin no. 1630 first edition.
3. API bulletin no. 421.
4. Tank manufactured per ASTM D-4021.
5. Tank must meet National Fire Protection Association (NFPA 30) Flammable and Combustible Liquids Code.
6. EPA Test Methods 413.1 & 413.2

1.03 Submittals

A. Shop Drawings: Contractor shall submit _____ copies of shop drawings for each separator. Drawings shall include all critical dimensions and locations of all fittings and accessories. Material of construction shall be in accordance with section 1.02 of this specification.

B. Catalog Data: Contractor shall submit _____ copies of manufacturer's literature.

C. Installation Instructions: Contractor shall submit _____ copies of manufacturer's installation instructions.

D. Operation and Maintenance Manual: Contractor shall submit _____ copies of manufacturer's operation and maintenance manuals.

Part II Products

2.01 Single-Wall or Double-Wall Fiberglass Oil/Water Separators

A. Loading conditions–Tank shall meet the following design criteria:

1. External hydrostatic pressure:

   Buried in ground with 7' of overburden over the top of the tank, the hole fully flooded and safety factor of 5:1 against general buckling. (Contact CSI for deeper burial depths.)
2. Surface loads: When installed according to manufacturer's installation instructions, tanks will withstand surface H-20 axle loads (32,000 lbs./axle).
3. Internal load: Primary and secondary tanks shall withstand 5 psi air pressure test with 5:1 safety factor.
4. Tanks shall be designed to support accessory equipment such as manway extensions, drop tubes, etc. when installed according to manufacturer's recommendations and limitations.

B. Product Storage

1. All primary tanks must be vented. Tanks are designed for operation at atmospheric pressure only.
2. Tanks shall be capable of storing liquids with specific gravities up to 1.1.
3. Tank shall be capable of storing grease and oils at temperatures not to exceed 150°F.
4. Tanks shall be inert to petroleum products.
5. Coalescer plates and associated internal mounting hardware shall be rustproof.
6. Tank laminate shall consist of inert material with less than 1% moisture content.
7. Coalescer plates shall be horizontal, parallel plate design.
8. Coalescers shall be constructed of oleophilic material.

C. Capability and Dimensional Requirements (refer to Containment Solutions' literature on gallonage).

1. Nominal volume of the separator shall be _____ gallons.
2. Intermittent flow rate shall be 0 to _____ GPM.
3. Total spill capacity shall be _____ gallons.
4. Inlet oil specific gravity shall range between _____ and _____.
5. Effluent discharge quality shall be _____ ppm free oil and grease.
6. Nominal outside diameter of the separator shall be _____ feet.
7. Nominal overall length of the tank shall be _____ feet.

D. Monitoring Capabilities (Double-Wall Tanks Only)

1. Tanks shall have a space between the primary and secondary shell walls to allow for the free flow and containment of all leaked product from the primary tank.

2. The following continuous monitoring conditions shall be compatible with the cavity between the inner and outer tanks:
   - Vented to atmosphere
   - Vacuum–10.2" Hg maximum
   - Positive air pressure (3 psi maximum)
   - Hydrostatic pressure–7 foot maximum groundwater head pressure over tank top.
3. Tanks shall have an integrally mounted reservoir installed on the tank for optional hydrostatic monitoring. The reservoir shall be constructed of fiberglass reinforced plastic materials and warranted for 30 years against failure due to internal/external corrosion and, when properly installed, against structural failure (same as tank warranty).
4. Tanks shall be designed with one 4" fitting that will access the tank bottom between the primary and secondary walls (annular space).
5. The double-wall tank monitor shall be capable of detecting a breach in the inner and/or outer tank under the following installed conditions:
   a. When the inner tank is empty.
   b. When the inner tank is partially or completely full and the groundwater table is below the tank bottom.
   c. When the inner tank is partially or completely full and the tank is partially or completely submerged in groundwater.
6. The leak detection performance of the monitoring system shall be tested and verified by a qualified independent consultant to detect leaks as small as 0.10 gallons per hour from either wall under all groundwater conditions.
7. All monitoring equipment, including FRP reservoirs and electronic control, shall be UL-Listed.
8. If hydrostatically monitored, any solution used in the tank annular space shall have UL approval for compatibility with the tank and be a contrasting color to the tank surface to facilitate visual inspection of the tank for leaks prior to burial.

2.02 Accessories

A. Flanged Nozzles
1. Inlet and outlet nozzles shall be of fiberglass or PVC construction. The nozzles shall have standard 150# ANSI Flange.
2. Nozzles shall be of sufficient size for inlet flow rate.

B. Fittings Threaded–NPT
1. All threaded fittings shall be located in a manway lid or a tank mount and be constructed consistently with the requirements of the UL Label. Fittings to be supplied with threaded cast iron plugs.
2. All standard threaded fittings to the primary tank and monitoring cavity are 4" in diameter. All standard threaded fittings are half-couplings. Reducers are to be used for smaller sizes where specified and provided by contractor.
3. Thread Standards–All threaded fittings shall have machine tolerances in accordance with the ANSI standard for each fitting size.
4. Strength–NPT fittings will withstand a minimum of 150 foot-pounds of torque and 1,000 foot-pounds of bending, both with 2:1 factor of safety.
5. Location–refer to drawings for location.
6. All rigid internal piping shall be terminated at least 4" from the bottom of the tank.

C. Flanged Manways
1. One 29" oval or one 30" round manway will be provided with each separator. 4' and 6' diameter separators greater than 3,000-gallon total capacity will also include one 22" flanged manway. 8' and 10' diameter separators greater than 6,000 gallons will also include one 22" manway.
2. All manways will be furnished complete with UL-Listed gaskets, bolts and covers.
3. Location–see standard tank drawings.
4. Fiberglass containment collar and turbine enclosure shall be provided for primary manway. Manway extensions shall be provided for 22" manways.

D. Secondary Containment Collar–The secondary containment collar shall be constructed of fiberglass reinforced plastic. Collar shall be 42" or 48" in diameter and will be factory-installed in accordance with drawings.

E. Optional Oil/Water Separator Monitor & Electronic Accessories
1. Electronic Control Panels–The 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 and tank interstitial monitor sensors.

   Electrical components rating: Weatherproof (NEMA 4 or 4x)

   All control panels shall include:
   - Alarm lights for each circuit
   - Warning bell
   - Panel housing materials of epoxy coated steel
   - Alarm bell silence switch
   - Containment Solutions’ electronics do not require shielded cable

   Note: All wiring materials are provided by the contractor. Wiring is required from the power source to the control panel and from the control panel to the probe assembly.

   Note: Pump controls are available.
2. Oil/Water Interface Sensors

   Specifications:

   Single or multiple point sensors shall be designed to provide monitoring of the oil/water interface and to provide accessory control. Brass models and stainless steel models are available.
3. Reservoir sensor - is detailed in section H2 of the specification.

F. Optional Anchor Straps – Provide glass fiber-reinforced plastic anchor straps for each tank shown. Number and location of straps shall be as specified by manufacturer. Each strap shall be capable of withstanding the buoyancy load for tank diameter as shown.

4'0	–	4,200 Lbs.
6'0	–	18,000 Lbs.
8'0	–	25,000 Lbs.
10'0	–	25,000 Lbs.

Straps shall be standard as supplied by the tank manufacturer.

G. Tank Lifting Lugs–Provide lifting lug(s) on all tanks. Lifting lug system shall be capable of withstanding weight of tank with a safety factor of 3:1.

H. Optional Hydrostatic Monitor Accessories

1. Brine Antifreeze

   Brine Solution Designation: BAS-30
   Chemical Composition: 30%+ calcium chloride, 1% to 3% potassium chloride, 1% to 2% sodium chloride, balance water
   Visual Appearance: Green in color, odorless fluid
   Specific Gravity @ 60°F: 1.272-1.317
   Factory installed on tanks 30,000 gallon and under. Bulk brine jobsite installed on 35,000 gallon and 40,000 gallon tanks.

2. Reservoir Sensor–The FHRB 810 reservoir sensor is specifically designed for installation in the reservoirs of CSI double-wall tanks. The components of the sensor are compatible with CSI supplied brine solutions. The sensor is also compatible with any other control panel that accepts normally open or closed switches. The sensor provides two alarm points: high brine and low brine. The sensor can be wired to a control panel to provide only a single alarm (not distinguishing between high or low alarms) or it can be wired to report both alarm conditions.

   The FHRB 810 reservoir sensor interfaces with Fluid Electronics control panels. See section 2.02 E1 for additional details.

H. Optional Watertight Turbine Enclosure (Model WTE Series) – The watertight turbine enclosure consists of a fiberglass reinforced plastic (FRP) enclosure body (variable length in 12" increments, 42" or 48" ID's), an FRP reducer (42" x 30" or 48" x 30" ID's) with o-ring groove and o-ring gasket, and a push-on FRP lid with two handles. The reducer opening must be large enough (minimum 28") to allow for the removal of a 22" round or 23" x 29" oval manway lid. The lid OD must be small enough to be removed through a 36" street box. The enclosure body must be capable of joining to the 42" or 48" diameter secondary containment collar with a leaktight adhesive joint. The reducer must be capable of joining to the enclosure body with an external leaktight adhesive joint to allow for field installation of the adhesive without entering the enclosure.

With the lid installed, the assembly must provide a watertight seal with water up to 12" over the lid. The lid includes a non-skid exterior surface and must be able to support a person standing on the lid without damage to the lid. One of the lid handles is to be offset to aid in the removal of the lid and the other is centered on the lid.

3.01, 3.02 Installation and Testing

Tanks shall be tested and installed according to the current installation instructions provided with the tank (refer to Containment Solutions' latest version of Pub. INST 6001 and OWS 2013).

Specifications for Containment Solutions' Interceptors (Single-Wall and Double-Wall)

Short Form:

Provide and install _____ Containment Solutions, Inc. (single basin ((or)), double basin ((or)), triple basin) interceptor. Interceptor shall be (single-wall ((or)) double-wall Type II) constructed in accordance with UL 1316. Interceptor shall be _____ diameter and _____ long. Manufacturer shall provide written (30) year external and internal corrosion warranty.

CONTAINMENT SOLUTIONS MANUFACTURES:

Oil/Water Separators and Interceptors

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