Highland Tank Oil Water Separator Sizing

Outdoor Applications: Storm Water Runoff

1. **Determine Oil and Grease Discharge Requirements:** Highland Tank Model HT Oil Water Separators are designed for 15 ppm discharge of oil and grease, Model HTC Oil Water Separators are designed for 10 ppm discharge of oil and grease. Check state and local regulations covering the discharge of oily wastewater from the Petroleum Marketing Terminal or Vehicle Maintenance Facility and choose the appropriate model.

2. **Determine Design Flow:** Contaminated flows from a Petroleum Marketing Terminal or Vehicle Maintenance Facility generate from two primary sources, intermittent flows from hose down normal operations and storm water runoff. As storm water runoff flows usually greatly exceed all other flows, the design flow for an oil water separator should be based on the rates projected for treatment of contaminated storm water runoff.

3. **Isolation and Measurement of Contaminated Areas:** The initial step for computing a design flow is to define the areas where the contaminated flow originates. A map and description of the facility will indicate the areas where oily water is being generated. These areas are contaminated by accidental spills of oils, gasoline, greases, and other products onto the ground. Determine the area from which oily storm water runoff can be expected, in square foot units, either from actual measurements or drawings.

   Note: A separate drainage system to serve contaminated areas should be considered. If permitted, water run-off from essentially oil-free areas is routed around the separator, otherwise the separator requirement becomes too large. Storm water from building rooftops and other impervious surfaces not likely to be contaminated by oil should be discharged downstream of the separator, as long as other stormwater drainage requirements are met.

4. **Calculation of Rainfall:** Determine from the rainfall chart (see reverse) the amount of rainfall, in inches, expected in a one-hour period every ten years. Note: The amount of rainfall may be specified by the regulatory agency.

5. **Calculation of the Treatment Rate (Q):** The calculation of the treatment rate (in Gallons per Minute) for storm water runoff is as follows:

   $Q\ (GPM) = Area\ (Ft^2) \times Rainfall\ (In/Hr/Ft^2) \times 0.0104\ (GPM/In/Hr)$

6. **Locate the Proper Size Oil Water Separator:** Choose appropriate size oil water separator from a Highland Tank Product Guide.

7. **Spill Containment:** Highland Tank Oil Water Separator's are designed with oil storage capacities defined below. Check that the Separator sized for the facility has the capacity to adequately intercept and collect the largest projected spill at the facility. If not, increase the volume of the separator accordingly.

   Definitions:

   Maintenance Oil Capacity (MOC): The MOC of an Oil Water Separator is 20% of the total vessel volume.

   Integral Oil Capacity (IOC): The IOC of an Oil Water Separator is 50% of the total vessel volume.

   Emergency Spill Capacity (ESC): The ESC of an Oil Water Separator is 80% of the total vessel volume.

   Design Consideration:
   Largest Single Compartment (LSC): The LSC of a delivery transport vehicle varies by manufacturer of transport vehicle. One transport trailer may have multiple compartments which make up a complete trailer volume. The LSC is the largest of these compartments**.**

Indoor Applications: Service Bay Drainage

When sizing for indoor applications, the oil water separator shall be installed in accordance with the National Standard Plumbing Code and include a sand interceptor upstream to the OWS.

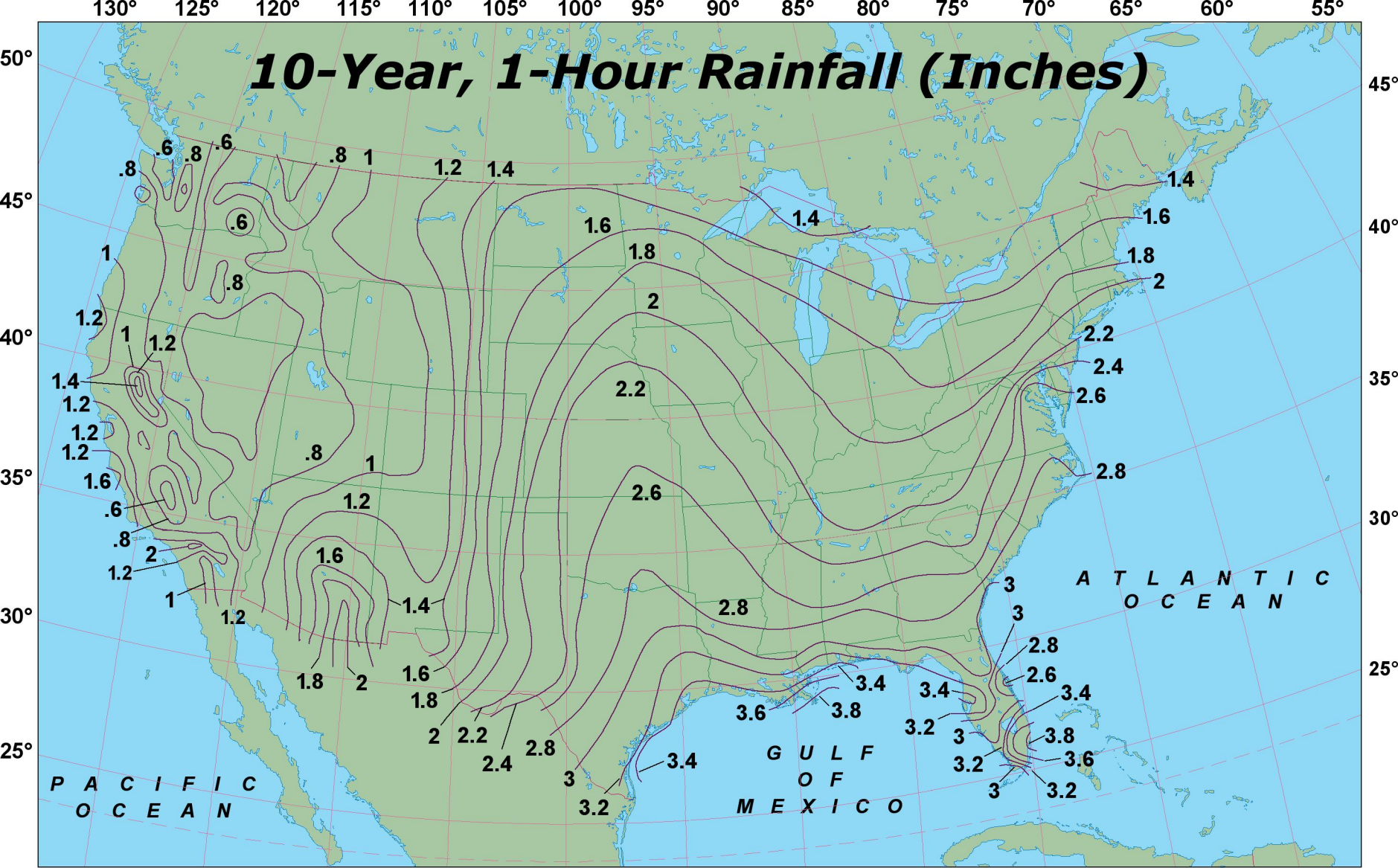
Where motor vehicles are serviced and stored, the oil water separator shall be sized with a volume of one cubic foot for every 100 square feet of indoor surface area to be drained. The oil water separator shall have a minimum volume of 550 gallons.

Calculation of the Treatment Rate (Q): The calculation of the treatment rate (in Gallons per Minute) is as follows:

$Q\ (GPM) = Area\ (Ft^2) \times 0.00748\ (GPM/Ft^2)$

(Follow Steps 6 and 7 Above)

East Coast Associates, Inc. • 204 Eagle Rock Ave • Roseland • NJ • 07068 • Phone: 973-228-3448 • Fax: 973-228-5747


10-Year, 1-Hour Rainfall (Inches)
130° 125° 120° 115° 110° 105° 100° 95° 90° 85° 80° 75° 70° 65° 60° 55°
50° 45° 40° 35° 30° 25°
.6 .8 .6 .8 1 1.2 1.4
.8 .6 .8 1 1.4
1.6 1.8 2 2.2 2.4 2.6 2.8
1 1.2 1.4 1.6 1.8 2 2.2 2.4 2.8 3 3.2 3.4 3.6 3.8
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