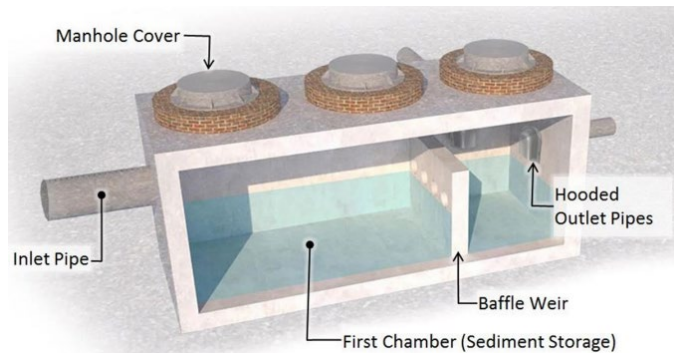


Oil Grit Separator



Source: University of Illinois at Urbana-Champaign and UNH Stormwater Center (2017), <https://railtec.illinois.edu/wp/wp-content/uploads/pdf-archive/14.3.pdf>

Description

Oil grit separators are underground, multi-chambered systems designed to remove coarse sediment, debris, and floatables including trash and oil. Oil grit separators are typically designed as off-line systems for pretreatment of runoff from small impervious areas and bypass of larger flows. Due to their limited storage capacity and volume, these systems have only limited water quality treatment and peak flow attenuation capabilities.

Oil grit separators typically consist of multiple baffled chambers (Figure 13-4) and rely on gravity and the physical characteristics of oil and sediments to achieve pollutant removal. In a typical three-

chamber system, the first chamber is a sedimentation chamber where floatable debris is trapped and gravity settling of sediments occurs, the second chamber is designed primarily for oil separation, and the third chamber provides additional settling prior to discharging to the storm drain system or downstream treatment practice. Many design modifications exist to enhance system performance including the addition of orifices, inverted elbow pipes, and diffusion structures. A two chambered system, as shown in Figure 13-5, can be used to maximize sediment storage when the outlet pipes, in the second chamber, are fitted with hoods.

Single-chamber wastewater oil/water separators should not be used for stormwater applications because the single-chamber design does not provide sufficient protection against re-suspension of sediment during runoff events.

Proprietary separators and similar devices can be used as pretreatment. These are addressed in the [Proprietary Pretreatment Device](#) section of this Manual, as well as in [Chapter 11 - Proprietary Stormwater BMPs](#).

Stormwater BMP Type

Pretreatment BMP	■
Infiltration BMP	□
Filtering BMP	□
Stormwater Pond BMP	□
Stormwater Wetland BMP	□
Water Quality Conveyance BMP	□
Stormwater Reuse BMP	□
Proprietary BMP	□
Other BMPs and Accessories	□

Stormwater Management Suitability

Retention	□
Treatment	□
Pretreatment	■
Peak Runoff Attenuation	□

Pollutant Removal

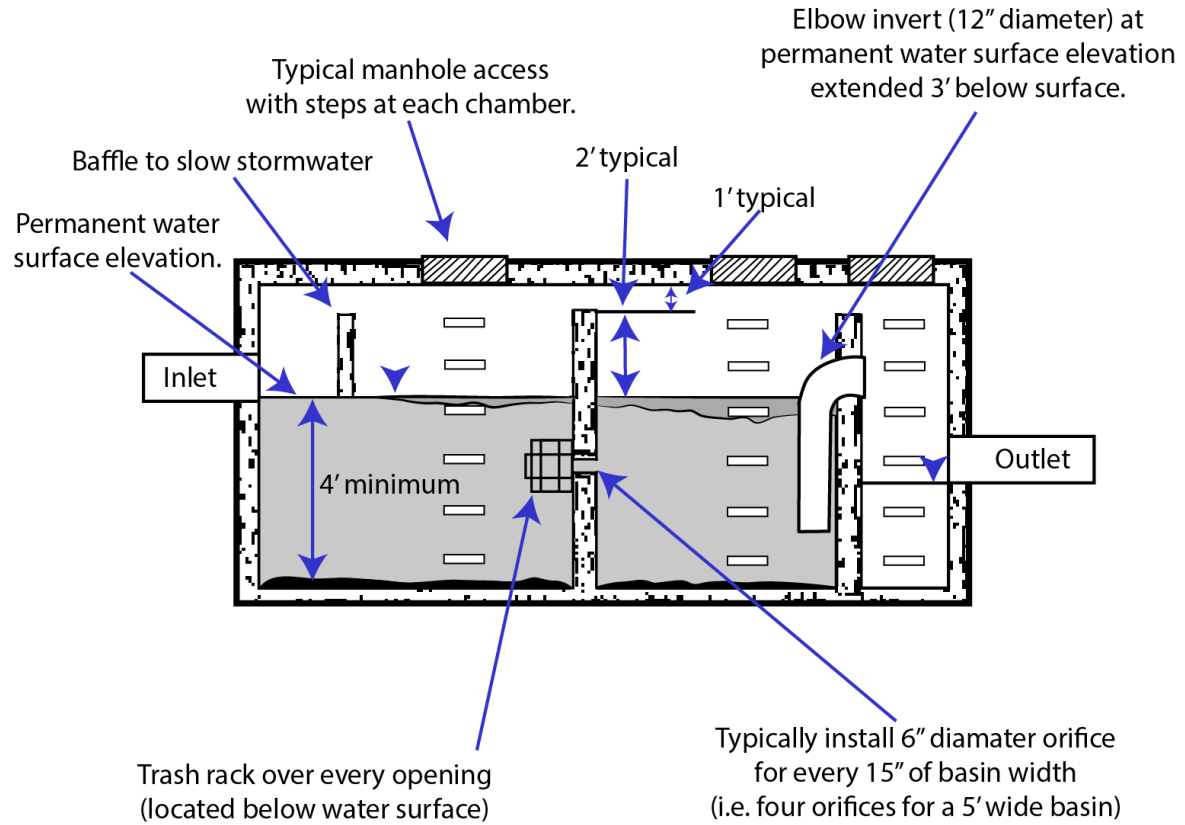
Sediment*	High
Phosphorus	Low
Nitrogen	Low
Bacteria	Low

*Includes sediment-bound pollutants and floatables

Implementation

Capital Cost	Moderate
Maintenance Burden	Moderate to High
Land Requirement	Low to Moderate

Figure 13-5. Typical Two-Chamber Oil Grit Separator



Siting Considerations

- Contributing drainage area to an oil grit separator generally should not exceed 1 acre of impervious cover.
- Locate where:
 - Land use requirements prohibit use of other pretreatment approaches.
 - Underground features are necessary due to site conditions.
 - Can accept runoff from watersheds with high trash, debris, oil and grease and other floatable loads.
- In areas with high groundwater, buoyancy and anchoring requirements must be considered.
- Siting limitations include:
 - Depth of bedrock
 - Presence of utilities
 - Unstable subsurface conditions that limit depth of excavation.

Design Recommendations

- Separators should only be used in an off-line configuration to treat the Water Quality Flow (peak flow associated with the Water Quality Volume). Design the device to bypass storms greater than the WQF.
- Upstream diversion structures can be used to divert higher flows around the separator. On-line units receive higher flows that cause increased turbulence and resuspension of settled material.
- Oil grit separator tanks can also be designed as flow diversion structures (see [Inlet and Outlet Controls](#) section of Chapter 13).
- Make the permanent pool at least 4 feet deep relative to the outlet invert.
- The separator should be fitted with frame and cover to facilitate maintenance access to each chamber.
- The separator should be designed with enough internal vault space to allow access for a vacuum truck suction nozzle without damaging hoods or access ladder steps.

Maintenance Needs

- Oil grit separators should be accessible for maintenance and/or emergency removal of oil or chemical spills.

- Inspect oil grit separators a minimum of 2 times per year – in late Spring after snowmelt and in late Fall after leaf fall and before the first snowfall. Establish a cleaning frequency such that the oil grit separator storage capacity is reduced by no more than 50%.
- Typical maintenance includes removal of accumulated oil and grease, floatables, and sediment using a vacuum truck or other catch basin cleaning equipment.
- The Operation and Maintenance (O&M) Plan should indicate the maximum allowable level of oil, sediment, and debris accumulation. These levels should be monitored during inspections to ensure that removal of these materials is performed when necessary.
- Dispose of material removed from the device, in accordance with CT DEEP guidelines (see [Chapter 6 - Source Control Practices and Pollution Prevention](#)) and other state and federal requirements, by a properly licensed contractor.