

PC-9 SURFACE SAND FILTER

Reference: Denver Urban Drainage and Flood Control District, Volume 3 Criteria Manual.



BMP Objectives

- Perimeter Control
- Slope Protection
- Borrow and Stockpiles
- Drainage Areas
- Sediment Trapping
- Stream Protection
- Temporary Stabilizing
- Permanent Stabilizing

Definition and Purpose

Surface sand filters are used to capture and treat a volume of stormwater runoff. This BMP is an excavated basin underlain by a sand filter bed with an underdrain system. Runoff collects in the basin and gradually infiltrates into the sand bed. The underdrain then dewater the sand bed and flows are conveyed to a nearby swale or storm sewer. An outfall is used to drain higher volumes of flow.

Appropriate Applications

- Can be used to enhance stormwater quality and reduce peak discharges.
- Is subject to clogging if moderate to high levels of silts and clays flow into facility and should not be used while construction is occurring in the upstream catchment. Facility is most effective if used with a pre-treatment basin to filter out finer materials.
- Is most effective in treating runoff from small storms or early stages of larger storms. Upstream grass channels or grass filter strips can also be used to help protect the integrity of the basin.
- Generally suited to tributary, on-site drainages and most development sites where sediment loads are low and there is no base flow.
- Can also be used in areas of thin soil and high evaporation rates.
- Can treat the largest drainage area of all filtering systems. Upper limit of drainage area is 50 acres, although most applications are for areas between 0.5 and 10 acres.
- Is useful in watersheds where groundwater quality is a concern or where low-permeability soils prevent infiltration.
- Should not be located close to building foundations or in areas where expansive soils are a concern.

Design Parameters

- Generally, basins are designed to infiltrate retained runoff within a 40-hour period.
- A dense vegetative cover needs to be established over all contributing pervious areas before runoff can be conveyed to the filter.
- Screens/grated inlets should be considered in design to keep debris out of filter chambers,
- Maximum design volume depth is generally 3 feet.
- Filter bed typically has a minimum depth of 18 inches.

Maintenance and Inspection

- Conduct inspections as required by the NPDES permit or contract specifications during construction.
- Periodic inspection and maintenance will be required based on post-construction site conditions.
- Make any repairs necessary to ensure the measure is operating properly.
- Regular maintenance is necessary to remove surface sediment, trash, debris, and leaf litter.