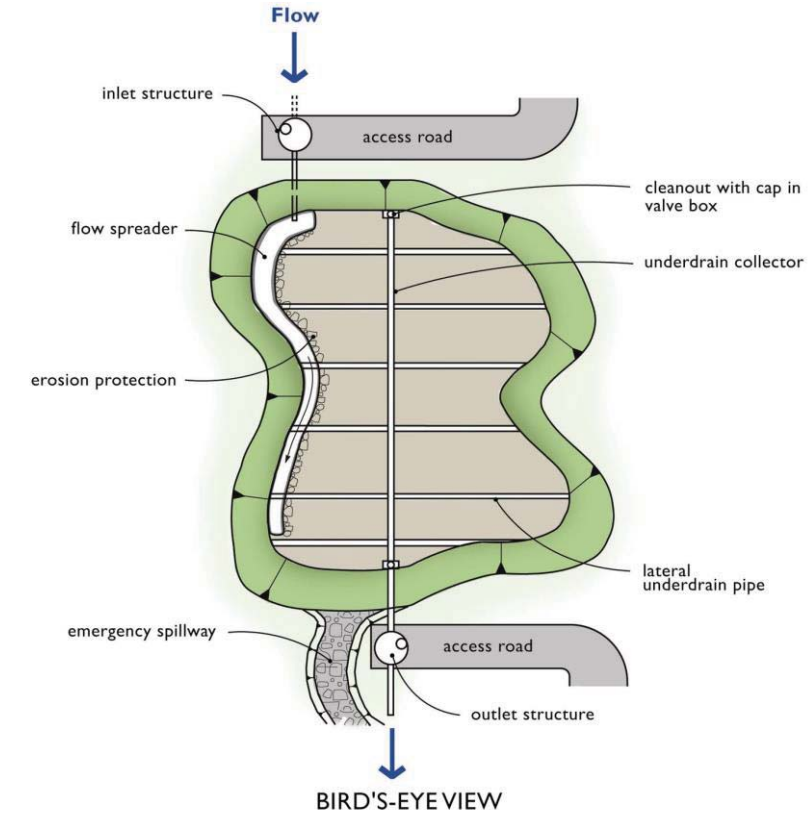
3.13 Sand Filters (Above Ground/Open)

Sand filters function by filtering stormwater runoff through a sand bed typically 18 inches in depth. The treated runoff is collected in the underdrain system and routed to a detention/retention facility or a downstream conveyance system. A typical sand filtration system consists of, a pretreatment system for removing larger sediment and debris from the runoff, a flow spreader, a sand bed, and an underdrain piping. The sand filter bed typically includes a woven (geotextile) fabric between the sand bed and the underdrain system.

Open, above-ground sand filters have a physical appearance similar to a detention pond with the main difference being the sand lined bottom.



Sand Filters (above ground/open) Checklist

		Date						
Frequency	Drainage System Feature	✓	✓	✓	✓	Problem	Conditions to Check For	Conditions That Should Exist
M	Above Ground (open sand filter)					Sediment Accumulation on top layer	Sediment depth exceeds 1/2-inch.	No sediment deposit on grass layer of sand filter that would impede permeability of the filter section.
M	Above Ground (open sand filter)					Trash and Debris Accumulations	Trash and debris accumulated on sand filter bed.	Trash and debris removed from sand filter bed.
M	Above Ground (open sand filter)					Sediment/ Debris in Clean-Outs	When the clean-outs become full or partially plugged with sediment and/or debris.	Sediment removed from clean-outs.
M	Above Ground (open sand filter)					Sand Filter Media	Drawdown of water through the sand filter media takes longer than 24-hours, and/or flow through the overflow pipes occurs frequently.	Top several inches of sand are scraped. May require replacement of entire sand filter depth depending on extent of plugging (a sieve analysis is helpful to determine if the lower sand has too high a proportion of fine material).
M	Above Ground (open sand filter)					Prolonged Flows	Sand is saturated for prolonged periods of time (several weeks) and does not dry out between storms due to continuous base flow or prolonged flows from detention facilities.	Low, continuous flows are limited to a small portion of the facility by using a low wooden divider or slightly depressed sand surface.
M	Above Ground (open sand filter)					Short Circuiting	When flows become concentrated over one section of the sand filter rather than dispersed.	Flow and percolation of water through sand filter is uniform and dispersed across the entire filter area.
M	Above Ground (open sand filter)					Erosion Damage to Slopes	Erosion over 2-inches deep where cause of damage is prevalent or potential for continued erosion is evident.	Slopes stabilized using proper erosion control measures.
A	Above Ground (open sand filter)					Rock Pad Missing or Out of Place	Soil beneath the rock is visible.	Rock pad replaced or rebuilt to design specifications.

Sand Filters (above ground/open) Checklist (Continued)

		Date						
Frequency	Drainage System Feature	✓	✓	✓	✓	Problem	Conditions to Check For	Conditions That Should Exist
M	Above Ground (open sand filter)					Flow Spreader	Flow spreader uneven or clogged so that flows are not uniformly distributed across sand filter.	Spreader leveled and cleaned so that flows are spread evenly over sand filter.
M	Above Ground (open sand filter)					Damaged Pipes	Any part of the piping that is crushed or deformed more than 20% or any other failure to the piping.	Pipe repaired or replaced.

If you are unsure whether a problem exists, please contact a Professional Engineer.

Comments:

Key:
(M) Monthly from November through April.
(A) Once in late summer (preferable September)
(S) After any major storm (use 1-inch in 24 hours as a guideline).