**Potential MDC for Sand Filters**

**November 17, 2014**

Blue font = from Bioretention MDC

1. SHWT SEPARATION. The SHWT shall be at least two feet below the bottom of the sand filter for open-bottom designs and one foot separation is required for closed-bottom designs. Exceptions to the one foot SHWT separation may be made if thesand filter does not drain the water table and it does not float.
2. EXCESS VOLUME/FLOW ATTENTUATION. Volume in excess of the treatment volume shall be bypassed. OR borrow from bioretention MDC: “Bioretention cells may store peak attenuation volume at a depth of up to 24 inches above the media surface. The peak attenuation outlet shall be a maximum of 18 inches above the media surface.
3. MAXIMUM DRAINAGE AREA SIZE. The maximum contributing drainage area is five acres. One acre or less is recommended.
4. TWO CHAMBER SYSTEM. The sand filter shall include a sedimentation chamber and a sand chamber.
5. MAXIMUM PONDING DEPTH. The maximum ponding depth for 75% of the treatment volume shall be six feet. The ponding depth is typically measured from the top of the overflow weir that separates the sediment chamber from the sand chamber.
6. DRAINAGE TIME. The sand filter must completely drain within 40 hours.
7. SEDIMENTATION CHAMBER. The sedimentation chamber shall contain ponded water.
8. SEDIMENT CHAMBER SIZING. The size of the sediment chamber shall be:

 treatment volume/(15 feet)

1. MINIMUM WIDTH OF SEDIMENTATION CHAMBER. The minimum width (parallel to flow) of the sedimentation chamber shall be 1.5 feet.
2. FLOW DISTRIBUTION. Incoming stormwater shall be evenly distributed over the surface of the sand chamber.
3. SAND MEDIA SPECIFICATION. Sand media shall be clean, washed, course masonry sand such as ASTM C33. The phosphorus index (P-index) for the media shall be between 10 and 50 if the receiving water is class B, C, SB or SC with no supplementary classification. Otherwise, the P-index shall be between 10 and 30.
4. MEDIA DEPTH. The filter bed shall have a minimum depth of 18 inches, with a minimum depth of sand above the drainage pipe of 12 inches.
5. SAND CHAMBER SIZING. The size of the sand chamber shall be:

 (treatment volume) \* (media depth) .

 140 feet \* (maximum ponding depth + media depth)

1. MAINTENANCE OF MEDIA. The sand filter shall be maintained in a manner that results in a drawdown of at least one inch per hour at the planting surface.
2. UNDERDRAIN. An underdrain with internal water storage shall be installed unless it can be demonstrated that the in-situ soil infiltration rate is two inches per hour or greater immediately prior to the initial placement of the media. The internal water storage zone shall extend to a minimum of 18” below the planting surface.
3. CLEAN-OUT PIPES. At least one clean-out pipe shall be provided on each line. Clean out pipes shall be capped.