

## Carroll County Supplemental Materials Specifications for Bio-Swale, Bioretention, Micro-Bioretention & Rain Gardens

Material	Specification	Size	Notes
<b>Plantings</b>	See Landscape Plan	N/A	Plantings are site specific and per approved landscape plan
<b>Seed Mix</b>	Filter Bed Mix – Use Wet Meadow Mix per MD Standards and Specifications §707. See Table 3 (1 lb. minimum/micro-bioretention)	N/A	Used with straw mulch in place of shredded hardwood mulch Incorporate seed evenly in top $\frac{1}{2}$ " of filter media
<b>Mulch</b>	Shredded Hardwood	N/A	Aged 6 months, minimum. 3-inch depth over facility bottom.
<b>Straw Mulch</b>	MD Standards and Specifications §920.04.01. (200 lb. minimum/micro-bioretention)	N/A	1-inch Straw mulch over seed bed (facility bottom)
<b>Geotextile</b>	Class "C" – Apparent opening size (ASTM-D-4751), Grab Tensile Strength (ASTM-D-4632), Puncture Resistance (ASTM-D-4833)	N/A	Sides only Not on bottom unless specified on the plans
<b>Underdrain and Reservoir Gravel</b>	AASHTO M-43 No. 8 Stone	$\frac{3}{8}$ " – $\frac{1}{8}$ "	Stone must be clean and washed
<b>Underdrain and Observation Well Piping</b>	Slotted PVC or Slotted HDPE Type "SP" Pipes Solid: Scheduled 40 PVC or HDPE Type "S"	See Plan	Refer to the Carroll County SWM Supplement Pg. 87 All pipes must be double walled (smooth core) and slotted (no circular holes)
<b>Sand</b>	ASTM-C-33 (3 parts to 6 within Filter Media)	0.02" – 0.04"	Sand substitutions such as Diabase and Graystone #10 are not acceptable. No calcium carbonate or dolomitic sand substitutions are acceptable. No "rock-dust" can be used for sand. Manufactured sand from approved sources may be used for filters. Manufactured sand may not be used in dams.
<b>Soil</b>	Engineer approved loam with 20% or less clay. (1 part to 6 within Filter Media)	N/A	
<b>Wood Chips</b>	Untreated "Green" (2 parts to 6 within Filter Media)	N/A	Untreated "green" wood chips
<b>Filter/Planting Media</b>	Comprised of 3 parts sand, 2 parts wood chips, 1 part soil	N/A	See individual material specifications
<b>Embankments &amp; Trench Backfill (non-378)</b>	Soils used for embankments and trench backfill shall be uniform and in accordance with MD 378 Code, except that fill material shall conform to Unified Soil Classification, GC, SC, SM, MH, ML, CH, or CL and be compacted to a density of not less than 95% of maximum dry density. Woody vegetation is prohibited on embankments.	N/A	See Earth Fill and Structure Backfill, Carroll County Construction Specifications Carroll County SWM Supplement, Page 130
<b>Principal Spillway Pipe (non-378)</b>	Shall be in accordance with MD 378 Code, except that all pipe joints are to be gasketed and completely watertight. Pipes connected to risers (inlets) shall be a single piece 20-feet long with no joints.	See Plan	See Pipe Conduits, Carroll County Construction Specifications Carroll County SWM Supplement, Page 131