



### **REQUIRED NOTES TO BE INCLUDED ON STORMWATER MANAGEMENT PLAN:**

1. Slopes which exceed (8) vertical feet should be stabilized with synthetic or vegetative mats, in addition to hydroseeding. It may be necessary to install temporary slope drains during construction.
2. Stabilization measures shall be initiated as soon as practicable in portions of the site where construction activities have temporarily or permanently ceased, but in no case more than 14 days after work has ceased, unless activity in that portion of the site will resume within 21 days.
3. All sediment and erosion control devices shall be inspected every seven days or after each rainfall occurrence that exceeds ½ inch. Damaged or ineffective devices shall be repaired or replaced, as necessary.
4. Provide silt fence and/or other control devices, as may be required, to control soil erosion during utility construction. All disturbed areas shall be cleaned, graded, and stabilized with grassing immediately after the utility installation.
5. All erosion control devices shall be properly maintained during all phases of construction until the completion of all construction activities and all disturbed areas have been stabilized. Additional control devices may be required during construction, in order to control erosion and/or offsite sedimentation. All temporary control devices shall be removed once construction is complete and the site is stabilized.
6. The contractor must take necessary action to minimize tracking of mud onto paved roadway from construction areas. The contractor shall daily remove mud/soil from pavement as may be required.
7. Residential subdivisions require erosion control features for infrastructure as well as for individual lot construction. Individual property owners shall follow these plans during lot construction or provide an individual plan meeting Section R.72.307 of the Stormwater Management and Sediment Reduction Act Requirements.

# STORMWATER MANAGEMENT DEPARTMENT

## City of Easley, SC

### STORMWATER MANAGEMENT SUBMITTAL PACKAGE CHECKLIST FOR ALL SITES:

- Copy of approved SCDHEC Stormwater Management Application.
- Location map with north arrow and scale.
- Project Narrative to include a brief overall description of the pre and post developed conditions and state if the project is part of a larger common development.
- USGS Topographic Map showing the site location, the route of runoff from the site to the nearest offsite receiving waterbody, and identify any critical areas downstream of the proposed site (i.e.: road crossings, ponds, wetlands, etc.).
- Drainage Area Map showing existing drainage areas and discharge points, proposed drainage areas and discharge points, and offsite drainage areas that drain through the site.
- Floodway maps/FEMA Flood Insurance Rate Maps (when applicable)
- Pickens County Soils Map showing the site and specify each soil type and NRCS Hydrologic Soil Group
- Include summary sheet of calculations to include the 2- and 10-year pre and post-developed discharges (cfs) at each outfall, the 2- and 10-year pre and post-developed velocities (FPS) at each outfall. For each detention structure include peak inflow, peak outflow, and maximum water surface elevation. Sediment structures must have greater than 80% trapping efficiency.
- Detention waiver request must include certification from engineer, in writing, that the increased flows will not have significant adverse impact on the downstream/adjacent properties. Request must be qualified with appropriate supporting calculations.
- Rip-rap with a geotextile lining must be used to stabilize all outfalls – unless some other energy dissipater is used.
- Proposed drainage must flow to an existing outfall. Storm drainage or pond outfalls must be carried to an existing drainage outfall such as a ditch, swale, pipe, etc. A point discharge onto adjacent property, where there was not a point discharge previously, cannot be allowed unless written permission from the adjacent property owner is granted or calculations show that no adverse impacts will result from the point discharge. In some cases a level spreader can be used to dissipate the flows before they are released to the adjacent property.
- Proposed fill slopes or embankments shall remain far enough away from adjacent property to “work” without going on the adjacent property (a 20’ to 30’ buffer is recommended). Slopes must be stabilized and “extra measures” may be required to stabilize slopes greater than 4:1. Extra measures may include retaining walls, the use of synthetic or vegetative matting, diversion berms, temporary slope drains, in addition to hydroseeding.
- All construction site entrances **and all possible entrances** will have construction pads.
- Full set of properly signed and sealed site and copy of appropriate calculations for all submittals.

Pre and Post-developed calculation must include the 2- and 10- year peak flow rate at each outfall and the 2- and 10-year peak velocities at each outfall, Stormwater conveyance structures must be designed to pass the 10-year design storm.

The Rational Method-Equation cannot be used to size detention ponds. A volume-based hydrograph routing is required for full pond routing. The TR55 program does not perform a full pond routing so that hand calculations, spreadsheets, or other computer programs (i.e., SEDCAD, PONDPACK, etc.) must be used to perform the pond routing. A 24-hour rainfall event using the 241 point NRCS rainfall distribution must be used. Run the 2, 10, 25, and 100-year storm events. For the City of Easley use the following information R1=3.3", R2=4.0", R5=5.2", R10=5.9", R25=6.7", R50=7.5", R100=8.0", Rainfall Factor = 275, and NRCS Type II storm. Note that detention is required for the 2- and 10-year design storm; however, it is recommended that the principal spillway pass the 25-year design storm (before reaching the emergency spillway) and that the emergency spillway be sized to pass all of the 100-year design storm with 6" of freeboard. Provide peak inflow, peak outflow, and the maximum water surface elevation at the pond. Provide the stage/storage/discharge relationships for the outlet structure(s) of the pond. Include all data to support the development of these rating curves/equations. For ponds that are to remain dry during non storm events, the pond must completely drain within a 24 to 72-hour time period. Provide a horseshoe shaped rip rap filter berm around the outlet structure. Include a detail of the rip rap berm and structure with maintenance notes. Provide construction detail of the cross-section of the dam and outlet structure and include this in the plans. The data in the detail must be consistent with the data used in the calculations. A minimum of 2 anti-seep collars must be used along barrel pipe.

Show that the existing and proposed channels are stable for the proposed conditions. If temporary or permanent liners are needed, they should be designated on the plan sheets and on the cross-section details for the channel.

When velocities at outfalls are greater than the pre-development velocities, energy dissipater's calculations must be provided. Energy dissipaters include velocity breakers, plunge pools, rip rap aprons, etc. Provide appropriate details, dimensions, and indicate required stone size when appropriate.

When 5 or more acres are disturbed, the sediment trapping efficiency must be greater than 80%. When 10 or more disturbed acres drain to a single outlet, a sediment basin is required. Computer programs such as SEDCAD or SEDIMONT may be used to calculate the trapping efficiency. Sediment traps should be sized appropriately to handle the amount of land disturbance and drainage going to the trap. Rock Check Dam weir overflows should be designed to handle the 10-year storm. Sediment trap calculations relating to less than 5 acres may be required if the adjoining area is sensitive to sediment deposition (i.e., wetland, lake, pond, branch, stream, creek, river, etc.).

Prior to release from plan review board and final approval to permit issuance, a letter certifying the site's BMP's are installed properly according to designed plans, signed by a professional engineer.