
1.0 DESIGN SPECIFICATIONS

The design criteria presented within this manual represent good engineering practices and should be utilized in the preparation of storm water management plans. The criteria are not intended to be an iron-clad set of rules within which the developer and the design professional must work; they are intended to establish guidelines, minimum standards, and methods for sound planning, design, and review process. Alternative methods of design should be submitted to the County for consideration.

The design criteria shall be revised and updated as necessary to reflect advances in urban drainage engineering and urban water resource management.

The County and other design professionals will utilize the Manual in the planning of new facilities and in their review of proposed work done by developers, private parties, and other governmental agencies.

The strict application of this Manual in the overall planning of new development is practical and economical. In the planning of drainage and water quality improvements and the designation of floodplains for built-up areas, the use of the criteria and standards herein may be adjusted as determined by the County.

1.0.1 Minimum Design Criteria

Each element of the storm water system contained in this Manual and described in detail within each chapter illustrates the design criteria established by the County. The designer is referred to these chapters for further explanation of the design criteria and its application.

1.0.2 Scope of Storm Water Management Plan

- (a) For land disturbing activities, regardless of size, all of the requirements of a storm water plan apply, except as detailed in item (b) below.
- (b) For single-family residential development lots which are not part of a larger common plan of development, the person responsible for the land disturbing activity shall conform to the Residential Storm Water Requirements as defined below. Submittal of a Storm Water Plan is not required. By obtaining a County Building Permit, the Owner grants the right to the Department to conduct on-site inspections. Residential Storm Water Requirements are as follows:

Residential Storm Water Requirements

1. Temporary vegetative and structural storm water management control measures shall be in place prior to land disturbance activity, and shall conform to the requirements of the Design Manual and the South Carolina Storm Water Management and Sediment Reduction Act.
 2. Permanent vegetative and structural storm water management control measures shall be in place prior to receiving certificate of occupancy.
- (c) In developing plans for residential subdivisions, each individual lot in a residential subdivision development shall be required to obtain and comply with the subdivision's overall storm water permit, including specified BMPs for addressing storm water quality. The residential subdivision development, as a whole, is considered to be a single land disturbing activity requiring a permit.

Hydrologic parameters that reflect the fully-built subdivision development will be used in all engineering calculations.

- (d) If individual lots or sections in a residential subdivision are being developed by different property owners, all land disturbing activities related to the residential subdivision shall be covered by the approved Storm Water Plan for the residential subdivision. Individual lot owners or developers will sign a certificate of compliance that all activities on that lot will be carried out in accordance with the approved Storm Water Plan for the residential subdivision.
- (e) Upon receipt of a completed application for storm water management, the Department shall accomplish its review of the initial application or revisions and have either the approval or review comments transmitted to the applicant according to the following schedule:

| <u>Site Size</u> | <u>Response Time</u> |
|------------------|----------------------|
| 1-5 acres | 10 working days |
| 5.01-20 acres | 15 working days |
| >20 acres | 20 working days |

1.0.3 Minimum Runoff Control Requirements

The following outlines the general requirements for controlling storm water runoff rate and pollutant discharge.

- 1. For Single Family Residential Individual Lots (not part of a larger development): Control of the peak runoff discharge is not required. Post construction water quality control is not required.
- 2. For Non Residential Development and Multi-lot Residential Development outside of the CUA:
 - a. Parcels less than or equal to 10 acres (small size development): Control post development peak runoff discharge to pre-development runoff rates for the 2-, 10-, and 25-year storm events. 100-year storm event must be accommodated through the development without causing damage to structures or exceeding the limits allocated for this storm event. Post construction water quality control shall meet the water quality performance standards by implementing approved BMPs as outlined in the Manual.
 - b. Parcels greater than 10 acres and less than 40 acres (mid size development): Control post development peak runoff discharge to pre-development runoff rates for the 2-, 10-, and 25-year storm events. 100-year storm event must be accommodated through the development without causing damage to structures or exceeding the limits allocated for this storm event. Post construction water quality control shall meet the water quality performance standards by implementing approved BMPs that meet targeted goals for BMP pollutant removal efficiency. The attainment of water quality performance standards shall be demonstrated through a specified calculation methodology submitted by the Developer and approved by the County. The specified calculation methodology for mid size developments shall be detailed in the Manual.

- c. Parcels greater than or equal to 40 acres (large size development): Control post development peak runoff discharge to pre-development runoff rates for the 2-, 10-, and 25-year storm events. 100-year storm event must be accommodated through the development without causing damage to structures or exceeding the limits allocated for this storm event. Post construction water quality control shall meet the water quality performance standards by implementing BMPs that provide for a post development pollutant discharge equal to or less than the pre-development pollutant discharge. A Modeling Plan, submitted by the Developer and approved by the County, shall demonstrate the attainment of water quality performance standards through the use of BMPs. The Modeling Plan submittal shall include the following but not necessarily be limited to: an explanation of the analysis approach, identification of pollutants or indicators and relationships thereof, description of model methodology, expected range of accuracy in result prediction, and sources of all data to be used for modeling
3. For Non-Residential Development and Multi-lot Residential Development within the CUA:
- a. New development on undisturbed tracts of land: Follow requirements as outlined in Section 3.6, part 2. Pervious pavement technology will be required for all driveways and parking lots for new development, in accordance with the Design Manual.
 - b. Redevelopment or expansion of existing development: Both existing and future development will follow requirements as outlined in Section 3.6, part 2, if at least one of the following criteria is met:
 - i. Value of improvements to the property meets or exceeds 51 percent of the current property value (based on current tax records).
 - ii. Amount of land disturbance meets or exceeds 40 percent of the total acreage of the parcel.
 - iii. Construction of at least 9,000 square feet total of additional impervious surface.
 - c. Redevelopment or expansion of existing development not meeting part 5b above: All new driveways and parking lots shall be constructed with pervious pavement technology, and all building roof drains and downspouts will be disconnected from impervious pavement/surfaces, and directed to vegetative ground cover for conveyance through a properly designed filter strip or vegetated swale (in accordance with the Manual). Properly installed and maintained porous paving technologies, including pervious concrete and pavers, will be considered 100 percent pervious and will not count against any total allowable impervious percentage on site, nor will it be considered impervious in determining the hydrologic runoff properties.
 - d. Buffer Requirements – Buffer requirements shall be in accordance with SCDHEC and Georgetown County Zoning regulations.
4. Construction Site Runoff Control measures for all qualifying developments shall be in accordance with the most current version of the SCDHEC Erosion and Sediment Reduction and Stormwater Management regulations.

1.1 PERMIT SUBMITTAL REQUIREMENTS**1.1.1 Storm Water Plan Requirements**

Concept plans shall include as a minimum the following:

- (a) A vicinity map indicating a north arrow, scale, boundary lines of the site, and other information necessary to locate the development site.
- (b) Description of the existing and proposed topography of the development site except in the case of individual lot grading plans in single-family subdivisions.
- (c) Site map of physical improvements on the site including both existing and proposed development.
- (d) Identification of all areas within the site included in the land disturbing activities and documentation of the total disturbed area calculations.
- (e) The location of temporary and permanent vegetative and structural storm water management control measures.
- (f) Location and description of BMPs to control the water quality of the runoff during the land disturbing activities and during the life of the development.

Storm water plans shall include as a minimum the following:

- (a) A vicinity map indicating a north arrow, scale, boundary lines of the site, and other information necessary to locate the development site.
- (b) Description of the existing and proposed topography of the development site except in the case of individual lot grading plans in single-family subdivisions.
- (c) Site map of physical improvements on the site including both existing and proposed development.
- (d) Location, dimensions, elevations, and characteristics of all storm water management facilities.
- (e) Identification of all areas within the site included in the land disturbing activities and documentation of the total disturbed area calculations.
- (f) The location of temporary and permanent vegetative and structural storm water management control measures.
- (g) Anticipated starting and completion dates of the various stages of land disturbing activities and the expected date the final stabilization will be completed.
- (h) A determination that the development is in compliance with the Storm Management and Flood Damage Protection requirements of the Georgetown County Code of Ordinances or a designated variance.
- (i) Designation of all easements (rights-of-way) needed for inspection and maintenance of the drainage systems and storm water management facilities.
- (j) BMPs to control the water quality of the runoff during the land disturbing activities and during the life of the development.
- (k) Construction and design details for structural storm water controls.
- (l) If the drainage plan and/or design report indicates that there may be a drainage or flooding problem at the exit from the proposed development, or at any point downstream as determined by the Department, the Department may require:

1. Water surface profiles plotted for the pre- and post- development conditions for the 2-year through 100-year design storm frequencies.
 2. Elevations and description of all structures potentially impacted by the 2-year through 100-year flows.
- (m) Certification by the person responsible for the land disturbing activity that the activity will be accomplished according to the approved plan and that responsible personnel will be assigned to the project.
- (n) Certification by the person responsible for the land disturbing activity of the right of the County's Department of Public Services to conduct onsite inspections.

1.1.2 Narrative

- (o) A narrative shall be included with the design plan submitted for review. This narrative shall detail, in addition to the items stated above, the general intent of the development highlighted on the proposed development plans. If the development is to be phased, a detailed description of the proposed phases should be included. The narrative should also contain the proposed storm water management system detailing the measures included in the system such as retention, infiltration, or filtration controls and the function of each. Description of site conditions around points of all surface water discharge including vegetation and method of flow conveyance from the land disturbing activity shall be included in the narrative.

1.1.3 Design Calculations

Drainage areas contributing to each inlet, pipe, culvert, ditch, or swale shall be delineated and tabulated. Existing storm water conveyance systems shall be shown on the drawings with details and capacities of each system included with the calculations. All engineering calculations needed to design the system and associated structures shall be submitted, including pre- and post-development flow velocities, peak rates of discharge, and inflow and outflow hydrographs of storm water runoff at all existing and proposed points of discharge from the site.

The drainage plan will not be considered approved without the inclusion of the Department approval stamp with a signature and date on the plans. The stamp of approval on the plans is solely an acknowledgement of satisfactory compliance with the requirements of these regulations. The approval stamp does not constitute a representation or warranty to the applicant or any other person concerning the safety, appropriateness or effectiveness of any provision, or omission from the drainage plan.

Approved drainage plans remain valid for two (2) years from the date of an approval. Extensions or renewals of the plan approval may be granted by the County upon written request by the person responsible for the land disturbing activity.

The expected timing of flood peaks through the downstream drainage system should be assessed when planning the use of detention facilities.

In determining downstream effects from storm water management structures and the development, hydrologic-hydraulic engineering studies may extend downstream to a point as determined by the Department. All storm water management facilities and all major portions of

the conveyance system through the proposed development (i.e., channels, and culverts) will be analyzed, using the design and 100-year storms, for design conditions and operating conditions which can reasonably be expected during the life of the facility. The results of the analysis shall be included in the hydrologic-hydraulic portion of the design study.

If the drainage plan and/or design report indicates that there may be a drainage or flooding problem at the exit from the proposed development, or at any point downstream as determined by the Department, the Department may require:

Water surface profiles plotted for the pre- and post- development conditions for the 2-year through 100-year design storm frequencies.

Elevations and description of all structures potentially impacted by the 2-year through 100-year flows.

1.1.4 Permits and Certifications

Prior to the Department issuing an "Authorization to Construct", other certifications and permits as required for the plan shall be submitted to their respective agencies for review and approval. A copy of the most recent approval of those certifications and permits should be submitted to the Department for filing with the plan.

1.2 OPERATION AND MAINTENANCE PLAN

The effectiveness of each of the BMPs described in the previous section depends upon appropriate design and maintenance. Many of the health and safety concerns that may arise when the BMPs are installed can be addressed by a scheduled maintenance plan. Therefore, the Storm Water Plan must contain a maintenance plan, including schedule, for each BMP incorporated into the storm water system. The maintenance plan must address both maintenance and monitoring procedures as outlined in Chapter 7 which, when followed, will prevent:

- Conditions of blocking, hindering or obstructing the natural or intended flow of surface waters;
- Improper operation of storm water retention or impoundment device or any structure or device used for the improvement of the quality of surface runoff;
- Any condition that would damage the County's storm water collection system or that would harm the quality of the County's waters; and
- Any conditions specifically declared to be dangerous to the public health, safety, and general welfare of the County's inhabitants.

Failure to properly operate and maintain storm water facilities and BMPs in accordance with the Storm Water Plan is a violation of the County's Storm Water Management Program Ordinance.

1.2.1 Maintenance Records and Inspection

The County Engineer, or their duly appointed representative, will conduct an inspection of the BMP facilities upon completion of the project and, at a minimum, every other year thereafter. The purpose will be to evaluate maintenance compliance by the property owner. Whenever

inspections are conducted, the Storm Water Plan permittee shall make maintenance records of all storm water facilities and BMPs available for viewing. At a minimum, those records shall contain:

- Descriptions, including landscape drawings, of any changes in the drainage pathways included in the site's Storm Water Plan and in any drainage pathways leading to or from a BMP.
- Descriptions, to include volumes and material descriptions of any excavation or fill operations to, or impacting a BMP, the drainage of storm water to or from a BMP, and the dates when those operations commenced and were completed.
- Confirmation of completion over the previous year of all routine maintenance items required by each BMP as documented in the Storm Water Plan.

Failure to perform required or emergency maintenance or failure to maintain and provide the required records of that maintenance is a violation of the County's Storm Water Management Program Ordinance.

1.3 FEE SCHEDULE

The cost of performing Storm Water Plan reviews and of administering applications for County storm water permits vary based on the size and complexity of the development. The fee schedule presented below is established to assist in financing the County Storm Water Management Program, the Storm Water Management Plan review process, and inspection of storm water management structures.

| TABLE 1-1 FEE SCHEDULE FOR STORM WATER PLAN REVIEW | | | |
|---|----------------------------|--------------------------|--------------------------------|
| Type of Development or Activity | Size of Development | Standard Fee | Additional Fee |
| Residential – Individual Single Family | Less than 1 Acre | Exempt – No Fee | |
| Residential – Individual Single Family | 1 Acre or Greater | \$100 per acre disturbed | |
| Residential – Single Family Subdivision | Any | \$100 per acre disturbed | |
| Residential – Multi-Family | Any | \$200 per acre disturbed | |
| Non-Residential | Any | \$200 per acre disturbed | |
| Review of Application for Variance | Any | \$300 | \$300 per fact-finding meeting |