

REPORT

April 2020

TOWN OF

James Island

SOUTH CAROLINA

RECOMMENDED SUPPLEMENTAL
STORMWATER DESIGN STANDARDS



Town of James Island
South Carolina



1.0 INTRODUCTION

As a coastal community, the Town of James Island is acutely cognizant of and sensitive to the effects of stormwater management. Within recent years, the Town has experienced an increase in both widespread flooding due to storm surge, tidal events, and historical rainfall as well as reported nuisance flooding during smaller common storm events. Stormwater management has never been more important to communities like the Town of James Island than it is now. The effects of future climate change ensure that the sea level will rise, and the frequency and intensity of rain events will increase. The future vitality of the Town's growth, development, and economy depends on its ability to effectively manage stormwater today for the future.

Within James Island there are three governing authorities, the Town of James Island, Charleston County, and the City of Charleston. The Town of James Island has adopted the Charleston County Stormwater Design Manual. The City of Charleston has its own Stormwater Design Manual, which is being updated and expected to be effective in July 2020. The County is in the process of updating its stormwater design manual, however, the future effective date has not been established. The Town of James Island, in an effort to ensure the best stormwater management practices are being implemented in a timeframe commensurate with its needs, has developed supplemental stormwater design standards. As an incorporated town, the Town has ordinances governing stormwater management within its jurisdiction and employs staff to implement, review, and enforce its Stormwater Management Program. While, the Town will continue to follow the Charleston County Stormwater Design Manual, the supplemental stormwater design standards in the following sections are to be incorporated in all construction projects within the Town's jurisdiction and applied to all construction activities applying for a permit starting on its effective date. Where there is conflict between the County design manual and these supplemental standards, the Town's stormwater design standards will supersede.

The Town of James Island Supplemental Stormwater Design Standards provide design requirements directly affecting stormwater quantity control. The standards are to be implemented for both single family residence and non-single-family residence sites. These standards have been coordinated between the County and City to ensure stormwater management on James Island is well-coordinated and effective between the three governing entities.

2.0 TOWN OF JAMES ISLAND REQUIREMENTS

2.1 Construction Activity Approval Process

All development within the Town of James Island shall have a preliminary planning meeting with the Town's Public Works Director to ensure the proposed site improvements are coordinated with the Town's stormwater master plan.

3.0 STORMWATER QUANTITY CONTROL DESIGN STANDARDS

3.1 Rainfall and Design Storms

The 24-hour precipitation depths/intensities corresponding to various probabilities for exceedance in any given year are shown in Table 1 and are to be used for projects within the Town. These values contain a 10 percent safety factor to account for uncertainties in the design process and the increasing intensity of future storms.

Table 1: 24-hour design storm precipitation data for Town of James Island, South Carolina

	100%	50%	20%	10%	4%	2%	1%
Return Frequency (Year)	1-yr	2-yr	5-yr	10-yr	25-yr	50-yr	100-yr
Precipitation (Inches)	3.8	4.6	6.1	7.2	8.7	9.9	11.3

3.2 Single Family Residence (SFR) Design Standards

Impervious area for individual residential lots, to include those within a larger planned community, shall not exceed 40% of the total property area. If the impervious area exceeds 40%, the runoff volume from a 25-year, 24-hour storm event shall be retained on site for the impervious area above 40%. For example, if the impervious area for a new home site is 52% of the total property, the site must retain the 25-year, 24-hour storm runoff volume for 12% of the total property area on site. Reference the Low Impact Development in Coastal South Carolina: A Planning and Design Guide for recommended best management practices.

3.3 Redevelopment Design Standards

Redevelopment shall be defined as a change to previously existing, improved property, where the impervious surface exceeds 20% of the total site and proposed improvements to the property exceed 50% of the total site value. Redevelopment design will apply to SFR and non-SFR site improvements. Improvements may include, but are not limited to, the demolition or construction of structures, filling, grading, paving, excavating, exterior improvements, interior remodeling, and resurfacing of paved areas. Improvement activities excluded from redevelopment include ordinary maintenance activities that do

not materially increase or concentrate stormwater runoff or cause additional nonpoint source pollution.

To improve stormwater management on existing developed sites, redevelopment activities for single family residence (SFR) and non-single-family residence sites shall implement at least one of the following performance standards:

- a. **Reduce Impervious Cover:** Reduce impervious cover to ensure it does not exceed 40% of the total lot area or retain runoff from 25-yr, 24-hour storm from the impervious area in excess of 40%. Confirm the post-development peak discharge rate does not exceed the pre-development peak discharge rate for the 50% AEP storm event. Confirm the post-development volume does not exceed the pre-development volume for the 10% and 4% AEP storm events.
- b. **Reduce Runoff Volume:** Achieve a 10% reduction in the total volume of runoff generated from the site by a 50% annual exceedance probability (AEP) storm event (2-year storm). Runoff calculations shall be based on a comparison of existing site conditions at the time of submittal of a Construction Activity Application to the post-development site conditions. Confirm the post-development peak discharge rate does not exceed the pre-development peak discharge rate for the 50% AEP storm event.
- c. **Reduce Peak Discharge Rates:** Achieve a 20% reduction of the existing peak discharge rates at the time of submittal of a CAA for the 10% and 4% AEP storm events (10-year and 25-year storms) based on a comparison of existing round cover at the time of submittal of a CAA to post-development site conditions. Confirm the post-development volume does not exceed the pre-development volume for the 10% and 4% AEP storm events.
- d. **Combination of Measures:** A combination of (a), (b), or (c) above that is acceptable to the Town.

3.4 Runoff Reduction Requirements

All SFR and non-SFR sites of less than a half-acre with an increase of 500 square feet or more of impervious area, shall offset the increase in runoff through implementation of runoff reduction practices. Runoff reduction practices include disconnected downspouts, rain garden, infiltration trench, rain barrels, etc. See Table 2 for a list of accepted runoff reduction practices.

Table 2: Runoff Reduction Practices

Reduction Practice	Requirement
Disconnect Downspouts from Impervious Areas or Piped Systems	500 sf of impervious area allowed per 500 sf of roof area disconnected
Install Rain Barrel	500 sf of impervious area per 50-gallon rain barrel installed at downspout
Install Rain Garden	500 sf of impervious area allowed per 50 sf of rain garden installed
Install Infiltration Trench	1' deep x 2' wide trench filled with clean coarse sand along each side of surface features such as driveways or patios with no more than 15 feet of linear unit area flowing to the feature
Remove and Replace	500 sf of impervious area allowed per 500 sf of existing impervious area removed and replaced with approved permeable material

Per Low Impact Development in Coastal South Carolina: A Planning and Design Guide, rain barrels should be used where there is a direct corollary reuse demand. In absence of such, an orifice outlet should be used to slowly drain to permeable surfaces.

3.5 Site Grading Requirements

Site fill is to be limited to the greatest extent possible to prevent disruption of existing overland stormwater flow patterns. If fill is required to elevate the site above existing grade, the following buffer requirements shall be met:

- a. 3H:1V slopes 1 foot in height or more above adjoining property shall maintain a 5-foot-wide vegetated buffer area for every additional 1 foot of height. (e.g., a 4-foot embankment would equate to a 15-foot buffer.)
- b. 4H:1V slopes 1 foot in height or more above adjoining property shall maintain a 3-foot-wide vegetated buffer area for every additional 1 foot of height. (e.g., a 4-foot embankment would equate to a 9-foot buffer.)
- c. 5H:1V slopes 1 foot in height or more above adjoining property shall maintain a 1-foot-wide vegetated buffer area for every additional 1 foot of height. (e.g., a 4-foot embankment would equate to a 3-foot buffer.)

The buffer may overlay other vegetated buffers and may contain stormwater features designed to manage stormwater generated by the fill slope. For grades between listed slopes, the necessary buffer shall be interpolated. Grading shall prevent runoff onto adjacent property.

Compaction of non-structural fill shall be minimized during construction. Soils in landscaping areas should be protected and amended as needed. Disturbed soils in areas of fill or heavy equipment operation that will be vegetated in the final site stabilization shall be scarified or treated as directed by the designer to improve infiltration and water retention prior to final establishment of vegetation.

3.6 Soil Infiltration

Any non-structural fill brought on-site shall have adequate permeability to allow water to infiltrate. Soils must have an infiltration rate of a minimum of 0.3 inches per hour as determined by a soil scientist or geotechnical engineer. The permeability test results must be submitted and approved prior to scheduling a certificate of occupancy or certificate of construction completion inspection. Soil infiltration best management practices (BMPs) shall be incorporated into the site design. Infiltration BMPs must be consistent with the most current version of the Low Impact Development in Coastal South Carolina: Planning and Design Guide.

3.7 Floodplain Storage

Construction activities that reduce storage within the floodplain, commonly known as “fill and build”, shall be prevented. The floodplain will be the 1% AEP floodplain as established by Federal Emergency Management Agency (FEMA) plus 2.5 feet elevation. The 100-year floodplain is defined by Special Hazard Area Zones A, AE, AH, AO, A99, V, and VE. The 2.5 ft will be added to the elevation of the 100-year flood plain. In cases where floodplain storage impacts are proposed, impacts shall be mitigated with a minimum 1.25:1 replacement based upon total storage volume to prevent deterioration of basin stormwater storage capacity over time. Mitigation shall be within the same basin effecting the same water surface elevations and hydraulics as the proposed impact.