

Appendix D: Conceptual Design Checklist

D.1 Design Checklist

This checklist serves as a guide for the consultant in the preparation and for the reviewer in the evaluation of a Stormwater Management Plan (SWMP). Any questions regarding items contained herein should be referred to the *Beaufort County Public Works Department*. Applicable page number or section in the Southern Lowcountry Stormwater Design Manual is included for reference.

NOTE: PLANS SUBMITTED WITHOUT A COMPLETED CHECKLIST MAY BE RETURNED WITHOUT REVIEW

Site/Project Name: _____	Date: _____
Consultant: _____	Applicant: _____
Phone Number: _____	Phone Number: _____
Email Address: _____	Email Address: _____

Conceptual Plan or **Final Plan**

Consultant: Please complete the checklist below. A box in the Conceptual or Final checklist columns indicates the item is required for a complete application submittal.

	Conceptual	Final
A. Narrative Information		
1. Cover Sheet with Project Name, Engineer’s Contact Information, Developer’s Contact Information, Contractors Contact Information. Information required: Name, mailing address, telephone, email.	<input type="checkbox"/>	<input type="checkbox"/>
2. Site development plan and stormwater management narrative	<input type="checkbox"/>	<input type="checkbox"/>
3. Assess potential application of green infrastructure practices in the form of better site planning and design techniques. Low impact development practice should be used to the maximum extent practicable during the creation of a stormwater management concept plan. A demonstration of better site planning is required. The following site information and practices shall be considered: <ul style="list-style-type: none"> a. Soil type (from Soil Study); b. Depth of ground water on site; c. Whether the type of development proposed is a hotspot as defined by the Ordinance and Design Manual and address how this influences the concept proposal; d. Protection of primary and secondary conservation areas; e. Reduced clearing and grading limits; f. Reduced roadway lengths and widths; g. Reduced parking lot and building footprints to minimize impervious surface; h. Soil restoration; i. Site reforestation/revegetation; j. Impervious area disconnection; 	<input type="checkbox"/>	

k. Green roof; and l. Permeable pavement		
4. Stormwater Pollution Prevention Plan (SWPPP) or Erosion and Sediment Control narrative (for projects disturbing over an acre)	<input type="checkbox"/>	<input type="checkbox"/>
5. Information regarding the mitigation of any off-site impacts anticipated as a result of the proposed development. Not applicable for all projects.		<input type="checkbox"/>
6. Construction specifications	<input type="checkbox"/>	<input type="checkbox"/>
B. Site Plan		
1. Standard drawing size (24 x 36 inches)	<input type="checkbox"/>	<input type="checkbox"/>
2. A plan showing property boundaries and the complete address of the property	<input type="checkbox"/>	<input type="checkbox"/>
3. Lot number or property identification number designation (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>
4. Property lines (include longitude and latitude)	<input type="checkbox"/>	<input type="checkbox"/>
5. Location of easements (if applicable)		<input type="checkbox"/>
6. A legend identifying all symbols used on the plan	<input type="checkbox"/>	<input type="checkbox"/>
7. Location and size of existing and proposed utilities (including gas lines, sanitary lines, telephone lines or poles, electric utilities and water mains), structures, roads, and other paved areas		<input type="checkbox"/>
8. Existing and proposed topographic contours	<input type="checkbox"/>	<input type="checkbox"/>
9. Show drainage patterns, property ridge line(s) and building finish elevation on the grading plan.		<input type="checkbox"/>
10. Material and equipment staging areas	<input type="checkbox"/>	<input type="checkbox"/>
11. Clearly note on plans: <ul style="list-style-type: none"> - A right-of-way permit shall be obtained prior to performing construction activity in the Beaufort County right-of-way - Chlorinated disinfected water shall not be discharged into the stormwater system - Call before you dig note and number 		<input type="checkbox"/>
12. Soil information for design purposes	<input type="checkbox"/>	<input type="checkbox"/>
13. Area(s) of soil disturbance	<input type="checkbox"/>	<input type="checkbox"/>
14. Site drainage area(s) (SDAs) within the limits of disturbance (LOD) and contributing to the LOD		<input type="checkbox"/>
15. Contributing drainage area (CDA) to each BMP		<input type="checkbox"/>
16. Location(s) of BMPs, marked with the BMP ID Numbers to agree with the BMP design summary list		<input type="checkbox"/>
17. Delineation of existing and proposed land covers including natural cover, compacted cover, and impervious surfaces.	<input type="checkbox"/>	<input type="checkbox"/>

18. Site fingerprint map of the location of existing stream(s), wetlands, or other natural features within the project area; tree and vegetation survey; and preservation area(s)	<input type="checkbox"/>	<input type="checkbox"/>
19. All plans and profiles must be drawn at a scale of 1 in. = 10 ft, 1 in. = 20 ft, 1 in. = 30 ft, 1 in. = 40 ft, 1 in. = 50 ft, or 1 in. = 100 ft. Although, 1 in. = 10 ft, 1 in. = 20 ft, and 1 in. = 30 ft, are the most commonly used scales. Vertical scale for profiles must be 1 in. = 2 ft, 1 in. = 4 ft, 1 in. = 5 ft, or 1 in. = 10 ft	<input type="checkbox"/>	<input type="checkbox"/>
20. Drafting media that yield first- or second-generation, reproducible drawings with a minimum letter size of No. 4 (1/8 inch)	<input type="checkbox"/>	<input type="checkbox"/>
21. Applicable flood boundaries and FEMA map identification number for sites lying wholly or partially within the 100-year floodplain (if applicable)	<input type="checkbox"/>	<input type="checkbox"/>
C. Design and As-Built Certification		
1. Statement and seal by a registered professional engineer licensed in the State of South Carolina that the site design, land covers, and design of the BMPs conform to engineering principles applicable to the treatment and disposal of stormwater pollutants		<input type="checkbox"/>
2. Submission one set of the As-Built drawings sealed by a registered professional engineer licensed in the State of South Carolina within 21 days after completion of construction of the site, all BMPs, land covers, and stormwater conveyances. *Comes at close out*		<input type="checkbox"/>
3. For a project consisting entirely of work in the public right-of-way (PROW), the submission of a Record Drawing certified by an officer of the project contracting company is acceptable if it details the as-built construction of the BMP and related stormwater infrastructure.		<input type="checkbox"/>
D. Maintenance of Stormwater BMPs		
1. BMP maintenance access easements shall not be located on pipe easements.		<input type="checkbox"/>
2. A minimum 20' wide maintenance access easement is provided around stormwater detention ponds and from publicly accessible road has been provided.		<input type="checkbox"/>
3. A maintenance plan that identifies routine and long-term maintenance needs and a maintenance schedule		<input type="checkbox"/>
4. For regulated projects, a maintenance agreement stating the owner's specific maintenance responsibilities identified in the maintenance plan and maintenance schedule. These must be exhibits recorded with the property deed at the Recorder of Deeds.		<input type="checkbox"/>
5. For applicants using Rainwater Harvesting, submission of third-party testing of end-use water quality may be required at equipment commissioning.		<input type="checkbox"/>
E. Stormwater Retention Volume Computations		

1. Calculation(s) of the required SWRv for the entire site within the LOD and each SDA within the LOD		<input type="checkbox"/>
2. Calculation(s) for each proposed BMP demonstrating retention value towards SWRv in accordance with Chapters 2 and 4 Stormwater Best Management Practices (BMPs)		<input type="checkbox"/>
3. For Rainwater Harvesting BMP, calculations demonstrating the annual water balance as determined using the Rainwater Harvesting Retention Calculator		<input type="checkbox"/>
4. For proprietary and non-proprietary BMPs outside Chapter 4, complete documentation defined in Chapter 4.15		<input type="checkbox"/>
5. Document off-site stormwater volume where required.		<input type="checkbox"/>
6. Document the 8-steps of the MEP process in Chapter 3.8.		<input type="checkbox"/>
F. Pre/Post-Development Hydrologic Computations		
1. A summary of soil conditions and field data		<input type="checkbox"/>
2. Pre- and post-project curve number summary table		<input type="checkbox"/>
3. Pre and post construction peak flow summary table for the 2, 10, 25, 50 and the 100-year 24-hour storm events for each SDA within the project's LOD		<input type="checkbox"/>
4. Flow control structure elevations		<input type="checkbox"/>
G. Hydraulic Computations		
1. Existing and proposed SDA must be delineated on separate plans with the flow paths used for calculation of the times of concentration		<input type="checkbox"/>
2. Hydraulic capacity and flow velocity for drainage conveyances, including ditches, swales, pipes, inlets.		<input type="checkbox"/>
3. Plan profiles for all open conveyances and pipelines, with energy (kinetic) and hydraulic gradients for the 25-year and 100-year, 24-hour storms		<input type="checkbox"/>
4. The proposed development layout including the following:		<input type="checkbox"/>
a) Location and design of BMP(s) on site, marked with the BMP ID Numbers		<input type="checkbox"/>
b) A list of design assumptions (e.g., design basis, 2 through 25-year return periods)		<input type="checkbox"/>
c) The boundary of the CDA to the BMP		<input type="checkbox"/>
d) Schedule of structures (a listing of the structures, details, or elevations including inverts)		<input type="checkbox"/>
e) Manhole to manhole listing of pipe size, pipe type, slope, computed velocity, and computed flow rate (i.e., a storm drain pipe schedule)		<input type="checkbox"/>
5. Demonstrate downstream conveyance system capacity for the development.		<input type="checkbox"/>

H. Erosion and Sediment Control Plans			
1. Provide erosion and sediment control drawings and detail sheets required by the CSWPPP		<input type="checkbox"/>	<input type="checkbox"/>
2. Show dewatering setup to ensure no negative off-site impacts result from the discharge		<input type="checkbox"/>	<input type="checkbox"/>
3. Provide erosion and sediment control inspection forms required by the CSWPPP			<input type="checkbox"/>
I. Supporting Documentation (written report)			
1. Pre- and Post-development curve number selection			<input type="checkbox"/>
2. Time of concentration calculation			<input type="checkbox"/>
3. Travel time calculation			<input type="checkbox"/>
4. Hydrologic computations supporting peak discharges assumed for each SDA within the project's LOD for the 2-, 10-, 25-, and 50-year, 24-hour storm events			<input type="checkbox"/>
5. Provide downstream and surrounding neighborhood area analysis to identify any existing capacity shortfalls or flooding based on the 10% rule.			<input type="checkbox"/>
6. SCDHEC's Construction Stormwater Pollution Prevention Plan (C-SWPPP)			<input type="checkbox"/>

<p>The engineering features of all stormwater best management practices (BMPs), stormwater infrastructure, and land covers (collectively the "Facility") have been designed/examined by me and found to be in conformity with the standard of care applicable to the treatment and disposal of stormwater pollutants. The Facility has been designed in accordance with the specification required under Chapter 99 of the Beaufort County Ordinance.</p>			
Seal	Signed	Date	
License Number:		Expiration Date:	