STORMWATER PLAN REVIEW CHECKLIST

PROJECT NAME: **JOB NO.:**
Engineer: **Date Received:**

Reviewed by: **Date Reviewed:**

_____ **Plan Stamped by a Professional Civil Engineer registered in the State of Georgia**

PLAN Page #	INCLUDED Y/N	
		I. ENVIRONMENTAL
		1. Narrative report describing existing conditions
		2. Heavy outline of the 100-year flood plain with Base Flood Elevation and Finished Floor Elevation of structure
		3. Location of all wetlands. Provide copy of Jurisdictional Determination or Permit from the USACE
		4. Location of all State Waters and applicable Undisturbed Buffer
		II. STORMWATER
		5. Plan of all impervious area(s), to include, but not limited to, roads, buildings, and parking lots
		6. Total impervious area provided, to include any changes in impervious area
		7. Existing and proposed topography [minimum of 2-foot contours recommended]
		a. Mass Grading meets Section 34-1 of Columbia County Ordinance
		8. Building pad elevation(s) provided
		9. Stormwater Quality:
		a. Stormwater Quality Calculations/Review Tool Provided
		b. Runoff Reduction/Feasibility Criteria Provided
		c. Maintenance Agreement Provided
		d. Exhibits provided to show location of BMP's
		e. Geotechical Report for GI/LID Structures Provided
		f. Detail of GI/LID meeting GSMM Provided
		10. Hydrology report for stormwater management facility(ies) including:
		a. Plan showing acreage and flows of all on-site and off-site drainage areas contributing flow through the project. Study point(s) are shown on map.
		b. Basis for determining Runoff Coefficients/Curve Numbers & Times of Concentrations include calculations
		c. Inflow and outflow hydrograph of pre- and post-developed runoff for the 1-, 25-, 50-, and 100- year storms
		d. Storage capacity and discharge rates with minimum of 30 minute detention time or routed design
		e. Storage facility designed to detain volume difference of runoff for the pre- and post-developed conditions
		f. Summary sheet showing pre-developed runoff, post-developed runoff and release rate of detained runoff for the 1-, 25-, 50-, 100-year storms
		g. Post-developed runoff is less than Pre-developed runoff through the 100-year storm
		h. Size and location of detention facility; detention facility cannot be located within 100-year floodplain
		i. Water surface elevation of 50-year storm detained within the facility without engaging the principal spillway or riser

j. Emergency Spillway sized to convey the 100-year storm assuming the stormwater management facility's outfall is 100% clogged providing a minimum freeboard of 12 inches to the top of embankment

k. No trees on the dam impoundment

l. Cross-section of dam specifying type of core material and compaction requirements, to include outfall, berm, spillways, outlet control structure, design storm water surface elevations, pond bottom, pilot channels, and inflows

m. Detailed construction information of outlet structure including buoyancy computations

n. Bottom of dry detention facility sloped at a minimum fall of 2% to provide positive drainage. If grades cannot be achieved, a pilot channel used to convey low flows from each facility inlet to the outlet control structure

11. Ponds to be deeded to Columbia County meet requirements in Section 4.5 of current Supplement to GSMM; Details 17-1, 17-1.1, 17-1.2 from Columbia County Engineering Division Construction Standard Specifications and Details are shown

12. Hydraulic report and plan for storm drains and pipes designed for the 25-year storm including:

a. Drainage area in acres to each inlet

b. Runoff Coefficient & calculations for weighted coefficient

c. Minimum time of concentration of 10 minutes

d. Rainfall frequency

e. Pipe capacity in cfs

f. Peak flow in cfs

g. Runoff velocity in fps:

1. minimum 2.5 fps in pipe flow
2. maximum 5 fps without energy dissipater outfall
3. maximum 15 fps in pipe system

h. Gutter Spread calculations shown meeting Section 5.2.1 of current Supplement to GSMM

i. Hydraulic Grade Lines shown meeting Section 5.2.3 of current Supplement to GSMM

j. Inverts for all pipes and traps shown

k. Length, grade, size, and type of pipe and structures; minimum pipe diameter 18"

l. Location of drainage structures on adjacent property with direction of flow indicated with arrows

m. Profiles of storm sewer system shown providing elevations, all utility crossings, and design storm hydraulic grade lines

13. Easements sized in accordance with Section 5.2.3 (6) of current Supplement to GSMM

14. No traps allowed in radii; No grate traps allowed in roadway

15. Minimum 18" separation between storm lines and sanitary sewer lines

16. Pipe material

Within right-of-way:

O-ring gasketed RCP
High Performance Polypropylene (PP)

Outside right-of-way:

O-ring gasketed RCP
Tongue and groove RCP
High Performance Polypropylene (PP)
High Density Polyethylene (HDPE) (Private)
Smooth-lined, Corrugated Polyethylene (CPP) (Private)

17. 18" minimum pipe cover on RCP; 24" minimum pipe cover on CPP and HDPE; and GDOT requirements shown for PP. Bedding details provided for all storm pipe materials in accordance with Columbia County Specifications

18. Details for all stormwater structures are shown:
a. GDOT details: 1019A (Precast & Brick), 1030P, 1030D, 1033, 1034, 1120, 1125, and 9031U
b. Columbia County details: 16-1, 16-2, 16-3, 16-4, 16-4.1, where applicable

19. Pipes extended to limits of the State Waters Buffer allowing for installation of outfall BMP's

20. Flared end sections shown on pipes up to 42" and outlet velocities less than 5 fps

21. Cast-in-place headwalls shown on pipes greater than 42"

22. Headwalls with energy dissipation devices and/or channel protection provided for outlet velocities exceeding 5 fps

23. Collars shown in pipes with slopes greater than:
    a. 20% for RCP
    b. 15% for CPP & HDPE

24. Swales meet Section 5.5 of current Supplement to GSMM. Cross sections provided

25. French drain plan showing location of french drain in areas of roadway with greater than 4 feet of cut and other areas as needed

III. NOTES TO BE SHOWN

26. All construction to conform to Columbia County Standards and Specifications

27. The contractor will coordinate the work with the utility companies and will verify all existing pipe inverts and existing road elevations prior to construction

28. Notify the County Engineer's office 48 hrs prior to starting construction, pouring trap tops, dumping base, or paving

29. Notify Columbia County Stormwater Utility office 24 hrs prior to construction of stormwater infrastructure

30. All boxes and traps having a depth greater than 4' must have steps vertically and ring and covers aligned for ready access to rungs

31. Full width of the right-of-way and additional utility easement must be cleared & graded with a slope of 1/4" to 1/2" per foot

32. No marquee, island or sprinkler system may be located within County R/W

33. Initial BMPs must be in place prior to clearing, regardless of plan requirement or lot size. No clearing or grading may be done until Initial BMP installation is complete. Contractor must contact Environmental Services for inspection BMPs prior to beginning clearing or grading activities

34. All easements to be grassed and/or rip-rapped as required to control erosion

35. Developers and/or Contractors are responsible to remove or clean out silt, dirt, mud or any other type of debris that comes off their site and finds its way into a private pond, onto private property, into a County owned pond or County owned property to include rights-of-way

36. Columbia County may require additional rip-rap at discharge points and stilling structures

37. Columbia County may require additional swales along rear and/or side lot lines after development begins

38. Columbia County may require additional french drains

39. The contractor will adhere to the weight limits prescribed on County maintained roads for hauling equipment and/or materials to and from this site. The contractor will be held responsible for any damages to the streets and/or utilities due to non-compliance of weight limit regulations