



Department of Planning and Development

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www.gwinnettcounty.com

GC DOT MS4 COMPLIANCE CHECKLIST

PROJECT NAME: _____

DISTRICT/LAND LOT/PARCEL: _____

ENGINEER: _____

EMAIL: _____

REVIEWER: _____

DATE: _____

SWM CASE #: _____

Abbreviations: UDO – Unified Development Ordinance | SSFISS – Gwinnett County Stormwater Systems and Facilities Installations Standards and Specifications

Provide one set of the following plans for review to the Gwinnett County Department of Planning & Development –Storm/Water/Sewer Plan Review Section, signed and sealed by a Registered Professional Engineer in the State of Georgia:

- a. Cover Sheet
- b. Storm Drainage Profiles, including sheet(s) with Pipe and Channel Charts.
- c. Special Construction Details (Water Quality BMP's, Stormwater Management Facility Grading Plan, Outlet Control Structure, etc.).
- d. One (1) copy of the Stormwater Management Report.
- e. Annotated checklist stating where requirements are located. (sheet and location –UL (upper left), LR (lower right))

➤ Provide applicable Water Quality BMP Checklist.

GENERAL PLAN REQUIREMENTS

1. Show acreage of the project, including total acreage and disturbed acreage.
2. Indicate project scope of work in title or narrative on plans.
3. Number all proposed pipes, existing pipes, and storm structures on plan.
4. Number all proposed engineered channels on plan.
5. Indicate source of topographic and reference datum (i.e. NGVD 1929, MSL, etc.).
6. Show existing and proposed topography at a 2' contour interval or less.
7. Label 100-year floodplain contour, elevation, floodway and source of information.

8. Provide storm water note(s) indicated below in a notes section on grading and drainage plan.
- Floodplain Note(s). Either select Note (a) or (b) and select Notes (c) and (d) as applicable.
- a. There is no floodplain on this project from a watercourse with a drainage area exceeding 100 acres or floodplain per FIRM Panel _____ dated _____.
 - b. Floodplain on this property from all watercourses with a drainage area exceeding 100 acres is shown.
 - c. Floodplain shown is from FIRM Panel _____ dated _____.
 - d. Floodplain shown is from Floodplain Study titled _____ by _____ dated _____. Study was prepared as part of Project named _____ with Case Number _____.
- Wetlands Note(s). **Select either (a) or (b).** If wetlands are being disturbed on the site, select Note (c).
- a. There are no wetlands being disturbed on this site.
 - b. All wetlands to be disturbed are delineated on this site.
 - c. The wetlands are being disturbed in accordance with Permit _____ dated _____.
- Stormwater Management note (if project meets exempt criteria, use note a).
- a. Storm Water Management for this project is provided on-site.
 - b. Storm Water Management for this project is provided off-site in Project named _____ with Case Number _____.
- State Waters note(s). Select either Note (a) or (b). **If a State Waters Buffer is being disturbed on the project, select Note (c).**
- a. There are no stream buffers on this project.
 - b. A 50-foot undisturbed buffer and a 75-foot impervious setback shall be maintained adjacent to all streams.
 - c. Stream Buffer Variance Number _____ was obtained for work within the buffer located _____.
9. Provide the following note: **MAXIMUM SLOPE FOR CUT OR FILL IS 2H:1V EXCEPT EARTHEN DAM EMBANKMENTS SHALL BE 3H:1V.**
10. Provide the following note: **ALL BUFFERS AND TREE SAVE AREAS ARE TO BE CLEARLY IDENTIFIED WITH TREE PROTECTIVE FENCING PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE.**
11. Provide the following note: **ALL CONSTRUCTION TO COMPLY WITH GWINNETT COUNTY STANDARDS.**

12. Provide the following note with an arrow pointing to the access easement, if applicable: **STORM WATER MANAGEMENT FACILITY ACCESS EASEMENT TO BE CLEARED AND GRUBBED.**
13. Provide a drainage easement located a minimum of 10-feet outside the 100-year ponding limits of any proposed storm water management facilities.
14. Provide a cleared access easement 20' wide to the storm water management facility from a public street.
15. Within the access easement, a 15-foot wide road shall be graded at a maximum 20% grade to provide access to the facility.
16. Show the storm water management facility's 100-year ponding contour and elevation on plan.
17. Minimum top width of detention pond, earthen dam to be 8'-0".
18. Bottom of dry facility shall have positive drainage. Provide Standard Detail 622.

PIPE & OPEN CHANNEL PROFILE SHEET

19. Provide pipe profiles. Show existing and proposed ground surface profiles, pipe lengths, slopes, inverts, and 25-year (minimum) or design year hydraulic grade lines.
20. Provide channel profiles. Show existing and proposed ground surface profiles, channel lengths, 25-year normal flow depth and slopes. Minimum freeboard to be 20% of the flow depth.
21. 25-year hydraulic grade line must be at least 1 foot below the gutter line or top of grate.
22. Channel velocities for the fully developed 25-year flow shall not exceed the non-erosive velocity as shown in 5.2.3 of the *Gwinnett County Stormwater System and Facilities Installation Standards and Specifications*. Refer to open channel #____.
23. Velocity in corrugated metal pipe system exceed(s) 5 fps manufacturer's maximum.
24. Anchor collars may be required on CMP and RCP pipes exceeding 10% slope. Provide anchors per manufacturers recommendations.
25. Minimum ground cover over all pipes of 1 foot.

26. Maximum spacing of structures shall be 300'. Maximum drop within a storm structure shall be 10'.
27. Show 10-year design gutter spread for road inlets and 100-year ponding limits above yard inlet storm structures (including headwalls).
28. Provide transition channel profiles from inlet and outlet ends of all pipes to natural drainage swales. Specifically, at inlet / outlet of pipe(s) # ____.
29. Provide complete pipe chart indicating the following (include outlet control structure outlet pipe also):
- a. Upstream Structure Type (SWCB, DWCB, DI, etc.).
 - b. Pipe Numbers/Pipe Structures
 - c. Pipe size
 - d. Pipe length
 - e. Pipe slope
 - f. Contributing drainage area
 - g. Design discharge (Q_{25} for piped drainage; Q_{100} for culverts)
 - h. Design storm frequency (25 year for piped drainage; 100 year for culverts)
 - i. Runoff coefficient (per future land use plan and assuming no detention)
 - j. Pipe material/coating
 - k. Velocity (V_{25} may not exceed non-erosive velocity at outlet headwall, unless energy dissipation is provided.)
30. Provide complete channel chart indicating the following:
- a. Open channel numbers
 - b. Contributing drainage area
 - c. Runoff coefficient (per future land use plan and assuming no detention)
 - d. Conveyance size
 - e. Lining material (riprap, grouted riprap, sod, or erosion control blanket, etc.)
 - f. Channel length
 - g. Channel slope (for minimum and maximum values - Maximum 10%)
 - h. Velocity (V_{25} may not exceed non-erosive velocity – Maximum 4 fps for sod.)
 - i. Design storm frequency (25 year)
 - j. Design discharge (25 year)
 - k. Normal flow depth (25 year)

HYDROLOGY REPORT REQUIREMENTS:

Provide a table of contents and either provide page numbers or tabs referencing sections for the following.

- Executive summary
- Hydrology
- Water quality
- Environmental permits

31. Professional Engineer seal, signature and date.
32. Narrative explaining the purpose of the report
33. Summary of the report’s findings organized similar to these sample tables:

Flow Summary

Basin (as shown on drainage area maps)	Return Frequency	Drainage area to receiving structure (ac)	Receiving structure type	Pre- developed flow (cfs)	Post- developed flow (cfs)	Calculated percent increase (%)
A	2					
	5					
	10					
	25					
	50					
	100					

Energy Dissipation Summary:

Pipe outlet headwall / Detention pond outlet	25 year post- developed flow velocity at outlet headwall	Non-erosive velocity from Storm Water Design Manual	Froude Number	Type of Energy Dissipation Measures proposed
A				
B				

Downstream receiving conveyance velocity summary:

Study point/ hydraulic structure / Basin	25 year pre- developed flow velocity	25 year post- developed flow velocity	Non-erosive velocity from Storm Water Design Manual	Current condition of the channel (appear stable or is it eroding)	Adverse impact expected from proposed project	Detention necessary?
A						
B						

Times of Concentration Summary:

Sub-area	Pre/Post Overland flow, minutes	Pre/Post Shallow Concentrated flow, minutes	Pre/Post Open channel flow, minutes	Pre-developed Tc, minutes	Post-developed Tc, minutes
A-1	25/15	35/20	10/10	70	45
A-2					

Curve Number Summary:

Sub-area	Existing Curve Number	Post-developed Curve Number
A-1		
A-2		

Gutter Spread Calculations Summary:

CB	Max spread, ft
1	
2	

- 34. A map showing drainage areas used for pipe design.
- 35. A map showing drainage areas for all hydrographs. Preferably county GIS for basins less than 100 acres.
- 36. A map showing all on-site drainage areas, off-site drainage areas, and all pond bypass areas considered in detention calculations.
- 37. Calculations determining the capacity of existing pipe to carry the proposed discharges.
- 38. Calculations showing discharge of concentrated flows into the streets do not exceed the max flow rates.

MAXIMUM FLOWS INTO STREETS

STREET CLASSIFICATION	ALLOWABLE PEAK FLOW RATE FOR A 2-YEAR STORM
Local	2.0 cfs
Minor Collector	1.0 cfs
Other	0.5 cfs

- 39. Time of concentration for all hydrographs.

40. Curve Number calculations for both existing and post-developed conditions for all hydrographs.
41. Analysis of downstream conditions shall include the following:
- A. Describe in combination with a topographic map, all culverts, obstructions, existing and potential erosion problems, elevations of existing improvements, and existing drainage complaints, between the downstream property line and the 10% point.
 - B. Analyze downstream watercourses and receiving conveyances to determine 25-yr. flow channel velocities. .
 - C. Analyze existing pipe systems and culverts for compliance with current development regulation design criteria. Culverts should pass Q_{100} . If existing pipes are not adequate for increased 100-year flow, detention may be required.
 - D. Hydrograph comparisons for the 1, 2, 5, 10, and 25, 50 and 100-year storms for both the downstream property line study point and the point where the drainage basin equals 10 times the project area.
 - E. A detailed written description of the first 500 feet off site; at least one photograph looking downstream with some object included in the photograph for scale shall be included.
 - F. Method to perform the hydrograph analysis is as follows for each study point:
 1. Pre-developed on-site hydrograph
 2. Basin area at study point excluding on-site area hydrograph
 3. Combine 1 and 2
 4. Post-developed on-site hydrograph
 5. Combine 4 and 2
 6. Compare 5 and 3 to show
42. Downstream analysis indicates adverse impacts are may be expected, provide storm water detention for the 2 through 25-year storms in basins where post flow exceeds 5% more than the existing conditions flow.
43. Detain the runoff from the 1-year storm for 24 hours if water quality storage is required. SCS volume method required. Show calculations. (see the SSFISS for orifice sizing equations for Gwinnett County)
44. All hydrographs shall be based on a 24-hour storm.
45. Time interval used in routing must be set to 20% of Time to Peak or smaller. This is imperative for Hydraflow software so storm volumes are calculated properly.

TSS SPREADSHEET

46. Use the Storm Water Quality Performance Review form to perform the TSS analysis for the project site. The form can be downloaded at www.gwinnettstormwater.com, under Documents and then Development Review Documents.
47. The modeled TSS load shall not exceed 850 lbs./acre/yr for the total project area.
48. Provide a map delineating the different land use types and acreage for water quality analysis purposes. (i.e. Impervious Area, Disturbed Pervious Area, Undisturbed Upland Area, Undisturbed Stream Buffer Area)
49. Do not model off-site areas.
50. Provide print-out of BMPTracking Form for Structural BMPs from Stormwater Quality Performance Review Tool.
- a. Commission Districts can be found on the web page “www.GwinnettCounty.com” under “departments”, “Board of Commissioners”, and “District Map”.
 - b. Watersheds can be found on the web page “www.GwinnettStormWater.com” under “Documents”, “Development Review Documents”, and “Watershed Basin Maps”.

ADDITIONAL COMMENTS:

- 51.
- 52.
- 53.