CHAPTER 10

REVIEW CHECKLIST-STORM WATER MANAGEMENT REPORT

10.3 Storm Water Management Report

DEVELOPMENT NAME:
ENGINEER:
DISTRICT/LANDLOT:
FAX NUMBER/EMAIL:
REVIEWER:
DATE:
CITY CASE #:

Please contact City of Lawrenceville Planning and Zoning Office at 770-963-2414 with any questions

STORM WATER MANAGEMENT REPORT

1. ___Storm Water Management Report shall contain the following:

A.___Professional Engineer or Landscape Architect seal, signature and date (Section 9.3.1.1)

B.___ Narrative explaining the purpose of the report.

C.___ An executive summary of the report's findings organized similar to the sample tables provided below:

Table 10.3-1

Flow Summary

Basin	Return Frequency	Pre-developed Flow @ Property line	Post-developed flow @ property line	Detention Necessary? (if yes, list routed flow)	Ponding Elevation	10% point pre-developed flow	10% point post-developed flow
A	2						
	5						
	10						
	25						
	50						
	100						

Table 10.3-2
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	Energy Dissipation Measures Proposed
A				
B				
C				

Table 10.3-3
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						
C						

Table 10.3-4
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					

Table 10.3-5
Curve Number Summary

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

Table 10.3-6
Gutter Spread Calculations Summary
(for roadways, max to be 8' for collectors roads,
10' (16' both sides combined) for subdivisions streets during the 10 year storm)

CB	Combined spread from both sides of street, ft	Max spread on one Side of street, ft
1		
2		

D.___ A map showing drainage areas used for pipe design. (Section 9.3.1.2)

E.___ A map showing drainage areas for all hydrographs. Preferably Gwinnett County GIS. (Section 9.3.1.2)

F.___ A map showing all on-site drainage areas, off-site drainage areas, and all pond by-pass areas considered in detention calculations. (Section 9.3.1.2)

G.__ Calculations verifying the adequacy of existing pipe to carry the proposed discharges. (Sections 9.3.1.2 & 9.3.1.3)

H.__ Calculations showing discharge of concentrated flows into the streets do not exceed the flow rates in table 9.10.4-1(Section 9.10.4.1)

TABLE 10.3-7

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

MAXIMUM FLOWS INTO STREETS

I.__ Calculations showing outlet pipe for detention ponds will accommodate 125% of Q_{100} routed, if no earthen embankment emergency spillway is proposed. (Section 9.9.4.2)

J.__ Time of concentration calculations for all hydrographs. Follow the procedures set forth in the City of Lawrenceville *Storm Water Design Manual*. (Subsection 9.3.3.8)

K.__ Curve Number calculations for both pre-developed and post-developed conditions for all hydrographs. Follow the procedures set forth in the City of Lawrenceville *Storm Water Design Manual*. (Section 9.3.3.8)

L.__ Provide Energy Dissipater calculations/designs for outlet headwalls of pipes and detention ponds. The Following Energy Dissipaters may only be used in the corresponding Froude number range:

TABLE 10.3-8

ENERGY DISSIPATER

Energy dissipator	*Froude Number range*
Riprap apron	**Less than or equal to 2.5**
Riprap outlet basins	**Less than or equal to 2.5**
Baffled outlets	**1 to 9**

M.__ An analysis of downstream conditions. See below. (9.3.1.2)

N.__ Detention pond computer output for the 2, 5, 10, 25 and 100-year storms in basins where detention is necessary. (Subsection 9.3.3.9)

2.___ The Rational Method **may not** be used for detention pond design. (Sections 9.3.3.6)

3.___ Analysis of downstream conditions shall include the following: (Section 9.3.1.3)

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 25yr. Flow Channel Velocities. If Non-Erosive Velocity of the stream exceed, detention may be required. (Section 9.3.2.1)

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, detention may be required.

D.__ Hydrograph comparisons for the 2, 5, 10, 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.__ FYI: Hydrograph analysis methodology should be 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 determine impacts

4.___Since downstream analysis indicates adverse impacts are expected, provide storm water detention in basin(s) _____ for the 1, 2, 5, 10, and 25-year storms. Route the 100-year storm through the pond so that the earth embankment will not overflow. (Section 9.3.3.2)

5.___Detain the runoff from the 1-year storm for 24 hours. Use the SCS runoff equation to size the volume required. Use the following equation to size the orifice:

$$A= (V/t)/(0.6*(64.4*H/2)^{0.5})$$

where t= 86,400 sec

A= area of the orifice, ft^2

H= height above the centroid of the orifice

V= 1-yr channel protection

Volume, ft^3

6.___ All hydrographs shall be based on a 24-hour storm. (Section 9.3.1.3.2)

7.___ Provide a cross-section of detention pond embankment including outlet pipe, emergency spillway, embankment slopes, minimum embankment top width, outlet control structures, headwalls and riprap. Verify that minimum 1'-6" freeboard above maximum water surface elevation in provided for earthen dams.

8.___ Maximum ponding for parking lot detention: 6" on 10-year storm, 9" on 100-year storm. In truck parking areas, the maximum depth of parking shall be 12" for the 10-year storm. (Section 9.9.5)

9.___ No orifices less than 3" in diameter permitted that are not part of a water quality BMP. A trash rack with a surface area of at least 10 square feet shall protect all orifices less than 15" diameter. Provide detail.

10.___For the site, use pre-developed CN less than or equal to 60 unless approved.

11.___Post-developed flows in every basin must be less than or equal to pre developed flows, unless meeting the conditions of Section 9.3.2. Refer to ___year storm in basin _____.

OTHER COMMENTS

END OF SECTION 10.3