



City of Durham
Public Works Department
Stormwater Services Divisions

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Underground Detention Design Summary

Stormwater Management Construction Plan Review:

A complete stormwater management construction plan submittal includes a design summary for each stormwater BMP, design calculations, plans and specifications showing BMP, inlet and outlet structure details.

I. PROJECT INFORMATION

Project Name: _____ Phase _____

PIN: _____ Case #: _____

Design Contact Person: _____ Phone #: (____) ____ - _____

Legal Name of Owner: _____

Owner Contact: _____ Phone #: (____) ____ - _____

Owner Address: _____

Deed Book _____ Page # _____ or Plat Book _____ Page# _____ for BMP Property

For projects with multiple basins, specify which pond this worksheet applies to: _____

Detention provided for: _____ 1-year _____ 2-year _____ 10-year _____ other _____

Elevations

Bottom elevation	_____	ft. (<i>invert out elevation of system</i>)
1-year storm orifice/weir elevation	_____	ft. (<i>invert elevation</i>)
1-year storm water surface elevation	_____	ft. (<i>elevation at the outlet of system</i>)
2-year storm orifice/weir elevation	_____	ft. (<i>invert elevation</i>)
2-year storm water surface elevation	_____	ft. (<i>elevation at the outlet of system</i>)
10-year storm orifice/weir elevation	_____	ft. (<i>invert elevation</i>)
10-year storm water surface elevation	_____	ft. (<i>elevation at the outlet of system</i>)
Emergency spillway elevation	_____	ft. (<i>invert of emergency spillway</i>)
Ground Surface Elevation	_____	ft. (<i>elevation of ground above outlet</i>)
Maximum Water Surface Elevation (____-year storm)	_____	ft. (<i>elevation at the outlet of system</i>)

Areas

Drainage area _____ ac. (*total drainage to the facility*)

Volumes

Total Storage Volume Provided _____ ft³ (*volume detained at design storm*)

Discharges (Specify only applicable frequency events)

At BMP

	1-year	2-year	10-year	____-year
Inflow	_____ cfs	_____ cfs	_____ cfs	_____ cfs
Routed outflow	_____ cfs	_____ cfs	_____ cfs	_____ cfs

At Analysis Point(s) that BMP Contributes to

	1-year	2-year	10-year	____-year
Pre-development	_____ cfs	_____ cfs	_____ cfs	_____ cfs
Post-development w/o detention	_____ cfs	_____ cfs	_____ cfs	_____ cfs
With detention	_____ cfs	_____ cfs	_____ cfs	_____ cfs

System Information

1-year storm orifice/weir	diameter_____ in.	length _____ft.	
2-year storm orifice/weir	diameter_____ in.	length _____ft.	
10-year storm orifice/weir	diameter_____ in.	length _____ft.	
____- year storm orifice/weir	diameter_____ in.	length _____ft.	
Principal spillway	diameter_____ in.		
Emergency spillway	width_____ ft.	side slopes ____:1	slope _____%

II. REQUIRED ITEMS CHECKLIST

The following checklist outlines design requirements. In the space provided to indicate the following design requirements have been met and supporting documentation is attached.

Applicant's initials

- _____ a. Riprap outlet protection, if provided, reduces flow to non-erosive velocities (provide calculations).
- _____ b. The system consists of two 60-inch minimum header pipes and two 60-inch minimum perimeter pipes. 36-inch interior pipes for additional storage are provided if needed.
- _____ c. Manhole access has been provided at the 4 corners of the system.
- _____ d. Traffic bearing cleanouts have been provided every 100-feet with a minimum of two per pipe run. Manholes may be counted as cleanouts.
- _____ e. A traffic bearing door (bilco type or approved equal) has been placed at the inlet and outlet of the system.
- _____ f. Spacing of pipe runs are per the manufacturer's specification.
- _____ g. The backfill material has been certified by a Geotechnical Engineer.
- _____ h. The system is water tight for the 10-year hydrostatic pressure calculated at the inlet to the system.
- _____ i. A surface or sub-surface bypass has been sized to safely convey the maximum required design storm.
- _____ j. An operation and maintenance plan for the system has been provided.
- _____ k. A recorded drainage easement is provided for each basin including access to the nearest right-of-way and is graded per Section 8.3, Stormwater Control Facilities (BMPs).
- _____ l. A plan view of the system with grading shown is provided

- _____ m. A profile through the system and emergency bypass is provided. Water surface elevations are shown on the profile.
- _____ n. Outlet structure details are provided.
- _____ o. Compaction specifications for the installation of the system are provided on the plan.

Note: Executed Stormwater Facility Operation and Maintenance Permit Agreement, payment of permit fee per facility and payment of surety are required prior to construction drawing approval.