

# City of West Point

## STORMWATER DETENTION REGULATIONS

### 1. STORMWATER MANAGEMENT REPORT REQUIRED

- a) Every project (except as provided in paragraph (d) below) shall provide a Stormwater Management Report prepared by a Professional Engineer currently registered in the State of Georgia. The purpose of this report shall be to formulate a plan to manage stormwater runoff so that stormwater runoff hazards are not worsened, either upstream or downstream from or within the boundaries of the property being developed.
- b) The Stormwater Management Report shall identify the locations and quantities of stormwater runoff entering and exiting the site for both pre- and post-developed conditions. It shall contain drainage area delineation maps and other exhibits at satisfactory scale and sufficient in quantity and scope to define the boundaries of the site relative to water courses, drainage divides, drainage structures, and other pertinent features.
- c) The analysis of downstream conditions in the report shall address each point or area along the project site's boundaries at which runoff will exit the property. The analysis shall focus on the portion of the drainageway immediately downstream from the project.
- d) The following are exceptions to the requirements of this part:
  1. Construction of a sole single-family house and associated driveway on a vacant lot, except that a project involving subdivision of land into such lots shall be subject to the requirements of this part.
  2. Construction in which there is no increase in impermeable surface and no alteration of stormwater drainage features.

### II. STORMWATER DETENTION REQUIRED

- a) Whenever a Stormwater Management Report indicates that adverse impact from stormwater runoff is expected to result from the development of a property, that project shall be required to provide stormwater detention facilities such that peak flows from the developed site do not exceed those associated with pre-development conditions.
- b) The following criteria shall be evaluated by the Engineer preparing the Stormwater Management Report in determining whether detention should be required for a site:
  1. Existing land uses downstream.
  2. Anticipated future land uses downstream.
  3. Magnitude of increase in peak flows due to development.
  4. Presence of existing drainage problems.
  5. Capacity of existing and anticipated drainage systems.
  6. Creation of concentrated flows where none had occurred previously.
  7. Existing flows generated off-site which pass through the project site.
  8. Anticipated future flows generated off-site which pass through the project site.
  9. The nature of the receiving watercourse.

c) Stormwater detention facilities shall be required for any portion of a site for which development activities will result in increased flows, unless a Professional Engineer currently registered in the State of Georgia certifies and provides certified documentation supporting the conclusion that the following is true and correct as applicable:

1. The post-development runoff from the site will be no more than 1.0 cubic feet per second (c.f.s.) greater than the pre-development runoff, based on the 10-year storm.
2. The undetained flow will pass through the downstream properties, in permanent drainage easements obtained by the developer and placed on record in the office of the Clerk of Superior Court of Troup County, to a new or existing detention facility which has been designed to manage the upstream property's runoff. A copy of a written permanent maintenance agreement between the Developer and the Owner of the land on which the detention facility and drainage easements are located shall be submitted to the City along with the Stormwater Management Report. (Amended on 2/13/01)

d) In the event the Professional Engineer has concluded that stormwater detention will not be necessary based on the conditions above, a pre- design conference with the City shall be required before the submittal of development plans. Waiving of stormwater detention requirements does not negate the requirement for providing adequate measures for soil erosion and sedimentation control, and in some cases sediment ponds may still be required.

### III. DETENTION DESIGN CRITERIA - GENERAL

a) All stormwater detention design calculations shall be certified by a Professional Engineer currently registered in the State of Georgia.

b) All stormwater detention facilities shall be designed to control the peak flow rates associated with storms having 2-year, 10-year, 25-year, and 100-year frequencies.

c) A variety of methods of achieving stormwater management goals shall be acceptable in providing detention facilities. The type of facility provided shall be based on the following criteria:

1. The type of development for which the detention facility is being provided.
2. The type of development which the detention facility is intended to protect.
3. Volume of stormwater to be stored.
4. Origin and magnitude of the flows to be managed.
5. Topographic opportunities and limitations.
6. Safety considerations.
7. Maintenance requirements.
8. Aesthetic considerations.
9. Likelihood of facility operation interfering with access to public or private facilities.
10. Proximity of facility to property lines, utilities, buffers, etc.
11. Similar site-specific constraints.

d) Detention facilities may be of any of the following types, and two types may be used in combination with one another:

1. Normally-dry basins, whether excavated or created by damming a natural drainage feature.
2. Lakes and ponds, whether excavated or created by damming a natural drainage feature.
3. Parking lot facilities.
4. Underground facilities.

e) Reservoir routine methods shall be used for all detention facility design.

f) The detention methodology required for any given project shall conform to Table A. Although the various methods shown are authorized, it shall be the responsibility of the design Engineer to use the appropriate coefficients and applications which will result in compliance with the requirements and intent of these Regulations.

g) Runoff coefficients used for pre- and post-development conditions for the Rational Method shall be consistent with those shown in Table B. For the SCS method, the Runoff Curve Numbers found in the "Manual for Erosion and Sediment Control in Georgia" shall be used.

h) If either the Rational Method or the SCS Method is used for detention design, calculations shall be provided showing how all times of concentration or lag times were computed, both for pre- and post-developed conditions. Likewise, adequate support must be provided for all composite runoff coefficients or curve numbers used.

i) If a computer program is used for detention design, including generating and routing hydrographs, the output from the program shall be summarized in the Stormwater Management Report, and the name and version of the program shall be indicated. Computer output sheets shall be attached to the report.

j) The design of every detention facility of any type shall consider the effects of malfunctioning of the primary outlet system. A safe path for overflow-condition flows shall be provided.

#### IV. DETENTION FACILITY LOCATION CRITERIA

a) For purposes of these Regulations, a detention facility shall be deemed to consist of the area within the maximum design ponding limits, the dam (if one) including all embankment slopes and wall footings (if applicable). primary and emergency outlet works, any drainage and access easements, and any energy dissipation devices.

b) Detention facilities, to the greatest extent feasible, shall be located so as to minimize the amount of flow generated on-site which bypasses the facility.

c) No portion of any detention facility shall disturb any required buffer, landscape strip, or tree protection area

**Table A**  
**DETENTION METHODOLOGY BY DRAINAGE BASIN SIZE**

<u>TOTAL ACRES WITHIN BASIN</u>	<u>METHODOLOGY</u>
Up to 10	Rational
Over 10 to 100	Rational or SCS
Over 100 to 2,000	SCS or HEC-1
Over 2,000	HEC-1 or TR-20

1. For the purpose of these Regulations, a drainage basin includes all of the acreage which will contribute flow to a study point of the site being developed. Such study point will typically be located along a downstream property line.

2. All sub-basins draining a project which fall within the same size category above should be analyzed using the same methodology.

3. Under no circumstances will the "bowstring" method be acceptable.

d) The 100-year ponding limits of a detention facility shall not encroach upon a public right-of-way.

e) Detention facilities may be located within or encroach upon utility easements or rights-of-way, upon receipt by the City of written permission from both the property and utility owners.

f) Detention facilities may be constructed within recreation areas if the following criteria are met:

1. Ownership of the area will be held by a qualified Property Owners Association, Homeowners Association, or other private party.

2. Permanent structures, such as buildings and swimming pools, will not be constructed within the boundaries of the detention facility.

#### V. DETENTION FACILITY MAINTENANCE

a) The detention storage capacity or function of any detention basin, pond or other impoundment, whether natural or manmade, shall not be removed or diminished without the express approval of the City.

b) It shall be the responsibility of the property owner to maintain the operational characteristics of any facility constructed on the Owner's property for stormwater detention pursuant to City requirements and to maintain the facility free of obstruction, silt or debris.

**Table B**  
**RUNOFF COEFFICIENTS FOR VARIOUS LAND-USES**  
**TYPICAL VALUES \*\***

Slope	Land-Use	Sandy Soils		Clay Soils	
		Min.	Max.	Min.	Max.
Flat (0-2%)	Woodlands	0.10	0.15	0.15	0.20
	*Pasture, grass & farmland	0.15	0.20	0.20	0.25
	Rooftops and pavement	0.95		0.95	
	Single family residential:				
	½ acre lots & larger	0.30	0.35	0.35	0.45
	Smaller lots	0.35	0.45	0.40	0.50
	Multi-family residential:				
	Duplexes	0.35	0.45	0.40	0.50
	Apartments, townhouses, and condominiums	0.45	0.60	0.50	0.70
	Commercial and Industrial	0.50	0.95	0.50	0.95
	Rolling (2-7%)	Woodlands	0.15	0.20	0.20
*Pasture, grass & farmland		0.20	0.25	0.25	0.30
Rooftops and pavement		0.95		0.95	
Single family residential:					
½ acre lots and larger		0.35	0.50	0.40	0.55
Smaller lots		0.40	0.55	0.45	0.60
Multi-family residential:					
Duplexes		0.40	0.55	0.45	0.60
Apartments, townhouses, and condominiums		0.50	0.70	0.60	0.80
Commercial and Industrial		0.50	0.95	0.60	0.95
Steep (7%+)		Woodlands	0.20	0.25	0.25
	*Pasture, grass & farmland	0.25	0.35	0.30	0.40
	Rooftops and pavement	0.95		0.95	
	Single family residential:				
	½ acre lots and larger	0.40	0.55	0.50	0.65
	Smaller lots	0.45	0.60	0.55	0.70
	Multi-family residential:				
	Duplexes	0.45	0.60	0.55	0.70
	Apartments, townhouses, and condominiums	0.60	0.75	0.65	0.85
	Commercial and Industrial	0.60	0.95	0.65	0.95

\* Coefficients assume good ground cover and conservation treatment.

\*\* Weighted coefficient based on percentage of impervious surfaces and green areas must be selected for each site.

## VI. DETENTION FACILITY CONSTRUCTION STANDARDS

NOTE: These are minimum standards for construction of small detention facilities. Permanently wet facilities are to be constructed in accordance with good Geotechnical Engineering practices.

- a) Stormwater detention facilities shall be constructed in accordance with plans reviewed and approved by the City and shall be in place and inspected as soon as practical in the construction sequence of the projects.
- b) Within a detention basin, all stumps are to be cut flush with the ground or removed and all debris is to be removed below the 10-year ponding elevation.
- c) Detention slopes which are disturbed are to be grassed. The ground cover within the basin shall be well established with all exposed areas covered prior to the approval of the detention facility certification and record drawings.
- d) The embankments and cut slopes in the detention basin shall have a maximum slope of 2' horizontal per 1' vertical (2:1).
- e) The crest of the embankment shall be constructed at least 1' above the 100-year ponding elevation. The crest of the embankment shall be a minimum of 6' wide.
- f) For normally dry detention facilities, the bottom of the pond shall slope toward the outlet structure at a slope of 1 % or greater to provide positive drainage.
- g) Wet ponds or lakes shall be provided with a system for draining the facility, if possible, within the constraints of the site.
- h) If the developer desires to place a fence around a detention facility, it shall be a minimum 4-foot-high fence of durable material, with a 12-foot- wide access gate.

## VII. DETENTION FACILITY ENGINEER'S CERTIFICATION AND RECORD DRAWINGS

A certified record survey of each detention facility shall be prepared by a Land Surveyor currently registered in the State of Georgia. A certified record drawing of the facility shall be prepared based upon this survey. Based on the actual parameters established on the record drawing, an addendum to the Stormwater Management Report shall be prepared which demonstrates that the facility, as constructed, complies with the requirements of these Regulations. The amended Stormwater Management Report shall be certified by a Professional Engineer currently registered in the State of Georgia. The amended report will be submitted to the City for review and approval prior to issuance of a Certificate of Occupancy or approval of the final plat.

## DRAINAGE STRUCTURE DRAWINGS

The following standard drawings shall be applied to all drainage structures on public rights-of-way or otherwise to be accepted for maintenance by the City of Newnan.

### **Standards. Georgia Department of Transportation:**

Pipe Culverts (concrete or corrugated steel), No.1030D

[Steel pipe must be bituminous-coated. Where height of fill above top of pipe is less than 15 feet, use 0.064" thickness (16 gage) for pipe size through 48" (2-2/3" x 1/2" corrugation), or through 66" (3" x 1" corrugation). Larger pipe or greater fill height may require greater thickness].

Inlet/outlet for pipes 42" d. or less - Flared End Sections for Pipes, No. 1120

Inlet/outlet for pipes 48" d. or greater - Inlet Headwall-Outlet Headwall, No. 1125

Catch Basins, No.1 033D & 1033D PRECAST ("single-wing") and No.1 034D & 1034D PRECAST ("double-wing")

Circular Base Units and Risers for Catch Basins, No.1040 (including details for adapting circular precast sections for use with No.1033D and 1034D inlet designs)

Junction Boxes, No. 9031 U

Concrete Curb & Gutter, No. 9032B [30", Type 2]

Concrete Valley Gutter at Drive [for driveway with apron-type instead of street- intersection-type entrance], No. 9031J

Concrete Spillways (typical use: along roadway at end of curb), No. 9013

**Drainage Structure Specifications  
for the  
City of West Point, Georgia**

These specifications are adapted from and reference Standard Specifications for Road and Bridge Construction, 1983 Edition, Georgia Department of Transportation.

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**SECTION 550**  
**STORM DRAIN PIPE, PIPE-ARCH CULVERTS, AND SIDE DRAIN PIPE**

550.01 DESCRIPTION: This Work shall consist of furnishing and installing Storm Drain Pipe; Pipe-Arch Culverts; . . . Flared End Section; . . . and Side Drain Pipe. The Type of Pipe to be used, together with acceptable alternates when applicable, shall be as designated on the Plans.

550-02 MATERIALS: Materials shall meet the requirements of the following:

Backfill Materials	Section 207
Reinforced Concrete Pipe	Section 843.01
Nonreinforced Concrete Pipe	Section 843.02
Mortar and Grout	Section 834.03
Bituminous Plastic Cement	Section 848.10
Rubber Type Gasket Joints	Section 848.04.A

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O-Ring Gaskets	Section 848.11
Preformed Plastic Gaskets	Section 848.12
Corrugated Steel Pipe	Section 844.01
Bituminous Coated Corrugated Steel Pipe	Section 844.02
Corrugated Aluminum Alloy Pipe	Section 840.01
Bituminous Coated Corrugated Aluminum Pipe	Section 840.03
Aluminized Type 2 Corrugated Steel Pipe	Section 844.08

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Bituminous Coated, Galvanized Steel Culverts	Section 844.05
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550.03 CONSTRUCTION:

A) General Requirements:

Structures shall be installed in accordance with the Specifications and in reasonably close conformance with the details shown on the Plans or as directed. Structure excavation and foundation preparation shall be as set

forth in Section 207. Before pipe and pipe-arches are installed, the foundation material shall be shaped as shown on the Plans.

The Contractor shall provide necessary temporary drainage.

Before any traffic over a culvert is allowed, the contractor shall provide an adequate depth and width of compacted backfill to protect the structure from damage or displacement. Any damage or displacement that may occur after installing and backfilling due to traffic or erosion shall be repaired or corrected. . . Any debris or silt that constricts the flow through a pipe shall be removed by the Contractor as often as necessary to maintain drainage. . . All pipes and pipe-arch culverts shall be cleaned before the Work is accepted.

B) Installation:

1. Concrete Pipe: Flat bottom and circular sections shall be laid in a prepared trench with the socket ends pointing upstream. Sections may be joined by mortar joints, bituminous plastic cement joints, rubber-type gasket joints, O-ringed gasket joints, or preformed plastic gasket joints. In mortar and bituminous plastic cement joints the annular space shall be filled with the joint material, and the inside of each joint wiped smooth. Mortar joints shall be made in the same manner except that the annular space shall be thoroughly wetted before filling with joint material. After the initial set, the mortar on the outside shall be protected from the air and sun with thorough wet earth or burlap cover. Rubber-Type, O-Ring, and Preformed Plastic Gasket Joints shall be installed in accordance with the manufacturer's recommendations.

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3. Corrugated Aluminum or Steel Pipe and Pipe-Arches: Pipe sections shall be laid in a prepared trench with outside laps of circumferential joints pointing upstream and with longitudinal joints at the sides. Coupling bands, fastened by two or more bolts, shall join the sections. The space between adjoining sections shall be not more than the width of one corrugation.

All damaged spots in galvanized coating that expose the base metal shall be repaired in accordance with Section 645, before the structure is backfilled. All damaged spots in bituminous coating that expose the base metal shall be recoated with asphalt before the structure is backfilled.

Joints for smooth lined asbestos bonded, corrugated steel pipe shall be formed with an "O" ring type mechanical seal assembly when so detailed on the Plans. Seal assembly should be furnished by the same manufacturer that supplies the pipe.

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7. Flared End Sections may be specified for use either on the inlet or outlet or both ends of storm drain pipe according to Plan Details.

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**SECTION 668  
MISCELLANEOUS DRAINAGE STRUCTURES**

668.01 DESCRIPTION: This work shall consist of the construction of Catch Basins. . . [and] Junction Boxes. . . in accordance with these Specifications, and reasonably close conformity with the lines and grades shown on the Plans or established by the Engineer.

668.02 MATERIALS: Unless a certain type of construction is specified on the Plans or in the Proposal, the various structures included in this Section may be constructed of brick, cast-in-place concrete or precast concrete at the option of the Contractor. Rubble Masonry will be used only when specified on the Plans. Materials shall meet the requirements of the following:

Class "A" or "B"	
Concrete	Section 500.00
Portland Cement	Section 830.01
Brick	Section 834.01
Masonry Stone	Section 834.02
Mortar and Grout	Section 834.03
Nonreinforced Concrete	
Pipe	Section 843.02
Steel Bars for	
Reinforcement	Section 853.01
Gray Iron Castings	Section 854.01
Fine Aggregate for Mortar	Section 801.02
Sand for Bedding Material	Section 801.01
Precast Reinforced Concrete	
Catch Basin, Inlet and	
Manhole Units	Section 866.00

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668.03 CONSTRUCTION:

A) Excavation and Backfill: Excavation and foundation preparation for these structures and for pipes entering and exiting these structures shall be in accordance with the provisions of Section 207 . . . .

B) Concrete: Concrete units may be either poured-in-place or precast. Construction relative to the two types shall conform to the following:

1. Poured-In-Place Units: The throat or other non-reinforced portions of Catch Basins may be Class "B" concrete. The top slab shall be

Class "A" concrete. Construction shall meet the requirements of Section 500.

2. Precast Reinforced Concrete Units:

a) Holes for Pipe: Each unit shall be cast with pipe holes of the specific number and dimensions necessary to incorporate the unit into the drainage system as shown on the Plans. In the event conditions during installation require additional pipe for which no holes have been cast, the Contractor may make such holes provided he replaces or repairs any damaged units to the satisfaction of the Engineer.

b) Pipe Connections: Pipe shall be connected to units with ... either Mortar or Class "A" Concrete.

c) Installation:

1. Precast Reinforced Concrete Units: Such units shall be set to within  $\pm \frac{1}{2}$  inch of grade on a bed of compacted sand bedding material which is approximately 2 to 3 inches thick.

2. Sectional Precast Reinforced Concrete Units: When such units are used to build up extra depth catch basins or drop inlets, the joints between sections shall be filled with mortar and all such joints shall be wiped smooth.

C) Brick Masonry: Brick masonry structures shall be constructed in accordance with the requirements of Section 608.

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E) Castings: Frame castings shall be securely held in place to proper line and grade and made an integral part of the complete structure. All castings subject to use by traffic shall be firm and stable under traffic upon completion of the structure.

F) Maintenance: All structures shall be kept thoroughly clean of all fallen masonry, silt, debris and other foreign matter.

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