

Sec. 30-125. Runoff coefficients.

The runoff coefficients to be used in the Rational Method shall be those indicated in tables 1 and 2. In lieu of providing average block calculations, the engineer for the subdivision may use the table 7.19.3 as applicable. In addition, for any drainage analysis performed using the SCS method, the designer shall select curve numbers in accordance with Urban Hydrology for Small Watersheds Technical Release 55 (TR55) and tables 7.19.4 and 7.19.5.

TABLE 1. RATIONAL METHOD RUNOFF COEFFICIENTS

<i>Development/Subdivision Type</i>	<i>Runoff Coefficient</i>
Residential:	
Single-family detached	0.30 to 0.50
Two-family (duplex)	0.40 to 0.60
Single-family and multifamily attached	0.60 to 0.75
Commercial, retail and office:	
Downtown area	0.70 to 0.95
Neighborhood and outlying areas	0.50 to 0.70
Industrial:	
Light industry	0.50 to 0.80
Heavy industry	0.60 to 0.90
Parks and cemeteries	0.10 to 0.25
Playgrounds	0.20 to 0.40
Railroad yard areas	0.20 to 0.40
Vacant, open space and unimproved areas	0.10 to 0.30

TABLE 2. RUNOFF COEFFICIENTS FOR AVERAGE BLOCK CALCULATIONS

<i>Type</i>	<i>Runoff Coefficient</i>
Asphalt surfaces	0.95
Concrete surfaces	0.95
Roof areas	0.85
Lawns:	
Flat (less than 2% grade)	0.20
Average (2% to 7% grade)	0.25
Steep (greater than 7% grade)	0.30

(Ord. No. 2002-017, § 4(E), 5-20-2002; Ord. No. 2008-010, § 1, 6-16-2008)

Secs. 30-126—30-150. Reserved.

DIVISION 4. ENGINEERING REQUIREMENTS

Sec. 30-151. Generally.

All residential and commercial development that results in increased stormwater runoff exceeding the predevelopment runoff rate shall be required to mitigate the increase through drainage improvements. The drainage improvements shall be based on the design criteria of this division in addition to any other stated provision. The development drainage design shall be based on the five-year storm event for residential developments and the ten-year storm event for commercial developments.

(Ord. No. 2002-017, § 5, 5-20-2002)

Sec. 30-152. Information to be submitted for review.

(a) The following information shall be submitted for development drainage review:

- (1) Existing drainage area map.
- (2) Design drainage area map.
- (3) Hydraulic analysis of the five-year storm event for residential development, the ten-year storm event for commercial development and the 100-year storm event for both types of development.
- (4) Typical sections and stage/storage information of the detention facility.
- (5) Outlet structure details.
- (6) If a detention facility is within a parking lot, parking lot grades, curb grades, areas identifying ponding limits and depths.
- (7) Typical sections, cross sections, and such other details as required by the review engineer for review of the proposed development.
- (8) All hydrographs and routing curves.
- (9) Inflow/outflow results highlighted for the reviewer's ease of identification.
- (10) All other applicable forms, tables, charts, etc.

- (11) Detailed explanation of predevelopment analysis, post-development analysis, routing conclusion, and engineer's evaluation of whether the development has satisfied all the hydraulic requirements.
- (12) Detail of construction access entrance.
- (13) Detail of construction silt fencing and erosion control plan. These items shall be in place prior to construction of the form work for the building improvements and/or site improvements.
- (14) Any development shall provide sufficient access servitude, as well as sufficient drainage servitude around detention facilities as required by the city for the purpose of maintenance of said facility in accordance with this division.
- (15) The signed and sealed completed drainage checklist.

(b) The information required by subsection (a) of this section shall be submitted in a "bound" booklet form with dividers separating predevelopment and post-development outputs for each design storm event as well as the conclusion of the analysis.

(Ord. No. 2002-017, § 5(1), 5-20-2002; Ord. No. 2008-010, § 1, 6-16-2008)

Sec. 30-153. Detention requirements for commercial developments.

Detention requirements for commercial developments are as follows:

- (1) *Permissible detention basins.* The following are permissible detention basins:
 - a. Pond.
 - b. Parking lot; depth of ponding is not to exceed seven inches.
 - c. Underground storage.
 - d. Perimeter swale ditches.
 - e. Detention within required green areas.
 - f. Other methods only with prior approval of the city engineer or his designee.

- (2) *Outlet structures.*
 - a. Design shall be based on the ten-year storm event with analysis of the 100-year storm event.
 - b. Emergency spillways shall be in an area that will least affect traffic flow and not cause flooding of structures intended for occupancy.
- (3) *Plan requirements.* Plan requirements are as follows:
 - a. Existing topographic plan with elevations.
 - b. Grading plan with elevations.
 - c. Minimum of two grading sections of entire site (i.e., one east/west and one north/south). A sufficient number of grading sections shall be provided to adequately evaluate site drainage patterns as required by the city engineer.
 - d. Profile of outlet structure connecting to existing outfall depicting utility crossings and identifying conflicts, if any.
- (4) *Maintenance of stormwater management facility.*
 - a. The owner of the proposed development or any successor who acquires title to the stormwater management facility shall at all times maintain the design section of the stormwater management facility as indicated on the site drainage plan and in the drainage impact analysis report. If the city engineer determines that the stormwater management facility has not been maintained, the owner shall make the necessary modifications to conform to the original approved design sections, requirements, etc., within a 30-day period from written notification from the city. If the owner does not act within this timeframe to remedy the situation, the city may perform the necessary modification, improvements, etc., and