

Stormwater runoff evaluation – See TR-55 and SBUH Excel examples on Canvas

1. Acquire City Stormwater Manual
2. Determine runoff method to be used
 - a. Rational
 - b. SCS, TR-55, SBUH
 - c. Select storm to evaluate per municipality code: 2, 10, 25, 50 or 100-year storm
3. Estimate Pre and post development runoff. For urban areas suggest SBUH (see Excel example on Canvas)
 - a. Estimate predevelopment runoff
 - i. Either current conditions (as developed)
 - ii. Original natural settings
 - b. Estimate post development runoff. Use SBUH
 - i. Estimate runoff for each catch basin
 1. Determine time of concentration for each catch basin (t_c) and T_c is sum of all t_c .
 2. Time of concentration: Sheet flow, shallow concentrated flow, and channel/pipe flow
 3. The time of concentration for an area consists of an inlet time plus the time of flow in a closed conduit or open channel to the design point.
 - ii. Estimate runoff for entire site using T_c
 - iii. Use curve numbers for urban areas (assumes areas drain to stormwater system). See Table 2-2a in SCS manual.

Table 2-2a.—Runoff curve numbers for urban areas¹

4. All new developments must retain new burden of runoff
 - a. New additional runoff = (post development – predevelopment)
 - b. New additional runoff needs to be retained on site for:
 - i. Infiltration, water quality treatment, evaporation, slows runoff down, promotes wildlife, aesthetically pleasing. Uses native plants, rocks, etc.
 - ii. Methods:
 1. Use ponds
 2. Underground cells
 3. Swales, planter boxes, curb cuts/rain gardens, green roofs, etc.
5. Size pipes for each catch basin runoff (see Excel example) in site using selected storm
 - a. Typical maximum flow in pipe is ~50%
 - b. Min/max pipe velocity ~ 2ft/sec (to reduce sedimentation in pipe) to max. ~ 6ft/sec. **Verify with your municipality codes.**
 - c. Size pipes for each catch basin
 - d. Pipes conveyance – go from smaller to larger. As an example stormwater pipes may be 4”- 6” around building catch basin, 8” for parking lot catch basin, and then 10” as catch basins merge.
6. Have escape route for runoff for 50 and 100 –year storm