

June 1, 2007
Rev. June 11, 2009

ADMINISTRATIVE POLICY FOR STORMWATER MANAGEMENT AND DRAINAGE DESIGN STANDARDS

In an effort to comply with the Connecticut Department of Environmental Protection Guidelines for Soil Erosion and Sediment and Control and Stormwater Quality Manual, the Town of Trumbull Engineering Department is requiring specific design standards to protect the waters of the Town of Trumbull and adjoining downstream municipalities from the adverse impacts of post construction stormwater runoff. Below, please find a set of guidelines by which applicants should design and submit drainage proposals for review, effective July 1, 2009.

This document is an attempt to incorporate reasonable goals for attenuating the impact of runoff, abate existing flooding problems and to address water quality issues at the same time. By implementing a standard this department hopes to create an environment in which a consistent methodology is used by all individuals submitting development proposals, and to clarify exactly what is expected. From time to time these requirements may be modified, updated, or adapted to account for new government regulations, changes in technology, or constructive criticism by the Engineering community at large.

Stormwater Design Criteria

If the proposed construction project increases the total impervious area on the lot by more than 800 sf, then a site plan and drainage calculations, prepared by a licensed civil engineer must be submitted for review and approval by the Town Engineer prior to the issuance of permit. For the case where permits are required by the Inland Wetland and Watercourse Commission and/or Planning and Zoning Commission, the site plan and drainage calculations are to be submitted at the same time as the application. The minimum necessary submission elements for any design either computer generated or manually plotted are:

1. The proposed development shall be planned so that there will be no increase in the post development peak flow rate from the site for each 2-yr, 10-yr and 25-yr design storm frequency, 24-hour duration. Design rainfalls shall be 3.3, 5.0 and 5.7 inches respectively.
2. Zero incremental runoff shall be accomplished by appropriate water retention or infiltration systems designed to achieve a gradual, controlled and dispersed storm water release, by such means as retention/detention basins, dry wells, diversion reservoirs, or permeable driveways or other systems designed in accordance with good engineering practices and sound environmental and conservation objectives.

3. Natural Resource Conservation Service (formerly SCS) TR-55 and TR-20 methodology shall be used. Rational Methodology will not be accepted. Design storms shall be Type III, 24-hour duration.
4. A brief narrative of the activity, a summary of the changes to impervious area, and a tabulation of design input values.
5. Graphical hydrographs and routing diagrams are required for all watershed subareas and all detention structures must be routed. Evaluations of curve number, (CN), and time of concentration for each watershed subarea are also required.
6. A description, design detail, evaluation and summary for each storage device within the system.
7. A graphic display of all appropriate hydrographs.
8. A tabular summary of routing results.
9. The storm runoff calculations shall model existing conditions as development as of 1964 per Town aerial maps.
10. Percolation tests and test pits must be conducted at the location of subsurface drainage facilities, prior to the design submission, and be shown on the plans and incorporated into the design. These must be witnessed in the field by our inspector.
11. The water quality of the proposed discharge must be addressed in accordance with 2004 Connecticut Stormwater Manual, including Water Quality Volume calculation.

Further design standards and considerations include:

1. For embankment detention or retention ponds, the minimum top width of the embankment shall be ten feet (10'). The combined upstream and downstream side slopes of the embankment shall not be less than five horizontal to one vertical (5:1), with neither slope steeper than 2:1. Seepage collars shall be designed for pipelines passing through the embankments, with a minimum of two collars spaced 15' apart. The emergency spillway shall be designed to pass the entire peak discharge of the design storms plus an allowance of one-foot (1') of freeboard below the top of the embankment. The side slopes of the emergency spillway shall be no steeper than five horizontal to one vertical (5:1) to permit passage of maintenance vehicles along the top of the embankment. Where the embankment is formed on original ground, strip organic material and other unsuitable soils before placing fill. Embankment shall be compacted to 95% Proctor Density. Material shall be placed in lifts no greater than twelve inches (12") and shall be composed of nongranular clean fill free of organic material. No stones larger than nine inches (9") shall be permitted, and shall comprise no more than 5% of the embankment volume. The embankment shall be suitably protected against erosion. Town inspection is required during construction and when completed.
2. All proposed detention or retention ponds shall have an emergency outlet sized to safely pass the post development peak runoff from the 100 year design storm, 24-hour rainfall in a controlled manner without eroding the outlet works and downstream drainages. Design rainfall shall be 7.2 inches.

3. Maximum infiltration into the ground is encouraged. Design of the stormwater management system shall consider reducing run-off by use of such techniques as minimizing impervious areas and maximizing travel times by using grass or rock-lined channels in lieu of storm drainage pipes.
4. Design of detention basins, sediment ponds and other structures shall be in accordance with the Chapter 9 of the Connecticut Guidelines for Soil Erosion and Sediment Control (2002 as amended). Design of infiltration practices shall be in accordance with 2004 Stormwater Quality Manual.
5. When engineering, aesthetics, and economic factors make combined detention or other drainage facilities more practical for construction, the Town Engineer may permit several developers to construct joint facilities.
6. Run-off management system components shall be designed according to sound engineering principles and installed in a sequence that permits each to function as intended without causing a hazard. Single components shall not be installed until plans for the entire run-off management system are completed and approved. Final discharge points must be approved by the Town Engineer. An appropriate downstream drainage study may be required to demonstrate the feasibility of a drainage project.
7. All on-site facilities shall be properly maintained by the owners so that they do not become nuisances. A plan of operation and maintenance shall be prepared for use by the owner, or others responsible for the system, to ensure that each component functions properly. This plan shall provide requirements for periodic inspections, and itemized maintenance of individual components, including outlets. It shall specify who is responsible for maintenance. Adequate access must be provided for maintenance vehicles.
8. All run-off control structures located on private property, whether dedicated to the Town or not, shall be accessible at all times for Town inspection. Easements and appropriate grading shall provide access for maintenance vehicles to all parts of the detention, which may require maintenance. Access easements shall have a minimum width of twenty feet (20').
9. Appropriate safety features and devices shall be installed to protect humans and animals from such accidents as falling or drowning. Temporary or permanent fencing and guide rails may be deemed necessary to provide such protection.
10. Permits for stormwater management systems may also be required from the Inland Wetlands and Watercourses Commission where such systems may have an impact on inland wetlands or from any other regulatory agency or commission as applicable.