

Engineering Department

Frank M. Smeriglio, PE
Town Engineer

Town Hall

5866 Main Street
Trumbull, Connecticut 06611
Telephone: (203) 452-5050
Fax: (203) 452-5061

Effective January 1, 2014

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 & Sediment 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 January 1, 2014.

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

- A) If the proposed construction project increases the total impervious area on the lot by less than 400 square feet on a site, then the applicant must demonstrate low impact development in handling the storm runoff. Examples of low impact developments include, but not limited to, discharging roof runoff onto splash pads, not discharging directly to a neighbor's property, not tying runoff directly to the town's drainage system, utilizing any other proposed green infrastructure systems, etc. Depending on the configuration of the proposed improvement relative to abutting properties, the Engineering Department reserves the right to require the applicant to submit drainage calculations prepared by a Civil Engineer licensed in Connecticut and provide a certification that the proposed development will not have a negative impact to the proposed property, abutting and/or downstream properties.
- B) If the proposed construction project increases the total impervious area on the lot by more than 400 square feet on a site, then a site plan and drainage calculations, prepared by a Civil Engineer, licensed in Connecticut, must be submitted for review and approval by the Town Engineer prior to the issuance of permit. The licensed civil engineer must provide a certification that the proposed development will not have a negative impact to the proposed property, abutting and downstream properties.
- C) If the proposed construction project requires a permit by the Inland Wetland & Watercourse Commission and Planning & Zoning Commission, the site plan

and drainage calculations are to be submitted at the same time as the application. For ZBA applications, Engineering Department may require site plans and drainage calculation 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, 5-yr, 10-yr and 25-yr design storm frequency, 24-hour duration. Design rainfalls shall be 3.3, 4.3, 5.0 and 5.7 inches respectively. For large size developments, Engineering Department may require a reduction in the 100 year storm event for the proposed development.
2. In addition to item 1, if the storm runoff drains directly onto neighboring properties, storm drainage system must be sized to store and infiltrate the minimum of either increase in volume generated in a 25 year storm or the volume generated by a 2 year storm for the entire impervious areas tributary to the storm drainage system. Overflow pipe must not drain directly towards the downstream property. Sheet flow conditions for the overflow must be proposed as part of the development plans.
3. If an increase in peak flow rate is proposed, Civil Engineer licensed in Connecticut must analyze down stream drainage structures, abutting and downstream properties to determine that there will not be any negative impacts to them.
4. Green infrastructure systems are encouraged. Design Engineer can utilize best engineering practices to determine appropriate Curve Number (CN), Time of Concentration (T^c) or any other drainage factors for the green infrastructure.
5. Zero incremental runoff shall be accomplished by appropriate water retention, detention 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.
6. Natural Resource Conservation Service (formerly SCS) TR-55 and TR-20 methodology shall be used. Rational Methodology will not be accepted, unless approved by the Engineering Department. Design storms shall be Type III, 24-hour duration. Rational method can be used for pipe sizing.
7. Orientation Map must be submitted.
8. A brief narrative of the activity, a summary of the changes to impervious area (existing vs. proposed), and a tabulation of design input values.
9. A water runoff basin map of the property must be submitted. The water runoff basin map must depict all watershed subareas on the property (existing and proposed).
10. 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.
11. A description, design detail, evaluation and summary for each storage device within the system, including control structure.
12. A tabular summary of routing results.

13. The storm runoff calculations shall model existing conditions as development as of 1964 per Town aerial maps or as approved by the Engineering Department.
14. 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 may be witnessed in the field by our inspector. Percolation tests must be conducted as defined by Health Codes and must be conducted in the soil layer below the proposed infiltration gallery.
15. The water quality of the proposed discharge must be addressed in accordance with 2004 Connecticut Stormwater Manual, including Water Quality Volume calculation.
16. Minimum requirements for water quality control include 24 inch sumps and a bell trap over the out let pipe at all catch basins. It is not recommended to install pipe runs from catch basin to catch basin on private properties.
17. For large size developments, the proposed development must remove eighty percent of the Total Suspended Solids for the first flush stormwater. Or as approved by the Engineering Department.
18. Proposed main run storm line shall not tie through catch basins owned and maintained by the Town of Trumbull. Unless approved by the Engineering Department.
19. Proposed pipe runs shall be designed to withstand H-20 loading or better where applicable. All proposed Town owned pipes shall be either SDR-35 pipe or Reinforced Concrete pipe. Any substitutions must be approved by the Engineering Department.
20. For developments requiring a Civil Engineer licensed in Connecticut, as described above in Items B and C, upon completion of the development and prior to the Engineering Departments sign-off for Certificate of Occupancy, the Civil Engineer licensed in Connecticut must submit a certification letter indicating that the Proposed Development has been constructed in accordance with the Design plans. If there are any changes between the as-built drawing and the design plans, the Civil Engineer of record must list the changes and indicate that with the changes, there will not be a negative impact on the proposed property, abutting and downstream properties. Additionally, an as-built drawing of the proposed improvements, as prepared by a Connecticut licensed survey, must be submitted to the Engineering Department for review and approval prior to the sign-off.

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. Minimum separation of 12" must be achieved between the bottom of infiltration gallery used for storage and any restrictive layer (i.e. soil mottling, ledge or any other restrictive layer) as determined by the test pits. When infiltration rates are utilized for a design, Design Engineer of record must specifically certify that there are no impacts to the existing/proposed building foundation and/or foundation drains.
4. Footing drains shall not tie into the proposed detention/retention system used for storm water storage and shall not discharge directly at grade towards the roadway or downstream property. Design Engineer shall design a separate system to accommodate the footing drain in a manner to not cause an impact on existing or downstream properties.
5. Infiltration galleries must be a minimum of 20 feet from the down stream property lines.
6. 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.
7. 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.
8. 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.

9. 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').
10. 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.
11. 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.
12. The applicant is responsible to obtain any other applicable state, federal permits and/or other permits required by different agencies for proposed improvements.
13. Any Storm drainage tie-in to the Town drainage facility will require a Storm Drainage waiver to be signed by the owner of the property.
14. Any proposed developments located within flood prone areas defined in Article 11 of the Trumbull Zoning Regulations must adhere to the requirements in Article 11.
15. Based on the varying circumstances for proposed property developments, The Engineering Department reserves the right to request any other additional information not mentioned above.