

**Adopted 12/20/23**  
**Effective 1/9/24**

#### **470-713 STORMWATER MANAGEMENT**

##### **A. Purpose and General Requirements**

1. The following stormwater management requirements are established to minimize the negative environmental and other impacts due to, and to protect public health, safety and general welfare where threats thereto may be created or exacerbated by, altered stormwater runoff as a result of development.
2. Stormwater management for a particular site/location shall be encompassed in a compliant stormwater management plan (SWMP) for that site/location. The SWMP shall be compliant with and satisfy all applicable federal, state, and local laws, regulations, and standards. The SWMP shall prioritize and further the following objectives:
  - a. Maximize low impact development (LID) principles and techniques.
  - b. Minimize potential for increased flooding or flood damage in any location.
  - c. Preserve existing natural drainage patterns and pre-development site hydrology.
  - d. Maximize groundwater recharge.
  - e. Minimize soil erosion and sedimentation potential as a result of site development and operations.
  - f. Preventing pollution in various forms as may be associated with stormwater as a result of site development and operations.
  - g. Preserving, maintaining, and enhancing the positive environmental, biological, recreational, functional, and aesthetic characteristics and benefits of surface waters, wetlands, buffer zones, and related features.
  - h. Assuring the adequacy of the proposed stormwater facilities and any existing stormwater facilities that may be affected as a result of site development and operations.
  - i. Providing proper maintenance to stormwater facilities installed to ensure benefits over time.
3. All stormwater management related plans and design shall:
  - a. Meet the requirements of this Section 470-713.
  - b. Apply sound engineering practices and judgement.
  - c. Utilize the latest and most appropriate accepted industry standard techniques, methods, and means.
  - d. Be prepared and appropriately certified by a licensed engineer in the State of Connecticut.

##### **B. Applicability**

1. The provisions of this section shall apply to any new or modification development that creates or effectively replaces\* impervious areas or other surface areas, exposed to rainfall and that may affect the quantity or quality of stormwater runoff from a site, in aggregate subsequent to [effective date here], in an amount greater than 15,000 square feet. (\*Pavement rehabilitation that removes less than 50% of the thickness of the hardscape pavement depth shall not be considered replacement.)

C. Reference Standards

The following reference standards and requirements shall apply, and the same are incorporated herein as applicable, in order of priority:

1. Applicable federal and state laws and regulations, and applicable local laws.
2. The provisions of any applicable federal or state regulatory approval or enforcement action.
3. These Regulations and the provisions of any applicable local approval or enforcement action.
4. Any applicable standards, details, requirements, or other such documents issued by the Director of Public Works and promulgated on the web pages associated with Public Works on the Town website ([www.townofcanton.org](http://www.townofcanton.org)).
5. The 2023 edition of the Connecticut Stormwater Quality Manual (CT\_SWQM), issued by the Connecticut Department of Energy and Environmental Protection (CTDEEP), (publication date of September 30, 2023,) including any amendments or supplements duly issued thereto. The provisions of this document are incorporated as required standards.
6. The 2023 edition of the Connecticut Guidelines for Soil Erosion & Sediment Control (CT\_SESCG), issued by the Council on Soils and Water Conservation in collaboration with the Connecticut Department of Energy and Environmental Protection, (publication date of September 30, 2023,) including any amendments or supplements duly issued thereto. The provisions of this document are incorporated as required standards.
7. The chapters of the latest edition of the Connecticut Department of Transportation (CTDOT) Drainage Manual, including any amendments or supplements duly issued thereto, covering the following topics (with the chapter number as of January 2024 in parentheses): culverts (Chapters 4 and 8), channels (Chapter 7), bridges (Chapter 9), and storm drainage systems (Chapter 11). The provisions of this document are incorporated as required standards, as may be applicable.

D. Stormwater Management Plan (SWMP)

1. A stormwater management plan prepared in accordance with Chapter 12 of the CT\_SWQM shall be a required component of the site plan for all applicable development.

E. Hydrology

1. Design Storm Selection – The following design storms shall be used for subject facility design/purpose:
  - a. Flood mitigation (i.e. avoiding negative effects of flooding on structures, roadways, sidewalks, and other facilities and spaces): 100-year storm.
  - b. Detention/retention facilities and other stormwater facilities or means that effectively direct or convey stormwater offsite: 2-, 10-, and 100-year 24-hour storms; (unless it is determined that a shorter duration storm results in a more critical flow for evaluation.)
  - c. Culverts: drainage area less than 1 square mile: 50-year storm; others: 100-year storm.
  - d. Other drainage systems or facilities: 25-year storm.

2. Precipitation Data: NOAA Atlas 14 and NOAA\_D rainfall distribution data/information shall be used as appropriate for hydrologic analyses as set forth in Chapter 4 of the CT\_SWQM.
  3. Hydrology Methods
    - a. A number of various methods for hydrologic analysis are available; and the designer may use whatever method is deemed fit thereby in accordance with the general requirements hereof, with the following restrictions:
    - b. The rational method may not be used for drainage basin areas larger than 10 acres.
    - c. The rational method may not be used to size or route flows through stormwater storage or infiltration facilities or other similar purposes.
- F. Stormwater Collection and Conveyance
1. Conduits
    - a. The following materials, when used for the manufacture or construction of conduits specifically designed for conveying storm drainage, are approved for use:
      - i. Reinforced portland cement concrete; reinforced concrete pipe (RCP) shall be class IV or class V.
      - ii. Polyvinyl chloride pipe (pvc) per ASTM F794 or R949
      - iii. Polypropylene pipe per AASHTO M330
      - iv. Corrugated high density polyethylene pipe (HDPE) per AASHTO M294; except that HDPE is not allowed under Town roadways, parking lots, or similar Town facilities intended for vehicular traffic.
    - b. Conduits composed of other materials may be approved if appropriateness for the particular circumstances is demonstrated.
    - c. Minimum cover depths for reinforced concrete pipe shall be 1.75 feet under Town roadways, 1.5 feet under private roads and parking lots, and 1 foot elsewhere.
    - d. Minimum and maximum cover depths for plastic pipes are provided on the Town standard detail for "Storm Drain Plastic Pipe – Bedding and Installation".
    - e. Minimum slopes for enclosed conduits shall be 0.5%.
    - f. Maximum flow velocity for the design storm shall be 12 feet per second.
    - g. Minimum circular pipe size within or serving roadways or parking lots with more than 8 parking spaces is 15 inches.
  2. Catch Basins
    - a. All catch basins shall have 4-foot sumps to trap sediment, unless otherwise approved for valid reason (e.g. utility conflict), and appropriate hoods per the CT-SWQM.
    - b. Catch basins shall not be located in front of curb ramps or otherwise within intended walking paths, unless practically unavoidable. Where so unavoidable, special grates designed for pedestrian traffic shall be used.
  3. Collection and Conveyance System Calculations and Modelling
    - a. Non-culvert subsurface conduits shall be designed to convey the flow from the design storm in free open channel flow, non-surcharged condition.

- b. Pipe inlets at catch basins with sumps will effectively function as culvert inlets; the lesser value between the inlet capacity at the upstream catch basin and the maximum free open channel flow capacity of a pipe shall be used in conveyance system calculations and modelling.
- c. Bypass flow shall be appropriately accounted for at catch basin grates at grade.
- d. All systems shall be evaluated for the 100-year flow:
  - i. Determine where excess water will flow and what will be flooded.
  - ii. Problematic flooding should be avoided; flood waters shall not reach an elevation that will enter any existing or proposed building.
  - iii. Flood waters that end up in different locations than stormwater that is being conveyed by the drainage system shall be appropriately accounted for in the modelling.

#### G. Stormwater Quality

- 1. The provisions of the CT\_SWQM shall be complied with in the planning, design, construction, operation, and maintenance of all stormwater facilities as relates to stormwater quality and treatment.
- 2. As a point of emphasis, LID site planning and design shall be used to the “furthest degree possible”, as set forth in the CT\_SWQM. The Commission may, at its discretion, require an alternatives analysis to determine compliance with this requirement.

#### H. Stormwater Quantity

- 1. Post development peak flow rate from the subject site to any downstream location shall not increase for the 100-year storm event.
- 2. Peak flow rates from the subject site to any downstream location shall not increase for the 2- or 10-year storm events, subject to:
  - a. Any requirements from the Inland Wetlands and Watercourses Commission to maintain certain flow levels with respect to a downstream wetland, shallow water body, vernal pool, or small watercourse, etc.
  - b. In circumstances where stormwater retention possibilities are appropriately limited, peak flow rates from the 2- and/or 10-year storm events may be allowed increase by an insignificant amount where it is demonstrated that there is a practical advantage to the overall design of the peak flow attenuation system in doing so.
  - c. Note: The CT\_SWQM requirement to control the 2-year peak flow rate to 50% of predevelopment rate is a goal, and this requirement is not globally applicable to these regulations.
- 3. Flow characteristics to any downstream location shall not be altered so as to cause, or threaten to cause, damage, erosion, or other harm to any downstream location.
- 4. Subject to 470-713.C.1, 413-713.C.2, and 470-713.H.2.a and any groundwater pollution concerns, stormwater retention shall be achieved to the “maximum extent achievable”, as set forth in the CT\_SWQM.

I. Shared Stormwater Management Facilities

1. Where the Commission determines that technical, aesthetic, and/or economic factors make combined storm drainage management facilities more practical and beneficial, the Commission may permit multiple properties to construct, operate, and maintain joint facilities, provided that an acceptable maintenance agreement between the subject properties is filed on the Land Records.

J. Maintenance

1. All stormwater management facilities shall be properly maintained in a regular and timely manner in accordance with the approved stormwater management plan for the subject site and to keep the subject facilities functioning as intended. The property owner is responsible for ensuring that such maintenance activities are properly documented to demonstrate compliance.
2. Stormwater management facilities and maintenance records shall be made available for inspection, in a timely manner upon notice, to Town staff endeavoring to enforce or monitor compliance with these regulations. The subject property owner, or their agents or representatives, shall cooperate fully with such inspection activities by or on behalf of the Commission.