

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

subject: Design Measures for
Stormwater Permits
Phase II

memorandum

date: June 16, 2003

to: Mr. Arthur W. Gruhn
Chief Engineer
Bureau of Engr. and Highway Oper.

from:  Edgar T. Hurlé
Director of Env. Planning
Bureau of Policy and Planning

The Department continues to coordinate activities with the Department of Environmental Protection (DEP) with respect to the General Permit for Stormwater discharge, as well as related issues. With the onset of NPDES Phase II, this coordination takes on added importance.

The following information is being provided to update and clarify previously established guidelines for the evaluation and treatment of stormwater systems and their discharges. This memo also outlines the criteria to be used if a DOT project requires DEP permits or approvals, including Inland Wetland, Section 401 Water Quality, Stream Channel Encroachment Lines, Coastal Area Management, Structures and Dredging or Tidal Wetlands.

The following are areas of concern that should be investigated for possible treatment measures. All drainage and appurtenant facilities should be designed in accordance with the procedures contained within the Department's Drainage Manual, and the application of engineering judgement in the use of these guidelines is advised.

- 1) *Any drainage system containing four to ten catches basins, which discharges within fifty feet of a regulated area. Note: The number of catch basins refers to the combined total of existing and proposed State maintained structures. The following items describe situations wherein catch basin inlets need not be included in the overall structure count:*
 - *Inlets on town maintained systems or within private developments adjoining State highways which connect to the State system as long as a distinct separation point (catch basin or manhole) exists or will be constructed at the junction of the two facilities. This will allow access for testing purposes should water quality issues arise at the discharge point of the State system.*
 - *Catch basins located in grassed areas 20 feet or more from the pavement edge.*
 - *Ancillary catch basins that are internal to the drainage area and contribute no additional runoff to the storm sewer system such as flanker basins, basins intended to improve intersection drainage or inlets placed on steep grades to increase interception.*

Consider a combination of the following treatment measures:

- a) Eliminate curbing, design for sheet flow and utilize natural vegetation to help filter particulates. On steep embankment slopes, erosion protection measures should be employed.

- b) Utilize oversized catch basins with four-foot deep sumps. It may be justified to provide six-foot sumps at the last two catch basins in the system if there are no conflicts with groundwater, ledge rock, rights-of-way or underground utilities. If end treatments such as hydrodynamic separators (gross particle separators) wet ponds or detention basins are constructed at the terminus of the drainage system, deep catch basin sumps can be eliminated. Additionally, sumps (any depth) should not be specified for any manholes or for catch basins on storm drainage systems which are 36 inches or greater in diameter.

At all locations where deep sumps are specified, the maximum depth of structure shall not exceed twelve feet as measured from the top-of-grate elevation.

- c) Utilize outlet protection such as riprap energy dissipators; scour holes, stone check dams erosion control matting and vegetative linings in outlet channels.
- 2) *Any drainage system containing ten or more catch basins which discharges within fifty feet of a regulated area. Note: Same criteria applies as in Item No. 1 above with respect to qualifying inlets.*

Recommended treatment measures:

- a) Outlet areas shall be designed so that an open channel with check dams, a sediment basin, or a combination of both is specified, these shall be designed to accommodate the peak runoff associated with the "first flush", known as Water Quality Flow (WQF). The last option is to specify a *Hydrodynamic Separator also known as a Gross Particle Separator*.

Studies related to the efficiency of these chambers with respect to storm water treatment are ongoing. Pending the publication and review of specific performance data, the following guidelines shall be applied:

- a) Hydrodynamic separators shall be designed to accommodate the peak runoff associated with the "first flush", known as the Water Quality Flow (WQF). The WQF shall be determined using the procedures outlined in Chapter 11, Appendix C of the Drainage Manual.
- b) Chambers shall be placed "off-line" and a bypass system shall be designed to convey the peak flow rate for the design storm.
- c) Hydrodynamic separators are best suited for the treatment of storm runoff from site drainage related to transportation facilities such as bus or train stations, maintenance garages, rest areas or commuter parking lots. Roadway applications should be limited primarily to urban areas.

The original version of Design Measures for Stormwater Permits dated February 5, 1998 is superseded with this memo. Please ensure that these criteria are addressed on all DOT projects, which require DEP review. This will meet the concerns of DEP, as identified in various meetings, and expedite the review and approval process.

If you or your staff have any questions on this matter, please contact Mr. Paul Corrente of my staff at 594-2932.

Bcc: Charles Evans, DEP
Chris Stone, DEP

Paul Corrente /pnc

Cc: James H. Boice
~~Edgar T. Hurle – Mark Alexander~~
Michael W. Lonergan
Carl F. Bard
James H. Norman
Joseph J. Obara – Michael E. Masayda