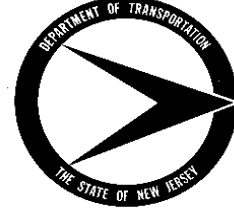


***New Jersey Department of Transportation***

1035 Parkway Avenue, PO Box 600, Trenton, New Jersey 08625-0600



***Baseline Document Change Announcement***

***NJDOT Design Manual - Roadway Changes***

**BDC97MR-006**

**February 8, 1999**

**Subject: Release of Metric Version of NJDOT Design Manual - Roadway, Section 10, "Drainage Design"**

Attached for inclusion in your copy of the *NJDOT Design Manual - Roadway* is the metric version of the approved English Section 10, "Drainage Design", original dated March 1, 1984, revised March 5, 1987 and September 30, 1991. This metric version of Section 10 contains the following pages:

**Metric Version:**

10-1 to 10-89

**Instructions to Designers**

This Section is effective immediately and shall apply to all projects, except those projects where the implementation of the new criteria will require substantial cost or schedule changes. In such cases, the Designer shall contact the Department's Project Manager to determine how to proceed.

Various subsections within Section 10 refer to the Standard Construction Details. Standard Construction Detail CD-602-1, Pipe End Sections, and CD-616-1, Slope and Channel Protection are being updated via BDC98D-001 to conform to the revisions and/or additions to Subsections 10-05.2, 10-06.2 (Subpart Y), 10-08.6 (Subpart A through C), and 10-09.

The following are additions and/or revisions to Section 10 that have not been incorporated in the English version:

Subsection 10-01.1, Introduction: total rewrite.

Subsection 10-01.2, Definitions and Abbreviations: added definition for Dam, Regulatory Flood and Stream Encroachment.

Subsection 10-01.3, Design Procedure Overview: revised

Section 10-02, Drainage Policy: added Subsection 10-02.2, Stormwater Management and Non-Point Source Pollution Control, Subsection 10-02.6 Regulatory Compliance, Subsection 10-02.7, Stream Encroachment, and Subsection 10-02.8, Soil Erosion and Sediment Control. Revised Subsection 10-02.1, Introduction, Subsection 10-02.3,

- Allowable Water Surface Elevation, Subsection 10-02.4, Recurrence Interval, Subsection 10-02.5, Increasing Fill Height Over Existing Structures.
- Section 10-03, Hydrology: added Subsection 10-03.4, U.S. Natural Resources Conservation Service (NRCS) Methodology and Subsection 10-03.5, Time of Concentration (Tc). Revised the rest of Section 10-03.
- Section 10-04, Channel Design: added statements on non-erodible linings and other water quality design measures, and , references to *the NJDOT Soil Erosion and Sediment Control Standards Manual*.
- Section 10-05, Drainage of Highway Pavements: added Subsection 10-05.1, Introduction, Subsection 10-05.2, Runoff Collection and Conveyance System Type, Subsection 10-05.3, Types of Inlets Used by NJDOT, Subsection 10-05.7, Capacity of Gutter Inlets on Grade, Subsection 10-05.12, Snow Melt Control, and Subsection 10-05.13, Alternative Runoff Collection Systems. Revised the rest of Section 10-05 including adding procedures developed by the University of Texas based on hydraulic testing of the bicycle safe grate to Subsection 10-05.7 and Subsection 10-05.8, Capacity of Grate Inlets at Low Points.
- Section 10-06, Storm Drains: added Subsection 10-06.1, Introduction, Subsection 10-06.3, Storm Sewer Design, Subsection 10-06.4, Preliminary Pipe Size and 10-06.5, Hydraulic Grade Line Computations. Revised references and added criteria on plastic (HDPE) pipe, precast manholes or inlets, cleaning existing pipes and designing in contaminated areas to Subsection 10-06.2.
- Section 10-07, Median Drainage: Minor revisions to Subsection 10-07.1, Introduction and Subsection 10-07.3, Median Design Criteria-Continuous Grade. Total rewrite of Subsection 10-07.4, Procedure for Spacing Median Drains.
- Section 10-08, Culvert Design: Minor revisions to Subsection 10-08.2, Culvert Types, and Subsection 10-08.4, Culvert Selection. The detailed culvert design procedure in Subsection 10-08.5, Culvert Hydraulics, has been removed due to overlap with same data in FHWA HDS-5. Added Subsection 10-08.6, Culvert End Structures, Subsection 10-08.7, Flood Routing at Culverts, and Subsection 10-08.8, Fish Passage.
- Section 10-09, Conduit Outlet Protection: Replaced the term “Culvert Outlet Protection” with “Conduit Outlet Protection”. Referred design of conduit outlet protection and apron dimensions to the *NJDOT Soil Erosion and Sediment Control Standards*. Added Subsection 10-09.2, Energy Dissipators.
- Section 10-10, Reset Castings-Manholes and Inlets: Replaced the term “Heads” with “Castings.” Added design guidance from the May 18, 1990 ADU memo entitled “Cast Iron Extension Frames and Rings” to Subsection 10-10.1, Reset castings and Construction Practices. Added clarification to Subsection 10-10.3, Extension Rings-Manholes, and Subsection 10-08.4, Extension Rings-Manholes.
- Section 10-11, Stormwater Management: New subsection which ties into *the NJDOT Stormwater Best Management Practices Manual*.
- Section 10-12, Water Quality: New subsection which ties into the NJDOT Stormwater Best Management Practices Manual.
- Section 10-13, Sample Hydraulic Calculations: New subsection on sample storm sewer hydraulic computations.

References: Updated.

### **Distribution to In-House Staff and Various Public Agencies**

This BDC Announcement file and Section 10 can be viewed or downloaded from the New Jersey Department of Transportation Web Page at <http://www.state.nj.us/transportation/>. Click on “Capital Program Management”, located on the left side of the web page. When this page is loaded, select “Capital Program Management Table of Contents” and click on “Go To Selection”. Click whatever document you wish to view or download. The download files are in a zip format. If you need an unzipping program, download and install the “WINZIP” or “PKZIP” program located at the bottom of the page. Do this prior to downloading the BDC memorandum file or attachment file.

This memorandum along with a copy of the Section 10 will be distributed to In-House staff and various Public Agencies in accordance with the *NJDOT Design Manual - Roadway* distribution list by the Office of Document Control. The hard copy distribution may be at least one month after date of this memorandum because of printing delays, so rely on the web for faster service. Please make additional copies as needed.

### **Distribution to other Outside Agencies (Consultants, Contractors, etc.)**

This BDC memorandum file and Section 10 can be downloaded from the New Jersey Department of Transportation Web Page at <http://www.state.nj.us/transportation/>. See “Distribution to In-House Staff and Various Public Agencies” above for complete web page instructions.

This memorandum will not be posted on the New Jersey Department of Transportation’s Electronic Bulletin Board System (BBS). From now on use our web page.

This memorandum along with a copy of Section 10 will be mailed to all *NJDOT Design Manual - Roadway* holders. Make additional copies as needed. Hard copies of the *NJDOT Design Manual - Roadway* (Metric version) with additions and revisions can be obtained by contacting:


Engineering Documents Unit  
E&O Building, 1<sup>st</sup> Floor  
1035 Parkway Avenue, PO Box 600  
Trenton, New Jersey 08625  
Phone: (609) 530-5587  
Fax: (609) 530-6626

#### **Recommended By:**

Original signed by B.S.  
Brian Strizki  
Manager,  
Quality Management Services

#### **Approved By:**

Original signed by R.D.T.  
Russell D. Tong  
Assistant Commissioner,  
Capital Program Management

attachment  
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