
Drainage Manual Supplement

The following are changes, additions or deletions to the FDOT Drainage Manual (DM), for use on Turnpike projects only.

Chapter 1 - Introduction

1.4 General

Add the following paragraph to this section

The intent of this supplement is to clarify and supplement criteria in the DM (2017), in order to provide additional guidance to the Section Designers in providing the Turnpike with safe, economical designs for roadway drainage and least cost maintenance. Some criteria are intended to address construction and maintenance issues experienced in past projects.

Chapter 2 – Open Channels

2.4.4 Channel Bottom

Replace second sentence of first paragraph with the following

V-bottom ditches are not allowed on Turnpike-maintained facilities without approval from FTE Drainage and Maintenance Departments.

Chapter 3 - Storm Drain Hydrology and Hydraulics

3.11 Pipes Within or Adjacent to Retained Earth (Walled) Embankment Sections

Add the following sentence to the end of the 2nd paragraph

For Wall Zone Pipes, provide verification of wall zones in design calculations.

3.7.2 Manholes

Add the following sentence to the section

Do not place manholes in the travel lanes of Turnpike facilities.

3.9.2 Spread for Temporary Construction

Add the following paragraphs to the section

The spread resulting from a rainfall intensity of 4 inches per hour shall not encroach onto the adjacent travel lane for design speeds equal to or greater than 55 mph.

3.9.3 Hydroplaning

Add the following sentence as the last sentence in the section

Design the inlet to capture 100 percent of the flow.

3.12.3 Resilient Connectors

Add the following sentence to the section

Resilient connectors are required for all vertical pipes.

Chapter 4 - Cross Drain Hydraulics

4.8.1.1 Bridges

Add the following paragraphs to the section

ICPR Version 4 is the only acceptable version of ICPR for analyzing hydraulic performance of bridges over riverine waterways.

Chapter 5 - Storm Water Management

5.4.1.1 General

Add the following to this section

~~Base Clearance to the Design High Water (DHW) shall be considered when establishing roadway grades. The DHW for roadside treatment swales shall be set at the weir elevation. A lower elevation may be used if all of the following applies:~~

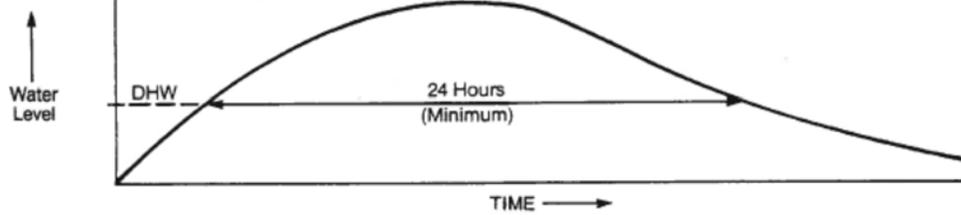
For treatment swales, base clearance to the Base Clearance Water Elevation (BCWE) shall be considered when establishing roadway grades. The BCWE for roadside treatment swales shall be set at the weir elevation. A lower elevation may be used if all of the following applies:

- **In-situ soils are classified as Hydrologic Soil Group A, with high permeability, and**
- **Geotechnical investigation reveals there is no confining layer to impede drawdown, and**
- **Construction activities such as heavy equipment, staging, and desilting are limited within the treatment swale to avoid compaction and tracking of silt and muck.**

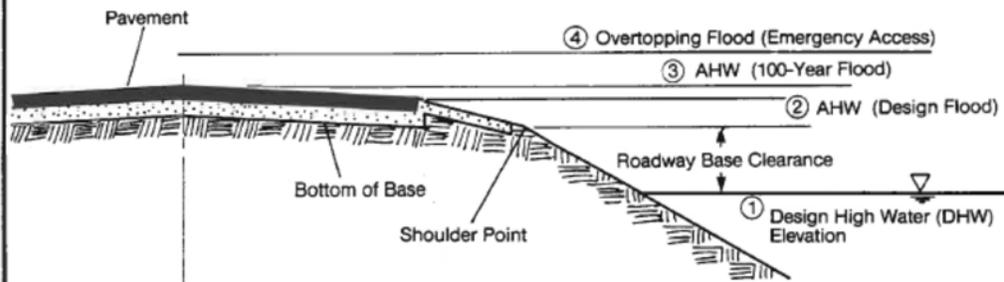
For ponds, BCWE shall be set at the 24 hour design high water elevation (see figure below). In the absence of ponds and treatment swales, the BCWE shall be set at the SHWT elevation.

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A) DHW Determination



Roadway Classification	Minimum Standard Roadway Base Clearance (feet)
Interstate	3
4-Lane (Primary Importance)	2-3
2-Lane (Primary Importance)	1-2
Other Facilities (Secondary Importance)	1

Standard values assume the base is susceptible to structural deterioration due to the proximity of standing water. Special conditions which require clearances below the minimum standard values can be addressed by using an asphalt or soil-cement base.

WATER ELEVATION	PURPOSE	STANDARD CRITERIA
1) Design High Water (DHW)	Base Protection	Standing Water Duration Exceeds 24 Hours for Traditional Frequencies
2) Allowable High Water (AHW) for Design Flood	Culvert Capacity	At or Below Edge of Pavement for Design Frequency, T (See Chapter 8, Volume 2)
3) Allowable High Water (AHW) for 100-Year Flood *	Culvert Capacity	Two-Lanes—½ Lane Dry for Q ₁₀₀ Multi-Lane—½ Lane Dry for Q ₁₀₀
4) Overtopping Flood	Emergency Access	Product of Velocity and Depth Less than 8 with a Maximum Depth of 1 Foot

*May not apply for all structures

B) Roadway Base Clearance and Various Water Elevations

FIGURE 6-1

DHW Determination, Roadway Base Clearance, and Various Water Elevations

5.4.4.2 Detention and Retention Ponds

Add the following information to this section

8. Skimmers/Baffles

All basin outlet structures shall be designed to skim floating debris, oil and grease. Skimmers/baffles shall be UV resistant fiberglass or galvanized steel, rather than aluminum, to minimize theft. Sufficient structural connection and support details shall be shown in the plans.

5.5 Documentation

Add the following information to the Section

Figure 5-1: Any borrow excavation occurring within the FDOT right of way shall meet the pond dimensional criteria depicted in Figure 5-1.

Chapter 6 – Optional Culvert Materials

6.8 Documentation

Add the following to the blue box

The selected materials can also be documented on plan sheets.