

**TURNPIKE SUPPLEMENT
TO THE
FDOT DRAINAGE MANUAL**



**FLORIDA'S TURNPIKE ENTERPRISE
DRAINAGE DESIGN OFFICE**

January 2021

INTRODUCTION

As part of the Turnpike's continuing quality enhancement effort, this ***Supplement to the Drainage Manual*** has been developed to provide consultants, reviewers, and management with a single source of additional Turnpike-specific requirements that modify or add to the requirements included in the ***Florida Department of Transportation (FDOT) Drainage Manual***.

The ***Supplement to the Drainage Manual*** is updated on an annual basis, following the official revision of the ***FDOT Drainage Manual***. Interim updates to the ***Supplement to the Drainage Manual*** will be issued as Addenda to the annual revision.

Should you have any comments or suggestions for this document, please contact the Turnpike Drainage Design Engineer.

The following are changes, additions or deletions to the January 2021 FDOT Drainage Manual, Topic No. 625-040-002, for use on Turnpike projects only.

CHAPTER 1 - INTRODUCTION

1.4 GENERAL

Add the following paragraph

The intent of this supplement is to clarify and supplement criteria in the **FDOT [Drainage Manual](#)**, in order to provide additional guidance to 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 lessons learned from past projects.

CHAPTER 2 – OPEN CHANNEL

2.4 HYDRAULIC ANALYSIS

2.4.4 Channel Bottom

Replace the second sentence of the first paragraph with the following sentence

V-bottom ditches are not allowed on Turnpike-maintained facilities.

CHAPTER 3 – STORM DRAIN HYDROLOGY AND HYDRAULICS

3.9 PAVEMENT HYDRAULICS

3.9.1 Spread Criteria

Add the following paragraph after the second paragraph

Bridge deck spread must be evaluated for all bridges including MOT phases. The Bridge Development Report (BDR) must include preliminary spread calculations for the bridge deck in order to determine whether additional drainage conveyance is required. Typical drainage conveyance costs may include, but are not limited to, additional shoulder width during construction, bridge deck drains, and conveyance systems. Costs for the bridge deck drainage must be considered when comparing alternative bridge designs.

3.11 PIPES WITHIN OR ADJACENT TO RETAINED EARTH (WALLED) EMBANKMENT SECTIONS

Add the following sentence to the end of the second paragraph

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

3.12 ADDITIONAL DESIGN CONSIDERATIONS

3.12.3 Resilient Connectors

Add the following sentence to the end of the first paragraph

Resilient connectors are required for all vertical pipes.

CHAPTER 4 – CROSS DRAIN HYDRAULICS

4.8 HYDRAULICS ANALYSIS

4.8.1 Riverine Crossings

4.8.1.1 Bridges

Add the following paragraph

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

4.9 SPECIFIC STANDARDS RELATING TO BRIDGES

4.9.2 Scour Estimates

4.9.2.2 Scour Estimates

Replace the second bullet on the list under Table 4.3 with the following

- For temporary bridges, a 25-year scour analysis is required. For temporary bridges in place longer than 85 months, apply the permanent design storm per Table 4.1 and associated scour frequency as per Table 4.3.

CHAPTER 5 – STORMWATER MANAGEMENT

5.4 DESIGN STANDARDS

5.4.1 Design of Systems

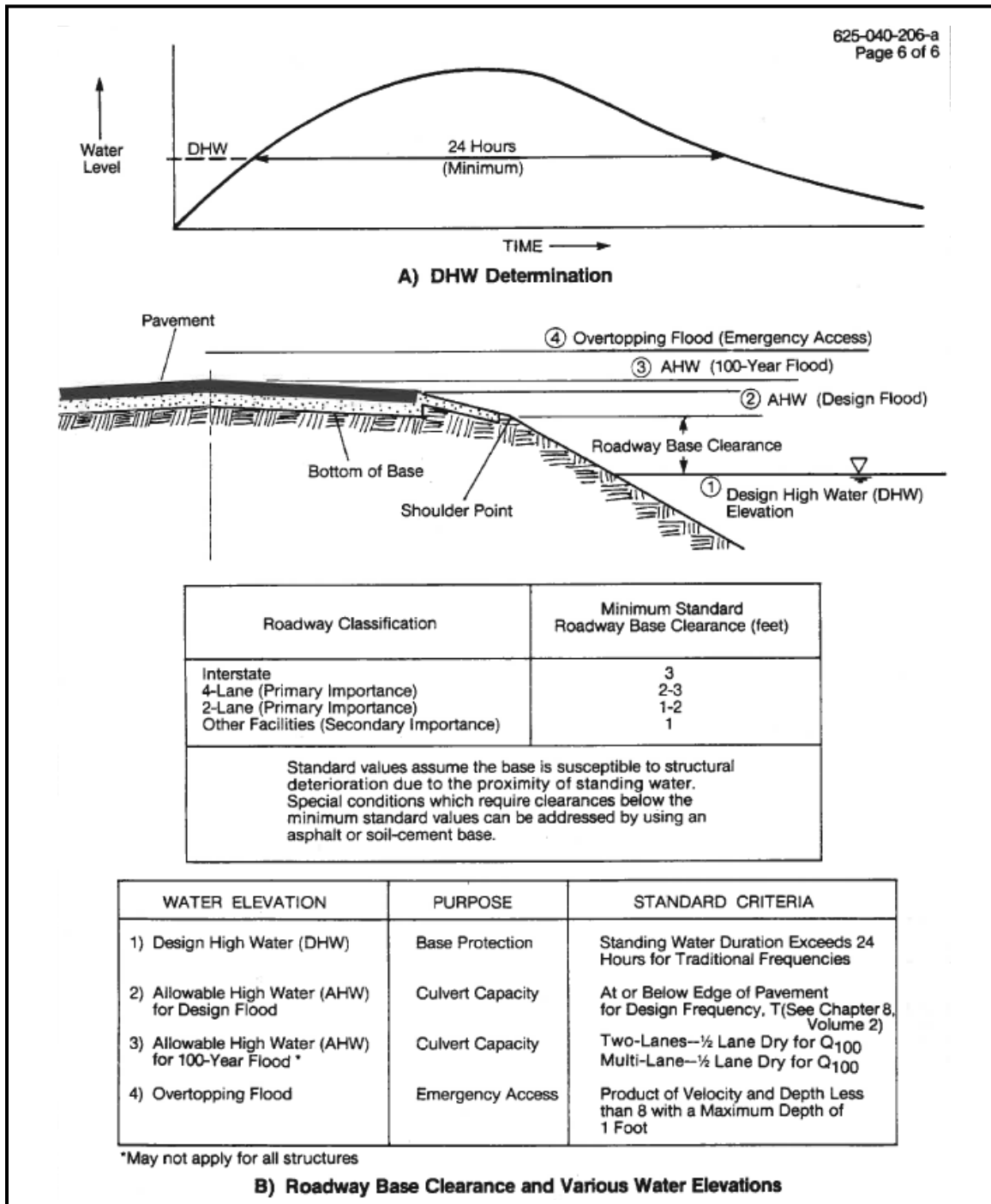
5.4.1.1 General

Add the following paragraphs

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 apply:

- 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 Seasonal High Water Table elevation.



5.4.4 Construction and Maintenance Considerations

5.4.4.2 Detention and Retention Ponds

Replace the second sentence of item (1) on the list in the second paragraph with the following

Provide at least 15 feet adjacent to the pond at a slope of 1:8 or flatter towards the pond.

Add the following item to the list in the second paragraph

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.

Figure 5-1: Minimum Clearance Retention-Detention Ponds

Add the following note

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