

# **TURNPIKE DESIGN HANDBOOK (TDH)**

## **DEVELOPMENT AND PROCESSES – PART 1**



### **FLORIDA'S TURNPIKE ENTERPRISE PRODUCTION DESIGN DEPARTMENT**

**OCOEE, FL**

**January 2021**

## Introduction

As part of the Florida's Turnpike Enterprise (Turnpike) continuing quality enhancement efforts, the ***Turnpike Design Handbook (TDH)*** 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) Design Manual (FDM)***.

The ***FDM*** and the ***TDH*** are both four-part documents:

- Development and Processes – Part 1
- Design Criteria – Part 2
- Plans Production – Part 3
- NexGen Plans Production – Part 9

The ***TDH*** also includes the [Turnpike Guide Drawings](#), which are available electronically on the Turnpike Design website. Review and become familiar with the [Turnpike Guide Drawings](#), including the Guide Drawings Introduction document which provides a general description and overview of the Guide Drawings development and their use.

For Turnpike requirements related to tolling, please see the [General Tolling Requirements \(GTR\)](#) which is a separate document.

The ***TDH*** is updated on an annual basis, following the official revision of the ***FDM***. Interim updates to the ***TDH*** will be issued as Addenda to the annual revision.

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

## 100 Introduction

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 102 Glossary of Terms

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 103 Standard Forms

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 104 Public Involvement

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 105 Aesthetic Design

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 106 Exempt Public Documents

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***



## 110 Initial Engineering Design Process

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 110.2 Initial Engineering Design

*Add the following items to the list in the first paragraph*

- (14) Identify seasonal high water and base clearance water elevations and determine base clearance.
- (15) Identify applicable project drainage criteria and constraints. Determine impacts to project design and schedule.
- (16) Identify locations of potential hydroplaning risk and develop mitigating strategies to reduce risk and aid in the development of the Typical Section Package.

### 110.5 Support Services

*Add the items to the list in the third paragraph*

- (22) Tolls Design
- (23) Environmental Permitting
- (24) ITS
- (25) Lighting/Electrical
- (26) Concepts
- (27) Architecture
- (28) Materials (pavement)

### 110.6 Preliminary Geometry

*Add the following sentence to the end of the third paragraph*

Refer to **TDH 120.2.5.1**, for specific submittal and coordination requirements of the preliminary line and grade.

## 111 Final Engineering Design Process

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 111.3 Contract Plans Preparation

*Add the following item to the list in the first paragraph*

- (9) Toll Facilities

### 111.7 Project Documentation

*Replace the first and second paragraphs with the following*

The submittal of project documentation is required for all projects. The Turnpike Transportation Development Document Management Team will place required projects documents in the Project Suite Enterprise Edition (PSEE) Design Development Documentation Module after the project letting date. Only final documents will be placed in this folder structure; do not submit working files or draft documents. Standard file format is PDF; however, an Excel spreadsheet may be placed in the folder structure if protected to prohibit changes.

When the PSEE module is fully populated and no additional plan changes are expected, the Department will lock the Design Development Documentation Module, typically one week after the letting date.

#### 111.7.1 File Naming Convention

*Replace entire subsection with the following*

These file creation and naming guidelines do not supersede [FDOT CADD Manual](#) standards for Digital Delivery processes and related file naming conventions for the production deliverables (signed and sealed Contract Plans and Specifications Package).

Contact [TP-TransDev-DocMgmt@dot.state.fl.us](mailto:TP-TransDev-DocMgmt@dot.state.fl.us) if there are questions prior to submittal to the Turnpike.

**General Requirements:**

Do not include the following characters in any folder or file names:

\ / : \* ? " < > | # { } % ~ &

Spell out acronyms in file names. Ex: LDAR = Lighting Design Analysis Report

Indicate the FPID, submittal phase, and date (MM-DD-YYYY) on the front cover page of each file. (This does not apply to the signed and sealed Contract Plans and Specifications Package deliverables.)

For plan sets, provide individual PDFs for each component set.

Print / plot / export to PDF file format directly from software used to create files.

For design documentation, the PDF file must have either 1) interactive table of contents or 2) bookmarks to assist with navigation.

If the PDF file has bookmarks, ensure the bookmarks tab shows when the PDF file is opened. In Adobe, select File → Properties → Initial View and then change Navigation Tab to “Bookmarks Panel and Page” drop-down option.

**Scanning Requirements:**

Scan pages only if absolutely necessary (ex: scan the manually signed and sealed cover page only, not the entire report).

If scanning a page with a crimped seal, shade the seal to ensure it is visible when scanned.

Set scanner resolution to a minimum of 300 dpi.

Ensure scanned pages have the Optical Character Recognition (OCR) feature enabled (allows searchable text on scanned images).

**File Naming Convention:**

Formula: 7-digit FPID + phase + doc description + date submitted to FTE (YYYY-MM-DD)

Example: 123456-1 PhIV Roadway Plans 2018-09-26.pdf

Example: 123456-1 PhIV Roadway Design Documentation 2018-09-26.pdf

If the document is independent of a phase submittal, use DRAFT, FINAL, or REVISED.

Example: 123456-1 DRAFT Typical Section Package 2018-09-26.pdf

If a document has been signed and sealed, include S+S in the file name as the phase.

Example: 123456-1 S+S Typical Section Package 2018-09-26.pdf

Example: 123456-1 S+S Roadway Design Documentation 2018-09-26.pdf

## 112 Update Engineering Design Process

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 113 Right of Way Requirements

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 113.1 General

*Add the following paragraph*

Non-monetary Benefit is when an attorney represents a property owner, and the attorney secures a benefit for his client such as improved access, drainage or a re-design. When this benefit can be quantified in dollars, the attorney may add the value of this benefit to the acquisition price of the property when determining his statutory fee, which is based on the benefit achieved.

### 113.2 Procedures for Establishing Right of Way Requirements

#### 113.2.3 Access Management

*Add the following sentence to end of the first paragraph*

Access management criteria often affect the access to property after construction. These criteria should be discussed during the field review to lessen potential impacts.

*Add the following sections*

### 113.4 Property Owner Contacts

Ensure that all property owners are contacted and given notice prior to entering their property for any reason. In many cases survey crews make the first contact with a property owner. The Department has received complaints from property owners where survey crews were on the property unbeknownst to the owner. In some cases, school age children were home alone; in others, the crews were disturbing livestock or cutting trees. When contacted, the company's response has been "we have the legal right to be there". While true, the Turnpike expects a more diplomatic and sensitive approach. A bad experience on the part of the property owner early in the process can sour the whole acquisition process.

Property owners often contact project managers by phone or at public hearings. There is a tendency to try to accommodate the needs of a property owner, which can lead the

property owner to believe they have a commitment from the Department. This is especially true with the initial design, access, and drainage. Avoid conjecture and speculating on possible changes to avoid misunderstanding. The Turnpike Right of Way Office is the point of contact with the property owner to discuss right of way impacts to the property. Provide copies of any responses sent to property owners to the Turnpike Right of Way Office and Turnpike Project Manager.

Throughout the life of a project, refer any contact by the property owner to the Turnpike Right of Way Office. Concessions made to a property owner may result in a non-monetary benefit to the owner's attorney. Include the Turnpike Right of Way Office in all discussions involving design changes that affect the land required or access to adjoining properties.

## **113.5 Construction Issues**

Fencing and encroachments are two issues that are repeated concerns upon letting a project to construction. The Turnpike routinely pays for fencing in the right of way and for replacement fencing as a "cost to cure." However, the property owner does not have to implement a "cost to cure" and therefore the contractor often finds a fence in place during clearing and grubbing. Contractors may be concerned that if they take the fence down they will incur some liability for damages, like cattle roaming free or trespassing.

The Turnpike Right of Way Office routinely notifies the property owner in writing that a fence will be removed by contractors and that the property owner is responsible for replacing the fence. Often though, the owner's inaction requires Turnpike legal staff to contact the owner's attorney to get the new fence erected. Including temporary fencing in the construction contract can help avoid any delays caused by fencing.

Other encroachments such as mailboxes and signs are found from time to time and the Turnpike Right of Way Office is charged with facilitating their removal.

## 114 Resurfacing, Restoration and Rehabilitation (RRR)

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 114.1 General

*Add the following paragraphs*

Projects not designated as “RRR” are required to apply new construction criteria for all design elements.

Existing median crossovers on Interstate highway and freeways must be evaluated for conformance to the criteria in **FDM 211.3.2.1**, Crossovers on Limited Access Facilities, and as modified in **TDH 211.3.2.2**. Crossovers that do not meet those criteria must be presented to Turnpike staff for internal review. Turnpike staff will provide direction to either remove or relocate the crossover.

### 114.3 RRR Design Process

#### 114.3.1 Assessment of Existing Conditions

##### 114.3.1.2 Field Reviews

*Add the following sentences to the end of the first paragraph*

Document the field review with either photographs or video and ensure that the date of the field review is documented. Use the field reviews to document deterioration that occurs during the life of the design project, particularly the roadway pavement deterioration.

*Add the following item to list (1)*

- (o) Existing landscaping and natural vegetation

##### 114.3.1.4 Design Exceptions and Design Variations

*Add the following paragraphs*



All Design Exceptions, Formal Design Variations and Design Variation Memorandums identified in the Existing Roadway Conditions Assessment Report (ERCAR) must be tabulated with the following data:

- (1) Number; Location
- (2) Element; Criteria
- (3) Estimated Cost
- (4) Explanatory Comments

#### **114.3.1.5 Design Documentation**

***Replace the first paragraph with the following paragraph***

Include in the design an ERCAR that substantiates the design process, evaluates all existing conditions against criteria, provides recommendation, and documents decisions made. It must include the following information:

***Add the following item to the list in the first paragraph***

- (7) [ERCAR Sample Outline](#) can be found on the Turnpike Design website.

## 115 Standard Plans and Standard Specifications

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 116 Alternative Intersection and Interchange Review

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 117 Monitor Existing Structures

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 120 Design Submittals

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 120.2 Design Documentation Submittals

*Add the following paragraph*

Draft and Final versions of all documents requiring Turnpike approval or concurrence must be submitted to the Turnpike Project Manager for review through the ERC process. Once the ERC process is complete, the Turnpike Project Manager can proceed with obtaining the necessary approvals or concurrence.

#### 120.2.2 Traffic Data

*Add the following item to the list in the second paragraph*

- Truck DDHV (DDHV is the directional design hour volume expressed as vehicles per hour)

### 120.2.3 Typical Section Package

#### 120.2.3.1 Approval Process

*Replace the second paragraph with the following paragraph*

For projects that do not contain a PD&E phase or have significantly changed during the design process, the typical section package is prepared, sealed and submitted by the Design EOR. The draft version must be submitted to the Department for review through ERC prior to the 45% traffic control plan workshop and plans submittal. The final version must be reviewed through ERC and the signed and sealed documents must be signed by the Turnpike Design Engineer before the Phase II plans can be submitted for review. The Phase II plans will not be accepted for review until concurrence is obtained from the Turnpike Design Engineer.

*Add the following paragraph*

When cross roads or other facilities are maintained by another agency, the agency must sign and date their approval on the typical section before Turnpike concurrence. If this is not possible, a letter is sent by the Turnpike to the agency confirming their concurrence

and requesting a concurrence signature. In that case, the design documentation includes a copy of the local agency standard to document design conformance. The maintaining agency does not need to upgrade their typical sections to meet higher Department or Turnpike criteria.

### 120.2.3.3 Typical Section Sheet

***Add the following item to the list in the first paragraph***

- Realigned local roads, frontage roads, cul-de-sacs, railroads, canals, aerial transmission lines, or other facilities that impact the typical cross section.

***Add the following items to the list in the fourth paragraph***

- (4) Traffic Data: provide the following,
  - (g) Truck DDHV
- (5) Roadway Typical Section Drawing: provide the following,
  - (o) Lane buffer widths
  - (p) Future lane widths (types and locations)
  - (q) Clear zone
  - (r) Vertical and horizontal clearances at crossing roads if project includes work within bridge limits.
  - (s) If shoulder widths are wider than standard widths (e.g. to accommodate SSD or high truck traffic), provide a note on each typical section to explain the reason for the additional shoulder width.
  - (t) Denote elements that require a Design Exception, Formal Design Variation, or Design Variation Memorandum
  - (u) Toll equipment building, gantry and foundation outlines
  - (v) If Florida Gas Transmission (FGT) facilities are a primary design constraint, show the FGT Specified Width.
- (6) Bridge Typical Section Drawing: provide the following,
  - (i) Minimum vertical clearance
  - (j) If shoulder widths are wider than standard widths (e.g. to accommodate SSD or high truck traffic), provide a note on each typical section to explain the reason for the additional shoulder width.
  - (k) Denote elements that require a Design Exception, Formal Design Variation, or Design Variation Memorandum

(l) Lane buffer widths

***Add the following paragraph***

If major changes are planned for after initial construction, a separate future typical section drawing must be prepared. Future lanes on proposed crossroad typical sections must be dashed and labeled "Future, By Others".

## **120.2.4 Preliminary Drainage Design**

***Add the following paragraph***

Complex projects require a 45% drainage submittal including plans as outlined in **TDH Table 301.2.2** and design calculations. The intent of this submittal is to verify that the design methodology used for stormwater ponds documents compliance with Department, Turnpike, and regulatory stormwater management criteria.

## **120.2.5 Preliminary Geometry and Grades**

***Add the following subsection***

### **120.2.5.1 Turnpike Preliminary Line and Grade Submittal**

Submit preliminary (approximately 15%) alignment and grade sketches or computer plots depicting the proposed geometric design. The submittal must include horizontal geometry for all mainline roadways, ramps, cross streets and side roads. Vertical geometry must be provided for all mainline roadways and cross streets. Vertical geometry for ramps and side roads must be provided if critical to the project. The sketches or computer plots can be in sheet or roll plot form and must be at a reasonable and useable scale. Base clearance water, seasonal high groundwater, and flood plain elevations must be shown in profile view.

Supporting calculations must also be submitted. Specific elements which must be addressed in the supporting documentation include:

- Design speed
- Lane widths
- Shoulder widths
- Bridge widths

- Horizontal and vertical clearances
- Stopping sight distance
- Intersection sight distance
- Aesthetics
- Access management
- Base clearance
- Existing bridge approach slab to remain evaluation

The various elements must be developed to a level of detail consistent with the objectives of the preliminary (15%) submittal as described below. Continued development and refinement of the geometric elements for subsequent phase submittals is anticipated. The primary objectives of the Preliminary (15%) Line and Grade Submittal are to:

- (1) Check consistency with the intent and scope of the Project Concept Report
- (2) Evaluate the impacts of changes to the project concept, resulting from the normal design development process as well as those due to changes in scope and the identification of adverse site conditions
- (3) Verify the geometric viability of the project for the desired design speed and traffic volumes
- (4) Provide a basis for early coordination with other disciplines
- (5) Provide a basis for early identification of design constraints or problems
- (6) Document off-site and pavement drainage constraints; such as flood plain elevations and base clearance and seasonal high water table.
- (7) Design criteria specific to the project
- (8) Anticipated Design Variations and Design Exceptions that are associated with horizontal and vertical alignment



## 120.2.6 Preliminary Traffic Control Plan

*Add the following subsection*

### 120.2.6.1 Turnpike Preliminary Traffic Control Plan

A preliminary traffic control plan design (45%) must be submitted for review and a traffic control plan workshop with Department production and construction staff must be held following the submission. This workshop will ideally be scheduled about halfway through the Department ERC review period and is intended to facilitate a collaborative discussion of the traffic control plan to work through the proposed design and the complex issues that require Department assistance. The submission will be reviewed in the ERC system and comments will be provided for the EOR's information and consideration. No written responses will be required in ERC for this submittal as they are expected to be addressed in the subsequent Phase submittal.

Deviations from [Turnpike Lane Closure Policy](#) or from the **FDM and TDH 240, 241, 242, or 243** must be identified as part of or prior to the 45% submittal. Approval must be obtained prior to the Phase II submittal.

This submittal must contain the Roadway Plans for reference as outlined in **TDH Table 301.2.2** and design calculations, and include the following items:

- (1) Traffic pacing
- (2) Traffic detours, including lengths and impacts on toll revenue
- (3) Traffic crossovers
- (4) Paving approach and sequence, including proposed cross slope correction
- (5) Lane closure analysis and restrictions, and daytime and weekend considerations
- (6) Construction hauling route restrictions
- (7) For any speed reduction request during the maintenance of traffic operations throughout the project limits not applicable to the use of [FDOT Standard Plans, Index 102-670 Motorist Awareness System](#), a speed reduction Design Variation Memorandum must be submitted and approved by the Turnpike Traffic Operations Engineer in addition to the Turnpike Design Engineer.

The preliminary submittal must be on roll plots, in electronic format, and must include:

- (1) Documentation of off-site and pavement drainage constraints
- (2) Critical cross sections at temporary traffic shifts

- (3) Typical sections for each proposed phase
- (4) Traffic pacing and detour analysis as appropriate for the project

Coordinate with the Turnpike Traffic Operations Engineer for an appropriate speed to use in the pacing analysis.

## 120.2.7 Pavement Selection and Design

### *Add the following paragraph*

Within 60 calendar days of Notice to Proceed on any design contract coordinate with the Turnpike Project Manager to schedule a meeting with the Turnpike Materials Team to review the Pavement Survey and Evaluation Report (PSER) and other pavement and subsurface data. The intent of this meeting is for the EOR to summarize their review, prior to the meeting, of all the available data and advise the Turnpike Materials Team on any additional field data that must be gathered to complete the project design.

### *Add the following subsections*

#### 120.2.7.1 Turnpike Pavement Design Submittals

The draft version must be submitted to the Department for review prior to the 45% traffic control plan workshop and plans submittal. The final version must be submitted and reviewed prior to submitting the Phase II plans. The Phase II submittal will incorporate the resolution from the final pavement design submittal. The signed and sealed documents must be signed by the Turnpike Design Engineer before the Phase III plans can be submitted for review. The Phase III plans will not be accepted for review until concurrence is obtained from the Turnpike Design Engineer.

[Pavement Design Package Table of Contents](#) and [Pavement Coring and Evaluations Report Table of Contents](#) are available on the Turnpike Design website.

The draft version of the pavement design submittal must include the following at a minimum:

- (1) Delineation of all locations where deep milling and or base repairs are necessary.
- (2) Approximately 60% completion level deep milling details if deep milling is necessary.
- (3) Approximately 60% completion level base repair details if base repairs are necessary.

- (4) Identify if high polymer is to be used and delineate all locations high polymer will be used as well as justification why it is needed on the project. Use of high polymer requires State Materials Office approval prior to use. All correspondence for approval must be included in the draft pavement design submittal.
- (5) Identify if high friction surface treatment is to be used and delineate all locations high friction surface treatment will be used as well as justification why it is needed on the project. The usage must be explicitly approved (email or meeting note documentation is acceptable) by the Department and correspondence showing concurrence from the Roadway, Traffic Operations, and Maintenance departments must be included in the draft pavement design submittal.
- (6) Limits on transitioning from FC-5 and FC-12.5 must be identified on the ramps. Correspondence with Roadway, Traffic Operations, and Maintenance must be included in the draft pavement design submittal.
- (7) Equivalent baseline stations must be shown for each notation of mileposts or mile markers within the package and appendices.

### 120.2.7.2 Cross Slope Analysis During Design

Cross slope analysis on designated RRR projects must use the cross slope ranges defined in **FDM 210.9.2** and **FDM 211.2.2.1**. All non-designated RRR projects require new construction criteria and must use the cross slope tolerances for new construction cross slopes as defined by [FDOT Specifications, Section 330](#).

Existing cross-slopes must be analyzed by averaging the cross slope on a sliding scale and comparing the average cross slope against the appropriate tolerances. For practical construction purposes, Turnpike generally uses 1000 feet on tangent and 500 feet through horizontal curves as the minimum sliding scale lengths. However, lengths may be increased or decreased based on project specific warrants. The Cross Slope Analysis Report will be submitted as an Appendix in the Pavement Design Package. Simplifying the cross slope correction design and providing greater plan clarity is necessary to accomplish cross slope correction in the field. Show milling at specific cross slopes between stations from a single constant depth control point for at least 1000 feet through tangent sections and 500 feet through horizontal curves, followed by constant depth resurfacing.

The draft version of the Cross Slope Analysis Report must include the following at a minimum:

- (1) Existing cross slope analysis spreadsheet that delineates the areas of cross slope correction and areas recommended to match existing that would require a Design Variation Memorandum or Design Exception.

- (2) Approximately 60% completion level milling and resurfacing details that clearly identify the milling control point.
- (3) Approximately 60% completion level cross slope correction details that clearly identify the milling control point and the methodology for achieving the cross slope correction.
- (4) Approximately 60% completion level shoulder rocking details that clearly identify changes to the shoulder slopes, shoulder breakover, and any changes to the barrier wall reveal.
- (5) Draft of the 45% level TTCP phasing sequence for the paving operations.
- (6) Equivalent baseline stations must be shown for each notation of mileposts or mile markers within the package and appendices.

### 120.2.7.3 Cross Slope Analysis Post Design

If a project includes cross slope correction, verification of the newly constructed corrected cross slopes is required. Profilograph data is collected by the Turnpike and provided for analysis. Submit a Design Memorandum indicating if the newly constructed cross slope correction meets the requirements detailed in the plans and in **FDM 210.9.2** and **FDM 211.2.2.1** or [FDOT Specifications, Section 330](#).

*Add the following subsection*

### 120.2.9 Roadway Design Documentation

Roadway design documentation must be provided at Phase I, II, III, IV, and production submittals. The design documentation must include, but is not limited, to the following information as applicable:

- (1) Section 1 - Summary
  - (a) Narrative - summary of existing and proposed design
  - (b) Design Decision Journal
    - Document design decisions for all disciplines both internal and external in tabular format
    - Include Identification Number, Date, Author, Discipline, Subject, Decision, and an Explanation
- (2) Section 2 - Design Documentation
  - (a) Location Map

- (b) Roadway Design Criteria (**FDM**, **TDH**, & **AASHTO** in tabular format)
- (c) Horizontal and Vertical Alignments (GEOPAK Output)
- (d) Design Calculations and Exhibits (Existing, Proposed, and Temporary Traffic Control Conditions)
  - Superelevation
  - Horizontal and Vertical Stopping Sight Distance
  - Vertical Clearance
  - Barrier – Length of Need
  - AutoTURN Analysis
  - Intersection Sight Distance Analysis
  - Cross Slope and Superelevation Analysis
- (e) MOT
  - Lane Closure Analysis (Final Signed and Sealed)
  - Pacing Analysis
  - Detour Analysis
  - Impacts to Toll Facilities
- (f) Typical Section Package (Final Signed and Sealed)
- (g) Pavement Design Package (Final Signed and Sealed)
- (h) Design Exceptions, Formal Design Variations and Design Variation Memorandums (Final Signed and Sealed)
- (i) Summary of 5-Year Crash Data
- (j) Existing Roadway Conditions Assessment Report (ERCAR)
- (k) Meeting Minutes/Project Correspondence (Related to Roadway Elements)
- (l) Comments and Responses (Related to Roadway Elements)

The design documentation must include all design notes, data, and calculations to document the design conclusions reached during the development of the contract plans. The design notes, data, and computations must be recorded on size 8 ½" x 11" sheets, titled, numbered, dated, indexed and signed by the designer and the checker. Computer output forms and other oversized sheets are allowed. All documentation must be submitted electronically to the Turnpike Project Manager.

## 120.4 Plans Phase Reviews

*Add the following paragraph*

For each phase submittal review, provide the CADD.zip or BIM.zip as outlined in the [\*\*FDOT CADD Manual\*\*](#).

## **121 Bridge Project Development**

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### **121.9 Bridge Development Report (BDR)/30% Structures Plans**

#### **121.9.2 Format**

***Replace the last paragraph with the following paragraph***

For most projects, the BDR contains exhibits/sketches and the 30% Plans are submitted after acceptance of the BDR recommendations.

## 122 Design Exceptions and Design Variations

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 122.2 Identification

#### 122.2.2 Design Variations

##### *Add the following paragraphs*

When proposed design elements are only violating the Turnpike specific criteria (TDH) a Design Variation Memorandum is required.

Deviations in criteria and procedures defined in the [FDOT Structures Manual](#) and structural sections of the FDM shall be documented and implemented as noted in the [FDOT Structures Manual](#) and structural sections of the FDM.

### 122.3 Justification for Approval

##### *Add the following subsection*

#### 122.3.1 Turnpike Design Exceptions, Formal Design Variations and Design Variation Memorandums

Submit all Design Exceptions, Formal Design Variations, Design Variation Memorandums electronically to the Turnpike Project Manager for review through the ERC process. Refer to **TDH 120.2** for design submittal requirements.

Upon acceptance by Turnpike staff, submit digitally signed and sealed Design Exceptions, Formal Design Variations and Design Variation Memorandums to the Turnpike Project Manager who coordinates the appropriate signatures. After receiving the applicable signatures, a copy of the digitally signed document will be returned.

The draft versions must be submitted to the Department for review through ERC prior to the 45% traffic control plan workshop and plans submittal. The final version must be reviewed through ERC and the signed and sealed documents must be signed by the Turnpike Design Engineer before the Phase II plans can be submitted for review. The Phase II plans will not be accepted for review until concurrence is obtained from the Turnpike Design Engineer.



All Design Exceptions and Formal Design Variations must have the appropriate checklist completed and included with the submittal. The [Request for FTE Design Exceptions & Variations Checklist](#) and [Example Turnpike Design Exceptions and Variations](#) can be found on the Turnpike Design website.

Design Memorandums should not be confused with Design Variation Memorandums. Design Memorandums are not required to be signed by the Turnpike Design Engineer and do not have a specific submittal schedule. Design Memorandums are typically used to document alternative design analysis and follow a submittal schedule that is coordinated with the Turnpike Project Manager.

## 122.4 Documentation for Approval

***Add the following item to the list in the third paragraph***

- (7) The milepost and station location (including left/right side) of the Design Variation.

***Add the following paragraphs***

For Design Variation Memorandums some of the required documentation listed within bullet points 2 thru 6 may be listed as not applicable (N/A) within the memorandum report depending on the design element being evaluated. Coordination with the applicable Turnpike design discipline lead will be needed to determine the items that will not be applicable.

Submittal/Approval Letters are not required when the Design Variation Memorandum is documenting deviations from Turnpike specific criteria (TDH) only.

## 123 Engineering Design Estimate Process

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 123.6 Alternative Contracting Practices

***Add the following sentence***

Coordinate with the Turnpike Project Manager to obtain a Contract Construction Memo from the Turnpike Construction Office identifying recommendations for alternative contracting practices.

## 124 QA/QC Management Plan

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 124.2 Quality Control Plan

***Add the following paragraph***

Independently and continually ensure that a QC process is implemented on all reports, documents, and plans. Be responsible for the professional quality, technical accuracy, and coordination of all technical reports, surveys, designs, drawings, specifications and other services furnished by the prime consultant and their subconsultant(s).

#### 124.2.1 QA/QC Staffing Plan

***Add the following items to the list in the first paragraph***

- Constructability and Biddability Reviewer
- Maintainability Reviewer

***Add the following sentence to the end of the third paragraph***

The QC Reviewer must have similar or more relevant project experience than the Lead Technical Professional.

***Add the following paragraph after the third paragraph***

The QA Manager must be a Principal or Officer-in-Charge of the Consultant Firm.

***Replace the fifth paragraph with the following paragraph***

For consultant design projects, provide the Turnpike Project Manager with an updated staffing plan for written (e-mail) approval prior to making any staffing changes. Staff replacements must have similar or more relevant project experience than the staff they are replacing. The updated staffing plan must include resumes for the replacement staff and the staff being replaced.

***Replace the sixth paragraph with the following paragraph***

An example of a [QA/QC Project Staffing List](#) is provided on the Turnpike Design website.

## 124.2.2 Quality Control Review

***Replace the third paragraph with the following paragraphs***

The deliverable that has completed the Quality Control Review is referred to as the “QC Document”. Documents that contain multidisciplinary information must show documentation of all applicable discipline reviews. All subconsultant deliverables shall be submitted by the subconsultant directly to the prime consultant for their independent Quality Control Review and subsequent submittal to the Department.

A marked up set of prints from a Quality Control Review indicating the reviewers for each component (structures, roadway, drainage, signals, geotechnical, signing and marking, lighting, landscape, surveys, tolling, etc.) and a written resolution of comments on a point-by-point basis will be required with each phase submittal. The responsible Professional Engineer, Architect, or Professional Surveyor and Mapper that performed the Quality Control Review shall sign a statement certifying that the review was conducted and found to meet required specifications. For a paper review, scan the QC Document to PDF.

## 124.2.3 Certificate of Compliance

***Add the following paragraph***

A template for the [Certificate of Compliance](#) is provided on the Turnpike Design website. Complete the Certificate of Compliance and submit with each deliverable.

## 124.4 Field Review

***Add the following sentence to the end of the second paragraph***

An example of a [Field Review Log](#) template is provided on the Turnpike Design website.

***Add the following sections***

## 124.5 Constructability and Biddability Review

Perform an independent Constructability and Biddability Review that is supplemental to the Quality Control Review. This review is conducted by an independent team of qualified reviewers on specific design elements or portions of a project. Members of the Constructability and Biddability review team are not assigned to the same organizational unit that managed and produced the Plans. The review shall be performed by a person(s) with experience working on Department construction projects (CEI, Contractor, etc.). The

review shall ensure the project can be constructed and paid for as designed. Conduct the reviews prior to the Phase III and Phase IV submittals, using the Phase Review Checklist (Guidance Document 1-1-A) from the [FDOT Construction Project Administration Manual \(CPAM\)](#) as a minimum guideline. Submit this checklist as well as the set of plans marked-up during this review, and review comments and comment responses from any previous reviews. These documents will be reviewed by Turnpike's Design and Construction Offices.

## **124.6 Maintainability Review**

Perform a documented review prior to the Phase III submittal to determine the ease with which the roadway can be maintained in order to: isolate and correct defects or their cause, repair or replace damaged components, prevent unexpected failures, maximize the facilities' useful life, meet new requirements, make future maintenance easier, and maximize efficiency, reliability, and safety. Submit the marked-up set of plans during this review, review comments, and comment responses with the Phase III submittal.

## **124.7 Quality Process Log**

Use a Quality Process Log to monitor, track, and document the production and review process for each deliverable and support documentation. Quality Process Logs provide a record of the progress of the project and document the completion of each major phase of the submittal production and review process. Submit the current up to date log with each deliverable.

An example of a [Quality Process Log](#) is provided on the Turnpike Design website.

## 125 Quality Assurance

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 126 Lane Repurposing Projects

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 127 Community Aesthetic Features

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***



## 128 Federal-Aid Project Certification

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 130 Signing and Sealing Documents

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 131 Plans Processing

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

### 131.1 General

#### 131.1.1 Definitions

##### *Replace the following definitions*

- (5) **Plans, Specifications, and Estimates (PS&E) Package:** This package is transmitted by the Turnpike PS&E Team to District Contracts Office for letting. The package consists of signed and sealed Final Plans and BIM.zip, Specification Package, the Estimated Quantities Report, and other contract and transmittal documents. PS&E submittals are numbered consecutively, and re-submittals are required until the project is accepted by the Turnpike PS&E Team.
- (7) **Production Date:** The committed completion date for Final Plans, Specifications Package, and related design documentation to be submitted by the Design Consultant to the Turnpike Design PM.
- (11) **Supplemental Specifications Package:** A signed and sealed document modifying the Specifications Package after construction contract advertisement.

##### *Add the following definition*

- (12) **PS&E Submittal:** After Phase IV and no later than three weeks before the Production Date, submittal of signed and sealed Final Plans, Specifications Package, and design documents for review by the Turnpike PS&E Team in ERC.

### 131.2 District Plans Processing

##### *Replace this section with the following paragraphs*

All Turnpike construction contracts are let utilizing Turnpike's Contracts Administration Office. Turnpike does not let projects through the Central Office "Final Plans" section.

Transmit the signed and sealed PS&E Package to the Turnpike Design Project Manager. All deliverables will then be reviewed by the Turnpike PS&E Team. Any comments will be provided and a request will be made to resubmit the updated deliverables. Any questions

about Plans Processing should be vetted through the Turnpike Design Project Manager and Turnpike PS&E Team.

## 132 Plan Revisions

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 133 Retention of Electronic Documents

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***

## 140 Lump Sum Projects

The following are changes, additions or deletions to the January 2021 FDOT Design Manual (FDM), Topic #625-000-002, for use on Turnpike projects only.

***No changes to this chapter***