TURNPIKE PLANS PREPARATION AND PRACTICES HANDBOOK (T PPPH)

VOLUME 1

FLORIDA’S TURNPIKE ENTERPRISE
PRODUCTION DESIGN DEPARTMENT
OCOEE, FL
June 2016
Introduction

As part of the Turnpike’s continuing quality enhancement effort, the Turnpike Plans Preparation and Practices Handbook (TPPPH) that includes Volumes 1, 2, and the Turnpike Enterprise Guide Drawings, has been developed to provide Consultants, Reviewers and Management with a single source of additional Turnpike specific requirements that modify or add to the normal requirements included in the FDOT Plans Preparations Manual (PPM). These two sources include the normal criteria that govern our work and help our projects to better "conform to requirements", the official FDOT definition of quality.

For Turnpike requirements related to tolling, please see the General Toll Requirements (GTR) which is a separate document.

The TPPPH Table of Contents for Volumes 1 and 2 show the PPM's Chapters and Sections that have been modified. If a section has been modified, the user can refer to the specific section in the TPPPH shown in the Table of Contents.

The TPPPH is updated on an annual basis (following the revisions to the PPM). We hope that you will find this document helps with the efficient production of quality plans.

Should you have any comments or suggestions for this TPPPH document, please contact the Turnpike Design Engineer.
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No changes to the entire chapter

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No changes to the entire chapter
Chapter 1

Design Controls

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

1.5 RRR Design

Add the following section

1.5.1 Turnpike Resurfacing, Restoration and Rehabilitation (RRR) Design

Florida's Turnpike Enterprise resurfacing design criteria must follow the modifications shown in Chapter 25 of the TPPPH. All facilities must be designed to new design criteria.

1.9 Design Speed

1.9.1 Design Speed Coordination and Approvals

Add the following paragraph

All Turnpike Interstate Facilities will follow Table 1.9.2 (70 MPH minimum design speed) with the following exceptions.

1. HEFT from Milepost 0 to Milepost 27.5 is classified as an Urbanized Freeway and will have a design speed of 65 MPH in accordance to AASHTO design criteria, for horizontal and vertical curve length and stopping sight distance, with the exception of K-Values for crest vertical curves that must meet or exceed the more stringent FDOT 60 MPH criteria. All other design elements must conform to FDOT criteria.

2. Veteran’s Expressway from Milepost 1.54 to Milepost 13.57 will have a design speed of 60 MPH.

3. Polk Parkway from Milepost 0 to Milepost 12.7 will have a design speed of 65 MPH.
1.13 Turnpike Design Controls

1.13.1 Use of "Interstate" vs. "Freeway Other" vs. "Non Interstate" Criteria

Unless approved by the Turnpike Design Engineer, the Turnpike System must be designed to "Interstate" Standards with the following exceptions.

1. Veteran’s Expressway from Milepost 1.54 to Milepost 13.57 is classified as an Urbanized Freeway.
Chapter 2

Design Geometrics and Criteria

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

2.0 General

Add the following paragraph

The width of all bridges must equal the paved width of the approach roadway including the paved width of shoulders. Section 2.3 of this Volume provides criteria for design of shoulders.

2.1 Lanes

2.1.5 Cross Slopes

Add the following paragraph

Median through-lane widening, turn lanes, tapered or parallel single lane ramps adjacent to two through-lanes do not automatically warrant a 3 percent cross slope. Surface drainage will be reviewed and used as the deciding factor. New two lane ramps, however, will be designed with 3 percent for both lanes through the gore area. It is understood that Figure 2.1.1 depicts through lanes, and that auxiliary lanes can be applied with a cross slope in the same direction as the adjacent through lane even if this causes more than three lanes to be sloped in the same direction. This approach does not require a Design Variation, but must meet lane spread requirements for storm water runoff. However, a hydroplaning analysis will be required if number of lanes sloped in one direction is greater than the maximum allowed of 3 lanes.

2.1.5.1 Hydroplaning Risk Analysis

Add the following paragraph

Hydroplaning Analysis is required whenever any additional contributing pavement (ex: Express Lane buffer, paved shoulder, paved gore, auxiliary lane, etc.) is added to the Standard Pavement Cross Slope sections shown in Figure 2.1.1. Super-elevated sections will be analyzed for hydroplaning when two (2) or more crashes occurred during the last 5 year period that were within the curve including transitions that were attributable or associated with weather/roadway conditions. Hydroplaning analysis will apply to all conventional and non-conventional projects; (widenings, reconstruction, resurfacing, and new construction projects).
2.1.6 Roadway Pavement

*Add the following paragraph*

TPPPH Section 16.2.7.1 contains the minimum standards for pavement designs on the Turnpike System.

2.1.7 Transitions of Pavement Widths

*Add the following paragraph*

At bridge approach slabs, for a 150 foot length before or after the concrete approach slab, the ultimate pavement design asphalt thickness must be placed flush with the concrete at the ultimate profile grade. The initial pavement section must transition to the ultimate thickness at a maximum rate of 0.08 percent (1 inch/100 feet).

2.3 Shoulders

*Add the following paragraphs*

On ramps, the left and right shoulder widths may be reversed or adjusted if needed to provide additional sight distance on the inside of a curve. However, the sum of the right and left shoulder widths must be greater than or equal to the sum of the standard shoulder widths and in no instance will the shoulder width on the outside of the curve be less than 4 ft. Even though this is an acceptable practice for mitigating sight distance per AASHTO Chapter 10.9.6, a Design Variation for shoulder width will be required.

Where single lane ramps meet cross roads, additional ramp lanes are usually added for acceleration/deceleration of right or left turns. Unless these additional lanes are more than 500 feet long measured along the ramp baseline, single lane six foot wide ramp shoulders must be used throughout. A similar 500 feet length would apply to ramp plaza approaches and departures. Frequent short changes in ramp width do not warrant corresponding short changes in ramp shoulder width. The shoulder transitions may be longer than the multi-lane ramp segment.

Other shoulder requirements:

1. Four feet paved inside shoulders on one lane ramps and profiled edge lines on both sides of the travel way for all ramps must be evaluated at each ramp location within a project before implementation. The evaluation must consider horizontal and vertical geometry, sight distance, crash data, and other site specific factors to compare safety benefits to constructability and cost considerations.

2. “Two Lane Ramp Interstate” within PPM Table 2.3.1 must also be applied to ramps with more than two lanes, and thus have a four feet paved inside shoulder and a ten feet paved outside shoulder.

3. Though PPM Figure 2.0.1 only shows “two lanes” for multi-lane ramps, the shoulder configuration (six feet inside shoulder and ten feet outside shoulder) must also be applied when more than two ramp lanes occur.

4. Twelve feet inside and outside paved shoulders must be provided for mainline sections that are three lanes or more in one direction, and that have greater than 250 DDHV trucks.
Additional stabilization and continuation of the shoulder cross slope beyond the twelve feet paved width are not required. This shoulder width requirement also needs to be applied to bridges when the above conditions occur.

5. A minimum median paved shoulder width of twelve feet is required for express lane marker separated Express Lanes.

Deviations to the above requirements will require an approved technical memorandum, similar in effort to preparing and processing a standard Design Variation.

At tolling locations, the paved shoulder width must meet the total minimum roadway shoulder widths (paved & unpaved) as specified in the FDOT PPM and the Turnpike TPPPH.

2.3.1 Limits of Friction Course on Paved Shoulders

Add the following paragraph

Shoulder pavement on the high side where the shoulder slopes toward the travel lanes, the shoulder pavement will be flush with the adjacent travel way friction course to avoid trapping water on the shoulder. Inside Shoulder Detail Guide Drawings can be found at the following link:

http://floridasturnpike.com/design/tppph.html

2.3.2 Shoulder Warning Devices (Rumble Strips)

Add the following paragraph

The minimum thickness of structural asphalt on shoulders where ground-in rumbles strips are to be used is 1.5 inches. On existing shoulders without rumble strips that call for new rumble strips to be placed, the minimum thickness of existing structural asphalt and proposed asphalt must be no less than 1.5 inches.

2.3.4 Shoulder Rocking

Add the following section

Cross slope for full width shoulders in a tangent section may be varied from 3% to a maximum of 6%. A minimum longitudinal gutter grade of 0.24% must be met. The minimum distance between the low point and high point is 100 feet. This criterion applies to sections of the mainline where the profile grade line will require varying the inside or outside shoulder slope as a means of maintaining minimum spread criteria. Design must include provisions to assure that the reveal of the concrete barrier is not compromised.

For the outside shoulder, the Turnpike will allow one of three types of treatment in areas where the outside shoulder slope must be varied in order to meet minimum spread criteria. Options 1 and 2 must be shown as not feasible or workable before Option 3 can be considered.

1. Use concrete barrier wall with inlets. If the shoulder slope must be varied then the above criteria for varying the shoulder slope and longitudinal gutter grade must be met.
2. Use guardrail with shoulder gutter and inlets to collect storm water. If the shoulder slope must be varied then the above criteria for varying the shoulder slope and longitudinal gutter grade must be met.

3. Use guardrail in conjunction with a permanent turf reinforcement mat in fill sections with a front slope steeper than 1:4 and embankment height less than or equal to 10 feet. Storm water will be allowed to flow over the shoulder and the miscellaneous asphalt onto the sodded front slope. Shear stress calculations are required for the design/selection of the permanent turf reinforcement mat.

2.5 Borders

2.5.1 Limited Access Facilities

Add the following paragraphs

On Turnpike resurfacing and widening projects where additional R/W will not be acquired, the minimum border width will be based on the following criteria:

1. The border width accommodates (1) roadside design components such as signing, drainage features, guardrail, fencing and clear zone, (2) the construction and maintenance of the facility and (3) permitted public utilities.

2. Along ramps and mainline lanes where roadside barriers are used and thus clear zone is not applicable, the minimum border width from the back of a barrier or retaining wall must be 10’ if maintenance vehicles have sufficient access from public right-of-way that is contiguous and unimpeded to the Turnpike facility.

3. If the maintenance access is not continuous along a barrier or wall, and thus maintenance vehicles and equipment would need to turn around, then a sufficient turnaround area must be provided that is acceptable and approved by FTE Maintenance.

4. Maintenance accessibility includes the ability for equipment and vehicles to maneuver around obstacles including fences, lights, signs, side slopes and ponds.

This approach does not require a Design Variation.

2.6 Grades

Table 2.6.2 Maximum Change in Grade Without Vertical Curves

Add following note

The minimum distance required between VPI’s used to develop the Profile Grade Line (PGL) is 3 * Design Speed.
2.8 Curves

2.8.1 Horizontal Curves

Add the following section

2.8.1.4 Express Lane Separation in Horizontal Curves

On Turnpike facilities, Express Lanes will be either barrier separated or buffer separated with express lane markers. Minimum stopping sight distances requirements per PPM Table 2.7.1 and AASHTO apply. If barrier or express lane markers impede required sightlines around horizontal curves, then a formal Design Exception or Variation is required.

2.8.2 Vertical Curves

Add the following paragraphs

The minimum vertical curve lengths and minimum K values listed in the notes in PPM Tables 2.8.5 and 2.8.6 require some clarifications and restrictions:

Service Interchanges Per AASHTO, it is intended that a "platform" about 200 feet in length be provided on the ramp in advance of the gore using the Freeway K values.

System Interchanges K values for the higher system ramp design speeds must be used except for the "platform" area.

2.9 Superelevation

Replace paragraph 2 with the following

The standard superelevation transition places 80% of the transition on the tangent and 20% on the curve. In transition sections where the cross slope is less than 1.5%, a minimum longitudinal grade of 0.5% must be maintained for new and reconstructed alignments. For widening projects where MOT is shown to be cost prohibitive, the inside and outside edge of pavement must maintain a minimum grade of 0.3%.

Add the following paragraph

For ramp design speeds less than 35 mph. See AASHTO Exhibit 3-30 Maximum Relative Gradient for superelevation transition rates.

2.10 Vertical Clearance

Replace the first sentence of paragraph 3 with the following

For any construction affecting existing bridge clearances (e.g., bridge widenings or resurfacing), vertical clearances less than 16'-6" must be maintained or increased, unless otherwise approved by the Turnpike Structures Design Engineer.
Table 2.10.2 Minimum Vertical Clearances for Signs

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>CLEARANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overhead Sign Structures</td>
<td>18’-0”</td>
</tr>
</tbody>
</table>

2.14 Interchanges and Medians Openings/Crossovers

2.14.5 Crossovers on Turnpike Facilities

Median u-turns throughout the Turnpike are used to accommodate turnarounds between interchanges for maintenance, service, and law enforcement personnel. The primary purpose of the u-turns is to alleviate adverse travel time for emergency vehicles by providing strategic u-turn locations along Florida’s Turnpike.

Coordination efforts between Turnpike Production Design, Traffic Operations, FHP Troop K, and Service/Maintenance departments, helped provide the direction needed to identify and develop Turnpike specific criteria for the design and locations (sometimes relocation) of the official use u-turns on the system. Design guidelines from AASHTO’s A Policy of Highway and Streets (2004), along with outcome of the internal coordination efforts, were used to develop Turnpike specific criteria during the time when the state was developing standards for crossovers on Limited Access Facilities.

The following is a summary of Florida’s Turnpike crossover spacing criteria:

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Turnpike Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median width opening</td>
<td>≥ 20 feet (concrete barrier wall separated)</td>
</tr>
</tbody>
</table>

All crossovers within a project’s limit are to be evaluated by the design consultant for the spacing criteria and for sight distance deficiency. Findings are to be documented and submitted to the Department for review and an internal decision will be made as to relocate or close the location. In the special case of managed lanes with buffers separating the managed lanes from general purpose lanes, crossovers will be prohibited. The design consultant will evaluate alternative crossing locations such as bridge abutments or emergency routes through interchanges.

Emergency Crossover Design Guide Drawings can be found at the following link:

http://floridasturnpike.com/design/tppph.html
Additional guide drawings are available within the PPM, Chapter 2.

Add the following section

2.17 Sodding

On resurfacing projects where there is more than 12 feet of travel lane pavement draining to the edge, the minimum sod dimension is 2 feet 8 inches. Where there is less than 12 feet of travel lane pavement draining to the edge, the minimum sod dimension is 1 foot 4 inches. Typically, the 2 feet 8 inches occurs on the outside shoulder and the 1 foot 4 inches on the inside shoulder.

For all slopes adjacent to new construction or widening, sodding must be used throughout the entire limits of the project.

Add the following section

2.18 Interchange Fence

On all projects involving interchanges between a Turnpike system facility and any roadway classified as “Urban”, use Type B Fence along the Limited Access Right-of-Way within the limits of the interchange unless otherwise approved for the Turnpike Roadway Design Engineer.

Limits of Type B fence within the interchange begin at the theoretical gore point of each ramp and terminate at the end of the Limited Access Right-of-Way adjoining the urban roadway being crossed. Quadrants that do not contain a theoretical gore point will extend Type B fence to the point where the typical mainline Right-of-Way is resumed.
Chapter 3

Earthwork

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

3.5 Earthwork Items of Payment

3.5.9 Summary of Earthwork

Add the following paragraph

Specify and quantify material necessary to meet the drainage design requirements, such as select material beneath swales, on fill, and ponds designed to percolate runoff.
Chapter 4

Roadside Safety

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

4.2 Roadside Features

4.2.3 Clear Zone Criteria

Add the following figure

Figure 4.2.16 Clear Zones at a Ramp

4.2.6 Roadside Slope Criteria

4.2.6.1 New Construction Slope Criteria

Add the following paragraphs

Though a 1:4 front slope rate can be applied without restrictions per PPM Chapter 4, a 1:6 rate to the edge of a clear zone is required on widening and reconstruction projects. In addition, a 1:2 front slope rate with guardrail can be applied regardless of fill height when constrained conditions exist, which requires approval from FTE Roadway, Drainage and Maintenance.
5 feet from face of guardrail to the beginning of the 1:2 cut slope must be provided on all guardrail and 1:2 cut slope applications to allow for a 5 feet guardrail deflection. If a concrete barrier is used instead of guardrail and shoulder gutter, then a 4 feet wide level bench must be constructed within the fill behind the barrier before proceeding with a 1:2 slope.

4.3 Roadside Hazards

4.3.2 Canal Hazards

Add the following paragraphs

Design Consultants must request the Florida Turnpike Enterprise (FTE) 2009 Canal Protection Program Update to review.

Florida’s Turnpike Enterprise defines a water body as a natural or manmade feature, such as a pond, lake, ditch or canal that has a depth of water of 3 feet or more for an extended period of time (24 hours or more), as measured from the seasonal high water level or control elevation, to the water feature’s bottom elevation. All water bodies within Turnpike right of way, as well as canals that run along and may fall slightly outside of Turnpike right of way must be evaluated for protection.

PPM criteria for Canal Hazard shielding must be followed with the exception of water bodies within interchange areas. Design Consultants must provide shielding for all canals and water bodies within the right-of-way of interchange areas.

4.4 Longitudinal Barriers, Barrier Transitions, End Treatments & Crash Cushions

4.4.6 Barrier Placement

4.4.6.4 Median Barriers

Add the following section

4.4.6.4.1 Median Barrier Grading Requirements

The most desirable median slope is one that is relatively flat with slopes at 1:10 or less in lieu of the standard 1:6 median typical section slopes. The slopes ahead and in front of guardrail installation are particularly critical on the older/narrow medians of 40 feet or less in width (see AASHTO Roadside Design Guide). In most cases, regrading will require the median ditch profile to be realigned horizontally and vertically. Therefore, drainage and earthwork in these areas need special attention in developing the typical sections and drainage profiles.
Add the following section

4.4.6.6 Flexible Barrier Placement

The following criteria apply to the placement/location of high tension cable barrier and are supplement to Developmental Specification 540 High Tension Cable Barrier System.

1. The maximum slope a high tension cable barrier must be placed on is 1V:6H, with preferred slope of 1V:10H.

2. High tension cable barrier cannot be placed between the front slope break point and 8’ from the break point or median center when the approach slope is 1:6 or flatter; or 10’ from the break point if the front slope is steeper than 1:6. See figure below for clarification.

3. Post spacing must be installed such that the dynamic deflection is no more than a maximum of 8 feet.

4. End anchors must be protected from vehicle impact with rigid barrier, guardrail, or overlapping cable barrier to avoid collapse of the cable barrier thereby losing median crossover protection.

5. For all median applications retro-reflective sheeting must be specified on both sides of the posts in the contract documents.

Add the following section

4.4.6.7 Access Openings

On projects that add roadside barrier to existing facilities (e.g. canal protection, spot/system wide safety improvement projects) the designer must strategically locate access points such that maintenance and operation crews can conveniently access existing infrastructure, particularly facilities that may already be placed outside the clear zone and would not be accessible from the shoulder. In addition, the maximum continuous length of a guardrail run along the outside of the roadway is 2,500 between end terminals. When long guardrail runs need to be broken up or an opening provided to access roadside facilities an access opening must be provided. The Designer must coordinate with FTE Maintenance and ITS on the final access location points to ensure these locations meet the needs for maintenance & operations.

The preferred typical detail for roadside guardrail access openings along Turnpike facilities can be found at the following link:

http://floridasturnpike.com/design/tppph.html
4.4.7 Warrants for Roadside Barriers

4.4.7.2 Shielding Requirements

Add the following paragraph

Light pole foundations are not considered a hazard if built in accordance to Standard Index 17500, though the roadway slope may cause a portion of the foundations to protrude more than 4” in height.

Figure 4.13 Cable Barrier Placement

4.7 Upgrading Existing Barrier Systems

Add the following paragraphs

For added capacity and reconstruction projects, existing guardrail sections that do not meet current mounting height design standards must be replaced or upgraded to meet current standards. If the run of guardrail extends beyond the project limits, then a 25 foot transition detail will be used to connect to the existing guardrail.

For resurfacing and spot or system wide safety improvement projects, existing guardrail sections that do not meet current mounting height design standards AND are impacted by project
improvements must be replaced or upgraded such that the entire run of guardrail is upgraded/replaced to meet current standards. If the run of guardrail extends beyond the project limits, then a 25 foot transition detail will be used to connect to the existing guardrail. Existing guardrail not impacted by the design of the project improvements, is not required to be upgraded or replaced.
Chapter 5

Utilities

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 6

Railroad Crossing

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

*No changes to the entire chapter*
Chapter 7
Traffic and ITS Design

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

7.1 General

Add the following paragraphs

Florida’s Turnpike Enterprise has developed Traffic Plans Guide Drawings to establish guidelines for traffic design and traffic engineering plan development. The Guide Drawings attempt to improve the quality of plans, provide system consistency, reduce plan development time and reduce plan review time. The Guide Drawings represent the compilation of engineering manuals, best practices and effective design experience on Florida’s Turnpike. The Guide Drawings show layouts and details of an example condition.

It is the responsibility of the Design Engineer of Record using these Guide Drawings to exercise proper engineering judgment and prepare a safe and effective design that fits the specific conditions of a project. The inappropriate use of and adherence to these Guide Drawings does not exempt the engineer from the professional responsibility of developing an appropriate design. Design engineers and consultants are encouraged to become familiar with the information contained in the Guide Drawings and to discuss specific design details with Florida’s Turnpike design staff.

The Traffic Plans Guide Drawings are available as .dgn and .pdf at the following link:

http://floridasturnpike.com/design/tppph.html

7.2 Signing

7.2.1 Design Criteria

Add the following to paragraph 1

The placement of signs must prevent subjecting motorists to too much information, not interfere with other traffic control devices, not impair the visibility of other signs and not violate minimum spacing distances listed in Table 1, Minimum Spacing Distances for Signs in Florida Administrative Code 14-51.014. Table 1 provides the minimum spacing requirements and the design should maximize the sign spreading concept in MUTCD 2E.11 when possible. In addition, the minimum sign spacing between a Dynamic Message Sign (DMS) and guide signs-directional signs should be 1000 feet.

Add the following to paragraph 2
The designer must consider the physical placement of sign supports as well as the visibility of the sign panel. The placement of sign supports must not occur in the bottom of ditches. Clearing and grubbing should be included if the visibility of the sign panel is blocked. Refer to the Traffic Plans Guide Drawings for guidance.

The design for sign location must consider the cross section as to the placement of the sign structure foundation outside the clear zone. Signs located behind guardrail must be located at the minimum setback required from the face of guardrail. This applies to the foundations on overhead signs and for the sign panel for ground mounted signs.

Add the following paragraphs

All advance guide signs should use the physical gore as the point of reference for distance messages. The only time this should not be done is if the physical gore and theoretical gore are separated by more than 500 feet.

Destination guide signs on ramps must include destinations that repeat advance guide sign and supplemental guide sign information and provides route guidance to the driver.

Follow Typical Off Ramp Signing Diagrams, located on Turnpike Design Internet, for Advisory Speed Warning Signing at all Turnpike exit ramps.

For all post-interchange distance signs on the Turnpike, the maximum letter height used must be 10” E or 10” EM.

For size of signs, lettering and plaques, Florida’s Turnpike facilities must follow the Freeway Classification in MUTCD Tables 2B-1, 2C-2, 2E-4 and 2E-5. The minimum sizes for regulatory and warning signs on exit or entrance ramps to/from Turnpike facilities must be Freeway Classification as well.

7.2.2 Overhead Signs on Freeways and Expressways

Replace item 3 under paragraph 2 as follows

Mount advance guide signs and exit direction signs on overhead structures when the number of travel lanes in one direction is three or more. Supplemental guide signs must remain ground mounted under sections of three or more travel lanes.

Add the following paragraph

Overhead sign installations must meet the vertical clearance requirements of TPPPH Section 2.10, Table 2.10.2.
7.2.4 External Lighting of Overhead Signs

Add the following item

4. If a sign panel on an existing structure is being replaced, all signs on the structure should be consistent. For example, if a structure has three existing signs with lights, one panel is being replaced, the plans should call for either A) lights on the new panel or B) the other two panels replaced with Type XI sheeting and removal of the lights.

7.2.5 Signs on Median Barriers and Traffic Railings

Modify the list in paragraph 1

4. Add “Do Not Stop” (TPK-7) to the list of permanent signs critical to safety.

7.2.8 Delineators, Object Markers and Express Lane Markers

Add the following to paragraph

On Turnpike facilities, Express Lanes will be either barrier separated or buffer separated with express lane markers. Standard specifications for the express lane markers used in this application have not yet been developed. Therefore, a Modified Special Provision is required and must be included in the contract to define requirements for color, height, retroreflectivity, spacing, and mounting technique. The Turnpike Traffic Engineer must be consulted on this item.

Modification for Non-Conventional Projects:

Delete the last sentence of the above paragraph and see RFP for delineator requirements on Turnpike Express Lane projects.

Add the following section

7.2.11 Toll Route Markers

The Florida’s Turnpike mainline must use the Turnpike Route Marker sign panel shown in the most current Guide Drawings.

For all other Turnpike operated facilities the Toll Route Marker must be used as shown in the Traffic Engineering Manual, Section 2.23. The size of this panel must meet the standards in the TEM with the following exception:

1. For identification along the mainline (i.e., Post Interchange Sign) – 36” x 48”

The width of the attached cardinal direction sign, directional arrow auxiliary sign, or other auxiliary sign must match the width of the parent route marker sign.

On the side streets, leading to the Turnpike Mainline, use the Toll Auxiliary Sign (M4-15) in combination with the Turnpike route marker. On numbered routes, such as Toll Route 869, use the
Toll Route Shield (FTP-79-06, FTP-80-06, or FTP-81-06) without the additional Toll Auxiliary Sign.

Add the following section

### 7.2.12 Truck Lane Restrictions

The design engineer must include truck lane restriction signs on corridors that have three or more lanes in each direction of travel.

Sample panel designs for the restriction are included in the Guide Drawings. The design engineer should implement the signs similar to a post-interchange sign so that drivers entering the system are informed at each entry point. If installation of the truck lane restriction sign is not possible on the mainline due to sign clutter, the truck lane restriction sign can be implemented on the entrance ramp after the toll plaza, when necessary, to maintain proper sign spacing.

### 7.3 Lighting

Florida’s Turnpike Enterprise has developed Lighting Guide Drawings to establish guidelines for lighting design and plan development. The Lighting Guide Drawings are available as .dgn and .pdf at the following link:

http://floridasturnpike.com/design/tppph.html

Projects including lighting design must comply with applicable standards. In addition to the Department's Standard Specifications, the following standards should be consulted:

**Roadway Lighting Design Guide, AASHTO** - This is the basic guide for highway lighting. It includes information on warranting conditions and design criteria.

**Design Standards** - These indices are composed of a number of standard drawings or indexes which address specific situations that occur on a large majority of construction projects.

**Recommended Practice for Roadway Lighting IES RP-8-00 (R2005), ANSI/IESNA.**

**American National Standard Practice for Tunnel Lighting IES RP-22-11, ANSI/IESNA.**

**The IESNA Lighting Handbook Reference & Application, IESNA.**

**Federal Aviation Regulation, Part 77, Safe, Efficient Use, and Preservation of the Navigable Airspace, USDOT/FAA.** This regulation sets the requirements to follow on projects near airports.

**Federal Aviation Administration Advisory Circular AC 70/7460-1, Obstruction Marking and Lighting, FAA.** This advisory circular defines the requirements to follow to identify objects that require special lighting near airports.
Federal Aviation Administration Advisory Circular AC 150/5345-43, Specification for Obstruction Lighting Equipment, FAA. This advisory circular contains the FAA specification for obstruction lighting equipment.


7.3.1 Design Criteria

Add the following paragraphs

Lighting pole layout and design must employ practices, where possible, to reduce the risk of light poles in high crash and high risk locations. Some of these design considerations are, but not limited to: lane drop and intersection locations, sections of roadway where the paved shoulder narrows, and curve/vehicle departure directions. All design considerations must be documented in the Lighting Design Analysis Report (LDAR).

Conventional lighting should be used for all Florida Turnpike roads.

| Modification for Non-Conventional Projects: |
| Conventional lighting must be used unless directed otherwise in the RFP. |

Conventional lighting must be shoulder mounted. Median mounted poles are not allowed. If a geometric or safety concern exists related to shoulder mounting, median mounted poles will be considered. In these cases, approval is required by the Turnpike Project Manager, Turnpike Electrical Engineer, and Turnpike Maintenance. Median mounted poles must be limited to the area of geometric or safety concern.

| Modification for Non-Conventional Projects: |
| Shoulder mounted poles must be used unless directed otherwise in the RFP. |

High mast lighting may be considered where conventional lighting is proven not feasible and the surrounding area is not residential or environmentally sensitive. The consultant must obtain approval from the Turnpike Electrical Engineer, Turnpike Structures Maintenance, and Project Manager before considering high mast lighting.

| Modification for Non-Conventional Projects: |
| High mast lighting must not be used unless directed otherwise in the RFP. |

High mast lighting must not be located in the following locations and must meet horizontal clearance requirements specified in PPM, Vol. 1 Chapter 2:

a. Steep Embankments
b. Steep Slopes in Slope Pavement
c. Adjacent to Slope Embankment Cut-Outs
d. With Buried Pole Bases
e. In areas not accessible to a crane for aerial basket work.
Underdeck lighting must be mounted to pier caps, end bents, or walls. If pendant hung fixtures are required to meet criteria, special attention should be given to locate fixtures over shoulders, gore areas, other separations from traffic. If pendant hung fixtures are required over live traffic lanes, the fixture locations must be coordinated with the Turnpike Electrical Engineer and Turnpike Maintenance. Additional coordination with the Department’s central office will be required where use of pendant lighting is recommended prior to final design submittal and must be coordinated with the Turnpike Project Manager. All pendant hung fixtures must have a redundant method of support, designed, signed and sealed by a Structural Engineer.

Where there is continuous roadway lighting, roadways under bridges structures must be lighted to the same level (or criteria) of the adjacent roadway. If the adjacent roadway is not lighted, lighting under bridges structures is still required where there is frequent nighttime pedestrian traffic; or where unusual or critical roadway geometry occurs adjacent to or under the bridge structure. Tunnel or daytime lighting may be required when the bridge structure limits natural sunlight penetration and limits a driver’s visibility under the structure. Other factors to consider in evaluating the need for tunnel or daytime lighting include, but may not be limited to: specific roadway geometry and conditions, pedestrian and vehicular activity, bridge/underpass orientation and length to height ratio, safe site stopping distance, and traffic speed. Evaluation of proposed roadway design regarding the need for Tunnel or Daytime lighting must be included in the Lighting Design Analysis Report. These requirements include not only Turnpike facilities, but any roadway crossing under a Turnpike facility.

Projects with conventional lighting along the roadside must be designed for an average initial illumination as indicated in Table 7.3.1. Projects with high mast lighting must be designed for an average initial illumination as indicated in Table 7.3.2 Rest areas and Service Plazas must be designed for an average initial illumination as indicated in Table 7.3.5. This includes the ramps to and from the Service Plazas.

If the adjoining mainline roads are not illuminated, then the lighting design must include mainline transition lighting to allow a driver a reasonable reduction in lighting levels from a lighted roadway to an unlit road. The mainline transition lighting must extend beyond the project lighting limits by approximately four-to six-pole spacing. The mainline transition illumination levels must be 1.0 foot candles average initial intensity (horizontal foot candles) with the same uniformity ratios specified in Table 7.3.1.

If the length of the mainline between any two lighted areas (roadway sections, interchanges, service plazas, and/or tolls plaza) is 0.5 mile or less, then that section of the mainline must be lighted regardless of what the Lighting Justification Report indicates.

All widening and resurfacing projects must be reviewed for compliance with current lighting criteria. Project begin and end limits must define project lighting scope to be considered, regardless of the limits of resurfacing unless otherwise noted. All deficiencies within the project scope must be addressed and corrected. Deficiencies outside the project scope must be brought to the attention of the Turnpike Project Manager and Electrical Engineer.
Projects with highway speed tolling gantries are not required to have roadside lighting unless dictated by another section of the TPPPH and/or a Lighting Justification Report. Where roadside lighting exists, the roadway lighting must remain and must be reviewed for compliance with current lighting criteria. All deficiencies within the project scope must be addressed and corrected. Deficiencies outside the project scope must be brought to the attention of the Turnpike Project Manager and Electrical Engineer.

Where new poles and luminaires are being proposed, all poles, luminaires, foundations, and infrastructure within the project scope must be new.

**Modification for Non-Conventional Project:**

All poles, luminaries, foundations and infrastructure must be new unless directed otherwise in the RFP.

### Table 7.3.1 Conventional Lighting – Roadways and Signalized Intersections

Replace the following table

<table>
<thead>
<tr>
<th>ROADWAY CLASSIFICATIONS</th>
<th>ILLUMINATION LEVEL AVERAGE INITIAL (H.F.C)</th>
<th>UNIFORMITY RATIOS</th>
<th>VEILING LUMINANCE RATIO</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AVG/MIN</td>
<td>MAX/MIN</td>
<td>Lv (max)/Lavg</td>
</tr>
<tr>
<td>INTERSTATE, EXPRESSWAY, FREEWAY, MAJOR ARTERIALS &amp; HIGHWAY SPEED TOLLING GANTRIES</td>
<td>1.7</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
<tr>
<td>ALL OTHER ROADWAYS</td>
<td>1.0</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
<tr>
<td>*PEDESTRIAN WAYS AND BICYCLE LANES</td>
<td>2.5</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
</tbody>
</table>

**Note:** These average illumination values should be considered standard, but should be increased if necessary to maintain an acceptable uniformity ratio. The maximum illumination level average initial horizontal foot-candle value must be 2.25 FC for Interstate, Expressway, Freeway, Major Arterials, and Highway Speed Tolling Gania. The maximum illumination level average initial horizontal foot-candle values must be one and one-half values for All Other Roadways, Pedestrian Ways, and Bicycle Lanes.

* This assumes a separate facility. Facilities adjacent to a vehicular roadway should use the levels for that roadway.
### Table 7.3.2 Highmast Lighting – Roadways

<table>
<thead>
<tr>
<th>ROADWAY CLASSIFICATIONS</th>
<th>ILLUMINATION LEVEL AVERAGE INITIAL (H.F.C)</th>
<th>UNIFORMITY RATIOS</th>
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<tbody>
<tr>
<td>INTERSTATE, EXPRESSWAY, FREEWAY, MAJOR ARTERIALS &amp; HIGHWAY SPEED TOLLING GANTRIES</td>
<td>1.0</td>
<td>3:1 or Less</td>
<td>10:1 or Less</td>
</tr>
<tr>
<td>ALL OTHER ROADWAYS</td>
<td>1.0</td>
<td>3:1 or Less</td>
<td>10:1 or Less</td>
</tr>
</tbody>
</table>

**Note:** These average illumination values should be considered standard, but should be increased if necessary to maintain an acceptable uniformity ratio. The maximum illumination level average initial horizontal foot-candle values must be one and one-half values for Interstate, Expressway, Freeway, Major Arterials, Highway Speed Tolling GANTRIES, and All Other Roadways.

### Table 7.3.5 Sign Lighting

<table>
<thead>
<tr>
<th>AMBIENT LUMINANCE*</th>
<th>ILLUMINATION LEVEL AVERAGE INITIAL (H.F.C)</th>
<th>UNIFORMITY RATIOS</th>
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<tbody>
<tr>
<td>LOW</td>
<td>5.0 to 10.0</td>
<td>6:1</td>
<td></td>
</tr>
<tr>
<td>MEDIUM</td>
<td>10.0 to 20.0</td>
<td>6:1</td>
<td></td>
</tr>
<tr>
<td>HIGH</td>
<td>20.0 to 40.0</td>
<td>6:1</td>
<td></td>
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</tbody>
</table>

*Ambient luminance classifications are defined in Section 10.3 of the AASHTO Roadway Lighting Design Guide (2005). Refer to the Traffic Plans Guide Drawings for information on sign panel sheeting used on Turnpike projects.*
Table 7.3.7 Rest Area Lighting

Replace title with the following

Table 7.3.7 Rest Area and Service Plaza Lighting

Replace the following table

<table>
<thead>
<tr>
<th>AREA ILLUMINATED</th>
<th>ILLUMINATION LEVEL AVERAGE INITIAL (H.F.C)</th>
<th>UNIFORMITY RATIOS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ENTRANCE AND EXIT</td>
<td>1.7</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
<tr>
<td>INTERIOR ROADWAYS</td>
<td>1.5</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
<tr>
<td>PARKING AREAS</td>
<td>1.5</td>
<td>4:1 or Less</td>
<td>10:1 or Less</td>
</tr>
</tbody>
</table>

Note: These average illumination values should be considered standard, but should be increased if necessary to maintain an acceptable uniformity ratio. The maximum illumination level average initial horizontal foot-candle values must be one and one-half values.

Add the following section

7.3.1.1 Box Girder Maintenance Lighting and Power

No welding or burning of the structure will be allowed. All fasteners must be approved mechanical devices. The electrical work associated with the box girders involves working in confined space areas. All precautions and rules according to "confined spaces" of the Code of Federal Regulations, 29 CFR 1910.146 must apply. Emergency lighting must be provided within each box girder per NFPA 101.

The minimum conductor size must be No. 10 AWG. A green insulated conductor must be installed in each conduit run. The minimum conduit size must be 1 inch.

The six-hour timers must control the lighting contactors. Timers must be provided at each hatch entrance and mid span.

The light fixtures must be connected to branch circuit breakers separate from the receptacle branch circuit breakers.

The service voltage for the box girders must be 240/480 volts, single-phase, three-wires and then step down to the 120/240 volts through the mini power centers. A main disconnect switch must be provided immediately adjacent to the hatch door of each girder. The 240/480 volt-feeder must terminate in a distribution panelboard. The distribution panelboard must provide 480 volt power to each mini power center.

The number of mini power centers within each box girder must be determined based on the number of lights and receptacles. The maximum number of lights and receptacles within a mini power center must be as indicated on Structural Index No. 21240.
7.3.1.2 Photometric Analysis

A point-by-point, computerized photometric analysis must be performed for all roadway areas being illuminated throughout the project. A 5 foot by 5 foot maximum point spacing must be used for the point by point photometric analysis on the mainline, and major arterials, ramps and all other roadways. Alternatively, the photometric grid may consist of longitudinal points spaced up to 16 feet apart with two transverse points per lane at each longitudinal point spaced ¼ of the lane width from the edges of the lane. Photometric data points must be legible. A copy of the results of this analysis must be included in the LDAR and submitted to the Turnpike Electrical Engineer for review. The photometric analysis must identify and evaluate each roadway classification and area of illumination, as defined by the section 7.3.1, within the project scope. The analysis must also identify distinct area/sections of roadway within the project scope. Some of these distinct areas may include: Mainline, Ramps, and Roadway Directions. Results must indicate foot-candle values displayed on plan view on 11’ x 17’ pages with 1/100th accuracy (0.XX foot-candles). Where solid objects, such as bridges, block light fixture contributions, a 3D graphic representation must be included to ascertain that solids were accounted for. Typical section photometric analysis are not considered a complete or through photometric analysis.

A point-by-point, computerized photometric analysis must be performed for all signs being illuminated throughout the project. A 1 foot by 1 foot maximum point spacing must be used for the point by point photometric for the entire area of the sign panel(s). A copy of the results of this analysis must be included in the LDAR and submitted to the Turnpike Electrical Engineer for review. Results must indicate foot-candle values displayed on each sign panel with 1/100th accuracy (0.XX foot-candles).

A photometric analysis is required for projects where the relocation of light poles is included in the scope of work.

Provide an angle convention detail, if any tilting is required, to clearly depict fixture tilt orientation. A detail is required for each type of fixture being used (fixture on pole, sign luminaire, etc.). The detail(s) must be provided in the LDAR and the plan sheets.

7.3.1.3 Lighting Load Center and Wiring Criteria

The standard service voltage for the roadway lighting load centers must be 240/480 volts, single-phase, three-wires.

Roadway lighting load centers must be coordinated with utility provider prior to Phase III Plan Submittal. Utility transformers must be sized for connected and spare loads. Consideration must be given for utility standard transformer sizes and limitations. Where a lighting load exceeds
typical utility transformer sizes, the lighting load must be split and multiple load centers provided to serve the load unless approved otherwise by Turnpike Electrical Engineer.

FDOT Design Standard Index No. 17504 (Service Point Details) and Turnpike Lighting Guide Drawings must be coordinated with the utility provider’s requirements for electrical service (or electrical service standards). The electrical service point must designed to and meet all utility provider’s requirements.

Load centers must not be connected to or located within any facilities buildings unless there is a requirement for the load center to have emergency power from the toll plaza’s generator.

The load center location and surrounding area must have a minimum of 1’-0” between the load center and the designer’s high water elevation.

Load center enclosure minimum dimensions must be as shown in the Turnpike Lighting Guide Drawings.

Where a load center is being replaced and existing poles, equipment, etc. are being re-fed, all equipment and identification labels must be replaced to include the new load center designation and circuit. Coordination with Turnpike Maintenance Engineer must be conducted as needed to properly update identification of equipment.

The voltage for the roadway luminaires must be 480 volts, single-phase, two-wires.

Roadway lighting circuit conductors must not be larger than #1 AWG. Circuits requiring conductors larger than #1 AWG must be coordinated with the Turnpike Electrical Engineer and Turnpike Maintenance.

Where existing conductors within a circuit are being replaced, the size of the new conductors must not be smaller than the existing conductors.

Dedicated circuits must be provided for daytime supplemental underdeck lighting. Daytime dedicated circuits must be in separate conduits from roadway lighting circuits. Where conduits are run in the same trench with roadway lighting conduits, the conduits must be separated in the pull boxes. Dedicated daytime lighting circuit conduits must be wrapped with electrical hazard tape in the pull boxes. Dedicated daytime lighting circuit conductors to be identified with an additional tag that states the conductors are live 24 hours a day, seven days a week.

Underdeck light fixture mounting details must be provided. Light fixtures/associated conduit may be field routed. Attachment of lighting equipment/associated conduit to MSE wall panels is not allowed. Attachment of lighting equipment/associated conduit to MSE copings is acceptable. Attachment to other bridge elements must conform to the Structures Design Guidelines Appendix 1A.

Roadway lighting must be connected to alternate circuits to prevent a total blackout of any section of the highway in the event a circuit is out of service. Minor replacements must be evaluated on a case by case basis.
Modification for Non-Conventional Projects:

Roadway lighting must be connected to alternate circuits unless directed otherwise in the RFP.

The maximum distance between pull boxes and/or splice boxes in long conduit runs must be 300 feet.

A special power distribution design is required when new poles and luminaires are being proposed behind Noise Barriers (Sound Walls). Conduit, junction boxes, and pull boxes must not be installed in front of Noise Barriers (Sound Walls). Provide conduit, junction boxes, and pull boxes in front of Noise Barriers (Sound Walls) on the roadside.

There must be no more than three circuits in a single conduit. Provide multiple conduits as needed in the plans.

All roadway crossings must be provided with a spare conduit and provided with a dedicated pull box at each end of the crossing road. Use of light pole pull boxes is not allowed, where space is sufficient for providing dedicated pull boxes.

All pull boxes and splice boxes must be H-20 or HS-20 load rated.

Add the following section

7.3.1.4 Temporary Lighting Criteria

The design of temporary lighting must meet the criteria shown in section 7.3.1. If this criteria cannot be met based on various factors of construction, the Design Engineer of Record must submit a safe and effective design, using proper engineering judgment to the Turnpike Project Manager and Turnpike Electrical Engineer for review and approval.

7.3.2 Pole Design Criteria

7.3.2.1 General

Add the following paragraphs

It is desirable not to locate any light poles on highway bridges. Spacing must be adjusted, if possible, to keep light poles off bridge structures including the approach slabs. If light poles are required on bridges, their location must be closely coordinated with the Bridge Structural Designer. Bridge-mounted poles must have pull box as specified in FDOT Standard Index No. 21210.

Nominal mounting heights for conventional poles must be 40 and 50 feet as specified in FDOT Standard Index No. 17515. Nominal mounting heights for highmast poles must be between 80 and 120 feet as specified in FDOT Standard Index No. 17502. In cases where lower or higher mounting heights are required to meet minimum lighting design criteria, the designer must contact the Turnpike Electrical Engineer for approval and coordination. Technical special provisions and
details must be provided in those cases where special designs are required. Technical special provisions must be signed and sealed by a Professional Engineer, licensed in the State of Florida. Vibration dampers and pads must be provided for all shoulder-mounted poles with pole-top mounted luminaires having mounting heights over 40 feet. All conventional light poles must be provided with breakaway transformer-type bases except when mounted on bridge traffic railing barriers or on barrier walls. Conventional light poles in parking lots must not be provided with frangible bases.

Conventional light poles must be aluminum and must not be painted. High mast light poles must be galvanized steel only.

A concrete slab is not required in those instances when the poles are located behind sidewalks. The pull box must be located flush with the sidewalk in front of the light pole, and is paid for as "roadside".

A combination pole and pull box concrete slab is not required where the grade is 1:2 or greater and protected by guardrail.

All foundations and pull boxes must be coordinated with current and future grading to ensure that the top of the foundations and the pull boxes are not below grade. In addition, foundations, boxes (pull, splice, junction or similar), and lighting equipment must not be located within the limits of any drainage systems or other locations where water and debris may accumulate.

7.3.4 Lighting Project Coordination

Replace the last paragraph with the following

Per PPM, Vol. 1, 2.10.4 and PPM, Vol. 1, 13.5.1, all projects must be reviewed and coordinated with the FDOT Aviation Office to determine if notification and/or permitting are required to the Federal Aviation Administration (FAA), Florida Department of Transportation (FDOT), and any local jurisdictions.

The Turnpike preferred method of determining FAA notification requirements must be the FAA’s Online Notice Criteria Tool at the following link:


The Turnpike Project Manager and Turnpike Electrical Engineer must be provided copies of all notifications and permits for review in the Lighting Design Analysis Report. If none are required, written notification must be given to that effect in the Lighting Design Analysis Report.

The airport manager of any possibly affected airport and/or heliport must be contacted and provided project scope, drawings, etc. and be met with to fully coordinate the airspace aspects of the project.
**Turnpike ITS and Tolls** – When the locations of light poles are established, they should be checked with the ITS layout and the Toll Equipment layout for any conflicts with the light poles, the light pole pull boxes, and the roadway lighting circuits.

**Modification for Non-Conventional Project:**
The Roadway Lighting Engineer of Record is responsible for all necessary coordination.

### 7.3.5 Voltage Drop Criteria

When determining conductor sizes for lighting branch circuits, the maximum allowable voltage drop must be 6 percent. It must include a combination of both feeder and branch circuit runs from the power company service point to the last luminaire within a circuit.

### 7.3.5.1 Pole Cable Distribution System

All components of the pole cable distribution system must be listed by a Nationally Recognized Testing Laboratory.

The pole cable distribution system must be installed in the pull box adjacent to each light pole.

A pole cable distribution system that is installed inside the pole base may only be used when specific project conditions deem its installation inside the pull box impractical, and only after obtaining the approval of the Turnpike Electrical Engineer.

For poles that are median barrier mounted or pedestal mounted, the light poles must not be provided with frangible bases, strain relief fittings, or breakaway fuseholders.

For poles with (2) luminaires, a single TC cable must be run from the adjacent pull box to the pole's handhole. From the pole's handhole, a pole cable distribution system is required for each luminaire.

### 7.4 Traffic Signals

#### 7.4.1 Design Criteria

The Designer must make every reasonable effort to incorporate the design preferences of the local maintaining agency. These preferences may include but are not limited to pole types, detector loop strategies, conduit routing, specific equipment, signal timing methods, etc. It is the responsibility of the design consultant to meet with the maintaining agency to ascertain their
preferences and obtain all other pertinent information. The findings of the design consultant must be reported to the Turnpike’s project manager before proceeding with design.

**7.4.2 Certification and Specialty Items**

Replace the paragraph with the following

The design of traffic signals compatible with local signal systems may require the use of materials for which there are no Department approved Standard Specifications or Supplemental Specifications. In those cases, the design consultant will be required to develop project specific Technical Special Provisions (TSPs) for inclusion in the contract document.

**7.4.11 Traffic Signal Project Coordination**

Add the following as paragraphs 7, 8 & 9

In general, the Turnpike will actively work with the local maintaining agencies for coordination of design and maintenance issues.

**Signal Systems** - At the request of the local maintaining agency any signals designed by the Turnpike will include features and equipment typically used for their signals and signal systems. This will include time base, closed loop, UTCS or other technologies. The communications medium must match that already in place.

**Legal Authorization and Maintenance Agreements** - Maintenance Agreements with local maintaining agencies are handled by each FDOT district. New traffic signal locations need to be discussed with Traffic Operations personnel located in the district where they are being installed so that new traffic signals can be included in the overall list they are maintaining.

**7.5 Intelligent Transportation System (ITS) Components**

**7.5.1 Design Criteria**

Add the following paragraphs

All pull boxes and splice boxes must be H-20 or HS-20 load rated.

The design and construction of all ITS electrical conductor splicing inside power pull boxes must comply with the requirements specified in the Highway Lighting Systems and Highway Lighting Materials sections of the FDOT Standard Specifications for Road and Bridge Construction.

**7.5.2 ITS Device Approval and Compatibility**

Add the following paragraph

Wireless and network equipment requirements must be coordinated at time of final RFP development or specification development with the Florida’s Turnpike Traffic Operations Unit to ensure the most appropriate manufactures and models at the time.
7.5.4 Motorist Information Systems

7.5.4.1 Dynamic Message Sign (DMS)

When general purpose mainline DMS are proposed, a travel time sensor compatible with the existing travel time system (TTS) must be installed at the site. Placement of mainline and arterial DMS must be in accordance with the PPM.

New walk-in DMS installed on the mainline must be capable of displaying 18” characters, 21 characters per line, three lines, full color, full matrix messages with 20mm pixel pitch (resolution). Half-span or Full Span supporting truss structure is the preferred mounting style.

Arterial DMS (also known as “ADMS” or “Front Access DMS”) must be capable of displaying 12” characters, 15 characters per line, three lines, full color and full matrix messages with 20mm pixel pitch (resolution). The ADMS are typically mounted on cantilevered structures.

Toll Plaza Approach DMS (TDMS) are typically mounted to cantilevered structures and must be full-color with 20mm pixel pitch (resolution). TDMS must be located 1-mile to 2-miles from the toll plaza being considered, and must be located to provide adequate perception-reaction distance for the approaching motorists.

Single-line DMS (S-DMS). The Express Lanes status DMS must be capable of displaying 18” characters, 18 characters per line, one line, full color and full matrix messages with 20mm pixel pitch (resolution). For S-DMS provided along arterials, the character height requirement may be reduced to 12”, depending on the arterial speed limit.

Toll Amount DMS (T-DMS). The Express Lanes toll mount DMS must be capable of displaying 18” characters, 7 characters per line, one line, full color and full matrix messages with 20mm pixel pitch (resolution). For T-DMS provided along arterials, the character height requirement may be reduced to 12”, depending on the arterial speed limit.

When general purpose mainline DMS are proposed, transfer switch, auxiliary power and generator connection must be installed. A generator may also be desired; check with Florida’s Turnpike Traffic Operations Unit to see if a separate generator is required. At DMS locations with separate generators (separate from the overall express lanes generator installations) a leveled concrete pad of minimum eight feet (8’) by ten feet (10’) and six-inch (6”) thickness must be installed to support the DMS controller cabinet and generator.

7.5.4.2 Highway Advisory Radio

Existing HAR Transmitter (HART) and HAR Beacon (HARB) locations impacted by project work must be relocated to maintain system effectiveness, in accordance with FCC licensing requirements.
A typical HAR deployment consists of one (1) HART and two (2) HARB signs. One HARB is installed in each direction approaching the HART. A frequency study should be performed prior to locating HARB and HART to ensure adequate signal strength and to limit potential interference of the radio signal between HARB and HART locations, however a practical spacing of 3 miles is recommended between the HART and HARB location to ensure adequate signal strength at the beacon locations.

Coordinate relocations with Central Office Telecommunications, who maintains FCC licensing information for each HART. The Radio Frequency (RF) output is power adjustable up to the FCC maximum of 10 watts, but must be in accordance with the requirements of the FCC License.

The existing and desired radio frequency is established at 1640 AM (1640 KHz), as licensed by the FCC on the Turnpike system.

### 7.5.5 Video Equipment

#### 7.5.5.1 Closed-circuit Television Systems

*Add the following paragraphs*

Provide IP-addressable CCTV cameras with, Power over Ethernet (PoE) and Built-in encoder utilizing H.264. Provide camera capable of providing 1080p resolution.

Provide CCTV Poles in accordance with Index 18113.

All new CCTV deployments must utilize a camera lowering device to facilitate maintenance for locations that are difficult to access or where pole heights greater than 45 feet.

#### 7.5.5.2 Video Display Systems

*Add the following paragraph*

Video wall requirements must be coordinated at time of final RFP development or specification development with the Florida Turnpike Traffic Operations Unit to ensure the most appropriate manufactures and models at the time.

### 7.5.6 Network Devices

*Add the following paragraph*

All device requirements must be coordinated at time of final RFP development or specification development with the Florida’s Turnpike Traffic Operations Unit to ensure the most appropriate manufactures and models at the time.
7.5.7 Fiber Optic Cable and Interconnect

7.5.7.1 Fiber Optic Cable

For new systems, the FOC backbone should utilize 144 single-mode fibers as a minimum (Minimum FOC 144 fibers mainline).

Lateral connections for ITS drops to the backbone must utilize 24 fibers as a minimum.

Label splice enclosure, exiting conduits, and FOC entering the boot with weatherproof laser printed tags (no sharpie or marker). Label patch panels inside of building installations. Use a permanent laser printed tag, waterproof labels, with a printout indicating the department, number of strands, stations upstream and downstream to the next hub. For example:

Department: TP-ITS
Strands: 144
Install Date: 07/07/2013
Project: 420735-1-A
Current MP: 152.6
Upstream MP: 153.4
Downstream MP: 151.9

7.5.7.2 Fiber Optic Conduit

The fiber optic conduit system must consist of a minimum of four (4) 1-1/4” conduits. One (1) of the conduits must contain the fiber optic cable (FOC) backbone. One (1) of the conduits must contain tone wire and the other two (2) remaining conduits are spares. The conduits must utilize the following colors:

Orange without stripes (fiber optic cable backbone);
Orange with white stripes (tone wire);
Orange with green stripes (spare); and
Orange with black stripes (spare).

The electrical conduit system must consist of a minimum of one (1) 2” conduit, and must utilize Red colored (without stripes) conduit.

Lateral fiber conduit requirements for ITS must include two (2), 1.25-inch conduits of which one is a spare. The lateral conduits must utilize the following colors:

Orange without stripes (lateral); and
Orange with white stripe (spare).
7.5.7.3 Fiber Optic Splices and Terminations

Add the following paragraphs

Terminate all fibers that enter a structure inside the rack.

Do not locate splice vaults outside of hub buildings; bring the trunk and laterals inside the hub building.

Do not use multimode fiber or copper in any underground backbone or lateral locations.

When the project work necessitates a break in the fiber cable, include provisions regarding allowable downtime. Temporary fusion splices may be used provisioned to temporarily reconnect any broken fibers. Mechanical splices are not permitted. After any temporary splices are added to the system and prior to final acceptance of the project permanent repair and subsequent testing of the ITS fiber optic cable must be completed in accordance with the FDOT Specifications.

Further, permanent repair for fiber optic cable must include replacement of the entire cable from the nearest existing termination point (butt end splice) to the next existing termination point (butt end splice) removing all temporary splices, unless otherwise directed by the Engineer. The butt end splice is defined as a color to color splice of all fibers of the cable. All temporary and permanent splicing must be performed in accordance with the provisions of FDOT Specifications.

Include requirements to submit an ITS repair plan to the Engineer at the pre-construction conference. The plan must outline the procedures, resources and points of contact for a step-by-step guideline in the event the Contractor damages or disrupts normal operation.

Provide detailed plans to the Engineer which show how damage to any ITS facility will be remedied. These details will become part of the as-built plans package. Remediation plans must follow the same guidelines for development and presentation of the as-built plans. In addition, the remediation plans must be approved by the Engineer before any remediation work proceeds.

7.5.7.4 Fiber Optic Cable Designating System

Add the following paragraphs

In addition to the Sunshine One Call number (800-432-4770) provided on each route marker, the following contact information must be shown:

1. Florida’s Turnpike Enterprise, Traffic Management Center (Orlando) 407-264-3363
2. Florida’s Turnpike Enterprise, Traffic Management Center (Pompano) 954-934-1370

The labeling on the Fiber Route Marker must be:

BEFORE DIGGING IN THIS AREA CALL
Florida’s Turnpike Enterprise
407-264-3363
7.5.7.5 Pull, Splice and Junction Boxes

Add the following paragraph

Provide requirements for splice vault wire management such as non-metallic cable supports to allow the slack cable to be positioned without resting on the ground. The railing system must provide at least 3 inches of separation from the cabling to the bottom of vault. Maintain manufacturers recommended bend radius during and after installation. Provide concrete apron as indicated in the standard index, ensuring appropriate compaction to reduce the possibility of washouts.

Pull, Splice and Junction Boxes must be located above the Design Water elevations, and must meet the minimum requirements of the FDOT Standard Specifications. In addition, foundations and pull boxes must not be located in ditch bottoms or other locations where water and debris may accumulate.

Pull Boxes and Splice Boxes for fiber optic cable must be labeled and include the words “TPK FIBER OPTIC” permanently cast into their top surface.

7.5.8 Infrastructure

Add the following paragraphs

Electrical pull boxes must be spaced at a maximum distance of 500 feet for the entire length of new projects.

Electrical Pull Box covers for ITS must include the words “TPK ITS Electric” permanently cast into their top surface.

All foundations, cabinets and pull boxes must be coordinated with current and future grading to ensure that the top of the foundations, cabinets and the pull boxes are not below grade. In addition, foundations, cabinets, boxes (pull, splice, junction or similar), and ITS equipment must not be located within the limits of any drainage systems or other locations where water and debris may accumulate.

FTE preference is the use of gel-cap splices. No wire nut or electrical tape splicing is acceptable.

Power conduits must have smooth walls and be sized adequately, as determined by the overall cable diameter and recommended percentage of fill of conduit area, per requirements in the latest NEC and FDOT standard specifications, or a minimum of two inches (2”) conduits, whichever is larger.
600V step-up electrical systems must not be allowed, without approval from Turnpike Electrical Engineer and Turnpike Maintenance.

### 7.5.8.2 CCTV Pole and Lowering Device

Add the following to the first paragraph

The CCTV camera must be mounted at a minimum of 45 feet above the road, and in some cases may need to be higher to maintain 100% coverage of the roadway.

Add the following paragraph

When prestressed concrete poles are specified for ITS Poles, the Design Consultant should provide design and details based on the proposed attachments. Symmetrically placed prestressing should be considered where applicable.

### 7.5.8.4 Equipment Shelter

Add the following paragraph

The design layout must include necessary master hub locations to minimize network traffic with an optimum spacing, however, must be supported by a network layout and analysis with appropriate design loss calculations to meet the intent and requirements of this section and all applicable FTE and FDOT standards.

### 7.5.9 Vehicle Detection and Data Collection

Add the following paragraphs

Except for vehicle detectors used to capture information in the Express Lanes, new vehicle detectors (Vehicle Detection Systems or Microwave Vehicle Detection Systems) must be installed every one-mile.

Express Lanes VDS must be installed at a spacing in accordance with the FDOT Express Lanes Handbook.

The VDS should be installed at CCTV Camera locations to minimize costs, where conflicts between the VDS and CCTV lower device can be avoided. The use of roadway lighting poles or sign structures for the installation of CCTV cameras and MVDS sites is not allowed.

For travel time data collection, consideration should be given to Bluetooth technologies as an alternative to the toll tag reader technologies. Travel Time System (TTS) equipment must be installed at each DMS and every interchange, with a maximum spacing at approximately 3 to 5 miles for blue tooth based technology, 10 miles for transponder based technology, and in accordance with the manufacturer’s requirements. Where Bluetooth technology is deployed adjacent to a section which currently utilizes toll transponder tags, the alternating technologies must have at least one link which overlaps the existing technology at the corridor beginning and end points.
Regardless of the technology selection, the designer must provide a Travel Time Origin-Destination and link development submittal. This submittal must be coordinated with the Florida Turnpike Traffic Operations Unit, ensuring adequate link and site design / selection to provide adequate read and matches to provide a reliable travel time. This submittal will clearly identify each TTS location, message origin & destination, segment length, and anticipated DMS travel time message. In addition, this submittal will identify the links and messages for the FL 511 designation, which will be provided for critical segments from interchange to interchange.

### 7.6 Pavement Markings

Add the following reference

**TPPPH Guide Drawings**

### 7.7 Electrical Systems Design and Analysis

The design of all electrical systems (Lighting, Traffic Signals, ITS, etc.) must comply with Florida Administrative Code (FAC) 61G15-33, Responsibility Rules of Professional Engineers Concerning the Design of Electrical Systems. These responsibilities are applicable for all new projects and any major modifications or renovations. The following analysis are required, yet not limited to: Voltage Drop Calculations, Load Analysis and Calculations, Arc Flash Hazard Analysis, and Short Circuit Analysis and Device Coordination. These designs and analyses must be prepared, reviewed, and signed and sealed by a Professional Engineer licensed in the State of Florida. The Professional Engineer must be competent in electrical engineering through training and/or experience. The design analyses must be submitted with each plan submittal as part of the Lighting Design Analysis Report (LDAR) for lighting projects and the Power Design Analysis Report (PDAR) for ITS projects.

Turnpike preference is for electrical system design analysis to be completed using accepted industry power system analysis software (i.e. ETAP, SKM, etc.). When calculations by hand are used, engineering judgement, assumptions and methods must be clearly explained in the report. All supplemental information used or referenced in the power design analysis must also be provided in the report.

#### 7.7.1 Voltage Drop

Voltage drop calculations must be submitted for all branch circuits and service feeders. Voltage drop calculations must be limited to the percentages shown in the TPPPH and/or TPPPH Guide Drawings. If no criteria exist within the TPPPH and/or TPPPH Guide Drawings, the standards set forth in the FDOT PPM, FDOT Design Standards, and FDOT Standard Specifications for Road and Bridge Construction must be used. If no Turnpike or FDOT criteria exist, the consultant must use the guidelines set forth in the National Electric Code (NEC). Voltage drop calculations must be performed when additional loads are added to existing infrastructure to ensure the proposed
conductors are sized appropriately for the total voltage drop resulting from the addition of new loads further from the existing circuits. Formulas, description of variables, and any other supplemental information required to evaluate design results must be included in the report.

7.7.2 Load Analysis

A complete load analysis must be submitted. This analysis must include, but is not limited to: calculation of individual circuits, major distribution equipment, and service points. All calculations must verify all interrupting ratings and conductor sizing.

For any major modifications or renovations, calculations must consist of providing the existing load (prior to modification), the load being removed, the load being added, and new total load. A load analysis must be provided any time electrical load is added to existing infrastructure. All existing loads must be field verified by metering or calculated based on existing conditions.

New service points and major distribution equipment must be provided with a minimum of 20-percent spare capacity.

Manufacturer’s product data cut sheets containing equipment power requirements must be provided in the report. Generator sizing calculations, UPS sizing calculations, and any other calculations affected by power loads for the project must be provided in the report.

7.7.3 Arc Flash Hazard Analysis

Provide an Arc Flash Hazard Analysis for new electrical distribution equipment (panelboards, transformers, load centers, disconnects, etc.), per the latest version of the Standard for Electrical Safety in the Workplace, NFPA 70E. An arc flash hazard analysis must determine the Arc Flash Protection Boundary and the personal protective equipment (PPE) that personnel within the Arc Flash Boundary must use. The arc flash hazard analysis must be updated when a major modification or renovation takes place. Arc Flash and Shock Warning labels must be field installed on each piece of new electrical distribution equipment. The labels will indicate the flash hazard boundary, the flash hazard at 18 inches, the PPE level requirements, and the approach restrictions. All labels proposed for use on electrical equipment must be provided (in .pdf format) as part of the report and in the plans.

7.7.4 Short Circuit Analysis and Device Coordination

A short circuit analysis must determine maximum fault current on each piece of new electrical distribution equipment and proper fault current interrupting capacity. Provide documentation from the utility provider on the maximum available fault current at the utility transformer. This value must be used in the short circuit analysis. Software programs or hand methods used must be capable of calculating the maximum short circuits at all electrical equipment locations to ensure equipment ratings are adequate. The short circuit analysis must be updated when a major modification or renovation takes place or if electrical load is added to existing infrastructure. The AIC ratings for all equipment must be provided as part of the contract documents to meet or exceed the short circuit analysis results.
Electrical distribution equipment must be designed as fully rated and selectively coordinated systems. The protective features of the electrical distribution system must automatically and selectively isolate a faulted or overloaded circuit from the remainder of the electrical system. Only the closest protective device to the fault must operate to isolate the fault without affecting other parts of the system.
Chapter 8

Pedestrian, Bicycle and Public Transit Facilities

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

8.7 Bridges, Overpasses, and Underpasses

8.7.1 Design Criteria

Replace the following paragraph

6. Fencing/Railing

c. Provide full screening in conformance with Standard Index drawings on pedestrian bridges and vehicular bridges with pedestrian facilities crossing Turnpike right of way in order to reduce the likelihood of objects being dropped or thrown onto the roadway below. Unless otherwise approved, fencing must extend the full length of the bridge including approach slabs. See Figure 8.7.1 for example of full screening.
Chapter 9

Landscape and Community Aesthetic Features

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

9.1 General

Add the following paragraph

All FTE landscape designs must comply with the “Florida Turnpike Enterprise Landscape BRAND Guidelines” most current issue. This document can be found at:

http://floridasturnpike.com/design/docsandpubs.html

9.1.1 References

Add the following reference

Chapter 10

Transportation Management Plan

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

10.2 References

Add the following reference

9. FDOT, Drainage Manual

10.3 Transportation Management Plan (TMP)

Add to 4th paragraph representatives list

Insert new additional #5. Florida Highway Patrol and Emergency Responders

Add to #2 Transportation Operations component paragraph

“… safety management and law enforcement, Incident Management, and work zone traffic management.”

10.3.1 Transportation Management Plan Components

10.3.1.1 Temporary Traffic Control (TTC) Plans

Add the following sentence to item 9

9. Consideration must take into account all affected lanes, i.e., mainline, auxiliary lanes, acceleration/deceleration, ramps, etc.

Add to item 6

6. “…. Temporary signals, roadway CCTVs, and video detection sites.”

Add new/additional items

16. Emergency responder access to maintained travel lanes within work zone and to work area

17. Communication plan to coordinate with Turnpike Traffic Management Center (TMC) for real-time work zone and lane closure activities

18. Address Emergency Stopping Sites (ESS)/Accident Investigation Sites (AIS) for motorists and responders within the work zone.
Add the following paragraphs

Project specific conditions associated with milling and resurfacing require the designer to develop project specific notes for the plans. Generally these notes are part of the TCP.

It is the Turnpike’s policy **not** to allow ponding conditions during the milling and resurfacing. The Traffic Control Plan may require alternate stages/notes within a milling and resurfacing phase to meet this requirement.

The plan may require the contractor to alternate stages or pave multiple lifts during the same work period to comply with ponding avoidance and drop off restrictions.

It is the designer’s responsibility to evaluate his/her plans and to incorporate notes or phasing such that the contractor clearly understands the conditions associated with milling and resurfacing in order to adhere to the Turnpike’s policy.

### 10.3.1.1 TTC Plan Development

*Add the following as bullets to the end of Step #2*

- Maintain drainage conveyance and spread.
- Maintaining traffic at interchange locations, ie. need for auxiliary lane(s), lengths of acceleration and deceleration lane(s).

*Add the following as bullet #11 and 13 to end of Step #6*

- a. Turnpike TMC communication and coordination for real-time activities.
- Detail temporary drainage and maintenance of offsite drainage plans.

*Add the following as bullets to end of Step #6*

- Staged wreckers or tow vehicles
- Emergency Stopping Sites (ESS) or Accident Investigation Sites (AIS)

### 10.3.1.2 Transportation Operations

*Add 2 boxes to Strategies table to include:*

Under Safety Management and Enforcement column:
- “Specialty tow or flatbed wreckers, incident response trucks (IRT)”
- “Emergency Access, Emergency Stopping Sites, Glare Screens”

### 10.4 Coordination

*Add the following paragraphs*

Refer to TPPPH Volume 1, section 16.2.6.1, for specific coordination and preliminary traffic control plan requirements.
TTC plans must also include requirements for real-time communication and coordination with Turnpike TMC for active work zone and lane closure activities.

10.6 TTC Devices

Add language to #8

8. Motorist Advisory System (MAS) and Turnpike TMC real-time coordination

10.7 Signs

Add the following paragraph

The Designer must prepare details for nonstandard TTC signs that do not have a standard MUTCD or FTP number. Provide the details on guide sign worksheets in the plans.

10.7.3 Project Information Sign

Replace with the following paragraph

Project Information Signs and Toll Dollars At Work Signs are required for all projects with more than 90 days of contract time. Placement of the Project Information Sign and Toll Dollars At Work Sign must be in advance of the first advance warning sign or as close to the beginning of the project as practice on each mainline approach. Ensure proper sign spacing criteria is maintained as described in section 7.2.1. The Project Information Sign must precede the Toll Dollars At Work Sign. See Index 600 and the Guide Drawings for sign layout details.

10.8 Lighted Units

10.8.2 Portable Changeable Message Signs

Add sentence to end of paragraph 1

Use of remotely programmable PCMS should be considered as needed. These PCMS could be activated and changed in real-time by TMC for better work zone management.

Add the following paragraph

For planned lane closures and detours, a portable changeable message sign must be placed and must display an advanced notification message one week prior to lane closure or detour. The EOR may extend this time if they deem necessary, but should not extend 14 calendar days. The message must include the month and day(s) of the implementation of the closure or detour. Prior to closure, the message must read location “TO CLOSE” with the date. During the closure the message must read the location is “CLOSED”.
10.10 Pavement Markings

Add the following paragraph

All proposed, temporary, or pavement markings to be removed must be detailed completely in the plans for a proper layout. This includes either dimensions to physical features or stations and offsets.

10.10.1 Removing Pavement Markings

Add the following paragraphs

The Turnpike is advising all consultants that overlays or milling with overlays will be the only acceptable method(s) to achieve a positive means for the obliteration of existing pavement markings in areas such as long term crossovers, diversions and in some cases tangent sections that provide a rough riding pavement.

High pressure water blasting is the only acceptable method for the removal of conflicting pavement markings in those areas not mentioned above. When removing pavement messages via water blasting, the entire area within the pavement message, including the interior of the message that is not painted or have thermoplastic, must be water blasted so that the message outline is completely obliterated and drivers are not able to read or see the scar outlining the former message.

10.12 Temporary Traffic Control Plan Details

Add the following as bullet #11

11. Temporary pavement and drainage maintenance details.

10.12.5 Superelevation

Add the following paragraphs

The transition from existing to temporary pavements is a critical area. These areas are prone to flooding since all of the permanent construction features do not exist. These incomplete features include final pavement elevations and drainage facilities. Frequently, these temporary pavement transitions are superelevated with almost flat profiles. Elevations and grades with all superelevation data are required to be shown to ensure the intended design is constructed.

On Turnpike Facilities, diversions with construction speeds of 50 mph or greater are considered high speed facilities. Curvature and superelevation criteria for open highway conditions apply and must meet superelevation criteria described in the PPM Volume 1, Chapter 2.9.

10.12.6 Lane Widths

Add the following paragraphs

Shoulder widths associated with the travel lanes must be designed to achieve a minimum of two feet in width (paved). Spread must be checked to verify that the provided shoulder width complies
with the criteria in Chapter 3.9.1 of the Drainage Manual. Any deviation from the two feet must be justified to and approved by the Turnpike Design Engineer.

Milling and resurfacing of Turnpike's mainline and maintained facilities (SR 417, Veterans Expressway, Sawgrass Expressway, etc.) must utilize a minimum offset of four feet from Turnpike Traffic and the milling operation or the resurfacing operation. Where a four feet shoulder (buffer) cannot be maintained, an acceptable buffer space must be approved by the Turnpike Design Engineer.

*Add the following sentence*

Consideration should also be given to maintain the maximum shoulder width up to 12-feet whenever possible to benefit motorists and for use by law enforcement and emergency responders for incident management.

*Add the following section*

10.12.6.1 Emergency Pull Off Area

All capacity improvement (widening, reconstruction, etc.) or interchange projects that are greater than one mile in length along the mainline, and reduce the outside mainline shoulder width less than eight feet wide, must include provisions for an emergency pull off area. The emergency pull off area must be located to the right of the outside travel lane for use by patrons and emergency management personnel. The emergency pull off area must be a minimum of twelve feet wide and 500 feet long located every one-half to one mile and no closer than one-half mile from an interchange. The emergency pull off area must maintain the adjacent lane or paved shoulder cross slope and be paved with chevron pavement markings at 60 foot spacing. The emergency pull off area must not be designated as an ingress/egress location for the contractor.

10.12.7 Lane Closure Analysis

*Add the following paragraphs*

Closing a traffic lane on Interstate or Limited Access facilities can have a significant operational impact in terms of reduced capacity and delay. Operational impact can occur when lane closure(s) of any of the following occur; mainline, interchange ramp(s), auxiliary lane(s), acceleration or deceleration lane(s). There will be no daytime lane closures allowed on Florida’s Turnpike unless it is approved in writing by the Director of Transportation Operations or designee. Other districts have adopted similar policy for Interstate daytime lane closures; therefore, it is recommended the Designer verify the District’s lane closure policy at the beginning of the design process.

The Turnpike System is a major intrastate facility that is vital in the case of evacuations due to weather and other disasters. The Turnpike also serves as a diversion route for various Interstates, including I-95 and I-4. It is essential that the Turnpike be able to reopen its facilities to all lanes even within construction zones. The development of a traffic control plan must not include prolonged lane reductions on mainline, ramps, auxiliary lanes, etc. The staging of a particular construction project must permit the roadway to be restored to its original number of lanes within
24 hours. If necessary the use of temporary bridges must be included in the traffic control plans to avoid prolonged lane closures due to work on the bridge.

Turnpike lane closure traffic data must be obtained from Turnpike Traffic and Planning Departments including a growth rate factor and peak seasonal factor for all production design projects. See Florida’s Turnpike Lane Closure Policy for additional information and guidance. The design consultant will be responsible for developing analysis for both the begin construction year and the end construction year for projects twenty-four months and longer. Lane closure analyses are to be submitted for review in electronic format and include traffic data as attachment for reference. If a detour and/or a prolonged closure is proposed on a project, the lane closure analysis must also include traffic analysis of the affected ramps. In terms of prolonged closure, include analysis and effect of closure(s) on the capacity and operations at the interchange. Once reviewed and approval is provided, a signed and sealed Lane Closure Analysis will be requested by Project Manager for filing in the project folder.

The use of **daytime lane closures** cannot be incorporated into the design plans without an official request by the designer and approval by the Turnpike (the Director of Transportation Operations or designee) as outlined in Florida’s Turnpike Lane Closure Policy. Even though the lane closure analysis may support a daytime closure, approval must be obtained.

Daytime closures will be considered/allowed if the EOR for the design makes a recommendation to the Project Manager that a closure is more beneficial to the Turnpike, its customers and adjacent property owners. For example, driving guardrail posts at night adjacent to homes is not as desirable as daytime closures which would support the work during the day and minimize the noise pollution and complaints from the adjacent property owners. The EOR for the design will be required to provide all supporting documentation including, but not limited to, lane closure analysis and the specific reasons why the request is being made to the Project Manager. On certain projects, daytime lane closures may not be applicable throughout the entire project. This aspect has to be considered by the EOR for the design when making his recommendation. The EOR for the design must evaluate adjacent projects for their closure hours and provide that information along with their analysis and recommendation.

In addition to daytime lane closures, Florida’s Turnpike prohibits lane closures from sunup Friday until sundown Sunday (weekend). Weekend lane closures will also be considered/allowed if the EOR for the design makes a recommendation to the Project Manager that a closure is more beneficial to the Turnpike, its customers and adjacent property owners. A weekend lane closure request must follow the same process as a daytime lane closure request.
Add the following section

10.12.7.1 Exit Ramp Opening within a Lane Closure

Work in the vicinity of an exit ramp must follow the latest MUTCD requirements with the following modification:

1. Minimum Ramp Opening of 200 feet.

10.12.8 Traffic Pacing Design

Add language to last sentence

“… the Florida Highway Patrol troop who will assist in the operation, and communicate and coordinate with the Turnpike TMC for pre-notice and real-time implementation. Coordination with TMC will allow real-time traveler information use of dynamic message signs, highway advisory radios and citizen band advisory system and statewide Florida 511 system.”

Add the following paragraphs

Index 655 also includes a design table applicable to most work times of 20 minutes or less. The table is based on a pacing speed of 20 mph. Slower pacing speeds are not recommended but can be selected by the designer when necessary to shorten the pacing distance. See section IV Traffic Pacing of the Florida’s Turnpike Enterprise Lane Closure Policy for additional guidelines on Traffic Pacing.

Site specific conditions will dictate whether a pacing operation can be implemented; therefore, it is necessary that the designer coordinate with Florida’s Turnpike Enterprise at the time the Traffic Control Plan is being developed. The type of work will determine the construction equipment and required staging areas the contractor will need, particularly for placing bridge beams. Review of these issues with Florida’s Turnpike Enterprise will determine if lane closures will need to be used along with the pacing operation, or if the traffic will have to be detoured instead of paced. If it is determined that a pacing operation will be used, the designer must obtain concurrence from the Captain of the Florida Highway Patrol troop (Troop K) who will assist in the operation.

Exhibit 10-C, sheets 5 - 12 will not be applicable. See Florida’s Turnpike Enterprise Lane Closure Policy for allowable hours of Traffic Pacing. The Lane Closure Policy can be found at the following link:

http://floridasturnpike.com/design/tppph.html
10.12.12 Narrow Bridges and Roadways

Add the following paragraph

In the development of the detailed traffic control plan, any existing guardrail and barrier wall end treatments must be compared with standards to ensure the current standards are met. If the traffic control plan impacts these end treatments, then protective device upgrades will be necessary.

10.12.13 Existing Highway Lighting

Replace the first paragraph with the following

Temporary lighting systems are required for all roadways where existing lighting is being replaced or new lighting is being constructed. The designer must prepare a specification that completely describes what is to be done during all phases of construction. Give detailed information on poles, conduit, and/or conductors that would have to be installed. A field survey must be conducted to establish the condition of any existing system(s) and what responsibility the contractor will have in bringing the existing lighting system(s) back to an acceptable condition.

Add the following section

10.12.18 Temporary Drainage

The Designer is responsible for designing the temporary drainage facilities necessary during construction. This includes designing temporary ditches, the size and length of pipes, placement of inlets and where necessary calculating spread where water may pool along temporary barrier wall or curbing adjacent to an inside lane. All temporary drainage items must be quantified.

Add the following section

10.12.19 Friction Course on Temporary Pavement

New structural asphalt has similar friction factors as friction course. The use of friction course asphalt on temporary pavement during construction will be used on a case by case basis and consider the duration of the construction phase, drainage, cross slope, operating speed and horizontal curvature.

Add the following section

10.12.20 Reflective Pavement Markers

Reflective Pavement Markers (RPM) used to delineate traffic control lane lines must be installed in conjunction with lane stripes. The use of RMP's independent of pavement stripes must be approved by the Turnpike Design Engineer.
Add the following section

10.12.21 Standard MOT General Notes

See Roadway Guide Drawings for standard MOT General Notes that must be shown on traffic control plans as applicable. Roadway Guide Drawings are at the following link on the Turnpike Design Website:

http://floridasturnpike.com/design/tppph.html

10.13 Speed Zoning

10.13.1 Regulatory Speeds in Work Zones

Add the following paragraph

All transitions and tapers for work zones must be based upon the preconstruction speed limits. For any locations incorporating speed reductions, speed limit signs must be installed departing the work zone to "restore" the speed limit to its preconstruction limit. During non-construction periods the speed limits must be restored to preconstruction limits.

10.14 Law Enforcement Services

10.14.2 Use of Traffic Control Officer

Add the following paragraphs

All lane and ramp closures on a FTE mainline facility require the use of Traffic Control Officers for the duration of the closure. The designer needs to coordinate the use of additional Traffic Control Officers with FTE Construction at the preliminary TCP submittal, or at a minimum, prior to the Phase II submittal. This must be an item of discussion at the 45% Traffic Control Meeting.

The locations and/or need for additional traffic control, must be outside of the four conditions called out in the Specification 102-7 and must be brought to the Turnpike’s attention by memo identifying the additional locations and the corresponding considerations of a safety issue to the motorist and workers.

A matrix indicating the estimated hours for traffic control must be developed and provided to FTE Construction during coordination of law enforcement personnel. Coordination with FTE Construction must include discussion on placement of the matrix within the plans and/or the Computation Book.
This matrix is an example and must be modified as required for each project.

Upon concurrence with the designer’s recommendation for the use of additional traffic control officers on the project, review MOT General Notes and incorporate in plans the applicable traffic control officer notes and Regional contact information:

http://floridasturnpike.com/design/tppph.html

### 10.15 Motorist Awareness System (MAS)

Required real-time communication and coordination with Turnpike TMC for traveler information device usage should be utilized. Dynamic message signs and other traveler information devices can be used by TMC for motorist information.

### FHP TRAFFIC CONTROL OFFICER ESTIMATE

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Chapter 11

Stormwater Pollution Prevention Plan

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 12

Right of Way

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

12.1 General

Add the following definition to the end of section

**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.

12.2 Procedures for Establishing R/W Requirements

12.2.3 Access Management

Add at end of paragraph 1

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 section

12.4 Property Owner Contacts

All property owners should be contacted and given notice prior to entering their property for any reason. In many cases the design consultant’s survey crew makes the first contact with an owner. The Department has received complaints from 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 an 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. The Engineer/Surveyor should avoid conjecture and speculating on possible changes to avoid misunderstanding. The Turnpike Right of Way Office will be the point of contact with the property owner to discuss right of way impacts to the property. The
Turnpike Right of Way Office and Turnpike Project Manager should receive copies of any responses sent to property owners.

Throughout the life of a project, the project manager should refer any contact by the property owner to the right of way project manager. Concessions made to a property owner may result in a non-monetary benefit to the owner's attorney. Right of way should be included in all discussions when a design change affects the land required or access to adjoining property.

*Add the following section*

### 12.5 Construction Issues

Fencing and encroachments are two issues that are repeated concerns upon letting a project to construction. The Department 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. Construction may be concerned that if they take the fence down they will incur some liability for damages, like cattle roaming free or trespassing.

Right of Way routinely notifies the property owner in writing that a fence will be removed by construction and that the owner is responsible for replacing the fence. Often though, the owner’s inaction requires the Department’s legal staff to contact the owner’s attorney to get the new fence erected. Providing for 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 Property Management Office in Right of Way is charged with facilitating their removal.
Chapter 13

Initial Engineering Design Process

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

13.2 Initial Engineering Design (Phase I)

Add the following items

12. Identify seasonal high water and base clearance design high water (not peak design stage) elevation and check base clearance (PPM, Chapter 2).

13. Identify applicable project drainage criteria and constraints. Determine impacts to project design and schedule.

13.5 Support Services

Add the following items

21. Toll Operations
22. Environmental Permitting
23. ITS
24. Lighting/Electrical
25. Concepts
26. Architecture
27. Materials (pavement)

13.6 Preliminary Geometry, Grades, and Cross Sections

Add the following sentence at the end of 3rd paragraph

Refer to TPPPH Volume 1, Section 16.2.5.1, for specific submittal and coordination requirements of the preliminary line and grade.
Chapter 14

Final Engineering Design Process

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 15

Update Engineering Design Process

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 16
Design Submittals

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

16.2 Design Documentation Submittals

16.2.3 Typical Section Package

Add the following before paragraph 1

All Typical Section Packages must include a Signature Sheet that will be located directly behind the key sheet and include an index of sheets and contain all necessary signatures for the package. This will allow Signatories to sign/seal one sheet as opposed to every sheet and facilitate the use of digital signatures. If District, County, or other signatories are required, those sheets will be listed separately on the Signature Sheet.

An example Signature Sheet can be found on the Turnpike Design Website:

http://floridasturnpike.com/design/disciplines/roadway.html

Add item e. to Bullet #1 “Are required if:”

e. There are realigned local roads, frontage roads, cul-de-sacs, railroads, canals, aerial transmission lines, etc. as applicable.

Add the following after paragraph 3

When cross roads or other facilities are maintained by another agency, they must sign and date their approval on the typical itself before Turnpike concurrence. If this is not possible, a letter will be written to the agency confirming their concurrence and requesting a concurrence signature. In that case, the design documentation will include a copy of the local agency standard to document design conformance. (The maintaining agency does not need to upgrade their typicals to meet higher FDOT or Turnpike criteria.)

Add to Bullet #7 (Traffic Data) “Project Controls Sheet”

7. Traffic Data – Truck DDHV

Add to list for “Proposed Roadway Typical Section Drawing”

17. Express lane buffer widths with express lane markers (when applicable)
18. Future lane widths (types and locations).
20. Vertical and Horizontal Clearances at crossing roads if project includes work within bridge limits.
21. When shoulder widths are wider than standard widths (e.g. to mitigate/accommodate SSD or high truck traffic), provide a note on each typical section drawing to explain the reason for the additional shoulder width.
22. Denote elements that require a design exception/variation.

If major changes will be made after initial construction, a separate future typical must be prepared. Future lanes on proposed crossroad typicals must be dashed and labeled "Future, By Others". Typical Sections of future construction may be urban while proposed is rural, or may be rural with different design speeds. (See TPPPH Chapter 2 on future lanes and Profile Grade Lines, PGLs.)

**Add to list for “Proposed Structure Typical Section Drawing”**

14. When shoulder widths are wider than standard widths (e.g. to mitigate/accommodate SSD or high truck traffic), provide a note on each typical section drawing to explain the reason for the additional shoulder width.
15. Denote elements that require a design exception/variation.
16. Express lane buffer width with express lane markers (when applicable).

**Add the following section**

### 16.2.3.1 FTE Processing

If major changes will be made after initial construction, a separate future typical must be prepared. Future lanes on proposed crossroad typicals must be dashed and labeled "Future, By Others". Typical Sections of future construction may be urban while proposed is rural, or may be rural with different design speed from proposed design speed (See TPPPH Chapter 2 on future lanes and Profile Grade Lines, PGLs.)

The draft Typical Section Package will be submitted to the Turnpike Project Manager for review through the ERC process. Upon acceptance by FTE staff, the Turnpike Roadway Engineer (TRE) will advise the Project Manager to instruct the Consultant to submit the signed and sealed Typical Section Package to the TRE who will forward the typical section package to the Turnpike Design Engineer (TDE) with a recommendation of approval. After receiving concurrence by the TDE, a signed copy will be returned to the Consultant.

### 16.2.4 Preliminary Drainage Design

**Add the following paragraph**

Complex projects require a preliminary 45% drainage submittal. The intention of this submittal is to verify the design methodology used for stormwater ponds adequately documents compliance with FDOT, Turnpike, and Regulatory Stormwater Management Criteria.
16.2.5 Preliminary Geometry and Grades

**Add the following section**

16.2.5.1 Turnpike Preliminary Line and Grade Submittal

The Design Consultant must submit preliminary (approximately 15 percent) alignment and grade sketches/computer plots depicting the proposed geometric design. The submittal must include horizontal geometry for all mainline roadways, ramps, cross streets and side roads. As a minimum, vertical geometry must be provided for all mainline roadways and cross streets. Vertical geometry for ramps and side roads will be provided where critical to the project. The sketches or computer plots can be in sheet or roll form and will 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/computer printouts must also be submitted. Specific elements which must be addressed in the supporting documentation include but are not limited to design speed, lane widths, shoulder widths, bridge widths, horizontal and vertical clearances, stopping sight distance, intersection sight distance, aesthetics, access management and base clearance. The various elements must be developed to a level of detail consistent with the objectives of the preliminary (15 percent) 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 percent) Geometric 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, identification of adverse site conditions, etc.
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 (drainage, structures, etc.) and for early identification of design constraints or problems.
5. Document off-site and pavement drainage constraints; such as flood plain elevations and base clearance/seasonal high water table.
6. Design criteria specific to the project.
7. Anticipated variations and exceptions that are associated with horizontal and vertical alignment.
16.2.6 Preliminary Traffic Control Plan

Add the following section

16.2.6.1 Turnpike Preliminary Traffic Control Plan

The Turnpike is a unique facility in that there are variable site conditions and traffic volumes requiring a detailed analysis to determine the appropriate Traffic Control Plan (TCP). The Turnpike has heavy holiday and seasonal traffic flows that will impact the solution based on the time of year, location of the project to tourist destinations and other varying conditions. Traffic Control impacts to the traveling public on an FTE facility can severely limit or prohibit construction operations using lane closures. Due to these impacts, a preliminary TCP design (45 percent) must be submitted for review. A comment resolution meeting between the design consultant and FTE production and Construction staff must be scheduled following the review. This submittal will be required, but not limited, to 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/weekend consideration.

The preliminary submittal must be on Roll Plots, in electronic format, and must include, but not limited to:

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.

It is recommended that coordination occur with FTE Consultants for an appropriate speed to use in the pacing analysis.
16.2.7 Pavement Selection and Design

**Add the following section**

16.2.7.1 Turnpike Pavement Design Submittals

Pavement designs on Florida’s Turnpike System must be done to the following minimum standards, variations from these standards require concurrence by Turnpike Roadway Engineer prior to submittal of the final pavement design for concurrence by the Turnpike Design Engineer.

1. All pavement designs on new construction must be calculated using a minimum reliability (%R) of 95 percent.

2. All pavement designs on rehabilitation projects must be calculated using a minimum Reliability (%R) of 99 percent.

3. All temporary pavement designs for use during construction must be calculated using a minimum Reliability (%R) of 80 percent.

4. All pavement designs, with the exception of temporary pavement, must be calculated for a 20 year design life. The minimum design life and traffic (ESALd) for temporary pavements must be no less than the construction period for the project.

5. Table 5.5 of the Flexible Pavement Design Manual must be the required minimum thickness for new construction and resurfacing projects.

6. All travel lanes pavement must include PG 76-22 (PMA) in the top structural lift and friction course regardless of traffic level.

7. The designer must coordinate the use of FC 12.5 or FC 9.5 with FTE Production, Construction and Material departments at any ramp crossroad terminus that shows extensive failure of the existing Friction Course. Department approval must be obtained prior to submitting signed and sealed pavement designs.

8. Using a much higher traffic level mix than traffic requires can cause premature deterioration and cracking of the pavement. Therefore, the designer must not increase the traffic level mix in the pavement design documents or plans to anticipate optimization of contractor operations. The FDOT specifications 334-1.2 provides the Contractor this flexibility within the realms of required criteria.

9. Whenever new pavement is proposed to be joined to existing pavement such as widening, auxiliary lanes, ramps, turn lanes, etc., a minimum 6” wide shelf will be created at the longitudinal joint by milling the existing pavement structure. The minimum depth of the milling will equal the thickness of the final lift of structural course in the new pavement structure. This will create a milled offset in the longitudinal pavement joint from preceding lifts of structural asphalt. Tack coat is to be used in the shelf aid in adhesion and imperviousness. A detail of the longitudinal joint will be developed and placed in the project Typical Section details. The Traffic Control Plan will accommodate the space...
necessary for this work in the phasing sequence. Plan notes or a table of dimensions will describe the limits of the milled shelf width with width and depth.

10. All Pavement designs through Tolling Gantry systems must meet the minimum pavement designs listed in the General Tolling Requirements (GTR), latest edition. If necessary the pavement thickness must be increased from the GTR minimums in order to provide the required pavement structural number.

Pavement Design Reports must be submitted to the Turnpike Project Manager for review in electronic format through the ERC submittal process. Upon acceptance by FTE staff, submit the signed and sealed Pavement Design Reports. The Turnpike Roadway Engineer will forward the report to the Turnpike Design Engineer for concurrence and signature. A signed copy will be returned to the consultant.

A sample Table of Contents for the Pavement Design Report and also the Pavement Coring and Evaluations Report are available at the following link:

http://floridasturnpike.com/design/disciplines/roadway.html

Add the following section

16.2.7.2 Cross Slope Analysis Report – Design

Existing cross-slopes must be analyzed and a separate cross slope analysis report must be submitted concurrently with the project pavement design prior to the Phase II project submittal. The cross slope analysis report must be submitted to the Turnpike Project Manager for review in electronic format through the ERC submittal process.

Section 25.4.6 of PPM Volume 1 requires tabulating existing cross slopes in the plans at 100 feet intervals, and preparing cross sections for the plans 50 feet before and after PC’s and PT’s and at 300 feet intervals along curves, for superelevation correction.

FTE experience is that simplifying the cross slope correction design and providing greater plan clarity is necessary to accomplish cross slope correction in the field. Typically, profilograph data is collected and significant coordination occurs as to the best paving approach and how it must be shown in the plans, with a preference to show milling at specific cross slopes between stations and from single control points, followed by constant depth resurfacing. This approach minimizes the amount of the data shown in tabular format.

Therefore, the new PPM requirements for cross slope correction design and plan presentation, as described above must be evaluated on a project by project basis and waived unless deemed beneficial.
16.2.7.3 Cross Slope Analysis Report – Post Design

When a project includes cross slope correction, verification of the newly constructed corrected cross slopes is required. Typically, profilograph data will be collected and provided to the EOR for analysis. The EOR will submit a design memorandum to the Turnpike Roadway Engineer indicating if the newly constructed cross slope correction meets the requirements detailed in the plans and in PPM Chapter 25.4.6 and 25.4.7.

16.2.9 Roadway Design Documentation

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

I. Section 1 – Summary
   A. Narrative
      a. Summary of existing and proposed design
   B. Design Decision Journal
      a. Document design decisions for all disciplines both internal and external in tabular format
      b. Include Identification Number, Date, Author, Discipline, Subject, Decision, and an Explanation

II. Section 2 – Design Documentation
   A. Location Map
   B. Roadway Design Criteria (PPM, TPPPH, & AASHTO in tabular format)
   C. Horizontal and Vertical Alignments (GEOPAK Output)
   D. Design Calculations
      a. Superelevation
      b. Horizontal and Vertical Stopping Sight Distance
      c. Vertical Clearance
      d. Barrier – Length of Need
      e. AutoTURN Analysis
      f. Intersection Sight Distance Analysis
      g. Cross Slope & Superelevation Analysis
   E. MOT
      a. Lane Closure Analysis (Final Signed and Sealed)
      b. Pacing Analysis
      c. Detour Analysis
      d. Impacts to Toll Facilities
   F. Typical Section Package (Final Signed and Sealed)
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, fully 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 FTE Project Manager.
Chapter 17

Engineering Design Estimate Process

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

17.6 Alternative Contracting Practices

Add the following sentence

The Project Manager must obtain, from the construction office, recommendations for Alternative Contracting Practices.
Chapter 18

Quality Assurance and Quality Control

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

Add the following sections

18.4 Turnpike Quality Control and Assurance Process

18.4.1 Quality Goals and General Requirements

The Turnpike’s definition of Quality is “Conformance to Requirements”. The Turnpike’s primary quality goal is that construction documents and reports be complete, orderly, correct, and appropriate for the intended purposes, so that they do not impose potential liability, or require supplemental agreements that increase construction time or cost, or require an inappropriate review effort on the part of the Turnpike. The preparation of the work must meet or exceed normal, legally acceptable, "Due Diligence" ("Due or Ordinary Care") requirements that have been established by the following criteria, the standard of practice generally provided on Turnpike work.

The following is the general quality control and assurance process criteria that is required by each project Scope of Services, including - initiation, production, review and audit procedures.

1. Designate the appropriate project staffing for each element of the work in the Project Staffing List form included at the end of this section. Also provide the required organization, planning, scheduling and project initiation. If the work produced is to comply with the quality requirements and goals, it will be imperative that the work be prepared and checked by qualified professionals that know the Department and Project requirements, and that they use and document the "Due or Ordinary Care" production and review quality control and assurance requirements stipulated in the Standard Project Scope of Services performance criteria. Designated Project Team personnel include - the qualified Responsible Professionals and associated project staff to produce the work, and Reviewers with professional qualifications necessary to be the Responsible Professional to review and confirm that the work is accurate and complete. Also, Reviewers must be independent of activities that take place during design and plans production for the Project.

2. Focus on the prevention of rework and production errors by the use of quality oriented Responsible Professionals and production procedures (including self and documented Responsible Professional checking) to produce high quality work. Production quality is achieved through the careful development of the work and the continuous checking,
concurrence (back checking) and verification of changes on all work and documents during their preparation and review.

3. Provide and document the required Coordination, Field and Biddability Reviews as provided in the Scope of Services to prevent production rework, errors and omissions.

4. Support Value Engineering Studies and provide special supplemental Independent Peer, Constructability, and/or Maintainability Reviews on designated projects.

5. Provide and document, as required, the Submittal and Biddability Reviews by qualified and experienced Reviewers to confirm that the work produced is appropriate, complete, and correct. As a minimum, checking must be required for each document before it is used for further development or before a required Phase Submittal.

6. Utilize a standard check and back check procedure that meets the Standard Project Scope of Services performance criteria to document the thoroughness of the checking and review process and to provide the documentation of the agreement between two qualified (licensed if required) professionals in a given field that the work produced and reviewed conforms to all requirements, is appropriate, complete, accurate and correct. The checking process must take place in accordance with the requirements of the Scope of Services and the established project schedule.

7. Utilize Submittal Sufficiency and Quality Assurance Reviews to confirm completion and validate each submittal Certificate of Compliance.

8. The Standard Project Scope of Services performance criteria require that a Standard Check and Back Checking Procedure must be used to document all checking and reviews. Project production and review team members must also utilize the Completion Checklists, Quality Control Tracking Stamp and Quality Process Logs, (blank copy included at the end of this Chapter), to document the production and review checking of all work. Project production and review quality control procedures are to be performed in compliance with the Scope of Services.

9. The Standard Project Scope of Services performance criteria requires that the review documentation, which is developed during the production and review of the work, must be retained in the project files, according to requirements of the Scope of Services, for Quality Assurance Review and audit purposes, and to demonstrate that the Project quality control requirements have been met.

10. If, under some extenuating circumstance an information printout or document must be sent to the Turnpike before the required Submittal Review has been performed, this procedure is to be followed:

   a. The Principal or Officer-In-Charge approves the release of the documents.

   b. The documents are stamped "Advance Copy - For Information Only".
c. The Turnpike is notified in the transmittal letter that the Submittal Review process has not been completed on the documents and that the Turnpike personnel should not review the documents until the Project Quality Control Process is complete.

11. The Turnpike will provide compliance and Biddability Reviews, PM Monitoring, and Quality Process Audits to complete the process.

12. The process required forms - Quality Control Tracking Stamp, Project Staffing List, Quality Process Log, Certificate of Compliance and Certification of Plans, Specifications and Quantities are located at the end of this chapter. A Sample Project Quality Control Plan that meets the requirements of the Standard Project Scope of Services performance criteria is available through Turnpike Project Managers.

13. Definitions of terms utilized in the Standard Project Scope of Services performance criteria and explanations of these requirements are included in the following section.

18.4.2 Quality Control Procedure Requirements

18.4.2.1 Completion Checklists Requirements

The Standard Project Scope of Services performance criteria requires that the Design Consultant use appropriate Completion Checklists to document the thoroughness of their production and review efforts and to reduce rework on each work element. Design Consultant will include copies of their Completion Checklists as an appendix to their Project Quality Control Plan.

18.4.2.2 Quality Control Tracking Stamp Requirements

The Standard Project Scope of Services performance criteria requires that the Design Consultant use the standard Quality Control Tracking Stamp or an equivalent CADD cell, with an acceptable version of the production certification shown in the stamp below, to document and track the completion of the check and back check procedure on all types of checking and reviews. The stamp is applied by the Responsible Professional to the cover of a bound set of documents or to individual sheets, if unbound or uses different project personnel. The stamp is designed to track, guide, and document the quality review process and the Standard Checking Procedure described herein. The person responsible for each step of the Submittal Review procedure is required to "sign-off" and to date the document being reviewed on the Quality Control Tracking Stamp as a record that their part of the procedure has been carried out. The Responsible Professional (RP) and Reviewer (R) that produce the work and conduct the Submittal Review will be those designated in the Project Staffing List. The Project Manager must secure the Department approval of any changes of designated project staff prior to the revised staff beginning work on the project.
18.4.2.3 Quality Process Log Requirements

The Standard Project Scope of Services performance criteria requires that the Design Consultant utilize the standard Quality Process Log form (see attached) 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. In addition, the Project Team members are to utilize their Completion Checklists, as well as the Quality Control Tracking Stamp to promote the thoroughness of the checking process and to eliminate oversights and omissions.

18.4.2.4 Standard Documentation Procedure

The Standard Project Scope of Services performance criteria requires that the Design Consultant utilize the standard forms (Completion Checklists, Quality Process Logs, Quality Control Tracking Stamp, Certificate of Compliance) included in this section.

18.4.3 Definitions

**Biddability Review** - A review of construction contract documents, prior to bidding, which seeks to identify errors, omissions, conflicts, ambiguities, inaccuracies, and deficiencies in and among the construction documents. Biddability Reviews are made in addition to Quality Control (QC) reviews and focus on pay items and uniformity between the plan quantities and the TRNS*PORT input forms.

**Constructability Review** - A supplemental and specialized review of construction plans and specifications which seeks to identify construction requirements that are impractical, unnecessarily costly, or difficult to build. Constructability Reviews are made in addition to Quality Control reviews, and considers such items as contractor access, site constraints and relationship to other project work.
Coordination Review - A review of combined work elements to identify and resolve any conflicts that may exist among the elements such as lighting and drainage (i.e. foundation conflicts with pipe runs).

Deliverable - A professional service product that is to be furnished to the Department or others.

Field Review - Mandatory visits to the project site to verify compatibility of the design with the field conditions to be encountered during construction.

Kick-Off Meeting - A meeting held before any work begins on a project in which the Project Work Plan and quality control requirements are discussed by the Consultant's Project Manager, the Responsible Professionals, the Reviewers, and others as appropriate.

Independent Peer Review - A supplemental Quality Control review performed on selected projects, or portions of a project, by an independent team of qualified reviewers. This review is performed in addition to the regular Submittal Reviews and is conducted under the direction of the Consultant's Project Manager. Normally, members of the Independent Peer Review team are not assigned to the same organizational unit or location that managed and produced the project. The Independent Peer Review is a comprehensive examination of the technical aspects of the project design that is made in addition to Submittal Reviews.

Project Work Plan (PWP) - A document that programs the assignment from the Kick-Off Meeting through production, submittal review, coordination, delivery of the product, and archiving of the project records.

Quality Assurance (QA) Review - The Principal or Officer-In-Charge review and certification procedure to determine whether or not production and review quality control procedures have been performed effectively and appropriately.

Quality Control (QC) Process - Prescribed production and review on procedures by which deliverables are produced, reviewed and brought into compliance with Department and project requirements, professional standards, contractual obligations, and commitments.

Standard Checking Procedure - A color-coded check and back check process for reviewing and correcting work products before they are released for use by the Turnpike or otherwise released as a final work product.

Submittal Review - Review of submittal documents by the designated Reviewer, a qualified professional other than the Responsible Professional for each element of the work, to see that the work is accurate, conforms to the project requirements, and is free of errors and omissions. The Reviewer checks concepts, methods of preparation, and presentation.

Project Staffing List (Expand or reduce list to include all Sub consultants, and deliverables)
The following key Project Team members are dedicated to the production and review of the project deliverables shown below. Resumes of the Principal or Officer-In-Charge, Project Manager, Responsible Professionals and Reviewers for all deliverables are attached. The Project Manager must revise the Project Staffing List and secure the approval of any changes in key Project Team personnel during the production and review of the project. Show Professional Registration.
Add the following exhibit

Exhibit 18-A, Page 1 of 4

**Principal or Officer-In-Charge (Oversees Project & provides QA Review):** Name  
**Project Manager (Oversees Quality Control & Coordination, provides part of the QA Review):** Name

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<th>Responsible Professional (RP)</th>
<th>Reviewer (R)</th>
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### Exhibit 18-A, Page 3 of 4

#### Project Staffing List (Cont.)

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Exhibit 18-A, Page 4 of 4
Project Staffing List (Cont.)

**PROJECT STAFFING LIST** (Cont., for PD&E projects, list all elements & deliverables, including those provided by sub consultants)

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<tr>
<td>Location Hydraulics Report</td>
<td>Reports - Draft &amp; Final</td>
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<td>Geotechnical Report</td>
<td>Reports - Draft &amp; Final</td>
<td></td>
<td></td>
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<tr>
<td>Bridge Development Analysis</td>
<td>Reports - Draft &amp; Final</td>
<td></td>
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</tr>
<tr>
<td>Pond Siting Report</td>
<td>Reports - Draft &amp; Final</td>
<td></td>
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</tr>
</tbody>
</table>
Add the following exhibit

Exhibit 18-B
Certificate of Compliance

CERTIFICATE OF COMPLIANCE (Complete and Submit on Consultant's Letterhead)

TO: ____________, P.E., Turnpike Director of Transportation Development
    ____________, P.E., Turnpike Design Engineer
    ____________, P.E., Design Program Manager
    ____________, P.E., Production Project Manager
    ____________, P.E., Turnpike Quality Initiatives Manager

DATE: ______________

RE: QUALITY ASSURANCE (QA) REVIEW - PHASE ___ SUBMITTAL

FPID: ____________

DESCRIPTION: ____________________________________________
COUNTY: ____________
COMPONENT SETS: _______________________
CONSULTANT: _______________________

______________________   (___) __________
SUBCONSULTANTS: _______________________

______________________   (___) __________

This is to certify that we have monitored the quality control (QC) process during production and review of the above submittal, that we have completed and signed the attached QC Checklists for each element of the project, and that we have completed and documented (in the Quality Process Log) the required QA Review of the production and review quality control documentation for all component sets (elements) of the above phase submittal. This QA Review was conducted at the above office on (day, month, year), after all QC procedures were complete. Submittal plans, associated production and review check prints, and quality control documents for the referenced elements (including those of the Subconsultants) have been evaluated, initialed, and are available for review upon request.

This certificate is issued to document our reviews and to confirm that "due or ordinary care" processes were followed in producing the submittal documents. In our professional opinions, these documents meet the standards of the Turnpike and the Florida Department of Transportation, and are ready for review. These requirements include those stipulated in the Project Scope of Services performance criteria and Florida Department of Transportation requirements.

SIGNED: ____________________________, P.E. PRINTED: ____________________________, P.E.
Consultant Principal or Officer –In-Charge

SIGNED: ____________________________, P.E. PRINTED: ____________________________, P.E.
Consultant Project Manager
**Exhibit 18-C**
Quality Process Log

**QUALITY PROCESS LOG**

<table>
<thead>
<tr>
<th>Deliverable Document</th>
<th>Coordination Review</th>
<th>Field Review</th>
<th>QC Review</th>
<th>QA Review</th>
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<tbody>
<tr>
<td></td>
<td>By Begin End</td>
<td>By Begin End</td>
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</tbody>
</table>

Add the following exhibit
Add the following exhibit

Exhibit 18-D
Certification of Plans, Specifications and Quantities

Date

____________, P.E.
Turnpike Design Engineer
Florida’s Turnpike Enterprise
Florida Department of Transportation
P.O. Box 613069
Ocoee, Florida 34761

Re: Certification of Plans, Specifications and Quantities
Financial Project ID: 408694-1-52-01
County: Martin
Description: Drainage and Safety Improvements at Stuart Interchange

Dear Mr. __________:

The undersigned John Doe, P.E., hereby certifies that the plans, specifications and estimates for the above referenced project are free from design errors or omissions, and are ready to process for contract Letting. Further:

• All work has been prepared in accordance with this project Scope of Services.

• Engineering design conforms to the current Florida Department of Transportation (FDOT) Plans Preparation Manual and Design Standards.

• All plans components are complete, accurate, and up to date.

• The Specifications Package has been prepared in accordance with FDOT Specifications Package Preparation Procedure. Included are any necessary Technical Special Provisions.

• All applicable general notes and pay item footnotes are included. All notes are clear and free of ambiguities and contradictions.

• Pay item numbers and quantities are consistent with related pay item notes. The Summary of Pay Items agrees with work called for in the plans.

• Required construction operations will not conflict with each other.

• The project is constructible and traffic can be maintained efficiently.
• All conditions included in permits issued to the Department have been addressed.

• Public Involvement requirements have been met and are documented in the project file.

If you should have any questions, please feel free to give me a call.

Sincerely,
HOWARD, BRACKINS & ASSOCIATES, INC.

John Doe, P.E.
Principal-in-Charge
Chapter 19

Sealing Design Documents

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

19.3 Sealing Other Design Documents

Add the following as items #15 and #16

14. Lane Closure Analysis on Turnpike Facilities
15. Cross Slope Analysis Report
Chapter 20

Plans Processing and Revisions

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

20.1 Plans Processing and Revisions Prior to Award

20.1.4 Revisions to the PS&E Submittal

Add the following language

Changes to plans after advertisement require clouding as well as the revision triangle and date.

Any change to the Contract Plans and/or Specifications Package during advertisement require the Design Consultant to submit Exhibit 20.4-A Contract Addendum Transmittal Memo.
## Exhibit 20.4-A

### Contract Addendum Transmittal Memo

**CONTRACT E8L46 MODIFICATIONS SUMMARY:**

<table>
<thead>
<tr>
<th>PLAN REVISIONS</th>
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<th>DESCRIPTION OF MODIFICATION</th>
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<tr>
<td>2</td>
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</tr>
<tr>
<td>3</td>
<td></td>
<td>Added / revised pay items</td>
</tr>
<tr>
<td>13</td>
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<td>14</td>
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<td>15</td>
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<td>Added / revised pay item notes</td>
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<tr>
<td>17</td>
<td></td>
<td>Revised notes</td>
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<td>44A</td>
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**PAY ITEMS + QUANTITIES (TRNS*PORT) 123456-1-52-01**

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<th>PAY ITEM</th>
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**PAY ITEMS + QUANTITIES (TRNS*PORT) 123456-3-52-01**

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<td>0401-70-4</td>
<td>3</td>
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<td>3</td>
<td>MOD</td>
<td>12571.000</td>
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**SUPPLEMENTAL SPECIFICATIONS**

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<tr>
<th>SECTION</th>
<th>DESCRIPTION OF MODIFICATION</th>
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<tbody>
<tr>
<td>975</td>
<td>Section 975 Structural Coating Materials is deleted and substituted</td>
</tr>
</tbody>
</table>

**CONTRACT E8L46 MODIFICATIONS NARRATIVE:**

Provide a brief description of modifications.
Chapter 21

Transportation Design for Livable Communities

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

21.5 Design Criteria

21.5.10 Landscaping

Replace the last sentence in the second paragraph with the following

Landscaping must also comply with the horizontal clearance and horizontal sight distance requirements found in Section 21.5.6 of this chapter, and Chapters 2, 4, and 25 of this volume. Sight distance limits are measured from the edge of traveled way to the outside edge of the mature growth. In addition, it must be ensured that future growth will not obstruct sight distance.
Chapter 22

Lump Sum Project Guidelines

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 23

Design Exceptions and Design Variations

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

23.3 Approval

23.3.1 Turnpike Design Exceptions and Variations

The Consultant must submit all design variations and exceptions electronically to the Turnpike Project Manager for review through the ERC process.

Upon acceptance by FTE staff, the Turnpike Roadway Engineer (TRE) will advise the Project Manager to instruct the Consultant to submit the signed and sealed Exceptions and Variations to the TRE who will forward the approved documents to the TDE with a recommendation of approval. After receiving concurrence by the Turnpike Design Engineer (TDE), a signed copy will be returned to the Consultant.

All exceptions and variations will require that the appropriate checklist be completed and included with the submittal.

For examples of Turnpike exceptions and variations document format, refer to Design website, Roadway discipline, and Design Exceptions and Variations link:

http://floridasturnpike.com/design/disciplines/roadway.html

23.8 Design Variation Approval

23.8.1 Turnpike Design Variations

Design Variations that are approved solely by the Turnpike, do not impact the 13 Controlling Design Elements and do not impact clear zones, sight distance, or Americans with Disabilities Act (ADA), may be submitted to the Turnpike as a signed and sealed Design Memorandum.
Chapter 24

Federal Aid Project Certification

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 25

Florida’s Design Criteria for Resurfacing, Restoration and Rehabilitation (RRR) of Streets and Highways

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

25.1 Introduction

25.1.2 Application

Revise 3rd Paragraph

Existing median crossovers on Interstate highway and freeways must be evaluated for conformance to the criteria in section 2.14.4, Crossovers on Limited Access Facilities, and as modified in TPPPH section 2.14.5. Crossovers that do not meet those criteria must be presented to FTE staff for internal review. FTE staff will provide direction to either remove or relocate the crossover.

25.3 RRR Project Design Process

25.3.6 Document the Design Process

Revise 1st Paragraph

The designer must include in the design an Existing Roadway Conditions Assessment Report (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 Items

7. The Turnpike will evaluate the ERCAR and determine what elements will require a design variation/exception and/or the enhancement work to be included into the current project or a separate FPID. The consultant will be directed by the FTE Project Manager on how to proceed.

8. ERCAR guidelines can be found at the following link:

http://floridasturnpike.com/design/docsandpubs.html
25.4 RRR Design Criteria

25.4.3 Pavement Design

Add the following sentence

See section 16.2.7.1 for additional FTE pavement design requirements.

25.4.26 Ancillary Structures (Sign, Signal, Lighting and ITS)

Add the following sentence

For projects that involve the re-use of existing miscellaneous structures, the provisions of section 25.4.26 applies, even if the project is not a RRR.

25.4.26.2 Analytical Evaluation with Proposed Additional Loading or Relocated Structures

Replace the last sentence

Structures must be strengthened or replaced. Design exceptions will not be permitted.

25.5 Design Exceptions and Design Variations

Revise the following section

Every effort must be made to adhere to new construction criteria. However, it may be necessary and appropriate to use values that are less than the minimum FTE preferred values. Application of lesser values must be identified and coordinated with FTE. The necessary evaluation, coordination, approval, and concurrence must be obtained at the earliest possible time, but not later than Phase II, so that the denial of any such request will not alter the project letting date.

Design Exceptions and Variations on resurfacing projects will be processed as follows:

1. If a design exception is identified under the ERCAR, the element should then be evaluated against Chapter 25 for final determination of a design exception. If the element meets Chapter 25 design criteria, a technical memo will be submitted for approval by the Turnpike Design Engineer documenting that the element meets Chapter 25 criteria and a design exception is not required.

2. If a design exception is identified under the ERCAR and also does not meet Chapter 25 criteria, then a design exception will be processed against current new construction criteria.

3. All design variations identified under the ERCAR will be processed against PPM and TPPPH new construction criteria.
4. All design exceptions and design variations identified in the ERCAR will be tabulated with the following data as a minimum:

- Number; Location
- Element; Criteria
- Tech Memo (Y/N)
- Estimated Cost
- Explanatory Comments

FTE intent is to accumulate ledger of design exceptions and design variations on the Turnpike system for inclusion in future widening or reconstruction projects.
Chapter 26

Bridge Project Development

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

26.9 Bridge Development Report (BDR)/30% Structures Plans

26.9.4 Aesthetics

Add the following items

3. FTE offers the following guidance as to the implementation of Structures Design Guidelines 1.4.5 and 7.3.1.c “Concrete Surface Finishes”. In certain cases, project specific conditions may dictate that enhanced aesthetic treatments are required. For projects that involve coatings, textures, colors or graphics on any concrete structures, please see the guidance below, request the appropriate approvals as necessary and coordinate with the FTE Project Manager. “Coating” refers to coatings, colors, tints, or stains. “Structures” include bridges, retaining walls, noise barriers and traffic railings/parapets on bridges/walls.

<table>
<thead>
<tr>
<th>Projects with</th>
<th>Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Structures</td>
<td>Bridges – no coating, smooth&lt;br&gt;Retaining Walls – no coating, Ashlar Stone (Type B) or Vertical Fractured Fin (Type G) texture per FDOT Standard Index No. 5200&lt;br&gt;Noise Walls (ground mounted) – no coating, Ashlar Stone (Type B) or Vertical Fractured Fin (Type G) texture per FDOT Standard Index No. 5200&lt;br&gt;Noise Walls (barrier mounted) – no coating, smooth</td>
</tr>
<tr>
<td>New Structures Adjacent to Existing Structures / Bridge Widenings</td>
<td>Generally follow treatment for New Structures above. If project specific conditions warrant (ex: existing coating on an adjacent structure), then coat new structure to match the existing scheme and clean the existing structure. If cleaning alone is insufficient, then clean and recoat the existing structure. In all cases, avoid where possible (re)coating areas that require Chief Engineer approval (ex: traffic face of traffic railing). If the Class 5 coating on an existing bridge has degraded to resemble unfinished concrete, the bridge should be considered to &quot;not have a Class 5 coating&quot; for the purposes of SDG 7.3.1.c.</td>
</tr>
<tr>
<td>Repainting Existing Steel Girders</td>
<td>Clean the existing concrete. Recoating may be considered in special circumstances.</td>
</tr>
<tr>
<td>Aesthetic Commitments</td>
<td>Meet aesthetic commitments.</td>
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<tr>
<td>-----------------------</td>
<td>-----------------------------</td>
</tr>
<tr>
<td>Other Agencies</td>
<td>No (re)coating. If a Local Maintaining Agency requests (re)coatings then follow SDG 1.4.5.D.</td>
</tr>
<tr>
<td>Anti-Graffiti Coating</td>
<td>Do not use.</td>
</tr>
<tr>
<td>Textures/Graphics</td>
<td>Use of textures and graphics is acceptable. Get approval if texture/graphic is not from the Standard Index drawings.</td>
</tr>
</tbody>
</table>

The Approval Letter for Concrete Surface Finishes can be found at the following link:

http://floridasturnpike.com/design/disciplines/structures.html

4. For projects with steel girders that require painting, coordinate the girder color with the FTE Project Manager. Typically steel girders are painted FTE Green (FC34090).

5. For historical documentation, the following are the colors that were previously used on FTE structures:

a) Light Tan: FC23717 for retaining walls
b) Dark Tan: FC20475 for traffic railings, copings and slab overhangs
c) FTE Green: FC34090 for beams

### 26.10 Bridge Development Report (BDR) Submittal Checklist

*Add the following to item 4*

Bridge deck spread must be evaluated for all bridges. 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, cross slope adjustment, bridge deck drains and conveyance systems. Costs for the bridge deck drainage may be significant when comparing alternative bridge designs.

*Add the following sections*

### 26.19 Deviations from Structures Manual

#### 26.19.1 Deck Thickness Determination

Structures Manual – Volume 1: Structures Design Guidelines - Section 4.2.2.D must be modified as follows:

The thickness of CIP bridge decks on beams or girders for minor widening will be 8” minimum unless otherwise approved by the Turnpike Structures Design Engineer.
26.19.2 Bridge Deck Grooving

Structures Manual – Volume 1: Structures Design Guidelines – Section 7.7. A must be modified as follows:

For widened superstructures where at least one traffic lane is to be added, add a note to the plans specifying that the new bridge floor finish match that of the existing bridge deck surface. If the existing deck is not grooved, and there is a history of crashes at that location, grooving must be investigated during the design process.

26.19.3 Barrier Retrofit

Substandard TL-3 barriers with round aluminum railing may be candidates for upgrades using a steel elliptical railing retrofit. Contact the Turnpike Structures Design Engineer for details.

26.19.4 Barrier Conduits

All bridge barriers and parapets must have conduits per Index 21210. Conduits not intended for current use must be labeled as "future use". In the case of a parapet and a barrier on one side of the structure (ex: sidewalk configuration), conduit is required in whichever feature is located closest to the coping. Median barriers must also have conduits. In the case of adjacent bridges with back-to-back barriers with a clear gap of 5-ft or less, conduit is only required in one barrier. These requirements also apply to retaining wall barriers/parapets on bridge approaches.

26.19.5 Bridge Widenings

SDG Section 7.3 applies to all portions of the existing bridge, both superstructure and substructure. Bridge widenings should be "in-kind" with the existing structure. As an example, if an existing end bent has battered piles, then the proposed end bent extension should provide a means of lateral load restraint. Design Variations for overstress, as noted in SDG Section 7.3.4.B, will not be granted.
Chapter 27

Hydraulic Data and Agency Permits

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 28

Shop and Erection Drawings

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

Replace within whole chapter

Where stated in the Plans Preparation Manual (PPM), Volume 1, Chapter 28, any reference to Engineer of Record, must read as follows: Architect of Record and/or Engineer of Record (AOR/EOR).

28.1 Introduction

Add the following paragraph

Typically, Florida’s Turnpike Enterprise Shop Drawing Review Office (Department) will provide the Contractor with the Shop Drawing Routing Chart (Exhibit 28-B) and Shop Drawing Procedures information package at the Preconstruction Conference. This information addresses requirements for the submission of shop drawings electronically and provides an overview of the review and approval process.

Modification for Non-Conventional Project:
In 1st sentence, delete reference to Exhibit 28-B and replace with Exhibit 28-D.

28.2 Drawing Submittals Required

Replace title with the following

28.2 Shop Drawings Required

Delete paragraph 4 and add the following

Material certifications, welding procedures, paint procedures and concrete mix designs are typically submitted by the Contractor to the Resident Engineer (CEI) who forwards the certifications to the State Materials Engineers in Gainesville. These items do not need to be submitted to the Department’s Shop Drawing Review Office for review and approval by the Engineer of Record. They are submitted through the ProjectSolve system as Pre-Qualified submittals within the shop drawing module, which are submitted directly to the Resident Engineer (CEI) for review. For non-standards items, the Resident Engineer (CEI) will typically request approval by the Engineer of Record regarding applicability. Material certifications for items on the Approved Product List (APL) are typically submitted by the Contractor to the Resident Engineer (CEI) through ProjectSolve.
28.3 Contractor Information Required

Replace last sentence of paragraph 2 with the following

Other documents such as trade literature, catalogue information, calculations and manuals must be submitted through ProjectSolve with a Table of Contents coversheet.

Add the following after the last sentence, paragraph 2

Identify Toll Gantry Structures by site location.

Replace the following (Modification for Non-Conventional Project) after paragraph 3

<table>
<thead>
<tr>
<th>Modification for Non-Conventional Project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete the above paragraph and replace with the following:</td>
</tr>
</tbody>
</table>
| The Design-Build Firm is responsible for the preparation and approval of all shop drawings and calculations. Once the shop drawings have been reviewed and approved by the Contractor and Architect of Record Engineer of Record, submit shop drawings and calculations to the Department for review and approval. Before submission, the Contractor and AOR/EOR must determine and verify all quantities, dimensions, specified performance criteria, installation requirements, materials, catalog number and similar data with respect thereto, and must review and coordinate each drawing with other shop drawings and with the requirements of the Contract Plans and Specifications. The Contractor and the AOR/EOR must stamp and initial each sheet indicating that the shop drawing review and approval is for conformance with the design concept of the project and for conformance with information given in the Contract Plans and Specifications (including Supplemental Specifications and Special Provisions).

Only shop drawings stamped “APPROVED” or “APPROVED AS NOTED” will be forwarded to the Department for review. Shop drawings submitted without stamps from Contractor and the AOR/EOR, will be returned for re-submittal. When the Department requires a resubmittal, the drawings must be modified by the Contractor, resubmitted to the AOR/EOR for approval, and then resubmitted to the Department for review. In the case where the AOR/EOR generates the shop drawings for the project, another Engineer within their firm, not involved in the production of the shop drawing, must review and stamp the drawings per the requirements stated herein.

Replace first sentence of paragraph 5 with the following

At the time of each submission, the Contractor must give specific written notice, along with an itemized list of all deviations/variations from the Contract Plans and Specifications, in a transmittal letter along with the Shop Erection Drawing submission. In addition, the drawings must contain a specific notation which explicitly and prominently calls out any deviations. Approval of Shop Erection Drawings will not constitute nor be considered grounds for approval of a variation in which the project requirements are affected unless specifically indicated as such and noted on the submission by the AOR/EOR or the Department’s approval comments as returned with the shop drawing to the Contractor.
Contractor’s request for contract change in time, scope, cost, design, material or product type, specification requirements and/or remedial design for correction construction/fabrication deficiencies, will not be submitted as a shop drawing, but must be submitted in proper format to the Resident Engineer (CEI) for further handling and processing.

Submit shop drawings/submittals electronically utilizing Florida’s Turnpike Enterprise website, ProjectSolve. Assign a unique submittal number to Shop Drawing.

Shop drawings will be submitted in Portable Data Format (pdf), using 300 dpi resolution and in 8-bit up to 24-bit color. Once the Contractor has uploaded the shop drawing to ProjectSolve, the AOR/EOR is notified via an email generated by the system, notifying a shop drawing has been submitted for review; the Resident Engineer (CEI) is copied on the email notification.

Any comments or markings provided by the Contractor or their Subcontractor must be indicated in blue or black. In the case there is no place for the stamp on the front page, stamp the back side of each sheet, indicating the page number (i.e., back of Page 1 of 6). Ensure that this page is also scanned in Portable Data Format (.pdf).

If the shop drawings consist of samples, as outlined in the Contractor’s shop drawing item list, it is acceptable to submit the data electronically through ProjectSolve. Data must include the following: Manufacturer, Product Name and Product Number. These pages must be stamped. It will be at the discretion of the Department, if submissions of original samples are required. The Contractor will coordinate with the Architectural Department prior to the submission.

If original samples are required, the Contractor must submit three (3) samples for proper processing, in addition to the number of samples needed by the Contractor. The Contractor is required to stamp the samples, include the FPID and their shop drawing submittal number. Initiate the shop drawing review process through ProjectSolve, by uploading the transmittal letter and indicate in the “Comment” area on the shop drawing module page that samples have been forwarded to the AOR/EOR via Overnight Courier Service.

Once samples have been reviewed by both the AOR/EOR and Florida’s Turnpike Enterprise, the Shop Drawing Review Office will distribute, if allotted number of samples have been provided: one (1) to the Resident Engineer (CEI) and Florida’s Turnpike Enterprise Shop Drawing Review Office will retain one (1) for their files. Any remaining samples will be provided to the Contractor.
28.4 Submittals Requiring a Specialty Engineer

When a shop drawing requires a Specialty Engineer, the sealed prints and calculations will ultimately be retained by the Department electronically, as the official record shop drawing.

Prior to Contractor uploading the shop drawing to ProjectSolve, ensure that the seal (rubber ink stamped or embossed) is legible. Failure to do so will constitute the submission as incomplete and the shop drawing will be submitted back to Contractor as “Not Reviewed”. Resubmittal will be required. It is acceptable for the Contractor and the AOR/EOR to stamp the cover page of the calculations only. Each sheet of the shop drawing must be stamped.

28.5 Scheduling of Submittals

The Shop Drawing Schedule (Item List) will be provided by the Resident Engineer (CEI) to General Contractor (an excel spreadsheet with a specific format). For each planned shop drawing submission, define in the list the following; description of item, structure identification number, bridge number, gantry structures, location, specification section numbers and roadway divisions. Reference Exhibit 28-A which depicts the review coordination of the shop drawing/submittal item list. The Contractor will provide the completed list to the Resident Engineer (CEI).

28.6 Transmittal of Submittals

Submission of Shop Erection Drawings must be made to the designated parties, as applicable, only by the Contractor for the project. In that the Department’s legal contracts and documents are with the Contractor, submissions will not be accepted directly from a subcontractor or fabricator.
Replace paragraph 2 with the following

Exhibits 28-A through 28-C show the flow of shop drawings submissions during the review process. These Exhibits are shown at the end of this chapter.

Exhibit 28-A  Florida’s Turnpike Enterprise (FTE) Flow Chart for Shop Drawing/Submittal Item List – Reviewer Coordination for Items Deemed “Critical” – Design Bid Build (Conventional) Projects

Exhibit 28-B  Florida’s Turnpike Enterprise (FTE) Shop Drawing Routing Chart for Design Bid Build (Conventional) Projects

Exhibit 28-C  Florida’s Turnpike Enterprise (FTE) – Shop Drawing Review Office - Department Review Office Distribution Chart

Exhibit 28-E  Not Used

Replace the following Modification for Non-Conventional Project after paragraph 2

Modification for Non-Conventional Project:
Delete the above paragraph and replace with the following:

Exhibit 28-D  Florida’s Turnpike Enterprise (FTE) Shop Drawing Routing Chart for Design Build (Non-Conventional) Projects

Exhibit 28-D shows the distribution flow of shop drawing during the review process, through ProjectSolve.

Replace paragraph 3 with the following

The Special Provisions for the project may denote the procedure to be followed. Furthermore, the procedural requirements for shop drawings submissions and the website URL will be provided at the preconstruction conference for the project. In the absence of such instructions, the following, as outlined within this Chapter, generally applies.

28.6.1 General Submittal Requirements

28.6.1 General Shop Drawing Requirements

On projects where the AOR/EOR is a Consultant to the Department, and unless otherwise directed at the project’s preconstruction conference, the Contractor must submit shop drawings to the Consultant utilizing ProjectSolve. On projects where the Department is the AOR/EOR, the Contractor must submit shop drawings to the Department utilizing ProjectSolve. All drawings must be on sheets no larger than 11” x 17” (plotted in 11” x 17” format) in order to facilitate
electronic filing. For plotting requirements, please refer to *FDOT CADD Production Criteria Handbook*. The Contractor’s letter of transmittal must accompany the drawings.

*Delete Modification for Non-Conventional Project after paragraph 1*

### 28.6.2 Requirements for Department EOR

*Replace title with the following*

#### 28.6.2 Requirements for Department Architect of Record/Engineer of Record

*Replace this section with the following*

On projects where the AOR/EOR is the Department in-house staff, shop drawings will be transmitted to the Department Shop Drawing Review Office or as directed at the preconstruction conference. The Department Shop Drawing Review Office is the principal contact group and “clearing house” for all construction shop drawings and information desired by the Contractor regarding structural, mechanical, electrical, tolling and vertical elements.

### 28.6.3 Requirements for Consultant EOR (Full Services)

*Replace title with the following*

#### 28.6.3 Requirements for Consultant Architect of Record/Engineer of Record (Full Services)

*Add the following paragraphs*

On projects where the AOR/EOR is a Consultant to the Department and has been retained by the Department to review construction items, shop drawings, (unless otherwise noted below) must be submitted by the Contractor directly to the Consultant. Upon receipt of the shop drawing, the Consultant will perform the review, note any comments directly on the sheets indicate their dispositions by electronically stamping the sheets as described within this chapter and, finally submit the shop drawing, through ProjectSolve to the Department’s Shop Drawing Review Office for review and distribution.

When shop drawings require a Specialty Engineer, the AOR/EOR must verify the Contractor has properly submitted the shop drawing and the seal is a legible image. If the seal is not legible, the AOR/EOR will coordinate with the Contractor to determine if they can acquire a legible copy in a reasonable amount of time. If not, the shop drawing will require resubmission. The AOR/EOR must coordinate with the Department’s Shop Drawing Review Office to properly process the shop drawing, through ProjectSolve and request resubmission.

As the AOR/EOR, when reviewing signed and sealed calculations and shop drawings, it is acceptable to incorporate the disposition stamp on the cover sheet of the calculations only. Each sheet of the shop drawings must be stamped by the AOR/EOR.
The AOR/EOR is responsible for reviewing the Contractor’s Shop Drawing/Submittal Item List, to ensure verification for its technical components per the Design Plans. Reference Exhibit 28-A.

AOR/EOR receives the shop drawing from the Contractor, through ProjectSolve. It is the responsibility of the AOR/EOR to ensure that the Contractor has submitted the shop drawing/submittal as outlined within this chapter. If the shop drawing/submittals have not been provided in complete format, the AOR/EOR must coordinate with the Resident Engineer (CEI) and/or Contractor. The AOR/EOR will make determination, based on coordination, if the Contractor is required to resubmit. The AOR/EOR must coordinate with the Department’s Shop Drawing Review Office, to process the shop drawing through ProjectSolve and request resubmission.

If it is determined that a submission is a Pre-Qualified item, a (APL), product which should be reviewed by the Resident Engineer (CEI), the AOR/EOR must coordinate with the Resident Engineer (CEI), and contact the Department’s Shop Drawing Review Office to amend the ProjectSolve System for proper routing to the Resident Engineer (CEI).

The Architect of Record and/or Engineer of Record reviews the shop drawing and implements any comments in red, stamps every sheet of the shop drawing with their disposition; “APPROVED”, “APPROVED AS NOTED”, “RESUBMIT” OR “NOT APPROVED”, include initials and date. Any additional comments may be added where they apply, under the stamp or in an attached Memorandum.

If the shop drawing consists of samples, the AOR/EOR must incorporate their disposition stamp. If physical samples are provided by the Contractor, once the AOR/EOR has reviewed and stamped, they will retain one (1) copy for their files and return the remaining original samples to the Department’s Shop Drawing Review Office (via overnight courier), unless specific instructions have been provided. Color should be either to match existing, or if the AOR/EOR is responsible for choosing the color, it should be noted.

The AOR/EOR must notify the Florida’s Turnpike Enterprise Production Project Manager if shop drawing submissions deviate from contract requirements.

Once the AOR/EOR has completed the review of the shop drawing, it is submitted through ProjectSolve to the Department’s Shop Drawing Review Office for final processing. (Refer to Exhibit 28-B).

28.6.3.1 Review by Engineer of Record Only

Replace title with the following

28.6.3.1 Review by Architect of Record/Engineer of Record Only

Replace this section with the following

Refer to Section 28.6.3 for AOR/EOR requirements. On projects where the AOR/EOR is a Consultant to the Department and has been retained by the Department to review construction
items without follow-up review by the Department, the Consultant will assume the responsibility of the owner’s agent. The reviewing consultant is encouraged to communicate with fabricators, contractors, specialty engineers and the Department Review Office Responsible Lead Reviewer (refer to Exhibit 28-C) to clarify concerns before returning the shop drawing to the Contractor. The reviewing Consultant will also contact the Department Review Office if unsure of the Department’s position on certain issues during the review. Shop drawings should not be stamped “RESUBMIT” if “APPROVED AS NOTED” will suffice. Shop drawings (unless otherwise noted below) must be submitted by the Contractor directly to the Consultant. Upon receipt of the shop drawing, the Consultant will perform the review and electronically note any comments directly on the sheets, indicate the disposition by stamping the sheets as described within this chapter and submit the shop drawings back to the Department Shop Drawing Review Office through ProjectSolve, for final processing.

### 28.6.3.2 Review by Engineer of Record and the Department

*Replace title with the following*

**28.6.3.2 Review by Architect of Record/Engineer of Record and the Department**

*Replace the whole section with the following*

On projects where the AOR/EOR is a Consultant to the Department and has been retained by the Department to review construction items, shop drawings, (unless otherwise noted below) must be submitted by the Contractor directly to the Consultant. Upon receipt of the shop drawing, the Consultant will perform the review and electronically note any comments directly on the sheets, indicate the disposition by stamping the sheets as described within this chapter and submit the shop drawing back to the Department’s Shop Drawing Review Office through ProjectSolve, for final processing.

*Add the following paragraphs*

The Department will continue to overview those shop drawings which are deemed “Critical” (ADA, Life Safety and/or Tolling elements). A project specific list of “Critical” shop drawings will be determined by the Department. Upon review of these shop drawings, the Department’s reviewer will indicate the disposition by stamping the sheets, sign and date shop drawing, electronically. (Refer to Exhibit 28-A).

<table>
<thead>
<tr>
<th>Modification for Non-Conventional Project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete the above paragraph and replace with the following:</td>
</tr>
<tr>
<td>The Department will overview all shop drawings. Upon review of these shop drawings, the Department’s reviewer will indicate the disposition by stamping the sheets, sign and date shop drawing electronically.</td>
</tr>
</tbody>
</table>
28.6.5 Requirements for Architectural or Building Structures

Replace this section with the following

Shop drawings related to architectural or building structures must follow the standard Florida’s Turnpike Enterprise Shop Drawing Process as required within this chapter.

28.6.6 Requirements for Roadway Submittal Items

Replace title with the following

28.6.6 Requirements for Roadway Shop Drawing Items

Replace with the following paragraph

Shop drawings related to roadway plans such as lighting, attenuators, non-standard drainage structures, retained earth wall systems, etc. (except bridge items such as poles, bracket arms, or as noted below) must be distributed in accordance to the Construction Project Administration Manual, (Topic No. 700-000-000) for the component involved or as otherwise directed at the preconstruction conference. Shop drawings related to bridge items must be submitted as required within this chapter.

28.6.8 Miscellaneous Requirements and Assistance

Replace this section with the following

For items not specified above or for which questions may arise as to shop drawing requirements, the Contractor should be advised to contact the Resident Engineer (CEI) or the appropriate Department’s Shop Drawing Review Office personnel.

28.7 Disposition of Submittals

Replace title with the following

28.7 Disposition of Shop Drawings

Replace paragraph 1 with the following

The approval or disapproval of shop drawings by the AOR/EOR must indicate one of the following designations: “APPROVED” (no further action required), “APPROVED AS NOTED”, (make corrections noted, no further submission is required), “RESUBMIT”, (make corrections noted and resubmit for approval), or “NOT APPROVED” (rejected, do not resubmit the concept or component as submitted).

Add the following after paragraph 1

The approval or disapproval of shop drawings by the Department must be indicated by one of the following designations: “REVIEWED”, (approved, no further s required), “FURNISH AS NOTED”, (approved as noted, make corrections noted, no further submission is required), “FURNISH AS NOTED/SUBMIT SPECIFIC ITEM”, (approved as noted, approval is
contingent upon submission of additional information for review and approval), “REJECTED”, (not approved, do not resubmit the concept or component as submitted), “REJECTED/SUBMIT SPECIFIC ITEM”, (not approved, submit additional information for review and approval), “REVISE/RESUBMIT”, (resubmit with corrections), “NOT REVIEWED”, (no review required), “SUBMIT SPECIFIC ITEM”, (submit additional information for review and approval), “NOT REVIEWED/SUBMIT SPECIFIC ITEM”, (not reviewed, submit additional information for proper review and approval).

Replace the following Modification for Non-Conventional Project after paragraph 2

<table>
<thead>
<tr>
<th>Modification for Non-Conventional Project:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Delete the above paragraph and replace with the following:</td>
</tr>
<tr>
<td>The approval or disapproval of shop drawings by the AOR/EOR will be indicated by one of the following designations: “APPROVED” (no further action required), “APPROVED AS NOTED” (make corrections noted, no further submission is required), “RESUBMIT” (make corrections and resubmit for approval), or “NOT APPROVED” (rejected, do not resubmit the concept or component as submitted). Only shop drawings that have been “APPROVED”, or “APPROVED AS NOTED” will be submitted to the Department, for review.</td>
</tr>
<tr>
<td>Upon completion of the Department’s review, the Department submits the shop drawing to the Resident Engineer (CEI) who must stamp the drawings, “RELEASE FOR CONSTRUCTION”, “RELEASE FOR CONSTRUCTION AS NOTED”. Shop drawings which are stamped “RESUBMIT”, by the AOR/EOR, will not be submitted to the Resident Engineer (CEI) for stamping.</td>
</tr>
</tbody>
</table>

Replace paragraph 3 with the following

All Consultants reviewing shop drawings must red ink stamp and initial each item as noted above with the firm’s appropriate stamp. Consultants must declare any limitations to the extent of their review and approval by the terminology of their standard stamp and/or by additional written and “ballooned” notes on the shop drawing items. When the AOR/EOR is a Consultant, and when a Sub-consultant is retained to assist in the shop drawing review, the AOR/EOR must signify disposition of the shop drawing as noted above with the AOR/EOR’s firm’s appropriate stamp prior to distribution or prior to submitting, through ProjectSolve, to the Department. In this event, it is the AOR/EOR’s prerogative to also require a disposition stamp by the Sub-consultant.

Replace paragraph 4 with the following

When a shop drawing contains deviations from the Contract Plans and Specifications, the Consultant must contact Florida’s Turnpike Enterprise Project Manager, who will coordinate with the Construction Project Manager and will determine as to whether or not a Supplemental Agreement or Cost Savings Initiative Proposal (CSIP) is required. If either procedure is required to be initiated, the shop drawing will not be reviewed until a decision is finalized.
Replace paragraph 13 with the following

Exhibits 28-A through 28-C reflect the distributional flow of a shop drawing. When the Department concurs with the Consultant’s review and disposition of the shop drawing, the Department will stamp and submit the shop drawing through ProjectSolve, the Consultant is notified by the system. Should the Department’s review and/or dispositions of the shop drawing differ from that of the Consultant, the final disposition will be resolved by coordination between the firms, the final disposition on the shop drawing is reflected by the Department’s disposition stamp.

Replace Modification for Non-Conventional Project after paragraph 13 with the following

Modification for Non-Conventional Project:
Delete the above paragraph and replace with the following:

Exhibit 28-D shows the shop drawing and distributional flow of a shop drawing. When the Department concurs with the Design-Build Firm’s AOR/EOR review and disposition, the Department will stamp and distribute the shop drawing through ProjectSolve. Should the Department’s review and/or disposition differ from that of the Design-Build Firm’s AOR/EOR, the final disposition on the shop drawing is reflected by the Department’s disposition stamp.

28.9 Distribution of Submittals

Replace title with the following

28.9 Distribution of Shop Drawings

Replace paragraph 1 and Table 28.3 with the following

Refer to Exhibit 28-B for the distributional flow a shop drawing through ProjectSolve.

Replace paragraph 2 with the following

When precast/prestressed concrete components are involved, the Department’s District Precast Engineer is furnished an electronic copy. When structural steel components are involved, the Department’s Assigned Commercial Inspection Agency (ACIA) is furnished an electronic copy. When mechanical/electrical components of movable bridges are involved, the Mechanical/Electrical Section of the State Structures Design Office (SSDO) is furnished an electronic copy.

Replace paragraph 4 with the following

When approval of a shop drawing is denied (“RESUBMIT” or “NOT APPROVED”), distribution of the shop drawing will occur through ProjectSolve. The Contractor, AOR/EOR and the Resident Engineer (CEI) are notified by a system generated email.

Modification for Non-Conventional Project:
Refer to Exhibit 28-D which shows the shop drawing flow diagram for Design-Build
Projects. The Contractor is responsible for transmitting a copy of the processed shop drawing to the appropriate subcontractor, specialty engineer or fabricator.

28.11 Submittal Activity Record (Logbook)

Replace title with the following

28.11 Shop Drawing Activity Record (Logbook) and ProjectSolve

Replace paragraph 1 with the following

The Department’s Shop Drawing Review Office is the Final Review Office and maintains the Shop Drawing Activity Record (Logbook), through ProjectSolve. A log can be generated for each project where shop drawings have been submitted. Reports can be generated on a daily basis.

The following minimum data is entered and generated within the ProjectSolve Site.

1. Financial Project ID
2. Contract Number
3. Roadway Division/Specification Section
4. Florida’s Turnpike Enterprise (FTE) Shop Drawing Number
5. Description of Shop Drawing Entry
6. AOR/EOR Submittal Number (if applicable)
7. Contractor Submittal Number
8. Date Submitted by Contractor to the AOR/EOR
9. Date Submitted by AOR/EOR to the Department’s Shop Drawing Review Office
10. Date Distributed by the Final Review Office to the Contractor
11. AOR/EOR Disposition
12. FTE Disposition

ProjectSolve maintains a historical record of activity devoted to an individual shop drawing as that for the project as a whole. It can serve as a verification of review time, to respond to inquiries of a particular shop drawing’s status and as a record of manpower effort to aid in estimating and allocating future workload.

28.12 Archiving Record Shop Drawings

Replace this section with the following paragraphs

Prior to project completion, the Resident Engineer (CEI) must coordinate with the Department’s Shop Drawing Review Office to verify resolution (resubmissions) of all project shop drawing submissions. If, for any reason all resolutions have not taken place, the Shop Drawing Review Office will contact the Resident Engineer (CEI) to obtain a Memorandum clarifying the resolution.

Upon completion and acceptance of the construction project by the Department (usually by receipt of a written Notice of Acceptance), the Department’s Shop Drawing Review Office has
the shop drawings imported (uploaded) into the EDMS System. The Shop Drawing Activity Record Logbook (Shop Drawing Status Report) is generated through ProjectSolve), which also imported into the system.
**Exhibit 28-A**

Florida’s Turnpike Enterprise (FTE) Flow Chart for Shop Drawing/Submittal Item List Reviewer Coordination for Items Deemed “Critical” Design Bid Build (Conventional) Projects

**Contractor**

Submits Shop Drawing/Submittal Item List to Resident Engineer (CEI)

**Resident Engineer (CEI)**

Submits Shop Drawing/Submittal Item List to FTE Shop Drawing Review Office

**Florida’s Turnpike Enterprise (FTE) Shop Drawing Review Office**

Sends item list to the AOR/EOR for review/verification of technical components of shop drawings

**Architect of Record/Engineer of Record (AOR/EOR)**

Verifies list and coordinates any deficiencies with the Resident Engineer (CEI) and/or Contractor

Once item list is verified, AOR/EOR forwards to FTE Shop Drawing Review Office and copies FTE Design Project Manager

**Florida’s Turnpike Enterprise (FTE) Shop Drawing Review Office**

Provides list to FTE Discipline Reviewers to identify those items deemed “Critical”, which require FTE Overview

**Florida’s Turnpike Enterprise (FTE) Discipline Reviewers**

“Critical” items are identified

List is provided to the FTE Shop Drawing Review Office

**ProjectSolve Administrator**

Imports shop drawing/submittal item list into ProjectSolve.

A confirmation email is sent to all parties
Replace the following Exhibit

Exhibit 28-B
Florida’s Turnpike Enterprise (FTE)
Shop Drawing Routing Chart for Design Bid Build (Conventional) Projects

Subcontractor, Suppliers, Fabricators

Initiates and submits shop drawing thru ProjectSolve

Contractor

Architect of Record/Engineer of Record (AOR/EOR)
ProjectSolve notifies AOR/EOR, via email,
Reviews shop drawing
Reviewed shop drawing is routed to FTE thru ProjectSolve,
System notification sent to FTE
Resident Engineer (CEI) is copied on email notification

Florida’s Turnpike Enterprise (FTE)
Shop Drawing Review Office
Submits final processed shop drawing thru ProjectSolve
System notifications are sent to all interested parties

AOR/EOR
Contractor
Resident Engineer (CEI)
FTE Construction Project Manager
FTE Project Manager

Welding Inspection and/or Structural Coatings Inspection Firms
If Applicable to Project

FDOT District Precast Inspector
If Applicable to Project
Replace the following Exhibit

Exhibit 28-C
Florida's Turnpike Enterprise (FTE)
Shop Drawing Review Office
Department Review Office Distribution Chart
Replace the following Exhibit

Exhibit 28-D
Florida’s Turnpike Enterprise (FTE)
Shop Drawing Routing Chart for Design Build (Non-Conventional) Projects

[Diagram showing the flow of shop drawing routing for Design Build (Non-Conventional) Projects, with key roles such as Subcontractor, Suppliers, Fabricators, Design-Build Contractor, Design-Build Architect of Record/Engineer of Record (D-B AOR/EOR), Resident Engineer (CEI), FTE Project Manager, Welding Inspection and/or Structural Coating Inspection Firms, and FDOT District Precast Inspector indicated with arrows connecting their responsibilities and communication paths.]
Delete the following exhibit

*Exhibit 28-E*
Chapter 29

Structural Supports for Signs, Luminaires, and Traffic Signals

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

29.1 General

Add the following paragraphs

For projects that involve the re-use of existing miscellaneous structures, the provisions of Section 25.4.26 applies, even if the project is not a RRR.

During the design process, the Design Consultant should coordinate with FTE Maintenance to secure structures numbers for overhead cantilever and span sign structures. These structure numbers should be used in the Signing and Pavement Markings plan set.

Miscellaneous Structures (sign structures, mast arms, etc.) must use a galvanized coating per the applicable Standards. Do not paint or otherwise coat these structures without consent of FTE. Coordinate with the Turnpike Project Manager as necessary.

Typically if a drilled shaft supporting a sign structure is deemed unacceptable in construction, a replacement shaft can be constructed nearby. The Consultant must identify structure foundation locations which are associated with toll gantries or toll equipment, are critical (cannot be moved nearby without design or permit changes), and follow the gantry foundation construction requirements of drilled shafts in the General Toll Requirements.

29.2 Sign Support Structures

Add the following paragraphs

All overhead sign structures including those carrying DMS, must be designed to accommodate 25% extra sign area than what is called for in the plans. Sign structures must be designed for a minimum sign panel weight of 5 lbs/sf for conventional sign panels and 25% extra dead load for DMS. The requirements for minimum and future sign panels in Structures Manual Volume 3 also apply. If 125% of the proposed panel area is less than the Volume 3 minimum area, the Volume 3 minimum area should be used. If signs are not present over lanes, the Volume 3 minimum area should be used. Refer to TPPPH Section 2.10 for the requirements of minimum vertical clearance.

The designer is responsible to determine the dimensions of the 125% panel that will create the worst case loading scenario. For historical documentation, a note must be added to each sign
structure cross-section and to the structural Table of Variable notes that the design accounts for the 25% increase in area.

Application of the 25% extra area and weight is not required when analyzing existing sign structures for re-use.

The designer should verify that the sign panel size conforms to the FDOT Standard Index drawings with regards to vertical hangers, wind beams and luminaire arms. If not, special design and details should be provided in the S&PM plans.

When possible, avoid truss depths greater than 8-ft (96”). Deep trusses pose additional inspection issues.

For bridge mounted sign structures, connection to the traffic railing barrier should be avoided where possible. If it is absolutely necessary to connect to the barrier, the point of connection should be as close to the top of deck as possible.

### 29.5 ITS Support Structures

*Add the following paragraph*

For projects that involve the re-use of existing sign structures carrying DMS signs, at a minimum, existing U-bolts which connect the truss chords to the upright must be replaced with high-strength U-bolts. Also refer to 29.2.4 and 29.2.5 for additional TPPPH requirements.
Chapter 30

Retaining Walls

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

30.3 Retaining Wall Plans Submittal Procedures

Add the following paragraph

If any wall system is proposed to be connected to an existing MSE wall, and the existing soil reinforcement are required to provide resistance for that new wall, the design life of the existing wall system must be analyzed to provide full design life of a new wall. This analysis must be submitted for review with the Phase III submittal (or 90% Plans). Internal and external wall stability analyses must use the lowest soil friction angle, as determined by direct shear tests following FM 3-D3080 to model existing MSE wall backfill. This requirement applies to both conventional and non-conventional projects.
Chapter 31

Geosynthetic Design

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

31.4 Geosynthetic Reinforcement Design Methodology

31.4.2 Requirements

Replace the following variables

2. Nominal Tension Resistance of Reinforcement:

\[ T_{ult} = \text{Ultimate wide-width tensile strength of a geosynthetic per ASTM D 4595} \]

\[ T_{creep} = \text{Serviceability state reinforcement tensile load based on minimum 10,000 hour creep tests per ASTM D 5262} \]
Chapter 32

Noise Walls and Perimeter Walls

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

32.3 Noise Abatement Criteria

Add the following paragraphs

Maintenance access points must be provided for noise barriers constructed along the Turnpike. The spacing between openings or the ends of the noise barrier must be no greater than one-half mile. Consultants must coordinate all maintenance openings with the FTE Project Manager and the FTE Maintenance Department. Refer to the Noise Wall Maintenance Access Guide Drawings for acceptable access opening types and example details of maintenance doors. Please note that the Design Consultant is responsible for the final Control Drawings and all details required for the proposed openings.

If a Design Phase Noise Study Report proposes a Traffic Railing/Noise Wall where tapers and attenuators have not been included, the station limits must be extended to account for any tapers or attenuators introduced in final design due to the requirements of the FDOT Design Standards. This applies to individual Traffic Railing/Noise Walls and also where an overlap with another parallel noise barrier is proposed. These changes may require reanalysis due to site specific geometry, and must be approved by the Turnpike Environmental Management Office.

Show the location and limits (Stations and Offsets), including any tapers, for the Traffic Railing/Noise Walls in the Post and Panel Plans. Provide dimensions “D” and “L” depicted in the Noise Wall Maintenance Access Guide Drawings for any proposed access points.

The Noise Wall Maintenance Access Guide Drawings can be found in the following link:

http://floridasturnpike.com/design/tppph.html
Chapter 33

Reinforced Concrete Box and Three-Sided Culverts

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter
Chapter 34

Monitor Existing Structures

The following are changes, additions or deletions to the January 2016, Topic #625-000-007, Plans Preparation Manual (PPM), for use on Turnpike projects only.

No changes to the entire chapter