



Florida's Turnpike Enterprise



Pavement Design Package Guidance & Best Practice Checklist

FPID: _____ Proj Desc: _____
 Date: _____ GEC PM: _____
 Submittal: _____ Consultant PM: _____

Include Checklist for all Pavement Design package submittals

Item Description	Complete	N/A
(1) Pavement Design Package Report Guidance		
(a) Report Cover Sheet with EOR's Digital Seal and Concurrence Signature Block for District Design Engineer's Approval	<input type="checkbox"/>	<input type="checkbox"/>
(b) Report Cover Sheet needs to include Concurrence Signature Block for local or county engineers when our project impacts any local or county sidestreets. Within these signature blocks specify the pavement designs (E.G. - Pavement designs 1, 2 &3) for which the city or county engineer are responsible for concurrence.	<input type="checkbox"/>	<input type="checkbox"/>
(c) Table of Contents (Bookmarks to report sections and appendices is required)	<input type="checkbox"/>	<input type="checkbox"/>
(d) Executive Summary	<input type="checkbox"/>	<input type="checkbox"/>
a. Project Description include Type of Work		
b. Existing Pavement Conditions		
c. Traffic Data Analysis		
d. Summary Design Criteria		
e. Typical Section Analysis (Drawing or Written)		
f. Pavement Recommendations (M&R, Full Depth, Cross Slope Correction, Overbuild, etc.)		
1. <i>Milling and Resurfacing</i>		
2. <i>Full Depth</i>		
3. <i>Cross Slope Correction</i>		
4. <i>Overbuild Recommendations</i>		
(e) Calculations for Pavement Design	<input type="checkbox"/>	<input type="checkbox"/>
a. Number each pavement design structural number calculation in sequence matching corresponding pavement layering detail and item (1)(b)		
b. Provide separate calculations for Modulus reductions for 1 or 2 foot base clearance.		
c. For isolated areas on ramps and sidestreets tying into existing conditions where the calculated base clearance is less than 3-feet measured from bottom of base to Turnpike Design High Water elevation require a separate calculation.		
d. Clearly identify if the calculations are applicable to the mainline pavement, ramp pavement or a specific sidestreet.		

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| <p>(f) Pavement Layering Details</p> <p>a. Number Each Pavement layering Detail in sequence matching corresponding calculation and item (1)(b).</p> <p>b. Each layer sketch must include the corresponding Pavement Calculation #</p> | <input type="checkbox"/>

<input type="checkbox"/> | <input type="checkbox"/>

<input type="checkbox"/> |
| <p>(g) Milling & Resurfacing (M&R) Recommendation Sketches</p> <p>a. Provide the M&R recommendation sketches by filling up the excel template provided within FTE's website.</p> | <input type="checkbox"/> | <input type="checkbox"/> |
| <p>(h) Appendices</p> <ol style="list-style-type: none"> 1. Cross Slope Correction Analysis 2. Resilient Modulus Values (<i>Mr</i>) / (<i>FWD</i>) / (<i>LBR</i>) 3. Traffic Data 4. GPR Data 5. Profilograph Cross Slope Data 6. Overbuild Recommendations 7. Base Clearance Calculations 8. Straight Line Diagrams 9. Approved Typical Section Package 10. Pavement Coring Evaluation Report <i>(If multiple reports were utilized they must be included)</i> 11. Pavement Design Meeting Minutes 12. Friction Course Type Selection for Ramps Exhibits & Coordination Correspondence 13. Project Correspondence (Emails or meeting minutes related to pavement design) 14. List of References from Flexible Pavement Design Manual | <input type="checkbox"/> | <input type="checkbox"/> |

Remarks (Provide remarks for any deviations from a specific checklist item or N/A items that may require further explanation)

(2) General Pavement Design Guidance

- (a) Adhere to the following submittal deadlines:
- a. Draft version of the pavement design package shall be submitted prior to the 45% temporary traffic control plans submittal
 - b. Final submittal of the pavement design package shall be submitted prior to the phase II submittal
 - c. The signed and sealed version of the pavement design package must be signed by the Turnpike Design Engineer prior to the phase III submittal.
- (b) Identify if high polymer is to be used and delineate all locations high polymer will be used as well as justification why it is needed on the project. Use of high polymer requires State Materials Office approval prior to use. All correspondence for approval must be included in the draft pavement design submittal.
- (c) Identify if high friction surface treatment is to be used and delineate all locations high friction surface treatment will be used as well as justification why it is needed on the project. The usage must be explicitly approved (email or meeting note documentation is acceptable) by the Department and correspondence showing concurrence from the Roadway, Traffic Operations, Maintenance and Construction departments must be included in the draft pavement design submittal.
- (d) Equivalent baseline stations must be shown for each notation of mileposts or mile markers within the package and appendices.
- (e) Limits on transitioning from FC-5 and FC-12.5 must be identified on the ramps. Before the draft submittal provide exhibits depicting the proposed limits of FC-5 and FC-12.5 which includes the accident data within these ramps. The project manager can either schedule a meeting with the Roadway, Maintenance, Materials, Traffic Operations and Construction disciplines to discuss the proposed limits or distribute internally for their feedback. Once resolution is achieved regarding the limits of friction course within the ramps, feedback will be provided to Engineer of Record for incorporation into plans. Correspondence and exhibits for this task shall be included within the the draft pavement design submittal appendices.
- (f) The draft version of the pavement design submittal must include delineation of all locations where deep milling and or base repairs are necessary.

- (g) The draft version of the pavement design submittal must include draft deep milling details if deep milling is necessary.
- (h) The draft version of the pavement design submittal must include draft base repair details if base repairs are necessary.

Remarks (Provide remarks for any deviations from a specific checklist item or N/A items that may require further explanation)

(3) Turnpike Flexible Pavement Design Best Practices

- (a) Use 95% reliability for new construction / reconstruction pavement designs.
- (b) Use 99% reliability for rehabilitation projects pavement designs.
- (c) Use 80% reliability for all temporary pavement designs to be used during construction.
- (d) To avoid adverse schedule impacts, the total number of milling depths should be limited to a maximum of 8, with a hard limit of 10 if absolutely necessary. If more than 10 milling depths are required, the EOR must seek approval from the Turnpike Materials, Construction, and Roadway disciplines, through the Turnpike Design Project Manager before proceeding. Finalize the total number of different milling depths as early as the project kickoff meeting and no later than the Phase II submittal, keeping milling depths as an agenda item in progress meetings until finalized. Additional pavement design meetings should be scheduled with the Turnpike PM as required.
Total Different Milling Depths _____
- (e) All pavement designs, except for 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.
- (f) All Turnpike facilities mainline & ramp travel lanes pavement must include PG 76-22 in the top structural lift and friction course regardless of traffic level. This requirement is not applicable to non Turnpike facilities, for those follow the local stakeholder preferences or the latest flexible pavement design manual for FDOT facilities.
- (g) For traffic level E, use PG 76-22 or High Polymer binder as follows:
 - a. 10 million to < 30 million ESALS: use, at a minimum, in the top 1.5” of the structural layer
 - b. ≥ 30 million ESALS: use, at a minimum, in the top 3” of the structural layer

(h) The Pavement Design Package must document what the existing friction course is and compare that to the existing crash patterns in determining the friction course when resurfacing ramps. Determine the location where speeds on the ramp are expected to drop below or exceed approximately 50 mph and make a recommendation for the logical transition between FC-5 and FC-12.5.

(i) Using a much higher traffic level mix than traffic requires can cause premature deterioration and cracking of the pavement. Therefore, do not increase the traffic level mix in the pavement design documents or plans to anticipate optimization of contractor operations. FDOT Specifications, Section 334 provides the contractor this flexibility within the realms of required criteria.

If new pavement is proposed to be joined to existing pavement such as widening, auxiliary lanes, ramps, and turn lanes, a minimum 6-inch wide shelf must be created at the longitudinal joint by milling the existing pavement structure (See exhibit A). The minimum depth of the milling equals the thickness of the final lift of structural course in the new pavement structure. This creates a milled offset in the longitudinal pavement joint from preceding lifts of structural asphalt. Tack coat is used in the shelf to aid in adhesion and imperviousness. A detail of the longitudinal joint must be developed and placed in the project plans. The traffic control plan must accommodate the space necessary for this work in the phasing sequence.

(j)

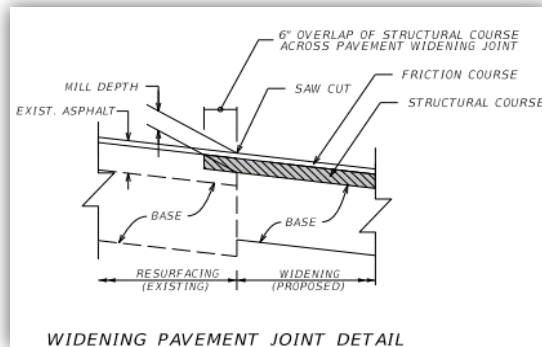


Exhibit A

(k) All pavement designs through toll loop pavement area must meet the minimum pavement designs listed in the GTR. If necessary, the pavement thickness must be increased from the GTR minimums in order to provide the required pavement structural number.

- (l) Use table 5.5 of the FDOT Flexible Pavement Design Manual for the required minimum thickness for new construction and resurfacing projects.

Remarks (Provide remarks for any deviations from a specific checklist item or N/A items that may require further explanation)

(4) Cross Slope Analysis

- (a) Submit report as an appendix in the Pavement Design Package.
- (b) Cross slope analysis on designated RRR projects must use the cross slope ranges defined in FDM 210.9.2 and FDM 211.2.2.1.. All non-designated RRR projects must follow new construction criteria.
- (c) Existing cross-slopes must be analyzed by averaging the cross slope on a sliding scale and comparing the average cross slope against the appropriate tolerances.
- (d) For practical construction purposes, Turnpike generally uses 1000 feet on tangent and 600 feet through horizontal curves as the minimum sliding scale lengths. However, lengths may be increased or decreased based on project specific warrants.
- (e) Simplifying the cross slope correction design and providing greater plan clarity is necessary to accomplish cross slope correction in the field. Show milling at specific cross slopes between stations from a single constant depth control point for at least 1000 feet through tangent sections and 600 feet through horizontal curves, followed by constant depth resurfacing.
- (f) Verify cross slope of superelevated section matches the Design Speed from As-Built or has design speed increased or decreased. If Design Speed has changed when compared to As-Built information coordinate with District Roadway Design Engineer for resolution.
- (g) Include analysis if any evidence shows cross slope correction is required due to roadway settlement or deficient cross slope was due to previous construction activities.
- (h) Draft version must include the calculation summary tables, ranges of cross slope correction and summary of recommendations.
- (k) Draft version must include draft cross slope correction details that clearly identify the milling control point and the methodology for achieving the cross slope correction.
- (l) Draft version must include draft shoulder rocking details that clearly identify changes to the shoulder slopes, shoulder breakover, and any changes to the barrier wall reveal.

- (m) Draft version of the Cross Slope Analysis Report must include preliminary TTCP phasing sequence for the paving operations.
- (n) Draft version must include equivalent baseline stations must be shown for each notation of mileposts or mile markers within the package and appendices.
- (o) Draft version must include existing cross slope analysis spreadsheet that delineates the areas of cross slope correction and areas recommended to match existing that would require a Design Variation Memorandum or Design Exception.
- (p) Include the total number of cross slope correction mill depths in Item 3(d) above and included in overall sketch under Item 1(g).

Remarks (Provide remarks for any deviations from a specific checklist item or N/A items that may require further explanation)

I certify that I have thoroughly read through the checklist and confirm the information presented is accurate to the best of my knowledge.

Engineer of Record

Project Quality Manager