

To: \_\_\_\_\_  
*Turnpike Design Engineer*

Date: March 8, 2007

Financial Project ID: 419572-1-52-01 & 419572-3-52-01 New Const. (X) RRR ( )

Federal Aid Number: N/A

Project Description: Resurfacing & Design Criteria Upgrades on TP mainline in Sumter Co.

State Road Number: SR 91 Co./ Sec./ Sub. 18470000

Begin Project MP: 297.795 End Project MP: 308.443

Full Federal Oversight: Yes ( ) No (X)

Request for Design Exception ( ), Design Variation (X)

Re-submittal: Yes ( ) No (X) Original Ref# \_\_\_\_\_-\_\_\_\_\_-\_\_\_\_\_

Requested for the following element:

- ( ) Design Speed      ( ) Lane Widths      ( ) Shoulder Widths      ( ) Bridge Widths
- ( ) Structural Capacity      (X) Vertical Clearance      ( ) Grades      ( ) Cross Slope
- ( ) Superelevation      ( ) Horizontal Alignment      ( ) Vertical Alignment      ( ) SSD
- ( ) Horizontal Clearance      ( ) Other

The purpose of Project 419572-1-52-01 is to mill and resurface approximately 10.648 miles of the Florida's Turnpike (SR 91) mainline from the Lake/Sumter County Line (MP 297.795) to I-75 (MP 308.443). The existing travel lanes and the inside and outside shoulder pavement will be milled and resurfaced in both the northbound (NB) and southbound (SB) directions. Additionally, the milling and resurfacing work includes the Okahumpka Service Plaza acceleration and deceleration lanes, and the US 301 interchange ramps. In addition to the milling and resurfacing work, Project 419572-3-52-01 includes design criteria upgrades to enhance the safety of the Florida's Turnpike in Sumter County. This project includes the evaluation of the thirteen (13) critical design elements in Chapter 23 of the PPM for specific roadside elements within the project limits that do not meet current FDOT or AASHTO design criteria.

Within the limits of this project, there are several locations where the vertical clearance above the mainline roadway does not meet FDOT criteria. These locations do satisfy AASHTO criteria. This Design Variation is requested in order to allow these locations to remain as outlined in the attached report.

**Recommended by:**

\_\_\_\_\_ Date \_\_\_\_\_

Responsible Engineer

**Approvals:**

\_\_\_\_\_ Date \_\_\_\_\_  
Turnpike Design Engineer

N/A \_\_\_\_\_ Date \_\_\_\_\_  
Turnpike Structures Design Engineer

N/A \_\_\_\_\_ Date \_\_\_\_\_  
State Roadway Design Engineer

N/A \_\_\_\_\_ Date \_\_\_\_\_  
State Structures Design Engineer

N/A \_\_\_\_\_ Date \_\_\_\_\_  
State Chief Engineer

N/A \_\_\_\_\_ Date \_\_\_\_\_  
FHWA Division Administrator

**Resurfacing and Design Criteria Upgrades on  
Turnpike Mainline (SR-91) in Sumter County  
FPID 419572-1-52-01 & FPID 419572-3-52-01**

**VERTICAL CLEARANCE  
VARIATION REPORT**

Prepared For:



Prepared By:

Design Consultant  
Information

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Responsible Engineer

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Date

## Table of Appendices

APPENDIX A – *Crash History*

This report will outline the justification and support documentation regarding the Vertical Clearance Design Variation. A conclusion and recommendation based on the support documentation is also contained in the report.

**1. DESCRIPTION**

The purpose of Project 419572-1-52-01 is to mill and resurface approximately 10.648 miles of the Florida’s Turnpike (SR 91) mainline from the Lake/Sumter County Line (MP 297.795) to I-75 (MP 308.443). The existing travel lanes and the inside and outside shoulder pavement will be milled and resurfaced in both the northbound (NB) and southbound (SB) directions. Additionally, the milling and resurfacing work includes the Okahumpka Service Plaza acceleration and deceleration lanes, and the US 301 interchange ramps.

In addition to the milling and resurfacing work, Project 419572-3-52-01 includes design criteria upgrades to enhance the safety of the Florida’s Turnpike in Sumter County. This project includes an evaluation of specific roadside elements within the project limits that are substandard to current FDOT or AASHTO design criteria.

Within the project limits, there are two (2) underpass locations.

- Bailey Road over Turnpike County **MP 1.368** Turnpike **MP 299.163**
- CR 468 over Turnpike County **MP 3.428** Turnpike **MP 301.223**

These underpass locations consist of multi-span bridges over the Turnpike mainline. The FDOT criteria for minimum vertical clearance on an FIHS and freeway facility is listed in **Table 2.10.1** of the *Plans Preparation Manual, Volume I (PPM)* as 16.5’. The AASHTO criteria for minimum vertical clearance on a freeway facility is 16.0’ as described on page 506 of *A Policy on Geometric Design of Highways and Street (2004)*.

Survey data was collected for the minimum vertical clearances on November 11, 2006. At both of the underpasses, the minimum vertical clearance is located along the inside edge of travel of each direction. A summary of the minimum vertical clearance at each of these locations is provided in the following table.

<b>MINIMUM VERTICAL CLEARANCE OVER TURNPIKE MAINLINE</b>						
<b>Bridge Number</b>	<b>Milepost</b>	<b>Direction</b>	<b>Overpass Road</b>	<b>Vertical Clearance</b>	<b>Meets FDOT</b>	<b>Meets AASHTO</b>
180024	1.368 (299.163)	NB	Bailey Rd.	16.30’	No	Yes
180024	1.368 (299.163)	SB	Bailey Rd.	16.35’	No	Yes
180007	3.428 (301.223)	NB	CR 468	16.20’	No	Yes
180007	3.428 (301.223)	SB	CR 468	16.25’	No	Yes

As depicted in the table, the underpass locations do not have the FDOT minimum of 16.5’ vertical clearance in either direction. In all cases, however, the AASHTO minimum of 16.0’ vertical clearance is exceeded.

## 2. SAFETY IMPACTS

The review of five years of crash data (2001 to 2005) does not indicate the occurrence of any 'motor vehicles striking bridge' or 'collision with fixed object above road' at these locations. The pavement design and milling and resurfacing details at these underpass locations are designed such that the finished grade (pavement elevation) does not further reduce the vertical clearance at these locations.

## 3. CONCLUSIONS AND RECOMMENDATIONS

For the two (2) underpass locations where the 16.5' FDOT minimum vertical clearance criteria is not satisfied:

- The existing vertical clearance exceeds AASHTO requirements
- The existing vertical clearance does not present any safety or operational concerns
- Vertical clearance corrections would require reconstruction of the bridges and are beyond the scope and construction budget programmed for this project

Although the FDOT criteria for minimum vertical clearance are not satisfied at these locations, the AASHTO requirements are met. Therefore, we recommend that this Design Variation for Vertical Clearance be documented and approved.

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**DESIGN VARIATION  
FOR  
VERTICAL CLEARANCE**

**SR 91 (FLORIDA'S TURNPIKE)  
FINANCIAL PROJECT ID 419572-1-52-01**

**APPENDIX A**

**CRASH HISTORY**

Crash	Crash Number	County Milepost	Turnpike Milepost	Harmful Event	Contributing Cause	Vehicle 1 Direction	Vehicle 2 Direction
04-025	738137740	22.649	296.568	MV Hit Concrete Barrier Wall	Careless Driving	SB	
05-040	704017680	22.860	296.779	All Other	Disregarded Traffic Signal	SB	SB
04-026	738138760	22.899	296.818	Collision with MV (Angle)	Careless Driving	NB	SB
04-022	703837890	22.919	296.838	Collision with MV (Sideswipe)	Improper Lane Change	SB	SB
05-029	738127670	23.001	296.92	All Other	All Other	SB	SB
04-027	752762140	23.019	296.938	MV Hit Concrete Barrier Wall	Careless Driving	NB	
05-016	703833730	23.019	296.938	Tractor Trailer Jackknifed	Careless Driving	NB	
05-032	704017260	23.019	296.938	MV hit Guardrail	Careless Driving	NB	
01-020	607054030	23.099	297.018	MV Ran into Ditch/Culvert	Careless Driving	NB	
02-005	703849680	23.219	297.138	Collision with MV (Angle)	Improper Lane Change	SB	SB
01-025	602811210	23.319	297.238	Overtaken	Careless Driving	NB	
03-002	703803500	23.360	297.279	Collision with MV (Sideswipe)	Improper Lane Change	SB	SB
05-041	744766770	23.399	297.318	Collision with MV (Rear End)	Careless Driving	NB	NB
05-026	753619780	23.419	297.338	Overtaken	Careless Driving	NB	
03-028	703843150	23.876	297.795	Median Crossover	Careless Driving	SB	NB
05-043	744755950	0.000	297.795	All Other	Improper Lane Change	SB	SB
05-015	738131380	0.109	297.904	Overtaken	Careless Driving	NB	
03-008	700730930	0.127	297.922	MV Ran into Ditch/Culvert	Exceeded Speed Limit	SB	
05-042	744765470	0.166	297.961	All Other	All Other	NB	NB
05-013	704001620	0.166	297.961	Collision with MV (Angle)	Careless Driving	NB	NB
05-021	738127550	0.166	297.961	MV hit Guardrail	Careless Driving	NB	
05-023	704016070	0.166	297.961	MV hit Guardrail	Careless Driving	NB	
04-010	703837790	0.166	297.961	Collision with MV (Sideswipe)	Improper Lane Change	NB	NB
05-011	703824660	0.166	297.961	MV hit Guardrail	No Improper Driving	NB	
04-016	732221380	0.263	298.058	MV Hit Sign/Sign Post	Fleeing Police	NB	
01-024	602840750	0.266	298.061	MV hit Tree/Shrubbery	No Improper Driving		
01-031	598168960	0.392	298.187	Collision with MV (Angle)	Careless Driving	SB	NB
02-010	703832250	0.466	298.261	Collision with MV (Angle)	Exceeded Safe Speed Limit	NB	SB
02-001	703836000	0.666	298.461	Collision with MV (Angle)	Driving Wrong Side	NB	SB
03-007	703831500	0.754	298.549	MV hit Tree/Shrubbery	Careless Driving	NB	
01-033	602857520	0.792	298.587	MV hit Guardrail	Careless Driving	SB	
04-034	704014770	0.792	298.587	Overtaken	Careless Driving	SB	
05-008	703833600	0.792	298.587	Collision with MV (Rear End)	Careless Driving	NB	NB
05-039	703813210	0.792	298.587	MV hit Guardrail	Careless Driving	SB	
02-019	703849790	0.792	298.587	MV hit Tree/Shrubbery	No Improper Driving	NB	
02-023	703803440	0.792	298.587	MV hit Guardrail	No Improper Driving	NB	

Crash	Crash Number	County Milepost	Turnpike Milepost	Harmful Event	Contributing Cause	Vehicle 1 Direction	Vehicle 2 Direction
05-014	753345340	0.792	298.587	MV hit Guardrail	No Improper Driving	SB	
03-001	704023310	0.992	298.787	Collision with MV (Rear End)	Careless Driving	NB	NB
03-029	706168220	1.265	299.06	MV hit Tree/Shrubbery	Careless Driving	SB	
05-002	752762200	1.584	299.379	MV hit Tree/Shrubbery	Careless Driving	NB	
04-007	31080820	1.684	299.479	All Other	Careless Driving	NB	
03-006	703832400	1.689	299.484	Overtaken	Careless Driving	NB	
01-018	602839350	1.765	299.56	Overtaken	No Improper Driving	NB	
01-027	602840790	1.784	299.579	MV Ran into Ditch/Culvert	Careless Driving		
02-022	703833170	1.784	299.579	Ran Off Road into Water	Careless Driving	NB	
04-008	738129350	1.784	299.579	All Other	Improper Lane Change	NB	NB
05-004	704014880	1.784	299.579	Collision with MV (Sideswipe)	Improper Lane Change	SB	SB
02-020	703849800	1.784	299.579	MV hit Tree/Shrubbery	No Improper Driving	SB	
01-019	602844210	1.806	299.601	Collision with MV (Sideswipe)	Careless Driving	SB	SB
05-033	704002090	1.822	299.617	MV hit Tree/Shrubbery	Careless Driving	SB	
03-019	738138640	2.265	300.06	Collision with MV (Rear End)	Careless Driving	SB	SB
04-032	732231190	2.265	300.06	Collision with MV (Sideswipe)	Careless Driving	W	W
02-009	703840600	2.285	300.08	All Other	Improper Lane Change	NB	NB
01-013	602833540	2.339	300.134	All Other	Careless Driving		NB
01-014	602849100	2.372	300.167	Overtaken	Careless Driving	NB	
01-012	602841370	2.379	300.174	Collision with MV (Sideswipe)	Careless Driving	SB	SB
03-020	738136840	2.385	300.18	Collision with MV (Sideswipe)	All Other	NB	NB
01-028	602840800	2.385	300.18	MV hit Tree/Shrubbery	Careless Driving	SB	
02-014	703844330	2.585	300.38	MV hit Tree/Shrubbery	Careless Driving	NB	
03-023	703810700	2.585	300.38	Overtaken	No Improper Driving	NB	
01-017	602843030	2.685	300.48	MV hit Tree/Shrubbery	Careless Driving	SB	
02-002	703832170	2.685	300.48	Overtaken	Exceeded Speed Limit	SB	
03-009	704023360	2.685	300.48	All Other	Improper Lane Change	SB	SB
04-028	31075560	2.685	300.48	Ran Off Road into Water	No Improper Driving	SB	
01-010	602841290	2.785	300.58	Overtaken	Careless Driving	SB	
03-021	738137310	2.785	300.58	MV hit Tree/Shrubbery	Careless Driving	NB	
05-003	708304260	2.785	300.58	Overtaken	Careless Driving	NB	
05-037	704007040	2.785	300.58	All Other	Driving Wrong Side	NB	SB
05-019	704020660	2.785	300.58	Collision with MV (Rear End)	Improper Lane Change	SB	SB
01-011	602841310	2.928	300.723	Collision with MV (Angle)	Careless Driving	NB	NB
03-032	707337310	2.985	300.78	MV hit Guardrail	Exceeded Safe Speed Limit	SB	NB
03-016	602843390	3.165	300.96	MV hit Tree/Shrubbery	No Improper Driving	NB	

Crash	Crash Number	County Milepost	Turnpike Milepost	Harmful Event	Contributing Cause	Vehicle 1 Direction	Vehicle 2 Direction
02-017	703849750	3.265	301.06	All Other	Improper Turn	SB	SB
03-017	738138890	3.372	301.167	Overtuned	Careless Driving	SB	
02-007	703832740	3.419	301.214	Collision with MV (Angle)	Improper Lane Change	SB	NB
02-027	703836470	3.486	301.281	Collision with MV (Rear End)	Followed Too Closely	SB	SB
05-012	704023470	3.786	301.581	Collision with MV (Angle)	Careless Driving	NB	NB
05-024	703813060	3.786	301.581	MV hit Guardrail	Careless Driving	SB	SB
03-012	703840970	3.907	301.702	Overtuned	No Improper Driving	SB	
03-004	704023340	4.286	302.081	All Other	Improper Lane Change		SB
03-018	708300190	4.385	302.18	Collision with MV (Rear End)	All Other	SB	NB
02-026	703836460	4.386	302.181	Median Crossover	Careless Driving	SB	NB
04-019	703837920	4.386	302.181	Collision with MV (Sideswipe)	Careless Driving	SB	SB
04-020	708300310	4.585	302.38	Median Crossover	All Other	SB	NB
05-005	602843610	4.765	302.56	MV hit Guardrail	Careless Driving	SB	
05-018	703833740	4.785	302.58	MV Ran into Ditch/Culvert	Careless Driving	NB	
05-022	703813040	4.785	302.58	MV hit Tree/Shrubbery	No Improper Driving	SB	SB
03-025	713885720	4.985	302.78	MV Ran into Ditch/Culvert	No Improper Driving	SB	
03-005	702164330	5.183	302.978	MV Ran into Ditch/Culvert	Careless Driving	NB	
02-008	703844130	5.185	302.98	Overtuned	Exceeded Safe Speed Limit	NB	
05-027	704017140	5.265	303.06	MV hit Guardrail	Careless Driving	SB	
03-003	703844840	5.265	303.06	All Other	No Improper Driving	NB	NB
03-014	703840250	5.285	303.08	Collision with MV (Angle)	Careless Driving	SB	SB
01-021	602810350	5.485	303.28	Collision with MV (Angle)	No Improper Driving	NB	SB
04-029	708300340	5.726	303.521	All Other	Careless Driving	NB	
01-009	602831260	5.783	303.578	MV hit Tree/Shrubbery	Careless Driving	NB	
03-015	704023450	5.783	303.578	Collision with MV (Angle)	Careless Driving	NB	NB
04-018	704007340	5.783	303.578	Collision with MV (Sideswipe)	Careless Driving	NB	NB
05-036	703813180	5.783	303.578	Overtuned	Careless Driving	NB	
04-033	703843840	5.783	303.578	Collision with MV on Roadway	Improper Lane Change	NB	NB
01-002	602832200	5.836	303.631	Collision with MV (Angle)	All Other	SB	SB
01-029	602849700	6.265	304.06	Overtuned	Careless Driving	SB	
03-031	738131080	6.265	304.06	MV hit Tree/Shrubbery	Careless Driving	SB	
05-034	744765350	6.265	304.06	MV hit Tree/Shrubbery	Careless Driving	NB	
04-001	738138950	6.265	304.06	Overtuned	Drove Left of Center	NB	
02-016	703804950	6.283	304.078	MV Hit Sign/Sign Post	Careless Driving	SB	
05-028	753619860	6.283	304.078	MV hit Tree/Shrubbery	Careless Driving	NB	
01-023	602853340	6.482	304.277	MV hit Tree/Shrubbery	Careless Driving	NB	

Crash	Crash Number	County Milepost	Turnpike Milepost	Harmful Event	Contributing Cause	Vehicle 1 Direction	Vehicle 2 Direction
02-024	703810270	6.483	304.278	MV hit Tree/Shrubbery	Careless Driving	NB	
04-030	738126020	6.682	304.477	All Other	No Improper Driving	NB	
03-026	708300230	6.782	304.577	Collision with MV (Rear End)	Careless Driving	NB	NB
04-023	752761020	6.782	304.577	All Other	Careless Driving	SB	
05-017	704020650	6.782	304.577	Collision with MV (Angle)	Careless Driving	SB	SB
05-020	703813020	6.782	304.577	MV hit Tree/Shrubbery	Careless Driving	SB	
02-006	703837320	6.782	304.577	Ran Off Road into Water	Followed Too Closely	NB	NB
01-003	602842900	6.982	304.777	Overtuned	Careless Driving	NB	
01-030	602847770	7.040	304.835	Collision with MV (Head On)	Careless Driving	NB	SB
05-038	748154100	7.296	305.091	MV hit Guardrail	Alcohol Under Influence	NB	
05-025	748153560	7.456	305.251	MV hit Guardrail	All Other	NB	
04-035	704013190	7.482	305.277	All Other	Improper Lane Change	SB	SB
02-013	703810920	7.483	305.278	MV hit Guardrail	Careless Driving	NB	
03-011	704005260	7.496	305.291	MV Hit Sign/Sign Post	Careless Driving	NB	
04-002	738131090	7.546	305.341	Collision with MV (Rear End)	Careless Driving	NB	NB
05-030	602843880	7.596	305.391	Collision with MV (Rear End)	Careless Driving	NB	NB
02-011	703840630	7.655	305.45	Overtuned	All Other	NB	
02-012	703837640	7.682	305.477	Collision with MV (Sideswipe)	Careless Driving	NB	NB
01-004	602830800	7.764	305.559	MV Hit Concrete Barrier Wall	Careless Driving	NB	
01-006	602811860	7.783	305.578	All Other	Careless Driving		SB
04-003	738136660	7.783	305.578	Collision with MV (Rear End)	Careless Driving	NB	NB
05-031	704016120	7.783	305.578	Collision with MV (Rear End)	Careless Driving	SB	SB
05-035	704020710	7.783	305.578	Collision with MV (Angle)	Improper Lane Change	SB	SB
05-009	703811850	7.783	305.578	Overtuned	No Improper Driving	NB	
05-007	703838530	7.796	305.591	All Other	Improper Load	NB	NB
04-013	752752360	7.953	305.748	Collision with MV (Sideswipe)	Improper Lane Change	NB	NB
02-021	703828160	7.979	305.774	Overtuned	No Improper Driving	SB	
04-004	738136650	8.183	305.978	Collision with MV (Rear End)	Careless Driving	NB	NB
05-006	752762240	8.183	305.978	MV hit Guardrail	Careless Driving	SB	
04-014	708300290	8.282	306.077	MV hit Guardrail	All Other		
04-015	738131150	8.314	306.109	Collision with Animal	No Improper Driving	NB	
02-018	703844750	8.383	306.178	Tractor Trailer Jackknifed	No Improper Driving	NB	
04-005	738136830	8.779	306.574	Collision with MV (Angle)	Careless Driving	NB	NB
04-017	707315860	8.779	306.574	MV Ran into Ditch/Culvert	Careless Driving	NB	
04-006	738129780	8.779	306.574	All Other	Improper Lane Change	NB	NB
01-026	602857190	8.779	306.574	Overtuned	No Improper Driving		

Crash	Crash Number	County Milepost	Turnpike Milepost	Harmful Event	Contributing Cause	Vehicle 1 Direction	Vehicle 2 Direction
03-027	703810710	8.879	306.674	MV hit Utility Pole/Light Pole	All Other	SB	
01-022	602835700	8.879	306.674	MV hit Tree/Shrubbery	Exceeded Safe Speed Limit	NB	
01-034	598168090	9.296	307.091	Collision with MV (Angle)	Careless Driving	NB	SB
01-035	598168100	9.296	307.091	Overtuned	Careless Driving	SB	
01-001	602810240	9.579	307.374	Overtuned	Careless Driving	NB	
02-015	703844720	9.579	307.374	All Other	No Improper Driving	NB	NB
04-024	708300320	9.676	307.471	Collision with MV (Rear End)	Careless Driving	NB	NB
05-010	753345290	9.776	307.571	Collision with MV (Sideswipe)	All Other	SB	SB
03-013	703811620	9.776	307.571	MV hit Tree/Shrubbery	No Improper Driving	NB	
03-030	703837760	9.803	307.598	Overtuned	Careless Driving	NB	
02-003	703830010	9.826	307.621	MV hit Guardrail	Careless Driving	SB	
04-012	732213080	10.064	307.859	MV hit Tree/Shrubbery	No Improper Driving	NB	NB
01-007	602844270	10.076	307.871	Collision with MV (Rear End)	Careless Driving	SB	SB
03-024	732209670	10.170	307.965	MV hit Other Fixed Object	Careless Driving	NB	
04-031	708300400	10.176	307.971	Collision with MV (Sideswipe)	Improper Lane Change	SB	SB
04-021	703837900	10.214	308.009	All Other	All Other	NB	NB
01-005	602834960	10.276	308.071	Overtuned	Careless Driving	NB	
01-008	598139330	10.276	308.071	MV Ran into Ditch/Culvert	No Improper Driving	NB	
05-001	704013210	10.295	308.09	Collision with MV (Sideswipe)	Improper Lane Change	SB	SB
01-032	598168010	10.296	308.091	MV hit Tree/Shrubbery	Careless Driving		
03-010	738137980	10.296	308.091	Collision with MV (Rear End)	Careless Driving	SB	SB
02-025	706007610	10.470	308.265	Collision with MV (Sideswipe)	Improper Lane Change		NB
03-022	703810670	10.476	308.271	MV hit Tree/Shrubbery	Careless Driving	NB	
04-011	703837810	10.570	308.365	Collision with MV (Sideswipe)	All Other	SB	SB
01-015	598139820	10.632	308.427	MV hit Guardrail	Careless Driving	E	
01-016	598139800	10.651	308.446	Collision with MV (Sideswipe)	Followed Too Closely	E	E
04-009	732229170	10.670	308.465	Overtuned	Careless Driving	NB	
02-004	703835010	10.670	308.465	Collision with MV (Sideswipe)	No Improper Driving	SB	SB