Pavement Design Package

for

State Road 400 (SR 400) / Interstate 4 (I-4) BTU

From West of CR 532 (Polk/Osceola County Line) to
East of Osceola Pkwy (Osceola/Orange County Line)
(MP 0.000 to MP 7.885)

Osceola County (92310)

Financial Project ID: 431456-1-32-01

Prepared for:

(District 5)

FDOT Project Manager: Su Hao, P.E.

Submitted by:

AECOM

AECOM Technical Services, Inc.

315 East Robinson Street
Suite 245
Orlando, Florida 32801
Certificate of Authorization No. 8115

March 2018

TABLE OF CONTENTS

APPENDIX	DESCRIPTION
A	Coring Report
B	Typical Section Package
C	Straight Line Diagram
D	Traffic Projections, 18 KIP ESAL Report
E	Pavement Type Selection Report
F	Review Checklist

SECTION 1

PROJECT DESCRIPTION

SECTION 1: PROJECT DESCRIPTION

I-4 Beyond the Ultimate (BTU) is a multi-segment reconstruction project for SR 400 (I-4) in five counties within Central Florida. This project extends from East of CR 532 to East of SR 522 (Osceola Parkway). SR 400 is classified as an urban interstate within the project limits. The project maintains a 70 mph design speed for the interstate facility, while the other roads within this project have design speed set per road designation. This project is to be let by the Florida Department of Transportation (FDOT) with project (FPID: 242484-8-32-01). The I-4 Beyond the Ultimate project involves the development of concept plans to establish Right of Way needs for the build-out of I-4 to its ultimate condition within the project limits. The project will tie into, and coordinate with Project 201210-3-32-01 to the west and 242484-8-32-02 to the east.

Proposed improvements include the addition of two (2) new express lanes in each direction, making a total of ten (10) dedicated lanes. In some areas up to three 12-foot auxiliary lanes will be provided in the eastbound direction and up to two 12-foot auxiliary lanes in the westbound direction. The scope includes the reconstruction of arterial roads connecting to I-4 and adjoining ramps

Reconstruction using Flexible pavement is proposed for the corridor including the mainline General Use Lanes (GUL), Express Lanes (XL), all ramps, CD roads, major arterial connected to I-4, as well as minor streets within the project limits.

SECTION 2

PROJECT LOCATION

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

FINANCIAL PROJECT ID 4314561-52-01

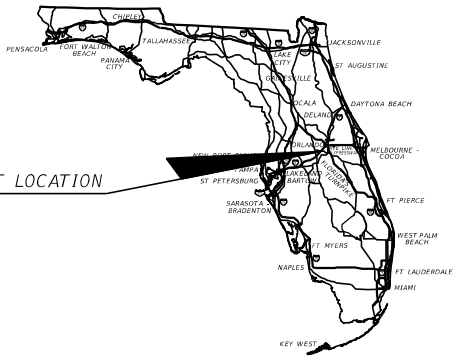
FEDERAL FUNDS

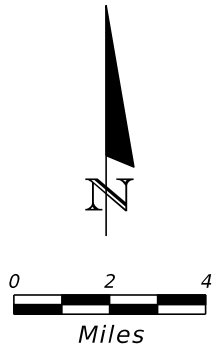
OSCEOLA COUNTY (92130)

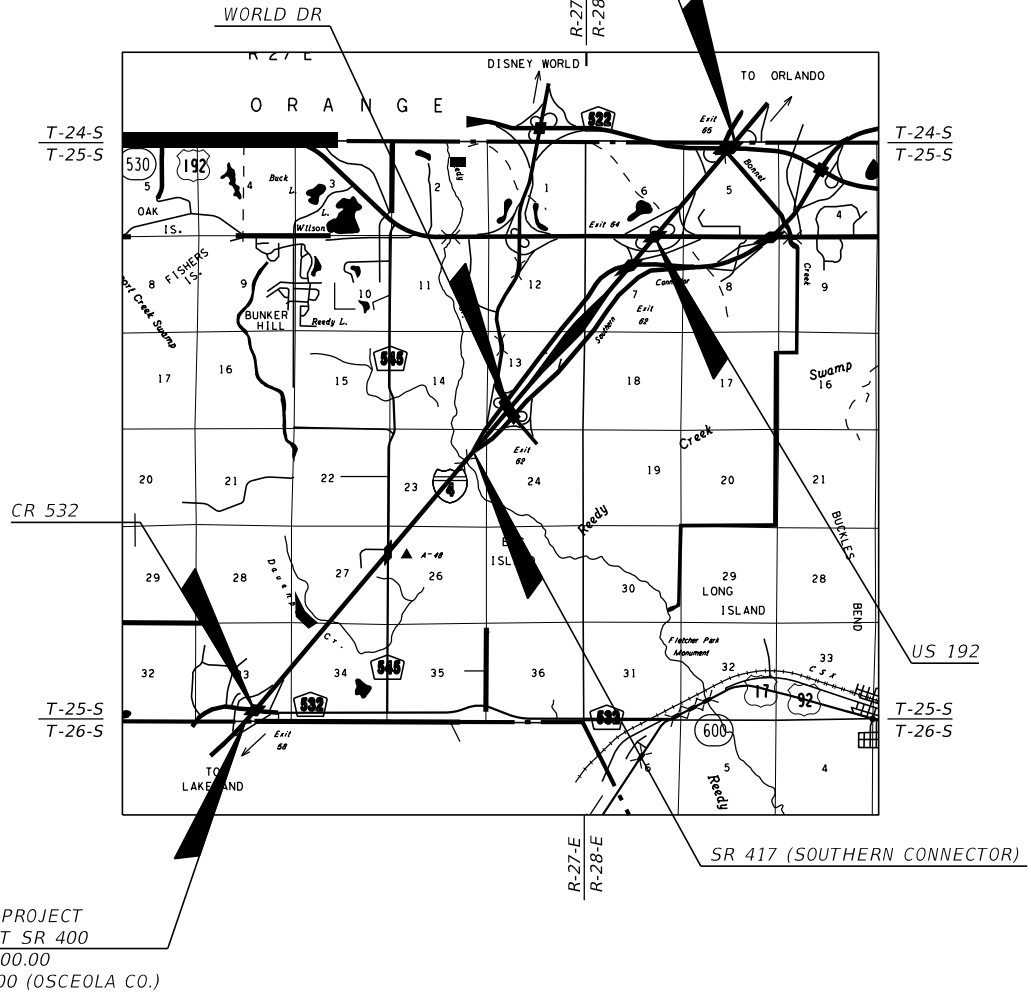
STATE ROAD NO. 400 (I-4)

I4 BEYOND THE ULTIMATE

TYPICAL SECTION PACKAGE







FDOT PROJECT MANAGER: KEVIN MOSS, P.E

SHEET 1

SECTION 3

PAVEMENT DESIGN

SECTION 3-a

LIMITED ACCESS
PAVEMENT DESIGN SUMMARY SHEETS

i. I-4 GUL Mainline & Shoulders
ii. I-4 XL Mainline & Shoulders
iii. I-4 CD Mainline & Shoulders
iva. I-4 Single Lane Ramps
ivb. I-4 Single Lane Ramps (High ESAL)
ivc. I-4 Dual Lane Ramps
ivd. I-4 Dual Lane Ramps (High ESAL)
ive. Ramps (Mill & Resurface)

SR 400 - I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **10/24/2017**

State Project No.: **431456-1-32-01**
FA No.: **3141-035-P**
State Road No.: **SR 400**
Design Speed: **70 MPH**
Opening Year: **2020**
Design Year: **2040**
ESAL's: **45,095,000** (PTSR Page 2 - Appendix E)

Project Name: **I-4 BTU**
AECOM Project No.: **12722741**
Prepared By: **GLF**
Checked By: **BL**
LBR: **25**
Mr: **8750 psi**
% R: **90%**

	SN Required:	SN Computed:
Travelway:	5.81	5.85
Shoulder:	3.46	3.54

Description: I-4 GUL Mainline and Shoulders

RECOMMENDED I-4 (SR 400) GUL NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 4" (TRAFFIC LEVEL E) (440 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL E) (220 LBS/SY)
OPTIONAL BASE GROUP 12
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 3" (TRAFFIC LEVEL C) (330 LBS/SY)
OPTIONAL BASE GROUP 05
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:

3/26/18

Garfield L. Foster, P.E. **Date:**
AECOM Technical Services, Engineer of Record

Concurrence by:

Mario Bizzio, P.E. **Date:**
FDOT D5 District Design Engineer

Approved by:

3/26/18

Lori B. Epperson, P.E. **Date:**
FDOT D5 District Pavement Design Engineer

Approved by:

Nahir DeTizio, P.E. **Date:**
FHWA Senior Transportation Engineer

i-1

SR 400 - I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32 AECOM
State Road No.: SR 400

Date Prepared: 10/24/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **I-4 GUL Mainline and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	45,095,000	(Actual)- 2040 Design Year
use	45,100,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "E," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

45,000,000		**50,000,000**		**45,100,000**		
8000 psi	5.97	8000 psi	6.06	45,000,000	5.81	
8750 psi	SNr	8750 psi	SNr	45,100,000	SNr	
9000 psi	5.76	9000 psi	5.84	50,000,000	5.90	
SN =	5.81	**SN =**	5.90	**SN_R =**	**5.81**	(Min. SN Req.)

SHOULDERS

ESAL's: 1,400,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

1,000,000		**1,500,000**		**1,400,000**		
8000 psi	3.39	8000 psi	3.62	1,000,000	3.28	
8750 psi	SNr	8750 psi	SNr	1,400,000	SNr	
9000 psi	3.24	9000 psi	3.46	1,500,000	3.50	
SN =	3.28	**SN =**	3.50	**SN_R =**	**3.46**	(Min. SN Req.)

SR 400 - I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

5.81 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

4.85 $= (a2 \times D2) + (a_3 \times D_3)$

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 12.

Structural Course: 4.85 $= (a_2 \times D_2) +$ 2.25 $a_2 = 0.44$

D_2 = 5.92 ***Use 6" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	6.00	0.44	2.64			
Base Group 12	12.50	0.18	2.25			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.85**	>	**5.81**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 1,400,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

3.46 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

2.50 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5). Use 3.0" SP

(a2 x D2)

Structural Course: 2.50 = 1.32 $(a3 \times D3)$ $a3 = 0.18$

$D3$ = 6.53 ***Use OBG 08 (9.5")***

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	3.00	0.44	1.32			
Base Group 05	7.00	0.18	1.26			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**3.54**	>	**3.46**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SR 400 XL- I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	10/24/2017
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	SR 400	Prepared By:	GLF
Design Speed:	70 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	22,547,500 (50% of GUL ESAL)*	% R:	90%

	SN Required:	SN Computed:
Travelway:	5.29	5.32
Shoulder:	3.09	3.18

Description: I-4 XL Mainline and Shoulders

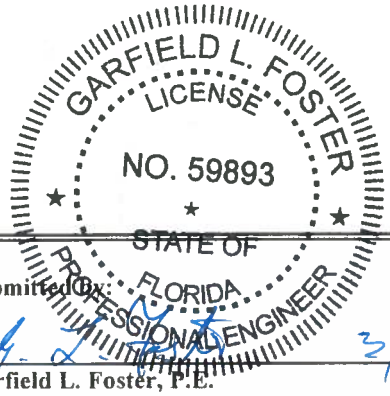
RECOMMENDED I-4 (SR 400) XL (SHOULDER) NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL D) (220 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYER
TYPE SP STRUCTURAL COURSE 3" (TRAFFIC LEVEL D) (330 LBS/SY)
OPTIONAL BASE GROUP 11
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 3" (TRAFFIC LEVEL C) (330 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)



Submitted by: 3/26/18
Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by: 3/26/18
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by: 3/26/18
Lori B. Epperson, E.I. Date:
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportaion Engineer

SR 400 XL - I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 400

Date Prepared: 10/24/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **I-4 XL Mainline and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	22,547,500	(Actual)- 2040 Design Year
use	22,600,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "D," recommended per Page 5-28 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

20,000,000		**25,000,000**		**22,600,000**		
8000 psi	5.35	8000 psi	5.52	20,000,000	5.20	
8750 psi	SNr	8750 psi	SNr	22,600,000	SNr	
9000 psi	5.15	9000 psi	5.32	25,000,000	5.37	
SN =	5.20	**SN =**	5.37	**SN_R =**	**5.29**	(Min. SN Req.)

SHOULDERS

ESAL's: 700,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

700,000		**0**		**700,000**		
8000 psi	3.20	8000 psi	0	700,000	3.09	
8750 psi	SNr	8750 psi	SNr	700,000	SNr	
9000 psi	3.05	9000 psi	0	0	0.00	
SN =	3.09	**SN =**	0.00	**SN_R =**	**3.09**	(Min. SN Req.)

SR 400 XL - I-4 BTU (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

5.29 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2015), use FC-5 (3/4") (PG 76-22)

4.33 $= (a2 \times D2) + (a_3 \times D_3)$

Table 5.5, FDOT Flexible Pavement Design Manual (2015), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 11.

Structural Course: 4.33 $= (a_2 \times D_2) +$ 2.16 $a_2 = 0.44$

D_2 = 4.93 ***Use 5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	5.00	0.44	2.20			
Base Group 11	12.00	0.18	2.16			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.32**	**>**	**5.29**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 700,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

3.09 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

2.13 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5). Use 3.0 SP

(a2 x D2)

Structural Course: 2.13 = 1.32 $+(a3 \times D3)$ $a3 = 0.18$

$D3$ = 4.49 ***Use OBG 05 (7")***

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	3.00	0.44	1.32			
Base Group 03	5.00	0.18	0.90			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**3.18**	**>**	**3.09**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

I-4 CD MAINLINE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: AECOM
Date Prepared: 8/18/2017

State Project No.: 431456-1-32-01
FA No.: 3141-035-P
State Road No.: I-4 CD ROAD
Design Speed: 60 MPH
Opening Year: 2020
Design Year: 2040
ESAL's: N/A (15% Reduced GUL SN used)*

Project Name: I-4 BTU
AECOM Project No.: 12722741
Prepared By: GLF
Checked By: BL
LBR: 25
Mr: 8750 psi
% R: 90%

*Per Section 5.6.7 of the Flexible Pavement Design Manual (2016)

	SN Required:	SN Computed:
Travelway:	4.94	4.97
Shoulder:	2.94	3.10

Description: I-4 CD Mainline Pavement and Shoulders
(Applies to WB and EB CD Roads)

RECOMMENDED I-4 CD NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL D) (220 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYER
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL D) (220 LBS/SY)
OPTIONAL BASE GROUP 12
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 05
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:
Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:
Lori B. Epperson, P.E. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportation Engineer

I-4 CD MAINLINE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: I-4 CD ROAD

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **I-4 CD Mainline Pavement and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	N/A	(Actual)- 2040 Design Year
use	N/A	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

Use Superpave Traffic Level "D," recommended per Page 5-28 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

	N/A		**N/A**		**N/A**	
8000 psi	0	8000 psi	0	N/A	0.00	
8750 psi	SNr	8750 psi	SNr	N/A	SNr	
9000 psi	0	9000 psi	0	N/A	0.00	
SN =	0.00	**SN =**	0.00	**SN_R =**	**4.94**	(Min. SN Req.)

I-4 GUL SN (15% Reduction)

SHOULDERS

ESAL's: N/A (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

	N/A		**0**		**N/A**	
8000 psi	0.00	8000 psi	0	N/A	0.00	
8750 psi	SNr	8750 psi	SNr	N/A	SNr	
9000 psi	0.00	9000 psi	0	0	0.00	
SN =	0.00	**SN =**	0.00	**SN_R =**	**2.94**	(Min. SN Req.)

I-4 GUL SN (15% Reduction)

I-4 CD MAINLINE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.94 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible

3.98 $= (a_2 \times D_2) + (a_3 \times D_3)$ Pavement Design Manual (2015), use FC-5 (3/4") (PG 76-22)

Table 5.5, FDOT Flexible Pavement Design Manual (2015), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 12.

Structural Course: 3.98 $= (a_2 \times D_2) +$ 2.25 $a_2 = 0.44$

D_2 = 3.93 ***Use 4" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	4.00	0.44	1.76			
Base Group 12	12.50	0.18	2.25			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.97**	**>**	**4.94**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 700,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

3.09 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

2.13 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

(a2 x D2)

Structural Course: 2.13 = 0.88 $+(a_3 \times D_3)$ $a_3 = 0.18$

D_3 = 6.93 ***Use OBG 05 (7")***

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 05	7.00	0.18	1.26			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**3.10**	**>**	**2.94**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: AECOM
Date Prepared: 8/18/2017

State Project No.: 431456-1-32-01
FA No.: 3141-035-P
State Road No.: N/A
Design Speed: 50 MPH
Opening Year: 2020
Design Year: 2040
ESAL's: 9,830,000 (ESAL Reports - Appendix D)

Project Name: I-4 BTU
AECOM Project No.: 12722741
Prepared By: GLF
Checked By: BL
LBR: 25
Mr: 8750 psi
% R: 90%

	SN Required:	SN Computed:
Travelway:	4.70	4.70
Shoulder:	2.68	2.83

Description: I-4 Single Lane Ramps and Shoulders
(Applies to All Single Lane Ramps except: B1_532, C1_530, C2_530 & D2_530)

RECOMMENDED SINGLE LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 4" (TRAFFIC LEVEL C) (440 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYER
OPTIONAL BASE GROUP 10
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:
Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:
Mario Bizzio, P.E. Date: 6/18
FDOT D5 District Design Engineer

Approved by:
Lori B. Epperson, E.I. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportation Engineer iva-1

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **I-4 Single Lane Ramps and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	9,830,000	(Actual)- 2040 Design Year
use	9,900,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2015).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

	9,000,000		**10,000,000**		**9,900,000**	
8000 psi	4.78	8000 psi	4.85	9,000,000	4.64	
8750 psi	SNr	8750 psi	SNr	9,900,000	SNr	
9000 psi	4.59	9000 psi	4.66	10,000,000	4.71	
SN =	4.64	**SN =**	4.71	**SN_R =**	**4.70**	(Min. SN Req.)

SHOULDERS

ESAL's: 300,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

	300,000		**0**		**300,000**	
8000 psi	2.78	8000 psi	0	300,000	2.68	
8750 psi	SNr	8750 psi	SNr	300,000	SNr	
9000 psi	2.65	9000 psi	0	0	0.00	
SN =	2.68	**SN =**	0.00	**SN_R =**	**2.68**	(Min. SN Req.)

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.70 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible

3.74 $= (a_2 \times D_2) + (a_3 \times D_3)$ Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: > 3,500 Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 10.

Structural Course: 3.74 $= (a_2 \times D_2) +$ 1.98 $a_2 = 0.44$

D_2 = 4.00 ***Use 4" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	4.00	0.44	1.76			
Base Group 10	11.00	0.18	1.98			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.70**	**>**	**4.70**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 300,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

2.68 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.72 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

Structural Course: 1.72 = 0.88 $+(a_3 \times D_3)$ $a_3 = 0.18$

D_3 = 4.68 ***Use OBG 03 (5.5")***

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 04	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.83**	**>**	**2.68**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: AECOM
Date Prepared: 3/21/2018

State Project No.: 431456-1-32-01
FA No.: 3141-035-P
State Road No.: N/A
Design Speed: 50 MPH
Opening Year: 2020
Design Year: 2040
ESAL's: 32,644,000 (ESAL Reports - Appendix D)

Project Name: I-4 BTU
AECOM Project No.: 12722741
Prepared By: GLF
Checked By: BL
LBR: 25
Mr: 8750 psi
% R: 90%

	SN Required:	SN Computed:
Travelway:	5.57	5.63
Shoulder:	3.28	3.36

Description: High ESAL I-4 Single Lane Ramps and Shoulders
(Applies to: B1_532, C1_530, C2_530 & D2_530)

RECOMMENDED HIGH ESAL SINGLE LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 3.5" (TRAFFIC LEVEL E) (385 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL E) (220 LBS/SY)
OPTIONAL BASE GROUP 12
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 3.0" (TRAFFIC LEVEL C) (330 LBS/SY)
OPTIONAL BASE GROUP 04
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:
Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:
Mario Bizzio, P.E. Date: 3/26/18
FDOT D5 District Design Engineer

Approved by:
Lori B. Epperson, P.E. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportation Engineer ivb-1

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 3/21/2018
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **High ESAL I-4 Single Lane Ramps and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	32,644,000	(Actual)- 2040 Design Year
use	32,700,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "E," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the top two structural layers per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

30,000,000		**35,000,000**			**32,700,000**	
8000 psi	5.66	8000 psi	5.78	30,000,000	5.50	
8750 psi	SNr	8750 psi	SNr	32,700,000	SNr	
9000 psi	5.45	9000 psi	5.57	35,000,000	5.62	
SN =	5.50	**SN =**	5.62	**SN_R =**	**5.57**	(Min. SN Req.)

SHOULDERS

ESAL's: 1,000,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

1,000,000		**0**			**1,000,000**	
8000 psi	3.39	8000 psi	0	1,000,000	3.28	
8750 psi	SNr	8750 psi	SNr	1,000,000	SNr	
9000 psi	3.24	9000 psi	0	0	0.00	
SN =	3.28	**SN =**	0.00	**SN_R =**	**3.28**	(Min. SN Req.)

ivb-2

SINGLE LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

5.57 = (0.00 x 0.75) + (a_2 x D_2) + (a_3 x D_3) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2015), use FC-5 (3/4") (PG 76-22)

4.61 = (a_2 x D_2) + (a_3 x D_3)

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: > 3,500 Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 12.

Structural Course: 4.61 = (a_2 x D_2) + 2.25 a_2 = 0.44

D_2 = 5.36 ***Use 5.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	5.50	0.44	2.42			
Base Group 12	12.50	0.18	2.25			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.63**	>	**5.57**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 1,000,000
Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

3.28 = (a_2 x D_2) + (a_3 x D_3) + (0.08 x 12)

2.32 = (a_2 x D_2) + (a_3 x D_3)

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

(a2 x D2)

Structural Course: 2.32 = 1.32 +(a_3 x D_3) a_3 = 0.18

D_3 = 1.00 ***Use OBG 09 (10")***

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	3.00	0.44	1.32			
Base Group 04	6.00	0.18	1.08			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**3.36**	>	**3.28**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	8/18/2016
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	N/A	Prepared By:	GLF
Design Speed:	50 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	7,476,000 (ESAL Report - Appendix D)	% R:	90%

	SN Required:	SN Computed:
Travelway:	4.51	4.52
Shoulder:	2.60	2.83

Description: I-4 Dual Lane Ramps and Shoulders
(Applies to All Dual Lane Ramps except: D1_532,C3_WD, D1_530 & A1_OP)

RECOMMENDED DUAL LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 4" (TRAFFIC LEVEL C) (440 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYER
OPTIONAL BASE GROUP 09
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by: 3/26/18
Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by: 3/26/18
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by: 3/26/18
Lori B. Epperson, P.E. Date:
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportation Engineer

ivc-1

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 8/18/2016
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **I-4 Dual Lane Ramps and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	7,476,000	(Actual)- 2040 Design Year
use	7,500,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

	7,000,000		**8,000,000**		**7,500,000**		
8000 psi	4.61	8000 psi	4.7	7,000,000	4.47		
8750 psi	SNr	8750 psi	SNr	7,500,000	SNr		
9000 psi	4.42	9000 psi	4.51	8,000,000	4.56		
SN =	4.47	**SN =**	4.56	**SN_R =**	**4.51**	(Min. SN Req.)	

SHOULDERS

ESAL's: 250,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

	250,000		**0**		**250,000**		
8000 psi	2.69	8000 psi	0	250,000	2.60		
8750 psi	SNr	8750 psi	SNr	250,000	SNr		
9000 psi	2.57	9000 psi	0	0	0.00		
SN =	2.60	**SN =**	0.00	**SN_R =**	**2.60**	(Min. SN Req.)	

ivc-2

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.51 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

3.55 $= (a_2 \times D_2) + (a_3 \times D_3)$

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: > 3,500 Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 9.

Structural Course: 3.55 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 3.98 ***Use 4" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	4.00	0.44	1.76			
Base Group 09	10.00	0.18	1.80			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.52**	>	**4.51**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 250,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

2.60 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.64 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

Structural Course: 1.64 = 0.66 $+(a_3 \times D_3)$ $a_3 = 0.18$

D_3 = 5.44 ***Use OBG 03 (5.5")***

Use 2" for Structural Course

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 03	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.83**	>	**2.60**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	3/21/2018
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	N/A	Prepared By:	GLF
Design Speed:	50 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	34,126,000 (ESAL Report - Appendix D)	% R:	90%

	SN Required:	SN Computed:
Travelway:	5.60	5.63
Shoulder:	3.32	3.36

Description: High ESAL I-4 Dual Lane Ramps and Shoulders
(Applies to: D1_532, C3_WD, D1_530 & A1_OP)

RECOMMENDED HIGH ESAL DUAL LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 3.5" (TRAFFIC LEVEL E) (385 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL E) (220 LBS/SY)
OPTIONAL BASE GROUP 12
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 3" (TRAFFIC LEVEL C) (330 LBS/SY)
OPTIONAL BASE GROUP 04
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:
Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:
Lori B. Epperson, P.E. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

Approved by:
Nahir DeTizio, P.E. Date:
FHWA Senior Transportation Engineer ivd-1

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 3/21/2018
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **High ESAL I-4 Dual Lane Ramps and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	34,126,000	(Actual)- 2040 Design Year
use	34,200,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "E," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

	30,000,000		**35,000,000**		**34,200,000**		
8000 psi	5.66	8000 psi	5.78	30,000,000	5.50		
8750 psi	SNr	8750 psi	SNr	34,200,000	SNr		
9000 psi	5.45	9000 psi	5.57	35,000,000	5.62		
SN =	5.50	**SN =**	5.62	**SN_R =**	**5.60**	(Min. SN Req.)	

SHOULDERS

ESAL's: 1,100,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

	1,000,000		**1,500,000**		**1,100,000**		
8000 psi	3.39	8000 psi	3.62	1,000,000	3.28		
8750 psi	SNr	8750 psi	SNr	1,100,000	SNr		
9000 psi	3.24	9000 psi	3.46	1,500,000	3.50		
SN =	3.28	**SN =**	3.50	**SN_R =**	**3.32**	(Min. SN Req.)	

ivd-2

DUAL LANE RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

5.60 = (0.00 x 0.75) + ($a_2 \times D_2$) + ($a_3 \times D_3$) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

4.64 = ($a_2 \times D_2$) + ($a_3 \times D_3$)

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: > 3,500 Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 12.

0

Structural Course: 4.64 = ($a_2 \times D_2$) + 2.25 $a_2 = 0.44$

D_2 = 5.44 ***Use 5.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	5.50	0.44	2.42			
Base Group 12	12.50	0.18	2.25			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.63**	>	**5.60**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 1,100,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

3.32 = ($a_2 \times D_2$) + ($a_3 \times D_3$) + (0.08 x 12)

2.36 = ($a_2 \times D_2$) + ($a_3 \times D_3$)

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

Structural Course: 2.36 = 1.32 +($a_3 \times D_3$) $a_3 = 0.18$

D_3 = 5.79 ***Use OBG 09 (10")***

Use 2" for Structural Course

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	3.00	0.44	1.32			
Base Group 04	6.00	0.18	1.08			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**3.36**	>	**3.32**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

EXISTING RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	10/24/2017
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	N/A	Prepared By:	GLF
Design Speed:	50 MPH	Checked By:	BL
Opening Year:	2020	LBR	N/A
Design Year:	2040	Mr:	N/A
ESAL's:	N/A	% R:	N/A

	SN Existing:	SN Computed:
Travelway:	N/A	N/A
Shoulder:	N/A	N/A

Description: Existing Ramps Mill and Resurface (for existing ramps to remain)
Mill existing pavement for final striping and uniformity with adjacent new construction.

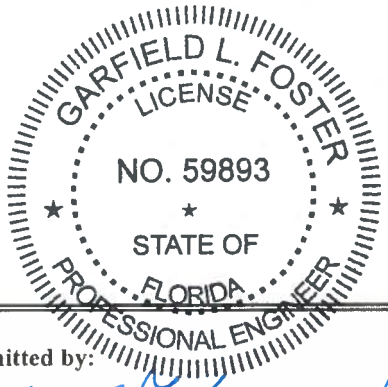
RECOMMENDED EXISTING RAMP MILL AND RESURFACE DESIGN

MAINLINE

MILL 2 1/4"
RESURFACE WITH:
FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)

SHOULDERS

MILL 1.5"
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)



Submitted by:

G. L. Foster 3/26/18

Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by:

3/26/18

Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:

Lori B. Epperson 3/26/18

Lori B. Epperson, E.I. Date:
FDOT D5 District Pavement Design Engineer

ive-1

EXISTING RAMPS - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 10/24/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project] 12722741

Description: **Existing Ramps Mill and Resurface (for existing ramps to remain)**

A. DESIGN FACTORS

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

	2020	Opening Year
ESAL's	N/A	(Actual)- 2040 Design Year
use	N/A	(Rounded)
LBR	N/A	Provided in Geotechnical Engineer's Report
Mr(psi) =	N/A	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	N/A	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

C. EXISTING STRUCTURE:

USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Friction Course (FC-5)	0.00	Good	0.00	0.00
Type 'S/SP'	0.00	Good	0.34	0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	Good	0.18	0.00
Stabilization (LBR 40)	0.00	-	0.08	0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

7,000,000		**8,000,000**			**N/A**	
8000 psi	0	8000 psi	0	7,000,000	0.00	
	SNr	0 psi	SNr	N/A	SNr	
9000 psi	0	9000 psi	0	8,000,000	0.00	
SN =	0	**SN =**	0.00	**SN_R =**	**N/A**	(Min. SN Req.)

SHOULDERS

ESAL's: 250,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

250,000		**0**			**250,000**	
8000 psi	0	8000 psi	0	250,000	0.00	
0 psi	SNr	0 psi	SNr	0	SNr	
9000 psi	0	9000 psi	0	0	0.00	
SN =	0	**SN =**	0.00	**SN_R =**	**N/A**	(Min. SN Req.)

ive-2

SECTION 3-b

INTERCHANGES (MAJOR CROSS STREETS)
PAVEMENT DESIGN SUMMARY SHEETS

i. CR 532
iia. SR 429 (Widening)
iib. SR 429 (Mill & Resurface)
iii. World Drive
iv. SR 530 (US 192)
va. SR 417
vb. SR 417 (Mill & Resurface)
vi. Osceola Parkway

CR 532 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **8/18/2017**

State Project No.: **431456-1-32-01**
FA No.: **3141-035-P**
State Road No.: **N/A**
Design Speed: **45 MPH**
Opening Year: **2020**
Design Year: **2040**
ESAL's: **22,732,000** (ESAL Report - Appendix D)

Project Name: **I-4 BTU**
AECOM Project No.: **12722741**
Prepared By: **GLF**
Checked By: **BL**
LBR **25**
Mr: **8750 psi**
% R: **90%**

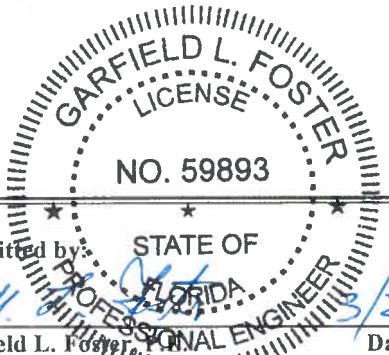
	SN Required:	SN Computed:
Travelway:	**5.30**	**5.32**

Description: CR 532 Mainline Pavement

RECOMMENDED CR 532 NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL D) (165 LBS/SY) WITH MODIFIED ASPHALT BINDER PG 76-22
TYPE SP STRUCTURAL COURSE 3.5" (TRAFFIC LEVEL D) (385 LBS/SY)
OPTIONAL BASE GROUP 11
12" TYPE B STABILIZATION (LBR 40)



Submitted by:

3/26/18

Garfield L. Foster, P.E. **Date:**
AECOM Technical Services, Engineer of Record

Concurrence by:

3/26/18

Mario Bizzio, P.E. **Date:**
FDOT D5 District Design Engineer

Approved by:

3/26/18

Lori B. Epperson, E.I. **Date:**
FDOT D5 District Pavement Design Engineer

CR 532 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **CR 532 Mainline Pavement**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	22,732,000	(Actual)- 2040 Design Year
use	22,800,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

Use Superpave Traffic Level "D," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
Recommend using modified asphalt binder PG 76-22 in the final structural layer per Section 5.6.6 of the FDOT Flexible Pavement Design Manual (2016).

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

20,000,000		**25,000,000**		**22,800,000**		
8000 psi	5.35	8000 psi	5.52	20,000,000	5.20	
8750 psi	SNr	8750 psi	SNr	22,800,000	SNr	
9000 psi	5.15	9000 psi	5.32	25,000,000	5.37	
SN =	5.20	**SN =**	5.37	**SN_R =**	**5.30**	(Min. SN Req.)

CR 532 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

5.30 = (0.44 x 1.5) SR 536 — From Page 4.1.0 and Table 4.1 of the FDOT Flexible

3.68 = $(a_2 \times D_2) + (a_3 \times D_3)$ — Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new >3.5M ESAL construction: Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 11.

0

Structural Course: 3.68 = $(a_2 \times D_2)$ + 2.16 $a_2 = 0.44$

D_2 = 3.44 ***Use 3.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Type SP Structural Course	3.50	0.44	1.54			
Base Group 11	12.00	0.18	2.16			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.32**	**>**	**5.30**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2015).

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **8/18/2017**

State Project No.: **431456-1-32-01**
FA No.: **3141-035-P**
State Road No.: **SR 429**
Design Speed: **70 MPH**
Opening Year: **2020**
Design Year: **2040**
ESAL's: **6,744,000** (ESAL Report - Appendix D)

Project Name: **I-4 BTU**
AECOM Project No.: **12722741**
Prepared By: **GLF**
Checked By: **BL**
LBR **25**
Mr: **8750 psi**
% R: **90%**

	SN Required:	SN Computed:
Travelway:	**4.45**	**5.19**
Shoulder:	**2.60**	**2.83**

Description: SR 429 Mainline and Shoulders (Widening)

RECOMMENDED SR 429 WIDENING PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 4.5" (TRAFFIC LEVEL C) (495 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS
OPTIONAL BASE GROUP 12
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:

Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:

Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:

Lori B. Epperson, E.I. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 429

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **SR 429 Mainline and Shoulders (Widening)**

A. DESIGN FACTORS

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

	2020	Openging Year
ESAL's	6,744,000	(Actual)- 2040 Design Year
use	6,800,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Friction Course (FC-5)	0.90	Fair	0.00	0.00
Type 'S	4.35	Fair	0.25	1.09
Type 'I'	0.00	-		0.00
LimeRock Base	12.90	Fair	0.18	2.32
Stabilization (LBR 40)	12.00	-	0.08	0.96
		TOTAL SN_e =		**4.37**

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

6,000,000		**7,000,000**		**6,800,000**		
8000 psi	4.5	8000 psi	4.61	6,000,000	4.37	
8750 psi	SNr	8750 psi	SNr	6,800,000	SNr	
9000 psi	4.32	9000 psi	4.42	7,000,000	4.47	
SN =	4.37	**SN =**	4.47	**SN_R =**	**4.45**	(Min. SN Req.)

SHOULDERS

ESAL's: 250,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

250,000		**0**		**250,000**		
8000 psi	2.69	8000 psi		250,000	2.60	
8750 psi	SNr	8750 psi	SNr	250,000	SNr	
9000 psi	2.57	9000 psi		0	0.00	
SN =	2.60	**SN =**	0.00	**SN_R =**	**2.60**	(Min. SN Req.)

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR WIDENING

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.45 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

3.49 $= (a_2 \times D_2) + (a_3 \times D_3)$

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 9**

Structural Course: 3.49 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 3.83 ***Use 4.5" Structural Course to match adjacent pavement***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course **	4.50	0.44	1.98			
Base Group 12 **	12.50	0.18	2.25			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**5.19**	**>**	**4.45**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS

**Increased Pavement and OBG Depth to match adjacent pavement. See Coring Report (Appendix A)

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 250,000

Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

2.60 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.64 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2015), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1" & Min OBG = 1, Table 5.5).

Structural Course: 1.64 $= (a_3 \times D_3) = 0.66 + (a_3 \times D_3)$ $a_3 = 0.18$

D_3 = 5.44 ***Use OBG 03 (5.5")***

Use 2" Structural Course

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 03	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.83**	**>**	**2.60**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **10/24/2017**

State Project No.: **431456-1-32-01**
FA No.: **3141-035-P**
State Road No.: **SR 429**
Design Speed: **70 MPH**
Opening Year: **2020**
Design Year: **2040**
ESAL's: **6,744,000** (ESAL Report - Appendix D)

Project Name: **I-4 BTU**
AECOM Project No.: **12722741**
Prepared By: **GLF**
Checked By: **BL**
LBR **25**
Mr: **8750 psi**
% R: **95%**

	SN Required:	SN Computed:
SB Travelway:	**4.71**	**4.92**
NB Travelway:	**4.71**	**4.71**
Shoulder:	**N/A**	**N/A**

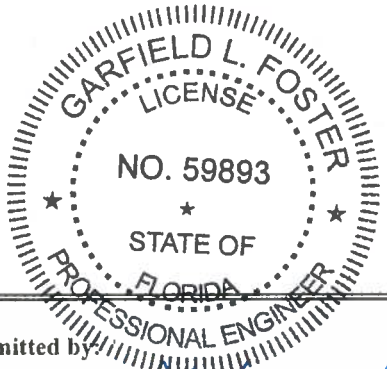
Description: SR 429 Mainline Mill and Resurface
Mill existing pavement for final striping and uniformity with adjacent new construction.

RECOMMENDED SR 429 MILLING AND RESURFACING PAVEMENT DESIGN

MAINLINE

MILL 2.25"
RESURFACE WITH:
FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTUREAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)

SHOULDERS
MILL 1.5"
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
(FOR UNIFORMITY WITH MAINLINE)



Submitted by:

3/26/18

Garfield L. Foster, P.E. **Date:**
AECOM Technical Services, Engineer of Record

Concurrence by:

3/26/18

Mario Bizzio, P.E. **Date:**
FDOT D5 District Design Engineer

Approved by:

3/26/18

Lori B. Epperson, E.I. **Date:**
FDOT D5 District Pavement Design Engineer

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 429

Date Prepared: 10/24/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **SR 429 Mainline Mill and Resurface**

A. DESIGN FACTORS

	2020	Opening Year
ESAL's	6,744,000	(Actual)- 2040 Design Year
use	6,800,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual, Table 5.1 (2016)
% R =	95%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

SB SR 429

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Friction Course (FC-5)	0.80	Good	0.00	0.00
Type 'S/SP'	4.00	Good	0.34	1.36
Type 'I'	0.00	-		0.00
LimeRock Base	13.50	Good	0.18	2.43
Stabilization (LBR 40)	12.00	-	0.08	0.96
		TOTAL SN_e =		**4.75**

NB SR 429

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Friction Course (FC-5)	1.00	Fair	0.00	0.00
Type 'S/SP'	4.70	Fair	0.25	1.18
Type 'I'	0.00	-		0.00
LimeRock Base	12.30	Fair	0.18	2.21
Stabilization (LBR 40)	12.00	-	0.08	0.96
		TOTAL SN_e =		**4.35**

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

MILL AND RESURFACE

6,000,000		**7,000,000**		**6,800,000**		
8000 psi	4.76	8000 psi	4.87	6,000,000	4.62	
8750 psi	SNr	8750 psi	SNr	6,800,000	SNr	
9000 psi	4.57	9000 psi	4.68	7,000,000	4.73	
SN =	4.62	**SN =**	4.73	**SN_R =**	**4.71**	(Min. SN Req.)

SR 429 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR RESURFACING

SB SR 429

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.71 = (a1 x D1) + (0.34 x 2.55) + (0.18 x 13.50) + (0.08 x 12.00)

3.75 = (a1 x D1)

From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (0.75") (PG 76-22)

SNe is higher than SNr and only 1" SPC required, however, in order to be consistent, mill existing pavement 1.75" and replace with 0.75" of FC-5 and 1.5" of SPC.

Structural Course: 3.75 = (a1 x D1) a1 = 0.44

D1 = 1.02 ***Use 1.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	1.5	0.44	0.66			
Type S/SP Struct. Course (exist. after mill)	2.55	0.34	0.87			
Base Group (existing)	13.50	0.18	2.43			
Stabilization (LBR 40) (existing)	12.00	0.08	0.96			
		Total SNc =	**4.92**	**>**	**4.71**	**O.K.**

Thicknesses shown are from cores taken on SR 429 in Coring Memo (Appendix A)

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

NB SR 429

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.71 = (a1 x D1) + (0.25 x 3.50) + (0.18 x 12.30) + (0.08 x 12.00)

3.75 = (a1 x D1)

From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (0.75") (PG 76-22)

SNe is lower than SNr, therefore, mill existing pavement 1.75" and replace with 0.75" of FC-5 and 1.5" of SPC.

Structural Course: 3.75 = (a1 x D1) a1 = 0.44

D1 = 1.49 ***Use 1.5" Structural Course***

NB SR 429	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	1.5	0.44	0.66			
Type S/SP Struct. Course (exist. after mill)	3.50	0.25	0.88			
Base Group (existing)	12.30	0.18	2.21			
Stabilization (LBR 40) (existing)	12.00	0.08	0.96			
		Total SNc =	**4.71**	**=**	**4.71**	**O.K.**

Thicknesses shown are from cores taken on SR 429 in Coring Memo (Appendix A)

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

WORLD DRIVE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	3/21/2018
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	N/A	Prepared By:	GLF
Design Speed:	40 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	3,633,000 (ESAL Report - Appendix D)	% R:	90%

	SN Required:	SN Computed:
Travelway:	4.05	4.08
Shoulder:	2.39	2.61

Description: World Drive Mainline Pavement and Shoulders

RECOMMENDED WORLD DRIVE NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
OPTIONAL BASE GROUP 09
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:

Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:

Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:

Lori B. Epperson, P.E. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

WORLD DRIVE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32 AECOM
State Road No.: N/A

Date Prepared: 3/21/2018
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **World Drive Mainline Pavement and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	3,633,000	(Actual)- 2040 Design Year
use	3,700,000	(Rounded)
LBR		Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

3,500,000		**4,000,000**		**3,700,000**		
8000 psi	4.14	8000 psi	4.23	3,500,000	4.01	
8750 psi	SNr	8750 psi	SNr	3,700,000	SNr	
9000 psi	3.97	9000 psi	4.06	4,000,000	4.10	
SN =	4.01	**SN =**	4.10	**SN_R =**	**4.05**	(Min. SN Req.)

SHOULDERS

ESAL's: 150,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

150,000		**0**		**150,000**		
8000 psi	2.47	8000 psi		150,000	2.39	
8750 psi	SNr	8750 psi	SNr	150,000	SNr	
9000 psi	2.36	9000 psi		0	0.00	
SN =	2.39	**SN =**	0.00	**SN_R =**	**2.39**	(Min. SN Req.)

WORLD DRIVE - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.05 $= (0.44 \times 1.5) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible
2.43 $= (a2 \times D2) + (a_3 \times D_3)$ Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for >3.5M ESAL construction: Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 9.

0

Structural Course: 2.43 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 1.43 ***Use 1.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Type SP Structural Course	1.50	0.44	0.66			
Base Group 9	10.00	0.18	1.80			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.08**	>	**4.05**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 150,000
Use Superpave Traffic Level "B," Recommended for use on all Arterial Shoulders.

2.39 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$
1.43 $= (a_2 \times D_2) + (a_3 \times D_3)$ `

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Shoulder Min Structural Course = 1" & Min OBG = 1, Table 5.5).

Structural Course: 1.43 = 0.44 $+(a3 \times D3)$ $a3 = 0.18$

$D3$ = 5.49 ***Use OBG 03 (5.5")***

Use Friction Course (FC-12.5) 1.5" to match Mainline

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Base Group 03	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.61**	>	**2.39**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SR 530 (US 192) - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **3/21/2018**

State Project No.: **431456-1-32-01**
FA No.: **3141-035-P**
State Road No.: **SR 530 (US 192)**
Design Speed: **50 MPH**
Opening Year: **2020**
Design Year: **2040**
ESAL's: **3,854,000** (ESAL Report - Appendix D)

Project Name: **I-4 BTU**
AECOM Project No.: **12722741**
Prepared By: **GLF**
Checked By: **BL**
LBR **25**
Mr: **8750 psi**
% R: **90%**

	SN Required:	SN Computed:
Travelway:	**4.08**	**4.26**
Shoulder:	**2.39**	**2.61**

Description: SR 530 (US 192) Mainline and Shoulders

RECOMMENDED SR 530 (US 192) NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 3" (TRAFFIC LEVEL C) (330 LBS/SY)
OPTIONAL BASE GROUP 10
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:
Garfield L. Foster, P.E. **Date:** 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:
Mario Bizzio, P.E. **Date:** 3/28/18
FDOT D5 District Design Engineer

Approved by:
Lori B. Epperson, E.I. **Date:** 3/26/18
FDOT D5 District Pavement Design Engineer

v-1

SR 530 (US 192) - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 530 (US 192)

Date Prepared: 3/21/2018
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **SR 530 (US 192) Mainline and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	3,854,000	(Actual)- 2040 Design Year
use	3,900,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

3,500,000		**4,000,000**		**3,900,000**		
8000 psi	4.14	8000 psi	4.23	3,500,000	4.01	
8750 psi	SNr	8750 psi	SNr	3,900,000	SNr	
9000 psi	3.97	9000 psi	4.06	4,000,000	4.10	
SN =	4.01	**SN =**	4.10	**SN_R =**	**4.08**	(Min. SN Req.)

SHOULDERS

ESAL's: 150,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

150,000		**0**		**150,000**		
8000 psi	2.47	8000 psi		150,000	2.39	
8750 psi	SNr	8750 psi	SNr	150,000	SNr	
9000 psi	2.36	9000 psi		0	0.00	
SN =	2.39	**SN =**	0.00	**SN_R =**	**2.39**	(Min. SN Req.)

SR 530 (US 192) - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.08 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-5 (3/4") (PG 76-22)

3.12 $= (a2 \times D2) + (a_3 \times D_3)$

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for >3.5M ESAL construction: Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 10.

Structural Course: 3.12 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 3.01 ***Use 3.25" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	3.00	0.44	1.32			
Base Group 10	11.00	0.18	1.98			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.26**	>	**4.08**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 150,000
Use Superpave Traffic Level "B," Recommended for use on all Arterial Shoulders.

2.39 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.43 $= (a_2 \times D_2) + (a_3 \times D_3)$ `

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Shoulder Min Structural Course = 1" & Min OBG = 1, Table 5.5).

Structural Course: 1.43 = 0.44 $+(a3 \times D3)$ $a3 = 0.18$

$D3$ = 5.49 ***Use OBG 03 (5.5")***

Use 1.5" Structural Course

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	1.50	0.44	0.66			
Base Group 03	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.61**	>	**2.39**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2015).

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: **AECOM**

Date Prepared: **8/18/2017**

State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	SR 417	Prepared By:	GLF
Design Speed:	55 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	7,476,000 (ESAL Report - Appendix D)	% R:	90%

	SN Required:	SN Computed:
Travelway:	4.51	4.52
Shoulder:	2.60	2.83

Description: SR 417 Mainline and Shoulders

RECOMMENDED SR 417 NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 4" (TRAFFIC LEVEL C) (440 LBS/SY)
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS
OPTIONAL BASE GROUP 09
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 03
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:

Garfield L. Foster, P.E. Date: 3/26/18
AECOM Technical Services, Engineer of Record

Concurrence by:

Mario Bizzio, P.E. Date: 3/26/18
FDOT D5 District Design Engineer

Approved by:

Lori B. Epperson, P.E. Date: 3/26/18
FDOT D5 District Pavement Design Engineer

iva-1

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 417

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **SR 417 Mainline and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	7,476,000	(Actual)- 2040 Design Year
use	7,500,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

7,000,000		**8,000,000**		**7,500,000**		
8000 psi	4.61	8000 psi	4.7	7,000,000	4.47	
8750 psi	SNr	8750 psi	SNr	7,500,000	SNr	
9000 psi	4.42	9000 psi	4.51	8,000,000	4.56	
SN =	4.47	**SN =**	4.56	**SN_R =**	**4.51**	(Min. SN Req.)

SHOULDERS

ESAL's: 250,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

250,000		**0**		**250,000**		
8000 psi	2.69	8000 psi		250,000	2.60	
8750 psi	SNr	8750 psi	SNr	250,000	SNr	
9000 psi	2.57	9000 psi		0	0.00	
SN =	2.60	**SN =**	0.00	**SN_R =**	**2.60**	(Min. SN Req.)

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.51 $= (0.00 \times 0.75) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible

3.55 $= (a_2 \times D_2) + (a_3 \times D_3)$ Pavement Design Manual (2015), use FC-5 (3/4") (PG 76-22)

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 9.

0

Structural Course: 3.55 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 3.98 ***Use 4" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	4.00	0.44	1.76			
Base Group 09	10.00	0.18	1.80			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.52**	**>**	**4.51**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).
USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 250,000
Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

2.60 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.64 $= (a_2 \times D_2) + (a_3 \times D_3)$

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

(a2 x D2)

Structural Course: 1.64 = 0.66 $+(a_3 \times D_3)$ $a_3 = 0.18$

D_3 = 5.44 ***Use OBG 03 (5.5")***

Use 2" Structural Course

	Thickness (in.)	Coefficient *	SNc			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 03	5.50	0.18	0.99			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.83**	**>**	**2.60**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: AECOM
Date Prepared: 3/21/2018

State Project No.: 431456-1-32-01
FA No.: 3141-035-P
State Road No.: SR 417
Design Speed: 55 MPH
Opening Year: 2020
Design Year: 2040
ESAL's: 7,476,000 (ESAL Report - Appendix D)

Project Name: I-4 BTU
AECOM Project No.: 12722741
Prepared By: GLF
Checked By: BL
LBR: 25
Mr: N/A
% R: 90%

	SN Existing:	SN Computed:
Travelway:	3.90	4.12
Shoulder:	N/A	N/A

Description: SR 417 Mainline and Shoulder Mill and Resurface
Mill existing pavement for final striping and uniformity with adjacent new construction- Exsiting ramps A1_417 and B1_417 to remain)

RECOMMENDED SR 417 MILLING AND RESURFACING PAVEMENT DESIGN

MAINLINE

MILL 2.25"
RESURFACE WITH:
FRICTION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)

SHOULDERS

MILL 1.5"
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
(FOR UNIFORMITY WITH MAINLINE)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by: 3/26/18
Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by: 3/26/18
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by: 3/26/18
Lori B. Epperson, P.E. Date:
FDOT D5 District Pavement Design Engineer

ivb-1

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: SR 417

Date Prepared: 10/24/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project No.: 12722741

Description: **SR 417 Mainline and Shoulder Mill and Resurface**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	7,476,000	(Actual)- 2040 Design Year
use	7,500,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	N/A	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809$ =

M_R =

C. EXISTING STRUCTURE:

USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYERS

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
Friction Course (FC-5)	0.95	Good	0.00	0.00
Type 'S/SP'	3.40	Good	0.34	1.16
Type 'I'	0.00	-		0.00
LimeRock Base	9.90	Good	0.18	1.78
Stabilization (LBR 40)	12.00	-	0.08	0.96
		TOTAL SN_e =		**3.90**

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

7,000,000		**8,000,000**		**7,500,000**		
8000 psi	0	8000 psi	0	7,000,000	0.00	
	SNr	0 psi	SNr	7,500,000	SNr	
9000 psi	0	9000 psi	0	8,000,000	0.00	
SN =	0	**SN =**	0.00	**SN_R =**	**N/A**	(Min. SN Req.)

SHOULDERS

ESAL's: 250,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

250,000		**0**		**250,000**		
8000 psi	0	8000 psi	0	250,000	0.00	
0 psi	SNr	0 psi	SNr	0	SNr	
9000 psi	0	9000 psi	0	0	0.00	
SN =	0	**SN =**	0.00	**SN_R =**	**N/A**	(Min. SN Req.)

ivb-2

SR 417 - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

Mill existing pavement 1.75" and replace with 0.75" of FC-5 and 1.5" of SPC for final striping and uniformity with adjacent new construction.

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-5)	0.75	0.00	0.00			
Type SP Structural Course	1.5	0.44	0.66			
Type S/SP Struct. Course (exist. after mill)	2.10	0.34	0.71			
Base Group (existing)	9.90	0.18	1.78			
Stabilization (LBR 40) (existing)	12.00	0.08	0.96			
		Total SNc =	**4.12**	>	**3.90**	**O.K.**

*Coefficients are taken from Tables 5.4 and 7.1 of the FDOT Flexible Pavement Design Manual (2016).

OSCEOLA PKWY - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By: AECOM
Date Prepared: 3/21/2018

State Project No.: 431456-1-32-01
FA No.: 3141-035-P
State Road No.: N/A
Design Speed: 45 MPH
Opening Year: 2020
Design Year: 2040
ESAL's: 5,187,000 (ESAL Report - Appendix D)

Project Name: I-4 BTU
AECOM Project No.: 12722741
Prepared By: GLF
Checked By: BL
LBR: 25
Mr: 8750 psi
% R: 90%

	SN Required:	SN Computed:
Travelway:	4.27	4.30
Shoulder:	2.51	2.52

Description: Osceola Pkwy Mainline Pavement and Shoulders

RECOMMENDED OSCEOLA PKWY NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)
OPTIONAL BASE GROUP 09
12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
OPTIONAL BASE GROUP 02
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by: 3/26/18
Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by: 3/26/18
Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by: 3/26/18
Lori B. Epperson, P.E. Date:
FDOT D5 District Pavement Design Engineer

OSCEOLA PKWY - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32 AECOM
State Road No.: N/A

Date Prepared: 3/21/2018
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project N 12722741

Description: **Osceola Pkwy Mainline Pavement and Shoulders**

A. DESIGN FACTORS

	2020	Openging Year
ESAL's	5,187,000	(Actual)- 2040 Design Year
use	5,200,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	Thickness	Condition	Coefficient *	SN_e
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

	5,000,000		**6,000,000**		**5,200,000**		
8000 psi	4.38	8000 psi	4.5	5,000,000	4.25		
8750 psi	SNr	8750 psi	SNr	5,200,000	SNr		
9000 psi	4.2	9000 psi	4.32	6,000,000	4.37		
SN =	4.25	**SN =**	4.37	**SN_R =**	**4.27**	(Min. SN Req.)	

SHOULDERS

ESAL's: 200,000 (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016).

	200,000		**0**		**200,000**		
8000 psi	2.60	8000 psi		200,000	2.51		
8750 psi	SNr	8750 psi	SNr	200,000	SNr		
9000 psi	2.48	9000 psi		0	0.00		
SN =	2.51	**SN =**	0.00	**SN_R =**	**2.51**	(Min. SN Req.)	

OSCEOLA PKWY - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.27 $= (0.44 \times 1.5) + (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$ From Page 4.1.0 and Table 4.1 of the FDOT Flexible

2.65 $= (a2 \times D2) + (a_3 \times D_3)$ Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for >3.5M ESAL construction: Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 9.

Structural Course: 2.65 $= (a_2 \times D_2) +$ 1.8 $a_2 = 0.44$

D_2 = 1.93 ***Use 2" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Type SP Structural Course	2.00	0.44	0.88			
Base Group 09	10.00	0.18	1.80			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.30**	>	**4.27**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

ESAL's = 200,000
Use Superpave Traffic Level "B," Recommended for use on all Arterials.

2.51 $= (a_2 \times D_2) + (a_3 \times D_3) + (0.08 \times 12)$

1.55 $= (a_2 \times D_2) + (a_3 \times D_3)$ `

From Table 5.9 of the FDOT Flexible Pavement Design Manual (2016), thickness for Structural Course and Base Group Number were determined (Limited Access Shoulder Min Structural Course = 1.5" & Min OBG = 1, Table 5.5).

(a2 x D2)

Structural Course: 1.55 = 0.66 $+(a3 \times D3)$ $a3 = 0.18$

D3 = 4.94 ***Use OBG 02 (5")***

Use Friction Course (FC-12.5) 1.5" to match Mainline

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Base Group 02	5.00	0.18	0.90			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**2.52**	>	**2.51**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2015).

SECTION 3-c

MINOR CROSS STREEETS
PAVEMENT DESIGN SUMMARY SHEETS

i. Old Lake Wilson Rd

OLD LAKE WILSON - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared By:	AECOM	Date Prepared:	8/18/2017
State Project No.:	431456-1-32-01	Project Name:	I-4 BTU
FA No.:	3141-035-P	AECOM Project No.:	12722741
State Road No.:	N/A	Prepared By:	GLF
Design Speed:	45 MPH	Checked By:	BL
Opening Year:	2020	LBR	25
Design Year:	2040	Mr:	8750 psi
ESAL's:	3,633,000 (ESAL Report - Appendix D)*	% R:	90%

*ESAL for Old Lake Wilson Rd was not requested
World Drive ESAL was used.

	SN Required:	SN Computed:
Travelway:	4.05	4.08

Description: Old Lake Wilson Mainline Pavement

RECOMMENDED OLD LAKE WILSON NEW CONSTRUCTION PAVEMENT DESIGN

MAINLINE

FRICTION COURSE (FC-12.5) 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)
OPTIONAL BASE GROUP 09
12" TYPE B STABILIZATION (LBR 40)

GARFIELD L. FOSTER LICENSE NO. 59893 STATE OF FLORIDA PROFESSIONAL ENGINEER

Submitted by:

3/26/18

Garfield L. Foster, P.E. Date:
AECOM Technical Services, Engineer of Record

Concurrence by:

Mario Bizzio, P.E. Date:
FDOT D5 District Design Engineer

Approved by:

3/26/18

Lori B. Epperson, P.E. Date:
FDOT D5 District Pavement Design Engineer

OLD LAKE WILSON - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

State Project No.: 431456-1-32-01
State Road No.: N/A

Date Prepared: 8/18/2017
Calculated By: GLF
Project Name: I-4 BTU
AECOM Project I 12722741

Description: **Old Lake Wilson Mainline Pavement**

A. DESIGN FACTORS

	2020	Openging Year
*ESAL's	3,633,000	(Actual)- 2040 Design Year
use	3,700,000	(Rounded)
LBR	25	Provided in Geotechnical Engineer's Report
Mr(psi) =	8,750	Flexible Pavement Design Manual,Table 5.1 (2016)
% R =	90%	80% - 95% Reliability for **New** limited access roadway facilities (Table 5.2)
		95% - 99% Reliability for **Rehabilitation** limited access roadway facilities (Table 5.2)

B. DETERMINE MODULUS OF RESILIENCE:

$M_R = 10^{[0.7365 * \log(LBR)]} * 809 =$

$M_R =$

Use Superpave Traffic Level "C," recommended per Page 5-25 of the Flexible Pavement Design Manual (2016).
*ESAL was not requested for Old Lake Wilsone. World Drive ESAL was used since it is a similar 4-lane arterial within project limits.

C. EXISTING STRUCTURE:

(Used Avg. depths for the project)

Layer/Material	**Thickness**	**Condition**	**Coefficient ***	**SN_e**
FC	0.00	-		0.00
Type 'S	0.00	-		0.00
Type 'I'	0.00	-		0.00
LimeRock Base	0.00	-		0.00
Stabilization (LBR 40)	0.00	-		0.00
		TOTAL SN_e =		**0.00**

*Coefficients are taken from Tables 5.4 and 6.1 of the FDOT Flexible Pavement Design Manual (2016).

D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN_R)

See 18 Kip Equivalent Single Axle Load Analysis from Table A.4A of the FDOT Flexible Pavement Design Manual (2016), using interpolation:

NEW CONSTRUCTION

3,500,000		**4,000,000**		**3,700,000**		
8000 psi	4.14	8000 psi	4.23	3,500,000	4.01	
8750 psi	SNr	8750 psi	SNr	3,700,000	SNr	
9000 psi	3.97	9000 psi	4.06	4,000,000	4.10	
SN =	4.01	**SN =**	4.10	**SN_R =**	**4.05**	(Min. SN Req.)

OLD LAKE WILSON - (OSCEOLA COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

$SN_C = (a_1 \times D_1) + (a_2 \times D_2) + \ldots + (a_n \times D_n) = SN_R$

4.05 = (0.44 x 1.5) + (a_2 x D_2) + (a_3 x D_3) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible

2.43 = (a_2 x D_2) + (a_3 x D_3) Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: Limited Access Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 9.
*ESAL for Old Lake Wilson Rd was not requested

Structural Course: 2.43 = (a_2 x D_2) + 1.8 a_2 = 0.44

D_2 = 1.43 ***Use 1.5" Structural Course***

	Thickness (in.)	Coefficient *	SNc			
Friction Course (FC-12.5)	1.50	0.44	0.66			
Type SP Structural Course	1.50	0.44	0.66			
Base Group 09	10.00	0.18	1.80			
Stabilization (LBR 40)	12.00	0.08	0.96			
		Total SNc =	**4.08**	**>**	**4.05**	**O.K.**

*Coefficients are taken from Table 5.4 of the FDOT Flexible Pavement Design Manual (2016).

APPENDIX A

CORING REPORT

Florida Department of TRANSPORTATION

DRAFT

PAVEMENT SURVEY AND EVALUATION REPORT

FINANCIAL PROJECT NUMBER: 431456-1

STATE ROAD 400 (I-4)

SR 400 (I-4) From the Polk County Line to the Orange County Line

Section #: 92130; MP 0.000 – 7.885

Osceola County

December 18, 2015

PREPARED BY:

DRAFT

William A. Wall
Pavement Rehabilitation Specialist

APPROVED BY:

DRAFT

Rafael M. Rodriguez, P.E.
District 5 Materials & Research Office
PE Number 68482

EXECUTIVE SUMMARY

FPN 431456-1; SR 400 (I-4)
Section # 92130; MP 0.000 – 7.885

INTRODUCTION

Construction for this project is currently unfunded with no clear anticipation of when construction would commence. This project is a follow-on to the Interstate 4 (I-4) Ultimate projects to the north in Orange and Seminole counties. Currently, the pavement is in fair and serviceable condition with no need of major rehabilitation or repair in the foreseeable future. The purpose of this report is to provide recommendations for developing the pavement design for the possible widening of Interstate 4 within the project limits, reconstruction options and possible interim rehabilitation of the existing pavement before widening occurs whenever funding is available for this project.

Understanding that pavement conditions will continue to deteriorate over time, these recommendations are based on existing pavement structure information, our current observations and our past experience rehabilitating Interstate projects. As such, these recommendations should be considered preliminary.

It is recommended the pavement conditions be re-evaluated during the "Plans Update" phase.

REHABILITATION AND RECONSTRUCTION RECOMMENDATIONS

Option 1: Interim Rehabilitation of the Mainline Travel Lanes and Paved Shoulders

The following mainline milling recommendations are to rehabilitate the mainline roadway if it is required before the roadway is widened or reconstructed. This would be for safety reasons, such excessive raveling of the existing friction course, skid hazard, or to extend the service life of the pavements until widening or reconstruction occurs.

Eastbound and Westbound Mainline Lanes MP 0.000 to MP 7.885:
We recommend that all mainline lanes be milled 2.25 inches as an interim measure before the roadway is widened.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend no rehabilitation of the paved shoulders as their current condition does not warrant resurfacing.

Option 2: Roadway Widening with the Rehabilitation of the Existing Mainline Travel Lanes and Paved Shoulders

The following recommendations are for long-term planning and cost estimates with the premise that the existing eastbound and westbound roadways will be widened with asphalt to accept new lanes and other pavement features. These recommendations may need to be reviewed during the "Plans Update" phase.

Eastbound and Westbound Outside and Auxiliary Lanes MP 0.000 to MP 7.885:
We recommend that existing outside and auxiliary travel lanes be milled 4.25 inches to remove current and anticipated pavement distresses.

Eastbound and Westbound Inside and Middle Lanes MP 0.000 to MP 7.885:
We recommend that all existing inside and middle travel lanes be milled 3.75 inches to remove current and anticipated pavement distresses.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend 1.50 inches of milling to remove the deteriorated surface course of the existing shoulders that will remain after widening.

Option 3: Roadway Reconstruction with Portland Cement Concrete (PCC)

Eastbound and Westbound Mainline Lanes MP 0.000 to MP 7.885:
If there is a consideration of pavement reconstruction instead of widening by adding lanes to the mainline travel lanes eastbound and westbound, we suggest that a Pavement Type Selection be performed. This would be to consider if the construction of a rigid pavement of Portland Cement Concrete (PCC) designed according to the Rigid Pavement Design Manual is feasible.

Although PCC concrete pavement is initially more expensive per lane mile than a reconstruction using asphalt friction and structural courses with a Limerock base, its durability over a long period of time under heavy traffic loading, as will be seen within the project limits, may be a more-cost effective solution than repetitive cycles of asphalt rehabilitation or repair.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend 1.50 inches of milling to remove the deteriorated surface course of the existing shoulders that will remain after widening.

Ramp and Sidestreet Milling Recommendations

Since the ramps and sidestreets near and on this project are to be reconstructed, we recommend a salvage milling recommendation of 2.75 inches to remove as much asphalt for recycling without contacting the underlying base materials.

PAVEMENT SURVEY AND EVALUATION REPORT

STATE ROAD 400 (I-4)
From The Polk County Line to the Orange County Line

INTRODUCTION

This report presents an analysis of information collected during the above-referenced Pavement Survey and Evaluation (PSE) report. The proposed project starts at the Osceola/Polk County line. The project then proceeds from there (MP 0.000) in a northeast direction to the Orange County line (MP 7.885). Roadway designations are eastbound (towards the northeast) and westbound (towards the southwest).

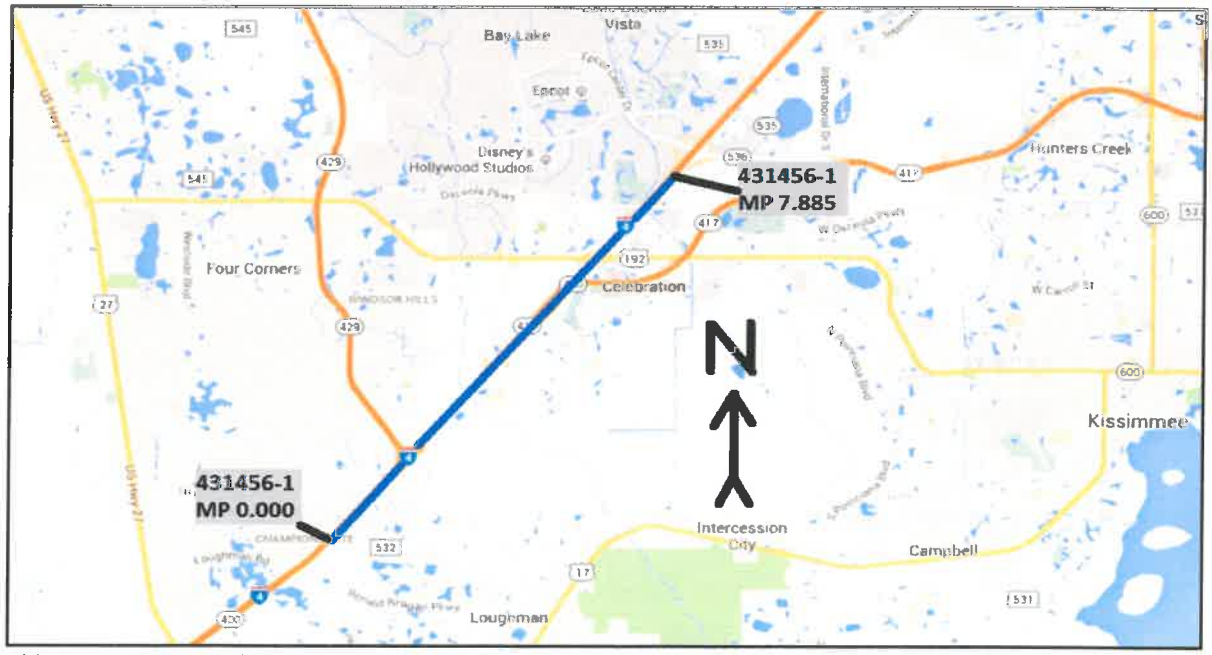
Previous Projects:

Financial Project Number 242523-1-52-01: This project was from MP 0.000 to MP 6.856 and involved the construction of inner travel lanes, inside paved shoulders and median guardrails for both the eastbound and westbound roadways. The existing travel lanes and outside paved shoulders were rehabilitated by milling and resurfacing. A Supplemental Agreement (SA#5) was needed for deep milling and resurfacing the eastbound existing travel lanes 5 inches deep to repair unforeseen underlying pavement distress. In addition there were locations where box culverts were constructed across the roadways. The project was accepted on September 23, 2006.

Financial Project Number 242531-1-52-01: This project was the reconstruction of the interchange of I-4 at SR 530 (US 192). The work performed on I-4 was the milling and resurfacing the existing travel lanes and shoulders with the construction of outside travel/auxiliary lanes and paved shoulders in select locations. The project limits for this work on I-4 was from MP 6.231 to MP 7.617. The project was accepted on September 20, 2007.

Ongoing Projects:
Financial Project Numbers 432416-1-52-01: This proposed resurfacing project starts west of the World Drive interchange with I-4 at MP 3.630 and proceeds eastwards to MP 5.239. This project involves resurfacing the collector/distributor ramps and its associated interchange ramps connecting to and from World Drive. The project is currently in the pre-construction phase. Currently the letting date for this project is scheduled for August 31, 2016.

LOCATION MAP



This map is not to scale.

CORING INFORMATION

Elipsis Engineering & Consulting, LLC performed coring at an interval of approximately one per lane mile on each travel lane, and one per lane mile for the inside and outside shoulders. Additional cores were taken where warranted by composition determination or unusual pavement distress. Cores were not taken in the L2/R2 middle lanes due to safety and traffic concerns. Along with the coring effort, approaches for bridges 920094 and 920095 were drilled to determine asphalt thicknesses at their approaches. Bridges 920098, 920099, 920100 and 920101 had concrete approaches and were not drilled. Asphalt overlays over bridges 920095, 920099, and 920101 on the eastbound roadway were drilled to determine the depth of the overlays. This information can be found in the Roadway Surface Condition of this report and in the Appendix.

In addition to the cores taken on the roadway and shoulders, the Project Manager requested that additional cores be taken on and in the vicinity of the interchange ramps and selected sidestreets within the project limits. These locations will be affected by construction activities performed by this project. A total of 27 cores were taken to satisfy the request.

The signed and sealed pavement core sheets (dated May 28, 2015 and December 3, 2015) are included in the Appendix. A total of 107 core samples (32 mainline lanes, 8 from auxiliary lanes, 16 from inside paved shoulders, 24 from outside paved shoulders and 27 cores from the ramps, sidestreets, and their vicinity) were collected from the subject roadway. Additional core information was derived from modified Pavement Evaluation and Condition Data (PECD) sheets from previous resurfacing projects Financial Project Number (FPN) 242523-1-52-01 and FPN 252531-1-52-01. The core data from the mainline lanes and their new alignment were incorporated to increase data points for base and asphalt compositions.

The core photo directory is included in the Appendix for further review. The following tables show the types of material, average material thickness, layer thickness ranges, and total average pavement thickness along with a min-max range for the different sections of the subject roadway. A chart has been placed in the Appendix to reference the location of each segment within the project limits.

- Of the 32 cores taken from the mainline lanes, 1 core (3%) was cracked 1.3 inches deep.
- Of the 8 cores taken from the auxiliary lanes, none were cracked.
- Of the 40 cores taken from the inside and outside paved shoulders, none were cracked.
- Of the 27 cores taken from the ramps and sidestreets, 4 cores (15%) were cracked. 1 core (25%) was cracked full depth to the base. The other 3 cores (75%) were cracked to an average depth of 0.9 inches with a range of 0.5 to 1.7 inches.

SECTION 92130: SR400 (I-4) Original Alignment WB Roadway
MP 0.000-MP 2.045 (L2 and L3)
MP 2.045-MP 4.886 (L1 and L2)
MP 4.886-MP 6.000 (L2 and L3)
MP 6.000-MP 7.885 (L1, L2, L3)

Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	0.9	0.4 to 1.2
Type SP	1.5	1.2 to 1.7
Type S	2.8	0.3 to 4.3
Type I	3.7	0.9 to 5.0
Binder Course	2.0	1.6 to 2.4
Limerock Base	10.6	9.8 to 12.5
Pavement Thickness:	10.9	6.1 to 12.7

Exceptions:
1) Core # 31 (MP 5.900/L3) has a base of Asphalt Base Course instead of Limerock. It is an outlier and was not used for base calculations.
Notes:
2) Cores #27 (MP 7.251/L3) and #57 (MP 7.263/L1) have a layer of Asphalt Rubber Membrane Interlayer (ARMI) between the Type SP layer and the Type S layer.

SECTION 92130: SR400 (I-4) Original Alignment EB Roadway MP 0.000-MP 2.045 (R2 and R3) MP 2.045-MP 4.886 (R1 and R2) MP 4.886-MP 6.000 (R2 and R3) MP 6.000-MP 7.885 (R1 and R2)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	0.9	0.7 to 1.0
Type SP	4.3	3.8 to 5.1
Type I	2.7	0.3 to 5.0
Binder Course	2.1	1.6 to 3.7
Limerock Base	10.8	8.3 to 12.5
Pavement Thickness:	10.3	7.3 to 11.9

Exceptions:

3) Core #45 (MP 2.569/R1) has unusually thick layers of Type S and Type I with an overall length of 19.8 inches. This is an outlier compared to the other cores.

Notes:

4) The following cores taken in 2015 had Type S remaining in their compositions after the deep milling of the eastbound roadway in 2006: #47 (MP 3.300/R1), #49 (MP 4.380/R1) and #53 (MP 6.700/R1).

SECTION 92130: SR400 (I-4) MP 0.000-MP 2.045 (L1 and R1) MP 2.045-MP 4.886 (L3 and R3) MP 4.886-MP 6.000 (L1 and R1) MP 3.300-MP 7.885 (L4 and R4) Aux Lanes with Limerock Base)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	0.9	0.5 to 1.5
Type SP	5.9	4.4 to 7.4
Limerock Base	12.4	10.8 to 14.9
Pavement Thickness:	6.8	5.4 to 8.2

SECTION 92130: SR400 (I-4) Auxiliary Lanes with Asphalt Base Course MP 5.200-MP 5.950 (L4 and R4) MP 7.100-MP 7.698 (R4 and R5)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	0.8	0.6 to 1.0
Type SP	1.4	1.3 to 1.4
Type S	3.2	2.9 to 3.7
Asphalt Base Course	6.8	6.3 to 7.3
Pavement Thickness:	12.2	12.0 to 12.3

Exceptions:

5) Core #21 (MP 7.279/R5) has a Limerock base instead of Asphalt Base Course. It is an outlier and was not used in calculations.

SECTION 92130: SR400 (I-4) Inside Paved Shoulders (IL and IR) MP 0.000-MP 7.885		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
Type SP	2.2	1.5 to 3.0
Limerock Base	6.6	5.1 to 8.1
Pavement Thickness:	2.2	1.5 to 3.0

Exceptions:

6) Cores #54 (MP 6.700/IR) and #60 (MP 6.700/IL) have thick Limerock base thicknesses when compared to the other cores. They were not used in calculations.

SECTION 92130: SR400 (I-4) Outside Paved Shoulders (OL and OR) MP 0.000-MP 2.045		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
Structural Asphalt	4.4	3.7 to 5.0
Asphalt Base Course	1.8	1.2 to 3.6
Pavement Thickness:	6.2	5.4 to 7.6

Notes:

7) Outside paved shoulders taken in this area from MP 0.000 to MP 2.045 varied in composition. It was decided to group the asphalt structural courses together by thickness.

SECTION 92130: SR400 (I-4) Outside Paved Shoulders (OL and OR) MP 2.045-MP 7.885		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
Type SP	2.3	1.1 to 4.1
Limerock Base	6.0	3.5 to 7.4
Pavement Thickness:	2.4	1.1 to 4.1

Exceptions:

8) Core #20 (MP 6.480/OR) has a thick Limerock base of 11.3 inches. It was excluded from calculations.

9) Cores #34 (MP 5.510/OR), #18 (MP 5.599/OR), #28 (MP 7.251/OL), and #24 (MP 7.620/OR) have Asphalt Base Course instead of Limerock for a base. These were located in auxiliary lanes that had Asphalt Base Course as a base. They are outliers compared to the other cores.

Notes:

10) Core #22 (MP 7.279/OR) has a layer of Type S under the Type SP layer.

CR 532 Mainline Lanes at Interchange with SR400 (I-4) (L1, L2, R1 and R2)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-3	1.4	1.0 to 1.7
Type S/SP	3.0	2.5 to 3.6
Limerock Base	9.1	8.2 to 9.7
Pavement Thickness:	4.4	3.6 to 5.3

Mainline Lanes near I-4 On/Off Ramps CR 522 (Osceola Parkway) SR 530 (US 192) (L1 and R4)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	1.1	1.0 to 1.2
Type S/SP	3.6	3.1 to 4.0
Limerock Base	13.2	10.2 to 18.0
Pavement Thickness:	4.5	4.2 to 4.8

Notes:
11) Core #90 (SR 530 EB) has a friction course of FC 12.5 instead of FC-5 in its composition.

On/Off Ramps on SR400 (I-4) SR 429 (Western Parkway) SR 417 (Central Florida Greeneway) SR 530 (US 192) CR 522 (Osceola Parkway) SR 536 (World Center Drive)		
Type of Material (by layer)	Avg. Layer Thickness (in.)	Layer Thickness Range (in.)
FC-5	0.9	0.5 to 1.4
Type S/SP	4.0	2.4 to 5.2
Limerock Base	12.1	9.1 to 18.8
Pavement Thickness:	4.9	3.2 to 6.0

Notes:
12) Core #91 (Ramp) has Asphalt Base Course instead of Limerock as a base. It was excluded from calculations.

ROADWAY SURFACE CONDITION

The last time the majority of the roadway was resurfaced within the projects limits was in 2006-2007. The current roadway surface condition is discussed below, but as the roadway ages the condition will deteriorate. We recommend that in the plans update phase that our office conduct an update to the roadway surface condition. As it is now, the lanes are in fair and serviceable condition with some exceptions to that listed below by group.

EASTBOUND:

Inside Passing and Middle Travel Lanes (R1 and R2)
The inside and middle lanes of the eastbound roadway are in fair condition. There is light tire rim gouges in the outside wheelpaths of both the R1 and R2 lanes. The R1 lane has minor pop-outs and raveling of coarse aggregates from the open-graded friction course. There are more severe pop-outs and raveling in the outside wheelpath of the R2 lane. There is also minor branch cracking observed in the outside wheelpath of the R2 lane. There is a semi-continuous light to moderate longitudinal crack between the R1 and R2 lane at the pavement joint to just inside the R2 lane from widening of the roadway in 2006 from MP 0.200 to MP 2.045. Near end of World Drive interchange from MP 4.716 to MP 4.856 there is a ragged moderate longitudinal crack that transverses from the inside to the outside of the R2 lane.

Outside Travel Lane (R3)
The outside lane is in fair condition, but with more distresses than the R1 and R2 lanes mentioned above. There are moderate tire rim gouges in both wheelpaths of this lane. The gouging is deteriorating into minor to moderate branch cracking and raveling from MP 2.415 east to MP 7.415, particularly in the outside wheelpath. There is also moderate pop-outs of coarse aggregates from the open-graded friction course. Moderate longitudinal cracking between the R3 lane and the on/off ramps are found at the interchanges of CR 532 (MP 0.371-MP 0.776) and SR 429 (MP 1.371-1.521 & MP 2.656-MP 2.861). From MP 2.415 (Mile Marker 60) to MP 4.415 (Mile Marker 62) there is moderate branch, block and longitudinal cracking in the outside wheelpath of this lane. There are also signs of limerock pumping to the surface from the base in the outside wheelpath at this location as well, see Photo 4. From MP 7.415

to the end of the project at MP 7.885 the surface condition improves to good condition. This friction course was placed within the last few years on work done on the ramps on SR 530/US 192.

Auxiliary Lanes (R4 and R5)
The R4 and R5 auxiliary lanes on the eastbound roadway are extended on and off ramps for the interchanges of SR 429 (MP 1.376 - 1.561 & MP 2.613 - MP 2.856), World Drive (MP 3.311 – 3.810 & MP 5.239 - MP 5.476) and SR 530/US 192 (MP 5.476 - MP 6.083 & MP 7.059 – MP 7.885). They are in fair condition with minor pop-outs of aggregates from the friction course in their wheelpaths. There is also minor tire rim gouging in the outside wheelpath of these lanes.

WESTBOUND:

Inside Passing and Middle Travel Lanes (L1 and L2)
The inside and middle lanes of the westbound roadway are in fair condition. There is light tire rim gouges in the outside wheelpaths of both the L1 and L2 lanes. There is occasional deep gouging from vehicles across the L1 lane. There are light pop-outs of aggregates from the friction course.

Outside Travel Lane (L3)
The outside lane is in fair condition, but with slightly more distresses than the L1 and L2 lanes mentioned above. There are moderate tire rim gouges in both wheelpaths of this lane. The gouging is deteriorating into light to moderate branch cracking and raveling. There is moderate pop-outs in the wheelpaths of this lane and more severe raveling of the friction course down to the structural course west of the Reedy Creek Bridge from MP 3.295 to MP 3.495. From MP 1.000 to MP 4.415 (Mile Marker 62) there is moderate branch, block and longitudinal cracking in both wheelpaths of this lane. There are also signs of intermittent limerock pumping to the surface from the base. The L3 lane from MP 2.045 to MP 4.415 is a widened section of the westbound roadway constructed in 2006.

Auxiliary Lanes (L4)
The L4 auxiliary lane on the westbound roadway is an extended on and off ramp for the interchanges of SR 429 (MP 1.410 - 1.664 & MP 2.368 - MP 2.655), World Drive (MP 3.365 – 3.630 & MP 5.180 - MP 5.750) and SR 530/US 192 (MP 6.755 - MP 6.989 & MP 7.545 – MP 7.885). They are in fair condition with minor pop-outs of aggregates from the friction course in their wheelpaths. There is also minor tire rim gouging in the outside wheelpath of these lanes.

OTHER PAVEMENT FEATURES:

Paved Shoulders (IL, IR, OL and OR)
The inside and outside paved shoulders within the project limits are in fair condition. They have an 8 inch wide overlay of FC-5 open-graded friction course from the mainline lanes, and also have ground-in rumble strips. There are few distresses such as isolated minor branch cracking and oxidized pavement along with isolated locations where vehicular fires have occurred. It can be an exception to rehabilitation between now and widening of the roadway.

Gutter Swales
The gutter swales with v-shaped ditch bottom drainage inlets found at interchanges within the project limits are in fair condition with no asphalt overlays in them. Some coarse aggregates from pop-outs and raveling from the mainline lanes open-graded friction course can be found in the bottom of these swales along with limited turf intrusion.

Bridge Approaches and Decks
There were two bridges that had asphalt overlays on their approaches. They were located in the eastbound and westbound roadways at the CR 532 interchange. They were drilled to determine the depth of the overlay. Bridge 920095 eastbound from MP 0.117 to 0.151 had an average depth of 5.3 inches with a range from 4.5 to 6.0 inches. Bridge 920094 westbound from MP 0.102 to 0.136 had an average depth of 3.8 inches with a range from 2.4 to 5.0 inches.

A total of three bridges on the eastbound roadway have asphalt overlays of their concrete decks. These were drilled to determine the depth of the asphalt overlay on the concrete deck. The asphalt overlays are in fair condition with one exception. The asphalt overlay on the eastbound Bonnett Creek Bridge is much older than the surrounding pavement and is possibly from resurfacing work done in 1999. It is badly worn and has numerous surface cracks in the asphalt overlay. Bridge 920095 eastbound at the CR 532 interchange from MP 0.117 to 0.151 had an average asphalt depth over the deck of 2.3 inches with a range from 1.6 to 2.8 inches. Bridge 920099 eastbound over Reedy Creek from MP

3.493 to 3.536 had an average asphalt depth over the deck of 2.5 inches with a range from 2.4 to 3.9 inches. Bridge 920101 eastbound over Bonnett Creek from MP 7.698 to 7.726 had an average asphalt depth over the deck of 3.4 inches with a range from 2.4 to 4.4 inches.

On/Off ramps and Sidestreets within the vicinity of Interchanges within the Project Limits:
The condition of the ramps and sidestreets that are within the vicinity of the On/Off Ramps to I-4 within the project limits are in overall fair condition with one exception.

The only location with pavement that is in poor condition is at the interchange of CR 532 with I-4 at the Polk/Osceola County line. The roadway under I-4 is in fair to poor condition with moderate rippling along with moderate block and branch cracking across the surface of the roadway. There is also shoving of the pavement in the L2 at the location of the on-ramp with I-4 eastbound. The on/off ramps are in poor condition with widespread moderate to severe raveling, severe alligator and branch cracking along with rippling of the pavement.

CROSS SLOPE AND RUT DEPTH DATA

Cross slope and rut depth data were collected on the mainline lanes with the use of State Materials Office's Multi-Purpose Survey Vehicle (MPSV). This vehicle uses laser sensors, which are specifically positioned across the width of the test vehicle to measure the cross-slope and rutting. Rut depths and tangent cross slope information for the subject roadway are summarized as follows:

RUTTING:

MP 0.000 to MP 7.885								
Rut	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average (inches)	0.1	0.2	0.1	0.1	0.1	0.2	0.3	0.1
Std. Deviation	0.06	0.11	0.04	0.05	0.06	0.09	0.11	0.07
Range (inches)	0.0 to 0.3	0.0 to 0.7	0.0 to 0.3	0.0 to 0.5	0.0 to 0.3	0.0 to 0.7	0.0 to 0.7	0.0 to 0.3

Note: L4 westbound is between MP 5.265 to MP 5.582, and from MP 7.727 to 7.885.
R4 eastbound is between MP 3.409 to MP 3.693, MP 5.322 to MP 5.758, and from MP 7.197 to 7.689.

The pavement does exhibit severe rutting greater than 0.5 inches at the following locations:

Lane	From Milepost	To Milepost	Deepest Rut
R2	5.890	6.042	0.7 inches
L3	3.598	3.920	0.6 inches
R3	3.807	3.958	0.7 inches
L3	4.678	4.905	0.7 inches
R3	4.905	5.038	0.6 inches

During the physical coring of the roadway 6 locations have measured rut depths of over 0.5 inches.

Core Number	Lane	Milepost	Measured Rut
3	R3	1.171	0.5 inches
5	R3	1.820	0.5 inches
75	L3	2.151	0.5 inches
9	R3	3.151	0.5 inches
37	L3	3.850	0.5 inches
13	R3	4.700	0.5 inches

CROSS-SLOPE

The pavement along this project is a six lane standard profile with auxiliary lanes, with the crown in the median. MPSV data was used for the mainline travel lanes. Any areas that are very shallow in percentage of cross-slope or above 1.00 in standard deviation are highlighted in yellow.

MP 0.000 to MP 0.095								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		2.1	1.5	-2.6	-1.7	-0.2	1.6	
Std. Deviation		0.35	0.57	1.35	0.86	0.46	0.87	
Range		1.7 to 2.6	0.8 to 2.2	-0.4 to -4.4	-0.4 to -2.6	-1.0 to 0.3	-0.1 to 2.2	

Transition: MP 0.095 to MP 0.133

MP 0.133 to MP 1.970								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		2.4	1.3	-2.4	-2.2	1.6	2.9	
Std. Deviation		0.36	0.30	0.25	0.48	0.43	0.48	
Range		1.7 to 3.3	0.4 to 2.2	-1.9 to -3.2	-3.2 to 1.3	0.2 to 2.5	1.7 to 4.2	

Transition: MP 1.970 to MP 2.008

MP 2.008 to MP 3.390								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.7	2.8	1.0	1.0	3.0	3.6	
Std. Deviation		0.39	0.40	0.42	0.44	0.37	0.48	
Range		2.6 to 4.4	1.6 to 3.9	-0.5 to 1.7	0.1 to 1.9	2.1 to 4.0	2.5 to 4.7	

Transition: None. SLD indicates a curve from MP 1.967 to MP 2.546. Visual observation shows no curves.

MP 3.390 to MP 3.693								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.3	2.5	0.7	1.1	2.5	2.8	3.1
Std. Deviation		0.86	0.48	0.60	0.35	0.23	0.58	0.97
Range		1.5 to 4.5	1.7 to 3.3	-0.1 to 2.0	0.5 to 1.6	2.1 to 2.9	1.7 to 3.4	1.2 to 4.2

Transition: None

MP 3.693 to MP 4.905								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.7	2.8	0.9	1.4	1.6	3.7	
Std. Deviation		0.43	0.31	0.40	0.33	0.82	0.52	
Range		2.4 to 4.6	1.8 to 3.6	0.0 to 1.8	0.7 to 2.2	0.5 to 3.9	2.5 to 4.9	

Transition: MP 4.905 to MP 4.962

MP 4.962 to MP 5.246								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.0	1.5	-1.8	-1.7	1.0	2.2	
Std. Deviation		0.32	0.21	0.46	0.49	0.43	0.56	
Range		2.4 to 3.8	1.0 to 1.7	-1.1 to -2.7	-1.0 to -2.5	0.3 to 1.7	1.2 to 3.3	

Transition: MP 5.246 to MP 5.303

MP 5.303 to MP 5.682								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average	3.4	2.6	1.5	-1.8	-1.8	0.7	2.5	2.9
Std. Deviation	0.37	0.28	0.30	0.17	0.18	0.29	0.33	0.33
Range	2.9 to 4.3	2.1 to 3.2	0.8 to 2.0	-1.5 to -2.2	-1.5 to -2.1	0.1 to 1.2	1.9 to 3.0	2.5 to 3.6

Transition: MP 5.682 to MP 5.758

MP 5.758 to MP 5.947								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.2	1.4	-1.8	-1.7	1.3	3.1	
Std. Deviation		0.12	0.43	0.33	0.51	0.47	0.18	
Range		3.0 to 3.4	0.9 to 2.2	-1.3 to -2.3	-1.1 to -2.7	0.6 to 2.1	2.6 to 3.3	

Transition: MP 5.947 to MP 6.004

MP 6.004 to MP 7.008								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.5	2.6	1.6	1.3	2.4	3.4	
Std. Deviation		0.83	0.40	0.38	0.61	0.55	0.68	
Range		2.1 to 5.9	1.9 to 3.7	0.7 to 2.4	0.0 to 2.1	1.3 to 3.4	2.1 to 4.8	

Transition: MP 7.008 to MP 7.045

MP 7.045 to MP 7.178								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		2.7	2.0	1.7	-2.4	1.3	2.1	
Std. Deviation		0.11	0.10	0.19	0.30	0.17	0.24	
Range		2.6 to 2.8	1.9 to 2.2	1.5 to 2.0	-1.9 to -2.9	1.1 to 1.6	1.9 to 2.5	

Transition: None

MP 7.178 to MP 7.386								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.4	2.3	1.8	-2.2	1.7	1.6	2.7
Std. Deviation		0.40	0.29	0.29	0.31	0.19	0.24	0.42
Range		2.6 to 3.9	1.8 to 2.6	1.2 to 2.2	-1.8 to -2.8	1.4 to 2.1	1.3 to 2.1	2.3 to 3.6

Transition: MP 7.386 to MP 7.424

MP 7.424 to MP 7.689								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average		3.8	2.4	1.9	1.7	2.0	2.9	3.0
Std. Deviation		0.51	0.36	0.18	0.41	0.31	0.45	0.41
Range		2.2 to 4.3	1.3 to 2.7	1.5 to 2.3	1.0 to 2.4	1.5 to 2.5	2.3 to 3.7	2.2 to 3.8

Transition: MP 7.689 to MP 7.708

MP 7.708 to MP 7.885								
Tangent	**L4**	**L3**	**L2**	**L1**	**R1**	**R2**	**R3**	**R4**
Average	3.4	3.4	2.0	2.2	1.8	2.2	2.7	
Std. Deviation	0.37	0.12	0.47	0.13	0.31	0.28	0.42	
Range	2.6 to 3.9	3.3 to 3.6	0.8 to 2.4	1.9 to 2.4	1.4 to 2.2	1.9 to 2.8	2.3 to 3.5	

Transition: End of Project

The Designer should plan for additional survey in areas of suspected cross slope irregularities, especially in areas with extreme low or high cross-slope values, to verify the data provided by the MPSV. Rut depth and cross slope information for all individual core locations are provided in the "Pavement Evaluation and Condition Data" sheets in the Appendix. In addition, the MPSV data is available in the Appendix for review.

RESILIENT MODULUS

It is anticipated that during the Plans Update phase that a request will be made by our office to the State Materials Office to have falling weight deflection testing performed for Resilient Modulus.

The Project Designer will also need to coordinate for some geotechnical work (soil sampling) for the determination of design Limerock Bearing Ratio (LBR) for this project.

PAVEMENT CONDITION SURVEY

The 2015 Pavement Condition Survey currently show no deficiency in Crack, Ride, or Rut. The lowest rating in cracking is 7.0 both eastbound and westbound from MP 0.000 to MP 5.482 where the pavement surface is almost 10 years old.

Eastbound

RDWYID / SR US / INTERSECT AT (MP|SIDE) / ITMSEG-P / CONTRACTOR (AGE ONE YEAR) / ITMSEG-F	BMP / G_BMP / W_BMP	EMP / G_EMP / W_EMP	RW	SYS	TYP	SPD	DISTRESS RATINGS	SURVEYED YEAR 1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
								2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
92130000 400 I4	0.000 57.2	5.482 62.7	R 3	4 5.7	1 108000	65	CRACKING	9.4	9.0	9.0	6.5	6.5	10.0	10.0	10.0	10.0	10.0	9.5	9.5	8.0
					FC5		RIDE	8.9	8.5	8.4	8.9	7.7	9.2	9.2	8.9	9.1	9.1	9.1	8.9	8.7
							RUTTING	9.0	9.0	8.0	8.0	8.0	9.0	10.0	10.0	9.0	10.0	10.0	9.0	9.0
2425231 RANGER CONSTRUCTION INDUST	0.000	6.856	C	2003	0218		CRACKING	8.0				10.0	10.0	10.0	10.0	10.0	9.5	9.5	8.5	7.0
(2007)					S		RIDE	8.6				8.2	8.2	8.1	7.8	8.1	8.1	7.8	7.7	7.6
							RUTTING	9.0				9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
92130000 400 I4	5.482 62.7	6.856 64.0	R 3	4 9.2	1 90000	65	CRACKING	9.4	9.0	9.0	6.5	6.5	10.0	10.0	10.0		10.0	10.0	10.0	10.0
					FC5		RIDE	8.9	8.5	8.4	8.9	7.7	9.2	9.2	8.0		9.1	9.2	9.0	9.0
							RUTTING	9.0	9.0	8.0	8.0	8.0	9.0	10.0	9.0		10.0	9.0	9.0	9.0
2425231 RANGER CONSTRUCTION INDUST	0.000	6.856	C	2003	0218		CRACKING	10.0					10.0	10.0	10.0	9.5	9.5	9.5	9.5	8.5
(2008)					S		RIDE	9.0					8.0	8.1	7.8	7.9	7.9	7.3	7.6	7.6
							RUTTING	9.0					9.0	9.0	9.0	9.0	9.0	8.0	8.0	9.0
92130000 400 I4	6.856 64.0	7.885 65.1	R 3	4 5.8	1 102500	65	CRACKING	8.4	8.0	3.5*	3.5*	3.5*	10.0	10.0	10.0	10.0	10.0	10.0		10.0
					FC5		RIDE	9.1	8.7	7.2	6.8	7.1	9.3	9.2	8.9	9.1	9.0	9.0		8.4
							RUTTING	8.0	8.0	8.0	8.0	8.0	9.0	10.0	10.0	9.0	10.0	10.0		10.0
							CRACKING	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.5
				(2002)			RIDE	8.5	8.0	7.8			8.0	8.0	7.7	7.9	7.9	7.6	7.6	7.5
							RUTTING	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0

Westbound

RDWYID / SR US / INTERSECT AT (MP|SIDE) / ITMSEG-P / CONTRACTOR (AGE ONE YEAR) / ITMSEG-F	BMP / G_BMP / W_BMP	EMP / G_EMP / W_EMP	RW SYS TYP SPD / LN %T AADT / RW FY-P WKMX-P / SURFTYPE / ASTYPE / RW FY-F WKMX-F	DISTRESS RATINGS	SURVEYED YEAR 1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
					2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
92130000	0.000	5.482	L 4 1 65	CRACKING	9.4	9.0	9.0	8.5	8.5	10.0	10.0	10.0	10.0	10.0	9.5	9.5	9.5
400 I4	57.2	62.7	3 5.7 108000	RIDE	8.9	8.5	8.3	8.8	7.8	9.3	9.2	9.0	9.1	9.1	9.1	8.9	8.9
			FC5	RUTTING	9.0	9.0	9.0	9.0	9.0	9.0	10.0	9.0	9.0	10.0	10.0	9.0	9.0
2425231	0.000	6.856	C 2003 0218	CRACKING	9.5				10.0	10.0	10.0	10.0	10.0	10.0	9.5	8.5	7.0
RANGER CONSTRUCTION INDUST(2007)			S	RIDE	8.7				8.0	8.1	8.0	7.9	7.9	7.9	7.8	7.7	7.6
				RUTTING	9.0				9.0	10.0	9.0	10.0	9.0	9.0	9.0	9.0	9.0
92130000	5.482	6.856	L 4 1 65	CRACKING	9.4	9.0	9.0	8.5	8.5	10.0	10.0	10.0		10.0	10.0	10.0	10.0
400 I4	62.7	64.0	3 9.2 90000	RIDE	8.9	8.5	8.3	8.8	7.8	9.3	9.2	8.4		8.8	8.9	8.7	8.7
			FC5	RUTTING	9.0	9.0	9.0	9.0	9.0	9.0	10.0	10.0		10.0	10.0	9.0	9.0
2425231	0.000	6.856	C 2003 0218	CRACKING	10.0					10.0	10.0	10.0	9.5	9.5	9.5	9.5	8.5
RANGER CONSTRUCTION INDUST(2008)			S	RIDE	8.7					8.0	8.0	7.9	7.9	7.9	7.8	7.8	7.7
				RUTTING	9.0					10.0	10.0	10.0	9.0	10.0	9.0	9.0	9.0
92130000	6.856	7.885	L 4 1 65	CRACKING	8.4	7.5	7.0	6.5	4.5*	10.0	10.0	10.0	10.0	10.0	10.0		10.0
400 I4	64.0	65.1	3 5.8 102500	RIDE	8.9	8.6	7.2	6.7	7.4	9.3	9.2	9.1	9.1	9.0	9.0		8.0
			FC5	RUTTING	8.0	8.0	8.0	7.0	7.0	9.0	9.0	9.0	9.0	9.0	9.0		10.0
				CRACKING	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	9.5
		(2002)		RIDE	8.1	7.6	7.5			7.9	7.9	7.9	7.9	7.9	7.9	7.8	7.7
				RUTTING	10.0	9.0	9.0	9.0	9.0	10.0	10.0	10.0	9.0	10.0	9.0	9.0	9.0

REHABILITATION RECOMMENDATIONS

Option 1: Interim Rehabilitation of the Mainline Travel Lanes and Paved Shoulders

The following mainline milling recommendations are to rehabilitate the mainline roadway if it is required before the roadway is widened or reconstructed. This would be for safety reasons, such excessive raveling of the existing friction course, skid hazard, or to extend the service life of the pavements until widening or reconstruction occurs.

Eastbound and Westbound Mainline Lanes MP 0.000 to MP 7.885:
We recommend that all mainline lanes be milled 2.25 inches as an interim measure before the roadway is widened.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend no rehabilitation of the paved shoulders as their current condition does not warrant resurfacing.

Option 2: Roadway Widening with the Rehabilitation of the Existing Mainline Travel Lanes and Paved Shoulders

The following recommendations are for long-term planning and cost estimates with the premise that the existing eastbound and westbound roadways will be widened with asphalt to accept new lanes and other pavement features. These recommendations may need to be reviewed during the "Plans Update" phase.

Eastbound and Westbound Outside and Auxiliary Lanes MP 0.000 to MP 7.885:
We recommend that existing outside and auxiliary travel lanes be milled 4.25 inches to remove current and anticipated pavement distresses.

Eastbound and Westbound Inside and Middle Lanes MP 0.000 to MP 7.885:
We recommend that all existing inside and middle travel lanes be milled 3.75 inches to remove current and anticipated pavement distresses.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend 1.50 inches of milling to remove the deteriorated surface course of the existing shoulders that will remain after widening.

Option 3: Roadway Reconstruction with Portland Cement Concrete (PCC)

Eastbound and Westbound Mainline Lanes MP 0.000 to MP 7.885:
If there is a consideration of pavement reconstruction instead of widening by adding lanes to the mainline travel lanes eastbound and westbound, we suggest that a Pavement Type Selection be performed. This would be to consider if the construction of a rigid pavement of Portland Cement Concrete (PCC) designed according to the Rigid Pavement Design Manual is feasible.

Although PCC concrete pavement is initially more expensive per lane mile than a reconstruction using asphalt friction and structural courses with a Limerock base, its durability over a long period of time under heavy traffic loading, as will be seen within the project limits, may be a more-cost effective solution than repetitive cycles every 9 to 14 years of asphalt rehabilitation or repair.

Inside and Outside Paved Shoulders MP 0.000 to MP 7.885:
We recommend 1.50 inches of milling to remove the deteriorated surface course of the existing shoulders that will remain after widening.

Ramp and Sidestreet Milling Recommendations

Since the ramps and sidestreets near and on this project are to be reconstructed, we recommend a salvage milling recommendation of 2.75 inches to remove as much asphalt for recycling without contacting the underlying base materials.

APPENDIX

i) Notations for Identifying Lane Types

ii) Pavement Evaluation & Condition Data (PECD) Sheets
(dated May 28, 2015 and December 3, 2015) coring by Elipsis Engineering & Consulting, LLC

iii) Ground Penetrating Radar (GPR) and Multi-Purpose Survey Vehicle (MPSV) Thickness, Cross-Slope, and Rut Data (Including Cross-Slope Graphs)

iv) Chart showing locations of Pavement Composition Segments

v) Pavement Condition Survey Charts

vi) Core Photo Directory

vii) Typical Roadway Survey Photographs

Notations for Identifying Lane Types

6-Lane Sections with Grass Median and Auxiliary Lanes

OL	Westbound Outside Paved Shoulder
L4	Westbound Auxiliary Lane
L3	Westbound Outside Lane
L2	Westbound Middle Lane
L1	Westbound Inside Lane
IL	Westbound Inside Paved Shoulder
Grass Median	
IR	Eastbound Inside Paved Shoulder
R1	Eastbound Inside Lane
R2	Eastbound Middle Lane
R3	Eastbound Outside Lane
R4	Eastbound Auxiliary Lane
R5	Eastbound Auxiliary Lane
OR	Eastbound Outside Paved Shoulder

ELIPSIS ENGINEERING & CONSULTING, LLC

May 28, 2015

Florida Department of Transportation
1650 N. Kepler Road
DeLand, Florida 32724

Attention: Mr. Tim Keefe

Reference: Final Pavement Evaluation and Condition Data Report
SR 400 (I-4) from Orange County line to Polk County line
Osceola County, Florida
FPN 431456-1
Section No: 92 130
Contract No.: C-9570
EEC Project No.: 12009-8.12

Dear Mr. Keefe:

Per your request, Elipsis Engineering & Consulting (EEC) has obtained pavement core and other relative information for the above referenced project. Our scope of services was conducted in accordance with your request for proposal dated April 14, 2015.

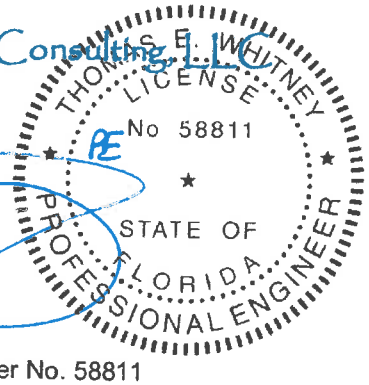
The pavement core data is presented on the attached Pavement Evaluation and Condition Data (PECD) Sheets 1 through 5 and Bridge Approach & Leave Concrete Slab Depth Data Sheets 1 and 2. We have also included supplemental data sheets for the requested GPS locations, Cross-slope data for each core and drill depth location, and core photographs for each core obtained. We have additionally included the roadway condition photo at each core location.

To the best of our knowledge, the information presented in the attachments to this letter is accurate and represents the existing pavement conditions at the locations cored. The pavement cores have been retained in storage pending further instructions from FDOT regarding their disposal.

Please feel free to contact us with any concerns or requests for further information.

Sincerely,
Elipsis Engineering & Consulting, LLC
Certificate of Authorization No. 28455

Thomas E. Whitney, PE
Principal Engineer
Signature Date: 5/28/15
STATE OF FLORIDA
Registered Professional Engineer No. 58811



State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 5/4/15 & 5/5/15	**Page No.:** 1 of 5
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	Type SP	ARM	Type S	Type I	Binder Course	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
1	0.369	10.0	R3	X	0.8	4.7			1.8	3.7	11.0	LR	11.5	–	–	–	–	F	0.4	2.0	
2	0.369	6.0	OR			4.7					5.9	ABC	1.2	–	–	–	–	F	0.0	6.2	
3	1.171	2.5	R3	X	0.7	4.9			1.7	3.4	10.7	LR	10.6	–	–	–	–	F	0.5	2.4	
4	1.171	6.0	OR			4.4					6.5	ABC	2.1	–	–	–	–	F	0.0	4.4	
5	1.820	9.0	R3	X	0.8	5.1			0.6	3.6	10.1	LR	10.9	–	–	–	–	F	0.5	2.8	
6	1.820	6.0	OR			1.3		2.9			5.6	ABC	1.4	–	–	–	–	F	0.0	6.9	
7	2.320	2.5	R3	X	0.8	5.6					6.4	LR	11.6	–	–	–	–	F	0.4	3.4	
8	2.320	6.0	OR			2.3					2.3	LR	5.5	–	–	–	–	F	0.0	5.5	
9	3.151	9.0	R3	X	0.7	5.8					6.5	LR	12.0	–	–	–	–	F	0.5	3.3	
10	3.151	6.5	OR			2.0					2.0	LR	7.0	–	–	–	–	F	0.0	5.0	
11	3.450	2.5	R4/AUX	X	1.1	5.4					6.5	LR	14.9	–	–	–	–	F	0.3	3.2	Auxiliary Lane Core fractured during extraction
12	3.450	7.0	OR			3.2					3.2	LR	6.8	–	–	–	–	F	0.0	5.0	Auxiliary Lane Shoulder
13	4.700	2.0	R3	X	1.1	4.8					5.9	LR	12.8	1.3	SL	I	M	P	0.5	3.3	
14	4.700	4.5	OR			1.8					1.8	LR	6.0	–	–	–	–	F	0.0	6.2	
15	5.080	9.0	R3	X	0.9	3.9			5.0	2.1	11.9	LR	8.3	–	–	–	–	F	0.4	1.5	Core fractured during extraction
16	5.080	6.5	OR			2.6					2.6	LR	5.4	–	–	–	–	F	0.0	6.1	

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 5/4/15 & 5/5/15	**Page No.:** 2 of 5
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	Type SP	ARMI	Type S	Type I	Binder Course	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
17	5.599	2.5	R4/AUX	X	0.8	1.3		2.9			12.3	ABC	7.3	–	–	–	–	F	0.2	2.5	Auxiliary Lane
18	5.599	4.5	OR			1.5		0.9			7.3	ABC	4.9	–	–	–	–	F	0.0	6.8	Auxiliary Lane Shoulder
19	6.480	9.0	R3	X	0.8	6.7					7.5	LR	12.5	–	–	–	–	F	0.1	3.5	Moved MP to be in lane
20	6.480	4.0	OR		0.9	1.8					2.7	LR	11.3	–	–	–	–	F	0.0	4.0	Moved MP to be in lane
21	7.279	2.0	R5/AUX	X	0.8	1.5		1.4			3.7	LR	9.3	–	–	–	–	F	0.0	2.6	Auxiliary Lane Moved MP to be in lane
22	7.279	6.5	OR			1.1		1.2			2.3	LR	3.5	–	–	–	–	F	0.0	6.2	Auxiliary Lane Shoulder Moved MP to be in lane
23	7.620	9.0	R4/AUX	X	0.6	1.4		3.7			12.0	ABC	6.3	–	–	–	–	F	0.2	2.6	Auxiliary Lane
24	7.620	6.0	OR					1.6			6.0	ABC	4.4	–	–	–	–	G	0.0	5.9	Auxiliary Lane Shoulder
25	7.850	2.0	L4/AUX	X	0.8	7.3					8.1	LR	10.9	–	–	–	–	F	0.2	3.0	Auxiliary Lane
26	7.850	4.0	OL			1.2					1.2	LR	7.3	–	–	–	–	F	0.0	5.5	Auxiliary Lane Shoulder
27	7.251	9.0	L3	X	0.8	1.7	0.5	0.5	0.9	1.7	6.1	LR	9.9	–	–	–	–	F	0.2	3.2	
28	7.251	6.5	OL			1.4		3.9			9.6	ABC	4.3	–	–	–	–	F	0.0	5.9	
29	6.500	2.0	L3	X	0.9	7.3					8.2	LR	11.3	–	–	–	–	F	0.3	3.1	
30	6.500	4.5	OL			1.1					1.1	LR	7.4	–	–	–	–	F	0.0	5.6	
31	5.900	9.0	L3	X	0.9	1.5		2.0			11.4	ABC	7.0	–	–	–	–	F	0.3	2.9	
32	5.900	4.5	OL			2.8					2.8	LR	6.2	–	–	–	–	F	0.0	5.2	

F

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch
SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack
Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1 | **Cored By:** Elipsis Engineering and Consulting | **Date:** 5/4/15 & 5/5/15 | **Page No.:** 3 of 5

County: Osceola | **Highway Sect. No:** 92130 | **From:** Polk County Line | **To:** Orange County Line

Road No.: SR 400 | **Begin MP:** 0.000 | **End MP:** 7.885 | **Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	Type SP	ARMI	Type S	Type I	Binder Course	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
33	5.510	2.5	L4/AUX	X	1.0	1.4		3.1			12.3	ABC	6.8	–	–	–	–	F	0.3	2.9	Auxiliary Lane
34	5.510	4.0	OL			2.0		2.2			7.7	ABC	3.5	–	–	–	–	F	0.0	3.5	Auxiliary Lane Shoulder
35	4.731	9.0	L3	X	1.0	5.2					6.2	LR	10.8	–	–	–	–	F	0.3	3.0	
36	4.731	6.0	OL			2.8					2.8	LR	6.1	–	–	–	–	F	0.0	5.0	
37	3.850	2.5	L3	X	0.8	5.7					6.5	LR	12.0	–	–	–	–	F	0.5	3.4	
38	3.850	5.0	OL			2.5					2.5	LR	6.3	–	–	–	–	F	0.0	6.5	
39	3.487	11.0	L4/AUX	X	1.5	5.6					7.1	LR	14.9	–	–	–	–	F	0.1	1.9	Auxiliary Lane: Moved MP to Stay in L4
40	3.487	5.0	OL			4.1					4.1	LR	5.4	–	–	–	–	F	0.0	-0.2	Auxiliary Lane Shoulder: Moved MP to Stay in L4
41	0.370	2.5	R1	X	0.5	6.5					7.0	LR	12.5	–	–	–	–	F	0.1	-2.0	
42	0.370	5.5	IR			3.0					3.0	LR	5.5	–	–	–	–	F	0.0	-5.5	
43	1.630	9.5	R1	X	0.9	5.5					6.4	LR	13.1	–	–	–	–	F	0.3	-2.8	
44	1.630	6.0	IR			2.4					2.4	LR	6.6	–	–	–	–	F	0.0	-5.9	
45	2.569	2.0	R1	X	0.5	5.3		6.7	5.7	1.6	19.8	LR	9.2	–	–	–	–	F	0.1	1.2	Core fractured during extraction
46	2.569	6.0	IR			2.3					2.3	LR	5.7	–	–	–	–	F	0.0	-3.9	
47	3.300	9.0	R1	X	1.0	4.8		2.0	1.2	1.8	10.8	LR	11.2	–	–	–	–	F	0.3	0.6	
48	3.300	6.5	IR			2.0					2.0	LR	6.0	–	–	–	–	F	0.0	-4.8	

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 5/4/15 & 5/5/15	**Page No.:** 4 of 5
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	Type SP	ARMI	Type S	Type I	Binder Course	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
49	4.380	2.0	R1	X	0.9	4.5		1.0	1.5	2.1	10.0	LR	10.0	–	–	–	–	F	0.3	1.9	
50	4.380	5.0	IR			1.8					1.8	LR	6.2	–	–	–	–	F	0.0	-4.5	
51	5.250	9.0	R1	X	0.9	5.6					6.5	LR	12.5	–	–	–	–	F	0.1	-2.1	
52	5.250	6.0	IR			2.1					2.1	LR	7.4	–	–	–	–	F	0.0	-5.6	
53	6.700	2.0	R1	X	1.0	3.8		1.0	2.2	1.7	9.7	LR	10.3	–	–	–	–	F	0.0	1.4	
54	6.700	6.5	IR			2.6					2.6	LR	9.6	–	–	–	–	F	0.0	-3.8	
55	7.300	9.0	R1	X	0.5	7.4					7.9	LR	12.6	–	–	–	–	F	0.2	-2.6	
56	7.300	7.0	IR			1.7					1.7	LR	8.1	–	–	–	–	F	0.0	-4.7	
57	7.263	2.0	L1	X	0.9	1.2	0.5	3.0	3.0	1.8	10.4	LR	11.6	–	–	–	–	F	0.0	1.8	
58	7.263	5.5	IL			2.8					2.8	LR	5.1	–	–	–	–	F	0.0	-4.5	
59	6.700	9.0	L1	X	0.9	1.5		2.8	4.0	2.0	11.2	LR	9.8	–	–	–	–	F	0.2	2.3	
60	6.700	7.0	IL			1.7					1.7	LR	10.3	–	–	–	–	F	0.0	-4.6	
61	5.601	2.0	L1	X	0.9	5.5					6.4	LR	13.6	–	–	–	–	F	0.2	-2.2	
62	5.601	5.0	IL			2.4					2.4	LR	6.5	–	–	–	–	F	0.0	-5.2	
63	4.501	9.0	L1	X	0.9	1.6		4.3	3.2	1.9	11.9	LR	10.4	–	–	–	–	F	0.2	1.5	
64	4.501	7.0	IL			2.5					2.5	LR	6.0	–	–	–	–	F	0.0	-5.7	

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 5/4/15 & 5/5/15	**Page No.:** 5 of 5
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	Type SP	ARMI	Type S	Type I	Binder Course	Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
65	3.732	2.0	L1	X	0.4	1.5		2.6	3.6	2.0	10.1	LR	10.9	–	–	–	–	F	0.1	0.5	
66	3.732	5.5	IL			2.8					2.8	LR	6.1	–	–	–	–	F	0.0	-4.6	
67	2.570	9.5	L1	X	0.9	1.4		3.2	4.4	1.6	11.5	LR	12.5	–	–	–	–	F	0.2	0.7	
68	2.570	6.0	IL			1.9					1.9	LR	8.1	–	–	–	–	F	0.0	-3.6	
69	1.250	2.0	L1	X	0.8	6.0					6.8	LR	12.2	–	–	–	–	F	0.1	-2.3	
70	1.250	5.0	IL			1.5					1.5	LR	7.5	–	–	–	–	F	0.0	-6.0	
71	0.681	9.0	L1	X	1.3	5.7					7.0	LR	12.0	–	–	–	–	F	0.1	-2.5	
72	0.681	7.0	IL			1.9					1.9	LR	7.9	–	–	–	–	F	0.0	-5.6	
73	2.578	2.0	L4/AUX	X	1.0	4.4					5.4	LR	12.6	–	–	–	–	F	0.0	2.8	Auxiliary Lane: Moved MP to be in lane
74	2.578	5.0	OL			2.8					2.8	LR	6.3	–	–	–	–	F	0.0	3.7	Auxiliary Lane Shoulder: Moved MP to be in lane
75	2.151	10.0	L3	X	1.0	5.4					6.4	LR	11.6	–	–	–	–	F	0.5	2.4	
76	2.151	7.0	OL			2.5					2.5	LR	4.9	–	–	–	–	F	0.0	4.6	
77	1.821	2.0	L3	X	1.2	1.6		3.2	3.7	2.4	12.1	LR	9.9	–	–	–	–	F	0.2	1.8	
78	1.821	5.5	OL			1.4		3.6			7.6	ABC	2.6	–	–	–	–	F	0.0	6.5	
79	0.850	9.5	L3	X	0.8	1.4		2.3	3.6	2.1	10.2	LR	9.8	–	–	–	–	F	0.2	2.2	
80	0.850	6.0	OL			1.9		1.8			5.4	ABC	1.7	–	–	–	–	F	0.0	5.7	

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch
SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

Supplemental Data to PECD

(GPS Coordinates for Each Locations Cored)

SR 400 FIN: 431456-1 County: Osceola

Core #	GPS Coordinates
1	28.26339 ° -81.610522 °
2	28.26339 ° -81.610522 °
3	28.272332 ° -81.602095 °
4	28.272336 ° -81.602098 °
5	28.279764 ° -81.595113 °
6	28.279762 ° -81.59511 °
7	28.285349 ° -81.589865 °
8	28.285349 ° -81.589867 °
9	28.2946 ° -81.581118 °
10	28.294601 ° -81.581118 °
11	28.297908 ° -81.577927 °
12	28.297909 ° -81.577926 °
13	28.311761 ° -81.564928 °
14	28.31176 ° -81.564932 °
15	28.315924 ° -81.560834 °
16	28.315925 ° -81.560831 °
17	28.321446 ° -81.555245 °
18	28.321447 ° -81.555245 °
19	28.33143 ° -81.546335 °
20	28.33143 ° -81.546335 °

Core #	GPS Coordinates
21	28.340326 ° -81.537895 °
22	28.340326 ° -81.537893 °
23	28.344142 ° -81.534321 °
24	28.344142 ° -81.534321 °
25	28.347343 ° -81.531959 °
26	28.347343 ° -81.531959 °
27	28.340332 ° -81.538382 °
28	28.340327 ° -81.538391 °
29	28.331962 ° -81.546306 °
30	28.331964 ° -81.546306 °
31	28.325279 ° -81.55264 °
32	28.325279 ° -81.552639 °
33	28.321179 ° -81.557063 °
34	28.321179 ° -81.557065 °
35	28.312218 ° -81.564934 °
36	28.312219 ° -81.564932 °
37	28.302395 ° -81.574196 °
38	28.302398 ° -81.574197 °
39	28.298468 ° -81.577987 °
40	28.298468 ° -81.577987 °

Supplemental Data to PECD

(GPS Coordinates for Each Locations Cored)

SR 400 FIN: 431456-1 County: Osceola

Core #	GPS Coordinates
41	28.263434 ° -81.610581 °
42	28.263434 ° -81.610581 °
43	28.277497 ° -81.597341 °
44	28.277497 ° -81.59734 °
45	28.28797 ° -81.587456 °
46	28.28797 ° -81.587456 °
47	28.296128 ° -81.579765 °
48	28.296128 ° -81.579765 °
49	28.308231 ° -81.56836 °
50	28.308229 ° -81.568359 °
51	28.317648 ° -81.559029 °
52	28.317649 ° -81.559028 °
53	28.333701 ° -81.544291 °
54	28.333704 ° -81.544293 °
55	28.340642 ° -81.537763 °
56	28.340642 ° -81.537764 °
57	28.340311 ° -81.538354 °
58	28.340311 ° -81.538354 °
59	28.333831 ° -81.544466 °
60	28.333831 ° -81.544466 °

Core #	GPS Coordinates
61	28.321776 ° -81.556323 °
62	28.321771 ° -81.556323 °
63	28.30962 ° -81.567298 °
64	28.30962 ° -81.567298 °
65	28.301026 ° -81.57539 °
66	28.301027 ° -81.57539 °
67	28.288184 ° -81.587511 °
68	28.288182 ° -81.58751 °
69	28.273443 ° -81.601435 °
70	28.27344 ° -81.601436 °
71	28.267094 ° -81.607435 °
72	28.267092 ° -81.607435 °
73	28.288329 ° -81.587557 °
74	28.288329 ° -81.587559 °
75	28.283517 ° -81.59205 °
76	28.283516 ° -81.59205 °
77	28.279841 ° -81.595541 °
78	28.27984 ° -81.59554 °
79	28.268998 ° -81.60576 °
80	28.268998 ° -81.60576 °

Supplemental Data to PECD

(Cross-Slope Data for Each Locations Cored)

SR 400 FIN: 431456-1 County: Osceola

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
1	0.369	R3	1.8	2.2
2	0.369	OR	6.2	
3	1.171	R3	2.5	2.3
4	1.171	OR	4.4	
5	1.820	R3	2.8	3
6	1.820	OR	6.9	
7	2.320	R3	2.9	3.8
8	2.320	OR	5.5	
9	3.151	R3	3.3	3.3
10	3.151	OR	5.0	
11	3.450	R4/AUX	3.2	3.9
12	3.450	OR	5.0	
13	4.700	R3	3.3	2.9
14	4.700	OR	6.2	
15	5.080	R3	1.5	1.2
16	5.080	OR	6.1	
17	5.599	R4/AUX	2.5	2.8
18	5.599	OR	6.8	
19	6.480	R3	3.7	3.2
20	6.480	OR	4.0	

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
21	7.279	R5/AUX	2.8	2.3
22	7.279	OR	6.2	
23	7.620	R4/AUX	2.9	2.3
24	7.620	OR	5.9	
25	7.850	L4/AUX	3.0	3.0
26	7.850	OI	5.5	
27	7.251	L3	3.2	3.1
28	7.251	OL	5.9	
29	6.500	L3	3.5	2.7
30	6.500	OL	5.6	
31	5.900	L3	2.8	3.0
32	5.900	OL	5.2	
33	5.510	L4/AUX	2.9	2.8
34	5.510	OL	3.5	
35	4.731	L3	2.9	3.1
36	4.731	OL	5.0	
37	3.850	L3	3.1	3.7
38	3.850	OL	6.5	
39	3.487	L4/AUX	1.9	1.8
40	3.487	OL	-0.2	

Supplemental Data to PECD

(Cross-Slope Data for Each Locations Cored)

SR 400 FIN: 431456-1 County: Osceola

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
41	0.370	R1	-2.4	-1.5
42	0.370	IR	-5.5	
43	1.630	R1	-2.7	-2.9
44	1.630	IR	-5.9	
45	2.569	R1	1.2	.6
46	2.569	IR	-3.9	
47	3.300	R1	0.7	0.5
48	3.300	IR	-4.8	
49	4.380	R1	1.9	1.1
50	4.380	IR	-4.5	
51	5.250	R1	-2.1	-2.2
52	5.250	IR	-5.6	
53	6.700	R1	1.4	1.4
54	6.700	IR	-3.8	
55	7.300	R1	-2.6	-2.9
56	7.300	IR	-4.7	
57	7.263	L1	1.8	1.7
58	7.263	IL	-4.5	
59	6.700	L1	2.4	2.1
60	6.700	IL	-4.6	

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
61	5.601	L1	-2.0	-2.4
62	5.601	IL	-5.2	
63	4.501	L1	1.7	1.2
64	4.501	IL	-5.7	
65	3.732	L1	0.7	0.3
66	3.732	IL	-4.6	
67	2.570	L3	0.7	0.6
68	2.570	IL	-3.6	
69	1.250	L1	-2.4	-2.2
70	1.250	IL	-6.0	
71	0.681	L1	-2.7	-2.3
72	0.681	IL	-5.6	
73	2.578	L4/AUX	2.6	2.9
74	2.578	OL	3.7	
75	2.151	L3	2.7	2.0
76	2.151	OL	4.6	
77	1.821	L3	2.1	1.5
78	1.821	OL	6.5	
79	0.850	L3	2.1	2.2
80	0.850	OL	5.7	

State of Florida Department of Transportation
BRIDGE APPROACH AND LEAVE CONCRETE SLAB DEPTH DATA SHEET

Project No.: 431456-1 | **Cored By:** Elipsis Engineering and Consulting | **Date:** 5/4/15 & 5/5/15 | **Page No.:** 1 of 2

County: Osceola | **Highway Sect. No:** 92130 | **From:** Polk County Line | **To:** Orange County Line

Road No.: SR 400 | **Begin MP:** 0.000 | **End MP:** 7.885 | **Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					Location						Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
D-1	0.115	5.0	R3		Approach						5.8	PCC	N/A					F	0.3	1.3	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 5.8"
D-2	0.115	4.5	OR		Approach						4.5	PCC	N/A					F	0.0	4.5	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 4.5"
D-3	0.134	5.0	R3		Deck						2.8	PCC	N/A					F	0.1	1.6	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 2.8"
D-4	0.134	5.0	OR		Deck						2.0	PCC	N/A					F	0.0	1.3	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 2.0"
D-5	3.514	5.5	R4/AUX		Deck						2.7	PCC	N/A					F	0.3	1.2	Bridge 920099 I-4 EB at Reedy Creek Asphalt Thickness = 2.7"
D-6	3.514	5.5	OR		Deck						2.4	PCC	N/A					F	0.0	0.5	Bridge 920099 I-4 EB at Reedy Creek Asphalt Thickness = 2.4"
D-7	7.709	5.0	R4/AUX		Deck						4.4	PCC	N/A					F	0.1	2.7	Bridge 920101 I-4 EB at Bonnett Creek Asphalt Thickness = 4.4"
D-8	7.709	5.0	OR		Deck						2.4	PCC	N/A					F	0.0	2.4	Bridge 920101 I-4 EB at Bonnett Creek Asphalt Thickness = 2.4"
D-9	0.115	5.5	R1		Approach						6.0	PCC	N/A					F	0.2	1.3	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 6.0"
D-10	0.115	5.5	IR		Approach						4.8	PCC	N/A					F	0.0	1.4	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 4.8"
D-11	0.135	5.5	R1		Deck						2.8	PCC	N/A					F	0.1	1.2	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 2.8"
D-12	0.135	6.0	IR		Deck						1.6	PCC	N/A					F	0.0	1.5	Bridge 920095 I-4 EB at CR 532 Interchange Asphalt Thickness = 1.6"
D-13	3.514	5.0	R1		Deck						3.0	PCC	N/A					F	0.1	1.3	Bridge 920099 I-4 EB at Reedy Creek Asphalt Thickness = 3.0"
D-14	3.514	6.0	IR		Deck						2.0	PCC	N/A					F	0.0	2.0	Bridge 920099 I-4 EB at Reedy Creek Asphalt Thickness = 2.0"
D-15	7.710	6.0	R1		Deck						4.4	PCC	N/A					F	0.1	1.3	Bridge 920101 I-4 EB at Bonnett Creek Asphalt Thickness = 4.4"
D-16	7.710	6.0	IR		Deck						2.5	PCC	N/A					F	0.0	-0.2	Bridge 920101 I-4 EB at Bonnett Creek Asphalt Thickness = 2.5"

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation

BRIDGE APPROACH AND LEAVE CONCRETE SLAB DEPTH DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 5/4/15 & 5/5/15	**Page No.:** 2 of 2
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					Location						Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
D-17	0.137	5.5	L1		Approach						3.4	PCC	N/A					F	0.3	1.0	Bridge 920094 I-4 WB at CR 532 Interchange Asphalt Thickness = 3.4"
D-18	0.137	6.0	IL		Approach						2.4	PCC	N/A					F	0.0	2.9	Bridge 920094 I-4 WB at CR 532 Interchange Asphalt Thickness = 2.4"
D-19	0.137	6.0	L3		Approach						5.0	PCC	N/A					F	0.1	1.1	Bridge 920094 I-4 WB at CR 532 Interchange Asphalt Thickness = 5.0"
D-20	0.137	5.0	OL		Approach						4.4	PCC	N/A					F	0.0	0.2	Bridge 920094 I-4 WB at CR 532 Interchange Asphalt Thickness = 4.4"

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

Supplemental Data to Drill Depth Data Sheet

(GPS Coordinates for Each Drill Depth Location)

SR 400 FIN: 431456-1 County: Osceola

Drill Depth #	GPS Coordinates
D-1	28.260656 ° -81.613103 °
D-2	28.260656 ° -81.613103 °
D-3	28.260876 ° -81.612891 °
D-4	28.260876 ° -81.612891 °
D-5	28.298519 ° -81.577384 °
D-6	28.298519 ° -81.577384 °
D-7	28.345193 ° -81.533166 °
D-8	28.345199 ° -81.533167 °
D-9	28.260669 ° -81.613186 °
D-10	28.260669 ° -81.613186 °
D-11	28.260898 ° -81.612967 °
D-12	28.260898 ° -81.612967 °
D-13	28.298581 ° -81.577455 °
D-14	28.298581 ° -81.577454 °
D-15	28.345357 ° -81.533339 °
D-16	28.345358 ° -81.533338 °
D-17	28.261126 ° -81.613071 °
D-18	28.261126 ° -81.613071 °
D-19	28.261119 ° -81.613184 °
D-20	28.261116 ° -81.613178 °

Core #	GPS Coordinates

Supplemental Data to Drill Depth Data Sheet

(Cross-Slope Data for Each Drill Depth Location)

SR 400 FIN: 431456-1 County: Osceola

Drill Depth #	MP	Lane	0 to 6 feet	6 to 12 feet
D-1	0.115	R3	1.2	1.4
D-2	0.115	OR	4.5	
D-3	0.134	R3	1.3	1.9
D-4	0.134	OR	1.3	
D-5	3.514	R4/AUX	1.2	1.5
D-6	3.514	OR	0.5	
D-7	7.709	R4/AUX	2.3	3.0
D-8	7.709	OR	2.4	
D-9	0.115	R1	1.3	1.5
D-10	0.115	IR	1.4	
D-11	0.135	R1	1.2	1.3
D-12	0.135	IR	1.5	
D-13	3.514	R1	1.3	1.2
D-14	3.514	IR	2.0	
D-15	7.710	R1	1.3	1.1
D-16	7.710	IR	-0.2	
D-17	0.137	L1	1.2	.7
D-18	0.137	IL	2.9	
D-19	0.137	L3	1.1	1.1
D-20	0.137	OL	0.2	

Core #	MP	Lane	0 to 6 feet	6 to 12 feet

ELIPSIS ENGINEERING & CONSULTING, LLC

December 3, 2015

Florida Department of Transportation
1650 N. Kepler Road
DeLand, Florida 32724

Attention: Mr. Tim Keefe

Reference: Final Pavement Evaluation and Condition Data Report
SR 400 – supplemental cores for I-4 BTU in Osceola County
Osceola County, Florida
FPN 431456-1 (supplemental)
Section No: 92 130
Contract No.: C-9570
EEC Project No.: 12009-10.05

Dear Mr. Keefe:

Per your request, Elipsis Engineering & Consulting (EEC) has obtained pavement core and other relative information for the above referenced project. Our scope of services was conducted in accordance with your request for proposal dated October 27, 2015.

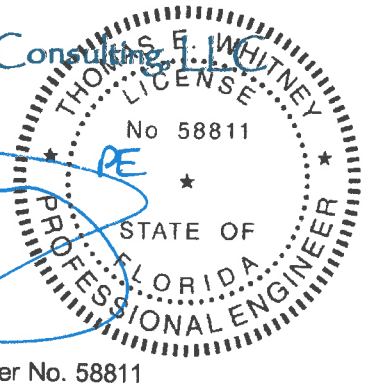
The pavement core data is presented on the attached Pavement Evaluation and Condition Data (PECD) Sheets 1 and 2. We have also included supplemental data sheets for the requested GPS locations, Cross-slope data for each core location, and core photographs for each core obtained. We have additionally included the roadway condition photo at each core location.

To the best of our knowledge, the information presented in the attachments to this letter is accurate and represents the existing pavement conditions at the locations cored. The pavement cores have been retained in storage pending further instructions from FDOT regarding their disposal.

Please feel free to contact us with any concerns or requests for further information.

Sincerely,
Elipsis Engineering & Consulting, LLC
Certificate of Authorization No. 28455

Thomas E. Whitney, PE
Principal Engineer
Signature Date: 12/3/15
STATE OF FLORIDA
Registered Professional Engineer No. 58811



State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 11/10/2015 & 11/11/15	**Page No.:** 1 of 2
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	FC-12.5	FC-3	Type S/SP			Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
81	517'	8.5	RAMP	X	0.6			4.4			5.0	LR	13.0	–	–	–	–	G	0.1	4.8	517' South of Gore on SR 429 SB to I-4 WB
82	530'	2.5	L1	X			1.7	3.6			5.3	LR	9.7	–	–	–	–	F	0.3	1.1	530' West of I-4 Overpass on CR 532
83	530'	2.0	R1	X			1.5	3.3			4.8	LR	9.2	–	–	–	–	F	0.1	2.8	530' West of I-4 Overpass on CR 532
84	1000'	9.0	R2	X			1.0	2.6			3.6	LR	9.4	–	–	–	–	F	0.2	3.3	1000' East of I-4 Overpass on CR 532
85	1000'	2.5	L2	X			1.3	2.5			3.8	LR	8.2	B	Br	III	M	F	0.4	1.9	1000' East of I-4 Overpass on CR 532
86	1014'	11.0	RAMP	X	1.0			4.7			5.7	LR	12.3	–	–	–	–	F	0.1	1.7	1014' North of Bridge over I-4 on I-4 WB to SR 429 NB
87	500'	2.0	RAMP	X	0.8			4.0			4.8	LR	13.5	–	–	–	–	G	0.3	-8.7	500' North of Bridge over I-4 on SR 429 SB to I-4 WB
88	500'	11.5	RAMP	X	0.8			5.0			5.8	LR	13.2	–	–	–	–	F	0.1	5.5	500' East of Gore on I-4 EB to SR 530 WB
89	500'	8.0	L1	X	1.2			3.4			4.6	LR	12.4	–	–	–	–	F	0.1	2.1	500' East of Bridge over I-4 on SR 530 WB
90	500'	2.0	R4	X		1.5		4.0			4.5	LR	18.0	–	–	–	–	F		1.3	500' East of Bridge over I-4 on SR 530 EB
91	500'	9.0	RAMP	X		0.8		4.9			5.7	ABC	5.9	–	–	–	–	G	0.3	1.7	500' East of Ramp Gore on I-4 WB to SR 536 Ramp
92	1000'	2.5	RAMP	X	0.7			3.8			4.5	LR	10.5	–	–	–	–	G		1.4	1000' East of Bridge over Bonnet Creek on I-4 WB to Osceola Pkwy
93	N/A	13.0	RAMP	X	0.8			4.0			4.8	LR	10.2	–	–	–	–	P	0.1	9.7	Along loop ramp from I-4 WB to Osceola Pkwy EB
94	500'	19.0	RAMP	X	1.0			3.8			4.8	LR	10.2	–	–	–	–	G		2.5	500' East of Gore combining Osceola Pky EB & WB to I-4 EB
95	500'	9.0	RAMP	X	0.9			4.2			5.1	LR	9.9	0.5	SL	I	M	F	0.3	2.4	500' West of Bridge over Bonnet Creek on I-4 WB to Osceola Pkwy WB
96	1500'	9.0	L1	X	1.0			3.8			4.8	LR	10.2	1.7	SL	II	M	F	0.2	0.4	1500' West of Bridge over I-4 on Osceola Pkwy WB

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

State of Florida Department of Transportation
PAVEMENT EVALUATION AND CONDITION DATA SHEET

Project No.: 431456-1	**Cored By:** Elipsis Engineering and Consulting	**Date:** 11/10/2015 & 11/11/15	**Page No.:** 2 of 2
County: Osceola	**Highway Sect. No:** 92130	**From:** Polk County Line	**To:** Orange County Line
Road No.: SR 400	**Begin MP:** 0.000	**End MP:** 7.885	**Length:** 7.885

Core No.	MP	Distance from left edge of lane (ft)	Lane	Wheel Path	Pavement Layer (in.)							Base		Crack				Pavt Cond.	Rut Depth (in)	Cross Slope (%)	Comments
					FC-5	FC-12.5	FC-3	Type S/SP			Core Length (in)	Type	Thick-ness (in)	Depth (in)	Type	Class	Extent				
97	1500'	2.5	R4	X	1.1			3.1			4.2	LR	12.3	–	–	–	–	F	0.2	2.2	1500' West of Bridge over I-4 on Osceola Pkwy EB
98	200'	2.5	RAMP	X	1.4			3.8			5.2	LR	18.8	–	–	–	–	F	0.1	6.1	200' West of Gore for Osceola EB & WB to I-4 EB
99	525'	2.5	RAMP	X	0.8			5.0			5.8	LR	14.2	–	–	–	–	F		1.8	500' West of Gore on I-4 WB to SR 530 EB
100	500'	2.0	RAMP	X	0.9			2.8			3.7	LR	9.1	–	–	–	–	F	0.2	1.7	500' West of Gore to I-4 EB & WB on SR 530 EB
101	500'	11.0	RAMP	X	1.2			4.0			5.2	LR	12.8	–	–	–	–	F		10.4	500' West of Gore on I-4 WB to SR 429 NB
102	1000'	9.0	RAMP	X	0.8			5.2			6.0	LR	12.5	–	–	–	–	G	0.2	7.7	1000' South of Bridge over Celebration Blvd on I-4 EB to SR 417 NB
103	500'	2.5	RAMP	X	0.8			3.7			4.5	LR	9.5	–	–	–	–	G		1.5	500' South of Bridge over Celebration Blvd on SR 417 SB to I-4 WB
104	500'	9.0	RAMP	X	1.1			3.1			4.2	LR	10.3	–	–	–	–	G	0.1	-9.9	500' South of Bridge over I-4 on SR 417 SB to I-4 WB
105	N/A	12.5	RAMP	X	0.9			4.4			5.3	LR	12.7	–	–	–	–	F	0.1	1.5	Under SR 530 Overpass on I-4 EB to SR 530 WB
106	500'	12.0	RAMP	X	0.8			2.4			3.2	LR	14.8	–	–	–	–	F		4.2	500' East of Ramp Overpass on I-4 EB to Osceola Pkwy
107	500'	1.5	RAMP	X	0.5			4.0			4.5	LR	10.5	0.5	SL	I	L	P	0.1	3.2	500' West of bridge over Bonnet Creek on I-4 EB to Osceola Pkwy

Remarks: Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement

Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; Bl= Block; Br= Branch

SL= Single Longitudinal; ST= Single Transverse; R= Reflective; J= Joint; OGFC= Open-Graded FC Stress Crack

Base Types: LR= Limerock; COQ= Coquina; SC= Soil Cement; ABC= Asphalt Base; SAHM= Sand Asphalt Hot Mix; NB= No Base

Supplemental Data to PECD

(GPS Coordinates for Each Locations Cored)

SR 400 FIN 431456-1 County: Osceola

Core #	GPS Coordinates
81	28.283775 ° -81.595077 °
82	28.261262 ° -81.615016 °
83	28.261152 ° -81.615013 °
84	28.260166 ° -81.60959 °
85	28.260345 ° -81.609528 °
86	28.286039 ° -81.595321 °
87	28.283919 ° -81.594539 °
88	28.330372 ° -81.546216 °
89	28.332723 ° -81.54342 °
90	28.332491 ° -81.543412 °
91	28.348199 ° -81.530387 °
92	28.348029 ° -81.53175 °
93	28.344173 ° -81.536458 °
94	28.349425 ° -81.528392 °
95	28.34587 ° -81.535839 °
96	28.345715 ° -81.537119 °
97	28.345381 ° -81.537566 °
98	28.343639 ° -81.536851 °
99	28.334692 ° -81.544117 °
100	28.332071 ° -81.550698 °

Core #	GPS Coordinates
101	28.284599 ° -81.592487 °
102	28.325315 ° -81.551063 °
103	28.326511 ° -81.549035 °
104	28.325585 ° -81.553644 °
105	28.33261 ° -81.544893 °
106	28.338172 ° -81.539685 °
107	28.346512 ° -81.531827 °

Supplemental Data to PECD

(Cross-Slope Data for Each Locations Cored)

SR 400 FIN 431456-1 County: Osceola

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
81	517'	RAMP	5.1	4.5
82	530'	L1	1.3	0.8
83	530'	R1	2.5	3.0
84	1000'	R2	3.4	3.1
85	1000'	L2	1.9	1.6
86	1014'	RAMP	1.7	1.6
87	500'	RAMP	-8.3	-9.1
88	500'	RAMP	5.5	5.4
89	500'	L1	2.1	2.3
90	500'	R4	1.4	1.1
91	500'	RAMP	1.7	1.5
92	1000'	RAMP	1.4	1.3
93	N/A	RAMP	9.7	10.3
94	500'	RAMP	1.8	3.2
95	500'	RAMP	2.4	2.6
96	1500'	L1	0.6	0.2
97	1500'	R4	2.2	2.8
98	200'	RAMP	4.8	7.3
99	525'	RAMP	1.9	1.6
100	500'	RAMP	1.7	1.6

Core #	MP	Lane	0 to 6 feet	6 to 12 feet
101	500'	RAMP	10.8	9.9
102	1000'	RAMP	7.4	7.9
103	500'	RAMP	1.4	1.5
104	500'	RAMP	-10.0	-9.8
105	N/A	RAMP	1.4	1.5
106	500'	RAMP	4.2	4.1
107	500'	RAMP	3.2	3.2

GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			8.2	1.7		7.9	1.1		6.3	-2.6		0.000	5.8	-0.4		5.6	-1.0		5.1	-0.1				
			9.0	2.0	0.0	6.7	2.2	0.2	7.4	-4.4	0.1	0.019	7.1	-2.3	0.2	6.4	-0.2	0.2	7.2	1.3	0.1			
			9.7	2.4	0.2	8.6	1.3	0.3	7.3	-3.1	0.1	0.038	7.7	-1.8	0.1	8.3	-0.3	0.2	9.4	2.2	0.2			
			9.3	2.3	0.1	8.1	0.8	0.1	7.3	-3.2	0.1	0.057	7.2	-2.2	0.1	9.2	0.0	0.2	9.4	1.9	0.3			
			8.8	2.6	0.3	8.5	1.4	0.2	6.7	-1.9	0.1	0.076	7.0	-2.6	0.0	9.0	0.2	0.1	8.6	2.2	0.3			
			7.5	1.9	0.3	6.6	2.2	0.1	7.0	-0.4	0.1	0.095	7.1	-1.1	0.1	8.2	0.3	0.2	8.5	1.8	0.3			
				1.2	0.3		1.9	0.1		2.0	0.1	0.114	8.3	1.3	0.1	8.3	-0.1	0.2	7.8	1.5	0.2			
				1.6	0.3		1.6	0.1		1.7	0.1	0.133		1.9	0.2		1.5	0.2		1.4	0.2			
			6.3	2.1	0.1	6.2	0.8	0.2	8.2	-2.0	0.1	0.152		1.3	0.2		1.5	0.2		1.7	0.2			
			7.8	2.5	0.1	6.9	1.2	0.1	7.5	-2.7	0.0	0.170	7.6	-1.6	0.1	8.1	1.2	0.1	8.3	3.1	0.2			
			10.4	2.3	0.1	8.9	1.2	0.2	7.4	-2.6	0.0	0.189	7.4	-2.0	0.1	9.4	0.2	0.1	9.5	2.4	0.2			
			11.9	2.3	0.2	12.7	1.4	0.1	6.9	-2.4	0.1	0.208	7.5	-1.9	0.1	11.5	0.3	0.3	13.4	2.0	0.4			
			12.0	1.8	0.2	12.1	1.3	0.1	7.8	-2.2	0.1	0.227	7.5	-2.0	0.1	12.5	0.6	0.2	12.0	2.3	0.2			
			13.5	2.0	0.1	12.0	1.0	0.1	7.2	-2.3	0.1	0.246	7.5	-2.4	0.1	11.8	0.5	0.1	13.2	1.9	0.3			
			13.2	2.1	0.2	12.2	1.1	0.1	7.4	-2.5	0.1	0.265	7.4	-2.5	0.1	12.4	0.6	0.1	13.5	1.7	0.3			
			13.6	2.0	0.1	12.9	1.2	0.1	7.0	-2.2	0.1	0.284	8.0	-2.6	0.1	12.2	0.9	0.1	13.0	2.4	0.3			
			14.4	1.8	0.3	12.8	1.0	0.1	8.0	-2.4	0.1	0.303	7.6	-2.2	0.2	13.0	0.6	0.1	12.6	2.2	0.2			
			13.2	1.9	0.1	12.3	1.4	0.1	7.5	-2.2	0.2	0.322	8.0	-1.8	0.1	12.5	1.4	0.3	13.3	2.8	0.4			
			13.5	2.0	0.1	13.1	1.1	0.1	6.9	-2.4	0.1	0.341	8.6	-1.7	0.2	13.0	1.3	0.1	14.1	3.0	0.3			
			14.3	2.4	0.2	12.7	0.9	0.1	7.2	-2.6	0.1	0.360	8.0	-1.9	0.2	12.8	1.2	0.1	14.9	2.7	0.3			
			14.9	2.0	0.1	13.2	1.0	0.1	7.4	-2.3	0.0	0.379	8.1	-1.7	0.2	13.5	0.7	0.1	14.1	2.0	0.3			
			14.3	2.0	0.1	13.5	0.8	0.1	7.4	-2.6	0.1	0.398	8.4	-2.0	0.2	13.3	1.0	0.1	15.0	2.4	0.3			
			14.7	1.9	0.1	13.1	1.3	0.1	7.1	-2.6	0.1	0.417	7.8	-1.9	0.2	13.8	1.2	0.2	12.8	2.4	0.2			
			14.0	2.5	0.2	13.2	1.2	0.1	7.4	-2.8	0.1	0.436	7.9	-2.0	0.2	13.6	1.3	0.2	12.4	2.4	0.2			
			14.3	2.5	0.1	13.9	1.4	0.1	7.3	-2.6	0.1	0.455	7.9	-2.1	0.2	13.7	1.6	0.1	14.1	2.5	0.3			
			13.9	2.8	0.1	15.0	1.5	0.2	7.8	-2.3	0.1	0.473	7.4	-2.3	0.2	13.4	1.1	0.1	13.7	2.4	0.4			
			14.2	3.3	0.0	14.0	1.3	0.1	7.3	-2.6	0.0	0.492	8.4	-1.8	0.2	14.6	1.4	0.1	13.1	2.3	0.3			
			14.7	2.9	0.1	13.6	1.2	0.1	7.2	-2.5	0.0	0.511	8.4	-1.9	0.2	13.6	1.3	0.1	13.1	2.3	0.3			
			15.4	2.6	0.1	13.4	1.1	0.1	7.7	-2.7	0.2	0.530	7.9	-2.3	0.1	14.6	1.8	0.1	14.2	2.7	0.3			
			17.9	3.2	0.1	16.5	1.5	0.1	7.1	-2.6	0.1	0.549	8.2	-2.0	0.1	15.5	1.4	0.1	16.1	2.8	0.3			
			13.3	2.8	0.1	15.5	1.2	0.1	8.0	-2.5	0.1	0.568	7.8	-2.1	0.1	14.3	1.6	0.1	14.4	2.9	0.3			
			12.9	2.6	0.1	14.9	0.9	0.1	7.3	-2.4	0.1	0.587	8.0	-2.0	0.1	13.2	1.8	0.2	13.6	2.9	0.2			
			14.3	2.8	0.1	14.9	1.1	0.1	7.3	-2.3	0.1	0.606		-2.1	0.2	13.3	1.7	0.3	13.1	2.8	0.3			
			13.9	3.1	0.2	14.7	1.6	0.1	7.9	-2.6	0.1	0.625	7.8	-2.1	0.2	13.2	1.5	0.2	13.2	3.0	0.3			
			15.2	3.0	0.1	14.4	1.6	0.1	6.5	-2.5	0.1	0.644	8.1	-2.0	0.2	13.6	1.7	0.2	11.9	2.8	0.3			
			13.8	2.7	0.2	14.2	1.3	0.1	6.4	-2.5	0.1	0.663	8.1	-1.9	0.1	12.0	1.9	0.3	12.1	3.3	0.2			
			13.7	3.1	0.2	15.0	1.1	0.1	7.5	-2.5	0.1	0.682	7.3	-2.0	0.1	13.5	1.4	0.1	12.7	2.7	0.2			
			13.0	2.9	0.2	14.4	1.2	0.1	7.1	-2.2	0.1	0.701	7.9	-2.1	0.2	13.2	1.4	0.2	13.7	3.4	0.2			
			14.6	2.5	0.1	14.7	1.5	0.2	7.4	-2.5	0.1	0.720	8.5	-2.2	0.2	14.1	1.2	0.1	12.6	3.7	0.2			
			14.1	2.5	0.1	13.8	1.7	0.2	7.9	-2.5	0.2	0.739	8.3	-2.2	0.2	12.1	2.1	0.1	13.7	3.7	0.2			
			13.0	2.6	0.1	14.6	1.4	0.1	7.8	-2.3	0.2	0.758	7.8	-2.0	0.2	13.1	1.4	0.2	13.1	3.4	0.2			
			13.1	2.2	0.1	14.3	1.4	0.1	7.3	-2.5	0.1	0.777	7.7	-1.7	0.1	13.0	1.5	0.3	12.6	3.1	0.2			
			13.8	2.0	0.1	13.9	1.2	0.1	8.1	-2.4	0.2	0.795	7.2	-1.8	0.1	13.1	1.5	0.2	12.4	3.3	0.2			
			13.0	2.2	0.1	13.2	1.5	0.1	8.0	-2.4	0.2	0.814	7.8	-2.3	0.1	12.0	1.8	0.4	12.5	3.4	0.2			
			12.9	2.3	0.1	12.8	1.3	0.1	7.8	-2.4	0.1	0.833	7.1	-2.3	0.1	12.1	1.8	0.2	12.2	3.7	0.3			
			13.2	2.5	0.1	13.5	1.7	0.1	8.0	-2.6	0.2	0.852	7.2	-2.2	0.1	13.0	1.8	0.3	13.2	3.1	0.2			
			12.9	2.0	0.1	13.5	1.2	0.1	7.3	-2.4	0.1	0.871	6.9	-2.2	0.1	13.0	1.6	0.2	12.8	3.0	0.2			
			13.9	2.5	0.1	13.7	1.7	0.1	7.8	-2.4	0.1	0.890	8.0	-2.1	0.1	12.5	2.0	0.2	12.3	3.7	0.2			
			12.5	2.1	0.1	14.1	1.2	0.1	7.6	-2.3	0.0	0.909	7.2	-1.9	0.1	12.3	1.9	0.3	13.0	3.4	0.3			
			13.1	2.1	0.1	13.9	1.4	0.1	7.2	-3.0	0.0	0.928	7.1	-1.9	0.2	12.9	1.9	0.2	12.3	3.4	0.2			
			13.0	2.2	0.1	14.0	1.4	0.1	8.9	-2.1	0.1	0.947	7.5	-2.1	0.1	12.5	2.1	0.3	12.5	3.6	0.3			
			14.8	1.7	0.1	14.4	1.1	0.1	7.6	-2.0	0.1	0.966	8.0	-2.2	0.1	12.9	2.0	0.3	13.7	3.4	0.2			
			14.1	1.9	0.1	14.9	1.2	0.0	7.7	-2.2	0.2	0.985	7.1	-1.9	0.2	12.8	1.4	0.3	13.1	3.2	0.3			
			15.2	2.0	0.1	14.1	1.3	0.1	7.4	-2.4	0.2	1.004	7.5	-2.3	0.2	12.0	1.6	0.3	13.1	3.7	0.3			
			14.4	1.7	0.0	14.8	1.3	0.1	7.6	-2.5	0.2	1.023	7.7	-1.9	0.2	12.1	1.6	0.2	11.6	3.4	0.5			
			13.7	2.3	0.1	14.6	1.2	0.1	7.8	-2.2	0.1	1.042	8.0	-1.9	0.1	12.2	1.6	0.4	13.1	3.3	0.2			
			13.9	2.4	0.1	13.7	1.6	0.2	7.8	-2.2	0.1	1.061	7.2	-2.1	0.2	11.4	1.9	0.4	12.3	3.4	0.3			
			14.4	2.4	0.1	13.7	1.2	0.1	7.6	-2.6	0.1	1.080	7.0	-2.1	0.1	11.3	2.1	0.3	12.1	2.9	0.4			
			14.5	2.2	0.1	13.8	1.4	0.2	7.6	-2.4	0.2	1.098	6.7	-2.0	0.1	12.0	1.9	0.2	11.7	2.5	0.3			
			14.0	2.9	0.1	13.8	1.3	0.1	7.5	-2.5	0.2	1.117	7.0	-2.4	0.2	11.9	2.1	0.3	13.2	3.1	0.5			
			13.4	1.9	0.1	14.6	1.4	0.1	7.6	-3.0	0.1	1.136	7.9	-1.9	0.1	12.2	2.1	0.3	11.5	3.3	0.3			

GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			14.1	2.5	0.1	13.9	1.3	0.1	7.5	-3.2	0.1	1.155	6.9	-2.2	0.2	11.0	1.8	0.3	11.7	2.8	0.3			
			14.1	2.8	0.1	13.6	1.5	0.1	6.8	-2.5	0.1	1.174	6.7	-2.7	0.1	11.8	1.8	0.3	11.8	3.1	0.3			
			13.5	2.8	0.1	14.4	1.4	0.1	7.5	-2.6	0.0	1.193	6.8	-2.4	0.1	12.7	2.1	0.3	12.1	2.8	0.3			
			17.7	2.6	0.1	14.3	1.7	0.1	7.6	-2.3	0.1	1.212	7.6	-2.0	0.2	12.2	1.9	0.3	12.0	3.1	0.4			
			12.9	2.7	0.1	17.0	2.1	0.1	7.3	-2.3	0.1	1.231	7.4	-2.4	0.2		1.6	0.3	11.7	3.2	0.5			
			11.9	2.1	0.1	13.4	1.5	0.1	7.1	-2.1	0.1	1.250	7.2	-2.2	0.2	12.6	1.6	0.3	12.0	3.5	0.4			
			11.9	2.6	0.1	13.7	1.4	0.1	7.4	-2.4	0.1	1.269	7.3	-2.6	0.1	12.4	1.5	0.2	13.1	3.1	0.5			
			13.7	2.7	0.1	14.0	2.2	0.1	7.5	-2.3	0.1	1.288	8.5	-2.6	0.1	11.5	1.4	0.3	11.6	2.7	0.5			
			14.2	3.0	0.0	14.2	1.2	0.1	7.1	-2.0	0.1	1.307	8.8	-2.5	0.1	12.4	1.9	0.4	13.0	2.6	0.4			
			16.4	3.0	0.2	17.4	2.0	0.2	7.1	-2.2	0.1	1.326	8.4	-2.5	0.1	11.7	1.4	0.3	13.1	2.4	0.4			
			16.2	2.6	0.1	20.2	1.7	0.2	6.8	-2.7	0.1	1.345	7.3	-2.6	0.1	13.9	1.8	0.2	13.3	3.0	0.5			
				2.2	0.2	18.4	1.4	0.1	6.1	-2.6	0.0	1.364	7.4	-2.7	0.1		1.7	0.2	14.6	3.7	0.4			
			17.1	2.5	0.2		1.4	0.1	7.5	-2.6	0.1	1.383	8.5	-2.6	0.2		1.4	0.2		3.8	0.3			
			11.5	2.5	0.0	17.4	1.9	0.0	7.0	-2.4	0.0	1.402	7.5	-2.1	0.1		2.0	0.1		4.2	0.2			
			12.4	2.4	0.0	13.0	1.1	0.1	7.3	-2.5	0.0	1.420	8.2	-2.7	0.1	13.8	2.1	0.3	11.8	3.2	0.3			
			11.7	2.3	0.0	12.6	1.5	0.1	7.8	-3.2	0.0	1.439	8.4	-2.3	0.1	12.2	2.1	0.2	11.8	3.0	0.3			
			12.1	2.4	0.0	13.8	1.0	0.2	7.6	-2.2	0.0	1.458	7.3	-2.1	0.1	13.1	2.0	0.3	11.8	2.9	0.2			
			11.6	2.7	0.0	13.1	1.4	0.1	7.3	-2.4	0.1	1.477	8.3	-2.4	0.1	12.4	2.2	0.3	12.6	2.9	0.1			
			11.7	2.4	0.0	13.5	1.4	0.1	8.3	-2.3	0.1	1.496	6.6	-2.7	0.1	13.1	1.8	0.1	11.9	2.8	0.1			
			11.6	2.3	0.0	13.3	1.4	0.1	7.7	-2.4	0.1	1.515	6.7	-2.7	0.1	12.9	1.6	0.3	12.2	2.5	0.3			
			12.6	2.8	0.1	13.2	1.2	0.1	7.5	-2.3	0.0	1.534	7.2	-2.8	0.1	13.5	1.7	0.3	11.9	3.2	0.3			
			12.2	2.8	0.1	13.1	2.0	0.1		-2.7	0.1	1.553	6.8	-2.4	0.1	12.7	2.2	0.3	11.4	3.0	0.3			
			11.7	2.8	0.1	13.6	1.7	0.2	7.6	-2.5	0.0	1.572	6.5	-1.9	0.1	13.6	1.9	0.3	10.2	2.6	0.4			
			11.4	2.6	0.1	13.3	1.2	0.1	8.0	-2.7	0.0	1.591	6.6	-2.8	0.1	13.0	2.2	0.4	11.2	2.6	0.3			
			11.6	2.3	0.1	13.7	0.9	0.1	8.4	-2.8	0.0	1.610	6.5	-2.8	0.1	12.5	2.2	0.3	10.1	3.0	0.4			
			11.7	2.5	0.1	12.8	1.2	0.1	7.7	-2.4	0.0	1.629	6.9	-2.8	0.2	12.6	2.5	0.2	10.7	2.8	0.5			
			12.0	2.3	0.1	13.1	1.5	0.1	7.7	-2.5	0.1	1.648	7.0	-2.4	0.2	13.1	2.2	0.3	11.1	3.1	0.5			
			12.4	2.3	0.1	13.0	1.4	0.1	7.0	-2.6	0.0	1.667	7.3	-2.4	0.2	12.7	1.8	0.2	13.2	2.4	0.4			
			12.2	3.1	0.0	15.0	1.9	0.1	6.9	-2.3	0.1	1.686	7.1	-1.7	0.2	12.3	1.3	0.3	12.9	2.9	0.4			
			11.5	1.8	0.1	14.5	1.3	0.1	7.4	-2.0	0.1	1.705	7.7	-2.2	0.1	12.8	1.2	0.3	11.8	3.1	0.4			
			13.7	2.8	0.1	13.6	1.3	0.2	7.1	-2.2	0.1	1.723	6.5	-2.5	0.2	13.3	1.4	0.2	12.8	2.8	0.3			
			13.2	2.7	0.0	14.0	1.6	0.1	7.5	-2.1	0.1	1.742	6.8	-2.4	0.2	13.8	1.5	0.3	11.5	2.5	0.3			
			13.1	2.1	0.0	13.0	1.5	0.1	7.8	-2.1	0.1	1.761	7.4	-2.0	0.2	14.0	1.3	0.2	14.8	3.1	0.3			
			14.0	2.1	0.0	14.2	1.7	0.2	7.5	-2.5	0.0	1.780	7.0	-2.3	0.2	13.3	1.7	0.3	12.6	2.9	0.3			
			13.4	2.0	0.0	14.2	1.8	0.1	7.3	-2.2	0.1	1.799	7.3	-2.4	0.2	12.9	1.3	0.3	11.2	2.7	0.3			
			13.2	2.2	0.1	14.7	1.3	0.1	7.6	-2.3	0.1	1.818	7.2	-2.4	0.2	12.9	1.5	0.2	11.6	2.5	0.3			
			13.9	1.9	0.1	14.6	0.7	0.1	7.1	-1.9	0.1	1.837	8.1	-2.1	0.2	13.8	1.5	0.2	13.5	3.1	0.3			
			13.6	2.3	0.1	14.7	0.4	0.1	7.8	-2.0	0.1	1.856	6.8	-2.5	0.2	13.9	1.5	0.3	12.0	3.0	0.3			
			14.7	2.4	0.0	14.1	1.4	0.1	7.2	-1.9	0.0	1.875	6.8	-3.2	0.3	13.5	1.4	0.4	12.7	2.9	0.3			
			14.7	2.2	0.1	13.8	1.1	0.2	7.3	-2.0	0.1	1.894	6.7	-2.4	0.2	13.3	1.5	0.4	11.6	2.8	0.4			
			14.2	2.1	0.1	13.8	1.6	0.2	7.4	-2.3	0.1	1.913	7.4	-3.0	0.2	13.5	1.3	0.3	13.9	2.8	0.4			
			14.6	2.4	0.1	13.1	1.6	0.2	7.0	-2.4	0.1	1.932	6.8	-2.4	0.2	12.3	1.5	0.2	12.5	2.5	0.3			
			13.4	2.7	0.1	12.9	1.4	0.2	6.9	-2.2	0.1	1.951	7.2	-2.6	0.2	12.0	1.4	0.2	13.1	2.2	0.3			
			13.7	2.6	0.1	13.6	1.2	0.2	7.2	-2.8	0.0	1.970	7.6	-2.6	0.2	12.1	1.2	0.3	12.2	2.7	0.3			
			13.4	2.3	0.1	13.2	1.4	0.1	6.8	0.7	0.1	1.989	7.0	-2.6	0.2	12.8	0.9	0.2	12.9	2.8	0.3			
			12.9	2.8	0.1	14.3	1.5	0.1	7.0	1.1	0.0	2.008	4.7	-2.8	0.1	12.9	1.4	0.1	11.3	2.7	0.3			
			12.9	3.8	0.3	14.0	1.6	0.1	6.9	0.8	0.0	2.027	6.2	0.5	0.2	12.9	2.2	0.1	12.2	3.3	0.2			
			10.0	4.2	0.2	14.8	2.2	0.1	6.7	0.5	0.0	2.045	6.6	0.6	0.2	13.6	2.1	0.1	10.7	3.2	0.3			
			10.0	4.0	0.1	14.2	2.2	0.1	9.8	0.0	0.0	2.064	9.3	1.5	0.2	14.7	2.1	0.2	10.5	3.9	0.4			
			10.7	3.6	0.1	13.9	1.8	0.2	9.2	0.4	0.1	2.083	9.5	1.6	0.2	13.1	2.5	0.3	9.9	3.8	0.2			
			7.8	2.6	0.1	14.8	2.0	0.2	12.3	-0.5	0.0	2.102	9.2	1.0	0.2	12.3	2.7	0.4	8.5	2.8	0.2			
			7.9	2.7	0.2	14.1	2.5	0.1	12.1	0.1	0.0	2.121	12.1	1.2	0.2	12.5	2.8	0.1	8.0	2.9	0.2			
			8.0	2.6	0.2	13.5	2.6	0.2	11.3	1.1	0.0	2.140	12.0	1.0	0.2	12.4	2.9	0.2	8.0	2.6	0.2			
			7.4	3.1	0.2	12.1	2.5	0.1	13.4	0.7	0.0	2.159	11.3	0.6	0.1	10.2	3.1	0.2	8.9	2.6	0.2			
			6.6	3.8	0.2	13.5	2.9	0.2	15.3	1.4	0.1	2.178	11.8	0.7	0.1	11.9	2.6	0.2	6.9	2.5	0.2			
			7.6	3.4	0.2	13.1	3.2	0.1	13.6	0.9	0.0	2.197	11.9	0.6	0.1	11.7	2.5	0.2	8.1	3.0	0.3			
			6.9	3.5	0.1	14.1	3.1	0.1	14.3	1.0	0.1	2.216	10.8	0.6	0.2	9.6	2.7	0.3	7.5	3.3	0.2			
			8.1	3.4	0.1	12.6	3.1	0.2	12.9	1.1	0.0	2.235	9.9	1.1	0.2	9.7	3.4	0.2	7.9	3.6	0.3			
			7.3	3.5	0.1	12.2	3.6	0.1	13.1	0.8	0.0	2.254	9.5	1.8	0.1	7.8	4.0	0.3	7.7	3.6	0.3			
			7.8	3.5	0.2	12.4	2.9	0.1	15.6	0.4	0.0	2.273	9.5	1.7	0.1	9.3	3.2	0.1	7.9	3.4	0.2			
			8.4	3.2	0.2	14.5	3.0	0.1	13.6	1.0	0.0	2.292	10.1	0.7	0.1	8.8	2.6	0.1	8.3	3.8	0.3			

GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			7.9	2.9	0.2	13.2	2.7	0.1	12.9	0.6	0.0	2.311	10.7	0.9	0.1	12.3	2.7	0.3	8.1	3.6	0.3			
			7.5	3.9	0.2	16.3	3.0	0.2	12.4	1.1	0.0	2.330	12.4	0.9	0.1	12.4	2.8	0.3	8.0	3.6	0.4			
			6.9	3.8	0.2	14.6	2.9	0.1	13.9	0.9	0.0	2.348	13.0	1.2	0.2	11.9	3.1	0.2	7.7	3.8	0.4			
			7.3	3.5	0.1	14.1	2.3	0.2	15.4	0.0	0.0	2.367	11.4	1.1	0.1	12.1	3.0	0.3	7.8	3.6	0.4			
			8.0	3.7	0.1	15.5	2.0	0.1	14.0	0.6	0.1	2.386	11.6	0.5	0.1	11.9	2.7	0.2	8.1	3.6	0.3			
			7.5	3.8	0.2	14.1	3.0	0.2	14.0	1.3	0.0	2.405	10.8	1.2	0.1	11.8	2.8	0.2	8.3	3.6	0.4			
			8.6	3.7	0.2	13.7	2.7	0.2	15.6	1.0	0.0	2.424	11.9	0.6	0.1	11.4	2.5	0.2	8.0	4.2	0.3			
			7.7	3.6	0.1	13.3	2.4	0.2	13.7	1.2	0.0	2.443	11.4	1.1	0.1	11.5	2.9	0.3	7.9	3.7	0.3			
			8.2	3.1	0.2	14.6	2.6	0.2	14.1	1.3	0.0	2.462	11.4	0.8	0.1	12.2	3.2	0.2	8.1	3.3	0.2			
			7.2	3.8	0.2	12.8	2.9	0.1	14.9	1.5	0.0	2.481	11.3	0.9	0.1	11.9	3.0	0.2	7.7	3.6	0.2			
			8.6	4.1	0.2	12.9	2.4	0.2	15.2	0.8	0.0	2.500	10.7	1.9	0.1	12.5	3.2	0.2	8.3	3.8	0.3			
			8.3	4.2	0.2	15.0	2.8	0.1	14.1	0.6	0.0	2.519	11.9	1.5	0.1	13.5	3.1	0.2	7.2	4.1	0.3			
			7.9	4.1	0.2	13.1	2.7	0.1	14.0	1.0	0.0	2.538	12.4	1.4	0.1	13.3	3.4	0.2	8.0	3.8	0.3			
			7.6	4.4	0.2	15.1	2.5	0.2	14.2	0.0	0.1	2.557	19.2	0.8	0.1	18.7	2.9	0.1	7.0	3.6	0.3			
			7.4	4.4	0.2	13.1	2.5	0.1	12.5	0.8	0.0	2.576	18.7	1.3	0.1	21.6	3.4	0.2	7.4	3.9	0.2			
			7.5	4.2	0.1	14.8	2.7	0.1	12.3	0.8	0.0	2.595	11.8	1.1	0.1	11.9	2.9	0.1	8.5	3.6	0.3			
			7.8	4.1	0.2	15.9	3.1	0.1	13.3	1.7	0.0	2.614	11.1	1.5	0.1	12.1	3.3	0.2	7.7	3.9	0.2			
			7.4	3.7	0.1	13.7	2.5	0.1	13.6	1.0	0.0	2.633	11.3	0.7	0.1	11.3	3.0	0.2	7.0	4.1	0.2			
			7.4	3.5	0.1	14.1	2.8	0.2	12.7	1.2	0.0	2.652	11.4	1.2	0.1	12.2	2.9	0.2	7.8	4.0	0.3			
			7.4	3.6	0.2	15.5	2.3	0.2	13.8	1.0	0.0	2.670	12.3	1.5	0.0	12.0	2.8	0.1	7.2	4.2	0.3			
			8.1	3.7	0.2	13.7	2.3	0.2	13.5	1.3	0.0	2.689	11.5	1.2	0.1	11.0	3.0	0.3	8.2	3.7	0.2			
			7.6	3.9	0.1	14.1	2.5	0.2	13.9	1.5	0.0	2.708	10.7	0.3	0.1	10.6	3.2	0.2	7.0	3.8	0.3			
			6.6	4.0	0.1	13.9	2.9	0.1	13.2	1.2	0.0	2.727	11.2	1.0	0.1	10.8	3.2	0.3	8.4	3.8	0.4			
			7.6	4.1	0.2	12.8	2.9	0.1	13.4	1.3	0.0	2.746	10.8	1.1	0.1	9.6	3.8	0.2	6.3	4.7	0.3			
			7.3	4.0	0.1	13.9	2.9	0.3	13.3	1.0	0.0	2.765	10.7	1.4	0.1	12.8	4.0	0.2	7.4	4.2	0.3			
			7.8	4.0	0.2	13.4	2.9	0.2	13.6	1.5	0.0	2.784	10.5	1.5	0.1	12.0	3.4	0.2	6.8	4.5	0.1			
			6.3	3.3	0.1		2.8	0.2	14.3	1.2	0.1	2.803	10.9	1.4	0.1	11.4	2.6	0.3	7.2	3.5	0.2			
			6.5	3.3	0.1	13.4	3.0	0.1	13.1	1.0	0.0	2.822	11.5	1.5	0.1	12.6	2.8	0.3	7.7	3.7	0.3			
			6.5	4.0	0.1	12.3	2.8	0.1	12.6	1.3	0.0	2.841	11.7	1.6	0.1	12.3	2.9	0.3	6.8	4.1	0.2			
			6.8	3.9	0.1	14.2	3.1	0.1	13.2	1.1	0.0	2.860	11.7	1.5	0.2	11.3	3.4	0.2	8.6	2.9	0.1			
			6.9	3.7	0.1	14.3	2.9	0.2	12.3	1.4	0.0	2.879	12.1	1.3	0.2	13.2	3.2	0.3	8.2	2.9	0.2			
			6.7	4.2	0.1	13.6	3.0	0.1	12.5	1.3	0.0	2.898	11.3	1.3	0.2	13.1	3.0	0.2	7.5	3.3	0.3			
			7.0	4.1	0.1	14.2	3.2	0.1	14.1	1.2	0.1	2.917	11.5	1.5	0.2	12.3	3.4	0.2	7.7	3.7	0.4			
			6.7	3.9	0.1	13.0	3.0	0.1	14.0	1.1	0.0	2.936	11.2	1.2	0.2	12.5	3.0	0.3	8.2	2.9	0.2			
			6.1	3.9	0.1	13.4	2.8	0.1	13.2	1.0	0.1	2.955	12.0	1.3	0.2	11.6	3.0	0.4	7.0	3.3	0.2			
			7.1	3.6	0.1	12.6	2.8	0.1	13.3	0.8	0.1	2.973	11.3	0.8	0.2	11.5	2.7	0.4	7.1	3.8	0.2			
			6.4	3.7	0.2	13.1	3.0	0.1	12.5	0.9	0.0	2.992	11.1	0.9	0.2	10.8	3.4	0.3	6.8	4.0	0.3			
			8.0	4.0	0.2	11.6	3.3	0.1	13.5	1.3	0.0	3.011	10.8	0.3	0.3	12.0	3.1	0.3	6.9	3.5	0.3			
			6.8	3.9	0.1	13.1	2.7	0.1	13.6	0.7	0.0	3.030	11.1	0.2	0.2	12.2	3.0	0.3	7.5	4.3	0.2			
			6.8	4.2	0.1	12.0	3.2	0.1	14.1	1.0	0.0	3.049	11.5	0.7	0.2	13.4	3.8	0.3	7.5	4.2	0.2			
			7.0	4.2	0.1	11.9	3.0	0.1	12.7	1.0	0.0	3.068	11.1	0.6	0.2	13.0	3.3	0.3	7.9	3.9	0.3			
			7.8	3.7	0.1	12.6	2.8	0.1	14.1	1.5	0.0	3.087	12.1	0.6	0.2	12.4	2.8	0.2	8.2	4.6	0.3			
			7.7	3.9	0.3	11.9	2.9	0.1	13.9	1.1	0.0	3.106	12.2	1.1	0.1	12.9	3.5	0.2	7.9	3.6	0.3			
			7.0	3.8	0.2	12.5	2.9	0.0	13.5	1.2	0.0	3.125	11.4	0.6	0.3	12.7	3.5	0.1	7.2	3.1	0.2			
			7.0	3.6	0.2	12.8	2.8	0.1	13.4	1.4	0.0	3.144	11.8	0.6	0.2	12.7	3.3	0.1	8.2	3.2	0.3			
			7.2	3.6	0.2	12.7	2.8	0.0	13.9	1.3	0.0	3.163	12.6	0.1	0.1	12.9	3.0	0.1	8.6	3.5	0.3			
			7.3	3.5	0.3	13.5	2.7	0.1	13.4	1.7	0.0	3.182	11.2	0.4	0.1	11.8	3.1	0.1	7.7	3.2	0.4			
			6.9	3.5	0.2	11.7	3.1	0.1	13.4	1.5	0.0	3.201	11.8	0.3	0.2	12.7	3.0	0.1	7.5	3.0	0.4			
			6.6	3.6	0.3	12.2	2.7	0.1	13.0	1.1	0.0	3.220	11.6	0.4	0.2	12.9	3.0	0.2	8.8	3.2	0.3			
			6.9	3.6	0.2	12.4	2.6	0.1	12.7	1.1	0.0	3.239	12.0	0.4	0.2	13.5	2.9	0.1	7.3	4.1	0.4			
			7.1	3.5	0.2	13.2	2.9	0.1	12.6	1.2	0.0	3.258	11.3	0.3	0.2	13.0	3.1	0.2	7.1	3.7	0.1			
			7.2	3.7	0.2	12.6	2.7	0.1	12.9	1.2	0.0	3.277	11.8	0.5	0.2	12.8	3.2	0.2	7.0	3.7	0.2			
			6.9	3.8	0.2	12.4	2.6	0.1	12.3	0.9	0.0	3.295	11.6	0.6	0.2	13.1	2.8	0.1	7.7	4.2	0.3			
			7.5	3.9	0.3	11.9	3.2	0.1	12.3	1.2	0.0	3.314	12.1	1.5	0.2	13.1	2.8	0.2	7.4	4.3	0.1			
			8.1	3.5	0.2	12.2	3.9	0.1	12.9	0.8	0.0	3.333	11.6	0.8	0.2	14.3	2.7	0.1	10.5	3.8	0.2			
			11.2	3.4	0.1	12.3	3.8	0.1	13.4	0.7	0.1	3.352	11.0	1.0	0.1	13.6	2.7	0.1	11.8	4.1	0.2			
			10.5	3.5	0.0	12.2	3.4	0.1	13.4	0.4	0.0	3.371	11.7	1.1	0.1	13.1	2.7	0.1	12.6	3.1	0.2			
			11.6	2.9	0.1	11.2	3.1	0.1	12.5	0.5	0.0	3.390	11.5	1.3	0.1	12.6	2.7	0.3	12.1	3.1	0.2			
			13.4	3.7	0.1	11.6	3.0	0.0	10.8	0.4	0.0	3.409	11.8	1.0	0.1	13.2	2.6	0.3	9.3	2.6	0.2		3.6	0.1
			13.3	3.6	0.1	10.9	2.9	0.1	9.8	0.4	0.0	3.428	11.9	1.1	0.1	11.9	2.9	0.3	9.1	2.9	0.3		4.1	0.2
			14.0	3.3	0.2	7.7	2.9	0.1	7.7	0.3	0.2	3.447	10.6	1.4	0.1	12.6	2.9	0.3	9.3	3.4	0.4		4.2	0.3

GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			13.3	3.3	0.2	6.7	3.3	0.0	7.4	1.1	0.1	3.466	9.9	0.7	0.1	11.7	2.4	0.3	13.9	2.9	0.3		3.4	0.2
				1.6	0.2	7.5	2.9	0.1	6.4	1.3	0.1	3.485	9.0	1.3	0.1	10.8	2.6	0.3	12.9	3.3	0.2		2.5	0.2
				2.1	0.2		1.9	0.1		2.0	0.1	3.504		1.3	0.1		2.4	0.2		1.7	0.3		1.2	0.3
				1.5	0.2		1.7	0.1		1.8	0.1	3.523		1.6	0.1		2.3	0.2		1.9	0.3		1.5	0.3
			13.3	3.6	0.3	7.4	1.9	0.1	8.1	-0.1	0.0	3.542	7.8	1.6	0.1		2.3	0.2	8.6	1.9	0.3		1.4	0.3
			13.0	3.7	0.3	8.7	2.4	0.1	8.9	0.3	0.0	3.561	7.5	1.1	0.1	8.5	2.3	0.3	13.5	2.4	0.3		3.2	0.1
			14.2	4.5	0.4	10.6	2.1	0.1	11.6	0.3	0.0	3.580	9.5	1.3	0.1	11.0	2.5	0.3	13.4	3.4	0.3		3.2	0.1
			9.1	2.9	0.5	12.8	2.1	0.1	13.2	0.2	0.0	3.598	10.8	0.6	0.1	12.1	2.3	0.3	13.7	2.7	0.2		3.2	0.1
			9.2	3.5	0.4	13.5	2.3	0.1	13.0	0.4	0.0	3.617	11.8	0.5	0.1	13.7	2.1	0.3	14.3	2.4	0.1		3.3	0.1
			7.4	3.8	0.4	12.7	2.8	0.1	12.6	0.3	0.0	3.636	11.8	0.6	0.1	12.3	2.4	0.3	13.3	3.3	0.2		3.4	0.2
			7.3	3.7	0.4	12.7	2.6	0.2	13.0	0.9	0.0	3.655	11.6	0.8	0.1	12.8	2.7	0.3	13.4	2.8	0.2		3.5	0.2
			7.6	4.1	0.4	12.5	2.7	0.1	12.4	0.4	0.1	3.674	12.4	1.0	0.0	13.4	2.7	0.3	14.0	3.3	0.2		3.9	0.1
			7.4	4.1	0.5	13.9	2.8	0.2	12.4	0.6	0.0	3.693	12.4	0.9	0.1	13.7	2.6	0.3	13.6	3.4	0.2		4.1	0.1
			7.2	3.4	0.4	13.8	2.6	0.1	13.2	0.5	0.1	3.712	12.0	0.8	0.1	12.6	2.6	0.3	14.2	2.8	0.2			
			7.8	3.6	0.4	13.8	2.8	0.1	12.2	0.6	0.0	3.731	12.8	0.7	0.1	13.2	2.3	0.2	14.9	2.8	0.2			
			8.2	3.5	0.4	13.3	2.8	0.1	13.3	0.6	0.0	3.750	12.6	0.9	0.1	13.1	2.9	0.3	14.7	4.0	0.3			
			8.2	3.6	0.3	13.0	2.6	0.2	12.4	0.2	0.0	3.769	13.1	1.1	0.1	13.9	3.2	0.2	13.8	4.5	0.3			
			7.8	3.8	0.4	14.1	2.5	0.3	13.1	0.5	0.0	3.788	11.7	1.1	0.2	12.0	3.4	0.3	8.1	4.4	0.4			
			7.8	3.7	0.6	12.7	2.4	0.1	13.0	0.9	0.0	3.807	11.4	1.1	0.1	13.4	3.1	0.3	8.5	3.5	0.5			
			7.5	3.7	0.6	12.7	2.1	0.1	13.3	0.0	0.0	3.826	11.6	1.3	0.1	12.4	3.2	0.3	7.6	4.1	0.3			
			7.4	3.6	0.4	14.0	2.4	0.1	13.5	0.2	0.0	3.845	9.6	0.8	0.2	12.4	3.9	0.3	7.9	4.9	0.7			
			7.1	3.5	0.4	13.7	2.6	0.1	13.9	0.8	0.0	3.864	10.0	0.8	0.2	12.3	3.9	0.4	7.4	4.3	0.4			
			6.9	3.9	0.4	12.9	2.8	0.1	13.7	0.5	0.0	3.883	10.7	1.9	0.2	12.0	2.4	0.2	7.7	3.8	0.4			
			7.0	3.5	0.4	13.2	3.0	0.2	13.8	0.7	0.0	3.902	11.5	1.5	0.1	12.7	2.0	0.2	7.6	3.8	0.4			
			7.4	3.7	0.4	13.0	3.1	0.1	13.3	0.7	0.0	3.920	10.5	1.3	0.1	11.6	2.5	0.3	7.6	4.6	0.4			
			7.9	3.6	0.3	12.5	3.1	0.2	12.7	1.0	0.0	3.939	10.8	1.1	0.1	12.3	2.5	0.3	6.9	4.2	0.5			
			7.6	4.0	0.3	13.2	3.0	0.1	13.9	1.1	0.0	3.958	10.6	1.2	0.1	13.6	2.2	0.2	7.8	4.0	0.3			
			6.7	3.9	0.3	13.0	2.9	0.1	14.1	0.8	0.0	3.977	11.0	1.4	0.1	13.0	2.4	0.3	8.0	3.6	0.3			
			6.8	3.8	0.4	13.0	3.6	0.1	13.7	1.3	0.0	3.996	11.4	1.6	0.1	13.4	1.9	0.2	8.0	4.2	0.3			
			7.3	3.5	0.4	13.1	3.4	0.1	13.8	1.0	0.0	4.015	10.7	1.8	0.1	11.9	2.0	0.1	7.8	3.4	0.3			
			7.1	4.3	0.4	12.9	3.1	0.1	14.8	0.9	0.0	4.034	10.1	1.0	0.1	12.7	1.7	0.2	7.8	3.4	0.4			
			7.5	3.9	0.4	13.5	3.2	0.2	15.8	1.3	0.0	4.053	10.4	1.4	0.0	11.1	1.6	0.2	7.3	3.6	0.4			
			7.3	4.1	0.4	15.5	3.0	0.3	19.1	1.1	0.0	4.072	10.2	1.5	0.1	11.2	1.2	0.2	6.1	4.2	0.3			
			7.4	3.8	0.4	15.1	3.1	0.1	16.2	0.8	0.0	4.091	10.4	2.1	0.1	12.3	1.3	0.2	7.0	4.0	0.3			
			7.0	3.8	0.4	12.9	3.0	0.1	14.0	0.6	0.1	4.110	10.3	1.2	0.1	12.1	0.9	0.2	6.5	4.5	0.4			
			7.4	3.9	0.2	14.2	3.1	0.2	14.3	0.2	0.0	4.129	11.8	1.5	0.1	13.0	0.8	0.2	6.3	3.8	0.3			
			7.1	4.1	0.2	13.9	2.8	0.2	13.9	0.4	0.0	4.148	11.3	1.4	0.1	13.0	0.7	0.2	6.9	3.7	0.2			
			7.3	3.7	0.3	13.5	2.9	0.2	13.7	0.8	0.0	4.167	11.1	1.1	0.1	12.7	0.7	0.1	7.0	4.4	0.4			
			7.3	3.5	0.3	13.9	2.8	0.3	13.8	1.3	0.0	4.186	10.5	1.2	0.1	12.4	0.9	0.1	7.2	4.4	0.3			
			7.0	3.5	0.3	13.5	2.6	0.3	13.1	1.4	0.0	4.205	12.3	1.2	0.1	12.3	0.7	0.2	6.7	3.8	0.2			
			7.3	3.5	0.2	13.8	2.7	0.2	13.6	1.4	0.0	4.223	11.2	1.3	0.1	11.3	0.7	0.3	6.9	4.0	0.4			
			6.2	4.4	0.3	13.8	2.4	0.1	13.8	0.6	0.0	4.242	11.1	1.8	0.1	11.6	1.2	0.1	6.6	4.0	0.2			
			6.9	4.0	0.3	13.0	2.7	0.2	14.8	1.0	0.0	4.261	10.9	1.3	0.1	11.2	1.1	0.2	7.3	4.5	0.4			
			6.6	4.4	0.4	14.6	2.9	0.2	13.9	1.3	0.0	4.280	11.3	1.5	0.1	12.4	1.0	0.3	7.1	4.0	0.5			
			6.4	4.1	0.4	13.4	3.1	0.2	14.2	1.0	0.0	4.299	11.5	1.3	0.1	12.2	0.6	0.3	7.0	4.0	0.4			
			6.4	3.9	0.3	12.6	3.1	0.2	14.4	0.9	0.0	4.318	11.7	1.6	0.1	11.7	0.8	0.2	7.1	4.1	0.4			
			7.5	4.2	0.5	12.5	2.9	0.2	14.5	0.8	0.0	4.337	11.7	1.4	0.1	12.5	1.2	0.2	7.6	3.7	0.4			
			6.7	4.2	0.2	12.7	3.1	0.2	14.4	1.2	0.0	4.356	11.1	1.3	0.1	12.5	1.1	0.3	6.7	3.7	0.5			
			7.0	4.2	0.3	13.3	3.0	0.2	14.6	1.1	0.0	4.375	10.9	1.6	0.1	11.1	1.2	0.2	6.1	3.5	0.3			
			7.0	4.1	0.3	12.3	3.1	0.1	14.8	0.8	0.0	4.394	10.9	1.4	0.1	12.4	1.6	0.2	6.8	3.7	0.4			
			6.9	4.1	0.2	13.8	2.9	0.2	14.6	1.2	0.0	4.413	10.6	1.5	0.1	11.4	1.6	0.2	7.4	3.3	0.3			
			7.2	4.0	0.4	13.5	3.4	0.2	14.7	1.7	0.0	4.432	11.6	1.5	0.1	12.3	1.6	0.2	7.4	3.5	0.4			
			7.1	4.6	0.4	12.9	2.9	0.2	14.3	1.1	0.0	4.451	10.6	2.2	0.1	11.9	1.5	0.2	7.9	3.5	0.4			
			6.7	4.3	0.2	14.0	2.9	0.2	13.5	1.8	0.0	4.470	11.4	1.8	0.1	12.5	1.1	0.2	7.5	4.0	0.4			
			7.5	3.4	0.2	13.3	3.3	0.3	13.6	1.7	0.0	4.489	11.1	1.8	0.2	12.7	1.2	0.2	7.7	3.6	0.3			
			7.0	3.3	0.2	12.7	2.4	0.2	13.3	0.9	0.0	4.508	10.7	1.6	0.1	11.8	0.7	0.2	7.9	3.4	0.5			
			7.9	3.1	0.4	14.1	2.8	0.2	13.2	1.1	0.0	4.527	12.0	1.6	0.1	13.7	1.0	0.3	7.9	3.5	0.5			
			7.2	3.2	0.2	13.7	3.0	0.2	13.3	1.5	0.0	4.545	11.2	1.5	0.1	13.4	1.3	0.2	7.1	3.7	0.3			
			8.5	3.3	0.2	13.7	3.2	0.1	13.9	1.6	0.0	4.564	12.0	1.4	0.1	13.5	1.0	0.2	6.5	3.6	0.4			
			7.7	3.2	0.2	14.7	2.9	0.2	13.7	1.6	0.0	4.583	13.2	1.5	0.1	14.2	1.3	0.2	6.7	3.5	0.3			
			7.0	3.6	0.2	13.9	3.0	0.2	13.9	1.0	0.0	4.602	12.2	1.9	0.0	13.4	1.4	0.3	6.3	3.2	0.3			

GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

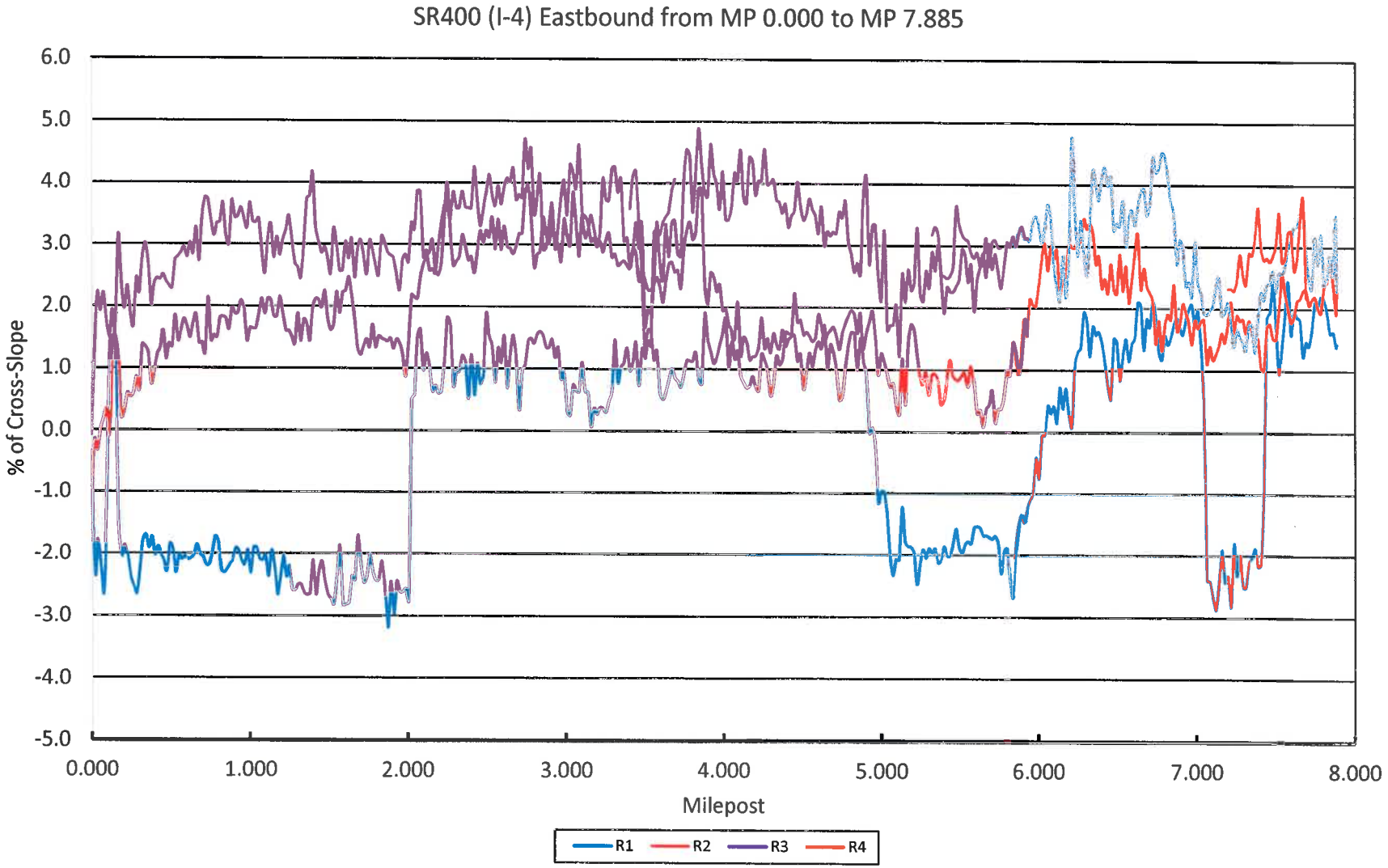
L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			7.6	3.3	0.1	14.5	3.1	0.2	14.8	0.4	0.0	4.621	13.1	1.7	0.1	14.8	1.3	0.2	6.7	3.6	0.4			
			8.2	3.2	0.2	13.0	2.8	0.1	13.6	1.1	0.0	4.640	11.9	1.5	0.1	13.9	1.7	0.2	6.3	3.0	0.3			
			7.6	3.8	0.2	13.7	2.5	0.2	13.3	1.0	0.0	4.659	11.8	1.6	0.1	13.7	1.0	0.2	6.7	3.2	0.3			
			7.8	3.1	0.4	13.9	2.7	0.2	13.2	0.8	0.0	4.678	11.8	1.6	0.0	14.6	1.4	0.1	6.2	3.1	0.3			
			7.5	3.4	0.2	13.0	2.6	0.2	14.1	0.4	0.0	4.697	12.3	1.7	0.1	13.3	1.3	0.2	7.3	3.2	0.3			
			7.8	3.4	0.4	12.3	3.0	0.2	13.2	0.7	0.0	4.716	12.2	1.5	0.1	14.4	1.0	0.2	5.9	3.2	0.3			
			6.9	3.4	0.2	13.3	2.8	0.1	14.3	0.7	0.0	4.735	12.0	1.3	0.1	13.3	0.5	0.2	7.6	3.5	0.4			
			8.0	3.4	0.4	12.2	2.8	0.2	12.6	0.7	0.0	4.754	13.8	1.6	0.2	13.3	0.6	0.3	7.1	3.4	0.5			
			6.9	3.4	0.6	14.0	2.8	0.2	14.2	0.7	0.0	4.773	12.3	1.7	0.1	12.8	1.0	0.3	7.1	3.7	0.5			
			7.1	3.4	0.4	14.1	2.8	0.2	13.7	1.1	0.0	4.792	11.9	1.9	0.1	12.4	1.4	0.3	7.1	3.0	0.4			
			6.6	3.4	0.3	13.0	2.6	0.2	13.0	0.8	0.0	4.811	12.4	1.9	0.1	14.6	1.6	0.2	6.7	2.9	0.4			
			6.9	3.4	0.2	13.4	2.8	0.2	13.8	1.1	0.0	4.830	12.1	1.9	0.1	14.2	1.6	0.2	8.0	2.6	0.4			
			7.8	3.4	0.1	13.8	2.4	0.1	13.2	1.4	0.0	4.848	12.1	1.6	0.1	14.0	1.0	0.1	7.2	2.7	0.4			
			8.4	3.4	0.3	13.6	2.5	0.1	12.8	1.0	0.0	4.867	12.7	1.9	0.1	14.7	1.5	0.1	7.7	2.5	0.4			
			7.8	3.4	0.7	13.9	2.2	0.1	13.7	0.8	0.0	4.886	13.3	1.1	0.1	13.9	1.3	0.1	6.4	3.8	0.4			
			10.0	3.4	0.2	13.7	1.8	0.2	12.6	0.3	0.1	4.905	10.3	0.9	0.2	14.3	1.6	0.2	10.2	4.1	0.3			
			10.8	3.4	0.2	14.5	2.1	0.2	11.0	0.8	0.2	4.924	10.7	0.0	0.2	13.9	1.8	0.1	9.8	2.7	0.3			
			11.0	3.4	0.2	13.7	1.9	0.2	11.2	0.0	0.5	4.943	8.0	0.1	0.1	13.3	1.9	0.3	8.0	3.3	0.6			
			10.9	3.4	0.2	15.2	1.2	0.2	11.4	-0.7	0.2	4.962	7.6	-0.2	0.1	12.5	1.5	0.4	11.2	3.3	0.5			
			12.8	3.4	0.3	14.1	1.5	0.2	9.8	-1.1	0.0	4.981	8.4	-1.1	0.0	11.7	0.9	0.4	11.0	2.5	0.3			
			12.7	3.4	0.3	13.9	1.6	0.2	6.6	-1.3	0.1	5.000	8.2	-1.0	0.0	11.7	1.3	0.3	12.3	2.1	0.4			
			14.2	3.4	0.3	13.9	1.5	0.2	6.6	-2.7	0.0	5.019	8.2	-1.0	0.1	12.2	1.1	0.3	12.8	3.2	0.4			
			14.3	3.4	0.2	14.0	1.3	0.2	7.0	-2.1	0.0	5.038	7.8	-1.3	0.1	12.4	0.9	0.3	14.6	1.6	0.3			
			12.6	3.4	0.3	13.3	1.4	0.2	7.8	-1.8	0.0	5.057	7.0	-2.0	0.1	10.8	0.7	0.4	12.8	1.7	0.3			
			14.6	3.4	0.2	15.1	1.5	0.1	6.7	-2.1	0.0	5.076	7.4	-2.3	0.0	9.1	0.8	0.2	13.4	1.7	0.3			
			12.3	3.4	0.3	15.1	1.2	0.2	7.4	-1.7	0.0	5.095	7.7	-2.1	0.1	12.0	0.4	0.3	13.6	2.0	0.2			
			13.7	3.4	0.2	13.8	1.3	0.1	7.1	-1.8	0.1	5.114	6.9	-2.1	0.1	13.8	0.3	0.2	15.5	1.2	0.2			
			13.4	3.4	0.3	14.6	1.5	0.1	8.6	-1.3	0.0	5.133	8.0	-1.2	0.1	12.2	1.2	0.3	14.0	2.5	0.3			
			13.9	3.4	0.2	13.2	1.5	0.1	7.9	-2.2	0.1	5.152	7.1	-1.8	0.1	13.2	0.4	0.3	12.3	2.1	0.3			
			12.9	3.4	0.4	13.2	1.5	0.1	7.7	-2.4	0.1	5.170	7.3	-1.9	0.2	12.3	1.4	0.3	10.7	2.6	0.4			
			13.2	3.4	0.2	14.1	1.7	0.2	7.6	-1.5	0.1	5.189	6.9	-1.9	0.1	11.4	1.7	0.2	11.6	2.3	0.3			
			14.3	3.4	0.2	13.7	1.6	0.2	8.2	-1.3	0.0	5.208	7.2	-2.0	0.2	11.5	1.6	0.2	11.1	2.4	0.5			
			13.3	3.4	0.2	13.9	1.7	0.2	8.9	-1.8	0.0	5.227	6.5	-2.5	0.1	12.0	1.2	0.5	11.8	3.3	0.4			
			13.8	3.4	0.1	12.6	1.0	0.2	7.4	-1.8	0.0	5.246	7.0	-2.1	0.1	11.0	0.9	0.3	13.8	2.2	0.3			
	3.7	0.3	13.3	3.4	0.1	13.3	1.1	0.2	7.2	-1.9	0.0	5.265	6.9	-1.9	0.1	12.8	0.8	0.2	13.1	2.1	0.2			
	3.6	0.1	13.6	3.4	0.2	13.0	1.1	0.2	7.1	-1.6	0.0	5.284	7.4	-2.0	0.0	10.7	1.0	0.3	13.8	2.6	0.2			
	3.6	0.1	14.1	3.4	0.1	13.4	1.2	0.1	8.1	-1.9	0.0	5.303	7.1	-1.9	0.1	11.9	0.6	0.2	13.6	2.3	0.2			
	2.9	0.1	14.5	3.4	0.1	13.1	1.2	0.1	7.1	-1.7	0.0	5.322	7.2	-2.0	0.1	12.7	0.9	0.2	15.1	2.9	0.2		3.2	0.0
	3.3	0.1	13.6	3.4	0.1	15.1	1.5	0.1	7.9	-1.9	0.1	5.341	7.6	-1.9	0.1	12.9	0.9	0.3	14.1	2.6	0.1		3.3	0.0
	3.4	0.1	14.3	3.4	0.1	14.0	1.6	0.1	7.4	-1.8	0.1	5.360	7.0	-2.1	0.1	11.5	0.9	0.2	12.5	3.0	0.2		3.2	0.1
	3.2	0.0	15.3	3.4	0.2	15.8	1.9	0.2	6.8	-1.9	0.1	5.379	7.6	-2.1	0.1	12.4	0.5	0.3	13.3	2.5	0.2		2.5	0.0
	3.7	0.0	13.9	3.4	0.2	14.6	1.8	0.1	7.7	-1.6	0.1	5.398	7.1	-1.9	0.1	12.9	0.5	0.2	13.7	1.9	0.1		2.5	0.1
	3.2	0.0	14.2	3.4	0.2	14.8	1.2	0.1	7.8	-1.7	0.1	5.417	7.1	-2.0	0.1	12.0	0.8	0.2	13.4	2.3	0.1		2.5	0.0
	3.2	0.0	15.3	3.4	0.1	14.6	1.6	0.1	7.5	-1.8	0.0	5.436	7.7	-2.0	0.1	13.6	1.2	0.2	14.0	2.3	0.1		2.5	0.1
	3.1	0.0	12.9	3.4	0.2	13.4	1.2	0.1	7.3	-1.6	0.0	5.455	7.5	-1.8	0.1	12.1	0.9	0.3	13.2	2.3	0.1		2.6	0.1
	3.3	0.1	13.2	3.4	0.2	14.2	1.6	0.1	7.8	-1.9	0.1	5.473	7.8	-1.6	0.1	12.5	0.9	0.3	13.6	2.3	0.1		3.6	0.1
	3.1	0.0	12.8	3.4	0.2	13.1	1.5	0.2	7.7	-1.5	0.0	5.492	7.8	-1.9	0.1	13.3	0.8	0.2	14.1	2.4	0.0		3.3	0.2
	2.9	0.0	14.5	3.4	0.2	13.5	1.1	0.1	7.5	-1.7	0.0	5.511	7.5	-2.0	0.2	14.2	0.9	0.2	13.4	2.9	0.0		3.2	0.1
	3.1	0.0	13.3	3.4	0.2	13.5	1.0	0.1	7.0	-1.9	0.0	5.530	7.8	-1.8	0.1	12.9	0.9	0.2	13.5	2.8	0.0		3.1	0.1
	3.2	0.0	12.8	3.4	0.1	12.7	0.8	0.1	6.9	-1.9	0.0	5.549	7.6	-1.8	0.1	13.4	0.7	0.1	13.3	2.4	0.0		3.1	0.1
	3.3	0.0	13.8	3.4	0.2	13.1	1.6	0.1	7.2	-2.0	0.0	5.568	7.8	-1.8	0.1	12.0	1.1	0.2	13.2	2.7	0.1		2.9	0.2
	3.8	0.1	14.3	3.4	0.1	12.7	1.6	0.1	7.4	-2.2	0.1	5.587	7.8	-1.6	0.1	12.1	0.8	0.1	13.5	1.9	0.3		2.8	0.2
	3.6	0.0	14.5	3.4	0.1	14.3	1.5	0.1	8.5	-1.8	0.1	5.606	7.9	-1.5	0.1	11.9	0.3	0.2	13.1	2.4	0.3		2.9	0.2
	2.9	0.0	15.5	3.4	0.0	14.6	1.8	0.1	7.9	-1.6	0.1	5.625	7.9	-1.6	0.2	12.7	0.4	0.2	12.8	2.6	0.4		2.7	0.2
	3.8	0.0	15.7	3.4	0.1	14.8	2.0	0.1	8.6	-1.7	0.1	5.644	7.3	-1.7	0.1	13.2	0.1	0.2	13.6	2.9	0.2		2.7	0.2
	4.3	0.1	15.3	3.4	0.1	14.1	1.6	0.1	8.2	-1.8	0.2	5.663	7.7	-1.7	0.1	13.7	0.4	0.2	15.1	2.5	0.1		3.1	0.1
	3.9	0.0	16.0	3.4	0.1	15.0	1.3	0.1	8.1	-2.1	0.1	5.682	7.5	-1.7	0.1	12.4	0.4	0.2	12.5	3.0	0.2		2.7	0.2
			16.0	3.4	0.2	14.2	0.8	0.1	8.1	-2.1	0.2	5.701	8.0	-1.7	0.1	13.6	0.7	0.2	14.1	2.6	0.2		3.0	0.1
			15.4	3.4	0.1	14.6	1.3	0.1	8.7	-2.0	0.1	5.720	7.1	-1.7	0.2	13.4	0.1	0.2	14.2	2.9	0.3		3.1	0.1
			15.0	3.4	0.1	14.0	1.0	0.1	8.1	-2.2	0.1	5.739	8.3	-1.8	0.2	12.0	0.4	0.2	12.6	2.6	0.3		3.0	0.1
			16.7	3.4	0.1	14.1	1.0	0.1	8.1	-2.4	0.2	5.758	8.2	-2.3	0.1	14.7	0.4	0.2	14.1	2.3	0.2		3.0	0.1

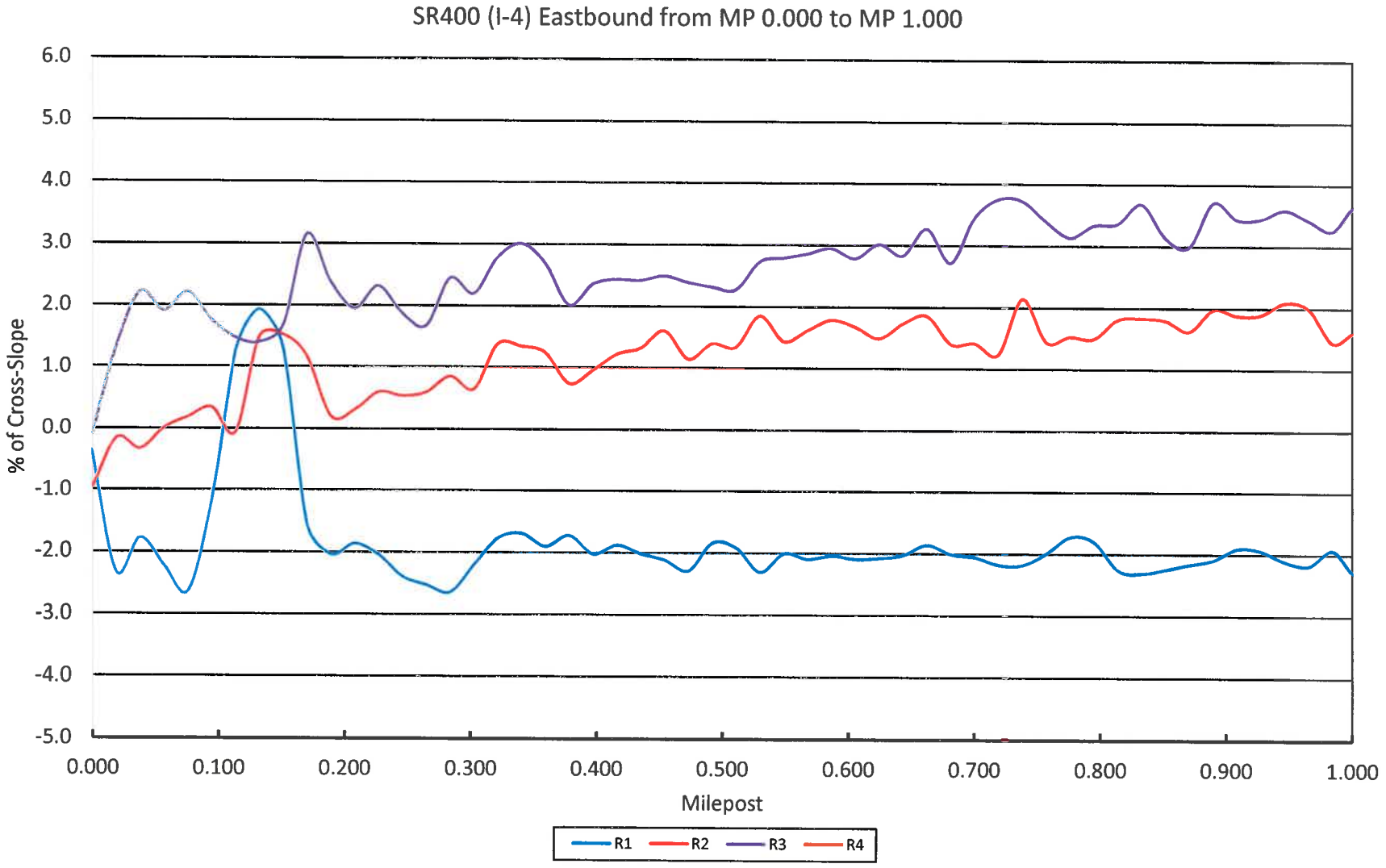
GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

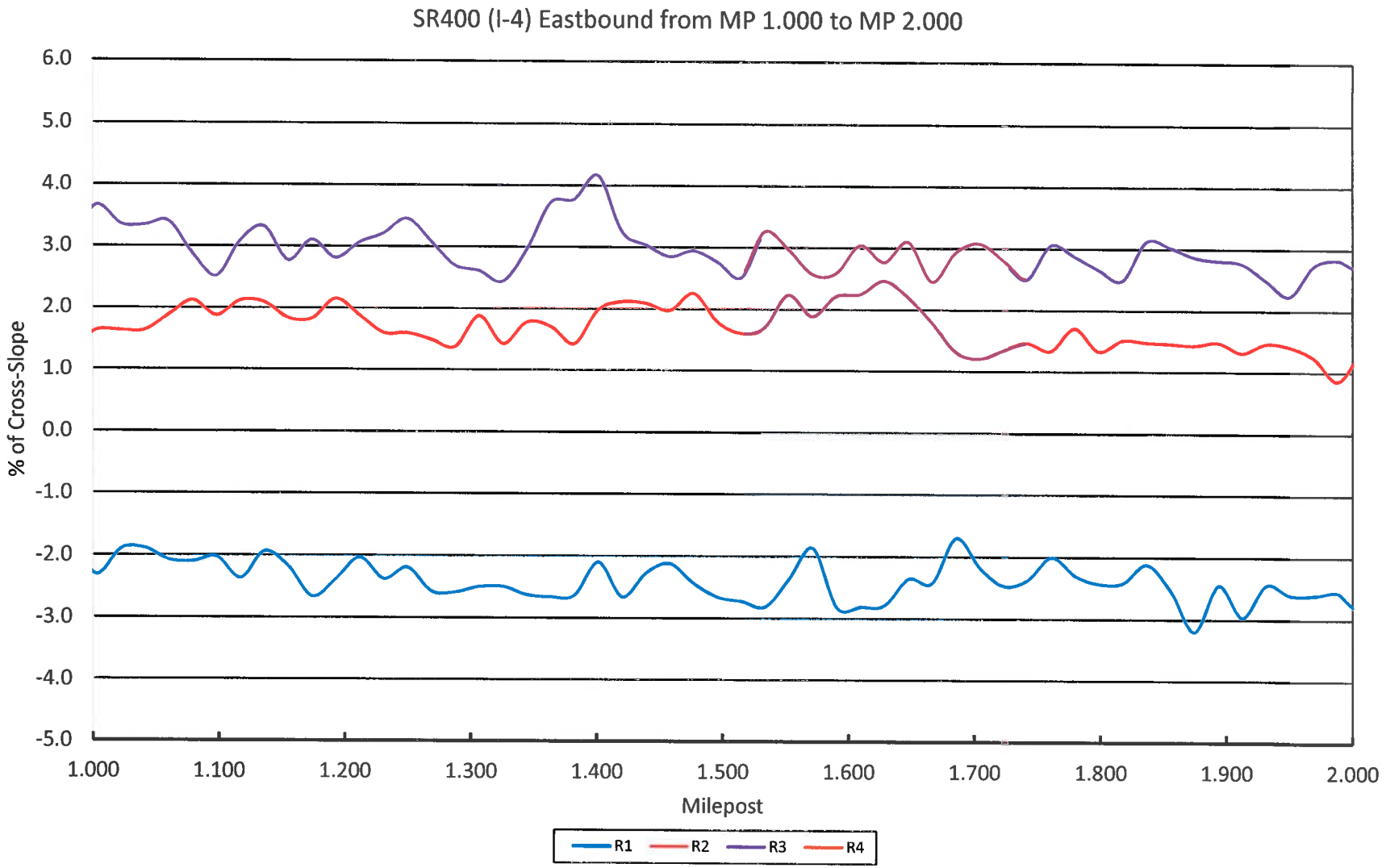
L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			14.8	3.4	0.2	13.7	1.2	0.1	7.5	-2.3	0.1	5.777	7.4	-1.9	0.1	12.9	0.6	0.1	12.5	2.6	0.2			
			15.9	3.4	0.1	15.1	0.9	0.1	7.3	-1.7	0.1	5.795	7.5	-1.9	0.2	12.6	1.0	0.3	13.7	3.0	0.3			
			15.8	3.4	0.1	15.8	0.9	0.1	8.0	-1.9	0.1	5.814	7.1	-2.4	0.1	13.8	0.9	0.2	13.0	3.0	0.3			
			15.0	3.4	0.1	15.8	1.1	0.1	7.1	-2.3	0.1	5.833	7.2	-2.7	0.1	13.1	1.4	0.2	11.9	3.1	0.4			
			13.8	3.4	0.1	15.9	1.2	0.1	8.7	-1.5	0.1	5.852	7.5	-1.9	0.1	14.2	1.3	0.2	13.1	3.0	0.3			
			14.6	3.4	0.2	14.8	1.9	0.1	7.4	-2.0	0.1	5.871	8.6	-1.5	0.1	13.5	0.9	0.2	13.0	3.2	0.2			
			15.8	3.4	0.2	14.9	2.2	0.1	7.0	-1.3	0.1	5.890	7.4	-1.3	0.1	13.4	1.2	0.3	12.0	3.3	0.2			
			14.3	3.4	0.3	15.7	1.3	0.2	9.7	-1.9	0.1	5.909	7.1	-1.5	0.1	14.1	1.8	0.3	13.6	3.1	0.1			
			14.3	3.4	0.1	15.6	1.5	0.2	10.1	-1.5	0.1	5.928	9.7	-1.2	0.2	13.0	1.6	0.5	13.1	3.1	0.2			
			11.9	3.4	0.1	15.2	1.8	0.1	9.7	-1.6	0.1	5.947	10.2	-1.1	0.2	15.0	2.1	0.6	14.2	3.1	0.2			
			13.6	3.4	0.2	15.3	1.7	0.1	13.5	-0.5	0.1	5.966	9.6	-1.0	0.2	13.4	2.1	0.7	12.5	3.4	0.3			
			14.5	3.4	0.2	15.4	2.4	0.1	15.6	0.8	0.1	5.985	10.5	-0.4	0.1	14.1	2.0	0.7	12.5	3.5	0.4			
			13.6	3.4	0.1	15.7	2.5	0.1	15.1	1.0	0.1	6.004	11.7	-0.8	0.1	12.9	2.4	0.5	12.6	3.3	0.3			
			14.4	3.4	0.2	15.1	3.0	0.1	15.2	1.3	0.1	6.023	13.6	0.0	0.1	14.3	2.8	0.3	14.3	3.0	0.3			
			12.6	3.4	0.3	15.7	2.8	0.1	15.6	2.0	0.1	6.042	13.1	0.0	0.1	13.4	3.0	0.3	13.9	3.3	0.4			
			13.3	3.4	0.3	15.0	3.1	0.1	15.4	1.2	0.1	6.061	13.6	0.4	0.1	13.8	2.6	0.3	13.0	3.7	0.3			
			13.5	3.4	0.1	14.6	2.8	0.1	14.8	1.3	0.1	6.080	13.1	0.3	0.1	13.4	3.0	0.3	13.5	3.4	0.4			
			13.4	3.4	0.2	14.7	2.8	0.1	14.2	1.1	0.1	6.098	12.0	0.4	0.1	14.2	2.8	0.3	13.9	2.7	0.2			
			12.6	3.4	0.1	14.9	3.1	0.1	15.2	1.1	0.1	6.117	12.3	0.2	0.1	13.9	2.9	0.3	14.0	2.3	0.3			
			14.1	3.4	0.1	15.0	3.7	0.1	15.6	1.3	0.2	6.136	14.1	0.7	0.1	13.8	2.2	0.2	14.8	2.1	0.2			
			14.6	3.4	0.2	14.0	3.7	0.1	14.9	1.7	0.1	6.155	13.2	0.4	0.1	13.1	2.5	0.3	13.8	2.8	0.3			
			13.8	3.4	0.2	16.8	3.5	0.1	15.8	1.5	0.1	6.174	13.3	0.7	0.1	12.6	2.4	0.4	13.2	2.2	0.2			
			13.3	3.4	0.2	16.4	2.6	0.1	16.3	1.5	0.0	6.193	12.8	0.3	0.2	14.3	3.0	0.3	13.9	2.8	0.3			
			12.0	3.4	0.2	18.2	2.3	0.1	15.2	1.2	0.1	6.212	13.8	0.1	0.1	15.0	3.0	0.3	9.4	4.8	0.3			
			12.2	3.4	0.2	17.3	2.7	0.1	15.9	0.7	0.2	6.231	14.7	1.1	0.0	13.7	3.0	0.2	11.0	3.6	0.2			
			12.0	3.4	0.1	17.2	2.8	0.1	16.1	1.1	0.1	6.250	13.7	1.3	0.0	13.7	3.1	0.3	11.0	2.8	0.2			
			12.4	3.4	0.1	15.7	2.5	0.1	15.2	1.2	0.1	6.269	14.1	1.4	0.1	14.4	3.1	0.1	10.2	3.4	0.1			
			11.9	3.4	0.1	16.0	2.1	0.1	14.2	0.7	0.1	6.288	14.8	1.9	0.1	13.4	3.4	0.2	10.0	2.9	0.2			
			10.3	3.4	0.1	14.0	2.3	0.1	13.8	1.1	0.1	6.307	13.4	1.8	0.1	12.2	3.3	0.2	9.4	2.5	0.2			
			11.4	3.4	0.2	12.7	2.9	0.1	14.1	1.3	0.1	6.326	13.2	1.2	0.1	12.7	3.4	0.2	9.4	3.4	0.1			
			11.4	3.4	0.1	14.0	2.5	0.1	12.9	1.6	0.1	6.345	12.8	1.7	0.1	11.8	3.2	0.2	9.4	4.2	0.2			
			11.6	3.4	0.1	13.2	2.5	0.1	13.2	1.2	0.2	6.364	12.2	1.6	0.1	11.6	2.7	0.2	9.1	4.0	0.2			
			11.8	3.4	0.2	10.1	2.8	0.1	11.3	1.5	0.1	6.383	11.2	1.6	0.1	10.6	2.8	0.2	9.2	3.7	0.2			
			12.5	3.4	0.1	10.3	2.3	0.1	11.2	1.4	0.1	6.402	9.4	1.4	0.0	10.2	2.3	0.1	8.5	4.1	0.0			
			11.3	3.4	0.1	10.2	2.2	0.1	10.7	1.1	0.0	6.420	9.3	1.2	0.1	9.3	2.5	0.1	8.7	4.3	0.1			
			10.4	3.4	0.2	11.2	2.2	0.1	10.8	1.3	0.0	6.439	9.4	0.7	0.0	9.1	2.2	0.0	9.7	4.0	0.1			
			11.3	3.4	0.1	12.9	2.4	0.1	11.8	1.2	0.1	6.458	10.2	0.6	0.1	9.7	2.7	0.0	8.9	4.1	0.1			
			11.1	3.4	0.1	13.7	1.9	0.1	13.9	1.3	0.0	6.477	10.0	1.5	0.0	9.5	2.3	0.0	9.2	3.3	0.1			
			9.5	3.4	0.1	14.5	2.4	0.1	13.4	1.8	0.0	6.496	9.7	1.5	0.0	9.2	2.2	0.0	9.4	3.4	0.1			
			10.0	3.4	0.1	13.9	2.2	0.1	13.7	1.5	0.0	6.515	8.6	0.8	0.0	9.6	2.9	0.1	9.1	3.3	0.1			
			10.9	3.4	0.1	14.3	2.2	0.1	14.0	1.4	0.0	6.534	9.6	1.2	0.0	8.7	2.3	0.1	8.9	3.7	0.1			
			11.7	3.4	0.1	16.3	2.4	0.2	15.0	1.5	0.0	6.553		1.5	0.0	8.5	2.7	0.0	10.2	3.0	0.1			
			10.5	3.4	0.2	13.1	2.8	0.0	14.7	1.2	0.1	6.572	9.2	1.2	0.1	8.2	2.1	0.1	9.3	3.4	0.1			
			10.0	3.4	0.1	13.6	2.4	0.1	14.2	1.8	0.1	6.591	10.3	1.4	0.0	7.2	2.4	0.0	9.6	3.6	0.1			
			10.4	3.4	0.2	13.4	2.0	0.1	13.5	1.7	0.1	6.610	10.5	1.5	0.0	7.5	2.9	0.2	9.5	3.3	0.1			
			10.9	3.4	0.1	15.1	2.3	0.1	15.4	1.7	0.1	6.629	10.7	2.1	0.0	10.5	3.2	0.1	9.0	3.6	0.0			
			10.3	3.4	0.2	16.1	2.1	0.1	14.9	2.2	0.1	6.648	11.1	2.1	0.0	10.7	2.3	0.0	9.2	3.9	0.0			
			15.7	3.4	0.2	15.6	2.7	0.1	14.3	2.2	0.1	6.667	11.5	1.3	0.0	11.3	2.7	0.1	9.2	3.9	0.0			
			15.3	3.4	0.1	15.1	2.4	0.1	16.0	1.9	0.1	6.686	11.6	1.8	0.0	10.3	2.4	0.1	9.1	3.5	0.1			
			15.7	3.4	0.2	15.2	2.1	0.1	15.6	1.6	0.0	6.705	11.3	1.7	0.0	11.0	2.3	0.1	9.6	3.7	0.1			
			16.3	3.4	0.1	16.2	2.5	0.1	14.7	1.8	0.1	6.723	11.0	2.1	0.0	11.5	2.1	0.1	9.0	4.5	0.1			
			16.2	3.4	0.1	16.4	2.3	0.1	15.5	2.0	0.1	6.742	11.2	1.8	0.0	12.1	1.4	0.1	9.3	4.2	0.1			
			16.1	3.4	0.1	15.6	2.3	0.1	15.2	2.1	0.0	6.761	11.2	1.3	0.0	11.8	1.8	0.1	9.1	4.3	0.0			
			14.9	3.4	0.1	16.3	2.0	0.1	16.1	2.2	0.0	6.780	9.8	1.2	0.0	12.1	1.3	0.1	8.8	4.5	0.1			
			16.0	3.4	0.1	14.5	2.3	0.2	15.7	2.4	0.1	6.799	9.6	1.6	0.1	11.6	1.7	0.2	8.6	4.5	0.0			
			17.9	3.4	0.1	15.4	2.2	0.2	17.8	2.0	0.1	6.818	11.0	1.4	0.0	12.1	1.9	0.1	10.6	4.1	0.2			
			14.9	3.4	0.1	16.3	2.2	0.2	17.2	2.0	0.1	6.837	10.3	1.5	0.1	12.2	1.8	0.4	11.4	3.7	0.3			
			11.8	3.4	0.1	15.2	2.5	0.2	16.4	1.7	0.1	6.856	10.3	1.7	0.2	11.7	2.4	0.5	10.3	3.6	0.5			
			12.2	3.4	0.2	14.7	3.0	0.2	15.4	1.6	0.1	6.875	10.5	1.8	0.2	12.0	1.6	0.3	10.9	2.7	0.3			
			12.3	3.4	0.2	13.4	2.9	0.1	14.0	1.8	0.1	6.894	8.4	1.7	0.2	12.7	1.7	0.4	12.0	3.1	0.4			
			12.1	3.4	0.2	13.6	2.9	0.2	14.5	1.9	0.1	6.913	8.8	1.6	0.3	10.8	2.1	0.4	11.6	3.0	0.3			

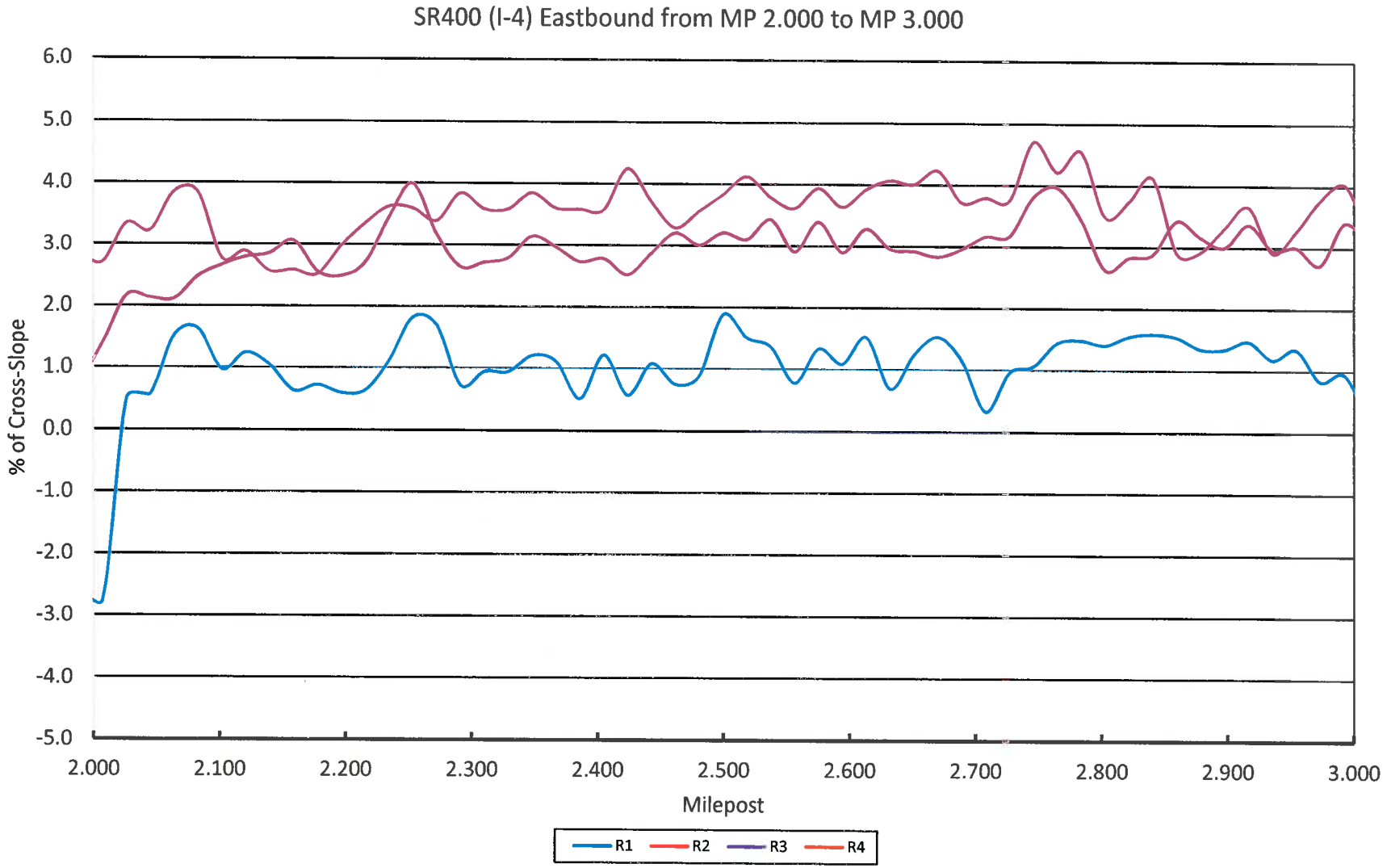
GPR/MPSV Information for FPN 431456-1 SR 400 (I-4)

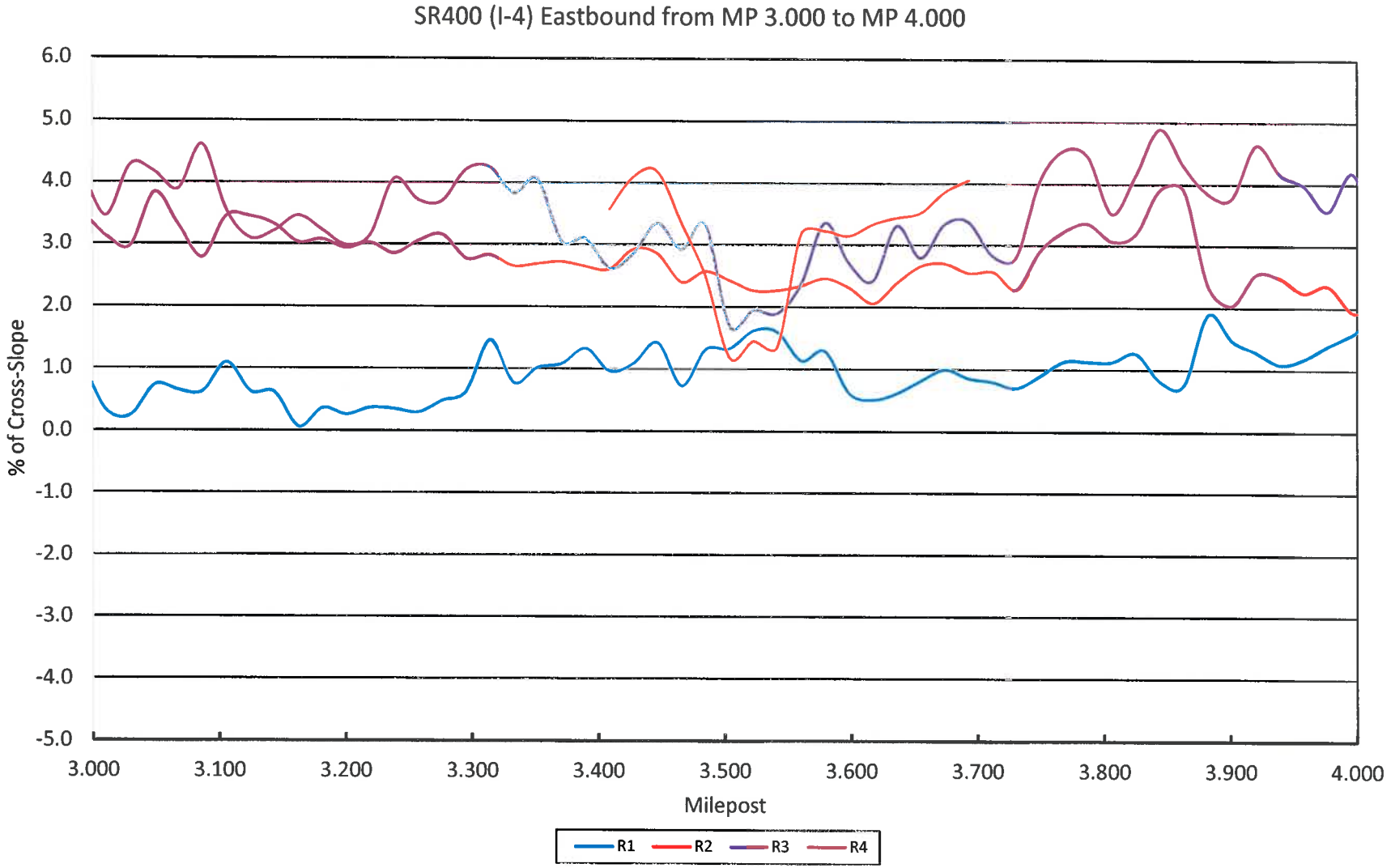
L4			L3			L2			L1				R1			R2			R3			R4		
HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	Milepost	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth	HMA Thickness	Cross Slope	Rut Depth
(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)		(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)	(in.)	(%)	(in.)
			12.8	3.4	0.1	14.7	2.8	0.1	15.5	1.6	0.1	6.932	9.6	1.8	0.1	11.8	1.9	0.3	12.7	2.4	0.3			
			11.8	3.4	0.2	13.9	2.9	0.1	15.7	1.8	0.1	6.951	9.6	2.0	0.2	11.8	1.8	0.3	13.1	2.4	0.2			
			12.0	3.4	0.1	14.6	2.5	0.1	15.3	1.5	0.1	6.970	10.0	2.1	0.2	12.9	1.4	0.3	12.9	2.2	0.2			
			11.7	3.4	0.2	15.2	2.7	0.1	17.3	1.8	0.1	6.989	10.0	1.7	0.2	13.3	1.8	0.3	13.0	3.1	0.2			
			11.2	3.4	0.2	15.0	2.6	0.1	16.7	2.0	0.1	7.008	9.4	2.0	0.2	13.2	1.7	0.2	11.4	2.4	0.2			
			12.1	3.4	0.2	15.1	2.3	0.1	16.6	1.9	0.1	7.027	9.7	1.4	0.1	13.3	1.8	0.2	12.7	2.3	0.2			
			13.1	3.4	0.2	16.2	2.4	0.1	17.3	1.7	0.1	7.045	10.9	0.4	0.2	12.5	1.8	0.2	14.5	1.9	0.2			
			12.6	3.4	0.1	16.4	2.2	0.1	16.0	1.5	0.1	7.064	9.2	-2.4	0.1	11.6	1.1	0.2	11.9	1.9	0.2			
			13.1	3.4	0.2	15.6	1.9	0.1	16.1	1.9	0.1	7.083	9.3	-2.4	0.2	12.6	1.4	0.2	13.9	2.0	0.2			
			13.8	3.4	0.1	15.8	2.0	0.2	17.8	1.5	0.1	7.102	10.1	-2.7	0.2	12.9	1.2	0.2	12.8	2.0	0.2			
			13.7	3.4	0.2	16.1	2.0	0.1	15.3	1.6	0.1	7.121	9.6	-2.9	0.1	13.2	1.3	0.2	13.4	2.4	0.2			
			12.9	3.4	0.1	15.3	2.1	0.1	15.3	1.7	0.1	7.140	10.4	-2.4	0.2	12.4	1.4	0.2	12.7	2.5	0.2			
			12.0	3.4	0.2	15.1	2.0	0.1	15.6	1.6	0.1	7.159	9.5	-1.9	0.2	11.8	1.6	0.2	12.0	1.9	0.2			
			11.7	3.4	0.1	12.9	1.9	0.0	15.0	2.0	0.1	7.178	9.9	-2.4	0.2		1.5	0.2	10.3	1.9	0.2			
			9.0	3.4	0.2	14.2	1.9	0.1	14.2	1.4	0.0	7.197	10.2	-2.3	0.2	10.1	1.8	0.3	11.2	2.1	0.1		2.3	0.0
			9.0	3.4	0.2	13.0	1.8	0.1	15.1	1.8	0.0	7.216	10.6	-2.8	0.2	8.2	2.1	0.2	8.9	1.8	0.1		2.3	0.1
			8.0	3.4	0.1	12.1	2.1	0.2	13.8	2.2	0.1	7.235	9.6	-1.8	0.2	7.7	1.6	0.2	8.9	1.4	0.1		2.3	0.1
			8.4	3.4	0.2	10.8	2.3	0.2	12.8	1.9	0.1	7.254	10.2	-2.3	0.1	6.3	1.9	0.2	7.7	1.7	0.2		2.4	0.0
			11.5	3.4	0.2	13.9	2.4	0.2	15.1	1.9	0.1	7.273	9.5	-2.0	0.2	7.8	1.8	0.2	8.0	1.5	0.2		2.9	0.0
			10.6	3.4	0.2	11.7	2.4	0.2	12.9	1.9	0.1	7.292	10.1	-2.5	0.1	9.1	1.8	0.2	9.4	1.5	0.2		2.5	0.0
			13.1	3.4	0.1	15.5	2.5	0.1	15.6	1.9	0.1	7.311	9.1	-2.5	0.2	11.8	1.6	0.2	12.3	1.3	0.2		2.4	0.0
			9.8	3.4	0.2	15.0	2.5	0.2	13.0	1.2	0.0	7.330	10.1	-2.1	0.1	14.5	1.8	0.2	13.6	1.7	0.2		2.9	0.0
			7.8	3.4	0.2	14.0	2.6	0.1	14.3	1.6	0.0	7.348	10.4	-2.0	0.3	12.4	1.7	0.2	12.9	1.7	0.2		2.9	0.0
			8.0	3.4	0.2	13.7	2.5	0.1	13.1	1.7	0.0	7.367	9.1	-1.9	0.1	13.1	1.4	0.4	12.9	1.3	0.2		3.1	0.0
			7.0	3.4	0.2	12.5	2.6	0.2	14.2	2.0	0.1	7.386	8.9	-2.2	0.2	11.8	1.5	0.2	12.7	1.8	0.1		3.6	0.0
			6.9	3.4	0.2	13.3	2.8	0.1	16.0	1.9	0.1	7.405	9.6	-2.1	0.1	11.9	1.1	0.2	12.9	2.3	0.1		3.0	0.0
			7.0	3.4	0.2	13.1	2.6	0.1	14.6	2.0	0.0	7.424	10.3	-0.8	0.2	11.3	1.0	0.1	12.5	2.1	0.1		2.8	0.0
			8.0	3.4	0.2	14.0	2.6	0.1	14.8	2.1	0.1	7.443	10.3	1.8	0.2	11.8	1.7	0.2	12.6	2.4	0.1		2.8	0.0
			9.2	3.4	0.1	14.5	2.6	0.1	16.0	1.9	0.0	7.462	10.4	1.9	0.2	13.1	1.8	0.2	13.0	2.4	0.1		2.8	0.1
			8.5	3.4	0.1	14.5	2.5	0.1		2.0	0.0	7.481	10.1	2.4	0.2	12.7	1.5	0.2	13.1	2.6	0.2		2.9	0.1
			8.6	3.4	0.2	14.1	2.4	0.1	15.9	1.9	0.0	7.500	10.7	1.8	0.2	12.4	1.5	0.2	11.7	2.3	0.2		3.0	0.1
			8.3	3.4	0.2	14.9	2.4	0.1	13.8	1.8	0.0	7.519	12.0	1.0	0.2	13.8	2.0	0.2	10.4	2.6	0.2		3.6	0.1
			7.0	3.4	0.2	14.0	2.7	0.1	13.9	1.9	0.1	7.538	10.7	1.4	0.3	12.2	2.5	0.2	10.0	2.6	0.2		2.8	0.1
			8.3	3.4	0.2	13.6	2.2	0.1	14.1	2.2	0.1	7.557	11.8	1.9	0.2	13.2	2.2	0.3	9.6	2.7	0.2		2.8	0.1
			6.6	3.4	0.1	13.3	2.7	0.1	12.7	1.8	0.1	7.576	9.3	2.4	0.1	11.0	2.0	0.2	8.7	3.0	0.2		3.2	0.1
			7.9	3.4	0.1	12.6	2.5	0.1	12.1	2.0	0.1	7.595	11.9	1.6	0.1	13.0	1.8	0.2	8.5	3.1	0.2		3.3	0.1
			6.7	3.4	0.1	12.8	2.3	0.1	11.2	1.9	0.1	7.614	12.6	1.9	0.1	12.7	1.9	0.2	8.9	3.3	0.3		2.6	0.1
			5.3	3.4	0.2	10.8	2.5	0.2	11.5	2.0	0.1	7.633	12.6	1.9	0.1	13.1	2.1	0.2	8.9	3.3	0.3		2.8	0.0
			6.2	3.4	0.1	9.8	2.6	0.1	10.6	2.3	0.1	7.652	10.0	1.8	0.0	12.0	2.2	0.1	8.3	3.5	0.2		3.4	0.0
			7.4	3.4	0.1	9.2	2.7	0.2	9.4	1.7	0.1	7.670	9.7	1.2	0.1	11.0	2.3	0.1	5.9	3.7	0.1		3.8	0.1
				3.4	0.1		1.3	0.1		1.5	0.1	7.689	10.2	1.5	0.1		2.3	0.1		3.0	0.0		2.2	0.1
			7.0	3.4	0.1		1.5	0.1		1.7	0.1	7.708		1.4	0.1		2.1	0.1		2.4	0.0			
	3.4	0.1	10.4	3.4	0.1	8.7	0.8	0.1	10.1	1.9	0.0	7.727		1.7	0.1	9.6	2.1	0.1	7.1	2.3	0.0			
	3.3	0.1	9.2	3.4	0.0	10.7	1.7	0.1	12.4	2.4	0.1	7.746	9.0	2.1	0.0	8.3	2.2	0.1	6.0	3.1	0.1			
	3.8	0.1	10.8	3.4	0.0	12.4	2.1	0.1	12.9	2.1	0.0	7.765	10.3	2.0	0.0	10.1	2.0	0.3	6.5	2.7	0.2			
	3.9	0.1	11.0	3.4	0.1	12.4	2.2	0.1	13.4	2.2	0.0	7.784	10.6	2.2	0.1	10.9	1.9	0.2	7.1	3.2	0.3			
	3.6	0.1	11.0	3.4	0.0	14.7	2.1	0.1	12.8	2.0	0.0	7.803	11.2	2.2	0.0	10.9	2.3	0.3	6.6	2.4	0.2			
	3.6	0.1	9.4	3.4	0.1	14.1	1.8	0.1	13.2	2.3	0.0	7.822	13.9	1.9	0.0	11.9	2.4	0.2	5.7	2.5	0.3			
	3.5	0.1	10.3	3.4	0.1	14.6	2.3	0.1	14.1	2.1	0.0	7.841	10.9	1.6	0.0	11.3	2.8	0.2	6.9	2.8	0.3			
	3.1	0.1	9.3	3.4	0.0	13.3	2.3	0.1	15.1	2.1	0.0	7.860	11.2	1.6	0.0	11.4	2.4	0.2	7.7	2.5	0.2			
	2.6	0.1	9.6	3.4	0.1	13.4	2.3	0.1	13.8	2.1	0.0	7.879	10.4	1.4	0.0	10.3	1.9	0.2	7.0	3.5	0.2			
	3.4	0.1	9.0	3.4	0.1	12.8	2.4	0.1	13.8	2.3	0.0	7.885	11.8	1.4	0.1	10.7	2.3	0.0	6.6	2.3	0.0			

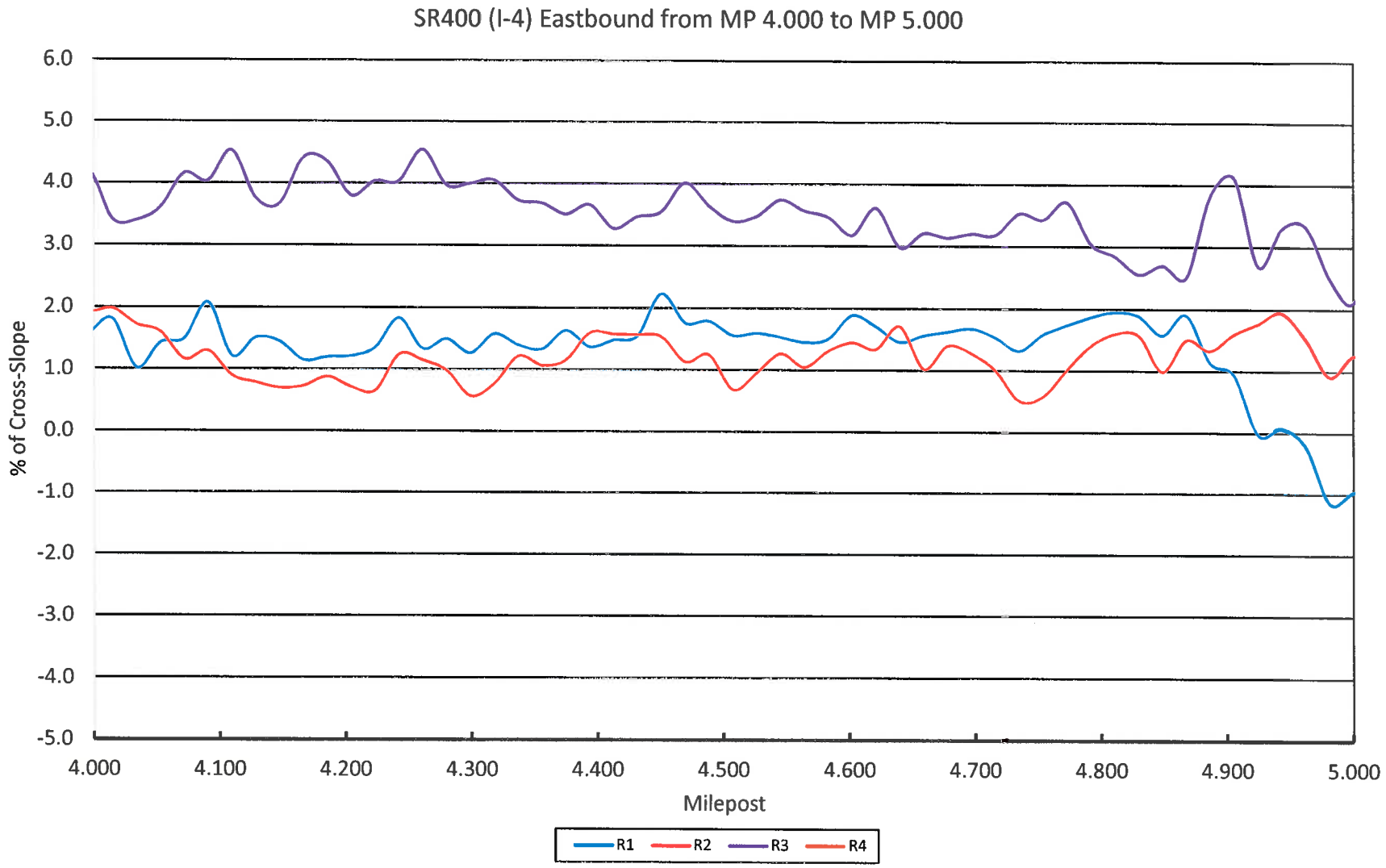

SR400 (I-4) Eastbound from MP 0.000 to MP 7.885
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
0.000
1.000
2.000
3.000
4.000
5.000
6.000
7.000
8.000
Milepost
R1
R2
R3
R4

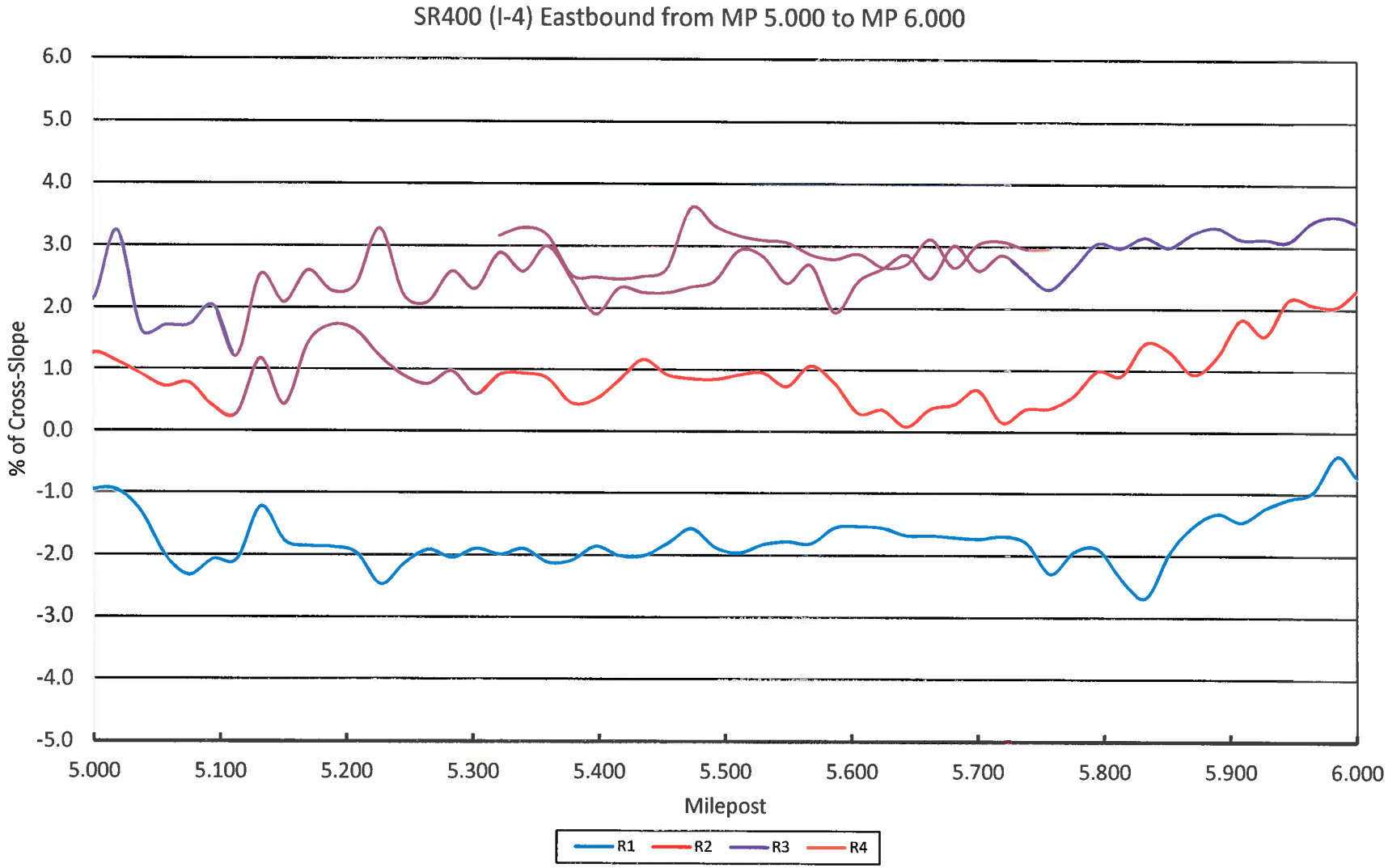

SR400 (I-4) Eastbound from MP 0.000 to MP 1.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
0.000
0.100
0.200
0.300
0.400
0.500
0.600
0.700
0.800
0.900
1.000
Milepost
R1
R2
R3
R4

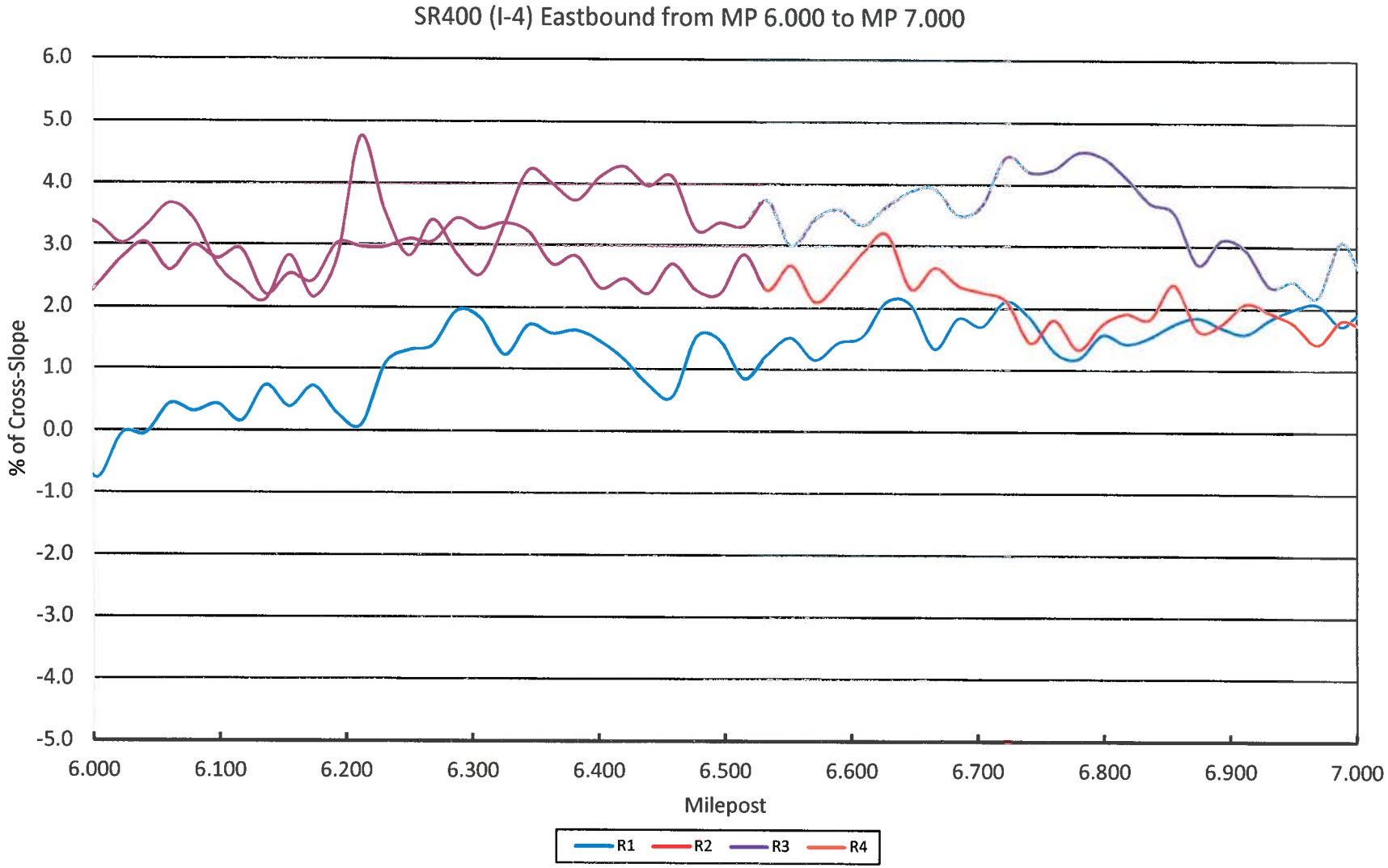

SR400 (I-4) Eastbound from MP 1.000 to MP 2.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
1.000
1.100
1.200
1.300
1.400
1.500
1.600
1.700
1.800
1.900
2.000
Milepost
R1
R2
R3
R4

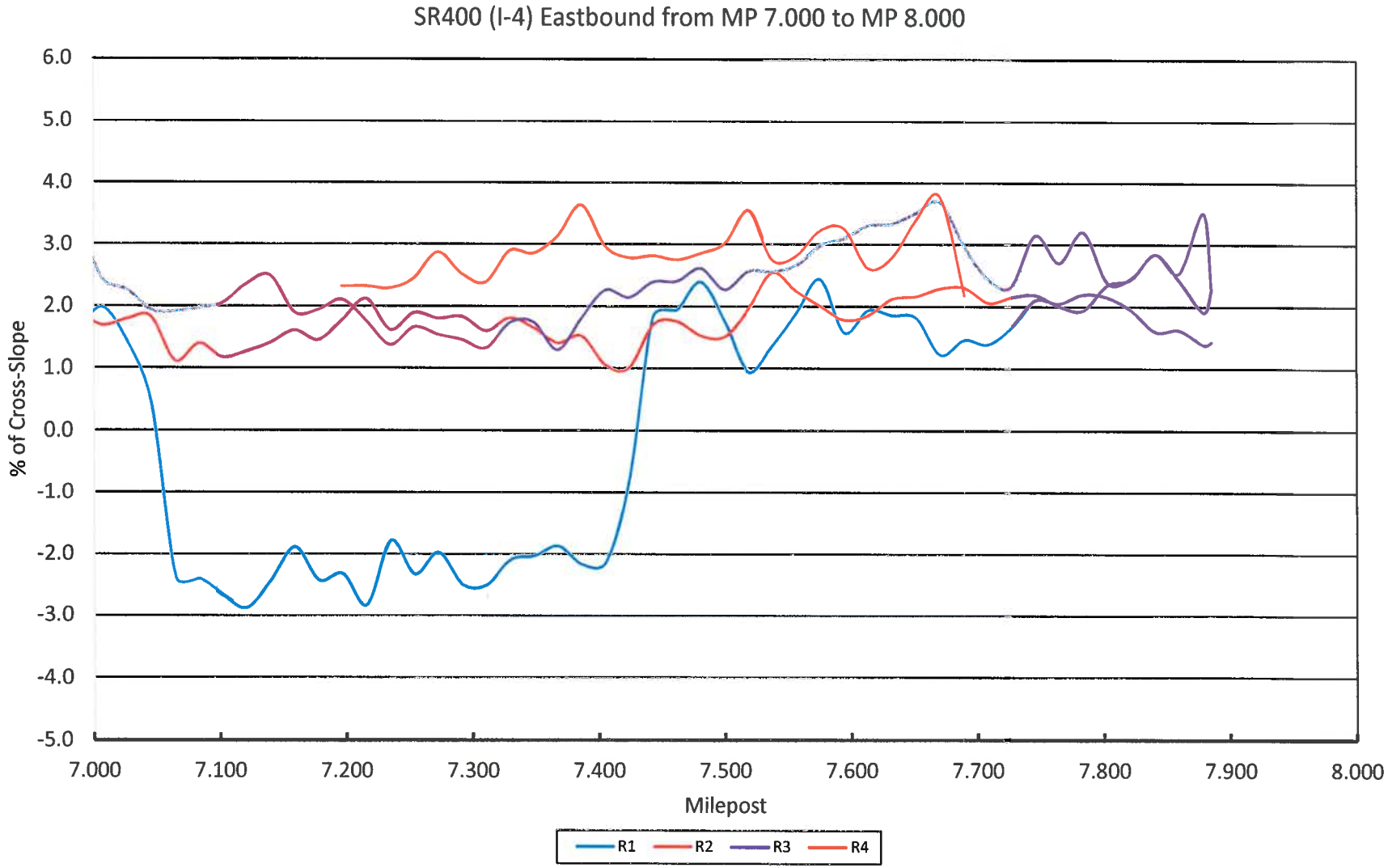

SR400 (I-4) Eastbound from MP 2.000 to MP 3.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
2.000
2.100
2.200
2.300
2.400
2.500
2.600
2.700
2.800
2.900
3.000
Milepost
R1
R2
R3
R4

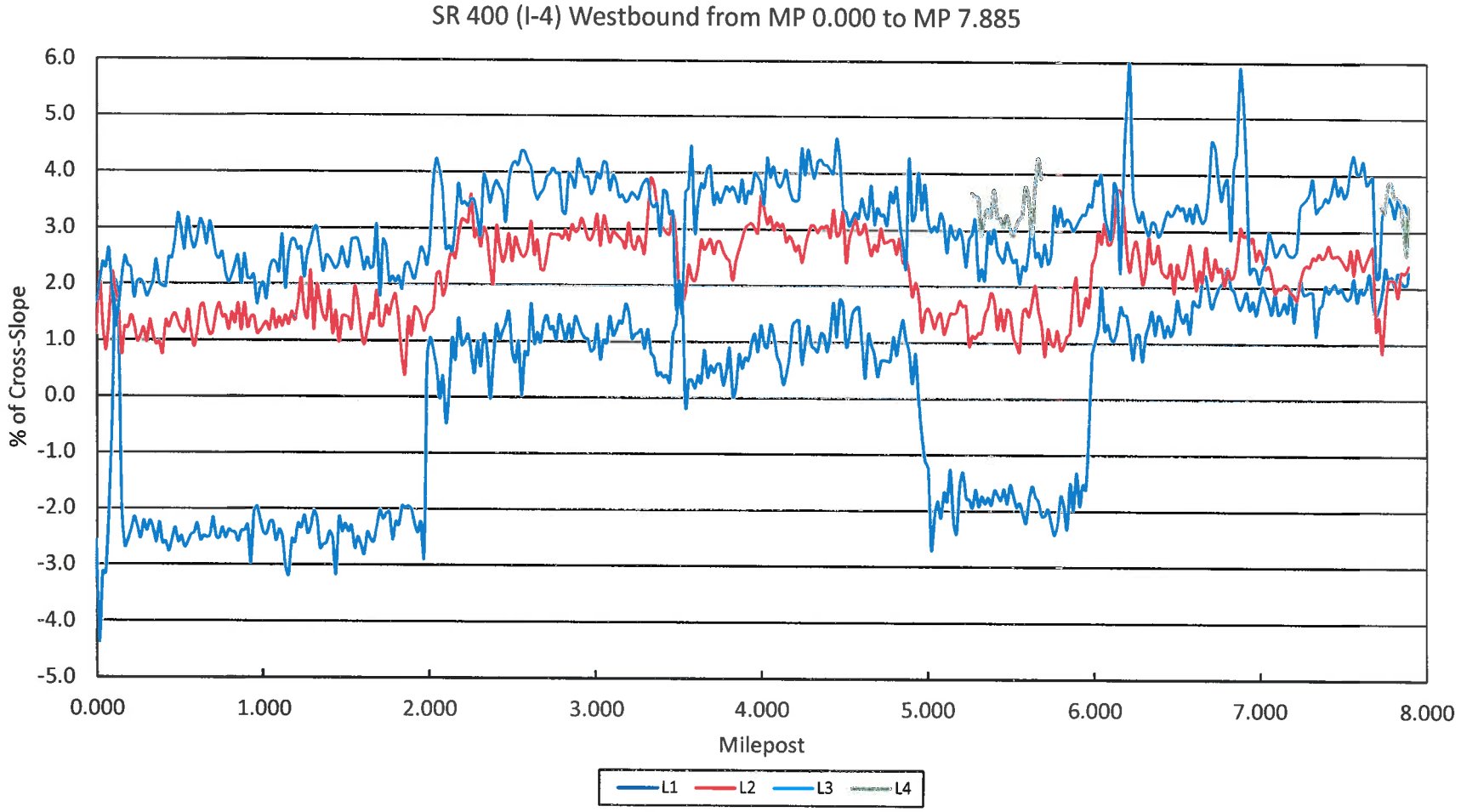

SR400 (I-4) Eastbound from MP 3.000 to MP 4.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
3.000
3.100
3.200
3.300
3.400
3.500
3.600
3.700
3.800
3.900
4.000
Milepost
R1
R2
R3
R4

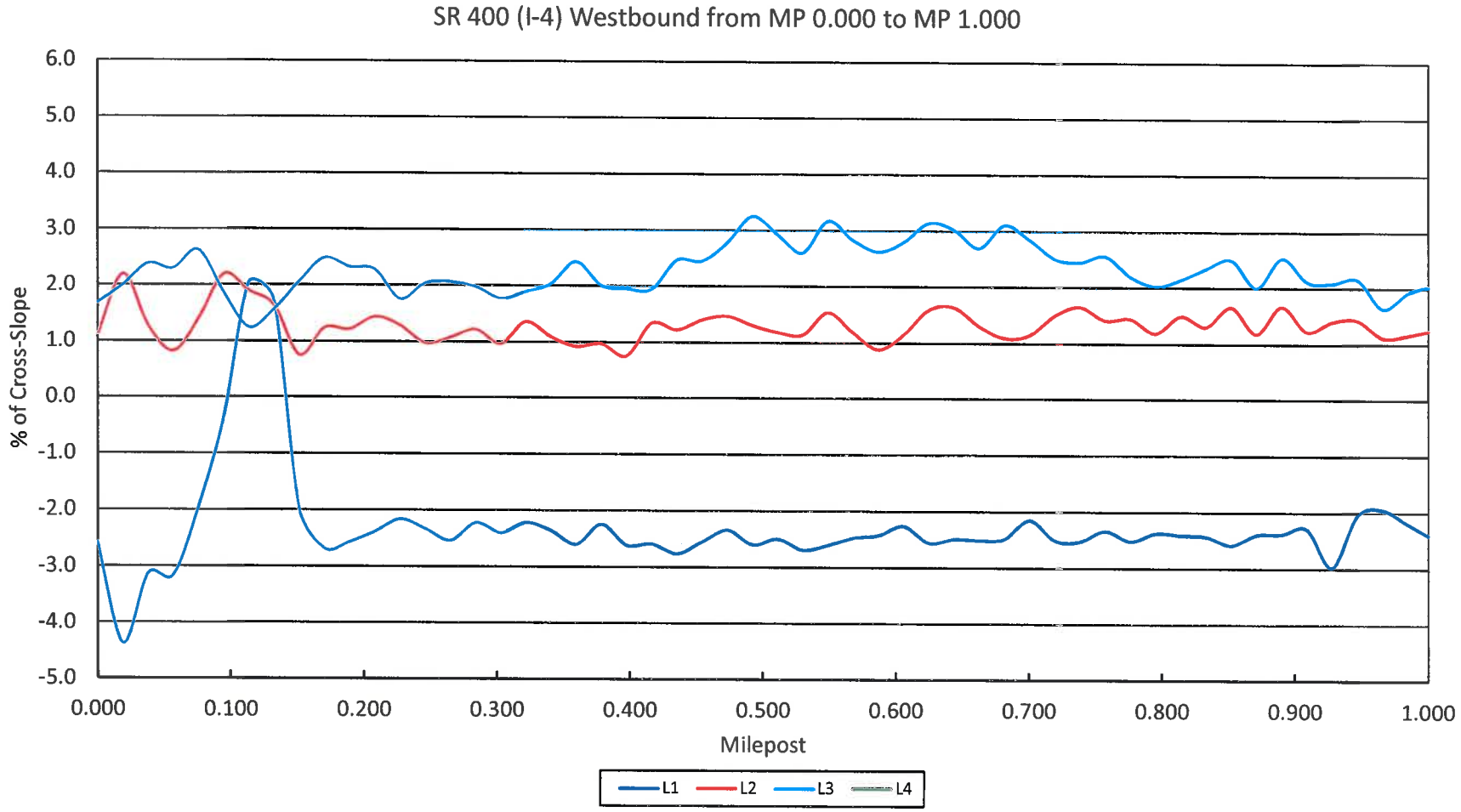

SR400 (I-4) Eastbound from MP 4.000 to MP 5.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
4.000
4.100
4.200
4.300
4.400
4.500
4.600
4.700
4.800
4.900
5.000
Milepost
R1
R2
R3
R4

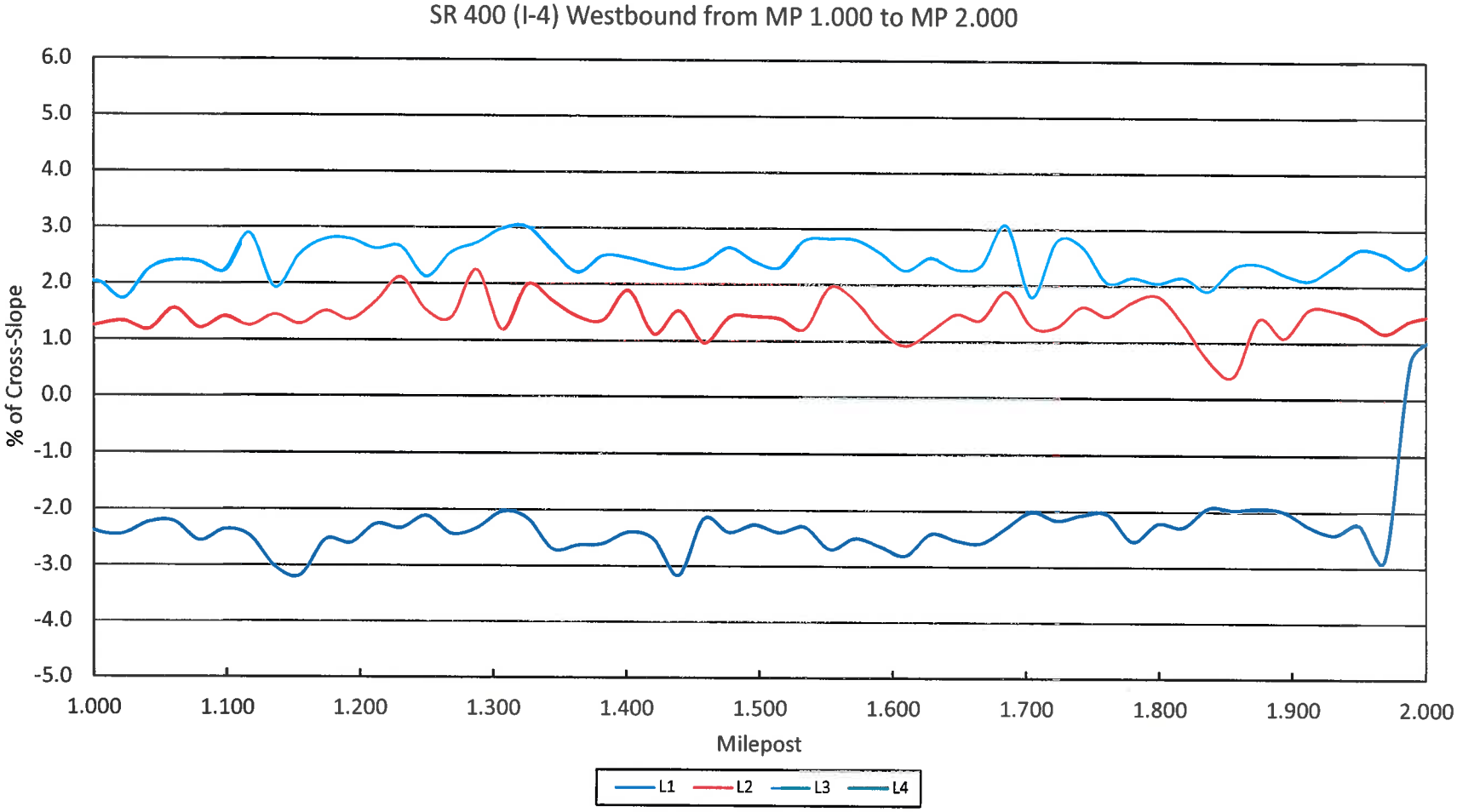

SR400 (I-4) Eastbound from MP 5.000 to MP 6.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
5.000
5.100
5.200
5.300
5.400
5.500
5.600
5.700
5.800
5.900
6.000
Milepost
R1
R2
R3
R4

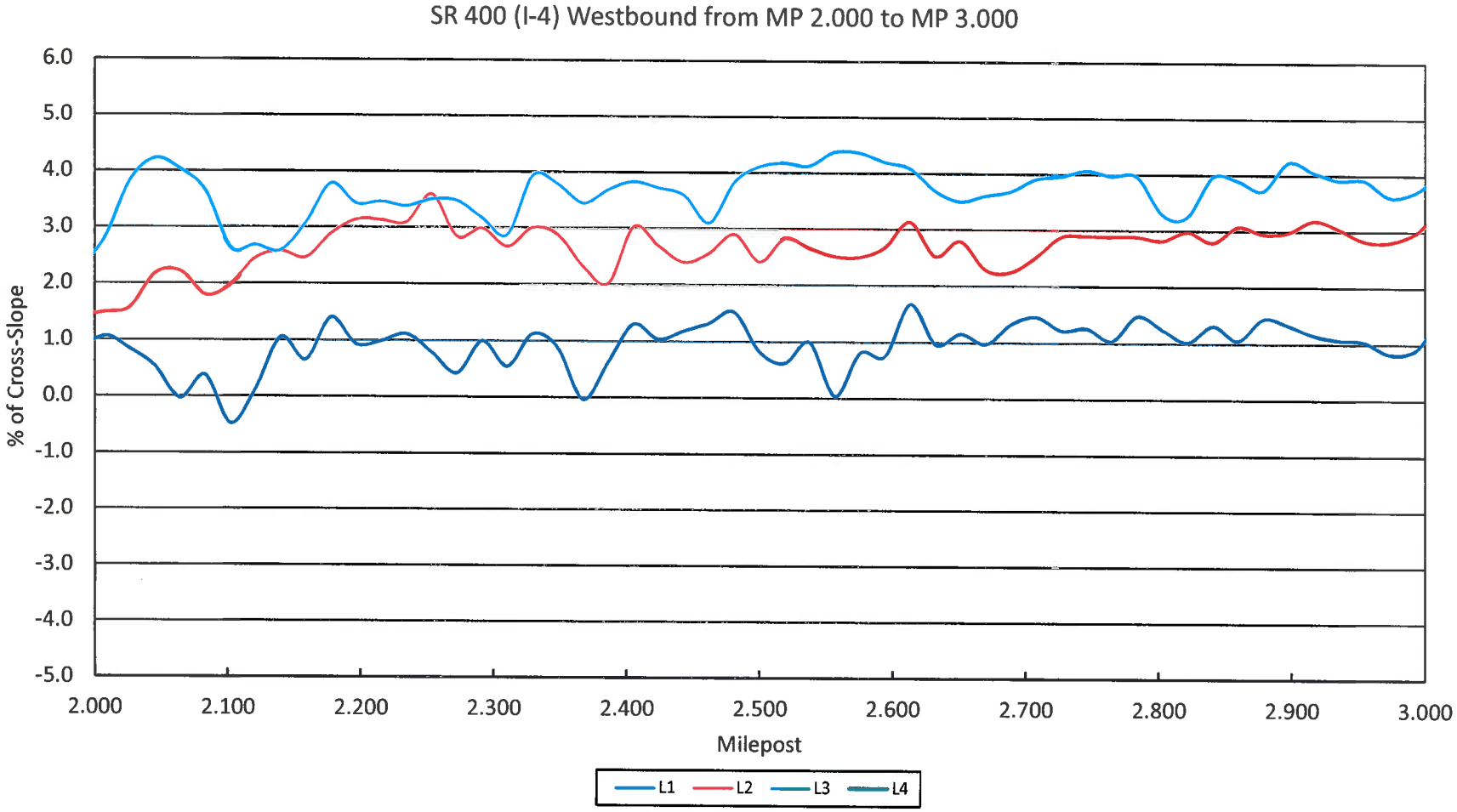

SR400 (I-4) Eastbound from MP 6.000 to MP 7.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
6.000
6.100
6.200
6.300
6.400
6.500
6.600
6.700
6.800
6.900
7.000
Milepost
R1
R2
R3
R4

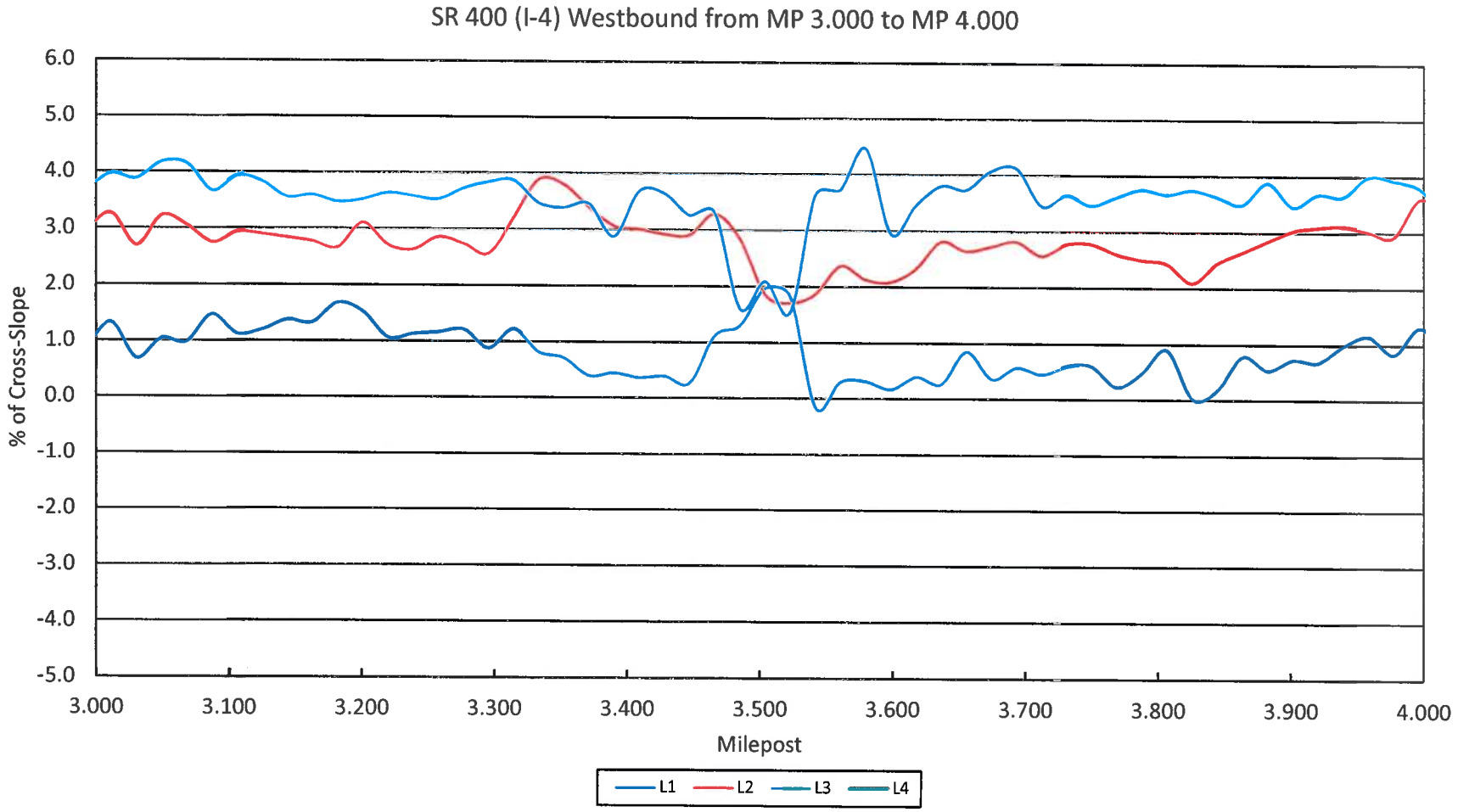

SR400 (I-4) Eastbound from MP 7.000 to MP 8.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
7.000
7.100
7.200
7.300
7.400
7.500
7.600
7.700
7.800
7.900
8.000
Milepost
R1
R2
R3
R4

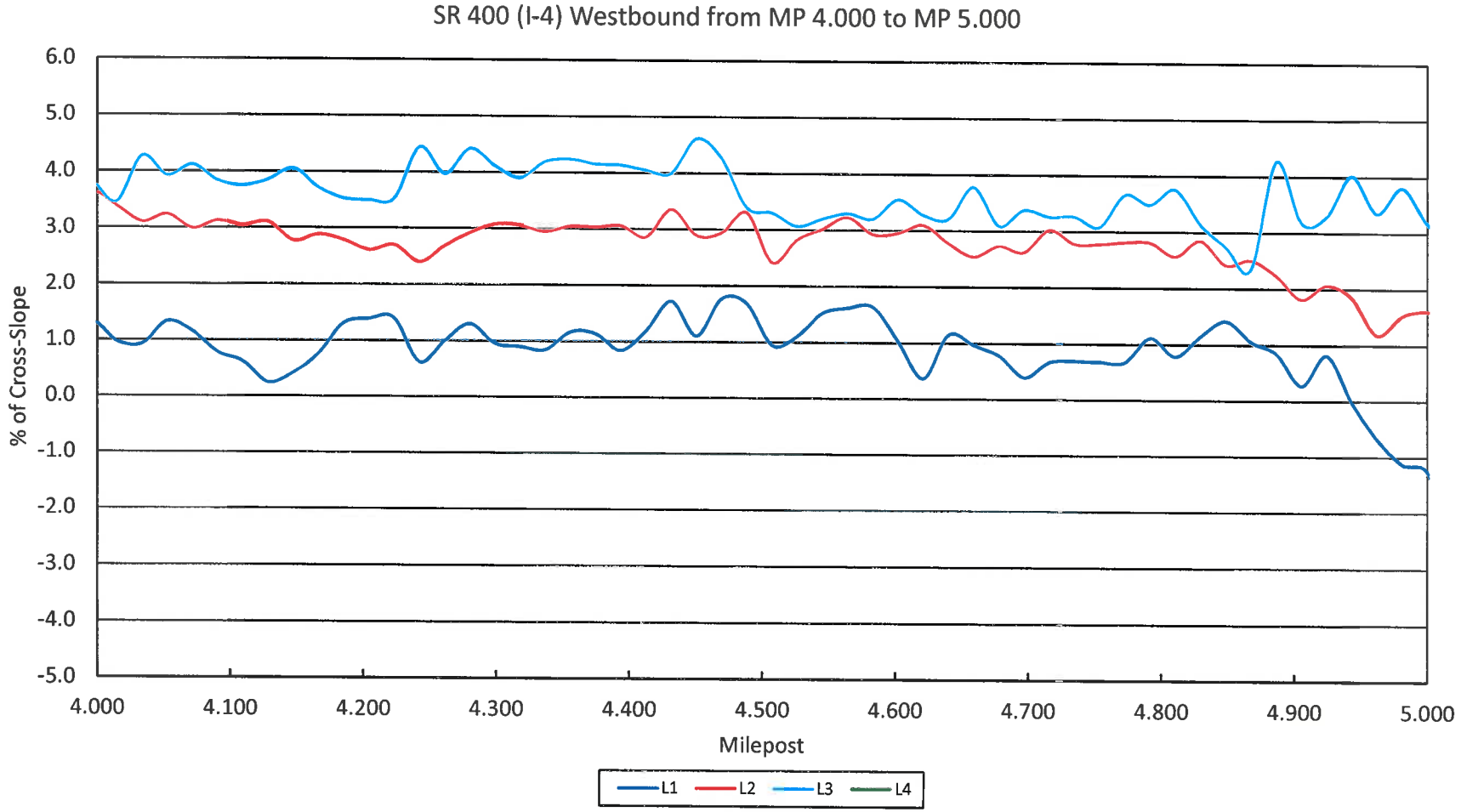

SR 400 (I-4) Westbound from MP 0.000 to MP 7.885
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
0.000
1.000
2.000
3.000
4.000
5.000
6.000
7.000
8.000
Milepost
L1
L2
L3
L4

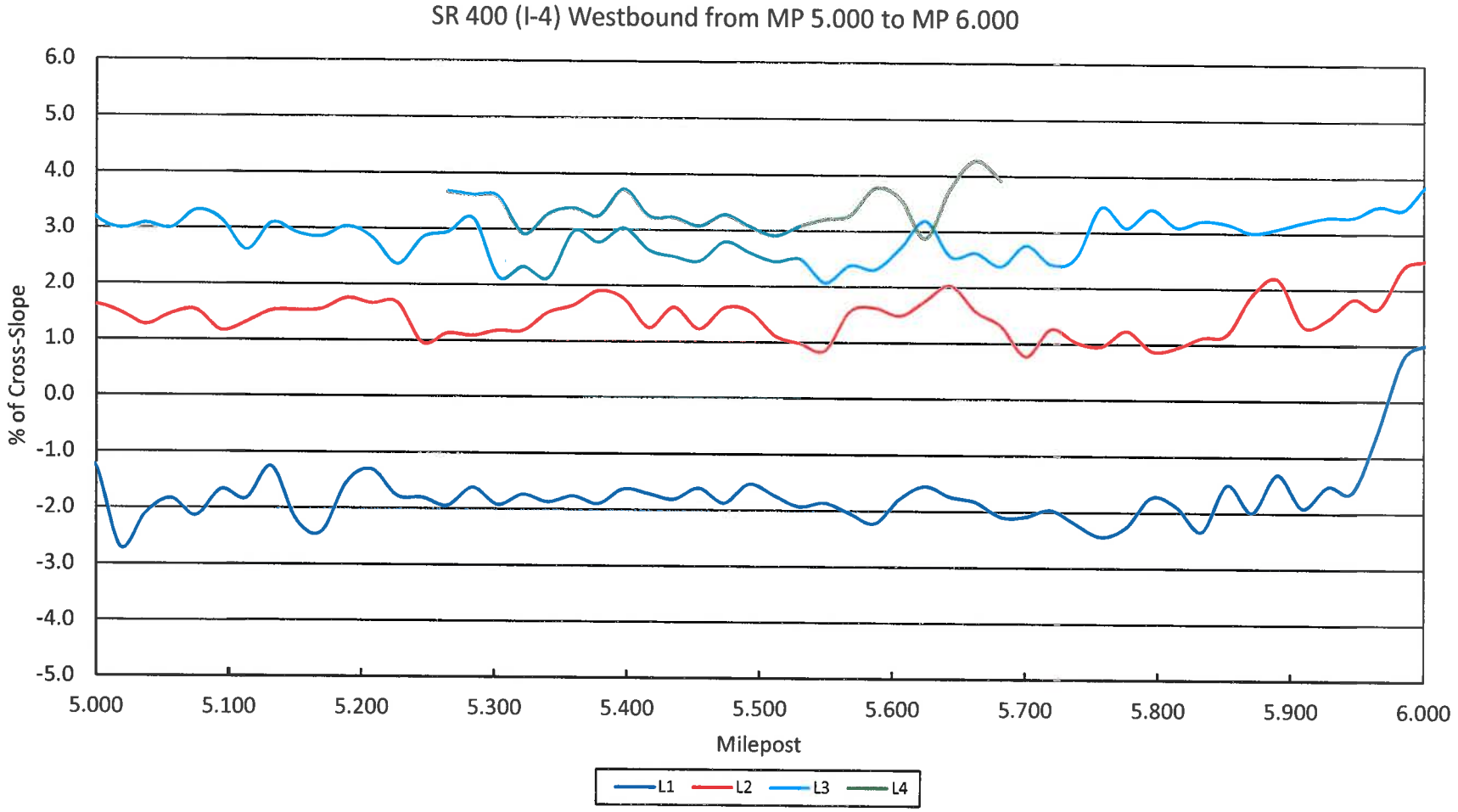

SR 400 (I-4) Westbound from MP 0.000 to MP 1.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
0.000
0.100
0.200
0.300
0.400
0.500
0.600
0.700
0.800
0.900
1.000
Milepost
L1
L2
L3
L4

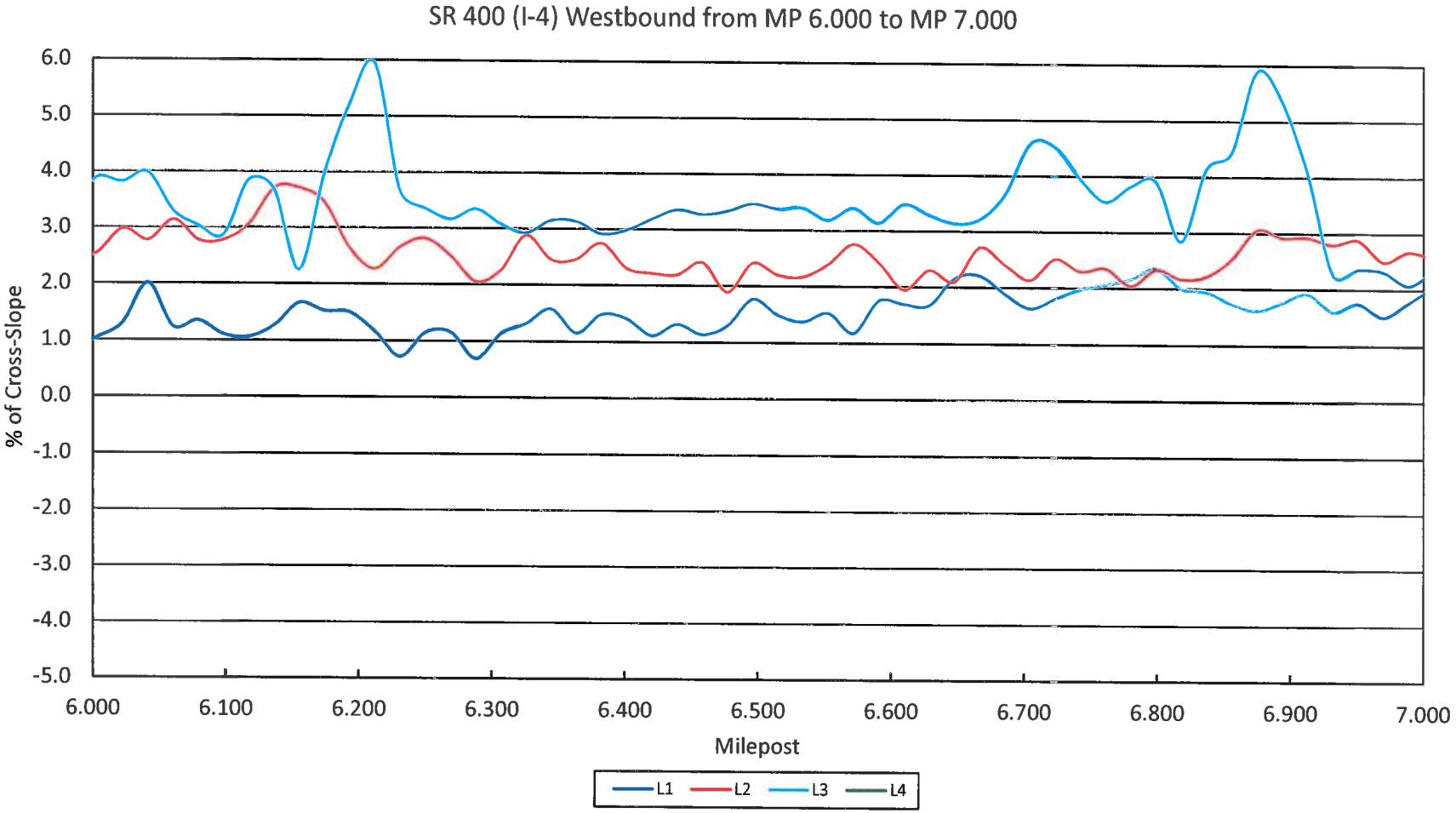

SR 400 (I-4) Westbound from MP 1.000 to MP 2.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
1.000
1.100
1.200
1.300
1.400
1.500
1.600
1.700
1.800
1.900
2.000
Milepost
L1
L2
L3
L4

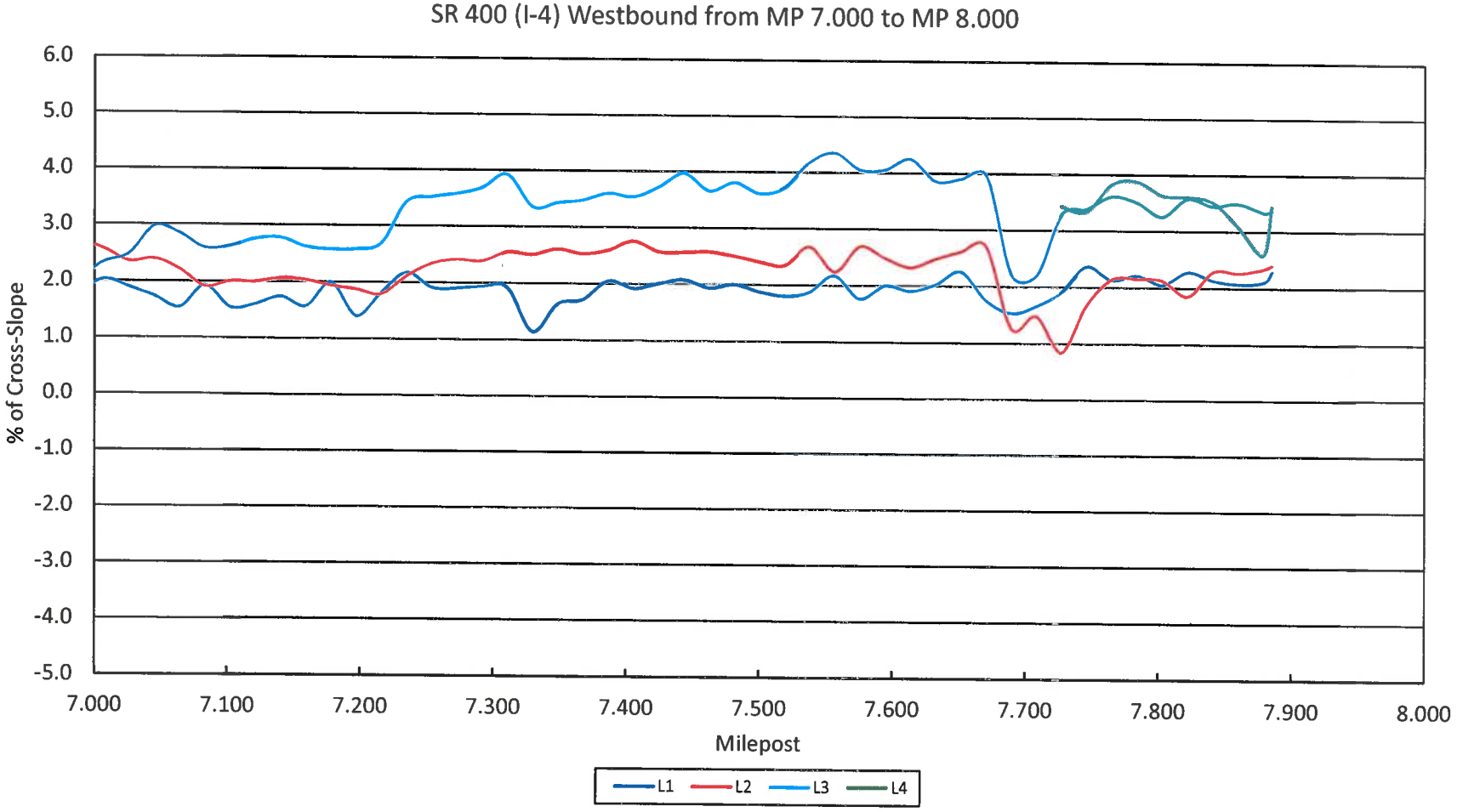

SR 400 (I-4) Westbound from MP 2.000 to MP 3.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
2.000
2.100
2.200
2.300
2.400
2.500
2.600
2.700
2.800
2.900
3.000
Milepost
L1
L2
L3
L4

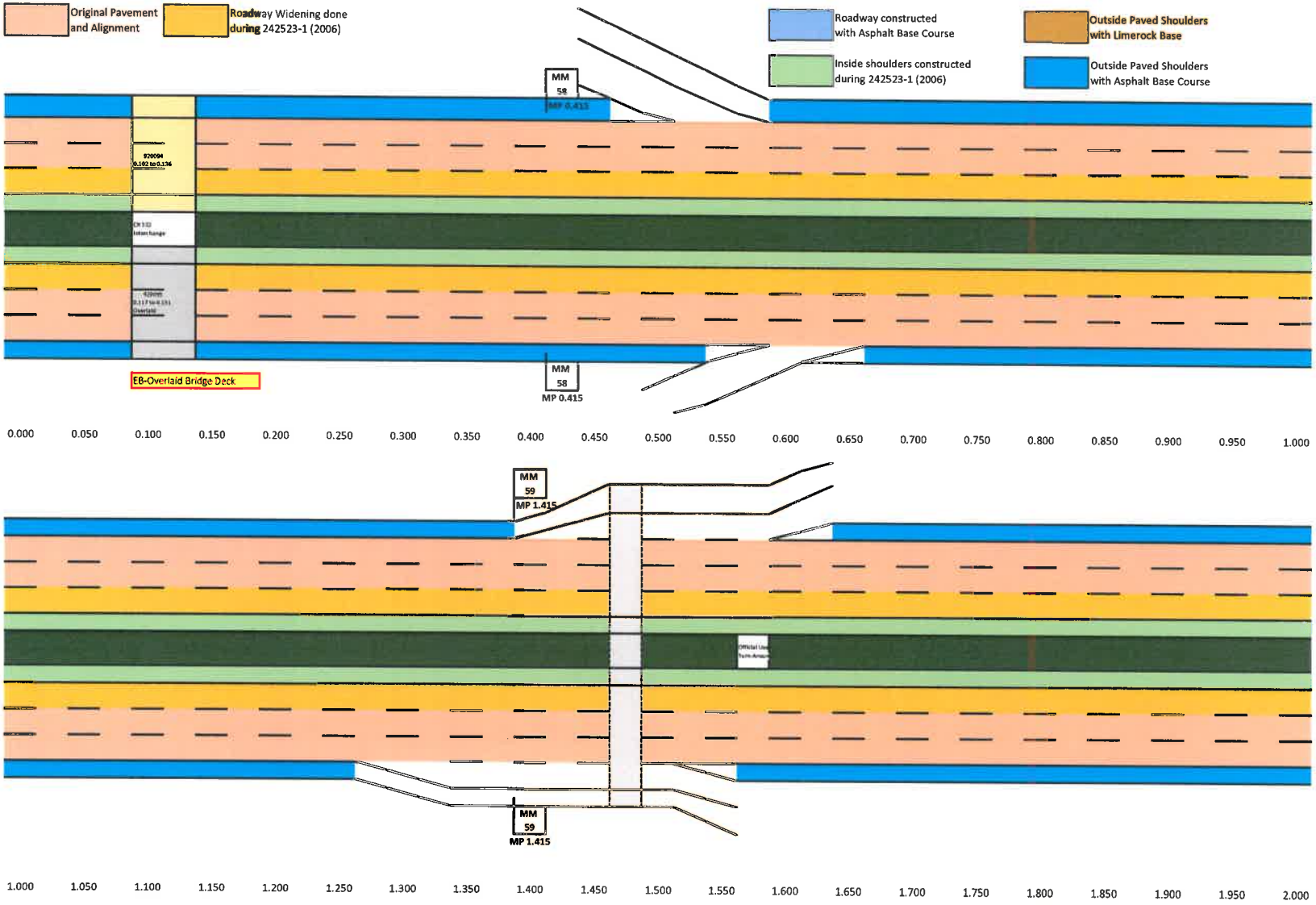

SR 400 (I-4) Westbound from MP 3.000 to MP 4.000
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
% of Cross-Slope
3.000
3.100
3.200
3.300
3.400
3.500
3.600
3.700
3.800
3.900
4.000
Milepost
L1
L2
L3
L4

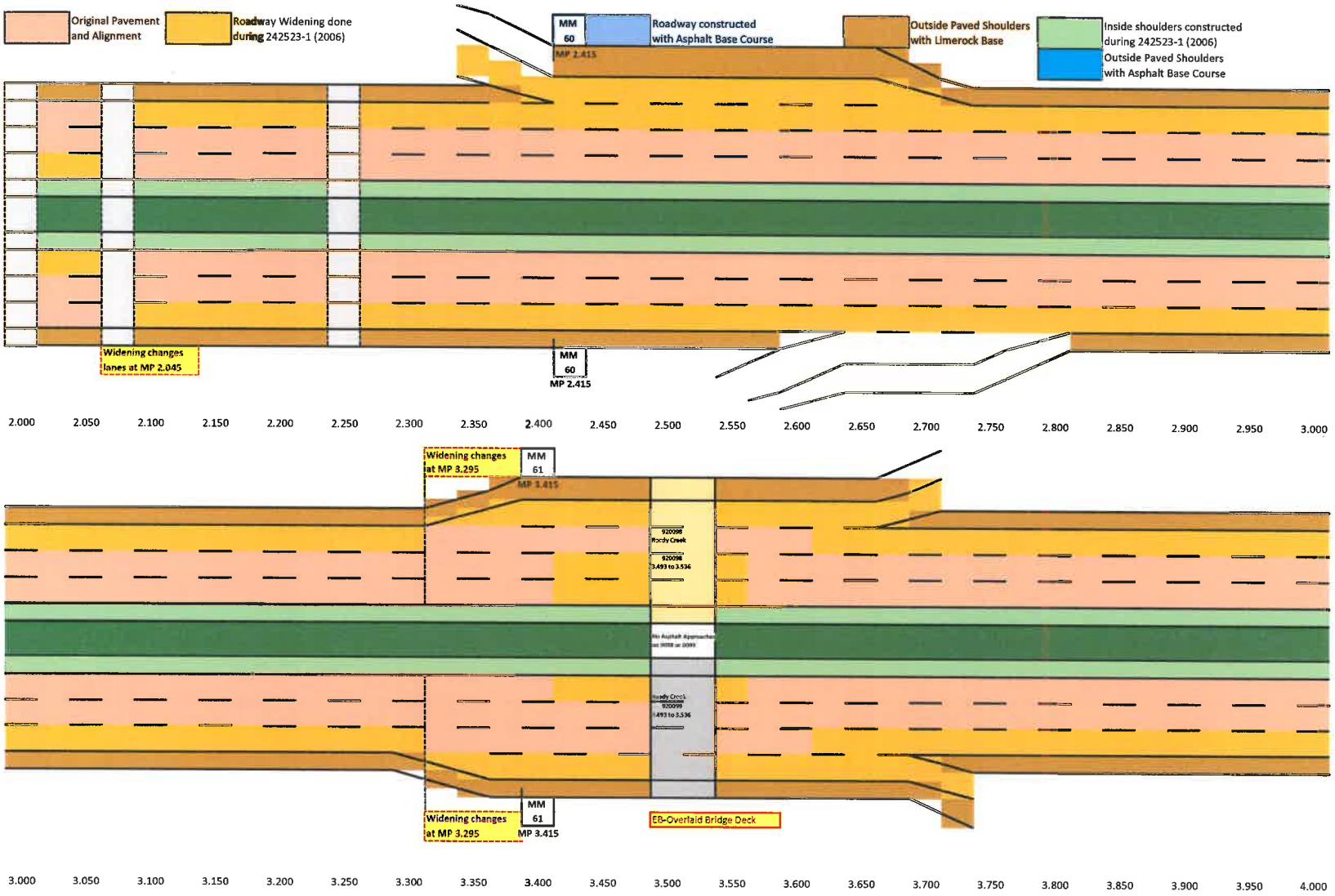

SR 400 (I-4) Westbound from MP 4.000 to MP 5.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
4.000
4.100
4.200
4.300
4.400
4.500
4.600
4.700
4.800
4.900
5.000
Milepost
L1
L2
L3
L4

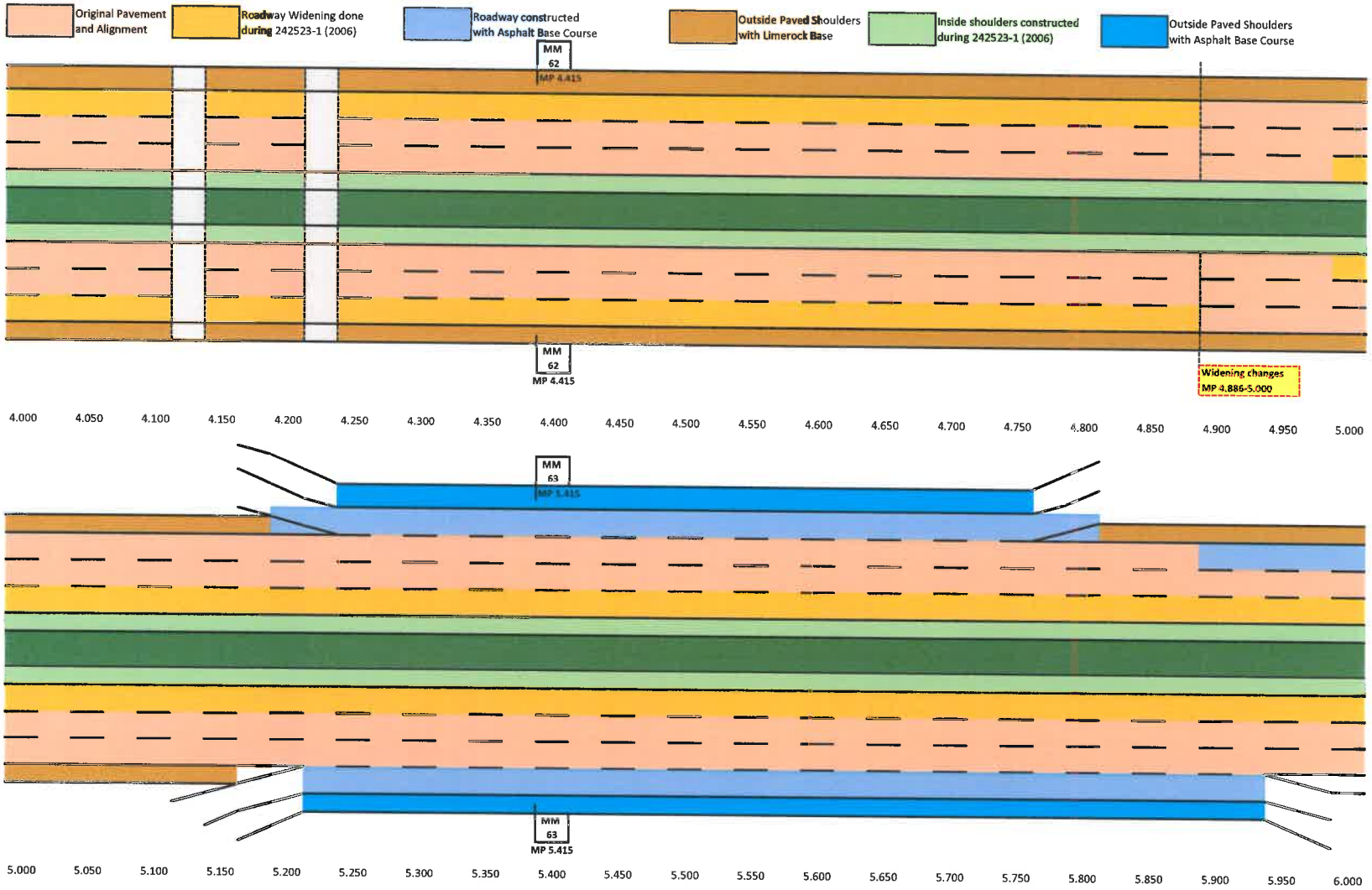

SR 400 (I-4) Westbound from MP 5.000 to MP 6.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
5.000
5.100
5.200
5.300
5.400
5.500
5.600
5.700
5.800
5.900
6.000
Milepost
L1
L2
L3
L4

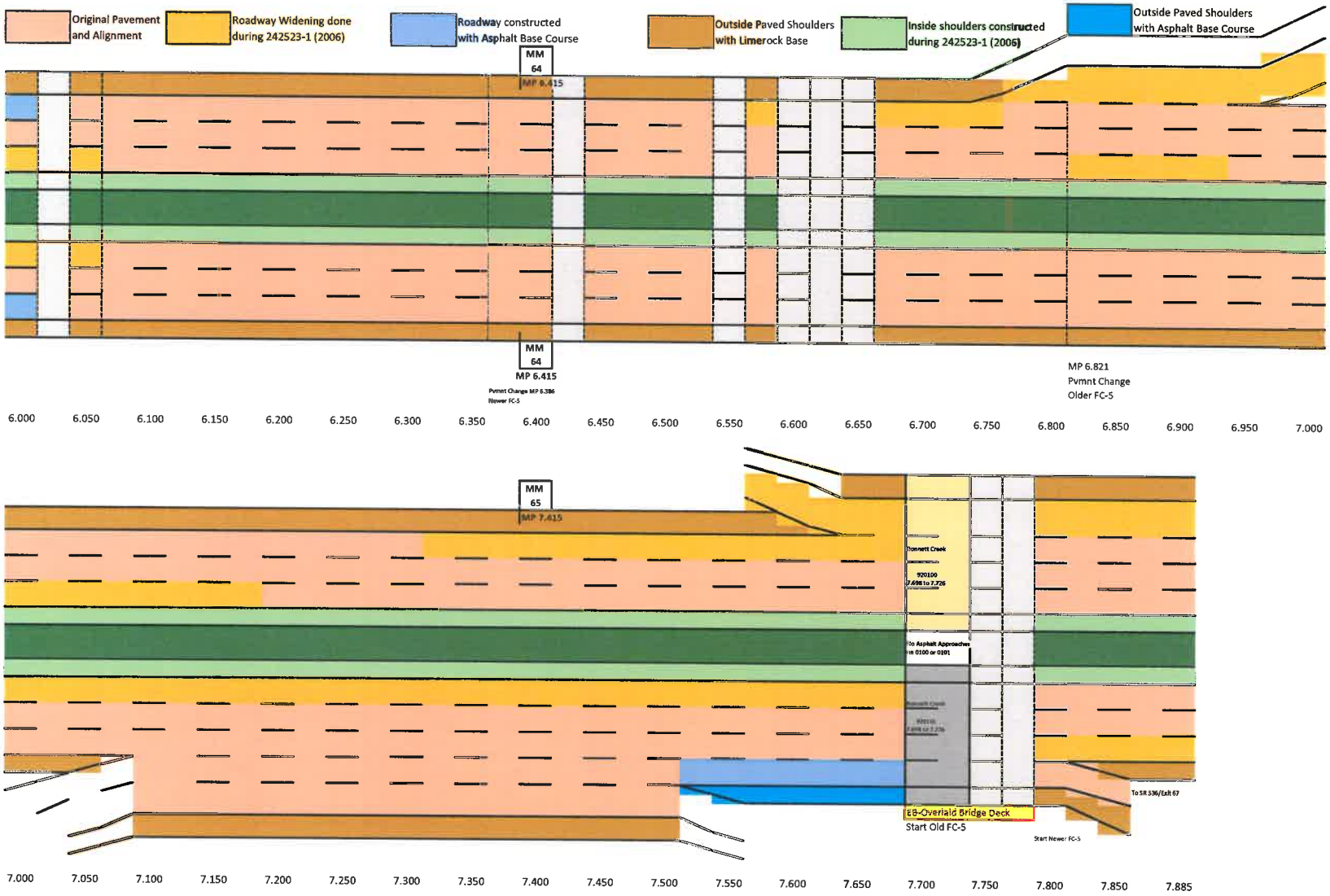

SR 400 (I-4) Westbound from MP 6.000 to MP 7.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
6.000
6.100
6.200
6.300
6.400
6.500
6.600
6.700
6.800
6.900
7.000
Milepost
L1
L2
L3
L4


SR 400 (I-4) Westbound from MP 7.000 to MP 8.000
% of Cross-Slope
6.0
5.0
4.0
3.0
2.0
1.0
0.0
-1.0
-2.0
-3.0
-4.0
-5.0
7.000
7.100
7.200
7.300
7.400
7.500
7.600
7.700
7.800
7.900
8.000
Milepost
L1
L2
L3
L4


Original Pavement and Alignment
Roadway Widening done during 242523-1 (2006)
Roadway constructed with Asphalt Base Course
Inside shoulders constructed during 242523-1 (2006)
Outside Paved Shoulders with Limerock Base
Outside Paved Shoulders with Asphalt Base Course
MM 58
MP 0.415
EB-Overlaid Bridge Deck
MM 58
MP 0.415
0.000 0.050 0.100 0.150 0.200 0.250 0.300 0.350 0.400 0.450 0.500 0.550 0.600 0.650 0.700 0.750 0.800 0.850 0.900 0.950 1.000
MM 59
MP 1.415
MM 59
MP 1.415
1.000 1.050 1.100 1.150 1.200 1.250 1.300 1.350 1.400 1.450 1.500 1.550 1.600 1.650 1.700 1.750 1.800 1.850 1.900 1.950 2.000

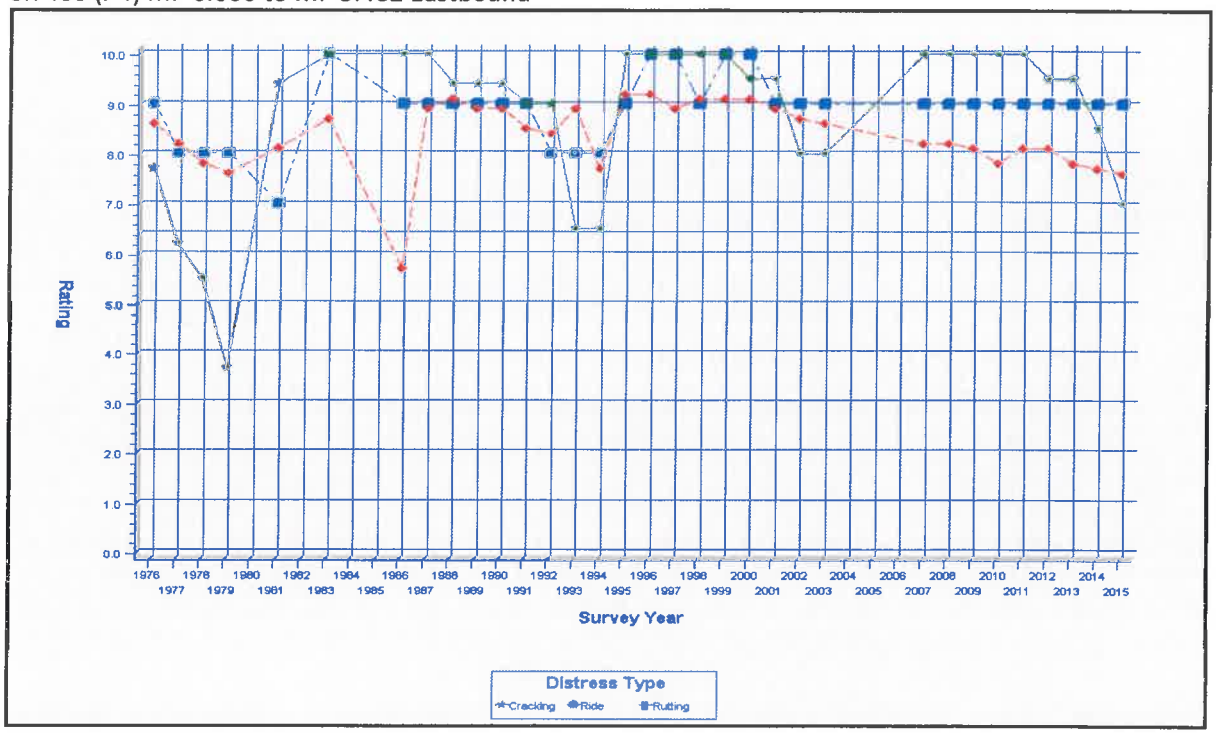

Original Pavement and Alignment
Roadway Widening done during 242523-1 (2006)
MM 60
Roadway constructed with Asphalt Base Course
MP 2.415
Outside Paved Shoulders with Limerock Base
Inside shoulders constructed during 242523-1 (2006)
Outside Paved Shoulders with Asphalt Base Course
Widening changes lanes at MP 2.045
MM 60
MP 2.415
2.000 2.050 2.100 2.150 2.200 2.250 2.300 2.350 2.400 2.450 2.500 2.550 2.600 2.650 2.700 2.750 2.800 2.850 2.900 2.950 3.000
Widening changes at MP 3.295
MM 61
MP 3.415
920098 Rocky Creek
920098 3.493 to 3.536
920099 3.493 to 3.536
EB-Overlaid Bridge Deck
Widening changes at MP 3.295
MM 61
MP 3.415
3.000 3.050 3.100 3.150 3.200 3.250 3.300 3.350 3.400 3.450 3.500 3.550 3.600 3.650 3.700 3.750 3.800 3.850 3.900 3.950 4.000


Original Pavement and Alignment
Roadway Widening done during 242523-1 (2006)
Roadway constructed with Asphalt Base Course
Outside Paved Shoulders with Limerock Base
Inside shoulders constructed during 242523-1 (2006)
Outside Paved Shoulders with Asphalt Base Course
MM 62
MP 4.415
MM 62
MP 4.415
Widening changes
MP 4.886-5.000
4.000 4.050 4.100 4.150 4.200 4.250 4.300 4.350 4.400 4.450 4.500 4.550 4.600 4.650 4.700 4.750 4.800 4.850 4.900 4.950 5.000
MM 63
MP 5.415
MM 63
MP 5.415
5.000 5.050 5.100 5.150 5.200 5.250 5.300 5.350 5.400 5.450 5.500 5.550 5.600 5.650 5.700 5.750 5.800 5.850 5.900 5.950 6.000

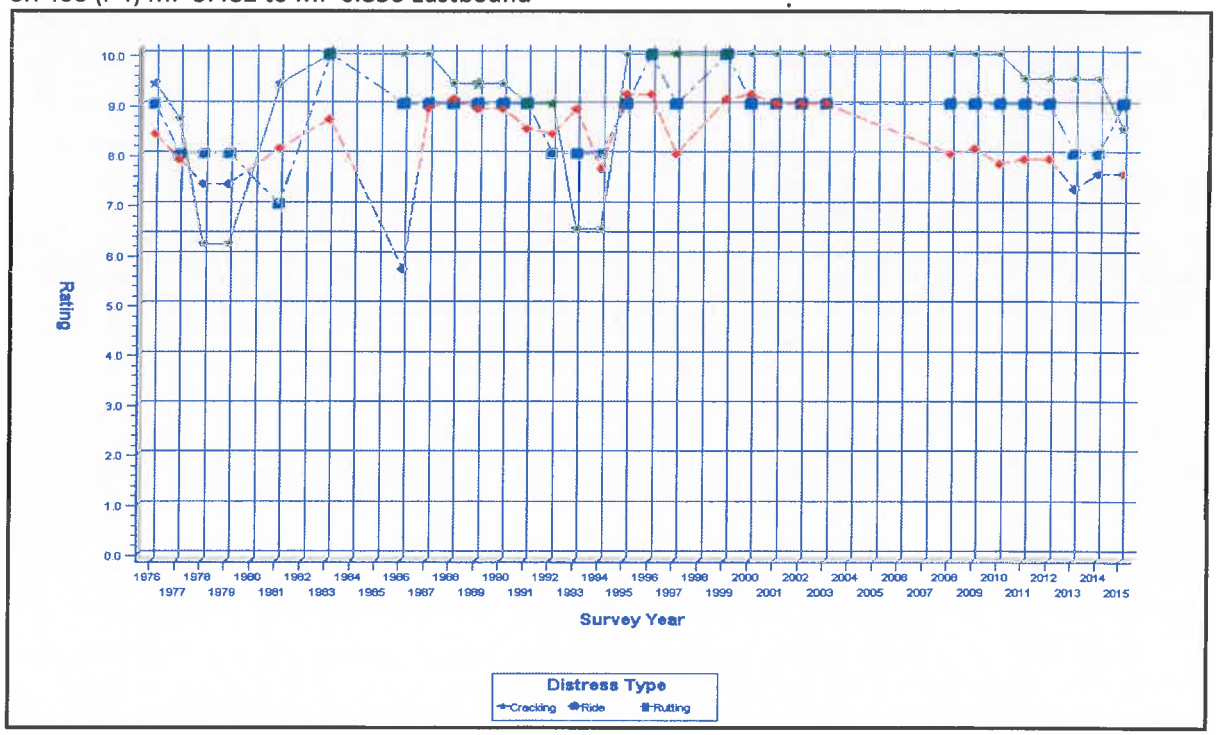

Original Pavement and Alignment
Roadway Widening done during 242523-1 (2006)
Roadway constructed with Asphalt Base Course
Outside Paved Shoulders with Limerock Base
Inside shoulders constructed during 242523-1 (2006)
Outside Paved Shoulders with Asphalt Base Course
MM 64
MP 6.415
MM 64
MP 6.415
Pvmnt Change MP 6.386 Newer FC-5
MP 6.821
Pvmnt Change
Older FC-5
6.000
6.050
6.100
6.150
6.200
6.250
6.300
6.350
6.400
6.450
6.500
6.550
6.600
6.650
6.700
6.750
6.800
6.850
6.900
6.950
7.000
MM 65
MP 7.415
Bonnett Creek
920100
7.698 to 7.726
To Asphalt Approaches in 0100 or 0101
EB-Overlaid Bridge Deck
Start Old FC-5
To SR 536/Exit 67
Start Newer FC-5
7.000
7.050
7.100
7.150
7.200
7.250
7.300
7.350
7.400
7.450
7.500
7.550
7.600
7.650
7.700
7.750
7.800
7.850
7.885

Pavement Condition Survey (PCS) Charts for 431456-1

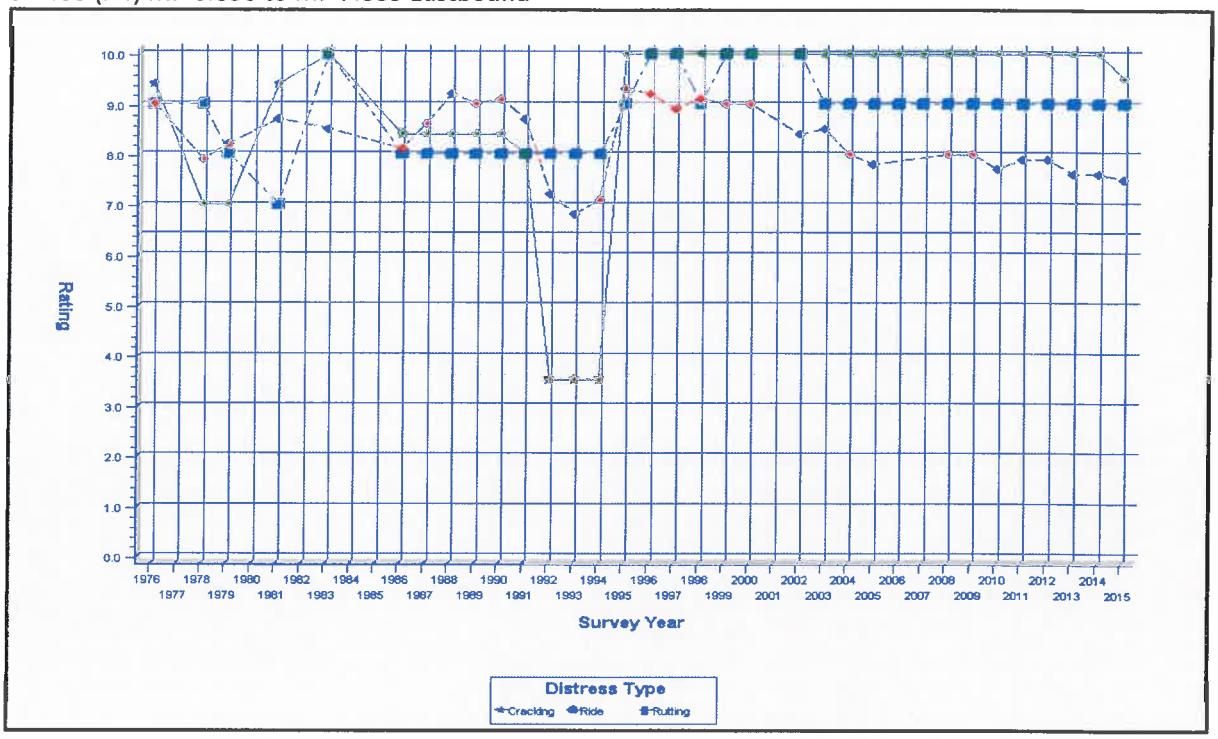
SR 400 (I-4) MP 0.000 to MP 5.482 Eastbound



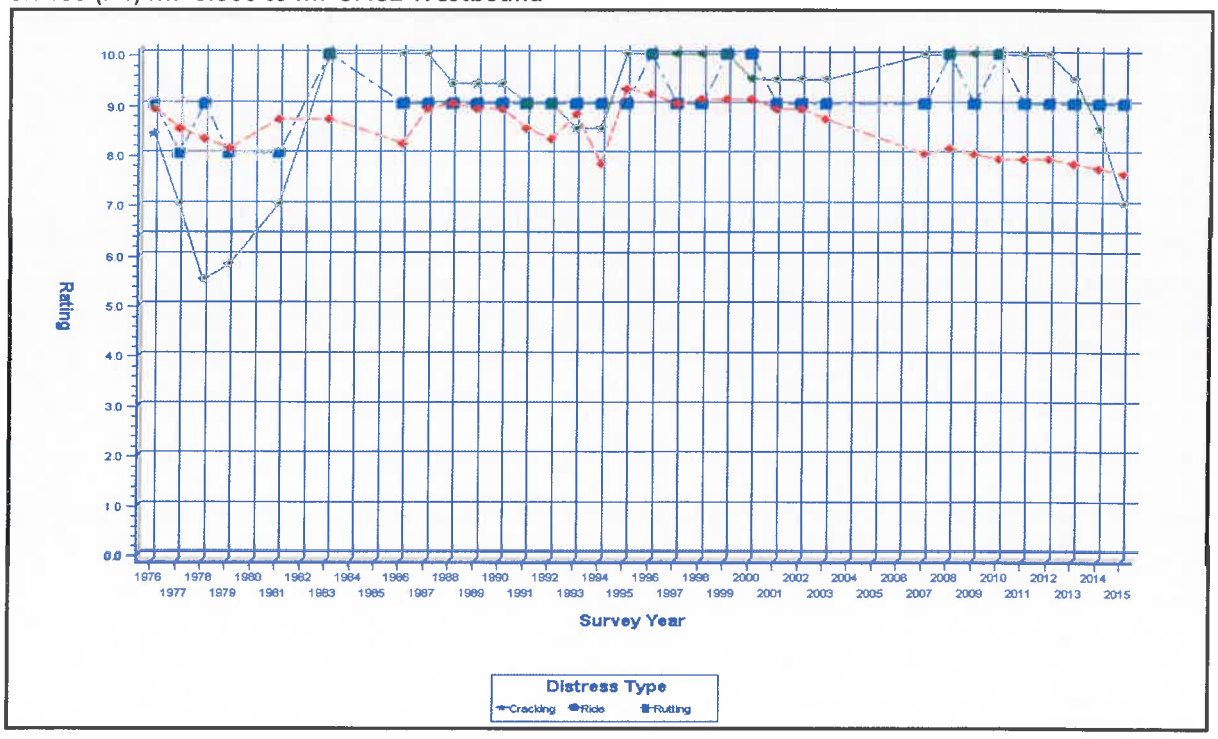
SR 400 (I-4) MP 5.482 to MP 6.856 Eastbound



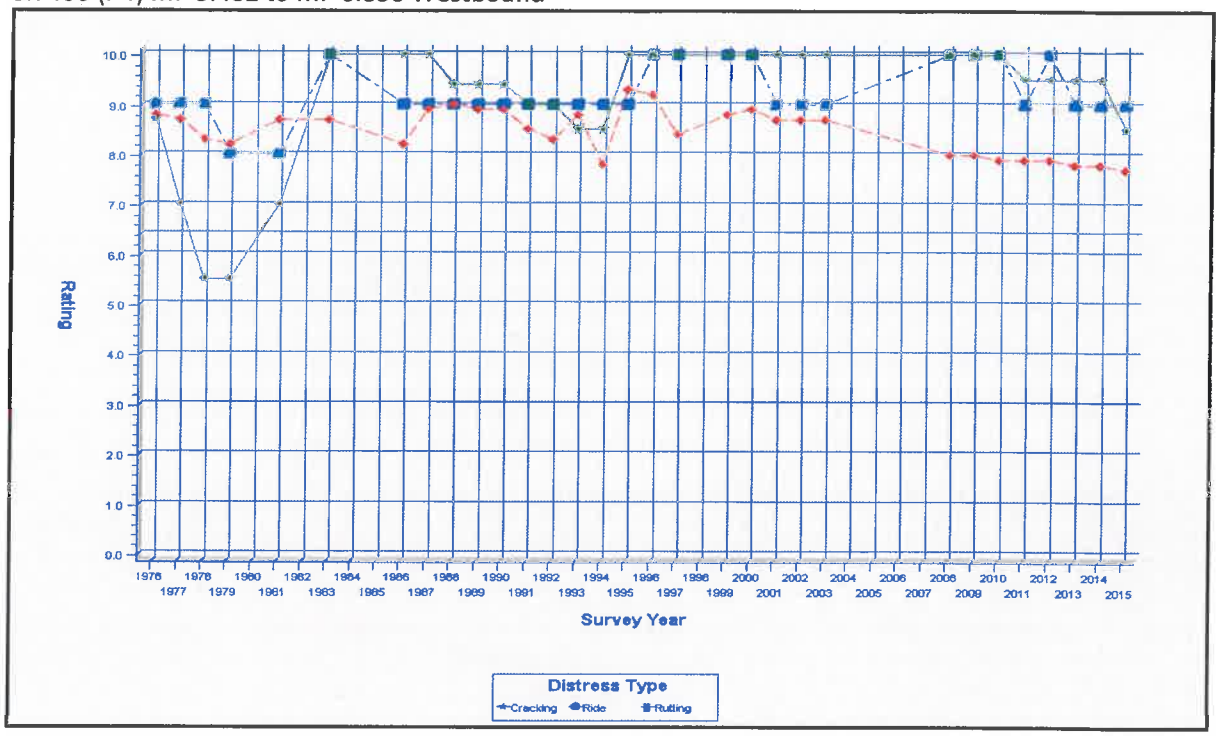
SR 400 (I-4) MP 6.856 to MP 7.885 Eastbound



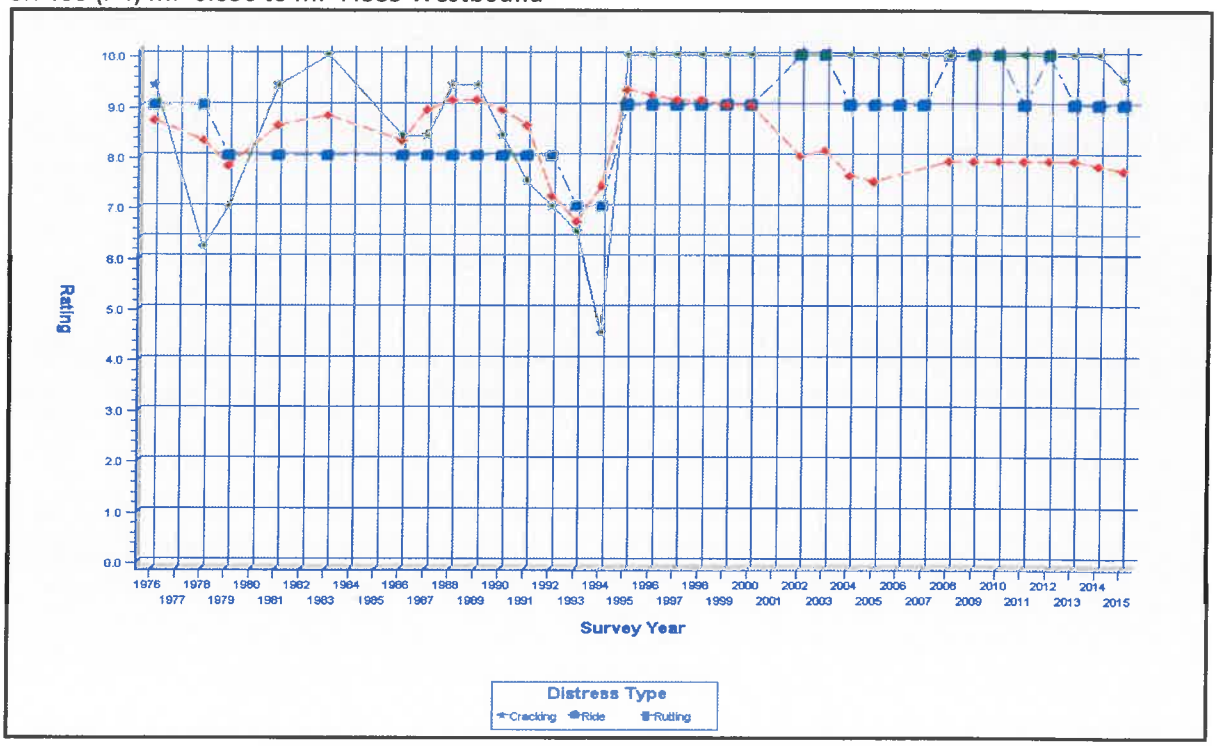
SR 400 (I-4) MP 0.000 to MP 5.482 Westbound

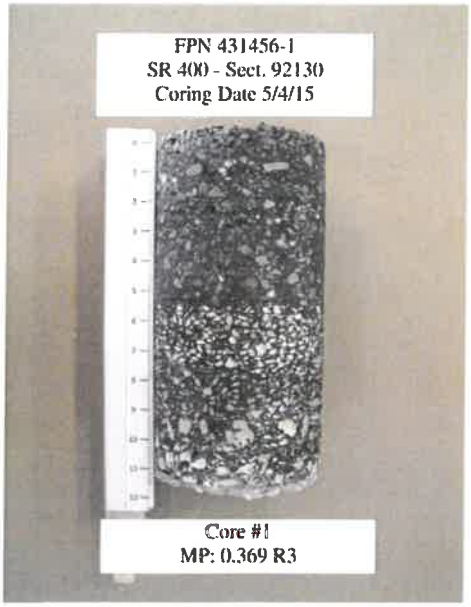


SR 400 (I-4) MP 5.482 to MP 6.856 Westbound



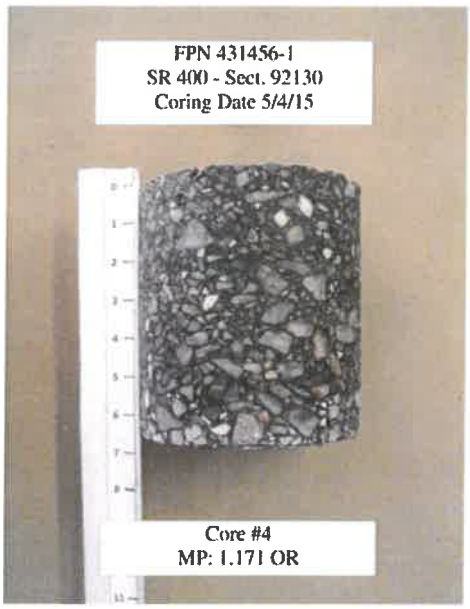
SR 400 (I-4) MP 6.856 to MP 7.885 Westbound




FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #1
MP: 0.369 R3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #2
MP: 0.369 OR

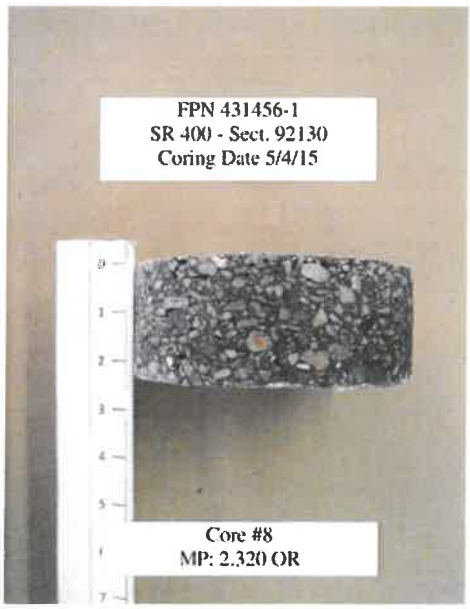

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #3
MP: 1.171 R3

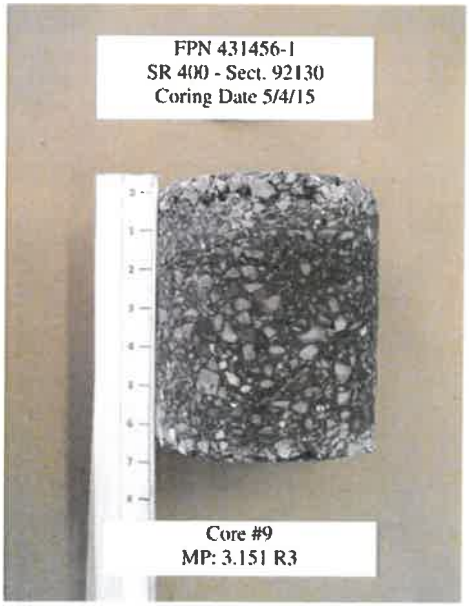

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #4
MP: 1.171 OR

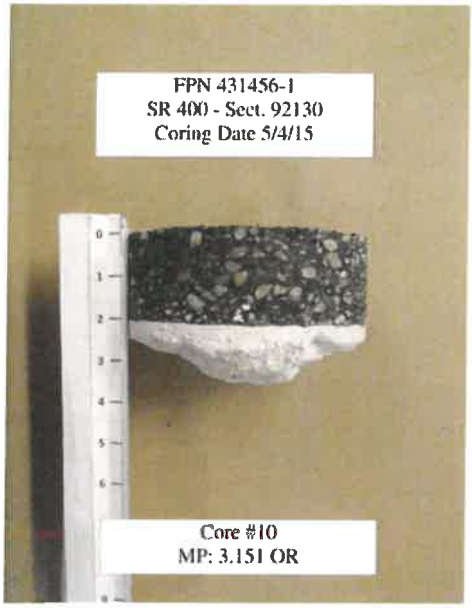

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #5
MP: 1.820 R3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #6
MP: 1.820 OR

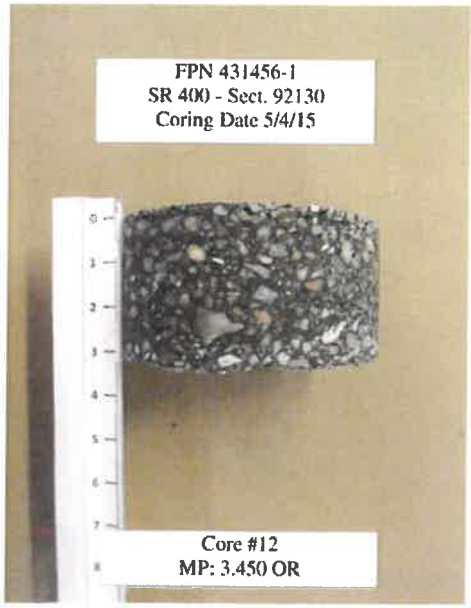

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #7
MP: 2.320 R3

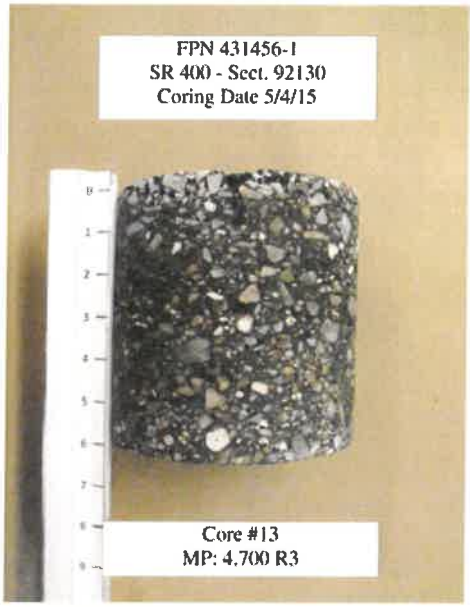

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #8
MP: 2.320 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #9
MP: 3.151 R3

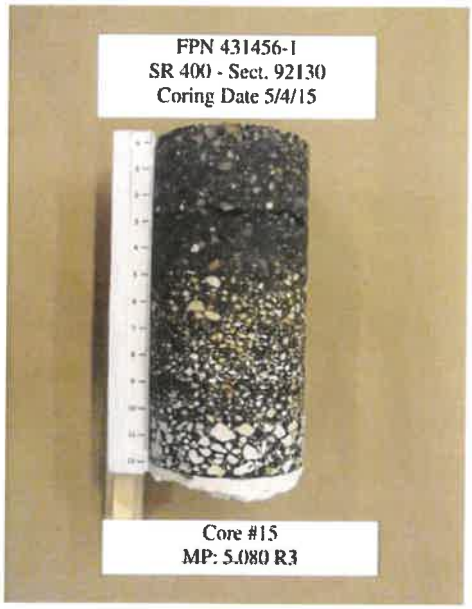

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #10
MP: 3.151 OR

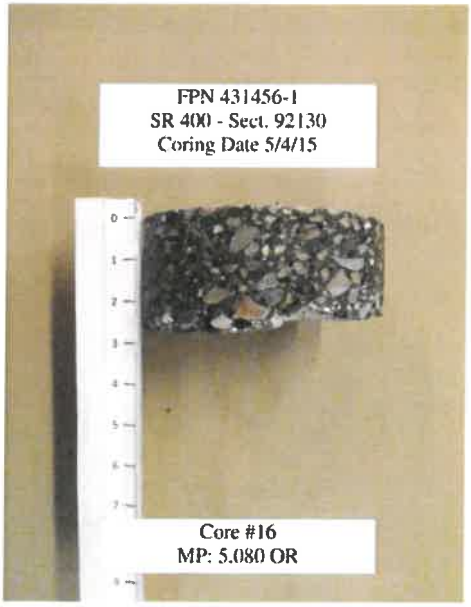

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #11
MP: 3.450 R4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #12
MP: 3.450 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #13
MP: 4.700 R3

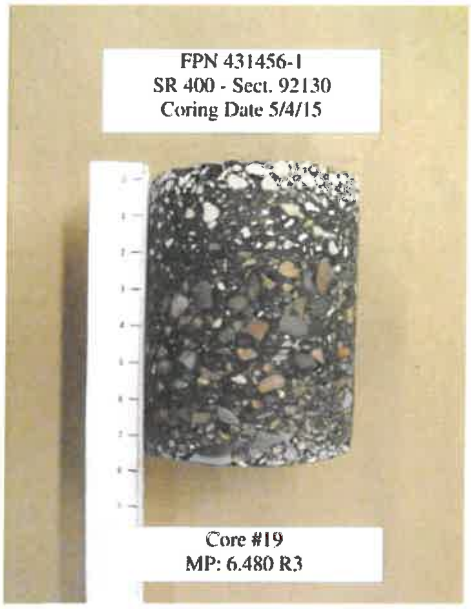

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #14
MP: 4.700 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #15
MP: 5.080 R3

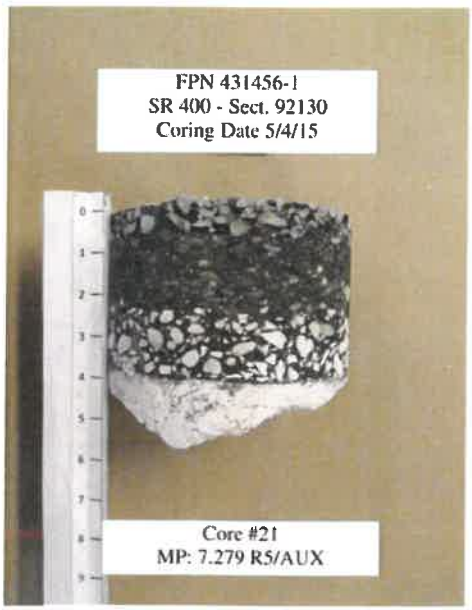

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #16
MP: 5.080 OR

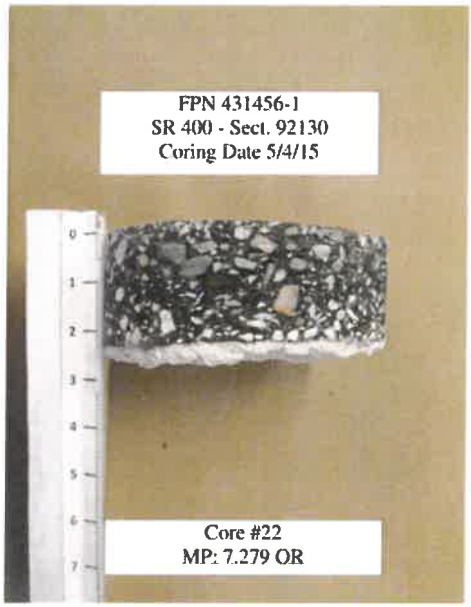

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #17
MP: 5.599 R4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #18
MP: 5.599 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #19
MP: 6.480 R3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #20
MP: 6.480 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #21
MP: 7.279 R5/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #22
MP: 7.279 OR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #23
MP: 7.620 R4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #24
MP: 7.620 OR

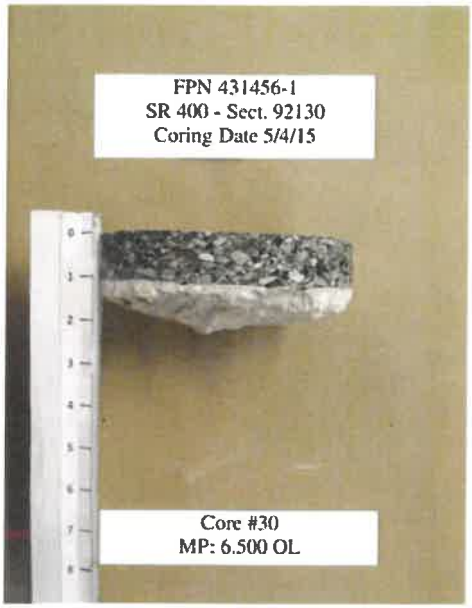

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #25
MP: 7.850 L4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #26
MP: 7.850 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #27
MP: 7.251 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #28
MP: 7.251 OL

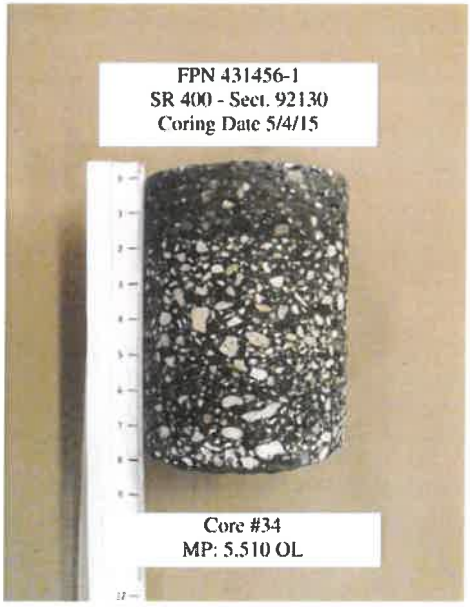

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #29
MP: 6.500 L3

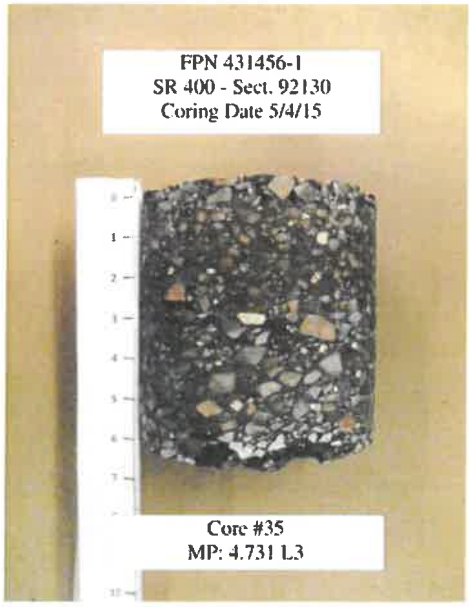

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #30
MP: 6.500 OL

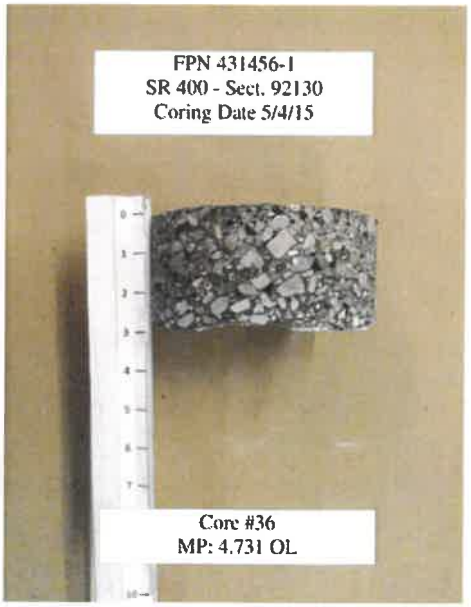

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #31
MP: 5.900 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #32
MP: 5.900 OL

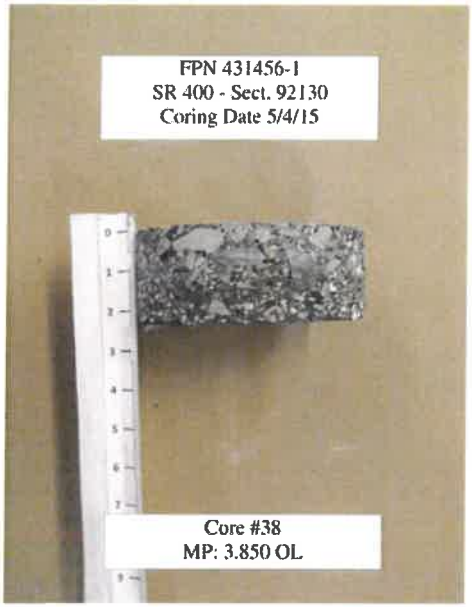

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #33
MP: 5.510 L4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #34
MP: 5.510 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #35
MP: 4.731 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #36
MP: 4.731 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #37
MP: 3.850 L3

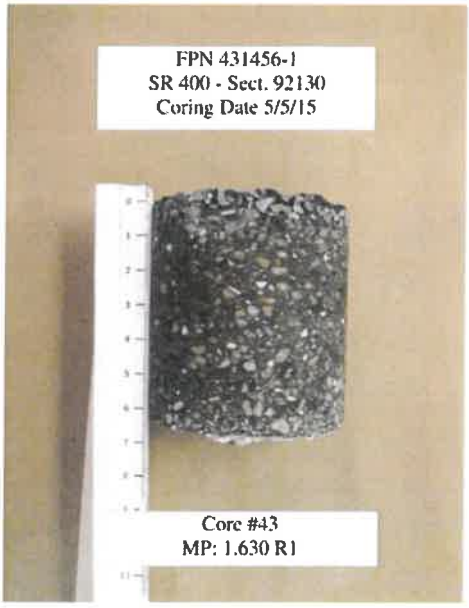

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #38
MP: 3.850 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #39
MP: 3.487 L4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/4/15
Core #40
MP: 3.487 OL

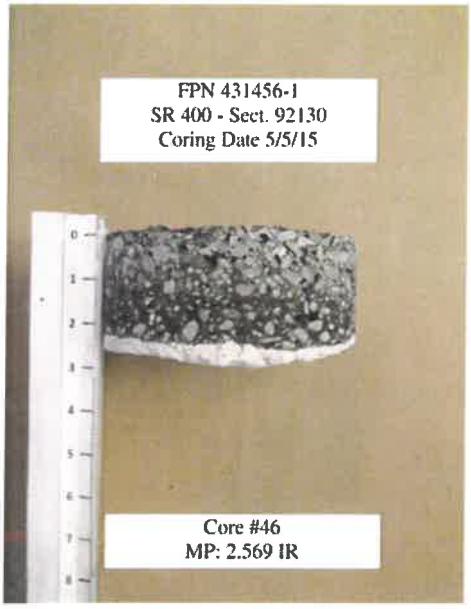

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #41
MP: 0.370 R1

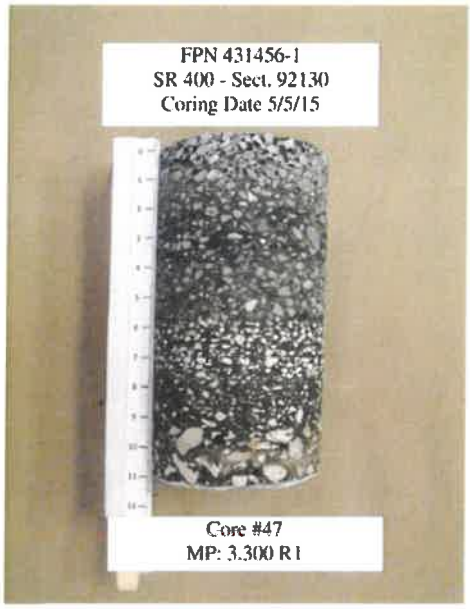

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #42
MP: 0.370 IR

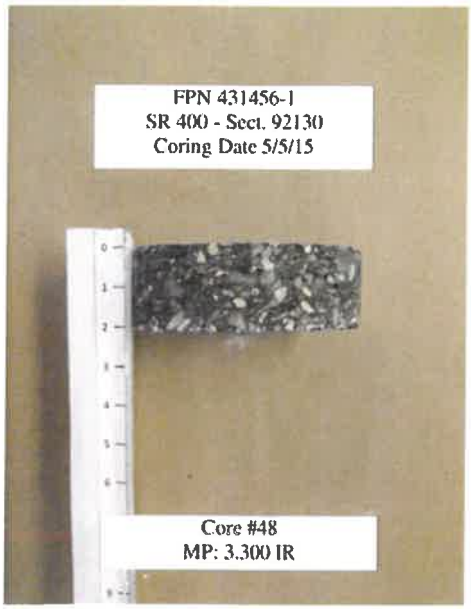

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #43
MP: 1.630 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #44
MP: 1.630 IR

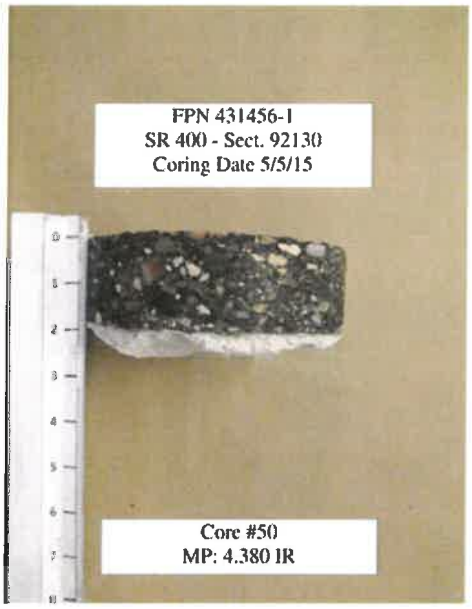

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #45
MP: 2.569 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #46
MP: 2.569 IR

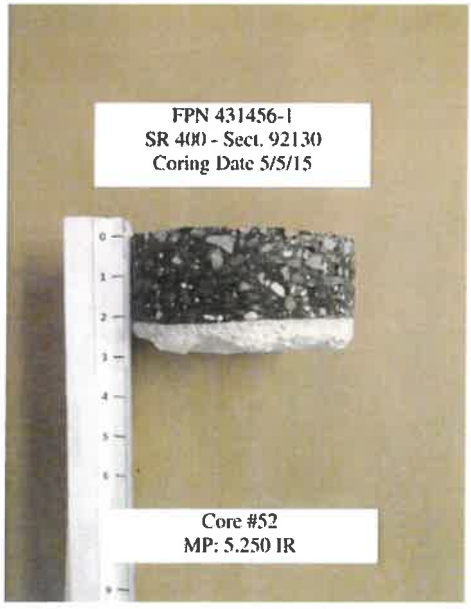

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #47
MP: 3.300 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #48
MP: 3.300 IR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #49
MP: 4.380 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #50
MP: 4.380 IR

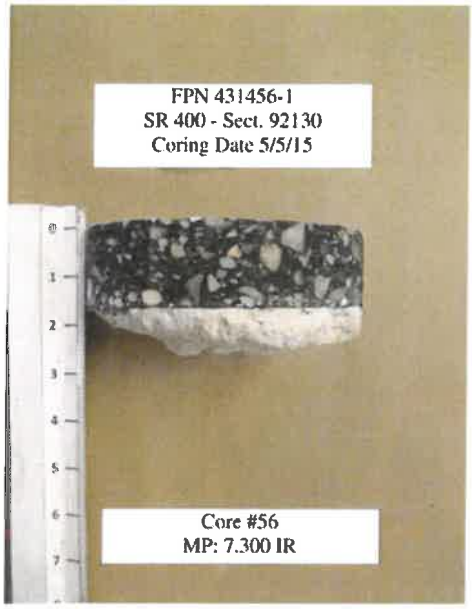

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #51
MP: 5.250 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #52
MP: 5.250 IR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #53
MP: 6.700 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #54
MP: 6.700 IR


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #55
MP: 7.300 R1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #56
MP: 7.300 IR

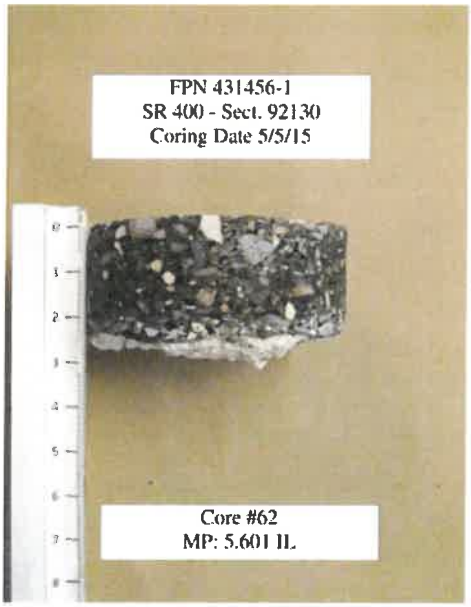

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #57
MP: 7.263 L1

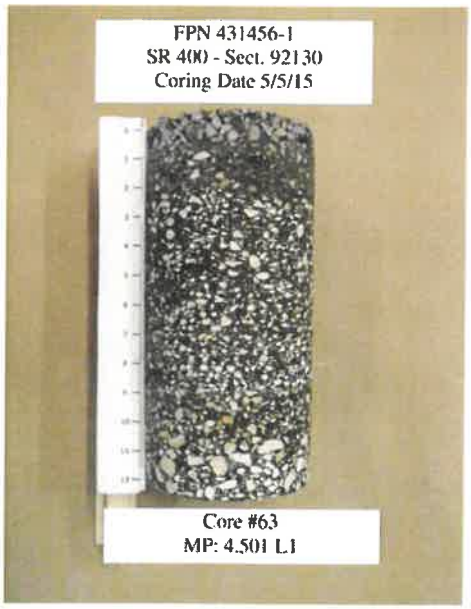

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #58
MP: 7.263 IL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #59
MP: 6.700 L1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #60
MP: 6.700 IL

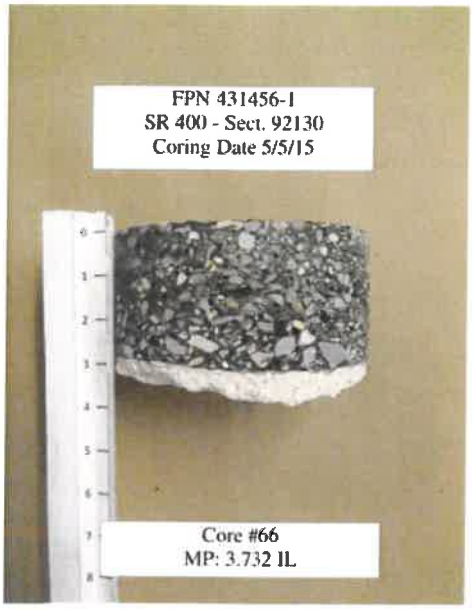

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #61
MP: 5.601 L1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #62
MP: 5.601 IL

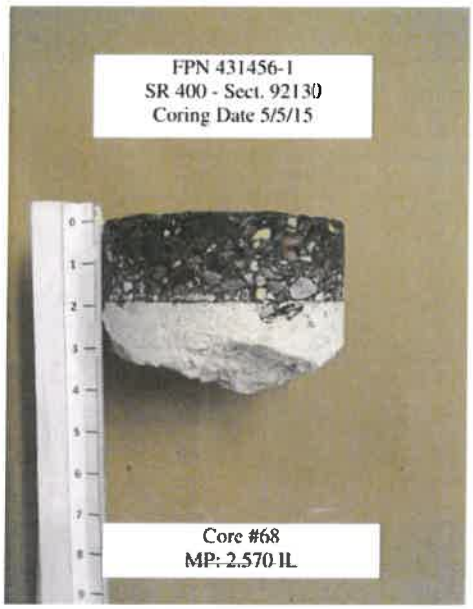

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #63
MP: 4.501 L1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #64
MP: 4.501 IL

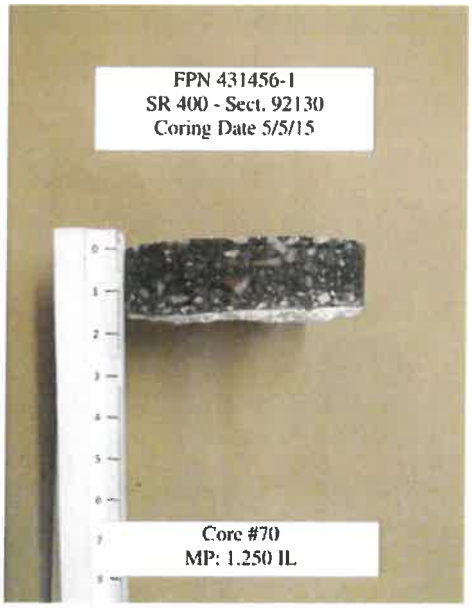

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #65
MP: 3.732 L1

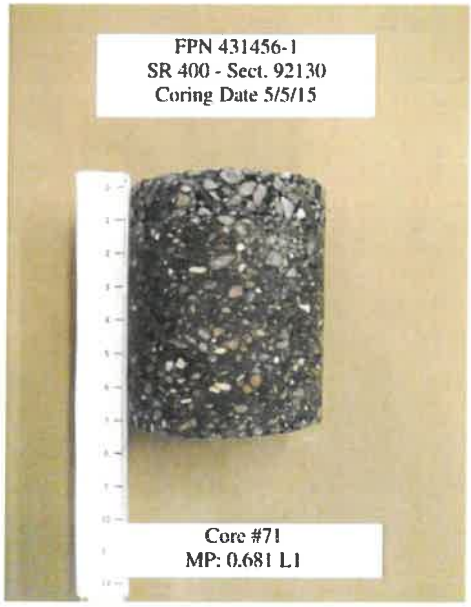

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #66
MP: 3.732 IL

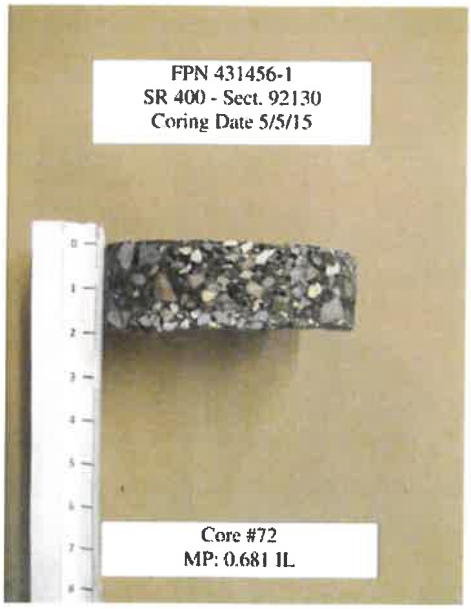

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #67
MP: 2.570 L1

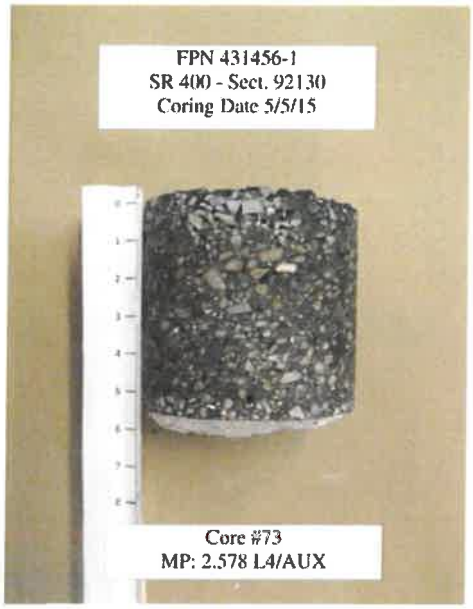

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #68
MP: 2.570 IL

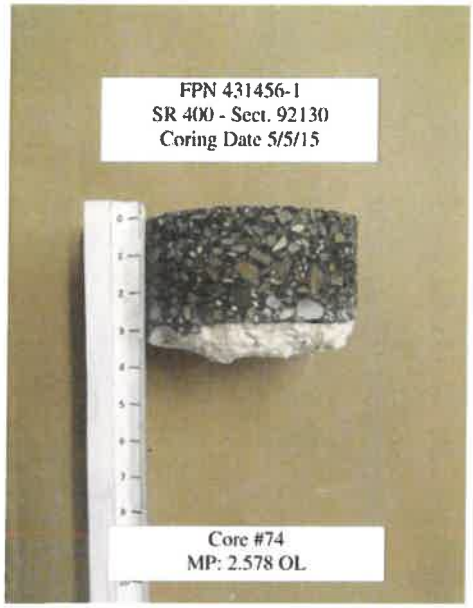

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #69
MP: 1.250 L1


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #70
MP: 1.250 IL

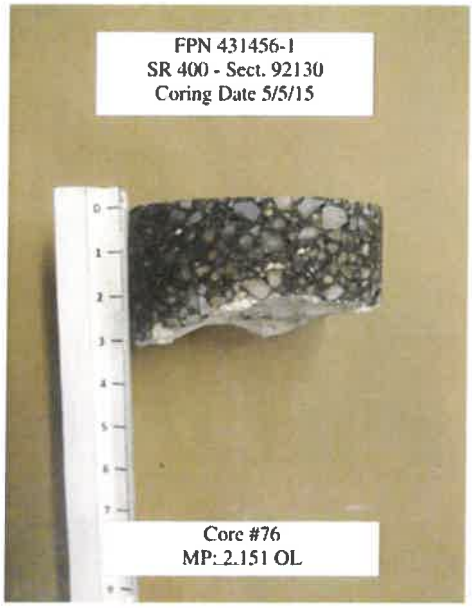

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #71
MP: 0.681 L1

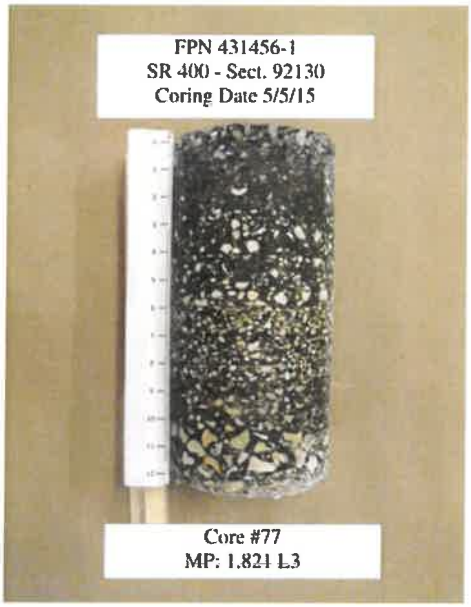

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #72
MP: 0.681 IL

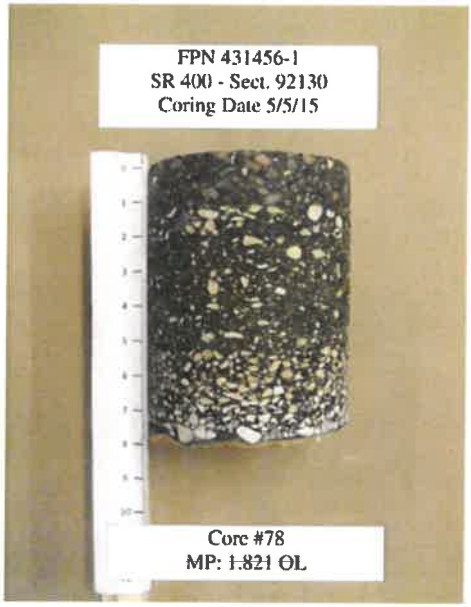

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #73
MP: 2.578 L4/AUX


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #74
MP: 2.578 OL

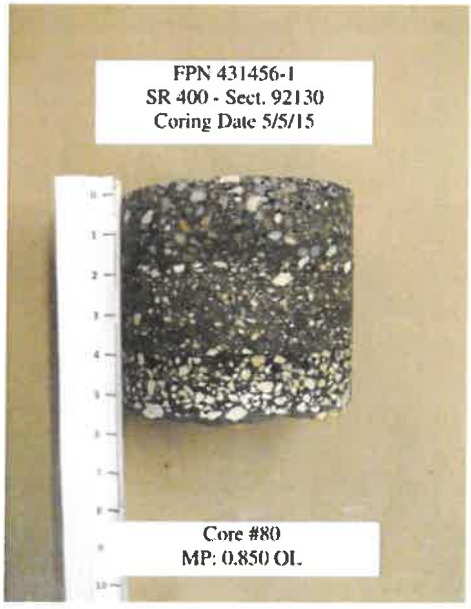

FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #75
MP: 2.151 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #76
MP: 2.151 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #77
MP: 1.821 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #78
MP: 1.821 OL


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #79
MP: 0.850 L3


FPN 431456-1
SR 400 - Sect. 92130
Coring Date 5/5/15
Core #80
MP: 0.850 OL

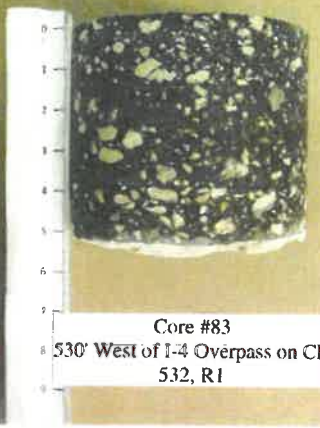
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #81
517' South of Gore on SR 429
SB to I-4 WB, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #82
530' West of I-4 Overpass on CR
532, L1

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



Core #83
530' West of I-4 Overpass on CR
532, R1

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #84
1000' West of I-4 Overpass on
CR 532, R2

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #85
1000' West of I-4 Overpass on
CR 532, L2

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #86
1014' North of Bridge over I-4 on
I-4 WB to SR 429 NB, RAMP

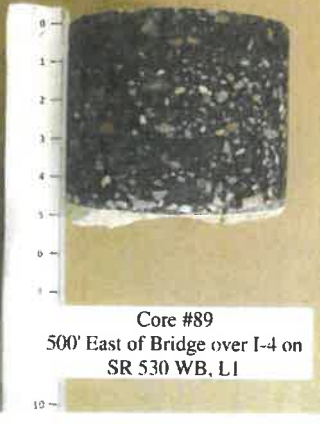
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #87
500' North of Bridge over I-4 on
SR 429 SB to I-4 WB, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #88
500' East of Gore on I-4 EB to
SR 530 WB, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



Core #89
500' East of Bridge over I-4 on
SR 530 WB, L1

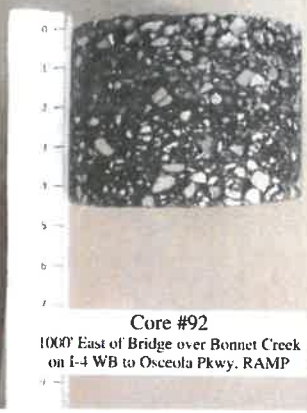
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #90
500' East of Bridge over I-4 on SR 530 EB, R4

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

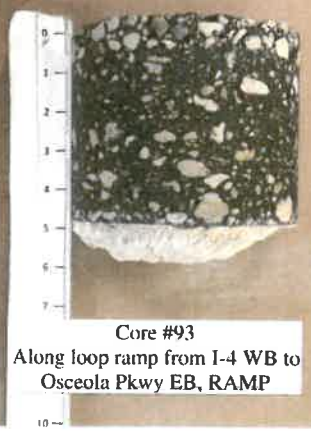
Core #91
500' East of Ramp Gore on I-4 WB to SR 536 Ramp, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



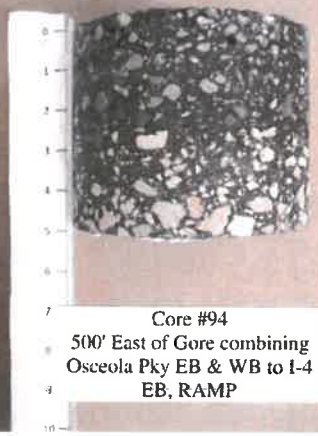
Core #92
1000' East of Bridge over Bonnet Creek on I-4 WB to Osceola Pkwy, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



Core #93
Along loop ramp from I-4 WB to Osceola Pkwy EB, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



Core #94
500' East of Gore combining Osceola Pky EB & WB to I-4 EB, RAMP

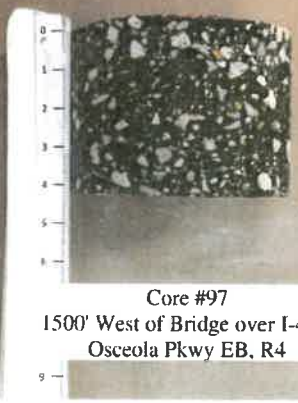
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #95
500' West of Bridge over Bonnet Creek on I-4 WB to Osceola Pkwy WB, RAMP

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #96
1500' West of Bridge over I-4 on Osceola Pkwy WB, L1

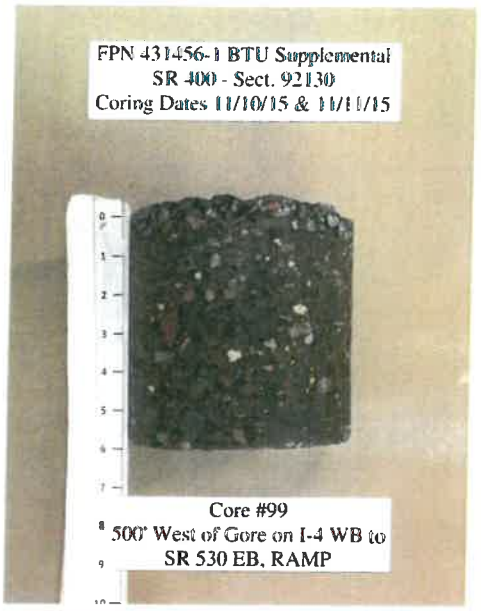
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15



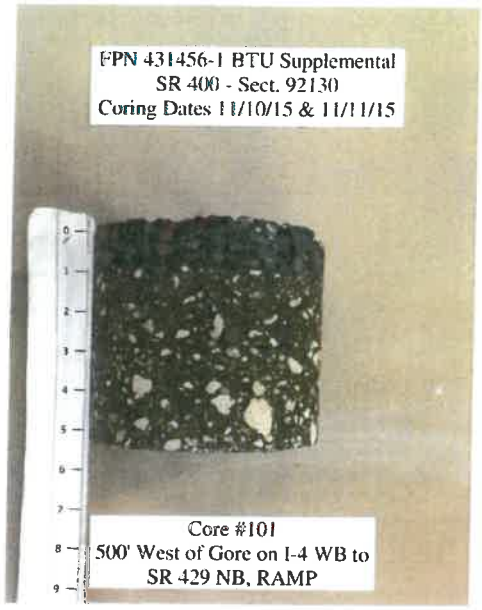
Core #97
1500' West of Bridge over I-4 on Osceola Pkwy EB, R4

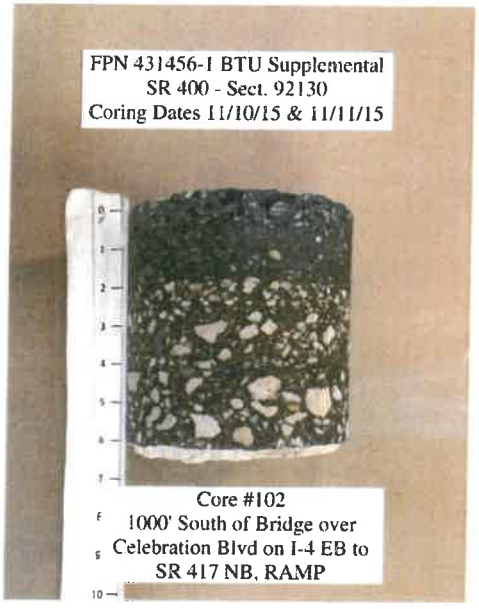
FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15

Core #98
200' West of Gore for Osceola EB & WB to I-4 EB, RAMP

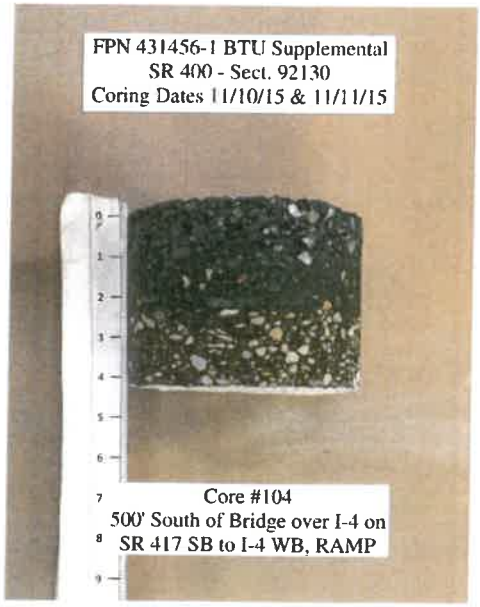

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #99
500' West of Gore on I-4 WB to
SR 530 EB, RAMP

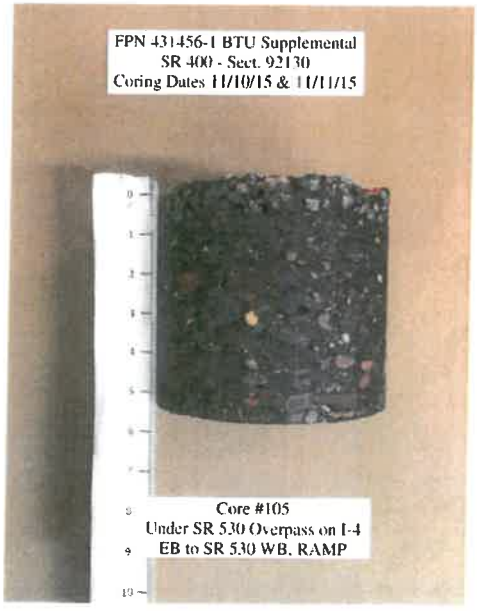

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #100
500' West of Gore to I-4 EB &
WB on SR 530 EB, RAMP

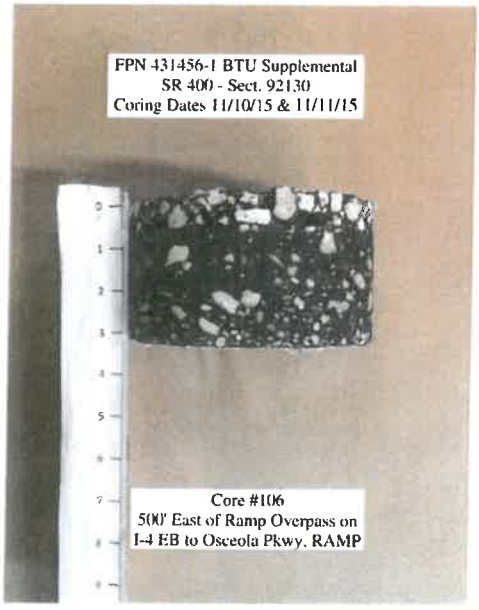

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #101
500' West of Gore on I-4 WB to
SR 429 NB, RAMP

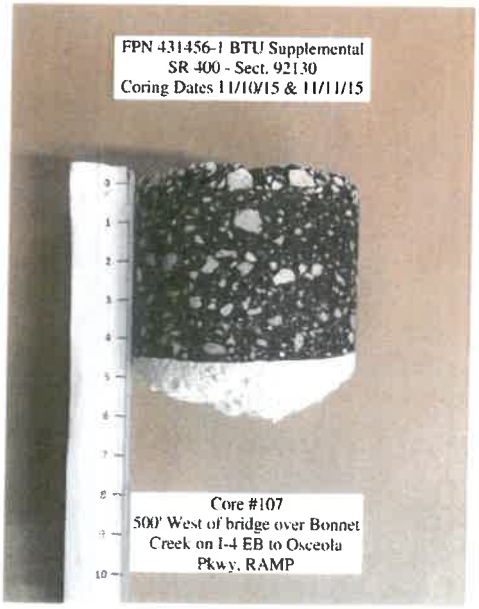

FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #102
1000' South of Bridge over
Celebration Blvd on I-4 EB to
SR 417 NB, RAMP


FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #103
500' South of Bridge over
Celebration Blvd on SR 417 SB
to I-4 WB, RAMP


FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #104
500' South of Bridge over I-4 on
SR 417 SB to I-4 WB, RAMP


FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #105
Under SR 530 Overpass on I-4
EB to SR 530 WB, RAMP


FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #106
500' East of Ramp Overpass on
I-4 EB to Osceola Pkwy, RAMP


FPN 431456-1 BTU Supplemental
SR 400 - Sect. 92130
Coring Dates 11/10/15 & 11/11/15
Core #107
500' West of bridge over Bonnet
Creek on I-4 EB to Osceola
Pkwy, RAMP

Photos 1-7: I-4 Eastbound MP 0.000-7.885

Photo 1: I-4 eastbound near MP 0.741. This picture shows the typical fair condition of the R1 inside passing lane within the project limits.

Photo 2: I-4 eastbound near MP 3.346. The inside paved shoulder is in fair to good condition and can be considered an exception to any rehabilitation prior to widening or reconstruction of the roadway.

Photo 3: I-4 eastbound near MP 3.851. The eastbound outside paved shoulder is in fair condition, and can be considered an exception to any rehabilitation prior to the widening or reconstruction of the roadway.

Photo 4: I-4 eastbound near MP 4.971. This is one of the locations where limerock pumping is occurring in both the eastbound and westbound outside travel lanes between MP 2.045 and MP 5.145 (MM 63). This is at the World Drive interchange.

Photo 5: I-4 eastbound near MP 5.250. This is the location of Core 51, taken in the R1 lane. It is located in a lane of widening constructed in 2006 during project FPN 242523-1-52-01.

Photo 6: I-4 eastbound near MP 5.901. This photo shows a continuous longitudinal crack that is the separation between the original roadway (the R3 Lane) and an auxiliary lane to the right (the R4 lane) constructed later. The R4 lane has an Asphalt Base Course, while the original roadway has a Limerock base.

Photo 7: I-4 eastbound near MP 7.611. This photo shows an example of the pop-outs and wear in the wheelpaths in the R2 lane of the FC-5 friction course within the project limits.

Photos 8-13: I-4 Westbound MP 0.000-7.885

Photo 8: I-4 westbound near MP 0.705. The L2 has light pop-outs and minor tire rim gouging in the wheelpaths.

Photo 9: I-4 westbound near MP 3.580. Although the three bridge locations in the eastbound lanes have an asphalt overlay of the bridge deck, none of the westbound spans have one.

Photo 10: I-4 westbound near MP 3.845. This is a view of the westbound outside paved shoulder. With the exception of a couple of burn scars where there had been vehicle fires, there are no distresses.

Photo 11: I-4 westbound near MP 4.731. This is a view of the westbound inside paved shoulder. It is in fair to good condition with few if any distresses.

Photo 12: I-4 westbound near MP 4.960. This is a location where limerock pumping was observed in the outside wheelpath of the L3 lane. This is a lane that was widened in 2006, not the original alignment.

Photo 13: I-4 westbound near MP 4.960. This is a close-up of the limerock pumping shown in Photo 12. This does indicate that the structural and friction courses are permeable to water infiltration.

Photo 14: I-4 westbound near MP 7.275. A view of the fair condition of the L1 lane at this location.

APPENDIX B

TYPICAL SECTION PACKAGE

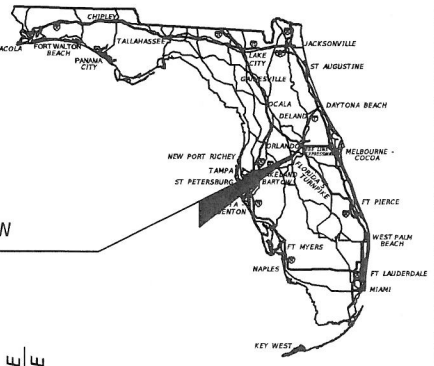
STATE OF FLORIDA

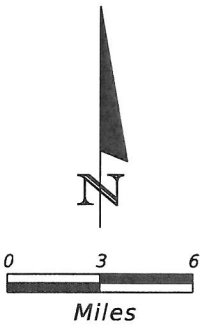
DEPARTMENT OF TRANSPORTATION

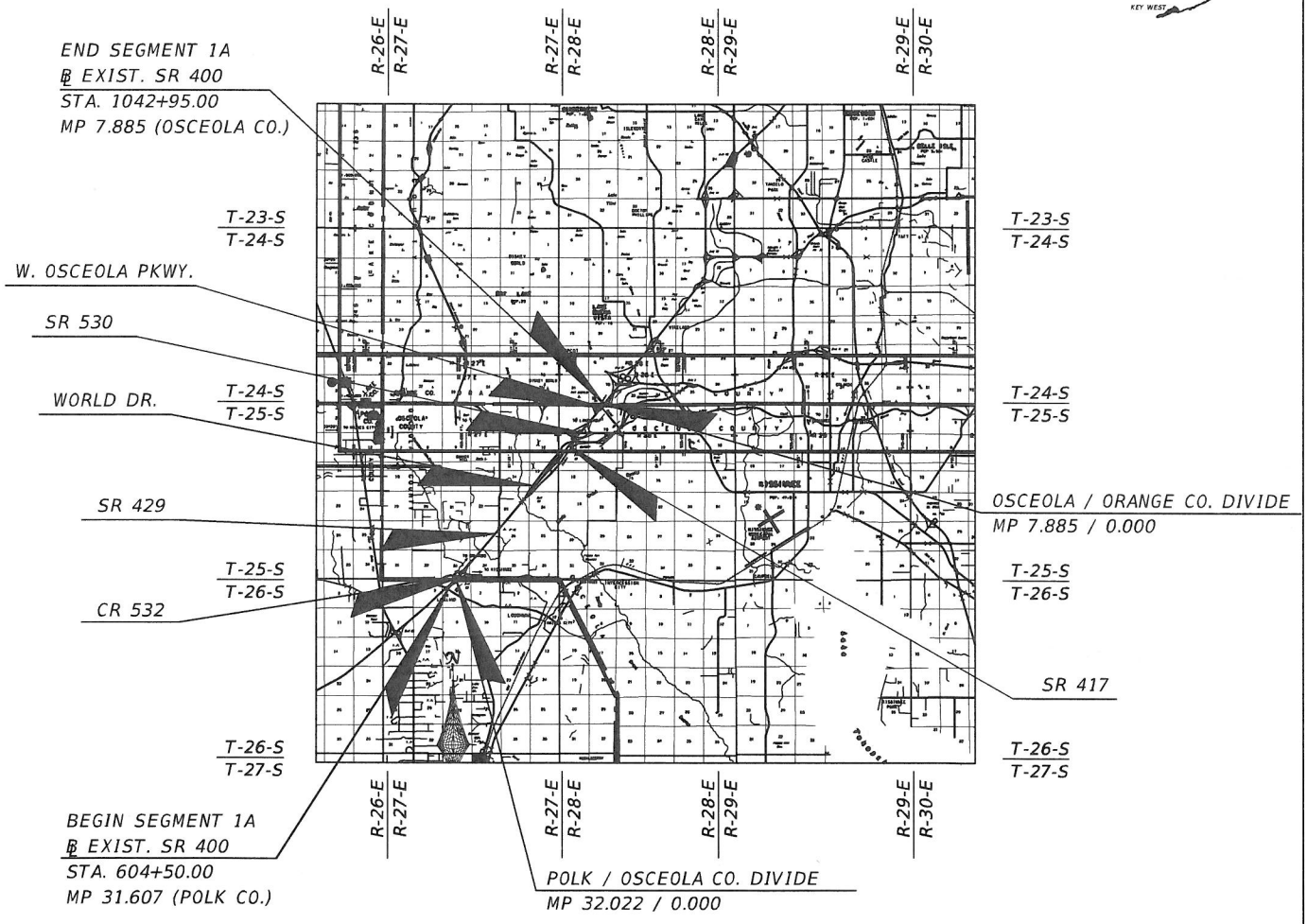
FINANCIAL PROJECT ID 432100-1-22-01
(FEDERAL FUNDS)

OSCEOLA COUNTY (92130)

STATE ROAD NO. 400 (I-4)
I-4 BEYOND THE ULTIMATE
TYPICAL SECTION PACKAGE







PROJECT LENGTH IS BASED ON ℄ OF CONSTRUCTION

LENGTH OF PROJECT

	LINEAR FEET	MILES
ROADWAY	43345.74	8.209
BRIDGES	478.26	0.091
NET LENGTH OF PROJECT	43824.00	8.300
EXCEPTIONS	--	--
GROSS LENGTH OF PROJECT	43824.00	8.300

FDOT PROJECT MANAGER: BEATA STYŚ-PALASZ, PE

SHEET 1A-1

I-4 Beyond the Ultimate

Osceola County Typical Section Package Index

PD&E FPID: 432100-1 (Segment 1A)
Design FPID: 431456-1

I-4 Mainline

- 1A-1 Key Sheet
- 1A-2 I-4 Project Controls
- 1A-3 I-4 Typical Section with Rail Corridor (Osceola County)
- 1A-4 I-4 Typical Section Bridge Viaduct Between SR 429 and World Drive (Orange County)
- 1A-5 I-4 Bridge Over CR 532 (Replace)
- 1A-6 I-4 Bridge Over Reedy Creek (Replace)
- 1A-7 I-4 Bridge Over Bonnet Creek (Replace)

Ramps

- 1A-8 One Lane Ramp
- 1A-9 Two Lane Ramp
- 1A-10 Three Lane Ramp
- 1A-11 One Lane Bridge Ramp

CR 532

- 1A-12 CR 532 Project Controls
- 1A-13 CR 532 Roadway Section Under I-4
- 1A-14 CR 532 Roadway Section

Tradition Boulevard

- 1A-15 I-4 Under Tradition Blvd

SR 429

- 1A-16 I-4 Under SR 429 Northbound Ramp
- 1A-17 I-4 Under SR 429 Southbound to Eastbound I-4

Old Lake Wilson Road

- 1A-18 Old Lake Wilson Project Controls
- 1A-19 I-4 Under Old Lake Wilson Road
- 1A-20 Old Lake Wilson Road Bridge Section (Replace)
- 1A-21 Old Lake Wilson Road Section

I-4 Beyond the Ultimate

Osceola County Typical Section Package Index

PD&E FPID: 432100-1 (Segment 1A)
Design FPID: 431456-1

World Drive

- 1A-22 World Drive Project Controls
- 1A-23 World Drive Bridge Section (Replace)
- 1A-24 I-4 Under Eastbound and Westbound World Drive
- 1A-25 World Drive Roadway Section

SR 417

- 1A-26 SR 417 Project Controls
- 1A-27 SR 417 Bridge Section (Southbound) (Replace)
- 1A-28 I-4 Under SR 417 (Southbound)
- 1A-29 SR 417 Bridge Section (Northbound)

US 192 / SR 530

- 1A-30 US 192 Project Controls
- 1A-31 US 192 Bridge Section (Replace)
- 1A-32 I-4 Under US 192 Eastbound Ramp
- 1A-33 US 192 Bridge Section (Replace)
- 1A-34 I-4 Under US 192
- 1A-35 I-4 Under Westbound Ramp to Westbound I-4
- 1A-36 US 192 Bridge Section (Eastbound I-4 to Westbound US 192)
- 1A-37 I-4 Under Westbound Ramp

Osceola Parkway

- 1A-38 Osceola Parkway Project Controls
- 1A-39 Osceola Parkway Bridge Section (Replace)
- 1A-40 Osceola Parkway Roadway Section (West of SR 400)
- 1A-41 Osceola Parkway Roadway Section (East of SR 400)
- 1A-42 I-4 Under Osceola Parkway

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (SR 400/I-4)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

(X) FREEWAY/EXPWY. ( ) MAJOR COLL.
( ) PRINCIPAL ART. ( ) MINOR COLL.
( ) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
(X)	( )	NATIONAL HIGHWAY SYSTEM
(X)	( )	FLORIDA INTRASTATE HIGHWAY SYSTEM
(X)	( )	STRATEGIC INTERMODAL SYSTEM
(X)	( )	STATE HIGHWAY SYSTEM
( )	(X)	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	202,000
INTERIM	2030	237,000
DESIGN	2040	269,000

		DISTRIBUTION	
DESIGN SPEED	70 MPH	K	7.4
POSTED SPEED	70 MPH	D	52.92
		T_{24}	10.2%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER _____ DATE _____

DISTRICT TRAFFIC OPERATIONS ENGINEER _____ DATE _____

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

BORDER WIDTH (VARIATION) - FOR THE BORDER WIDTHS LESS THAN 94-FT (94-FT REQUIRED)
SHOULDER WIDTH (VARIATION) - FOR THE 10-FT MEDIAN GUL SHOULDER (12-FT REQUIRED)
SHOULDER WIDTH (VARIATION) - FOR THE 4-FT MEDIAN EXPRESS LANE SHOULDER (6-FT REQUIRED)

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

CR 532	(920094, 920095)
DAVENPORT CREEK	(920097)
REUNION ACCESS RD	(925500)
DITCH CULVERT	(920203)
SR 429	(920601, 920602)
CR 545	(924179)
REEDY CREEK	(920098, 920099)
WORLD DRIVE	(920176, 920170)
SR 417	(920169)
US 192	(920083, 920193, 920192, 920195, 920194)
BONNET CREEK	(920100, 920101)
OSCEOLA PARKWAY	(920180)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

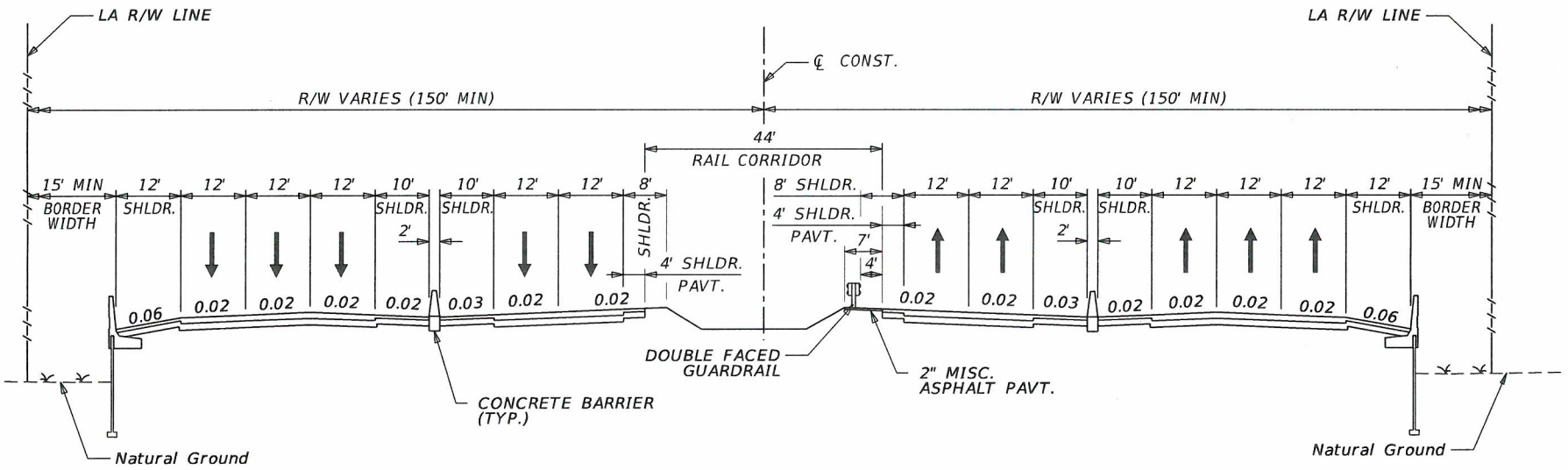
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH
SR 400 (I-4) WITH RAIL CORRIDOR
STA 627+20.00 TO STA 759+00.00
STA 828+00.00 TO STA 1042+95.00

SHEET 1A-3

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
STATE OF FLORIDA PROFESSIONAL ENGINEER ROBERT M. DENNEY LICENSE No 58593 2/9/17 ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:14 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-I-4 TYPICALS.DGN

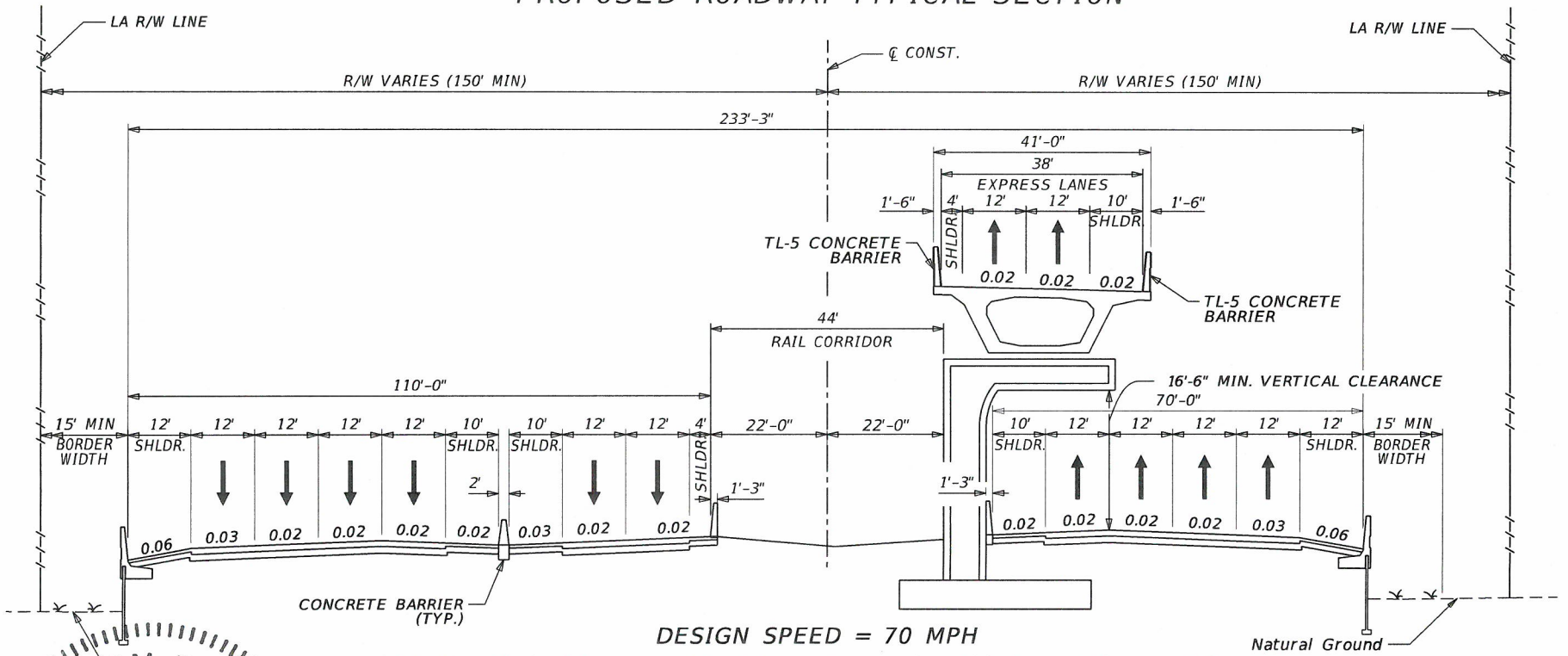
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) BRIDGE VIADUCT BETWEEN SR 429 AND WORLD DRIVE

STA 759+00 TO STA 828+00

SHEET 1A-4

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
STATE OF FLORIDA ROBERT M. DENNEY LICENSE No. 58593 PROFESSIONAL ENGINEER ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:14 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-I-4 TYPICALS.DGN

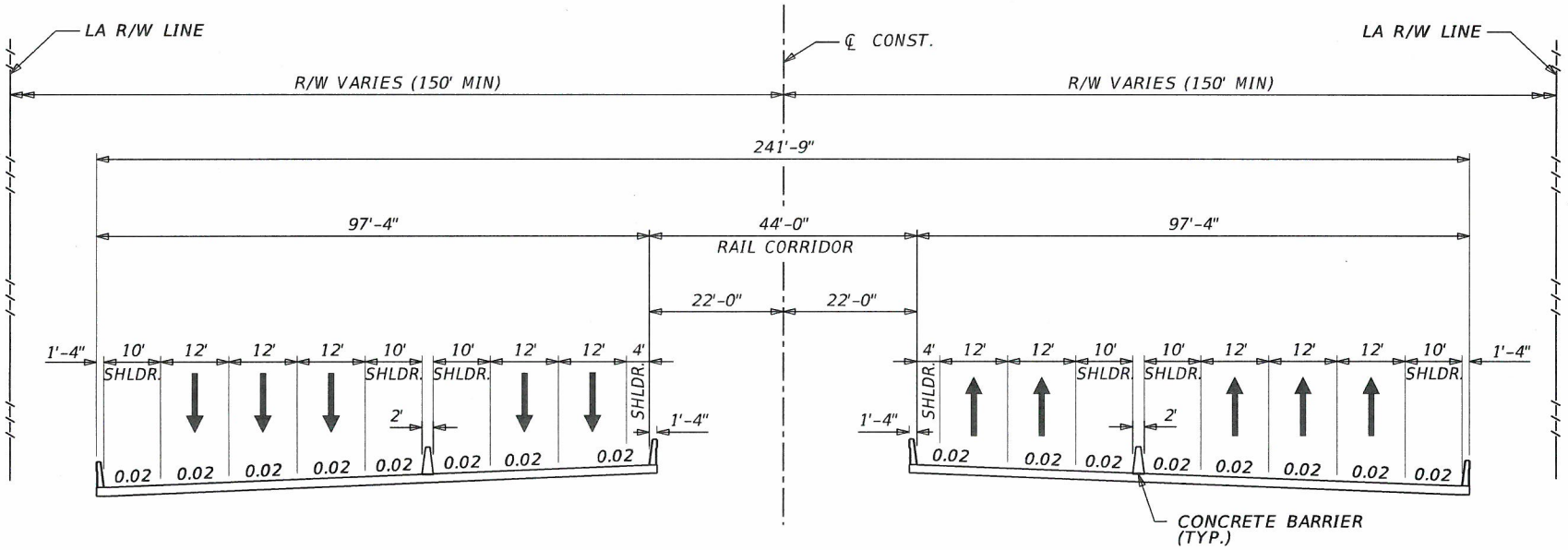
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) BRIDGE OVER CR 532

SHEET 1A-5

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Engineer of Record 58593 — Date	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer — Date	FHWA Transportation Engineer — Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:15 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-I-4 TYPICALS.DGN

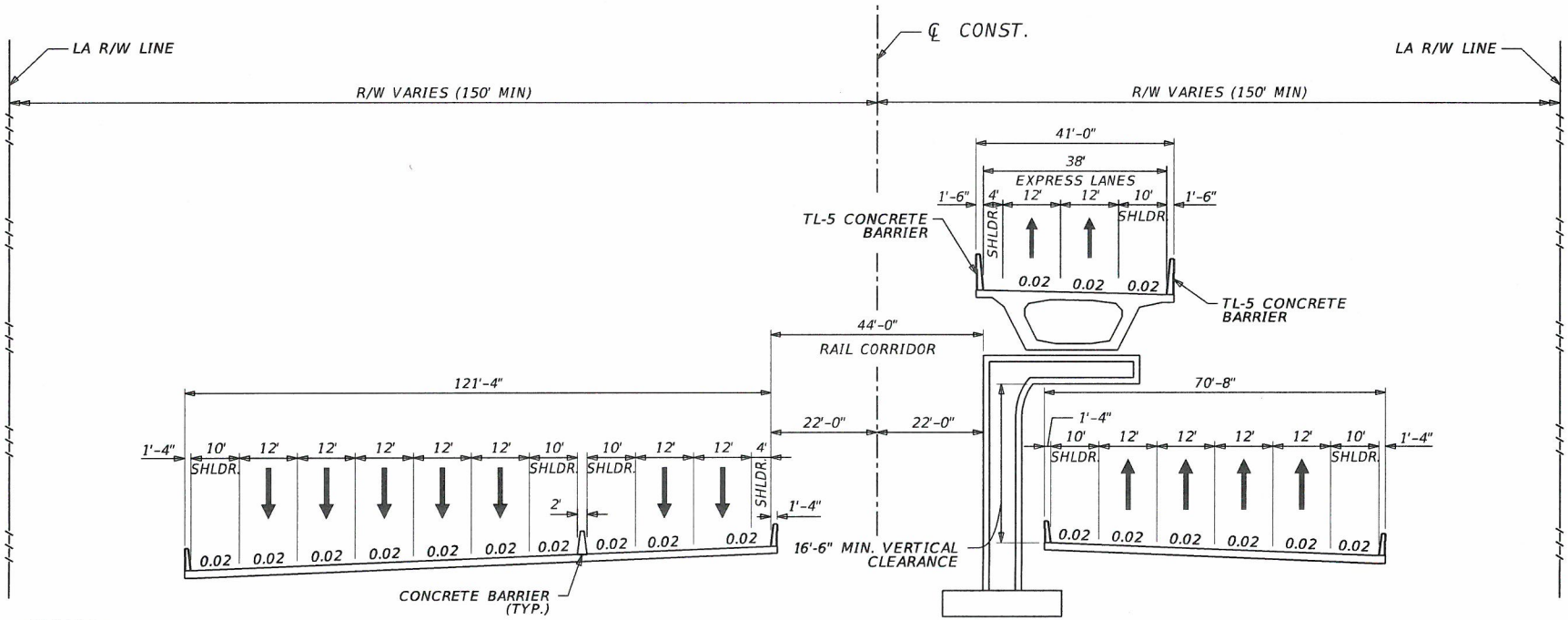
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) BRIDGE OVER REEDY CREEK

SHEET 1A-6

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:15 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-I-4 TYPICALS.DGN

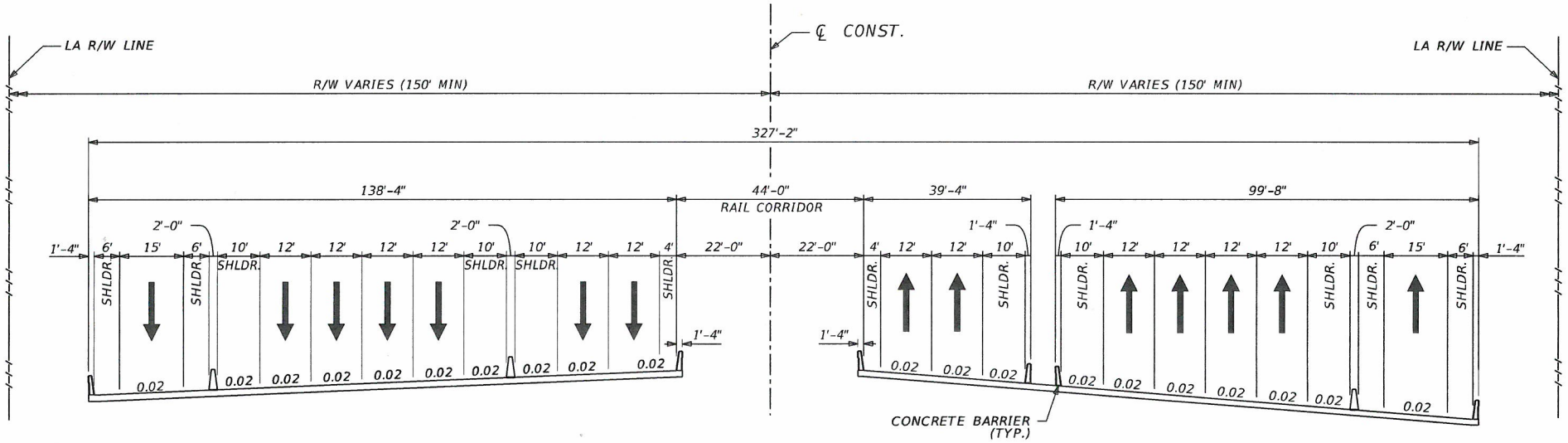
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) BRIDGE OVER BONNET CREEK

SHEET 1A-7

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 STATE OF FLORIDA	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:15 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-I-4 TYPICALS.DGN

PROJECT IDENTIFICATION

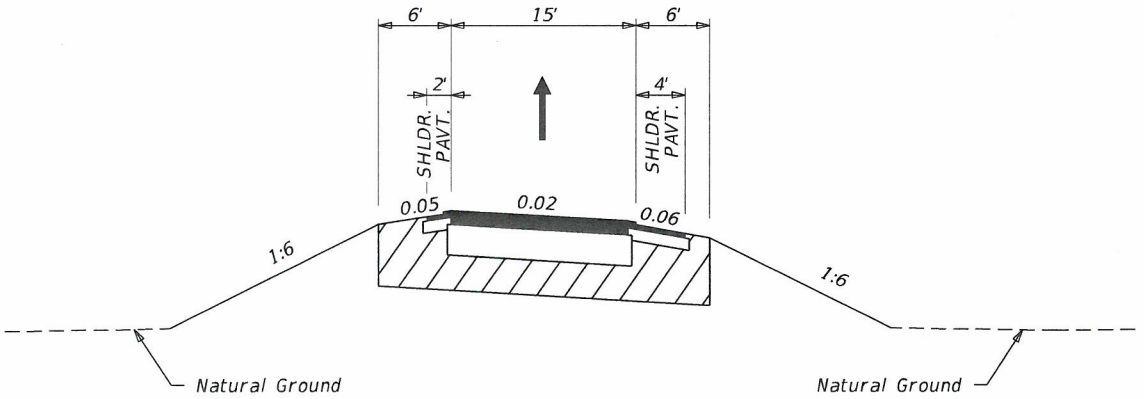
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

Ramp	Design Speed
SEGMENT 1A	
I-4 EB GUL TO CR 532	50
CR 532 TO I-4 WB GUL	50
CR 532 TO I-4 EB GUL	50
I-4 EB GUL TO SR 429	50
I-4 EB EXPRESS LANE TO SR 429	50
SR 429 TO I-4 WB EXPRESS LANE	50
I-4 WB EXPRESS LANE TO SR 429	50
I-4 WB GUL TO SR 429	50
I-4 EB RAMP TO OSCEOLA PKWY	50
OSCEOLA PKWY TO I-4 WB GUL	50
I-4 EB GUL TO OSCEOLA PKWY WB	50
I-4 EB GUL TO OSCEOLA PKWY WB	30
I-4 WB GUL TO OSCEOLA PKWY WB	30
I-4 WB GUL TO OSCEOLA PKWY WB	50
I-4 EB EXPRESS LANE TO OSCEOLA PKWY EB	50
I-4 EB RAMP TO WB OSCEOLA PKWY	30

PROPOSED ROADWAY TYPICAL SECTION



SR 400 (I-4)
ONE LANE RAMP

SHEET 1A-8

ROBERT M. DENNEY LICENSE No 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

PROJECT IDENTIFICATION

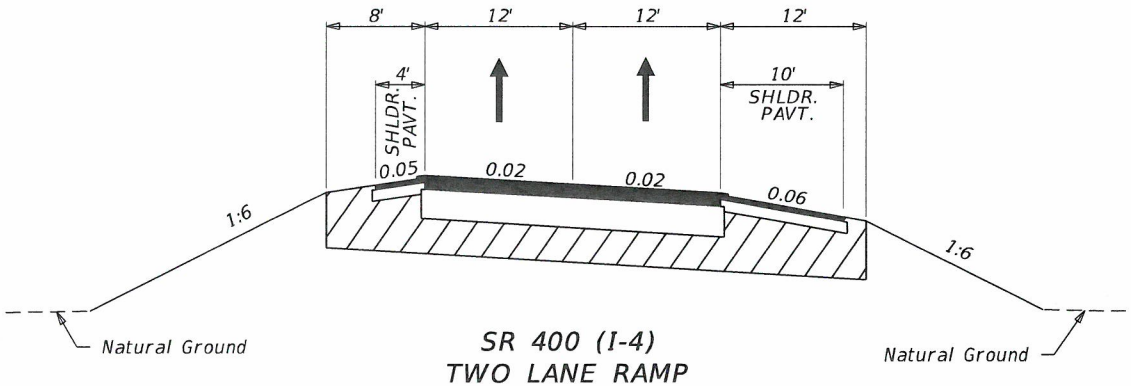
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

Ramp	Design Speed
SEGMENT 1A	
I-4 WB GUL TO CR 532	50
I-4 EB RAMP TO SR 429 WB	50
SR 429 TO I-4 WB GUL	50
SR 429 TO I-4 EB GUL	50
I-4 WB RAMP TO OSCEOLA PKWY WB	50
OSCEOLA PKWY TO I-4 EB GUL	50

PROPOSED ROADWAY TYPICAL SECTION



SR 400 (I-4)
TWO LANE RAMP

SHEET 1A-9

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

PROJECT IDENTIFICATION

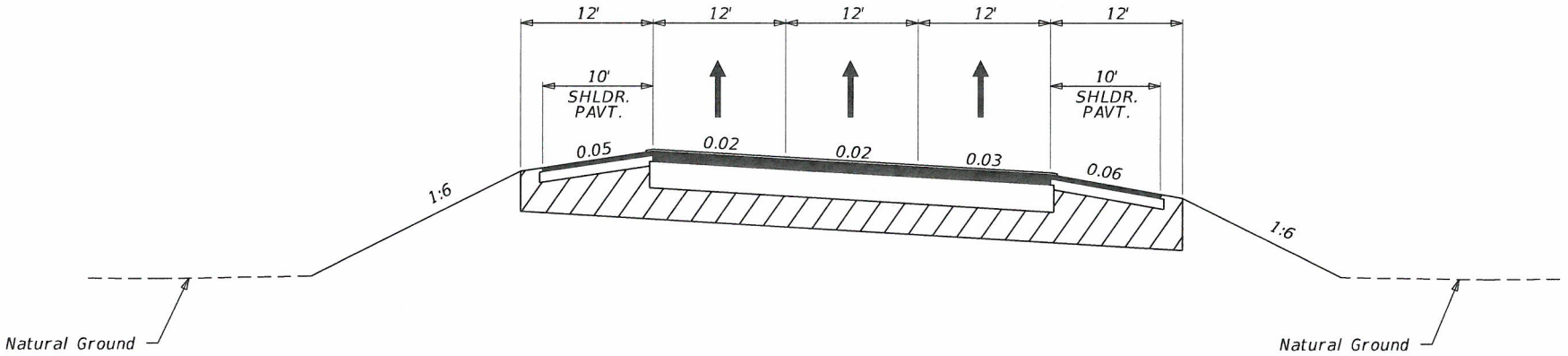
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

Ramp	Design Speed
SEGMENT 1A	
I-4 TO SR 429	50

PROPOSED ROADWAY TYPICAL SECTION



SR 400 (I-4)
THREE LANE RAMP

SHEET 1A-10

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:16 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-RAMPS.DGN

PROJECT IDENTIFICATION

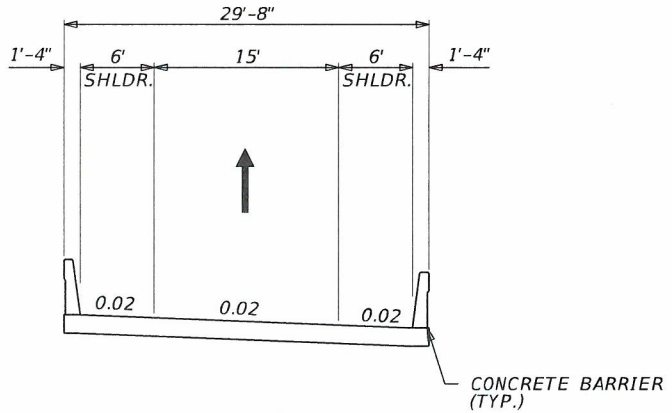
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

Ramp	Design Speed
SEGMENT 1A	
I-4 EB EXPRESS LANE TO SR 429	50
SR 429 TO I-4 WB EXPRESS LANE	50
I-4 WB EXPRESS LANE TO SR 429	50
I-4 EB EXPRESS LANE TO OSCEOLA PKWY EB	50
OSCEOLA PKWY EB RAMP TO I-4 EXPRESS LANES EB	50
I-4 EB RAMP TO WB OSCEOLA PKWY	30

PROPOSED STRUCTURE TYPICAL SECTION



SR 400 (I-4)
ONE LANE BRIDGE RAMP

SHEET 1A-11

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 9/8/2017 2:38:16 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-RAMPS.DGN

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (CR 532)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( ) FREEWAY/EXPWY. ( ) MAJOR COLL.
( ) PRINCIPAL ART. ( ) MINOR COLL.
(X) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
( )	(X)	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
( )	(X)	STATE HIGHWAY SYSTEM
(X)	( )	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
(X) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	29,000
INTERIM	2030	39,000
DESIGN	2040	48,000

DESIGN SPEED 40 MPH
POSTED SPEED 35 MPH

DISTRIBUTION

K	7.4
D	53.66
T_{24}	28.5%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER DATE

DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

CR 532 (920094, 920095)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

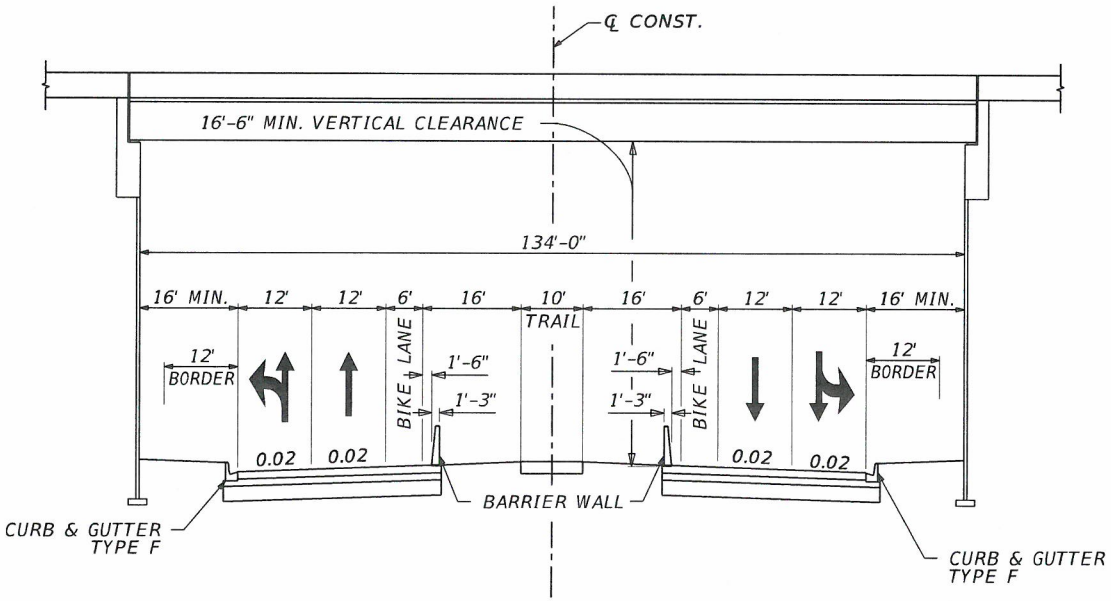
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



CR 532 ROADWAY SECTION UNDER SR 400 (I-4)
DIVERGING DIAMOND INTERCHANGE

SHEET 1A-13

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

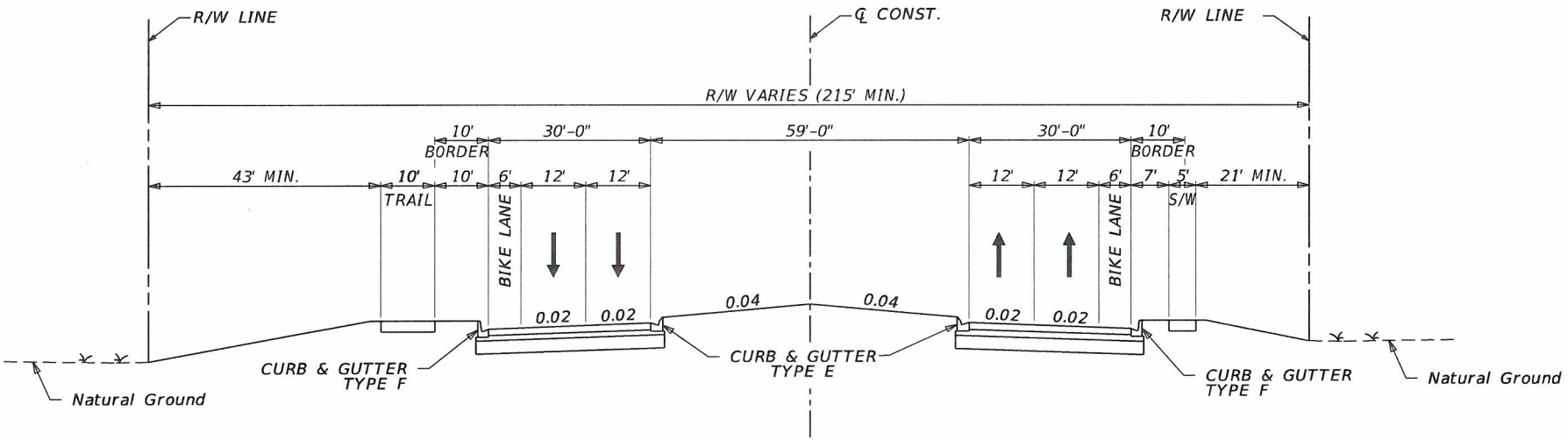
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 40 MPH
CR 532 ROADWAY SECTION
STA 53+00 TO STA 78+00

SHEET 1A-14

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

mbacal 2/9/2017 2:38:19 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

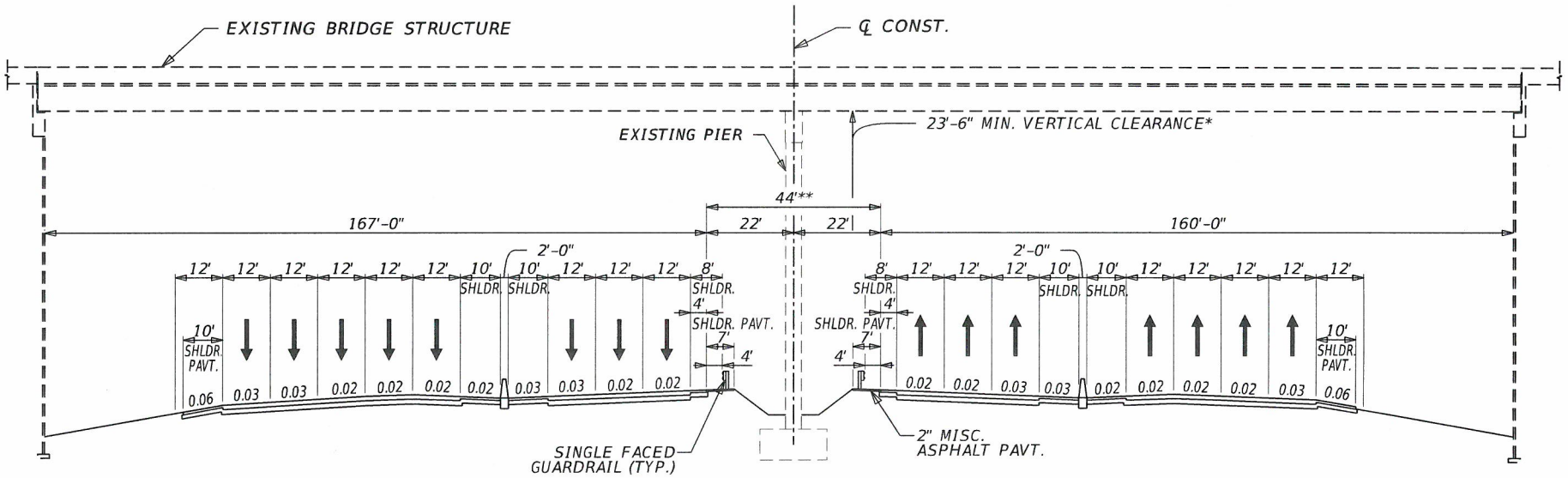
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER TRADITION BOULEVARD

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

SHEET 1A-15

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:19 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

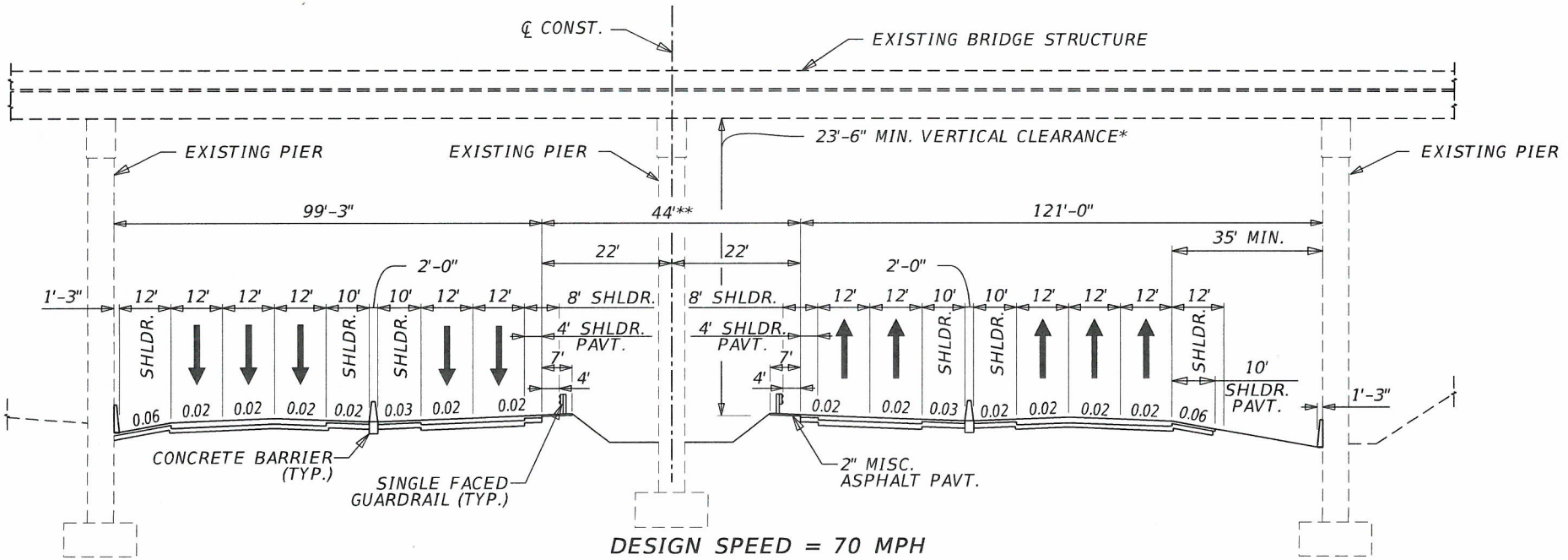
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER SR 429 NORTHBOUND RAMP

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

SHEET 1A-16

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 7/9/2017 2:38:20 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

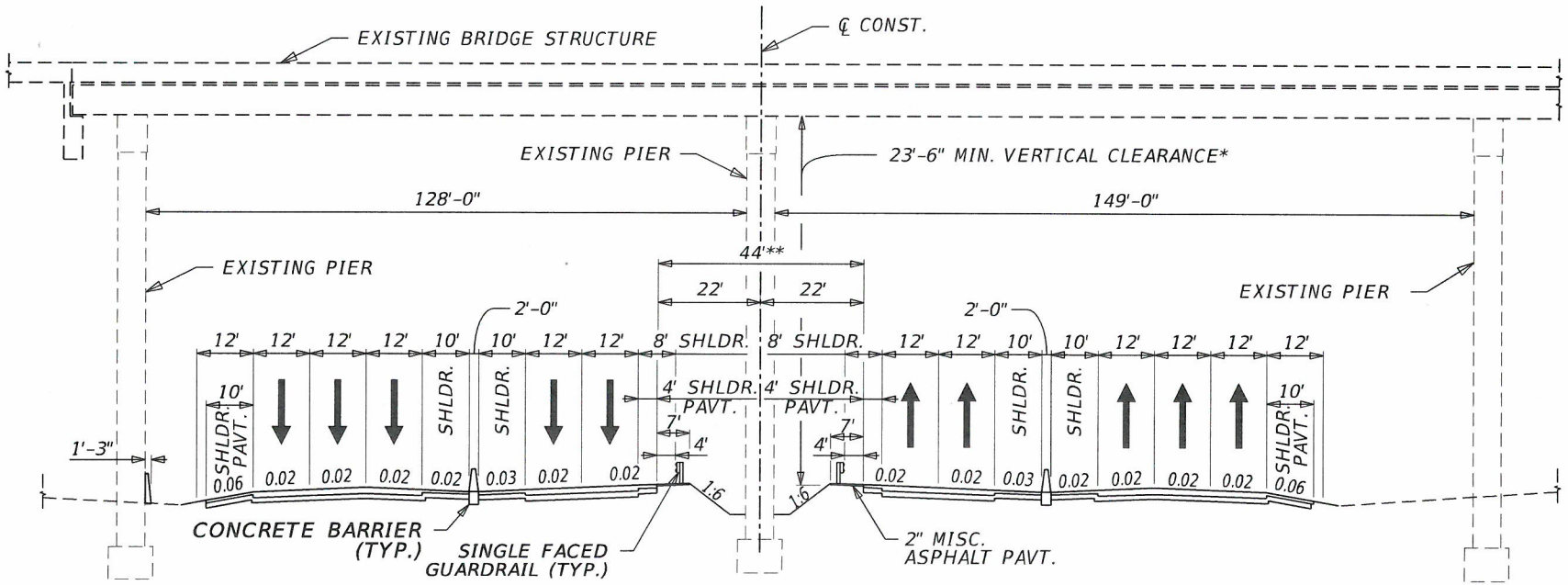
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER SR 429 SOUTHBOUND TO EASTBOUND I-4

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

SHEET 1A-17

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacay 2/9/2017 2:38:20 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (OLD LAKE WILSON ROAD)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( ) FREEWAY/EXPWY. ( ) MAJOR COLL.
( ) PRINCIPAL ART. ( ) MINOR COLL.
(X) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
( )	(X)	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
( )	(X)	STATE HIGHWAY SYSTEM
(X)	( )	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
(X) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

TRAFFIC

	YEAR	AADT
OPENING	2020	15,949
INTERIM	2030	25,979
DESIGN	2040	43,317

DESIGN SPEED 45 MPH
POSTED SPEED 45 MPH

DISTRIBUTION
K 7.4
D 53.66
T_{24} 5.0%

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER DATE

DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

OLD LAKE WILSON ROAD (924179)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

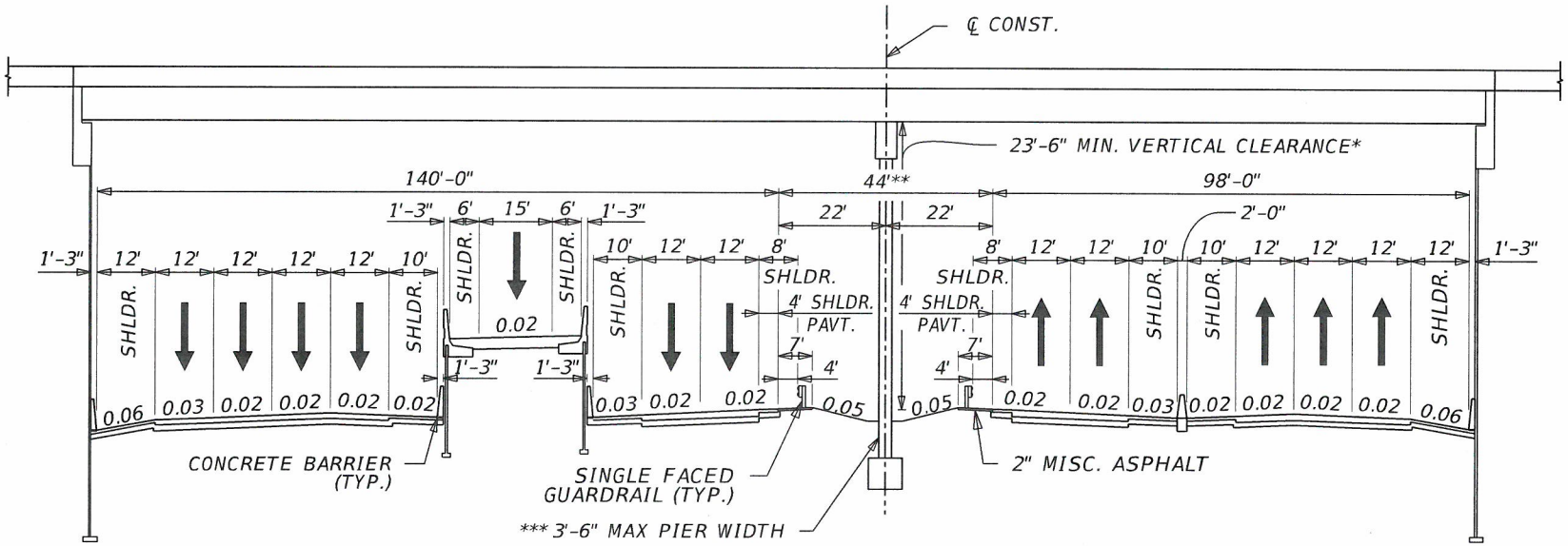
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER OLD LAKE WILSON ROAD

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-19

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:23 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

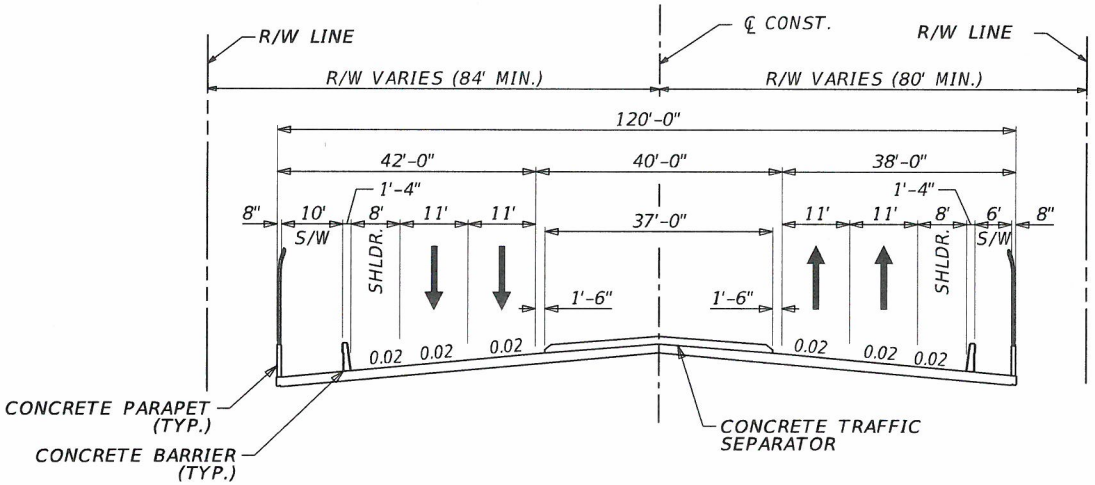
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 45 MPH

OLD LAKE WILSON ROAD BRIDGE OVER SR 400 (I-4)

SHEET 1A-20

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY

ROBERT M. DENNEY, P.E. Date
Engineer Of Record 58593

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

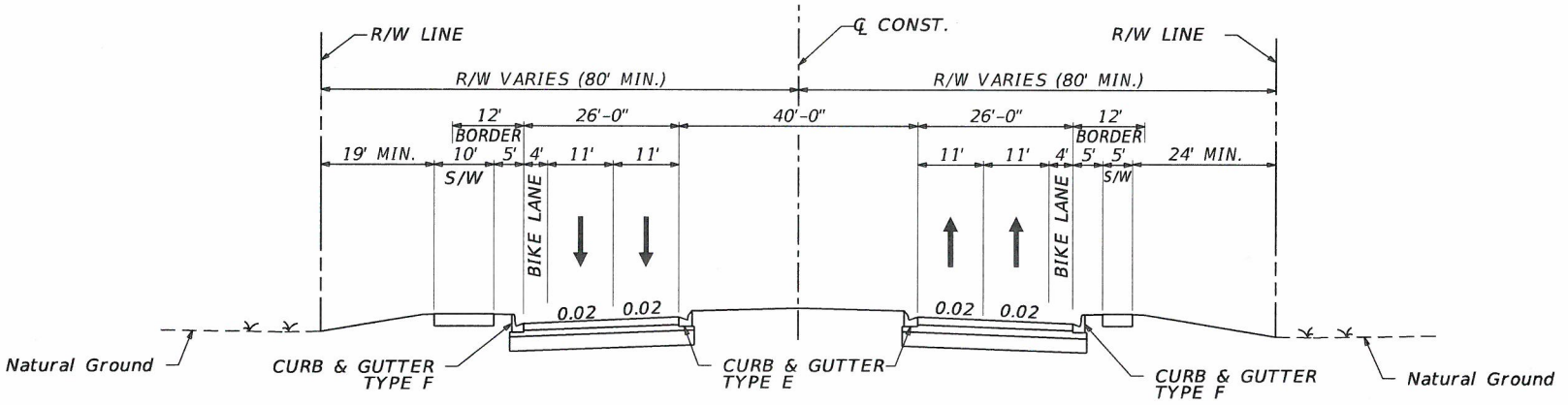
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 45 MPH

OLD LAKE WILSON ROAD

SHEET 1A-21

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593.	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

mbacay 2/9/2017 2:38:24 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (WORLD DRIVE)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( ) FREEWAY/EXPWY. ( ) MAJOR COLL.
( ) PRINCIPAL ART. ( ) MINOR COLL.
(X) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
( )	(X)	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
( )	(X)	STATE HIGHWAY SYSTEM
(X)	( )	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
(X) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	29,000
INTERIM	2030	34,000
DESIGN	2040	39,000

		DISTRIBUTION	
DESIGN SPEED	40 MPH	K	7.4
POSTED SPEED	35 MPH	D	53.66
		T_{24}	3.2%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER DATE

DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

WORLD DRIVE (920176, 920170)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

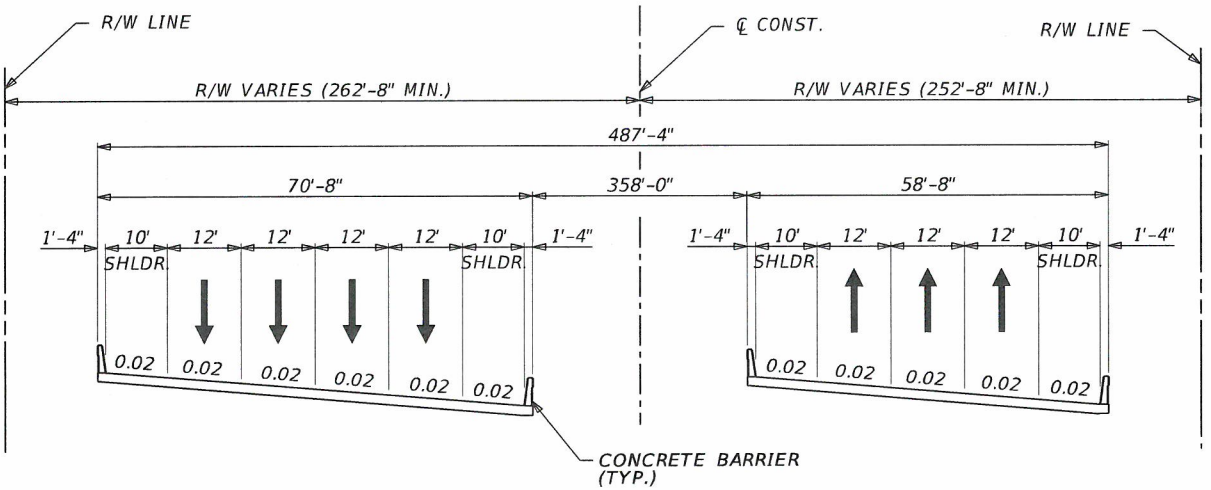
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 40 MPH

WORLD DRIVE BRIDGE OVER SR 400 (I-4)

SHEET 1A-23

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

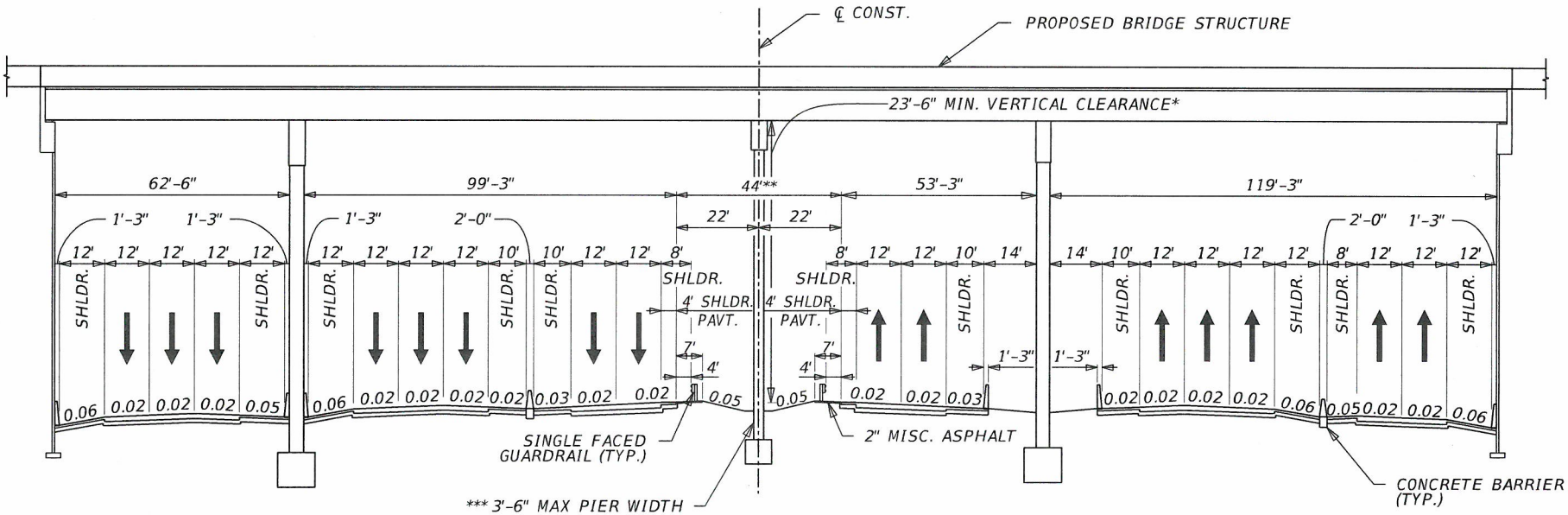
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER EASTBOUND AND WESTBOUND WORLD DRIVE

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-24

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

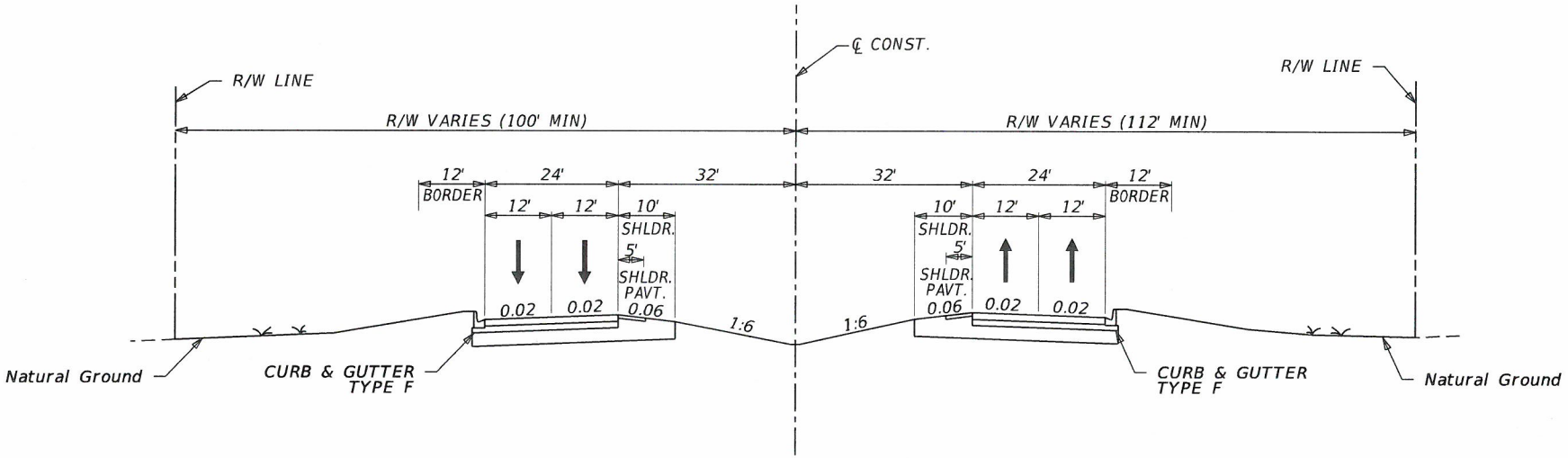
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 40 MPH

WORLD DRIVE ROADWAY SECTION

SHEET 1A-25

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

mbacal 2/9/2017 2:38:27 PM \\LKMw00\pmwork3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (SR 417)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( )	FREEWAY/EXPWY.	( )	MAJOR COLL.
(X)	PRINCIPAL ART.	( )	MINOR COLL.
( )	MINOR ART.	( )	LOCAL

HIGHWAY SYSTEM

Yes	No	
(X)	( )	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
(X)	( )	STRATEGIC INTERMODAL SYSTEM
(X)	( )	STATE HIGHWAY SYSTEM
( )	(X)	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	28,000
INTERIM	2030	33,000
DESIGN	2040	38,000

DESIGN SPEED 55 MPH
POSTED SPEED 50 MPH

DISTRIBUTION

K	7.4
D	53.66
T_{24}	12.2%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER — DATE

DISTRICT TRAFFIC OPERATIONS ENGINEER — DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

SR 417 (920169)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

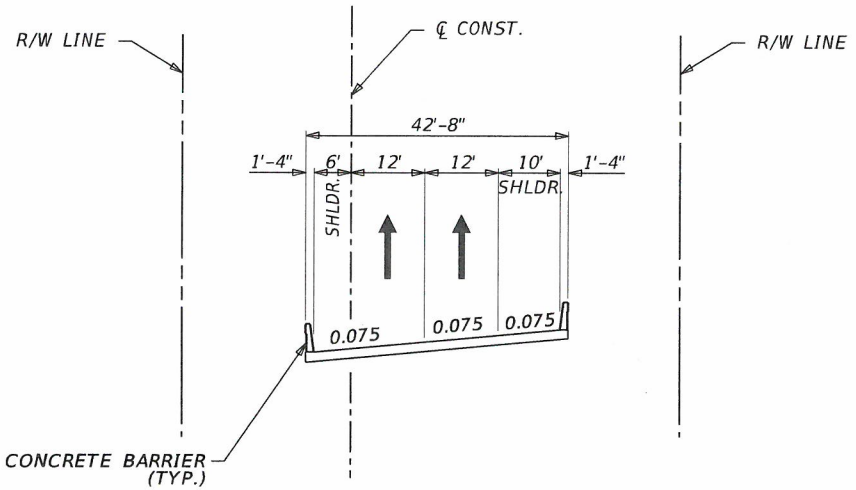
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 55 MPH

SR 417 SOUTHBOUND BRIDGE SECTION

SHEET 1A-27

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE NO. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

mbacal 2/9/2017 2:38:29 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

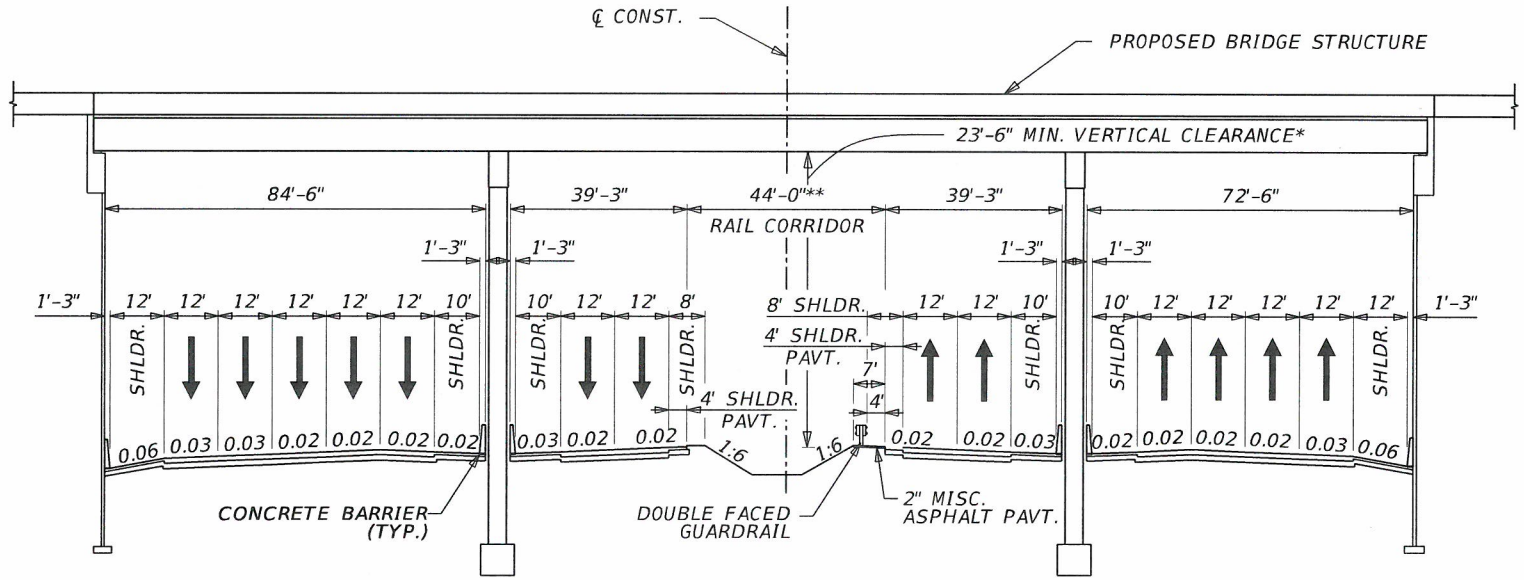
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER SR 417 SOUTHBOUND

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

SHEET 1A-28

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:29 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

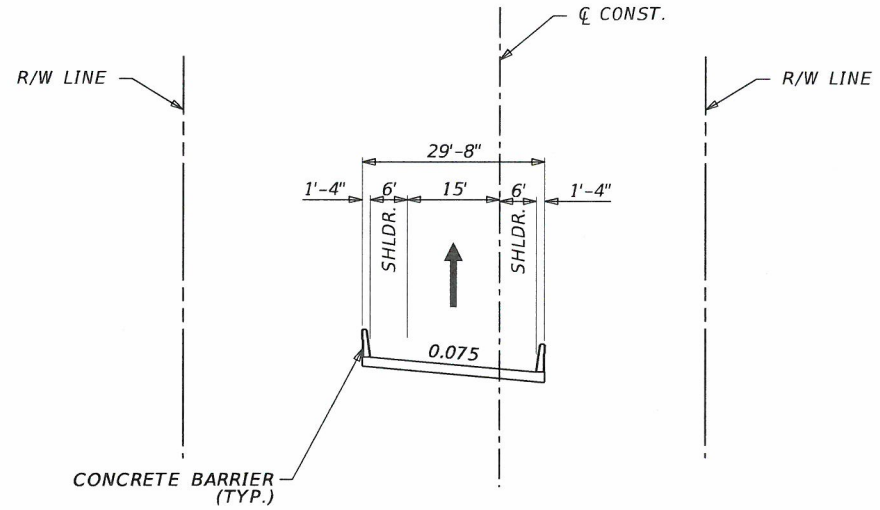
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 50 MPH
SR 417 NORTHBOUND BRIDGE SECTION

SHEET 1A-29

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (US 192/SR 530)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( )	FREEWAY/EXPWY.	( )	MAJOR COLL.
(X)	PRINCIPAL ART.	( )	MINOR COLL.
( )	MINOR ART.	( )	LOCAL

HIGHWAY SYSTEM

Yes	No	
(X)	( )	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
(X)	( )	STATE HIGHWAY SYSTEM
( )	(X)	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
(X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	55,000
INTERIM	2030	64,000
DESIGN	2040	74,000

DESIGN SPEED 50 MPH
POSTED SPEED 50 MPH

DISTRIBUTION
K 7.4
D 53.66
T_{24} 3.9%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER _____ DATE _____

DISTRICT TRAFFIC OPERATIONS ENGINEER _____ DATE _____

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

US 192 (920083, 920193, 920192, 920195, 920194)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

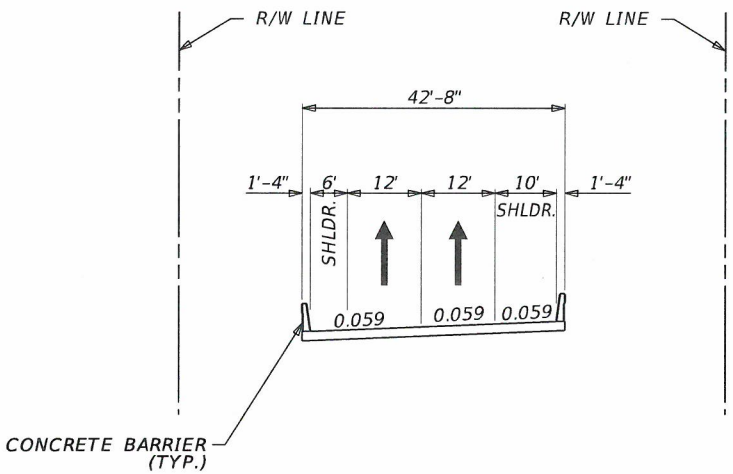
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 50 MPH

US 192/SR 530 EASTBOUND RAMP BRIDGE SECTION

SHEET 1A-31

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:32 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

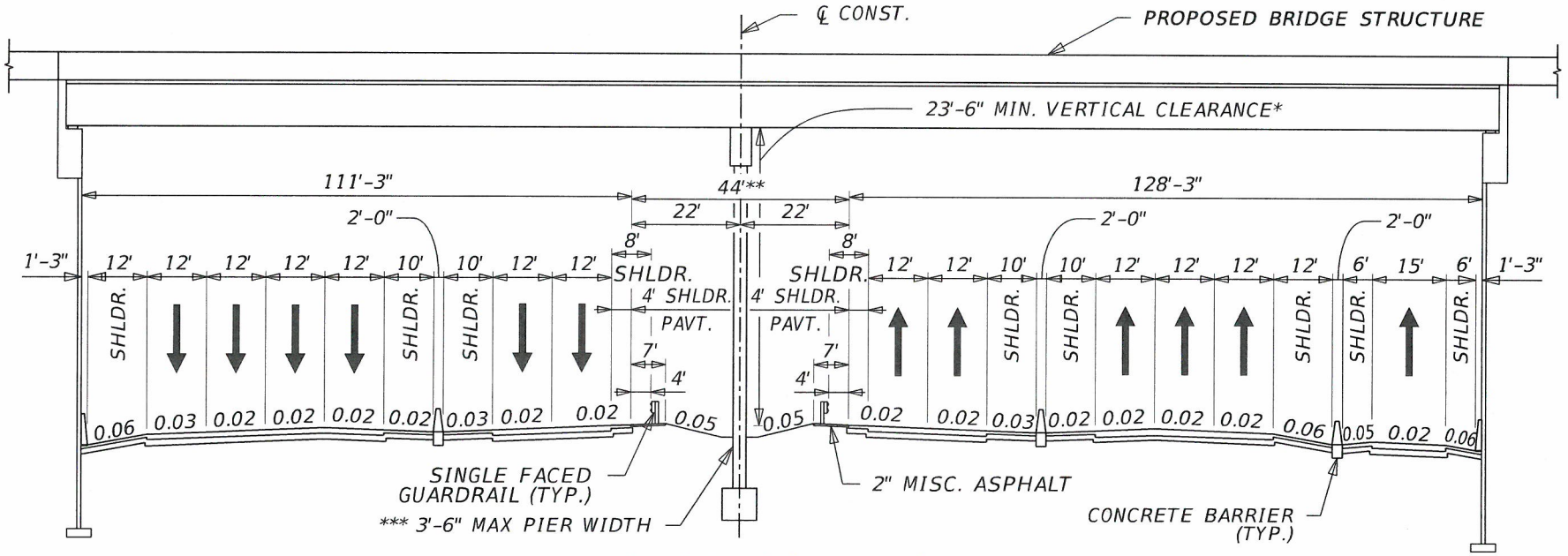
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER US 192/SR 530 EASTBOUND RAMP

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-32

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY

ROBERT M. DENNEY, P.E. Date
Engineer of Record 58593

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

FDOT CONCURRENCE

ANNETTE K. BRENNAN, P.E. Date
FDOT District Design Engineer

FHWA CONCURRENCE

FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:32 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

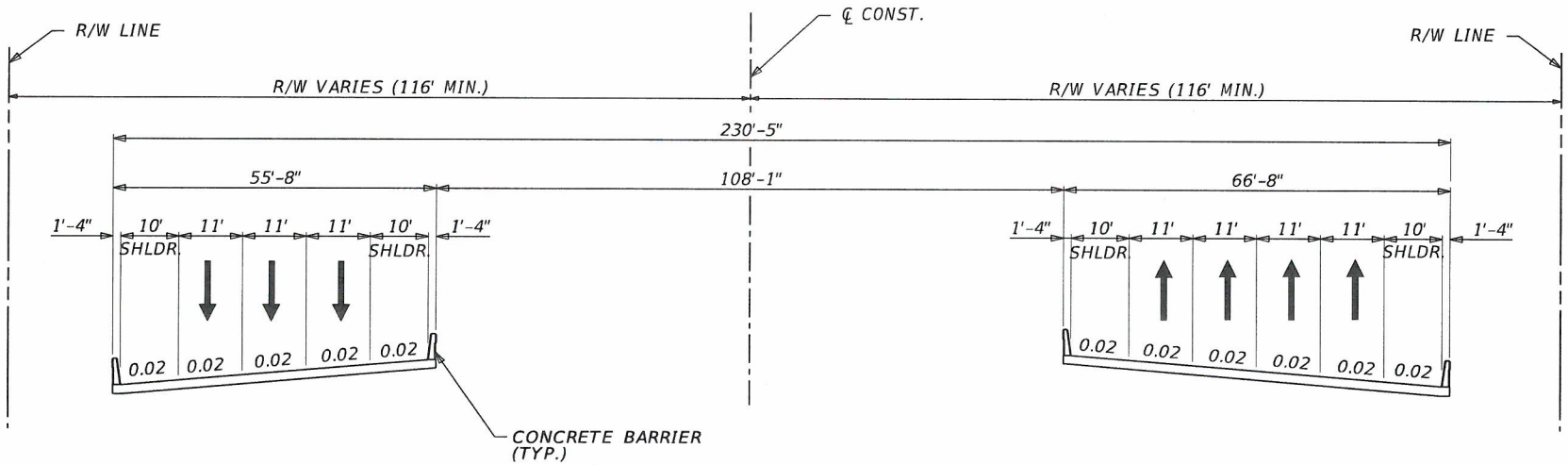
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 50 MPH

US 192/SR 530 BRIDGE SECTION

SHEET 1A-33

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

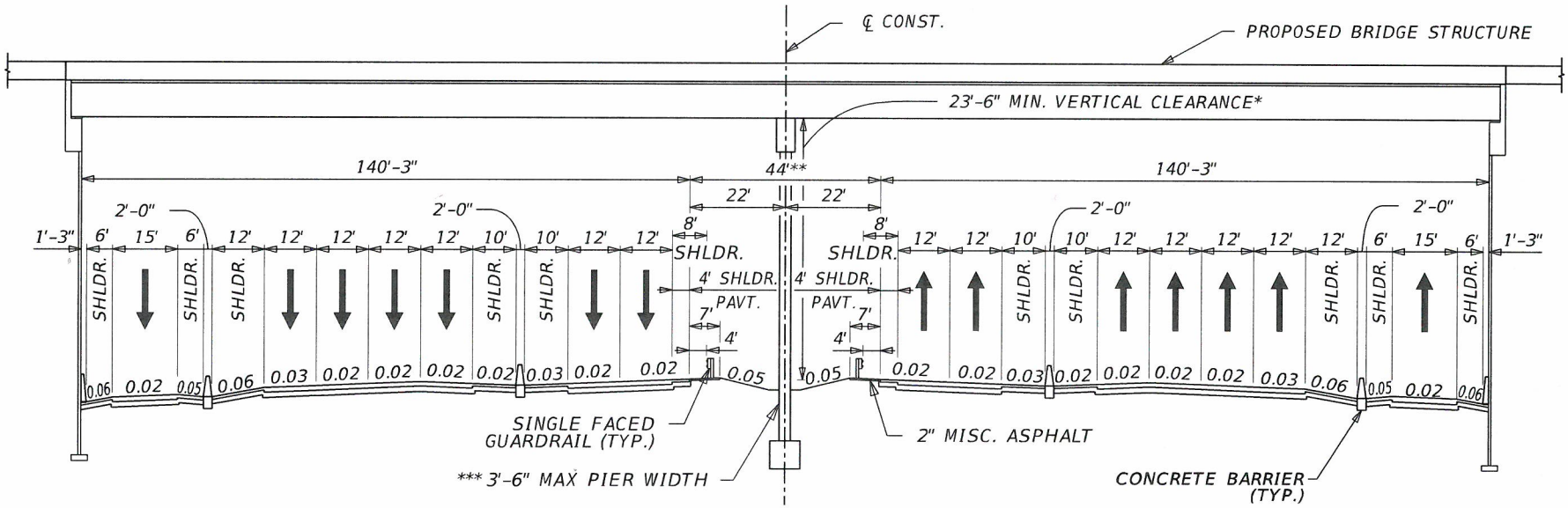
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER US 192/SR 530

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-34

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:33 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

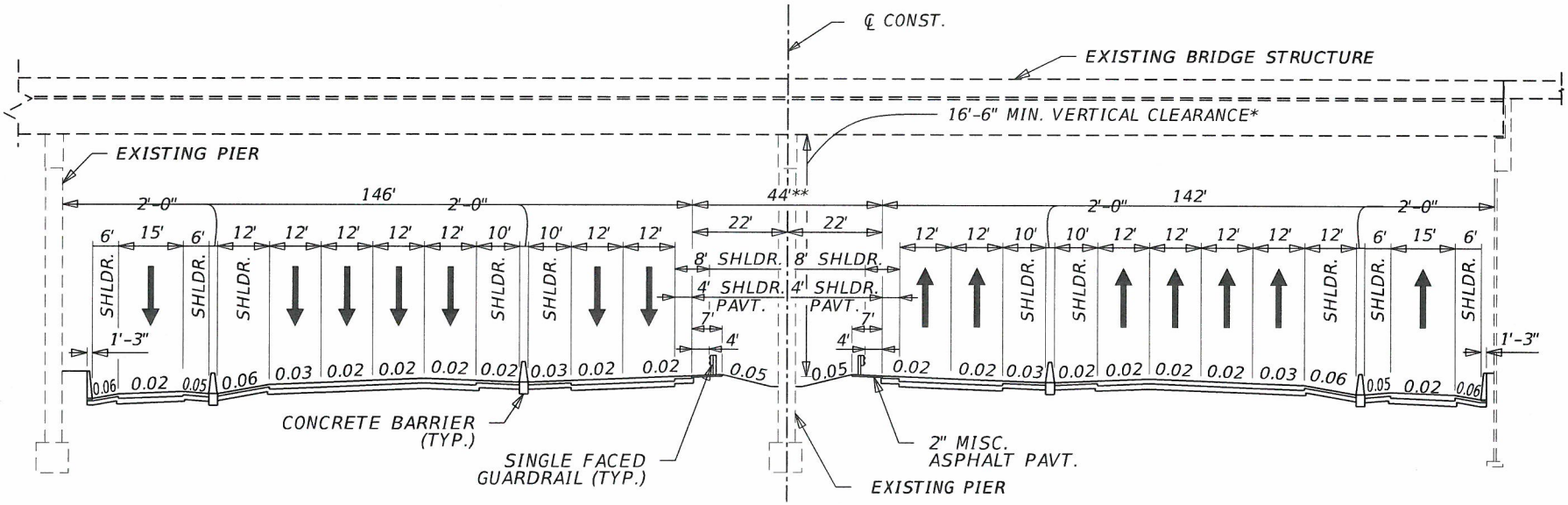
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER US 192/SR 530 WESTBOUND RAMP TO WESTBOUND SR 400 (I-4)

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

SHEET 1A-35

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

7/6/17

mbacal 2/9/2012 2:38:34 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

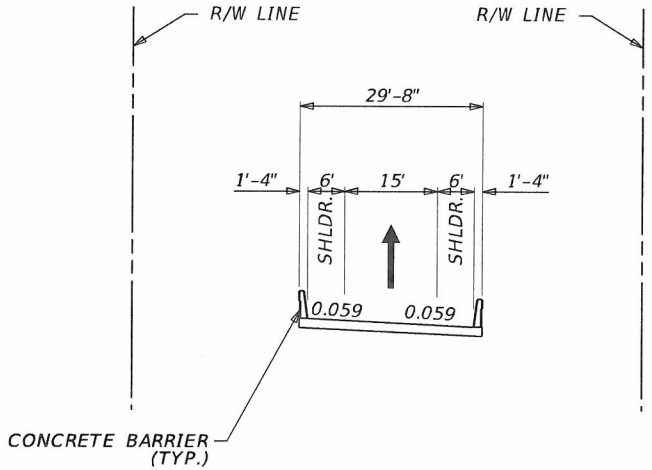
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 50 MPH

SR US 192/SR 530 BRIDGE SECTION

EASTBOUND SR 400 (I-4) TO WESTBOUND SR US 192/SR 530 RAMP

SHEET 1A-36

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbacal 2/9/2017 2:38:34 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

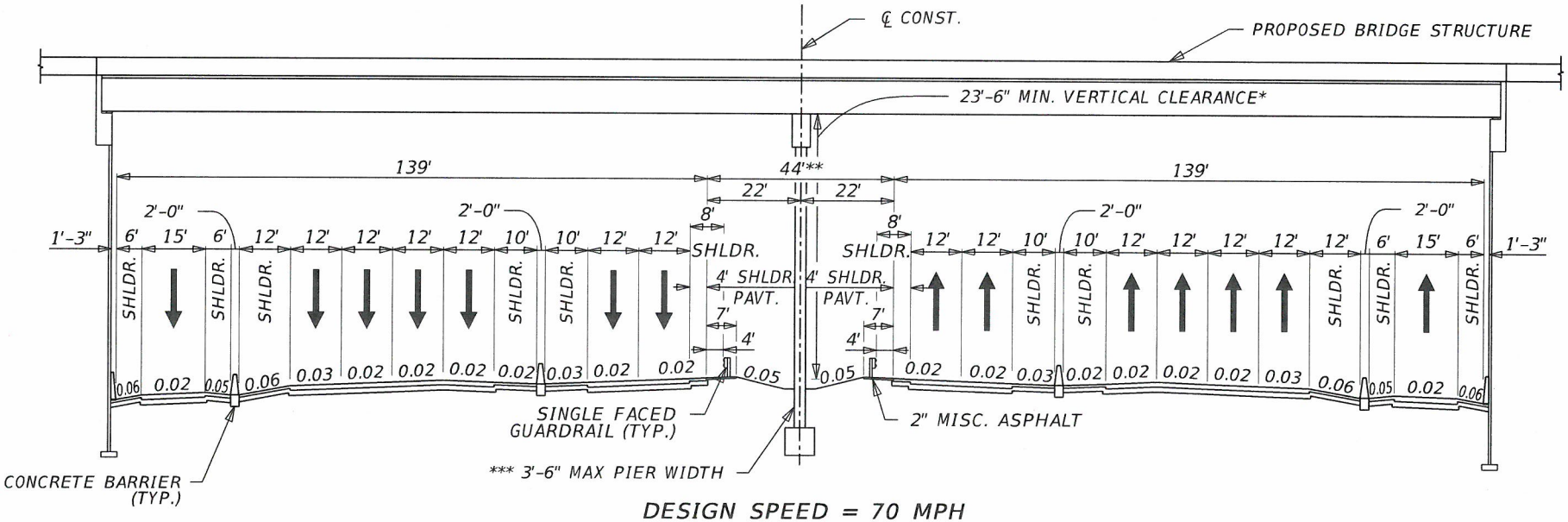
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER EASTBOUND SR 400 (I-4) RAMP TO US 192/SR 530 WESTBOUND

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-37

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/3/2017 2:38:35 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID: 432100-1-22-01 COUNTY (SECTION): OSCEOLA (92130)

PROJECT DESCRIPTION: WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 (KIRKMAN RD.) AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROJECT CONTROLS (OSCEOLA PARKWAY)

FUNCTIONAL CLASSIFICATION

( ) RURAL
(X) URBAN

( ) FREEWAY/EXPWY. ( ) MAJOR COLL.
(X) PRINCIPAL ART. ( ) MINOR COLL.
( ) MINOR ART. ( ) LOCAL

HIGHWAY SYSTEM

Yes	No	
( )	(X)	NATIONAL HIGHWAY SYSTEM
( )	(X)	FLORIDA INTRASTATE HIGHWAY SYSTEM
( )	(X)	STRATEGIC INTERMODAL SYSTEM
( )	(X)	STATE HIGHWAY SYSTEM
(X)	( )	OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT
OPENING	2020	53,000
INTERIM	2030	61,000
DESIGN	2040	69,000

DESIGN SPEED 45 MPH
POSTED SPEED 45 MPH

DISTRIBUTION
K 7.4
D 53.66
T_{24} 5.0%

CRITERIA

(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RRR INTERSTATE / FREEWAY
( ) RRR NON-INTERSTATE / FREEWAY
( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION
( ) TDLC / RRR
( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)

DESIGN SPEED APPROVALS

DISTRICT DESIGN ENGINEER DATE

DISTRICT TRAFFIC OPERATIONS ENGINEER DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

OSCEOLA PARKWAY (920180)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
GAS (CENTRAL FLORIDA GAS)
WATER (OSCEOLA COUNTY UTILITIES)
COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)
WASTEWATER (OSCEOLA COUNTY UTILITIES)
ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

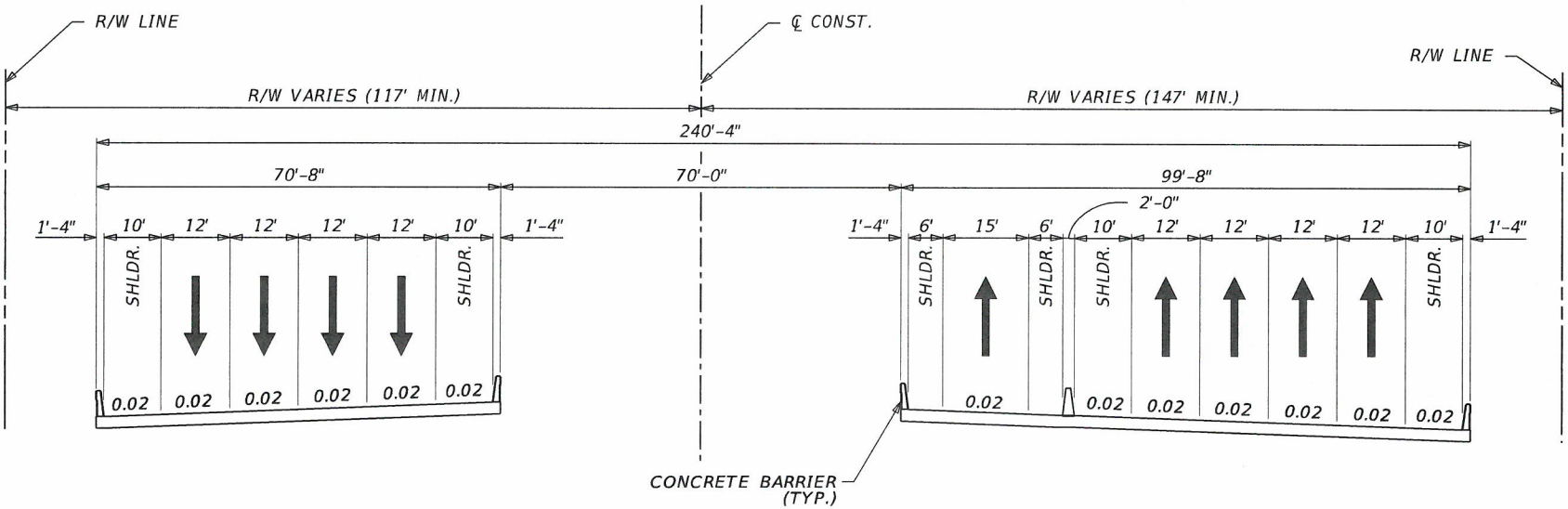
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 45 MPH

OSCEOLA PARKWAY BRIDGE OVER SR 400 (I-4)

SHEET 1A-39

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

mbacal 2/9/2017 2:38:37 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

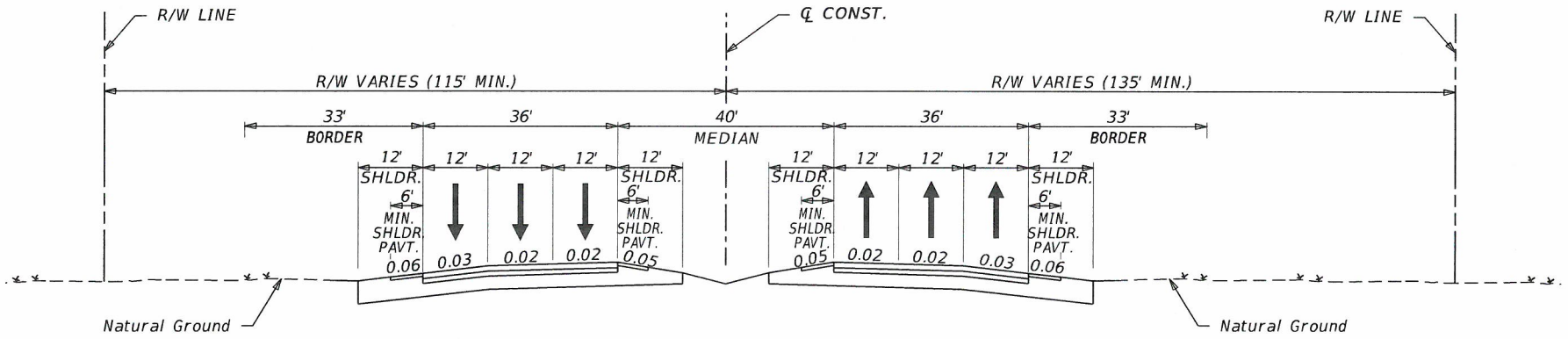
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 45 MPH

OSCEOLA PARKWAY ROADWAY SECTION (WEST OF SR 400)

SHEET 1A-40

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
STATE OF FLORIDA ROBERT M. DENNEY LICENSE No. 58593 PROFESSIONAL ENGINEER ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date
HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500			

mbacal 2/9/2017 2:38:37 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

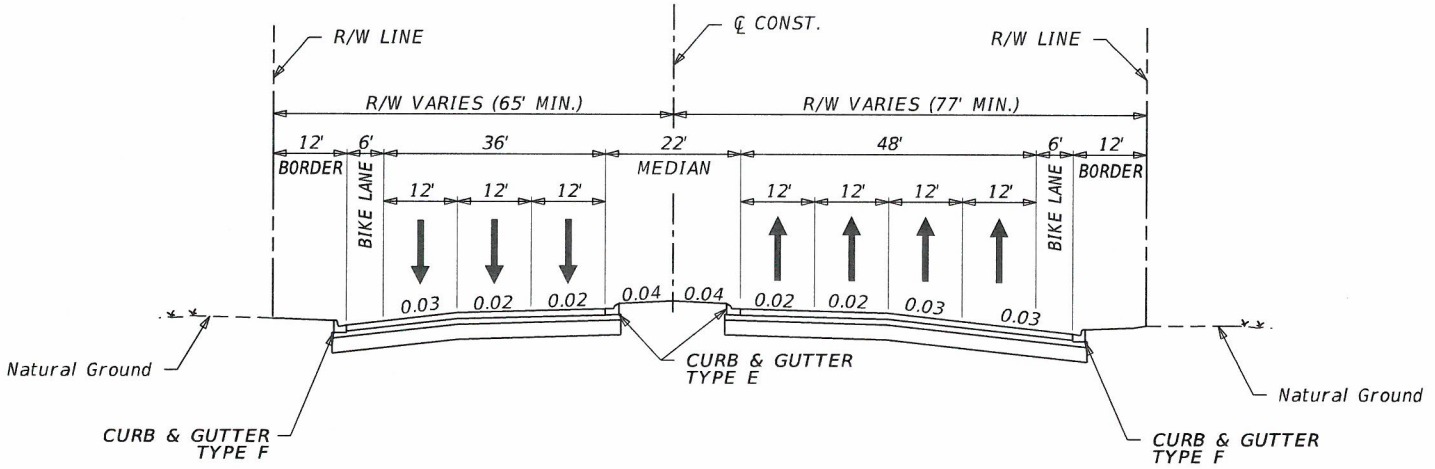
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 45 MPH

OSCEOLA PARKWAY ROADWAY SECTION (EAST OF SR 400)

SHEET 1A-41

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE	COUNTY CONCURRENCE
STATE OF FLORIDA ROBERT M. DENNEY LICENSE No. 58593 PROFESSIONAL ENGINEER ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593	ANNETTE K. BRENNAN, P.E. FDOT District Design Engineer Date	FHWA Transportation Engineer Date	County Engineer Date

HNTB CORPORATION
610 CRESCENT EXEC. CT.
SUITE 400
LAKE MARY, FL 32746
(407) 805-0355
CERT OF AUTH NO 6500

mbaeby 2/5/2017 2:38:38 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

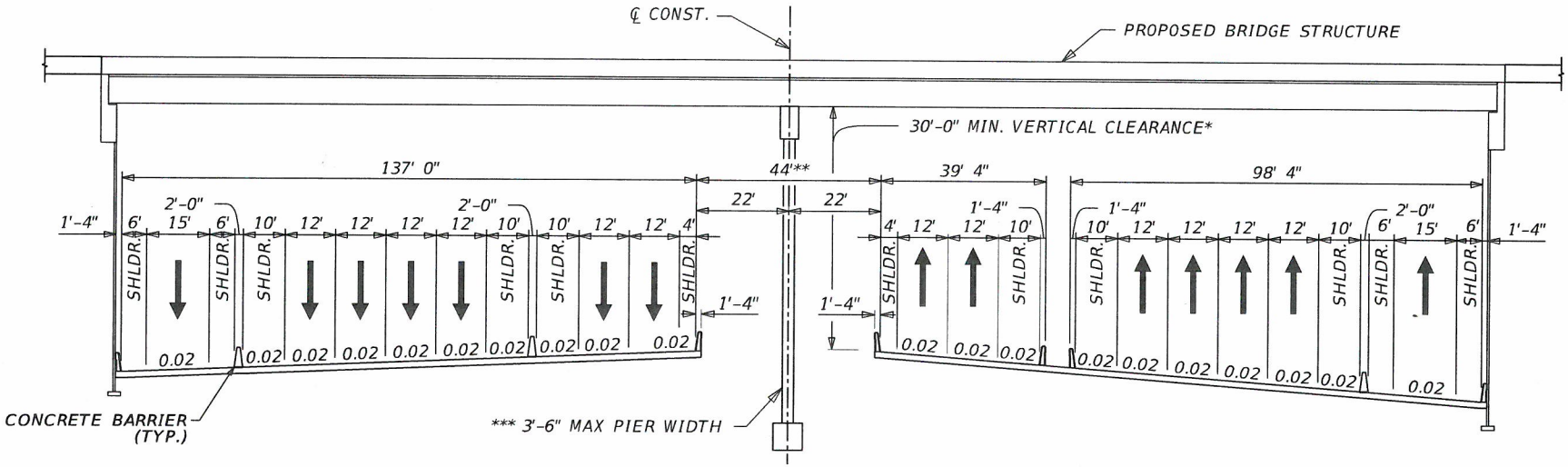
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA

SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 70 MPH

SR 400 (I-4) UNDER OSCEOLA PARKWAY

* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER (SPECIAL VERTICAL CLEARANCE REQUIRED FOR THE CONSTRUCTION OF THE I-4 BRIDGES UNDER OSCEOLA PARKWAY).

** 44' REQUIRED FOR FUTURE RAIL CORRIDOR. FUTURE RAIL CORRIDOR IS MEASURED FROM FACE OF FUTURE INSIDE BARRIER TO FACE OF FUTURE INSIDE BARRIER.

*** 3'-6" MAXIMUM PIER WIDTH ALLOWED.

SHEET 1A-42

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

APPROVED BY	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer of Record 58593 HNTB CORPORATION 610 CRESCENT EXEC. CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

mbacal 2/9/2017 2:38:38 PM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\Typical Section Package\TYPDRD01-SEG-1.DGN

APPENDIX C

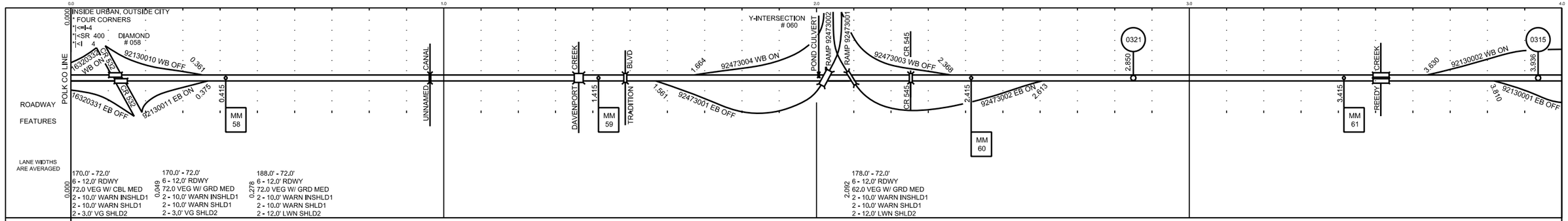
STRAIGHT LINE DIAGRAM

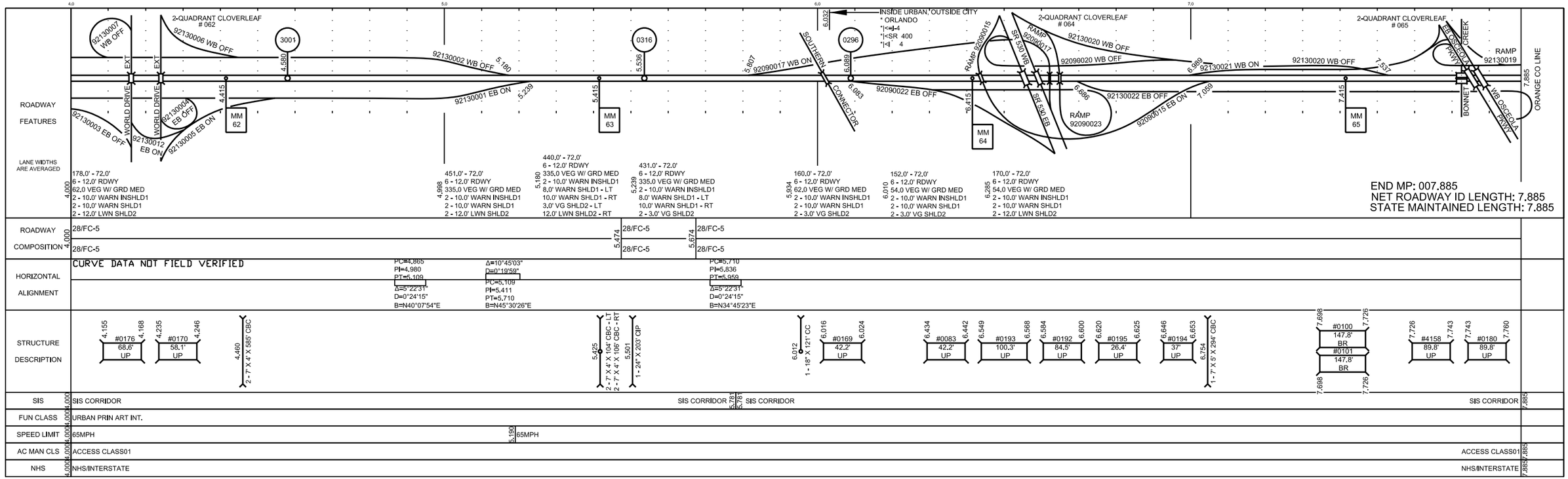
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	06/02/2014	08/04/2014	000.000	007.885		12/10/2014 MR
BY	Elizabeth Nelson	Michael Register				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02	I 4	SR 400	OSCEOLA	05	92130000	1 OF 1





Version: 1,4,2,24 11/22/2014

APPENDIX D

TRAFFIC PROJECTIONS, 18-KIP ESAL REPORT

ESAL SUMMARY SHEET
OSCEOLA COUNTY

LEGEND	
Color/Symbol	DESCRIPTION
	ESAL USED FOR ROAD LISTED
	ESALS USED FOR HIGH-ESAL RAMPS (SEE RAMPS THAT THESE ESALS ARE APPLIED TO IN TABLE BELOW)
	ESALS USED FOR ALL OTHER RAMPS

County	Pavt Type	Opening Year ESAL (2020)	Location #	Location Description	Design/Movement Description	ROAD TYPE	RAMP/BL
CR 532							
OSCEOLA	Asphalt	9,830,000	167082-16320332	CR 532 to I-4 SB (WB) On Ramp		Single Lane Ramp	A1_532
OSCEOLA	Asphalt	32,515,000	922001-92130011	I-4 NB Off Ramp to CR 532		Single Lane Ramp	B1_532
OSCEOLA	Asphalt	24,860,000	922002-92130010	I-4 SB Ramp to CR 532		Dual Lane Ramp	D1_532
OSCEOLA	Asphalt	20,945,000	928034-92000063	CR 532 W of I-4		CR 532	CR 532
OSCEOLA	Asphalt	22,732,000	928034-92652000	CR 532 E of I-4		CR 532	CR 532
SR 429							
OSCEOLA	Asphalt	6,020,000	979004-92473004	SR 429 SB to I-4 \WB On Ramp		Single Lane Ramp	A1_429
OSCEOLA	Asphalt	5,204,000	979001-92473002	SR 429 SB to I-4 EB On Ramp		Single Lane Ramp	A3_429
OSCEOLA	Asphalt	7,836,000	979001-92473001	I-4 Off Ramp to SR 429 NB		Single Lane Ramp	B1_429
OSCEOLA	Asphalt	5,204,000	979003-92473003	I-4 WB Off Ramp to SR 429 NB		Single Lane Ramp	D1_429
OSCEOLA	Asphalt	6,744,000	972800-92473000	SR 429 NB & SB North of I-4		SR 429	SR 429
World Drive							
OSCEOLA	Asphalt	2,220,000	922009-9213008	World Drive SB On Ramp to I-4 CD WB		Single Lane Ramp	A1_WD
OSCEOLA	Asphalt	2,634,000	922008-9213007	I-4 CD WB Off Ramp to World Drive		Single Lane Ramp	A2_WD
County	Pavt Type	Opening Year ESAL (2020)	Location #	Location Description	Design/Movement Description	ROAD TYPE	RAMP/BL

ESAL SUMMARY SHEET
OSCEOLA COUNTY

OSCEOLA	Asphalt	1,085,000	922004-92130003	I-4 EB CD Off Ramp to World Drive Ramp SB		Single Lane Ramp	B_WD
OSCEOLA	Asphalt	1,446,000	922005-9213005	World Drive NB On Ramp to I-4 CD EB		Single Lane Ramp	C1_WD
OSCEOLA	Asphalt	3,071,000	922006-92130004	I-4 EB CD Off Ramp to World Drive Ramp NB		Single Lane Ramp	C2_WD
OSCEOLA	Asphalt	14,721,000	922030-92130012	World Drive SB On Ramp to I-4 CD EB		Dual Lane Ramp	C3_WD
OSCEOLA	Asphalt	7,974,000	922009-92130002	I-4 CD WB On Ramp to I-4 WB GUL		WBCD	WBCD
OSCEOLA	Asphalt	14,529,000	928000-9213001	I-4 EB Off Ramp to I-4 EB CD		EB CD	EB CD
OSCEOLA	Asphalt	3,633,000	927062-92515000	World Drive N of I-4		World Drive	World Drive
OSCEOLA	Asphalt	2,982,000	927062-92515000	World Drive S of I-4		World Drive	World Drive
SR 417							
OSCEOLA	Asphalt	7,424,000	972610-92472002	SR 417 WB Off Ramp to I-4 CD		Dual Lane Ramp	A1_417
OSCEOLA	Asphalt	7,476,000	972610-92472001	I-4 CD NB Off Ramp TO SR 417 EB		Dual Lane Ramp	B1_417
US 192							
OSCEOLA	Asphalt	5,749,000	922016 - 92090018	US 192 EB to I-4 SB On Ramp	I-4, RAMP FROM US-192 WB TO I-4 WB	Single Lane Ramp	A1_530
OSCEOLA	Asphalt	3,432,000	924002-92090015	US 192 EB to I-4 NB On Ramp		Dual Lane Ramp	A2_530
OSCEOLA	Asphalt	6,764,000	922018 - 92090022	I-4 NB Off Ramp to US 192 EB	I-4, RAMP FROM I-4 WB TO US-192 EB	Signle Lane Ramp	B1_530
OSCEOLA	Asphalt	5,241,000	922018 - 92090022	I-4 NB Off Ramp to US 192 WB	I-4, RAMP FROM I-4 WB TO US-192 WB	Dual Lane Ramp	B2_530
OSCEOLA	Asphalt	32,644,000	922028 - 92090021	US 192 WB On Ramp to I-4 NB	RAMP FROM US-192 WB TO I-4 EB	Single Lane Ramp	C1_530
OSCEOLA	Asphalt	17,555,000	922026 - 92090017	US 192 WB On Ramp to I-4 SB	RAMP FROM SR-530 WB TO I-4 WB	Single Lane Ramp	C2_530
OSCEOLA	Asphalt	24,908,000	922031 - 92130020	I-4 CD SB Off Ramp to US 192 WB	RAMP FROM I-4 WB TO US-192 WB	Dual Lane Ramp	D1_530
OSCEOLA	Asphalt	32,635,000	922027 - 92090020	I-4 CD SB to US 192 EB Ramp	RAMP FROM I-4 WB TO SR-530 EB	Single Lane Ramp	D2_530
OSCEOLA	Asphalt	3,854,000	920300 - 9209000	US 192 E of I-4	ON US-192, 0.441 MI. E OF I-4 BRIDGE (UCLP)	US 192	US 192
County	Pavt Type	Opening Year ESAL (2020)	Location #	Location Description	Design/Movement Description	ROAD TYPE	RAMP/BL

ESAL SUMMARY SHEET
OSCEOLA COUNTY

SR 522 (Osceola Pkwy)							
OSCEOLA	Asphalt	34,126,000	922031 - 92130021	Osceola Pkwy EB to I-4 SB On Ramp	RAMP FROM I-4 WB TO US-192 WB	Dual Lane Ramp	A1_OP
OSCEOLA	Asphalt	3,820,000	922022 - 92130017	Osceola Pkwy EB to I-4	I-4, RAMP FROM OSCEOLA PKY EB TO I-4 EB (UV)	Single Lane Ramp	A3_OP
OSCEOLA	Asphalt	3,081,000	92130022 - New Ramp	I-4 CD NB Off Ramp to Osceola Pkwy EB		Single Lane Ramp	B1_OP
OSCEOLA	Asphalt	2,245,000	922022 - 92130022	I-4 CD NB Off Ramp to Osceola Pkwy WB	I-4, RAMP FROM OSCEOLA PKY EB TO I-4 WB (UV)	Single Lane Ramp	B2_OP
OSCEOLA	Asphalt	3,752,000	922023 - 92130018	Osceola Pkwy WB to I-4 NB Off Ramp	I-4, RAMP FROM OSCEOLA PKY WB TO I-4 EB (UV)	Single Lane Ramp	C_OP
OSCEOLA	Asphalt	4,197,000	922021 - 92130016	I-4 CD SB Off Ramp to Osceola Pkwy WB	I-4, RAMP FROM I-4 WB TO OSCEOLA PKY WB (UV)	Triple Lane Ramp	D1_OP
OSCEOLA	Asphalt	3,263,000	922025 - 92130019	I-4 CD SB Off Ramp to Osceola Pkwy EB	I-4, RAMP I-4 WB TO OSCEOLA PKY EB (UV)	Single Lane Ramp	D2_OP
OSCEOLA	Asphalt	6,436,000	750668 - 75039008	I-4 NB Off Ramp to I-4 CD NB	ON I-4, 1.022 MI. S OF SR-536 (UVL)	EB CD	EB CD
OSCEOLA	Asphalt	5,187,000	928058 - 92514000	Osceola Pkwy W of I-4	OSCEOLA PKWY, BTWN VICTORY WAY & I-4 - OFF SYSTEM	OP	OP
OSCEOLA	Asphalt	4,694,000	928058 - 92514000	Osceola Pkwy E of I-4	OSCEOLA PKWY, BTWN VICTORY WAY & I-4 - OFF SYSTEM	OP	OP

HIGH ESAL RAMPS	
HIGH ESAL SINGLE LANE RAMPS	HIGH ESAL DUAL LANE ESAL RAMPS
B1_532	D1_532
C1_530	C3_WD
C2_530	D1_530
D2_530	A1_OP

APPENDIX D

CR 532

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92652000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928034 - 92652000

LOCATION DESCRIPTION: CR 532 E of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	23450
Mid-Design Year	2030	31780
Design Year	2040	39650

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 2

T24 values

Existing to Opening Year: 28.50%
Opening to Mid-Year: 28.50%
Mid-Year to Design-Year: 28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	____	1.270	____
RURAL HIGHWAY:	0.960	____	1.350	____
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):		____		____

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928034 - 92652000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92652000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	23400	860	860	0.5	28.50%	0.793	0.890
2021	24200	886	1746	0.5	28.50%	0.790	0.890
2022	25100	915	2661	0.5	28.50%	0.787	0.890
2023	25900	942	3603	0.5	28.50%	0.785	0.890
2024	26700	967	4570	0.5	28.50%	0.782	0.890
2025	27600	997	5567	0.5	28.50%	0.780	0.890
2026	28400	1022	6589	0.5	28.50%	0.777	0.890
2027	29200	1048	7637	0.5	28.50%	0.775	0.890
2028	30100	1077	8714	0.5	28.50%	0.772	0.890
2029	30900	1102	9816	0.5	28.50%	0.770	0.890
2030	31700	1128	10944	0.5	28.50%	0.768	0.890
2031	32500	1153	12097	0.5	28.50%	0.766	0.890
2032	33300	1178	13275	0.5	28.50%	0.764	0.890
2033	34100	1204	14479	0.5	28.50%	0.762	0.890
2034	34900	1229	15708	0.5	28.50%	0.760	0.890
2035	35700	1254	16962	0.5	28.50%	0.758	0.890
2036	36500	1279	18241	0.5	28.50%	0.757	0.890
2037	37200	1301	19542	0.5	28.50%	0.755	0.890
2038	38000	1325	20867	0.5	28.50%	0.753	0.890
2039	38800	1350	22217	0.5	28.50%	0.751	0.890
2040	39600	1375	23592	0.5	28.50%	0.750	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 10084

Opening to Design Year ESAL Accumulation (1000s): 22732

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928034 - 92652000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92652000 **LOCATION #:** 928034 - 92652000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	23400	1178	1178	0.5	28.50%	0.793	1.220
2021	24200	1214	2392	0.5	28.50%	0.790	1.220
2022	25100	1255	3647	0.5	28.50%	0.787	1.220
2023	25900	1290	4937	0.5	28.50%	0.785	1.220
2024	26700	1326	6263	0.5	28.50%	0.782	1.220
2025	27600	1366	7629	0.5	28.50%	0.780	1.220
2026	28400	1401	9030	0.5	28.50%	0.777	1.220
2027	29200	1436	10466	0.5	28.50%	0.775	1.220
2028	30100	1476	11942	0.5	28.50%	0.772	1.220
2029	30900	1511	13453	0.5	28.50%	0.770	1.220
2030	31700	1546	14999	0.5	28.50%	0.768	1.220
2031	32500	1580	16579	0.5	28.50%	0.766	1.220
2032	33300	1615	18194	0.5	28.50%	0.764	1.220
2033	34100	1650	19844	0.5	28.50%	0.762	1.220
2034	34900	1684	21528	0.5	28.50%	0.760	1.220
2035	35700	1718	23246	0.5	28.50%	0.758	1.220
2036	36500	1753	24999	0.5	28.50%	0.757	1.220
2037	37200	1783	26782	0.5	28.50%	0.755	1.220
2038	38000	1817	28599	0.5	28.50%	0.753	1.220
2039	38800	1851	30450	0.5	28.50%	0.751	1.220
2040	39600	1885	32335	0.5	28.50%	0.750	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 13821

Opening to Design Year ESAL Accumulation (1000s): 31157

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922001 - 92130011

LOCATION DESCRIPTION: I-4 NB Off Ramp to CR 532

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	15610
Mid-Design Year	2030	17500
Design Year	2040	18700

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	28.50%
Opening to Mid-Year	28.50%
Mid-Year to Design-Year	28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922001 - 92130011

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15600	1461	1461	1	28.50%	1.000	0.900
2021	15700	1470	2931	1	28.50%	1.000	0.900
2022	15900	1489	4420	1	28.50%	1.000	0.900
2023	16100	1508	5928	1	28.50%	1.000	0.900
2024	16300	1527	7455	1	28.50%	1.000	0.900
2025	16500	1545	9000	1	28.50%	1.000	0.900
2026	16700	1564	10564	1	28.50%	1.000	0.900
2027	16900	1583	12147	1	28.50%	1.000	0.900
2028	17100	1601	13748	1	28.50%	1.000	0.900
2029	17300	1620	15368	1	28.50%	1.000	0.900
2030	17500	1639	17007	1	28.50%	1.000	0.900
2031	17600	1648	18655	1	28.50%	1.000	0.900
2032	17700	1658	20313	1	28.50%	1.000	0.900
2033	17800	1667	21980	1	28.50%	1.000	0.900
2034	17900	1676	23656	1	28.50%	1.000	0.900
2035	18100	1695	25351	1	28.50%	1.000	0.900
2036	18200	1704	27055	1	28.50%	1.000	0.900
2037	18300	1714	28769	1	28.50%	1.000	0.900
2038	18400	1723	30492	1	28.50%	1.000	0.900
2039	18500	1733	32225	1	28.50%	1.000	0.900
2040	18700	1751	33976	1	28.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 15546

Opening to Design Year ESAL Accumulation (1000s): 32515

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922001 - 92130011

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922001 - 92130011 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15600	2061	2061	1	28.50%	1.000	1.270
2021	15700	2075	4136	1	28.50%	1.000	1.270
2022	15900	2101	6237	1	28.50%	1.000	1.270
2023	16100	2127	8364	1	28.50%	1.000	1.270
2024	16300	2154	10518	1	28.50%	1.000	1.270
2025	16500	2180	12698	1	28.50%	1.000	1.270
2026	16700	2207	14905	1	28.50%	1.000	1.270
2027	16900	2233	17138	1	28.50%	1.000	1.270
2028	17100	2260	19398	1	28.50%	1.000	1.270
2029	17300	2286	21684	1	28.50%	1.000	1.270
2030	17500	2312	23996	1	28.50%	1.000	1.270
2031	17600	2326	26322	1	28.50%	1.000	1.270
2032	17700	2339	28661	1	28.50%	1.000	1.270
2033	17800	2352	31013	1	28.50%	1.000	1.270
2034	17900	2365	33378	1	28.50%	1.000	1.270
2035	18100	2392	35770	1	28.50%	1.000	1.270
2036	18200	2405	38175	1	28.50%	1.000	1.270
2037	18300	2418	40593	1	28.50%	1.000	1.270
2038	18400	2431	43024	1	28.50%	1.000	1.270
2039	18500	2445	45469	1	28.50%	1.000	1.270
2040	18700	2471	47940	1	28.50%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 21935

Opening to Design Year ESAL Accumulation (1000s): 45879

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Polk
ROADWAY ID: 16320000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 167082 - 16320332

LOCATION DESCRIPTION: CR 532 to I-4 SB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	8740
Mid-Design Year	2030	10340
Design Year	2040	11960

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	14.40%
Opening to Mid-Year	14.40%
Mid-Year to Design-Year	14.40%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 167082 - 16320332

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 16320000 **COUNTY:** Polk **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8700	412	412	1	14.40%	1.000	0.900
2021	8900	422	834	1	14.40%	1.000	0.900
2022	9000	426	1260	1	14.40%	1.000	0.900
2023	9200	436	1696	1	14.40%	1.000	0.900
2024	9300	440	2136	1	14.40%	1.000	0.900
2025	9500	450	2586	1	14.40%	1.000	0.900
2026	9700	459	3045	1	14.40%	1.000	0.900
2027	9800	464	3509	1	14.40%	1.000	0.900
2028	10000	474	3983	1	14.40%	1.000	0.900
2029	10100	478	4461	1	14.40%	1.000	0.900
2030	10300	488	4949	1	14.40%	1.000	0.900
2031	10500	497	5446	1	14.40%	1.000	0.900
2032	10600	502	5948	1	14.40%	1.000	0.900
2033	10800	511	6459	1	14.40%	1.000	0.900
2034	10900	516	6975	1	14.40%	1.000	0.900
2035	11100	526	7501	1	14.40%	1.000	0.900
2036	11300	535	8036	1	14.40%	1.000	0.900
2037	11400	540	8576	1	14.40%	1.000	0.900
2038	11600	549	9125	1	14.40%	1.000	0.900
2039	11700	554	9679	1	14.40%	1.000	0.900
2040	11900	563	10242	1	14.40%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 4537

Opening to Design Year ESAL Accumulation (1000s): 9830

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 167082 - 16320332

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 16320000 **LOCATION #:** 167082 - 16320332 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8700	581	581	1	14.40%	1.000	1.270
2021	8900	595	1176	1	14.40%	1.000	1.270
2022	9000	601	1777	1	14.40%	1.000	1.270
2023	9200	615	2392	1	14.40%	1.000	1.270
2024	9300	621	3013	1	14.40%	1.000	1.270
2025	9500	635	3648	1	14.40%	1.000	1.270
2026	9700	648	4296	1	14.40%	1.000	1.270
2027	9800	655	4951	1	14.40%	1.000	1.270
2028	10000	668	5619	1	14.40%	1.000	1.270
2029	10100	675	6294	1	14.40%	1.000	1.270
2030	10300	688	6982	1	14.40%	1.000	1.270
2031	10500	701	7683	1	14.40%	1.000	1.270
2032	10600	708	8391	1	14.40%	1.000	1.270
2033	10800	721	9112	1	14.40%	1.000	1.270
2034	10900	728	9840	1	14.40%	1.000	1.270
2035	11100	741	10581	1	14.40%	1.000	1.270
2036	11300	755	11336	1	14.40%	1.000	1.270
2037	11400	761	12097	1	14.40%	1.000	1.270
2038	11600	775	12872	1	14.40%	1.000	1.270
2039	11700	781	13653	1	14.40%	1.000	1.270
2040	11900	795	14448	1	14.40%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 6401

Opening to Design Year ESAL Accumulation (1000s): 13867

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92000063
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928034 - 92000063

LOCATION DESCRIPTION: CR 532 W of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	22220
Mid-Design Year	2030	28920
Design Year	2040	35610

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 50%
Lanes in One Direction 2

T24 values
Existing to Opening Year 28.50%
Opening to Mid-Year 28.50%
Mid-Year to Design-Year 28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/26/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928034 - 92000063

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92000063 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	22200	820	820	0.5	28.50%	0.798	0.890
2021	22800	840	1660	0.5	28.50%	0.795	0.890
2022	23500	863	2523	0.5	28.50%	0.793	0.890
2023	24200	886	3409	0.5	28.50%	0.790	0.890
2024	24900	909	4318	0.5	28.50%	0.788	0.890
2025	25500	929	5247	0.5	28.50%	0.786	0.890
2026	26200	951	6198	0.5	28.50%	0.784	0.890
2027	26900	974	7172	0.5	28.50%	0.782	0.890
2028	27500	993	8165	0.5	28.50%	0.780	0.890
2029	28200	1016	9181	0.5	28.50%	0.778	0.890
2030	28900	1038	10219	0.5	28.50%	0.776	0.890
2031	29500	1058	11277	0.5	28.50%	0.774	0.890
2032	30200	1080	12357	0.5	28.50%	0.772	0.890
2033	30900	1102	13459	0.5	28.50%	0.770	0.890
2034	31500	1121	14580	0.5	28.50%	0.769	0.890
2035	32200	1144	15724	0.5	28.50%	0.767	0.890
2036	32900	1166	16890	0.5	28.50%	0.765	0.890
2037	33600	1188	18078	0.5	28.50%	0.763	0.890
2038	34200	1207	19285	0.5	28.50%	0.762	0.890
2039	34900	1229	20514	0.5	28.50%	0.760	0.890
2040	35600	1251	21765	0.5	28.50%	0.759	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 9399

Opening to Design Year ESAL Accumulation (1000s): 20945

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/26/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928034 - 92000063

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92000063 **LOCATION #:** 928034 - 92000063 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	22200	1124	1124	0.5	28.50%	0.798	1.220
2021	22800	1151	2275	0.5	28.50%	0.795	1.220
2022	23500	1183	3458	0.5	28.50%	0.793	1.220
2023	24200	1214	4672	0.5	28.50%	0.790	1.220
2024	24900	1246	5918	0.5	28.50%	0.788	1.220
2025	25500	1273	7191	0.5	28.50%	0.786	1.220
2026	26200	1304	8495	0.5	28.50%	0.784	1.220
2027	26900	1335	9830	0.5	28.50%	0.782	1.220
2028	27500	1361	11191	0.5	28.50%	0.780	1.220
2029	28200	1392	12583	0.5	28.50%	0.778	1.220
2030	28900	1423	14006	0.5	28.50%	0.776	1.220
2031	29500	1450	15456	0.5	28.50%	0.774	1.220
2032	30200	1480	16936	0.5	28.50%	0.772	1.220
2033	30900	1511	18447	0.5	28.50%	0.770	1.220
2034	31500	1537	19984	0.5	28.50%	0.769	1.220
2035	32200	1567	21551	0.5	28.50%	0.767	1.220
2036	32900	1598	23149	0.5	28.50%	0.765	1.220
2037	33600	1628	24777	0.5	28.50%	0.763	1.220
2038	34200	1654	26431	0.5	28.50%	0.762	1.220
2039	34900	1684	28115	0.5	28.50%	0.760	1.220
2040	35600	1714	29829	0.5	28.50%	0.759	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 12882

Opening to Design Year ESAL Accumulation (1000s): 28705

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/26/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Polk
ROADWAY ID: 16320000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 167081 - 16320331

LOCATION DESCRIPTION: I-4 NB Off Ramp to CR 532

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	10090
Mid-Design Year	2030	10180
Design Year	2040	11490

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	14.40%
Opening to Mid-Year	14.40%
Mid-Year to Design-Year	14.40%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 167081 - 16320331

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 16320000 **COUNTY:** Polk **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	10000	474	474	1	14.40%	1.000	0.900
2021	10000	474	948	1	14.40%	1.000	0.900
2022	10100	478	1426	1	14.40%	1.000	0.900
2023	10100	478	1904	1	14.40%	1.000	0.900
2024	10100	478	2382	1	14.40%	1.000	0.900
2025	10100	478	2860	1	14.40%	1.000	0.900
2026	10100	478	3338	1	14.40%	1.000	0.900
2027	10100	478	3816	1	14.40%	1.000	0.900
2028	10100	478	4294	1	14.40%	1.000	0.900
2029	10100	478	4772	1	14.40%	1.000	0.900
2030	10100	478	5250	1	14.40%	1.000	0.900
2031	10300	488	5738	1	14.40%	1.000	0.900
2032	10400	492	6230	1	14.40%	1.000	0.900
2033	10500	497	6727	1	14.40%	1.000	0.900
2034	10700	507	7234	1	14.40%	1.000	0.900
2035	10800	511	7745	1	14.40%	1.000	0.900
2036	10900	516	8261	1	14.40%	1.000	0.900
2037	11000	521	8782	1	14.40%	1.000	0.900
2038	11200	530	9312	1	14.40%	1.000	0.900
2039	11300	535	9847	1	14.40%	1.000	0.900
2040	11400	540	10387	1	14.40%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 4776

Opening to Design Year ESAL Accumulation (1000s): 9913

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 167081 - 16320331

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 16320000 **LOCATION #:** 167081 - 16320331 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	10000	668	668	1	14.40%	1.000	1.270
2021	10000	668	1336	1	14.40%	1.000	1.270
2022	10100	675	2011	1	14.40%	1.000	1.270
2023	10100	675	2686	1	14.40%	1.000	1.270
2024	10100	675	3361	1	14.40%	1.000	1.270
2025	10100	675	4036	1	14.40%	1.000	1.270
2026	10100	675	4711	1	14.40%	1.000	1.270
2027	10100	675	5386	1	14.40%	1.000	1.270
2028	10100	675	6061	1	14.40%	1.000	1.270
2029	10100	675	6736	1	14.40%	1.000	1.270
2030	10100	675	7411	1	14.40%	1.000	1.270
2031	10300	688	8099	1	14.40%	1.000	1.270
2032	10400	695	8794	1	14.40%	1.000	1.270
2033	10500	701	9495	1	14.40%	1.000	1.270
2034	10700	715	10210	1	14.40%	1.000	1.270
2035	10800	721	10931	1	14.40%	1.000	1.270
2036	10900	728	11659	1	14.40%	1.000	1.270
2037	11000	735	12394	1	14.40%	1.000	1.270
2038	11200	748	13142	1	14.40%	1.000	1.270
2039	11300	755	13897	1	14.40%	1.000	1.270
2040	11400	761	14658	1	14.40%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 6743

Opening to Design Year ESAL Accumulation (1000s): 13990

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922002 - 92130010

LOCATION DESCRIPTION: I-4 SB Off Ramp to CR 532

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	16270
Mid-Design Year	2030	17420
Design Year	2040	18680

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	28.50%
Opening to Mid-Year	28.50%
Mid-Year to Design-Year	28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922002 - 92130010

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	16200	1163	1163	1	28.50%	0.766	0.900
2021	16300	1169	2332	1	28.50%	0.766	0.900
2022	16500	1182	3514	1	28.50%	0.765	0.900
2023	16600	1188	4702	1	28.50%	0.764	0.900
2024	16700	1195	5897	1	28.50%	0.764	0.900
2025	16800	1201	7098	1	28.50%	0.763	0.900
2026	16900	1208	8306	1	28.50%	0.763	0.900
2027	17000	1214	9520	1	28.50%	0.762	0.900
2028	17100	1220	10740	1	28.50%	0.762	0.900
2029	17300	1233	11973	1	28.50%	0.761	0.900
2030	17400	1239	13212	1	28.50%	0.760	0.900
2031	17500	1246	14458	1	28.50%	0.760	0.900
2032	17600	1252	15710	1	28.50%	0.760	0.900
2033	17700	1258	16968	1	28.50%	0.759	0.900
2034	17900	1271	18239	1	28.50%	0.758	0.900
2035	18000	1277	19516	1	28.50%	0.758	0.900
2036	18100	1284	20800	1	28.50%	0.757	0.900
2037	18300	1296	22096	1	28.50%	0.756	0.900
2038	18400	1303	23399	1	28.50%	0.756	0.900
2039	18500	1309	24708	1	28.50%	0.755	0.900
2040	18600	1315	26023	1	28.50%	0.755	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 12049

Opening to Design Year ESAL Accumulation (1000s): 24860

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922002 - 92130010

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922002 - 92130010 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	16200	1641	1641	1	28.50%	0.766	1.270
2021	16300	1650	3291	1	28.50%	0.766	1.270
2022	16500	1668	4959	1	28.50%	0.765	1.270
2023	16600	1677	6636	1	28.50%	0.764	1.270
2024	16700	1686	8322	1	28.50%	0.764	1.270
2025	16800	1695	10017	1	28.50%	0.763	1.270
2026	16900	1704	11721	1	28.50%	0.763	1.270
2027	17000	1713	13434	1	28.50%	0.762	1.270
2028	17100	1722	15156	1	28.50%	0.762	1.270
2029	17300	1740	16896	1	28.50%	0.761	1.270
2030	17400	1749	18645	1	28.50%	0.760	1.270
2031	17500	1758	20403	1	28.50%	0.760	1.270
2032	17600	1767	22170	1	28.50%	0.760	1.270
2033	17700	1775	23945	1	28.50%	0.759	1.270
2034	17900	1793	25738	1	28.50%	0.758	1.270
2035	18000	1802	27540	1	28.50%	0.758	1.270
2036	18100	1811	29351	1	28.50%	0.757	1.270
2037	18300	1829	31180	1	28.50%	0.756	1.270
2038	18400	1838	33018	1	28.50%	0.756	1.270
2039	18500	1847	34865	1	28.50%	0.755	1.270
2040	18600	1856	36721	1	28.50%	0.755	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 17004

Opening to Design Year ESAL Accumulation (1000s): 35080

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX D

SR 429

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 979001 - 92473001

LOCATION DESCRIPTION: I-4 EB Off Ramp to SR 429 NB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	8210
Mid-Design Year	2030	9770
Design Year	2040	11220

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	12.20%
Opening to Mid-Year	12.20%
Mid-Year to Design-Year	12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979001 - 92473001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	329	329	1	12.20%	1.000	0.900
2021	8300	333	662	1	12.20%	1.000	0.900
2022	8500	341	1003	1	12.20%	1.000	0.900
2023	8600	345	1348	1	12.20%	1.000	0.900
2024	8800	353	1701	1	12.20%	1.000	0.900
2025	8900	357	2058	1	12.20%	1.000	0.900
2026	9100	365	2423	1	12.20%	1.000	0.900
2027	9300	373	2796	1	12.20%	1.000	0.900
2028	9400	377	3173	1	12.20%	1.000	0.900
2029	9600	385	3558	1	12.20%	1.000	0.900
2030	9700	389	3947	1	12.20%	1.000	0.900
2031	9900	397	4344	1	12.20%	1.000	0.900
2032	10000	401	4745	1	12.20%	1.000	0.900
2033	10200	409	5154	1	12.20%	1.000	0.900
2034	10300	413	5567	1	12.20%	1.000	0.900
2035	10400	417	5984	1	12.20%	1.000	0.900
2036	10600	425	6409	1	12.20%	1.000	0.900
2037	10700	429	6838	1	12.20%	1.000	0.900
2038	10900	437	7275	1	12.20%	1.000	0.900
2039	11000	441	7716	1	12.20%	1.000	0.900
2040	11200	449	8165	1	12.20%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3618

Opening to Design Year ESAL Accumulation (1000s): 7836

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979001 - 92473001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 979001 - 92473001 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	464	464	1	12.20%	1.000	1.270
2021	8300	470	934	1	12.20%	1.000	1.270
2022	8500	481	1415	1	12.20%	1.000	1.270
2023	8600	487	1902	1	12.20%	1.000	1.270
2024	8800	498	2400	1	12.20%	1.000	1.270
2025	8900	504	2904	1	12.20%	1.000	1.270
2026	9100	515	3419	1	12.20%	1.000	1.270
2027	9300	526	3945	1	12.20%	1.000	1.270
2028	9400	532	4477	1	12.20%	1.000	1.270
2029	9600	543	5020	1	12.20%	1.000	1.270
2030	9700	549	5569	1	12.20%	1.000	1.270
2031	9900	560	6129	1	12.20%	1.000	1.270
2032	10000	566	6695	1	12.20%	1.000	1.270
2033	10200	577	7272	1	12.20%	1.000	1.270
2034	10300	583	7855	1	12.20%	1.000	1.270
2035	10400	589	8444	1	12.20%	1.000	1.270
2036	10600	600	9044	1	12.20%	1.000	1.270
2037	10700	606	9650	1	12.20%	1.000	1.270
2038	10900	617	10267	1	12.20%	1.000	1.270
2039	11000	623	10890	1	12.20%	1.000	1.270
2040	11200	634	11524	1	12.20%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 5105

Opening to Design Year ESAL Accumulation (1000s): 11060

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 979003 - 92473003

LOCATION DESCRIPTION: I-4 WB Off Ramp to SR 429 NB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	5470
Mid-Design Year	2030	6510
Design Year	2040	7480

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	12.20%
Opening to Mid-Year	12.20%
Mid-Year to Design-Year	12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979003 - 92473003

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5400	217	217	1	12.20%	1.000	0.900
2021	5500	221	438	1	12.20%	1.000	0.900
2022	5600	225	663	1	12.20%	1.000	0.900
2023	5700	229	892	1	12.20%	1.000	0.900
2024	5800	233	1125	1	12.20%	1.000	0.900
2025	5900	237	1362	1	12.20%	1.000	0.900
2026	6000	241	1603	1	12.20%	1.000	0.900
2027	6100	245	1848	1	12.20%	1.000	0.900
2028	6300	253	2101	1	12.20%	1.000	0.900
2029	6400	257	2358	1	12.20%	1.000	0.900
2030	6500	261	2619	1	12.20%	1.000	0.900
2031	6600	265	2884	1	12.20%	1.000	0.900
2032	6700	269	3153	1	12.20%	1.000	0.900
2033	6800	273	3426	1	12.20%	1.000	0.900
2034	6800	273	3699	1	12.20%	1.000	0.900
2035	6900	277	3976	1	12.20%	1.000	0.900
2036	7000	281	4257	1	12.20%	1.000	0.900
2037	7100	285	4542	1	12.20%	1.000	0.900
2038	7200	289	4831	1	12.20%	1.000	0.900
2039	7300	293	5124	1	12.20%	1.000	0.900
2040	7400	297	5421	1	12.20%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2402

Opening to Design Year ESAL Accumulation (1000s): 5204

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979003 - 92473003

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 979003 - 92473003 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5400	306	306	1	12.20%	1.000	1.270
2021	5500	312	618	1	12.20%	1.000	1.270
2022	5600	317	935	1	12.20%	1.000	1.270
2023	5700	323	1258	1	12.20%	1.000	1.270
2024	5800	329	1587	1	12.20%	1.000	1.270
2025	5900	334	1921	1	12.20%	1.000	1.270
2026	6000	340	2261	1	12.20%	1.000	1.270
2027	6100	345	2606	1	12.20%	1.000	1.270
2028	6300	357	2963	1	12.20%	1.000	1.270
2029	6400	362	3325	1	12.20%	1.000	1.270
2030	6500	368	3693	1	12.20%	1.000	1.270
2031	6600	374	4067	1	12.20%	1.000	1.270
2032	6700	379	4446	1	12.20%	1.000	1.270
2033	6800	385	4831	1	12.20%	1.000	1.270
2034	6800	385	5216	1	12.20%	1.000	1.270
2035	6900	391	5607	1	12.20%	1.000	1.270
2036	7000	396	6003	1	12.20%	1.000	1.270
2037	7100	402	6405	1	12.20%	1.000	1.270
2038	7200	408	6813	1	12.20%	1.000	1.270
2039	7300	413	7226	1	12.20%	1.000	1.270
2040	7400	419	7645	1	12.20%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 3387

Opening to Design Year ESAL Accumulation (1000s): 7339

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92473000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 972800 - 92473000

LOCATION DESCRIPTION: SR 429 NB & SB North of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	18250
Mid-Design Year	2030	20620
Design Year	2040	24930

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 50%
Lanes in One Direction 2

T24 values
Existing to Opening Year 12.20%
Opening to Mid-Year 12.20%
Mid-Year to Design-Year 12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972800 - 92473000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92473000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	18200	294	294	0.5	12.20%	0.814	0.890
2021	18400	297	591	0.5	12.20%	0.813	0.890
2022	18700	301	892	0.5	12.20%	0.812	0.890
2023	18900	304	1196	0.5	12.20%	0.811	0.890
2024	19100	307	1503	0.5	12.20%	0.810	0.890
2025	19400	311	1814	0.5	12.20%	0.809	0.890
2026	19600	314	2128	0.5	12.20%	0.808	0.890
2027	19900	319	2447	0.5	12.20%	0.807	0.890
2028	20100	321	2768	0.5	12.20%	0.806	0.890
2029	20300	324	3092	0.5	12.20%	0.805	0.890
2030	20600	329	3421	0.5	12.20%	0.804	0.890
2031	21000	334	3755	0.5	12.20%	0.802	0.890
2032	21400	340	4095	0.5	12.20%	0.801	0.890
2033	21900	347	4442	0.5	12.20%	0.799	0.890
2034	22300	353	4795	0.5	12.20%	0.797	0.890
2035	22700	358	5153	0.5	12.20%	0.796	0.890
2036	23200	366	5519	0.5	12.20%	0.794	0.890
2037	23600	371	5890	0.5	12.20%	0.793	0.890
2038	24000	377	6267	0.5	12.20%	0.791	0.890
2039	24400	382	6649	0.5	12.20%	0.790	0.890
2040	24900	389	7038	0.5	12.20%	0.788	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 3127

Opening to Design Year ESAL Accumulation (1000s): 6744

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972800 - 92473000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92473000 **LOCATION #:** 972800 - 92473000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	18200	403	403	0.5	12.20%	0.814	1.220
2021	18400	407	810	0.5	12.20%	0.813	1.220
2022	18700	413	1223	0.5	12.20%	0.812	1.220
2023	18900	417	1640	0.5	12.20%	0.811	1.220
2024	19100	421	2061	0.5	12.20%	0.810	1.220
2025	19400	427	2488	0.5	12.20%	0.809	1.220
2026	19600	431	2919	0.5	12.20%	0.808	1.220
2027	19900	437	3356	0.5	12.20%	0.807	1.220
2028	20100	440	3796	0.5	12.20%	0.806	1.220
2029	20300	444	4240	0.5	12.20%	0.805	1.220
2030	20600	450	4690	0.5	12.20%	0.804	1.220
2031	21000	458	5148	0.5	12.20%	0.802	1.220
2032	21400	466	5614	0.5	12.20%	0.801	1.220
2033	21900	476	6090	0.5	12.20%	0.799	1.220
2034	22300	483	6573	0.5	12.20%	0.797	1.220
2035	22700	491	7064	0.5	12.20%	0.796	1.220
2036	23200	501	7565	0.5	12.20%	0.794	1.220
2037	23600	509	8074	0.5	12.20%	0.793	1.220
2038	24000	516	8590	0.5	12.20%	0.791	1.220
2039	24400	524	9114	0.5	12.20%	0.790	1.220
2040	24900	534	9648	0.5	12.20%	0.788	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 4287

Opening to Design Year ESAL Accumulation (1000s): 9245

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 979001 - 92473002

LOCATION DESCRIPTION: SR 429 SB to I-4 EB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	5470
Mid-Design Year	2030	6510
Design Year	2040	7480

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	12.20%
Opening to Mid-Year	12.20%
Mid-Year to Design-Year	12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979001 - 92473002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5400	217	217	1	12.20%	1.000	0.900
2021	5500	221	438	1	12.20%	1.000	0.900
2022	5600	225	663	1	12.20%	1.000	0.900
2023	5700	229	892	1	12.20%	1.000	0.900
2024	5800	233	1125	1	12.20%	1.000	0.900
2025	5900	237	1362	1	12.20%	1.000	0.900
2026	6000	241	1603	1	12.20%	1.000	0.900
2027	6100	245	1848	1	12.20%	1.000	0.900
2028	6300	253	2101	1	12.20%	1.000	0.900
2029	6400	257	2358	1	12.20%	1.000	0.900
2030	6500	261	2619	1	12.20%	1.000	0.900
2031	6600	265	2884	1	12.20%	1.000	0.900
2032	6700	269	3153	1	12.20%	1.000	0.900
2033	6800	273	3426	1	12.20%	1.000	0.900
2034	6800	273	3699	1	12.20%	1.000	0.900
2035	6900	277	3976	1	12.20%	1.000	0.900
2036	7000	281	4257	1	12.20%	1.000	0.900
2037	7100	285	4542	1	12.20%	1.000	0.900
2038	7200	289	4831	1	12.20%	1.000	0.900
2039	7300	293	5124	1	12.20%	1.000	0.900
2040	7400	297	5421	1	12.20%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2402

Opening to Design Year ESAL Accumulation (1000s): 5204

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979001 - 92473002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 979001 - 92473002 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5400	306	306	1	12.20%	1.000	1.270
2021	5500	312	618	1	12.20%	1.000	1.270
2022	5600	317	935	1	12.20%	1.000	1.270
2023	5700	323	1258	1	12.20%	1.000	1.270
2024	5800	329	1587	1	12.20%	1.000	1.270
2025	5900	334	1921	1	12.20%	1.000	1.270
2026	6000	340	2261	1	12.20%	1.000	1.270
2027	6100	345	2606	1	12.20%	1.000	1.270
2028	6300	357	2963	1	12.20%	1.000	1.270
2029	6400	362	3325	1	12.20%	1.000	1.270
2030	6500	368	3693	1	12.20%	1.000	1.270
2031	6600	374	4067	1	12.20%	1.000	1.270
2032	6700	379	4446	1	12.20%	1.000	1.270
2033	6800	385	4831	1	12.20%	1.000	1.270
2034	6800	385	5216	1	12.20%	1.000	1.270
2035	6900	391	5607	1	12.20%	1.000	1.270
2036	7000	396	6003	1	12.20%	1.000	1.270
2037	7100	402	6405	1	12.20%	1.000	1.270
2038	7200	408	6813	1	12.20%	1.000	1.270
2039	7300	413	7226	1	12.20%	1.000	1.270
2040	7400	419	7645	1	12.20%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 3387

Opening to Design Year ESAL Accumulation (1000s): 7339

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/19/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 979004 - 92473004

LOCATION DESCRIPTION: SR 429 SB to I-4 WB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	8220
Mid-Design Year	2030	8680
Design Year	2040	11220

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 2

T24 values

Existing to Opening Year: 12.20%
Opening to Mid-Year: 12.20%
Mid-Year to Design-Year: 12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979004 - 92473004

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	271	271	1	12.20%	0.823	0.900
2021	8200	271	542	1	12.20%	0.823	0.900
2022	8300	274	816	1	12.20%	0.822	0.900
2023	8300	274	1090	1	12.20%	0.822	0.900
2024	8400	277	1367	1	12.20%	0.821	0.900
2025	8400	277	1644	1	12.20%	0.821	0.900
2026	8400	277	1921	1	12.20%	0.821	0.900
2027	8500	280	2201	1	12.20%	0.820	0.900
2028	8500	280	2481	1	12.20%	0.820	0.900
2029	8600	283	2764	1	12.20%	0.819	0.900
2030	8600	283	3047	1	12.20%	0.819	0.900
2031	8900	292	3339	1	12.20%	0.816	0.900
2032	9100	297	3636	1	12.20%	0.814	0.900
2033	9400	306	3942	1	12.20%	0.811	0.900
2034	9600	312	4254	1	12.20%	0.810	0.900
2035	9900	321	4575	1	12.20%	0.807	0.900
2036	10200	329	4904	1	12.20%	0.805	0.900
2037	10400	335	5239	1	12.20%	0.803	0.900
2038	10700	344	5583	1	12.20%	0.801	0.900
2039	10900	350	5933	1	12.20%	0.799	0.900
2040	11200	358	6291	1	12.20%	0.797	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2776

Opening to Design Year ESAL Accumulation (1000s): 6020

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 979004 - 92473004

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 979004 - 92473004 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	382	382	1	12.20%	0.823	1.270
2021	8200	382	764	1	12.20%	0.823	1.270
2022	8300	386	1150	1	12.20%	0.822	1.270
2023	8300	386	1536	1	12.20%	0.822	1.270
2024	8400	390	1926	1	12.20%	0.821	1.270
2025	8400	390	2316	1	12.20%	0.821	1.270
2026	8400	390	2706	1	12.20%	0.821	1.270
2027	8500	395	3101	1	12.20%	0.820	1.270
2028	8500	395	3496	1	12.20%	0.820	1.270
2029	8600	399	3895	1	12.20%	0.819	1.270
2030	8600	399	4294	1	12.20%	0.819	1.270
2031	8900	411	4705	1	12.20%	0.816	1.270
2032	9100	419	5124	1	12.20%	0.814	1.270
2033	9400	432	5556	1	12.20%	0.811	1.270
2034	9600	440	5996	1	12.20%	0.810	1.270
2035	9900	452	6448	1	12.20%	0.807	1.270
2036	10200	465	6913	1	12.20%	0.805	1.270
2037	10400	473	7386	1	12.20%	0.803	1.270
2038	10700	485	7871	1	12.20%	0.801	1.270
2039	10900	493	8364	1	12.20%	0.799	1.270
2040	11200	505	8869	1	12.20%	0.797	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 3912

Opening to Design Year ESAL Accumulation (1000s): 8487

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX D

WORLD DRIVE

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922008 - 92130007

LOCATION DESCRIPTION: I-4 CD WB Off Ramp to World Drive SB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	6720
Mid-Design Year	2030	8000
Design Year	2040	9190

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922008 - 92130007

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	6700	111	111	1	5.00%	1.000	0.900
2021	6800	112	223	1	5.00%	1.000	0.900
2022	6900	114	337	1	5.00%	1.000	0.900
2023	7100	117	454	1	5.00%	1.000	0.900
2024	7200	119	573	1	5.00%	1.000	0.900
2025	7300	120	693	1	5.00%	1.000	0.900
2026	7400	122	815	1	5.00%	1.000	0.900
2027	7600	125	940	1	5.00%	1.000	0.900
2028	7700	127	1067	1	5.00%	1.000	0.900
2029	7800	129	1196	1	5.00%	1.000	0.900
2030	8000	132	1328	1	5.00%	1.000	0.900
2031	8100	134	1462	1	5.00%	1.000	0.900
2032	8200	135	1597	1	5.00%	1.000	0.900
2033	8300	137	1734	1	5.00%	1.000	0.900
2034	8400	138	1872	1	5.00%	1.000	0.900
2035	8500	140	2012	1	5.00%	1.000	0.900
2036	8700	143	2155	1	5.00%	1.000	0.900
2037	8800	145	2300	1	5.00%	1.000	0.900
2038	8900	147	2447	1	5.00%	1.000	0.900
2039	9000	148	2595	1	5.00%	1.000	0.900
2040	9100	150	2745	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1217

Opening to Design Year ESAL Accumulation (1000s): 2634

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922008 - 92130007

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922008 - 92130007 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	6700	156	156	1	5.00%	1.000	1.270
2021	6800	158	314	1	5.00%	1.000	1.270
2022	6900	160	474	1	5.00%	1.000	1.270
2023	7100	165	639	1	5.00%	1.000	1.270
2024	7200	167	806	1	5.00%	1.000	1.270
2025	7300	170	976	1	5.00%	1.000	1.270
2026	7400	172	1148	1	5.00%	1.000	1.270
2027	7600	177	1325	1	5.00%	1.000	1.270
2028	7700	179	1504	1	5.00%	1.000	1.270
2029	7800	181	1685	1	5.00%	1.000	1.270
2030	8000	186	1871	1	5.00%	1.000	1.270
2031	8100	188	2059	1	5.00%	1.000	1.270
2032	8200	191	2250	1	5.00%	1.000	1.270
2033	8300	193	2443	1	5.00%	1.000	1.270
2034	8400	195	2638	1	5.00%	1.000	1.270
2035	8500	198	2836	1	5.00%	1.000	1.270
2036	8700	202	3038	1	5.00%	1.000	1.270
2037	8800	204	3242	1	5.00%	1.000	1.270
2038	8900	207	3449	1	5.00%	1.000	1.270
2039	9000	209	3658	1	5.00%	1.000	1.270
2040	9100	211	3869	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 1715

Opening to Design Year ESAL Accumulation (1000s): 3713

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922009 - 92130002

LOCATION DESCRIPTION: I-4 CD WB On Ramp to I-4 WB GUL

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	20270
Mid-Design Year	2030	24230
Design Year	2040	27740

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 1

T24 values
Existing to Opening Year 5.00%
Opening to Mid-Year 5.00%
Mid-Year to Design-Year 5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922009 - 92130002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	20200	332	332	1	5.00%	1.000	0.900
2021	20600	339	671	1	5.00%	1.000	0.900
2022	21000	345	1016	1	5.00%	1.000	0.900
2023	21400	352	1368	1	5.00%	1.000	0.900
2024	21800	359	1727	1	5.00%	1.000	0.900
2025	22200	365	2092	1	5.00%	1.000	0.900
2026	22600	372	2464	1	5.00%	1.000	0.900
2027	23000	378	2842	1	5.00%	1.000	0.900
2028	23400	385	3227	1	5.00%	1.000	0.900
2029	23800	391	3618	1	5.00%	1.000	0.900
2030	24200	398	4016	1	5.00%	1.000	0.900
2031	24500	403	4419	1	5.00%	1.000	0.900
2032	24900	409	4828	1	5.00%	1.000	0.900
2033	25200	414	5242	1	5.00%	1.000	0.900
2034	25600	421	5663	1	5.00%	1.000	0.900
2035	25900	426	6089	1	5.00%	1.000	0.900
2036	26300	432	6521	1	5.00%	1.000	0.900
2037	26600	437	6958	1	5.00%	1.000	0.900
2038	27000	444	7402	1	5.00%	1.000	0.900
2039	27300	449	7851	1	5.00%	1.000	0.900
2040	27700	455	8306	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3684

Opening to Design Year ESAL Accumulation (1000s): 7974

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922009 - 92130002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922009 - 92130002 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	20200	469	469	1	5.00%	1.000	1.270
2021	20600	478	947	1	5.00%	1.000	1.270
2022	21000	487	1434	1	5.00%	1.000	1.270
2023	21400	496	1930	1	5.00%	1.000	1.270
2024	21800	506	2436	1	5.00%	1.000	1.270
2025	22200	515	2951	1	5.00%	1.000	1.270
2026	22600	524	3475	1	5.00%	1.000	1.270
2027	23000	534	4009	1	5.00%	1.000	1.270
2028	23400	543	4552	1	5.00%	1.000	1.270
2029	23800	552	5104	1	5.00%	1.000	1.270
2030	24200	561	5665	1	5.00%	1.000	1.270
2031	24500	568	6233	1	5.00%	1.000	1.270
2032	24900	578	6811	1	5.00%	1.000	1.270
2033	25200	585	7396	1	5.00%	1.000	1.270
2034	25600	594	7990	1	5.00%	1.000	1.270
2035	25900	601	8591	1	5.00%	1.000	1.270
2036	26300	610	9201	1	5.00%	1.000	1.270
2037	26600	617	9818	1	5.00%	1.000	1.270
2038	27000	626	10444	1	5.00%	1.000	1.270
2039	27300	633	11077	1	5.00%	1.000	1.270
2040	27700	643	11720	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 5196

Opening to Design Year ESAL Accumulation (1000s): 11251

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922006 - 92130004

LOCATION DESCRIPTION: I-4 EB CD Off Ramp to World Drive Ramp NB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	7830
Mid-Design Year	2030	9320
Design Year	2040	10720

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922006 - 92130004

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	129	129	1	5.00%	1.000	0.900
2021	7900	130	259	1	5.00%	1.000	0.900
2022	8100	134	393	1	5.00%	1.000	0.900
2023	8200	135	528	1	5.00%	1.000	0.900
2024	8400	138	666	1	5.00%	1.000	0.900
2025	8500	140	806	1	5.00%	1.000	0.900
2026	8700	143	949	1	5.00%	1.000	0.900
2027	8800	145	1094	1	5.00%	1.000	0.900
2028	9000	148	1242	1	5.00%	1.000	0.900
2029	9100	150	1392	1	5.00%	1.000	0.900
2030	9300	153	1545	1	5.00%	1.000	0.900
2031	9400	155	1700	1	5.00%	1.000	0.900
2032	9600	158	1858	1	5.00%	1.000	0.900
2033	9700	160	2018	1	5.00%	1.000	0.900
2034	9800	161	2179	1	5.00%	1.000	0.900
2035	10000	165	2344	1	5.00%	1.000	0.900
2036	10100	166	2510	1	5.00%	1.000	0.900
2037	10300	170	2680	1	5.00%	1.000	0.900
2038	10400	171	2851	1	5.00%	1.000	0.900
2039	10500	173	3024	1	5.00%	1.000	0.900
2040	10700	176	3200	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1416

Opening to Design Year ESAL Accumulation (1000s): 3071

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922006 - 92130004

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922006 - 92130004 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	181	181	1	5.00%	1.000	1.270
2021	7900	184	365	1	5.00%	1.000	1.270
2022	8100	188	553	1	5.00%	1.000	1.270
2023	8200	191	744	1	5.00%	1.000	1.270
2024	8400	195	939	1	5.00%	1.000	1.270
2025	8500	198	1137	1	5.00%	1.000	1.270
2026	8700	202	1339	1	5.00%	1.000	1.270
2027	8800	204	1543	1	5.00%	1.000	1.270
2028	9000	209	1752	1	5.00%	1.000	1.270
2029	9100	211	1963	1	5.00%	1.000	1.270
2030	9300	216	2179	1	5.00%	1.000	1.270
2031	9400	218	2397	1	5.00%	1.000	1.270
2032	9600	223	2620	1	5.00%	1.000	1.270
2033	9700	225	2845	1	5.00%	1.000	1.270
2034	9800	228	3073	1	5.00%	1.000	1.270
2035	10000	232	3305	1	5.00%	1.000	1.270
2036	10100	235	3540	1	5.00%	1.000	1.270
2037	10300	239	3779	1	5.00%	1.000	1.270
2038	10400	242	4021	1	5.00%	1.000	1.270
2039	10500	244	4265	1	5.00%	1.000	1.270
2040	10700	248	4513	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 1998

Opening to Design Year ESAL Accumulation (1000s): 4332

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922004 - 92130003

LOCATION DESCRIPTION: I-4 EB CD Off Ramp to World Drive SB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	3230
Mid-Design Year	2030	3290
Design Year	2040	3480

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 1

T24 values
Existing to Opening Year 5.00%
Opening to Mid-Year 5.00%
Mid-Year to Design-Year 5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922004 - 92130003

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	3200	53	53	1	5.00%	1.000	0.900
2021	3200	53	106	1	5.00%	1.000	0.900
2022	3200	53	159	1	5.00%	1.000	0.900
2023	3200	53	212	1	5.00%	1.000	0.900
2024	3200	53	265	1	5.00%	1.000	0.900
2025	3200	53	318	1	5.00%	1.000	0.900
2026	3200	53	371	1	5.00%	1.000	0.900
2027	3200	53	424	1	5.00%	1.000	0.900
2028	3200	53	477	1	5.00%	1.000	0.900
2029	3200	53	530	1	5.00%	1.000	0.900
2030	3200	53	583	1	5.00%	1.000	0.900
2031	3300	55	638	1	5.00%	1.000	0.900
2032	3300	55	693	1	5.00%	1.000	0.900
2033	3300	55	748	1	5.00%	1.000	0.900
2034	3300	55	803	1	5.00%	1.000	0.900
2035	3300	55	858	1	5.00%	1.000	0.900
2036	3400	56	914	1	5.00%	1.000	0.900
2037	3400	56	970	1	5.00%	1.000	0.900
2038	3400	56	1026	1	5.00%	1.000	0.900
2039	3400	56	1082	1	5.00%	1.000	0.900
2040	3400	56	1138	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 530

Opening to Design Year ESAL Accumulation (1000s): 1085

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922004 - 92130003

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922004 - 92130003 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	3200	75	75	1	5.00%	1.000	1.270
2021	3200	75	150	1	5.00%	1.000	1.270
2022	3200	75	225	1	5.00%	1.000	1.270
2023	3200	75	300	1	5.00%	1.000	1.270
2024	3200	75	375	1	5.00%	1.000	1.270
2025	3200	75	450	1	5.00%	1.000	1.270
2026	3200	75	525	1	5.00%	1.000	1.270
2027	3200	75	600	1	5.00%	1.000	1.270
2028	3200	75	675	1	5.00%	1.000	1.270
2029	3200	75	750	1	5.00%	1.000	1.270
2030	3200	75	825	1	5.00%	1.000	1.270
2031	3300	77	902	1	5.00%	1.000	1.270
2032	3300	77	979	1	5.00%	1.000	1.270
2033	3300	77	1056	1	5.00%	1.000	1.270
2034	3300	77	1133	1	5.00%	1.000	1.270
2035	3300	77	1210	1	5.00%	1.000	1.270
2036	3400	79	1289	1	5.00%	1.000	1.270
2037	3400	79	1368	1	5.00%	1.000	1.270
2038	3400	79	1447	1	5.00%	1.000	1.270
2039	3400	79	1526	1	5.00%	1.000	1.270
2040	3400	79	1605	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 750

Opening to Design Year ESAL Accumulation (1000s): 1530

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928000 - 92130001

LOCATION DESCRIPTION: I-4 EB Off Ramp to I-4 EB CD

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	19660
Mid-Design Year	2030	23660
Design Year	2040	27220

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	12.70%
Opening to Mid-Year	12.70%
Mid-Year to Design-Year	12.70%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928000 - 92130001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	19600	614	614	1	12.70%	0.751	0.900
2021	20000	625	1239	1	12.70%	0.749	0.900
2022	20400	637	1876	1	12.70%	0.747	0.900
2023	20800	648	2524	1	12.70%	0.746	0.900
2024	21200	659	3183	1	12.70%	0.744	0.900
2025	21600	670	3853	1	12.70%	0.743	0.900
2026	22000	681	4534	1	12.70%	0.741	0.900
2027	22400	692	5226	1	12.70%	0.740	0.900
2028	22800	703	5929	1	12.70%	0.738	0.900
2029	23200	714	6643	1	12.70%	0.737	0.900
2030	23600	724	7367	1	12.70%	0.735	0.900
2031	24000	735	8102	1	12.70%	0.734	0.900
2032	24300	743	8845	1	12.70%	0.733	0.900
2033	24700	754	9599	1	12.70%	0.732	0.900
2034	25000	762	10361	1	12.70%	0.731	0.900
2035	25400	773	11134	1	12.70%	0.729	0.900
2036	25700	781	11915	1	12.70%	0.728	0.900
2037	26100	792	12707	1	12.70%	0.727	0.900
2038	26500	803	13510	1	12.70%	0.726	0.900
2039	26800	811	14321	1	12.70%	0.725	0.900
2040	27200	822	15143	1	12.70%	0.724	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 6753

Opening to Design Year ESAL Accumulation (1000s): 14529

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928000 - 92130001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 928000 - 92130001 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	19600	867	867	1	12.70%	0.751	1.270
2021	20000	882	1749	1	12.70%	0.749	1.270
2022	20400	898	2647	1	12.70%	0.747	1.270
2023	20800	914	3561	1	12.70%	0.746	1.270
2024	21200	929	4490	1	12.70%	0.744	1.270
2025	21600	945	5435	1	12.70%	0.743	1.270
2026	22000	960	6395	1	12.70%	0.741	1.270
2027	22400	976	7371	1	12.70%	0.740	1.270
2028	22800	991	8362	1	12.70%	0.738	1.270
2029	23200	1007	9369	1	12.70%	0.737	1.270
2030	23600	1022	10391	1	12.70%	0.735	1.270
2031	24000	1037	11428	1	12.70%	0.734	1.270
2032	24300	1049	12477	1	12.70%	0.733	1.270
2033	24700	1064	13541	1	12.70%	0.732	1.270
2034	25000	1076	14617	1	12.70%	0.731	1.270
2035	25400	1091	15708	1	12.70%	0.729	1.270
2036	25700	1102	16810	1	12.70%	0.728	1.270
2037	26100	1118	17928	1	12.70%	0.727	1.270
2038	26500	1133	19061	1	12.70%	0.726	1.270
2039	26800	1144	20205	1	12.70%	0.725	1.270
2040	27200	1159	21364	1	12.70%	0.724	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 9524

Opening to Design Year ESAL Accumulation (1000s): 20497

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92515000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 927062 - 92515000

LOCATION DESCRIPTION: World Dr N of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	23560
Mid-Design Year	2030	32230
Design Year	2040	31850

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	4.80%
Opening to Mid-Year	4.80%
Mid-Year to Design-Year	4.80%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 927062 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92515000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	23500	146	146	0.5	4.80%	0.793	0.890
2021	24400	151	297	0.5	4.80%	0.790	0.890
2022	25200	155	452	0.5	4.80%	0.787	0.890
2023	26100	160	612	0.5	4.80%	0.784	0.890
2024	27000	165	777	0.5	4.80%	0.781	0.890
2025	27800	169	946	0.5	4.80%	0.779	0.890
2026	28700	174	1120	0.5	4.80%	0.776	0.890
2027	29600	179	1299	0.5	4.80%	0.774	0.890
2028	30400	183	1482	0.5	4.80%	0.772	0.890
2029	31300	188	1670	0.5	4.80%	0.769	0.890
2030	32200	193	1863	0.5	4.80%	0.767	0.890
2031	32100	192	2055	0.5	4.80%	0.767	0.890
2032	32100	192	2247	0.5	4.80%	0.767	0.890
2033	32100	192	2439	0.5	4.80%	0.767	0.890
2034	32000	192	2631	0.5	4.80%	0.767	0.890
2035	32000	192	2823	0.5	4.80%	0.767	0.890
2036	32000	192	3015	0.5	4.80%	0.767	0.890
2037	31900	191	3206	0.5	4.80%	0.768	0.890
2038	31900	191	3397	0.5	4.80%	0.768	0.890
2039	31800	191	3588	0.5	4.80%	0.768	0.890
2040	31800	191	3779	0.5	4.80%	0.768	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 1717

Opening to Design Year ESAL Accumulation (1000s): 3633

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 927062 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92515000 **LOCATION #:** 927062 - 92515000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	23500	200	200	0.5	4.80%	0.793	1.220
2021	24400	206	406	0.5	4.80%	0.790	1.220
2022	25200	212	618	0.5	4.80%	0.787	1.220
2023	26100	219	837	0.5	4.80%	0.784	1.220
2024	27000	226	1063	0.5	4.80%	0.781	1.220
2025	27800	232	1295	0.5	4.80%	0.779	1.220
2026	28700	239	1534	0.5	4.80%	0.776	1.220
2027	29600	245	1779	0.5	4.80%	0.774	1.220
2028	30400	251	2030	0.5	4.80%	0.772	1.220
2029	31300	258	2288	0.5	4.80%	0.769	1.220
2030	32200	264	2552	0.5	4.80%	0.767	1.220
2031	32100	264	2816	0.5	4.80%	0.767	1.220
2032	32100	264	3080	0.5	4.80%	0.767	1.220
2033	32100	264	3344	0.5	4.80%	0.767	1.220
2034	32000	263	3607	0.5	4.80%	0.767	1.220
2035	32000	263	3870	0.5	4.80%	0.767	1.220
2036	32000	263	4133	0.5	4.80%	0.767	1.220
2037	31900	262	4395	0.5	4.80%	0.768	1.220
2038	31900	262	4657	0.5	4.80%	0.768	1.220
2039	31800	261	4918	0.5	4.80%	0.768	1.220
2040	31800	261	5179	0.5	4.80%	0.768	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 2352

Opening to Design Year ESAL Accumulation (1000s): 4979

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92150000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928059 - 92515000

LOCATION DESCRIPTION: World Dr NB On Ramp to I-4 CD WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	5810
Mid-Design Year	2030	6990
Design Year	2040	7940

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928059 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92150000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5800	96	96	1	5.00%	1.000	0.900
2021	5900	97	193	1	5.00%	1.000	0.900
2022	6000	99	292	1	5.00%	1.000	0.900
2023	6100	101	393	1	5.00%	1.000	0.900
2024	6200	102	495	1	5.00%	1.000	0.900
2025	6400	106	601	1	5.00%	1.000	0.900
2026	6500	107	708	1	5.00%	1.000	0.900
2027	6600	109	817	1	5.00%	1.000	0.900
2028	6700	111	928	1	5.00%	1.000	0.900
2029	6800	112	1040	1	5.00%	1.000	0.900
2030	6900	114	1154	1	5.00%	1.000	0.900
2031	7000	115	1269	1	5.00%	1.000	0.900
2032	7100	117	1386	1	5.00%	1.000	0.900
2033	7200	119	1505	1	5.00%	1.000	0.900
2034	7300	120	1625	1	5.00%	1.000	0.900
2035	7400	122	1747	1	5.00%	1.000	0.900
2036	7500	124	1871	1	5.00%	1.000	0.900
2037	7600	125	1996	1	5.00%	1.000	0.900
2038	7700	127	2123	1	5.00%	1.000	0.900
2039	7800	129	2252	1	5.00%	1.000	0.900
2040	7900	130	2382	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1058

Opening to Design Year ESAL Accumulation (1000s): 2286

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928059 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92150000 **LOCATION #:** 928059 - 92515000 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5800	135	135	1	5.00%	1.000	1.270
2021	5900	137	272	1	5.00%	1.000	1.270
2022	6000	140	412	1	5.00%	1.000	1.270
2023	6100	142	554	1	5.00%	1.000	1.270
2024	6200	144	698	1	5.00%	1.000	1.270
2025	6400	149	847	1	5.00%	1.000	1.270
2026	6500	151	998	1	5.00%	1.000	1.270
2027	6600	153	1151	1	5.00%	1.000	1.270
2028	6700	156	1307	1	5.00%	1.000	1.270
2029	6800	158	1465	1	5.00%	1.000	1.270
2030	6900	160	1625	1	5.00%	1.000	1.270
2031	7000	163	1788	1	5.00%	1.000	1.270
2032	7100	165	1953	1	5.00%	1.000	1.270
2033	7200	167	2120	1	5.00%	1.000	1.270
2034	7300	170	2290	1	5.00%	1.000	1.270
2035	7400	172	2462	1	5.00%	1.000	1.270
2036	7500	174	2636	1	5.00%	1.000	1.270
2037	7600	177	2813	1	5.00%	1.000	1.270
2038	7700	179	2992	1	5.00%	1.000	1.270
2039	7800	181	3173	1	5.00%	1.000	1.270
2040	7900	184	3357	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 1490

Opening to Design Year ESAL Accumulation (1000s): 3222

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92515000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 927062 - 92515000

LOCATION DESCRIPTION: World Dr S of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	20100
Mid-Design Year	2030	24220
Design Year	2040	27390

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	4.80%
Opening to Mid-Year	4.80%
Mid-Year to Design-Year	4.80%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 927062 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92515000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	20100	127	127	0.5	4.80%	0.806	0.890
2021	20500	129	256	0.5	4.80%	0.804	0.890
2022	20900	131	387	0.5	4.80%	0.803	0.890
2023	21300	134	521	0.5	4.80%	0.801	0.890
2024	21700	136	657	0.5	4.80%	0.799	0.890
2025	22100	138	795	0.5	4.80%	0.798	0.890
2026	22500	140	935	0.5	4.80%	0.796	0.890
2027	22900	142	1077	0.5	4.80%	0.795	0.890
2028	23300	145	1222	0.5	4.80%	0.794	0.890
2029	23800	147	1369	0.5	4.80%	0.792	0.890
2030	24200	150	1519	0.5	4.80%	0.790	0.890
2031	24500	151	1670	0.5	4.80%	0.789	0.890
2032	24800	153	1823	0.5	4.80%	0.788	0.890
2033	25100	155	1978	0.5	4.80%	0.787	0.890
2034	25400	156	2134	0.5	4.80%	0.786	0.890
2035	25800	158	2292	0.5	4.80%	0.785	0.890
2036	26100	160	2452	0.5	4.80%	0.784	0.890
2037	26400	162	2614	0.5	4.80%	0.783	0.890
2038	26700	163	2777	0.5	4.80%	0.782	0.890
2039	27000	165	2942	0.5	4.80%	0.781	0.890
2040	27300	167	3109	0.5	4.80%	0.781	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 1392

Opening to Design Year ESAL Accumulation (1000s): 2982

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 927062 - 92515000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92515000 **LOCATION #:** 927062 - 92515000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	20100	174	174	0.5	4.80%	0.806	1.220
2021	20500	177	351	0.5	4.80%	0.804	1.220
2022	20900	180	531	0.5	4.80%	0.803	1.220
2023	21300	183	714	0.5	4.80%	0.801	1.220
2024	21700	186	900	0.5	4.80%	0.799	1.220
2025	22100	189	1089	0.5	4.80%	0.798	1.220
2026	22500	192	1281	0.5	4.80%	0.796	1.220
2027	22900	195	1476	0.5	4.80%	0.795	1.220
2028	23300	198	1674	0.5	4.80%	0.794	1.220
2029	23800	202	1876	0.5	4.80%	0.792	1.220
2030	24200	205	2081	0.5	4.80%	0.790	1.220
2031	24500	207	2288	0.5	4.80%	0.789	1.220
2032	24800	209	2497	0.5	4.80%	0.788	1.220
2033	25100	212	2709	0.5	4.80%	0.787	1.220
2034	25400	214	2923	0.5	4.80%	0.786	1.220
2035	25800	217	3140	0.5	4.80%	0.785	1.220
2036	26100	219	3359	0.5	4.80%	0.784	1.220
2037	26400	222	3581	0.5	4.80%	0.783	1.220
2038	26700	224	3805	0.5	4.80%	0.782	1.220
2039	27000	226	4031	0.5	4.80%	0.781	1.220
2040	27300	228	4259	0.5	4.80%	0.781	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 1907

Opening to Design Year ESAL Accumulation (1000s): 4085

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922005 - 92130005

LOCATION DESCRIPTION: World Drive NB On Ramp to I-4 CD EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	3550
Mid-Design Year	2030	4550
Design Year	2040	4910

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922005 - 92130005

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	3500	58	58	1	5.00%	1.000	0.900
2021	3600	60	118	1	5.00%	1.000	0.900
2022	3700	61	179	1	5.00%	1.000	0.900
2023	3800	63	242	1	5.00%	1.000	0.900
2024	3900	65	307	1	5.00%	1.000	0.900
2025	4000	66	373	1	5.00%	1.000	0.900
2026	4100	68	441	1	5.00%	1.000	0.900
2027	4200	69	510	1	5.00%	1.000	0.900
2028	4300	71	581	1	5.00%	1.000	0.900
2029	4400	73	654	1	5.00%	1.000	0.900
2030	4500	74	728	1	5.00%	1.000	0.900
2031	4500	74	802	1	5.00%	1.000	0.900
2032	4600	76	878	1	5.00%	1.000	0.900
2033	4600	76	954	1	5.00%	1.000	0.900
2034	4600	76	1030	1	5.00%	1.000	0.900
2035	4700	78	1108	1	5.00%	1.000	0.900
2036	4700	78	1186	1	5.00%	1.000	0.900
2037	4800	79	1265	1	5.00%	1.000	0.900
2038	4800	79	1344	1	5.00%	1.000	0.900
2039	4800	79	1423	1	5.00%	1.000	0.900
2040	4900	81	1504	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 670

Opening to Design Year ESAL Accumulation (1000s): 1446

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922005 - 92130005

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922005 - 92130005 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	3500	82	82	1	5.00%	1.000	1.270
2021	3600	84	166	1	5.00%	1.000	1.270
2022	3700	86	252	1	5.00%	1.000	1.270
2023	3800	89	341	1	5.00%	1.000	1.270
2024	3900	91	432	1	5.00%	1.000	1.270
2025	4000	93	525	1	5.00%	1.000	1.270
2026	4100	96	621	1	5.00%	1.000	1.270
2027	4200	98	719	1	5.00%	1.000	1.270
2028	4300	100	819	1	5.00%	1.000	1.270
2029	4400	102	921	1	5.00%	1.000	1.270
2030	4500	105	1026	1	5.00%	1.000	1.270
2031	4500	105	1131	1	5.00%	1.000	1.270
2032	4600	107	1238	1	5.00%	1.000	1.270
2033	4600	107	1345	1	5.00%	1.000	1.270
2034	4600	107	1452	1	5.00%	1.000	1.270
2035	4700	109	1561	1	5.00%	1.000	1.270
2036	4700	109	1670	1	5.00%	1.000	1.270
2037	4800	112	1782	1	5.00%	1.000	1.270
2038	4800	112	1894	1	5.00%	1.000	1.270
2039	4800	112	2006	1	5.00%	1.000	1.270
2040	4900	114	2120	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 944

Opening to Design Year ESAL Accumulation (1000s): 2038

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922009 - 92130008

LOCATION DESCRIPTION: World Drive SB On Ramp to I-4 CD WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	5660
Mid-Design Year	2030	6750
Design Year	2040	7750

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922009 - 92130008

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5600	92	92	1	5.00%	1.000	0.900
2021	5700	94	186	1	5.00%	1.000	0.900
2022	5800	96	282	1	5.00%	1.000	0.900
2023	5900	97	379	1	5.00%	1.000	0.900
2024	6000	99	478	1	5.00%	1.000	0.900
2025	6200	102	580	1	5.00%	1.000	0.900
2026	6300	104	684	1	5.00%	1.000	0.900
2027	6400	106	790	1	5.00%	1.000	0.900
2028	6500	107	897	1	5.00%	1.000	0.900
2029	6600	109	1006	1	5.00%	1.000	0.900
2030	6700	111	1117	1	5.00%	1.000	0.900
2031	6800	112	1229	1	5.00%	1.000	0.900
2032	6900	114	1343	1	5.00%	1.000	0.900
2033	7000	115	1458	1	5.00%	1.000	0.900
2034	7100	117	1575	1	5.00%	1.000	0.900
2035	7200	119	1694	1	5.00%	1.000	0.900
2036	7300	120	1814	1	5.00%	1.000	0.900
2037	7400	122	1936	1	5.00%	1.000	0.900
2038	7500	124	2060	1	5.00%	1.000	0.900
2039	7600	125	2185	1	5.00%	1.000	0.900
2040	7700	127	2312	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1025

Opening to Design Year ESAL Accumulation (1000s): 2220

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922009 - 92130008

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922009 - 92130008 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5600	130	130	1	5.00%	1.000	1.270
2021	5700	133	263	1	5.00%	1.000	1.270
2022	5800	135	398	1	5.00%	1.000	1.270
2023	5900	137	535	1	5.00%	1.000	1.270
2024	6000	140	675	1	5.00%	1.000	1.270
2025	6200	144	819	1	5.00%	1.000	1.270
2026	6300	147	966	1	5.00%	1.000	1.270
2027	6400	149	1115	1	5.00%	1.000	1.270
2028	6500	151	1266	1	5.00%	1.000	1.270
2029	6600	153	1419	1	5.00%	1.000	1.270
2030	6700	156	1575	1	5.00%	1.000	1.270
2031	6800	158	1733	1	5.00%	1.000	1.270
2032	6900	160	1893	1	5.00%	1.000	1.270
2033	7000	163	2056	1	5.00%	1.000	1.270
2034	7100	165	2221	1	5.00%	1.000	1.270
2035	7200	167	2388	1	5.00%	1.000	1.270
2036	7300	170	2558	1	5.00%	1.000	1.270
2037	7400	172	2730	1	5.00%	1.000	1.270
2038	7500	174	2904	1	5.00%	1.000	1.270
2039	7600	177	3081	1	5.00%	1.000	1.270
2040	7700	179	3260	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 1445

Opening to Design Year ESAL Accumulation (1000s): 3130

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922030 - 92130012

LOCATION DESCRIPTION: World Drive SB On Ramp to I-4 CD EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	8160
Mid-Design Year	2030	9720
Design Year	2040	11170

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	28.50%
Opening to Mid-Year	28.50%
Mid-Year to Design-Year	28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922030 - 92130012

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8100	625	625	1	28.50%	0.824	0.900
2021	8300	639	1264	1	28.50%	0.822	0.900
2022	8400	646	1910	1	28.50%	0.821	0.900
2023	8600	660	2570	1	28.50%	0.819	0.900
2024	8700	667	3237	1	28.50%	0.818	0.900
2025	8900	680	3917	1	28.50%	0.816	0.900
2026	9000	687	4604	1	28.50%	0.815	0.900
2027	9200	701	5305	1	28.50%	0.813	0.900
2028	9400	715	6020	1	28.50%	0.811	0.900
2029	9500	721	6741	1	28.50%	0.810	0.900
2030	9700	735	7476	1	28.50%	0.809	0.900
2031	9800	742	8218	1	28.50%	0.808	0.900
2032	10000	755	8973	1	28.50%	0.806	0.900
2033	10100	762	9735	1	28.50%	0.805	0.900
2034	10300	776	10511	1	28.50%	0.804	0.900
2035	10400	782	11293	1	28.50%	0.803	0.900
2036	10500	789	12082	1	28.50%	0.802	0.900
2037	10700	803	12885	1	28.50%	0.801	0.900
2038	10800	809	13694	1	28.50%	0.800	0.900
2039	11000	823	14517	1	28.50%	0.798	0.900
2040	11100	829	15346	1	28.50%	0.798	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 6851

Opening to Design Year ESAL Accumulation (1000s): 14721

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922030 - 92130012

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922030 - 92130012 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8100	882	882	1	28.50%	0.824	1.270
2021	8300	901	1783	1	28.50%	0.822	1.270
2022	8400	911	2694	1	28.50%	0.821	1.270
2023	8600	931	3625	1	28.50%	0.819	1.270
2024	8700	940	4565	1	28.50%	0.818	1.270
2025	8900	960	5525	1	28.50%	0.816	1.270
2026	9000	969	6494	1	28.50%	0.815	1.270
2027	9200	989	7483	1	28.50%	0.813	1.270
2028	9400	1008	8491	1	28.50%	0.811	1.270
2029	9500	1018	9509	1	28.50%	0.810	1.270
2030	9700	1037	10546	1	28.50%	0.809	1.270
2031	9800	1046	11592	1	28.50%	0.808	1.270
2032	10000	1066	12658	1	28.50%	0.806	1.270
2033	10100	1075	13733	1	28.50%	0.805	1.270
2034	10300	1094	14827	1	28.50%	0.804	1.270
2035	10400	1104	15931	1	28.50%	0.803	1.270
2036	10500	1113	17044	1	28.50%	0.802	1.270
2037	10700	1132	18176	1	28.50%	0.801	1.270
2038	10800	1142	19318	1	28.50%	0.800	1.270
2039	11000	1161	20479	1	28.50%	0.798	1.270
2040	11100	1170	21649	1	28.50%	0.798	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 9664

Opening to Design Year ESAL Accumulation (1000s): 20767

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX D

SR 417

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92472001
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 972610 - 92472001

LOCATION DESCRIPTION: I-4 CD NB Off Ramp to SR 417 EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	9900
Mid-Design Year	2030	11740
Design Year	2040	13490

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 2

T24 values

Existing to Opening Year: 12.20%
Opening to Mid-Year: 12.20%
Mid-Year to Design-Year: 12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972610 - 92472001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92472001 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9900	321	321	1	12.20%	0.807	0.900
2021	10000	324	645	1	12.20%	0.806	0.900
2022	10200	329	974	1	12.20%	0.805	0.900
2023	10400	335	1309	1	12.20%	0.803	0.900
2024	10600	341	1650	1	12.20%	0.801	0.900
2025	10800	347	1997	1	12.20%	0.800	0.900
2026	11000	352	2349	1	12.20%	0.798	0.900
2027	11100	355	2704	1	12.20%	0.798	0.900
2028	11300	361	3065	1	12.20%	0.796	0.900
2029	11500	367	3432	1	12.20%	0.795	0.900
2030	11700	372	3804	1	12.20%	0.793	0.900
2031	11900	378	4182	1	12.20%	0.792	0.900
2032	12000	381	4563	1	12.20%	0.791	0.900
2033	12200	387	4950	1	12.20%	0.790	0.900
2034	12400	392	5342	1	12.20%	0.788	0.900
2035	12600	398	5740	1	12.20%	0.787	0.900
2036	12700	401	6141	1	12.20%	0.786	0.900
2037	12900	406	6547	1	12.20%	0.785	0.900
2038	13100	412	6959	1	12.20%	0.784	0.900
2039	13300	418	7377	1	12.20%	0.783	0.900
2040	13400	420	7797	1	12.20%	0.782	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3483

Opening to Design Year ESAL Accumulation (1000s): 7476

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972610 - 92472001

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92472001 **LOCATION #:** 972610 - 92472001 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9900	452	452	1	12.20%	0.807	1.270
2021	10000	456	908	1	12.20%	0.806	1.270
2022	10200	465	1373	1	12.20%	0.805	1.270
2023	10400	473	1846	1	12.20%	0.803	1.270
2024	10600	481	2327	1	12.20%	0.801	1.270
2025	10800	489	2816	1	12.20%	0.800	1.270
2026	11000	497	3313	1	12.20%	0.798	1.270
2027	11100	501	3814	1	12.20%	0.798	1.270
2028	11300	509	4323	1	12.20%	0.796	1.270
2029	11500	517	4840	1	12.20%	0.795	1.270
2030	11700	525	5365	1	12.20%	0.793	1.270
2031	11900	533	5898	1	12.20%	0.792	1.270
2032	12000	537	6435	1	12.20%	0.791	1.270
2033	12200	545	6980	1	12.20%	0.790	1.270
2034	12400	553	7533	1	12.20%	0.788	1.270
2035	12600	561	8094	1	12.20%	0.787	1.270
2036	12700	565	8659	1	12.20%	0.786	1.270
2037	12900	573	9232	1	12.20%	0.785	1.270
2038	13100	581	9813	1	12.20%	0.784	1.270
2039	13300	589	10402	1	12.20%	0.783	1.270
2040	13400	593	10995	1	12.20%	0.782	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 4913

Opening to Design Year ESAL Accumulation (1000s): 10543

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92472002
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 972610 - 92472002

LOCATION DESCRIPTION: SR 417 WB Off Ramp to I-4 CD SB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	9790
Mid-Design Year	2030	11660
Design Year	2040	13390

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 2

T24 values

Existing to Opening Year: 12.20%
Opening to Mid-Year: 12.20%
Mid-Year to Design-Year: 12.20%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972610 - 92472002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92472002 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9700	315	315	1	12.20%	0.809	0.900
2021	9900	321	636	1	12.20%	0.807	0.900
2022	10100	327	963	1	12.20%	0.805	0.900
2023	10300	332	1295	1	12.20%	0.804	0.900
2024	10500	338	1633	1	12.20%	0.802	0.900
2025	10700	344	1977	1	12.20%	0.801	0.900
2026	10900	350	2327	1	12.20%	0.799	0.900
2027	11000	352	2679	1	12.20%	0.798	0.900
2028	11200	358	3037	1	12.20%	0.797	0.900
2029	11400	364	3401	1	12.20%	0.795	0.900
2030	11600	370	3771	1	12.20%	0.794	0.900
2031	11800	375	4146	1	12.20%	0.793	0.900
2032	12000	381	4527	1	12.20%	0.791	0.900
2033	12100	384	4911	1	12.20%	0.790	0.900
2034	12300	389	5300	1	12.20%	0.789	0.900
2035	12500	395	5695	1	12.20%	0.788	0.900
2036	12600	398	6093	1	12.20%	0.787	0.900
2037	12800	404	6497	1	12.20%	0.786	0.900
2038	13000	409	6906	1	12.20%	0.785	0.900
2039	13200	415	7321	1	12.20%	0.783	0.900
2040	13300	418	7739	1	12.20%	0.783	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3456

Opening to Design Year ESAL Accumulation (1000s): 7424

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 972610 - 92472002

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92472002 **LOCATION #:** 972610 - 92472002 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9700	444	444	1	12.20%	0.809	1.270
2021	9900	452	896	1	12.20%	0.807	1.270
2022	10100	461	1357	1	12.20%	0.805	1.270
2023	10300	469	1826	1	12.20%	0.804	1.270
2024	10500	477	2303	1	12.20%	0.802	1.270
2025	10700	485	2788	1	12.20%	0.801	1.270
2026	10900	493	3281	1	12.20%	0.799	1.270
2027	11000	497	3778	1	12.20%	0.798	1.270
2028	11200	505	4283	1	12.20%	0.797	1.270
2029	11400	513	4796	1	12.20%	0.795	1.270
2030	11600	521	5317	1	12.20%	0.794	1.270
2031	11800	529	5846	1	12.20%	0.793	1.270
2032	12000	537	6383	1	12.20%	0.791	1.270
2033	12100	541	6924	1	12.20%	0.790	1.270
2034	12300	549	7473	1	12.20%	0.789	1.270
2035	12500	557	8030	1	12.20%	0.788	1.270
2036	12600	561	8591	1	12.20%	0.787	1.270
2037	12800	569	9160	1	12.20%	0.786	1.270
2038	13000	577	9737	1	12.20%	0.785	1.270
2039	13200	585	10322	1	12.20%	0.783	1.270
2040	13300	589	10911	1	12.20%	0.783	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 4873

Opening to Design Year ESAL Accumulation (1000s): 10467

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX D

SR 530 / US 192

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922031 - 92130020

LOCATION DESCRIPTION: I-4 CD SB Off Ramp to US 192 WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	14680
Mid-Design Year	2030	17460
Design Year	2040	20080

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 2

T24 values
Existing to Opening Year 28.50%
Opening to Mid-Year 28.50%
Mid-Year to Design-Year 28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922031 - 92130020

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1060	1060	1	28.50%	0.775	0.900
2021	14900	1079	2139	1	28.50%	0.773	0.900
2022	15200	1099	3238	1	28.50%	0.772	0.900
2023	15500	1118	4356	1	28.50%	0.770	0.900
2024	15700	1131	5487	1	28.50%	0.769	0.900
2025	16000	1150	6637	1	28.50%	0.767	0.900
2026	16300	1169	7806	1	28.50%	0.766	0.900
2027	16600	1188	8994	1	28.50%	0.764	0.900
2028	16900	1208	10202	1	28.50%	0.763	0.900
2029	17100	1220	11422	1	28.50%	0.762	0.900
2030	17400	1239	12661	1	28.50%	0.760	0.900
2031	17700	1258	13919	1	28.50%	0.759	0.900
2032	17900	1271	15190	1	28.50%	0.758	0.900
2033	18200	1290	16480	1	28.50%	0.757	0.900
2034	18500	1309	17789	1	28.50%	0.755	0.900
2035	18700	1321	19110	1	28.50%	0.755	0.900
2036	19000	1340	20450	1	28.50%	0.753	0.900
2037	19200	1353	21803	1	28.50%	0.752	0.900
2038	19500	1372	23175	1	28.50%	0.751	0.900
2039	19800	1390	24565	1	28.50%	0.750	0.900
2040	20000	1403	25968	1	28.50%	0.749	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 11601

Opening to Design Year ESAL Accumulation (1000s): 24908

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922031 - 92130020

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922031 - 92130020 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1495	1495	1	28.50%	0.775	1.270
2021	14900	1523	3018	1	28.50%	0.773	1.270
2022	15200	1550	4568	1	28.50%	0.772	1.270
2023	15500	1577	6145	1	28.50%	0.770	1.270
2024	15700	1595	7740	1	28.50%	0.769	1.270
2025	16000	1623	9363	1	28.50%	0.767	1.270
2026	16300	1650	11013	1	28.50%	0.766	1.270
2027	16600	1677	12690	1	28.50%	0.764	1.270
2028	16900	1704	14394	1	28.50%	0.763	1.270
2029	17100	1722	16116	1	28.50%	0.762	1.270
2030	17400	1749	17865	1	28.50%	0.760	1.270
2031	17700	1775	19640	1	28.50%	0.759	1.270
2032	17900	1793	21433	1	28.50%	0.758	1.270
2033	18200	1820	23253	1	28.50%	0.757	1.270
2034	18500	1847	25100	1	28.50%	0.755	1.270
2035	18700	1865	26965	1	28.50%	0.755	1.270
2036	19000	1891	28856	1	28.50%	0.753	1.270
2037	19200	1909	30765	1	28.50%	0.752	1.270
2038	19500	1935	32700	1	28.50%	0.751	1.270
2039	19800	1962	34662	1	28.50%	0.750	1.270
2040	20000	1979	36641	1	28.50%	0.749	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 16370

Opening to Design Year ESAL Accumulation (1000s): 35146

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922027 - 92090020

LOCATION DESCRIPTION: I-4 CD SB to US 192 EB Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	14600
Mid-Design Year	2030	17390
Design Year	2040	19980

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 1

T24 values
Existing to Opening Year 28.50%
Opening to Mid-Year 28.50%
Mid-Year to Design-Year 28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922027 - 92090020

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1367	1367	1	28.50%	1.000	0.900
2021	14800	1386	2753	1	28.50%	1.000	0.900
2022	15100	1414	4167	1	28.50%	1.000	0.900
2023	15400	1442	5609	1	28.50%	1.000	0.900
2024	15700	1470	7079	1	28.50%	1.000	0.900
2025	15900	1489	8568	1	28.50%	1.000	0.900
2026	16200	1517	10085	1	28.50%	1.000	0.900
2027	16500	1545	11630	1	28.50%	1.000	0.900
2028	16800	1573	13203	1	28.50%	1.000	0.900
2029	17100	1601	14804	1	28.50%	1.000	0.900
2030	17300	1620	16424	1	28.50%	1.000	0.900
2031	17600	1648	18072	1	28.50%	1.000	0.900
2032	17900	1676	19748	1	28.50%	1.000	0.900
2033	18100	1695	21443	1	28.50%	1.000	0.900
2034	18400	1723	23166	1	28.50%	1.000	0.900
2035	18600	1742	24908	1	28.50%	1.000	0.900
2036	18900	1770	26678	1	28.50%	1.000	0.900
2037	19200	1798	28476	1	28.50%	1.000	0.900
2038	19400	1817	30293	1	28.50%	1.000	0.900
2039	19700	1845	32138	1	28.50%	1.000	0.900
2040	19900	1864	34002	1	28.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 15057

Opening to Design Year ESAL Accumulation (1000s): 32635

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922027 - 92090020

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922027 - 92090020 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1929	1929	1	28.50%	1.000	1.270
2021	14800	1956	3885	1	28.50%	1.000	1.270
2022	15100	1995	5880	1	28.50%	1.000	1.270
2023	15400	2035	7915	1	28.50%	1.000	1.270
2024	15700	2075	9990	1	28.50%	1.000	1.270
2025	15900	2101	12091	1	28.50%	1.000	1.270
2026	16200	2141	14232	1	28.50%	1.000	1.270
2027	16500	2180	16412	1	28.50%	1.000	1.270
2028	16800	2220	18632	1	28.50%	1.000	1.270
2029	17100	2260	20892	1	28.50%	1.000	1.270
2030	17300	2286	23178	1	28.50%	1.000	1.270
2031	17600	2326	25504	1	28.50%	1.000	1.270
2032	17900	2365	27869	1	28.50%	1.000	1.270
2033	18100	2392	30261	1	28.50%	1.000	1.270
2034	18400	2431	32692	1	28.50%	1.000	1.270
2035	18600	2458	35150	1	28.50%	1.000	1.270
2036	18900	2497	37647	1	28.50%	1.000	1.270
2037	19200	2537	40184	1	28.50%	1.000	1.270
2038	19400	2563	42747	1	28.50%	1.000	1.270
2039	19700	2603	45350	1	28.50%	1.000	1.270
2040	19900	2630	47980	1	28.50%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 21249

Opening to Design Year ESAL Accumulation (1000s): 46051

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922018 - 92090022

LOCATION DESCRIPTION: I-4 NB Off Ramp to US 192 EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	10620
Mid-Design Year	2030	11130
Design Year	2040	12800

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 1

T24 values
Existing to Opening Year 9.00%
Opening to Mid-Year 9.00%
Mid-Year to Design-Year 9.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922018 - 92090022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	10600	314	314	1	9.00%	1.000	0.900
2021	10600	314	628	1	9.00%	1.000	0.900
2022	10700	317	945	1	9.00%	1.000	0.900
2023	10700	317	1262	1	9.00%	1.000	0.900
2024	10800	320	1582	1	9.00%	1.000	0.900
2025	10800	320	1902	1	9.00%	1.000	0.900
2026	10900	323	2225	1	9.00%	1.000	0.900
2027	10900	323	2548	1	9.00%	1.000	0.900
2028	11000	326	2874	1	9.00%	1.000	0.900
2029	11000	326	3200	1	9.00%	1.000	0.900
2030	11100	329	3529	1	9.00%	1.000	0.900
2031	11200	332	3861	1	9.00%	1.000	0.900
2032	11400	338	4199	1	9.00%	1.000	0.900
2033	11600	343	4542	1	9.00%	1.000	0.900
2034	11700	346	4888	1	9.00%	1.000	0.900
2035	11900	352	5240	1	9.00%	1.000	0.900
2036	12100	358	5598	1	9.00%	1.000	0.900
2037	12200	361	5959	1	9.00%	1.000	0.900
2038	12400	367	6326	1	9.00%	1.000	0.900
2039	12600	373	6699	1	9.00%	1.000	0.900
2040	12800	379	7078	1	9.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3215

Opening to Design Year ESAL Accumulation (1000s): 6764

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922018 - 92090022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922018 - 92090022 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	10600	443	443	1	9.00%	1.000	1.270
2021	10600	443	886	1	9.00%	1.000	1.270
2022	10700	447	1333	1	9.00%	1.000	1.270
2023	10700	447	1780	1	9.00%	1.000	1.270
2024	10800	451	2231	1	9.00%	1.000	1.270
2025	10800	451	2682	1	9.00%	1.000	1.270
2026	10900	455	3137	1	9.00%	1.000	1.270
2027	10900	455	3592	1	9.00%	1.000	1.270
2028	11000	459	4051	1	9.00%	1.000	1.270
2029	11000	459	4510	1	9.00%	1.000	1.270
2030	11100	464	4974	1	9.00%	1.000	1.270
2031	11200	468	5442	1	9.00%	1.000	1.270
2032	11400	476	5918	1	9.00%	1.000	1.270
2033	11600	484	6402	1	9.00%	1.000	1.270
2034	11700	489	6891	1	9.00%	1.000	1.270
2035	11900	497	7388	1	9.00%	1.000	1.270
2036	12100	505	7893	1	9.00%	1.000	1.270
2037	12200	509	8402	1	9.00%	1.000	1.270
2038	12400	518	8920	1	9.00%	1.000	1.270
2039	12600	526	9446	1	9.00%	1.000	1.270
2040	12800	535	9981	1	9.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 4531

Opening to Design Year ESAL Accumulation (1000s): 9538

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922018 - 92090022

LOCATION DESCRIPTION: I-4 NB Off Ramp to US 192 WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	6410
Mid-Design Year	2030	9140
Design Year	2040	10500

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	9.00%
Opening to Mid-Year	9.00%
Mid-Year to Design-Year	9.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922018 - 92090022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	6400	190	190	1	9.00%	1.000	0.900
2021	6600	196	386	1	9.00%	1.000	0.900
2022	6900	204	590	1	9.00%	1.000	0.900
2023	7200	213	803	1	9.00%	1.000	0.900
2024	7500	222	1025	1	9.00%	1.000	0.900
2025	7700	228	1253	1	9.00%	1.000	0.900
2026	8000	237	1490	1	9.00%	1.000	0.900
2027	8300	246	1736	1	9.00%	1.000	0.900
2028	8500	252	1988	1	9.00%	1.000	0.900
2029	8800	261	2249	1	9.00%	1.000	0.900
2030	9100	270	2519	1	9.00%	1.000	0.900
2031	9200	272	2791	1	9.00%	1.000	0.900
2032	9400	278	3069	1	9.00%	1.000	0.900
2033	9500	281	3350	1	9.00%	1.000	0.900
2034	9600	284	3634	1	9.00%	1.000	0.900
2035	9800	290	3924	1	9.00%	1.000	0.900
2036	9900	293	4217	1	9.00%	1.000	0.900
2037	10000	296	4513	1	9.00%	1.000	0.900
2038	10200	302	4815	1	9.00%	1.000	0.900
2039	10300	305	5120	1	9.00%	1.000	0.900
2040	10500	311	5431	1	9.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2329

Opening to Design Year ESAL Accumulation (1000s): 5241

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922018 - 92090022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922018 - 92090022 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	6400	268	268	1	9.00%	1.000	1.270
2021	6600	276	544	1	9.00%	1.000	1.270
2022	6900	288	832	1	9.00%	1.000	1.270
2023	7200	301	1133	1	9.00%	1.000	1.270
2024	7500	313	1446	1	9.00%	1.000	1.270
2025	7700	322	1768	1	9.00%	1.000	1.270
2026	8000	334	2102	1	9.00%	1.000	1.270
2027	8300	347	2449	1	9.00%	1.000	1.270
2028	8500	355	2804	1	9.00%	1.000	1.270
2029	8800	368	3172	1	9.00%	1.000	1.270
2030	9100	380	3552	1	9.00%	1.000	1.270
2031	9200	384	3936	1	9.00%	1.000	1.270
2032	9400	393	4329	1	9.00%	1.000	1.270
2033	9500	397	4726	1	9.00%	1.000	1.270
2034	9600	401	5127	1	9.00%	1.000	1.270
2035	9800	409	5536	1	9.00%	1.000	1.270
2036	9900	414	5950	1	9.00%	1.000	1.270
2037	10000	418	6368	1	9.00%	1.000	1.270
2038	10200	426	6794	1	9.00%	1.000	1.270
2039	10300	430	7224	1	9.00%	1.000	1.270
2040	10500	439	7663	1	9.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 3284

Opening to Design Year ESAL Accumulation (1000s): 7395

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 924002 - 92090015

LOCATION DESCRIPTION: US 192 EB to I-4 NB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	15750
Mid-Design Year	2030	17250
Design Year	2040	19830

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	3.90%
Opening to Mid-Year	3.90%
Mid-Year to Design-Year	3.90%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 924002 - 92090015

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15700	155	155	1	3.90%	0.769	0.900
2021	15900	157	312	1	3.90%	0.768	0.900
2022	16000	158	470	1	3.90%	0.767	0.900
2023	16200	160	630	1	3.90%	0.766	0.900
2024	16300	160	790	1	3.90%	0.766	0.900
2025	16500	162	952	1	3.90%	0.765	0.900
2026	16600	163	1115	1	3.90%	0.764	0.900
2027	16800	165	1280	1	3.90%	0.763	0.900
2028	16900	166	1446	1	3.90%	0.763	0.900
2029	17100	167	1613	1	3.90%	0.762	0.900
2030	17200	168	1781	1	3.90%	0.761	0.900
2031	17500	171	1952	1	3.90%	0.760	0.900
2032	17700	173	2125	1	3.90%	0.759	0.900
2033	18000	175	2300	1	3.90%	0.758	0.900
2034	18200	177	2477	1	3.90%	0.757	0.900
2035	18500	180	2657	1	3.90%	0.755	0.900
2036	18700	181	2838	1	3.90%	0.755	0.900
2037	19000	184	3022	1	3.90%	0.753	0.900
2038	19300	186	3208	1	3.90%	0.752	0.900
2039	19500	188	3396	1	3.90%	0.751	0.900
2040	19800	191	3587	1	3.90%	0.750	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1626

Opening to Design Year ESAL Accumulation (1000s): 3432

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 924002 - 92090015

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 924002 - 92090015 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15700	219	219	1	3.90%	0.769	1.270
2021	15900	221	440	1	3.90%	0.768	1.270
2022	16000	222	662	1	3.90%	0.767	1.270
2023	16200	225	887	1	3.90%	0.766	1.270
2024	16300	226	1113	1	3.90%	0.766	1.270
2025	16500	229	1342	1	3.90%	0.765	1.270
2026	16600	230	1572	1	3.90%	0.764	1.270
2027	16800	232	1804	1	3.90%	0.763	1.270
2028	16900	234	2038	1	3.90%	0.763	1.270
2029	17100	236	2274	1	3.90%	0.762	1.270
2030	17200	237	2511	1	3.90%	0.761	1.270
2031	17500	241	2752	1	3.90%	0.760	1.270
2032	17700	243	2995	1	3.90%	0.759	1.270
2033	18000	247	3242	1	3.90%	0.758	1.270
2034	18200	249	3491	1	3.90%	0.757	1.270
2035	18500	253	3744	1	3.90%	0.755	1.270
2036	18700	256	4000	1	3.90%	0.755	1.270
2037	19000	259	4259	1	3.90%	0.753	1.270
2038	19300	263	4522	1	3.90%	0.752	1.270
2039	19500	265	4787	1	3.90%	0.751	1.270
2040	19800	269	5056	1	3.90%	0.750	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2292

Opening to Design Year ESAL Accumulation (1000s): 4837

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922016- 92090018

LOCATION DESCRIPTION: US 192 EB to I-4 SB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	7960
Mid-Design Year	2030	9830
Design Year	2040	11080

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	9.00%
Opening to Mid-Year	9.00%
Mid-Year to Design-Year	9.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922016- 92090018

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7900	234	234	1	9.00%	1.000	0.900
2021	8100	240	474	1	9.00%	1.000	0.900
2022	8300	246	720	1	9.00%	1.000	0.900
2023	8500	252	972	1	9.00%	1.000	0.900
2024	8700	258	1230	1	9.00%	1.000	0.900
2025	8800	261	1491	1	9.00%	1.000	0.900
2026	9000	267	1758	1	9.00%	1.000	0.900
2027	9200	272	2030	1	9.00%	1.000	0.900
2028	9400	278	2308	1	9.00%	1.000	0.900
2029	9600	284	2592	1	9.00%	1.000	0.900
2030	9800	290	2882	1	9.00%	1.000	0.900
2031	9900	293	3175	1	9.00%	1.000	0.900
2032	10000	296	3471	1	9.00%	1.000	0.900
2033	10200	302	3773	1	9.00%	1.000	0.900
2034	10300	305	4078	1	9.00%	1.000	0.900
2035	10400	308	4386	1	9.00%	1.000	0.900
2036	10500	311	4697	1	9.00%	1.000	0.900
2037	10700	317	5014	1	9.00%	1.000	0.900
2038	10800	320	5334	1	9.00%	1.000	0.900
2039	10900	323	5657	1	9.00%	1.000	0.900
2040	11000	326	5983	1	9.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2648

Opening to Design Year ESAL Accumulation (1000s): 5749

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922016- 92090018

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922016- 92090018 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7900	330	330	1	9.00%	1.000	1.270
2021	8100	338	668	1	9.00%	1.000	1.270
2022	8300	347	1015	1	9.00%	1.000	1.270
2023	8500	355	1370	1	9.00%	1.000	1.270
2024	8700	363	1733	1	9.00%	1.000	1.270
2025	8800	368	2101	1	9.00%	1.000	1.270
2026	9000	376	2477	1	9.00%	1.000	1.270
2027	9200	384	2861	1	9.00%	1.000	1.270
2028	9400	393	3254	1	9.00%	1.000	1.270
2029	9600	401	3655	1	9.00%	1.000	1.270
2030	9800	409	4064	1	9.00%	1.000	1.270
2031	9900	414	4478	1	9.00%	1.000	1.270
2032	10000	418	4896	1	9.00%	1.000	1.270
2033	10200	426	5322	1	9.00%	1.000	1.270
2034	10300	430	5752	1	9.00%	1.000	1.270
2035	10400	434	6186	1	9.00%	1.000	1.270
2036	10500	439	6625	1	9.00%	1.000	1.270
2037	10700	447	7072	1	9.00%	1.000	1.270
2038	10800	451	7523	1	9.00%	1.000	1.270
2039	10900	455	7978	1	9.00%	1.000	1.270
2040	11000	459	8437	1	9.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 3734

Opening to Design Year ESAL Accumulation (1000s): 8107

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92090000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 920311 - 92090000

LOCATION DESCRIPTION: US 192 W of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	41410
Mid-Design Year	2030	49790
Design Year	2040	57110

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	3
T24 values	
Existing to Opening Year	3.90%
Opening to Mid-Year	3.90%
Mid-Year to Design-Year	3.90%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 920311 - 92090000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92090000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	41400	164	164	0.5	3.90%	0.622	0.890
2021	42200	166	330	0.5	3.90%	0.621	0.890
2022	43000	169	499	0.5	3.90%	0.619	0.890
2023	43900	172	671	0.5	3.90%	0.618	0.890
2024	44700	175	846	0.5	3.90%	0.616	0.890
2025	45600	178	1024	0.5	3.90%	0.614	0.890
2026	46400	181	1205	0.5	3.90%	0.613	0.890
2027	47200	183	1388	0.5	3.90%	0.612	0.890
2028	48100	186	1574	0.5	3.90%	0.610	0.890
2029	48900	189	1763	0.5	3.90%	0.609	0.890
2030	49700	192	1955	0.5	3.90%	0.607	0.890
2031	50500	194	2149	0.5	3.90%	0.606	0.890
2032	51200	197	2346	0.5	3.90%	0.605	0.890
2033	51900	199	2545	0.5	3.90%	0.604	0.890
2034	52700	202	2747	0.5	3.90%	0.603	0.890
2035	53400	204	2951	0.5	3.90%	0.601	0.890
2036	54100	206	3157	0.5	3.90%	0.600	0.890
2037	54900	209	3366	0.5	3.90%	0.599	0.890
2038	55600	211	3577	0.5	3.90%	0.598	0.890
2039	56300	213	3790	0.5	3.90%	0.597	0.890
2040	57100	216	4006	0.5	3.90%	0.596	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 1791

Opening to Design Year ESAL Accumulation (1000s): 3842

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 920311 - 92090000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92090000 **LOCATION #:** 920311 - 92090000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	41400	224	224	0.5	3.90%	0.622	1.220
2021	42200	228	452	0.5	3.90%	0.621	1.220
2022	43000	232	684	0.5	3.90%	0.619	1.220
2023	43900	236	920	0.5	3.90%	0.618	1.220
2024	44700	240	1160	0.5	3.90%	0.616	1.220
2025	45600	244	1404	0.5	3.90%	0.614	1.220
2026	46400	247	1651	0.5	3.90%	0.613	1.220
2027	47200	251	1902	0.5	3.90%	0.612	1.220
2028	48100	255	2157	0.5	3.90%	0.610	1.220
2029	48900	259	2416	0.5	3.90%	0.609	1.220
2030	49700	263	2679	0.5	3.90%	0.607	1.220
2031	50500	266	2945	0.5	3.90%	0.606	1.220
2032	51200	269	3214	0.5	3.90%	0.605	1.220
2033	51900	273	3487	0.5	3.90%	0.604	1.220
2034	52700	276	3763	0.5	3.90%	0.603	1.220
2035	53400	279	4042	0.5	3.90%	0.601	1.220
2036	54100	283	4325	0.5	3.90%	0.600	1.220
2037	54900	286	4611	0.5	3.90%	0.599	1.220
2038	55600	289	4900	0.5	3.90%	0.598	1.220
2039	56300	292	5192	0.5	3.90%	0.597	1.220
2040	57100	296	5488	0.5	3.90%	0.596	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 2455

Opening to Design Year ESAL Accumulation (1000s): 5264

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922028 - 92090021

LOCATION DESCRIPTION: US 192 WB On Ramp to I-4 NB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	14610
Mid-Design Year	2030	17390
Design Year	2040	19990

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 1

T24 values
Existing to Opening Year 28.50%
Opening to Mid-Year 28.50%
Mid-Year to Design-Year 28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922028 - 92090021

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1367	1367	1	28.50%	1.000	0.900
2021	14800	1386	2753	1	28.50%	1.000	0.900
2022	15100	1414	4167	1	28.50%	1.000	0.900
2023	15400	1442	5609	1	28.50%	1.000	0.900
2024	15700	1470	7079	1	28.50%	1.000	0.900
2025	16000	1498	8577	1	28.50%	1.000	0.900
2026	16200	1517	10094	1	28.50%	1.000	0.900
2027	16500	1545	11639	1	28.50%	1.000	0.900
2028	16800	1573	13212	1	28.50%	1.000	0.900
2029	17100	1601	14813	1	28.50%	1.000	0.900
2030	17300	1620	16433	1	28.50%	1.000	0.900
2031	17600	1648	18081	1	28.50%	1.000	0.900
2032	17900	1676	19757	1	28.50%	1.000	0.900
2033	18100	1695	21452	1	28.50%	1.000	0.900
2034	18400	1723	23175	1	28.50%	1.000	0.900
2035	18600	1742	24917	1	28.50%	1.000	0.900
2036	18900	1770	26687	1	28.50%	1.000	0.900
2037	19200	1798	28485	1	28.50%	1.000	0.900
2038	19400	1817	30302	1	28.50%	1.000	0.900
2039	19700	1845	32147	1	28.50%	1.000	0.900
2040	19900	1864	34011	1	28.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 15066

Opening to Design Year ESAL Accumulation (1000s): 32644

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922028 - 92090021

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922028 - 92090021 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14600	1929	1929	1	28.50%	1.000	1.270
2021	14800	1956	3885	1	28.50%	1.000	1.270
2022	15100	1995	5880	1	28.50%	1.000	1.270
2023	15400	2035	7915	1	28.50%	1.000	1.270
2024	15700	2075	9990	1	28.50%	1.000	1.270
2025	16000	2114	12104	1	28.50%	1.000	1.270
2026	16200	2141	14245	1	28.50%	1.000	1.270
2027	16500	2180	16425	1	28.50%	1.000	1.270
2028	16800	2220	18645	1	28.50%	1.000	1.270
2029	17100	2260	20905	1	28.50%	1.000	1.270
2030	17300	2286	23191	1	28.50%	1.000	1.270
2031	17600	2326	25517	1	28.50%	1.000	1.270
2032	17900	2365	27882	1	28.50%	1.000	1.270
2033	18100	2392	30274	1	28.50%	1.000	1.270
2034	18400	2431	32705	1	28.50%	1.000	1.270
2035	18600	2458	35163	1	28.50%	1.000	1.270
2036	18900	2497	37660	1	28.50%	1.000	1.270
2037	19200	2537	40197	1	28.50%	1.000	1.270
2038	19400	2563	42760	1	28.50%	1.000	1.270
2039	19700	2603	45363	1	28.50%	1.000	1.270
2040	19900	2630	47993	1	28.50%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 21262

Opening to Design Year ESAL Accumulation (1000s): 46064

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922026- 92090017

LOCATION DESCRIPTION: US 192 WB On Ramp to I-4 SB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	7870
Mid-Design Year	2030	9360
Design Year	2040	10760

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	28.50%
Opening to Mid-Year	28.50%
Mid-Year to Design-Year	28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922026- 92090017

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	731	731	1	28.50%	1.000	0.900
2021	8000	749	1480	1	28.50%	1.000	0.900
2022	8100	759	2239	1	28.50%	1.000	0.900
2023	8300	778	3017	1	28.50%	1.000	0.900
2024	8400	787	3804	1	28.50%	1.000	0.900
2025	8600	806	4610	1	28.50%	1.000	0.900
2026	8700	815	5425	1	28.50%	1.000	0.900
2027	8900	834	6259	1	28.50%	1.000	0.900
2028	9000	843	7102	1	28.50%	1.000	0.900
2029	9200	862	7964	1	28.50%	1.000	0.900
2030	9300	871	8835	1	28.50%	1.000	0.900
2031	9500	890	9725	1	28.50%	1.000	0.900
2032	9600	899	10624	1	28.50%	1.000	0.900
2033	9700	909	11533	1	28.50%	1.000	0.900
2034	9900	927	12460	1	28.50%	1.000	0.900
2035	10000	937	13397	1	28.50%	1.000	0.900
2036	10200	955	14352	1	28.50%	1.000	0.900
2037	10300	965	15317	1	28.50%	1.000	0.900
2038	10400	974	16291	1	28.50%	1.000	0.900
2039	10600	993	17284	1	28.50%	1.000	0.900
2040	10700	1002	18286	1	28.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 8104

Opening to Design Year ESAL Accumulation (1000s): 17555

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922026- 92090017

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922026- 92090017 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	1031	1031	1	28.50%	1.000	1.270
2021	8000	1057	2088	1	28.50%	1.000	1.270
2022	8100	1071	3159	1	28.50%	1.000	1.270
2023	8300	1097	4256	1	28.50%	1.000	1.270
2024	8400	1110	5366	1	28.50%	1.000	1.270
2025	8600	1137	6503	1	28.50%	1.000	1.270
2026	8700	1150	7653	1	28.50%	1.000	1.270
2027	8900	1176	8829	1	28.50%	1.000	1.270
2028	9000	1190	10019	1	28.50%	1.000	1.270
2029	9200	1216	11235	1	28.50%	1.000	1.270
2030	9300	1229	12464	1	28.50%	1.000	1.270
2031	9500	1256	13720	1	28.50%	1.000	1.270
2032	9600	1269	14989	1	28.50%	1.000	1.270
2033	9700	1282	16271	1	28.50%	1.000	1.270
2034	9900	1308	17579	1	28.50%	1.000	1.270
2035	10000	1322	18901	1	28.50%	1.000	1.270
2036	10200	1348	20249	1	28.50%	1.000	1.270
2037	10300	1361	21610	1	28.50%	1.000	1.270
2038	10400	1374	22984	1	28.50%	1.000	1.270
2039	10600	1401	24385	1	28.50%	1.000	1.270
2040	10700	1414	25799	1	28.50%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 11433

Opening to Design Year ESAL Accumulation (1000s): 24768

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92090000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 920300 - 92090000

LOCATION DESCRIPTION: US 192 E of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	43800
Mid-Design Year	2030	51100
Design Year	2040	58950

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	3
T24 values	
Existing to Opening Year	3.80%
Opening to Mid-Year	3.80%
Mid-Year to Design-Year	3.80%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 920300 - 92090000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92090000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	43800	168	168	0.5	3.80%	0.618	0.890
2021	44500	170	338	0.5	3.80%	0.616	0.890
2022	45200	172	510	0.5	3.80%	0.615	0.890
2023	45900	174	684	0.5	3.80%	0.614	0.890
2024	46700	177	861	0.5	3.80%	0.613	0.890
2025	47400	179	1040	0.5	3.80%	0.611	0.890
2026	48100	182	1222	0.5	3.80%	0.610	0.890
2027	48900	184	1406	0.5	3.80%	0.609	0.890
2028	49600	186	1592	0.5	3.80%	0.608	0.890
2029	50300	189	1781	0.5	3.80%	0.606	0.890
2030	51100	191	1972	0.5	3.80%	0.605	0.890
2031	51800	194	2166	0.5	3.80%	0.604	0.890
2032	52600	196	2362	0.5	3.80%	0.603	0.890
2033	53400	199	2561	0.5	3.80%	0.601	0.890
2034	54200	201	2762	0.5	3.80%	0.600	0.890
2035	55000	204	2966	0.5	3.80%	0.599	0.890
2036	55800	206	3172	0.5	3.80%	0.598	0.890
2037	56500	209	3381	0.5	3.80%	0.597	0.890
2038	57300	211	3592	0.5	3.80%	0.596	0.890
2039	58100	214	3806	0.5	3.80%	0.594	0.890
2040	58900	216	4022	0.5	3.80%	0.593	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 1804

Opening to Design Year ESAL Accumulation (1000s): 3854

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 920300 - 92090000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92090000 **LOCATION #:** 920300 - 92090000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	43800	229	229	0.5	3.80%	0.618	1.220
2021	44500	233	462	0.5	3.80%	0.616	1.220
2022	45200	236	698	0.5	3.80%	0.615	1.220
2023	45900	239	937	0.5	3.80%	0.614	1.220
2024	46700	243	1180	0.5	3.80%	0.613	1.220
2025	47400	246	1426	0.5	3.80%	0.611	1.220
2026	48100	249	1675	0.5	3.80%	0.610	1.220
2027	48900	252	1927	0.5	3.80%	0.609	1.220
2028	49600	255	2182	0.5	3.80%	0.608	1.220
2029	50300	259	2441	0.5	3.80%	0.606	1.220
2030	51100	262	2703	0.5	3.80%	0.605	1.220
2031	51800	265	2968	0.5	3.80%	0.604	1.220
2032	52600	269	3237	0.5	3.80%	0.603	1.220
2033	53400	272	3509	0.5	3.80%	0.601	1.220
2034	54200	276	3785	0.5	3.80%	0.600	1.220
2035	55000	279	4064	0.5	3.80%	0.599	1.220
2036	55800	283	4347	0.5	3.80%	0.598	1.220
2037	56500	286	4633	0.5	3.80%	0.597	1.220
2038	57300	289	4922	0.5	3.80%	0.596	1.220
2039	58100	293	5215	0.5	3.80%	0.594	1.220
2040	58900	296	5511	0.5	3.80%	0.593	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 2474

Opening to Design Year ESAL Accumulation (1000s): 5282

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/20/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX D

OSCEOLA PKWY

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 92130022 - New Ramp

LOCATION DESCRIPTION: I-4 CD NB Off Ramp to Osceola Pkwy EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	7880
Mid-Design Year	2030	9320
Design Year	2040	10780

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

8 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 92130022 - New Ram

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	129	129	1	5.00%	1.000	0.900
2021	8000	132	261	1	5.00%	1.000	0.900
2022	8100	134	395	1	5.00%	1.000	0.900
2023	8300	137	532	1	5.00%	1.000	0.900
2024	8400	138	670	1	5.00%	1.000	0.900
2025	8600	142	812	1	5.00%	1.000	0.900
2026	8700	143	955	1	5.00%	1.000	0.900
2027	8800	145	1100	1	5.00%	1.000	0.900
2028	9000	148	1248	1	5.00%	1.000	0.900
2029	9100	150	1398	1	5.00%	1.000	0.900
2030	9300	153	1551	1	5.00%	1.000	0.900
2031	9400	155	1706	1	5.00%	1.000	0.900
2032	9600	158	1864	1	5.00%	1.000	0.900
2033	9700	160	2024	1	5.00%	1.000	0.900
2034	9900	163	2187	1	5.00%	1.000	0.900
2035	10000	165	2352	1	5.00%	1.000	0.900
2036	10100	166	2518	1	5.00%	1.000	0.900
2037	10300	170	2688	1	5.00%	1.000	0.900
2038	10400	171	2859	1	5.00%	1.000	0.900
2039	10600	175	3034	1	5.00%	1.000	0.900
2040	10700	176	3210	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1422

Opening to Design Year ESAL Accumulation (1000s): 3081

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

8 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 92130022 - New Ram

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 92130022 - New Ramp **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	7800	181	181	1	5.00%	1.000	1.270
2021	8000	186	367	1	5.00%	1.000	1.270
2022	8100	188	555	1	5.00%	1.000	1.270
2023	8300	193	748	1	5.00%	1.000	1.270
2024	8400	195	943	1	5.00%	1.000	1.270
2025	8600	200	1143	1	5.00%	1.000	1.270
2026	8700	202	1345	1	5.00%	1.000	1.270
2027	8800	204	1549	1	5.00%	1.000	1.270
2028	9000	209	1758	1	5.00%	1.000	1.270
2029	9100	211	1969	1	5.00%	1.000	1.270
2030	9300	216	2185	1	5.00%	1.000	1.270
2031	9400	218	2403	1	5.00%	1.000	1.270
2032	9600	223	2626	1	5.00%	1.000	1.270
2033	9700	225	2851	1	5.00%	1.000	1.270
2034	9900	230	3081	1	5.00%	1.000	1.270
2035	10000	232	3313	1	5.00%	1.000	1.270
2036	10100	235	3548	1	5.00%	1.000	1.270
2037	10300	239	3787	1	5.00%	1.000	1.270
2038	10400	242	4029	1	5.00%	1.000	1.270
2039	10600	246	4275	1	5.00%	1.000	1.270
2040	10700	248	4523	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2004

Opening to Design Year ESAL Accumulation (1000s): 4342

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922022 - 92130022

LOCATION DESCRIPTION: I-4 CD NB Off Ramp to Osceola Pkwy WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	5750
Mid-Design Year	2030	6800
Design Year	2040	7850

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922022 - 92130022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5700	94	94	1	5.00%	1.000	0.900
2021	5800	96	190	1	5.00%	1.000	0.900
2022	5900	97	287	1	5.00%	1.000	0.900
2023	6000	99	386	1	5.00%	1.000	0.900
2024	6100	101	487	1	5.00%	1.000	0.900
2025	6200	102	589	1	5.00%	1.000	0.900
2026	6300	104	693	1	5.00%	1.000	0.900
2027	6400	106	799	1	5.00%	1.000	0.900
2028	6500	107	906	1	5.00%	1.000	0.900
2029	6600	109	1015	1	5.00%	1.000	0.900
2030	6800	112	1127	1	5.00%	1.000	0.900
2031	6900	114	1241	1	5.00%	1.000	0.900
2032	7000	115	1356	1	5.00%	1.000	0.900
2033	7100	117	1473	1	5.00%	1.000	0.900
2034	7200	119	1592	1	5.00%	1.000	0.900
2035	7300	120	1712	1	5.00%	1.000	0.900
2036	7400	122	1834	1	5.00%	1.000	0.900
2037	7500	124	1958	1	5.00%	1.000	0.900
2038	7600	125	2083	1	5.00%	1.000	0.900
2039	7700	127	2210	1	5.00%	1.000	0.900
2040	7800	129	2339	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1033

Opening to Design Year ESAL Accumulation (1000s): 2245

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922022 - 92130022

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922022 - 92130022 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	5700	133	133	1	5.00%	1.000	1.270
2021	5800	135	268	1	5.00%	1.000	1.270
2022	5900	137	405	1	5.00%	1.000	1.270
2023	6000	140	545	1	5.00%	1.000	1.270
2024	6100	142	687	1	5.00%	1.000	1.270
2025	6200	144	831	1	5.00%	1.000	1.270
2026	6300	147	978	1	5.00%	1.000	1.270
2027	6400	149	1127	1	5.00%	1.000	1.270
2028	6500	151	1278	1	5.00%	1.000	1.270
2029	6600	153	1431	1	5.00%	1.000	1.270
2030	6800	158	1589	1	5.00%	1.000	1.270
2031	6900	160	1749	1	5.00%	1.000	1.270
2032	7000	163	1912	1	5.00%	1.000	1.270
2033	7100	165	2077	1	5.00%	1.000	1.270
2034	7200	167	2244	1	5.00%	1.000	1.270
2035	7300	170	2414	1	5.00%	1.000	1.270
2036	7400	172	2586	1	5.00%	1.000	1.270
2037	7500	174	2760	1	5.00%	1.000	1.270
2038	7600	177	2937	1	5.00%	1.000	1.270
2039	7700	179	3116	1	5.00%	1.000	1.270
2040	7800	181	3297	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 1456

Opening to Design Year ESAL Accumulation (1000s): 3164

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922025 - 92130019

LOCATION DESCRIPTION: I-4 CD SB Off Ramp to Osceola Pkwy EB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	8290
Mid-Design Year	2030	9920
Design Year	2040	11360

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922025 - 92130019

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	135	135	1	5.00%	1.000	0.900
2021	8400	138	273	1	5.00%	1.000	0.900
2022	8600	142	415	1	5.00%	1.000	0.900
2023	8700	143	558	1	5.00%	1.000	0.900
2024	8900	147	705	1	5.00%	1.000	0.900
2025	9100	150	855	1	5.00%	1.000	0.900
2026	9200	152	1007	1	5.00%	1.000	0.900
2027	9400	155	1162	1	5.00%	1.000	0.900
2028	9500	157	1319	1	5.00%	1.000	0.900
2029	9700	160	1479	1	5.00%	1.000	0.900
2030	9900	163	1642	1	5.00%	1.000	0.900
2031	10000	165	1807	1	5.00%	1.000	0.900
2032	10200	168	1975	1	5.00%	1.000	0.900
2033	10300	170	2145	1	5.00%	1.000	0.900
2034	10400	171	2316	1	5.00%	1.000	0.900
2035	10600	175	2491	1	5.00%	1.000	0.900
2036	10700	176	2667	1	5.00%	1.000	0.900
2037	10900	180	2847	1	5.00%	1.000	0.900
2038	11000	181	3028	1	5.00%	1.000	0.900
2039	11200	184	3212	1	5.00%	1.000	0.900
2040	11300	186	3398	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1507

Opening to Design Year ESAL Accumulation (1000s): 3263

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922025 - 92130019

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922025 - 92130019 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	8200	191	191	1	5.00%	1.000	1.270
2021	8400	195	386	1	5.00%	1.000	1.270
2022	8600	200	586	1	5.00%	1.000	1.270
2023	8700	202	788	1	5.00%	1.000	1.270
2024	8900	207	995	1	5.00%	1.000	1.270
2025	9100	211	1206	1	5.00%	1.000	1.270
2026	9200	214	1420	1	5.00%	1.000	1.270
2027	9400	218	1638	1	5.00%	1.000	1.270
2028	9500	221	1859	1	5.00%	1.000	1.270
2029	9700	225	2084	1	5.00%	1.000	1.270
2030	9900	230	2314	1	5.00%	1.000	1.270
2031	10000	232	2546	1	5.00%	1.000	1.270
2032	10200	237	2783	1	5.00%	1.000	1.270
2033	10300	239	3022	1	5.00%	1.000	1.270
2034	10400	242	3264	1	5.00%	1.000	1.270
2035	10600	246	3510	1	5.00%	1.000	1.270
2036	10700	248	3758	1	5.00%	1.000	1.270
2037	10900	253	4011	1	5.00%	1.000	1.270
2038	11000	255	4266	1	5.00%	1.000	1.270
2039	11200	260	4526	1	5.00%	1.000	1.270
2040	11300	262	4788	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2123

Opening to Design Year ESAL Accumulation (1000s): 4597

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922021 - 92130016

LOCATION DESCRIPTION: I-4 CD SB Off Ramp to Osceola Pkwy WB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	14110
Mid-Design Year	2030	16710
Design Year	2040	18980

Note: AADT values have been rounded to the nearest 100

Daily Direction Split
(50% or 100%) 100%
Lanes in One Direction 2

T24 values
Existing to Opening Year 5.00%
Opening to Mid-Year 5.00%
Mid-Year to Design-Year 5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922021 - 92130016

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14100	181	181	1	5.00%	0.778	0.900
2021	14300	183	364	1	5.00%	0.777	0.900
2022	14600	186	550	1	5.00%	0.775	0.900
2023	14800	189	739	1	5.00%	0.774	0.900
2024	15100	192	931	1	5.00%	0.772	0.900
2025	15400	195	1126	1	5.00%	0.771	0.900
2026	15600	198	1324	1	5.00%	0.769	0.900
2027	15900	201	1525	1	5.00%	0.768	0.900
2028	16100	203	1728	1	5.00%	0.767	0.900
2029	16400	207	1935	1	5.00%	0.765	0.900
2030	16700	210	2145	1	5.00%	0.764	0.900
2031	16900	212	2357	1	5.00%	0.763	0.900
2032	17100	214	2571	1	5.00%	0.762	0.900
2033	17300	217	2788	1	5.00%	0.761	0.900
2034	17600	220	3008	1	5.00%	0.760	0.900
2035	17800	222	3230	1	5.00%	0.759	0.900
2036	18000	225	3455	1	5.00%	0.758	0.900
2037	18200	227	3682	1	5.00%	0.757	0.900
2038	18500	230	3912	1	5.00%	0.755	0.900
2039	18700	232	4144	1	5.00%	0.755	0.900
2040	18900	234	4378	1	5.00%	0.754	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1964

Opening to Design Year ESAL Accumulation (1000s): 4197

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922021 - 92130016

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922021 - 92130016 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	14100	255	255	1	5.00%	0.778	1.270
2021	14300	258	513	1	5.00%	0.777	1.270
2022	14600	263	776	1	5.00%	0.775	1.270
2023	14800	266	1042	1	5.00%	0.774	1.270
2024	15100	271	1313	1	5.00%	0.772	1.270
2025	15400	276	1589	1	5.00%	0.771	1.270
2026	15600	279	1868	1	5.00%	0.769	1.270
2027	15900	283	2151	1	5.00%	0.768	1.270
2028	16100	287	2438	1	5.00%	0.767	1.270
2029	16400	291	2729	1	5.00%	0.765	1.270
2030	16700	296	3025	1	5.00%	0.764	1.270
2031	16900	299	3324	1	5.00%	0.763	1.270
2032	17100	302	3626	1	5.00%	0.762	1.270
2033	17300	306	3932	1	5.00%	0.761	1.270
2034	17600	310	4242	1	5.00%	0.760	1.270
2035	17800	313	4555	1	5.00%	0.759	1.270
2036	18000	317	4872	1	5.00%	0.758	1.270
2037	18200	320	5192	1	5.00%	0.757	1.270
2038	18500	324	5516	1	5.00%	0.755	1.270
2039	18700	328	5844	1	5.00%	0.755	1.270
2040	18900	331	6175	1	5.00%	0.754	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2770

Opening to Design Year ESAL Accumulation (1000s): 5920

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/28/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 75280000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 750668 - 75039008

LOCATION DESCRIPTION: I-4 NB Off Ramp to I-4 CD NB

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	24340
Mid-Design Year	2030	28850
Design Year	2040	33320

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 2

T24 values

Existing to Opening Year: 4.70%
Opening to Mid-Year: 4.70%
Mid-Year to Design-Year: 4.70%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750668 - 75039008

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 75280000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	24300	275	275	1	4.70%	0.733	0.900
2021	24700	279	554	1	4.70%	0.732	0.900
2022	25200	284	838	1	4.70%	0.730	0.900
2023	25600	288	1126	1	4.70%	0.729	0.900
2024	26100	293	1419	1	4.70%	0.727	0.900
2025	26500	297	1716	1	4.70%	0.726	0.900
2026	27000	302	2018	1	4.70%	0.724	0.900
2027	27400	306	2324	1	4.70%	0.723	0.900
2028	27900	311	2635	1	4.70%	0.721	0.900
2029	28300	315	2950	1	4.70%	0.720	0.900
2030	28800	320	3270	1	4.70%	0.719	0.900
2031	29200	324	3594	1	4.70%	0.718	0.900
2032	29700	329	3923	1	4.70%	0.716	0.900
2033	30100	333	4256	1	4.70%	0.715	0.900
2034	30600	338	4594	1	4.70%	0.714	0.900
2035	31000	342	4936	1	4.70%	0.713	0.900
2036	31500	347	5283	1	4.70%	0.711	0.900
2037	31900	350	5633	1	4.70%	0.710	0.900
2038	32400	355	5988	1	4.70%	0.709	0.900
2039	32800	359	6347	1	4.70%	0.708	0.900
2040	33300	364	6711	1	4.70%	0.707	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 2995

Opening to Design Year ESAL Accumulation (1000s): 6436

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750668 - 75039008

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 75280000 **LOCATION #:** 750668 - 75039008 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	24300	389	389	1	4.70%	0.733	1.270
2021	24700	394	783	1	4.70%	0.732	1.270
2022	25200	401	1184	1	4.70%	0.730	1.270
2023	25600	407	1591	1	4.70%	0.729	1.270
2024	26100	414	2005	1	4.70%	0.727	1.270
2025	26500	419	2424	1	4.70%	0.726	1.270
2026	27000	426	2850	1	4.70%	0.724	1.270
2027	27400	432	3282	1	4.70%	0.723	1.270
2028	27900	439	3721	1	4.70%	0.721	1.270
2029	28300	445	4166	1	4.70%	0.720	1.270
2030	28800	452	4618	1	4.70%	0.719	1.270
2031	29200	457	5075	1	4.70%	0.718	1.270
2032	29700	464	5539	1	4.70%	0.716	1.270
2033	30100	470	6009	1	4.70%	0.715	1.270
2034	30600	476	6485	1	4.70%	0.714	1.270
2035	31000	482	6967	1	4.70%	0.713	1.270
2036	31500	489	7456	1	4.70%	0.711	1.270
2037	31900	494	7950	1	4.70%	0.710	1.270
2038	32400	501	8451	1	4.70%	0.709	1.270
2039	32800	507	8958	1	4.70%	0.708	1.270
2040	33300	513	9471	1	4.70%	0.707	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 4229

Opening to Design Year ESAL Accumulation (1000s): 9082

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922022 - 92130017

LOCATION DESCRIPTION: Osceola Pkwy EB to I-4 NB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	12630
Mid-Design Year	2030	14960
Design Year	2040	17280

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	2
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922022 - 92130017

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	12600	163	163	1	5.00%	0.787	0.900
2021	12800	166	329	1	5.00%	0.786	0.900
2022	13000	168	497	1	5.00%	0.785	0.900
2023	13300	171	668	1	5.00%	0.783	0.900
2024	13500	174	842	1	5.00%	0.781	0.900
2025	13700	176	1018	1	5.00%	0.780	0.900
2026	14000	180	1198	1	5.00%	0.778	0.900
2027	14200	182	1380	1	5.00%	0.777	0.900
2028	14400	184	1564	1	5.00%	0.776	0.900
2029	14700	187	1751	1	5.00%	0.774	0.900
2030	14900	190	1941	1	5.00%	0.773	0.900
2031	15100	192	2133	1	5.00%	0.772	0.900
2032	15400	195	2328	1	5.00%	0.771	0.900
2033	15600	198	2526	1	5.00%	0.769	0.900
2034	15800	200	2726	1	5.00%	0.768	0.900
2035	16100	203	2929	1	5.00%	0.767	0.900
2036	16300	206	3135	1	5.00%	0.766	0.900
2037	16500	208	3343	1	5.00%	0.765	0.900
2038	16800	211	3554	1	5.00%	0.763	0.900
2039	17000	213	3767	1	5.00%	0.762	0.900
2040	17200	216	3983	1	5.00%	0.761	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1778

Opening to Design Year ESAL Accumulation (1000s): 3820

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922022 - 92130017

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922022 - 92130017 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	12600	230	230	1	5.00%	0.787	1.270
2021	12800	234	464	1	5.00%	0.786	1.270
2022	13000	237	701	1	5.00%	0.785	1.270
2023	13300	242	943	1	5.00%	0.783	1.270
2024	13500	245	1188	1	5.00%	0.781	1.270
2025	13700	248	1436	1	5.00%	0.780	1.270
2026	14000	253	1689	1	5.00%	0.778	1.270
2027	14200	256	1945	1	5.00%	0.777	1.270
2028	14400	260	2205	1	5.00%	0.776	1.270
2029	14700	264	2469	1	5.00%	0.774	1.270
2030	14900	268	2737	1	5.00%	0.773	1.270
2031	15100	271	3008	1	5.00%	0.772	1.270
2032	15400	276	3284	1	5.00%	0.771	1.270
2033	15600	279	3563	1	5.00%	0.769	1.270
2034	15800	282	3845	1	5.00%	0.768	1.270
2035	16100	287	4132	1	5.00%	0.767	1.270
2036	16300	290	4422	1	5.00%	0.766	1.270
2037	16500	293	4715	1	5.00%	0.765	1.270
2038	16800	298	5013	1	5.00%	0.763	1.270
2039	17000	301	5314	1	5.00%	0.762	1.270
2040	17200	304	5618	1	5.00%	0.761	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2507

Opening to Design Year ESAL Accumulation (1000s): 5388

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922031 - 92130021

LOCATION DESCRIPTION: Osceola Pkwy EB to I-4 SB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	15310
Mid-Design Year	2030	18130
Design Year	2040	20950

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	28.50%
Opening to Mid-Year	28.50%
Mid-Year to Design-Year	28.50%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922031 - 92130021

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15300	1433	1433	1	28.50%	1.000	0.900
2021	15500	1452	2885	1	28.50%	1.000	0.900
2022	15800	1480	4365	1	28.50%	1.000	0.900
2023	16100	1508	5873	1	28.50%	1.000	0.900
2024	16400	1536	7409	1	28.50%	1.000	0.900
2025	16700	1564	8973	1	28.50%	1.000	0.900
2026	17000	1592	10565	1	28.50%	1.000	0.900
2027	17200	1611	12176	1	28.50%	1.000	0.900
2028	17500	1639	13815	1	28.50%	1.000	0.900
2029	17800	1667	15482	1	28.50%	1.000	0.900
2030	18100	1695	17177	1	28.50%	1.000	0.900
2031	18400	1723	18900	1	28.50%	1.000	0.900
2032	18600	1742	20642	1	28.50%	1.000	0.900
2033	18900	1770	22412	1	28.50%	1.000	0.900
2034	19200	1798	24210	1	28.50%	1.000	0.900
2035	19500	1826	26036	1	28.50%	1.000	0.900
2036	19800	1854	27890	1	28.50%	1.000	0.900
2037	20100	1882	29772	1	28.50%	1.000	0.900
2038	20300	1901	31673	1	28.50%	1.000	0.900
2039	20600	1929	33602	1	28.50%	1.000	0.900
2040	20900	1957	35559	1	28.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 15744

Opening to Design Year ESAL Accumulation (1000s): 34126

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922031 - 92130021

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922031 - 92130021 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	15300	2022	2022	1	28.50%	1.000	1.270
2021	15500	2048	4070	1	28.50%	1.000	1.270
2022	15800	2088	6158	1	28.50%	1.000	1.270
2023	16100	2127	8285	1	28.50%	1.000	1.270
2024	16400	2167	10452	1	28.50%	1.000	1.270
2025	16700	2207	12659	1	28.50%	1.000	1.270
2026	17000	2246	14905	1	28.50%	1.000	1.270
2027	17200	2273	17178	1	28.50%	1.000	1.270
2028	17500	2312	19490	1	28.50%	1.000	1.270
2029	17800	2352	21842	1	28.50%	1.000	1.270
2030	18100	2392	24234	1	28.50%	1.000	1.270
2031	18400	2431	26665	1	28.50%	1.000	1.270
2032	18600	2458	29123	1	28.50%	1.000	1.270
2033	18900	2497	31620	1	28.50%	1.000	1.270
2034	19200	2537	34157	1	28.50%	1.000	1.270
2035	19500	2577	36734	1	28.50%	1.000	1.270
2036	19800	2616	39350	1	28.50%	1.000	1.270
2037	20100	2656	42006	1	28.50%	1.000	1.270
2038	20300	2682	44688	1	28.50%	1.000	1.270
2039	20600	2722	47410	1	28.50%	1.000	1.270
2040	20900	2762	50172	1	28.50%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 22212

Opening to Design Year ESAL Accumulation (1000s): 48150

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92514000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928058 - 92514000

LOCATION DESCRIPTION: Osceola Pkwy W of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	45560
Mid-Design Year	2030	52820
Design Year	2040	59590

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	3
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	____	1.270	____
RURAL HIGHWAY:	0.960	____	1.350	____
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):		____		____

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928058 - 92514000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92514000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	45500	228	228	0.5	5.00%	0.615	0.890
2021	46200	231	459	0.5	5.00%	0.613	0.890
2022	47000	234	693	0.5	5.00%	0.612	0.890
2023	47700	237	930	0.5	5.00%	0.611	0.890
2024	48400	240	1170	0.5	5.00%	0.610	0.890
2025	49100	243	1413	0.5	5.00%	0.608	0.890
2026	49900	246	1659	0.5	5.00%	0.607	0.890
2027	50600	249	1908	0.5	5.00%	0.606	0.890
2028	51300	252	2160	0.5	5.00%	0.605	0.890
2029	52000	255	2415	0.5	5.00%	0.604	0.890
2030	52800	259	2674	0.5	5.00%	0.602	0.890
2031	53400	261	2935	0.5	5.00%	0.601	0.890
2032	54100	264	3199	0.5	5.00%	0.600	0.890
2033	54800	267	3466	0.5	5.00%	0.599	0.890
2034	55500	270	3736	0.5	5.00%	0.598	0.890
2035	56200	273	4009	0.5	5.00%	0.597	0.890
2036	56800	276	4285	0.5	5.00%	0.596	0.890
2037	57500	278	4563	0.5	5.00%	0.595	0.890
2038	58200	281	4844	0.5	5.00%	0.594	0.890
2039	58900	284	5128	0.5	5.00%	0.593	0.890
2040	59500	287	5415	0.5	5.00%	0.592	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 2446

Opening to Design Year ESAL Accumulation (1000s): 5187

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928058 - 92514000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92514000 **LOCATION #:** 928058 - 92514000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	45500	312	312	0.5	5.00%	0.615	1.220
2021	46200	316	628	0.5	5.00%	0.613	1.220
2022	47000	321	949	0.5	5.00%	0.612	1.220
2023	47700	325	1274	0.5	5.00%	0.611	1.220
2024	48400	329	1603	0.5	5.00%	0.610	1.220
2025	49100	333	1936	0.5	5.00%	0.608	1.220
2026	49900	338	2274	0.5	5.00%	0.607	1.220
2027	50600	342	2616	0.5	5.00%	0.606	1.220
2028	51300	346	2962	0.5	5.00%	0.605	1.220
2029	52000	350	3312	0.5	5.00%	0.604	1.220
2030	52800	355	3667	0.5	5.00%	0.602	1.220
2031	53400	358	4025	0.5	5.00%	0.601	1.220
2032	54100	362	4387	0.5	5.00%	0.600	1.220
2033	54800	366	4753	0.5	5.00%	0.599	1.220
2034	55500	370	5123	0.5	5.00%	0.598	1.220
2035	56200	374	5497	0.5	5.00%	0.597	1.220
2036	56800	378	5875	0.5	5.00%	0.596	1.220
2037	57500	382	6257	0.5	5.00%	0.595	1.220
2038	58200	386	6643	0.5	5.00%	0.594	1.220
2039	58900	390	7033	0.5	5.00%	0.593	1.220
2040	59500	393	7426	0.5	5.00%	0.592	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 3355

Opening to Design Year ESAL Accumulation (1000s): 7114

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92130000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 922023 - 92130018

LOCATION DESCRIPTION: Osceola Pkwy WB to I-4 NB On Ramp

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	9590
Mid-Design Year	2030	11350
Design Year	2040	13110

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922023 - 92130018

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9500	157	157	1	5.00%	1.000	0.900
2021	9700	160	317	1	5.00%	1.000	0.900
2022	9900	163	480	1	5.00%	1.000	0.900
2023	10100	166	646	1	5.00%	1.000	0.900
2024	10200	168	814	1	5.00%	1.000	0.900
2025	10400	171	985	1	5.00%	1.000	0.900
2026	10600	175	1160	1	5.00%	1.000	0.900
2027	10800	178	1338	1	5.00%	1.000	0.900
2028	10900	180	1518	1	5.00%	1.000	0.900
2029	11100	183	1701	1	5.00%	1.000	0.900
2030	11300	186	1887	1	5.00%	1.000	0.900
2031	11500	189	2076	1	5.00%	1.000	0.900
2032	11700	193	2269	1	5.00%	1.000	0.900
2033	11800	194	2463	1	5.00%	1.000	0.900
2034	12000	198	2661	1	5.00%	1.000	0.900
2035	12200	201	2862	1	5.00%	1.000	0.900
2036	12400	204	3066	1	5.00%	1.000	0.900
2037	12500	206	3272	1	5.00%	1.000	0.900
2038	12700	209	3481	1	5.00%	1.000	0.900
2039	12900	212	3693	1	5.00%	1.000	0.900
2040	13100	216	3909	1	5.00%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1730

Opening to Design Year ESAL Accumulation (1000s): 3752

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 922023 - 92130018

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92130000 **LOCATION #:** 922023 - 92130018 **FIN #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	9500	221	221	1	5.00%	1.000	1.270
2021	9700	225	446	1	5.00%	1.000	1.270
2022	9900	230	676	1	5.00%	1.000	1.270
2023	10100	235	911	1	5.00%	1.000	1.270
2024	10200	237	1148	1	5.00%	1.000	1.270
2025	10400	242	1390	1	5.00%	1.000	1.270
2026	10600	246	1636	1	5.00%	1.000	1.270
2027	10800	251	1887	1	5.00%	1.000	1.270
2028	10900	253	2140	1	5.00%	1.000	1.270
2029	11100	258	2398	1	5.00%	1.000	1.270
2030	11300	262	2660	1	5.00%	1.000	1.270
2031	11500	267	2927	1	5.00%	1.000	1.270
2032	11700	272	3199	1	5.00%	1.000	1.270
2033	11800	274	3473	1	5.00%	1.000	1.270
2034	12000	279	3752	1	5.00%	1.000	1.270
2035	12200	283	4035	1	5.00%	1.000	1.270
2036	12400	288	4323	1	5.00%	1.000	1.270
2037	12500	290	4613	1	5.00%	1.000	1.270
2038	12700	295	4908	1	5.00%	1.000	1.270
2039	12900	299	5207	1	5.00%	1.000	1.270
2040	13100	304	5511	1	5.00%	1.000	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 2439

Opening to Design Year ESAL Accumulation (1000s): 5290

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0
COUNTY: Osceola
ROADWAY ID: 92514000
PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 928058 - 92514000

LOCATION DESCRIPTION: Osceola Pkwy E of I-4

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: D

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	N/A	0
Opening Year	2020	40570
Mid-Design Year	2030	46990
Design Year	2040	53040

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	50%
Lanes in One Direction	3
T24 values	
Existing to Opening Year	5.00%
Opening to Mid-Year	5.00%
Mid-Year to Design-Year	5.00%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900		1.270	
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890	X	1.220	X
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928058 - 92514000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92514000 **COUNTY:** Osceola **FIN #:** 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	40500	206	206	0.5	5.00%	0.624	0.890
2021	41200	209	415	0.5	5.00%	0.623	0.890
2022	41800	212	627	0.5	5.00%	0.622	0.890
2023	42400	214	841	0.5	5.00%	0.620	0.890
2024	43100	217	1058	0.5	5.00%	0.619	0.890
2025	43700	220	1278	0.5	5.00%	0.618	0.890
2026	44400	223	1501	0.5	5.00%	0.617	0.890
2027	45000	225	1726	0.5	5.00%	0.616	0.890
2028	45700	228	1954	0.5	5.00%	0.614	0.890
2029	46300	231	2185	0.5	5.00%	0.613	0.890
2030	46900	234	2419	0.5	5.00%	0.612	0.890
2031	47500	236	2655	0.5	5.00%	0.611	0.890
2032	48200	239	2894	0.5	5.00%	0.610	0.890
2033	48800	242	3136	0.5	5.00%	0.609	0.890
2034	49400	244	3380	0.5	5.00%	0.608	0.890
2035	50000	247	3627	0.5	5.00%	0.607	0.890
2036	50600	249	3876	0.5	5.00%	0.606	0.890
2037	51200	252	4128	0.5	5.00%	0.605	0.890
2038	51800	255	4383	0.5	5.00%	0.604	0.890
2039	52400	257	4640	0.5	5.00%	0.603	0.890
2040	53000	260	4900	0.5	5.00%	0.602	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 2213

Opening to Design Year ESAL Accumulation (1000s): 4694

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 928058 - 92514000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2020 to 2040*

SECTION #: 92514000 **LOCATION #:** 928058 - 92514000 **FIN #:** 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs D

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2020	40500	282	282	0.5	5.00%	0.624	1.220
2021	41200	286	568	0.5	5.00%	0.623	1.220
2022	41800	290	858	0.5	5.00%	0.622	1.220
2023	42400	293	1151	0.5	5.00%	0.620	1.220
2024	43100	298	1449	0.5	5.00%	0.619	1.220
2025	43700	301	1750	0.5	5.00%	0.618	1.220
2026	44400	305	2055	0.5	5.00%	0.617	1.220
2027	45000	309	2364	0.5	5.00%	0.616	1.220
2028	45700	313	2677	0.5	5.00%	0.614	1.220
2029	46300	317	2994	0.5	5.00%	0.613	1.220
2030	46900	320	3314	0.5	5.00%	0.612	1.220
2031	47500	324	3638	0.5	5.00%	0.611	1.220
2032	48200	328	3966	0.5	5.00%	0.610	1.220
2033	48800	331	4297	0.5	5.00%	0.609	1.220
2034	49400	335	4632	0.5	5.00%	0.608	1.220
2035	50000	338	4970	0.5	5.00%	0.607	1.220
2036	50600	342	5312	0.5	5.00%	0.606	1.220
2037	51200	345	5657	0.5	5.00%	0.605	1.220
2038	51800	349	6006	0.5	5.00%	0.604	1.220
2039	52400	352	6358	0.5	5.00%	0.603	1.220
2040	53000	356	6714	0.5	5.00%	0.602	1.220

Opening to Mid-Design Year ESAL Accumulation (1000s): 3032

Opening to Design Year ESAL Accumulation (1000s): 6432

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: Vanasse Hangen Brustlin, Inc.
225 East Robinson Street, Orlando,FL - 32801
Org. Unit or Firm
Al-Ahad Ekram, P.E. # 79191
Name
4/21/2016
Signature Date

Reviewed by: Jason Learned
Name
Project Manager - Design Traffic FDOT - D5
Title Org. Unit or Firm
Signature Date

APPENDIX E

PAVEMENT TYPE SELECTION REPORT

SR 400 (I-4) Project Development and Environment (PD&E) Study

FM No.: 432100-1-22-01

Pavement Type Selection Report

Segment 1: West of CR 532 (Osceola/Polk County Line) to West of SR 528 (Beachline Expressway) - Osceola County (92130) and Orange County (75280)

July 18, 2014

HNTB Corporation
610 Crescent Executive Court
Suite 400
Lake Mary, FL 32746

4 EXPRESS

Pavement Type Selection Report

SR 400 (I-4) Project Development and Environment (PD&E) Study

Segment 1: West of CR 532 (Osceola/Polk County Line) to West of SR 528 (Beachline Expressway)

Osceola County (92130) and Orange County (75280), Florida

Contract Number:
Financial ID Number: 432100-1-22-01
Federal Aid Project Number: 0041 227 1

Prepared For
Florida Department of Transportation
District 5
DeLand, Florida

July 18, 2014

ROBERT M. DENNEY LICENSE No. 58593 STATE OF FLORIDA PROFESSIONAL ENGINEER

Prepared by:

Robert Denney, PE — Date 7/21/14
PE No. 58593 — 7/18/2014

HNTB CORPORATION
610 Crescent Executive Ct, Suite 400
Lake Mary, Florida 32746
(407) 805-0355
CA No.: 6500

Concurrence by:

Annette K. Brennan, PE — Date 8/1/2014
FOR District Design Engineer, District

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

1.0 INTRODUCTION

The Florida Department of Transportation (FDOT) is proposing to reconstruct and widen I-4 as part of the I-4 Ultimate concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties. The concept design proposes the addition of two new express lanes in each direction within the center median of I-4, resulting in the reconstruction of the existing six-lane divided urban interstate to a ten-lane divided highway. The roadway improvements also include reconstruction of 19 local service interchanges and four systems interchanges.

The SR 400 (I-4) Project Development and Environment (PD&E) Study is an update which addresses the revision from the original design concept showing two High Occupancy Vehicle (HOV) lanes, as recommended in the Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for I-4 from West of Memorial Boulevard (SR 546) to CR 532 (Polk/Osceola County Line) and from CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) and in the Final Environmental Impact Statement (FEIS) for I-4 from West of SR 528 (Beachline Expressway) to SR 472, to the current proposed design concept of four Express Lanes. The Express Lanes are tolled lanes and will extend the full length of the project. The proposed typical section will include three general use lanes, two express lanes, an auxiliary lane (in some areas) and shoulders in each direction, with provision for a 44' rail corridor in the median from US 27 to SR 528. The express lanes and general use lanes will be separated by two 10- or 12- foot shoulders with a barrier wall in between the shoulders.

The overall SR 400 (I-4) PD&E project limits include a total of approximately 41 miles of roadway improvements divided into two sections east and west of the I-4 Ultimate project. The approximate limits of improvement for the west section are from SR25/US 27 in Polk County to west of SR 435 (Kirkman Road) in Orange County and for the east section, from one mile east of SR 434 in Seminole County to east of SR 472 in Volusia County. For purposes of documentation of the SR 400 (I-4) PD&E study, the east and west sections are further subdivided into segments as shown in Table 1.

Table 1: SR 400 (I-4) PD&E Segment Limits

SR 400 (I-4) PD&E West Section	
Segment 1	W. of CR 532 (Osceola/Polk County Line) to W. of SR 528 (Beachline Expressway) in Osceola and Orange Counties (13.5 miles)
Segment 2	W. of SR 528 (Beachline Expressway) to W. of SR 435 (Kirkman Road) in Orange County (3.9 miles)
Segment 5	W. of SR 25/US 27 to W. of CR 532 (Osceola/Polk County Line) in Polk County (3.2 miles)
SR 400 (I-4) PD&E East Section	
Segment 3	1 mile E. of SR 434 to E. of SR 15/600,US 17/92 (Seminole/Volusia County Line) in Seminole County (10.2 miles)
Segment 4	E. of SR 15/600,US 17/92 (Seminole/Volusia County Line) to 1/2 mile E. of SR 472 in Volusia County (10.1 miles)

The majority of the proposed improvements (37.7 miles) are within District 5 and a small segment (3.2 miles) is within District 1. The entire corridor is part of the state's Strategic Intermodal System (SIS).

As part of the SR 400 (I-4) PD&E Study, HNTB has prepared this Pavement Type Selection Report for I-4, Segment 1 (West of CR 532 to West of SR 528) in Osceola and Orange Counties; a project location map is provided in Figure 1. The purpose of this report is to analyze, compare and select the most feasible pavement type for this project, utilizing the methods of the 1993 American Association of State Highway and Transportation Officials (AASHTO) Guide for Design of Pavement Structures, adopted by FDOT and described in detail in the FDOT Pavement Type Selection Manual (October, 2013).

2.0 PRINCIPAL FACTORS

2.1 Traffic

Pavement design for new alignment and reconstruction projects requires a structural loading forecast of the 18-KIP Equivalent Single Axle Load (ESAL). The accumulated 18-KIP ESALs are used to determine the Structural Number Required (SN_R) for flexible pavement and the Depth Required (D) for rigid pavement. While the total traffic volume is the main factor in determining roadway geometrics, the percent of commercial traffic and heavy load applications are the major influences in the structural pavement design. The I-4, Segment 1 corridor within the project area is expected to be utilized by local traffic and through traffic. To determine the ESALs for this project, traffic data was obtained from *the I-4 SAMR Update: Design Traffic Technical Memorandum (January, 2013)*. Based on this memo, truck traffic percentages for the Segment 1 corridor range from 4.60 to 19.70 for year 2011. The truck factors for 2011 were reviewed for consistency by evaluating historical data provided by the FDOT Florida Traffic Online database. Based on these considerations, this project utilizes anticipated 24-hour truck traffic of 16.30% and a 20-year design. The future traffic volume projections used in the analysis are summarized in Table 2.

Table 2: Future Traffic Projections

	Year	AADT
Opening Year	2020	142,000
Mid-Design Year	2030	164,800
Design Year	2040	187,600

The 18-KIP ESAL for the roadway is 45,095,000 for flexible pavement and 63,629,000 for rigid pavement. Based on this information, either asphaltic concrete (AC) or Portland cement concrete (PCC) pavement would be sufficient. Traffic information and ESAL calculations are provided in Appendix A.

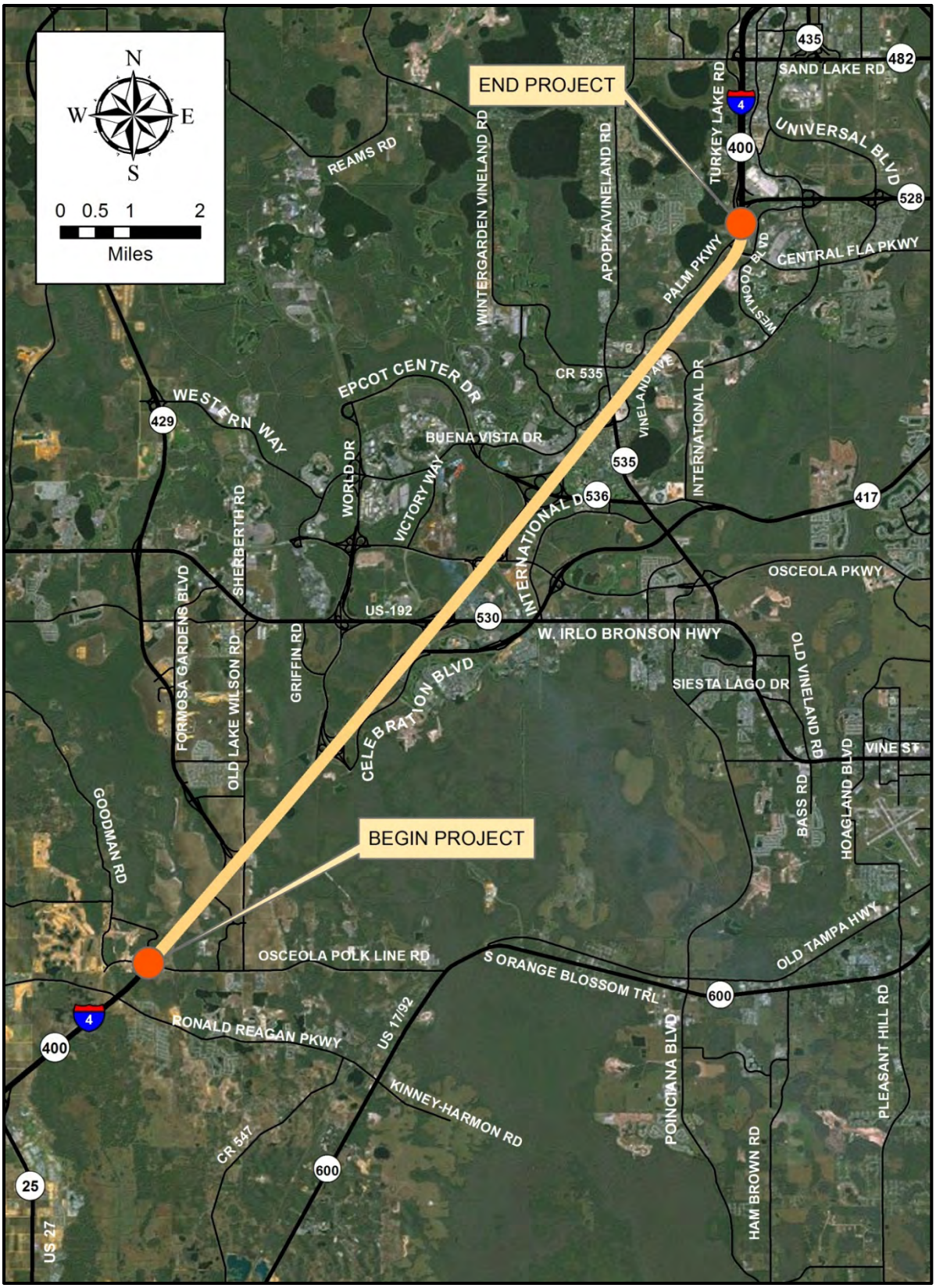


Figure 1: Project Location Map

2.2 Soil Characteristics

Geotechnical data near the study area was available from the report titled: *Final 30 Percent Geotechnical Report for Roadway SR 400 (I-4) From South of SR 435 (Kirkman Road) to South of SR 500/600 (Orange Blossom Trail), FPID: 242484-3-52-01*, which covers the I-4 Ultimate Section located approximately four miles north of the I-4, Segment 1 project. The report included results of Limerock Bearing Ratio (LBR) testing on twenty four soil samples obtained at depths of 0.0 to 1.5 feet below the existing grade adjacent to existing flexible pavement and proposed pond areas in the study corridor. The recommended LBR value for pavement design was 25. Using an LBR of 25 yields a corresponding roadway embankment resilient modulus (M_R) of 8,750 psi. These values were used in preparing the PTSR for the I-4, Segment 1 project. The geotechnical engineering evaluation memo prepared for the S.R. 400 (I-4), FPID: 242484-3-52-01 project is included in Appendix B.

2.3 Weather

High rainfall intensities are experienced in Florida during portions of the year. These rainfall conditions are expected to equally affect subsoil conditions for both flexible and rigid pavements; thus, the weather does not favor the placement of one type of pavement over the other. Additionally, cross slopes are designed to drain water off the pavement, and drainable base and edge drains were considered in the economic analysis to ensure the runoff would not negatively impact the concrete pavement. Therefore, either AC or PCC pavement type could be constructed with satisfactory wet weather performance and durability.

2.4 Construction Considerations

The interstate will be completely reconstructed. Staged construction will be necessary for either rigid or flexible type of pavement. The available right-of-way will allow for either type to be constructed satisfactorily.

2.5 Recycling

The existing roadway pavement is to be completely reconstructed; therefore, there is an opportunity to recycle the existing asphalt pavement in the initial construction. FDOT has successfully recycled rigid and flexible pavement, therefore, there are future recycling opportunities for both pavement types during rehabilitation of the pavements.

3.0 ECONOMIC ANALYSIS

The present worth method will be used to evaluate the cost of flexible pavement versus rigid pavement. All capital outlays for each alternative, including rehabilitation costs, are converted into today's dollars to compare the alternatives.

3.1 Basis of Comparison

The analysis will be based on the following assumptions:

Analysis Period: 40 years
Initial Pavement Design Life: 20 years
Discount Rate: 3.5%

The following baseline rehabilitation strategies were considered, as recommended in the *Pavement Type Selection Manual (October 2013)* for concrete pavement and from supporting data for lifecycles of asphalt pavement in Osceola and Orange Counties:

Concrete Pavement – Limited Access (Mainline & Shoulder)
23 Year – Concrete Pavement Rehabilitation (3% Slab Replacement)*
33 Year – Concrete Pavement Rehabilitation (5% Slab Replacement)*
*Estimate is based on the percentage of slab area in the truck lane

Asphalt Pavement - Limited Access (Mainline & Shoulder)
13 Year – Mill 3 inches
3" Structural Asphaltic Concrete
26 Year – Mill 3 inches
3" Structural Asphaltic Concrete

3.2 Pavement Data

The initial pavement designs developed for this analysis for both rigid and flexible pavement were based on the following geometry:

# of Lanes=10 (3 GUL+2 SUL in each direction)
Lane Width=12 feet
GUL: Inside Shoulder Width=12 feet, Outside Shoulder Width=12 feet
SUL: Inside Shoulder Width=10 feet, Outside Shoulder Width=10 feet
Notes: GUL = general use lanes, SUL = special use lanes
Paved inside shoulder for SUL will be modified from 10' to 6' when rail is constructed and barrier wall is in place.

The typical section used for this analysis is provided in Appendix C and the pavement design calculations are provided in Appendix D.

Rigid Pavement - This pavement design has been prepared in accordance with the most recent Rigid Pavement Design Manual (RPDM) (FDOT Document No. 625-010-006-e, January, 2009). This project is located in Orange and Osceola Counties. Using the Mechanistic-Empirical Pavement Design Guide (MEPDG) Design Tables, the slab thickness should be 13.5".

Rigid Pavement Design Parameters
18-KIP ESAL=63,629,000
Modulus of Subgrade Reaction (K_G)=200 pci
Reliability (%R)=90%

Mainline
13.5" Concrete Depth
4" Optional Base Group 1 (Type B-12.5 Only)
12" Type B Stabilization

Shoulder
2.0" Type SP Structural Course (Traffic B)
Optional Base Group 8 (9.5" LBR 100)
12" Type B Stabilization

Asphalt Pavement - This pavement design has been prepared in accordance with the most recent Flexible Pavement Design Manual (FPDM) (FDOT Document No. 625-010-002-g, March, 2008).

Flexible Pavement Design Parameters
18-KIP ESAL=45,095,000 (Traffic Level E)
18-KIP ESAL for shoulders=3% of mainline=1,352,850 (Traffic Level B)
Resilient Modulus (M_R)=8,750 psi
Reliability (%R)=90%

Mainline
- SN_R=5.81
- 0.75" Friction Course FC-5 (PG76-22) (Not included in the Life Cycle Cost Analysis)
- 2" Type SP Structural Course (Traffic E) (PG76-22)
- 2" Type SP Structural Course (Traffic E) (PG76-22)
- 2" Type SP Structural Course (Traffic E)
- Optional Base Group 12 (12.5" Limerock, LBR 100)
- 12" Type B Stabilization
- SN_C=5.85

Shoulder
- SN_R=3.44
- 2.0" Type SP Structural Course (Traffic B)
- Optional Base Group 8 (9.5" LBR 100)
- 12" Type B Stabilization
- SN_C=3.55

3.3 Cost Data for Economic Analysis

The unit prices used for this economic analysis are weighted averages obtained from FDOT's statewide item average unit costs from 4/01/2013 to 3/31/2014 and from D5 estimates, where available. The unit costs used are provided in Appendix E and are summarized in Table 3.

Table 3: Pavement Unit Prices

Item	Price	Unit
Type B Stabilized (LBR 40)	$3.25	Sq. Yd
OBG-1, Type B-12.5	$8.75	Sq. Yd
OBG-8	$25.85	Sq. Yd
OBG-12	$15.00	Sq. Yd
Milling 1" Avg. Depth	$2.45	Sq. Yd
Milling 3" Avg. Depth	$2.05	Sq. Yd
Type SP Traffic Level B	$85.00	Ton
Type SP Traffic Level E	$85.00	Ton
Type SP Traffic Level E PG76-22	$92.00	Ton
JPCP	$51.00	Sq. Yd
CPR - Slab Replacement (3%)	$400.00	Cu. Yd
CPR - Slab Replacement (5%)	$400.00	Cu. Yd
Edgedrain (Draincrete)	$26.72	Ft
Edgedrain Outlet Pipe (4 in)	$30.67	Ft

Source: FDOT, 12 month moving statewide averages and FDOT - D5 estimates.

3.4 Cost Comparison

A life cycle economic analysis per mile of concrete pavement and asphalt pavement was performed using an analysis period of 40 years and a discount rate of 3.5%. Based on the life cycle cost analysis, the total present worth costs per mile for concrete pavement is $7,405,436 and for flexible pavement, $6,661,475. The results of the analysis are summarized in Table 4. The details of the analysis are included in Appendix E.

4.0 SECONDARY FACTORS

4.1 Performance of Similar Pavements in the Area

The existing pavement sections, west and east of I-4, Segment 1 are both constructed with AC pavement. In general, these sections have not experienced any areas of premature distress and maintenance resurfacing is not excessively disruptive. The average age to rehabilitation for flexible pavements in Osceola and Orange Counties was reviewed. The average age to rehabilitation in Osceola County over the seven-year period ending in 2013 ranged from 10.6 years to 15.6 years. The average age to rehabilitation for flexible pavements in Orange County was also reviewed. The average age to rehabilitation in Orange County over the eight-year period ending in 2014 ranged from 10.0 years to 16.0 years. With

improvements made to FC-5 over the years, it is expected that an FC-5 flexible pavement will outperform previous FC-2 sections.

Table 4: Pavement Type Selection Economic Analysis (Cost per Mile)

Concrete Pavement (PCC)

			Cost		P / F		PRESENT WORTH
	Initial	2020	$6,814,177	*	1.00000	=	$6,814,177
23	Year	2043	$669,827	*	0.45329	=	$303,623
33	Year	2053	$895,107	*	0.32134	=	$287,636
					TOTAL AGENCY COSTS	**=**	**$7,405,436**
					USER COSTS	**=**	**N/A**
					SALVAGE VALUE	**=**	**N/A**
					TOTAL PRESENT WORTH LIFE-CYCLE COSTS	**=**	**$7,405,436**

Asphalt Pavement (AC)

			Cost		P / F		PRESENT WORTH
	Initial	2020	$4,975,718	*	1.00000	=	$4,975,718
13	Year	2033	$1,565,945	*	0.63940	=	$1,001,272
26	Year	2046	$1,565,945	*	0.40884	=	$640,217
39	Year	2059	$1,565,945	*	0.26141	=	$409,358
					TOTAL AGENCY COSTS	**=**	**$7,026,565**
					USER COSTS	**=**	**N/A**
					SALVAGE VALUE	**=**	**$365,090**
					TOTAL PRESENT WORTH LIFE-CYCLE COSTS	**=**	**$6,661,475**

Performance of concrete pavement in Central Florida was also reviewed. In the Orlando area within Orange County, concrete pavement was originally constructed on I-4 through the downtown area. This concrete pavement section has been in service for approximately 50 years and has undergone two major rehabilitations. Other concrete pavement sections in the Central Florida region were reviewed, including the average age to rehabilitation for concrete pavement in Hillsborough County. This data showed that over a 3 year period between 2006 and 2008, the average age for the rehabilitation cycle for these pavements within Hillsborough County were 20 years, 25 years and 22 years. Pavement performance and rehabilitation data is provided in Appendix F.

4.2 Adjacent Existing Pavements

The existing roadway sections, adjacent to the I-4 Segment 1 section are both constructed with flexible pavements. In addition, recent widening and rehabilitation projects throughout the corridor have been constructed with flexible pavement. The I-4, Segment 2 section, immediately east of Segment 1, is currently being evaluated for pavement type selection as part of the SR 400 (I-4) PD&E study.

4.3 Conservation of Materials and Energy

There are no significant differences in the energy consumption used to produce, transport or construct either type of pavement.

4.4 Availability of Local Materials or Contractor Capabilities

Materials are available locally for both pavement types. However, the majority of contractors in the Central Florida region are more familiar with asphalt pavement, since it is more commonly used in roadway projects in the area. FDOT District 5 also has prequalified contractors that have experience placing concrete pavement on major projects. Neither of the pavement types uses materials that are particularly scarce in Central Florida.

4.5 Traffic Safety

Current FDOT design guidelines and specifications for both the AC pavement and PCC pavement alternatives provide similar characteristics for wearing course, delineation through pavement and shoulder contrast, reflectivity under highway lighting and the maintenance of a nonskid surface.

4.6 Incorporation of Experimental Features

There are no experimental features included in this pavement type selection report.

4.7 Stimulation of Competition

Stimulation of competition is encouraged to avoid monopoly situations and improve products and methods in the projection of paving products. However, neither pavement type currently indicates a distinct advantage to provide more stimulation of competition over the other.

4.8 Municipal Preference, Participating Local Government Preference, and Recognition of Local Industry

No preferences apparent for pavement type by FDOT, which will be maintaining and operating this roadway facility.

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the preceding life cycle cost analysis and considering all other design factors evaluated in this report, AC pavement has a long term owner's cost advantage of 10.6%. Therefore, it is recommended that asphalt pavement be considered as the pavement type for the SR 400 (I-4) Segment 1 corridor.

APPENDICES

APPENDIX A

TRAFFIC INFORMATION

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2012 HISTORICAL AADT REPORT

COUNTY: 92 - OSCEOLA

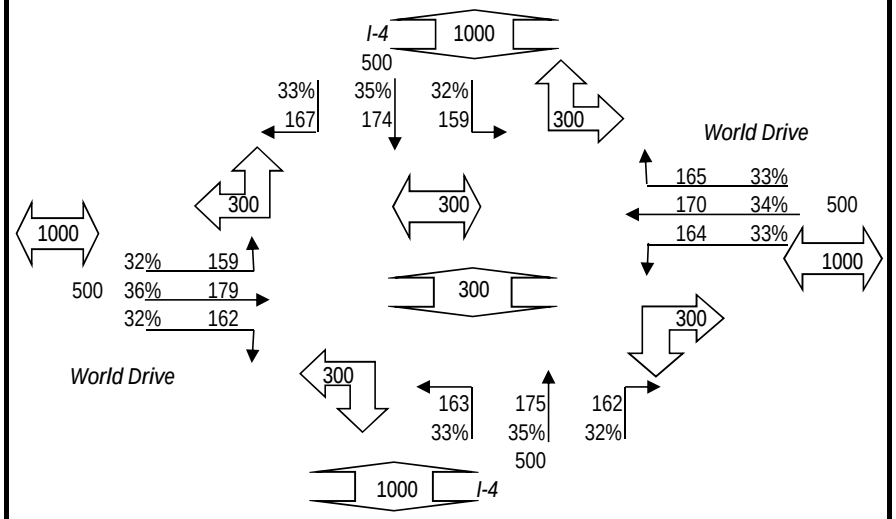
SITE: 0316 - ON I-4, 1.33 MI. E OF WORLD DR. (ITS)

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2012	75500 C	E 37500	W 38000	9.00	51.20	8.60
2011	61000 C	E 29500	W 31500	9.00	51.30	16.30
2010	85500 C	E 42500	W 43000	7.45	52.11	13.50
2009	78500 C	E 39000	W 39500	9.89	55.14	11.50
2008	78000 F	E 38500	W 39500	7.69	51.21	9.10
2007	79000 C	E 39000	W 40000	7.38	51.70	12.50
2006	95500 E	E 47000	W 48500	9.69	53.38	13.20
2005	93000 S	E 46000	W 47000	8.60	52.20	13.80
2004	88000 F	E 43500	W 44500	7.60	51.20	5.10
2003	85000 C	E 42000	W 43000	7.60	53.40	9.90
2002	61000 C	E 28000	W 33000	7.60	55.90	7.40
2001	64500 C	E 32500	W 32000	9.60	55.10	6.70
2000	63000 C	E 31500	W 31500	7.00	51.50	3.50
1999	62000 C	E 31000	W 31000	10.00	57.50	11.90
1998	60500 C	E 31000	W 29500	7.50	51.20	9.20

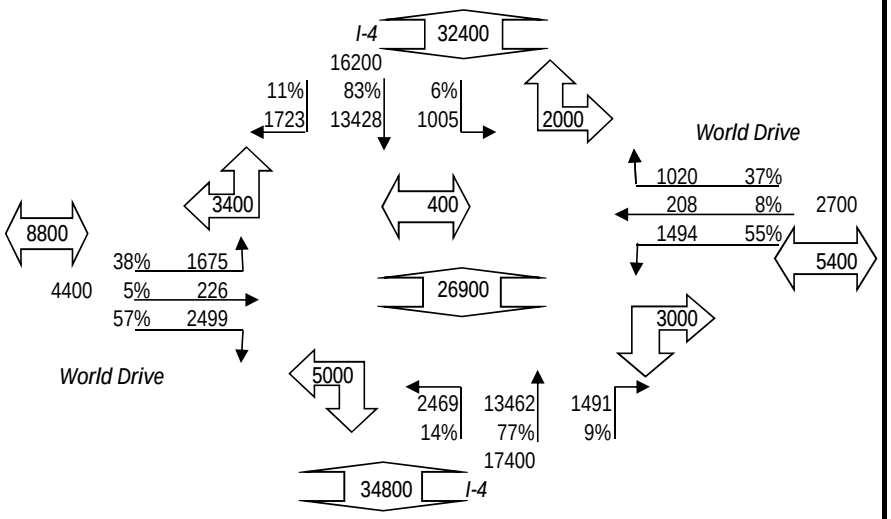
AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

PROJECT TRAFFIC FOR I-4 AT World Drive: TO

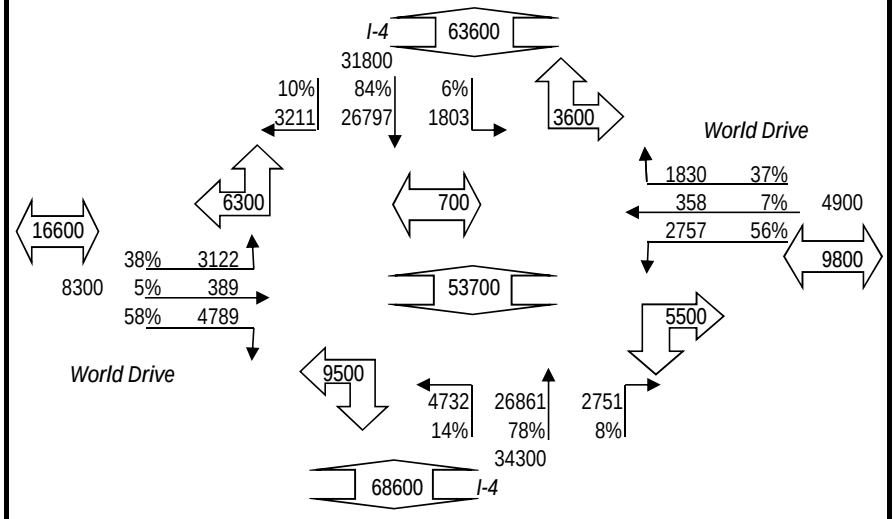
2-WAY AADT TURNING MOVEMENTS IN YEAR 2011



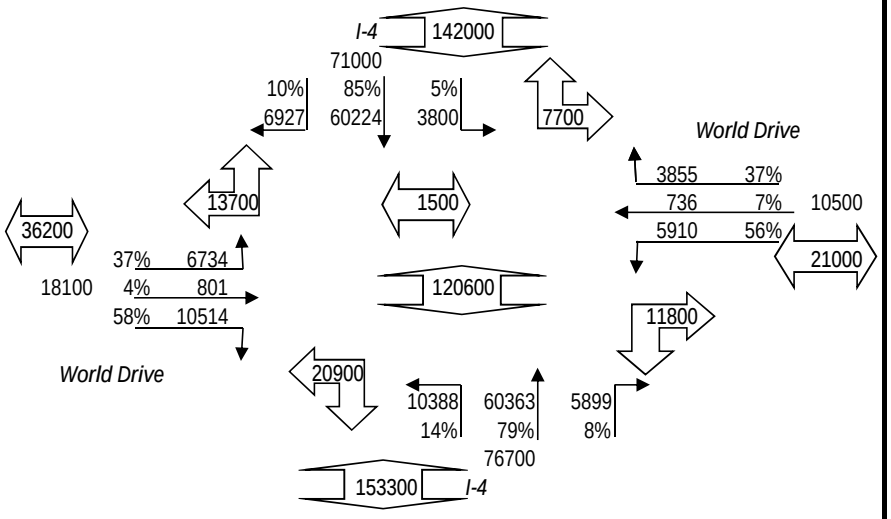
2-WAY AADT TURNING MOVEMENTS IN YEAR 2013



2-WAY AADT TURNING MOVEMENTS IN YEAR 2015

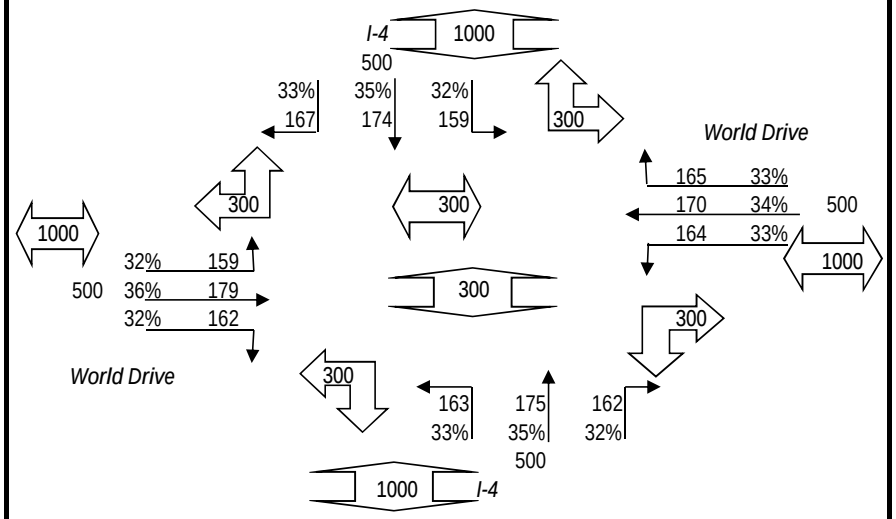


2-WAY AADT TURNING MOVEMENTS IN YEAR 2020

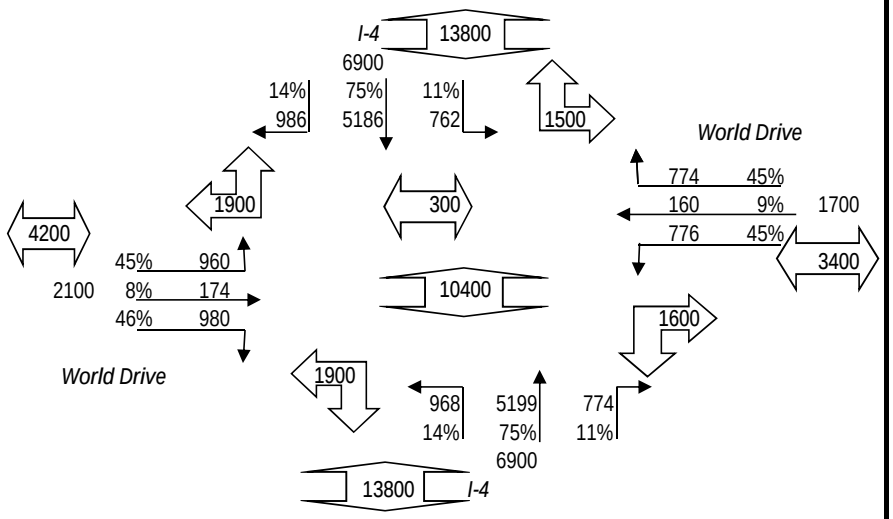


PROJECT TRAFFIC FOR I-4 AT World Drive: TO

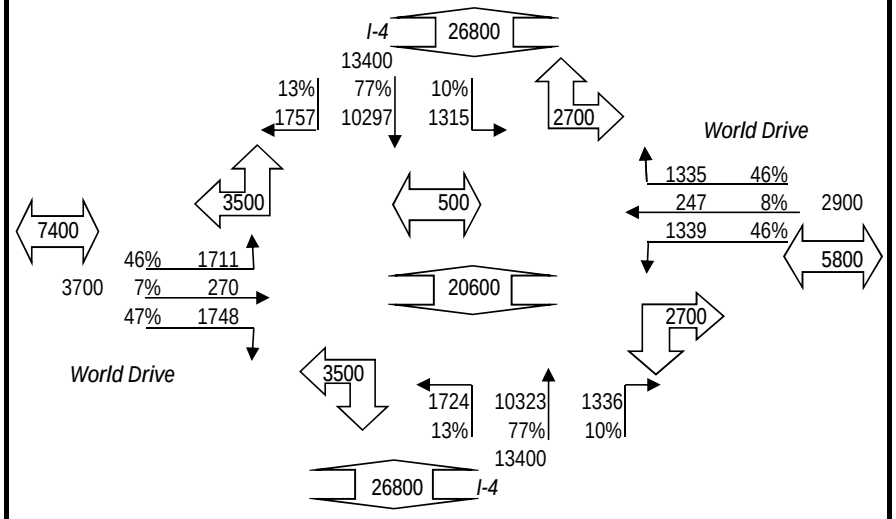
2-WAY AADT TURNING MOVEMENTS IN YEAR 2011



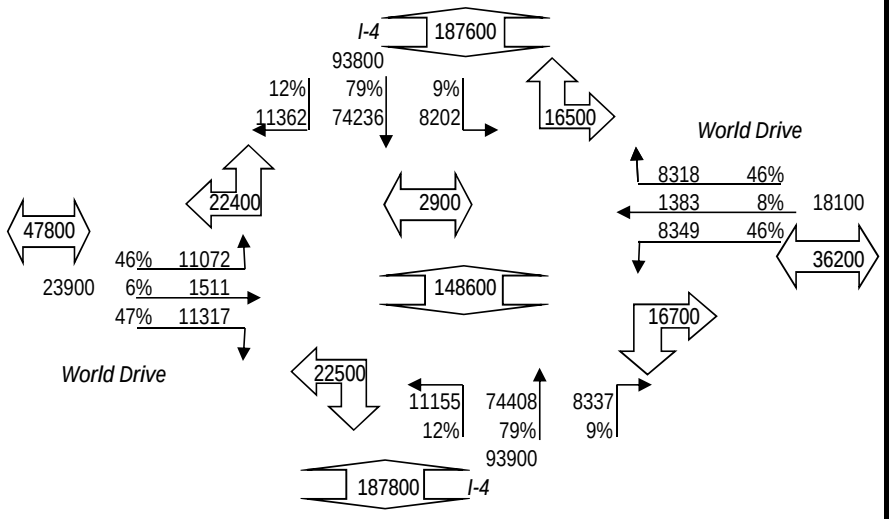
2-WAY AADT TURNING MOVEMENTS IN YEAR 2013



2-WAY AADT TURNING MOVEMENTS IN YEAR 2015



2-WAY AADT TURNING MOVEMENTS IN YEAR 2040



18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

SECTION #: 75280000
SEGMENT #: ML
ITEM #: 0
PROJECT DESCRIPTION: SR 400 (I-4) - E. of World Drive

LOCATION #: 1

LOCATION DESCRIPTION: Mainline

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: C

Linear Growth Rate ____ %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2011	61000
Opening Year	2020	142000
Mid-Design Year	2030	164800
Design Year	2040	187600

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 16.30%
Opening to Mid-Year: 16.30%
Mid-Year to Design-Year: 16.30%

1995 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050		1.600	
URBAN FREEWAY:	0.900	X	1.270	X
RURAL HIGHWAY:	0.960		1.350	
URBAN HIGHWAY:	0.890		1.220	
OTHER (Enter Factor and X):				

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated July 2, 1998.
Lane Factors developed by Copes equation

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

ROBERT M. DENNEY — LICENSED — No. 56593 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Prepared by: HNTB — 610 Crescent Executive Ct Suite 400 Lake Mary, FL 32746 — Robert Denney, PE — 4/23/2014
Org. Unit or Firm — Name — Date
Signature

Mark Robinson, PE — District 5 Design — FDOT - D5
Reviewed by: Name — Title — Org. Unit or Firm — Date
Signature

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 1

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2011 to 2040*

SECTION #: 75280000 **SEGMENT #:** ML **ITEM #:** 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK SR 400 (I-4) - E. of World Drive C

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2011	61000	965	0	0.5	16.30%	0.590	0.900
2012	70000	1086	0	0.5	16.30%	0.579	0.900
2013	79000	1204	0	0.5	16.30%	0.569	0.900
2014	88000	1320	0	0.5	16.30%	0.560	0.900
2015	97000	1434	0	0.5	16.30%	0.552	0.900
2016	106000	1547	0	0.5	16.30%	0.545	0.900
2017	115000	1657	0	0.5	16.30%	0.538	0.900
2018	124000	1766	0	0.5	16.30%	0.532	0.900
2019	133000	1874	0	0.5	16.30%	0.526	0.900
2020	142000	1980	1980	0.5	16.30%	0.521	0.900
2021	144200	2006	3986	0.5	16.30%	0.519	0.900
2022	146500	2032	6018	0.5	16.30%	0.518	0.900
2023	148800	2059	8077	0.5	16.30%	0.517	0.900
2024	151100	2086	10163	0.5	16.30%	0.516	0.900
2025	153400	2113	12276	0.5	16.30%	0.514	0.900
2026	155600	2138	14414	0.5	16.30%	0.513	0.900
2027	157900	2164	16578	0.5	16.30%	0.512	0.900
2028	160200	2191	18769	0.5	16.30%	0.511	0.900
2029	162500	2217	20986	0.5	16.30%	0.510	0.900
2030	164800	2243	23229	0.5	16.30%	0.508	0.900
2031	167000	2268	25497	0.5	16.30%	0.507	0.900
2032	169300	2295	27792	0.5	16.30%	0.506	0.900
2033	171600	2321	30113	0.5	16.30%	0.505	0.900
2034	173900	2347	32460	0.5	16.30%	0.504	0.900
2035	176200	2372	34832	0.5	16.30%	0.503	0.900
2036	178400	2397	37229	0.5	16.30%	0.502	0.900
2037	180700	2423	39652	0.5	16.30%	0.501	0.900
2038	183000	2449	42101	0.5	16.30%	0.500	0.900
2039	185300	2474	44575	0.5	16.30%	0.499	0.900
2040	187600	2500	47075	0.5	16.30%	0.498	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 21249

Opening to Design Year ESAL Accumulation (1000s): 45095

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project historical traffic data and other available information.

ROBERT M. DENNEY — LICENSE — No. 56990 — STATE OF FLORIDA — PROFESSIONAL ENGINEER

Prepared by: HNTB — 610 Crescent Executive Ct, Suite 400, Lake Mary, FL 32746 — Robert Denney, PE — 4/23/2014

Org. Unit or Firm — Name — Date

Signature

Reviewed by: Mark Robinson, PE — District 5 Design — FDOT - D5

Name — Title — Org.Unit or F — Date

Signature

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 1

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2011 to 2040*

SECTION #: 75280000 **SEGMENT #:** ML **ITEM #:** 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK SR 400 (I-4) - E. of World Drive C

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2011	61000	1361	0	0.5	16.30%	0.590	1.270
2012	70000	1532	0	0.5	16.30%	0.579	1.270
2013	79000	1699	0	0.5	16.30%	0.569	1.270
2014	88000	1863	0	0.5	16.30%	0.560	1.270
2015	97000	2024	0	0.5	16.30%	0.552	1.270
2016	106000	2182	0	0.5	16.30%	0.545	1.270
2017	115000	2338	0	0.5	16.30%	0.538	1.270
2018	124000	2492	0	0.5	16.30%	0.532	1.270
2019	133000	2644	0	0.5	16.30%	0.526	1.270
2020	142000	2794	2794	0.5	16.30%	0.521	1.270
2021	144200	2830	5624	0.5	16.30%	0.519	1.270
2022	146500	2868	8492	0.5	16.30%	0.518	1.270
2023	148800	2906	11398	0.5	16.30%	0.517	1.270
2024	151100	2943	14341	0.5	16.30%	0.516	1.270
2025	153400	2981	17322	0.5	16.30%	0.514	1.270
2026	155600	3017	20339	0.5	16.30%	0.513	1.270
2027	157900	3054	23393	0.5	16.30%	0.512	1.270
2028	160200	3091	26484	0.5	16.30%	0.511	1.270
2029	162500	3128	29612	0.5	16.30%	0.510	1.270
2030	164800	3165	32777	0.5	16.30%	0.508	1.270
2031	167000	3201	35978	0.5	16.30%	0.507	1.270
2032	169300	3238	39216	0.5	16.30%	0.506	1.270
2033	171600	3274	42490	0.5	16.30%	0.505	1.270
2034	173900	3311	45801	0.5	16.30%	0.504	1.270
2035	176200	3348	49149	0.5	16.30%	0.503	1.270
2036	178400	3382	52531	0.5	16.30%	0.502	1.270
2037	180700	3419	55950	0.5	16.30%	0.501	1.270
2038	183000	3455	59405	0.5	16.30%	0.500	1.270
2039	185300	3491	62896	0.5	16.30%	0.499	1.270
2040	187600	3527	66423	0.5	16.30%	0.498	1.270

Opening to Mid-Design Year ESAL Accumulation (1000s): 29983

Opening to Design Year ESAL Accumulation (1000s): 63629

I have reviewed the 18 kip Equivalent Single Axle Loads (ESAL's) to be used for pavement design on this project. I hereby attest that these have been developed in accordance with the FDOT Project Traffic Forecasting Procedure using historical traffic data and other available information.

Prepared by: HNTB 610 Crescent Executive Ct, Suite 400 Lake Mary, FL 32746 — Robert Denney, PE — 4/23/2014

Org. Unit or Firm — Name — Date

ROBERT M. DENNEY LICENSE NO. 68198 STATE OF FLORIDA PROFESSIONAL ENGINEER 4/23/14

Reviewed by: Mark Robinson, PE — District 5 Design — FDOT - D5

Name — Title — Org.Unit or Firm — Date

Signature

APPENDIX B

GEOTECHNICAL INFORMATION

Geotechnical Professional Associates, Inc.
GPA
Geotechnical & Environmental Consultants

December 9, 2003
File No.: 03-1010

Kimley-Horn & Associates, Inc.
Design Division
4431 Embarcadero Drive
West Palm Beach, Florida 33407

Attention: Murray D. Thornburg, Jr. P.E.

Subject: Design LBR Results
State Road 400 (Interstate 4)
From South of S.R. 435 (Kirkman Road)
to South of S.R. 500/600 (Orange Blossom Trail)
Orange County, Florida
FIN No.: 242484-3-32-01

Dear Mr. Thornburg:

As requested and authorized, we have completed design LBR calculations for the S.R. 400 project referenced above. The purpose of performing these analyses was to provide data for pavement design. This letter documents our findings and presents our engineering recommendations.

A total of 24 LBR tests were performed on selected bulk soil samples in accordance with the Florida Method of Tests for Limerock Bearing Ratios, designation FM-5-515. The samples were obtained at depths ranging from 0.0 to 1.5 feet below the existing grade adjacent to existing flexible pavement areas and from within proposed pond areas.

The design LBR value was calculated using the results of the LBR tests. Samples were obtained only for the proposed road as of this date. Results for all 24 LBR tests are presented in the following table.

	Roadway LBR Samples (1 - 24)
Mean Method	30
90% Method	32

Copies of the design LBR calculations are attached. LBR tests were conducted on near surface sandy soils. It should be noted that the majority of the pavement section will be placed on fill and that the actual LBR values of final embankment and/or subgrade soils may vary with the fill source. Therefore, we recommend using an LBR value of 25 for the pavement

5780 Hoffner Avenue • Suite 403
Orlando, Florida 32822
(407) 275-5959 FAX: (407) 275-5129

It has been a pleasure assisting you with this phase of the project. If you have any questions, or when we may be of further assistance to you, please do not hesitate to contact us.

Sincerely,
GEOTECHNICAL PROFESSIONAL ASSOCIATES, INC.

Brendan S. O'Brien. P.E.
Senior Project Engineer
Florida Registration No. 52047

Shelley B. Gisclar, P.E.
President

BSO/SBG/ks
\\Front\main c\2003 Projects\03-1010 I-4 Improvements\LBRs\LBR des let.wpd

cc: Mr. Carl Jones - Fla. Dept. Of Transportation - District V

APPENDIX C

TYPICAL SECTION

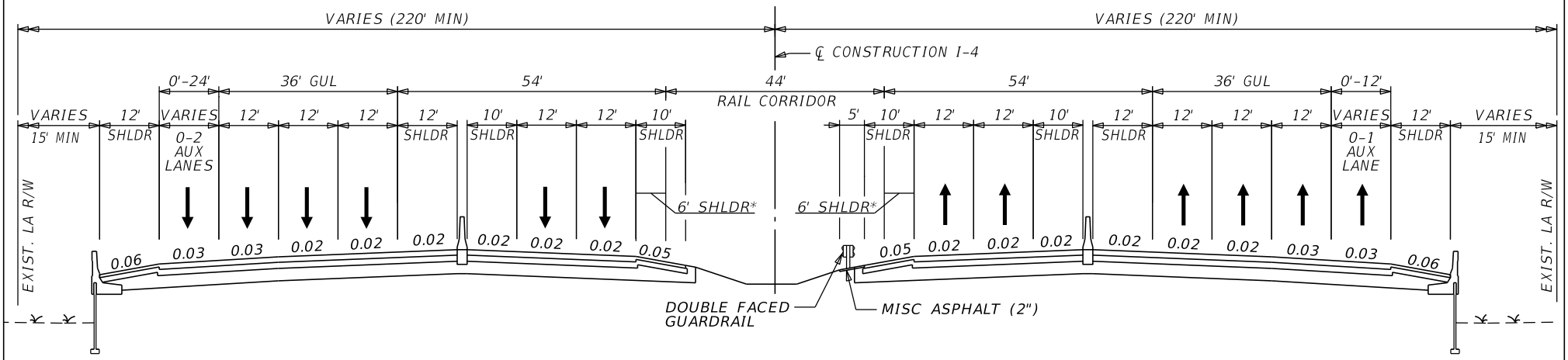
PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME OSCEOLA (92130) ORANGE (75280)

SECTION NO. 92130 & 75820 ROAD DESIGNATION I-4 (SR 400) LIMITS/MILEPOST MP 0.000 – 7.885 (OSCEOLA) MP 0.000 – 5.650 (ORANGE)

PROJECT DESCRIPTION I-4 WIDENING FROM EAST OF CR 54 TO WEST OF SR 528.

PROPOSED ROADWAY TYPICAL SECTION



TYPICAL SECTION
SR 400 (INTERSTATE 4)
MP 0.000 TO 7.885 (OSCEOLA COUNTY)
MP 0.000 TO 5.650 (ORANGE COUNTY)
(STA. 626+39.92 TO STA. 1345+48.48)

DESIGN SPEED = 70 MPH

* PAVED INSIDE SHOULDER FOR EXPRESS LANES MODIFIED FROM 10 FT TO 6 FT WHEN RAIL IS CONSTRUCTED AND BARRIER WALL IS IN PLACE

APPROVED BY:	FDOT CONCURRENCE	FHWA CONCURRENCE
ROBERT M. DENNEY, P.E. Date Engineer Of Record 58593 HNTB CORPORATION 610 CRESCENT EXECUTIVE CT. SUITE 400 LAKE MARY, FL 32746 (407) 805-0355 CERT OF AUTH NO 6500	ANNETTE K. BRENNAN, P.E. Date FDOT District Design Engineer	FHWA Transportation Engineer Date

ANMILLER 3/13/2014 10:15:06 AM \\LKMw00\pmwork3\Jobs\59219 - I4 SAMR\TECHPROD\43210012201\Segment 1\roadway\TYPDRD101.DGN

APPENDIX D

PAVEMENT DESIGN CALCULATIONS

TABLE A.4A

REQUIRED STRUCTURAL NUMBER (SN_R)
90% RELIABILITY (%R)
RESILIENT MODULUS (M_R) RANGE 4000 PSI TO 18000 PSI

RESILIENT MODULUS (M_R), (PSI x 1000)

M_R = 8.75

$ESAL_D$	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
100 000	3.02	2.77	2.59	2.44	2.31	2.21	2.12	2.04	1.97	1.91	1.86	1.81	1.76	1.72	1.68
150 000	3.23	2.97	2.77	2.61	2.47	2.36	2.27	2.19	2.11	2.05	1.99	1.94	1.89	1.84	1.80
200 000	3.39	3.11	2.90	2.73	2.60	2.48	2.38	2.30	2.22	2.15	2.09	2.03	1.98	1.94	1.89
250 000	3.52	3.23	3.01	2.84	2.69	2.57	2.47	2.38	2.30	2.23	2.17	2.11	2.06	2.01	1.97
300 000	3.62	3.33	3.10	2.92	2.78	2.65	2.55	2.46	2.37	2.30	2.24	2.18	2.12	2.07	2.03
350 000	3.71	3.41	3.18	3.00	2.85	2.72	2.61	2.52	2.44	2.36	2.30	2.23	2.18	2.13	2.08
400 000	3.79	3.49	3.25	3.07	2.91	2.78	2.67	2.58	2.49	2.42	2.35	2.29	2.23	2.18	2.13
450 000	3.87	3.56	3.32	3.13	2.97	2.84	2.73	2.63	2.54	2.46	2.39	2.33	2.27	2.22	2.17
500 000	3.93	3.62	3.38	3.18	3.02	2.89	2.77	2.67	2.59	2.51	2.44	2.37	2.31	2.26	2.21
600 000	4.05	3.73	3.48	3.28	3.12	2.98	2.86	2.76	2.67	2.58	2.51	2.45	2.39	2.33	2.28
700 000	4.14	3.82	3.57	3.36	3.20	3.05	2.93	2.83	2.73	2.65	2.58	2.51	2.45	2.39	2.34
800 000	4.23	3.90	3.64	3.44	3.27	3.12	3.00	2.89	2.80	2.71	2.63	2.57	2.50	2.44	2.39
900 000	4.31	3.97	3.71	3.51	3.33	3.18	3.06	2.95	2.85	2.76	2.69	2.62	2.55	2.49	2.44
1 000 000	4.38	4.04	3.78	3.57	3.39	3.24	3.11	3.00	2.90	2.81	2.73	2.66	2.60	2.54	2.48
1 500 000	4.65	4.30	4.03	3.81	3.62	3.46	3.33	3.21	3.10	3.01	2.92	2.85	2.78	2.71	2.65
2 000 000	4.85	4.50	4.21	3.99	3.79	3.63	3.49	3.36	3.25	3.16	3.07	2.99	2.91	2.85	2.78
2 500 000	5.01	4.65	4.36	4.13	3.93	3.76	3.62	3.49	3.38	3.27	3.18	3.10	3.02	2.95	2.89
3 000 000	5.14	4.77	4.48	4.25	4.05	3.88	3.73	3.60	3.48	3.37	3.28	3.19	3.12	3.04	2.98
3 500 000	5.25	4.88	4.59	4.35	4.14	3.97	3.82	3.69	3.57	3.46	3.36	3.28	3.20	3.12	3.06
4 000 000	5.35	4.98	4.68	4.44	4.23	4.06	3.90	3.77	3.65	3.54	3.44	3.35	3.27	3.19	3.12
4 500 000	5.44	5.06	4.76	4.52	4.31	4.13	3.98	3.84	3.72	3.61	3.51	3.42	3.33	3.26	3.19
5 000 000	5.52	5.14	4.83	4.59	4.38	4.20	4.04	3.90	3.78	3.67	3.57	3.47	3.39	3.31	3.24
6 000 000	5.66	5.27	4.96	4.71	4.50	4.32	4.16	4.02	3.89	3.78	3.67	3.58	3.49	3.41	3.34
7 000 000	5.78	5.38	5.07	4.82	4.61	4.42	4.26	4.12	3.99	3.87	3.77	3.67	3.58	3.50	3.43
8 000 000	5.88	5.48	5.17	4.91	4.70	4.51	4.35	4.20	4.07	3.95	3.85	3.75	3.66	3.58	3.50
9 000 000	5.97	5.57	5.26	5.00	4.78	4.59	4.43	4.28	4.15	4.03	3.92	3.82	3.73	3.65	3.57
10 000 000	6.06	5.65	5.33	5.07	4.85	4.66	4.50	4.35	4.22	4.10	3.99	3.89	3.79	3.71	3.63
15 000 000	6.39	5.97	5.64	5.37	5.14	4.95	4.77	4.62	4.48	4.36	4.25	4.14	4.05	3.96	3.88
20 000 000	6.63	6.20	5.86	5.59	5.35	5.15	4.98	4.82	4.68	4.55	4.44	4.33	4.23	4.14	4.06
25 000 000	6.82	6.38	6.04	5.76	5.52	5.32	5.14	4.98	4.84	4.71	4.59	4.48	4.38	4.29	4.20
30 000 000	6.98	6.53	6.18	5.90	5.66	5.45	5.27	5.11	4.96	4.83	4.71	4.60	4.50	4.41	4.32
35 000 000	7.12	6.66	6.31	6.02	5.78	5.57	5.38	5.22	5.07	4.94	4.82	4.71	4.61	4.51	4.42
40 000 000	7.24	6.78	6.42	6.13	5.88	5.67	5.48	5.32	5.17	5.04	4.91	4.80	4.70	4.60	4.51
45 000 000	7.34	6.88	6.52	6.22	5.97	5.76	5.57	5.41	5.26	5.12	5.00	4.88	4.78	4.68	4.59
50 000 000	7.44	6.97	6.61	6.31	6.06	5.84	5.65	5.49	5.34	5.20	5.07	4.96	4.85	4.76	4.66
60 000 000	7.61	7.13	6.76	6.46	6.21	5.99	5.79	5.62	5.47	5.33	5.21	5.09	4.98	4.88	4.79
70 000 000	7.76	7.27	6.90	6.59	6.33	6.11	5.91	5.74	5.59	5.45	5.32	5.20	5.09	4.99	4.90
80 000 000	7.88	7.40	7.01	6.70	6.44	6.22	6.02	5.85	5.69	5.55	5.42	5.30	5.19	5.09	4.99
90 000 000	8.00	7.51	7.12	6.80	6.54	6.31	6.11	5.94	5.78	5.64	5.51	5.39	5.28	5.17	5.08
100 000 000	8.10	7.60	7.21	6.90	6.63	6.40	6.20	6.02	5.86	5.72	5.59	5.47	5.35	5.25	5.15

$ESAL_D$ I-4 Mainline Shoulder = 1,352,850

$ESAL_D$ I-4 Mainline = 45,095,000

Pavement Design For New Pavement (Flexible)

Project: SR 400 (I-4) Mainline

Opening + 20 years = 2040

Given: $ESAL_D$ = 45,095,000 Traffic Level E page 2.5.0

M_R = 8,750 psi

Assume a 90% reliability

1.0 From table 5.3 (or A.4A), the Structural Number Required (SN_R) = 5.81

2.0

SN_R	=	SN_C										
5.81	=	a_1	D_1	+	a_2	D_2	+	a_3	D_3	+	a_4	D_4
5.81	=	0	0.75	+	a_2	D_2	+	a_3	D_3	+	0.08	12
5.81	=		0.00	+	a_2	D_2	+	a_3	D_3	+		0.96
4.85	=				a_2	D_2	+	a_3	D_3			

3.0 With the following eqn. find the base group from table 5.9

4.85	=	a_2	D_2	+	a_3	D_3

Base group 12 yields a 6.00 inch structural course with an SN of 4.89

Note: the structural number found in table 5.9 must be slightly larger than the $a_2D_2 + a_3D_3$ ratio

4.0

Calculate the Structural number (SN_C), so that it is equal to or larger than SN_R.

Material	Thickness	Coefficient	SN_C	
Structural Course	6.00	0.44	2.64	see table 5.4
Base (OBG 12 - 12.5" LBR 100)	12.50	0.18	2.25	see table 5.6
Stabilization (LBR 40)	12.00	0.08	0.96	
Total thickness	30.50 inches		SN_C=	5.85

$SN_C \geq SN_R$

$5.85 \geq 5.81$

New Pavement Design (Modulus of Subgrade Reaction = 200) (Rigid)

REQUIRED DEPTH (D_R) FOR 90% RELIABILITY From table 3.2

ESAL 63,629,000

ESAL's (000) Depth Region: 2 Table E.3

63,500,000 **13"**

Table E-7 from the 2009 FDOT Rigid Pavement Design Manual - Based on MEPDG with Tied Concrete Shoulders

When an ashphalt shoulder is used, Mainline Slab thickness must be increased by 1/2" and a 14' wide slab used.

use: **13.5**

Pavement Design For New Pavement (Flexible)

Project: SR 400 (I-4) Mainline Shoulder

Opening Year 2020

Design Year 2040

Given: $ESAL_D$ = 1,352,850 Traffic Level B

M_R = 8,750 psi

Assume a 90% reliability

1.0 From table 5.3, the Structural Number Required (SN_R) = 3.44

2.0

SN_R	=	SN_C									
3.44	=	a_1	D_1	+	a_2	D_2	+	a_3	D_3	+	a_4 D_4
3.44	=	0	0.75	+	a_2	D_2	+	a_3	D_3	+	0.08 12
3.44	=	0.00		+	a_2	D_2	+	a_3	D_3	+	0.96
2.48	=				a_2	D_2	+	a_3	D_3		

3.0 With the following eqn. find the base group from table 5.9

2.48	=	a_2	D_2	+	a_3	D_3

Base group 8 yields a 2.00 inch structural course with an SN of 2.50

Note: the structural number found in table 5.9 must be slightly larger than the $a_2D_2 + a_3D_3$ ratio

4.0 Calculate the Structural number (SN_C), so that it is equal to or larger than SN_R.

Material	Thickness	Coefficient	SN_C	
Structural Course (Traffic Level B)	2.00	0.44	0.88	see table 5.4
Base (OBG 8 - 9.5" LBR 100)	9.50	0.18	1.71	see table 5.6
Stabilization (LBR 40)	12.00	0.08	0.96	

SN_C= 3.55

SN_C	≥	SN_R
3.55	≥	3.44

APPENDIX E

LIFE CYCLE COST ANALYSIS

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description	
0125 1	5	$12.25	$189,709.27	15,484.000	CY	N	EXCAVATION FOR STRUCTURES	
0142 70	2	$8.30	$254,775.45	30,698.900	CY	N	FILL SAND	
0145 1	1	$2.80	$34,034.00	12,155.000	SF	N	GEOSYNTHETIC REINFORCED SOIL SLOPE	
0145 2	5	$4.13	$128,153.92	31,015.000	SY	N	GEOSYNTHETIC REINF FND OVER SOFT SOIL	
0145 71	2	$4.96	$126,655.10	25,537.000	SY	N	REINFORCEMENT GRID FOR SOIL STABILIZAT	
0160 4	75	$2.94	$6,786,939.17	2,306,819.900	SY	N	TYPE B STABILIZATION	Use $3.25
0162 1 11	47	$.75	$1,073,381.04	1,432,882.500	SY	N	PREPARED SOIL LAYER, FINISH SOIL, 6"	
0162 1 12	2	$6.00	$152,781.16	25,473.000	SY	N	PREPARED SOIL LAYER, FINISH SOIL, 12"	
0162 1 33	2	$6.47	$19,914.72	3,078.000	SY	N	PREPARED SOIL LAYER, BLANKET, SPECIAL	
0210 1 1	3	$.84	$15,497.22	18,428.000	SY	N	REWORKING LIMEROCK BASE, 6"	
0210 1 8	1	$5.25	$7,612.50	1,450.000	SY	N	REWORKING LIMEROCK BASE, 4"	
0210 1 9	2	$1.53	$13,705.98	8,952.000	SY	N	REWORKING LIMEROCK BASE, 3"	
0210 2	3	$30.06	$29,907.33	995.000	CY	N	LIMEROCK-NEW MATERIAL FOR REWORKING BASE	
0285701	43	$8.75	$2,143,465.88	245,052.400	SY	N	OPTIONAL BASE,BASE GROUP 01	
0285702	8	$9.74	$1,316,487.12	135,111.600	SY	N	OPTIONAL BASE,BASE GROUP 02	
0285703	4	$20.07	$424,418.92	21,145.000	SY	N	OPTIONAL BASE,BASE GROUP 03	
0285704	14	$12.30	$1,540,733.48	125,247.100	SY	N	OPTIONAL BASE,BASE GROUP 04	
0285705	5	$9.81	$215,501.27	21,972.500	SY	N	OPTIONAL BASE,BASE GROUP 05	
0285706	24	$16.77	$2,598,586.70	154,945.500	SY	N	OPTIONAL BASE,BASE GROUP 06	
0285707	6	$16.12	$571,196.20	35,437.000	SY	N	OPTIONAL BASE,BASE GROUP 07	
0285708	2	$25.85	$31,955.10	1,236.000	SY	N	OPTIONAL BASE,BASE GROUP 08	
0285709	43	$19.54	$6,117,979.92	313,132.900	SY	N	OPTIONAL BASE,BASE GROUP 09	
0285710	13	$12.09	$2,245,598.32	185,675.000	SY	N	OPTIONAL BASE,BASE GROUP 10	
0285711	14	$12.81	$7,766,775.03	606,371.300	SY	N	OPTIONAL BASE,BASE GROUP 11	
0285712	7	$11.34	$1,839,643.30	162,288.400	SY	N	OPTIONAL BASE,BASE GROUP 12	Use $15.00
0285713	7	$39.77	$1,296,066.58	32,589.000	SY	N	OPTIONAL BASE,BASE GROUP 13	
0285715	10	$44.62	$2,866,270.26	64,240.900	SY	N	OPTIONAL BASE,BASE GROUP 15	
0286 1	26	$13.30	$1,154,612.48	86,788.100	SY	N	TURNOUT CONSTRUCTION	
0286 2	2	$151.17	$48,737.50	322.400	TN	N	TURNOUT CONSTRUCTION-ASPHALT	
0287 1	1	$160.00	$929,600.00	5,810.000	CY	N	ASPHALT TREATED PERMEABLE BASE	
0288001	1	$800.00	$357,600.00	447.000	CY	N	CEMENT TREATED PERMEABLE BASE	
0327 70 1	52	$2.45	$2,864,985.08	1,169,586.100	SY	N	MILLING EXIST ASPH PAVT, 1" AVG DEPTH	
0327 70 2	8	$2.35	$719,563.62	305,678.200	SY	N	MILLING EXIST ASPH PAVT,3 1/2" AVG DEPTH	
0327 70 3	1	$1.80	$3,600.00	2,000.000	SY	N	MILLING EXIST ASPH PAVT,4 1/2" AVG DEPTH	
0327 70 4	24	$2.05	$2,458,346.15	1,197,643.100	SY	N	MILLING EXIST ASPH PAVT, 3" AVG DEPTH	
0327 70 5	32	$2.90	$3,015,433.62	1,039,975.400	SY	N	MILLING EXIST ASPH PAVT, 2" AVG DEPTH	
0327 70 6	63	$1.48	$3,281,473.57	2,214,828.040	SY	N	MILLING EXIST ASPH PAVT,1 1/2" AVG DEPTH	
0327 70 7	4	$3.93	$499,059.98	126,869.000	SY	N	MILLING EXIST ASPH PAVT, 4" AVG DEPTH	
0327 70 8	20	$1.94	$1,999,793.25	1,033,019.000	SY	N	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH	
0327 70 10	1	$8.00	$15,888.00	1,986.000	SY	N	MILLING EXIST ASPH PAVT, 5" AVG DEPTH	

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description	
0327 70 11	17	$1.56	$2,923,614.12	1,871,617.500	SY	N	MILLING EXIST ASPH PAVT,2 1/4" AVG DEPTH	
0327 70 12	4	$1.95	$133,787.48	68,539.000	SY	N	MILLING EXIST ASPH PAVT,1 1/4" AVG DEPTH	
0327 70 13	11	$2.13	$1,114,376.81	523,739.000	SY	N	MILLING EXIST ASPH PAVT,1 3/4" AVG DEPTH	
0327 70 15	9	$1.61	$1,240,974.34	771,417.000	SY	N	MILLING EXIST ASPH PAVT,2 3/4" AVG DEPTH	
0327 70 16	7	$1.16	$100,825.40	86,892.000	SY	N	MILLING EXIST ASPH PAVT, 1/2" AVG DEPTH	
0327 70 17	5	$2.00	$1,179,734.15	589,214.300	SY	N	MILLING EXIST ASPH PAVT,3 1/4" AVG DEPTH	
0327 70 19	20	$1.57	$761,476.82	485,441.000	SY	N	MILLING EXIST ASPH PAVT, 3/4" AVG DEPTH	
0327 70 20	3	$1.55	$302,718.58	194,784.000	SY	N	MILLING EXIST ASPH PAVT,3 3/4" AVG DEPTH	
0327 70 22	2	$2.46	$22,249.15	9,061.000	SY	N	MILLING EXIST ASPH PAVT,4 1/4" AVG DEPT	
0327 70 23	1	$7.45	$72,607.70	9,746.000	SY	N	MILLING EXIST ASPH PAVT, 6" AVG DEPTH	
0327 70 30	1	$4.28	$64,957.56	15,177.000	SY	N	MILLING EXIST ASPH PAVT,11.5" AVG DEPTH	
0334 1 11	11	$95.06	$802,726.60	8,444.750	TN	N	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	
0334 1 12	22	$81.26	$7,519,027.79	92,531.440	TN	N	SUPERPAVE ASPHALTIC CONC, TRAFFIC B	Use $85.00
0334 1 13	53	$83.22	$40,817,029.94	490,443.100	TN	N	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	
0334 1 14	9	$83.17	$7,012,333.90	84,315.100	TN	N	SUPERPAVE ASPHALTIC CONC, TRAFFIC D	
0334 1 22	16	$85.25	$9,503,952.79	111,481.900	TN	N	SUPERPAVE ASPH CONC, TRAF B, PG76-22,PMA	
0334 1 23	24	$88.67	$21,926,641.13	247,287.200	TN	N	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	
0334 1 24	20	$90.24	$24,497,134.59	271,468.400	TN	N	SUPERPAVE ASPH CONC, TRAF D, PG76-22,PMA	Use $92.00 as recommended for SP TRAF D, PG76-22
0334 1 25	2	$83.95	$5,003,179.12	59,598.600	TN	N	SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA	
0334 1 33	1	$129.49	$77,875.29	601.400	TN	N	SUPERPAVE ASPH CONC, TRAF C, PG82-22,PMA	
0337 7 22	30	$120.68	$20,017,257.02	165,872.000	TN	N	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	
0337 7 24	2	$148.15	$925,548.50	6,247.300	TN	N	ASPH CONC FC, FC-5, PG 76-22, ARB	
0337 7 40	15	$94.62	$6,178,002.65	65,292.800	TN	N	ASPH CONC FC,TRAFFIC B,FC-9.5,PG 76-22	
0337 7 41	2	$84.64	$650,506.31	7,685.900	TN	N	ASPH CONC FC,TRAFFIC B,FC-12.5,PG 76-22	
0337 7 42	9	$96.64	$5,720,697.02	59,193.000	TN	N	ASPH CONC FC,TRAFFIC C,FC-9.5,PG 76-22	
0337 7 43	18	$97.90	$9,187,654.92	93,844.000	TN	N	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	
0337 7 45	5	$104.36	$1,410,325.09	13,513.500	TN	N	ASPH CONC FC,TRAFFIC D,FC-12.5,PG 76-22	
0337 7 55	1	$87.00	$701,829.00	8,067.000	TN	N	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 82-22	
0337 7 71	2	$125.55	$401,813.44	3,200.400	TN	N	ASPH CONC FC,TRAF B,FC-9.5,PG 76-22, ARB	
0337 7 72	1	$149.00	$210,239.00	1,411.000	TN	N	ASPH CONC FC,TRAF B,FC-12.5,PG 76-22,ARB	
0337 7 73	11	$108.23	$3,802,934.94	35,137.560	TN	N	ASPH CONC FC,TRAF C,FC-9.5,PG 76-22, ARB	
0337 7 74	4	$103.90	$5,272,087.04	50,743.690	TN	N	ASPH CONC FC,TRAF C,FC-12.5,PG 76-22,ARB	
0339 1	70	$147.41	$2,725,380.62	18,488.000	TN	N	MISCELLANEOUS ASPHALT PAVEMENT	
0341 70	2	$6.01	$326,969.28	54,368.000	SY	N	ASPHALT RUBBER MEMBRANE INTERLAYER	
0350 1 1	1	$50.00	$18,150.00	363.000	SY	N	PLAIN CEMENT CONC PAVT, 6"	
0350 1 3	1	$55.00	$861,465.00	15,663.000	SY	N	PLAIN CEMENT CONC PAVT, 8"	
0350 1 4	1	$60.00	$38,280.00	638.000	SY	N	PLAIN CEMENT CONC PAVT, 9"	
0350 1 13	1	$51.00	$1,922,190.00	37,690.000	SY	N	PLAIN CEMENT CONC PAVT, 11 1/2"	
0350 1 20	1	$62.23	$2,052,220.94	32,978.000	SY	N	PLAIN CEMENT CONC PAVT, 9 1/2"	
0350 2 10	1	$86.00	$25,800.00	300.000	SY	N	CEMENT CONC PAVT REINFORCED,12"	

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description	
0350 72	4	$1.81	$1,170,093.83	645,760.000	LF	N	CLEANING & RESEALING JOINTS - CONC PVMT	
0350 78	3	$3.44	$67,170.00	19,506.000	LF	N	CLEANING & SEALING RAN CRACKS CONC PVMT	
0352 70	6	$3.62	$1,905,950.84	525,880.000	SY	N	GRINDING CONCRETE PAVT	
0353 70	4	$565.74	$11,234,177.50	19,857.450	CY	N	CONC PAVT SLAB REPLACEMENT	Use $400.00
0370 1	1	$85.00	$4,930.00	58.000	LF	N	BRIDGE APPR EXP JOINT FOR CONC PVMT	
0400 0 11	34	$472.70	$2,566,357.06	5,429.200	CY	N	CONC CLASS NS, GRAVITY WALL	
0400 0 13	3	$1,549.72	$18,751.64	12.100	CY	N	CONC CLASS NS, STEPS	
0400 1 2	29	$859.08	$603,008.67	701.920	CY	N	CONC CLASS I, ENDWALLS	
0400 1 11	1	$2,361.61	$6,140.19	2.600	CY	N	CONC CLASS I, RETAINING WALLS	
0400 2 1	3	$788.11	$1,332,537.58	1,690.800	CY	N	CONC CLASS II, CULVERTS	
0400 2 2	1	$806.90	$32,598.76	40.400	CY	N	CONC CLASS II, ENDWALLS	
0400 2 4	12	$591.73	$5,231,953.29	8,841.800	CY	N	CONC CLASS II, SUPERSTRUCTURE	
0400 2 5	7	$743.79	$650,001.78	873.900	CY	N	CONC CLASS II, SUBSTRUCTURE	
0400 2 10	17	$396.34	$1,185,093.76	2,990.100	CY	N	CONC CLASS II, APPROACH SLABS	
0400 2 11	2	$670.05	$74,509.50	111.200	CY	N	CONC CLASS II, RETAINING WALLS	
0400 2 12	1	$345.00	$29,980.50	86.900	CY	N	CONC CLASS II, TRENCH SLAB	
0400 2 41	1	$1,000.00	$151,800.00	151.800	CY	N	CONC CLASS II, PRECAST DECK OVERLAY	
0400 2 46	1	$624.15	$46,624.01	74.700	CY	N	CONC CLASS II, CIP COMP TOP W/ ADMIX	
0400 3 8	1	$765.62	$14,699.90	19.200	CY	N	CONC CLASS III, BULKHEAD	
0400 3 20	2	$403.44	$70,803.00	175.500	CY	N	CONC CLASS III, SEAL	
0400 4 1	9	$867.28	$1,636,044.97	1,886.400	CY	N	CONC CLASS IV, CULVERTS	
0400 4 4	8	$736.50	$2,118,909.00	2,877.000	CY	N	CONC CLASS IV, SUPERSTRUCTURE	
0400 4 5	19	$864.89	$3,429,894.14	3,965.700	CY	N	CONC CLASS IV, SUBSTRUCTURE	
0400 4 6	1	$250.00	$28,000.00	112.000	CY	N	CONC CLASS IV, COUNTERWEIGHT	
0400 4 8	7	$602.54	$1,308,291.05	2,171.300	CY	N	CONC CLASS IV, BULKHEAD	
0400 4 11	7	$603.33	$1,694,162.28	2,808.000	CY	N	CONC CLASS IV, RETAINING WALLS	
0400 4 25	4	$755.87	$1,327,149.00	1,755.800	CY	N	CONC CLASS IV, MASS, SUBSTRUCTURE	
0400 7	3	$11.30	$33,745.26	2,986.000	SY	N	BRIDGE DECK GROOVING, LESS THAN 8.5"	
0400 9	14	$9.62	$257,782.14	26,804.000	SY	N	BRIDGE DECK GROOV &PLANING, DECK 8.5"&>	
0400 32	1	$14,800.00	$128,760.00	8.700	CY	N	CONCRETE FOR JOINT REPAIR	
0400 60 1	4	$48,223.11	$192,892.43	4.000	LS	N	CATHODIC PROTECTION-ELECT WORK, AC POW	
0400 60 3	4	$61.31	$889,018.82	14,500.000	LF	N	CATHODIC PROTECTION-ELECT WORK, CODUIT,	
0400 60 4	4	$100,605.61	$402,422.43	4.000	LS	N	CATHODIC PROTECTION-ELECT WORK, EQUIP,	
0400 91	1	$2,500.00	$5,000.00	2.000	EA	N	DEWATERING FOR SPREAD FOOTINGS	
0400128	1	$10.00	$14,120.00	1,412.000	LF	N	GRTNING PRCST DECK PNL, NON-SHRINK GRTN	
0400140 1	1	$1,250.00	$90,000.00	72.000	EA	N	NEOPRENE PAD REPLACEMENT, BENT/PIER	
0400142 3	2	$45.67	$491,073.00	10,752.000	SF	N	CATHODIC PROTECTION SYSTEM, ZINC ALUM SP	
0400142 7	2	$46.83	$868,784.70	18,552.000	SF	N	CATHODIC PROTECTION SYSTEM,TITANIUM MESH	
0400142 9	1	$148.00	$258,556.00	1,747.000	SF	N	CATHODIC PROTECTION SYSTEM,OTHER MATRL	
0400143	7	$.97	$331,702.60	340,723.200	SF	N	CLEAN & COAT CONCRETE SURF , CLASS 5	

Florida Department of Transportation
Item Average Unit Cost
From 2013/04/01 to 2014/03/31

Contract Type: CC STATEWIDE
Displaying: VALID ITEMS WITH HITS
From: 0102 1 To: 9999999

Item	No. of Conts	Weighted Average	Total Amount	Total Quantity	Unit Meas	Obs?	Description
0446 1 1	2	$26.72	$213,892.08	8,004.000	LF	N	EDGEDRAIN DRAINCRETE, STANDARD
0446 71 1	4	$30.67	$56,408.70	1,839.000	LF	N	EDGEDRAIN OUTLET PIPE, 4"
0448 73	1	$873,909.95	$873,909.95	1.000	LS	N	PUMPING STATION- DRAINAGE
0450 2 36	5	$237.53	$3,113,565.00	13,108.000	LF	N	PREST BEAMS: FLORIDA-I BEAM 36"
0450 2 45	3	$176.33	$1,214,937.01	6,890.000	LF	N	PREST BEAMS: FLORIDA-I BEAM 45"
0450 2 54	1	$210.00	$1,180,830.00	5,623.000	LF	N	PREST BEAMS: FLORIDA-I BEAM 54"
0450 2 63	1	$215.00	$365,930.00	1,702.000	LF	N	PREST BEAMS: FLORIDA-I BEAM 63"
0450 2 84	1	$250.00	$332,250.00	1,329.000	LF	N	PREST BEAMS: FLORIDA-I BEAM 84"
0450 3 15	1	$160.00	$50,240.00	314.000	LF	N	PRESTRESSED SLAB UNITS,48" X 15"
0450 3 25	1	$160.00	$150,400.00	940.000	LF	N	PRESTRESSED SLAB UNITS,60" X 15"
0450 3 95	1	$160.00	$50,240.00	314.000	LF	N	PRESTRESSED SLAB UNITS,VAR WI 30-47", 15
0450 6	1	$19,464.85	$19,464.85	1.000	LS	N	PRESTRESSED SLAB BEAMS, INSTALL
0450 82	1	$400.00	$90,000.00	225.000	LF	N	BEAM REPAIR
0450 83 1	1	$2,050.00	$8,200.00	4.000	EA	N	BEAM REPAIR, STRAND SPLICES
0450 88 20	1	$71.00	$127,161.00	1,791.000	SF	N	PRESTR SLAB UNITS TRANSV POST TENS, 20"
0455 2	1	$1.00	$4,230.00	4,230.000	LF	N	TREATED TIMBER PILING
0455 14 3	2	$89.64	$520,335.80	5,805.000	LF	N	CONC SHEET PILING, 10"X30"
0455 14 4	1	$379.05	$191,041.20	504.000	LF	N	CONC SHEET PILING, 12"X30"
0455 18	6	$23,104.14	$138,624.82	6.000	LS	N	PROTECTION OF EXISTING STRUCTURES
0455 34 2	2	$72.14	$1,206,550.00	16,726.000	LF	N	PRESTRESSED CONCRETE PILING, 14" SQ.
0455 34 3	4	$77.11	$1,668,295.75	21,634.000	LF	N	PRESTRESSED CONCRETE PILING, 18" SQ
0455 34 5	9	$102.39	$4,084,021.40	39,887.000	LF	N	PRESTRESSED CONCRETE PILING, 24" SQ
0455 35 6	1	$80.00	$9,680.00	121.000	LF	N	STEEL PILING, HP 14 X 89
0455 35 8	1	$152.45	$134,156.00	880.000	LF	N	STEEL PILING, HP 14 X 117
0455 35 21	1	$166.92	$238,862.52	1,431.000	LF	N	STEEL PILING, 20" DIA. PIPE
0455 35 22	3	$117.76	$627,170.00	5,326.000	LF	N	STEEL PILING, 24" DIA. PIPE
0455 81101	1	$5,000.00	$20,000.00	4.000	EA	N	CATHODIC PROT,F&I,PILE,ZINC ANODE ASSEM
0455 81105	1	$6,875.00	$385,000.00	56.000	EA	N	CATHODIC PROT,F&I,PIER,TITANIUM ANODE
0455 87	3	$368.90	$29,881.30	81.000	EA	N	ANCHOR BAR, STEEL
0455 88 5	1	$335.72	$692,926.08	2,064.000	LF	N	DRILLED SHAFT, 48" DIA
0455101 1	1	$215,459.75	$215,459.75	1.000	EA	N	TEST LOAD, OSTERBERG CELL, < FIVE CELLS
0455107 5	1	$169.99	$34,677.96	204.000	LF	N	DRILLED SHAFT CASING, 48" DIA
0455111	1	$78.25	$175,280.00	2,240.000	LF	N	CORE-PILOT HOLE,DRILLED SHAFT EXCAV
0455120 7	3	$677.78	$67,100.00	99.000	EA	N	PILE POINT PROTECTION, 24" ROUND
0455122 5	1	$199.17	$379,219.68	1,904.000	LF	N	UNCLASSIFIED SHAFT EXCAVATION, 48" DIA
0455133 2	11	$17.49	$2,152,963.28	123,125.000	SF	N	SHEET PILING STEEL, TEMPORARY-CRITICAL
0455133 3	10	$30.08	$4,823,094.04	160,361.000	SF	N	SHEET PILING STEEL, F&I PERMANENT
0455133 5	2	$13.31	$1,393,684.70	104,743.000	SF	N	SHEET PILING VINYL, F&I PERMANENT
0455142	1	$1,983.23	$55,530.44	28.000	EA	N	CROSSHOLE SONIC LOGGING
0455143 3	4	$218.88	$552,675.10	2,525.000	LF	N	TEST PILES-PREST CONCRETE,18" SQ

FLORIDA DEPARTMENT OF TRANSPORTATION

PAVEMENT TYPE SELECTION SPREADSHEET

PROJECT DESCRIPTION:

Financial Project ID:	432100-1-22-01
State Road Number:	SR 400
County:	Osceola, Orange
Project Length:	13.535 Miles
Roadway ID:	92130000, 75280000
Begining MP:	
Ending MP:	
Transportation System:	
Type of Work	
Design Version	

432100-1-22-01				
LIST OF CONSTRUCTION ITEMS				
Pay Item	**Description**	**Mean Price**	**St. Deviation**	**Unit**
160 4	Type B Stabilized (LBR 40)	$3.25		Sq. Yd
285 7	OBG-1, Type B-12.5	$8.75		Sq. Yd
285 7	OBG-8	$25.85		Sq. Yd
285 7	OBG-12	$15.00		Sq. Yd
327 70	Milling 1" Avg. Depth	$2.45		Sq. Yd
327 70	Milling 3" Avg. Depth	$2.05		Sq. Yd
334 1	Type SP Traffic Level B	$85.00		Ton
334 1	Type SP Traffic Level E	$85.00		Ton
334 1	Type SP Traffic Level E PG76-22	$92.00		Ton
350 1	JPCP	$51.00		Sq. Yd
353 70	CPR - Slab Replacement (3%)	$400.00		Cu. Yd
353 70	CPR - Slab Replacement (5%)	$400.00		Cu. Yd
446 1	Edgedrain (Draincrete)	$26.72		Ft
446 71	Edgedrain Outlet Pipe (4 in)	$30.67		Ft

LIFE CYCLE COST ANALYSIS

JOINTED PLAIN CONCRETE PAVEMENT DESIGN (RIGID PAVEMENT)

Financial Project ID:432100-1-22-01, SR No.-SR 400, County:Osceola, Orange

Project Length: 13.535 Miles, Roadway ID: 92130000, 75280000

Begining MP: , Ending MP:

Definitions:

Length of Section:	5280	Ft			Analysis Period:	40	
Passing Lane Width:	12	Ft			Discount Rate:	3.5	
Travel Lane Width:	14	Ft			Initial Year of Construction:	2020	
Inside Shoulder Width:	22	Ft			No. of Passing Lanes:	3	
Outside Shoulder Width:	18	Ft			No. of Travel Lanes:	2	
Total Pavement Area:	675,840	Sq. Ft			No. of Travel Directions:	2	
Total Shoulder Area:	422,400	Sq. Ft	63,360	Long. Concrete Joints (Ft)	45,056	Trans. Concrete Joints (Ft)	

CONSTRUCTION ITEMS	THK.	QTY.	UNIT	UNIT PRICE	ST DEV	COST	PRESENT WORTH
INITIAL CONSTRUCTION IN YEAR:	**0**						
MAINLINE:							
JPCP	13.5	75,093.3	Sq. Yd	$51.00	$0.00	$3,829,760	$3,829,760
OBG-1, Type B-12.5	4	75,093.3	Sq. Yd	$8.75	$0.00	$657,067	$657,067
Type B Stabilized (LBR 40)	12	75,093.3	Sq. Yd	$3.25	$0.00	$244,053	$244,053
Edgedrain (Draincrete)	1	10,560.0	Ft	$26.72	$0.00	$282,163	$282,163
Edgedrain Outlet Pipe (4 in)	1	50.0	Ft	$30.67	$0.00	$1,534	$1,534
SHOULDER:							
Type SP Traffic Level B	2	5,104.0	Ton	$85.00	$0.00	$433,840	$433,840
OBG-8	9.5	46,933.3	Sq. Yd	$25.85	$0.00	$1,213,227	$1,213,227
Type B Stabilized (LBR 40)	12	46,933.3	Sq. Yd	$3.25	$0.00	$152,533	$152,533
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:	**23**						
MAINLINE:							
CPR - Slab Replacement (3%)	13.5	844.8	Cu. Yd	$400.00	$0.00	$337,920	$153,174
SHOULDER:							
Milling 1" Avg. Depth	1	46,933.3	Sq. Yd	$2.45	$0.00	$114,987	$52,122
Type SP Traffic Level B	1	2,552.0	Ton	$85.00	$0.00	$216,920	$98,327
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				

LIFE CYCLE COST ANALYSIS

JOINTED PLAIN CONCRETE PAVEMENT DESIGN (RIGID PAVEMENT)

Financial Project ID:432100-1-22-01, SR No.-SR 400, County:Osceola, Orange

Project Length: 13.535 Miles, Roadway ID: 92130000, 75280000

Begining MP: , Ending MP:

Definitions:

Length of Section:	5280	Ft			Analysis Period:	40	
Passing Lane Width:	12	Ft			Discount Rate:	3.5	
Travel Lane Width:	14	Ft			Initial Year of Construction:	2020	
Inside Shoulder Width:	22	Ft			No. of Passing Lanes:	3	
Outside Shoulder Width:	18	Ft			No. of Travel Lanes:	2	
Total Pavement Area:	675,840	Sq. Ft			No. of Travel Directions:	2	
Total Shoulder Area:	422,400	Sq. Ft	63,360	Long. Concrete Joints (Ft)	45,056	Trans. Concrete Joints (Ft)	

CONSTRUCTION ITEMS	THK.	QTY.	UNIT	UNIT PRICE	ST DEV	COST	PRESENT WORTH
REHABILITATION IN YEAR:	**33**						
MAINLINE:							
CPR - Slab Replacement (5%)	13.5	1,408.0	Cu. Yd	$400.00	$0.00	$563,200	$180,980
SHOULDER:							
Milling 1" Avg. Depth	1	46,933.3	Sq. Yd	$2.45	$0.00	$114,987	$36,950
Type SP Traffic Level B	1	2,552.0	Ton	$85.00	$0.00	$216,920	$69,706
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:	**40**						
MAINLINE:							
SHOULDER:							
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:							

TOTAL INITIAL CONSTRUCTION COST (YEAR 2020):	$6,814,177
TOTAL PRESENT WORTH REHABILITATION COST:	$591,259
TOTAL PRESENT WORTH SALVAGE VALUE:	$0
PRESENT WORTH:	$7,405,436

LIFE CYCLE COST ANALYSIS

ASPHALT CONCRETE PAVEMENT DESIGN (FLEXIBLE PAVEMENT)

Financial Project ID:432100-1-22-01, SR No.-SR 400, County:Osceola, Orange

Project Length: 13.535 Miles, Roadway ID: 92130000, 75280000

Begining MP: , Ending MP:

Definitions:

Length of Section:	5280	Ft	Analysis Period:	40
Passing Lane Width:	12	Ft	Discount Rate:	3.5
Travel Lane Width:	12	Ft	Initial Year of Construction:	2020
Inside Shoulder Width:	22	Ft	No. of Passing Lanes:	5
Outside Shoulder Width:	22	Ft	No. of Travel Lanes:	
Total Pavement Area:	633,600	Sq. Ft	No. of Travel Directions:	2
Total Shoulder Area:	464,640	Sq. Ft		

CONSTRUCTION ITEMS	THK.	QTY.	UNIT	UNIT PRICE	ST DEV	COST	PRESENT WORTH
INITIAL CONSTRUCTION IN YEAR:	**0**						
MAINLINE:							
Type SP Traffic Level E PG76-22	2	7,656.0	Ton	$92.00	$0.00	$704,352	$704,352
Type SP Traffic Level E PG76-22	2	7,656.0	Ton	$92.00	$0.00	$704,352	$704,352
Type SP Traffic Level E	2	7,656.0	Ton	$85.00	$0.00	$650,760	$650,760
OBG-12	12.5	70,400.0	Sq. Yd	$15.00	$0.00	$1,056,000	$1,056,000
Type B Stabilized (LBR 40)	12	70,400.0					
SHOULDER:							
Type SP Traffic Level B	1.5	4,210.8	Ton	$85.00	$0.00	$357,918	$357,918
OBG-8	9.5	51,626.7	Sq. Yd	$25.85	$0.00	$1,334,549	$1,334,549
Type B Stabilized (LBR 40)	12	51,626.7	Sq. Yd	$3.25	$0.00	$167,787	$167,787
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:	**13**						
MAINLINE:							
Milling 3" Avg. Depth	3	70,400.0	Sq. Yd	$2.05	$0.00	$144,320	$92,279
Type SP Traffic Level E PG76-22	2	7,656.0	Ton	$92.00	$0.00	$704,352	$450,366
Type SP Traffic Level E PG76-22	1	3,828.0	Ton	$92.00	$0.00	$352,176	$225,183
SHOULDER:							
Milling 1" Avg. Depth	1	51,626.7	Sq. Yd	$2.45	$0.00	$126,485	$80,875
Type SP Traffic Level B	1	2,807.2	Ton	$85.00	$0.00	$238,612	$152,570
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				

LIFE CYCLE COST ANALYSIS

ASPHALT CONCRETE PAVEMENT DESIGN (FLEXIBLE PAVEMENT)

Financial Project ID:432100-1-22-01, SR No.-SR 400, County:Osceola, Orange

Project Length: 13.535 Miles, Roadway ID: 92130000, 75280000

Begining MP: , Ending MP:

Definitions:

Length of Section:	5280	Ft	Analysis Period:	40
Passing Lane Width:	12	Ft	Discount Rate:	3.5
Travel Lane Width:	12	Ft	Initial Year of Construction:	2020
Inside Shoulder Width:	22	Ft	No. of Passing Lanes:	5
Outside Shoulder Width:	22	Ft	No. of Travel Lanes:	
Total Pavement Area:	633,600	Sq. Ft	No. of Travel Directions:	2
Total Shoulder Area:	464,640	Sq. Ft		

CONSTRUCTION ITEMS	THK.	QTY.	UNIT	UNIT PRICE	ST DEV	COST	PRESENT WORTH
REHABILITATION IN YEAR:	**26**						
MAINLINE:							
Milling 3" Avg. Depth	3	70,400.0	Sq. Yd	$2.05	$0.00	$144,320	$59,003
Type SP Traffic Level E PG76-22	2	7,656.0	Ton	$92.00	$0.00	$704,352	$287,966
Type SP Traffic Level E PG76-22	1	3,828.0	Ton	$92.00	$0.00	$352,176	$143,983
SHOULDER:							
Milling 1" Avg. Depth	1	51,626.7	Sq. Yd	$2.45	$0.00	$126,485	$51,712
Type SP Traffic Level B	1	2,807.2	Ton	$85.00	$0.00	$238,612	$97,554
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:	**39**						
MAINLINE:							
Milling 3" Avg. Depth	3	70,400.0	Sq. Yd	$2.05	$0.00	$144,320	$37,727
Type SP Traffic Level E PG76-22	2	7,656.0	Ton	$92.00	$0.00	$704,352	$184,126
Type SP Traffic Level E PG76-22	1	3,828.0	Ton	$92.00	$0.00	$352,176	$92,063
SHOULDER:							
Milling 1" Avg. Depth	1	51,626.7	Sq. Yd	$2.45	$0.00	$126,485	$33,065
Type SP Traffic Level B	1	2,807.2	Ton	$85.00	$0.00	$238,612	$62,376
DESIGN COSTS:			Subtotal				
MOT COSTS:			Subtotal				
CEI COSTS:			Subtotal				
REHABILITATION IN YEAR:	**52**						

TOTAL INITIAL CONSTRUCTION COST (YEAR 2020):	$4,975,718
TOTAL PRESENT WORTH REHABILITATION COST:	$2,050,847
TOTAL PRESENT WORTH SALVAGE VALUE:	$365,090
PRESENT WORTH:	$6,661,475

FLORIDA DEPARTMENT OF TRANSPORTATION
PAVEMENT TYPE SELECTION
ECONOMIC ANALYSIS
COST PER MILE

Analysis Period: 40 Years Discount Rate: 3.5%

PCC PAVEMENT

		Cost		P / F		PRESENT WORTH
	Initial	$6,814,177	*	1.00000	=	$6,814,177
23	Year	$669,827	*	0.45329	=	$303,623
33	Year	$895,107	*	0.32134	=	$287,636
40	Year		*		=	
	Year					
				TOTAL AGENCY COSTS	=	**$7,405,436**
				USER COSTS	=	
		Remaining Service Life		**PW of Last Rehab at Year 40**		
SALVAGE VALUE		0 / 7	*	$226,079	=	**$0**
				TOTAL PRESENT WORTH LIFE-CYCLE COSTS	=	**$7,405,436**

AC PAVEMENT

		Cost		P / F		PRESENT WORTH
	Initial	$4,975,718	*	1.00000	=	$4,975,718
13	Year	$1,565,945	*	0.63940	=	$1,001,272
26	Year	$1,565,945	*	0.40884	=	$640,217
39	Year	$1,565,945	*	0.26141	=	$409,358
52	Year					
				TOTAL AGENCY COSTS	=	**$7,026,565**
				USER COSTS	=	
		Remaining Service Life		**PW of Last Rehab at Year 40**		
SALVAGE VALUE		12 / 13	*	$395,515	=	**$365,090**
				TOTAL PRESENT WORTH LIFE-CYCLE COSTS	=	**$6,661,475**

COST COMPARISON

DIFFERENCE IN TOTAL PRESENT WORTH LIFE-CYCLE COSTS	=	**$743,961**
AVERAGE TOTAL PRESENT WORTH	=	**$7,033,455**
PERCENT DIFFERENCE IN TOTAL PRESENT WORTH	=	**10.6%**
DIFFERENCE IN ESTIMATED INITIAL COSTS	=	**$1,838,459**
PERCENT DIFFERENCE IN ESTIMATED INITIAL COSTS	=	**36.9%**
TOTAL PRESENT WORTH COST OF REHAB FOR PCC PAVEMENT	=	**$591,259**
TOTAL PRESENT WORTH COST OF REHAB FOR AC PAVEMENT	=	**$2,050,847**
DIFFERENCE IN TOTAL PRESENT WORTH OF REHAB COSTS (LCCF)	=	**$1,459,588**

APPENDIX F

PAVEMENT PERFORMANCE DATA

Rehabilitation Age by Year

For Osceola County
18APR2014
Other Conditions: Pavement= Asphalt

Year Rehabilitated	Lane Miles Rehabilitated	Average Rehabilitation Age	Standard Deviation
2007	30.5	14.5	4.2
2008	138.4	10.6	3.2
2009	66.0	12.3	3.3
2010	5.1	15.0	0.0
2011	4.2	14.0	0.0
2012	23.4	13.7	2.2
2013	20.0	15.6	0.5

Rehabilitation Age by Year

For Orange County
18APR2014
Other Conditions: Pavement= Asphalt

Year Rehabilitated	Lane Miles Rehabilitated	Average Rehabilitation Age	Standard Deviation
2007	196.8	15.1	6.6
2008	177.4	10.0	3.2
2009	229.9	12.3	7.7
2010	142.5	16.0	10.1
2011	67.4	15.9	6.8
2012	122.2	11.7	3.1
2013	60.2	12.0	5.6
2014	56.6	10.6	6.3

13JUN2012

Deficient Rehabilitation age by Year

For Hillsborough County

Other Conditions: Pavement= Concrete

Surface Type in (CONC)

Year Rehabilitated	Lane Miles Rehabilitated	Average Rehabilitation Age	Standard Deviation
2006	10.8	20	0
2007	26.7	25	0
2008	9.3	22	0

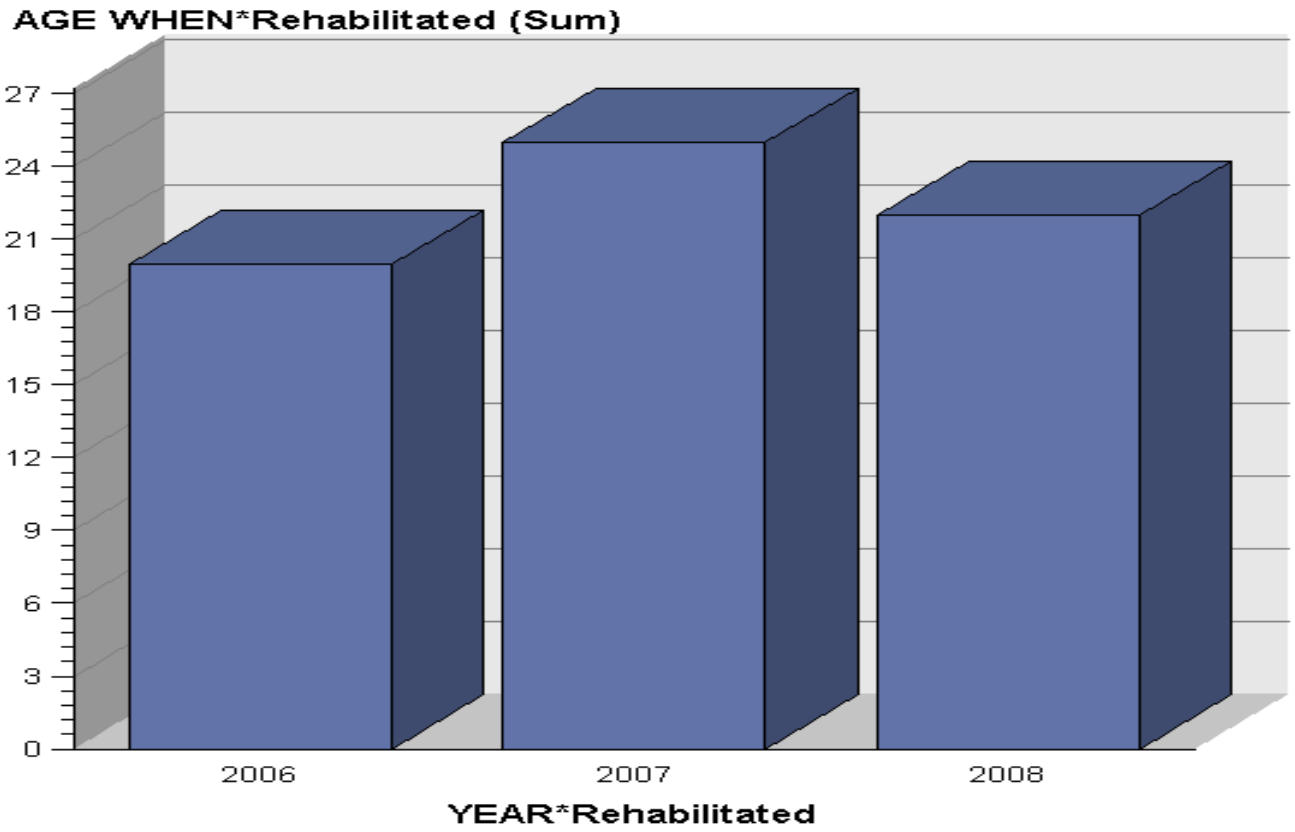
13JUN2012

Deficient Rehabilitation age by Year

For Hillsborough County

Other Conditions: Pavement= Concrete

Surface Type in (CONC)



APPENDIX G

QUALITY CONTROL CHECKLIST

PAVEMENT TYPE SELECTION

QUALITY CONTROL CHECKLIST

	Satisfactory Yes / No
Project Description	Yes
Financial Project ID / Annual Report	Yes
State Road No	Yes
County	Yes
Project Length	Yes
Transportation System	Yes
Flexible Pavement Design	
ESAL	Yes
Level of Reliability	Yes
Initial Design Period	Yes
Structural Number	Yes
Friction Course	Yes
Structural Thickness	Yes
Base Thickness	Yes
Number of Through Lanes	Yes
Lane Width	Yes
Shoulder Width	Yes
Rigid Pavement Design	
ESAL	yes
Level of Reliability	yes
Initial Design Period	yes
Thickness	yes

Base Thickness.....	yes
Base Type.....	yes
Number of Through	yes
Lanes.....	
Lane Width.....	yes
Shoulder Width.....	yes
Design Method (AASHTO 1993 or MEPDG).....	yes

PROJECT MILE ESTIMATES

Initial

Mainline Quantities.....	yes
Shoulder Quantities.....	yes
Unit Prices Reasonable.....	yes

Rehabilitation

Mainline Quantities.....	yes
Shoulder Quantities.....	yes
Unit Prices Reasonable.....	yes

Reviewer Signature

7/14/14
Date

APPENDIX F

REVIEW CHECKLIST

PAGE 1 OF 3

FLEXIBLE PAVEMENT DESIGN QUALITY CONTROL CHECKLIST

State Proj. No. I-4 BTU Federal Aid No. _____

FP ID No. 431456-1-32-01 County OSCEOLA

Flexible Pavement Design Review	**Satisfactory Yes/No/NA**
Pavement Design Summary Sheet.	YES
Project Location and Description	YES
Traffic Data and $ESAL_D$ Calculations	YES
Resilient Modulus (M_R)	YES
Reduced Resilient Modulus (M_R) for base high-water clearance less than 3ft.	YES
Required Structural Number (SN_R) Calculations. . .	YES
Calculated Structural Number (SN_C) Calculations. .	YES
Base Material Selection.	YES
Friction Course Selection.	YES
Stabilized Subgrade Evaluation	YES
Shoulder Design.	YES
Coordination with Other Offices.	YES
Other Special Details.	N/A
Final Pavement Design Drawing or Narrative	YES

Rehabilitation

Field Evaluation of Project. . . . . YES

Pavement Coring and Evaluation completed . . . . YES

Distress Evaluation. . . . . YES

Existing Cross-Slope and Correction method . . . . N/A

Milling Depth and Purpose. . . . . YES

Overlay Structural Number (SN_O) Calculations . . . YES

Overbuild Recommendation. . . . . N/A

Pavement Evaluation Coring and. . . YES
Condition Data Report

Projects That Do Not Require Design Calculations

Existing Pavement Evaluation . . . . . N/A

Existing Cross-Slope and Correction method . . . . N/A

Asphalt Thickness. . . . . N/A

Base Type and Thickness. . . . . N/A

Future Milling Considerations. . . . . N/A

Structural Evaluation. . . . . N/A

Plans Review

Plans Conform to Pavement Design . . . . . YES

Cross-Slope correction addressed . . . . . N/A

Design Details Adequately Covered. . . . . YES

Standard Indexes Properly Referenced . . . . . YES

Project is Constructible with Current Technology YES

Comments

QA by Michael S Phillips Date 6/28/17