

# **Pavement Design Package**

for

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

From East of Osceola Pkwy (Osceola/Orange County Line) to  
East of Central Florida Pkwy (MP 0.000 to MP 5.813)

Orange County (75280)

Financial Project ID: 242484-8-32-01

Prepared for:



(District 5)

FDOT Project Manager: Su Hao, P.E.

Submitted by:

**AECOM**

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Orlando, Florida 32801

Certificate of Authorization No. 8115

March 2018

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**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 SR 522 (Osceola Parkway) to West of SR528. 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. The Beyond the Ultimate project involves the development of concept plans to establish Right of Way necessary for the build-out of I-4 to its ultimate condition within the project limits. The project will tie into and coordinate with Project 431461-1-52-01 to the west and 242484-7-52-02 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 242484-8-52-01

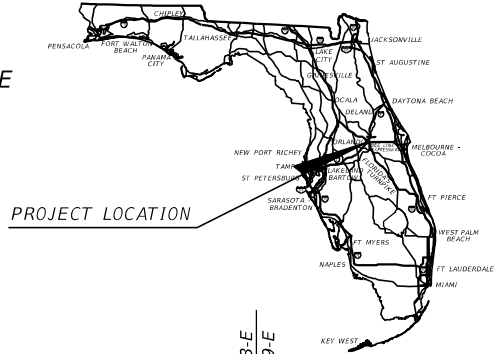
FEDERAL FUNDS

ORANGE COUNTY (75280)

STATE ROAD NO. 400 (I-4)

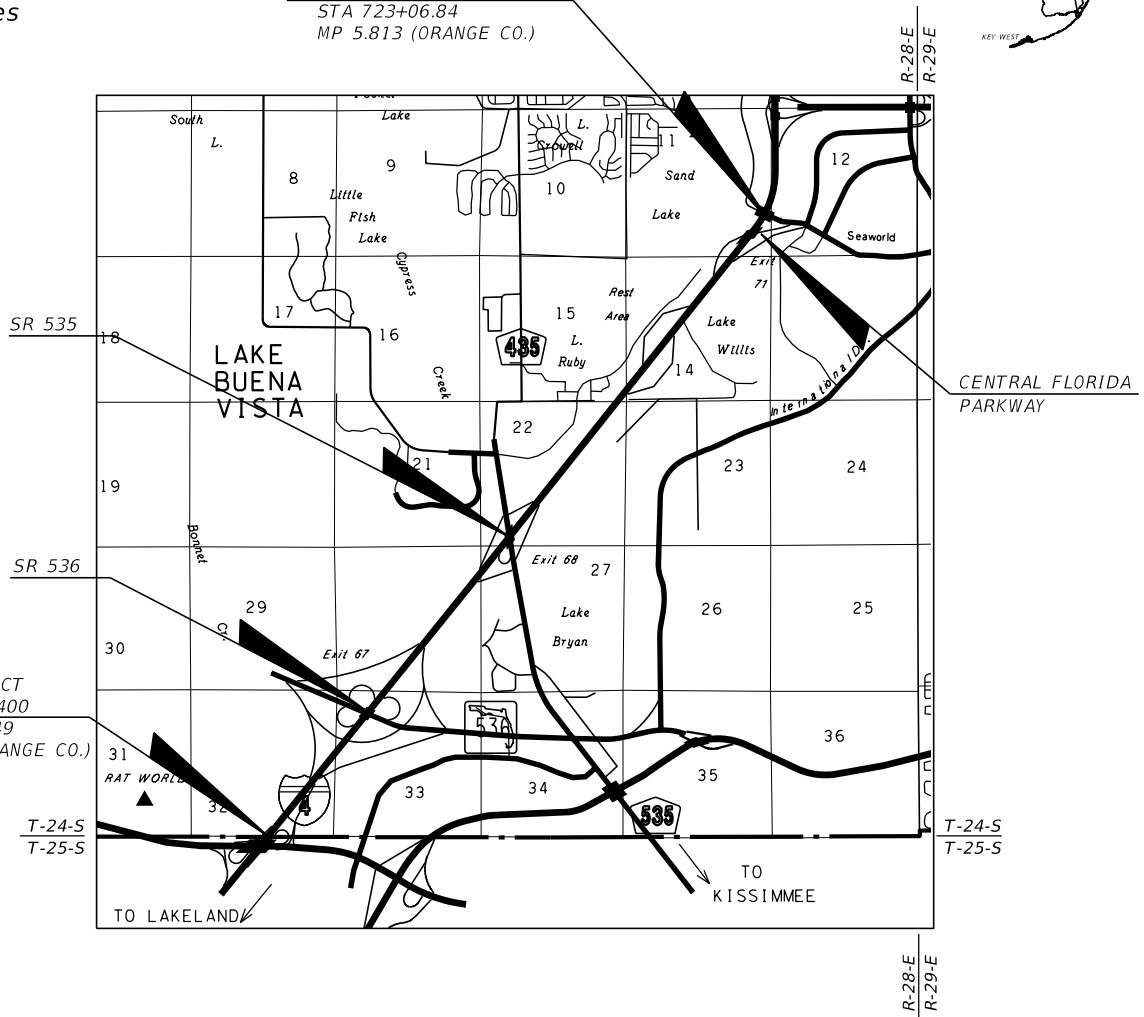
14 BEYOND THE ULTIMATE

TYPICAL SECTION PACKAGE



END PROJECT  
 EXIST SR 400  
 STA 723+06.84  
 MP 5.813 (ORANGE CO.)

START PROJECT  
 EXIST SR 400  
 STA 416+12.49  
 MP 0.000 (ORANGE CO.)



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
- ii. I-4 XL
- iii. Collector Distributor (CD) Roads
- iva. Single Lane Ramps (High ESAL)
- ivb. Single Lane Ramps
- ivc. Dual Lane Ramps (High ESAL)
- ivd. Dual Lane Ramps
- ive. Ramps (Mill & Resurface)

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

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                            | Date Prepared: <u>10/24/2017</u>   |
| State Project No.: <u>242484-8-32-01</u>             | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                            | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>SR 400</u>                        | Prepared By: <u>GLF</u>            |
| Design Speed: <u>70 MPH</u>                          | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                            | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                             | Mr: <u>8750 psi</u>                |
| ESAL's: <u>45,095,000 (PTSR Page 2 - Appendix E)</u> | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>5.81</u> <u>5.85</u> |
|  | Shoulder: <u>3.46</u> <u>3.54</u>  |

Description: I-4 GUL Mainline Pavement and Shoulders

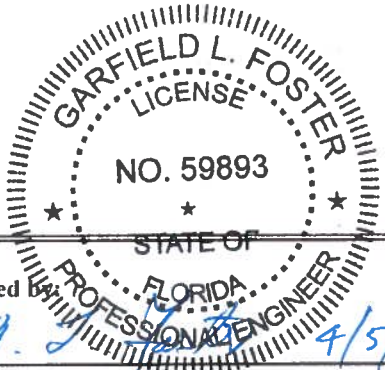
**RECOMMENDED I-4 (SR 400) GUL NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION 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 2 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)



Submitted by: [Signature] Date: 4/5/18  
 Garfield L. Foster, P.E.      Date:  
 AECOM Technical Services, Engineer of Record

Concurrence by: [Signature] Date: 4/2/18  
 Mario Bizzio, P.E.      Date:  
 FDOT D5 District Design Engineer

Approved by: [Signature] Date: 3/28/18  
 Lori B. Epperson, E.I.      Date:  
 FDOT D5 District Pavement Design Engineer

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

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

State Project No.: 242484-8-32-01  
 State Road No.: SR 400

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

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

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening 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 <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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 "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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| <u>Layer/Material</u>  | <u>Thickness</u> | <u>Condition</u>              | <u>Coefficient *</u> | <u>SN<sub>e</sub></u> |
|------------------------|------------------|-------------------------------|----------------------|-----------------------|
| 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                  |
|                        |                  | <b>TOTAL SN<sub>e</sub> =</b> |                      | <b>0.00</b>           |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>45,000,000</u> |             | <u>50,000,000</u> |                         | <u>45,100,000</u> |                |
|-------------|-------------------|-------------|-------------------|-------------------------|-------------------|----------------|
| 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              |                |
| <b>SN =</b> | <b>5.81</b>       | <b>SN =</b> | <b>5.90</b>       | <b>SN<sub>R</sub> =</b> | <b>5.81</b>       | (Min. SN Req.) |

**SHOULDERS**

|             | <u>1,400,000</u> |             | <u>1,500,000</u> |                         | <u>1,400,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 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             |                |
| <b>SN =</b> | <b>3.28</b>      | <b>SN =</b> | <b>3.50</b>      | <b>SN<sub>R</sub> =</b> | <b>3.46</b>      | (Min. SN Req.) |

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

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**5.81** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (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)

**4.85** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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<sub>2</sub> x D<sub>2</sub>) + 2.25 a<sub>2</sub> = 0.44

**D<sub>2</sub> = 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                  |
| <b>Total SNC =</b>        |                 |               | <b>5.85</b>           |
|                           |                 |               | <b>&gt; 5.81 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 1,400,000  
Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**3.46** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)

**2.50** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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

Structural Course: 2.50 = (a<sub>2</sub> x D<sub>2</sub>) + 1.32 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18

**D<sub>3</sub> = 6.53 Use OBG 05 (7.0")**

|                           | 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                  |
| <b>Total SNC =</b>        |                 |               | <b>3.54</b>           |
|                           |                 |               | <b>&gt; 3.46 O.K.</b> |

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

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

|   |                                    |
|---|------------------------------------|
| Prepared By: <u>AECOM</u>                         | Date Prepared: <u>10/24/2017</u>   |
| State Project No.: <u>242484-8-32-01</u>          | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                         | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>SR 400</u>                     | Prepared By: <u>GLF</u>            |
| Design Speed: <u>70 MPH</u>                       | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                         | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                          | Mr: <u>8750 psi</u>                |
| ESAL's: <u>22,547,500 (50% of GUL ESAL)</u>       | % R: <u>90%</u>                    |
|   | <b>SN Required: SN Computed:</b>   |
|   | Travelway: <u>5.29</u> <u>5.32</u> |
|   | Shoulder: <u>3.09</u> <u>3.18</u>  |
| Description: <u>I-4 XL Mainline and Shoulders</u> |                                    |

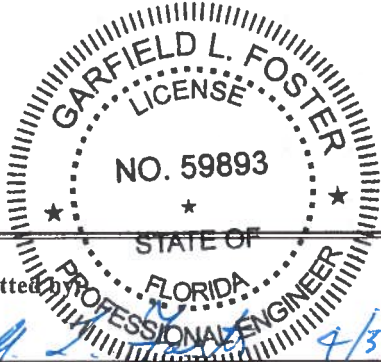
**RECOMMENDED I-4 (SR 400) XL (SHOULDER) NEW CONSTRUCTION PAVEMENT DESIGN**

**MAINLINE**

FRICITION 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 02  
 12" TYPE B STABILIZATION (LBR 40)



Submitted by: [Signature] Date: 4/3/18  
 Garfield L. Foster, P.E.  
 AECOM Technical Services, Engineer of Record

Concurrence by: [Signature] Date: 4/2/18  
 Mario Bizzio, P.E.  
 FDOT D5 District Design Engineer

Approved by: [Signature] Date: 3/28/18  
 Lori B. Epperson, P.E.  
 FDOT D5 District Pavement Design Engineer

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

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

State Project No.: 242484-8-32-01  
 State Road No.: SR 400

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

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

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening 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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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)

| <u>Layer/Material</u>  | <u>Thickness</u> | <u>Condition</u>              | <u>Coefficient *</u> | <u>SN<sub>e</sub></u> |
|------------------------|------------------|-------------------------------|----------------------|-----------------------|
| 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                  |
|                        |                  | <b>TOTAL SN<sub>e</sub> =</b> |                      | <b>0.00</b>           |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>20,000,000</u> |          | <u>25,000,000</u> |                   | <u>22,600,000</u> |                |
|----------|-------------------|----------|-------------------|-------------------|-------------------|----------------|
| 8000 psi | 5.35              | 8000 psi | 5.52              | 20,000,000        | 5.20              |                |
| 8750 psi | SN <sub>r</sub>   | 8750 psi | SN <sub>r</sub>   | 22,600,000        | SN <sub>r</sub>   |                |
| 9000 psi | 5.15              | 9000 psi | 5.32              | 25,000,000        | 5.37              |                |
| SN =     | 5.20              | SN =     | 5.37              | SN <sub>R</sub> = | <b>5.29</b>       | (Min. SN Req.) |

**SHOULDERS**

| ESAL's:  | <u>700,000</u>  | (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). | <u>0</u>        | <u>700,000</u>    |                 |                |
|----------|-----------------|---|-----------------|-------------------|-----------------|----------------|
| 8000 psi | 3.20            | 8000 psi  | 0               | 700,000           | 3.09            |                |
| 8750 psi | SN <sub>r</sub> | 8750 psi  | SN <sub>r</sub> | 700,000           | SN <sub>r</sub> |                |
| 9000 psi | 3.05            | 9000 psi  | 0               | 0                 | 0.00            |                |
| SN =     | 3.09            | SN =  | 0.00            | SN <sub>R</sub> = | <b>3.09</b>     | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**5.29** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (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)

**4.33** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44

**D<sub>2</sub> = 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                  |
| <b>Total SNC =</b>        |                 |               | <b>5.32</b>           |
|                           |                 |               | <b>&gt; 5.29 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 700,000  
Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**3.09** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)

**2.13** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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

Structural Course: 2.13 = 1.32 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18

**D<sub>3</sub> = 4.49 Use OBG 02 (5")**

|                           | Thickness (in.) | Coefficient * | SNC                   |
|---------------------------|-----------------|---------------|-----------------------|
| Type SP Structural Course | 3.00            | 0.44          | 1.32                  |
| Base Group 02             | 5.00            | 0.18          | 0.90                  |
| Stabilization (LBR 40)    | 12.00           | 0.08          | 0.96                  |
| <b>Total SNC =</b>        |                 |               | <b>3.18</b>           |
|                           |                 |               | <b>&gt; 3.09 O.K.</b> |

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

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

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>  | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>                         | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>  | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                                       | Prepared By: <u>GLF</u>            |
| Design Speed: <u>60 MPH</u>                                      | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>  | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>   | Mr: <u>8750 psi</u>                |
| ESAL's: <u>N/A</u> (15% Reduced GUL SN used)*                    | % R: <u>90%</u>                    |
| *Per Section 5.6.7 of the Flexible Pavement Design Manual (2016) |                                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>4.94</u> <u>4.97</u> |
|  | Shoulder: <u>2.94</u> <u>3.10</u>  |
| Description: <u>I-4 CD Mainline Pavement and Shoulders</u>       |                                    |

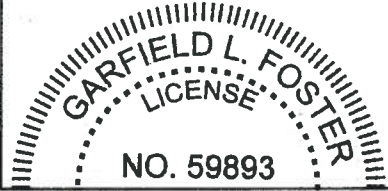
**RECOMMENDED I-4 CD NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION 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)



|  |  |
|--|--|
| Submitted by: <u>STATE OF FLORIDA</u>        | Concurrence by: <u>[Signature]</u>                     |
| <u>Garfield L. Foster</u>                    | <u>3/26/18</u>   |
| AECOM Technical Services, Engineer of Record | Marjo Bizzio, P.E.<br>FDOT D5 District Design Engineer |
| Date: <u>3/26/18</u>                         | Date: <u>3/26/18</u>                                   |
| Approved by: <u>[Signature]</u>              | Approved by: <u>[Signature]</u>                        |
| <u>Lori B. Epperson, E.I.</u>                | <u>Nahir DeTizio, P.E.</u>                             |
| FDOT D5 District Pavement Design Engineer    | FHWA Senior Transportation Engineer                    |
| Date: <u>3/29/18</u>                         | Date: <u>iii-1</u>                                     |



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

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

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

**A. DESIGN FACTORS**

|           |       |   |  |
|-----------|-------|---|--|
|           | 2020  | Opening 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 <b>New</b> limited access roadway facilities (Table 5.2)            |  |
|           |       | 95% - 99% Reliability for <b>Rehabilitation</b> 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 <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          |                 |          |                 |     |  |
|----------|-----------------|----------|-----------------|-----|--|
|          | <u>N/A</u>      |          | <u>N/A</u>      |     | <u>N/A</u>                                   |
| 8000 psi | 0               | 8000 psi | 0               | N/A | 0.00   |
| 8750 psi | SN <sub>r</sub> | 8750 psi | SN <sub>r</sub> | N/A | SN <sub>r</sub>                              |
| 9000 psi | 0               | 9000 psi | 0               | N/A | 0.00   |
| SN =     | 0.00            | SN =     | 0.00            |     | SN <sub>R</sub> = <b>4.94</b> (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). |  |
|          | <u>N/A</u>      |   | <u>0</u>                                     |
| 8000 psi | 0.00            | 8000 psi  | 0  |
| 8750 psi | SN <sub>r</sub> | 8750 psi  | SN <sub>r</sub>                              |
| 9000 psi | 0.00            | 9000 psi  | 0  |
| SN =     | 0.00            | SN =  | 0.00   |
|          |                 |   | 0  |
|          |                 |   | SN <sub>R</sub> = <b>2.94</b> (Min. SN Req.) |

**I-4 GUL SN (15% Reduction)**

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

## E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION

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

**4.94** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**3.98** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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<sub>2</sub> x D<sub>2</sub>) + 2.25 a<sub>2</sub> = 0.44  
**D<sub>2</sub>** = **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                  |
|                           |                 | <b>Total SNc =</b> | <b>4.97</b>           |
|                           |                 |                    | <b>&gt; 4.94 O.K.</b> |

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

## F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN

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

ESAL's = 700,000

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

**3.09** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)  
**2.13** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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: 2.13 = (a<sub>2</sub> x D<sub>2</sub>) + 0.88 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub>** = **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                  |
|                           |                 | <b>Total SNc =</b> | <b>3.10</b>           |
|                           |                 |                    | <b>&gt; 2.94 O.K.</b> |

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

**SINGLE LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|   |                                    |
|---|------------------------------------|
| Prepared By: <u>AECOM</u>   | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>  | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>   | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>  | Prepared By: <u>GLF</u>            |
| Design Speed: <u>50 MPH</u>   | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>   | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>  | Mr: <u>8750 psi</u>                |
| ESAL's: <u>12,393,000</u> (ESAL Summary Sheet-Appendix D)                               | % R: <u>90%</u>                    |
|   | <b>SN Required: SN Computed:</b>   |
|   | Travelway: <u>4.85</u> <u>4.88</u> |
|   | Shoulder: <u>2.81</u> <u>2.92</u>  |
| Description: <u>High ESAL I-4 Single Lane Ramps and Shoulders</u><br>(Applies to A DCP) |                                    |

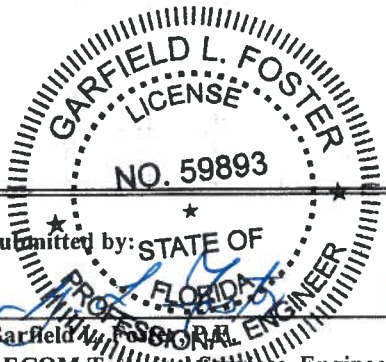
**RECOMMENDED HIGH ESAL SINGLE LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION 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 11  
 12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)  
 OPTIONAL BASE GROUP 04  
 12" TYPE B STABILIZATION (LBR 40)



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

Concurrence by: [Signature]  
 Marie Bizzio, P.E.  
 FDOT D5 District Design Engineer  
 Date: 3/26/18

Approved by: [Signature]  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer  
 Date: 3/20/18

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

**SINGLE LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

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

**A. DESIGN FACTORS**

|           |                   |   |
|-----------|-------------------|---|
|           | <u>2020</u>       | Opening Year  |
| ESAL's    | <u>12,393,000</u> | (Actual)- 2040 Design Year  |
| use       | <u>12,400,000</u> | (Rounded)   |
| LBR       | <u>25</u>         | Provided in Geotechnical Engineer's Report  |
| Mr(psi) = | <u>8,750</u>      | Flexible Pavement Design Manual, Table 5.1 (2016)   |
| % R =     | <u>90%</u>        | 80% - 95% Reliability for <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |                   | 95% - 99% Reliability for <b>Rehabilitation</b> 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 <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>10,000,000</u> |          | <u>15,000,000</u> |                   | <u>12,400,000</u> |                |
|----------|-------------------|----------|-------------------|-------------------|-------------------|----------------|
| 8000 psi | 4.85              | 8000 psi | 5.14              | 10,000,000        | 4.71              |                |
| 8750 psi | SN <sub>r</sub>   | 8750 psi | SN <sub>r</sub>   | 12,400,000        | SN <sub>r</sub>   |                |
| 9000 psi | 4.66              | 9000 psi | 4.95              | 15,000,000        | 5.00              |                |
| SN =     | 4.71              | SN =     | 5.00              | SN <sub>R</sub> = | <b>4.85</b>       | (Min. SN Req.) |

**SHOULDERS**

|          | <u>400,000</u>    |   | <u>0</u>        |                   | <u>400,000</u>  |                |
|----------|-------------------|---|-----------------|-------------------|-----------------|----------------|
| ESAL's:  | 400,000 (Rounded) | Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). |                 |                   |                 |                |
| 8000 psi | 2.91              | 8000 psi  | 0               | 400,000           | 2.81            |                |
| 8750 psi | SN <sub>r</sub>   | 8750 psi  | SN <sub>r</sub> | 400,000           | SN <sub>r</sub> |                |
| 9000 psi | 2.78              | 9000 psi  | 0               | 0                 | 0.00            |                |
| SN =     | 2.81              | SN =  | 0.00            | SN <sub>R</sub> = | <b>2.81</b>     | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.85** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (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)

**3.89** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new limited access construction: > 3,500 Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 11.

Structural Course: 3.89 = (a<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44

**D<sub>2</sub> = 3.92 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 11             | 12.00           | 0.18               | 2.16                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>4.88</b>           |
|                           |                 |                    | <b>&gt; 4.85 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 400,000  
 Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**2.81** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)

**1.85** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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 2" Structural Course matching adjacent pavt lift (a<sub>2</sub> x D<sub>2</sub>)

Structural Course: 1.85 = 0.88 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18

**D<sub>3</sub> = 5.40 Use OBG 04 (6")**

|                           | Thickness (in.) | Coefficient *      | SNc                   |
|---------------------------|-----------------|--------------------|-----------------------|
| Type SP Structural Course | 2.00            | 0.44               | 0.88                  |
| Base Group 04             | 6.00            | 0.18               | 1.08                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>2.92</b>           |
|                           |                 |                    | <b>&gt; 2.81 O.K.</b> |

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

**SINGLE LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                                | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-52-01</u>                 | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>50 MPH</u>                              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                 | Mr: <u>8750 psi</u>                |
| ESAL's: <u>6,531,000</u> (ESAL Summary Sheet-Appendix D) | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>4.43</u> <u>4.44</u> |
|  | Shoulder: <u>2.51</u> <u>2.61</u>  |
| Description: <u>I-4 Single Lane Ramps and Shoulders</u>  |                                    |
| <u>(Applies to ALL SINGLE LANE RAMPS EXCEPT: A DCP)</u>  |                                    |

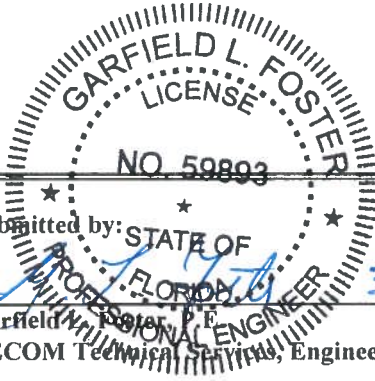
**RECOMMENDED SINGLE LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION 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 11  
 12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL C) (165 LBS/SY)  
 OPTIONAL BASE GROUP 03  
 12" TYPE B STABILIZATION (LBR 40)



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

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

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

Approved by: [Signature] Date: ivb-1  
 Nahir DeTizio, P.E.  
 FHWA Senior Tranporation Engineer

**SINGLE LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-52-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

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

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 6,531,000   | (Actual)- 2040 Design Year  |
| use       | 6,600,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>6,000,000</u> |          | <u>7,000,000</u> |                   | <u>6,600,000</u> |                |
|----------|------------------|----------|------------------|-------------------|------------------|----------------|
| 8000 psi | 4.5              | 8000 psi | 4.61             | 6,000,000         | 4.37             |                |
| 8750 psi | SN <sub>r</sub>  | 8750 psi | SN <sub>r</sub>  | 6,600,000         | SN <sub>r</sub>  |                |
| 9000 psi | 4.32             | 9000 psi | 4.42             | 7,000,000         | 4.47             |                |
| SN =     | 4.37             | SN =     | 4.47             | SN <sub>R</sub> = | <b>4.43</b>      | (Min. SN Req.) |

**SHOULDERS**

|          | <u>200,000</u>  |   | <u>0</u>        |                   | <u>200,000</u>  |                |
|----------|-----------------|---|-----------------|-------------------|-----------------|----------------|
| ESAL's:  | 200,000         | (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). |                 |                   |                 |                |
| 8000 psi | 2.60            | 8000 psi  | 0               | 200,000           | 2.51            |                |
| 8750 psi | SN <sub>r</sub> | 8750 psi  | SN <sub>r</sub> | 200,000           | SN <sub>r</sub> |                |
| 9000 psi | 2.48            | 9000 psi  | 0               | 0                 | 0.00            |                |
| SN =     | 2.51            | SN =  | 0.00            | SN <sub>R</sub> = | <b>2.51</b>     | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.43** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**3.47** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) Pavement Design Manual (2016), use FC-5 (3/4")  
 (PG 76-22 PMA)

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

Structural Course: 3.47 = (a<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44  
**D<sub>2</sub>** = **2.97 Use 3" 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 11             | 12.00           | 0.18               | 2.16                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>4.44</b>           |
|                           |                 |                    | <b>&gt; 4.43 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 200,000  
 Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**2.51** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)  
**1.55** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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: 1.55 = 0.66 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub>** = **4.94 Use OBG 03 (5.5")**

|                           | Thickness (in.) | Coefficient *      | SNc                   |
|---------------------------|-----------------|--------------------|-----------------------|
| 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                  |
|                           |                 | <b>Total SNc =</b> | <b>2.61</b>           |
|                           |                 |                    | <b>&gt; 2.51 O.K.</b> |

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



**DUAL LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|   |                                    |
|---|------------------------------------|
| Prepared By: <u>AECOM</u>                                 | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>                  | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                 | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                                | Prepared By: <u>GLF</u>            |
| Design Speed: <u>50 MPH</u>                               | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                 | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                  | Mr: <u>8750 psi</u>                |
| ESAL's: <u>11,754,000 (ESAL Summary Sheet-Appendix D)</u> | % R: <u>90%</u>                    |
|   | <b>SN Required: SN Computed:</b>   |
|   | Travelway: <u>4.81</u> <u>4.88</u> |
|   | Shoulder: <u>2.81</u> <u>2.92</u>  |

Description: High ESAL I-4 Dual Lane Ramps and Shoulders  
(Applies to: B DCP & C DCP)

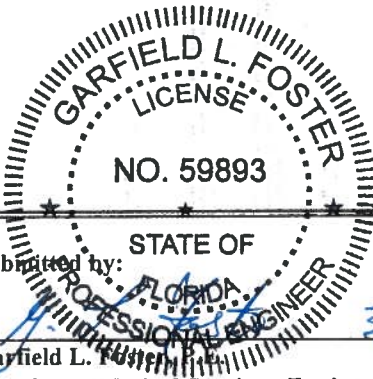
**RECOMMENDED HIGH ESAL DUAL LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION 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 11  
 12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)  
 OPTIONAL BASE GROUP 04  
 12" TYPE B STABILIZATION (LBR 40)



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

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

Approved by: [Signature]      Date: 3/20/18  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer

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

**DUAL LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

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

**A. DESIGN FACTORS**

|           |            |   |
|-----------|------------|---|
|           | 2020       | Opening Year  |
| ESAL's    | 11,754,000 | (Actual)- 2040 Design Year  |
| use       | 11,800,000 | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |            | 95% - 99% Reliability for <b>Rehabilitation</b> 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 <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>10,000,000</u> |             | <u>15,000,000</u> |                         | <u>11,800,000</u>          |
|-------------|-------------------|-------------|-------------------|-------------------------|----------------------------|
| 8000 psi    | 4.85              | 8000 psi    | 5.14              | 10,000,000              | 4.71                       |
| 8750 psi    | SN <sub>r</sub>   | 8750 psi    | SN <sub>r</sub>   | 11,800,000              | SN <sub>r</sub>            |
| 9000 psi    | 4.66              | 9000 psi    | 4.95              | 15,000,000              | 5.00                       |
| <b>SN =</b> | <b>4.71</b>       | <b>SN =</b> | <b>5.00</b>       | <b>SN<sub>R</sub> =</b> | <b>4.81</b> (Min. SN Req.) |

**SHOULDERS**

|             | 400,000 (Rounded) |   | 0               |                         | 400,000                    |
|-------------|-------------------|---|-----------------|-------------------------|----------------------------|
| ESAL's:     | 400,000           | Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). | 0               | 400,000                 | 2.81                       |
| 8000 psi    | 2.92              | 8000 psi  | 0               | 400,000                 | SN <sub>r</sub>            |
| 8750 psi    | SN <sub>r</sub>   | 8750 psi  | SN <sub>r</sub> | 0                       | 0.00                       |
| 9000 psi    | 2.78              | 9000 psi  | 0               | <b>SN<sub>R</sub> =</b> | <b>2.81</b> (Min. SN Req.) |
| <b>SN =</b> | <b>2.81</b>       | <b>SN =</b>   | <b>0.00</b>     |                         |                            |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.81** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**3.85** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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 = 4" & Min OBG = 9. From Table 5.9, use OBG = 11.

Structural Course: 3.85 = (a<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44  
**D<sub>2</sub>** = **3.85 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 11             | 12.00           | 0.18               | 2.16                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>4.88</b>           |
|                           |                 |                    | <b>&gt; 4.81 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 400,000  
 Use Superpave Traffic Level "C". Recommended for use on all Limited Access Shoulders.

**2.81** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)  
**1.85** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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: 1.85 = 0.88 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub>** = **5.42 Use OBG 04 (6")**

|                           | Thickness (in.) | Coefficient *      | SNc                   |
|---------------------------|-----------------|--------------------|-----------------------|
| Type SP Structural Course | 2.00            | 0.44               | 0.88                  |
| Base Group 04             | 6.00            | 0.18               | 1.08                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>2.92</b>           |
|                           |                 |                    | <b>&gt; 2.81 O.K.</b> |

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

**DUAL LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>  | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>   | Project Name: <u>IP-4 BTU</u>      |
| FA No.: <u>3141-035-P</u>  | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>   | Prepared By: <u>GLF</u>            |
| Design Speed: <u>50 MPH</u>  | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>  | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>   | Mr: <u>8750 psi</u>                |
| ESAL's: <u>7,630,000</u> (ESAL Summary Sheet, Appendix D)  | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>4.53</u> <u>4.70</u> |
|  | Shoulder: <u>2.68</u> <u>2.83</u>  |
| Description: <u>I-4 Dual Lane Ramps and Shoulders</u><br>(Applies to all Dual Lane Ramps except B DCP and C DCP) |                                    |

**RECOMMENDED DUAL LANE RAMPS NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION COURSE (FC-5) 3/4" (PG 76-22) (80 LBS/SY)  
 TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C (220 LBS/SY)  
 USE MODIFIED ASPHALT BINDER PG 76-22 IN TOP LAYER  
 TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)  
 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)



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

Concurrence by: [Signature]  
 Mario Bizzio, P.E.  
 FDOT D5 District Design Engineer  
 Date: 3/29/18

Approved by: [Signature]  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer  
 Date: 3/29/18

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

**DUAL LANE RAMPS - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

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

**A. DESIGN FACTORS**

|            |           |   |
|------------|-----------|---|
|            | 2020      | Opening Year  |
| ESAL's use | 7,630,000 | (Actual)- 2040 Design Year  |
| 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 <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material                | Thickness | Condition | Coefficient * | SN <sub>e</sub> |
|-------------------------------|-----------|-----------|---------------|-----------------|
| 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            |
| <b>TOTAL SN<sub>e</sub> =</b> |           |           |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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       |                         | 7,700,000                  |
|-------------|-----------------|-------------|-----------------|-------------------------|----------------------------|
| 8000 psi    | 4.61            | 8000 psi    | 4.7             | 7,000,000               | 4.47                       |
| 8750 psi    | SN <sub>r</sub> | 8750 psi    | SN <sub>r</sub> | 7,700,000               | SN <sub>r</sub>            |
| 9000 psi    | 4.42            | 9000 psi    | 4.51            | 8,000,000               | 4.56                       |
| <b>SN =</b> | <b>4.47</b>     | <b>SN =</b> | <b>4.56</b>     | <b>SN<sub>R</sub> =</b> | <b>4.53</b> (Min. SN Req.) |

**SHOULDERS**

| ESAL's:     | 300,000 (Rounded) | Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). | 0               | 300,000                 |                            |
|-------------|-------------------|---|-----------------|-------------------------|----------------------------|
| 8000 psi    | 2.78              | 8000 psi  | 0               | 300,000                 | 2.68                       |
| 8750 psi    | SN <sub>r</sub>   | 8750 psi  | SN <sub>r</sub> | 300,000                 | SN <sub>r</sub>            |
| 9000 psi    | 2.65              | 9000 psi  | 0               | 0                       | 0.00                       |
| <b>SN =</b> | <b>2.68</b>       | <b>SN =</b>   | <b>0.00</b>     | <b>SN<sub>R</sub> =</b> | <b>2.68</b> (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.53** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and TablPLJO  
**3.57** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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: > 3,500 Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 10.

Structural Course: 3.57 = (a<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 3.21 Use 4" Structural Course**

|                           | Thickness (in.) | Coefficient <sup>‡</sup>      | S <sub>Nc</sub>            |
|---------------------------|-----------------|-------------------------------|----------------------------|
| 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                       |
|                           |                 | <b>Total S<sub>Nc</sub> =</b> | <b>4.70 &gt; 4.53 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 300,000  
 Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**2.68** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)  
**1.72** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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 = (a<sub>2</sub> x D<sub>2</sub>) + 0.88 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub> = 4.68 Use OBG 03 (5.5")**

|                           | Thickness (in.) | Coefficient <sup>‡</sup>      | S <sub>Nc</sub>            |
|---------------------------|-----------------|-------------------------------|----------------------------|
| 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                       |
|                           |                 | <b>Total S<sub>Nc</sub> =</b> | <b>2.83 &gt; 2.68 O.K.</b> |

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

**EXISTING RAMPS - (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                | Date Prepared: <u>10/24/2017</u>   |
| State Project No.: <u>242484-8-32-01</u> | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>50 MPH</u>              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                | LBR: <u>N/A</u>                    |
| Design Year: <u>2040</u>                 | Mr: <u>N/A</u>                     |
| ESAL's: <u>N/A</u>                       | % R: <u>N/A</u>                    |
|  | <b>SN Existing: SN Computed:</b>   |
|  | Travelway: <u>N/A</u> <u>N/A</u>   |
|  | Shoulder: <u>N/A</u> <u>N/A</u>    |

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

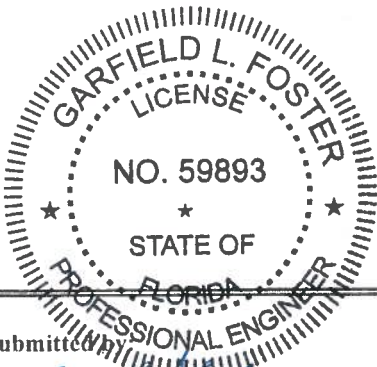
**RECOMMENDED EXISTING RAMP MILL AND RESURFACE DESIGN**

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: <u>Garfield L. Foster</u> Date: <u>3/26/18</u>             | Concurrence by: <u>Mario Bizzio</u> Date: <u>3/26/18</u> |
| Garfield L. Foster, P.E.<br>AECOM Technical Services, Engineer of Record | Mario Bizzio, P.E.<br>FDOT D5 District Design Engineer   |

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

**EXISTING RAMPS - (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 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**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | 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 <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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:**

| <u>Layer/Material</u>  | <u>Thickness</u> | <u>Condition</u>              | <u>Coefficient *</u> | <u>SN<sub>e</sub></u> |
|------------------------|------------------|-------------------------------|----------------------|-----------------------|
| 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                  |
|                        |                  | <b>TOTAL SN<sub>e</sub> =</b> |                      | <b>0.00</b>           |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          |                  |          |                  |                   |                    |
|----------|------------------|----------|------------------|-------------------|--------------------|
|          | <u>7,000,000</u> |          | <u>8,000,000</u> |                   | <u>N/A</u>         |
| 8000 psi | 0                | 8000 psi | 0                | 7,000,000         | 0.00               |
|          | SN <sub>r</sub>  | 0 psi    | SN <sub>r</sub>  | N/A               | SN <sub>r</sub>    |
| 9000 psi | 0                | 9000 psi | 0                | 8,000,000         | 0.00               |
| SN =     | 0                | SN =     | 0.00             | SN <sub>R</sub> = | 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). |                 |                   |                    |
|          | <u>250,000</u>  |   | <u>0</u>        |                   | <u>250,000</u>     |
| 8000 psi | 0               | 8000 psi  | 0               | 250,000           | 0.00               |
| 0 psi    | SN <sub>r</sub> | 0 psi   | SN <sub>r</sub> | 0                 | SN <sub>r</sub>    |
| 9000 psi | 0               | 9000 psi  | 0               | 0                 | 0.00               |
| SN =     | 0               | SN =  | 0.00            | SN <sub>R</sub> = | N/A (Min. SN Req.) |



**SECTION 3-b**

**INTERCHANGES (MAJOR CROSS STREETS)**  
**PAVEMENT DESIGN SUMMARY SHEETS**

- i. SR 536
- ii. SR535
- ii. SR 535 (Black Base)
- iiia. Daryl Carter Parkway (Widening)
- iiib. Daryl Carter Parkway (Milling and Resurfacing)

**SR 536 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|   |   |
|---|---|
| Prepared By: <u>AECOM</u><br><hr/> State Project No.: <u>242484-8-32-01</u><br>FA No.: <u>3141-035-P</u><br>State Road No.: <u>SR 536</u><br>Design Speed: <u>60 MPH</u><br>Opening Year: <u>2020</u><br>Design Year: <u>2040</u><br>ESAL's: <u>6,582,000</u> (ESAL Summary Sheet-Appendix D) | Date Prepared: <u>8/18/2017</u><br><hr/> Project Name: <u>I-4 BTU</u><br>AECOM Project No.: <u>12722741</u><br>Prepared By: <u>GLF</u><br>Checked By: <u>BL</u><br>LBR: <u>25</u><br>Mr: <u>8750 psi</u><br>% R: <u>90%</u> |
|---|---|

|            |                     |                     |
|------------|---------------------|---------------------|
|            | <b>SN Required:</b> | <b>SN Computed:</b> |
| Travelway: | 4.43                | 4.66                |
| Shoulder:  | 2.51                | 2.56                |

Description: SR 536 Mainline Pavement and Shoulders

**RECOMMENDED SR 536 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 C) (385 LBS/SY)  
 OPTIONAL BASE GROUP 11  
 12" TYPE B STABILIZATION (LBR 40)

SHOULDERS

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)  
 OPTIONAL BASE GROUP 01  
 12" TYPE B STABILIZATION (LBR 40)



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

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

Approved by: [Signature]  
 Lori B. Epperson, P.E.  
 FDOT D5 District Pavement Design Engineer  
 Date: 3/20/18

**SR 536 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: SR 536

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **SR 536 Mainline Pavement and Shoulders**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 6,582,000   | (Actual)- 2040 Design Year  |
| use       | 6,600,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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 5-28 of the Flexible Pavement Design Manual (2016).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>6,000,000</u> |          | <u>7,000,000</u> |                   | <u>6,600,000</u> |                |
|----------|------------------|----------|------------------|-------------------|------------------|----------------|
| 8000 psi | 4.5              | 8000 psi | 4.61             | 6,000,000         | 4.37             |                |
| 8750 psi | SN <sub>r</sub>  | 8750 psi | SN <sub>r</sub>  | 6,600,000         | SN <sub>r</sub>  |                |
| 9000 psi | 4.32             | 9000 psi | 4.42             | 7,000,000         | 4.47             |                |
| SN =     | 4.37             | SN =     | 4.47             | SN <sub>R</sub> = | <b>4.43</b>      | (Min. SN Req.) |

**SHOULDERS**

|          | <u>200,000</u>  |   | <u>0</u>        |                   | <u>200,000</u>  |                |
|----------|-----------------|---|-----------------|-------------------|-----------------|----------------|
| ESAL's:  | 200,000         | (Rounded) Used 3% of Mainline per Page 8-1 of the Flexible Pavement Design Manual (2016). |                 |                   |                 |                |
| 8000 psi | 2.60            | 8000 psi  | 2.51            | 200,000           | 2.51            |                |
| 8750 psi | SN <sub>r</sub> | 8750 psi  | SN <sub>r</sub> | 200,000           | SN <sub>r</sub> |                |
| 9000 psi | 2.48            | 9000 psi  | 0.00            | 0                 | 0.00            |                |
| SN =     | 2.51            | SN =  | 0.00            | SN <sub>R</sub> = | <b>2.51</b>     | (Min. SN Req.) |

**SR 536 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.43** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2015), use FC-12.5 (1.5")

**3.47** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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..

Structural Course: 3.47 = (a<sub>2</sub> x D<sub>2</sub>) + 2.16 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 2.97 Use 3.5" Structural Course**

|                           | Thickness (in.) | Coefficient                   | S <sub>Nc</sub> |                       |
|---------------------------|-----------------|-------------------------------|-----------------|-----------------------|
| Friction Course (FC-5)    | 0.75            | 0.00                          | 0.00            |                       |
| 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            |                       |
|                           |                 | <b>Total S<sub>Nc</sub> =</b> | <b>4.66</b>     | <b>&gt; 4.43 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

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

**2.51** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)

**1.55** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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: 1.55 = 0.88 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub> = 3.72 Use OBG 01 (4")**

|                           | Thickness (in.) | Coefficient                   | S <sub>Nc</sub> |                       |
|---------------------------|-----------------|-------------------------------|-----------------|-----------------------|
| Type SP Structural Course | 2.00            | 0.44                          | 0.88            |                       |
| Base Group 01             | 4.00            | 0.18                          | 0.72            |                       |
| Stabilization (LBR 40)    | 12.00           | 0.08                          | 0.96            |                       |
|                           |                 | <b>Total S<sub>Nc</sub> =</b> | <b>2.56</b>     | <b>&gt; 2.51 O.K.</b> |

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

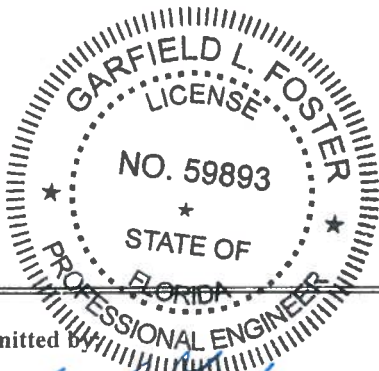
**SR 535 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |   |
|--|---|
| Prepared By: <u>AECOM</u>                                | Date Prepared: <u>8/18/2017</u>                   |
| State Project No.: <u>242484-8-32-01</u>                 | Project Name: <u>I-4 BTU</u>                      |
| FA No.: <u>3141-035-P</u>                                | AECOM Project No.: <u>12722741</u>                |
| State Road No.: <u>SR 535</u>                            | Prepared By: <u>GLF</u>                           |
| Design Speed: <u>45 MPH</u>                              | Checked By: <u>BL</u>                             |
| Opening Year: <u>2020</u>                                | LBR: <u>25</u>                                    |
| Design Year: <u>2040</u>                                 | Mr: <u>8750 psi</u>                               |
| ESAL's: <u>7,112,000</u> (ESAL Summart Sheet-Appendix D) | % R: <u>90%</u>                                   |
|  | <b>SN Required: SN Computed:</b>                  |
|  | <b>Travelway:            4.49            4.52</b> |
| Description: <u>SR 535 Mainline</u>                      |   |

**RECOMMENDED SR 535 NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)  
 TYPE SP STRUCTURAL COURSE 2.5" (TRAFFIC LEVEL C) (275 LBS/SY)  
 OPTIONAL BASE GROUP 09  
 12" TYPE B STABILIZATION (LBR 40)



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

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

Approved by: *Lori B. Epperson* Date: 3/20/18  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer

**SR 535 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: SR 535

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **SR 535 Mainline**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 7,112,000   | (Actual)- 2040 Design Year  |
| use       | 7,200,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>7,000,000</u> |             | <u>8,000,000</u> |                         | <u>7,200,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.61             | 8000 psi    | 4.7              | 7,000,000               | 4.47             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 7,200,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 4.42             | 9000 psi    | 4.51             | 8,000,000               | 4.56             |                |
| <b>SN =</b> | <b>4.47</b>      | <b>SN =</b> | <b>4.56</b>      | <b>SN<sub>R</sub> =</b> | <b>4.49</b>      | (Min. SN Req.) |

**SR 535 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.49** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.87** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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 = 9.

Structural Course: 2.87 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44  
**D<sub>2</sub>** = **2.42 Use 2.5" Structural Course**

|                                  | <u>Thickness (in.)</u> | <u>Coefficient *</u> | <u>SNc</u>            |
|----------------------------------|------------------------|----------------------|-----------------------|
| <b>Friction Course (FC-12.5)</b> | 1.50                   | 0.44                 | 0.66                  |
| <b>Type SP Structural Course</b> | 2.50                   | 0.44                 | 1.10                  |
| <b>Base Group 9</b>              | 10.00                  | 0.18                 | 1.80                  |
| <b>Stabilization (LBR 40)</b>    | 12.00                  | 0.08                 | 0.96                  |
|                                  |                        | <b>Total SNc =</b>   | <b>4.52</b>           |
|                                  |                        |                      | <b>&gt; 4.49 O.K.</b> |

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

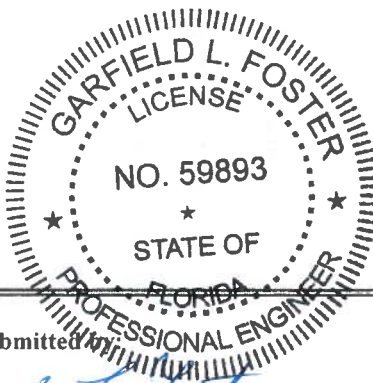
**SR 535 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>  | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>   | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>  | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>SR 535</u>  | Prepared By: <u>GLF</u>            |
| Design Speed: <u>45 MPH</u>  | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>  | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>   | * Mr: <u>4375 psi</u>              |
| ESAL's: <u>7,112,000</u> (ESAL Reports - Appendix D)   | % R: <u>90%</u>                    |
| * Resilient Modulus reduced by 50%   | <b>SN Required: SN Computed:</b>   |
|  | <b>Travelway: 5.65 5.84</b>        |
| Description: <u>SR 535 Mainline (Black Base)</u><br><u>Northbound from Sta. 126+50 to Sta. 139+00 and from Sta. 154+00 to End Construction</u><br><u>Southbound from Sta. 227+50 to Sta. 240+50 and from Sta. 250+50 to End Construction</u> |                                    |

**RECOMMENDED SR 535 NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)  
 TYPE SP STRUCTURAL COURSE 5.5" (TRAFFIC LEVEL C) (605 LBS/SY)  
 OPTIONAL BASE GROUP 09 (TYPE B-12.5) (6")  
 12" TYPE B STABILIZATION (LBR 40)



Submitted by: [Signature] Date: 3/26/18  
 Garfield L. Foster, PE  
 AECOM Technical Services, Engineer of Record

Concurrence by: [Signature] Date: 3/26/18  
 Mario Bizzio, PE  
 FDOT D5 District Design Engineer

Approved by: [Signature] Date: 3/20/18  
 Lori B. Epperson, EI  
 FDOT D5 District Pavement Design Engineer



**SR 535 - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: SR 535

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

Description: **Northbound from Sta. 126+50 to Sta. 139+00 and from Sta. 154+00 to End Construction**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 7,112,000   | (Actual)- 2040 Design Year  |
| use       | 7,200,000   | (Rounded)   |
| LBR       | 25          | Provided in Geotechnical Engineer's Report  |
| Mr(psi) = | 4,375       | Flexible Pavement Design Manual, Table 5.1 (2016). Includes 50% reduction   |
| % R =     | 90%         | 80% - 95% Reliability for <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| <u>Layer/Material</u>  | <u>Thickness</u> | <u>Condition</u>              | <u>Coefficient *</u> | <u>SN<sub>e</sub></u> |
|------------------------|------------------|-------------------------------|----------------------|-----------------------|
| 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                  |
|                        |                  | <b>TOTAL SN<sub>e</sub> =</b> |                      | <b>0.00</b>           |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>7,000,000</u> |          | <u>8,000,000</u> |                   | <u>7,200,000</u> |                |
|----------|------------------|----------|------------------|-------------------|------------------|----------------|
| 4000 psi | 5.78             | 4000 psi | 5.88             | 7,000,000         | 5.63             |                |
| 4375 psi | SN <sub>r</sub>  | 4375 psi | SN <sub>r</sub>  | 7,200,000         | SN <sub>r</sub>  |                |
| 5000 psi | 5.38             | 5000 psi | 5.48             | 8,000,000         | 5.73             |                |
| SN =     | 5.63             | SN =     | 5.73             | SN <sub>R</sub> = | <b>5.65</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**5.65** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)      From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-12.5 (1.5")

**4.03** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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 = 9.

Structural Course:                      4.03 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8                      a<sub>2</sub> = 0.44

**D<sub>2</sub> =                      5.07      Use 5.5" Structural Course**

|   | <b>Thickness (in.)</b> | <b>Coefficient *</b>          | <b>S<sub>Nc</sub></b> |                       |
|---|------------------------|-------------------------------|-----------------------|-----------------------|
| <b>Friction Course (FC-12.5)</b>        | 1.50                   | 0.44                          | 0.66                  |                       |
| <b>Type SP Structural Course</b>        | 5.50                   | 0.44                          | 2.42                  |                       |
| <b>Base Group 09 ( Type B12.5 Only)</b> | 6.00                   | 0.30                          | 1.80                  |                       |
| <b>Stabilization (LBR 40)</b>           | 12.00                  | 0.08                          | 0.96                  |                       |
|   |                        | <b>Total S<sub>Nc</sub> =</b> | <b>5.84</b>           | <b>&gt; 5.65 O.K.</b> |

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

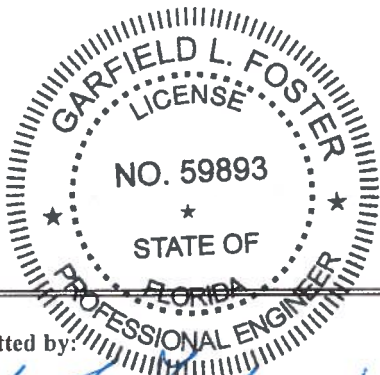
**DARYL CARTER PKWY - (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                                | Date Prepared: <u>10/24/2017</u>   |
| State Project No.: <u>242484-8-32-01</u>                 | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>40 MPH</u>                              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                 | Mr: <u>8750 psi</u>                |
| ESAL's: <u>8,976,000</u> (ESAL Summary Sheet-Appendix D) | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>4.64</u> <u>4.70</u> |
| Description: <u>Daryl Carter Pkwy Mainline Widening</u>  |                                    |

**RECOMMENDED DARYL CARTER PKWY WIDENING CONSTRUCTION PAVEMENT DESIGN**

**MAINLINE**

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)  
 TYPE SP STRUCTURAL COURSE 2.5" (TRAFFIC LEVEL C) (165 LBS/SY)  
 OPTIONAL BASE GROUP 10  
 12" TYPE B STABILIZATION (LBR 40)



Submitted by: *Garfield L. Foster* 4/5/18  
 Garfield L. Foster, P.E. Date:  
 AECOM Technical Services, Engineer of Record

Concurrence by: *[Signature]* 4/2/18  
 Marin Bizzio, P.E. Date:  
 FDOT D5 District Design Engineer

Approved by: *Lori B. Epperson* 3/28/18  
 Lori B. Epperson, E.I. Date:  
 FDOT D5 District Pavement Design Engineer

**DARYL CARTER PKWY - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

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

Description: **Daryl Carter Pkwy Mainline Widening**

**A. DESIGN FACTORS**

|           |                  |   |
|-----------|------------------|---|
|           | <u>2020</u>      | Opening Year  |
| ESAL's    | <u>8,976,000</u> | (Actual)- 2040 Design Year  |
| use       | <u>9,000,000</u> | (Rounded)   |
| LBR       | <u>25</u>        | Provided in Geotechnical Engineer's Report  |
| Mr(psi) = | <u>8,750</u>     | Flexible Pavement Design Manual, Table 5.1 (2016)   |
| % R =     | <u>90%</u>       | 80% - 95% Reliability for <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| FC-9.5                 | 0.90      | Good                          | 0.34          | 0.31            |
| Type 'SP'              | 4.05      | Good                          | 0.34          | 1.38            |
| Type 'I'               | 0.00      | -                             |               | 0.00            |
| LimeRock Base          | 11.60     | Good                          | 0.18          | 2.09            |
| Stabilization (LBR 40) | 12.00     | -                             | 0.08          | 0.96            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>4.73</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**WIDENING CONSTRUCTION**

|             | <u>9,000,000</u> |             | <u>0</u>        |                         | <u>9,000,000</u> |                |
|-------------|------------------|-------------|-----------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.78             | 8000 psi    |                 | 9,000,000               | 4.64             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub> | 9,000,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 4.59             | 9000 psi    |                 | 0                       | 0.00             |                |
| <b>SN =</b> | <b>4.64</b>      | <b>SN =</b> | <b>0.00</b>     | <b>SN<sub>R</sub> =</b> | <b>4.64</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR WIDENING CONSTRUCTION**

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

**4.64** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-12.5 (1.5")

**3.02** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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 4.0" total structural course.

Structural Course: 3.02 1.1 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>2</sub> = 0.44

D<sub>2</sub> = **10.65** Use **OBG 10 (11.0")**

|                           | Thickness (in.) | Coefficient *                 | S <sub>Nc</sub>       |
|---------------------------|-----------------|-------------------------------|-----------------------|
| Friction Course (FC-12.5) | 1.50            | 0.44                          | 0.66                  |
| Type SP Structural Course | 2.50            | 0.44                          | 1.10                  |
| Base Group 10             | 11.00           | 0.18                          | 1.98                  |
| Stabilization (LBR 40)    | 12.00           | 0.08                          | 0.96                  |
|                           |                 | <b>Total S<sub>Nc</sub> =</b> | <b>4.70</b>           |
|                           |                 |                               | <b>&gt; 4.64 O.K.</b> |

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

**DARYL CARTER PKWY - (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

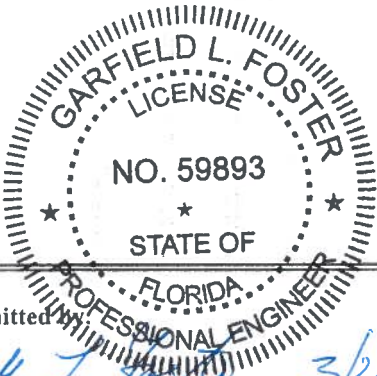
|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u> | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>40 MPH</u>              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                | LBR: <u>N/A</u>                    |
| Design Year: <u>2040</u>                 | Mr: <u>N/A</u>                     |
| ESAL's: <u>N/A</u>                       | % R: <u>N/A</u>                    |
|  | <b>SN Existing: SN Computed:</b>   |
|  | <b>Travelway: 4.73 4.88</b>        |

Description: Daryl Carter Pkwy Mill and Resurface

**RECOMMENDED DARYL CARTER PKWY MILLING AND RESURFACING PAVEMENT DESIGN**

MAINLINE

**MILL 1.5"  
RESURFACE WITH FRICTION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)**



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

Concurrence by: [Signature] Date: 3/26/18  
 Mario Bizzio, PE  
 FDOT D5 District Design Engineer

Approved by: [Signature] Date: 3/20/18  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer

**DARYL CARTER PKWY - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

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

Description: **Daryl Carter Pkwy Mill and Resurface**

**A. DESIGN FACTORS**

|           |      |   |
|-----------|------|---|
|           | 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 <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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:**

(Used Avg. depths for the project)

| Layer/Material                | Thickness | Condition | Coefficient * | SN <sub>e</sub> |
|-------------------------------|-----------|-----------|---------------|-----------------|
| FC-9.5                        | 0.90      | Good      | 0.34          | 0.31            |
| Type 'SP'                     | 4.05      | Good      | 0.34          | 1.38            |
| Type 'I'                      | 0.00      | -         |               | 0.00            |
| LimeRock Base                 | 11.60     | Good      | 0.18          | 2.09            |
| Stabilization (LBR 40)        | 12.00     | -         | 0.08          | 0.96            |
| <b>TOTAL SN<sub>e</sub> =</b> |           |           |               | <b>4.73</b>     |

Thicknesses shown are the average of the cores taken on Daryl Carter Parkway in Coring Memo (Appendix A)

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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**

|     |                  |      |          |           |  |
|-----|------------------|------|----------|-----------|--|
|     | <u>9,000,000</u> |      | <u>0</u> |           | <u>N/A</u>                                   |
|     | 8000 psi         | 0    | 8000 psi | 9,000,000 | 0.00   |
| N/A | SNr              | N/A  | SNr      | N/A       | SNr  |
|     | 9000 psi         | 0    | 9000 psi | 0         | 0.00   |
|     | SN =             | 0.00 | SN =     | 0.00      | SN <sub>R</sub> = <b>0.00</b> (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR RESURFACING**

S<sub>Nc</sub> is greater than S<sub>Ne</sub>, therefore, mill existing pavement 1.5" and replace with 1.5" of FC-12.5.  
 Minimum mill existing pavement for final striping and uniformity with adjacent new construction.

|   | <b>Thickness (in.)</b> | <b>Coefficient *</b>          | <b>S<sub>Nc</sub></b> |
|---|------------------------|-------------------------------|-----------------------|
| <b>Friction Course (FC-12.5)</b>                    | 1.50                   | 0.44                          | 0.66                  |
| <b>Type SP Structural Course (exist after mill)</b> | 3.45                   | 0.34                          | 1.17                  |
| <b>Base Group (existing)</b>                        | 11.60                  | 0.18                          | 2.09                  |
| <b>Stabilization (LBR 40) (existing)</b>            | 12.00                  | 0.08                          | 0.96                  |
|   |                        | <b>Total S<sub>Nc</sub> =</b> | <b>4.88</b>           |
|   |                        |                               | <b>&gt; 4.73 O.K.</b> |

Thicknesses shown are the average of the cores taken on Daryl Carter Parkway in Coring Memo (Appendix A)

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



**SECTION 3-c**

**MINOR CROSS STREETS**  
**PAVEMENT DESIGN SUMMARY SHEETS**

- i. Hotel Plaza Blvd
- ii. Vineland Avenue
- iii. Palm Parkway
- iv. Winter Garden Vineland Road
- va. Grand Cypress Blvd
- vb. Grand Cypress Blvd (Black Base)
- vi. Meadow Creek Dr

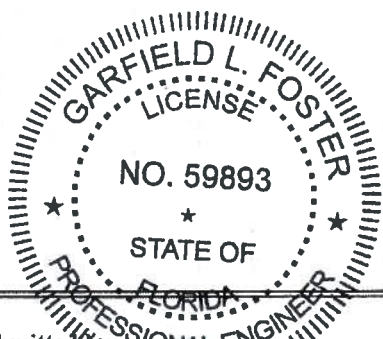
**HOTEL PLAZA BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                                | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>                 | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>35 MPH</u>                              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                 | Mr: <u>8750 psi</u>                |
| ESAL's: <u>3,688,000</u> (ESAL Summary Sheet-Appendix D) | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | Travelway: <u>4.05</u> <u>4.08</u> |

Description: Hotel Plaza Blvd Mainline Pavement

**RECOMMENDED VINELAND NEW CONSTRUCTION PAVEMENT DESIGN**

**MAINLINE**  
**FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (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)**



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

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

Approved by: [Signature] Date: 3/20/18  
 Lori B. Epperson, E.I.  
 FDOT D5 District Pavement Design Engineer

**HOTEL PLAZA BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Hotel Plaza Blvd Mainline Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 3,688,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>3,500,000</u> |             | <u>4,000,000</u> |                         | <u>3,700,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.14             | 8000 psi    | 4.23             | 3,500,000               | 4.01             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 3,700,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 3.97             | 9000 psi    | 4.06             | 4,000,000               | 4.10             |                |
| <b>SN =</b> | <b>4.01</b>      | <b>SN =</b> | <b>4.10</b>      | <b>SN<sub>R</sub> =</b> | <b>4.05</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.05** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.43** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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 = 9.

Structural Course: 2.43 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 1.43 Use 1.5" Structural Course**

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

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

**VINELAND AVE - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

Prepared By: AECOM

Date Prepared: 8/18/2017

State Project No.: 242484-8-32-01

Project Name: I-4 BTU

FA No.: 3141-035-P

AECOM Project No.: 12722741

State Road No.: N/A

Prepared By: GLF

Design Speed: 30 MPH

Checked By: BL

Opening Year: 2020

LBR: 25

Design Year: 2040

Mr: 8750 psi

ESAL's: 3,177,000 (ESAL Summary Sheet-Appendix D)

% R: 90%

**SN Required: SN Computed:**

Travelway: 3.96      4.03

Description: Vineland Ave Mainline Pavement

**RECOMMENDED VINELAND NEW CONSTRUCTION PAVEMENT DESIGN**

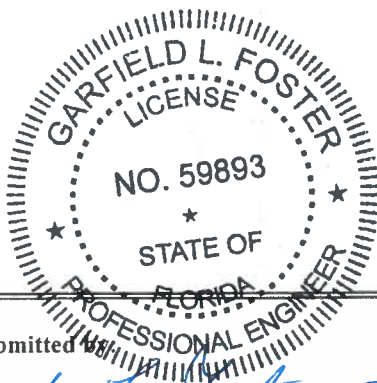
**MAINLINE**

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)

TYPE SP STRUCTURAL COURSE 2" (TRAFFIC LEVEL C) (220 LBS/SY)

OPTIONAL BASE GROUP 07

12" TYPE B STABILIZATION (LBR 40)



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

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

Approved by: [Signature] 3/20/18  
 Lori B. Epperson, E.I. Date:  
 FDOT D5 District Pavement Design Engineer

**VINELAND AVE - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Vineland Ave Mainline Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 3,177,000   | (Actual)- 2040 Design Year  |
| use       | 3,200,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>3,000,000</u> |             | <u>3,500,000</u> |                         | <u>3,200,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.05             | 8000 psi    | 4.14             | 3,000,000               | 3.92             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 3,200,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 3.88             | 9000 psi    | 3.97             | 3,500,000               | 4.01             |                |
| <b>SN =</b> | <b>3.92</b>      | <b>SN =</b> | <b>4.01</b>      | <b>SN<sub>R</sub> =</b> | <b>3.96</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**3.96** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.34** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2016), establishes minimum thickness for new 0.3-3.5M ESAL construction: Min Structural Course = 2" & Min OBG =6. From Table 5.9, use OBG = 7.

Structural Course: 2.34 = (a<sub>2</sub> x D<sub>2</sub>) + 1.53 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 1.84 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 07             | 8.50            | 0.18               | 1.53                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>4.03</b>           |
|                           |                 |                    | <b>&gt; 3.96 O.K.</b> |

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

**PALM PKWY MAINLINE - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

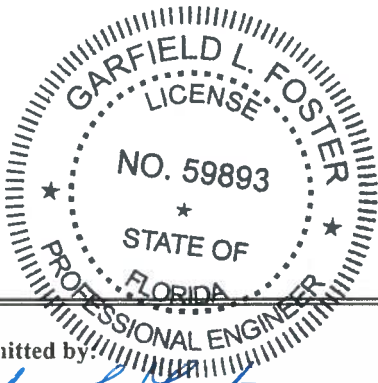
|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                                | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>                 | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                               | Prepared By: <u>GLF</u>            |
| Design Speed: <u>35 MPH</u>                              | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                 | Mr: <u>8750 psi</u>                |
| ESAL's: <u>4,292,000</u> (ESAL Summary Sheet-Appendix D) | % R: <u>90%</u>                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | <b>Travelway: 4.15 4.30</b>        |

Description: Palm Pkwy Mainline Pavement

**RECOMMENDED PALM PKWY NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (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)



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

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

Approved by: *Lori B. Epperson* 3/20/18  
 Lori B. Epperson, E.I. Date:  
 FDOT D5 District Pavement Design Engineer



**PALM PKWY MAINLINE - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32 AECOM  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Palm Pkwy Mainline Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 4,292,000   | (Actual)- 2040 Design Year  |
| use       | 4,300,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>4,000,000</u> |             | <u>4,500,000</u> |                         | <u>4,300,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.23             | 8000 psi    | 4.31             | 4,000,000               | 4.10             |                |
| 8750 psi    | SNr              | 8750 psi    | SNr              | 4,300,000               | SNr              |                |
| 9000 psi    | 4.06             | 9000 psi    | 4.13             | 4,500,000               | 4.18             |                |
| <b>SN =</b> | <b>4.10</b>      | <b>SN =</b> | <b>4.18</b>      | <b>SN<sub>R</sub> =</b> | <b>4.15</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT AECOM**

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

**4.15** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.53** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2015), establishes minimum thickness for new >3.5M ESAL construction: Min Structural Course = 3" & Min OBG = 9. From Table 5.9, use OBG = 9.

Structural Course: 2.53 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 1.65 Use 2" Structural Course**

|                                  | <b>Thickness (in.)</b> | <b>Coefficient *</b> | <b>SNc</b>            |
|----------------------------------|------------------------|----------------------|-----------------------|
| <b>Friction Course (FC-12.5)</b> | 1.50                   | 0.44                 | 0.66                  |
| <b>Type SP Structural Course</b> | 2.00                   | 0.44                 | 0.88                  |
| <b>Base Group 9</b>              | 10.00                  | 0.18                 | 1.80                  |
| <b>Stabilization (LBR 40)</b>    | 12.00                  | 0.08                 | 0.96                  |
|                                  |                        | <b>Total SNc =</b>   | <b>4.30</b>           |
|                                  |                        |                      | <b>&gt; 4.15 O.K.</b> |

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

**WINTER GARDEN VINELAND RD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

Page 1 of 3

Prepared By: AECOM

Date Prepared: 8/18/2017

State Project No.: 242484-8-32-01

Project Name: I-4 BTU

FA No.: 3141-035-P

AECOM Project No.: 12722741

State Road No.: N/A

Prepared By: GLF

Design Speed: 35 MPH

Checked By: BL

Opening Year: 2020

LBR: 25

Design Year: 2040

Mr: 8750 psi

ESAL's: 4,096,000 (ESAL Summary Sheet-Appendix D)

% R: 90%

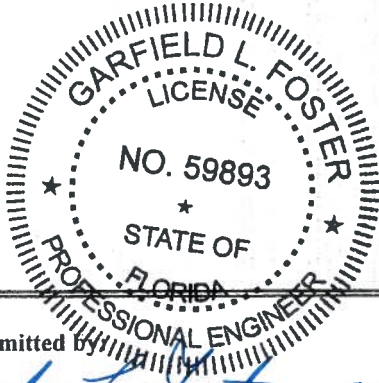
|            |                     |                     |
|------------|---------------------|---------------------|
|            | <b>SN Required:</b> | <b>SN Computed:</b> |
| Travelway: | <u>4.12</u>         | <u>4.30</u>         |

Description: Winter Garden Vineland Rd Pavement

**RECOMMENDED WINTER GARDEN VINELAND NEW CONSTRUCTION PAVEMENT DESIGN**

**MAINLINE**

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (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)



Submitted by: Garfield L. Foster 8/26/18  
 Garfield L. Foster, P.E. Date:  
 AECOM Technical Services, Engineer of Record

Concurrence by: Mario Bizzio 8/26/18  
 Mario Bizzio, P.E. Date:  
 FDOT D5 District Design Engineer

Approved by: Lori B. Epperson 8/20/18  
 Lori B. Epperson, E.I. Date:  
 FDOT D5 District Pavement Design Engineer

iv-1

**WINTER GARDEN VINELAND RD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Winter Garden Vineland Rd Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 4,096,000   | (Actual)- 2040 Design Year  |
| use       | 4,100,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material         | Thickness | Condition                     | Coefficient * | SN <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>4,000,000</u> |             | <u>4,500,000</u> |                         | <u>4,100,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.23             | 8000 psi    | 4.31             | 4,000,000               | 4.10             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 4,100,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 4.06             | 9000 psi    | 4.13             | 4,500,000               | 4.18             |                |
| <b>SN =</b> | <b>4.10</b>      | <b>SN =</b> | <b>4.18</b>      | <b>SN<sub>R</sub> =</b> | <b>4.12</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.12** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.50** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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 = 9.

Structural Course: 2.50 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 1.58 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 9              | 10.00           | 0.18               | 1.80        |                       |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96        |                       |
|                           |                 | <b>Total SNc =</b> | <b>4.30</b> | <b>&gt; 4.12 O.K.</b> |

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

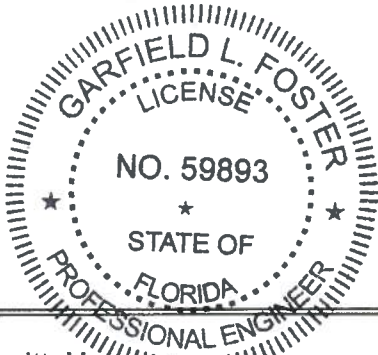
**GRAND CYPRESS BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |                                    |
|--|------------------------------------|
| Prepared By: <u>AECOM</u>                                      | Date Prepared: <u>8/18/2017</u>    |
| State Project No.: <u>242484-8-32-01</u>                       | Project Name: <u>I-4 BTU</u>       |
| FA No.: <u>3141-035-P</u>                                      | AECOM Project No.: <u>12722741</u> |
| State Road No.: <u>N/A</u>                                     | Prepared By: <u>GLF</u>            |
| Design Speed: <u>35 MPH</u>                                    | Checked By: <u>BL</u>              |
| Opening Year: <u>2020</u>                                      | LBR: <u>25</u>                     |
| Design Year: <u>2040</u>                                       | Mr: <u>8750 psi</u>                |
| ESAL's: <u>4,292,000</u>                                       | % R: <u>90%</u>                    |
| (New Road, Using Palm Pkwy ESAL where it ties in - Appendix D) |                                    |
|  | <b>SN Required: SN Computed:</b>   |
|  | <b>Travelway: 4.15 4.30</b>        |
| Description: <u>Grand Cypress Blvd Mainline Pavement</u>       |                                    |

**RECOMMENDED GRAND CYPRESS NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (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)



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

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

Approved by: Lori B. Epperson 3/20/18  
 Lori B. Epperson, P.E. Date:  
 FDOT D5 District Pavement Design Engineer

**GRAND CYPRESS BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Grand Cypress Blvd Mainline Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 4,292,000   | (Actual)- 2040 Design Year  |
| use       | 4,300,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> limited access roadway facilities (Table 5.2) |

**B. DETERMINE MODULUS OF RESILIENCE:**

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

$$M_R = \underline{\hspace{2cm}}$$

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 <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>4,000,000</u> |             | <u>4,500,000</u> |                         | <u>4,300,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 4.23             | 8000 psi    | 4.31             | 4,000,000               | 4.10             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 4,300,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 4.06             | 9000 psi    | 4.13             | 4,500,000               | 4.18             |                |
| <b>SN =</b> | <b>4.10</b>      | <b>SN =</b> | <b>4.18</b>      | <b>SN<sub>R</sub> =</b> | <b>4.15</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**4.15** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**2.53** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) Pavement Design Manual (2016), use FC-12.5 (1.5")

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

Structural Course: 2.53 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 1.65 Use 2" Structural Course**

|                                  | <u>Thickness (in.)</u> | <u>Coefficient *</u> | <u>SNc</u>            |
|----------------------------------|------------------------|----------------------|-----------------------|
| <b>Friction Course (FC-12.5)</b> | 1.50                   | 0.44                 | 0.66                  |
| <b>Type SP Structural Course</b> | 2.00                   | 0.44                 | 0.88                  |
| <b>Base Group 09</b>             | 10.00                  | 0.18                 | 1.80                  |
| <b>Stabilization (LBR 40)</b>    | 12.00                  | 0.08                 | 0.96                  |
|                                  |                        | <b>Total SNc =</b>   | <b>4.30</b>           |
|                                  |                        |                      | <b>&gt; 4.15 O.K.</b> |

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



**GRAND CYPRESS BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

Prepared By: AECOM

Date Prepared: 10/24/2017

State Project No.: 242484-8-32-01

Project Name: I-4 BTU

FA No.: 3141-035-P

AECOM Project No.: 12722741

State Road No.: N/A

Prepared By: GLF

Design Speed: 35 MPH

Checked By: BL

Opening Year: 2020

LBR: 25

Design Year: 2040

\* Mr: 4375 psi

ESAL's: 4,292,000

% R: 90%

(New Road, Using Palm Pkwy ESAL where it ties in - Appendix D)

SN Required: SN Computed:

\* Resilient Modulus reduced by 50%

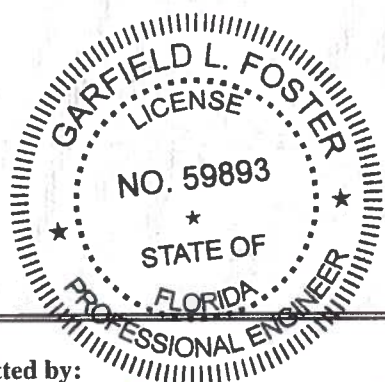
Travelway: 5.26 5.40

Description: Grand Cypress Blvd Mainline Pavement (Black Base)  
From Sta. 2400+36 to Sta. 2403+60 and from Sta. 2417+15 to Sta. 2419+48

**RECOMMENDED GRAND CYPRESS WIDENING CONSTRUCTION PAVEMENT DESIGN**

**MAINLINE**

- FRICITION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL C) (165 LBS/SY)
- TYPE SP STRUCTURAL COURSE 4.5" (TRAFFIC LEVEL C) (495 LBS/SY)
- OPTIONAL BASE GROUP 09 (TYPE B-12.5) (BLACK BASE) (6")
- 12" TYPE B STABILIZATION (LBR 40)



Submitted by: *Garfield L. Foster* 9/5/18  
 Garfield L. Foster, P.E. Date:  
 AECOM Technical Services, Engineer of Record

Concurrence by: *Mario Bizzio* 4/2/18  
 Mario Bizzio, P.E. Date:  
 FDOT D5 District Design Engineer

Approved by: *Lori B. Epperson* 3/28/18  
 Lori B. Epperson, E.L. Date:  
 FDOT D5 District Pavement Design Engineer

**GRAND CYPRESS BLVD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

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

Description: **Grand Cypress Blvd Mainline Pavement (Black Base)**

**A. DESIGN FACTORS**

|           |           |   |
|-----------|-----------|---|
|           | 2020      | Opening Year  |
| ESAL's    | 4,292,000 | (Actual)- 2040 Design Year  |
| use       | 4,300,000 | (Rounded)   |
| LBR       | 25        | Provided in Geotechnical Engineer's Report  |
| Mr(psi) = | 4,375     | Flexible Pavement Design Manual, Table 5.1 (2016). Includes 50% reduction   |
| % R =     | 90%       | 80% - 95% Reliability for <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| Layer/Material                | Thickness | Condition | Coefficient * | SN <sub>e</sub> |
|-------------------------------|-----------|-----------|---------------|-----------------|
| 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            |
| <b>TOTAL SN<sub>e</sub> =</b> |           |           |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|          | <u>4,000,000</u> |          | <u>4,500,000</u> |                   | <u>4,300,000</u> |                |
|----------|------------------|----------|------------------|-------------------|------------------|----------------|
| 4000 psi | 5.35             | 4000 psi | 5.44             | 4,000,000         | 5.21             |                |
| 4375 psi | SN <sub>r</sub>  | 4375 psi | SN <sub>r</sub>  | 4,300,000         | SN <sub>r</sub>  |                |
| 5000 psi | 4.98             | 5000 psi | 5.06             | 4,500,000         | 5.30             |                |
| SN =     | 5.21             | SN =     | 5.30             | SN <sub>R</sub> = | <b>5.26</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR WIDENING CONSTRUCTION**

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

**5.26** = (0.44 x 1.5) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible Pavement Design Manual (2016), use FC-12.5 (1.5")

**3.64** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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

Structural Course: 3.64 = (a<sub>2</sub> x D<sub>2</sub>) + 1.8 a<sub>2</sub> = 0.44

D<sub>2</sub> = **4.19** Use 4.5" Structural Course

|                                  | Thickness (in.) | Coefficient *                 | S <sub>Nc</sub> |                       |
|----------------------------------|-----------------|-------------------------------|-----------------|-----------------------|
| Friction Course (FC-12.5)        | 1.50            | 0.44                          | 0.66            |                       |
| Type SP Structural Course        | 4.50            | 0.44                          | 1.98            |                       |
| Base Group 09 (Type B-12.5 Only) | 6.00            | 0.30                          | 1.80            |                       |
| Stabilization (LBR 40)           | 12.00           | 0.08                          | 0.96            |                       |
|                                  |                 | <b>Total S<sub>Nc</sub> =</b> | <b>5.40</b>     | <b>&gt; 5.26 O.K.</b> |

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

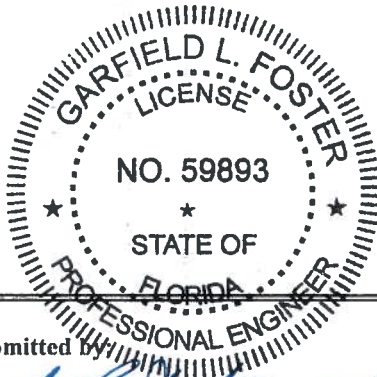
**MEADOW CREEK RD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

|  |   |
|--|---|
| Prepared By: <u>AECOM</u><br>State Project No.: <u>242484-8-32-01</u><br>FA No.: <u>3141-035-P</u><br>State Road No.: <u>N/A</u><br>Design Speed: <u>35 MPH</u><br>Opening Year: <u>2020</u><br>Design Year: <u>2040</u><br>ESAL's: <u>972,000</u> (ESAL Summary Sheet-Appendix D) | Date Prepared: <u>8/18/2017</u><br>Project Name: <u>I-4 BTU</u><br>AECOM Project No.: <u>12722741</u><br>Prepared By: <u>GLF</u><br>Checked By: <u>BL</u><br>LBR: <u>25</u><br>Mr: <u>8750 psi</u><br>% R: <u>90%</u> |
| SN Required:    SN Computed:<br>Travelway: <u>3.28</u> <u>3.72</u>   |   |
| Description: <u>Meadow Creek Rd Mainline Pavement</u>  |   |

**RECOMMENDED MEADOW CREEK NEW CONSTRUCTION PAVEMENT DESIGN**

MAINLINE

FRICTION COURSE (FC-12.5) 1.5" (PG 76-22) (TRAFFIC LEVEL B) (165 LBS/SY)  
 TYPE SP STRUCTURAL COURSE 1.5" (TRAFFIC LEVEL B) (165 LBS/SY)  
 OPTIONAL BASE GROUP 06  
 12" TYPE B STABILIZATION (LBR 40)



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

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

Approved by: *Lori B. Epperson*      Date: 3/20/18  
 Lori B. Epperson, E.L.      Date:  
 FDOT D5 District Pavement Design Engineer

**MEADOW CREEK RD - I-4 BTU (ORANGE COUNTY) FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET**

State Project No.: 242484-8-32-01  
 State Road No.: N/A

Date Prepared: 8/18/2017  
 Calculated By: GLF  
 Project Name: I-4 BTU  
 AECOM Project No.: 12722741

Description: **Meadow Creek Rd Mainline Pavement**

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening Year  |
| ESAL's    | 972,000     | (Actual)- 2040 Design Year  |
| use       | 1,000,000   | (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 <b>New</b> limited access roadway facilities (Table 5.2)            |
|           |             | 95% - 99% Reliability for <b>Rehabilitation</b> limited access roadway facilities (Table 5.2) |

**B. DETERMINE MODULUS OF RESILIENCE:**

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

$$M_R = \quad \quad \quad \text{N/A}$$

Use Superpave Traffic Level "B," 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 <sub>e</sub> |
|------------------------|-----------|-------------------------------|---------------|-----------------|
| 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            |
|                        |           | <b>TOTAL SN<sub>e</sub> =</b> |               | <b>0.00</b>     |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>900,000</u>  |             | <u>1,000,000</u> |                         | <u>1,000,000</u> |                |
|-------------|-----------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 3.33            | 8000 psi    | 3.39             | 900,000                 | 3.22             |                |
| 8750 psi    | SN <sub>r</sub> | 8750 psi    | SN <sub>r</sub>  | 1,000,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 3.18            | 9000 psi    | 3.24             | 1,000,000               | 3.28             |                |
| <b>SN =</b> | <b>3.22</b>     | <b>SN =</b> | <b>3.28</b>      | <b>SN<sub>R</sub> =</b> | <b>3.28</b>      | (Min. SN Req.) |

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**3.28** = (0.44 x 1.50) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**1.66** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) Pavement Design Manual (2016), use FC-12.5 (1.5")

Table 5.5, FDOT Flexible Pavement Design Manual (2015), establishes minimum thickness for new pavt 0.3 -3.5M ESAL construction: Min Structural Course = 2" & Min OBG = 6. From Table 5.9, use OBG = 6.

Structural Course: 1.66 = (a<sub>2</sub> x D<sub>2</sub>) + 1.44 a<sub>2</sub> = 0.44  
**D<sub>2</sub> = 0.49 Use 1" 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 6              | 8.00            | 0.18               | 1.44                  |
| Stabilization (LBR 40)    | 12.00           | 0.08               | 0.96                  |
|                           |                 | <b>Total SNc =</b> | <b>3.72</b>           |
|                           |                 |                    | <b>&gt; 3.28 O.K.</b> |

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

**APPENDIX A**  
**CORING REPORT**

# MEMORANDUM

FLORIDA DEPARTMENT OF TRANSPORTATION

DATE: July 29, 2016

TO: Heather Johnstone, Consultant Project Manager – MS# 2-542

FROM:  Timothy J. Keefe, District Materials Pavement Manager – MS# 519

COPIES TO: Project File

SUBJECT: FPN 242484-8

SR 400 (I-4) Beyond the Ultimate - - Pavement Coring on Various Side Streets  
*Daryl Carter Parkway, Palm Parkway, Winter Garden-Vineland Road, CR 535, Vinings Way  
Boulevard, and Vineland Avenue*  
Orange County, Florida  
**Pavement Core Data**

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It should be noted that this segment of I-4 between Osceola County Line and west of SR 528/Beachline was milled and resurfaced under two recent projects (FPN 429079-1-52-01, *completed 05/29/2015* and FPN 430644-1-52-01, *completed 04/08/2016*). In lieu of collecting pavement cores again for this I-4 BTU project, a copy of the final PSE reports (written for 429079-1 and 430644-1) were provided to the design team - FDOT Project Manager / Design Engineer of Record. The pavement composition of the I-4 roadway can be gleaned from the provided PSE reports. The Designer will need to account for the mill depths (removal of friction and some of the structural course) and overlay of new asphalt layers (add-on of structural & friction course). With the 1-1 ratio for milling and overlay resurfacing, the overall asphalt pavement thickness remains generally the same/unchanged.

Due to I-4 BTU design impacts to the local nearby streets, additional pavement cores were needed on various side streets. The proposed core locations were provided by the Design Engineer of Record. The pavement thickness and composition were mostly consistent for each of the different side streets cored. The following local streets/roadways were cored: *Daryl Carter Parkway, Palm Parkway, Winter Garden-Vineland Road, CR 535, Vinings Way Boulevard and Vineland Avenue.*

Please review the attached documents for more information on the various pavement cores obtained. If you have any questions concerning the contents of the PECD core sheets, please contact me by email at [timothy.keefe@dot.state.fl.us](mailto:timothy.keefe@dot.state.fl.us) or by phone at 1-386-490-8065.

Thank you.

Attachments:      1) PECD – core data sheets  
                         2) Core & Roadway Photographs  
                         3) Aerial Map View of Pavement Core Locations





# ELIPSIS ENGINEERING & CONSULTING, LLC

July 27, 2016

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) BTU Segment / Side Streets  
Orange County, Florida  
FPN 242484-8  
Section No: 75 280  
Contract No.: C-9570  
EEC Project No.: 12009-10.11

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 March 30, 2016.

The pavement core data is presented on the attached Pavement Evaluation and Condition Data (PECD) Sheet 1. 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

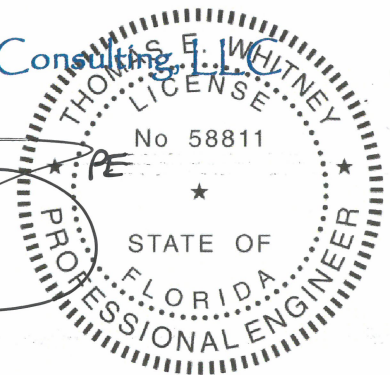
Thomas E. Whitney, PE

Principal Engineer

Signature Date: 7/27/16

**STATE OF FLORIDA**

Registered Professional Engineer No. 58811



*Laying a new foundation for growth, one job at a time!*

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

| Project No.: 242484-8 |    | Cored By: Elipsis Engineering and Consulting |      | Date: July 13, 2016       |                      | Page No.: 1 of 1             |        |                  |      |            |      |       |            |                |                 |          |                                       |
|-----------------------|----|--|------|---------------------------|----------------------|------------------------------|--------|------------------|------|------------|------|-------|------------|----------------|-----------------|----------|---------------------------------------|
| County: Orange        |    | Highway Sect. No: 75280                      |      | From: Osceola County Line |                      | To: West of SR 528/Beachline |        |                  |      |            |      |       |            |                |                 |          |                                       |
| Road No.: SR 400      |    | Begin MP: 0.000                              |      | End MP: 5.650             |                      | Length: 5.650                |        |                  |      |            |      |       |            |                |                 |          |                                       |
| Core No.              | MP | Distance from left edge of lane (ft)         | Lane | Wheel Path                | Pavement Layer (in.) |                              |        | Core Length (in) | Base | Crack      |      |       | Pavt Cond. | Rut Depth (in) | Cross Slope (%) | Comments |                                       |
|                       |    |  |      |                           | FC-9.5               | Type SP                      | Type S |                  |      | Depth (in) | Type | Class |            |                |                 |          | Extent                                |
| 1                     | *  | 2.0  | L1   | X                         | 0.8                  | 4.2                          |        | 5.0              | LR   | 11.0       | -    | -     | -          | G              | 0.0             | 1.3      | Daryl Carter E. of I-4                |
| 2                     | *  | 9.0  | R1   | X                         | 1.0                  | 3.9                          |        | 4.9              | LR   | 12.2       | -    | -     | -          | G              | 0.0             | 1.2      | Daryl Carter E. of I-4                |
| 3                     | *  | 2.0  | R1   | X                         | 1.3                  | 3.7                          |        | 5.0              | SC   | 12.5       | -    | -     | -          | G              | 0.0             | 1.4      | Palm Pkwy E of Daryl Carter Pkwy      |
| 4                     | *  | 9.5  | L1   | X                         | 0.5                  | 4.0                          |        | 4.5              | SC   | 12.5       | -    | -     | -          | G              | 0.0             | 1.6      | Palm Pkwy E of Daryl Carter Pkwy      |
| 5                     | *  | 2.0  | L1   | X                         | 1.0                  | 1.0                          |        | 2.0              | LR   | 7.8        | -    | -     | -          | F              | 0.0             | 1.0      | Palm Pkwy East of CR 535              |
| 6                     | *  | 9.5  | R1   | X                         | 1.3                  | 0.8                          | 3.1    | 5.2              | SC   | 6.8        | -    | -     | -          | F              | 0.2             | 2.1      | Palm Pkwy East of CR 535              |
| 7                     | *  | 10.0   | L1   | X                         | 1.5                  | 4.2                          |        | 5.7              | SC   | 16.3       | -    | -     | -          | F              | 0.1             | -1.3     | Winter Garden-Vineland West of CR 535 |
| 8                     | *  | 2.0  | R1   | X                         | 1.0                  | 3.5                          |        | 4.5              | SC   | 13.0       | -    | -     | -          | F              | 0.6             | 2.7      | Winter Garden-Vineland West of CR 535 |
| 9                     | *  | 2.5  | L1   | X                         | 1.5                  | 1.5                          |        | 3.0              | LR   | 8.0        | -    | -     | -          | F              | 0.1             | 3.5      | CR 535 - 500' S of Palm Pkwy          |
| 10                    | *  | 9.5  | R1   | X                         | 1.6                  | 1.3                          | 0.6    | 3.5              | SC   | 8.5        | -    | -     | -          | F              | 0.2             | 2.1      | CR 535 - 500' S of Palm Pkwy          |
| 11                    | *  | 3.0  | R1   | X                         | 1.4                  | 1.9                          |        | 3.3              | SC   | 8.7        | -    | -     | -          | F              | 0.0             | 2.2      | CR 535 - North of Palm Pkwy           |
| 12                    | *  | 9.0  | L1   | X                         | 1.2                  | 1.7                          |        | 2.9              | SC   | 7.5        | -    | -     | -          | F              | 0.1             | 2.4      | CR 535 - North of Palm Pkwy           |
| 13                    | *  | 3.0  | R1   | X                         | 1.5                  |                              |        | 1.5              | SC   | 9.0        | -    | -     | -          | F              | 0.0             | 1.2      | Vinings Way Blvd at CR 535            |
| 14                    | *  | 9.5  | L1   | X                         | 1.9                  |                              |        | 1.9              | SC   | 8.1        | -    | -     | -          | F              | 0.0             | 2.1      | Vinings Way Blvd at CR 535            |
| 15                    | *  | 5.0  | R1   |                           | 1.7                  | 3.7                          |        | 5.4              | SC   | 12.1       | 1.8  | Br    | I          | S              | P               | 2.2      | Vineland Ave near SR 535              |
| 16                    | *  | 11.5   | LRTL | X                         | 1.4                  | 3.3                          |        | 4.7              | SC   | 10.8       | -    | -     | -          | F              | 0.0             | 1.5      | Vineland Ave near SR 535              |

**Remarks:** Crack Depth of "B" indicates full depth crack to the base. EOP = Edge of Pavement \* = Refer to attached aerials for approximate locations cored  
 Crack Extent: L= Light; M= Moderate; S= Severe Pavement Condition: G= Good; F= Fair; P= Poor Crack Types: A= Alligator; B= 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





FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



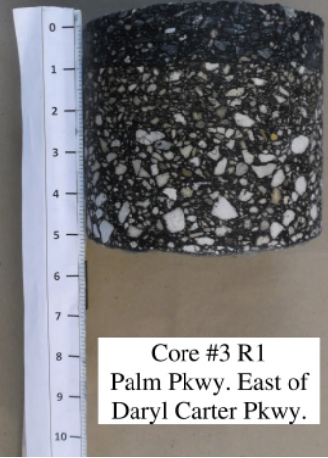
Core #1 L1  
Daryl Carter Pkwy.  
East of I-4

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



Core #2 R1  
Daryl Carter Pkwy.  
East of I-4

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



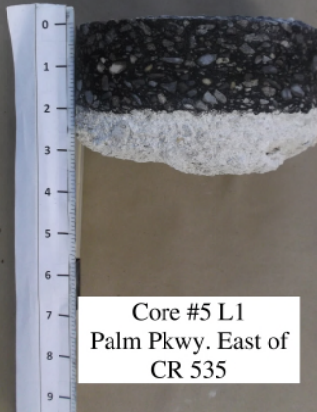
Core #3 R1  
Palm Pkwy. East of  
Daryl Carter Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



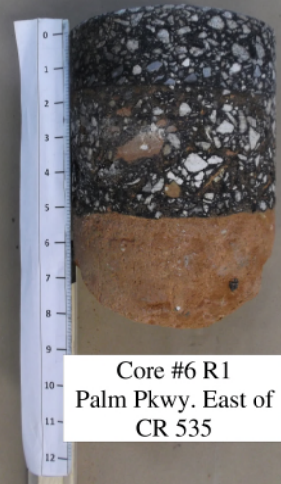
Core #4 L1  
Palm Pkwy. East of  
Daryl Carter Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



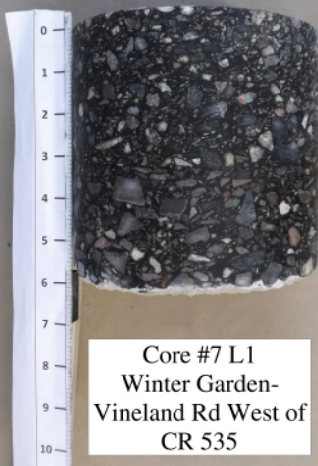
Core #5 L1  
Palm Pkwy. East of  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



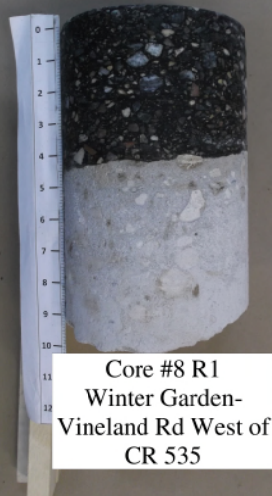
Core #6 R1  
Palm Pkwy. East of  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



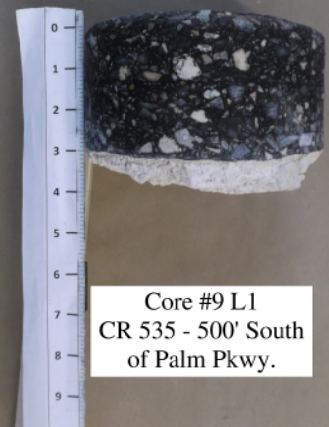
Core #7 L1  
Winter Garden-  
Vineland Rd West of  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



Core #8 R1  
Winter Garden-  
Vineland Rd West of  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



Core #9 L1  
CR 535 - 500' South  
of Palm Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



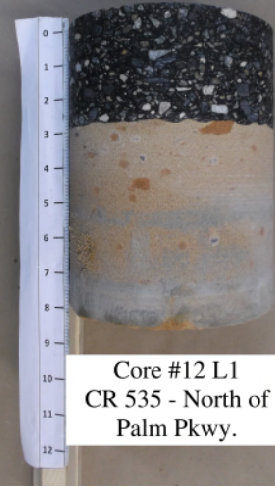
Core #10 R1  
CR 535 - 500' South  
of Palm Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



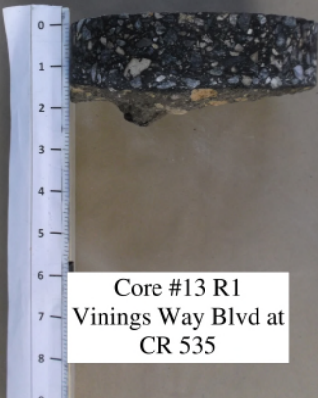
Core #11 R1  
CR 535 - North of  
Palm Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



Core #12 L1  
CR 535 - North of  
Palm Pkwy.

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



Core #13 R1  
Vinings Way Blvd at  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



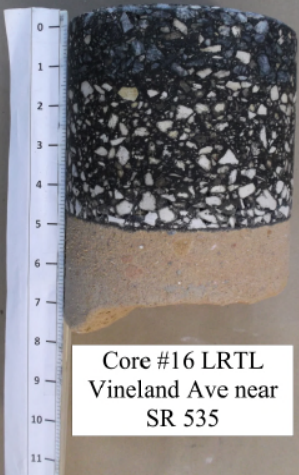
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Vinings Way Blvd at  
CR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16

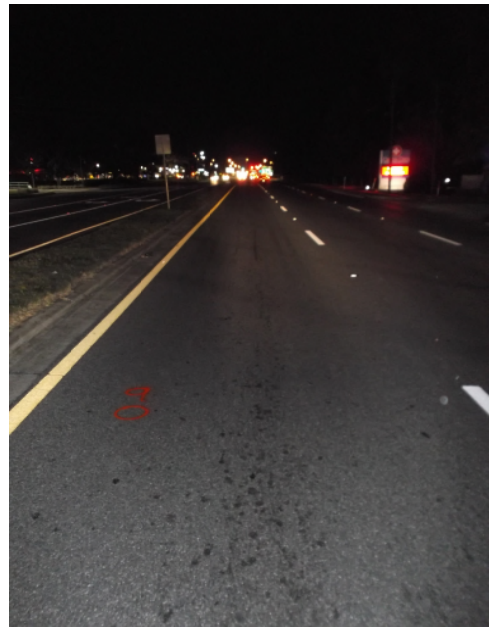
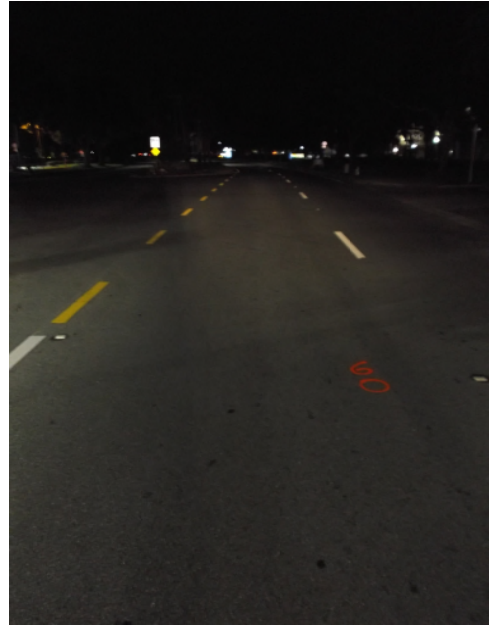


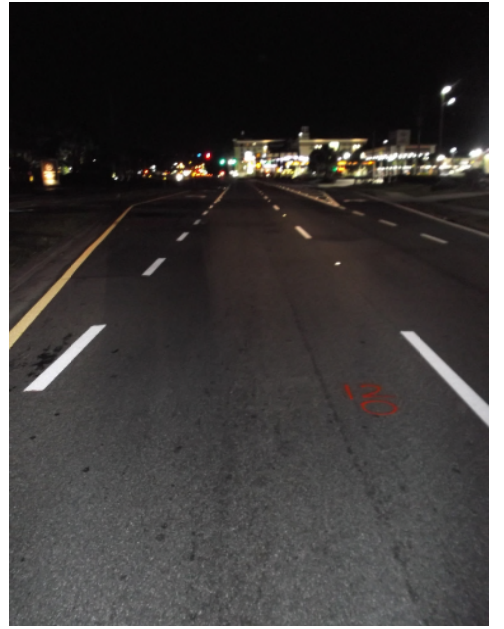
Core #15 R1  
Vineland Ave near  
SR 535

FPN 242484-8  
SR 400 - Sect. 75280  
Coring Date 7/13/16



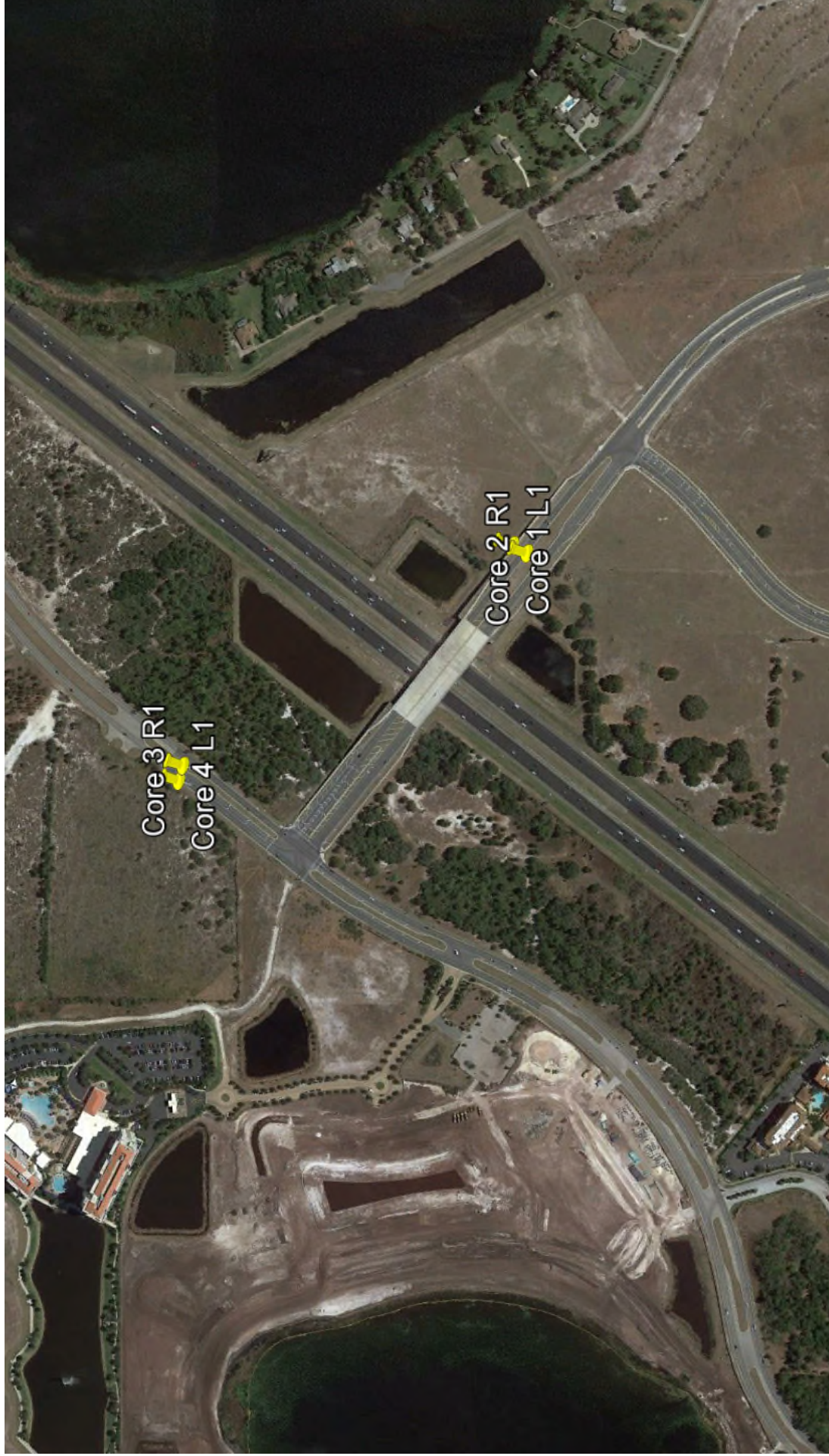
Core #16 LRTL  
Vineland Ave near  
SR 535





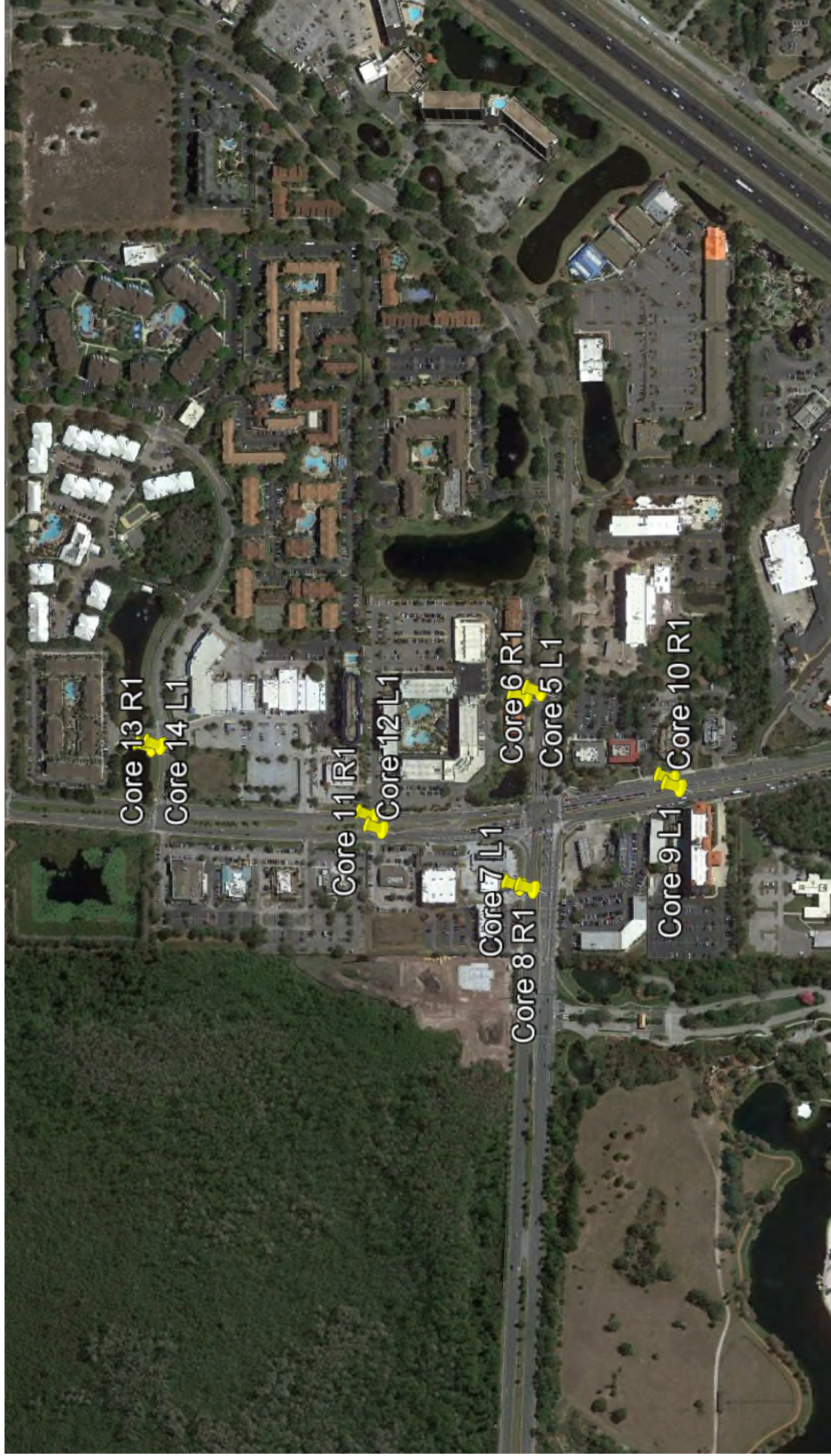


FPN 242484-8; SR 400 (I-4) Beyond The Ultimate - - Core Locations for Various Side Streets/Roadways



Coring Information: Core #1 and #2 taken from Daryl Carter Parkway; Core #3 and #4 taken from Palm Parkway

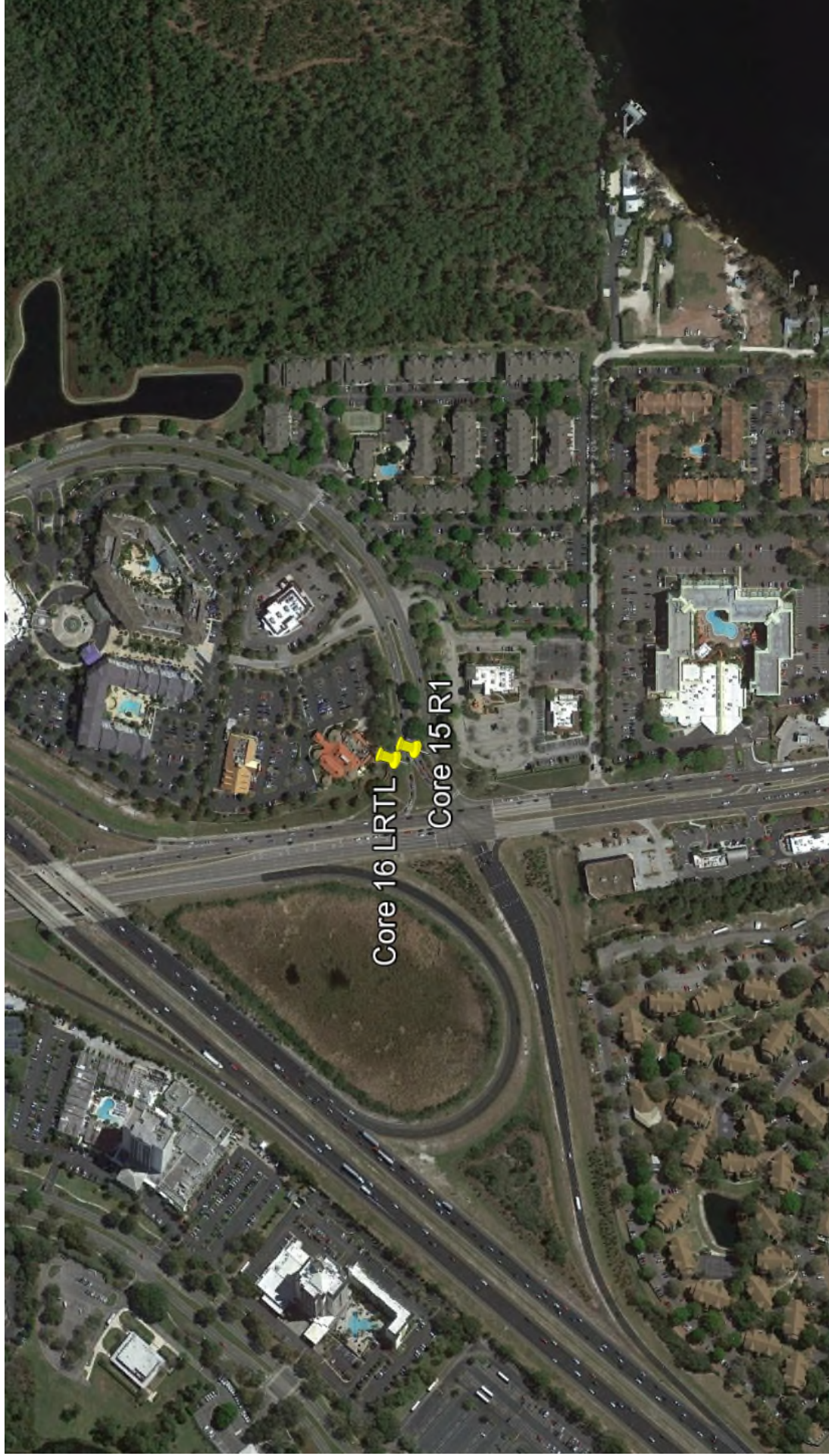
FPN 242484-8; SR 400 (I-4) Beyond The Ultimate - - Core Locations for Various Side Streets/Roadways



Coring Information: Core #5 and #6 taken from Palm Parkway; Core #7 and #8 taken from Winter Garden-Vineland Road

Core #9, #10, #11, and #12 taken from CR 535; Core #13 and #14 taken from Vinings Way Boulevard

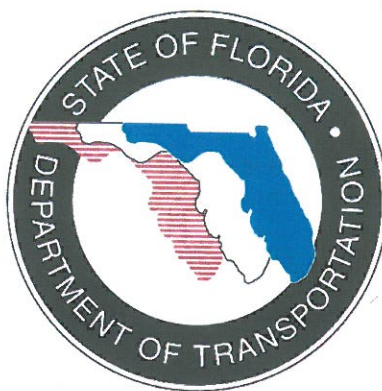
FPN 242484-8; SR 400 (I-4) Beyond The Ultimate - - Core Locations for Various Side Streets/Roadways



Coring Information: Core #15 and #16 taken from Vineland Avenue

# PAVEMENT SURVEY AND EVALUATION REPORT

FINANCIAL PROJECT NUMBER: 430671-1



## STATE ROAD 536


SECTION NUMBER: 75039; MP 0.000 to MP 2.034  
From West of Ramp 750004 to SR 535



ORANGE COUNTY

July 23, 2013

PREPARED BY:

APPROVED BY:

  
\_\_\_\_\_  
William A. Wall  
Pavement Rehabilitation Specialist

  
 7/24/13  
\_\_\_\_\_  
Rafael M. Rodriguez, PE  
District Materials Office  
PE Number 68482

## EXECUTIVE SUMMARY

FPN 430671-1; SR 536

Section # 75039; MP 0.000 – 2.034

### REHABILITATION RECOMMENDATIONS

**MP 0.000 to MP 2.034 Inside Lanes and Shoulders (IL, L1 IR & R1):**

Recommend 2.25 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

**MP 0.000 to MP 1.018 Outside Lanes (L2 & R2):**

Recommend 3.75 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

**MP 1.018 to MP 2.034 Middle and Outside Lanes (L2, L3, R2 & R3):**

Recommend 3.75 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

**MP 0.000 to MP 2.034 Outside Shoulders (OL & OR):**

Recommend 1.50 inches of milling for rehabilitation of the pavement surface. This will remove the oxidized surface pavement. In areas where the FC-5 friction course completely overlays the shoulders, mill 2.25 inches.

**MP 0.000 to MP 2.034 Inside and Outside Turn Lanes (LLTL, LRTL, RLTL&RRTL):**

Recommend 2.25 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

**SPECIAL NOTE 1:**

Because of the heavy number and volume of large buses and other vehicles in the middle and outside travel lanes, the damage is more severe than the inside lanes. We recommend that a 1.0 damage factor be utilized when calculating the structural number for effective rehabilitation. We also recommend that all structural and friction courses within the project limits have a PG 76-22 (PMA) modified binder for maximum durability.

**SPECIAL NOTE 2:**

Base exposure may occur at the following core locations:

| Core Number | Milepost | Lane | Core Number | Milepost | Lane |
|-------------|----------|------|-------------|----------|------|
| 7           | 0.350    | L2   | 49          | 1.800    | L2   |
| 17          | 0.900    | L2   | 1           | 0.125    | R2   |
| 21          | 1.075    | L2   | 44          | 1.675    | R2   |
| 25          | 1.200    | L2   | 32          | 1.375    | R3   |
| 34          | 1.425    | L2   | 40          | 1.580    | LRTL |

It is recommended that the Designer make provisions for Maintenance of Traffic and protection of base due to thin pavement and paved shoulders. The following plans note should be added to the typical sections as appropriate:

“During milling operations, base exposure will occur at certain locations. The contractor is responsible for protection of the base and Maintenance of Traffic.”

# PAVEMENT SURVEY AND EVALUATION REPORT

## STATE ROAD 536 From West of Ramp 750004 to SR 535

### INTRODUCTION

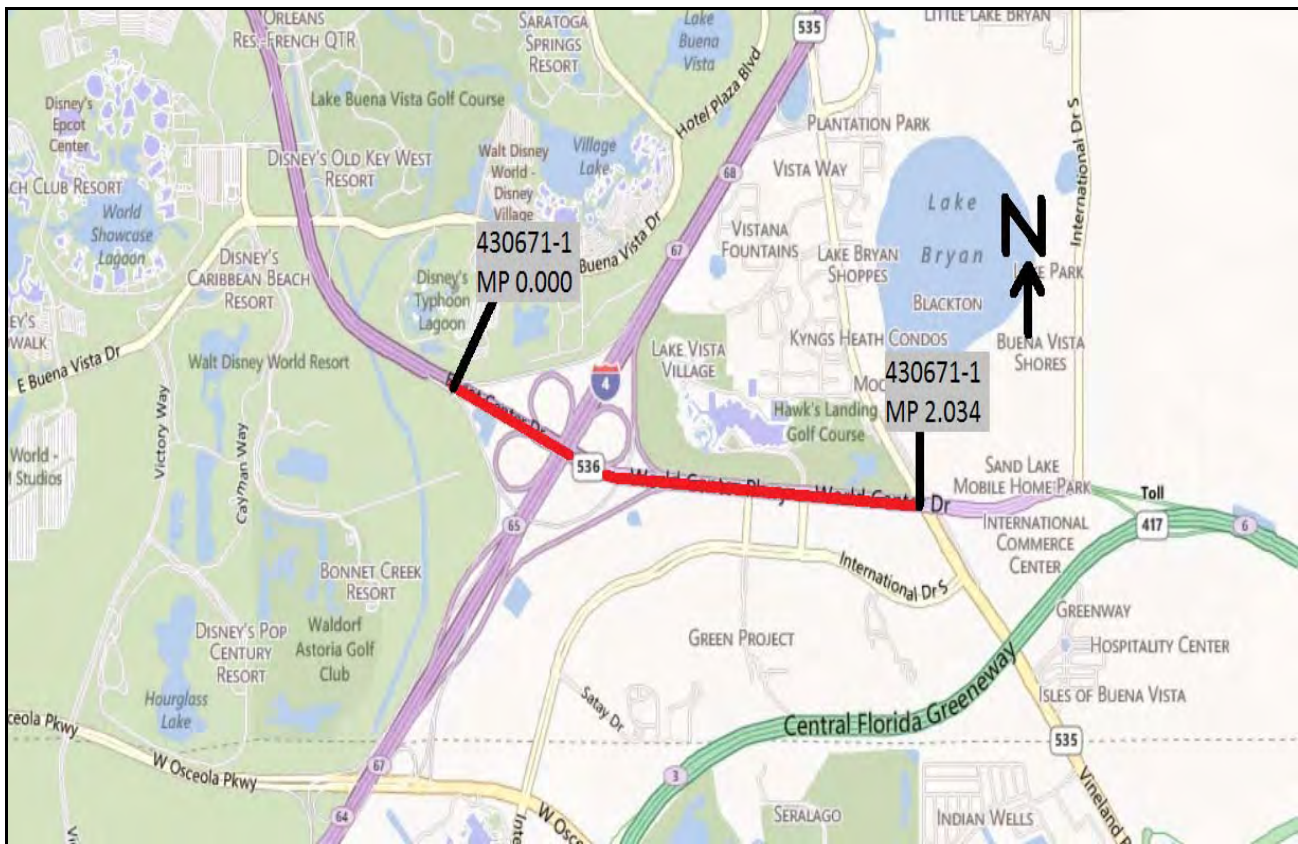
This report presents an analysis of information collected during the above-referenced Pavement Survey and Evaluation (PSE) report. The proposed resurfacing project starts near the front gate to Walt Disney World (MP 0.000) and proceeds east to the intersection of SR 536 with SR 535 (MP 2.034) near the town of Celebration in Orange County, Florida.

There has been only one previous resurfacing project with widening within the project limits.

#### State Project Number 75039-3502 (Financial Project Number 239372-1-52-01)

This project was to resurface and widen the roadway from 4 lanes to 6 lanes from MP 0.541 (Interchange with I-4) to MP 2.034 (SR 535). This project was completed on March 1, 2000. A review of as-built plans shows the actual project limits were from MP 0.000 to MP 2.034.

### LOCATION MAP



## CORING INFORMATION

Ardaman and Associates, Inc. performed coring at an interval of approximately two per lane mile on each travel lane, and two per lane mile for the inside and outside shoulders. Additional cores were taken where conditions warranted. The signed and sealed pavement core sheets (dated May 14, 2013) are included in the Appendix. A total of 56 core samples (24 mainline lanes, 9 from turn lanes and 23 from inside and outside paved shoulders) were collected from the subject roadway. In addition, 6 locations on two bridge approaches were drilled to determine their depth.

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.

- Of the 24 cores taken from the mainline lanes, 16 cores (67 %) were cracked. Of the 16 cracked cores, 14 of them (88%) were cracked full depth to the base. The other 2 cores (12%) were cracked to an average depth of 1.2 inches, with a range of 0.8 to 1.5 inches.
- Of the 23 cores taken from the paved shoulders, 3 cores (13%) were cracked full depth to the base.
- Of the 9 cores taken from the turn lanes and median crossovers, 5 cores (56%) were cracked to an average depth of 2.1 inches, with a range of 2.0 to 2.4 inches.

| <b>SECTION: From MP 0.000 to MP 2.034</b>           |                               |                             |
|---|-------------------------------|-----------------------------|
| <u>Mainline Lanes (L1, L2, L3, R1, R2 &amp; R3)</u> |                               |                             |
| Type of Material<br>(by layer)                      | Avg. Layer Thickness<br>(in.) | Layer Thickness Range (in.) |
| FC-5  | 0.8                           | 0.5 to 1.2                  |
| Type S  | 3.1                           | 2.3 to 4.4                  |
| Limerock Base                                       | 10.3                          | 9.4 to 11.7                 |
| Pavement Thickness:                                 | 3.9                           | 3.0 to 5.0                  |

| <b>SECTION: From MP 0.000 to MP 2.034</b>   |                               |                             |
|---|-------------------------------|-----------------------------|
| <u>Paved Shoulders (IL OL, IR &amp; OR)</u> |                               |                             |
| Type of Material<br>(by layer)              | Avg. Layer Thickness<br>(in.) | Layer Thickness Range (in.) |
| FC-5  | 0.9                           | 0.6 to 1.6                  |
| Type S                                      | 1.9                           | 1.0 to 3.0                  |
| Limerock Base                               | 8.5                           | 5.1 to 11.1                 |
| Pavement Thickness:                         | 2.7                           | 1.7 to 4.1                  |

Exceptions:

- 1) Core #6 (MP 0.350/OL) has only 1.0 inches of asphalt with no FC-5 friction course. It is an outlier.
- 2) Core #16 (MP 0.900/OL) has only 0.8 inches of asphalt with no FC-5 friction course. It is an outlier.
- 3) Cores #10 (MP 0.649/OL) and #16 (MP 0.900/OL) have thin limerock base. They are outliers.
- 4) Cores #39 (MP 1.580/OL) has a very thick limerock base. It was not representative of the rest of the shoulders and excluded from calculations.

Notes:

- 5) The inside paved shoulders have FC-5 across it. The outside paved shoulders have some locations where the majority of the lane has no friction course.

| <b>SECTION: From MP 0.000 to MP 2.034</b>                           |                               |                             |
|---|-------------------------------|-----------------------------|
| <b>Inside and Outside Turn Lanes (LLTL, RLTL, LRTL, &amp; RRTL)</b> |                               |                             |
| Type of Material<br>(by layer)                                      | Avg. Layer Thickness<br>(in.) | Layer Thickness Range (in.) |
| FC-5  | 0.8                           | 0.6 to 1.0                  |
| Type S  | 3.2                           | 1.5 to 5.1                  |
| Limerock Base   | 9.0                           | 5.6 to 10.6                 |
| Pavement Thickness:   | 4.2                           | 2.7 to 5.7                  |

Exception:

6) Core #40 (MP 1.580/LRTL) has only 1.9 inches of asphalt. It is an outlier.

## **ROADWAY SURFACE CONDITION**

A roadway surface condition survey was performed initially on May 7, 2013. The follow-up survey was done on May 22, 2013. The pavement in the project limits is over 13 years old. The pavement on this project ranges from fair to poor condition. The roadway surface condition is broken up into groups for easier discussion.

### **MP 0.000 to MP 1.018**

This is a four lane divided roadway with lawn median. There are 4 foot inside paved shoulders and 10 foot outside paved shoulders.

#### **Inside Passing Lanes (L1 and R1)**

The inside passing lanes (L1 and R1) are in fair to poor condition with moderate transverse rippling and moderate branch cracking in the wheelpaths. There are a few locations where the open-graded friction course has begun to ravel and pop out from the roadway surface.

#### **Outside Travel Lanes (L2 and R2)**

The outside travel lanes (L2 and R2) are in poor condition. The pavement has severe transverse and centerline rippling which give rough ride characteristics. There is severe alligator cracking in the wheelpaths, along with moderate to severe branch across the width of the lanes along with longitudinal cracking. See Photo 1 for an example of this distress. There is also widespread moderate to severe raveling of the open-graded friction course as well. Rutting was also observed in these lanes.

#### **Inside and Outside Paved Shoulders**

The inside and outside paved shoulders are in fair condition. The inside paved shoulders are completely overlaid with open-graded friction course. These shoulders have very few distresses. The outside paved shoulders on the approaches to bridges 750322 and 750323 (MP 0.430 to MP 0.725) are also completely overlaid with open-graded friction course. All other locations of the outside paved shoulders in this segment have a slight overlap of FC-5 from the outside travel lanes, but otherwise have no friction course.

### **MP 1.018 to MP 2.034**

This is a six lane divided roadway with lawn median. There are 4 foot inside paved shoulders and 10 foot outside paved shoulders.

#### **Inside Passing Lanes (L1 and R1)**

The inside passing lanes (L1 and R1) are in fair to poor condition with moderate centerline rippling and moderate branch cracking in the wheelpaths and across the lanes. There are also several locations where the open-graded friction course has begun to ravel and pop out from the roadway surface.

#### **Middle Travel Lanes (L2 and R2)**

The middle travel lanes (L2 and R2) are in poor condition. The pavement has severe transverse and centerline rippling which give rough ride characteristics. There is moderate to severe branch and longitudinal cracking across the width of these lanes. There is also widespread moderate to severe raveling of the open-graded friction course as well. The rutting seen in the previous segment is less severe than from Mp 0.000 to MP 1.018.



**Outside Travel Lanes (L3 and R3)**

The outside travel lanes (L3 and R3) are in poor condition with moderate branch cracking in the wheelpaths and the lanes along with moderate centerline rippling. See Photos 5 and 6 for an example of these distresses. There are locations where these lanes have dips from settling. There is also considerable moderate raveling and pop-outs of the aggregates in the open-graded friction course.

**Inside and Outside Turn Lanes**

The inside and outside turn lanes in this segment are in fair condition with some light to moderate branch cracking and friction course raveling.

**Inside and Outside Paved Shoulders (IL, IR, OL and OR)**

The inside and outside paved shoulders are in fair condition with few distresses. The inside paved shoulders are completely overlaid with FC-5. The outside paved shoulders have no friction course other than an overlap from the outside travel lanes. The only exceptions are the shoulders on the outside right turn lanes in this segment which are completely overlaid with FC-5.

**Bridge Approaches**

The approaches to Bridges 75322 and 75323 (MP 0.541-0.613) were drilled to determine asphalt overlay thickness. The average asphalt overlay thickness on the bridge approaches is 3.2 inches. Thickness varies from 2.5 to 4.0 inches.

**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 below and on the next page.

**RUTTING:**

| <b>MP 0.000 to MP 2.034</b> |            |            |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|------------|------------|
| <b>Rut</b>                  | <b>L3</b>  | <b>L2</b>  | <b>L1</b>  | <b>R1</b>  | <b>R2</b>  | <b>R3</b>  |
| Average                     | 0.1        | 0.2        | 0.1        | 0.1        | 0.2        | 0.1        |
| Std. Deviation              | 0.08       | 0.14       | 0.09       | 0.09       | 0.10       | 0.09       |
| Range (inches)              | 0.0 to 0.4 | 0.0 to 0.7 | 0.0 to 0.5 | 0.0 to 0.5 | 0.0 to 0.6 | 0.0 to 0.5 |

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

| Lane | From Milepost | To Milepost | Deepest Rut |
|------|---------------|-------------|-------------|
| L2   | 0.155         | 0.180       | 0.7 inches  |
| L2   | 0.197         | 0.246       | 0.6 inches  |
| L2   | 0.419         | 0.455       | 0.7 inches  |
| L2   | 0.862         | 0.866       | 0.6 inches  |
| R2   | 0.137         | 0.146       | 0.6 inches  |
| R2   | 1.532         | 1.542       | 0.6 inches  |

**CROSS-SLOPE:**

The pavement along most of this project is a four lane standard profile. The following table is a combination of MPSV data and physical core cross-slope percent measurements for the rehabilitation segments. A comparison of MPSV information with the Straight Line Diagram (SLD) shows the SLD does not match the MPSV on lengths of curves or tangents within the project limits.

| <b>MP 0.000 to MP 0.417</b> |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| <b>Tangent</b>              | <b>L2</b>  | <b>L1</b>  | <b>R1</b>  | <b>R2</b>  |
| Average                     | 1.8        | 2.4        | 2.3        | 2.1        |
| Std. Deviation              | 0.39       | 0.35       | 0.42       | 0.41       |
| Range                       | 0.8 to 2.9 | 1.6 to 3.4 | 1.0 to 3.4 | 1.3 to 3.2 |

Transition: None

| <b>MP 0.417 to MP 0.614</b> |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| <b>Tangent</b>              | <b>L2</b>  | <b>L1</b>  | <b>R1</b>  | <b>R2</b>  |
| <b>Average</b>              | 2.0        | 2.3        | 2.1        | 1.3        |
| <b>Std. Deviation</b>       | 0.26       | 0.38       | 0.30       | 0.46       |
| <b>Range</b>                | 1.2 to 2.7 | 1.6 to 3.2 | 1.2 to 2.9 | 0.5 to 2.0 |

Transition: MP 0.614 to MP 0.659

| <b>MP 0.659 to MP 0.881</b> |            |            |              |              |
|-----------------------------|------------|------------|--------------|--------------|
| <b>Curves Left</b>          | <b>L2</b>  | <b>L1</b>  | <b>R1</b>    | <b>R2</b>    |
| <b>Average</b>              | 5.2        | 5.6        | -4.5         | -5.0         |
| <b>Std. Deviation</b>       | 0.69       | 0.76       | 1.14         | 0.95         |
| <b>Range</b>                | 3.3 to 6.3 | 3.3 to 6.7 | -1.3 to -5.9 | -2.1 to -6.4 |

Transition: MP 0.881 to MP 0.926

| <b>MP 0.926 to MP 1.004</b> |            |            |            |            |
|-----------------------------|------------|------------|------------|------------|
| <b>Tangent</b>              | <b>L2</b>  | <b>L1</b>  | <b>R1</b>  | <b>R2</b>  |
| <b>Average</b>              | 1.6        | 1.5        | 2.1        | 1.6        |
| <b>Std. Deviation</b>       | 0.43       | 0.74       | 0.84       | 0.50       |
| <b>Range</b>                | 0.6 to 2.2 | 0.3 to 2.8 | 0.1 to 3.1 | 0.8 to 2.3 |

Transition: None

| <b>MP 1.004 to MP 1.190</b> |            |            |              |            |             |            |
|-----------------------------|------------|------------|--------------|------------|-------------|------------|
| <b>Tangent</b>              | <b>L3</b>  | <b>L2</b>  | <b>L1</b>    | <b>R1</b>  | <b>R2</b>   | <b>R3</b>  |
| <b>Average</b>              | 1.6        | 1.9        | -1.9         | 1.6        | 1.8         | 2.3        |
| <b>Std. Deviation</b>       | 0.76       | 0.44       | 0.46         | 0.43       | 0.30        | 0.70       |
| <b>Range</b>                | 0.4 to 4.5 | 0.9 to 3.1 | -0.4 to -3.1 | 0.7 to 2.4 | 1.1. to 2.5 | 1.0 to 4.1 |

Transition: MP 1.190 to MP 1.205

| <b>MP 1.205 to MP 1.720</b> |             |            |              |              |            |            |
|-----------------------------|-------------|------------|--------------|--------------|------------|------------|
| <b>Tangent</b>              | <b>L3</b>   | <b>L2</b>  | <b>L1</b>    | <b>R1</b>    | <b>R2</b>  | <b>R3</b>  |
| <b>Average</b>              | 1.2         | 1.6        | -2.1         | -1.9         | 1.6        | 1.8        |
| <b>Std. Deviation</b>       | 0.65        | 0.31       | 0.42         | 0.52         | 0.67       | 0.45       |
| <b>Range</b>                | -0.2 to 2.9 | 0.8 to 2.5 | -0.7 to -3.1 | -0.4 to -3.2 | 0.0 to 3.2 | 0.7 to 3.0 |

Transition: MP 1.720 to MP 1.729

| <b>MP 1.729 to MP 2.010</b> |             |             |              |            |            |            |
|-----------------------------|-------------|-------------|--------------|------------|------------|------------|
| <b>Tangent</b>              | <b>L3</b>   | <b>L2</b>   | <b>L1</b>    | <b>R1</b>  | <b>R2</b>  | <b>R3</b>  |
| <b>Average</b>              | 1.2         | 1.6         | -2.0         | 1.5        | 1.7        | 2.0        |
| <b>Std. Deviation</b>       | 0.60        | 1.04        | 0.39         | 0.45       | 0.41       | 0.56       |
| <b>Range</b>                | -0.1 to 3.4 | -2.5 to 3.0 | -0.4 to -2.7 | 0.3 to 2.5 | 0.6 to 2.6 | 0.4 to 3.5 |

Transition: None

| <b>MP 2.010 to MP 2.034</b> |             |             |             |            |            |            |
|-----------------------------|-------------|-------------|-------------|------------|------------|------------|
| <b>Tangent</b>              | <b>L3</b>   | <b>L2</b>   | <b>L1</b>   | <b>R1</b>  | <b>R2</b>  | <b>R3</b>  |
| <b>Average</b>              | -1.4        | 0.6         | 0.5         | 1.3        | 1.3        | 1.6        |
| <b>Std. Deviation</b>       | 0.98        | 0.39        | 0.57        | 0.60       | 0.60       | 0.75       |
| <b>Range</b>                | -2.5 to 0.2 | -0.3 to 1.1 | -1.0 to 1.0 | 0.2 to 2.4 | 0.5 to 2.3 | 0.8 to 3.0 |

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

The State Materials Office performed Falling Weight Deflection (FWD) testing for the entire length of the project. A copy of the report (dated May 13, 2013) along with the plot graph(s) is included in the Appendix.

MP 0.000 - 2.034 Eastbound/Westbound: Recommended Resilient Modulus of 21,000 psi (145 MPa).

## PAVEMENT CONDITION SURVEY

The current 2013 Pavement Condition Survey (PCS) notes a deficient crack rating of 4.5 in the eastbound and westbound lanes from MP 0.000 to MP 1.018. The crack rating from MP 1.018 to 2.034 for both eastbound and westbound lanes is a borderline 6.5. The graphs of the 2013 the PCS ratings are included in the Appendix for review.

## REHABILITATION RECOMMENDATIONS

### MP 0.000 to MP 2.034 Inside Lanes and Shoulders (IL, L1 IR & R1):

Recommend 2.25 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

### MP 0.000 to MP 1.018 Outside Lanes (L2 & R2):

Recommend 3.75 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

### MP 1.018 to MP 2.034 Middle and Outside Lanes (L2, L3, R2 & R3):

Recommend 3.75 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

### MP 0.000 to MP 2.034 Outside Shoulders (OL & OR):

Recommend 1.50 inches of milling for rehabilitation of the pavement surface. This will remove the oxidized surface pavement. In areas where the FC-5 friction course completely overlays the shoulders, mill 2.25 inches.

### MP 0.000 to MP 2.034 Inside and Outside Turn Lanes (LLTL, LRTL, RLTL&RRTL):

Recommend 2.25 inches of milling for rehabilitation of the pavement surface. This will remove most of the cracking and all of the rippling observed.

### **SPECIAL NOTE 1:**

Because of the heavy number and volume of large buses and other vehicles in the middle and outside travel lanes, the damage is more severe than the inside lanes. We recommend that a 1.0 damage factor be utilized when calculating the structural number for effective rehabilitation. We also recommend that all structural and friction courses within the project limits have a PG 76-22 (PMA) modified binder for maximum durability.

### **SPECIAL NOTE 2:**

Base exposure may occur at the following core locations:

| Core Number | Milepost | Lane | Core Number | Milepost | Lane |
|-------------|----------|------|-------------|----------|------|
| 7           | 0.350    | L2   | 49          | 1.800    | L2   |
| 17          | 0.900    | L2   | 1           | 0.125    | R2   |
| 21          | 1.075    | L2   | 44          | 1.675    | R2   |
| 25          | 1.200    | L2   | 32          | 1.375    | R3   |
| 34          | 1.425    | L2   | 40          | 1.580    | LRTL |

It is recommended that the Designer make provisions for Maintenance of Traffic and protection of base due to thin pavement and paved shoulders. The following plans note should be added to the typical sections as appropriate:

“During milling operations, base exposure will occur at certain locations. The contractor is responsible for protection of the base and Maintenance of Traffic.”

# APPENDIX

- i) Notations for Identifying Lane Types
- ii) Pavement Evaluation & Condition Data (PECD) Sheets  
(dated February 12, 2013) coring by Ardaman and Associates, Inc.
- iii) Falling Weight Deflection Test Results  
(Resilient Modulus Recommendation) dated April 25, 2012
- iv) Ground Penetrating Radar (GPR) and Multi-Purpose Survey Vehicle (MPSV)  
Thickness, Cross-Slope, and Rut Data (Including Cross-Slope Graphs)
- 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**

|              |                                  |
|--------------|----------------------------------|
| OL           | Westbound Outside Paved Shoulder |
| L3           | Westbound Outside Travel Lane    |
| L2           | Westbound Middle Travel Lane     |
| L1           | Westbound Inside Passing Lane    |
| IL           | Westbound Inside Paved Shoulder  |
| Grass Median |                                  |
| IR           | Eastbound Inside Paved Shoulder  |
| R1           | Eastbound Inside Passing Lane    |
| R2           | Eastbound Middle Travel Lane     |
| R3           | Eastbound Outside Travel Lane    |
| OR           | Eastbound Outside Paved Shoulder |

### **Turn Lanes**

|      |                           |
|------|---------------------------|
| LLTL | Westbound Left Turn Lane  |
| LRTL | Westbound Right Turn Lane |
| RLTL | Eastbound Left Turn Lane  |
| RRTL | Eastbound Right Turn Lane |



Ardaman & Associates, Inc.

Geotechnical, Environmental and  
Materials Consultants

May 14, 2013  
File No. 13-5857

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

Attention: Mr. Tim Keefe

Subject: Final Pavement Evaluation and Condition Data Report  
SR 536 from 300' West of I-4 Ramp 004 to SR 535  
Orange County, Florida  
FPN No. 430671-1  
Section No. 75039  
Contract No. C8S59

Dear Mr. Keefe,

As requested, we have obtained pavement core and other relative information for the subject project. Our scope of work was conducted in accordance with your request for proposal issued, March 26, 2013.

The pavement core data is presented on the attached Pavement Evaluation and Condition Data (PECD) Sheet and supplemental GPS data. A CD disk containing the Final PECD Report, PECD Excel file, KMZ file, and roadway and core photographs is also included. To the best of our knowledge, the information presented is accurate and represents the existing pavement conditions at the locations cored. The cores have been retained in storage awaiting instructions from FDOT concerning their disposal.

Please contact us if you have any questions or need any additional information.

Very truly yours,  
ARDAMAN AND ASSOCIATES, INC.  
Certificate of Authorization No. 5950

Jason M. Parker, P.E.  
Senior Project Engineer  
Florida License No. 65928

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

| Project No.: |       | 430671-1                              |      | Cored By:          |      | Ardaman |        | Date:   |      | 4/11/2013            |        | Page No.:       |            | 1 of 4 |       |        |                   |         |        |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
|--------------|-------|---------------------------------------|------|--------------------|------|---------|--------|---------|------|----------------------|--------|-----------------|------------|--------|-------|--------|-------------------|---------|--------|--------|------|-----------------|-----------------|------|-------|--------|--|--|------------|------|-------|--------|-------------|----------------|-----------------|----------|--|--|
| County:      |       | Orange                                |      | Highway Sect. No.: |      | 75039   |        | From:   |      | West of I-4 Ramp 004 |        | To:             |            | SR 535 |       |        |                   |         |        |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| Road No.:    |       | SR 536                                |      | Begin MP:          |      | 0.000   |        | End MP: |      | 2.034                |        | Length:         |            | 2.034  |       |        |                   |         |        |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| Core No.     | MP    | Distance from left edge of lane (ft.) | Lane | Wheel Path         | FC-5 |         |        | FC-12.5 |      |                      | Type S |                 |            | Type 1 |       |        | Core Length (ft.) |         |        | Type   |      |                 | Thick-ness (in) |      |       | Crack  |  |  | Depth (in) | Type | Class | Extent | Pavt. Cond. | Rut Depth (in) | Cross Slope (%) | Comments |  |  |
|              |       |                                       |      |                    | FC-5 | FC-12.5 | Type S | Type 1  | Type | Core Length (ft.)    | Type   | Thick-ness (in) | Depth (in) | Type   | Class | Extent | FC-5              | FC-12.5 | Type S | Type 1 | Type | Thick-ness (in) | Depth (in)      | Type | Class | Extent |  |  |            |      |       |        |             |                |                 |          |  |  |
| 1            | 0.125 | 10.0                                  | R2   | X                  | 0.7  |         | 2.6    |         |      | 3.3                  | LR     | 10.7            | B          | BR     | III   | M      | P                 | 0.5     | 2.5    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 2            | 0.150 | 2.0                                   | IR   |                    | 1.1  |         | 1.7    |         |      | 2.8                  | LR     | ---             | ---        | ---    | ---   | ---    | F                 | 0.0     | -2.0   |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 3            | 0.150 | 3.0                                   | R1   | X                  | 1.0  |         | 3.0    |         |      | 4.0                  | LR     | ---             | B          | SL     | II    | L      | P                 | 0.2     | 2.8    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 4            | 0.200 | 10.0                                  | L1   | X                  | 0.8  |         | 2.9    |         |      | 3.7                  | LR     | ---             | ---        | ---    | ---   | ---    | F                 | 0.1     | 2.2    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 5            | 0.200 | 1.0                                   | IL   |                    | 1.1  |         | 1.8    |         |      | 2.9                  | LR     | ---             | ---        | ---    | ---   | ---    | F                 | 0.0     | -3.1   |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 6            | 0.350 | 3.0                                   | OL   |                    |      |         | 1.0    |         |      | 1.0                  | LR     | ---             | ---        | ---    | ---   | ---    | F                 | 0.0     | 5.8    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 7            | 0.350 | 9.5                                   | L2   | X                  | 0.6  |         | 3.0    |         |      | 3.6                  | LR     | ---             | B          | AL     | I     | M      | P                 | 0.2     | 2.3    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 8            | 0.350 | 9.5                                   | R2   | X                  | 0.6  |         | 3.5    |         |      | 4.1                  | LR     | ---             | B          | BR     | I     | L      | P                 | 0.1     | 2.1    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 9            | 0.350 | 1.0                                   | OR   |                    | 0.8  |         | 1.6    |         |      | 2.4                  | LR     | ---             | ---        | ---    | ---   | ---    | F                 | 0.0     | 8.5    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          | Cored on edge of FC-5 from mainline. Majority of Shoulder has no FC. |  |
| 10           | 0.649 | 2.0                                   | OL   |                    | 1.0  |         | 3.2    |         |      | 4.2                  | LR     | 3.3             | ---        | ---    | ---   | ---    | F                 | 0.0     | 3.3    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 11           | 0.650 | 3.0                                   | L3   | X                  | 1.0  |         | 3.6    |         |      | 4.6                  | LR     | 10.4            | ---        | ---    | ---   | ---    | F                 | 0.1     | 2.5    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 12           | 0.700 | 9.5                                   | L1   | X                  | 0.8  |         | 3.5    |         |      | 4.3                  | LR     | 9.7             | ---        | ---    | ---   | ---    | F                 | 0.0     | 6.9    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 13           | 0.700 | 1.0                                   | IL   |                    | 0.6  |         | 2.6    |         |      | 3.2                  | LR     | 9.8             | ---        | ---    | ---   | ---    | F                 | 0.0     | -1.3   |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 14           | 0.750 | 9.5                                   | L2   | X                  | 1.0  |         | 3.4    |         |      | 4.4                  | LR     | 10.6            | ---        | ---    | ---   | ---    | F                 | 0.0     | -5.9   |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |
| 15           | 0.750 | 1.0                                   | OL   |                    | 1.3  |         | 1.3    |         |      | 2.6                  | LR     | 10.4            | ---        | ---    | ---   | ---    | F                 | 0.0     | 1.5    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  | Cored on edge of FC-5 from mainline. Majority of Shoulder has no FC. |
| 16           | 0.900 | 2.0                                   | OL   |                    |      |         | 0.8    |         |      | 0.8                  | LR     | 4.7             | ---        | ---    | ---   | ---    | F                 | 0.0     | 6.4    |        |      |                 |                 |      |       |        |  |  |            |      |       |        |             |                |                 |          |  |  |

**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; B= 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

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|--------------|-------|---------------------------------------|------|--------------------|-----------------------|---------|--------|---------|------------------|----------------------|----------------|------------|------|-----------------|----------|-------|--------|------|--------------------------|
| County:      |       | Orange                                |      | Highway Sect. No.: |                       | 75039   |        | From:   |                  | West of I-4 Ramp 004 |                | To:        |      | SR 535          |          |       |        |      |                          |
| Road No.:    |       | SR 536                                |      | Begin MP:          |                       | 0.000   |        | End MP: |                  | 2.034                |                | Length:    |      | 2.034           |          |       |        |      |                          |
| Core No.     | MP    | Distance from left edge of lane (ft.) | Lane | Wheel Path         | Pavement Layers (in.) |         |        |         | Base             |                      | Crack          |            |      | Cross Slope (%) | Comments |       |        |      |                          |
|              |       |                                       |      |                    | FC-5                  | FC-12.5 | Type S | Type 1  | Core Length (in) | Type                 | Thickness (in) | Depth (in) | Type |                 |          | Class | Extent |      |                          |
| 17           | 0.900 | 9.0                                   | L2   | X                  | 0.7                   |         | 2.6    |         | 3.3              | LR                   | 10.7           | B          | AL   | II              | M        | P     | 0.1    | 4.5  |                          |
| 18           | 0.900 | 1.0                                   | IR   |                    | 1.3                   |         | 1.9    |         | 3.2              | LR                   | 6.8            | ---        | ---  | ---             | ---      | F     | 0.0    | -4.9 |                          |
| 19           | 0.900 | 2.5                                   | R1   | X                  | 1.2                   |         | 3.2    |         | 4.4              | LR                   | 10.4           | 0.8        | OGFC | I               | L        | F     | 0.1    | -1.4 |                          |
| 20           | 1.050 | 3.0                                   | R2   | X                  | 0.7                   |         | 3.5    |         | 4.2              | LR                   | 10.1           | B          | BR   | I               | L        | P     | 0.2    | 1.8  |                          |
| 21           | 1.075 | 9.5                                   | L2   | X                  | 1.0                   |         | 2.5    |         | 3.5              | LR                   | 10.3           | B          | AL   | III             | S        | P     | 0.4    | 2.8  |                          |
| 22           | 1.075 | 3.0                                   | L1   | X                  | 1.0                   |         | 3.0    |         | 4.0              | LR                   | ---            | ---        | ---  | ---             | ---      | F     | 0.0    | -1.8 |                          |
| 23           | 1.075 | 1.5                                   | IL   |                    | 0.7                   |         | 1.8    |         | 2.5              | LR                   | ---            | ---        | ---  | ---             | ---      | F     | 0.0    | -6.5 |                          |
| 24           | 1.200 | 2.0                                   | OL   |                    |                       |         | 2.6    |         | 2.6              | LR                   | 8.5            | ---        | ---  | ---             | ---      | F     | 0.0    | 7.1  |                          |
| 25           | 1.200 | 3.0                                   | L2   | X                  | 0.7                   |         | 2.5    |         | 3.2              | LR                   | 9.8            | B          | AL   | II              | M        | P     | 0.1    | 2.0  |                          |
| 26           | 1.200 | 1.0                                   | IR   |                    | 1.6                   |         | 2.5    |         | 4.1              | LR                   | ---            | ---        | ---  | ---             | ---      | F     | 0.0    | -5.8 |                          |
| 27           | 1.200 | 9.5                                   | R1   | X                  | 0.9                   |         | 3.0    |         | 3.9              | LR                   | ---            | ---        | ---  | ---             | ---      | F     | 0.1    | -1.2 |                          |
| 28           | 1.311 | 10.0                                  | RRTL | X                  | 0.9                   | 1.7     | 1.5    |         | 4.1              | LR                   | 7.7            | ---        | ---  | ---             | ---      | F     | 0.0    | 3.4  | Granite FC-5 and Type SP |
| 29           | 1.311 | 1.5                                   | OR   |                    | 1.1                   |         | 1.2    |         | 2.3              | LR                   | 5.2            | ---        | ---  | ---             | ---      | F     | 0.0    | 4.1  |                          |
| 30A          | 1.375 | 2.0                                   | OL   |                    | 0.7                   |         | 1.0    |         | 1.7              | LR                   | 6.1            | B          | J    | II              | L        | P     | 0.0    | 7.5  |                          |
| 30B          | 1.375 | 2.0                                   | OL   |                    | 0.7                   |         | 2.0    |         | 2.7              | LR                   | 5.1            | B          | J    | II              | L        | P     | 0.0    | 7.5  |                          |
| 31           | 1.375 | 1.0                                   | L3   |                    | 0.7                   |         | 3.4    |         | 4.1              | LR                   | ---            | B          | BR   | I               | M        | P     | 0.2    | 0.8  |                          |

**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; BI= 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



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|--------------|-------|---------------------------------------|--------------------|------------|-----------------------|---------|--------|----------------------|-----------|------------------|--------|----------------|------------|-----------------|----------|------------|------|-------|--|
| County:      |       | Orange                                | Highway Sect. No.: |            | 75039                 | From:   |        | West of I-4 Ramp 004 | To:       |                  | SR 535 |                |            |                 |          |            |      |       |  |
| Road No.:    |       | SR 536                                | Begin MP:          |            | 0.000                 | End MP: |        | 2.034                | Length:   |                  | 2.034  |                |            |                 |          |            |      |       |  |
| Core No.     | MP    | Distance from left edge of lane (ft.) | Lane               | Wheel Path | Pavement Layers (in.) |         |        | Base                 | Crack     |                  |        | Rut Depth (in) | Pavt Cond. | Cross Slope (%) | Comments |            |      |       |  |
|              |       |                                       |                    |            | FC-5                  | FC-12.5 | Type S |                      | Type J    | Core Length (in) | Type   |                |            |                 |          | Depth (in) | Type | Class | Extent   |
| 32           | 1.375 | 9.5                                   | R3                 | X          | 0.5                   |         | 2.9    |                      | 3.4       | LR               | 9.4    | B              | BR         | I               | L        | P          | 0.1  | 2.2   |  |
| 33           | 1.375 | 0.5                                   | OR                 |            | 0.8                   |         | 1.0    |                      | 1.8       | LR               | 7.5    | ---            | ---        | ---             | ---      | F          | 0.0  | 7.7   | Cored on edge of FC-5 from mainline. Majority of Shoulder has no FC. |
| 34           | 1.425 | 3.0                                   | L2                 | X          | 0.7                   |         | 2.3    |                      | 3.0       | LR               | 10.0   | B              | BR         | I               | L        | P          | 0.1  | 1.8   |  |
| 35           | 1.425 | 7.0                                   | LLTL               |            | 0.9                   |         | 3.2    |                      | 4.1       | LR               | 9.7    | 2.0            | BR         | I               | L        | F          | 0.0  | -1.7  |  |
| 36           | 1.475 | 7.0                                   | RLTL               |            | 0.7                   |         | 3.0    |                      | 3.7       | LR               | 10.6   | 2.0            | BR         | I               | L        | F          | 0.3  | -1.6  |  |
| 37           | 1.501 | 7.0                                   | RRTL               |            | 0.8                   |         | 3.2    |                      | 4.0       | LR               | 10.0   | 2.0            | BR         | I               | L        | F          | 0.1  | 2.7   |  |
| 38           | 1.500 | 1.5                                   | OR                 |            | 1.0                   |         | 1.1    |                      | 2.1       | LR               | 9.7    | ---            | ---        | ---             | ---      | F          | 0.0  | 5.8   |  |
| 39           | 1.580 | 1.5                                   | OL                 |            | 0.9                   |         | 2.0    |                      | 2.9       | LR               | 21.1   | ---            | ---        | ---             | ---      | F          | 0.0  | 4.1   |  |
| 40           | 1.580 | 9.5                                   | LRTL               | X          | 0.6                   |         | 1.3    |                      | 1.9       | LR               | 9.6    | ---            | ---        | ---             | ---      | F          | 0.3  | 3.4   |  |
| 41           | 1.650 | 9.0                                   | LLTL               | X          | 0.6                   |         | 3.3    |                      | 3.9       | LR               | 10.1   | ---            | ---        | ---             | ---      | F          | 0.0  | -1.6  |  |
| 42           | 1.675 | 1.0                                   | IR                 |            | 0.6                   |         | 2.5    |                      | 3.1       | LR               | 10.7   | ---            | ---        | ---             | ---      | F          | 0.0  | -5.2  |  |
| 43           | 1.675 | 2.5                                   | R1                 | X          | 0.7                   |         | 3.3    |                      | 4.0       | LR               | 11.0   | ---            | ---        | ---             | ---      | F          | 0.4  | -1.2  |  |
| 44           | 1.675 | 9.0                                   | R2                 | X          | 0.7                   |         | 2.7    |                      | 3.4       | LR               | 10.6   | B              | BR         | I               | L        | P          | 0.3  | 3.4   |  |
| 45           | 1.675 | 9.5                                   | R3                 | X          | 0.8                   |         | 3.4    |                      | 4.2       | LR               | 9.8    | B              | BR         | I               | L        | P          | 0.1  | 1.1   |  |
| 46           | 1.675 | 0.5                                   | OR                 |            | 1.0                   |         | 1.2    |                      | 2.2       | LR               | 7.3    | ---            | ---        | ---             | ---      | F          | 0.0  | 7.0   | Cored on edge of FC-5 from mainline. Majority of Shoulder has no FC. |
| 47           | 1.799 | 3.0                                   | OL                 |            |                       |         | 2.8    |                      | 2.8       | LR               | 9.0    | ---            | ---        | ---             | ---      | F          | 0.0  | 6.0   |  |

**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; B|= 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**

| <b>Project No.:</b> 430671-1 |       | <b>Cored By:</b> Ardaman              |        | <b>Date:</b> 4/11/2013            |                       | <b>Page No.:</b> 4 of 4 |        |      |        |                  |      |            |            |                |                 |          |      |       |  |
|------------------------------|-------|---------------------------------------|--------|-----------------------------------|-----------------------|-------------------------|--------|------|--------|------------------|------|------------|------------|----------------|-----------------|----------|------|-------|--|
| <b>County:</b> Orange        |       | <b>Highway Sect. No.:</b> 75039       |        | <b>From:</b> West of I-4 Ramp 004 |                       | <b>To:</b> SR 535       |        |      |        |                  |      |            |            |                |                 |          |      |       |  |
| <b>Road No.:</b> SR 536      |       | <b>Begin MP:</b> 0.000                |        | <b>End MP:</b> 2.034              |                       | <b>Length:</b> 2.034    |        |      |        |                  |      |            |            |                |                 |          |      |       |  |
| Core No.                     | MP    | Distance from left edge of lane (ft.) | Lane   | Wheel Path                        | Pavement Layers (in.) |                         |        | Base | Crack  |                  |      |            | Pavt Cond. | Rut Depth (in) | Cross Slope (%) | Comments |      |       |  |
|                              |       |                                       |        |                                   | FC-5                  | FC-12.5                 | Type S |      | Type 1 | Core Length (in) | Type | Depth (in) |            |                |                 |          | Type | Class | Extent   |
| 48                           | 1.799 | 9.5                                   | L3     | X                                 | 0.6                   |                         | 4.4    |      | 5.0    | LR               | 11.7 | 1.5        | BR         | I              | L               | F        | 0.1  | 0.7   |  |
| 49                           | 1.800 | 3.5                                   | L2     | X                                 | 1.0                   |                         | 2.8    |      | 3.8    | LR               | 10.7 | B          | BR         | I              | L               | P        | 0.1  | 2.3   |  |
| 50                           | 1.925 | 6.0                                   | RLTL   |                                   | 0.7                   |                         | 2.0    |      | 2.7    | LR               | 5.6  | ---        | ---        | ---            | ---             | F        | 0.1  | -1.8  |  |
| 51                           | 1.960 | 1.0                                   | OL     |                                   | 0.6                   |                         | 2.0    |      | 2.6    | LR               | 10.2 | B          | BR         | I              | L               | P        | 0.0  | -3    | Cored on edge of FC-5 from mainline. Majority of Shoulder has no FC. |
| 52                           | 1.948 | 2.5                                   | L1     | X                                 | 0.8                   |                         | 3.1    |      | 3.9    | LR               | 10.1 | ---        | ---        | ---            | ---             | F        | 0.1  | -1.7  |  |
| 53                           | 1.948 | 1.0                                   | IL     |                                   | 0.8                   |                         | 2.1    |      | 2.9    | LR               | 11.1 | ---        | ---        | ---            | ---             | F        | 0.0  | -6.0  |  |
| 54                           | 1.957 | 3.5                                   | RRTL-1 | X                                 | 1.0                   |                         | 4.1    |      | 5.1    | LR               | 9.9  | 2.4        | SL         | II             | M               | F        | 0.2  | 1.4   |  |
| 55                           | 1.957 | 3.5                                   | RRTL-2 | X                                 | 0.6                   |                         | 5.1    |      | 5.7    | LR               | 8.6  | 2.1        | SL         | II             | L               | F        | 0.1  | 2.8   |  |
| 56                           | 1.957 | 2.0                                   | OR     |                                   | 1.1                   |                         | 3.0    |      | 4.1    | LR               | 9.9  | ---        | ---        | ---            | ---             | F        | 0.0  | 3.7   |  |
| D1                           | 0.540 | 9.5                                   | R1     | X                                 | ---                   |                         | ---    |      | 2.5    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.2  | 3.3   |  |
| D2                           | 0.540 | 3.0                                   | R2     | X                                 | ---                   |                         | ---    |      | 3.3    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.1  | 1.8   |  |
| D3                           | 0.540 | 3.0                                   | R3     | X                                 | ---                   |                         | ---    |      | 2.8    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.0  | 2.4   |  |
| D4                           | 0.614 | 9.0                                   | L3     | X                                 | ---                   |                         | ---    |      | 4.0    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.0  | 1.8   |  |
| D5                           | 0.614 | 3.0                                   | L2     | X                                 | ---                   |                         | ---    |      | 3.3    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.1  | 1.9   |  |
| D6                           | 0.614 | 2.5                                   | L1     | X                                 | ---                   |                         | ---    |      | 3.5    | PCC              | ---  | ---        | ---        | ---            | ---             | F        | 0.1  | 2.7   |  |

**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 536 FPN: 430671-1 County: Orange

Core # GPS Coordinates

| Core # | GPS Coordinates | GPS Coordinates |
|--------|-----------------|-----------------|
| 1      | N 28.362360     | W -81.527512    |
| 2      | N 28.362267     | W -81.527117    |
| 3      | N 28.362246     | W -81.527125    |
| 4      | N 28.362127     | W -81.526232    |
| 5      | N 28.362104     | W -81.526242    |
| 6      | N 28.361329     | W -81.523932    |
| 7      | N 28.361296     | W -81.523958    |
| 8      | N 28.361028     | W -81.524062    |
| 9      | N 28.361002     | W -81.524081    |
| 10     | N 28.359745     | W -81.519723    |
| 11     | N 28.359723     | W -81.519744    |
| 12     | N 28.359285     | W -81.518710    |
| 13     | N 28.359235     | W -81.518721    |
| 14     | N 28.358780     | W -81.517995    |
| 15     | N 28.358743     | W -81.518024    |
| 16     | N 28.358745     | W -81.515523    |
| 17     | N 28.358718     | W -81.515535    |
| 18     | N 28.358506     | W -81.515547    |
| 19     | N 28.358471     | W -81.515550    |
| 20     | N 28.358292     | W -81.513114    |

Core # GPS Coordinates

| Core # | GPS Coordinates | GPS Coordinates |
|--------|-----------------|-----------------|
| 21     | N 28.358545     | W -81.513119    |
| 22     | N 28.358502     | W -81.513022    |
| 23     | N 28.358469     | W -81.513017    |
| 24     | N 28.358446     | W -81.510627    |
| 25     | N 28.358382     | W -81.510645    |
| 26     | 28.358231       | -81.510649      |
| 27     | 28.358191       | -81.510662      |
| 28     | 28.357989       | -81.508831      |
| 29     | 28.357964       | -81.508836      |
| 30     | 28.358288       | -81.508020      |
| 31     | 28.358252       | -81.508026      |
| 32     | 28.357958       | -81.507741      |
| 33     | 28.357924       | -81.507751      |
| 34     | 28.358169       | -81.507115      |
| 35     | 28.358094       | -81.507122      |
| 36     | 28.357956       | -81.506138      |
| 37     | 28.357754       | -81.505682      |
| 38     | 28.357808       | -81.505673      |
| 39     | 28.358072       | -81.504128      |
| 40     | 28.358040       | -81.504124      |





## *Florida Department of Transportation*

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GOVERNOR

**STATE MATERIALS OFFICE**  
5007 Northeast 39<sup>th</sup> Avenue, Gainesville, Florida 32609  
Telephone: (352) 955-6341, Fax: (850) 412-8160

**ANANTH PRASAD, P.E.**  
SECRETARY

**TO:** Tim Keefe, District V Project Manager

**FROM:** Joseph Reiter, Pavement Performance Consultant

**DATE:** May 13, 2013

**COPIES:** Hyung Lee, State Nondestructive Testing Engineer

**SUBJECT:** Resilient Modulus Recommendation

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Project Description: SR 536  
MP 0.000 to 2.034

Project Number: 75039

FIN No.: 430671-1

County: Orange

On April 23, 2013 deflection tests were conducted in the eastbound and westbound traffic lanes of SR 536. Evaluation of the data and resulting deflection plots indicate the following Resilient Modulus is representative of the existing pavement system and is hereby recommended for this project.

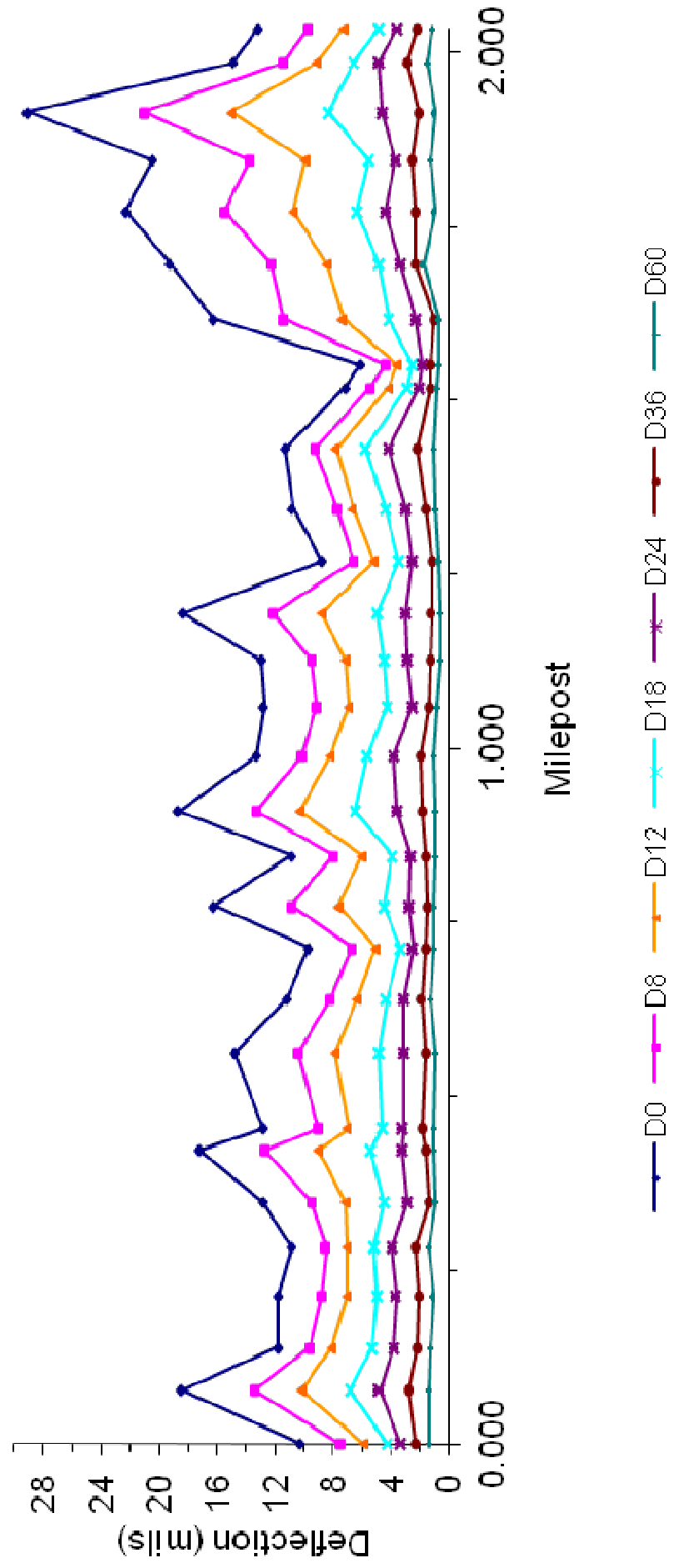
| Travel Direction    | Beginning Milepost | Ending Milepost | Modulus (psi) | Modulus (MPa) |
|---------------------|--------------------|-----------------|---------------|---------------|
| Eastbound/Westbound | 0.000              | 2.034           | 21,000        | 145           |

Please let me know if you need further assistance.

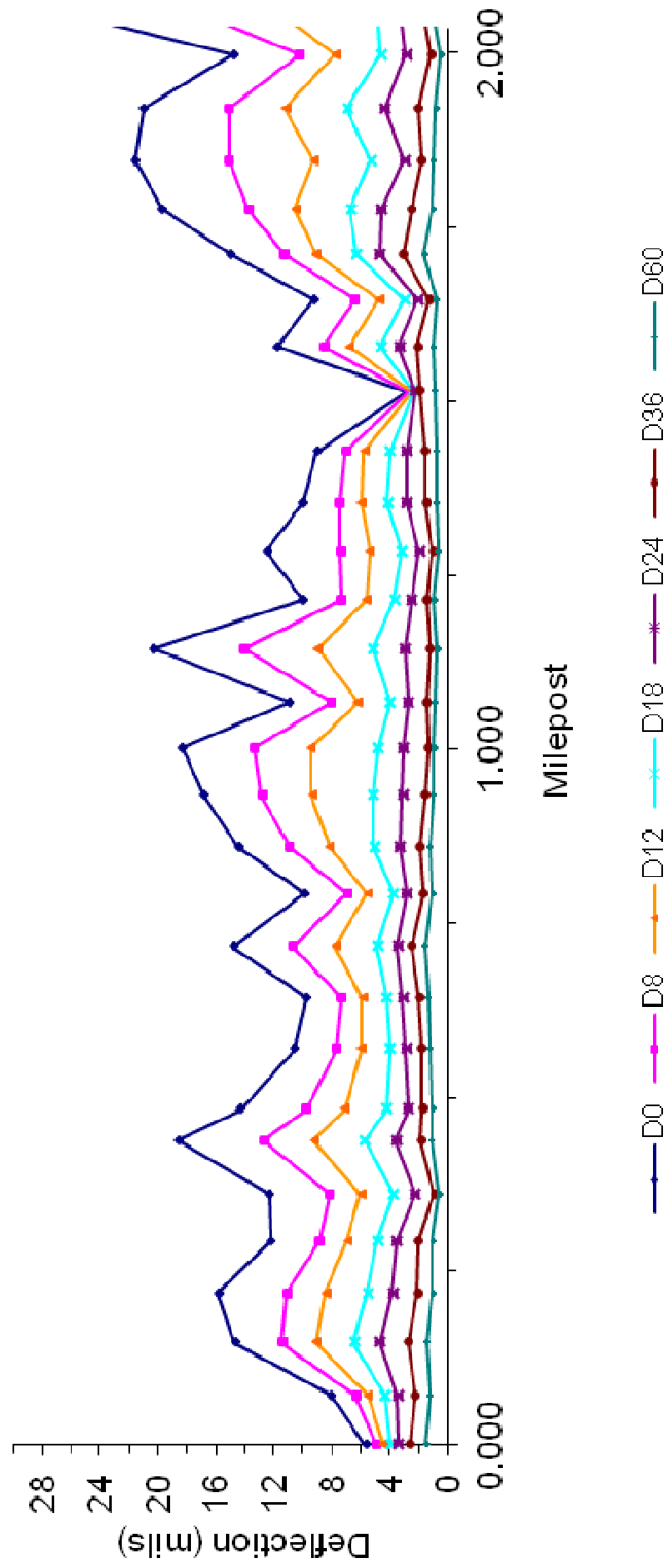
HSL/jr

Attachment: Deflection Plots

Falling Weight Deflections - 9 Kip Load  
Orange County / Section 75039  
SR 536 EBTL / MP 0.000 to 2.034



Falling Weight Deflections - 9 Kip Load  
Orange County / Section 75039  
SR 536 WBTL / MP 0.000 to 2.034



MPSV/GPR Information for FPN 430671-1 SR 536

| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | Milepost |                     |                 | R1              |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 5.6                 | 1.3             |                 | 9.9                 | 1.8             |                 | 0.000    | 8.2                 | 1.5             |                 | 5.7                 | 1.3             |                 |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.6             | 0.4             | 9.8                 | 1.9             | 0.0             | 0.002    | 7.8                 | 1.9             | 0.1             | 5.1                 | 1.9             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.2             | 0.4             | 8.7                 | 1.7             | 0.0             | 0.004    | 7.7                 | 1.7             | 0.0             | 5.2                 | 1.8             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.8             | 0.4             | 8.9                 | 1.7             | 0.0             | 0.006    | 7.6                 | 2.2             | 0.0             | 5.2                 | 1.7             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.2             | 0.2             | 8.4                 | 1.6             | 0.0             | 0.008    | 7.5                 | 1.6             | 0.0             | 5.2                 | 2.3             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.6                 | 1.5             | 0.2             | 4.2                 | 1.7             | 0.2             | 0.010    | 7.7                 | 1.5             | 0.0             | 5.5                 | 2.2             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.8             | 0.2             | 9.1                 | 1.7             | 0.0             | 0.012    | 7.6                 | 1.4             | 0.0             | 5.3                 | 2.5             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.6             | 0.2             | 8.5                 | 1.8             | 0.0             | 0.013    | 7.6                 | 1.6             | 0.0             | 5.5                 | 2.5             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.6             | 0.2             | 8.3                 | 1.6             | 0.1             | 0.015    | 7.7                 | 1.8             | 0.0             | 5.4                 | 2.1             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.9             | 0.2             | 8.9                 | 1.8             | 0.1             | 0.017    | 7.8                 | 2.4             | 0.0             | 5.5                 | 1.9             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.9             | 0.2             | 9.1                 | 2.0             | 0.0             | 0.019    | 7.9                 | 2.4             | 0.0             | 5.5                 | 1.7             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.9             | 0.2             | 8.6                 | 2.0             | 0.0             | 0.021    | 8.0                 | 2.5             | 0.0             | 5.4                 | 1.6             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.8             | 0.2             | 8.1                 | 2.1             | 0.0             | 0.023    | 8.4                 | 2.4             | 0.0             | 5.2                 | 1.7             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.9             | 0.3             | 8.5                 | 2.5             | 0.0             | 0.025    | 8.3                 | 2.5             | 0.0             | 5.4                 | 2.0             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.6             | 0.4             | 8.3                 | 2.5             | 0.0             | 0.027    | 8.1                 | 2.4             | 0.0             | 5.4                 | 2.1             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.4                 | 1.5             | 0.2             | 8.9                 | 2.6             | 0.0             | 0.029    | 7.8                 | 2.2             | 0.0             | 5.7                 | 2.2             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.8             | 0.2             | 8.8                 | 2.5             | 0.0             | 0.030    | 8.0                 | 1.9             | 0.1             | 5.7                 | 2.1             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.9             | 0.2             | 9.0                 | 2.7             | 0.0             | 0.032    | 7.7                 | 2.0             | 0.1             | 6.1                 | 2.0             | 0.3             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.7             | 0.3             | 8.8                 | 2.5             | 0.0             | 0.034    | 7.7                 | 1.8             | 0.1             | 5.6                 | 1.9             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 2.1             | 0.3             | 9.0                 | 2.6             | 0.0             | 0.036    | 8.0                 | 1.6             | 0.1             | 5.7                 | 1.7             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.3                 | 2.2             | 0.4             | 8.7                 | 2.6             | 0.0             | 0.038    | 8.2                 | 1.7             | 0.1             | 5.2                 | 1.8             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.6                 | 2.2             | 0.3             | 8.8                 | 2.7             | 0.0             | 0.040    | 7.8                 | 1.6             | 0.2             | 5.5                 | 1.7             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.2                 | 2.0             | 0.2             | 8.5                 | 2.8             | 0.0             | 0.042    | 7.8                 | 1.5             | 0.1             | 5.8                 | 1.8             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.1                 | 2.2             | 0.2             | 7.7                 | 2.8             | 0.0             | 0.044    | 8.7                 | 1.3             | 0.1             | 5.7                 | 2.0             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.1                 | 2.1             | 0.3             | 8.1                 | 2.9             | 0.0             | 0.046    | 8.5                 | 1.5             | 0.1             | 5.6                 | 2.2             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 2.0             | 0.3             | 8.1                 | 2.9             | 0.0             | 0.048    | 8.5                 | 1.6             | 0.1             | 4.8                 | 2.2             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.3                 | 1.7             | 0.4             | 8.4                 | 3.0             | 0.0             | 0.049    | 4.5                 | 1.7             | 0.1             | 3.4                 | 2.1             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.4                 | 1.2             | 0.4             | 8.1                 | 2.8             | 0.0             | 0.051    | 6.4                 | 1.5             | 0.2             | 2.9                 | 2.3             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.5                 | 1.3             | 0.3             | 8.2                 | 2.8             | 0.0             | 0.053    | 5.2                 | 1.7             | 0.1             | 2.9                 | 2.2             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.1             | 0.3             | 8.5                 | 2.5             | 0.0             | 0.055    | 5.3                 | 1.7             | 0.1             | 3.6                 | 2.1             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.5             | 0.2             | 8.2                 | 2.6             | 0.0             | 0.057    | 6.3                 | 1.8             | 0.1             | 3.8                 | 2.1             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.0                 | 1.6             | 0.3             | 5.2                 | 2.8             | 0.0             | 0.059    | 6.1                 | 1.5             | 0.1             | 3.9                 | 2.4             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.5             | 0.3             | 4.7                 | 2.7             | 0.0             | 0.061    | 5.4                 | 1.7             | 0.1             | 3.3                 | 2.3             | 0.3             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 4.5                 | 1.6             | 0.3             | 5.0                 | 2.8             | 0.0             | 0.063    | 4.7                 | 1.8             | 0.1             | 3.0                 | 2.3             | 0.3             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.7             | 0.3             | 5.4                 | 2.5             | 0.0             | 0.065    | 4.8                 | 1.9             | 0.1             | 2.8                 | 2.3             | 0.3             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.6             | 0.2             | 5.0                 | 2.5             | 0.1             | 0.066    | 4.3                 | 1.6             | 0.1             | 3.0                 | 2.4             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.2             | 0.2             | 4.7                 | 2.8             | 0.0             | 0.068    | 4.3                 | 1.4             | 0.1             | 3.1                 | 2.2             | 0.0             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.1             | 0.2             | 4.9                 | 2.7             | 0.0             | 0.070    | 4.5                 | 1.0             | 0.1             | 4.7                 | 2.5             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.6             | 0.2             | 5.3                 | 2.6             | 0.0             | 0.072    | 4.3                 | 1.0             | 0.1             | 3.2                 | 2.4             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.5                 | 1.7             | 0.1             | 5.5                 | 2.5             | 0.0             | 0.074    | 5.1                 | 1.2             | 0.1             | 4.9                 | 2.1             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.6                 | 1.7             | 0.2             | 5.3                 | 2.3             | 0.0             | 0.076    | 5.2                 | 1.5             | 0.1             | 3.2                 | 2.0             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.9                 | 1.6             | 0.2             | 5.7                 | 2.1             | 0.0             | 0.078    | 5.3                 | 1.7             | 0.1             | 3.2                 | 1.6             | 0.1             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 6.7                 | 1.5             | 0.2             | 5.4                 | 2.4             | 0.0             | 0.080    | 5.1                 | 1.8             | 0.1             | 5.0                 | 1.3             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 4.2                 | 1.4             | 0.2             | 5.5                 | 2.3             | 0.0             | 0.082    | 5.3                 | 2.0             | 0.1             | 5.2                 | 1.4             | 0.2             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.3             | 0.2             | 6.1                 | 2.6             | 0.0             | 0.084    | 5.4                 | 2.0             | 0.2             | 5.4                 | 1.8             | 0.3             |                     |                 |                 |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.3             | 0.2             | 6.3                 | 2.6             | 0.0             | 0.085    | 5.4                 | 2.0             | 0.2             | 5.6                 | 1.9             | 0.4             |                     |                 |                 |                     |                 |                 |



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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 5.6                 | 1.3             | 0.3             | 5.9                 | 2.9             | 0.0             | 0.087    | 5.3                 | 2.0             | 0.1             | 3.7                 | 1.7             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.2             | 0.3             | 5.6                 | 2.8             | 0.0             | 0.089    | 5.6                 | 2.2             | 0.2             | 3.5                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.1             | 0.4             | 5.5                 | 3.1             | 0.1             | 0.091    | 5.2                 | 2.3             | 0.1             | 3.4                 | 1.9             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.3             | 0.4             | 5.8                 | 3.1             | 0.0             | 0.093    | 5.1                 | 2.4             | 0.1             | 3.4                 | 1.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.6             | 0.3             | 5.8                 | 3.1             | 0.0             | 0.095    | 5.2                 | 2.5             | 0.1             | 3.5                 | 1.7             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.3             | 0.3             | 5.9                 | 3.4             | 0.0             | 0.097    | 5.7                 | 2.6             | 0.2             | 3.6                 | 1.6             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.1             | 0.4             | 5.8                 | 3.1             | 0.0             | 0.099    | 5.7                 | 2.7             | 0.2             | 3.7                 | 1.6             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 0.8             | 0.4             | 6.2                 | 3.2             | 0.1             | 0.101    | 5.9                 | 2.6             | 0.2             | 3.5                 | 1.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 1.2             | 0.3             | 5.7                 | 3.1             | 0.0             | 0.102    | 5.5                 | 2.6             | 0.2             | 3.4                 | 1.9             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.4             | 0.4             | 5.8                 | 3.1             | 0.0             | 0.104    | 5.5                 | 2.7             | 0.2             | 3.4                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.5             | 0.3             | 5.1                 | 3.0             | 0.1             | 0.106    | 5.8                 | 2.8             | 0.1             | 3.4                 | 2.1             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 1.5             | 0.5             | 5.4                 | 2.7             | 0.0             | 0.108    | 5.6                 | 2.8             | 0.1             | 3.6                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.3             | 0.5             | 5.5                 | 2.6             | 0.0             | 0.110    | 5.7                 | 2.6             | 0.1             | 3.4                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.5             | 0.5             | 5.7                 | 2.3             | 0.1             | 0.112    | 5.7                 | 2.7             | 0.1             | 3.2                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 1.6             | 0.5             | 5.4                 | 2.1             | 0.0             | 0.114    | 5.4                 | 2.5             | 0.1             | 3.1                 | 1.7             | 0.3             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.5             | 0.3             | 5.2                 | 2.1             | 0.0             | 0.116    | 5.2                 | 2.4             | 0.1             | 3.2                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.3             | 0.3             | 5.2                 | 2.3             | 0.0             | 0.118    | 5.0                 | 2.2             | 0.2             | 3.5                 | 1.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 1.2             | 0.4             | 7.0                 | 2.2             | 0.1             | 0.120    | 5.0                 | 2.2             | 0.1             | 5.3                 | 2.0             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.1             | 0.5             | 6.1                 | 2.4             | 0.2             | 0.121    | 4.9                 | 2.1             | 0.1             | 3.6                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.1             | 0.4             | 6.0                 | 2.3             | 0.2             | 0.123    | 4.7                 | 2.1             | 0.0             | 5.3                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.3             | 0.4             | 5.4                 | 2.3             | 0.2             | 0.125    | 4.8                 | 2.0             | 0.0             | 5.1                 | 2.4             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.5             | 0.3             | 5.4                 | 2.1             | 0.2             | 0.127    | 5.0                 | 2.3             | 0.0             | 5.0                 | 2.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.5             | 0.3             | 7.0                 | 2.1             | 0.1             | 0.129    | 5.2                 | 2.4             | 0.0             | 5.2                 | 2.6             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.7             | 0.3             | 6.7                 | 2.1             | 0.1             | 0.131    | 4.9                 | 2.4             | 0.1             | 3.7                 | 2.9             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.9             | 0.4             | 6.0                 | 2.2             | 0.1             | 0.133    | 5.8                 | 2.5             | 0.1             | 2.9                 | 2.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 2.2             | 0.4             | 6.1                 | 2.2             | 0.0             | 0.135    | 4.7                 | 2.5             | 0.1             | 3.0                 | 2.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.1             | 0.3             | 6.6                 | 2.4             | 0.0             | 0.137    | 4.6                 | 2.4             | 0.1             | 3.0                 | 3.0             | 0.4             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 1.6             | 0.4             | 6.6                 | 2.4             | 0.0             | 0.138    | 4.7                 | 2.5             | 0.1             | 3.0                 | 2.9             | 0.5             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 1.9             | 0.4             | 6.2                 | 2.5             | 0.0             | 0.140    | 4.8                 | 2.5             | 0.1             | 3.2                 | 2.7             | 0.6             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.8             | 0.3             | 5.8                 | 2.6             | 0.0             | 0.142    | 2.4                 | 2.2             | 0.1             | 3.1                 | 2.9             | 0.6             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 1.8             | 0.4             | 5.4                 | 2.6             | 0.0             | 0.144    | 5.0                 | 2.1             | 0.1             | 4.8                 | 3.1             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 1.8             | 0.4             | 5.3                 | 2.5             | 0.0             | 0.146    | 5.2                 | 1.9             | 0.0             | 2.8                 | 3.0             | 0.5             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 1.2             | 0.4             | 5.5                 | 2.3             | 0.1             | 0.148    | 5.1                 | 2.1             | 0.1             | 2.8                 | 2.7             | 0.3             |                     |                 |                 |
|                     |                 |                 |                     | 1.7             | 0.4             |                     | 2.5             | 0.0             | 0.150    | 5.2                 | 2.1             | 0.1             | 2.9                 | 2.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.6             | 0.4             | 5.9                 | 2.5             | 0.0             | 0.152    | 5.1                 | 2.2             | 0.2             | 2.7                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.6             | 0.4             | 5.4                 | 2.4             | 0.0             | 0.154    | 5.1                 | 2.3             | 0.1             | 2.8                 | 2.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 1.5             | 0.5             | 5.6                 | 2.4             | 0.1             | 0.155    | 5.1                 | 2.4             | 0.1             | 2.9                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.8                 | 1.5             | 0.6             | 5.5                 | 2.4             | 0.1             | 0.157    | 5.1                 | 2.6             | 0.1             | 3.0                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 1.6             | 0.6             | 5.2                 | 2.8             | 0.2             | 0.159    | 4.9                 | 2.4             | 0.0             |                     | 2.3             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.5             | 0.6             | 5.7                 | 2.7             | 0.2             | 0.161    | 4.9                 | 2.3             | 0.0             | 2.9                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.1                 | 1.6             | 0.6             | 5.5                 | 2.5             | 0.2             | 0.163    | 5.1                 | 2.2             | 0.0             | 3.0                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 1.7             | 0.6             | 5.5                 | 2.5             | 0.2             | 0.165    | 5.0                 | 2.3             | 0.0             | 4.8                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.6             | 0.6             | 4.9                 | 2.5             | 0.2             | 0.167    | 5.2                 | 2.4             | 0.0             | 5.9                 | 1.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 1.9             | 0.6             | 5.3                 | 2.6             | 0.1             | 0.169    | 5.3                 | 2.3             | 0.1             | 5.7                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.8             | 0.7             | 5.5                 | 2.5             | 0.1             | 0.171    | 5.5                 | 2.1             | 0.0             | 6.0                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 1.8             | 0.7             | 5.4                 | 2.0             | 0.1             | 0.173    | 5.7                 | 2.0             | 0.1             | 6.0                 | 1.7             | 0.2             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 5.3                 | 1.8             | 0.7             | 4.8                 | 2.1             | 0.1             | 0.174    | 6.1                 | 1.9             | 0.1             | 3.5                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.7             | 0.7             | 4.8                 | 2.2             | 0.0             | 0.176    | 5.7                 | 1.7             | 0.1             | 5.8                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.6             | 0.6             | 5.0                 | 2.3             | 0.1             | 0.178    | 5.5                 | 1.7             | 0.1             | 6.2                 | 1.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.8             | 0.4             | 5.4                 | 2.3             | 0.1             | 0.180    | 5.5                 | 1.5             | 0.1             | 6.0                 | 1.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.9             | 0.3             | 5.4                 | 2.4             | 0.1             | 0.182    | 5.4                 | 1.9             | 0.0             | 6.2                 | 1.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.8             | 0.3             | 5.5                 | 2.3             | 0.0             | 0.184    | 5.5                 | 2.1             | 0.0             | 5.9                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.5             | 0.2             | 5.4                 | 2.1             | 0.0             | 0.186    | 5.6                 | 2.3             | 0.0             | 3.2                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.7             | 0.2             | 5.4                 | 2.0             | 0.0             | 0.188    | 5.6                 | 2.4             | 0.1             | 3.5                 | 1.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 1.8             | 0.2             | 5.4                 | 1.9             | 0.0             | 0.190    | 5.6                 | 2.5             | 0.0             | 6.3                 | 1.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.8             | 0.2             | 5.4                 | 1.8             | 0.0             | 0.191    | 5.5                 | 2.4             | 0.0             | 3.7                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.9             | 0.3             | 5.3                 | 1.6             | 0.0             | 0.193    | 5.3                 | 2.3             | 0.0             | 5.5                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.7             | 0.3             | 5.6                 | 1.7             | 0.0             | 0.195    | 5.1                 | 2.4             | 0.0             | 3.8                 | 1.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.5             | 0.5             | 5.1                 | 1.8             | 0.1             | 0.197    | 5.0                 | 2.4             | 0.0             | 5.5                 | 1.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.4             | 0.5             | 5.4                 | 2.1             | 0.1             | 0.199    | 5.0                 | 2.5             | 0.1             | 5.2                 | 1.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.7             | 0.6             | 5.1                 | 2.2             | 0.0             | 0.201    | 5.1                 | 2.6             | 0.0             | 5.0                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.6             | 0.5             | 5.3                 | 2.5             | 0.0             | 0.203    | 5.2                 | 2.6             | 0.0             | 5.0                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 1.6             | 0.5             | 5.6                 | 2.5             | 0.0             | 0.205    | 5.5                 | 2.7             | 0.0             | 6.1                 | 2.1             | 0.3             |                     |                 |                 |
|                     |                 |                 | 6.6                 | 1.8             | 0.5             | 5.2                 | 2.3             | 0.0             | 0.207    | 5.3                 | 2.7             | 0.0             | 3.9                 | 2.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.2                 | 1.5             | 0.4             | 5.5                 | 2.5             | 0.0             | 0.209    | 5.2                 | 2.7             | 0.0             | 6.3                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.4                 | 1.5             | 0.3             | 5.2                 | 2.5             | 0.0             | 0.210    | 5.4                 | 2.6             | 0.0             | 6.4                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.3             | 0.4             | 5.1                 | 2.6             | 0.0             | 0.212    | 5.4                 | 2.6             | 0.0             | 6.0                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 1.3             | 0.4             | 5.3                 | 2.7             | 0.0             | 0.214    | 5.3                 | 2.6             | 0.0             | 6.2                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.3                 | 1.4             | 0.4             | 5.3                 | 2.7             | 0.0             | 0.216    | 5.2                 | 2.7             | 0.1             | 6.4                 | 2.0             | 0.3             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.5             | 0.2             | 5.1                 | 2.8             | 0.1             | 0.218    | 5.3                 | 2.8             | 0.0             | 6.4                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 2.1             | 0.3             | 5.1                 | 2.7             | 0.0             | 0.220    | 5.2                 | 2.9             | 0.0             | 6.3                 | 1.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.0             | 0.2             | 5.1                 | 2.8             | 0.0             | 0.222    | 5.2                 | 2.9             | 0.0             | 6.4                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.8             | 0.2             | 4.6                 | 2.2             | 0.0             | 0.224    | 5.0                 | 2.9             | 0.0             | 6.4                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.7             | 0.2             | 4.7                 | 2.0             | 0.0             | 0.226    | 5.0                 | 2.8             | 0.2             | 6.5                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.7             | 0.3             | 4.7                 | 2.2             | 0.1             | 0.227    | 5.0                 | 2.8             | 0.2             | 6.5                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.3             | 0.5             | 4.9                 | 2.1             | 0.0             | 0.229    | 4.9                 | 2.6             | 0.1             | 6.5                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.3                 | 1.5             | 0.6             | 5.0                 | 2.3             | 0.0             | 0.231    | 4.8                 | 2.6             | 0.1             | 6.4                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.8             | 0.6             | 5.1                 | 2.4             | 0.0             | 0.233    | 4.4                 | 2.5             | 0.1             | 6.1                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 1.8             | 0.6             | 5.1                 | 2.4             | 0.0             | 0.235    | 4.8                 | 2.6             | 0.0             | 5.4                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 1.5             | 0.6             | 5.0                 | 2.4             | 0.0             | 0.237    | 5.1                 | 2.4             | 0.1             | 5.7                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.6             | 0.5             | 4.8                 | 2.4             | 0.1             | 0.239    | 5.2                 | 2.7             | 0.1             | 5.7                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.6             | 0.6             | 5.4                 | 2.4             | 0.0             | 0.241    | 5.1                 | 2.7             | 0.2             | 6.0                 | 2.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.5             | 0.6             | 5.2                 | 2.4             | 0.0             | 0.243    | 5.2                 | 2.6             | 0.2             | 6.0                 | 2.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.3             | 0.5             | 4.6                 | 2.3             | 0.0             | 0.245    | 5.2                 | 2.5             | 0.1             | 5.7                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.5             | 4.5                 | 2.4             | 0.0             | 0.246    | 5.4                 | 2.7             | 0.2             | 6.0                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.0             | 0.4             | 4.3                 | 2.4             | 0.0             | 0.248    | 5.2                 | 2.8             | 0.2             | 4.8                 | 1.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.9             | 0.4             | 4.9                 | 2.4             | 0.0             | 0.250    | 5.1                 | 3.0             | 0.2             | 4.3                 | 1.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.1             | 0.4             | 4.9                 | 2.5             | 0.1             | 0.252    | 4.9                 | 2.9             | 0.2             | 3.3                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.8             | 0.4             | 4.8                 | 2.5             | 0.0             | 0.254    | 4.8                 | 2.9             | 0.2             | 4.4                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 1.9             | 0.3             | 4.9                 | 2.5             | 0.1             | 0.256    | 5.0                 | 3.0             | 0.2             | 5.8                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.9             | 0.3             | 4.6                 | 2.3             | 0.0             | 0.258    | 5.0                 | 3.1             | 0.2             | 6.1                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 2.1             | 0.4             | 4.7                 | 2.1             | 0.1             | 0.260    | 5.3                 | 3.3             | 0.2             | 6.8                 | 1.8             | 0.2             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.8                 | 2.1             | 0.4             | 5.2                 | 2.1             | 0.1             | 0.262    | 5.1                 | 3.3             | 0.1             | 6.7                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.4             | 5.2                 | 1.8             | 0.1             | 0.263    | 5.5                 | 3.2             | 0.1             | 6.2                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.2             | 0.3             | 4.9                 | 1.8             | 0.1             | 0.265    | 5.7                 | 3.4             | 0.1             | 6.3                 | 2.0             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.4             | 0.4             | 4.9                 | 1.9             | 0.1             | 0.267    | 5.5                 | 2.9             | 0.0             | 6.0                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.2             | 0.4             | 5.1                 | 2.0             | 0.1             | 0.269    | 5.3                 | 2.7             | 0.0             | 6.3                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.9             | 0.3             | 5.4                 | 2.1             | 0.1             | 0.271    | 5.2                 | 2.4             | 0.1             | 3.5                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.0             | 0.3             | 5.3                 | 2.2             | 0.1             | 0.273    | 5.2                 | 2.4             | 0.1             | 6.3                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.1             | 0.3             | 5.1                 | 2.3             | 0.1             | 0.275    | 5.4                 | 2.6             | 0.0             | 5.8                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.3             | 0.2             | 5.2                 | 2.3             | 0.1             | 0.277    | 5.3                 | 2.5             | 0.1             | 5.9                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 2.2             | 0.3             | 5.2                 | 2.0             | 0.1             | 0.279    | 5.2                 | 2.6             | 0.1             | 5.9                 | 1.9             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.2             | 0.3             | 5.2                 | 1.9             | 0.1             | 0.280    | 5.2                 | 2.8             | 0.1             | 6.2                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 2.2             | 0.3             | 5.3                 | 1.9             | 0.1             | 0.282    | 5.3                 | 2.9             | 0.1             | 5.9                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 2.3             | 0.2             | 5.3                 | 1.8             | 0.1             | 0.284    | 5.5                 | 2.9             | 0.2             | 5.3                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.2             | 5.4                 | 1.8             | 0.0             | 0.286    | 5.2                 | 2.8             | 0.1             | 6.4                 | 1.8             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.2             | 0.2             | 5.4                 | 2.0             | 0.0             | 0.288    | 4.9                 | 2.7             | 0.0             | 5.9                 | 1.6             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 2.3             | 0.2             | 4.9                 | 2.1             | 0.0             | 0.290    | 5.7                 | 2.6             | 0.2             | 3.6                 | 1.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.3             | 0.3             | 5.2                 | 2.1             | 0.0             | 0.292    | 4.6                 | 2.6             | 0.1             | 3.4                 | 1.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.3             | 5.2                 | 2.0             | 0.0             | 0.294    | 4.6                 | 2.3             | 0.1             | 3.5                 | 1.6             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.1             | 0.2             | 5.1                 | 2.1             | 0.0             | 0.296    | 4.7                 | 2.1             | 0.0             | 3.6                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.1             | 0.2             | 4.9                 | 1.9             | 0.0             | 0.298    | 4.9                 | 2.2             | 0.0             | 3.4                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 2.9                 | 2.4             | 0.2             | 4.9                 | 2.0             | 0.0             | 0.299    | 4.8                 | 2.2             | 0.1             | 5.9                 | 2.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 2.3             | 0.3             | 4.9                 | 1.8             | 0.0             | 0.301    | 5.0                 | 2.1             | 0.0             | 5.4                 | 2.4             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.3             | 0.4             | 5.1                 | 2.0             | 0.0             | 0.303    | 5.4                 | 1.9             | 0.2             | 3.5                 | 2.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.3             | 0.3             | 5.0                 | 1.9             | 0.0             | 0.305    | 5.4                 | 2.1             | 0.3             | 5.1                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.3             | 4.9                 | 2.1             | 0.0             | 0.307    | 5.6                 | 2.2             | 0.2             | 4.9                 | 2.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.0             | 0.3             | 4.9                 | 2.0             | 0.0             | 0.309    | 5.6                 | 2.2             | 0.1             | 5.7                 | 2.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.9             | 0.4             | 4.8                 | 2.0             | 0.0             | 0.311    | 5.1                 | 2.4             | 0.1             | 4.7                 | 2.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.6             | 0.4             | 5.0                 | 2.1             | 0.0             | 0.313    | 5.4                 | 2.4             | 0.1             | 5.7                 | 3.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 1.6             | 0.3             | 5.0                 | 2.4             | 0.0             | 0.315    | 5.5                 | 2.4             | 0.1             | 5.8                 | 3.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.0             | 0.3             | 4.8                 | 2.4             | 0.0             | 0.316    | 5.1                 | 2.4             | 0.0             | 6.0                 | 3.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.2             | 5.2                 | 2.2             | 0.0             | 0.318    | 4.8                 | 2.5             | 0.0             | 5.8                 | 3.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.2             | 0.3             | 5.0                 | 2.1             | 0.0             | 0.320    | 5.0                 | 2.6             | 0.0             | 6.3                 | 2.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 2.2             | 0.2             | 5.1                 | 2.2             | 0.0             | 0.322    | 4.8                 | 2.7             | 0.0             | 4.6                 | 2.9             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.0             | 0.3             | 5.2                 | 2.4             | 0.0             | 0.324    | 5.0                 | 2.5             | 0.0             | 5.9                 | 3.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 2.2             | 0.2             | 5.4                 | 2.2             | 0.0             | 0.326    | 5.1                 | 2.5             | 0.0             | 5.0                 | 3.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 2.1             | 0.2             | 5.4                 | 2.4             | 0.0             | 0.328    | 5.2                 | 2.3             | 0.0             | 2.9                 | 2.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 2.1             | 0.3             | 5.5                 | 2.3             | 0.0             | 0.330    | 5.0                 | 2.4             | 0.0             | 2.9                 | 2.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.2             | 0.3             | 5.3                 | 2.2             | 0.1             | 0.332    | 5.1                 | 2.4             | 0.0             | 5.3                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.3             | 0.3             | 5.4                 | 2.2             | 0.1             | 0.334    | 5.0                 | 2.6             | 0.1             | 6.8                 | 2.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.3             | 5.5                 | 2.2             | 0.0             | 0.335    | 4.8                 | 2.5             | 0.1             | 3.8                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.4             | 0.3             | 5.5                 | 2.1             | 0.1             | 0.337    | 4.9                 | 2.7             | 0.0             | 3.0                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 2.6             | 0.2             | 5.2                 | 2.2             | 0.0             | 0.339    | 4.4                 | 2.5             | 0.0             | 5.7                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 2.6             | 0.3             | 5.1                 | 2.0             | 0.0             | 0.341    | 4.7                 | 2.5             | 0.0             | 6.3                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 2.7             | 0.2             | 4.9                 | 1.9             | 0.0             | 0.343    | 5.2                 | 2.5             | 0.0             | 6.9                 | 2.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 2.3             | 0.2             | 5.0                 | 1.7             | 0.0             | 0.345    | 5.1                 | 2.3             | 0.0             | 5.6                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 2.4             | 0.2             | 5.1                 | 1.9             | 0.0             | 0.347    | 4.7                 | 2.1             | 0.0             | 5.9                 | 2.8             | 0.3             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.8                 | 2.2             | 0.2             | 5.0                 | 2.0             | 0.0             | 0.349    | 4.7                 | 2.1             | 0.0             | 5.8                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.2             | 0.2             | 5.1                 | 2.1             | 0.0             | 0.351    | 4.6                 | 1.9             | 0.0             | 5.8                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 2.0             | 0.2             | 4.9                 | 2.2             | 0.0             | 0.352    | 4.8                 | 2.2             | 0.0             | 6.2                 | 2.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.1             | 0.2             | 4.9                 | 2.4             | 0.1             | 0.354    | 5.0                 | 2.2             | 0.0             | 6.1                 | 2.5             | 0.3             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 2.3             | 0.2             | 5.0                 | 2.5             | 0.1             | 0.356    | 4.9                 | 2.3             | 0.0             | 5.7                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 2.6             | 0.2             | 5.3                 | 2.5             | 0.1             | 0.358    | 5.2                 | 2.2             | 0.0             | 5.9                 | 1.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.6             | 0.4             | 5.2                 | 2.6             | 0.1             | 0.360    | 5.2                 | 2.3             | 0.0             | 3.4                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.9             | 0.3             | 5.1                 | 2.6             | 0.1             | 0.362    | 5.2                 | 2.3             | 0.0             | 3.6                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.9             | 0.3             | 5.1                 | 2.7             | 0.1             | 0.364    | 5.4                 | 2.4             | 0.0             | 3.4                 | 2.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.8             | 0.3             | 5.0                 | 2.7             | 0.1             | 0.366    | 5.1                 | 2.3             | 0.0             | 5.4                 | 2.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.5             | 0.3             | 5.0                 | 2.7             | 0.0             | 0.368    | 5.0                 | 2.3             | 0.1             | 3.4                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 2.3             | 0.3             | 4.8                 | 2.6             | 0.0             | 0.370    | 5.2                 | 2.1             | 0.1             | 5.3                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.3             | 0.3             | 4.8                 | 2.5             | 0.0             | 0.371    | 5.8                 | 2.2             | 0.0             | 6.4                 | 2.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.5             | 0.2             | 5.0                 | 2.5             | 0.1             | 0.373    | 5.3                 | 2.2             | 0.0             | 4.2                 | 2.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.4             | 0.2             | 4.9                 | 2.5             | 0.0             | 0.375    | 4.8                 | 2.2             | 0.0             | 6.5                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.3             | 0.2             | 4.9                 | 2.5             | 0.0             | 0.377    | 5.1                 | 2.2             | 0.1             | 5.3                 | 2.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.2             | 0.3             | 5.0                 | 2.8             | 0.0             | 0.379    | 5.0                 | 2.3             | 0.0             | 3.4                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.2             | 0.2             | 4.8                 | 2.6             | 0.0             | 0.381    | 5.1                 | 2.1             | 0.0             | 4.0                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 2.2             | 0.3             | 5.0                 | 2.7             | 0.0             | 0.383    | 5.2                 | 2.3             | 0.0             | 7.3                 | 2.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.2             | 0.3             | 4.8                 | 2.8             | 0.0             | 0.385    | 5.0                 | 2.3             | 0.0             | 5.8                 | 2.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 2.0             | 0.3             | 4.8                 | 2.9             | 0.0             | 0.387    | 5.1                 | 2.3             | 0.1             | 6.0                 | 2.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 1.7             | 0.3             | 4.8                 | 3.0             | 0.0             | 0.388    | 4.6                 | 2.2             | 0.1             | 3.5                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.8             | 0.3             | 5.0                 | 3.0             | 0.0             | 0.390    | 5.1                 | 2.0             | 0.0             | 4.9                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.7             | 0.4             | 4.9                 | 2.9             | 0.0             | 0.392    | 4.6                 | 1.9             | 0.0             | 3.3                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.8             | 0.3             | 5.0                 | 2.7             | 0.0             | 0.394    | 4.9                 | 2.1             | 0.0             | 3.5                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 2.0             | 0.3             | 5.0                 | 2.5             | 0.0             | 0.396    | 4.7                 | 2.2             | 0.0             | 5.4                 | 2.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 2.0             | 0.3             | 4.9                 | 2.6             | 0.0             | 0.398    | 4.7                 | 2.4             | 0.1             | 6.3                 | 2.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.9             | 0.4             | 5.1                 | 2.4             | 0.0             | 0.400    | 4.4                 | 2.3             | 0.2             | 6.4                 | 1.9             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 1.8             | 0.3             | 4.7                 | 2.4             | 0.0             | 0.402    | 5.2                 | 2.2             | 0.1             | 3.9                 | 2.0             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.3             | 4.8                 | 2.5             | 0.0             | 0.404    | 5.5                 | 2.2             | 0.0             | 4.0                 | 1.7             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.2             | 0.2             | 4.7                 | 2.3             | 0.0             | 0.405    | 5.4                 | 2.2             | 0.0             | 5.6                 | 1.7             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.2             | 0.3             | 4.8                 | 2.4             | 0.0             | 0.407    | 5.7                 | 2.5             | 0.0             | 5.3                 | 2.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.2             | 0.3             | 4.7                 | 2.5             | 0.0             | 0.409    |                     | 2.5             | 0.0             | 3.7                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 2.3             | 0.3             | 4.8                 | 2.5             | 0.0             | 0.411    | 5.5                 | 2.8             | 0.0             | 3.7                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.3             | 5.3                 | 2.4             | 0.0             | 0.413    | 5.3                 | 2.9             | 0.0             | 3.2                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.2             | 5.5                 | 2.4             | 0.0             | 0.415    | 5.4                 | 2.9             | 0.0             | 5.1                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.3             | 0.3             | 6.4                 | 2.1             | 0.0             | 0.417    | 5.6                 | 2.9             | 0.0             | 5.1                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.7             | 0.4             | 6.3                 | 2.2             | 0.0             | 0.419    | 5.9                 | 2.6             | 0.0             | 3.7                 | 1.4             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.3             | 0.6             | 6.4                 | 2.4             | 0.0             | 0.421    | 5.9                 | 2.4             | 0.0             | 6.1                 | 1.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.2             | 0.6             | 6.0                 | 2.5             | 0.0             | 0.423    | 5.9                 | 2.6             | 0.0             | 6.2                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.6             | 5.8                 | 2.8             | 0.0             | 0.424    | 5.7                 | 2.5             | 0.0             | 6.2                 | 0.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 2.2             | 0.5             | 6.0                 | 2.8             | 0.0             | 0.426    | 5.5                 | 2.4             | 0.0             | 5.9                 | 0.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 2.4             | 0.5             | 6.1                 | 2.7             | 0.0             | 0.428    | 5.2                 | 2.2             | 0.0             | 5.7                 | 0.7             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.2             | 0.5             | 6.1                 | 2.8             | 0.0             | 0.430    | 5.3                 | 2.4             | 0.0             | 4.7                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.0             | 0.5             | 6.0                 | 2.7             | 0.0             | 0.432    | 5.2                 | 2.1             | 0.0             | 4.7                 | 0.7             | 0.0             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 2.1             | 0.5             | 6.1                 | 2.9             | 0.0             | 0.434    | 5.3                 | 2.0             | 0.0             | 5.0                 | 0.5             | 0.1             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.5                 | 2.0             | 0.5             | 5.8                 | 2.8             | 0.0             | 0.436    | 5.5                 | 2.2             | 0.0             | 5.0                 | 0.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.9             | 0.5             | 5.4                 | 2.8             | 0.0             | 0.438    | 5.1                 | 1.8             | 0.0             | 3.3                 | 0.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.0             | 0.5             | 5.2                 | 2.7             | 0.0             | 0.440    | 5.6                 | 2.0             | 0.0             | 3.3                 | 0.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.0             | 0.7             | 5.5                 | 2.6             | 0.0             | 0.441    | 5.5                 | 2.2             | 0.0             | 5.9                 | 1.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.0                 | 2.0             | 0.6             | 5.7                 | 2.6             | 0.0             | 0.443    | 5.4                 | 2.3             | 0.0             | 5.7                 | 0.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.1                 | 2.3             | 0.5             | 5.6                 | 2.6             | 0.0             | 0.445    | 5.1                 | 2.1             | 0.0             | 6.0                 | 1.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.1                 | 1.9             | 0.5             | 5.4                 | 2.8             | 0.0             | 0.447    | 5.2                 | 2.1             | 0.0             | 6.0                 | 0.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 2.0             | 0.4             | 5.3                 | 2.8             | 0.0             | 0.449    | 5.3                 | 1.9             | 0.1             | 5.8                 | 0.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 1.9             | 0.5             | 5.1                 | 2.9             | 0.0             | 0.451    | 5.2                 | 1.8             | 0.1             | 3.4                 | 0.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.9                 | 2.2             | 0.3             | 5.0                 | 3.0             | 0.0             | 0.453    | 5.1                 | 1.7             | 0.0             | 5.7                 | 0.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 2.3             | 0.5             | 5.4                 | 3.1             | 0.0             | 0.455    | 4.9                 | 1.8             | 0.0             | 5.6                 | 1.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.3             | 0.4             | 5.1                 | 3.0             | 0.0             | 0.457    | 4.9                 | 1.8             | 0.0             | 5.7                 | 1.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 1.8             | 0.4             | 5.4                 | 2.9             | 0.0             | 0.459    | 4.7                 | 1.8             | 0.0             | 3.1                 | 1.2             | 0.0             |                     |                 |                 |
|                     |                 |                 | 5.1                 | 2.1             | 0.4             | 5.5                 | 2.8             | 0.0             | 0.460    | 4.6                 | 2.0             | 0.0             | 4.9                 | 1.4             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.7                 | 2.0             | 0.4             | 5.2                 | 2.6             | 0.0             | 0.462    | 4.7                 | 2.1             | 0.0             | 3.3                 | 1.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.1                 | 1.9             | 0.4             | 5.6                 | 2.6             | 0.0             | 0.464    | 4.6                 | 2.3             | 0.0             | 3.5                 | 1.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.9             | 0.4             | 5.2                 | 2.6             | 0.0             | 0.466    | 4.9                 | 2.3             | 0.0             | 6.6                 | 1.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.9             | 0.3             | 5.3                 | 2.7             | 0.0             | 0.468    | 4.7                 | 2.3             | 0.0             | 6.4                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 2.1             | 0.3             | 5.7                 | 2.7             | 0.0             | 0.470    | 4.6                 | 2.1             | 0.1             | 6.4                 | 1.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.4             | 0.3             | 5.4                 | 2.7             | 0.0             | 0.472    | 4.4                 | 1.9             | 0.0             | 3.3                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 2.4             | 0.2             | 5.1                 | 2.6             | 0.0             | 0.474    | 4.5                 | 2.3             | 0.0             | 3.1                 | 1.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.3             | 0.2             | 5.2                 | 2.5             | 0.0             | 0.476    | 4.6                 | 2.4             | 0.0             | 3.4                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.4             | 0.2             | 5.1                 | 2.6             | 0.0             | 0.477    | 5.0                 | 2.4             | 0.0             | 3.4                 | 1.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.3             | 0.2             | 5.7                 | 2.3             | 0.1             | 0.479    | 4.9                 | 2.1             | 0.0             | 3.5                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.8             | 0.2             | 5.3                 | 2.3             | 0.0             | 0.481    | 4.7                 | 2.3             | 0.0             | 6.2                 | 1.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.7             | 0.2             | 5.4                 | 2.4             | 0.0             | 0.483    | 4.5                 | 2.3             | 0.0             | 6.2                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.5             | 0.3             | 5.7                 | 2.5             | 0.0             | 0.485    | 5.0                 | 2.3             | 0.0             | 6.0                 | 1.1             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.9             | 0.2             | 5.6                 | 2.6             | 0.0             | 0.487    | 4.1                 | 2.3             | 0.0             | 6.0                 | 1.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.9             | 0.3             | 5.9                 | 2.6             | 0.0             | 0.489    | 4.2                 | 2.5             | 0.0             | 5.7                 | 1.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 2.1             | 0.3             | 6.0                 | 2.7             | 0.0             | 0.491    | 4.2                 | 2.7             | 0.1             | 5.6                 | 0.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 2.3             | 0.3             | 6.1                 | 2.5             | 0.0             | 0.493    | 5.0                 | 2.6             | 0.1             | 5.4                 | 0.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 2.4             | 0.3             | 5.5                 | 2.4             | 0.0             | 0.495    | 4.8                 | 2.7             | 0.1             | 3.0                 | 0.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 2.3             | 0.3             | 5.5                 | 2.4             | 0.0             | 0.496    | 5.2                 | 2.7             | 0.0             | 3.0                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.4             | 0.3             | 5.5                 | 2.3             | 0.0             | 0.498    | 4.9                 | 2.4             | 0.0             | 2.5                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.4             | 0.3             | 5.5                 | 2.2             | 0.0             | 0.500    | 4.6                 | 2.4             | 0.0             | 2.7                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.1             | 0.2             | 5.6                 | 2.4             | 0.0             | 0.502    | 4.4                 | 2.1             | 0.0             | 2.8                 | 1.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 2.0             | 0.3             | 5.7                 | 2.2             | 0.0             | 0.504    | 4.1                 | 1.9             | 0.0             | 3.1                 | 1.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.1             | 0.2             | 5.5                 | 2.2             | 0.0             | 0.506    | 4.4                 | 1.8             | 0.0             | 3.2                 | 1.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 2.0             | 0.3             | 5.8                 | 2.1             | 0.0             | 0.508    | 4.4                 | 1.8             | 0.0             | 3.1                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 1.8             | 0.3             | 6.0                 | 2.3             | 0.0             | 0.510    | 4.7                 | 1.8             | 0.0             | 3.1                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.8             | 0.3             | 5.5                 | 2.4             | 0.0             | 0.512    | 5.2                 | 2.0             | 0.0             | 5.7                 | 1.5             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.7             | 0.3             | 5.7                 | 2.3             | 0.0             | 0.513    | 4.9                 | 2.1             | 0.0             | 6.2                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.3             | 0.3             | 5.8                 | 2.6             | 0.0             | 0.515    | 4.8                 | 2.1             | 0.0             | 5.7                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.5             | 0.3             | 6.2                 | 2.4             | 0.0             | 0.517    | 4.8                 | 1.8             | 0.0             | 3.9                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.3             | 0.3             | 6.0                 | 2.3             | 0.0             | 0.519    | 4.6                 | 1.6             | 0.0             | 4.3                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.2             | 0.3             | 5.6                 | 2.4             | 0.0             | 0.521    | 5.0                 | 1.5             | 0.0             | 3.9                 | 1.3             | 0.1             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | Milepost |                     |                 | R1              |                     |                 | R2              |                     |                 | R3              |  |  |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|--|--|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |  |  |
|                     |                 |                 | 3.1                 | 1.3             | 0.3             | 5.6                 | 2.2             | 0.0             | 0.523    | 4.8                 | 1.7             | 0.0             | 3.6                 | 1.2             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 1.5             | 0.4             | 6.2                 | 2.1             | 0.0             | 0.525    | 4.7                 | 1.2             | 0.0             | 5.7                 | 1.0             | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 4.8                 | 1.6             | 0.4             | 6.3                 | 2.0             | 0.0             | 0.527    | 4.7                 | 1.4             | 0.1             | 3.8                 | 0.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 1.9             | 0.4             | 5.7                 | 1.8             | 0.0             | 0.529    | 5.1                 | 1.4             | 0.1             | 5.9                 | 0.6             | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 5.2                 | 2.1             | 0.4             | 6.0                 | 1.8             | 0.0             | 0.530    | 4.5                 | 1.5             | 0.1             | 5.7                 | 0.6             | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 5.6                 | 1.9             | 0.4             | 6.1                 | 1.7             | 0.1             | 0.532    | 4.5                 | 1.7             | 0.1             | 3.6                 | 0.6             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.7                 | 1.7             | 0.4             | 6.0                 | 2.0             | 0.1             | 0.534    | 5.1                 | 1.9             | 0.0             | 3.8                 | 0.7             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.7                 | 1.8             | 0.4             | 5.7                 | 2.2             | 0.1             | 0.536    | 4.9                 | 2.2             | 0.0             | 3.4                 | 1.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.4                 | 1.8             | 0.4             | 5.0                 | 1.6             | 0.0             | 0.538    | 5.3                 | 2.5             | 0.0             | 3.4                 | 0.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.7                 | 2.0             | 0.4             | 5.2                 | 1.6             | 0.0             | 0.540    | 5.1                 | 2.7             | 0.0             | 3.5                 | 1.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.3                 | 1.8             | 0.4             | 5.3                 | 1.7             | 0.0             | 0.542    | 5.0                 | 2.9             | 0.0             | 3.5                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 2.1             | 0.4             | 5.6                 | 1.9             | 0.0             | 0.544    | 5.4                 | 2.4             | 0.0             | 3.6                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.5                 | 2.1             | 0.4             | 6.0                 | 1.9             | 0.0             | 0.546    | 5.4                 | 2.1             | 0.0             | 3.2                 | 1.7             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.0                 | 2.1             | 0.4             | 5.1                 | 2.0             | 0.0             | 0.548    | 5.3                 | 2.0             | 0.0             | 4.0                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.2                 | 2.2             | 0.4             | 5.5                 | 2.0             | 0.0             | 0.549    | 5.7                 | 1.8             | 0.0             | 4.0                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.9                 | 2.2             | 0.4             | 5.9                 | 2.0             | 0.0             | 0.551    | 5.8                 | 2.0             | 0.0             | 3.8                 | 1.7             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 2.2             | 0.4             | 5.0                 | 2.0             | 0.0             | 0.553    | 6.0                 | 1.9             | 0.0             | 4.4                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.7                 | 2.2             | 0.4             | 6.0                 | 2.0             | 0.0             | 0.555    | 5.7                 | 1.8             | 0.0             | 6.1                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 2.0             | 0.4             | 5.7                 | 2.0             | 0.0             | 0.557    | 5.7                 | 1.9             | 0.0             | 3.5                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.0                 | 2.0             | 0.4             | 5.0                 | 2.0             | 0.0             | 0.559    | 5.7                 | 1.8             | 0.0             | 4.0                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.1                 | 2.1             | 0.4             | 4.1                 | 2.0             | 0.0             | 0.561    | 5.1                 | 2.0             | 0.0             | 4.0                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 2.3             | 0.4             | 6.9                 | 1.9             | 0.0             | 0.563    | 5.2                 | 1.9             | 0.0             | 4.3                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.0                 | 1.8             | 0.4             | 6.8                 | 2.2             | 0.0             | 0.565    | 5.2                 | 1.9             | 0.0             | 3.9                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 1.8             | 0.4             | 4.9                 | 1.9             | 0.0             | 0.566    | 5.7                 | 1.9             | 0.0             | 4.4                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 1.9             | 0.4             | 6.3                 | 2.0             | 0.0             | 0.568    | 5.2                 | 2.1             | 0.0             | 4.2                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.9                 | 1.9             | 0.4             | 5.7                 | 2.1             | 0.0             | 0.570    | 5.1                 | 2.2             | 0.0             | 5.8                 | 2.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 1.9             | 0.4             | 6.1                 | 2.0             | 0.0             | 0.572    | 5.2                 | 2.1             | 0.0             | 3.5                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 6.0                 | 1.9             | 0.4             | 5.7                 | 1.9             | 0.0             | 0.574    | 5.2                 | 2.0             | 0.0             | 3.7                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.7                 | 1.8             | 0.4             | 5.1                 | 2.0             | 0.0             | 0.576    | 5.6                 | 2.0             | 0.0             | 3.5                 | 2.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.7                 | 1.9             | 0.4             | 5.8                 | 2.1             | 0.0             | 0.578    | 5.0                 | 2.0             | 0.0             | 3.3                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.6                 | 1.8             | 0.4             | 4.9                 | 2.0             | 0.0             | 0.580    | 4.5                 | 2.0             | 0.0             | 3.6                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.1                 | 1.8             | 0.4             | 5.1                 | 2.1             | 0.0             | 0.582    | 5.7                 | 2.1             | 0.0             | 4.3                 | 2.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.5                 | 1.7             | 0.4             | 6.1                 | 1.9             | 0.0             | 0.584    | 6.8                 | 2.1             | 0.0             | 7.0                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.5                 | 2.2             | 0.4             | 5.3                 | 2.0             | 0.0             | 0.585    | 6.9                 | 1.9             | 0.0             | 4.8                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.3                 | 2.0             | 0.4             | 5.9                 | 1.9             | 0.0             | 0.587    | 7.4                 | 2.0             | 0.0             | 3.8                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.1                 | 2.0             | 0.4             | 6.0                 | 1.7             | 0.0             | 0.589    | 6.5                 | 1.9             | 0.0             | 3.8                 | 1.7             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 6.4                 | 2.1             | 0.4             | 6.5                 | 1.8             | 0.0             | 0.591    | 5.4                 | 2.0             | 0.0             | 4.0                 | 1.9             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 6.2                 | 2.1             | 0.4             | 6.9                 | 1.8             | 0.0             | 0.593    | 5.2                 | 2.0             | 0.0             | 4.2                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 6.1                 | 1.9             | 0.4             | 5.7                 | 1.6             | 0.0             | 0.595    | 5.1                 | 2.0             | 0.0             | 4.2                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.8                 | 2.0             | 0.4             | 6.2                 | 1.8             | 0.0             | 0.597    | 5.4                 | 2.0             | 0.0             | 3.6                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.3                 | 1.9             | 0.4             | 6.2                 | 1.8             | 0.0             | 0.599    | 5.2                 | 1.9             | 0.0             | 3.8                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.0                 | 2.1             | 0.4             | 5.3                 | 1.8             | 0.0             | 0.601    | 5.9                 | 1.9             | 0.0             | 3.2                 | 1.7             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.6                 | 2.1             | 0.4             | 5.2                 | 2.1             | 0.0             | 0.602    | 6.4                 | 2.0             | 0.0             | 3.2                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.5                 | 2.0             | 0.4             | 6.0                 | 1.9             | 0.0             | 0.604    | 5.6                 | 1.9             | 0.0             | 4.3                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 2.0             | 0.4             | 5.7                 | 3.2             | 0.0             | 0.606    | 5.6                 | 2.0             | 0.0             | 4.0                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.8                 | 2.1             | 0.4             | 6.2                 | 2.0             | 0.0             | 0.608    | 6.4                 | 2.1             | 0.0             | 5.4                 | 1.7             | 0.1             |                     |                 |                 |  |  |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.7                 | 2.0             | 0.4             | 5.5                 | 2.1             | 0.0             | 0.610    | 5.9                 | 2.1             | 0.0             | 4.0                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 1.7             | 0.4             | 6.2                 | 2.1             | 0.0             | 0.612    | 5.9                 | 2.2             | 0.0             | 4.5                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.6             | 0.4             | 5.4                 | 2.0             | 0.0             | 0.614    | 6.5                 | 2.0             | 0.0             | 4.9                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.7                 | 1.4             | 0.4             | 5.6                 | 2.3             | 0.0             | 0.616    | 6.3                 | 2.1             | 0.0             | 3.8                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.8             | 0.4             | 6.3                 | 2.1             | 0.0             | 0.618    | 7.5                 | 2.1             | 0.0             | 3.9                 | 0.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 1.7             | 0.1             | 7.7                 | 1.6             | 0.0             | 0.620    | 8.1                 | 2.8             | 0.0             | 4.1                 | 0.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.6             | 0.1             | 8.0                 | 1.1             | 0.0             | 0.621    | 7.3                 | 2.6             | 0.0             | 5.2                 | 1.1             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.5                 | 1.7             | 0.1             | 5.4                 | 1.4             | 0.0             | 0.623    | 7.3                 | 1.8             | 0.1             | 4.1                 | 1.2             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 1.7             | 0.0             | 7.1                 | 1.4             | 0.0             | 0.625    | 6.7                 | 1.5             | 0.0             | 3.9                 | 1.3             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.7                 | 1.8             | 0.1             | 6.2                 | 1.2             | 0.0             | 0.627    | 6.2                 | 0.7             | 0.1             | 3.7                 | 0.9             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.6                 | 1.8             | 0.0             | 6.7                 | 1.0             | 0.0             | 0.629    | 6.5                 | 0.5             | 0.1             | 4.5                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.0                 | 1.9             | 0.1             | 6.4                 | 1.1             | 0.0             | 0.631    | 6.8                 | 0.3             | 0.1             | 4.2                 | 0.5             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.6                 | 1.6             | 0.1             | 7.1                 | 1.3             | 0.0             | 0.633    | 6.6                 | 0.3             | 0.1             | 4.2                 | 0.2             | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 1.4             | 0.0             | 7.1                 | 1.5             | 0.0             | 0.635    | 7.6                 | 0.5             | 0.2             | 4.2                 | -0.1            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.2             | 0.0             | 6.1                 | 1.9             | 0.0             | 0.637    | 7.7                 | 0.4             | 0.1             | 4.3                 | -0.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.3                 | 1.4             | 0.0             | 6.0                 | 2.0             | 0.0             | 0.638    | 8.7                 | 0.0             | 0.1             | 3.2                 | -0.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.2                 | 1.2             | 0.1             | 6.1                 | 2.2             | 0.0             | 0.640    | 7.2                 | -0.2            | 0.1             | 3.2                 | -0.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.2                 | 1.1             | 0.1             | 6.3                 | 2.0             | 0.0             | 0.642    | 6.4                 | -0.6            | 0.1             | 3.8                 | -0.5            | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 1.1             | 0.1             | 6.2                 | 2.0             | 0.0             | 0.644    | 6.7                 | -0.8            | 0.1             | 4.4                 | -0.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 1.4             | 0.1             | 6.8                 | 2.2             | 0.0             | 0.646    | 7.1                 | -1.0            | 0.1             | 4.6                 | -1.0            | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.5             | 0.1             | 6.2                 | 2.2             | 0.0             | 0.648    | 7.9                 | -1.1            | 0.1             | 4.2                 | -1.1            | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 1.7             | 0.1             | 5.7                 | 2.2             | 0.0             | 0.650    | 7.7                 | -1.0            | 0.1             | 4.3                 | -1.4            | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.7                 | 1.7             | 0.2             | 5.4                 | 2.4             | 0.0             | 0.652    | 7.5                 | -1.2            | 0.1             | 4.0                 | -1.6            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.0             | 0.2             | 6.6                 | 2.7             | 0.0             | 0.654    | 7.3                 | -1.2            | 0.1             | 3.5                 | -1.9            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.2             | 0.1             | 5.8                 | 2.7             | 0.0             | 0.655    | 7.1                 | -1.2            | 0.1             | 4.7                 | -2.1            | 0.0             |                     |                 |                 |
|                     |                 |                 | 2.9                 | 2.8             | 0.1             | 5.9                 | 2.9             | 0.0             | 0.657    | 6.7                 | -1.2            | 0.0             | 5.2                 | -2.4            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.9             | 0.1             | 6.6                 | 2.9             | 0.0             | 0.659    | 7.8                 | -1.2            | 0.1             | 5.9                 | -2.3            | 0.0             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 3.3             | 0.1             | 5.8                 | 3.3             | 0.0             | 0.661    | 9.9                 | -1.3            | 0.1             | 5.9                 | -2.2            | 0.0             |                     |                 |                 |
|                     |                 |                 | 6.2                 | 3.3             | 0.1             | 5.2                 | 3.5             | 0.0             | 0.663    | 9.9                 | -1.3            | 0.1             | 3.6                 | -2.1            | 0.0             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 3.4             | 0.1             | 4.4                 | 3.5             | 0.0             | 0.665    | 8.2                 | -1.4            | 0.1             | 3.6                 | -2.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 3.5             | 0.1             | 7.1                 | 3.8             | 0.0             | 0.667    | 5.0                 | -1.3            | 0.0             | 3.7                 | -2.5            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 3.6             | 0.1             | 6.2                 | 4.0             | 0.0             | 0.669    | 5.5                 | -1.5            | 0.1             | 4.3                 | -2.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.6                 | 3.7             | 0.1             | 6.1                 | 4.2             | 0.0             | 0.671    | 5.1                 | -2.1            | 0.1             | 3.8                 | -2.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 3.7             | 0.1             | 5.8                 | 4.4             | 0.0             | 0.673    | 4.6                 | -2.1            | 0.0             | 3.0                 | -2.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 1.8                 | 3.9             | 0.1             | 6.3                 | 4.2             | 0.0             | 0.674    | 4.9                 | -2.1            | 0.0             | 5.4                 | -2.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.5                 | 4.1             | 0.1             | 5.6                 | 4.4             | 0.0             | 0.676    | 4.6                 | -2.0            | 0.0             | 6.4                 | -3.1            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 4.2             | 0.1             | 6.4                 | 5.0             | 0.0             | 0.678    | 4.7                 | -2.1            | 0.1             | 3.8                 | -3.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 4.3             | 0.1             | 5.0                 | 5.4             | 0.0             | 0.680    | 4.9                 | -2.8            | 0.0             | 3.8                 | -3.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 4.4             | 0.2             | 3.8                 | 5.7             | 0.0             | 0.682    | 4.6                 | -2.5            | 0.0             | 5.8                 | -3.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 4.8             | 0.2             | 5.7                 | 5.6             | 0.0             | 0.684    | 4.7                 | -2.5            | 0.0             | 6.0                 | -3.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.0                 | 5.0             | 0.1             | 5.8                 | 5.7             | 0.0             | 0.686    | 4.5                 | -2.7            | 0.0             | 5.6                 | -4.0            | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 5.4             | 0.1             | 4.6                 | 5.7             | 0.0             | 0.688    | 4.6                 | -3.0            | 0.0             | 5.9                 | -4.1            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 5.5             | 0.1             | 6.0                 | 5.6             | 0.0             | 0.690    | 4.6                 | -3.2            | 0.0             | 4.2                 | -4.2            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 5.7             | 0.1             | 4.4                 | 5.5             | 0.0             | 0.691    | 3.9                 | -3.1            | 0.0             | 6.5                 | -4.3            | 0.0             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 5.4             | 0.1             | 5.5                 | 5.6             | 0.0             | 0.693    | 5.0                 | -3.3            | 0.0             | 3.5                 | -4.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 2.8                 | 5.4             | 0.1             | 5.7                 | 5.7             | 0.0             | 0.695    | 4.5                 | -3.5            | 0.0             | 3.5                 | -4.4            | 0.1             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.5                 | 5.4             | 0.2             | 5.2                 | 6.0             | 0.0             | 0.697    | 4.4                 | -3.6            | 0.0             | 3.1                 | -4.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 5.3             | 0.1             | 5.5                 | 6.2             | 0.0             | 0.699    | 4.4                 | -3.8            | 0.1             | 3.1                 | -4.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 5.3             | 0.1             | 6.2                 | 6.4             | 0.0             | 0.701    | 4.3                 | -3.9            | 0.0             | 3.5                 | -4.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.8                 | 5.5             | 0.1             | 6.3                 | 6.4             | 0.0             | 0.703    | 4.3                 | -4.2            | 0.0             | 3.1                 | -4.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 5.7             | 0.2             | 6.1                 | 6.7             | 0.0             | 0.705    | 4.2                 | -4.3            | 0.1             | 3.9                 | -5.0            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.1                 | 6.0             | 0.1             | 6.2                 | 6.6             | 0.0             | 0.707    | 5.3                 | -4.6            | 0.0             | 3.3                 | -5.2            | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.6                 | 5.9             | 0.1             | 5.3                 | 6.6             | 0.0             | 0.709    | 4.9                 | -4.7            | 0.0             | 3.5                 | -5.1            | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.4                 | 5.3             | 0.1             | 7.2                 | 6.6             | 0.0             | 0.710    | 5.4                 | -4.7            | 0.1             | 3.7                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 5.3             | 0.1             | 5.9                 | 6.3             | 0.0             | 0.712    | 5.9                 | -4.7            | 0.0             | 4.0                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.2                 | 5.7             | 0.1             | 5.5                 | 6.5             | 0.0             | 0.714    | 5.7                 | -4.6            | 0.0             | 5.8                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 5.9             | 0.1             | 6.2                 | 6.4             | 0.0             | 0.716    | 5.7                 | -4.7            | 0.0             | 7.4                 | -5.4            | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 6.0             | 0.1             | 6.0                 | 6.4             | 0.0             | 0.718    | 6.0                 | -4.8            | 0.0             | 6.0                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 5.9             | 0.1             | 6.2                 | 6.3             | 0.0             | 0.720    | 5.6                 | -4.9            | 0.0             | 5.7                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 5.7             | 0.1             | 6.4                 | 5.9             | 0.0             | 0.722    | 6.1                 | -5.1            | 0.0             | 5.3                 | -5.2            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 5.0             | 0.2             | 5.3                 | 6.1             | 0.0             | 0.724    | 5.8                 | -5.2            | 0.0             | 3.9                 | -5.2            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 4.5             | 0.1             | 7.0                 | 6.0             | 0.0             | 0.726    | 5.8                 | -5.4            | 0.0             | 5.9                 | -4.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 4.3             | 0.1             | 5.7                 | 6.2             | 0.0             | 0.727    | 4.9                 | -5.7            | 0.0             | 6.0                 | -4.7            | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 4.4             | 0.1             | 5.4                 | 6.3             | 0.0             | 0.729    | 5.8                 | -5.8            | 0.0             | 6.1                 | -4.5            | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 4.7             | 0.0             | 6.0                 | 6.6             | 0.0             | 0.731    | 5.6                 | -5.4            | 0.0             | 5.6                 | -4.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.3                 | 5.2             | 0.1             | 5.2                 | 6.4             | 0.0             | 0.733    | 5.4                 | -5.4            | 0.0             | 6.1                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.3                 | 5.3             | 0.1             | 6.5                 | 6.2             | 0.0             | 0.735    | 5.5                 | -5.4            | 0.0             | 4.3                 | -5.8            | 0.0             |                     |                 |                 |
|                     |                 |                 | 7.8                 | 5.3             | 0.1             | 6.4                 | 6.0             | 0.0             | 0.737    | 6.1                 | -5.1            | 0.0             | 3.8                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 5.4             | 0.1             | 5.2                 | 6.1             | 0.0             | 0.739    | 5.7                 | -4.9            | 0.0             | 3.9                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.1             | 0.1             | 5.0                 | 6.2             | 0.0             | 0.741    | 5.4                 | -4.9            | 0.0             | 3.5                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 5.0             | 0.1             | 5.4                 | 6.2             | 0.1             | 0.743    | 5.6                 | -4.8            | 0.1             | 3.5                 | -5.4            | 0.2             |                     |                 |                 |
|                     |                 |                 | 7.0                 | 5.3             | 0.1             | 5.2                 | 6.4             | 0.0             | 0.745    | 5.7                 | -4.8            | 0.0             | 4.0                 | -5.0            | 0.4             |                     |                 |                 |
|                     |                 |                 | 4.5                 | 5.4             | 0.1             | 5.6                 | 6.3             | 0.0             | 0.746    | 6.1                 | -4.9            | 0.0             | 3.3                 | -4.8            | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 5.4             | 0.1             | 6.2                 | 6.1             | 0.0             | 0.748    | 6.1                 | -5.2            | 0.0             | 3.2                 | -5.3            | 0.2             |                     |                 |                 |
|                     |                 |                 | 4.2                 | 5.5             | 0.1             | 6.3                 | 6.3             | 0.0             | 0.750    | 6.2                 | -5.1            | 0.1             | 3.3                 | -5.9            | 0.0             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 5.3             | 0.1             | 6.2                 | 6.1             | 0.0             | 0.752    | 5.9                 | -5.2            | 0.1             | 3.2                 | -6.1            | 0.0             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 5.2             | 0.1             | 6.1                 | 6.1             | 0.0             | 0.754    | 5.5                 | -5.1            | 0.0             | 3.4                 | -6.2            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 5.2             | 0.1             | 4.9                 | 5.9             | 0.0             | 0.756    | 5.8                 | -5.2            | 0.1             | 3.5                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.3             | 0.1             | 5.3                 | 5.9             | 0.0             | 0.758    | 5.7                 | -5.3            | 0.1             | 3.4                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 5.3             | 0.1             | 5.1                 | 6.2             | 0.0             | 0.760    | 5.6                 | -5.5            | 0.1             | 3.6                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.5             | 0.0             | 5.9                 | 6.1             | 0.0             | 0.762    | 5.7                 | -5.5            | 0.1             | 3.4                 | -5.7            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 5.4             | 0.1             | 5.8                 | 6.1             | 0.0             | 0.763    | 5.6                 | -5.4            | 0.1             | 3.5                 | -5.7            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 5.2             | 0.1             | 5.3                 | 6.1             | 0.0             | 0.765    | 5.5                 | -5.2            | 0.1             | 3.2                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 5.3             | 0.1             | 5.8                 | 6.2             | 0.0             | 0.767    | 5.8                 | -5.1            | 0.1             | 4.8                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 5.7             | 0.1             | 6.0                 | 6.1             | 0.0             | 0.769    | 5.4                 | -5.1            | 0.1             | 3.0                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.9             | 0.1             | 5.5                 | 6.1             | 0.0             | 0.771    | 5.5                 | -5.2            | 0.1             | 3.4                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.9             | 0.1             | 5.7                 | 6.0             | 0.0             | 0.773    | 5.4                 | -5.1            | 0.1             | 4.7                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 5.9             | 0.0             | 4.8                 | 5.8             | 0.0             | 0.775    | 5.5                 | -5.2            | 0.1             | 5.4                 | -5.8            | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 5.8             | 0.1             | 7.3                 | 5.8             | 0.0             | 0.777    | 5.5                 | -5.1            | 0.1             | 3.2                 | -6.0            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 5.7             | 0.0             | 5.4                 | 5.6             | 0.0             | 0.779    | 5.6                 | -4.8            | 0.1             | 3.3                 | -6.1            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 5.6             | 0.1             | 5.7                 | 5.7             | 0.0             | 0.780    | 5.6                 | -4.9            | 0.1             | 3.6                 | -6.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.9                 | 5.7             | 0.1             | 5.7                 | 5.7             | 0.0             | 0.782    | 5.5                 | -4.8            | 0.0             | 3.6                 | -6.1            | 0.1             |                     |                 |                 |



MPSV/GPR Information for FPN 430671-1 SR 536

| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 |                     |                 |                 |                     |                 |                 | 0.784    | 6.2                 | -5.1            | 0.1             | 3.3                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 2.3                 | 6.0             | 0.1             | 4.8                 | 5.7             | 0.0             | 0.786    | 5.6                 | -4.7            | 0.1             | 3.1                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 2.9                 | 5.5             | 0.1             | 5.1                 | 5.8             | 0.0             | 0.788    | 5.7                 | -5.0            | 0.1             | 2.9                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 5.5             | 0.1             | 4.7                 | 5.5             | 0.0             | 0.790    | 6.1                 | -5.1            | 0.1             | 3.0                 | -6.0            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 4.9             | 0.1             | 4.7                 | 5.4             | 0.0             | 0.792    | 5.9                 | -5.3            | 0.1             | 3.2                 | -6.0            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 4.6             | 0.1             | 5.1                 | 5.6             | 0.0             | 0.794    | 5.4                 | -5.7            | 0.1             | 2.9                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 4.9             | 0.1             | 5.7                 | 5.8             | 0.0             | 0.796    | 5.1                 | -5.9            | 0.1             | 3.3                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 2.9                 | 5.2             | 0.1             | 6.0                 | 5.8             | 0.0             | 0.798    | 5.3                 | -5.9            | 0.1             | 3.2                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.4                 | 5.6             | 0.1             | 6.1                 | 5.7             | 0.0             | 0.799    | 5.6                 | -5.6            | 0.1             | 2.8                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 5.6             | 0.1             | 6.0                 | 5.5             | 0.0             | 0.801    | 5.6                 | -5.3            | 0.1             | 3.2                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 5.8             | 0.1             | 4.5                 | 5.8             | 0.0             | 0.803    | 5.8                 | -5.1            | 0.1             | 3.6                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 5.7             | 0.1             | 4.4                 | 6.0             | 0.0             | 0.805    | 6.3                 | -5.1            | 0.1             | 3.3                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 6.0             | 0.1             | 4.8                 | 6.1             | 0.0             | 0.807    | 5.8                 | -4.9            | 0.2             | 3.4                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 5.9             | 0.1             | 5.3                 | 6.0             | 0.1             | 0.809    | 5.7                 | -5.0            | 0.1             | 3.3                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 5.8             | 0.1             | 4.9                 | 6.1             | 0.0             | 0.811    | 6.1                 | -5.0            | 0.1             | 3.5                 | -5.4            | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.2                 | 5.6             | 0.1             | 4.9                 | 6.2             | 0.0             | 0.813    | 6.6                 | -5.0            | 0.1             | 3.5                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 5.8             | 0.1             | 4.8                 | 6.2             | 0.0             | 0.815    | 6.2                 | -5.0            | 0.1             | 3.5                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.6             | 0.1             | 4.7                 | 6.3             | 0.0             | 0.816    | 6.4                 | -5.1            | 0.1             | 3.5                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 5.4             | 0.1             | 4.9                 | 6.2             | 0.0             | 0.818    | 6.4                 | -5.1            | 0.1             | 4.0                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 5.4             | 0.1             | 5.6                 | 5.9             | 0.0             | 0.820    | 6.1                 | -5.1            | 0.1             | 3.9                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 6.0             | 0.1             | 4.8                 | 5.8             | 0.1             | 0.822    | 5.9                 | -5.4            | 0.1             | 3.3                 | -5.7            | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.0                 | 6.1             | 0.1             | 4.9                 | 5.5             | 0.0             | 0.824    | 5.1                 | -5.4            | 0.1             | 3.8                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.6                 | 6.3             | 0.1             | 4.6                 | 5.3             | 0.0             | 0.826    | 4.8                 | -5.3            | 0.1             | 4.0                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 6.3             | 0.1             | 4.4                 | 5.4             | 0.0             | 0.828    | 5.0                 | -5.3            | 0.0             | 3.5                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 6.3             | 0.1             | 4.9                 | 5.7             | 0.0             | 0.830    | 5.5                 | -5.2            | 0.0             | 6.0                 | -5.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 6.2             | 0.2             | 4.6                 | 5.7             | 0.0             | 0.832    | 5.7                 | -5.2            | 0.0             | 5.8                 | -5.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 5.8             | 0.1             | 4.7                 | 5.7             | 0.0             | 0.834    | 5.5                 | -5.2            | 0.0             | 3.7                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 5.9             | 0.1             | 5.0                 | 5.7             | 0.1             | 0.835    | 5.3                 | -5.2            | 0.0             | 3.4                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 5.8             | 0.1             | 4.6                 | 5.7             | 0.0             | 0.837    | 5.2                 | -5.5            | 0.0             | 3.9                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 5.6             | 0.1             | 4.8                 | 5.5             | 0.0             | 0.839    | 5.8                 | -5.7            | 0.0             | 3.9                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 5.5             | 0.1             | 4.8                 | 5.7             | 0.0             | 0.841    | 6.0                 | -5.4            | 0.0             | 4.1                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 5.5             | 0.1             | 5.0                 | 5.9             | 0.1             | 0.843    | 5.8                 | -5.6            | 0.0             | 3.6                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 5.8             | 0.1             | 5.3                 | 5.7             | 0.1             | 0.845    | 6.1                 | -5.3            | 0.0             | 3.6                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 5.9             | 0.1             | 5.4                 | 5.8             | 0.1             | 0.847    | 5.6                 | -4.9            | 0.0             | 3.8                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.7                 | 5.6             | 0.2             | 5.3                 | 5.8             | 0.1             | 0.849    | 5.5                 | -5.0            | 0.1             | 3.4                 | -5.5            | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.0                 | 5.2             | 0.3             | 5.2                 | 5.9             | 0.1             | 0.851    | 5.8                 | -4.7            | 0.1             | 3.7                 | -5.6            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 4.9             | 0.3             | 5.0                 | 6.0             | 0.1             | 0.852    | 6.0                 | -4.9            | 0.1             | 3.7                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 5.1             | 0.3             | 4.6                 | 6.0             | 0.0             | 0.854    | 6.6                 | -4.6            | 0.1             | 4.1                 | -5.4            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 5.5             | 0.2             | 4.8                 | 5.6             | 0.0             | 0.856    | 5.8                 | -4.6            | 0.0             | 5.8                 | -5.1            | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 5.3             | 0.3             | 5.0                 | 5.3             | 0.0             | 0.858    | 5.9                 | -4.4            | 0.1             | 3.6                 | -5.3            | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 5.4             | 0.3             | 5.8                 | 4.8             | 0.0             | 0.860    | 5.9                 | -4.8            | 0.0             | 3.4                 | -5.3            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 5.3             | 0.3             | 5.4                 | 4.9             | 0.0             | 0.862    | 5.8                 | -4.7            | 0.0             | 3.4                 | -5.0            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 5.2             | 0.6             | 5.7                 | 4.6             | 0.1             | 0.864    | 5.7                 | -4.5            | 0.0             | 3.3                 | -4.8            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 5.0             | 0.4             | 5.8                 | 4.6             | 0.0             | 0.866    | 6.0                 | -4.3            | 0.0             | 5.5                 | -4.9            | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 4.9             | 0.3             | 4.7                 | 4.4             | 0.0             | 0.868    | 6.2                 | -4.0            | 0.0             | 5.5                 | -4.7            | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 4.3             | 0.2             | 5.1                 | 4.5             | 0.0             | 0.870    | 5.7                 | -3.7            | 0.0             | 5.8                 | -4.4            | 0.2             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | Milepost |                     |                 | R1              |                     |                 | R2              |                     |                 | R3              |  |  |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|--|--|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |  |  |
|                     |                 |                 | 3.3                 | 4.1             | 0.1             | 5.2                 | 4.4             | 0.0             | 0.871    | 5.6                 | -3.8            | 0.0             | 4.0                 | -4.1            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.7                 | 4.2             | 0.1             | 4.8                 | 4.3             | 0.0             | 0.873    | 6.3                 | -3.9            | 0.0             | 3.6                 | -4.2            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 4.4             | 0.1             | 4.5                 | 4.2             | 0.0             | 0.875    | 6.0                 | -3.6            | 0.0             | 3.5                 | -4.2            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.0                 | 4.2             | 0.1             | 5.4                 | 4.3             | 0.0             | 0.877    | 5.4                 | -3.4            | 0.0             | 3.4                 | -4.1            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.8                 | 4.8             | 0.3             | 2.4                 | 4.0             | 0.0             | 0.879    | 5.3                 | -3.4            | 0.0             | 3.6                 | -4.0            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.8                 | 4.4             | 0.3             | 4.9                 | 3.8             | 0.0             | 0.881    | 4.8                 | -2.9            | 0.0             | 3.3                 | -3.8            | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 4.3                 | 3.8             | 0.3             | 5.3                 | 3.8             | 0.0             | 0.883    | 5.0                 | -2.8            | 0.0             | 3.8                 | -3.6            | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 4.1                 | 3.3             | 0.4             | 5.0                 | 3.5             | 0.0             | 0.885    | 5.1                 | -2.5            | 0.0             | 3.5                 | -3.4            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.7                 | 3.1             | 0.4             | 4.8                 | 3.4             | 0.0             | 0.887    | 5.1                 | -2.5            | 0.0             | 5.2                 | -3.2            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 2.9             | 0.4             | 4.8                 | 3.2             | 0.1             | 0.888    | 5.2                 | -2.3            | 0.0             | 3.3                 | -2.9            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.1                 | 3.0             | 0.4             | 4.8                 | 3.0             | 0.1             | 0.890    | 5.5                 | -2.2            | 0.0             | 3.7                 | -2.5            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 2.6             | 0.4             | 4.8                 | 2.8             | 0.1             | 0.892    | 5.8                 | -2.0            | 0.0             | 3.7                 | -1.9            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.2                 | 2.5             | 0.3             | 4.8                 | 2.9             | 0.0             | 0.894    | 5.9                 | -2.1            | 0.0             | 3.5                 | -2.0            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.9                 | 2.4             | 0.2             | 5.5                 | 2.8             | 0.0             | 0.896    | 5.8                 | -2.4            | 0.1             | 5.4                 | -1.8            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 2.5             | 0.3             | 5.0                 | 2.7             | 0.0             | 0.898    | 5.9                 | -2.4            | 0.0             | 3.5                 | -1.7            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 2.2             | 0.3             | 4.9                 | 2.2             | 0.0             | 0.900    | 5.4                 | -2.2            | 0.0             | 5.3                 | -1.7            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 1.8             | 0.3             | 5.2                 | 1.9             | 0.0             | 0.902    | 5.4                 | -2.2            | 0.1             | 5.2                 | -1.9            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 1.3             | 0.2             | 5.2                 | 1.4             | 0.1             | 0.904    | 5.5                 | -2.0            | 0.1             | 5.0                 | -1.6            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 1.0             | 0.2             | 4.6                 | 1.2             | 0.1             | 0.905    | 6.3                 | -1.6            | 0.0             | 3.4                 | -1.3            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.6                 | 1.0             | 0.1             | 5.6                 | 1.2             | 0.1             | 0.907    | 6.1                 | -1.6            | 0.0             | 5.2                 | -1.1            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.4                 | 1.0             | 0.1             | 4.8                 | 1.2             | 0.1             | 0.909    | 5.9                 | -1.7            | 0.0             | 3.3                 | -0.7            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.6                 | 0.9             | 0.1             | 4.9                 | 1.2             | 0.1             | 0.911    | 5.4                 | -1.7            | 0.1             | 3.3                 | -0.5            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.8                 | 1.3             | 0.1             | 5.0                 | 1.2             | 0.1             | 0.913    | 5.3                 | -1.7            | 0.0             | 3.3                 | -0.5            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 1.2             | 0.1             | 4.7                 | 1.1             | 0.1             | 0.915    | 6.0                 | -1.8            | 0.1             | 3.5                 | -0.6            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.8                 | 1.3             | 0.1             | 4.9                 | 0.8             | 0.1             | 0.917    | 6.2                 | -1.8            | 0.1             | 5.1                 | -0.4            | 0.0             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 0.9             | 0.0             | 5.0                 | 1.0             | 0.0             | 0.919    | 6.2                 | -1.4            | 0.0             | 3.3                 | -0.4            | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 1.2             | 0.1             | 4.4                 | 1.1             | 0.0             | 0.921    | 6.3                 | -1.1            | 0.0             | 3.4                 | 0.1             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.7                 | 0.9             | 0.1             | 4.4                 | 1.0             | 0.0             | 0.923    | 5.6                 | -0.8            | 0.0             | 3.6                 | 0.1             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.2                 | 0.8             | 0.1             | 4.8                 | 1.1             | 0.0             | 0.924    | 5.7                 | -0.3            | 0.0             | 3.4                 | 0.3             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.7                 | 0.8             | 0.1             | 4.3                 | 1.3             | 0.0             | 0.926    | 6.5                 | -0.1            | 0.0             | 3.4                 | 0.6             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 6.2                 | 0.7             | 0.1             | 4.9                 | 1.5             | 0.0             | 0.928    | 6.2                 | 0.1             | 0.1             | 3.5                 | 0.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.5                 | 0.8             | 0.1             | 4.2                 | 1.6             | 0.0             | 0.930    | 6.4                 | 0.2             | 0.0             | 3.3                 | 0.9             | 0.2             |                     |                 |                 |  |  |
|                     |                 |                 | 3.3                 | 0.9             | 0.2             | 4.8                 | 1.8             | 0.0             | 0.932    | 6.3                 | 0.4             | 0.1             | 3.5                 | 1.1             | 0.3             |                     |                 |                 |  |  |
|                     |                 |                 | 3.5                 | 1.0             | 0.1             | 4.8                 | 1.8             | 0.0             | 0.934    | 6.2                 | 0.4             | 0.0             | 3.6                 | 1.2             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.4                 | 0.6             | 0.1             | 5.2                 | 2.1             | 0.0             | 0.936    | 5.8                 | 0.6             | 0.1             | 3.6                 | 1.4             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 0.8             | 0.1             | 4.1                 | 2.5             | 0.0             | 0.938    | 5.8                 | 1.0             | 0.0             | 3.5                 | 1.4             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.1                 | 0.9             | 0.1             | 3.9                 | 2.6             | 0.0             | 0.940    | 5.6                 | 1.3             | 0.0             | 3.3                 | 1.2             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.2                 | 1.3             | 0.1             | 4.8                 | 2.8             | 0.0             | 0.941    | 6.0                 | 1.4             | 0.0             | 3.5                 | 1.5             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.2                 | 1.5             | 0.2             | 4.8                 | 2.7             | 0.0             | 0.943    | 6.0                 | 1.5             | 0.0             | 3.7                 | 1.5             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 2.8                 | 1.6             | 0.2             | 4.5                 | 2.7             | 0.0             | 0.945    | 5.7                 | 1.8             | 0.0             | 3.5                 | 1.5             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.1                 | 1.5             | 0.1             | 4.7                 | 2.5             | 0.2             | 0.947    | 5.8                 | 2.0             | 0.1             | 3.6                 | 1.5             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 4.9                 | 1.5             | 0.1             | 4.7                 | 2.4             | 0.1             | 0.949    | 5.8                 | 2.1             | 0.1             | 5.4                 | 1.6             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 5.1                 | 1.5             | 0.1             | 5.5                 | 2.2             | 0.0             | 0.951    | 5.8                 | 2.0             | 0.1             | 3.4                 | 1.8             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.5                 | 1.5             | 0.1             | 5.1                 | 2.2             | 0.0             | 0.953    | 5.9                 | 2.0             | 0.1             | 5.1                 | 2.0             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.4                 | 1.3             | 0.2             | 4.5                 | 2.0             | 0.0             | 0.955    | 5.8                 | 2.0             | 0.0             | 4.0                 | 2.2             | 0.1             |                     |                 |                 |  |  |
|                     |                 |                 | 3.0                 | 1.2             | 0.0             | 4.6                 | 1.5             | 0.0             | 0.957    | 5.7                 | 2.1             | 0.1             | 3.6                 | 2.3             | 0.1             |                     |                 |                 |  |  |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
|                     |                 |                 | 3.4                 | 1.2             | 0.2             | 4.4                 | 0.9             | 0.0             | 0.959    | 5.4                 | 2.2             | 0.2             | 3.9                 | 2.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 1.4             | 0.1             | 3.9                 | 0.8             | 0.1             | 0.960    | 5.2                 | 2.2             | 0.1             | 4.1                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 2.8                 | 1.7             | 0.2             | 3.9                 | 0.7             | 0.2             | 0.962    | 5.4                 | 2.2             | 0.1             | 3.6                 | 2.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 2.8                 | 1.7             | 0.2             | 3.8                 | 0.9             | 0.1             | 0.964    | 5.7                 | 2.3             | 0.1             | 3.9                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 2.6                 | 1.7             | 0.2             | 4.0                 | 1.1             | 0.0             | 0.966    | 6.0                 | 2.9             | 0.0             | 3.3                 | 2.0             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 1.6             | 0.3             | 4.0                 | 1.3             | 0.0             | 0.968    | 6.3                 | 2.8             | 0.0             | 3.4                 | 1.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.0             | 0.2             | 3.9                 | 1.9             | 0.0             | 0.970    | 5.8                 | 3.1             | 0.0             | 3.1                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 2.2             | 0.2             | 4.3                 | 1.8             | 0.0             | 0.972    | 5.9                 | 3.0             | 0.0             | 5.3                 | 2.2             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.8             | 0.2             | 4.3                 | 1.6             | 0.1             | 0.974    | 5.5                 | 2.9             | 0.0             | 3.3                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.0             | 0.2             | 4.3                 | 1.7             | 0.1             | 0.976    | 5.4                 | 2.9             | 0.0             | 5.4                 | 2.1             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.8             | 0.2             | 4.3                 | 1.7             | 0.1             | 0.977    | 5.1                 | 2.7             | 0.0             | 3.2                 | 2.3             | 0.3             |                     |                 |                 |
|                     |                 |                 | 3.4                 | 2.2             | 0.2             | 4.5                 | 1.2             | 0.1             | 0.979    | 5.7                 | 2.7             | 0.0             | 3.0                 | 1.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.0             | 0.2             | 4.1                 | 1.1             | 0.1             | 0.981    | 5.6                 | 2.7             | 0.1             | 3.3                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.3                 | 2.1             | 0.2             | 4.2                 | 0.9             | 0.1             | 0.983    | 5.8                 | 2.9             | 0.1             | 5.1                 | 1.3             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.8             | 0.2             | 4.1                 | 0.7             | 0.0             | 0.985    | 6.4                 | 3.0             | 0.0             | 5.7                 | 1.1             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.5                 | 1.8             | 0.1             | 4.1                 | 0.6             | 0.0             | 0.987    | 5.7                 | 2.7             | 0.1             | 5.7                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.9                 | 1.9             | 0.1             | 4.8                 | 0.4             | 0.1             | 0.989    | 5.7                 | 2.7             | 0.0             | 3.6                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.7             | 0.2             | 4.5                 | 0.3             | 0.1             | 0.991    | 6.0                 | 2.7             | 0.0             | 3.5                 | 1.4             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.1                 | 1.6             | 0.2             | 4.9                 | 0.4             | 0.0             | 0.993    | 6.0                 | 2.7             | 0.0             | 5.5                 | 1.8             | 0.0             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.8             | 0.3             | 5.2                 | 0.6             | 0.0             | 0.995    | 6.0                 | 2.7             | 0.0             | 5.7                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.8             | 0.3             | 5.3                 | 1.1             | 0.0             | 0.996    | 6.2                 | 2.6             | 0.0             | 5.8                 | 0.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 1.9             | 0.3             | 5.4                 | 1.0             | 0.0             | 0.998    | 5.8                 | 2.5             | 0.0             | 5.4                 | 0.8             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.2             | 0.3             | 5.1                 | 0.9             | 0.0             | 1.000    | 5.4                 | 2.5             | 0.0             | 5.3                 | 0.8             | 0.4             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.8             | 0.2             | 5.0                 | 0.7             | 0.0             | 1.002    | 5.6                 | 2.4             | 0.1             | 5.3                 | 0.9             | 0.2             |                     |                 |                 |
|                     |                 |                 | 6.5                 | 2.0             | 0.2             | 5.8                 | 0.4             | 0.0             | 1.004    | 5.5                 | 2.3             | 0.0             | 3.7                 | 0.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.4                 | 2.2             | 0.1             | 5.5                 | -0.4            | 0.1             | 1.006    | 5.5                 | 2.4             | 0.1             | 5.5                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 6.9                 | 2.3             | 0.1             | 5.5                 | -1.6            | 0.2             | 1.008    | 5.5                 | 2.4             | 0.1             | 5.8                 | 1.1             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 1.9             | 0.1             | 5.0                 | -1.8            | 0.1             | 1.010    | 5.2                 | 2.2             | 0.1             | 5.5                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.6                 | 2.1             | 0.3             | 5.1                 | -1.7            | 0.2             | 1.012    | 5.4                 | 2.2             | 0.1             | 5.1                 | 1.4             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.8                 | 1.8             | 0.2             | 5.0                 | -1.1            | 0.2             | 1.013    | 5.8                 | 2.3             | 0.1             | 5.3                 | 1.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 2.2             | 0.2             | 4.5                 | -1.6            | 0.1             | 1.015    | 5.5                 | 2.3             | 0.0             | 5.4                 | 1.2             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.9                 | 1.5             | 0.3             | 4.0                 | -1.6            | 0.1             | 1.017    | 6.1                 | 2.1             | 0.0             | 5.1                 | 1.3             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.5                 | 1.8             | 0.2             | 4.4                 | -1.5            | 0.1             | 1.019    | 6.0                 | 2.0             | 0.1             | 3.9                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.8                 | 2.3             | 0.2             | 4.9                 | -1.4            | 0.1             | 1.021    | 5.8                 | 2.0             | 0.0             | 3.8                 | 1.5             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 2.4             | 0.2             | 5.6                 | -1.4            | 0.1             | 1.023    | 5.6                 | 2.1             | 0.0             | 5.8                 | 1.6             | 0.1             |                     |                 |                 |
|                     |                 |                 | 4.8                 | 2.3             | 0.0             | 6.1                 | -1.2            | 0.0             | 1.025    | 6.2                 | 1.8             | 0.1             | 6.3                 | 1.4             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.3                 | 2.6             | 0.3             | 5.8                 | -1.3            | 0.1             | 1.027    | 6.2                 | 1.6             | 0.0             | 6.2                 | 1.6             | 0.2             |                     |                 |                 |
|                     |                 |                 | 3.0                 | 2.0             | 0.0             | 4.0                 | 2.9             | 0.0             | 1.029    | 6.3                 | 1.5             | 0.0             | 5.6                 | 1.7             | 0.2             |                     |                 |                 |
|                     |                 |                 | 5.4                 | 1.6             | 0.0             | 4.3                 | 2.6             | 0.3             | 1.030    | 6.2                 | 1.4             | 0.0             | 6.1                 | 1.8             | 0.2             |                     |                 |                 |
|                     |                 |                 | 2.8                 | 3.3             | 0.0             | 4.2                 | 2.6             | 0.3             | 1.032    | 6.0                 | 1.3             | 0.0             | 6.2                 | 1.7             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.7                 | 1.6             | 0.0             | 4.4                 | 2.6             | 0.5             | 1.034    | 5.8                 | 1.3             | 0.0             | 5.7                 | 1.9             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 2.3             | 0.0             | 4.1                 | 2.4             | 0.4             | 1.036    | 5.7                 | 1.3             | 0.2             | 3.7                 | 2.0             | 0.1             |                     |                 |                 |
|                     |                 |                 | 2.3                 | 2.3             | 0.0             | 4.1                 | 2.3             | 0.3             | 1.038    | 5.4                 | 1.3             | 0.1             | 5.3                 | 1.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 5.0                 | 2.2             | 0.0             | 3.3                 | 2.8             | 0.4             | 1.040    | 5.3                 | 1.4             | 0.2             | 5.7                 | 1.8             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.1                 | 2.3             | 0.0             | 3.4                 | 2.4             | 0.4             | 1.042    | 5.2                 | 1.3             | 0.2             | 3.6                 | 1.4             | 0.1             |                     |                 |                 |
|                     |                 |                 | 3.2                 | 2.4             | 0.0             | 4.3                 | 3.0             | 0.3             | 1.044    | 5.0                 | 1.6             | 0.1             | 3.6                 | 1.4             | 0.1             |                     |                 |                 |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 3.5                 | 2.6             | 0.0             | 4.0                 | 3.1             | 0.2             | 5.5                 | -1.6            | 0.0             | 1.046    | 5.6                 | 1.7             | 0.2             | 3.9                 | 1.5             | 0.1             | 7.0                 | 3.4             | 0.0             |
| 5.6                 | 2.8             | 0.0             | 4.1                 | 2.5             | 0.2             | 5.2                 | -1.5            | 0.0             | 1.048    | 5.4                 | 1.6             | 0.2             | 5.7                 | 1.5             | 0.1             | 7.3                 | 3.2             | 0.0             |
| 3.3                 | 2.7             | 0.0             | 4.0                 | 2.4             | 0.2             | 5.4                 | -1.7            | 0.0             | 1.049    | 5.7                 | 1.6             | 0.2             | 5.9                 | 1.7             | 0.1             | 6.6                 | 3.1             | 0.0             |
| 4.7                 | 4.5             | 0.0             | 3.9                 | 2.4             | 0.2             | 5.9                 | -1.8            | 0.0             | 1.051    | 5.3                 | 1.7             | 0.2             | 3.7                 | 1.7             | 0.1             | 3.9                 | 4.1             | 0.0             |
| 3.5                 | 2.7             | 0.0             | 4.0                 | 2.3             | 0.2             | 5.5                 | -1.8            | 0.0             | 1.053    | 5.1                 | 1.5             | 0.2             | 5.4                 | 1.6             | 0.1             | 7.1                 | 3.4             | 0.0             |
| 5.1                 | 2.7             | 0.0             | 4.0                 | 2.2             | 0.1             | 5.4                 | -1.6            | 0.0             | 1.055    | 5.0                 | 1.4             | 0.2             | 5.4                 | 1.7             | 0.1             | 8.2                 | 3.4             | 0.0             |
| 5.5                 | 2.4             | 0.0             | 3.5                 | 2.1             | 0.2             | 5.6                 | -2.0            | 0.0             | 1.057    | 5.2                 | 1.2             | 0.0             | 3.9                 | 1.9             | 0.2             | 7.3                 | 3.1             | 0.0             |
| 5.2                 | 2.5             | 0.0             | 3.1                 | 2.2             | 0.3             | 5.3                 | -2.1            | 0.0             | 1.059    | 5.9                 | 1.2             | 0.2             | 5.5                 | 1.9             | 0.1             | 7.4                 | 3.3             | 0.0             |
| 6.8                 | 2.6             | 0.0             | 3.2                 | 1.6             | 0.1             | 4.8                 | -2.3            | 0.1             | 1.061    | 5.6                 | 1.0             | 0.0             | 5.8                 | 2.0             | 0.1             | 5.7                 | 2.8             | 0.0             |
| 4.6                 | 3.1             | 0.0             | 3.1                 | 1.5             | 0.2             | 5.0                 | -2.5            | 0.0             | 1.063    | 5.7                 | 0.8             | 0.1             | 4.2                 | 2.0             | 0.1             | 7.0                 | 3.1             | 0.0             |
| 5.2                 | 3.0             | 0.0             | 3.8                 | 1.2             | 0.1             | 4.8                 | -2.4            | 0.0             | 1.065    | 5.5                 | 0.8             | 0.1             | 6.1                 | 1.7             | 0.1             | 7.5                 | 2.1             | 0.0             |
| 5.2                 | 2.6             | 0.0             | 4.0                 | 1.3             | 0.1             | 4.7                 | -2.2            | 0.0             | 1.066    | 6.0                 | 0.7             | 0.1             | 6.0                 | 1.5             | 0.1             | 4.2                 | 2.0             | 0.0             |
| 5.5                 | 2.6             | 0.0             | 4.0                 | 1.5             | 0.2             | 4.6                 | -2.2            | 0.1             | 1.068    | 5.1                 | 0.7             | 0.2             | 6.1                 | 1.5             | 0.1             | 4.7                 | 2.3             | 0.0             |
| 4.0                 | 2.6             | 0.0             | 3.6                 | 1.5             | 0.1             | 4.6                 | -2.2            | 0.1             | 1.070    | 5.5                 | 0.8             | 0.1             | 5.3                 | 1.3             | 0.1             | 5.3                 | 2.3             | 0.0             |
| 7.6                 | 2.3             | 0.0             | 3.9                 | 1.3             | 0.1             | 5.2                 | -2.4            | 0.1             | 1.072    | 5.4                 | 0.9             | 0.2             | 5.6                 | 1.6             | 0.1             | 8.4                 | 2.5             | 0.0             |
| 6.4                 | 2.2             | 0.0             | 4.2                 | 0.9             | 0.0             | 5.4                 | -2.3            | 0.1             | 1.074    | 5.5                 | 1.0             | 0.2             | 6.0                 | 1.7             | 0.1             | 4.4                 | 2.3             | 0.0             |
| 6.4                 | 2.0             | 0.0             | 4.4                 | 1.1             | 0.0             | 5.7                 | -2.2            | 0.1             | 1.076    | 6.3                 | 1.0             | 0.1             | 3.7                 | 1.8             | 0.1             | 3.5                 | 2.5             | 0.0             |
| 3.6                 | 1.9             | 0.0             | 4.7                 | 1.1             | 0.0             | 5.8                 | -2.0            | 0.0             | 1.078    | 5.8                 | 1.3             | 0.1             | 5.8                 | 1.9             | 0.1             | 3.9                 | 2.8             | 0.0             |
| 4.3                 | 1.4             | 0.0             | 4.0                 | 1.8             | 0.0             | 5.3                 | -2.0            | 0.1             | 1.080    | 5.5                 | 1.2             | 0.1             | 3.5                 | 2.1             | 0.1             | 3.9                 | 2.6             | 0.0             |
| 6.0                 | 1.5             | 0.0             | 4.3                 | 1.6             | 0.0             | 5.4                 | -2.1            | 0.0             | 1.082    | 5.2                 | 1.5             | 0.1             | 4.1                 | 2.3             | 0.1             | 3.8                 | 3.2             | 0.0             |
| 4.4                 | 0.7             | 0.0             | 3.4                 | 1.6             | 0.1             | 5.3                 | -1.8            | 0.0             | 1.084    | 5.4                 | 1.6             | 0.2             | 3.5                 | 2.3             | 0.1             | 4.9                 | 3.0             | 0.0             |
| 3.5                 | 0.8             | 0.0             | 3.9                 | 1.8             | 0.1             | 5.2                 | -1.7            | 0.0             | 1.085    | 5.1                 | 1.8             | 0.1             | 3.9                 | 2.2             | 0.1             | 4.2                 | 2.8             | 0.0             |
| 5.6                 | 1.3             | 0.0             | 4.0                 | 1.7             | 0.1             | 5.1                 | -2.0            | 0.0             | 1.087    | 5.1                 | 2.0             | 0.1             | 3.7                 | 2.1             | 0.1             | 3.2                 | 2.6             | 0.0             |
| 7.3                 | 1.0             | 0.0             | 3.8                 | 1.9             | 0.1             | 5.2                 | -2.3            | 0.0             | 1.089    | 5.0                 | 2.1             | 0.2             | 3.4                 | 2.1             | 0.1             | 3.5                 | 2.2             | 0.0             |
| 5.9                 | 1.7             | 0.0             | 3.9                 | 2.1             | 0.2             | 5.0                 | -2.4            | 0.0             | 1.091    | 5.3                 | 2.2             | 0.2             | 3.2                 | 1.7             | 0.1             | 3.2                 | 2.1             | 0.0             |
| 6.2                 | 1.9             | 0.0             | 3.5                 | 2.1             | 0.1             | 5.0                 | -2.6            | 0.2             | 1.093    | 4.8                 | 2.0             | 0.2             | 3.8                 | 1.8             | 0.1             | 5.6                 | 2.2             | 0.0             |
| 7.7                 | 1.6             | 0.0             | 4.2                 | 1.7             | 0.1             | 5.2                 | -2.9            | 0.1             | 1.095    | 5.0                 | 1.9             | 0.0             | 5.7                 | 1.9             | 0.2             | 4.7                 | 2.0             | 0.0             |
| 5.6                 | 1.2             | 0.0             | 3.9                 | 1.5             | 0.1             | 4.8                 | -2.5            | 0.0             | 1.097    | 5.3                 | 2.0             | 0.2             | 5.5                 | 2.0             | 0.1             | 3.3                 | 2.2             | 0.0             |
| 5.2                 | 1.0             | 0.0             | 3.7                 | 1.7             | 0.1             | 5.2                 | -2.6            | 0.0             | 1.099    | 5.4                 | 1.9             | 0.2             | 3.8                 | 2.1             | 0.2             | 4.3                 | 2.3             | 0.0             |
| 5.2                 | 1.2             | 0.0             | 3.6                 | 1.7             | 0.2             | 4.8                 | -3.1            | 0.1             | 1.101    | 5.6                 | 1.8             | 0.1             | 3.6                 | 2.1             | 0.2             | 5.0                 | 2.2             | 0.0             |
| 6.1                 | 1.2             | 0.0             | 3.2                 | 1.4             | 0.2             | 5.3                 | -3.0            | 0.1             | 1.102    | 5.6                 | 1.4             | 0.1             | 4.0                 | 1.9             | 0.2             | 4.8                 | 2.4             | 0.0             |
| 3.5                 | 1.4             | 0.0             | 3.4                 | 1.4             | 0.1             | 5.1                 | -3.0            | 0.0             | 1.104    | 5.4                 | 1.1             | 0.1             | 3.7                 | 1.8             | 0.1             | 5.4                 | 2.2             | 0.0             |
| 5.7                 | 2.1             | 0.0             | 3.8                 | 1.4             | 0.1             | 4.9                 | -2.5            | 0.0             | 1.106    | 5.4                 | 1.1             | 0.1             | 3.9                 | 1.9             | 0.1             | 5.9                 | 2.3             | 0.0             |
| 7.0                 | 1.6             | 0.0             | 3.2                 | 1.7             | 0.1             | 4.8                 | -2.5            | 0.0             | 1.108    | 5.0                 | 1.2             | 0.2             | 3.7                 | 2.0             | 0.2             | 4.8                 | 2.4             | 0.0             |
| 3.8                 | 1.6             | 0.0             | 3.7                 | 1.5             | 0.1             | 4.1                 | -2.4            | 0.0             | 1.110    | 5.0                 | 1.3             | 0.1             | 3.9                 | 2.1             | 0.3             | 6.2                 | 2.3             | 0.0             |
| 5.9                 | 2.3             | 0.0             | 3.4                 | 1.7             | 0.0             | 4.4                 | -2.3            | 0.1             | 1.112    | 4.8                 | 1.4             | 0.2             | 3.7                 | 2.2             | 0.3             | 7.4                 | 2.5             | 0.0             |
| 4.4                 | 1.8             | 0.0             | 6.0                 | 1.6             | 0.1             | 4.0                 | -1.8            | 0.1             | 1.114    | 5.1                 | 1.2             | 0.1             | 3.8                 | 2.2             | 0.2             | 7.3                 | 2.1             | 0.0             |
| 3.9                 | 1.4             | 0.0             | 3.5                 | 1.8             | 0.1             | 4.1                 | -1.4            | 0.0             | 1.116    | 4.8                 | 1.4             | 0.1             | 3.8                 | 2.5             | 0.2             | 5.5                 | 1.9             | 0.0             |
| 3.7                 | 1.3             | 0.0             | 3.4                 | 1.9             | 0.1             | 4.4                 | -1.4            | 0.0             | 1.118    | 4.7                 | 1.4             | 0.1             | 3.7                 | 2.1             | 0.2             | 7.8                 | 1.8             | 0.0             |
| 3.3                 | 1.5             | 0.0             | 3.2                 | 1.5             | 0.2             | 4.5                 | -1.4            | 0.0             | 1.120    | 4.6                 | 1.2             | 0.1             | 3.7                 | 2.0             | 0.2             | 7.0                 | 1.7             | 0.0             |
| 3.3                 | 1.6             | 0.0             | 2.8                 | 1.8             | 0.3             | 4.6                 | -1.5            | 0.0             | 1.121    | 4.5                 | 1.7             | 0.1             | 3.8                 | 2.0             | 0.2             | 7.2                 | 1.8             | 0.0             |
| 4.3                 | 1.4             | 0.0             | 4.8                 | 2.4             | 0.3             | 4.7                 | -1.8            | 0.1             | 1.123    | 4.4                 | 1.7             | 0.2             | 5.3                 | 1.9             | 0.3             | 7.0                 | 1.8             | 0.0             |
| 4.0                 | 0.9             | 0.0             | 4.8                 | 1.7             | 0.4             | 4.7                 | -1.6            | 0.0             | 1.125    | 5.2                 | 1.9             | 0.2             | 3.5                 | 1.9             | 0.4             | 6.1                 | 1.7             | 0.0             |
| 4.0                 | 1.1             | 0.0             | 3.5                 | 2.4             | 0.3             | 4.2                 | -1.3            | 0.1             | 1.127    | 5.0                 | 2.1             | 0.2             | 5.8                 | 1.9             | 0.3             | 4.8                 | 1.9             | 0.0             |
| 5.6                 | 1.2             | 0.0             | 3.2                 | 2.0             | 0.2             | 4.6                 | -1.4            | 0.0             | 1.129    | 5.4                 | 2.1             | 0.2             | 5.1                 | 2.0             | 0.4             | 5.2                 | 2.1             | 0.0             |
| 3.6                 | 1.2             | 0.0             | 3.3                 | 1.9             | 0.2             | 4.3                 | -1.7            | 0.0             | 1.131    | 5.1                 | 2.3             | 0.1             | 3.5                 | 1.9             | 0.3             | 3.7                 | 1.9             | 0.0             |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 6.2                 | 0.9             | 0.0             | 4.9                 | 1.7             | 0.2             | 4.9                 | -1.9            | 0.0             | 1.133    | 4.7                 | 2.2             | 0.2             | 3.4                 | 1.7             | 0.3             | 4.8                 | 1.8             | 0.0             |
| 6.2                 | 1.1             | 0.0             | 4.5                 | 1.2             | 0.2             | 5.1                 | -1.5            | 0.0             | 1.135    | 4.7                 | 1.9             | 0.2             | 3.5                 | 2.0             | 0.5             | 4.1                 | 1.5             | 0.0             |
| 3.3                 | 1.3             | 0.1             | 3.3                 | 1.4             | 0.2             | 4.8                 | -1.8            | 0.0             | 1.137    | 4.8                 | 1.8             | 0.2             | 3.4                 | 2.1             | 0.5             | 4.0                 | 1.5             | 0.0             |
| 4.2                 | 0.9             | 0.1             | 4.6                 | 1.5             | 0.1             | 4.8                 | -1.6            | 0.0             | 1.138    | 5.0                 | 1.9             | 0.3             | 3.5                 | 2.1             | 0.5             | 3.9                 | 1.7             | 0.0             |
| 7.5                 | 1.1             | 0.1             | 5.2                 | 1.2             | 0.1             | 4.7                 | -1.6            | 0.0             | 1.140    | 5.4                 | 2.4             | 0.3             | 3.8                 | 2.3             | 0.4             | 3.4                 | 2.5             | 0.0             |
| 6.1                 | 0.8             | 0.1             | 2.5                 | 1.4             | 0.1             | 4.4                 | -1.3            | 0.1             | 1.142    | 4.9                 | 2.4             | 0.1             | 3.4                 | 2.1             | 0.2             | 5.2                 | 2.2             | 0.2             |
| 6.5                 | 0.7             | 0.1             | 5.4                 | 1.5             | 0.1             | 4.1                 | -1.5            | 0.0             | 1.144    | 5.1                 | 2.4             | 0.1             | 3.3                 | 1.9             | 0.3             | 4.6                 | 2.8             | 0.1             |
| 6.3                 | 0.8             | 0.2             | 4.0                 | 1.5             | 0.1             | 4.3                 | -1.7            | 0.1             | 1.146    | 4.8                 | 2.1             | 0.1             | 5.8                 | 2.0             | 0.2             | 3.7                 | 3.2             | 0.2             |
| 5.3                 | 0.9             | 0.2             | 3.0                 | 1.7             | 0.1             | 4.4                 | -1.8            | 0.1             | 1.148    | 4.6                 | 1.7             | 0.1             | 3.3                 | 2.1             | 0.1             | 4.5                 | 3.4             | 0.1             |
| 4.2                 | 0.9             | 0.1             | 3.5                 | 1.7             | 0.1             | 4.4                 | -2.0            | 0.1             | 1.150    | 4.8                 | 1.5             | 0.2             | 6.0                 | 1.8             | 0.1             | 3.3                 | 3.6             | 0.1             |
| 4.2                 | 1.0             | 0.1             | 3.5                 | 1.9             | 0.1             | 5.0                 | -2.3            | 0.0             | 1.152    | 4.9                 | 1.3             | 0.1             | 5.6                 | 1.6             | 0.1             | 3.0                 | 3.6             | 0.1             |
| 6.3                 | 1.1             | 0.1             | 3.7                 | 1.7             | 0.2             | 4.3                 | -2.4            | 0.1             | 1.154    | 4.5                 | 1.2             | 0.2             | 5.6                 | 1.4             | 0.1             | 4.4                 | 3.7             | 0.0             |
| 5.8                 | 1.1             | 0.1             | 3.4                 | 1.8             | 0.2             | 4.4                 | -2.3            | 0.2             | 1.155    | 4.9                 | 1.4             | 0.2             | 4.9                 | 1.4             | 0.1             | 3.8                 | 3.2             | 0.0             |
| 3.8                 | 1.2             | 0.1             | 3.9                 | 1.5             | 0.2             | 4.6                 | -2.1            | 0.2             | 1.157    | 4.8                 | 1.5             | 0.2             | 6.8                 | 1.2             | 0.1             | 7.0                 | 3.1             | 0.1             |
| 6.7                 | 1.3             | 0.0             | 3.2                 | 1.6             | 0.2             | 4.5                 | -1.8            | 0.2             | 1.159    | 4.4                 | 1.4             | 0.2             | 5.3                 | 1.4             | 0.1             | 5.3                 | 2.4             | 0.1             |
| 3.8                 | 1.3             | 0.2             | 3.6                 | 1.7             | 0.3             | 4.0                 | -1.9            | 0.1             | 1.161    | 5.0                 | 1.6             | 0.2             | 5.0                 | 1.6             | 0.1             | 5.3                 | 1.9             | 0.1             |
| 3.6                 | 1.4             | 0.1             | 2.8                 | 1.9             | 0.3             | 4.1                 | -1.9            | 0.2             | 1.163    | 4.5                 | 1.6             | 0.2             | 5.0                 | 1.5             | 0.1             | 4.2                 | 1.7             | 0.1             |
| 4.1                 | 1.2             | 0.2             | 2.5                 | 2.0             | 0.1             | 4.1                 | -2.1            | 0.1             | 1.165    | 4.7                 | 1.8             | 0.2             | 5.2                 | 1.6             | 0.1             | 5.2                 | 2.0             | 0.2             |
| 5.5                 | 1.3             | 0.1             | 3.3                 | 2.3             | 0.1             | 4.9                 | -2.2            | 0.1             | 1.167    | 5.1                 | 1.8             | 0.3             | 3.6                 | 1.7             | 0.1             | 5.4                 | 1.3             | 0.1             |
| 3.2                 | 1.5             | 0.1             | 4.8                 | 2.0             | 0.1             | 4.4                 | -2.3            | 0.1             | 1.169    | 4.6                 | 1.6             | 0.3             | 5.1                 | 1.8             | 0.0             | 4.0                 | 1.4             | 0.1             |
| 4.7                 | 1.4             | 0.1             | 3.1                 | 1.7             | 0.1             | 4.7                 | -2.2            | 0.2             | 1.171    | 3.0                 | 1.7             | 0.3             | 3.2                 | 2.0             | 0.1             | 5.0                 | 1.4             | 0.0             |
| 4.0                 | 1.4             | 0.1             | 4.7                 | 1.4             | 0.2             | 4.6                 | -2.0            | 0.1             | 1.173    | 5.2                 | 1.4             | 0.2             | 2.7                 | 2.0             | 0.1             | 4.6                 | 1.6             | 0.0             |
| 3.4                 | 1.1             | 0.1             | 5.7                 | 2.0             | 0.2             | 5.2                 | -2.0            | 0.1             | 1.174    | 5.7                 | 1.2             | 0.2             | 3.6                 | 1.8             | 0.1             | 5.4                 | 2.3             | 0.1             |
| 4.3                 | 1.0             | 0.1             | 4.4                 | 1.5             | 0.2             | 5.1                 | -2.0            | 0.1             | 1.176    | 5.1                 | 1.1             | 0.2             | 3.0                 | 2.1             | 0.1             | 3.0                 | 2.6             | 0.1             |
| 3.8                 | 0.6             | 0.1             | 4.0                 | 1.8             | 0.1             | 5.0                 | -2.1            | 0.1             | 1.178    | 4.2                 | 1.0             | 0.2             | 3.5                 | 1.8             | 0.1             | 5.4                 | 2.6             | 0.1             |
| 2.5                 | 0.5             | 0.2             | 4.3                 | 1.6             | 0.1             | 5.4                 | -2.2            | 0.2             | 1.180    | 5.4                 | 1.2             | 0.1             | 3.3                 | 1.9             | 0.0             | 4.7                 | 2.5             | 0.1             |
| 3.7                 | 0.5             | 0.1             | 2.8                 | 1.5             | 0.1             | 5.1                 | -1.9            | 0.1             | 1.182    | 5.1                 | 1.7             | 0.0             | 3.8                 | 2.0             | 0.0             | 2.5                 | 2.7             | 0.1             |
| 7.4                 | 0.4             | 0.0             | 3.7                 | 1.7             | 0.1             | 5.3                 | -2.1            | 0.1             | 1.184    | 4.8                 | 1.8             | 0.1             | 3.5                 | 2.0             | 0.0             | 3.0                 | 2.6             | 0.1             |
| 5.5                 | 0.5             | 0.1             | 3.3                 | 1.7             | 0.1             | 5.4                 | -2.1            | 0.0             | 1.186    | 5.6                 | 1.9             | 0.3             | 3.2                 | 2.1             | 0.1             | 6.1                 | 2.4             | 0.0             |
| 3.2                 | 0.7             | 0.1             | 3.3                 | 1.9             | 0.1             | 5.2                 | -2.5            | 0.1             | 1.188    | 5.4                 | 1.7             | 0.3             | 3.7                 | 1.9             | 0.1             | 5.3                 | 2.4             | 0.0             |
| 6.2                 | 0.6             | 0.0             | 3.1                 | 1.6             | 0.1             | 4.2                 | -2.4            | 0.1             | 1.190    | 5.4                 | 1.4             | 0.1             | 5.7                 | 1.8             | 0.1             | 3.3                 | 2.5             | 0.0             |
| 5.2                 | 0.9             | 0.1             | 3.8                 | 1.7             | 0.1             | 5.7                 | -2.5            | 0.0             | 1.191    | 4.7                 | 0.9             | 0.1             | 5.0                 | 1.9             | 0.1             | 5.9                 | 2.5             | 0.1             |
| 5.1                 | 0.7             | 0.1             | 4.4                 | 1.7             | 0.0             | 5.3                 | -2.2            | 0.0             | 1.193    | 3.6                 | 0.6             | 0.3             | 3.5                 | 2.0             | 0.2             | 3.7                 | 2.6             | 0.2             |
| 3.9                 | 0.6             | 0.1             | 2.7                 | 1.5             | 0.0             | 5.2                 | -2.0            | 0.0             | 1.195    | 5.5                 | 0.4             | 0.2             | 1.4                 | 1.8             | 0.3             | 5.6                 | 2.6             | 0.1             |
| 4.0                 | 0.7             | 0.0             | 5.5                 | 1.5             | 0.1             | 4.8                 | -1.5            | 0.1             | 1.197    | 5.4                 | 0.3             | 0.1             | 3.5                 | 1.9             | 0.3             | 4.8                 | 2.4             | 0.2             |
| 4.0                 | 0.5             | 0.1             | 4.8                 | 1.5             | 0.1             | 4.5                 | -1.0            | 0.0             | 1.199    | 6.6                 | 0.0             | 0.1             | 6.1                 | 2.1             | 0.3             | 5.3                 | 2.2             | 0.1             |
| 3.1                 | 0.3             | 0.1             | 2.5                 | 1.5             | 0.1             | 5.3                 | -1.0            | 0.1             | 1.201    | 5.3                 | 0.0             | 0.1             | 3.4                 | 1.9             | 0.2             | 5.9                 | 2.4             | 0.1             |
| 5.4                 | 0.3             | 0.1             | 2.3                 | 1.4             | 0.1             | 4.8                 | -0.9            | 0.0             | 1.203    | 6.3                 | -0.4            | 0.1             | 4.2                 | 1.7             | 0.2             | 4.0                 | 2.3             | 0.1             |
| 5.3                 | 0.8             | 0.1             | 4.0                 | 1.5             | 0.1             | 4.5                 | -1.0            | 0.1             | 1.205    | 6.3                 | -0.6            | 0.1             | 4.8                 | 1.6             | 0.3             | 4.9                 | 1.9             | 0.3             |
| 6.2                 | 0.7             | 0.0             | 2.8                 | 1.6             | 0.1             | 4.8                 | -1.3            | 0.0             | 1.207    | 5.8                 | -1.0            | 0.1             | 6.6                 | 1.4             | 0.2             | 6.6                 | 1.8             | 0.1             |
| 5.4                 | 0.8             | 0.0             | 2.8                 | 1.9             | 0.2             | 4.5                 | -1.7            | 0.0             | 1.209    | 5.7                 | -1.2            | 0.2             | 3.9                 | 1.4             | 0.2             | 4.8                 | 1.9             | 0.1             |
| 4.1                 | 0.6             | 0.0             | 2.6                 | 1.9             | 0.1             | 5.0                 | -1.8            | 0.0             | 1.210    | 5.7                 | -1.4            | 0.1             | 4.8                 | 1.6             | 0.2             | 5.0                 | 1.8             | 0.1             |
| 4.0                 | 0.6             | 0.0             | 4.3                 | 1.9             | 0.1             | 4.9                 | -1.8            | 0.0             | 1.212    | 6.4                 | -1.4            | 0.1             | 3.3                 | 1.4             | 0.1             | 4.1                 | 1.9             | 0.1             |
| 3.9                 | 0.7             | 0.0             | 2.5                 | 1.9             | 0.1             | 4.8                 | -1.8            | 0.0             | 1.214    | 5.6                 | -1.3            | 0.1             | 2.9                 | 1.3             | 0.1             | 6.2                 | 2.1             | 0.1             |
| 5.5                 | 0.9             | 0.0             | 4.9                 | 1.9             | 0.1             | 4.8                 | -1.7            | 0.1             | 1.216    | 6.0                 | -1.0            | 0.1             | 4.8                 | 1.2             | 0.2             | 3.3                 | 2.2             | 0.1             |
| 3.5                 | 0.9             | 0.0             | 3.1                 | 1.7             | 0.1             | 4.7                 | -1.7            | 0.1             | 1.218    | 7.3                 | -0.9            | 0.1             | 5.5                 | 0.8             | 0.2             | 3.5                 | 2.1             | 0.0             |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 3.1                 | 1.2             | 0.1             | 3.4                 | 1.7             | 0.1             | 4.8                 | -1.8            | 0.2             | 1.220    | 5.5                 | -1.1            | 0.1             | 5.3                 | 0.7             | 0.2             | 3.3                 | 2.1             | 0.1             |
| 5.7                 | 1.4             | 0.0             | 4.8                 | 1.4             | 0.2             | 5.1                 | -1.9            | 0.2             | 1.222    | 5.6                 | -1.0            | 0.0             | 4.0                 | 0.7             | 0.2             | 4.7                 | 1.9             | 0.1             |
| 6.0                 | 1.4             | 0.0             | 3.1                 | 1.5             | 0.2             | 4.9                 | -1.9            | 0.2             | 1.224    | 5.1                 | -1.1            | 0.1             | 3.7                 | 0.7             | 0.2             | 4.0                 | 2.1             | 0.1             |
| 5.6                 | 1.2             | 0.1             | 3.1                 | 1.5             | 0.1             | 5.0                 | -1.8            | 0.2             | 1.226    | 5.9                 | -1.0            | 0.0             | 5.6                 | 0.6             | 0.2             | 4.1                 | 2.0             | 0.1             |
| 3.7                 | 1.1             | 0.0             | 3.4                 | 1.9             | 0.2             | 4.1                 | -1.8            | 0.2             | 1.227    | 5.8                 | -1.1            | 0.0             | 2.7                 | 0.5             | 0.2             | 3.1                 | 2.4             | 0.1             |
| 6.0                 | 1.1             | 0.0             | 3.2                 | 1.5             | 0.1             | 5.2                 | -1.8            | 0.2             | 1.229    | 6.1                 | -1.4            | 0.0             | 4.3                 | 1.0             | 0.1             | 3.2                 | 2.6             | 0.1             |
| 4.7                 | 1.1             | 0.0             | 2.7                 | 1.5             | 0.1             | 5.1                 | -1.9            | 0.2             | 1.231    | 5.9                 | -1.4            | 0.2             | 3.5                 | 0.8             | 0.1             | 3.8                 | 2.4             | 0.1             |
| 4.8                 | 1.0             | 0.1             | 3.8                 | 1.5             | 0.0             | 4.9                 | -2.0            | 0.2             | 1.233    | 5.9                 | -1.5            | 0.1             | 5.3                 | 1.0             | 0.1             | 7.2                 | 2.5             | 0.1             |
| 5.1                 | 1.3             | 0.0             | 3.0                 | 1.4             | 0.0             | 5.0                 | -1.9            | 0.2             | 1.235    | 4.1                 | -1.4            | 0.2             | 3.5                 | 1.1             | 0.1             | 7.0                 | 2.4             | 0.1             |
| 5.6                 | 1.0             | 0.0             | 4.7                 | 1.3             | 0.0             | 5.1                 | -1.8            | 0.1             | 1.237    | 6.3                 | -1.5            | 0.0             | 3.9                 | 0.9             | 0.2             | 5.6                 | 2.1             | 0.1             |
| 6.7                 | 1.2             | 0.0             | 4.9                 | 1.3             | 0.0             | 5.4                 | -1.7            | 0.1             | 1.239    | 6.5                 | -1.5            | 0.1             | 4.7                 | 0.8             | 0.2             | 4.8                 | 1.7             | 0.1             |
| 5.9                 | 1.1             | 0.1             | 3.4                 | 1.2             | 0.0             | 4.4                 | -1.7            | 0.1             | 1.241    | 5.8                 | -1.4            | 0.0             | 3.7                 | 1.0             | 0.1             | 5.7                 | 1.9             | 0.0             |
| 2.4                 | 1.1             | 0.2             | 5.4                 | 1.3             | 0.1             | 5.2                 | -1.7            | 0.1             | 1.243    | 5.9                 | -1.4            | 0.1             | 5.1                 | 0.9             | 0.1             | 5.8                 | 2.1             | 0.1             |
| 3.6                 | 0.9             | 0.1             | 4.9                 | 1.1             | 0.1             | 5.5                 | -2.2            | 0.1             | 1.245    | 4.8                 | -1.2            | 0.2             | 4.7                 | 0.9             | 0.2             | 6.5                 | 2.1             | 0.1             |
| 6.4                 | 0.7             | 0.1             | 4.5                 | 1.3             | 0.1             | 4.8                 | -2.5            | 0.0             | 1.246    | 5.8                 | -0.9            | 0.2             | 4.5                 | 0.4             | 0.2             | 5.9                 | 2.1             | 0.1             |
| 3.8                 | 1.0             | 0.1             | 4.7                 | 1.2             | 0.1             | 5.1                 | -2.4            | 0.2             | 1.248    | 6.4                 | -0.7            | 0.1             | 5.0                 | 0.0             | 0.3             | 5.5                 | 2.1             | 0.1             |
| 5.8                 | 0.8             | 0.3             | 5.8                 | 1.5             | 0.1             | 5.2                 | -2.3            | 0.2             | 1.250    | 4.0                 | -0.8            | 0.1             | 5.1                 | 0.1             | 0.3             | 6.2                 | 2.1             | 0.0             |
| 6.0                 | 0.7             | 0.1             | 4.7                 | 1.7             | 0.0             | 5.1                 | -2.2            | 0.1             | 1.252    | 5.0                 | -0.9            | 0.1             | 3.2                 | 0.2             | 0.3             | 7.3                 | 2.0             | 0.1             |
| 5.1                 | 0.7             | 0.1             | 4.4                 | 1.7             | 0.1             | 5.7                 | -2.2            | 0.2             | 1.254    | 5.3                 | -1.1            | 0.1             | 4.0                 | 0.1             | 0.3             | 6.1                 | 2.1             | 0.0             |
| 4.4                 | 0.8             | 0.2             | 3.0                 | 1.5             | 0.0             | 5.9                 | -2.1            | 0.1             | 1.256    | 5.9                 | -1.3            | 0.1             | 3.8                 | 0.1             | 0.3             | 5.6                 | 2.3             | 0.1             |
| 4.2                 | 0.8             | 0.2             | 3.3                 | 1.6             | 0.1             | 5.8                 | -1.8            | 0.1             | 1.258    | 4.9                 | -1.7            | 0.1             | 5.4                 | 0.6             | 0.2             | 5.0                 | 2.4             | 0.1             |
| 4.2                 | 0.8             | 0.1             | 5.3                 | 1.5             | 0.1             | 6.4                 | -1.9            | 0.2             | 1.260    | 4.8                 | -2.0            | 0.1             | 4.1                 | 0.9             | 0.3             | 5.8                 | 2.4             | 0.1             |
| 4.3                 | 0.8             | 0.0             | 3.7                 | 1.7             | 0.1             | 4.8                 | -1.9            | 0.1             | 1.262    | 5.4                 | -2.1            | 0.2             | 3.7                 | 1.0             | 0.2             | 6.1                 | 2.4             | 0.2             |
| 5.1                 | 0.9             | 0.1             | 3.0                 | 1.5             | 0.1             | 6.9                 | -1.9            | 0.1             | 1.263    | 5.4                 | -2.1            | 0.3             | 3.8                 | 1.1             | 0.2             | 5.8                 | 2.5             | 0.1             |
| 5.2                 | 0.8             | 0.1             | 3.3                 | 1.6             | 0.2             | 6.2                 | -2.0            | 0.1             | 1.265    | 6.1                 | -2.2            | 0.3             | 3.8                 | 0.9             | 0.3             | 4.8                 | 2.1             | 0.0             |
| 7.0                 | 0.7             | 0.2             | 4.6                 | 1.2             | 0.2             | 5.4                 | -1.9            | 0.1             | 1.267    | 4.9                 | -2.1            | 0.2             | 5.1                 | 1.1             | 0.4             | 4.4                 | 2.0             | 0.0             |
| 4.6                 | 0.7             | 0.2             | 2.8                 | 1.2             | 0.2             | 4.8                 | -2.2            | 0.0             | 1.269    | 5.6                 | -1.9            | 0.2             | 3.3                 | 1.1             | 0.3             | 5.0                 | 2.1             | 0.0             |
| 6.5                 | 0.7             | 0.1             | 4.7                 | 1.2             | 0.2             | 6.1                 | -2.3            | 0.1             | 1.271    | 5.3                 | -1.9            | 0.2             | 3.2                 | 1.0             | 0.3             | 7.6                 | 2.4             | 0.1             |
| 3.4                 | 0.5             | 0.2             | 5.9                 | 1.3             | 0.3             | 5.0                 | -2.3            | 0.2             | 1.273    | 6.5                 | -2.0            | 0.1             | 4.5                 | 1.2             | 0.3             | 4.5                 | 2.4             | 0.0             |
| 4.5                 | 0.6             | 0.1             | 3.5                 | 1.2             | 0.2             | 5.5                 | -1.9            | 0.2             | 1.275    | 4.5                 | -2.1            | 0.1             | 5.0                 | 0.9             | 0.2             | 7.9                 | 2.5             | 0.1             |
| 5.7                 | 0.5             | 0.0             | 2.5                 | 1.1             | 0.2             | 5.9                 | -1.8            | 0.2             | 1.277    | 5.4                 | -1.9            | 0.2             | 3.3                 | 0.8             | 0.2             | 2.9                 | 2.7             | 0.1             |
| 4.7                 | 0.5             | 0.0             | 3.8                 | 1.3             | 0.2             | 5.4                 | -1.5            | 0.1             | 1.279    | 5.3                 | -2.0            | 0.0             | 5.1                 | 1.0             | 0.2             | 5.2                 | 2.6             | 0.2             |
| 5.2                 | 0.8             | 0.0             | 5.5                 | 0.9             | 0.1             | 6.1                 | -1.4            | 0.0             | 1.280    | 5.0                 | -1.6            | 0.2             | 5.7                 | 0.8             | 0.2             | 5.4                 | 2.3             | 0.3             |
| 5.4                 | 0.7             | 0.2             | 4.9                 | 1.2             | 0.1             | 5.1                 | -1.5            | 0.1             | 1.282    | 5.4                 | -1.4            | 0.1             | 5.3                 | 0.9             | 0.2             | 6.1                 | 2.3             | 0.2             |
| 0.8                 | 0.8             | 0.2             | 3.2                 | 1.1             | 0.1             | 4.9                 | -1.4            | 0.1             | 1.284    | 4.8                 | -1.7            | 0.1             | 3.5                 | 1.3             | 0.1             | 5.0                 | 2.1             | 0.2             |
| 3.0                 | 1.0             | 0.2             | 3.3                 | 1.2             | 0.1             | 5.0                 | -1.4            | 0.0             | 1.286    | 4.2                 | -1.8            | 0.1             | 4.9                 | 1.4             | 0.2             | 5.1                 | 1.9             | 0.2             |
| 5.6                 | 0.9             | 0.2             | 5.0                 | 1.2             | 0.1             | 4.7                 | -1.2            | 0.0             | 1.288    | 4.9                 | -2.0            | 0.1             | 5.0                 | 1.3             | 0.1             | 5.7                 | 2.0             | 0.0             |
| 4.1                 | 1.0             | 0.1             | 2.9                 | 1.4             | 0.2             | 5.4                 | -1.1            | 0.0             | 1.290    | 4.4                 | -2.0            | 0.1             | 5.1                 | 1.3             | 0.1             | 5.8                 | 1.7             | 0.2             |
| 3.0                 | 0.8             | 0.0             | 3.0                 | 1.6             | 0.2             | 5.2                 | -0.9            | 0.0             | 1.292    | 4.5                 | -2.0            | 0.1             | 4.3                 | 1.1             | 0.1             | 4.5                 | 2.0             | 0.1             |
| 8.5                 | 1.1             | 0.0             | 3.4                 | 1.6             | 0.1             | 5.2                 | -1.2            | 0.1             | 1.294    | 4.0                 | -2.0            | 0.1             | 4.3                 | 1.1             | 0.2             | 6.6                 | 1.6             | 0.2             |
| 5.2                 | 0.8             | 0.0             | 3.5                 | 1.5             | 0.2             | 5.2                 | -1.1            | 0.1             | 1.296    | 4.3                 | -1.8            | 0.1             | 5.0                 | 1.4             | 0.1             | 5.1                 | 1.7             | 0.2             |
| 9.9                 | 1.0             | 0.0             | 5.5                 | 1.7             | 0.1             | 4.6                 | -1.5            | 0.1             | 1.298    | 4.0                 | -1.6            | 0.1             | 5.0                 | 1.6             | 0.2             | 3.7                 | 1.5             | 0.2             |
| 4.8                 | 1.2             | 0.1             | 4.4                 | 1.5             | 0.1             | 4.9                 | -1.9            | 0.1             | 1.299    | 4.3                 | -1.5            | 0.0             | 5.0                 | 1.6             | 0.1             | 5.8                 | 1.4             | 0.1             |
| 6.6                 | 1.3             | 0.2             | 4.3                 | 1.5             | 0.2             | 4.8                 | -2.4            | 0.0             | 1.301    | 5.2                 | -1.4            | 0.0             | 4.8                 | 1.8             | 0.1             | 3.3                 | 1.2             | 0.1             |
| 4.6                 | 1.4             | 0.1             | 4.9                 | 1.4             | 0.1             | 4.2                 | -2.9            | 0.0             | 1.303    | 4.8                 | -1.0            | 0.1             | 4.8                 | 1.6             | 0.1             | 5.3                 | 0.9             | 0.0             |
| 4.2                 | 1.4             | 0.0             | 3.3                 | 1.5             | 0.1             | 4.8                 | -3.1            | 0.1             | 1.305    | 4.7                 | -0.9            | 0.1             | 5.9                 | 1.4             | 0.1             | 5.2                 | 1.0             | 0.1             |

MPSV/GPR Information for FPN 430671-1 SR 536

| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1                  |                 |                 | R2                  |                 |                 | R3                  |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 6.9                 | 1.5             | 0.0             | 2.6                 | 1.4             | 0.1             | 4.7                 | -3.0            | 0.1             | 5.2                 | -1.0            | 0.1             | 2.7                 | 1.4             | 0.1             | 4.4                 | 1.2             | 0.1             |
| 5.4                 | 1.1             | 0.1             | 3.1                 | 1.3             | 0.1             | 4.6                 | -2.9            | 0.1             | 4.2                 | -1.1            | 0.1             | 4.4                 | 1.3             | 0.1             | 5.0                 | 1.2             | 0.1             |
| 8.9                 | 1.4             | 0.0             | 3.1                 | 1.1             | 0.1             | 2.3                 | -2.7            | 0.1             | 4.1                 | -1.5            | 0.1             | 2.7                 | 1.2             | 0.1             | 3.3                 | 1.5             | 0.1             |
| 5.7                 | 1.4             | 0.0             | 3.6                 | 0.8             | 0.2             | 4.3                 | -2.6            | 0.3             | 4.4                 | -1.8            | 0.1             | 6.3                 | 1.2             | 0.1             | 3.3                 | 1.9             | 0.1             |
| 7.3                 | 1.2             | 0.0             | 2.8                 | 0.8             | 0.3             | 4.6                 | -2.8            | 0.1             | 4.6                 | -2.4            | 0.1             | 3.2                 | 1.3             | 0.1             | 3.3                 | 2.1             | 0.1             |
| 8.7                 | 1.3             | 0.0             | 3.2                 | 0.8             | 0.2             | 4.8                 | -2.7            | 0.2             | 5.1                 | -2.5            | 0.1             | 4.8                 | 1.4             | 0.1             | 3.7                 | 2.1             | 0.2             |
| 7.1                 | 1.5             | 0.2             | 5.7                 | 0.8             | 0.1             | 4.6                 | -2.5            | 0.2             | 4.2                 | -2.3            | 0.0             | 3.8                 | 1.5             | 0.1             | 5.5                 | 2.0             | 0.1             |
| 6.9                 | 1.5             | 0.1             | 3.6                 | 0.8             | 0.1             | 4.6                 | -2.5            | 0.2             | 4.8                 | -2.3            | 0.0             | 5.1                 | 1.8             | 0.1             | 4.0                 | 2.0             | 0.2             |
| 3.6                 | 1.5             | 0.0             | 5.8                 | 0.9             | 0.1             | 4.6                 | -2.6            | 0.1             | 4.7                 | -2.2            | 0.0             | 5.5                 | 1.7             | 0.2             | 3.3                 | 2.2             | 0.2             |
| 5.6                 | 1.4             | 0.0             | 5.8                 | 1.0             | 0.1             | 4.2                 | -2.7            | 0.0             | 4.7                 | -2.0            | 0.2             | 5.3                 | 1.3             | 0.1             | 4.0                 | 1.9             | 0.2             |
| 3.3                 | 1.4             | 0.0             | 4.5                 | 0.9             | 0.1             | 5.7                 | -2.7            | 0.2             | 3.3                 | -2.0            | 0.3             | 4.6                 | 1.6             | 0.1             | 4.9                 | 2.0             | 0.0             |
| 6.4                 | 1.4             | 0.0             | 3.3                 | 1.1             | 0.1             | 4.3                 | -2.8            | 0.1             | 4.6                 | -2.0            | 0.3             | 2.6                 | 1.1             | 0.1             | 4.6                 | 2.2             | 0.0             |
| 7.9                 | 1.2             | 0.1             | 4.9                 | 1.1             | 0.2             | 5.0                 | -2.6            | 0.2             | 5.1                 | -1.9            | 0.1             | 5.2                 | 1.1             | 0.1             | 4.1                 | 1.9             | 0.0             |
| 3.9                 | 1.4             | 0.1             | 3.9                 | 1.1             | 0.2             | 4.9                 | -2.5            | 0.2             | 4.6                 | -1.1            | 0.2             | 5.5                 | 0.9             | 0.0             | 4.2                 | 1.7             | 0.1             |
| 4.5                 | 1.4             | 0.1             | 4.1                 | 1.3             | 0.1             | 5.1                 | -2.7            | 0.1             | 4.0                 | -2.0            | 0.2             | 4.5                 | 0.9             | 0.1             | 4.0                 | 1.5             | 0.1             |
| 5.4                 | 1.4             | 0.1             | 3.2                 | 1.2             | 0.1             | 4.9                 | -2.7            | 0.1             | 2.9                 | -2.1            | 0.1             | 3.8                 | 0.9             | 0.1             | 4.3                 | 1.4             | 0.1             |
| 4.4                 | 1.5             | 0.1             | 3.7                 | 1.1             | 0.0             | 5.5                 | -2.8            | 0.1             | 3.1                 | -2.4            | 0.0             | 4.7                 | 0.8             | 0.1             | 3.0                 | 1.7             | 0.1             |
| 6.9                 | 1.5             | 0.1             | 3.9                 | 1.1             | 0.0             | 5.0                 | -2.8            | 0.1             | 4.5                 | -2.5            | 0.0             | 5.8                 | 0.8             | 0.1             | 4.8                 | 1.6             | 0.1             |
| 5.8                 | 1.6             | 0.2             | 4.6                 | 1.2             | 0.1             | 5.1                 | -2.8            | 0.1             | 5.0                 | -2.1            | 0.0             | 4.8                 | 0.7             | 0.1             | 3.7                 | 1.7             | 0.0             |
| 6.3                 | 1.5             | 0.2             | 2.7                 | 1.4             | 0.0             | 4.1                 | -2.7            | 0.1             | 6.1                 | -1.9            | 0.0             | 4.3                 | 0.7             | 0.2             | 6.9                 | 1.6             | 0.2             |
| 5.2                 | 1.6             | 0.1             | 2.6                 | 1.5             | 0.0             | 4.5                 | -2.5            | 0.1             | 5.5                 | -1.8            | 0.0             | 3.7                 | 0.9             | 0.1             | 4.1                 | 1.8             | 0.2             |
| 7.2                 | 1.5             | 0.1             | 3.5                 | 1.6             | 0.1             | 4.2                 | -2.2            | 0.1             | 4.8                 | -1.6            | 0.2             | 5.7                 | 1.0             | 0.1             | 6.0                 | 2.2             | 0.1             |
| 5.2                 | 1.5             | 0.1             | 3.6                 | 1.8             | 0.1             | 4.7                 | -2.3            | 0.1             | 4.9                 | -1.8            | 0.0             | 3.0                 | 0.8             | 0.1             | 3.9                 | 2.2             | 0.1             |
| 8.8                 | 0.9             | 0.1             | 5.1                 | 1.9             | 0.2             | 4.8                 | -2.2            | 0.1             | 4.0                 | -2.3            | 0.0             | 6.1                 | 0.8             | 0.1             | 7.8                 | 2.1             | 0.1             |
| 5.1                 | 1.1             | 0.1             | 4.4                 | 1.8             | 0.2             | 4.8                 | -2.1            | 0.1             | 5.3                 | -2.8            | 0.0             | 7.2                 | 0.9             | 0.1             | 6.4                 | 2.2             | 0.1             |
| 6.3                 | 1.2             | 0.1             | 2.9                 | 1.6             | 0.2             | 5.5                 | -1.9            | 0.1             | 11.9                | -2.7            | 0.0             | 2.2                 | 1.0             | 0.1             | 4.3                 | 2.3             | 0.1             |
| 6.5                 | 1.4             | 0.1             | 3.9                 | 2.1             | 0.3             | 6.0                 | -1.9            | 0.1             | 8.3                 | -2.4            | 0.0             | 4.9                 | 0.9             | 0.1             | 8.1                 | 2.7             | 0.0             |
| 6.1                 | 1.4             | 0.2             | 5.4                 | 1.9             | 0.2             | 13.1                | -2.1            | 0.1             | 10.5                | -2.1            | 0.0             | 3.6                 | 1.0             | 0.1             | 6.5                 | 3.0             | 0.1             |
| 4.0                 | 1.3             | 0.1             | 3.1                 | 1.7             | 0.3             | 11.4                | -2.4            | 0.1             | 6.3                 | -1.5            | 0.0             | 4.7                 | 1.5             | 0.0             | 6.6                 | 3.0             | 0.1             |
| 5.0                 | 1.2             | 0.1             | 4.9                 | 1.6             | 0.2             | 14.0                | -2.1            | 0.2             | 11.6                | -1.1            | 0.1             | 5.3                 | 1.7             | 0.1             | 4.6                 | 3.0             | 0.0             |
| 5.4                 | 1.1             | 0.2             | 3.0                 | 1.6             | 0.1             | 10.9                | -1.9            | 0.2             | 10.5                | -0.9            | 0.1             | 4.7                 | 1.5             | 0.1             | 6.8                 | 2.6             | 0.0             |
| 7.2                 | 1.2             | 0.2             | 3.1                 | 1.5             | 0.1             | 12.1                | -2.2            | 0.1             | 9.2                 | -0.4            | 0.1             | 5.3                 | 1.6             | 0.1             | 5.3                 | 2.7             | 0.0             |
| 8.8                 | 1.3             | 0.1             | 3.3                 | 1.6             | 0.1             | 10.8                | -2.1            | 0.2             | 11.1                | -0.7            | 0.1             | 4.1                 | 1.6             | 0.1             | 5.4                 | 2.5             | 0.0             |
| 3.9                 | 1.5             | 0.1             | 4.9                 | 1.8             | 0.1             | 11.7                | -2.2            | 0.2             | 8.9                 | -1.0            | 0.0             | 3.9                 | 1.8             | 0.1             | 7.8                 | 2.3             | 0.0             |
| 5.2                 | 1.2             | 0.0             | 5.6                 | 1.7             | 0.1             | 16.0                | -2.4            | 0.2             | 10.4                | -1.0            | 0.1             | 4.6                 | 2.0             | 0.0             | 8.4                 | 2.4             | 0.0             |
| 4.1                 | 1.2             | 0.1             | 2.6                 | 1.8             | 0.1             | 12.2                | -2.4            | 0.2             | 12.4                | -0.9            | 0.1             | 4.4                 | 1.7             | 0.1             | 7.1                 | 2.5             | 0.0             |
| 6.2                 | 0.8             | 0.1             | 4.6                 | 1.7             | 0.1             | 10.1                | -2.4            | 0.2             | 6.8                 | -0.8            | 0.1             | 4.4                 | 1.7             | 0.1             | 3.8                 | 2.4             | 0.0             |
| 4.5                 | 0.4             | 0.0             | 3.3                 | 1.7             | 0.1             | 12.4                | -2.5            | 0.2             | 10.1                | -0.5            | 0.0             | 2.1                 | 1.7             | 0.1             | 5.5                 | 2.3             | 0.0             |
| 6.7                 | 0.3             | 0.0             | 4.5                 | 1.6             | 0.1             | 13.1                | -2.6            | 0.2             | 11.3                | -0.7            | 0.0             | 2.6                 | 1.6             | 0.1             | 7.5                 | 2.3             | 0.1             |
| 6.6                 | 0.1             | 0.0             | 3.1                 | 1.6             | 0.0             | 12.1                | -2.3            | 0.2             | 12.3                | -0.9            | 0.1             | 3.8                 | 1.6             | 0.1             | 6.7                 | 2.1             | 0.0             |
| 3.3                 | 0.4             | 0.0             | 3.6                 | 1.7             | 0.1             | 12.7                | -2.4            | 0.2             | 12.6                | -1.0            | 0.0             | 4.2                 | 1.7             | 0.0             | 4.7                 | 1.9             | 0.1             |
| 4.4                 | 0.3             | 0.0             | 3.2                 | 1.7             | 0.0             | 13.7                | -2.7            | 0.2             | 11.6                | -1.6            | 0.0             | 4.7                 | 1.7             | 0.1             | 6.4                 | 1.9             | 0.0             |
| 4.9                 | 0.5             | 0.0             | 4.8                 | 1.7             | 0.0             | 13.5                | -2.6            | 0.2             | 14.2                | -1.7            | 0.0             | 4.7                 | 1.6             | 0.1             | 6.7                 | 1.8             | 0.0             |
| 5.7                 | 0.6             | 0.1             | 5.8                 | 1.5             | 0.0             | 13.4                | -2.7            | 0.3             | 10.1                | -2.0            | 0.0             | 4.2                 | 1.6             | 0.1             | 6.5                 | 1.7             | 0.0             |
| 6.8                 | 0.6             | 0.2             | 3.2                 | 1.6             | 0.0             | 11.4                | -2.5            | 0.1             | 12.5                | -1.8            | 0.1             | 3.8                 | 1.0             | 0.1             | 5.8                 | 1.8             | 0.1             |
| 4.5                 | 0.3             | 0.0             | 3.2                 | 1.4             | 0.0             | 13.2                | -2.3            | 0.2             | 12.7                | -1.7            | 0.1             | 5.5                 | 1.1             | 0.1             | 6.1                 | 1.5             | 0.1             |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 5.0                 | 0.8             | 0.1             | 4.5                 | 1.7             | 0.1             | 10.8                | -2.2            | 0.2             | 1.394    | 11.0                | -1.5            | 0.0             | 4.3                 | 1.4             | 0.2             | 4.7                 | 1.5             | 0.1             |
| 4.9                 | 0.5             | 0.1             | 4.2                 | 1.5             | 0.0             | 12.1                | -2.3            | 0.3             | 1.396    | 8.1                 | -1.6            | 0.1             | 3.0                 | 1.4             | 0.2             | 3.7                 | 1.2             | 0.1             |
| 6.1                 | 0.6             | 0.1             | 4.8                 | 1.5             | 0.1             | 12.1                | -2.2            | 0.1             | 1.398    | 12.0                | -1.5            | 0.1             | 4.1                 | 1.1             | 0.2             | 4.9                 | 1.3             | 0.1             |
| 4.0                 | 0.6             | 0.2             | 3.2                 | 1.6             | 0.0             | 14.5                | -2.4            | 0.1             | 1.400    | 14.6                | -1.6            | 0.1             | 3.8                 | 1.3             | 0.2             | 5.5                 | 1.1             | 0.0             |
| 4.4                 | 0.5             | 0.1             | 4.7                 | 1.5             | 0.1             | 13.2                | -2.2            | 0.1             | 1.402    | 14.2                | -1.8            | 0.1             | 3.8                 | 1.6             | 0.2             | 3.2                 | 1.2             | 0.0             |
| 5.7                 | 0.5             | 0.0             | 3.7                 | 1.6             | 0.0             | 10.0                | -2.2            | 0.1             | 1.404    | 12.6                | -2.0            | 0.0             | 3.7                 | 1.5             | 0.2             | 6.2                 | 1.3             | 0.1             |
| 3.7                 | 0.5             | 0.1             | 3.7                 | 1.6             | 0.0             | 12.5                | -2.5            | 0.1             | 1.405    | 12.8                | -2.2            | 0.0             | 3.3                 | 1.5             | 0.2             | 9.1                 | 1.3             | 0.0             |
| 5.7                 | 0.6             | 0.1             | 5.5                 | 1.5             | 0.1             | 7.7                 | -2.6            | 0.1             | 1.407    | 6.5                 | -1.9            | 0.0             | 3.6                 | 1.5             | 0.2             | 5.7                 | 1.2             | 0.0             |
| 6.3                 | 0.7             | 0.0             | 3.4                 | 1.6             | 0.1             | 7.6                 | -2.7            | 0.1             | 1.409    |                     | -1.8            | 0.0             | 4.2                 | 1.6             | 0.2             | 6.1                 | 1.1             | 0.0             |
| 4.0                 | 0.5             | 0.2             | 3.1                 | 1.6             | 0.1             | 6.4                 | -2.7            | 0.1             | 1.411    | 6.0                 | -1.7            | 0.0             | 6.2                 | 1.7             | 0.2             | 7.4                 | 1.1             | 0.0             |
| 4.3                 | 0.7             | 0.2             | 3.0                 | 1.6             | 0.0             | 6.0                 | -2.5            | 0.1             | 1.413    | 6.5                 | -1.4            | 0.0             | 4.6                 | 1.4             | 0.2             | 5.7                 | 1.4             | 0.0             |
| 4.2                 | 0.5             | 0.1             | 4.0                 | 1.6             | 0.0             | 4.5                 | -2.4            | 0.1             | 1.415    | 6.2                 | -1.3            | 0.0             | 5.4                 | 1.3             | 0.3             | 7.3                 | 1.5             | 0.0             |
| 3.8                 | 0.6             | 0.1             | 3.8                 | 1.5             | 0.0             | 4.4                 | -2.2            | 0.1             | 1.417    | 5.8                 | -1.4            | 0.0             | 4.7                 | 1.6             | 0.3             | 5.4                 | 1.6             | 0.0             |
| 6.8                 | 0.5             | 0.1             | 4.9                 | 1.2             | 0.0             | 4.9                 | -2.4            | 0.1             | 1.419    | 4.6                 | -1.5            | 0.0             | 6.2                 | 1.0             | 0.3             | 4.9                 | 1.8             | 0.1             |
| 4.8                 | 0.6             | 0.1             | 3.5                 | 1.1             | 0.1             | 4.5                 | -2.3            | 0.1             | 1.421    | 5.4                 | -1.7            | 0.0             | 4.5                 | 1.2             | 0.3             | 7.4                 | 1.8             | 0.2             |
| 3.9                 | 0.9             | 0.1             | 3.6                 | 1.0             | 0.1             | 4.7                 | -2.1            | 0.1             | 1.423    | 6.7                 | -2.0            | 0.0             | 2.8                 | 1.4             | 0.2             | 6.5                 | 1.6             | 0.1             |
| 4.9                 | 0.6             | 0.1             | 2.8                 | 1.4             | 0.1             | 4.8                 | -1.9            | 0.1             | 1.424    | 5.5                 | -2.1            | 0.0             | 5.9                 | 1.5             | 0.2             | 4.4                 | 1.6             | 0.1             |
| 5.4                 | 0.6             | 0.1             | 3.4                 | 1.8             | 0.1             | 4.6                 | -2.1            | 0.1             | 1.426    | 5.3                 | -1.9            | 0.0             | 3.9                 | 1.2             | 0.1             | 3.8                 | 1.7             | 0.2             |
| 4.7                 | 0.6             | 0.1             | 4.1                 | 1.9             | 0.1             | 5.3                 | -2.4            | 0.1             | 1.428    | 6.1                 | -1.9            | 0.0             | 5.9                 | 1.1             | 0.2             | 5.3                 | 1.4             | 0.1             |
| 6.4                 | 0.5             | 0.1             | 5.1                 | 1.9             | 0.0             | 4.5                 | -2.3            | 0.1             | 1.430    | 6.1                 | -1.7            | 0.0             | 6.1                 | 1.0             | 0.3             | 4.7                 | 1.5             | 0.1             |
| 5.0                 | 0.6             | 0.0             | 4.5                 | 1.9             | 0.1             | 4.9                 | -2.4            | 0.1             | 1.432    | 6.0                 | -2.0            | 0.0             | 4.4                 | 1.1             | 0.3             | 7.1                 | 1.5             | 0.0             |
| 5.3                 | 0.4             | 0.1             | 5.0                 | 1.8             | 0.0             | 4.7                 | -2.3            | 0.0             | 1.434    | 5.8                 | -2.0            | 0.0             | 3.7                 | 1.0             | 0.2             | 6.5                 | 1.5             | 0.0             |
| 4.9                 | 0.5             | 0.1             | 5.1                 | 1.8             | 0.1             | 5.6                 | -1.9            | 0.0             | 1.436    | 5.9                 | -2.3            | 0.1             | 4.8                 | 1.0             | 0.3             | 5.2                 | 1.7             | 0.0             |
| 6.4                 | 0.7             | 0.1             | 4.4                 | 1.8             | 0.0             | 5.6                 | -1.9            | 0.0             | 1.438    | 6.5                 | -2.4            | 0.1             | 3.8                 | 0.9             | 0.2             | 6.6                 | 2.0             | 0.0             |
| 5.1                 | 0.4             | 0.1             | 4.9                 | 1.9             | 0.1             | 5.6                 | -1.5            | 0.0             | 1.440    | 6.3                 | -2.6            | 0.1             | 4.8                 | 1.1             | 0.1             | 5.9                 | 2.0             | 0.0             |
| 4.7                 | 0.4             | 0.0             | 3.6                 | 1.9             | 0.1             | 2.9                 | -1.5            | 0.0             | 1.441    | 5.2                 | -2.3            | 0.1             | 4.2                 | 1.2             | 0.2             | 5.1                 | 2.1             | 0.1             |
| 5.6                 | 0.1             | 0.1             | 3.7                 | 2.0             | 0.1             | 4.1                 | -1.6            | 0.0             | 1.443    | 6.5                 | -2.2            | 0.1             | 3.8                 | 1.3             | 0.3             | 4.5                 | 1.9             | 0.1             |
| 5.1                 | 0.1             | 0.1             | 3.7                 | 2.4             | 0.1             | 10.1                | -1.7            | 0.0             | 1.445    | 6.2                 | -2.1            | 0.0             | 4.0                 | 1.2             | 0.3             | 4.4                 | 2.0             | 0.1             |
| 5.9                 | 0.3             | 0.0             | 4.0                 | 2.2             | 0.1             | 5.6                 | -1.8            | 0.0             | 1.447    | 6.3                 | -1.8            | 0.1             | 3.4                 | 1.1             | 0.3             | 6.0                 | 1.7             | 0.0             |
| 7.6                 | 0.3             | 0.1             | 3.4                 | 2.1             | 0.1             | 6.1                 | -1.7            | 0.0             | 1.449    | 5.4                 | -1.8            | 0.1             | 2.9                 | 1.1             | 0.3             | 5.8                 | 1.9             | 0.1             |
| 5.2                 | 0.2             | 0.1             | 2.7                 | 2.0             | 0.1             | 5.4                 | -1.5            | 0.0             | 1.451    | 6.4                 | -1.8            | 0.1             | 4.5                 | 1.1             | 0.3             | 4.9                 | 2.2             | 0.1             |
| 6.2                 | 0.5             | 0.2             | 2.7                 | 2.0             | 0.0             | 5.0                 | -1.4            | 0.0             | 1.453    | 6.6                 | -1.9            | 0.1             | 5.3                 | 1.2             | 0.3             | 4.8                 | 2.2             | 0.1             |
| 6.2                 | 0.3             | 0.2             | 3.7                 | 1.9             | 0.0             | 4.7                 | -1.5            | 0.0             | 1.455    | 4.9                 | -1.8            | 0.1             | 3.6                 | 1.2             | 0.3             | 5.3                 | 2.2             | 0.1             |
| 4.9                 | 0.4             | 0.2             | 4.2                 | 2.1             | 0.0             | 6.8                 | -1.6            | 0.0             | 1.457    | 5.4                 | -2.1            | 0.0             | 4.2                 | 1.5             | 0.3             | 6.9                 | 2.0             | 0.1             |
| 5.8                 | 0.4             | 0.2             | 4.0                 | 2.4             | 0.0             | 5.1                 | -2.0            | 0.0             | 1.459    | 6.2                 | -2.1            | 0.0             | 5.0                 | 1.4             | 0.3             | 7.5                 | 2.1             | 0.1             |
| 4.3                 | 0.0             | 0.2             | 4.0                 | 2.4             | 0.0             | 4.3                 | -2.3            | 0.0             | 1.460    | 6.1                 | -2.2            | 0.1             | 3.6                 | 1.5             | 0.3             | 4.8                 | 2.0             | 0.1             |
| 5.3                 | -0.1            | 0.1             | 3.9                 | 2.4             | 0.0             | 5.9                 | -2.4            | 0.0             | 1.462    | 3.1                 | -2.3            | 0.1             | 4.3                 | 1.5             | 0.3             | 4.9                 | 1.8             | 0.1             |
| 4.9                 | -0.2            | 0.2             | 2.8                 | 2.2             | 0.0             | 5.9                 | -2.3            | 0.1             | 1.464    | 5.3                 | -2.2            | 0.2             | 5.6                 | 1.4             | 0.3             | 3.7                 | 1.8             | 0.1             |
| 3.7                 | 0.1             | 0.2             | 2.8                 | 2.1             | 0.1             | 5.9                 | -2.2            | 0.0             | 1.466    | 6.4                 | -2.0            | 0.1             | 3.6                 | 1.4             | 0.3             | 4.0                 | 2.0             | 0.1             |
| 7.5                 | 0.1             | 0.1             | 4.3                 | 1.9             | 0.2             | 4.2                 | -2.0            | 0.1             | 1.468    | 5.7                 | -1.9            | 0.0             | 3.6                 | 1.4             | 0.3             | 3.5                 | 1.9             | 0.1             |
| 4.5                 | 0.0             | 0.2             | 3.5                 | 1.6             | 0.0             | 4.0                 | -1.8            | 0.1             | 1.470    | 5.8                 | -2.0            | 0.1             | 4.5                 | 1.3             | 0.3             | 8.0                 | 1.8             | 0.1             |
| 7.1                 | 0.0             | 0.1             | 4.8                 | 1.8             | 0.1             | 6.6                 | -1.5            | 0.1             | 1.472    | 6.1                 | -1.9            | 0.0             | 5.2                 | 1.1             | 0.3             | 5.4                 | 1.7             | 0.1             |
| 6.1                 | 0.2             | 0.2             | 4.0                 | 2.0             | 0.1             | 5.4                 | -1.4            | 0.2             | 1.474    | 7.6                 | -1.8            | 0.0             | 6.2                 | 1.0             | 0.2             | 6.6                 | 1.7             | 0.1             |
| 6.1                 | 0.3             | 0.2             | 4.5                 | 2.0             | 0.1             | 6.3                 | -1.5            | 0.1             | 1.476    | 4.9                 | -1.9            | 0.2             | 3.3                 | 1.2             | 0.2             | 3.9                 | 1.7             | 0.1             |
| 5.5                 | 0.5             | 0.1             | 4.7                 | 2.0             | 0.1             | 5.7                 | -1.7            | 0.2             | 1.477    | 5.1                 | -2.1            | 0.2             | 5.7                 | 1.2             | 0.2             | 5.6                 | 1.6             | 0.1             |
| 5.3                 | 0.6             | 0.1             | 3.2                 | 2.0             | 0.2             | 5.1                 | -1.9            | 0.2             | 1.479    | 7.3                 | -2.2            | 0.1             | 5.1                 | 1.5             | 0.2             | 4.8                 | 1.6             | 0.1             |



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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 5.6                 | 0.6             | 0.1             | 3.6                 | 1.8             | 0.1             | 5.6                 | -2.0            | 0.1             | 1.481    | 5.5                 | -2.2            | 0.3             | 3.6                 | 1.7             | 0.2             | 5.1                 | 1.6             | 0.2             |
| 5.4                 | 0.7             | 0.1             | 5.1                 | 1.8             | 0.2             | 5.4                 | -2.1            | 0.1             | 1.483    | 7.8                 | -2.2            | 0.2             | 2.8                 | 1.9             | 0.3             | 4.0                 | 1.2             | 0.1             |
| 4.8                 | 0.7             | 0.2             | 5.3                 | 1.8             | 0.2             | 5.5                 | -2.3            | 0.1             | 1.485    | 6.0                 | -2.3            | 0.1             | 2.8                 | 2.1             | 0.3             | 5.4                 | 1.6             | 0.1             |
| 3.6                 | 0.7             | 0.2             | 3.5                 | 2.0             | 0.2             | 5.6                 | -2.3            | 0.2             | 1.487    | 7.1                 | -2.2            | 0.2             | 5.8                 | 2.4             | 0.4             | 4.2                 | 1.7             | 0.1             |
| 5.3                 | 0.8             | 0.1             | 4.3                 | 1.7             | 0.1             | 6.0                 | -2.4            | 0.1             | 1.489    | 4.1                 | -2.4            | 0.1             | 3.4                 | 2.7             | 0.3             | 5.2                 | 1.6             | 0.2             |
| 5.4                 | 0.8             | 0.2             | 4.2                 | 1.7             | 0.2             | 5.2                 | -2.3            | 0.2             | 1.491    | 5.6                 | -2.3            | 0.1             | 3.4                 | 2.6             | 0.3             | 5.3                 | 1.7             | 0.1             |
| 6.8                 | 0.8             | 0.2             | 2.8                 | 1.5             | 0.2             | 5.1                 | -2.1            | 0.2             | 1.493    | 5.5                 | -2.5            | 0.1             | 4.7                 | 2.5             | 0.3             | 3.5                 | 1.7             | 0.2             |
| 4.3                 | 0.7             | 0.1             | 4.6                 | 1.6             | 0.3             | 5.9                 | -1.9            | 0.1             | 1.495    | 6.1                 | -2.5            | 0.1             | 2.7                 | 2.5             | 0.3             | 4.3                 | 1.7             | 0.2             |
| 5.9                 | 0.9             | 0.1             | 4.2                 | 1.6             | 0.1             | 5.9                 | -1.8            | 0.1             | 1.496    | 4.4                 | -2.8            | 0.1             | 4.2                 | 2.2             | 0.3             | 4.3                 | 1.6             | 0.1             |
| 3.3                 | 0.6             | 0.1             | 3.6                 | 1.5             | 0.1             | 5.8                 | -1.8            | 0.2             | 1.498    | 6.3                 | -2.6            | 0.2             | 5.5                 | 2.0             | 0.3             | 4.5                 | 1.7             | 0.1             |
| 4.4                 | 0.8             | 0.1             | 4.3                 | 1.4             | 0.1             | 4.5                 | -1.7            | 0.1             | 1.500    | 7.1                 | -2.6            | 0.1             | 4.9                 | 1.6             | 0.3             | 3.8                 | 1.6             | 0.1             |
| 7.6                 | 1.0             | 0.1             | 5.3                 | 1.5             | 0.1             | 5.3                 | -1.7            | 0.1             | 1.502    | 5.9                 | -2.5            | 0.1             | 4.9                 | 1.2             | 0.3             | 3.7                 | 1.7             | 0.1             |
| 6.0                 | 0.8             | 0.0             | 5.6                 | 1.5             | 0.1             | 6.4                 | -2.0            | 0.1             | 1.504    | 5.7                 | -2.4            | 0.1             | 3.8                 | 1.1             | 0.3             | 3.8                 | 1.7             | 0.1             |
| 4.7                 | 0.9             | 0.1             | 5.8                 | 1.4             | 0.1             | 4.3                 | -2.0            | 0.1             | 1.506    | 6.8                 | -2.2            | 0.3             | 4.0                 | 1.2             | 0.3             | 4.2                 | 1.7             | 0.1             |
| 5.0                 | 1.1             | 0.1             | 5.0                 | 1.4             | 0.2             | 7.0                 | -2.2            | 0.2             | 1.508    | 5.4                 | -2.2            | 0.3             | 5.9                 | 1.4             | 0.3             | 5.0                 | 1.6             | 0.2             |
| 6.6                 | 1.0             | 0.1             | 4.2                 | 1.6             | 0.2             | 4.2                 | -2.2            | 0.2             | 1.510    | 6.2                 | -2.2            | 0.2             | 4.4                 | 1.7             | 0.3             | 3.6                 | 1.4             | 0.2             |
| 6.2                 | 0.8             | 0.1             | 3.3                 | 1.8             | 0.2             | 4.7                 | -2.3            | 0.1             | 1.512    | 5.1                 | -2.1            | 0.3             | 7.2                 | 1.6             | 0.3             | 4.1                 | 1.2             | 0.2             |
| 4.9                 | 1.1             | 0.0             | 4.6                 | 1.8             | 0.2             | 5.5                 | -2.3            | 0.1             | 1.513    | 6.4                 | -2.0            | 0.3             | 6.0                 | 1.6             | 0.3             | 3.1                 | 1.5             | 0.1             |
| 6.3                 | 1.2             | 0.2             | 3.5                 | 1.8             | 0.2             | 4.5                 | -2.4            | 0.2             | 1.515    | 5.7                 | -2.0            | 0.3             | 4.7                 | 1.4             | 0.3             | 2.8                 | 1.6             | 0.2             |
| 8.2                 | 1.3             | 0.2             | 4.1                 | 1.8             | 0.1             | 5.6                 | -2.6            | 0.2             | 1.517    | 5.6                 | -2.1            | 0.3             | 4.6                 | 1.2             | 0.3             | 2.8                 | 1.9             | 0.1             |
| 2.8                 | 1.2             | 0.2             | 4.9                 | 2.0             | 0.2             | 5.0                 | -2.7            | 0.2             | 1.519    | 7.2                 | -2.1            | 0.3             | 4.2                 | 0.9             | 0.4             | 3.7                 | 1.9             | 0.1             |
| 4.1                 | 1.3             | 0.1             | 3.5                 | 2.0             | 0.1             | 5.0                 | -2.7            | 0.1             | 1.521    | 7.2                 | -2.4            | 0.3             | 2.9                 | 1.4             | 0.4             | 4.4                 | 1.9             | 0.2             |
| 3.2                 | 1.5             | 0.1             | 4.1                 | 2.0             | 0.1             | 3.8                 | -2.5            | 0.1             | 1.523    | 6.7                 | -2.3            | 0.3             | 4.2                 | 1.0             | 0.5             | 6.0                 | 2.0             | 0.2             |
| 5.4                 | 1.5             | 0.1             | 6.0                 | 1.8             | 0.2             | 5.1                 | -2.4            | 0.1             | 1.525    | 4.3                 | -2.1            | 0.3             | 7.0                 | 1.0             | 0.5             | 4.5                 | 2.0             | 0.2             |
| 4.0                 | 1.6             | 0.1             | 5.2                 | 1.7             | 0.2             | 5.2                 | -2.0            | 0.2             | 1.527    | 6.9                 | -2.1            | 0.3             | 5.1                 | 0.8             | 0.5             | 4.9                 | 2.0             | 0.2             |
| 2.7                 | 1.8             | 0.1             | 3.4                 | 1.6             | 0.2             | 4.5                 | -2.2            | 0.2             | 1.529    | 6.5                 | -2.2            | 0.3             | 7.1                 | 0.9             | 0.4             | 5.0                 | 2.1             | 0.3             |
| 4.7                 | 1.8             | 0.0             | 4.6                 | 1.7             | 0.2             | 7.2                 | -2.2            | 0.2             | 1.530    | 5.9                 | -2.4            | 0.3             | 4.9                 | 1.0             | 0.4             | 7.4                 | 2.4             | 0.3             |
| 4.5                 | 1.7             | 0.0             | 6.6                 | 1.7             | 0.2             | 4.6                 | -1.8            | 0.1             | 1.532    | 6.6                 | -2.7            | 0.3             | 5.0                 | 1.0             | 0.5             | 5.4                 | 1.6             | 0.3             |
| 5.2                 | 2.0             | 0.0             | 4.8                 | 1.6             | 0.2             | 5.9                 | -1.7            | 0.2             | 1.534    | 7.6                 | -2.8            | 0.3             | 7.9                 | 0.9             | 0.5             | 5.4                 | 2.0             | 0.4             |
| 4.8                 | 2.4             | 0.1             | 6.0                 | 1.5             | 0.2             | 6.5                 | -1.8            | 0.3             | 1.536    | 6.2                 | -2.5            | 0.3             | 5.6                 | 1.3             | 0.6             | 5.0                 | 2.0             | 0.5             |
| 3.1                 | 2.6             | 0.0             | 5.3                 | 1.6             | 0.2             | 3.3                 | -2.0            | 0.3             | 1.538    | 5.4                 | -2.5            | 0.3             | 8.4                 | 1.1             | 0.6             | 5.3                 | 2.2             | 0.4             |
| 4.3                 | 2.5             | 0.0             | 6.2                 | 1.6             | 0.2             | 5.7                 | -2.3            | 0.2             | 1.540    | 5.9                 | -2.5            | 0.3             | 6.4                 | 1.1             | 0.5             | 5.2                 | 2.1             | 0.3             |
| 2.3                 | 2.6             | 0.0             | 5.1                 | 1.7             | 0.0             | 4.8                 | -2.4            | 0.0             | 1.542    | 7.8                 | -2.3            | 0.5             | 5.6                 | 1.0             | 0.5             | 5.7                 | 2.3             | 0.2             |
| 4.7                 | 2.3             | 0.1             | 6.1                 | 1.7             | 0.1             | 6.2                 | -2.3            | 0.0             | 1.544    | 5.1                 | -2.3            | 0.3             | 5.9                 | 1.0             | 0.4             | 5.5                 | 2.3             | 0.1             |
| 4.1                 | 2.2             | 0.0             | 6.3                 | 1.9             | 0.2             | 5.2                 | -2.1            | 0.1             | 1.546    | 6.5                 | -1.9            | 0.2             | 5.7                 | 1.0             | 0.4             | 4.5                 | 2.2             | 0.1             |
| 3.7                 | 2.1             | 0.0             | 5.8                 | 2.0             | 0.2             | 8.2                 | -1.7            | 0.1             | 1.548    | 7.6                 | -1.7            | 0.2             | 4.8                 | 0.9             | 0.4             | 3.9                 | 2.2             | 0.1             |
| 3.7                 | 2.3             | 0.1             | 5.4                 | 2.1             | 0.2             | 4.8                 | -1.1            | 0.1             | 1.549    | 6.2                 | -1.9            | 0.2             | 4.6                 | 1.3             | 0.4             | 4.8                 | 2.1             | 0.0             |
| 4.5                 | 2.1             | 0.2             | 6.0                 | 2.1             | 0.2             | 5.3                 | -0.7            | 0.2             | 1.551    | 6.3                 | -2.0            | 0.0             | 3.8                 | 1.4             | 0.4             | 5.3                 | 1.9             | 0.0             |
| 5.3                 | 1.9             | 0.0             | 5.9                 | 1.9             | 0.2             | 5.8                 | -0.9            | 0.2             | 1.553    | 5.8                 | -2.3            | 0.1             | 6.6                 | 1.3             | 0.4             | 4.0                 | 2.0             | 0.0             |
| 4.4                 | 1.6             | 0.2             | 5.1                 | 1.9             | 0.2             | 5.3                 | -1.3            | 0.2             | 1.555    | 6.0                 | -2.3            | 0.1             | 6.0                 | 1.6             | 0.3             | 4.5                 | 2.1             | 0.1             |
| 5.2                 | 1.4             | 0.2             | 5.1                 | 1.8             | 0.4             | 4.2                 | -1.5            | 0.3             | 1.557    | 6.2                 | -2.3            | 0.2             | 5.8                 | 1.7             | 0.4             | 5.4                 | 2.0             | 0.0             |
| 4.3                 | 1.4             | 0.0             | 5.2                 | 1.9             | 0.2             | 5.5                 | -1.8            | 0.5             | 1.559    | 5.5                 | -2.1            | 0.1             | 4.5                 | 1.7             | 0.3             | 4.7                 | 2.2             | 0.0             |
| 5.4                 | 1.2             | 0.1             | 4.9                 | 1.9             | 0.2             | 4.6                 | -2.4            | 0.4             | 1.561    | 5.3                 | -1.9            | 0.1             | 4.2                 | 1.9             | 0.4             | 5.0                 | 2.5             | 0.2             |
| 6.5                 | 1.4             | 0.2             | 5.2                 | 1.6             | 0.3             | 5.7                 | -2.6            | 0.4             | 1.563    | 4.9                 | -2.1            | 0.1             | 5.9                 | 1.9             | 0.3             | 6.1                 | 2.2             | 0.1             |
| 5.4                 | 1.5             | 0.2             | 6.2                 | 1.5             | 0.3             | 6.5                 | -2.5            | 0.4             | 1.565    | 5.9                 | -2.2            | 0.1             | 4.2                 | 1.7             | 0.3             | 6.8                 | 2.1             | 0.1             |
| 4.5                 | 1.6             | 0.2             | 5.5                 | 1.7             | 0.3             | 5.2                 | -2.4            | 0.2             | 1.566    | 5.7                 | -2.7            | 0.1             | 5.2                 | 1.4             | 0.3             | 5.8                 | 2.0             | 0.1             |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 4.5                 | 1.5             | 0.3             | 4.9                 | 1.6             | 0.2             | 5.2                 | -2.1            | 0.3             | 1.568    | 5.4                 | -3.2            | 0.2             | 5.0                 | 1.5             | 0.2             | 6.0                 | 1.9             | 0.1             |
| 6.0                 | 1.6             | 0.2             | 4.4                 | 1.8             | 0.2             | 5.3                 | -2.3            | 0.3             | 1.570    | 5.5                 | -2.9            | 0.1             | 3.2                 | 1.5             | 0.2             | 4.7                 | 1.9             | 0.1             |
| 4.0                 | 1.8             | 0.3             | 5.8                 | 1.7             | 0.3             | 4.3                 | -2.3            | 0.4             | 1.572    | 6.0                 | -2.9            | 0.1             | 4.3                 | 1.5             | 0.2             | 3.3                 | 1.8             | 0.1             |
| 6.5                 | 2.1             | 0.3             | 4.2                 | 2.0             | 0.3             | 6.4                 | -2.4            | 0.3             | 1.574    | 7.7                 | -2.3            | 0.1             | 5.2                 | 1.5             | 0.1             | 3.9                 | 1.6             | 0.1             |
| 5.6                 | 2.2             | 0.4             | 5.7                 | 2.1             | 0.3             | 8.4                 | -2.5            | 0.3             | 1.576    | 6.8                 | -2.5            | 0.1             | 3.7                 | 1.7             | 0.2             | 6.1                 | 1.6             | 0.2             |
| 4.4                 | 2.5             | 0.2             | 6.3                 | 2.2             | 0.3             | 10.3                | -2.4            | 0.2             | 1.578    | 6.7                 | -2.5            | 0.2             | 5.2                 | 1.6             | 0.1             | 6.2                 | 1.6             | 0.2             |
| 4.8                 | 2.3             | 0.2             | 3.9                 | 1.9             | 0.3             | 14.7                | -2.5            | 0.3             | 1.580    | 7.0                 | -2.3            | 0.2             | 4.0                 | 1.7             | 0.1             | 5.6                 | 1.7             | 0.2             |
| 4.3                 | 2.6             | 0.3             | 6.0                 | 1.4             | 0.2             | 16.7                | -2.3            | 0.2             | 1.582    | 7.3                 | -2.5            | 0.2             | 3.9                 | 1.8             | 0.1             | 3.7                 | 1.6             | 0.2             |
| 6.6                 | 2.6             | 0.3             | 4.7                 | 1.6             | 0.2             | 14.9                | -2.2            | 0.2             | 1.584    | 4.3                 | -2.9            | 0.2             | 5.8                 | 1.8             | 0.1             | 5.6                 | 1.8             | 0.2             |
| 6.2                 | 2.5             | 0.3             | 5.4                 | 1.8             | 0.3             | 15.1                | -2.1            | 0.2             | 1.585    | 9.3                 | -2.9            | 0.2             | 4.0                 | 1.7             | 0.1             | 4.5                 | 1.6             | 0.2             |
| 5.3                 | 2.6             | 0.3             | 3.3                 | 1.6             | 0.3             | 11.7                | -2.1            | 0.2             | 1.587    | 8.8                 | -2.6            | 0.1             | 5.7                 | 1.8             | 0.2             | 3.6                 | 1.6             | 0.2             |
| 5.0                 | 2.9             | 0.2             | 6.1                 | 1.8             | 0.2             | 11.6                | -1.7            | 0.2             | 1.589    | 9.1                 | -2.5            | 0.2             | 3.8                 | 2.1             | 0.1             | 3.6                 | 1.5             | 0.2             |
| 3.6                 | 2.5             | 0.4             | 5.0                 | 1.9             | 0.1             | 12.3                | -1.8            | 0.3             | 1.591    | 9.1                 | -2.4            | 0.2             | 6.1                 | 2.0             | 0.1             | 7.2                 | 1.7             | 0.2             |
| 5.7                 | 2.5             | 0.3             | 4.4                 | 1.8             | 0.2             | 12.0                | -2.0            | 0.4             | 1.593    | 7.6                 | -2.3            | 0.2             | 3.9                 | 2.0             | 0.1             | 3.6                 | 1.7             | 0.0             |
| 3.3                 | 2.3             | 0.2             | 6.0                 | 1.9             | 0.1             | 10.2                | -1.9            | 0.4             | 1.595    | 9.3                 | -2.3            | 0.2             | 5.6                 | 1.9             | 0.1             | 6.9                 | 1.5             | 0.2             |
| 5.7                 | 2.1             | 0.2             | 6.1                 | 2.0             | 0.0             | 12.5                | -1.7            | 0.4             | 1.597    | 10.2                | -2.0            | 0.2             | 6.4                 | 2.2             | 0.1             | 4.5                 | 1.5             | 0.2             |
| 5.1                 | 1.8             | 0.2             | 4.9                 | 2.1             | 0.0             | 10.4                | -1.9            | 0.4             | 1.599    | 8.5                 | -2.0            | 0.1             | 5.5                 | 2.2             | 0.2             | 5.2                 | 1.6             | 0.2             |
| 3.8                 | 3.0             | 0.2             | 4.6                 | 2.2             | 0.0             | 8.7                 | -2.0            | 0.4             | 1.601    | 8.9                 | -1.7            | 0.1             | 5.3                 | 2.2             | 0.2             | 5.1                 | 1.5             | 0.2             |
| 3.6                 | 1.8             | 0.2             | 2.6                 | 2.3             | 0.0             | 13.3                | -2.1            | 0.3             | 1.602    | 8.7                 | -1.6            | 0.2             | 5.6                 | 2.3             | 0.2             | 5.9                 | 1.5             | 0.2             |
| 7.1                 | 1.6             | 0.1             | 4.0                 | 2.5             | 0.0             | 13.6                | -2.4            | 0.4             | 1.604    | 9.3                 | -1.9            | 0.1             | 5.2                 | 2.4             | 0.2             | 7.1                 | 1.6             | 0.1             |
| 5.8                 | 1.4             | 0.1             | 3.6                 | 2.4             | 0.0             | 11.7                | -2.5            | 0.4             | 1.606    | 9.9                 | -2.3            | 0.1             | 5.1                 | 2.3             | 0.1             | 6.2                 | 1.4             | 0.2             |
| 4.7                 | 1.5             | 0.2             | 5.3                 | 2.1             | 0.0             | 13.3                | -2.6            | 0.4             | 1.608    | 8.3                 | -2.5            | 0.1             | 3.5                 | 2.8             | 0.3             | 5.8                 | 1.3             | 0.1             |
| 6.5                 | 1.4             | 0.2             | 5.5                 | 1.9             | 0.0             | 14.4                | -2.7            | 0.4             | 1.610    | 8.8                 | -2.7            | 0.2             | 3.1                 | 2.8             | 0.3             | 6.8                 | 1.3             | 0.1             |
| 2.3                 | 1.6             | 0.2             | 4.4                 | 2.0             | 0.0             | 15.8                | -2.7            | 0.4             | 1.612    | 10.0                | -2.8            | 0.2             | 5.7                 | 2.8             | 0.2             | 5.0                 | 1.4             | 0.0             |
| 4.2                 | 1.6             | 0.2             | 3.7                 | 1.9             | 0.0             | 12.6                | -2.7            | 0.3             | 1.614    | 8.0                 | -3.1            | 0.2             | 4.2                 | 2.8             | 0.2             | 6.0                 | 1.4             | 0.1             |
| 2.9                 | 1.6             | 0.2             | 3.5                 | 1.7             | 0.0             | 13.9                | -2.7            | 0.3             | 1.616    | 9.5                 | -3.0            | 0.1             | 3.9                 | 2.8             | 0.2             | 5.0                 | 1.5             | 0.0             |
| 7.0                 | 1.7             | 0.3             | 3.5                 | 2.0             | 0.0             | 10.2                | -2.5            | 0.3             | 1.618    | 8.7                 | -2.7            | 0.2             | 3.9                 | 2.9             | 0.3             | 3.8                 | 1.4             | 0.1             |
| 4.4                 | 1.7             | 0.2             | 4.1                 | 1.9             | 0.0             | 12.3                | -2.6            | 0.3             | 1.620    | 9.3                 | -2.3            | 0.2             | 3.7                 | 2.9             | 0.3             | 5.9                 | 0.9             | 0.2             |
| 3.5                 | 1.7             | 0.3             | 4.5                 | 1.9             | 0.0             | 13.0                | -2.5            | 0.2             | 1.621    | 7.6                 | -1.6            | 0.2             | 4.1                 | 2.9             | 0.3             | 6.0                 | 1.0             | 0.1             |
| 2.9                 | 1.6             | 0.3             | 3.9                 | 1.9             | 0.0             | 11.0                | -2.5            | 0.2             | 1.623    | 8.5                 | -1.5            | 0.1             | 5.5                 | 2.8             | 0.3             | 6.4                 | 0.8             | 0.1             |
| 3.7                 | 1.4             | 0.2             | 4.3                 | 1.9             | 0.1             | 12.4                | -2.3            | 0.3             | 1.625    | 10.3                | -2.4            | 0.2             | 5.7                 | 3.0             | 0.3             | 5.5                 | 0.9             | 0.1             |
| 3.8                 | 1.7             | 0.2             | 4.0                 | 1.8             | 0.1             | 12.3                | -2.1            | 0.2             | 1.627    | 7.9                 | -2.6            | 0.2             | 6.6                 | 2.8             | 0.2             | 5.0                 | 1.2             | 0.1             |
| 3.5                 | 1.9             | 0.2             | 3.6                 | 2.0             | 0.1             | 14.9                | -2.2            | 0.2             | 1.629    | 6.6                 | -2.5            | 0.3             | 6.5                 | 2.7             | 0.3             | 8.1                 | 1.2             | 0.1             |
| 5.1                 | 2.3             | 0.1             | 4.9                 | 1.9             | 0.1             | 5.7                 | -2.4            | 0.1             | 1.631    | 8.2                 | -2.1            | 0.3             | 4.5                 | 2.6             | 0.2             | 6.3                 | 1.4             | 0.1             |
| 5.1                 | 2.2             | 0.1             | 4.0                 | 1.8             | 0.1             | 4.1                 | -2.6            | 0.2             | 1.633    | 7.0                 | -2.0            | 0.2             | 3.5                 | 2.5             | 0.2             | 5.5                 | 1.8             | 0.1             |
| 7.3                 | 2.2             | 0.1             | 5.4                 | 1.8             | 0.2             | 6.9                 | -2.4            | 0.1             | 1.635    | 6.6                 | -2.1            | 0.2             | 4.4                 | 2.4             | 0.2             | 7.0                 | 1.8             | 0.1             |
| 7.6                 | 2.1             | 0.1             | 4.4                 | 1.8             | 0.1             | 5.3                 | -2.4            | 0.2             | 1.637    | 7.0                 | -2.0            | 0.2             | 7.2                 | 2.4             | 0.1             | 6.5                 | 1.9             | 0.1             |
| 7.0                 | 2.0             | 0.1             | 4.8                 | 1.8             | 0.1             | 6.7                 | -2.3            | 0.2             | 1.638    | 6.2                 | -2.3            | 0.2             | 3.9                 | 2.4             | 0.1             | 6.5                 | 1.8             | 0.1             |
| 5.1                 | 2.1             | 0.0             | 4.9                 | 1.8             | 0.1             | 6.1                 | -2.3            | 0.2             | 1.640    | 6.2                 | -2.4            | 0.1             | 6.0                 | 2.6             | 0.2             | 6.5                 | 1.8             | 0.1             |
| 3.8                 | 2.0             | 0.1             | 5.1                 | 1.7             | 0.1             | 5.1                 | -2.6            | 0.1             | 1.642    | 6.4                 | -2.6            | 0.1             | 4.2                 | 2.8             | 0.1             | 4.1                 | 1.8             | 0.1             |
| 5.8                 | 2.1             | 0.0             | 3.8                 | 1.7             | 0.2             | 3.7                 | -2.7            | 0.1             | 1.644    | 6.4                 | -2.4            | 0.1             | 7.8                 | 2.7             | 0.1             | 7.1                 | 1.7             | 0.3             |
| 3.8                 | 2.0             | 0.0             | 4.3                 | 1.5             | 0.2             | 8.1                 | -2.6            | 0.2             | 1.646    | 6.4                 | -2.1            | 0.2             | 5.1                 | 2.8             | 0.1             | 5.2                 | 1.4             | 0.2             |
| 3.6                 | 2.3             | 0.0             | 4.0                 | 1.4             | 0.2             | 5.3                 | -2.5            | 0.2             | 1.648    | 5.8                 | -2.1            | 0.1             | 6.4                 | 2.7             | 0.1             | 7.5                 | 1.2             | 0.2             |
| 3.7                 | 2.3             | 0.1             | 3.8                 | 1.2             | 0.2             | 6.0                 | -2.2            | 0.2             | 1.650    | 5.9                 | -2.1            | 0.2             | 7.0                 | 2.5             | 0.1             | 3.3                 | 1.3             | 0.2             |
| 3.7                 | 1.8             | 0.2             | 5.8                 | 1.4             | 0.2             | 6.6                 | -2.0            | 0.3             | 1.652    | 6.0                 | -2.0            | 0.1             | 4.4                 | 2.3             | 0.1             | 4.5                 | 1.2             | 0.1             |
| 4.5                 | 1.7             | 0.1             | 5.7                 | 1.4             | 0.2             | 5.6                 | -1.8            | 0.2             | 1.654    | 7.2                 | -1.8            | 0.1             | 7.0                 | 2.2             | 0.1             | 4.8                 | 1.2             | 0.1             |

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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 4.1                 | 1.9             | 0.2             | 6.6                 | 1.3             | 0.2             | 4.6                 | -1.7            | 0.2             | 1.655    | 6.0                 | -2.2            | 0.1             | 5.7                 | 2.3             | 0.1             | 4.4                 | 1.1             | 0.1             |
| 4.5                 | 2.3             | 0.2             | 4.7                 | 1.2             | 0.2             | 5.4                 | -1.6            | 0.3             | 1.657    | 7.4                 | -2.3            | 0.2             | 4.6                 | 2.6             | 0.2             | 5.9                 | 0.9             | 0.0             |
| 4.1                 | 2.2             | 0.1             | 6.4                 | 1.3             | 0.2             | 5.6                 | -1.7            | 0.0             | 1.659    | 6.5                 | -2.3            | 0.1             | 5.3                 | 2.7             | 0.1             | 5.2                 | 0.8             | 0.1             |
| 5.7                 | 2.0             | 0.2             | 5.9                 | 1.6             | 0.2             | 5.2                 | -1.8            | 0.0             | 1.661    | 6.6                 | -2.3            | 0.2             | 5.8                 | 2.8             | 0.2             | 3.9                 | 0.7             | 0.1             |
| 5.1                 | 2.0             | 0.1             | 3.8                 | 1.6             | 0.2             | 5.9                 | -2.1            | 0.3             | 1.663    | 6.8                 | -2.2            | 0.2             | 6.1                 | 2.8             | 0.2             | 7.1                 | 0.8             | 0.1             |
| 5.8                 | 1.9             | 0.1             | 5.5                 | 1.6             | 0.2             | 5.2                 | -2.0            | 0.1             | 1.665    | 6.1                 | -2.2            | 0.2             | 5.2                 | 2.9             | 0.2             | 6.3                 | 0.7             | 0.1             |
| 4.1                 | 2.0             | 0.1             | 5.9                 | 1.6             | 0.2             | 4.8                 | -2.5            | 0.2             | 1.667    | 6.4                 | -2.0            | 0.2             | 6.4                 | 2.9             | 0.3             | 6.6                 | 0.8             | 0.1             |
| 6.9                 | 2.2             | 0.1             | 4.0                 | 1.5             | 0.2             | 6.0                 | -2.5            | 0.2             | 1.669    | 6.6                 | -2.1            | 0.2             | 5.9                 | 3.0             | 0.2             | 5.7                 | 1.1             | 0.1             |
| 7.0                 | 2.2             | 0.1             | 7.4                 | 1.4             | 0.2             | 4.9                 | -2.3            | 0.2             | 1.671    | 6.7                 | -2.0            | 0.2             | 5.9                 | 2.9             | 0.2             | 7.1                 | 1.0             | 0.2             |
| 8.4                 | 2.3             | 0.1             | 4.0                 | 1.4             | 0.2             | 4.7                 | -2.3            | 0.1             | 1.673    | 6.4                 | -1.8            | 0.2             | 6.6                 | 2.9             | 0.3             | 6.1                 | 1.1             | 0.2             |
| 6.1                 | 2.3             | 0.1             | 4.1                 | 1.8             | 0.2             | 5.6                 | -2.2            | 0.1             | 1.674    | 5.8                 | -1.8            | 0.2             | 6.2                 | 3.0             | 0.3             | 4.4                 | 1.1             | 0.2             |
| 7.8                 | 2.1             | 0.1             | 4.0                 | 1.6             | 0.2             | 5.4                 | -2.1            | 0.1             | 1.676    | 6.8                 | -1.8            | 0.2             | 6.4                 | 2.7             | 0.3             | 7.7                 | 1.3             | 0.1             |
| 7.3                 | 1.9             | 0.2             | 3.7                 | 1.6             | 0.2             | 5.1                 | -2.3            | 0.2             | 1.678    | 5.9                 | -2.2            | 0.2             | 7.1                 | 2.9             | 0.3             | 5.0                 | 1.4             | 0.2             |
| 6.6                 | 2.1             | 0.2             | 4.6                 | 1.8             | 0.3             | 5.7                 | -2.3            | 0.0             | 1.680    | 6.7                 | -2.4            | 0.2             | 6.4                 | 3.2             | 0.3             | 4.2                 | 1.2             | 0.3             |
| 5.2                 | 2.2             | 0.1             | 3.9                 | 1.8             | 0.2             | 6.6                 | -2.4            | 0.0             | 1.682    | 5.7                 | -2.5            | 0.2             | 5.0                 | 3.1             | 0.3             | 6.5                 | 1.0             | 0.2             |
| 4.1                 | 2.1             | 0.1             | 3.6                 | 2.0             | 0.3             | 5.6                 | -2.5            | 0.0             | 1.684    | 6.7                 | -2.2            | 0.1             | 7.2                 | 2.8             | 0.2             | 6.7                 | 1.0             | 0.2             |
| 5.1                 | 2.1             | 0.0             | 4.9                 | 1.7             | 0.3             | 6.0                 | -2.4            | 0.0             | 1.686    | 7.0                 | -1.4            | 0.3             | 4.9                 | 2.5             | 0.2             | 5.3                 | 1.1             | 0.2             |
| 5.8                 | 2.2             | 0.0             | 4.4                 | 1.7             | 0.4             | 5.1                 | -2.1            | 0.0             | 1.688    | 6.7                 | -1.4            | 0.2             | 6.3                 | 2.2             | 0.1             | 7.9                 | 0.9             | 0.1             |
| 4.2                 | 1.8             | 0.0             | 5.4                 | 1.9             | 0.2             | 4.8                 | -2.0            | 0.2             | 1.690    | 6.2                 | -1.3            | 0.3             | 6.7                 | 2.2             | 0.1             | 4.9                 | 0.7             | 0.2             |
| 4.0                 | 1.4             | 0.0             | 3.5                 | 1.9             | 0.2             | 5.8                 | -2.1            | 0.2             | 1.691    | 6.7                 | -1.7            | 0.2             | 3.9                 | 2.1             | 0.1             | 5.0                 | 1.0             | 0.1             |
| 7.4                 | 1.3             | 0.0             | 4.8                 | 1.8             | 0.2             | 5.4                 | -2.2            | 0.0             | 1.693    | 6.3                 | -1.9            | 0.3             | 6.6                 | 2.0             | 0.1             | 6.7                 | 1.0             | 0.1             |
| 4.6                 | 1.2             | 0.0             | 5.1                 | 1.6             | 0.2             | 4.4                 | -2.0            | 0.0             | 1.695    | 6.2                 | -2.0            | 0.2             | 6.6                 | 1.9             | 0.1             | 5.6                 | 1.2             | 0.1             |
| 5.0                 | 1.3             | 0.0             | 4.9                 | 1.5             | 0.2             | 5.4                 | -1.8            | 0.2             | 1.697    | 6.7                 | -2.4            | 0.2             | 5.9                 | 2.0             | 0.2             | 4.8                 | 1.4             | 0.1             |
| 3.5                 | 1.5             | 0.1             | 4.9                 | 1.6             | 0.2             | 5.4                 | -1.9            | 0.1             | 1.699    | 6.9                 | -2.3            | 0.2             | 6.8                 | 2.0             | 0.2             | 3.8                 | 1.6             | 0.2             |
| 7.3                 | 1.5             | 0.1             | 3.4                 | 1.6             | 0.3             | 6.2                 | -2.0            | 0.1             | 1.701    | 6.9                 | -2.4            | 0.2             | 5.9                 | 2.1             | 0.2             | 7.1                 | 1.6             | 0.2             |
| 4.7                 | 1.6             | 0.1             | 3.9                 | 1.7             | 0.2             | 5.6                 | -2.1            | 0.1             | 1.703    | 7.1                 | -2.6            | 0.1             | 5.6                 | 2.0             | 0.2             | 4.1                 | 1.7             | 0.2             |
| 7.6                 | 1.6             | 0.2             | 4.7                 | 1.7             | 0.2             | 4.6                 | -2.2            | 0.0             | 1.705    | 6.8                 | -2.1            | 0.1             | 5.6                 | 2.0             | 0.2             | 6.5                 | 1.9             | 0.1             |
| 5.1                 | 1.6             | 0.2             | 4.7                 | 1.6             | 0.2             | 4.7                 | -2.3            | 0.0             | 1.707    | 6.1                 | -1.9            | 0.2             | 5.1                 | 1.9             | 0.2             | 4.0                 | 1.8             | 0.2             |
| 6.4                 | 1.3             | 0.1             | 3.8                 | 1.6             | 0.2             | 5.3                 | -2.2            | 0.0             | 1.709    | 6.9                 | -1.7            | 0.2             | 5.7                 | 1.8             | 0.2             | 5.2                 | 1.8             | 0.1             |
| 6.7                 | 1.2             | 0.2             | 3.8                 | 1.4             | 0.3             | 4.9                 | -1.8            | 0.0             | 1.710    | 6.8                 | -1.7            | 0.2             | 5.8                 | 1.8             | 0.1             | 4.5                 | 1.7             | 0.2             |
| 4.4                 | 1.0             | 0.1             | 5.0                 | 1.7             | 0.2             | 6.7                 | -1.5            | 0.0             | 1.712    | 6.8                 | -1.7            | 0.3             | 3.3                 | 1.6             | 0.2             | 5.5                 | 1.7             | 0.2             |
| 4.4                 | 1.2             | 0.2             | 3.8                 | 1.7             | 0.1             | 5.6                 | -1.4            | 0.0             | 1.714    | 5.6                 | -1.7            | 0.3             | 5.4                 | 2.0             | 0.2             | 3.7                 | 1.7             | 0.2             |
| 6.1                 | 1.2             | 0.2             | 5.9                 | 1.5             | 0.2             | 6.0                 | -1.6            | 0.0             | 1.716    | 6.7                 | -1.6            | 0.2             | 3.8                 | 2.0             | 0.2             | 4.7                 | 1.6             | 0.2             |
| 5.2                 | 1.0             | 0.2             | 4.7                 | 1.6             | 0.2             | 5.7                 | -1.7            | 0.0             | 1.718    | 5.6                 | -1.5            | 0.3             | 5.5                 | 2.2             | 0.2             | 6.1                 | 1.6             | 0.2             |
| 9.1                 | 1.0             | 0.1             | 5.3                 | 1.9             | 0.2             | 6.8                 | -1.9            | 0.0             | 1.720    | 6.4                 | -1.2            | 0.2             | 5.6                 | 2.5             | 0.2             | 4.5                 | 1.7             | 0.2             |
| 6.4                 | 1.2             | 0.1             | 5.3                 | 1.8             | 0.2             | 7.4                 | -1.8            | 0.1             | 1.722    | 7.6                 | -0.9            | 0.2             | 3.3                 | 2.4             | 0.2             | 6.7                 | 1.8             | 0.1             |
| 6.5                 | 1.1             | 0.1             | 3.7                 | 1.9             | 0.3             | 4.8                 | -2.1            | 0.1             | 1.724    | 5.9                 | -0.1            | 0.1             | 3.0                 | 2.4             | 0.2             | 7.0                 | 1.6             | 0.2             |
| 7.3                 | 0.8             | 0.0             | 4.9                 | 1.8             | 0.3             | 5.2                 | -1.9            | 0.1             | 1.726    | 6.3                 | 0.7             | 0.2             | 4.6                 | 2.2             | 0.2             | 7.2                 | 1.5             | 0.2             |
| 7.6                 | 0.7             | 0.1             | 3.8                 | 1.6             | 0.2             | 6.1                 | -1.7            | 0.0             | 1.727    | 5.5                 | 1.0             | 0.2             | 6.8                 | 2.2             | 0.2             | 5.1                 | 0.8             | 0.1             |
| 7.2                 | 0.6             | 0.1             | 5.3                 | 1.3             | 0.3             | 4.5                 | -1.7            | 0.0             | 1.729    | 6.2                 | 1.2             | 0.1             | 5.9                 | 2.1             | 0.2             | 6.3                 | 1.5             | 0.1             |
| 5.9                 | 0.4             | 0.1             | 3.0                 | 1.4             | 0.3             | 5.8                 | -1.7            | 0.0             | 1.731    | 5.6                 | 1.5             | 0.1             | 6.5                 | 2.2             | 0.2             | 8.3                 | 1.8             | 0.3             |
| 6.2                 | 0.5             | 0.1             | 4.0                 | 1.4             | 0.2             | 5.8                 | -1.8            | 0.0             | 1.733    | 5.4                 | 1.4             | 0.2             | 4.3                 | 2.5             | 0.2             | 3.4                 | 1.9             | 0.1             |
| 4.6                 | 0.6             | 0.0             | 2.9                 | 1.2             | 0.2             | 5.5                 | -1.6            | 0.0             | 1.735    | 5.6                 | 1.2             | 0.2             | 5.4                 | 2.4             | 0.2             | 5.8                 | 2.0             | 0.1             |
| 6.1                 | 0.5             | 0.1             | 3.6                 | 1.5             | 0.2             | 4.7                 | -1.6            | 0.1             | 1.737    | 6.4                 | 1.0             | 0.2             | 4.8                 | 2.3             | 0.2             | 5.5                 | 2.2             | 0.1             |
| 3.9                 | 0.2             | 0.0             | 3.4                 | 1.5             | 0.2             | 4.3                 | -1.8            | 0.0             | 1.739    | 7.1                 | 1.2             | 0.2             | 5.2                 | 2.4             | 0.2             | 7.4                 | 2.2             | 0.0             |
| 6.5                 | 0.6             | 0.0             | 4.8                 | 1.8             | 0.1             | 5.1                 | -2.0            | 0.0             | 1.741    | 7.3                 | 1.6             | 0.2             | 3.3                 | 2.3             | 0.1             | 8.2                 | 2.2             | 0.0             |

MPSV/GPR Information for FPN 430671-1 SR 536

| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 8.0                 | 0.7             | 0.0             | 4.2                 | 2.1             | 0.2             | 4.6                 | -1.9            | 0.0             | 1.743    | 6.9                 | 1.3             | 0.2             | 6.1                 | 2.1             | 0.2             | 4.1                 | 2.2             | 0.1             |
| 8.3                 | 0.5             | 0.1             | 6.4                 | 2.0             | 0.1             | 5.8                 | -2.1            | 0.0             | 1.745    | 6.4                 | 1.5             | 0.2             | 5.2                 | 2.0             | 0.2             | 6.9                 | 2.2             | 0.2             |
| 7.6                 | 0.4             | 0.2             | 3.6                 | 2.1             | 0.1             | 4.2                 | -1.8            | 0.0             | 1.746    | 7.6                 | 1.5             | 0.1             | 6.5                 | 1.9             | 0.2             | 5.9                 | 2.2             | 0.1             |
| 5.5                 | 0.6             | 0.2             | 3.4                 | 2.1             | 0.1             | 4.9                 | -1.8            | 0.0             | 1.748    | 6.4                 | 1.4             | 0.1             | 6.3                 | 1.8             | 0.2             | 6.0                 | 2.4             | 0.1             |
| 9.5                 | 0.8             | 0.2             | 3.3                 | 2.1             | 0.2             | 5.6                 | -1.9            | 0.0             | 1.750    | 6.7                 | 1.2             | 0.2             | 6.2                 | 2.0             | 0.2             | 5.2                 | 2.6             | 0.2             |
| 8.5                 | 0.9             | 0.1             | 5.3                 | 1.9             | 0.2             | 4.8                 | -1.8            | 0.0             | 1.752    | 5.7                 | 0.8             | 0.2             | 4.3                 | 2.3             | 0.2             | 7.2                 | 1.9             | 0.2             |
| 7.4                 | 0.8             | 0.1             | 5.0                 | 2.1             | 0.2             | 5.0                 | -1.9            | 0.0             | 1.754    | 5.6                 | 0.7             | 0.0             | 7.3                 | 2.4             | 0.2             | 8.4                 | 2.3             | 0.2             |
| 4.5                 | 1.0             | 0.2             | 5.5                 | 2.2             | 0.2             | 6.1                 | -1.9            | 0.0             | 1.756    | 6.1                 | 1.1             | 0.0             | 6.4                 | 2.5             | 0.2             | 7.0                 | 2.1             | 0.2             |
| 5.5                 | 1.0             | 0.2             | 5.3                 | 2.0             | 0.2             | 5.8                 | -2.1            | 0.0             | 1.758    | 6.2                 | 1.1             | 0.0             | 6.1                 | 2.4             | 0.2             | 6.1                 | 2.7             | 0.2             |
| 8.1                 | 0.7             | 0.1             | 4.7                 | 1.9             | 0.3             | 5.5                 | -2.2            | 0.0             | 1.760    | 5.9                 | 1.3             | 0.0             | 5.5                 | 2.6             | 0.1             | 7.5                 | 2.2             | 0.1             |
| 4.7                 | 0.4             | 0.2             | 4.4                 | 1.6             | 0.3             | 4.9                 | -2.3            | 0.0             | 1.762    | 6.5                 | 1.2             | 0.0             | 5.2                 | 2.5             | 0.2             | 7.4                 | 2.3             | 0.1             |
| 8.9                 | 0.6             | 0.1             | 6.3                 | 1.4             | 0.3             | 5.0                 | -2.2            | 0.0             | 1.763    | 5.6                 | 1.0             | 0.0             | 6.0                 | 2.4             | 0.2             | 6.4                 | 2.4             | 0.1             |
| 7.2                 | 0.3             | 0.1             | 6.2                 | 1.3             | 0.2             | 5.4                 | -1.8            | 0.1             | 1.765    | 5.7                 | 0.9             | 0.1             | 6.1                 | 2.5             | 0.1             | 2.3                 | 2.4             | 0.1             |
| 5.2                 | 0.4             | 0.0             | 7.0                 | 0.7             | 0.3             | 5.3                 | -1.4            | 0.1             | 1.767    | 4.2                 | 0.9             | 0.0             | 6.5                 | 2.5             | 0.2             | 3.9                 | 2.4             | 0.1             |
| 5.2                 | 0.4             | 0.1             | 6.1                 | 0.9             | 0.3             | 5.2                 | -1.2            | 0.4             | 1.769    | 5.3                 | 0.9             | 0.0             | 6.7                 | 2.5             | 0.2             | 7.6                 | 2.2             | 0.1             |
| 4.3                 | 0.3             | 0.1             | 4.9                 | 0.9             | 0.4             | 5.0                 | -1.6            | 0.3             | 1.771    | 5.4                 | 1.1             | 0.0             | 7.0                 | 2.2             | 0.2             | 7.7                 | 2.5             | 0.2             |
| 5.5                 | 0.7             | 0.1             | 3.7                 | 1.1             | 0.4             | 5.6                 | -2.1            | 0.4             | 1.773    | 5.8                 | 1.2             | 0.1             | 6.3                 | 1.9             | 0.1             | 7.0                 | 2.7             | 0.2             |
| 5.9                 | 0.4             | 0.1             | 4.4                 | 1.6             | 0.3             | 5.8                 | -2.2            | 0.3             | 1.775    |                     | 1.4             | 0.0             | 6.8                 | 1.8             | 0.1             | 4.1                 | 2.7             | 0.3             |
| 5.4                 | 0.7             | 0.1             | 3.7                 | 1.4             | 0.3             | 4.8                 | -2.3            | 0.1             | 1.777    | 5.2                 | 1.7             | 0.0             | 7.2                 | 1.7             | 0.1             | 4.7                 | 2.7             | 0.0             |
| 5.3                 | 0.8             | 0.0             | 4.0                 | 1.6             | 0.3             | 5.5                 | -2.4            | 0.2             | 1.779    | 5.4                 | 2.0             | 0.0             | 7.2                 | 1.6             | 0.1             | 5.6                 | 2.8             | 0.0             |
| 4.6                 | 0.5             | 0.1             | 3.8                 | 1.6             | 0.3             | 4.8                 | -2.2            | 0.2             | 1.780    | 6.6                 | 2.0             | 0.0             | 7.8                 | 1.4             | 0.2             | 5.2                 | 2.6             | 0.0             |
| 6.0                 | 0.8             | 0.1             | 3.1                 | 1.5             | 0.2             | 5.7                 | -2.2            | 0.2             | 1.782    | 6.5                 | 2.1             | 0.0             | 7.7                 | 1.3             | 0.3             | 5.1                 | 2.6             | 0.0             |
| 4.8                 | 0.6             | 0.1             |                     | 1.6             | 0.2             | 5.1                 | -2.2            | 0.2             | 1.784    | 5.4                 | 2.0             | 0.0             | 6.7                 | 1.1             | 0.2             | 5.6                 | 2.6             | 0.0             |
| 4.6                 | 0.6             | 0.2             | 6.1                 | 1.8             | 0.2             | 5.5                 | -2.1            | 0.3             | 1.786    | 6.3                 | 2.2             | 0.1             | 4.7                 | 1.0             | 0.3             | 5.5                 | 2.6             | 0.1             |
| 5.5                 | 1.2             | 0.2             | 5.0                 | 1.7             | 0.3             | 4.3                 | -2.3            | 0.3             | 1.788    | 6.4                 | 1.8             | 0.1             | 6.7                 | 1.4             | 0.2             | 6.1                 | 2.8             | 0.1             |
| 5.8                 | 0.7             | 0.2             | 3.4                 | 1.8             | 0.2             | 5.5                 | -2.0            | 0.2             | 1.790    | 5.2                 | 2.1             | 0.1             | 6.8                 | 1.3             | 0.2             | 7.4                 | 2.8             | 0.0             |
| 5.8                 | 0.9             | 0.1             | 4.8                 | 1.9             | 0.2             | 4.9                 | -1.9            | 0.2             | 1.792    | 4.7                 | 1.9             | 0.1             | 6.4                 | 1.6             | 0.3             | 7.3                 | 2.7             | 0.2             |
| 6.2                 | 1.1             | 0.2             | 5.5                 | 2.0             | 0.1             | 4.5                 | -1.6            | 0.2             | 1.794    | 5.3                 | 1.9             | 0.2             | 7.4                 | 1.5             | 0.3             | 7.9                 | 2.7             | 0.2             |
| 6.7                 | 1.0             | 0.1             | 4.4                 | 2.2             | 0.1             | 5.8                 | -1.8            | 0.2             | 1.796    | 5.6                 | 1.8             | 0.1             | 6.1                 | 1.7             | 0.3             | 6.8                 | 2.5             | 0.1             |
| 4.0                 | 0.9             | 0.1             | 5.4                 | 2.0             | 0.1             | 4.4                 | -1.9            | 0.1             | 1.798    | 5.9                 | 1.9             | 0.2             | 6.4                 | 1.6             | 0.3             | 6.1                 | 3.5             | 0.3             |
| 6.4                 | 0.7             | 0.1             | 3.5                 | 1.7             | 0.2             | 5.9                 | -2.0            | 0.1             | 1.799    | 5.0                 | 1.8             | 0.1             | 7.2                 | 1.6             | 0.2             | 6.5                 | 2.9             | 0.3             |
| 4.3                 | 0.5             | 0.1             | 5.2                 | 1.7             | 0.2             | 6.0                 | -2.0            | 0.1             | 1.801    | 5.5                 | 1.8             | 0.2             | 5.9                 | 1.6             | 0.2             | 7.4                 | 3.1             | 0.2             |
| 5.0                 | 0.5             | 0.2             | 3.3                 | 1.4             | 0.2             | 4.7                 | -2.0            | 0.2             | 1.803    | 6.1                 | 1.9             | 0.2             | 6.7                 | 1.8             | 0.2             | 5.8                 | 2.8             | 0.1             |
| 8.4                 | 0.5             | 0.1             | 4.1                 | 1.6             | 0.2             | 4.9                 | -1.9            | 0.1             | 1.805    | 5.6                 | 1.7             | 0.2             | 8.2                 | 1.9             | 0.1             | 8.2                 | 2.7             | 0.2             |
| 5.7                 | 0.5             | 0.1             | 5.0                 | 1.6             | 0.2             | 4.5                 | -2.0            | 0.1             | 1.807    | 4.8                 | 1.7             | 0.0             | 7.6                 | 1.9             | 0.1             | 6.9                 | 2.5             | 0.3             |
| 5.8                 | 0.7             | 0.0             | 4.5                 | 1.7             | 0.1             | 5.5                 | -1.9            | 0.1             | 1.809    | 5.4                 | 1.9             | 0.0             | 6.9                 | 2.0             | 0.1             | 6.9                 | 2.6             | 0.2             |
| 4.3                 | 0.7             | 0.1             | 5.3                 | 1.7             | 0.1             | 5.4                 | -2.1            | 0.0             | 1.811    | 5.0                 | 1.8             | 0.0             | 7.8                 | 1.9             | 0.1             | 6.8                 | 2.6             | 0.2             |
| 3.2                 | 0.9             | 0.2             | 3.4                 | 1.9             | 0.1             | 4.8                 | -2.1            | 0.1             | 1.813    | 5.4                 | 2.0             | 0.0             | 6.2                 | 1.6             | 0.1             | 7.0                 | 2.7             | 0.2             |
| 5.7                 | 1.0             | 0.1             | 6.0                 | 2.0             | 0.2             | 4.7                 | -1.8            | 0.1             | 1.815    | 5.1                 | 1.9             | 0.0             | 4.1                 | 1.9             | 0.2             | 4.6                 | 2.7             | 0.2             |
| 8.0                 | 1.0             | 0.1             | 3.7                 | 2.2             | 0.2             | 4.1                 | -1.8            | 0.1             | 1.816    | 5.6                 | 2.0             | 0.1             | 6.9                 | 2.1             | 0.2             | 7.3                 | 2.8             | 0.1             |
| 5.4                 | 1.4             | 0.0             | 3.2                 | 2.4             | 0.2             | 3.7                 | -1.8            | 0.1             | 1.818    | 5.1                 | 1.8             | 0.0             | 7.2                 | 2.0             | 0.1             | 5.4                 | 2.7             | 0.1             |
| 4.3                 | 1.4             | 0.1             | 4.2                 | 2.7             | 0.1             | 5.5                 | -1.9            | 0.1             | 1.820    | 6.9                 | 1.5             | 0.0             | 6.4                 | 2.1             | 0.2             | 5.9                 | 2.6             | 0.0             |
| 6.5                 | 1.3             | 0.1             | 5.7                 | 2.3             | 0.1             | 4.0                 | -1.7            | 0.1             | 1.822    | 6.0                 | 1.3             | 0.1             | 5.7                 | 1.9             | 0.2             | 6.7                 | 2.4             | 0.1             |
| 6.2                 | 1.6             | 0.0             | 2.4                 | 2.3             | 0.1             | 5.4                 | -1.7            | 0.1             | 1.824    | 5.4                 | 1.3             | 0.0             | 6.9                 | 1.7             | 0.1             | 6.5                 | 2.5             | 0.1             |
| 4.6                 | 1.4             | 0.1             | 5.4                 | 2.3             | 0.2             | 4.8                 | -1.8            | 0.0             | 1.826    | 6.0                 | 1.4             | 0.0             | 7.0                 | 1.6             | 0.1             | 6.6                 | 2.4             | 0.2             |
| 5.8                 | 1.5             | 0.1             | 5.0                 | 2.1             | 0.1             | 4.2                 | -1.8            | 0.0             | 1.828    | 8.1                 | 1.4             | 0.0             | 6.8                 | 1.6             | 0.1             | 7.6                 | 2.7             | 0.2             |

MPSV/GPR Information for FPN 430671-1 SR 536

| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 4.8                 | 1.6             | 0.0             | 4.3                 | 2.1             | 0.1             | 3.7                 | -1.7            | 0.0             | 1.830    | 8.3                 | 1.5             | 0.0             | 8.5                 | 1.7             | 0.1             | 8.1                 | 2.4             | 0.1             |
| 6.2                 | 1.3             | 0.1             | 4.1                 | 2.0             | 0.1             | 4.6                 | -1.4            | 0.1             | 1.832    | 6.3                 | 1.6             | 0.0             | 6.3                 | 1.7             | 0.2             | 6.9                 | 2.5             | 0.1             |
| 6.1                 | 1.3             | 0.0             | 4.9                 | 1.9             | 0.0             | 4.4                 | -1.5            | 0.1             | 1.834    | 6.5                 | 1.8             | 0.0             | 7.8                 | 1.8             | 0.2             | 8.7                 | 2.2             | 0.2             |
| 4.6                 | 1.0             | 0.1             | 6.8                 | 1.7             | 0.0             | 4.5                 | -1.6            | 0.0             | 1.835    | 6.1                 | 2.0             | 0.1             | 7.4                 | 1.5             | 0.2             | 4.7                 | 2.4             | 0.1             |
| 7.1                 | 1.4             | 0.1             | 5.6                 | 1.8             | 0.0             | 5.1                 | -1.6            | 0.0             | 1.837    | 5.7                 | 1.9             | 0.0             | 7.7                 | 1.5             | 0.2             | 4.8                 | 2.3             | 0.1             |
| 6.0                 | 1.3             | 0.2             | 5.9                 | 1.9             | 0.1             | 6.1                 | -1.6            | 0.0             | 1.839    | 5.6                 | 1.9             | 0.0             | 8.0                 | 1.4             | 0.2             | 6.5                 | 2.3             | 0.2             |
| 5.9                 | 1.4             | 0.2             | 7.2                 | 2.2             | 0.0             | 6.2                 | -1.8            | 0.0             | 1.841    | 8.2                 | 1.9             | 0.0             | 3.3                 | 1.6             | 0.1             | 6.5                 | 2.3             | 0.2             |
| 5.2                 | 1.0             | 0.2             | 3.8                 | 2.2             | 0.0             | 5.9                 | -1.8            | 0.0             | 1.843    | 5.9                 | 1.7             | 0.0             | 6.9                 | 1.5             | 0.1             | 7.6                 | 2.2             | 0.1             |
| 3.7                 | 1.2             | 0.0             | 4.1                 | 2.2             | 0.0             | 5.5                 | -1.9            | 0.1             | 1.845    | 5.4                 | 2.0             | 0.0             | 7.3                 | 1.6             | 0.3             | 5.2                 | 2.2             | 0.2             |
| 3.4                 | 1.1             | 0.0             | 6.4                 | 2.2             | 0.1             | 4.8                 | -1.8            | 0.0             | 1.847    | 5.8                 | 2.1             | 0.1             | 6.9                 | 1.5             | 0.4             | 5.7                 | 2.3             | 0.2             |
| 5.2                 | 1.2             | 0.0             | 4.2                 | 2.0             | 0.1             | 4.6                 | -2.0            | 0.0             | 1.849    | 5.7                 | 2.1             | 0.0             | 7.7                 | 1.7             | 0.2             | 5.4                 | 2.2             | 0.1             |
| 4.8                 | 1.3             | 0.1             | 5.2                 | 2.0             | 0.0             | 5.4                 | -2.0            | 0.0             | 1.851    | 6.3                 | 2.0             | 0.0             | 8.1                 | 1.7             | 0.2             | 5.1                 | 1.8             | 0.0             |
| 3.9                 | 1.4             | 0.0             | 6.4                 | 2.0             | 0.0             | 5.7                 | -2.0            | 0.0             | 1.852    | 5.2                 | 1.8             | 0.0             | 7.0                 | 1.9             | 0.2             | 4.4                 | 1.7             | 0.0             |
| 4.0                 | 1.5             | 0.0             | 3.2                 | 2.1             | 0.0             | 6.1                 | -2.0            | 0.0             | 1.854    | 5.0                 | 1.6             | 0.0             | 7.3                 | 1.8             | 0.2             | 4.0                 | 1.7             | 0.1             |
| 3.7                 | 1.3             | 0.0             | 6.2                 | 2.3             | 0.0             | 5.3                 | -2.2            | 0.0             | 1.856    | 5.2                 | 1.5             | 0.0             | 5.9                 | 1.8             | 0.1             | 5.4                 | 1.7             | 0.1             |
| 2.9                 | 1.0             | 0.0             | 3.0                 | 2.2             | 0.1             | 5.2                 | -2.5            | 0.0             | 1.858    | 4.8                 | 1.6             | 0.0             | 5.3                 | 1.8             | 0.2             | 5.3                 | 1.8             | 0.2             |
| 3.5                 | 0.9             | 0.1             | 6.0                 | 2.3             | 0.0             | 6.4                 | -2.6            | 0.0             | 1.860    | 5.2                 | 1.7             | 0.0             | 7.1                 | 1.7             | 0.1             | 7.9                 | 1.9             | 0.2             |
| 3.4                 | 0.9             | 0.0             | 5.0                 | 2.3             | 0.1             | 5.0                 | -2.7            | 0.0             | 1.862    | 4.8                 | 1.7             | 0.0             | 5.6                 | 1.7             | 0.1             | 4.5                 | 1.9             | 0.2             |
| 3.5                 | 1.0             | 0.1             | 3.5                 | 2.1             | 0.1             | 6.3                 | -2.7            | 0.0             | 1.864    | 5.3                 | 1.5             | 0.1             | 6.7                 | 1.8             | 0.2             | 6.7                 | 1.9             | 0.2             |
| 3.5                 | 0.8             | 0.0             | 4.5                 | 2.2             | 0.0             | 5.4                 | -2.5            | 0.0             | 1.866    | 6.3                 | 1.4             | 0.0             | 6.2                 | 1.6             | 0.2             | 8.0                 | 1.9             | 0.2             |
| 4.9                 | 0.8             | 0.1             | 4.4                 | 2.1             | 0.0             | 5.1                 | -2.4            | 0.0             | 1.868    | 4.2                 | 1.5             | 0.1             | 8.2                 | 1.8             | 0.2             | 5.8                 | 2.2             | 0.1             |
| 3.9                 | 0.8             | 0.1             | 4.4                 | 1.9             | 0.0             | 6.3                 | -2.0            | 0.0             | 1.870    | 5.3                 | 1.4             | 0.1             | 8.4                 | 1.9             | 0.1             | 7.5                 | 2.2             | 0.1             |
| 4.4                 | 0.8             | 0.1             | 4.0                 | 1.7             | 0.0             | 6.1                 | -1.6            | 0.0             | 1.871    | 4.5                 | 1.2             | 0.1             | 5.8                 | 2.1             | 0.2             | 6.3                 | 2.4             | 0.1             |
| 4.4                 | 0.8             | 0.1             | 5.4                 | 1.6             | 0.0             | 6.0                 | -1.5            | 0.0             | 1.873    | 5.1                 | 1.1             | 0.1             | 7.3                 | 2.1             | 0.4             | 7.2                 | 2.5             | 0.1             |
| 3.4                 | 1.2             | 0.1             | 5.3                 | 1.6             | 0.0             | 5.9                 | -1.4            | 0.0             | 1.875    | 4.9                 | 0.9             | 0.1             | 5.3                 | 2.1             | 0.5             | 6.1                 | 2.4             | 0.0             |
| 6.3                 | 1.2             | 0.1             | 5.2                 | 1.8             | 0.0             | 5.4                 | -1.6            | 0.0             | 1.877    | 4.4                 | 0.8             | 0.1             | 5.8                 | 2.1             | 0.2             | 6.3                 | 2.3             | 0.0             |
| 4.2                 | 1.1             | 0.1             | 5.7                 | 1.9             | 0.0             | 4.9                 | -1.6            | 0.0             | 1.879    | 6.3                 | 0.8             | 0.0             | 6.0                 | 2.2             | 0.1             | 6.9                 | 2.0             | 0.0             |
| 6.4                 | 1.3             | 0.1             | 5.3                 | 1.9             | 0.0             | 5.7                 | -1.9            | 0.0             | 1.881    | 4.8                 | 0.5             | 0.0             | 7.2                 | 2.3             | 0.2             | 8.2                 | 1.8             | 0.0             |
| 4.6                 | 1.1             | 0.1             | 3.5                 | 1.9             | 0.1             | 5.0                 | -2.2            | 0.0             | 1.883    | 5.9                 | 0.4             | 0.0             | 6.6                 | 2.0             | 0.2             | 8.7                 | 1.8             | 0.0             |
| 5.3                 | 1.0             | 0.2             | 3.4                 | 2.0             | 0.0             | 5.7                 | -2.4            | 0.0             | 1.885    | 5.4                 | 0.3             | 0.0             | 6.4                 | 2.0             | 0.2             | 8.8                 | 1.8             | 0.0             |
| 3.5                 | 1.0             | 0.1             | 2.4                 | 2.0             | 0.1             | 5.7                 | -2.6            | 0.0             | 1.887    | 4.9                 | 0.6             | 0.0             | 5.9                 | 2.0             | 0.2             | 4.6                 | 1.6             | 0.0             |
| 4.4                 | 0.8             | 0.2             | 4.8                 | 1.7             | 0.0             | 5.5                 | -2.5            | 0.0             | 1.888    | 4.2                 | 1.0             | 0.0             | 5.1                 | 2.0             | 0.2             | 5.5                 | 1.7             | 0.0             |
| 3.7                 | 1.0             | 0.1             | 6.5                 | 1.6             | 0.0             | 5.6                 | -2.4            | 0.0             | 1.890    | 5.6                 | 1.0             | 0.0             | 6.8                 | 1.8             | 0.2             | 5.9                 | 1.7             | 0.0             |
| 4.5                 | 1.2             | 0.1             | 4.6                 | 1.5             | 0.0             | 4.8                 | -2.4            | 0.0             | 1.892    | 6.3                 | 1.0             | 0.0             | 7.1                 | 1.7             | 0.1             | 7.6                 | 1.9             | 0.0             |
| 4.4                 | 1.1             | 0.2             | 5.7                 | 1.6             | 0.0             | 4.1                 | -2.4            | 0.0             | 1.894    | 5.9                 | 1.3             | 0.0             | 7.7                 | 1.7             | 0.2             | 8.5                 | 1.9             | 0.0             |
| 3.7                 | 1.3             | 0.2             | 5.1                 | 1.7             | 0.0             | 5.1                 | -2.2            | 0.1             | 1.896    | 4.3                 | 1.6             | 0.0             | 5.1                 | 1.5             | 0.2             | 5.7                 | 2.1             | 0.0             |
| 4.6                 | 1.1             | 0.2             | 3.6                 | 1.6             | 0.0             | 5.1                 | -2.2            | 0.1             | 1.898    | 6.2                 | 1.7             | 0.0             | 5.1                 | 1.7             | 0.3             | 4.5                 | 2.0             | 0.1             |
| 4.1                 | 1.2             | 0.2             | 3.2                 | 1.6             | 0.0             | 4.6                 | -2.1            | 0.1             | 1.900    | 4.6                 | 1.7             | 0.0             | 5.6                 | 1.6             | 0.3             | 2.2                 | 2.2             | 0.1             |
| 2.8                 | 1.3             | 0.2             | 4.6                 | 1.3             | 0.0             | 4.0                 | -2.2            | 0.1             | 1.902    | 6.6                 | 1.5             | 0.0             | 7.2                 | 1.5             | 0.3             | 10.0                | 2.2             | 0.1             |
| 2.8                 | 1.4             | 0.1             | 6.2                 | 1.4             | 0.0             | 5.1                 | -1.8            | 0.1             | 1.904    | 6.7                 | 1.7             | 0.0             | 7.3                 | 1.5             | 0.4             | 9.2                 | 1.8             | 0.1             |
| 2.7                 | 1.4             | 0.0             | 3.6                 | 1.3             | 0.0             | 4.9                 | -1.7            | 0.1             | 1.905    | 5.6                 | 1.7             | 0.0             | 6.7                 | 1.4             | 0.2             | 9.9                 | 2.2             | 0.1             |
| 4.3                 | 1.5             | 0.1             | 6.7                 | 1.4             | 0.0             | 4.9                 | -1.4            | 0.0             | 1.907    | 5.7                 | 1.7             | 0.1             | 5.3                 | 1.5             | 0.2             | 9.8                 | 2.1             | 0.0             |
| 5.7                 | 1.6             | 0.0             | 3.1                 | 1.7             | 0.0             | 5.2                 | -1.7            | 0.0             | 1.909    | 5.0                 | 1.7             | 0.1             | 5.5                 | 1.4             | 0.2             | 10.7                | 2.1             | 0.0             |
| 3.1                 | 1.8             | 0.0             | 4.8                 | 1.8             | 0.0             | 5.3                 | -2.1            | 0.0             | 1.911    | 4.7                 | 1.9             | 0.1             | 5.1                 | 1.5             | 0.2             | 4.5                 | 2.5             | 0.0             |
| 3.8                 | 1.8             | 0.1             | 3.9                 | 1.9             | 0.1             | 4.6                 | -2.2            | 0.1             | 1.913    | 4.6                 | 1.9             | 0.2             | 5.8                 | 1.6             | 0.2             | 6.1                 | 2.2             | 0.1             |
| 2.7                 | 2.0             | 0.1             | 2.9                 | 1.9             | 0.1             | 4.9                 | -2.3            | 0.1             | 1.915    | 4.2                 | 2.0             | 0.1             | 7.8                 | 1.6             | 0.2             | 8.8                 | 2.8             | 0.1             |

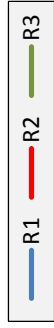
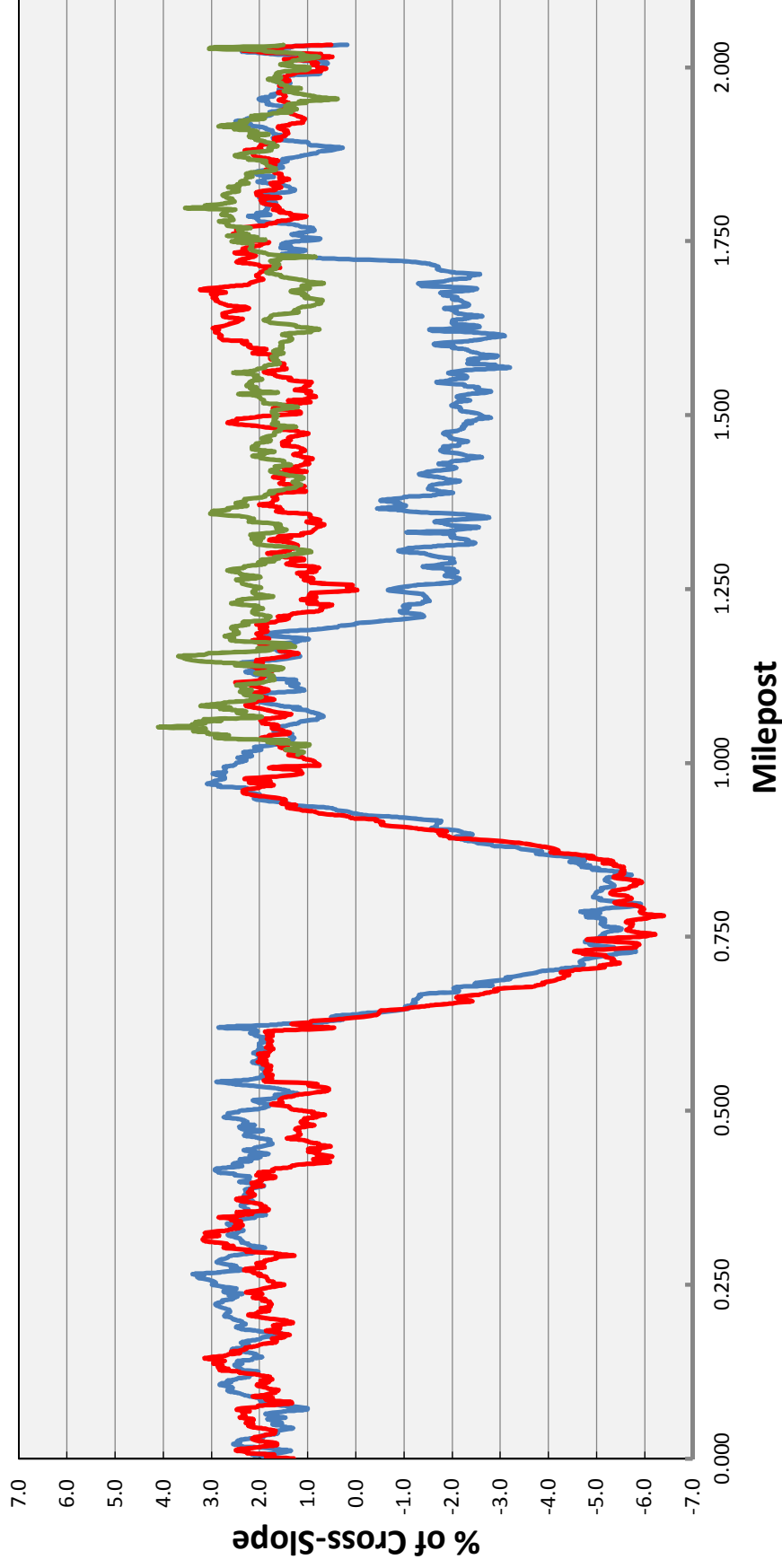
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| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 3.1                 | 1.9             | 0.0             | 3.3                 | 2.1             | 0.2             | 5.1                 | -2.1            | 0.1             | 1.917    | 6.0                 | 2.3             | 0.0             | 4.4                 | 1.4             | 0.2             | 8.8                 | 2.7             | 0.1             |
| 3.9                 | 2.2             | 0.0             | 3.5                 | 2.2             | 0.2             | 5.5                 | -2.2            | 0.1             | 1.919    | 4.9                 | 2.2             | 0.1             | 6.8                 | 1.4             | 0.2             | 6.3                 | 2.4             | 0.0             |
| 4.7                 | 2.0             | 0.0             | 3.7                 | 2.3             | 0.1             | 4.8                 | -2.2            | 0.1             | 1.921    | 6.5                 | 2.5             | 0.1             | 4.1                 | 1.1             | 0.2             | 7.5                 | 2.3             | 0.1             |
| 5.7                 | 1.9             | 0.0             | 4.0                 | 2.2             | 0.1             | 4.1                 | -2.0            | 0.1             | 1.923    | 4.6                 | 2.5             | 0.2             | 8.6                 | 1.1             | 0.2             | 8.3                 | 2.4             | 0.1             |
| 4.3                 | 1.7             | 0.1             | 3.5                 | 2.8             | 0.1             | 3.9                 | -1.8            | 0.0             | 1.924    | 6.1                 | 2.3             | 0.3             | 4.9                 | 1.1             | 0.2             | 6.9                 | 2.2             | 0.1             |
| 4.6                 | 1.7             | 0.0             | 4.1                 | 2.9             | 0.0             | 4.0                 | -1.6            | 0.1             | 1.926    | 5.6                 | 2.3             | 0.2             | 5.7                 | 1.1             | 0.2             | 7.5                 | 1.9             | 0.1             |
| 6.2                 | 1.6             | 0.1             | 4.3                 | 3.0             | 0.0             | 5.0                 | -1.8            | 0.0             | 1.928    | 4.4                 | 2.0             | 0.0             | 6.6                 | 1.1             | 0.2             | 5.2                 | 2.1             | 0.2             |
| 5.8                 | 1.8             | 0.0             | 3.3                 | 2.9             | 0.0             | 4.3                 | -2.2            | 0.0             | 1.930    | 5.6                 | 1.9             | 0.1             | 4.3                 | 1.2             | 0.2             | 7.0                 | 2.2             | 0.0             |
| 5.1                 | 1.9             | 0.0             | 3.2                 | 2.8             | 0.1             | 4.8                 | -2.5            | 0.1             | 1.932    | 6.2                 | 1.7             | 0.1             | 5.1                 | 1.3             | 0.2             | 6.1                 | 1.8             | 0.0             |
| 5.1                 | 2.0             | 0.0             | 3.1                 | 2.9             | 0.1             | 4.9                 | -2.5            | 0.1             | 1.934    | 5.7                 | 1.8             | 0.0             | 6.0                 | 1.4             | 0.2             | 4.2                 | 1.7             | 0.1             |
| 4.0                 | 1.9             | 0.1             | 4.4                 | 2.5             | 0.1             | 5.9                 | -2.6            | 0.1             | 1.936    | 6.5                 | 1.8             | 0.1             | 7.4                 | 1.4             | 0.2             | 4.1                 | 1.3             | 0.0             |
| 8.2                 | 1.6             | 0.1             | 4.5                 | 2.6             | 0.1             | 4.6                 | -2.5            | 0.1             | 1.938    | 5.6                 | 1.6             | 0.2             | 6.4                 | 1.5             | 0.2             | 4.6                 | 1.6             | 0.0             |
| 5.9                 | 1.5             | 0.1             | 3.0                 | 2.6             | 0.1             | 4.4                 | -2.6            | 0.1             | 1.940    | 6.0                 | 1.4             | 0.3             | 6.7                 | 1.5             | 0.2             | 5.0                 | 1.2             | 0.0             |
| 5.9                 | 1.3             | 0.1             | 3.8                 | 2.8             | 0.0             | 4.1                 | -2.5            | 0.1             | 1.941    | 6.5                 | 1.4             | 0.3             | 6.5                 | 1.4             | 0.2             | 3.5                 | 1.3             | 0.0             |
| 3.8                 | 1.3             | 0.1             | 2.7                 | 2.6             | 0.0             | 4.7                 | -2.3            | 0.2             | 1.943    | 5.3                 | 1.5             | 0.3             | 5.8                 | 1.3             | 0.2             | 3.7                 | 1.5             | 0.0             |
| 2.9                 | 1.5             | 0.0             | 4.0                 | 2.3             | 0.0             | 4.8                 | -2.3            | 0.2             | 1.945    | 5.7                 | 1.7             | 0.3             | 7.1                 | 1.3             | 0.0             | 3.6                 | 1.4             | 0.0             |
| 5.0                 | 1.6             | 0.0             | 2.7                 | 2.3             | 0.0             | 5.2                 | -2.3            | 0.1             | 1.947    | 5.2                 | 1.8             | 0.3             | 6.6                 | 1.4             | 0.0             | 5.9                 | 1.4             | 0.1             |
| 5.1                 | 1.6             | 0.0             | 3.1                 | 2.3             | 0.0             | 5.2                 | -2.1            | 0.1             | 1.949    | 6.5                 | 1.8             | 0.3             | 6.0                 | 1.4             | 0.0             | 4.5                 | 1.0             | 0.1             |
| 5.8                 | 1.6             | 0.0             | 4.3                 | 2.2             | 0.0             | 4.5                 | -2.1            | 0.2             | 1.951    | 7.0                 | 1.8             | 0.3             | 6.6                 | 1.5             | 0.0             | 3.5                 | 1.2             | 0.1             |
| 4.4                 | 1.6             | 0.0             | 3.2                 | 2.1             | 0.0             | 4.2                 | -2.0            | 0.2             | 1.953    | 6.8                 | 2.0             | 0.4             | 9.1                 | 1.6             | 0.0             | 4.0                 | 0.7             | 0.2             |
| 5.1                 | 1.7             | 0.0             | 2.9                 | 1.8             | 0.0             | 4.0                 | -2.2            | 0.2             | 1.955    | 6.4                 | 2.0             | 0.4             | 6.5                 | 1.5             | 0.0             | 6.3                 | 0.4             | 0.1             |
| 4.4                 | 1.6             | 0.0             | 4.8                 | 1.7             | 0.0             | 4.7                 | -2.2            | 0.3             | 1.957    | 5.2                 | 1.9             | 0.4             | 6.7                 | 1.5             | 0.1             | 6.1                 | 0.7             | 0.2             |
| 3.9                 | 1.5             | 0.0             | 3.4                 | 1.5             | 0.0             | 4.5                 | -2.3            | 0.3             | 1.959    | 8.0                 | 1.7             | 0.4             | 6.7                 | 1.5             | 0.1             | 6.3                 | 0.9             | 0.2             |
| 3.3                 | 1.7             | 0.0             | 4.1                 | 1.2             | 0.0             | 4.5                 | -2.3            | 0.2             | 1.960    | 5.6                 | 1.8             | 0.3             | 7.8                 | 1.5             | 0.0             | 6.5                 | 1.0             | 0.1             |
| 4.3                 | 1.9             | 0.1             | 5.2                 | 0.7             | 0.1             | 4.2                 | -2.3            | 0.3             | 1.962    | 7.2                 | 1.7             | 0.4             | 6.9                 | 1.5             | 0.1             | 7.8                 | 1.2             | 0.2             |
| 3.2                 | 2.0             | 0.1             | 2.7                 | 0.5             | 0.1             | 4.7                 | -2.2            | 0.2             | 1.964    | 6.0                 | 1.5             | 0.3             | 7.5                 | 1.6             | 0.1             | 8.1                 | 1.4             | 0.1             |
| 4.3                 | 2.1             | 0.1             | 4.8                 | 0.4             | 0.1             | 4.2                 | -2.0            | 0.2             | 1.966    | 7.9                 | 1.5             | 0.2             | 7.5                 | 1.4             | 0.2             | 5.5                 | 1.5             | 0.2             |
| 6.1                 | 2.3             | 0.1             | 4.2                 | 0.4             | 0.1             | 4.7                 | -2.1            | 0.2             | 1.968    | 6.7                 | 1.6             | 0.3             | 7.7                 | 1.3             | 0.2             | 7.6                 | 1.3             | 0.2             |
| 5.1                 | 2.3             | 0.0             | 3.1                 | 0.6             | 0.1             | 4.6                 | -2.2            | 0.2             | 1.970    | 6.9                 | 1.6             | 0.3             | 4.6                 | 1.5             | 0.3             | 6.8                 | 1.1             | 0.2             |
| 4.2                 | 2.5             | 0.0             | 3.5                 | 0.7             | 0.1             | 4.8                 | -2.6            | 0.3             | 1.972    | 6.0                 | 1.4             | 0.1             | 6.3                 | 1.4             | 0.3             | 4.2                 | 1.5             | 0.2             |
| 3.9                 | 3.0             | 0.0             | 3.6                 | 0.7             | 0.1             | 4.9                 | -2.2            | 0.2             | 1.974    | 5.8                 | 1.5             | 0.4             | 3.0                 | 1.6             | 0.2             | 4.6                 | 1.4             | 0.1             |
| 4.0                 | 3.4             | 0.0             | 4.1                 | 0.7             | 0.1             | 4.6                 | -1.5            | 0.3             | 1.976    | 6.5                 | 1.4             | 0.3             | 4.6                 | 1.5             | 0.3             | 6.5                 | 1.6             | 0.3             |
| 4.7                 | 3.1             | 0.0             | 4.6                 | 0.7             | 0.1             | 5.3                 | -1.2            | 0.2             | 1.977    | 4.5                 | 1.4             | 0.3             | 4.3                 | 1.5             | 0.3             | 4.0                 | 1.5             | 0.2             |
| 4.2                 | 2.8             | 0.0             | 5.0                 | 1.1             | 0.1             | 4.5                 | -1.3            | 0.2             | 1.979    | 6.0                 | 1.7             | 0.3             | 7.4                 | 1.5             | 0.3             | 4.6                 | 1.6             | 0.3             |
| 5.4                 | 2.1             | 0.0             | 4.6                 | 1.2             | 0.2             | 4.5                 | -1.6            | 0.1             | 1.981    | 6.7                 | 1.6             | 0.3             | 6.8                 | 1.4             | 0.3             | 6.3                 | 1.7             | 0.2             |
| 3.7                 | 1.5             | 0.0             | 6.0                 | 1.1             | 0.2             | 4.1                 | -1.8            | 0.1             | 1.983    | 6.5                 | 1.6             | 0.3             | 6.3                 | 1.5             | 0.3             | 4.1                 | 1.8             | 0.3             |
| 3.0                 | 1.4             | 0.0             | 3.0                 | 1.1             | 0.2             | 4.8                 | -1.9            | 0.1             | 1.985    | 5.2                 | 1.6             | 0.3             | 6.7                 | 1.5             | 0.2             | 4.0                 | 1.6             | 0.1             |
| 4.4                 | 1.8             | 0.0             | 4.6                 | 0.9             | 0.1             | 4.5                 | -2.0            | 0.2             | 1.987    | 6.7                 | 1.4             | 0.2             | 6.9                 | 1.4             | 0.2             | 5.8                 | 1.7             | 0.1             |
| 4.5                 | 0.6             | 0.0             | 5.2                 | 0.5             | 0.0             | 3.7                 | -1.8            | 0.3             | 1.989    | 6.5                 | 1.3             | 0.3             | 5.7                 | 1.4             | 0.2             | 5.1                 | 1.6             | 0.2             |
| 6.3                 | 0.8             | 0.0             | 3.7                 | 0.0             | 0.0             | 4.0                 | -1.7            | 0.3             | 1.991    | 5.3                 | 0.7             | 0.3             | 4.9                 | 1.3             | 0.3             | 3.0                 | 1.7             | 0.3             |
| 4.3                 | 0.9             | 0.0             | 2.7                 | -0.6            | 0.0             | 4.0                 | -1.1            | 0.3             | 1.993    | 5.6                 | 0.8             | 0.3             | 3.9                 | 1.2             | 0.4             | 3.8                 | 1.6             | 0.3             |
| 4.0                 | 0.6             | 0.0             | 3.3                 | -1.6            | 0.2             | 3.8                 | -0.7            | 0.3             | 1.995    | 5.0                 | 0.7             | 0.2             | 3.4                 | 0.7             | 0.3             | 4.0                 | 1.4             | 0.3             |
| 3.7                 | 0.3             | 0.0             | 3.3                 | -1.9            | 0.0             | 4.9                 | -0.4            | 0.3             | 1.996    | 5.3                 | 0.8             | 0.2             | 3.3                 | 0.7             | 0.3             | 3.7                 | 1.0             | 0.4             |
| 3.7                 | 0.7             | 0.0             | 5.9                 | -2.0            | 0.1             | 4.9                 | -0.6            | 0.2             | 1.998    | 5.2                 | 0.8             | 0.1             | 4.1                 | 0.6             | 0.3             | 5.6                 | 1.0             | 0.4             |
| 3.3                 | 1.0             | 0.0             | 6.5                 | -2.5            | 0.2             | 4.4                 | -1.4            | 0.0             | 2.000    | 6.6                 | 0.8             | 0.2             | 4.2                 | 0.8             | 0.3             | 6.0                 | 1.0             | 0.4             |
| 3.2                 | 1.0             | 0.0             | 5.6                 | -2.2            | 0.3             | 4.8                 | -2.0            | 0.1             | 2.002    | 4.9                 | 0.6             | 0.2             | 3.6                 | 0.8             | 0.3             | 4.5                 | 1.4             | 0.4             |

MPSV/GPR Information for FPN 430671-1 SR 536

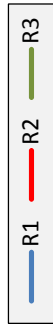
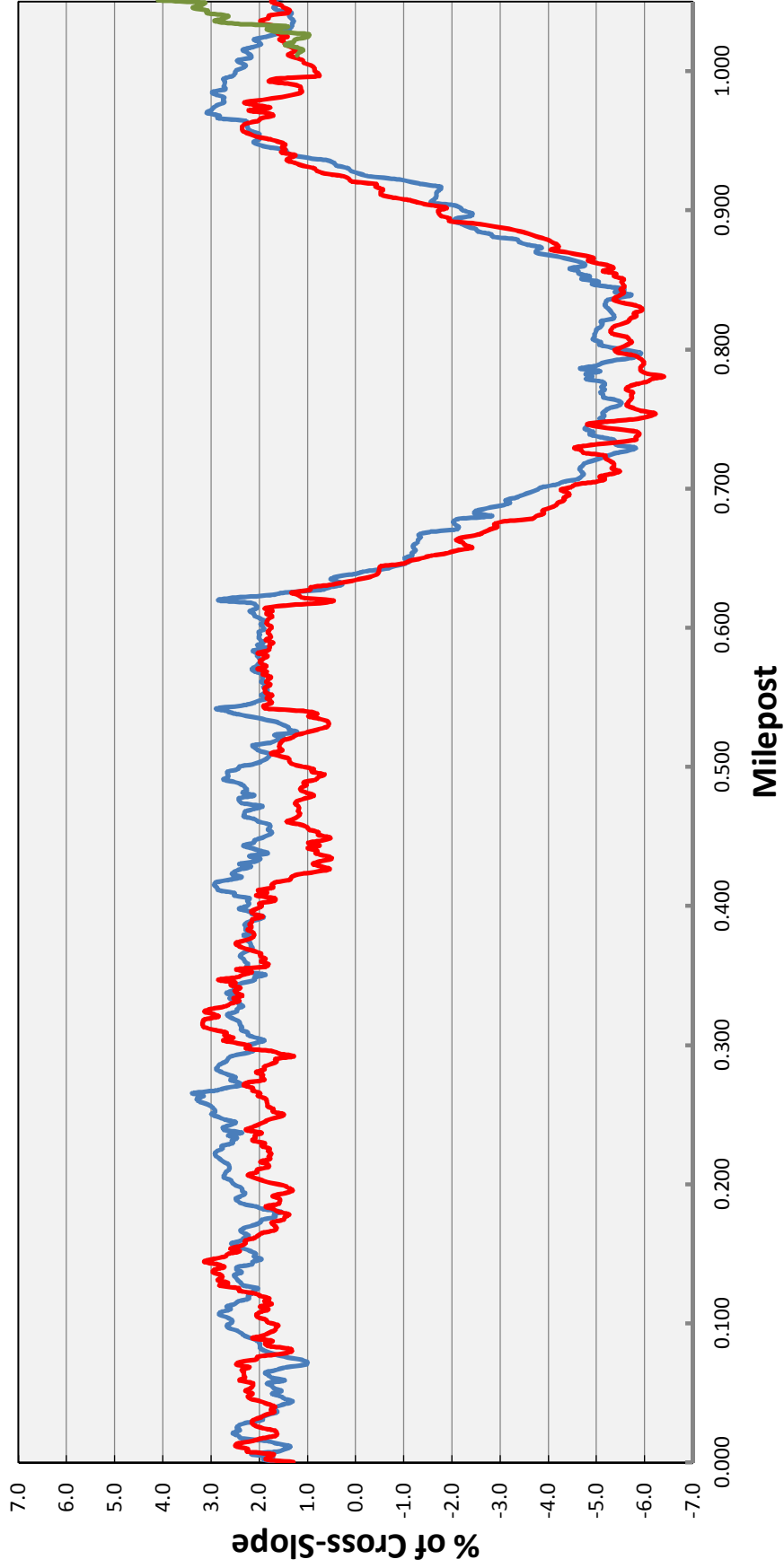
| L3                  |                 |                 | L2                  |                 |                 | L1                  |                 |                 | R1       |                     |                 | R2              |                     |                 | R3              |                     |                 |                 |
|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|----------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|---------------------|-----------------|-----------------|
| HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | Milepost | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) | HMA Thickness (in.) | Cross Slope (%) | Rut Depth (in.) |
| 4.6                 | 1.0             | 0.0             | 3.2                 | -2.3            | 0.2             | 4.9                 | -2.2            | 0.1             | 2.004    | 5.8                 | 0.6             | 0.2             | 3.1                 | 0.9             | 0.3             | 4.1                 | 1.6             | 0.4             |
| 4.6                 | 0.7             | 0.0             | 3.4                 | -1.6            | 0.2             | 4.3                 | -2.5            | 0.1             | 2.006    | 6.2                 | 0.6             | 0.2             | 5.2                 | 0.8             | 0.4             | 4.3                 | 1.4             | 0.4             |
| 3.6                 | 0.2             | 0.0             | 2.7                 | -1.6            | 0.3             | 4.4                 | -2.1            | 0.1             | 2.008    | 5.9                 | 0.6             | 0.2             | 4.3                 | 0.9             | 0.3             | 4.2                 | 1.3             | 0.4             |
| 3.1                 | -0.1            | 0.0             | 3.4                 | 0.2             | 0.1             | 4.4                 | -2.0            | 0.2             | 2.010    | 7.6                 | 1.1             | 0.2             | 4.6                 | 0.9             | 0.5             | 3.0                 | 1.3             | 0.4             |
| 3.3                 | -0.7            | 0.0             | 2.8                 | -0.3            | 0.2             | 5.5                 | -1.0            | 0.3             | 2.012    | 5.8                 | 1.1             | 0.2             | 3.9                 | 1.5             | 0.5             | 5.1                 | 1.1             | 0.4             |
| 3.4                 | -2.0            | 0.0             | 4.5                 | 0.2             | 0.2             | 5.1                 | -0.1            | 0.2             | 2.013    | 5.8                 | 0.8             | 0.2             | 2.7                 | 0.9             | 0.4             | 3.9                 | 0.9             | 0.4             |
| 3.5                 | -2.1            | 0.0             | 4.0                 | 0.6             | 0.2             | 6.0                 | 0.0             | 0.1             | 2.015    | 5.8                 | 0.6             | 0.2             | 3.9                 | 0.5             | 0.4             | 6.7                 | 0.8             | 0.1             |
| 3.4                 | -2.0            | 0.0             | 5.1                 | 0.7             | 0.2             | 5.1                 | 0.6             | 0.1             | 2.017    | 6.3                 | 1.2             | 0.2             | 4.1                 | 1.2             | 0.4             | 5.5                 | 1.2             | 0.0             |
| 3.1                 | -2.5            | 0.0             | 4.0                 | 1.1             | 0.2             | 5.2                 | 0.6             | 0.1             | 2.019    | 5.7                 | 1.7             | 0.0             | 5.6                 | 0.7             | 0.4             | 4.6                 | 1.1             | 0.0             |
| 3.3                 | -2.3            | 0.0             | 4.5                 | 0.8             | 0.2             | 4.7                 | 0.9             | 0.1             | 2.021    | 4.0                 | 2.0             | 0.1             | 3.8                 | 1.8             | 0.2             | 7.3                 | 1.4             | 0.0             |
| 2.8                 | -2.1            | 0.0             | 3.7                 | 0.8             | 0.2             | 3.7                 | 0.9             | 0.1             | 2.023    | 4.5                 | 2.4             | 0.2             | 4.7                 | 2.1             | 0.2             | 5.5                 | 1.9             | 0.0             |
| 3.5                 | -1.6            | 0.0             | 3.6                 | 0.4             | 0.2             | 3.8                 | 0.9             | 0.2             | 2.025    | 4.6                 | 1.6             | 0.2             | 3.2                 | 2.3             | 0.2             | 3.9                 | 2.0             | 0.0             |
| 3.2                 | -1.5            | 0.0             | 3.1                 | 0.6             | 0.2             | 4.4                 | 1.0             | 0.1             | 2.027    | 5.1                 | 1.6             | 0.1             | 3.3                 | 1.5             | 0.1             | 3.8                 | 3.0             | 0.0             |
| 3.3                 | 0.2             | 0.0             | 3.3                 | 0.5             | 0.4             | 5.6                 | 0.4             | 0.2             | 2.029    | 4.6                 | 1.4             | 0.3             | 1.1                 | 1.6             | 0.1             | 5.3                 | 3.0             | 0.0             |
| 3.2                 | -0.3            | 0.0             | 4.6                 | 0.7             | 0.4             | 12.5                | 0.8             | 0.2             | 2.030    | 4.0                 | 1.3             | 0.2             | 1.2                 | 1.2             | 0.2             | 3.8                 | 1.7             | 0.0             |
| 4.0                 | 0.2             | 0.0             | 3.5                 | 1.0             | 0.3             | 16.4                | 0.7             | 0.2             | 2.032    | 4.3                 | 0.2             | 0.3             | 4.6                 | 0.5             | 0.2             | 5.6                 | 1.5             | 0.0             |

# SR 536 Eastbound from MP 0.000 to MP 2.034

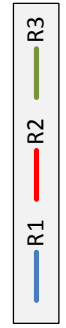
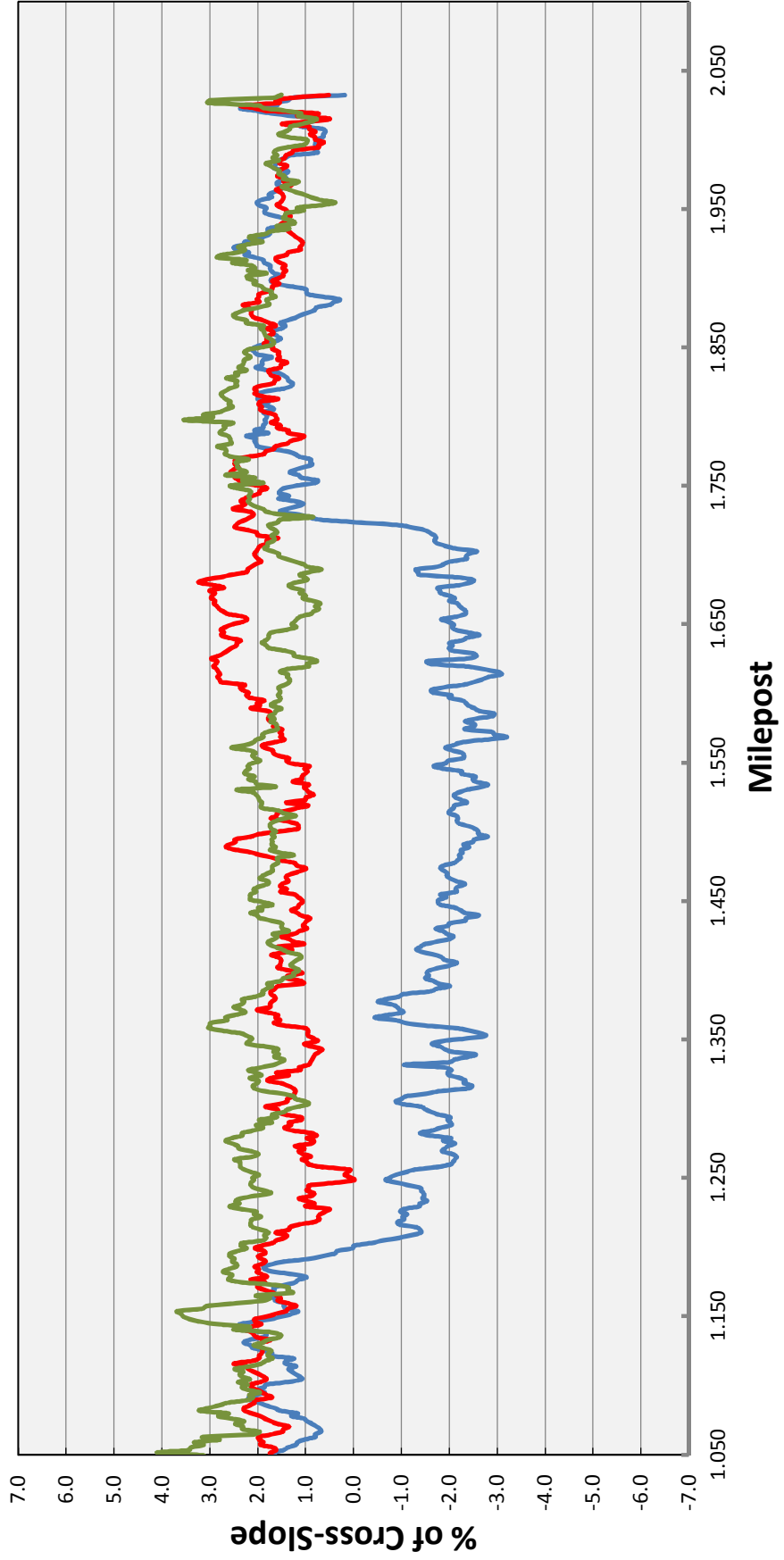




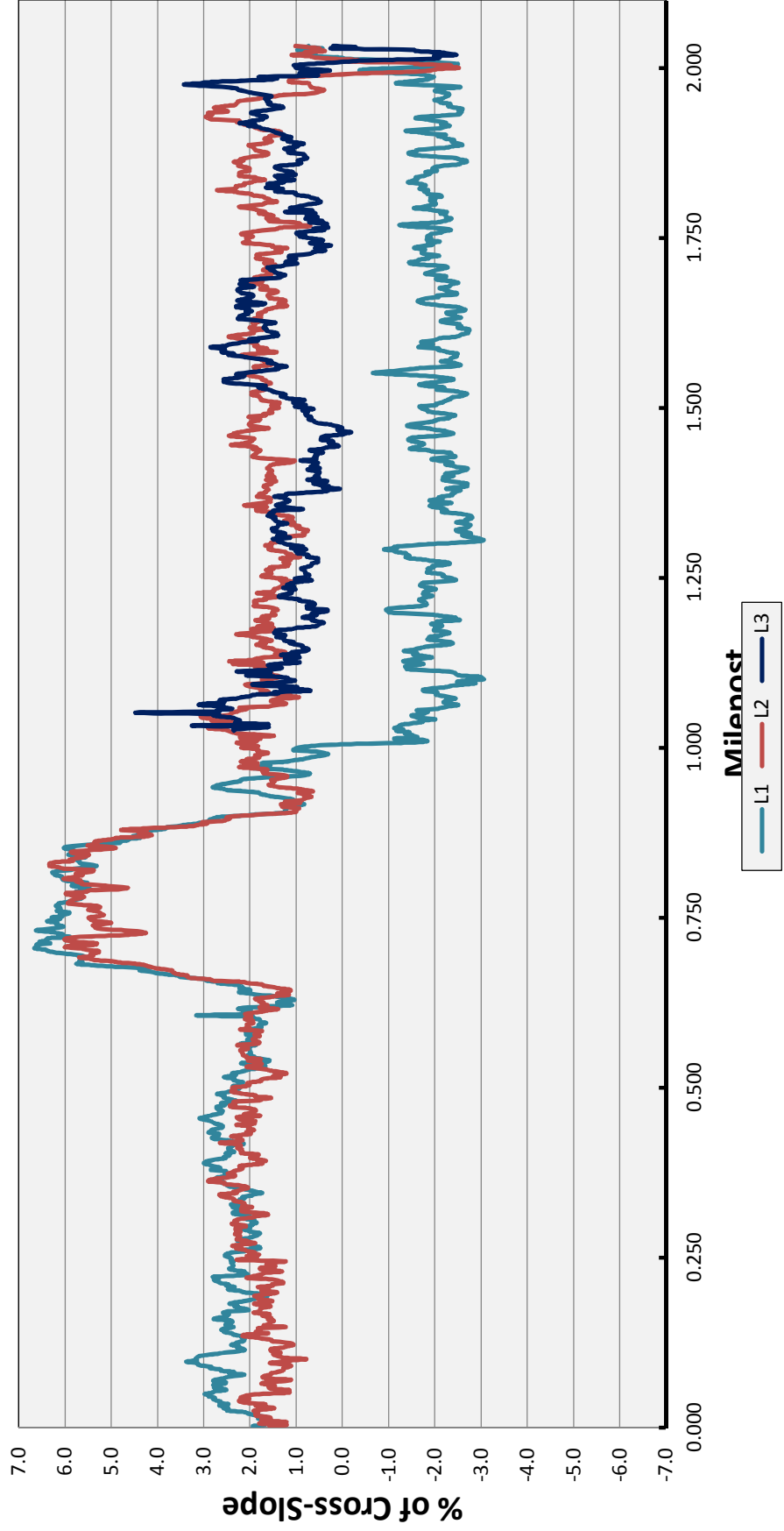
# SR 536 Eastbound from MP 0.000 to MP 1.050



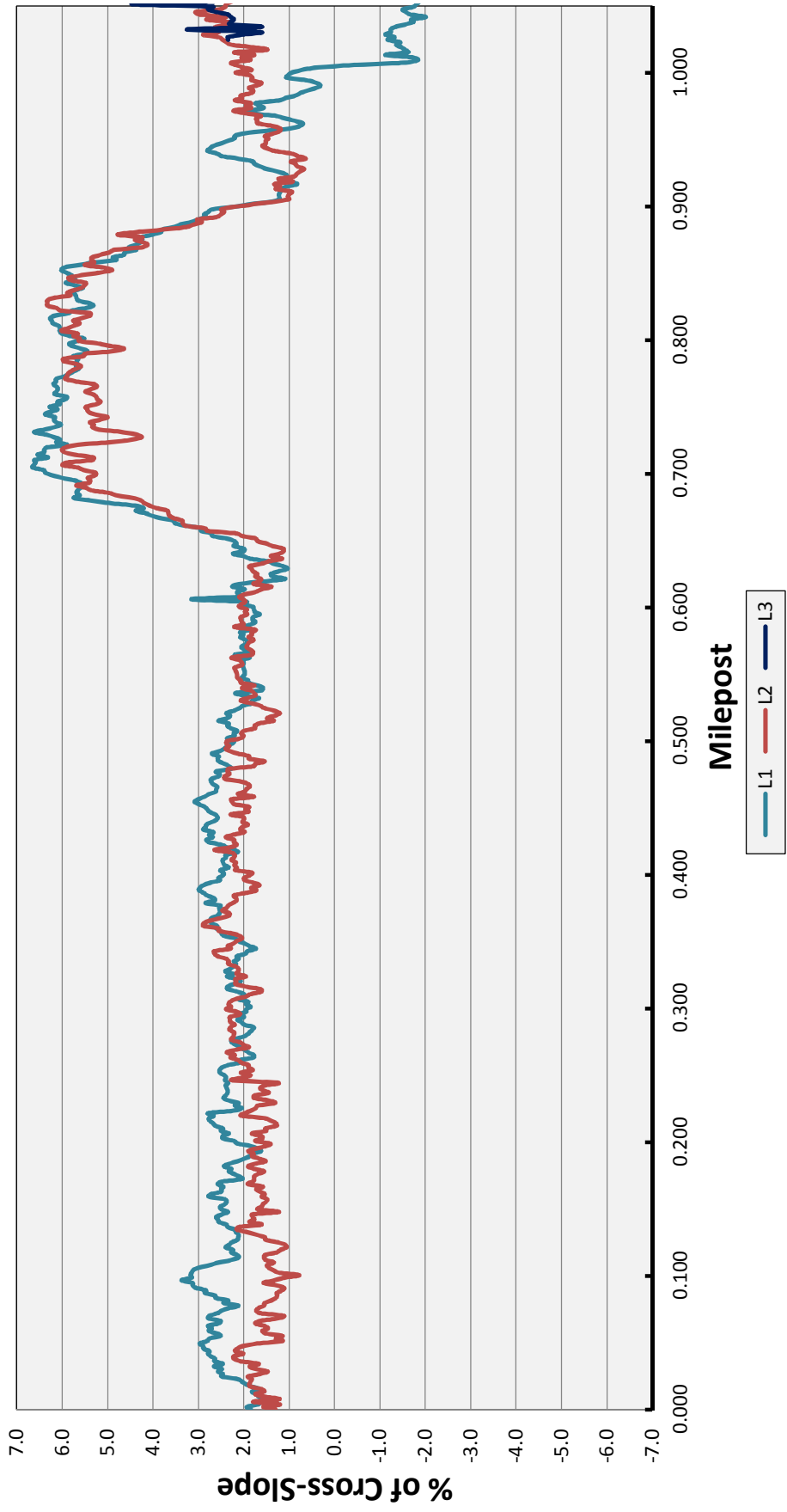
# SR 536 Eastbound from MP 1.050 to MP 2.100



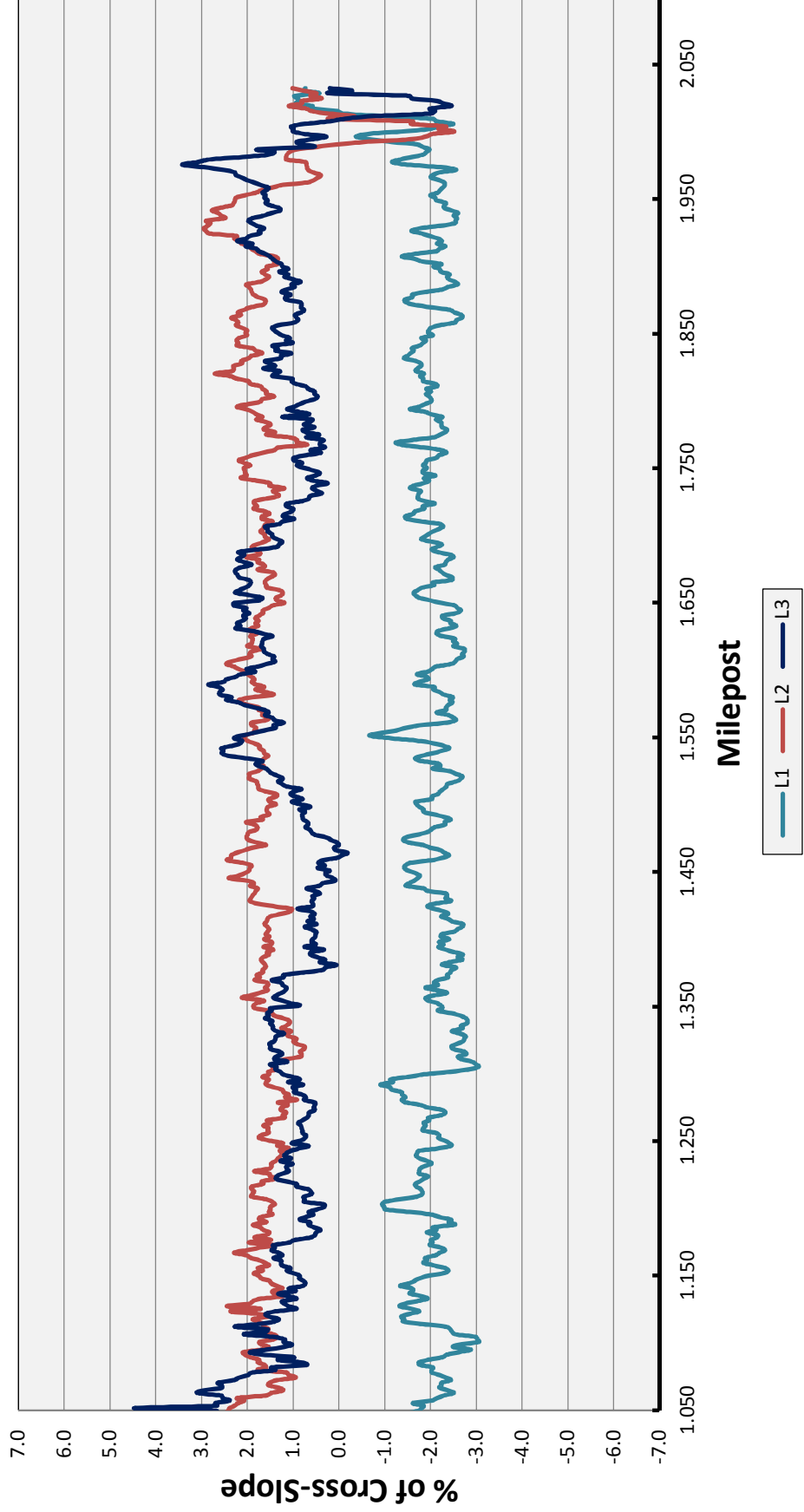
### SR 536 Westbound from MP 0.000 to MP 2.034



### SR 536 Westbound from MP 0.000 to MP 1.050

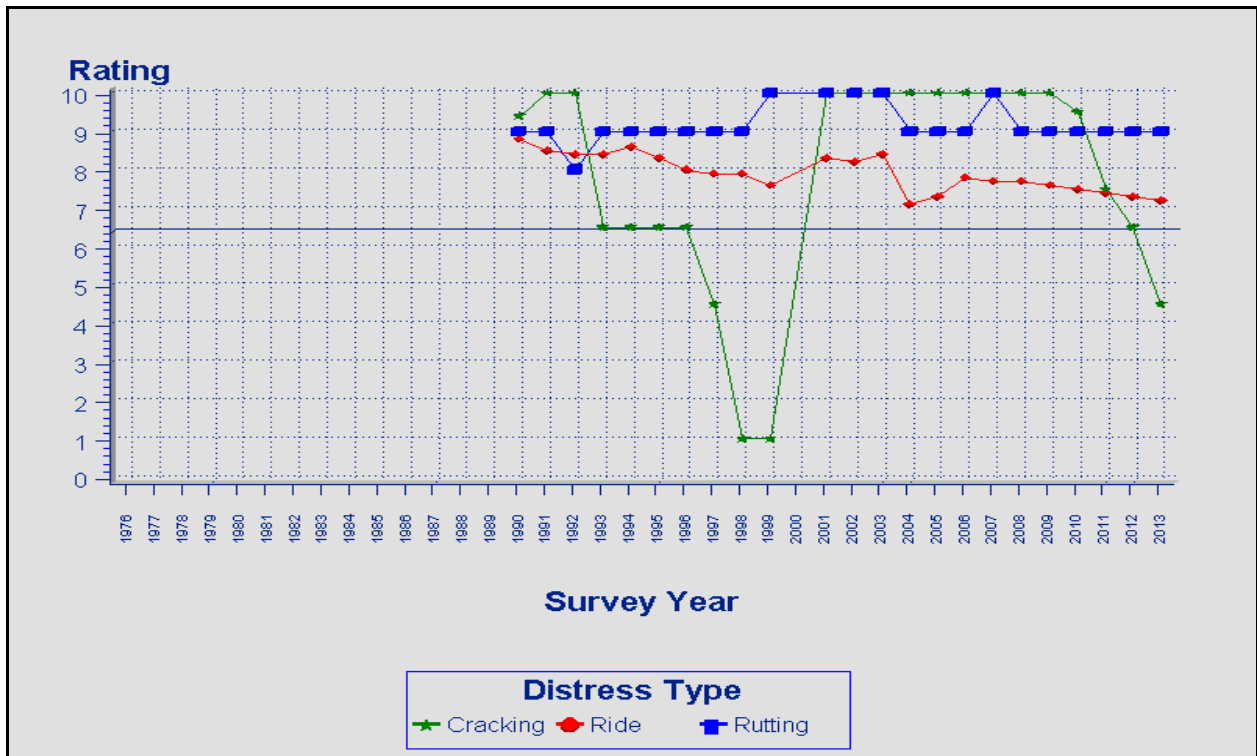


### SR 536 Westbound from MP 1.050 to MP 2.100

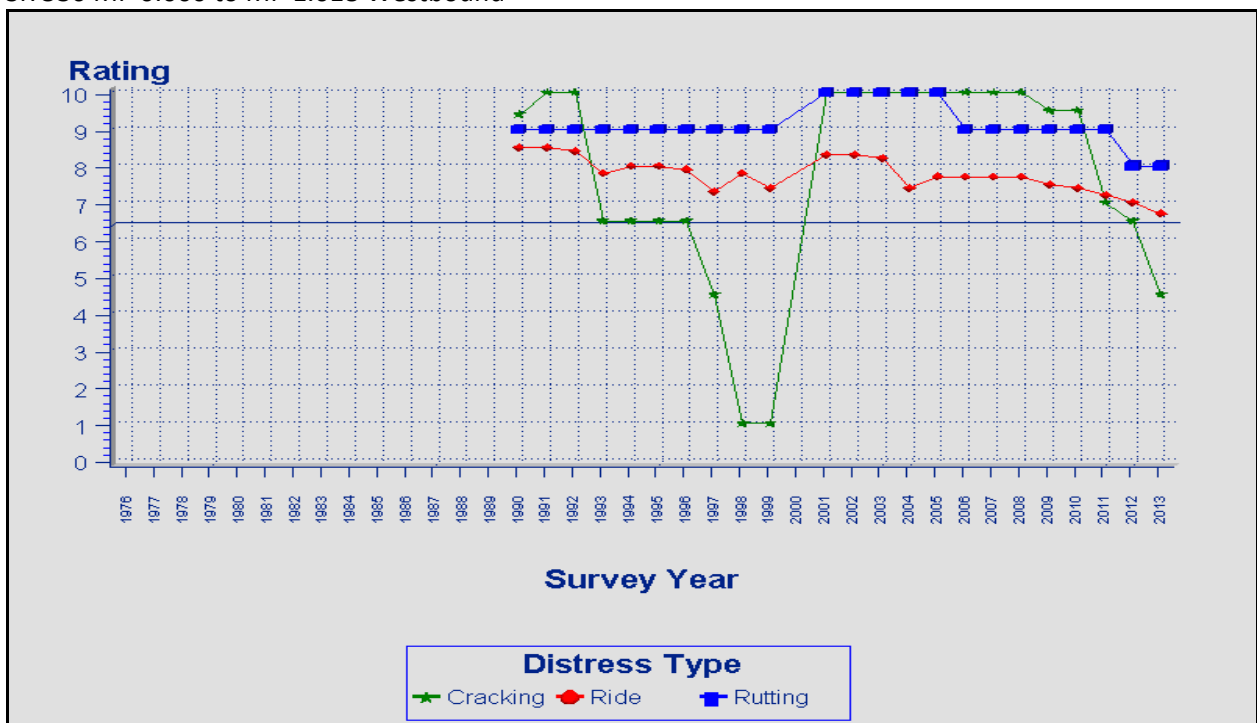


# Pavement Condition Survey (PCS) Charts for 430671-1

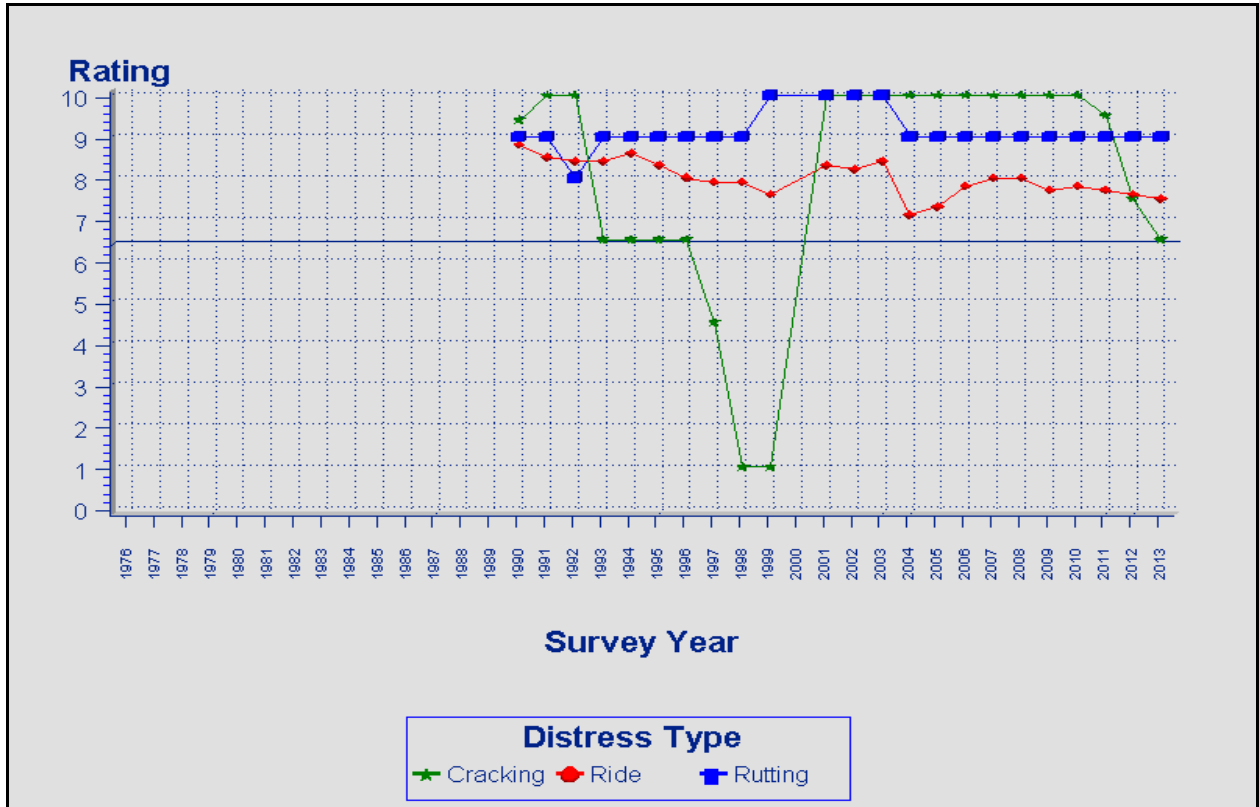
SR 536 MP 0.000 to MP 1.018 Eastbound



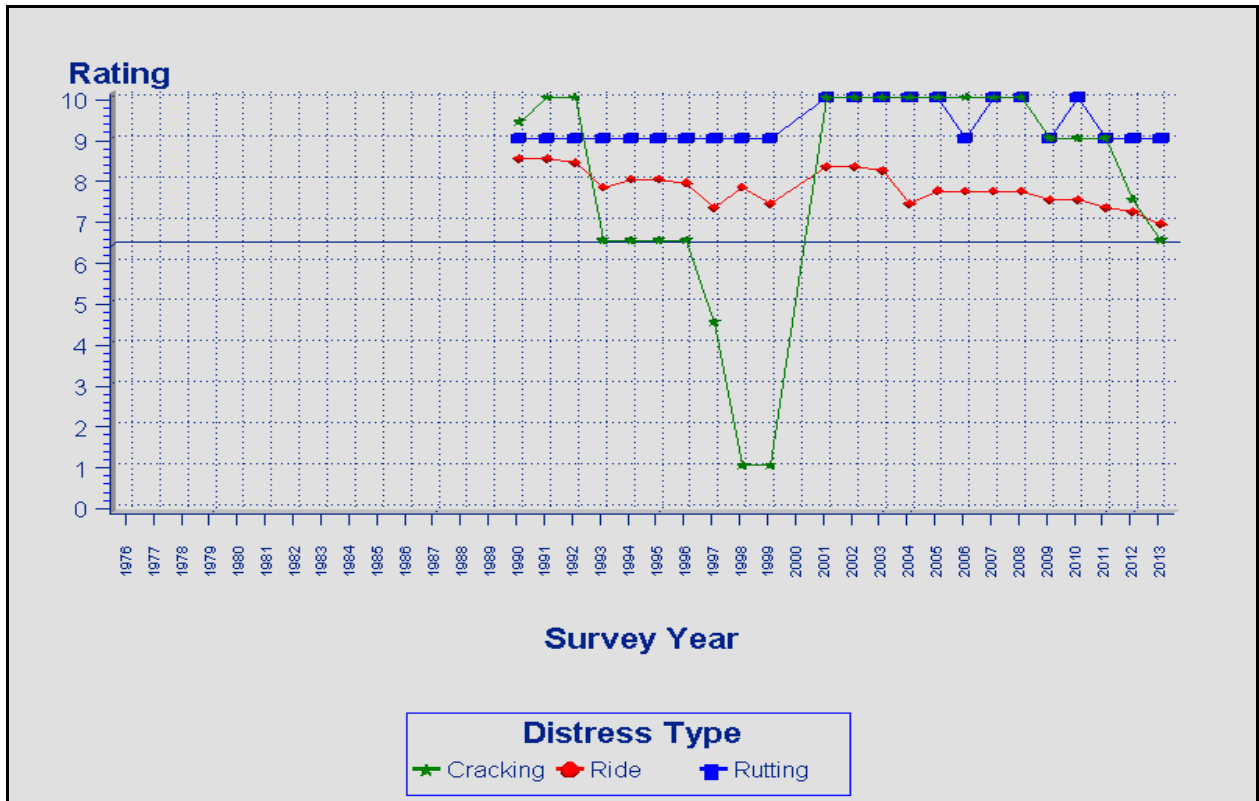
SR 536 MP 0.000 to MP 1.018 Westbound

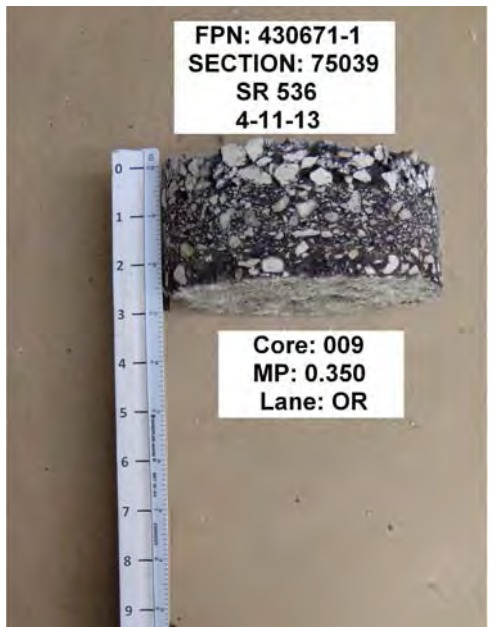
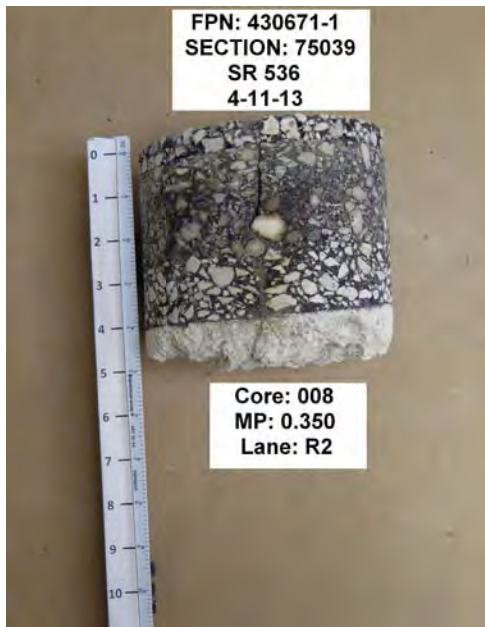
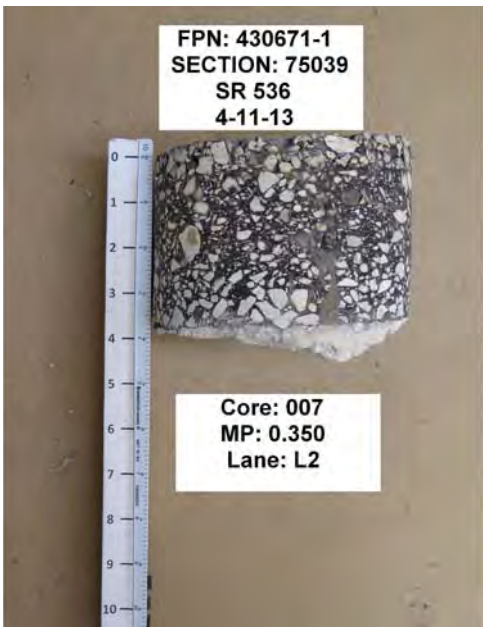
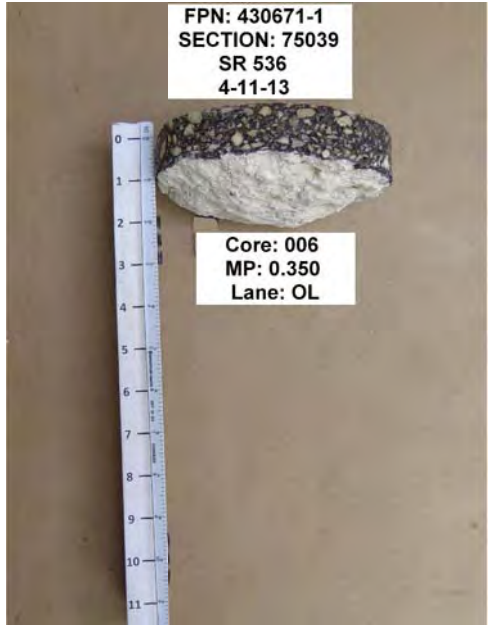
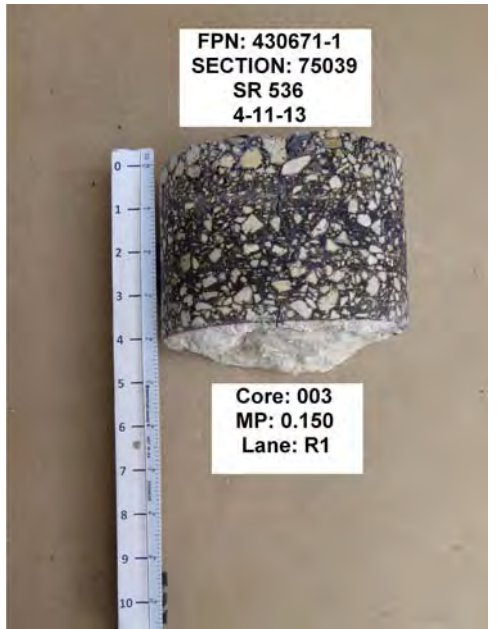
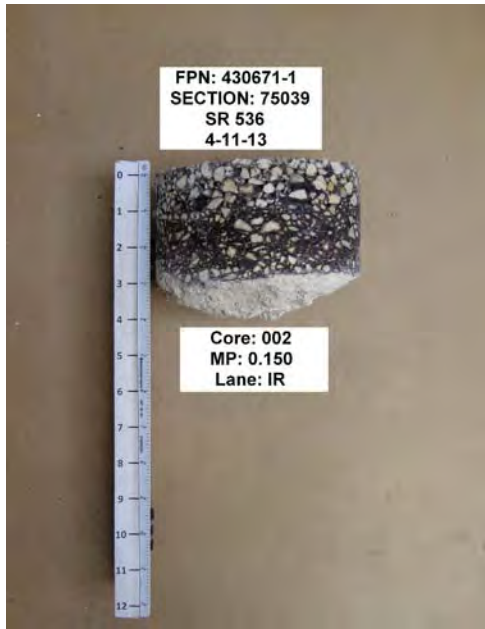


SR 536 MP 1.018 to MP 2.034 Eastbound

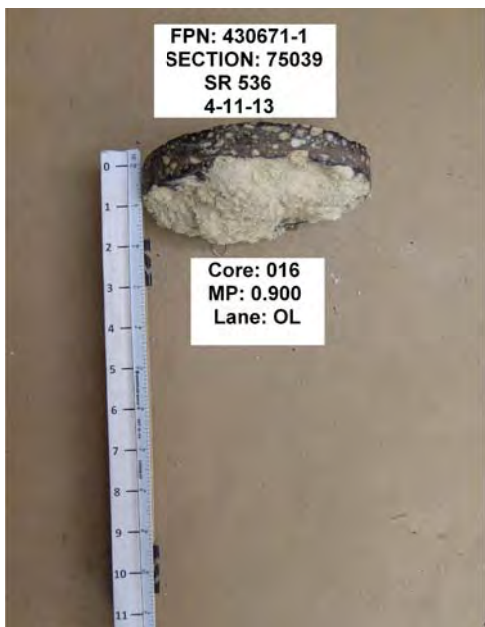
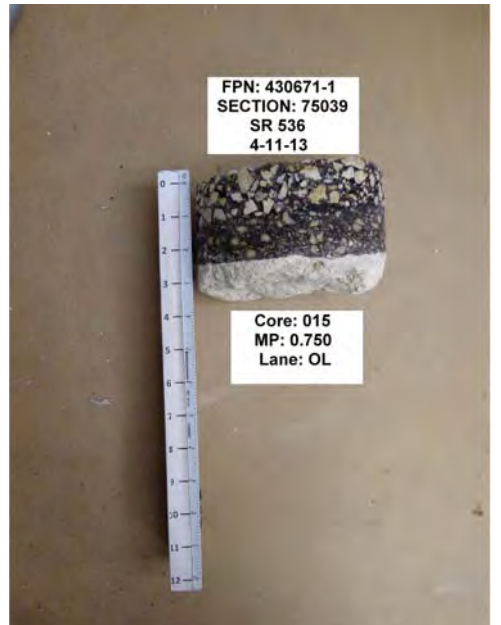
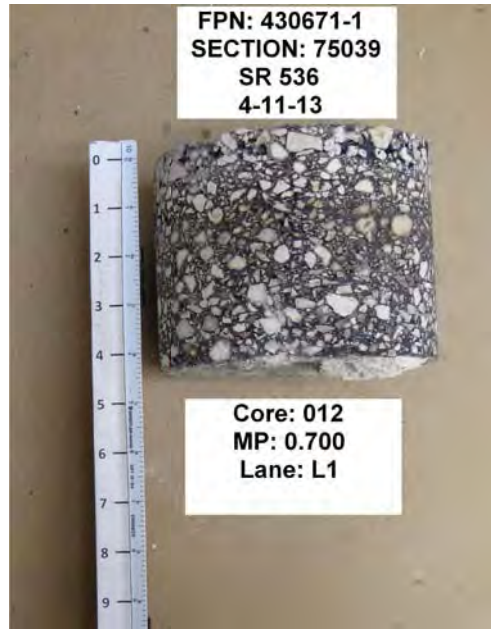
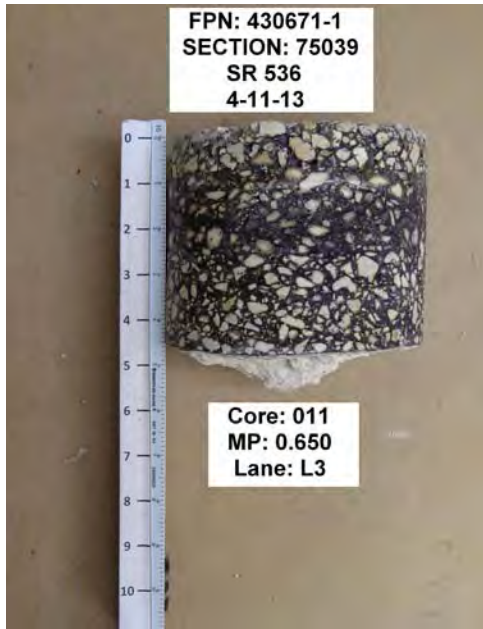
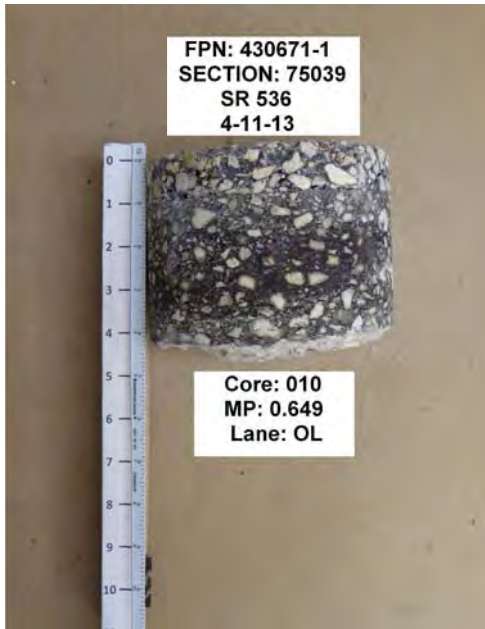


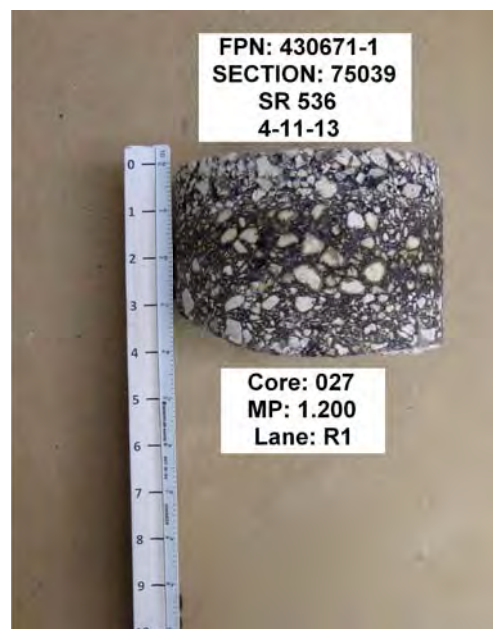
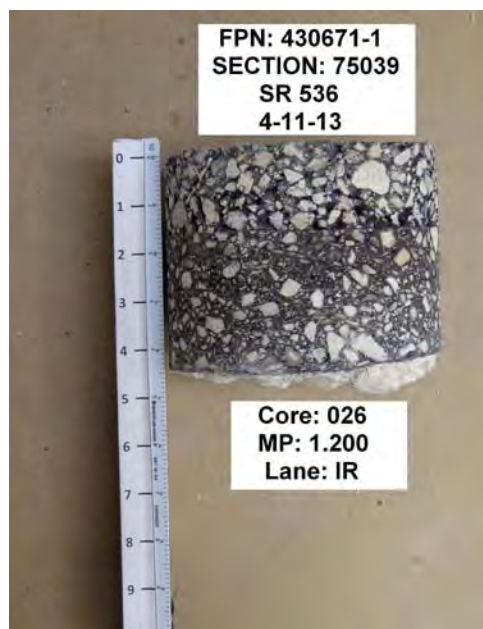
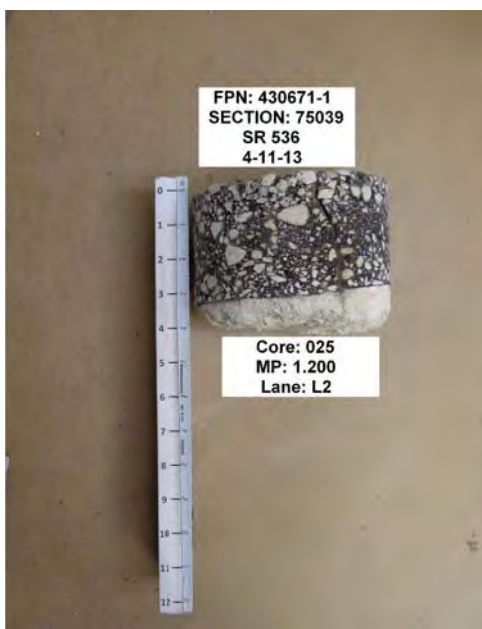
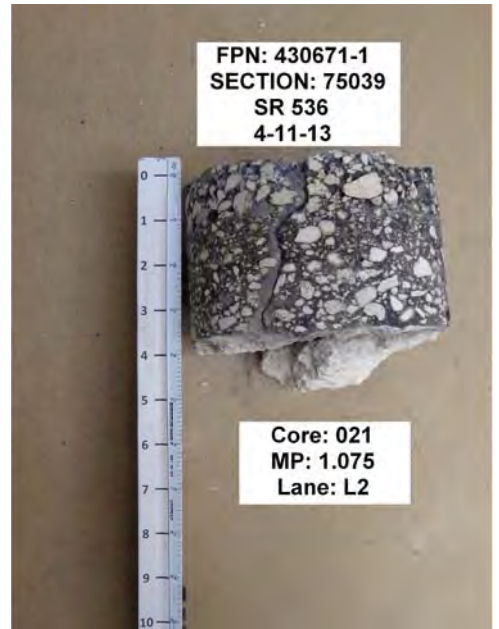
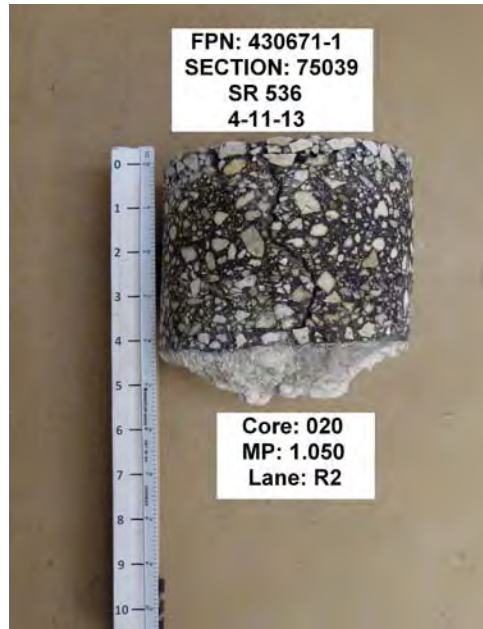
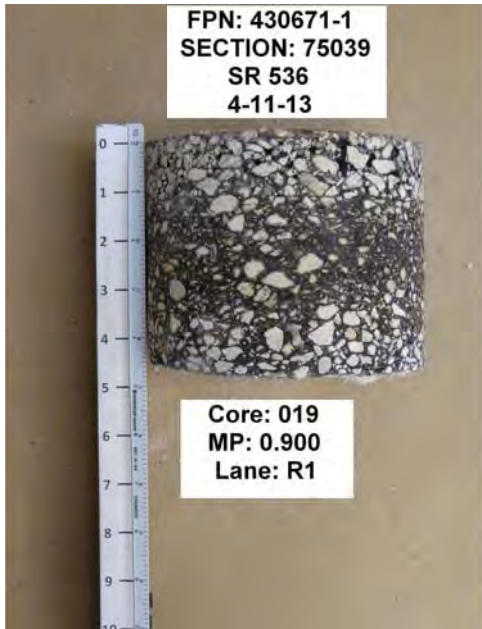
SR 536 MP 1.018 to MP 2.034 Westbound

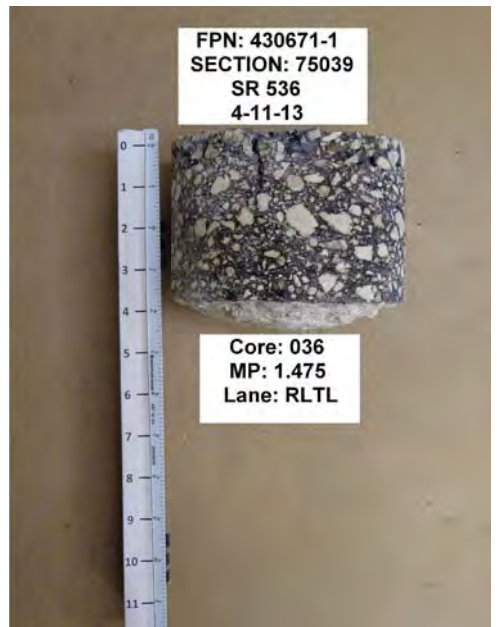
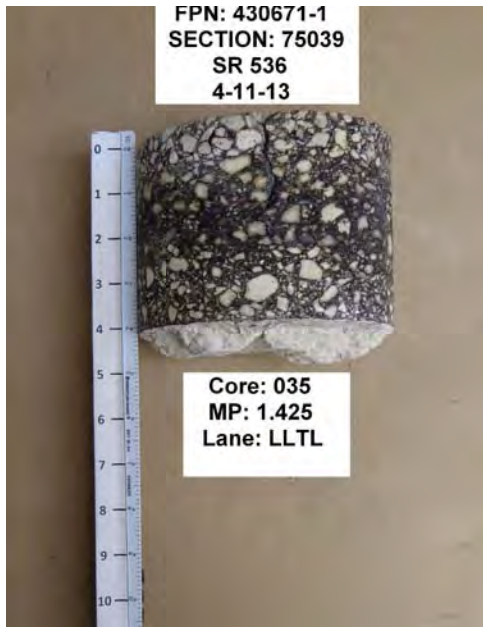
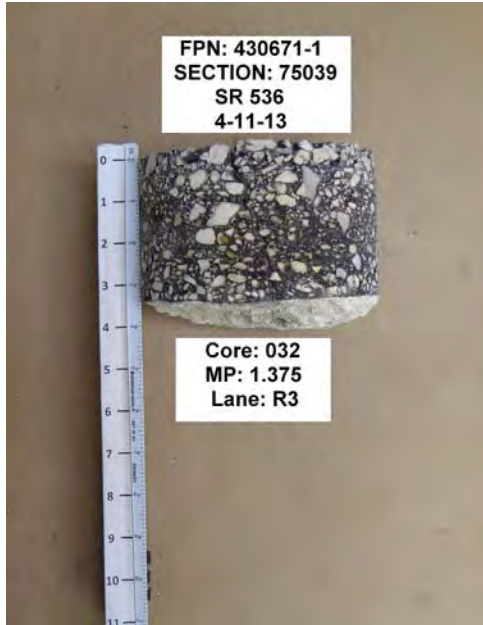
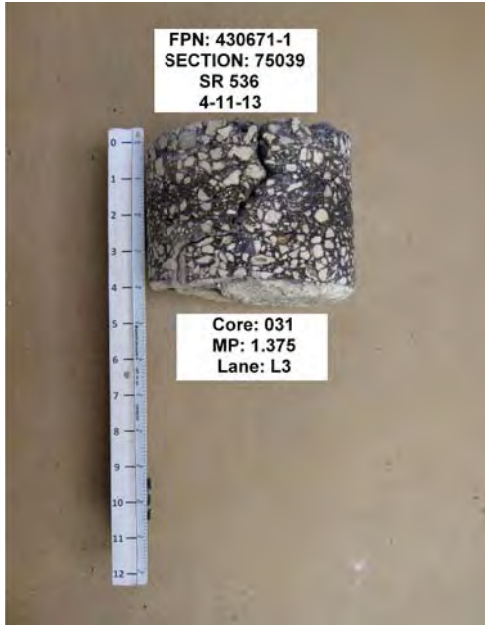
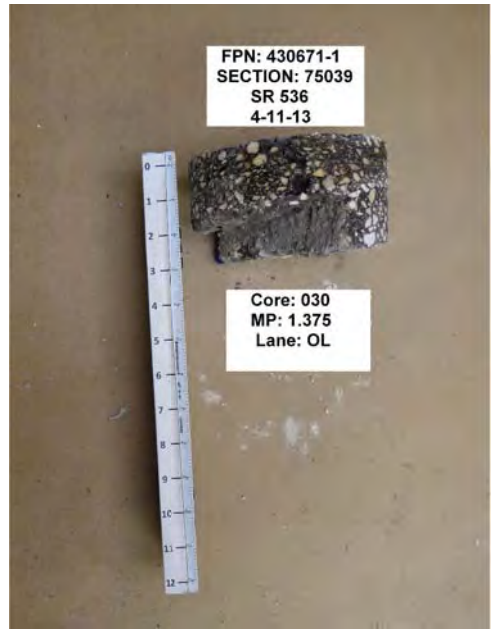
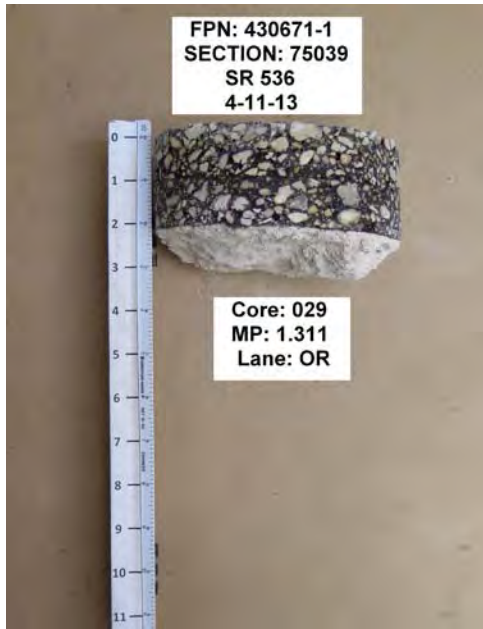
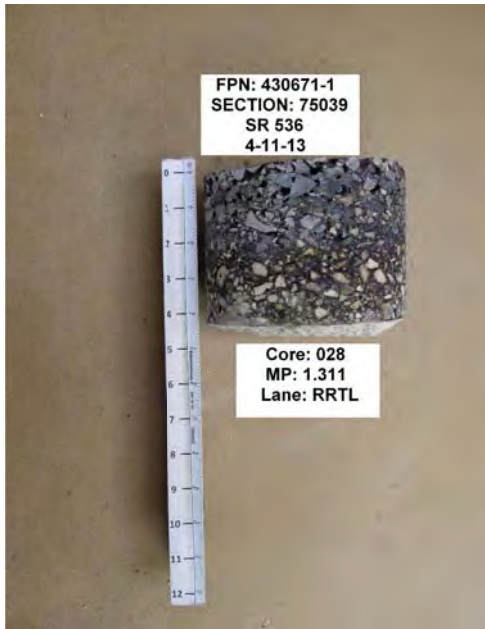


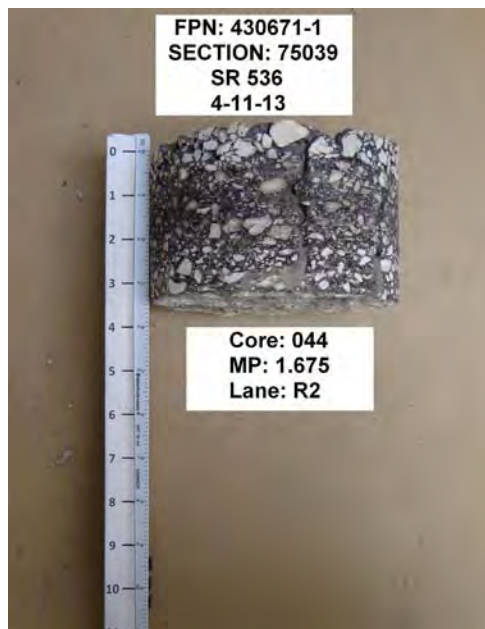
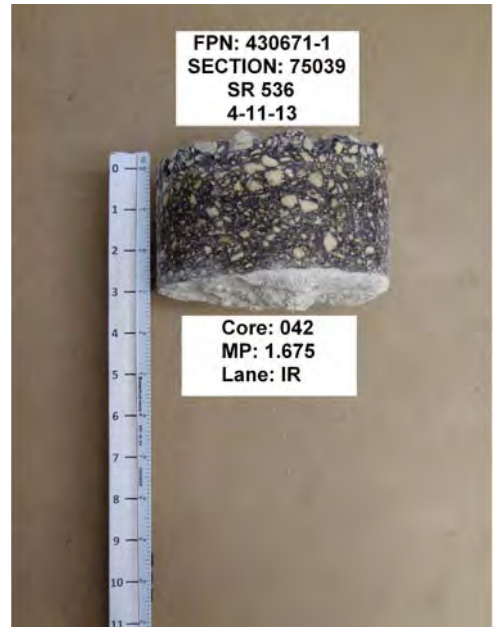
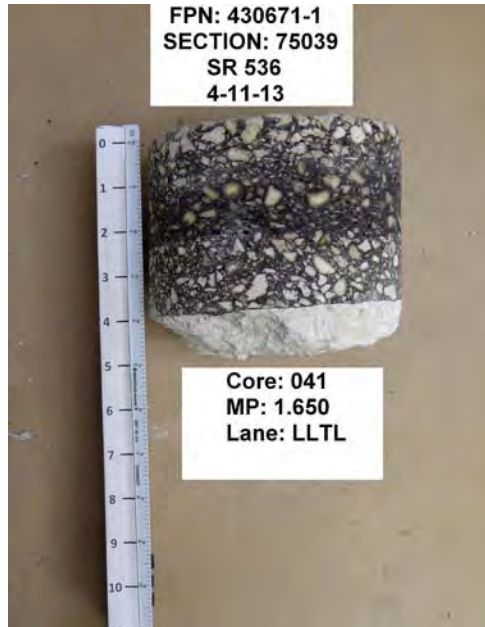
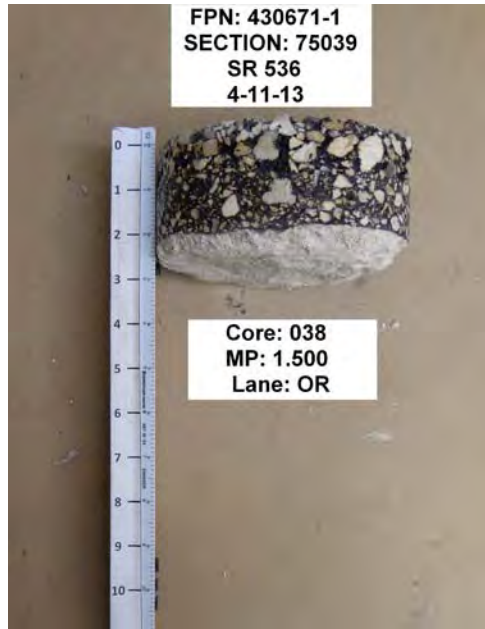
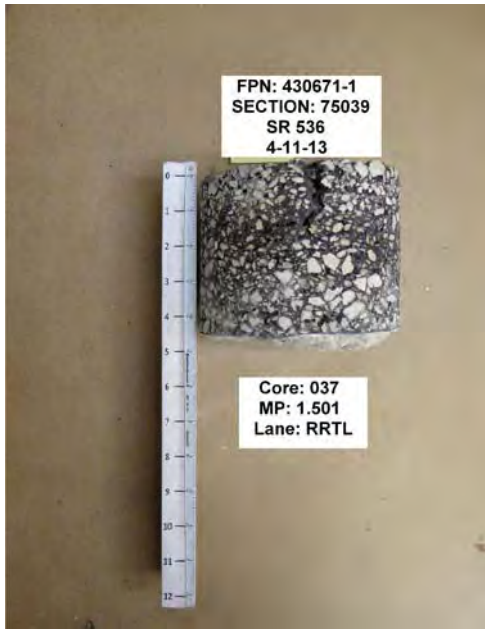


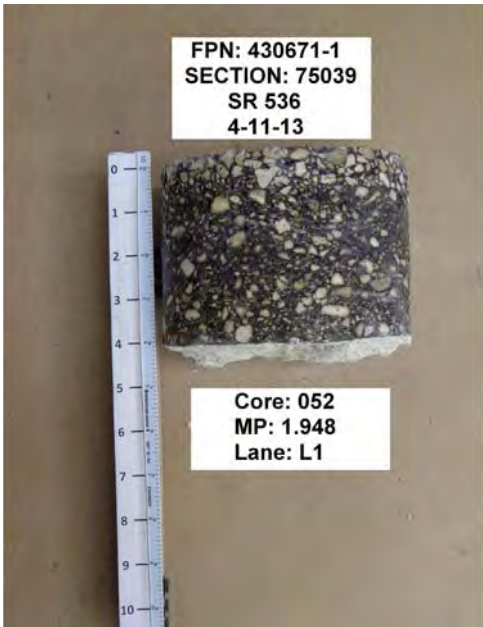
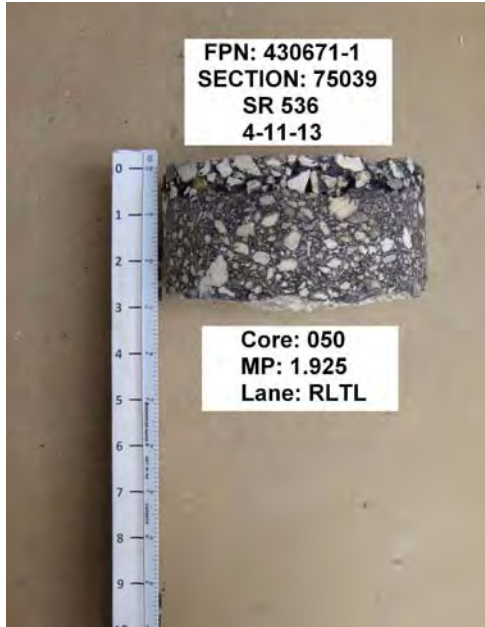
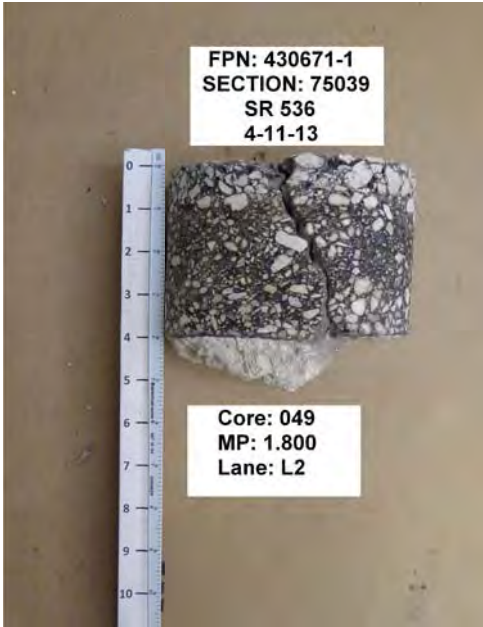
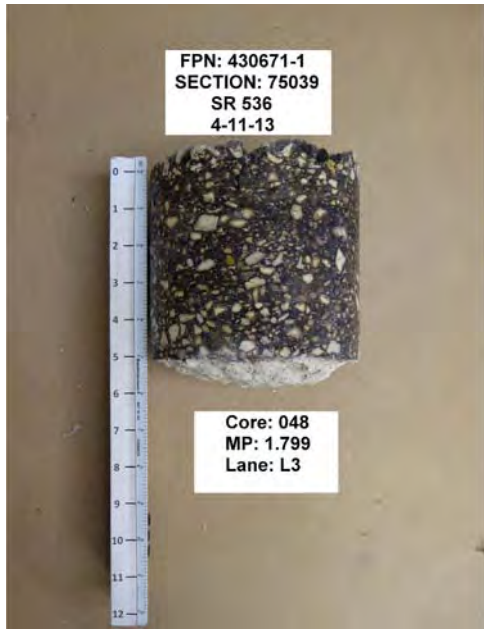
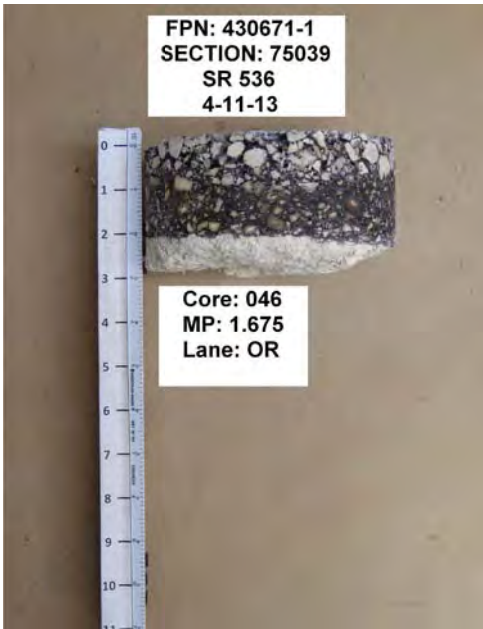










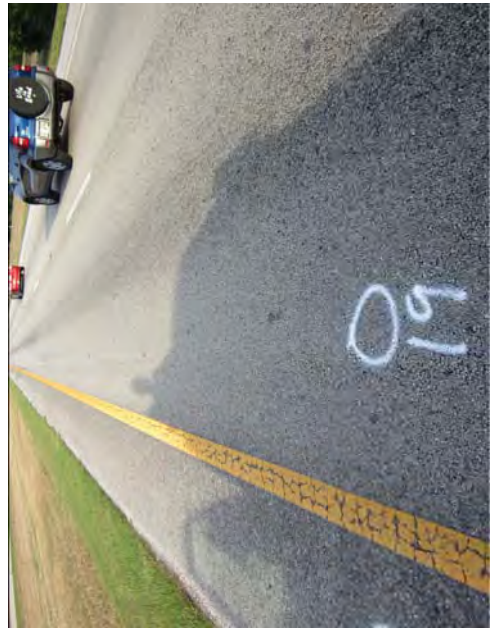


















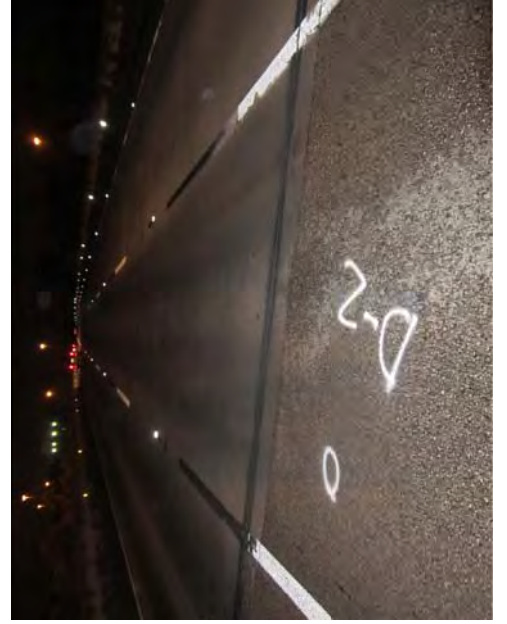




Photo 1: SR 536 eastbound near MP 0.130. This is an example of the severe pavement deterioration in the L2 and R2 travel lanes within the project limits. These lanes are heavily used by tour and transit buses going to and from the Walt Disney World theme parks.



Photo 2: SR 536 eastbound near MP 0.740. The outside paved shoulders within the project limits are wider than the 4 foot shoulders seen on roads similar to this one. The inside paved shoulders have an FC-5 surface course. The outside paved shoulders have locations that have an FC-5 surface course, and some that do not have a friction course except for an overlap from the outside travel lanes.



Photo 3: SR 536 eastbound near MP 1.305. This is in the R3 outside travel lane. Note the pop-outs of aggregates from the FC-5 friction course in the wheelpaths. The new asphalt in the right turn lane is a patch.



Photo 4: SR 536 eastbound near MP 1.515. This is a close-up of the pavement distress in the R2 lane. Note the cracking and severe raveling in this lane.



Photo 5: SR 536 eastbound near MP 1.700. Both the R2 and R3 lanes have moderate to severe cracking distress from MP 1.018 to the end of the project at MP 2.034.



Photo 6: SR 536 eastbound near MP 1.900. This photo shows more of the cracking in the R3 lane.





Photo 7: SR 536 westbound near MP 0.539. This is the last exit on the westbound roadway before entering Walt Disney World. There are no median crossovers after this milepost.



Photo 8: SR 536 westbound near MP 1.064. This is an example of the raveling distresses seen in the L2 lane.



Photo 9: SR 536 westbound near MP 1.184. This is an example of the moderate to severe alligator cracking distresses in the L2 lane within the project limits.



Photo 10: SR 536 westbound near MP 1.869. Typical condition of the westbound roadway.

**APPENDIX B**  
**TYPICAL SECTION PACKAGE**

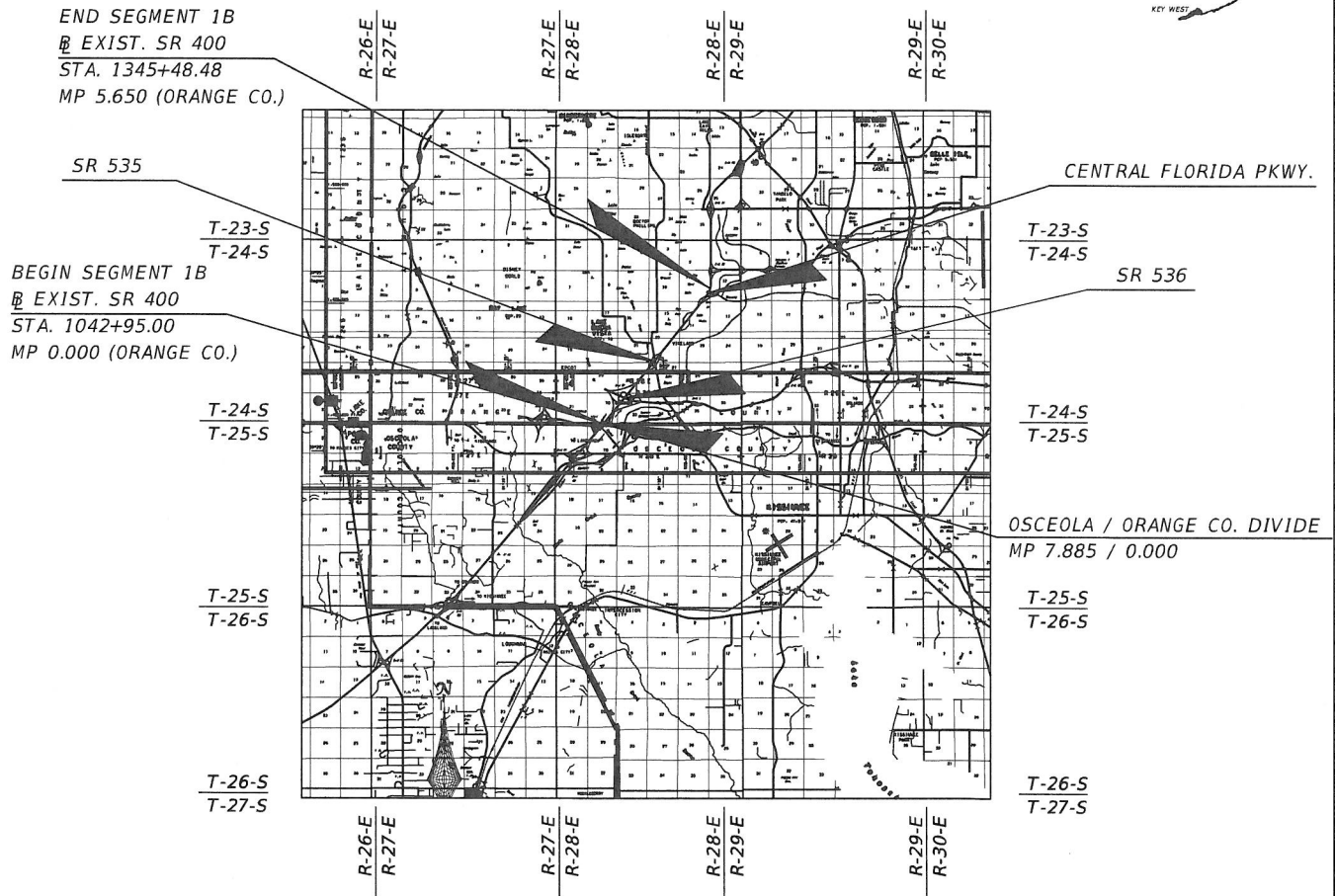
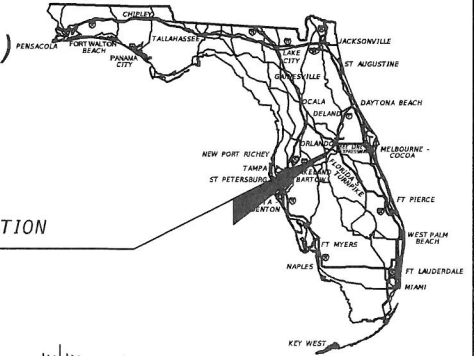
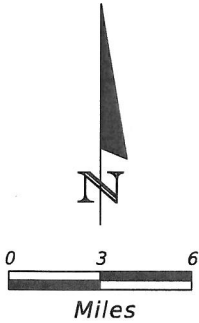
STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

FINANCIAL PROJECT ID 432100-1-22-01  
(FEDERAL FUNDS)

ORANGE COUNTY (75280)

STATE ROAD NO. 400 (I-4)  
I-4 BEYOND THE ULTIMATE  
TYPICAL SECTION PACKAGE

PROJECT LOCATION



PROJECT LENGTH IS BASED ON  $\bar{Q}$  OF CONSTRUCTION

| LENGTH OF PROJECT       |             |       |
|-------------------------|-------------|-------|
|                         | LINEAR FEET | MILES |
| ROADWAY                 | 29094.02    | 5.510 |
| BRIDGES                 | 1160.38     | 0.220 |
| NET LENGTH OF PROJECT   | 30254.40    | 5.730 |
| EXCEPTIONS              | --          | --    |
| GROSS LENGTH OF PROJECT | 30254.40    | 5.730 |

FDOT PROJECT MANAGER: BEATA STYŚ-PALASZ, PE

SHEET 1B-1

# I-4 Beyond the Ultimate

## Orange County Typical Section Package Index

PD&E FPID: 432100-1 (Segment 1B)

Design FPID: 242484-8



### I-4 Mainline

- 1B-1 Key Sheet
- 1B-2 I-4 Project Controls
- 1B-3 I-4 Typical Section with Rail Corridor (Orange County)
- 1B-4 I-4 Typical Section Bridge Viaduct Between SR 536 and SR 535 (Orange County)
- 1B-5 I-4 Typical Section Bridge Viaduct Between SR 535 and Daryl Carter Parkway (Orange County)
- 1B-6 I-4 Bridge Over SR 535 (Replace)
- 1B-7 I-4 Bridge Over Central Florida Parkway (Replace)

### Ramps

- 1B-8 One Lane Ramp
- 1B-9 Two Lane Ramp
- 1B-10 Three Lane Ramp
- 1B-11 One Lane Bridge Ramp
- 1B-12 Two Lane Bridge Ramp
- 1B-13 Three Lane Bridge Ramp

### SR 536

- 1B-14 SR 536 Project Controls
- 1B-15 SR 536 Bridge Section (Replace)
- 1B-16 I-4 Under SR 536 Eastbound Ramp
- 1B-17 I-4 Under SR 536 Mainline

### SR 535

- 1B-18 SR 535/Apopka Vineland Rd. Project Controls
- 1B-19 Hotel Plaza Blvd. Project Controls
- 1B-20 Vineland Ave. Project Controls
- 1B-21 Palm Parkway Project Controls
- 1B-22 Winter Garden Vineland Rd. Project Controls
- 1B-23 Grand Cypress Boulevard Project Controls
- 1B-24 SR 535 Roadway Section Under I-4
- 1B-25 SR 535 Roadway Section with Elevated SB
- 1B-26 Apopka Vineland Rd. Roadway Section with Elevated NB
- 1B-27 Apopka Vineland Rd. NB Bridge Section Over Hotel Plaza
- 1B-28 SR 535 SB Bridge Section Over Vineland Avenue
- 1B-29 Hotel Plaza Loop Ramp Under Apopka Vineland Rd. NB
- 1B-30 SR 400 (I-4) EB Off Ramp Under SR 535 SB

# I-4 Beyond the Ultimate

## Orange County Typical Section Package Index

PD&E FPID: 432100-1 (Segment 1B)

Design FPID: 242484-8



- 1B-31 Hotel Plaza Boulevard – Elevated Left Turns
- 1B-32 Vineland Avenue Roadway Section
- 1B-33 Hotel Plaza Boulevard Left Turn Flyover Over Apopka Vineland Rd. SB
- 1B-34 Vineland Avenue Left Turn Flyover Over SR 535 NB
- 1B-35 Apopka Vineland Rd. SB Roadway Section Under Hotel Plaza Boulevard Bridge
- 1B-36 SR 535 NB Roadway Section Under Vineland Avenue Bridge
- 1B-37 Palm Parkway Roadway Section
- 1B-38 Winter Garden Vineland Rd. Roadway Section
- 1B-39 Grand Cypress Parkway Roadway Section
- 1B-40 Vinings Way Boulevard Roadway Section
- 1B-41 Apopka Vineland Rd./CR 435 Roadway Section

### Daryl Carter Parkway

- 1B-42 Daryl Carter Parkway Project Controls
- 1B-43 I-4 Under Daryl Carter Parkway
- 1B-44 Daryl Carter Parkway Bridge Section

### Central Florida Parkway

- 1B-45 Central Florida Parkway Project Controls
- 1B-46 I-4 Under Westbound Central Florida Parkway Ramp
- 1B-47 Central Florida Parkway Under I-4

**PROJECT IDENTIFICATION**

FINANCIAL PROJECT ID 432100-1-22-01 COUNTY (SECTION) ORANGE (75280)  
 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          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | (X) ( ) NATIONAL HIGHWAY SYSTEM           |
| (X) FREEWAY/EXPWY. ( ) MAJOR COLL. | (X) ( ) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. ( ) MINOR COLL. | (X) ( ) STRATEGIC INTERMODAL SYSTEM       |
| ( ) MINOR ART. ( ) LOCAL           | (X) ( ) STATE HIGHWAY SYSTEM              |
|                                    | ( ) (X) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| (X) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>202,000</u> |
| ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>237,000</u> |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>269,000</u>  |
| ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>70 MPH</u> K 7.4   |
|   | POSTED SPEED <u>70 MPH</u> D 52.92 |
|   | T 24 10.2%                         |

| CRITERIA   | DESIGN SPEED APPROVALS  |                                   |               |   |               |
|--|---|-----------------------------------|---------------|---|---------------|
| (X) NEW CONSTRUCTION / RECONSTRUCTION  |   |                                   |               |   |               |
| ( ) RRR INTERSTATE / FREEWAY   |   |                                   |               |   |               |
| ( ) RRR NON-INTERSTATE / FREEWAY   |   |                                   |               |   |               |
| ( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION   |   |                                   |               |   |               |
| ( ) TDLC / RRR   |   |                                   |               |   |               |
| ( ) MANUAL OF UNIFORM MINIMUM STANDARDS<br>(FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY) |   |                                   |               |   |               |
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| _____<br>DISTRICT DESIGN ENGINEER  | _____<br>DATE   |                                   |               |   |               |
| _____<br>DISTRICT TRAFFIC OPERATIONS ENGINEER  | _____<br>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:

SR 536 (750324, 750323, 750322)  
 SR 535 (750367, 750368)  
 DARYL CARTER PARKWAY (754115)  
 CENTRAL FLORIDA PARKWAY (750142, 750200, 750402)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:  
 GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE COUNTY UTILITIES)  
 ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

**SHEET 1B-2**

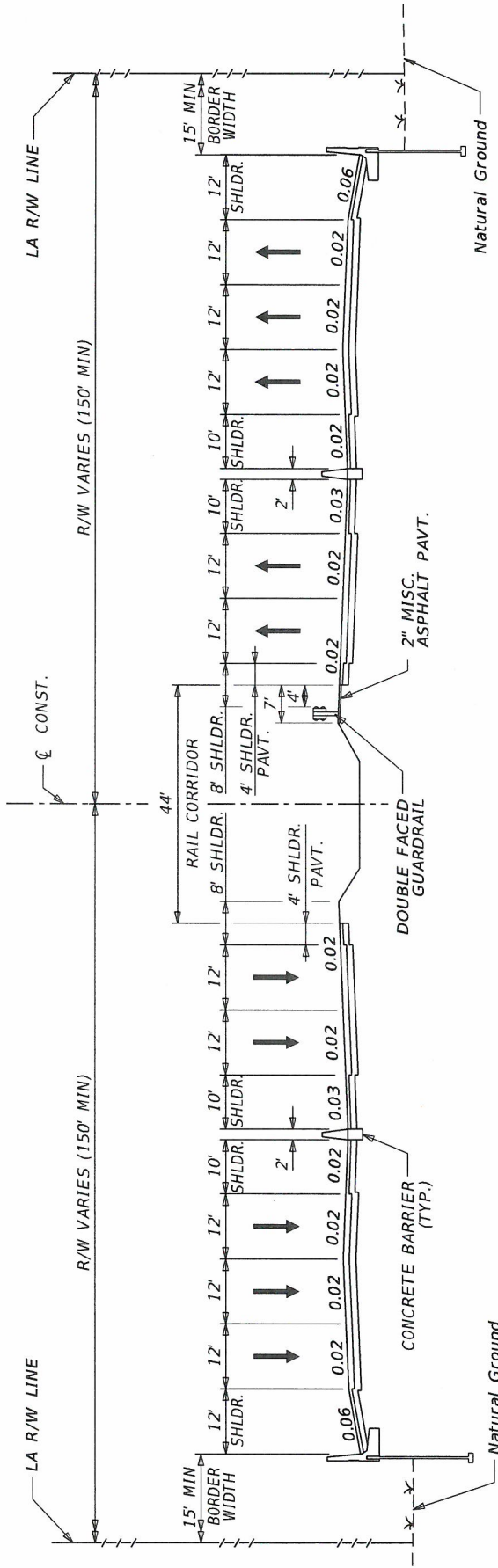
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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.

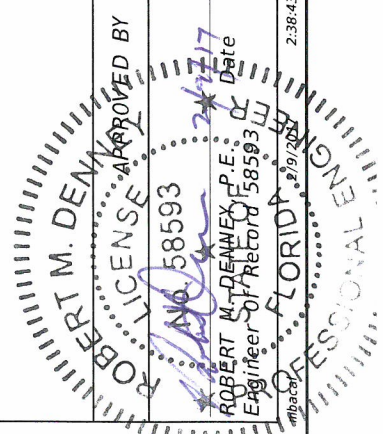
## PROPOSED ROADWAY TYPICAL SECTION



**DESIGN SPEED = 70 MPH**  
**SR 400 (I-4) WITH RAIL CORRIDOR**  
**STA 1042+95.00 TO STA 1121+50.00**  
**STA 1288+00.00 TO STA 1345+48.48**

SHEET 1B-3

|  |   |                                      |
|--|---|--------------------------------------|
| APPROVED BY  | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:43 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | FHWA Transportation Engineer<br>Date |





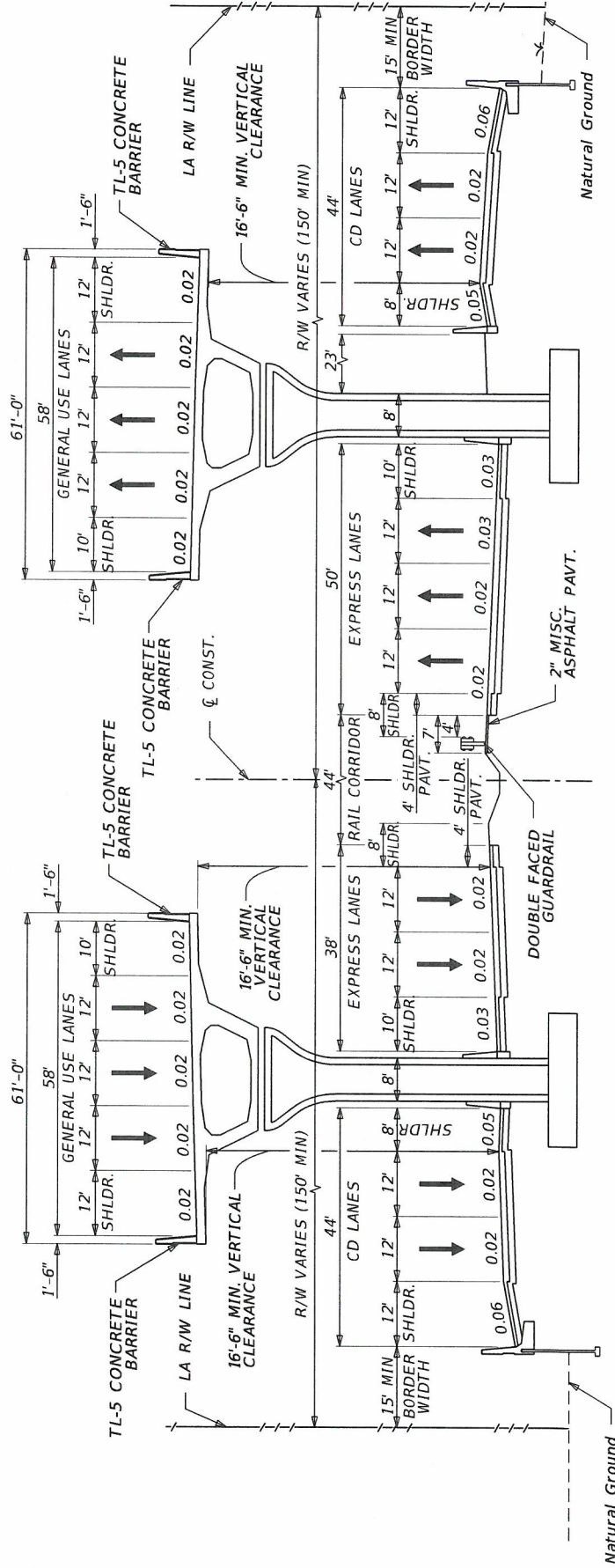
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FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 536 AND SR 535  
 STA 1121+50 TO STA 1168+50

SHEET 1B-4

|  |   |   |
|--|---|---|
| LICENSE APPROVED BY<br>ROBERT M. DENNEY<br>No. 58593 | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2/2/2017 2:38:43 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date |
| FDOT CONCURRENCE                                     | FDOT CONCURRENCE  | FHWA CONCURRENCE  |
| Date   | Date  | Date  |

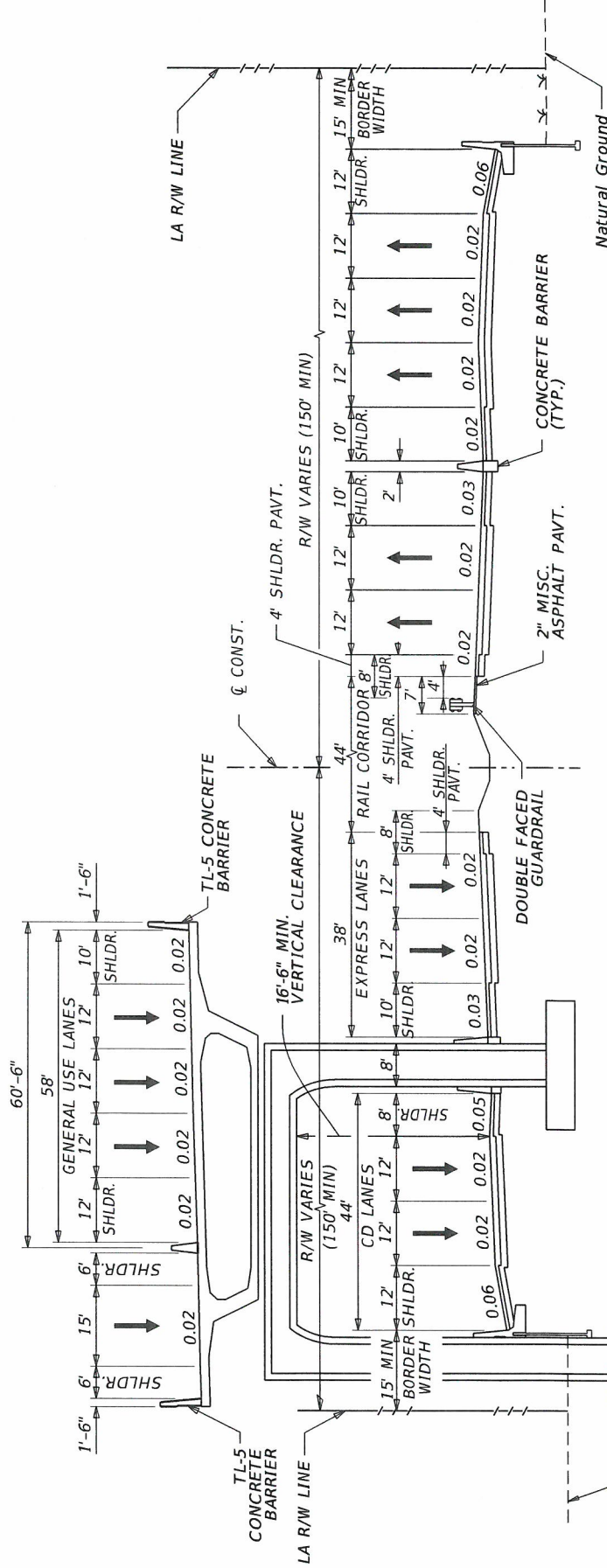
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 535 AND DARYL CARTER PARKWAY  
STA 1168+50 TO STA 1288+00

SHEET 1B-5

|                          |   |  |
|--------------------------|---|--|
| APPROVED BY<br>No. 58593 | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT. OF AUTH. NO. 6500 | DATE OF STATE OF FLORIDA LICENSE<br>ROBERT M. DENNEY, P.E.<br>Engineer of Roadways<br>2/9/2017 |
| FDOT CONCURRENCE         | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer   | DATE   |
| FHWA CONCURRENCE         | FHWA Transportation Engineer  | DATE   |

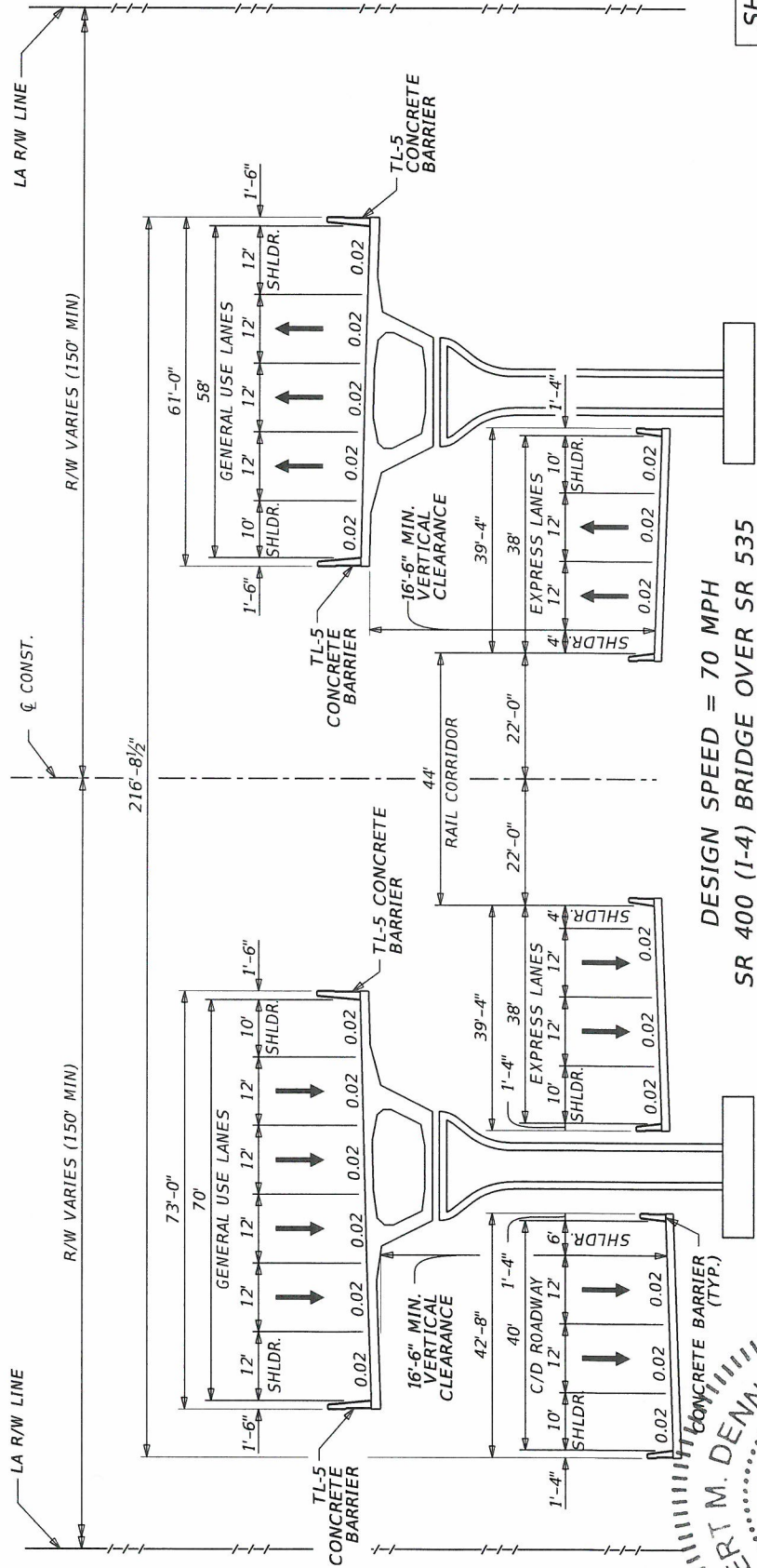
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 SR 535**

SHEET 1B-6

|  |   |              |
|--|---|--------------|
| FDOT CONCURRENCE   | FHWA CONCURRENCE  |              |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT. OF AUTH. NO. 6500<br>2/9/2017 2:38:44 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | Date<br>Date |

**APPROVED BY**  
 ROBERT M. DENNE  
 LICENSE NO. 58593  
 2/9/2017

PROFESSIONAL ENGINEER

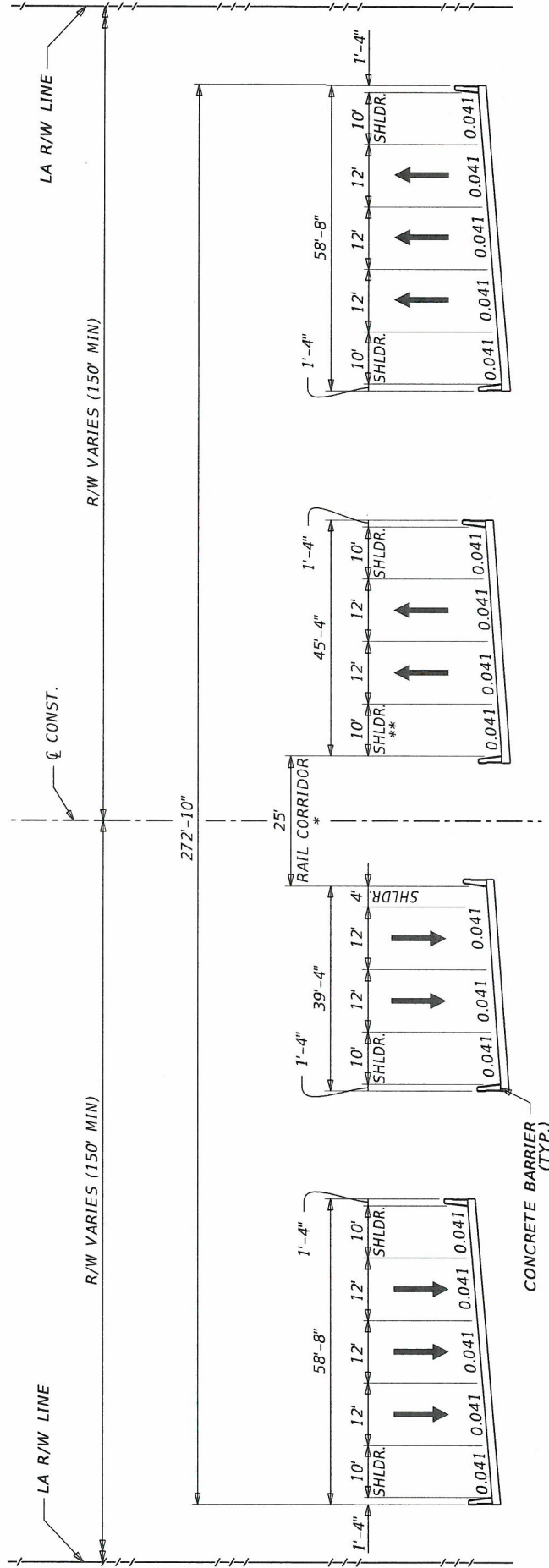
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 CENTRAL FLORIDA PKWY

\* 25-FT REQUIRED FROM INSIDE FACE OF BARRIER TO INSIDE FACE OF RAIL ELEVATED IN THIS AREA.  
 \*\* 10-FT WIDE SHOULDER USED IN LIEU OF 4-FT SHOULDER TO MEET STOPPING SIGHT DISTANCE.

SHEET 1B-7

|  |  |  |
|--|--|--|
| <p>APPROVED BY<br/>                 No. 58593<br/>                 ROBERT M. DENNEY<br/>                 LICENSE<br/>                 STATE OF FLORIDA<br/>                 ENGINEER<br/>                 Date</p> | <p>DATE<br/>                 ANNETTE K. BRENNAN, P.E.<br/>                 FDOT District Design Engineer<br/>                 Date</p> | <p>DATE<br/>                 ANNETTE K. BRENNAN, P.E.<br/>                 FDOT District Design Engineer<br/>                 Date</p> |
| <p>CONCRETE BARRIER (TYP.)</p>   | <p>FDOT CONCURRENCE</p>  | <p>FHWA CONCURRENCE</p>  |

# PROJECT IDENTIFICATION

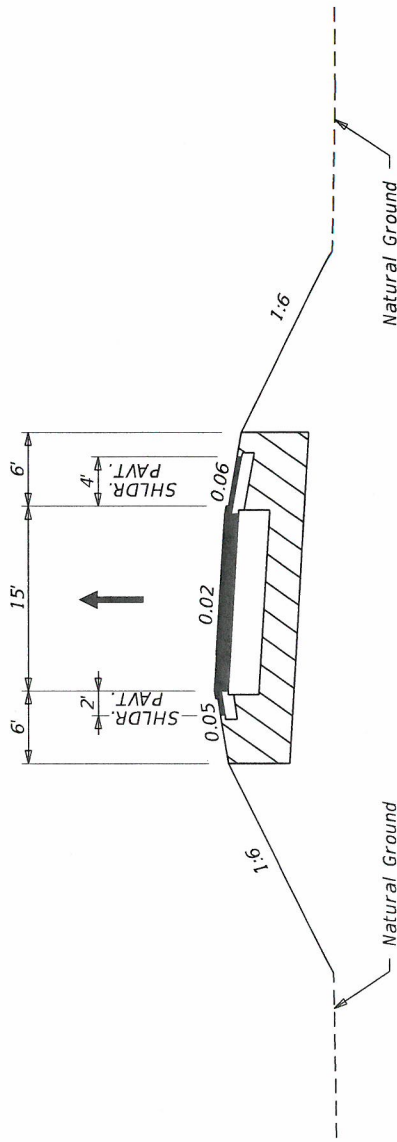
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 | Ramp  | Design Speed | Ramp                                 | Design Speed |
|---------------------------------------|--------------|---|--------------|--------------------------------------|--------------|
| SEGMENT 1B                            |              | I-4 EB TO SR 536 WB                         | 30           | I-4 WB GUL TO SR 535 SB              | 50           |
| WORLD DR EB TO I-4 GUL WB             | 50           | SR 536 WB TO I-4 WB CD ROAD                 | 30           | I-4 WB CD RAMP TO SR 535 NB          | 50           |
| I-4 EB TO WORLD DR EB                 | 50           | I-4 WB EXPRESS LANES RAMP TO I-4 WB CD ROAD | 50           | I-4 WB CD RAMP TO SR 535 SB          | 50           |
| I-4 WB RAMP TO WORLD DR EB            | 30           | I-4 WB EXPRESS LANES RAMP TO SR 536 WB      | 50           | DARYL CARTER PKWY RAMP TO I-4 WB     | 50           |
| I-4 EB GUL TO WORLD DR WB             | 30           | I-4 WB CD ROAD RAMP TO I-4 WB GUL           | 50           | I-4 WB RAMP TO DARYL CARTER PKWY     | 50           |
| I-4 EXPRESS LANES EB TO SR 417 NB     | 50           | I-4 EB GUL TO I-4 EB EXPRESS LANES          | 50           | I-4 EB RAMP TO DARYL CARTER PKWY     | 50           |
| SR 417 SB TO I-4 EXPRESS LANES WB     | 50           | I-4 EB GUL TO SR 535 SB                     | 30           | SR 535 NB TO HOTEL PLAZA BLVD        | 30           |
| I-4 EB RAMP TO SR 530 WB              | 30           | I-4 EB GUL TO SR 535 SB                     | 50           | CENTRAL FL PKWY WB TO I-4 WB CD ROAD | 50           |
| I-4 EB RAMP TO SR 530 WB              | 50           | I-4 EB GUL TO SR 535 NB                     | 50           | CENTRAL FL PKWY EB TO I-4 WB         | 50           |
| I-4 WB RAMP TO SR 530 EB              | 30           |   |              |                                      |              |
| I-4 EB RAMP TO OSCEOLA PKWY           | 50           |   |              |                                      |              |
| I-4 EB EXPRESS LANES TO SR 536/SR 535 | 50           |   |              |                                      |              |
| SR 536 TO I-4 WB GUL                  | 50           |   |              |                                      |              |
| SR 536 TO I-4 WB EXPRESS LANES        | 50           |   |              |                                      |              |
| SR 536 EB TO I-4 WB                   | 50           |   |              |                                      |              |
| I-4 WB CD ROAD TO I-4 WB              | 50           |   |              |                                      |              |
| I-4 WB CD ROAD TO SR 536 EB           | 30           |   |              |                                      |              |
| SR 536 EB TO I-4 EB GUL               | 50           |   |              |                                      |              |

## PROPOSED ROADWAY TYPICAL SECTION



SR 400 (I-4)  
ONE LANE RAMP

SHEET 1B-8

|  |   |                                      |
|--|---|--------------------------------------|
|  | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:45 PM<br>2/9/2017 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date | FHWA Transportation Engineer<br>Date |

APPROVED BY

# PROJECT IDENTIFICATION

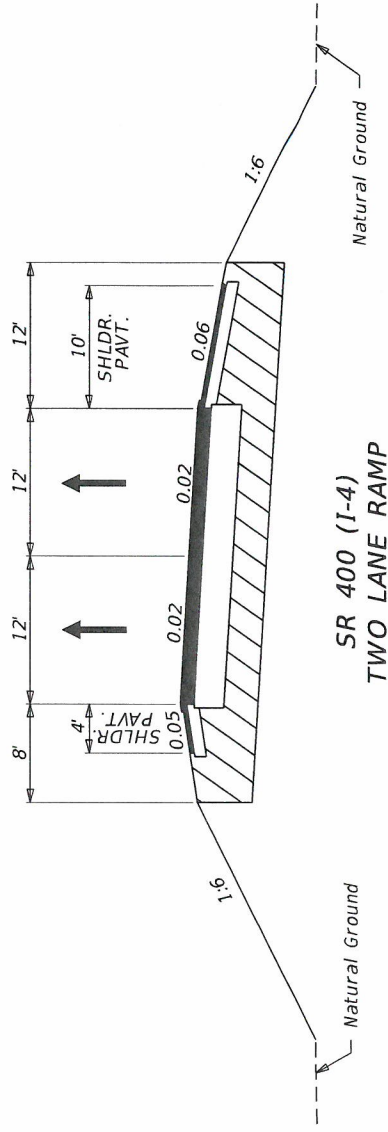
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 | Ramp                              | Design Speed |
|--------------------------------|--------------|-----------------------------------|--------------|
| WORLD DR RAMP TO I-4 EB        | 50           | DARYL CARTER PKWY RAMP TO I-4 WB  | 50           |
| I-4 WB TO WORLD DR WB          | 50           | I-4 EB RAMP TO DARYL CARTER PKWY  | 50           |
| SR 530 EB RAMP TO I-4 EB       | 50           | DARYL CARTER PKWY RAMP TO I-4 EB  | 50           |
| I-4 WB GUL TO SR 530           | 50           | I-4 WB RAMP TO DARYL CARTER PKWY  | 50           |
| I-4 EB TO SR 536/SR535         | 50           | I-4 EB GUL TO CENTRAL FL PKWY     | 50           |
| I-4 EB CD ROAD TO SR 536 EB    | 50           | I-4 WB GUL TO CENTRAL FL PKWY     | 50           |
| SR 536 TO SR 535               | 50           | CENTRAL FL PKWY TO I-4 EB CD ROAD | 50           |
| SR 536 TO I-4 EB EXPRESS LANES | 50           | CENTRAL FL PKWY TO I-4 EB GUL     | 50           |
| I-4 EB TO SR 535               | 50           |                                   |              |
| SR 536 TO I-4 EB GUL           | 50           |                                   |              |
| I-4 WB RAMP TO 536 WB          | 50           |                                   |              |
| SR 535 SB TO I-4 WB GUL        | 50           |                                   |              |
| SR 535 NB TO I-4 EB GUL        | 50           |                                   |              |
| I-4 WB GUL TO SR 535 NB        | 30           |                                   |              |

## PROPOSED ROADWAY TYPICAL SECTION



SHEET 1B-9

|  |   |                                      |
|--|---|--------------------------------------|
|  | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| APPROVED BY<br>No. 58593<br>HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO. 6500<br>2/9/2007 2:38:45 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | FHWA Transportation Engineer<br>Date |

# PROJECT IDENTIFICATION

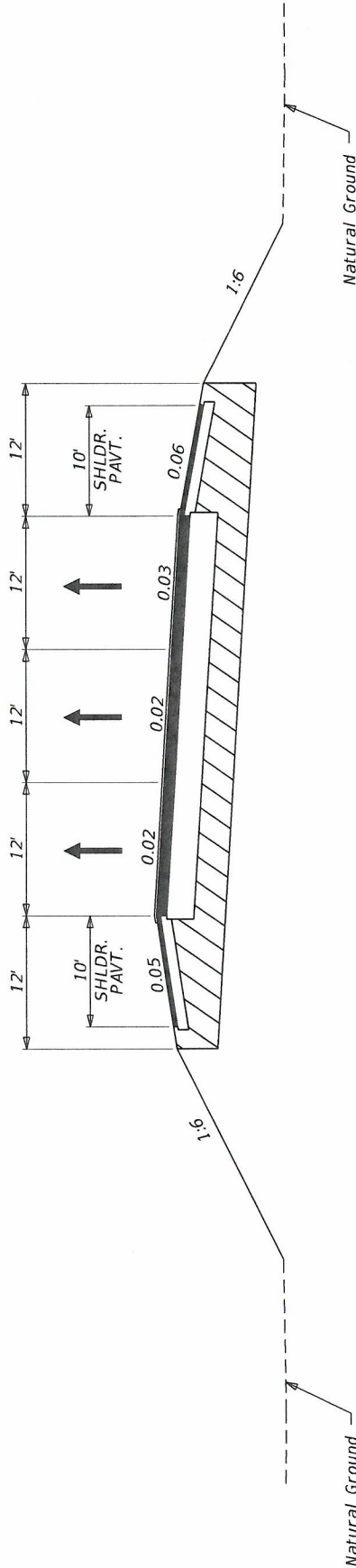
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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.

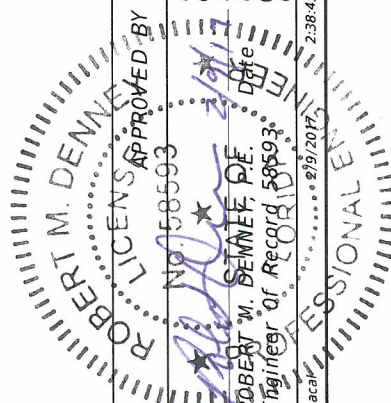
| Ramp                       | Design Speed |
|----------------------------|--------------|
| SEGMENT 1B                 |              |
| SR 536 EB TO I-4 EB/SR 535 | 50           |
| I-4 WB RAMP TO 536 WB      | 50           |

## PROPOSED ROADWAY TYPICAL SECTION



SR 400 (I-4)  
THREE LANE RAMP

SHEET 1B-10



| APPROVED BY   | DATE          | CONCURRENCE      |
|---|---------------|------------------|
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:45 PM<br>No. 58593<br>ROBERT M. DENNEFF, P.E.<br>Engineer of Record, 58593 | _____<br>Date | FDOT CONCURRENCE |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer   | _____<br>Date | FHWA CONCURRENCE |

# PROJECT IDENTIFICATION

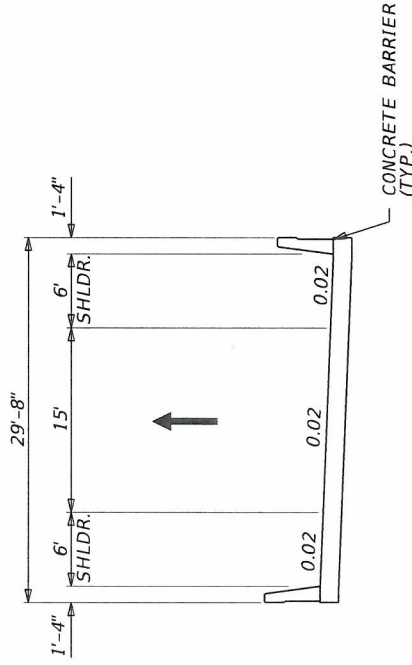
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 1B                            |              |
| I-4 EXPRESS LANES EB TO SR 417 NB     | 50           |
| SR 417 SB TO I-4 EXPRESS LANES WB     | 50           |
| SR 530 EB RAMP TO I-4 WB              | 50           |
| I-4 EB RAMP TO SR 530 WB              | 50           |
| I-4 EB EXPRESS LANES TO SR 536/SR 535 | 50           |
| SR 536 TO I-4 EB GUL                  | 50           |
| I-4 WB CD ROAD RAMP TO I-4 WB GUL     | 50           |
| I-4 WB GUL TO SR 535 SB               | 50           |
| DARYL CARTER PKWY RAMP TO I-4 WB      | 50           |
| CENTRAL FL PKWY WB TO I-4 WB CD ROAD  | 50           |
| I-4 WB TO CENTRAL FL PKWY             | 50           |

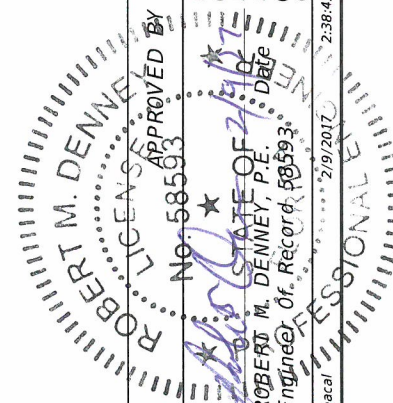
## PROPOSED STRUCTURE TYPICAL SECTION



SR 400 (I-4)  
ONE LANE BRIDGE RAMP

SHEET 1B-II

|  |   |                                      |
|--|---|--------------------------------------|
|  | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| APPROVED BY<br>LICENSE NO. 58593<br>STATE OF FLORIDA<br>ROBERT M. DENNEY, P.E.<br>Engineer, Of. Record # 58593 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date | FHWA Transportation Engineer<br>Date |





# PROJECT IDENTIFICATION

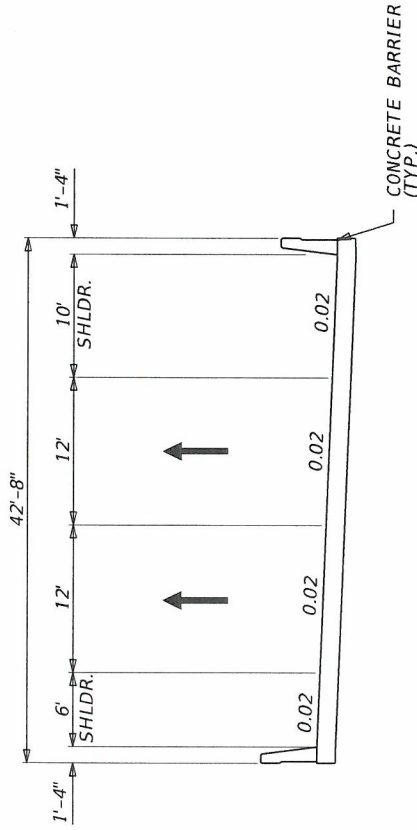
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 1B                       |              |
| SR 417 TO I-4 WB                 | 50           |
| I-4 EB TO SR 536/SR535           | 50           |
| SR 536 TO I-4 EB EXPRESS LANES   | 50           |
| SR 536 TO I-4 EB GUL             | 50           |
| DARYL CARTER PKWY RAMP TO I-4 EB | 50           |
| HOTEL PLAZA BLVD TO SR 535 NB    | 30           |
| I-4 WB TO CENTRAL FL PKWY        | 50           |

## PROPOSED STRUCTURE TYPICAL SECTION



SR 400 (I-4)  
TWO LANE BRIDGE RAMP

SHEET 1B-12

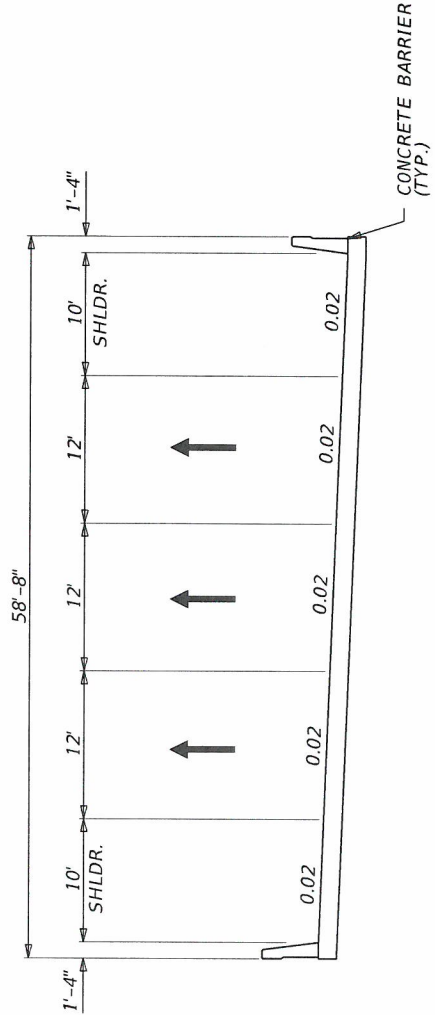
| CONCURRENCE  | DATE | BY |
|--|------|----|
| FHWA CONCURRENCE   |      |    |
| FDOT CONCURRENCE   |      |    |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 |      |    |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer  |      |    |
| FHWA Transportation Engineer   |      |    |

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 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 1B                 |              |
| SR 536 EB TO I-4 EB/SR 535 | 50           |

## PROPOSED STRUCTURE TYPICAL SECTION



SR 400 (I-4)  
THREE LANE BRIDGE RAMP

APPROVED BY  
  
 ROBERT M. DENNEY, P.E.  
 Engineer of Record 58593  
 Date 2/9/17

|   |   |  |
|---|---|--|
| FDOT CONCURRENCE  | FHWA CONCURRENCE  | SHEET 1B-13                                |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>\\\LKHW00\pmw\or-k3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPRD01-RAMPS.DGN<br>2:38:46 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date _____ | FHWA Transportation Engineer<br>Date _____ |

**PROJECT IDENTIFICATION**

FINANCIAL PROJECT ID 432100-1-22-01 COUNTY (SECTION) ORANGE (75280)  
 PROJECT DESCRIPTION WIDENING SR 400 (1-4) 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 536)**

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          | <u>DISTRIBUTION</u> |       |
|---------|-------------|---------------|---------------------|-------|
| OPENING | <u>2020</u> | <u>73,000</u> | K                   | 7.4   |
| INTERIM | <u>2030</u> | <u>80,000</u> | D                   | 53.66 |
| DESIGN  | <u>2040</u> | <u>88,000</u> | T <sub>24</sub>     | 4.7%  |

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 536 (750324, 750323, 750322)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

- GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE COUNTY UTILITIES)  
 ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

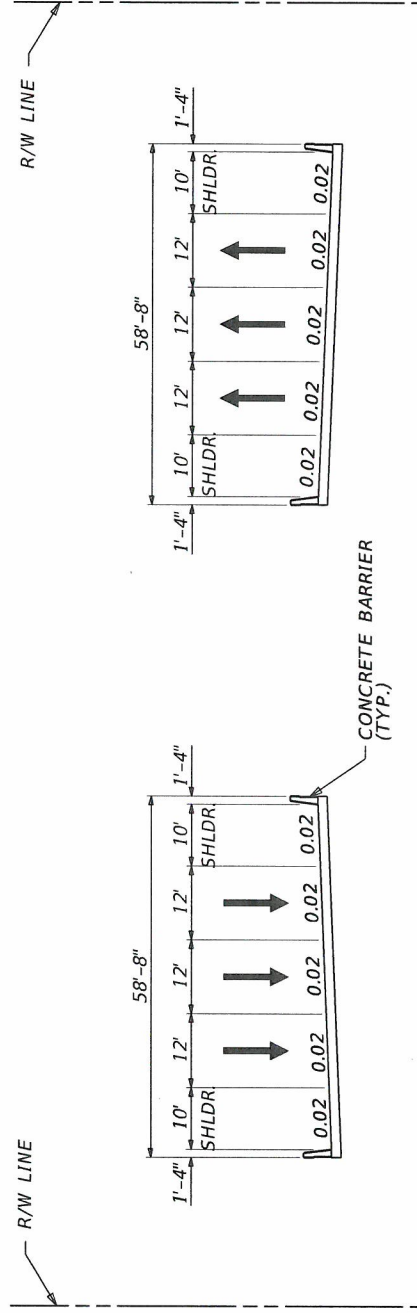
N/A

**SHEET 1B-14**

# PROJECT IDENTIFICATION

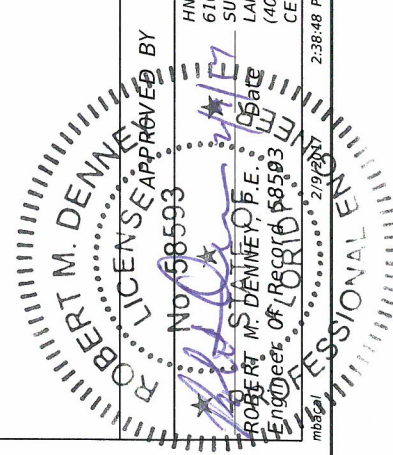
FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

## PROPOSED STRUCTURE TYPICAL SECTION



DESIGN SPEED = 60 MPH  
 SR 536 BRIDGE SECTION

|  |   |
|--|---|
| SHEET 1B-15  |   |
| FDOT CONCURRENCE   | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer |
| LICENSE APPROVED BY<br>ROBERT M. DENNEY, P.E.<br>Engineer of Record # 58593  | Date _____<br>Date _____                                  |



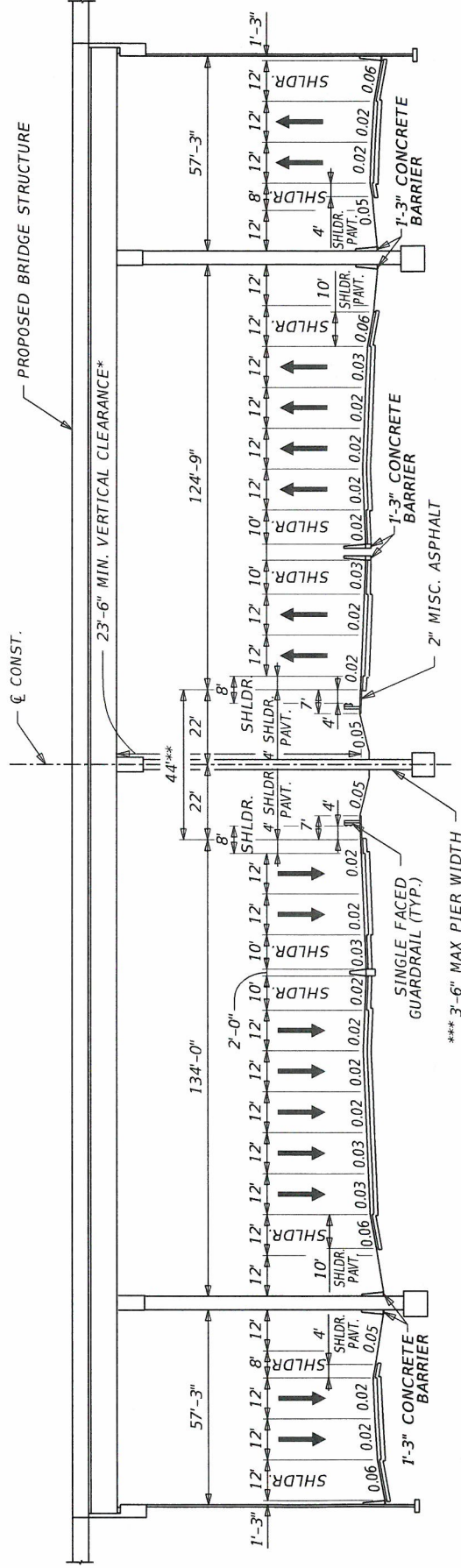
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 536 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 1B-16

FDOT CONCURRENCE

FHWA CONCURRENCE

NO. 5855 APPROVED BY:  
 HNTB CORPORATION  
 610 CRESCENT EXEC. CT.  
 SUITE 400  
 LAKE MARY, FL 32746  
 (407) 805-0355  
 CERT OF AUTH. NO. 6500  
 2/9/2022 2:38:49 PM  
 STATE OF FLORIDA  
 ROBERT M. DENNEY, P.E.  
 ENGINEER OF RECORD 5855g

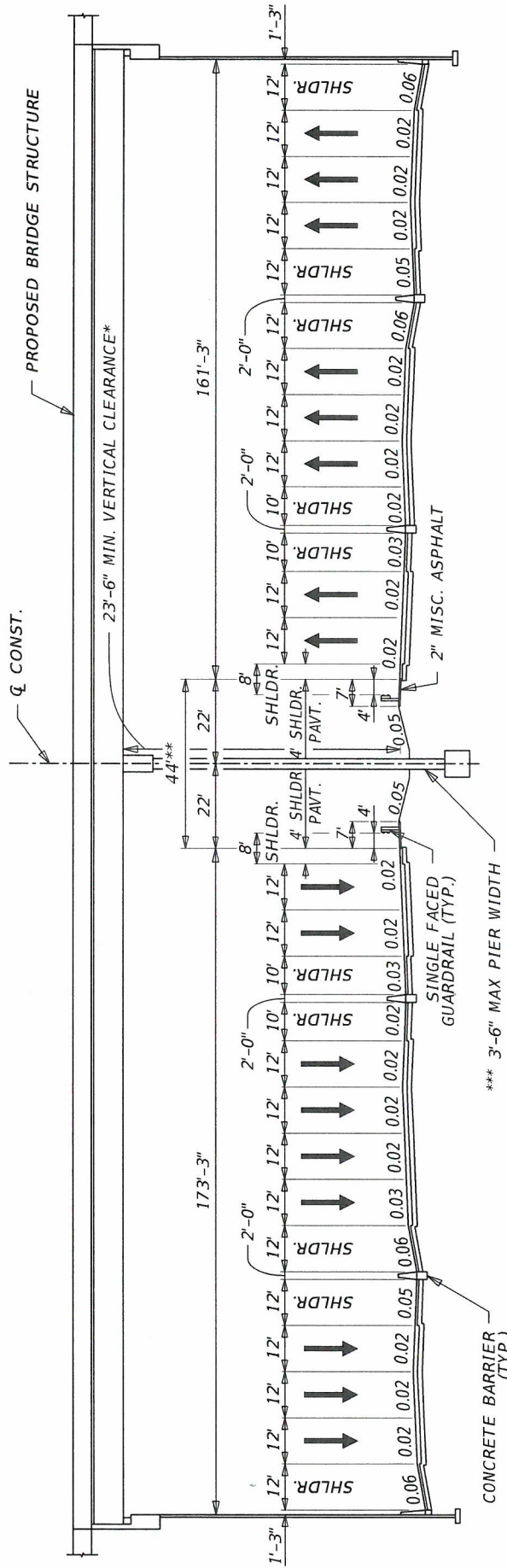
ANNETTE K. BRENNAN, P.E. Date

FHWA Transportation Engineer Date

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 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 536 MAINLINE

- \* VERTICAL CLEARANCE MEASURED FROM EXPRESS LANE INSIDE EDGE OF TRAVEL TO LOW MEMBER.
- \*\* 4' 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.

**ROBERT M. DENNEY**  
LICENSE

No. 58593 APPROVED BY

STATE OF FLORIDA  
 ROBERT M. DENNEY P.E., Ltd. Inc.  
 Engineer of Record - 58593

2:38:49 PM 11/9/2004

|   |                              |             |
|---|------------------------------|-------------|
| FDOT CONCURRENCE  | FHWA CONCURRENCE             | SHEET 1B-17 |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | FHWA Transportation Engineer | Date        |

**PROJECT IDENTIFICATION**

FINANCIAL PROJECT ID 432100-1-22-01 COUNTY (SECTION) ORANGE (75280)  
 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 535/APOPKA VINELAND ROAD)**

| FUNCTIONAL CLASSIFICATION          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | ( ) (X) NATIONAL HIGHWAY SYSTEM           |
| ( ) FREEWAY/EXPWY. ( ) MAJOR COLL. | ( ) (X) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. ( ) MINOR COLL. | ( ) (X) STRATEGIC INTERMODAL SYSTEM       |
| (X) MINOR ART. ( ) LOCAL           | (X) ( ) STATE HIGHWAY SYSTEM              |
|                                    | ( ) (X) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| ( ) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>79,000</u>  |
| (X) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>85,283</u>  |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>96,000</u>   |
| ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>45 MPH</u> K 7.4   |
|   | POSTED SPEED <u>40 MPH</u> D 53.66 |
|   | T <sub>24</sub> 5.0%               |

| CRITERIA  | DESIGN SPEED APPROVALS  |                                   |               |   |               |
|---|---|-----------------------------------|---------------|---|---------------|
| (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) |   |                                   |               |   |               |
|   | <table border="0"> <tr> <td align="center">_____<br/>DISTRICT DESIGN ENGINEER</td> <td align="center">_____<br/>DATE</td> </tr> <tr> <td align="center">_____<br/>DISTRICT TRAFFIC OPERATIONS ENGINEER</td> <td align="center">_____<br/>DATE</td> </tr> </table> | _____<br>DISTRICT DESIGN ENGINEER | _____<br>DATE | _____<br>DISTRICT TRAFFIC OPERATIONS ENGINEER | _____<br>DATE |
| _____<br>DISTRICT DESIGN ENGINEER   | _____<br>DATE   |                                   |               |   |               |
| _____<br>DISTRICT TRAFFIC OPERATIONS ENGINEER   | _____<br>DATE   |                                   |               |   |               |

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

SR 535 (750367, 750368)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE 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 COUNTY (SECTION) ORANGE (75280)  
 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 (HOTEL PLAZA BOULEVARD)**

| FUNCTIONAL CLASSIFICATION          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | ( ) (X) NATIONAL HIGHWAY SYSTEM           |
| ( ) FREEWAY/EXPWY. (X) MAJOR COLL. | ( ) (X) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. ( ) MINOR COLL. | ( ) (X) STRATEGIC INTERMODAL SYSTEM       |
| ( ) MINOR ART. ( ) LOCAL           | ( ) (X) STATE HIGHWAY SYSTEM              |
|                                    | (X) ( ) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| ( ) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>30,000</u>  |
| ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>33,000</u>  |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>36,000</u>   |
| (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>35 MPH</u> K 7.4   |
|   | POSTED SPEED <u>35 MPH</u> D 53.66 |
|   | T <sub>24</sub> 6.0%               |

| CRITERIA  | DESIGN SPEED APPROVALS |
|---|------------------------|
| (X) NEW CONSTRUCTION / RECONSTRUCTION   |                        |
| ( ) RRR INTERSTATE / FREEWAY  |                        |
| ( ) RRR NON-INTERSTATE / FREEWAY  |                        |
| ( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION  | _____ DATE             |
| ( ) TDLC / RRR  |                        |
| ( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY) | _____ DATE             |

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

HOTEL PLAZA BOULEVARD (PROPOSED)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE 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 COUNTY (SECTION) ORANGE (75280)  
 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 (VINELAND AVENUE)**

| FUNCTIONAL CLASSIFICATION          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | ( ) (X) NATIONAL HIGHWAY SYSTEM           |
| ( ) FREEWAY/EXPWY. ( ) MAJOR COLL. | ( ) (X) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. ( ) MINOR COLL. | ( ) (X) STRATEGIC INTERMODAL SYSTEM       |
| (X) MINOR ART. ( ) LOCAL           | ( ) (X) STATE HIGHWAY SYSTEM              |
|                                    | (X) ( ) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| ( ) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>29,000</u>  |
| ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>32,000</u>  |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>35,000</u>   |
| (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>35 MPH</u> K 7.4   |
|   | POSTED SPEED <u>35 MPH</u> D 53.66 |
|   | T 24 4.4%                          |

| CRITERIA  | DESIGN SPEED APPROVALS  |                                   |               |   |               |
|---|---|-----------------------------------|---------------|---|---------------|
| (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) |   |                                   |               |   |               |
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| _____<br>DISTRICT DESIGN ENGINEER   | _____<br>DATE   |                                   |               |   |               |
| _____<br>DISTRICT TRAFFIC OPERATIONS ENGINEER   | _____<br>DATE   |                                   |               |   |               |

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

VINELAND AVENUE (PROPOSED)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE 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 COUNTY (SECTION) ORANGE (75280)  
 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 (PALM PARKWAY)

| FUNCTIONAL CLASSIFICATION  | HIGHWAY SYSTEM   |
|--|--|
| <input type="checkbox"/> RURAL<br><input checked="" type="checkbox"/> URBAN<br><input type="checkbox"/> FREEWAY/EXPWY. <input type="checkbox"/> MAJOR COLL.<br><input type="checkbox"/> PRINCIPAL ART. <input type="checkbox"/> MINOR COLL.<br><input checked="" type="checkbox"/> MINOR ART. <input type="checkbox"/> LOCAL | Yes No<br><input type="checkbox"/> <input checked="" type="checkbox"/> NATIONAL HIGHWAY SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> FLORIDA INTRASTATE HIGHWAY SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> STRATEGIC INTERMODAL SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> STATE HIGHWAY SYSTEM<br><input checked="" type="checkbox"/> <input type="checkbox"/> OFF STATE HIGHWAY SYSTEM |

| ACCESS CLASSIFICATION   | TRAFFIC  |               |              |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
|---|--|---------------|--------------|-------|--|--|---------|-------------|---------------|--|--|---------|-------------|---------------|--|--|--------|-------------|---------------|--|--|--|--|--|--------------|--|--------------|---------------|--|---|-----|--------------|---------------|--|---|-------|--|--|--|------|------|
| <input type="checkbox"/> 1 - FREEWAY<br><input type="checkbox"/> 2 - RESTRICTIVE w/Service Roads<br><input type="checkbox"/> 3 - RESTRICTIVE w/660 ft. Connection Spacing<br><input type="checkbox"/> 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing<br><input checked="" type="checkbox"/> 5 - RESTRICTIVE w/440 ft. Connection Spacing<br><input type="checkbox"/> 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing<br><input type="checkbox"/> 7 - BOTH MEDIAN TYPES | <table border="0"> <thead> <tr> <th></th> <th align="center">YEAR</th> <th align="center">AADT</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>OPENING</td> <td align="center"><u>2020</u></td> <td align="center"><u>32,000</u></td> <td colspan="2"></td> </tr> <tr> <td>INTERIM</td> <td align="center"><u>2030</u></td> <td align="center"><u>42,000</u></td> <td colspan="2"></td> </tr> <tr> <td>DESIGN</td> <td align="center"><u>2040</u></td> <td align="center"><u>52,000</u></td> <td colspan="2"></td> </tr> <tr> <td colspan="3"></td> <th align="center" colspan="2">DISTRIBUTION</th> </tr> <tr> <td>DESIGN SPEED</td> <td align="center"><u>30 MPH</u></td> <td></td> <td align="center">K</td> <td align="center">7.4</td> </tr> <tr> <td>POSTED SPEED</td> <td align="center"><u>30 MPH</u></td> <td></td> <td align="center">D</td> <td align="center">53.66</td> </tr> <tr> <td></td> <td></td> <td></td> <td align="center">T 24</td> <td align="center">4.4%</td> </tr> </tbody> </table> |               | YEAR         | AADT  |  |  | OPENING | <u>2020</u> | <u>32,000</u> |  |  | INTERIM | <u>2030</u> | <u>42,000</u> |  |  | DESIGN | <u>2040</u> | <u>52,000</u> |  |  |  |  |  | DISTRIBUTION |  | DESIGN SPEED | <u>30 MPH</u> |  | K | 7.4 | POSTED SPEED | <u>30 MPH</u> |  | D | 53.66 |  |  |  | T 24 | 4.4% |
|   | YEAR   | AADT          |              |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
| OPENING   | <u>2020</u>  | <u>32,000</u> |              |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
| INTERIM   | <u>2030</u>  | <u>42,000</u> |              |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
| DESIGN  | <u>2040</u>  | <u>52,000</u> |              |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
|   |  |               | DISTRIBUTION |       |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
| DESIGN SPEED  | <u>30 MPH</u>  |               | K            | 7.4   |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
| POSTED SPEED  | <u>30 MPH</u>  |               | D            | 53.66 |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |
|   |  |               | T 24         | 4.4%  |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |  |  |  |              |  |              |               |  |   |     |              |               |  |   |       |  |  |  |      |      |

| CRITERIA  | DESIGN SPEED APPROVALS  |       |  |       |                          |  |      |       |  |       |                                      |  |      |
|---|---|-------|--|-------|--------------------------|--|------|-------|--|-------|--------------------------------------|--|------|
| <input checked="" type="checkbox"/> NEW CONSTRUCTION / RECONSTRUCTION<br><input type="checkbox"/> RRR INTERSTATE / FREEWAY<br><input type="checkbox"/> RRR NON-INTERSTATE / FREEWAY<br><input type="checkbox"/> TDLC / NEW CONSTRUCTION / RECONSTRUCTION<br><input type="checkbox"/> TDLC / RRR<br><input type="checkbox"/> MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY) | <table border="0"> <tr> <td align="center" colspan="2">_____</td> <td align="center">_____</td> </tr> <tr> <td align="center" colspan="2">DISTRICT DESIGN ENGINEER</td> <td align="center">DATE</td> </tr> <tr> <td align="center" colspan="2">_____</td> <td align="center">_____</td> </tr> <tr> <td align="center" colspan="2">DISTRICT TRAFFIC OPERATIONS ENGINEER</td> <td align="center">DATE</td> </tr> </table> | _____ |  | _____ | DISTRICT DESIGN ENGINEER |  | DATE | _____ |  | _____ | DISTRICT TRAFFIC OPERATIONS ENGINEER |  | DATE |
| _____   |   | _____ |  |       |                          |  |      |       |  |       |                                      |  |      |
| 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:

N/A

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE 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 COUNTY (SECTION) ORANGE (75280)  
 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 (WINTER GARDEN VINELAND ROAD)**

| FUNCTIONAL CLASSIFICATION  | HIGHWAY SYSTEM   |
|--|--|
| <input type="checkbox"/> RURAL<br><input checked="" type="checkbox"/> URBAN<br><input type="checkbox"/> FREEWAY/EXPWY. <input checked="" type="checkbox"/> MAJOR COLL.<br><input type="checkbox"/> PRINCIPAL ART. <input type="checkbox"/> MINOR COLL.<br><input type="checkbox"/> MINOR ART. <input type="checkbox"/> LOCAL | Yes No<br><input type="checkbox"/> <input checked="" type="checkbox"/> NATIONAL HIGHWAY SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> FLORIDA INTRASTATE HIGHWAY SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> STRATEGIC INTERMODAL SYSTEM<br><input type="checkbox"/> <input checked="" type="checkbox"/> STATE HIGHWAY SYSTEM<br><input checked="" type="checkbox"/> <input type="checkbox"/> OFF STATE HIGHWAY SYSTEM |

| ACCESS CLASSIFICATION   | TRAFFIC  |                 |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
|---|--|-----------------|-------|------|---------|-------------|---------------|---------|-------------|---------------|--------|-------------|---------------|--------------|--|--|--|--------------|---------------|---|-----|--------------|---------------|---|-------|--|--|-----------------|------|
| <input type="checkbox"/> 1 - FREEWAY<br><input type="checkbox"/> 2 - RESTRICTIVE w/Service Roads<br><input type="checkbox"/> 3 - RESTRICTIVE w/660 ft. Connection Spacing<br><input type="checkbox"/> 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing<br><input checked="" type="checkbox"/> 5 - RESTRICTIVE w/440 ft. Connection Spacing<br><input type="checkbox"/> 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing<br><input type="checkbox"/> 7 - BOTH MEDIAN TYPES | <table border="1"> <thead> <tr> <th></th> <th>YEAR</th> <th>AADT</th> </tr> </thead> <tbody> <tr> <td>OPENING</td> <td><u>2020</u></td> <td><u>44,000</u></td> </tr> <tr> <td>INTERIM</td> <td><u>2030</u></td> <td><u>52,000</u></td> </tr> <tr> <td>DESIGN</td> <td><u>2040</u></td> <td><u>59,000</u></td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="4">DISTRIBUTION</th> </tr> </thead> <tbody> <tr> <td>DESIGN SPEED</td> <td><u>35 MPH</u></td> <td>K</td> <td>7.4</td> </tr> <tr> <td>POSTED SPEED</td> <td><u>35 MPH</u></td> <td>D</td> <td>53.66</td> </tr> <tr> <td></td> <td></td> <td>T<sub>24</sub></td> <td>4.9%</td> </tr> </tbody> </table> |                 | YEAR  | AADT | OPENING | <u>2020</u> | <u>44,000</u> | INTERIM | <u>2030</u> | <u>52,000</u> | DESIGN | <u>2040</u> | <u>59,000</u> | DISTRIBUTION |  |  |  | DESIGN SPEED | <u>35 MPH</u> | K | 7.4 | POSTED SPEED | <u>35 MPH</u> | D | 53.66 |  |  | T <sub>24</sub> | 4.9% |
|   | YEAR   | AADT            |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| OPENING   | <u>2020</u>  | <u>44,000</u>   |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| INTERIM   | <u>2030</u>  | <u>52,000</u>   |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| DESIGN  | <u>2040</u>  | <u>59,000</u>   |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| DISTRIBUTION  |  |                 |       |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| DESIGN SPEED  | <u>35 MPH</u>  | K               | 7.4   |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
| POSTED SPEED  | <u>35 MPH</u>  | D               | 53.66 |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |
|   |  | T <sub>24</sub> | 4.9%  |      |         |             |               |         |             |               |        |             |               |              |  |  |  |              |               |   |     |              |               |   |       |  |  |                 |      |

| CRITERIA  | DESIGN SPEED APPROVALS  |       |       |                          |      |       |       |                                      |      |
|---|---|-------|-------|--------------------------|------|-------|-------|--------------------------------------|------|
| <input checked="" type="checkbox"/> NEW CONSTRUCTION / RECONSTRUCTION<br><input type="checkbox"/> RRR INTERSTATE / FREEWAY<br><input type="checkbox"/> RRR NON-INTERSTATE / FREEWAY<br><input type="checkbox"/> TDLC / NEW CONSTRUCTION / RECONSTRUCTION<br><input type="checkbox"/> TDLC / RRR<br><input type="checkbox"/> MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY) | <table border="1"> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>DISTRICT DESIGN ENGINEER</td> <td>DATE</td> </tr> <tr> <td>_____</td> <td>_____</td> </tr> <tr> <td>DISTRICT TRAFFIC OPERATIONS ENGINEER</td> <td>DATE</td> </tr> </table> | _____ | _____ | DISTRICT DESIGN ENGINEER | DATE | _____ | _____ | DISTRICT TRAFFIC OPERATIONS ENGINEER | DATE |
| _____   | _____   |       |       |                          |      |       |       |                                      |      |
| 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:

N/A

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:  
 GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE 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 COUNTY (SECTION) ORANGE (75280)  
 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 (GRAND CYPRESS BOULEVARD)**

| FUNCTIONAL CLASSIFICATION          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | ( ) (X) NATIONAL HIGHWAY SYSTEM           |
| ( ) FREEWAY/EXPWY. ( ) MAJOR COLL. | ( ) (X) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. (X) MINOR COLL. | ( ) (X) STRATEGIC INTERMODAL SYSTEM       |
| ( ) MINOR ART. ( ) LOCAL           | ( ) (X) STATE HIGHWAY SYSTEM              |
|                                    | (X) ( ) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| ( ) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>16,000</u>  |
| ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>19,000</u>  |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>22,000</u>   |
| (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>30 MPH</u> K 7.4   |
|   | POSTED SPEED <u>30 MPH</u> D 53.66 |
|   | T 24 4.9%                          |

| CRITERIA  | DESIGN SPEED APPROVALS  |       |       |                          |      |       |       |                                      |      |
|---|---|-------|-------|--------------------------|------|-------|-------|--------------------------------------|------|
| (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) |   |       |       |                          |      |       |       |                                      |      |
|   | <table border="0"> <tr> <td align="center">_____</td> <td align="center">_____</td> </tr> <tr> <td align="center">DISTRICT DESIGN ENGINEER</td> <td align="center">DATE</td> </tr> <tr> <td align="center">_____</td> <td align="center">_____</td> </tr> <tr> <td align="center">DISTRICT TRAFFIC OPERATIONS ENGINEER</td> <td align="center">DATE</td> </tr> </table> | _____ | _____ | DISTRICT DESIGN ENGINEER | DATE | _____ | _____ | DISTRICT TRAFFIC OPERATIONS ENGINEER | DATE |
| _____   | _____   |       |       |                          |      |       |       |                                      |      |
| 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:  
  
N/A

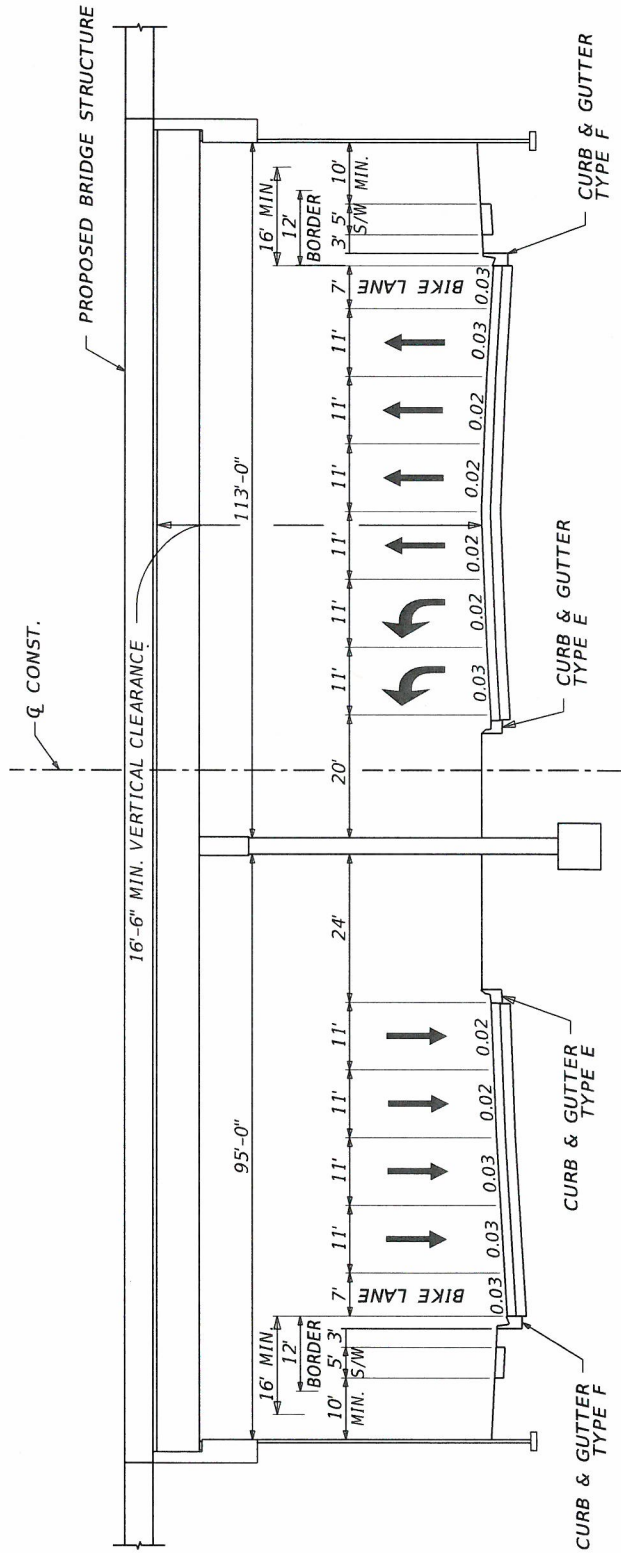
LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:  
 GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE COUNTY UTILITIES)  
 ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

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 ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 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**  
**SR 535 ROADWAY SECTION UNDER SR 400 (I-4)**

SHEET 1B-24

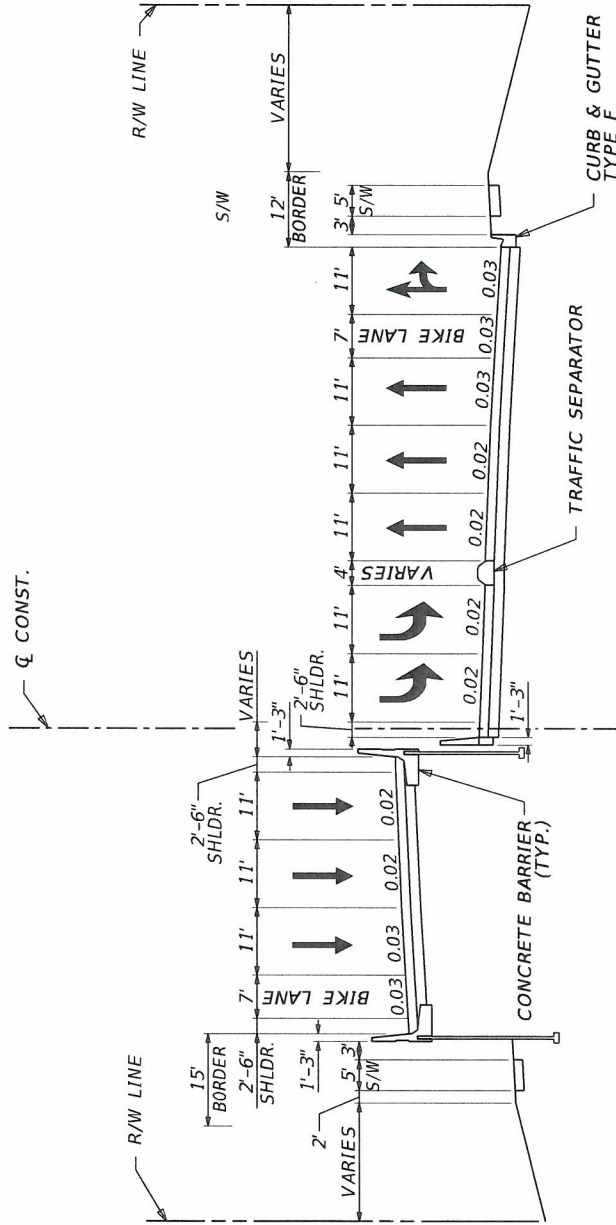
|  |  |                          |
|--|--|--------------------------|
| FDOT CONCURRENCE   | FHWA CONCURRENCE   |                          |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer  | Date _____<br>Date _____ |
| No. 58593<br>STATE OF FLORIDA<br>PROFESSIONAL ENGINEER   | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 | Date _____<br>Date _____ |

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

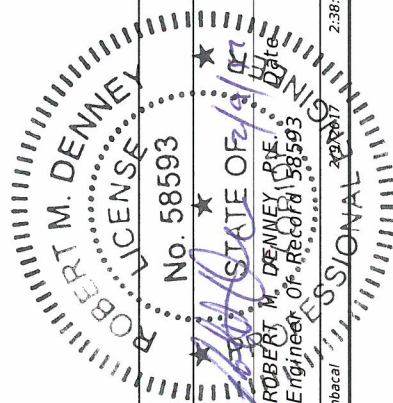
PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.



DESIGN SPEED = 45 MPH  
SR 535 ROADWAY SECTION WITH ELEVATED SB

SHEET 1B-25

|  |   |                                      |
|--|---|--------------------------------------|
|  | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:53 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date | FHWA Transportation Engineer<br>Date |



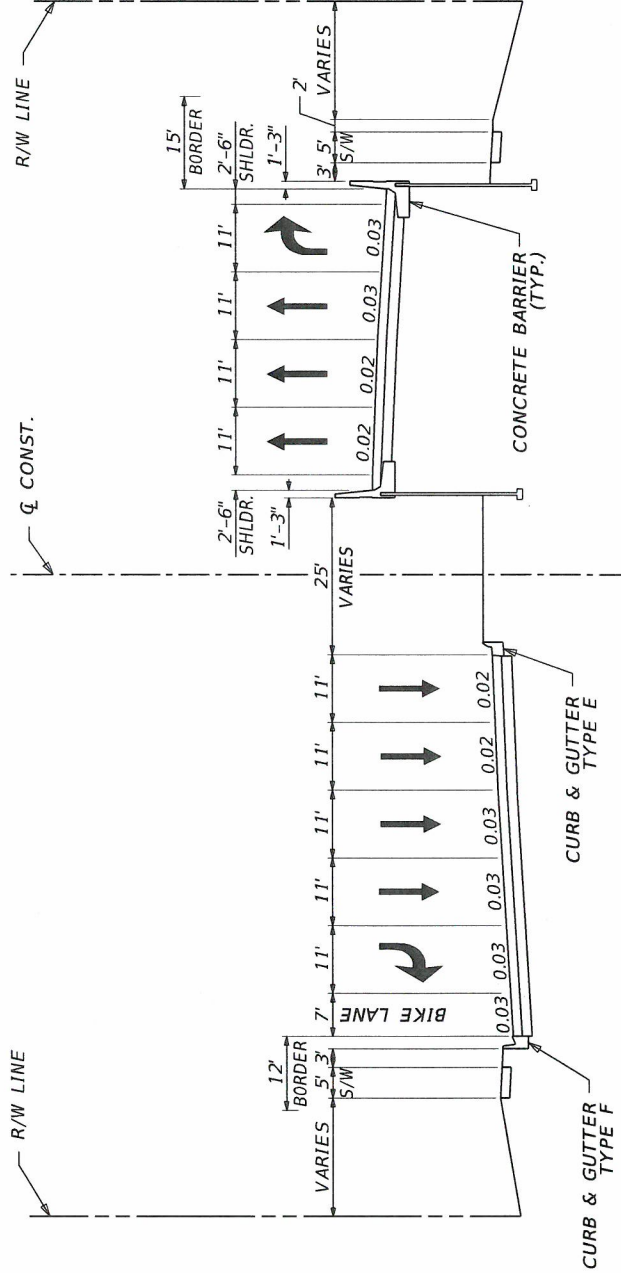
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 7.5280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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

APOPKA VINELAND ROAD ROADWAY SECTION WITH ELEVATED NB

SHEET 1B-26

|   |  |   |  |
|---|--|---|--|
| FHWA CONCURRENCE  |  | FHWA CONCURRENCE  |  |
| FDOT CONCURRENCE  |  | FDOT CONCURRENCE  |  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2/24/2019 |  | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date _____<br>Date _____ |  |
| No. 58593<br>STATE OF FLORIDA<br>ROBERT M. DENNEY, P.E.<br>Engineer of Record<br>No. 98593<br>2/24/2019                               |  | PROFESSIONAL ENGINEER   |  |

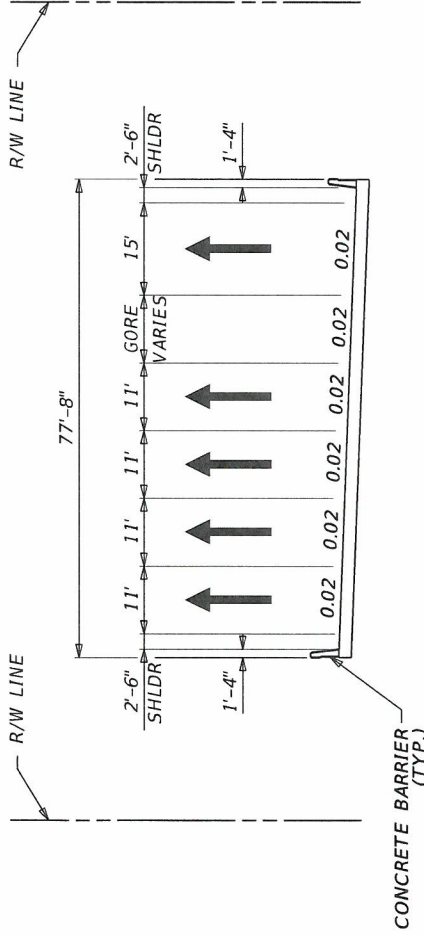
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

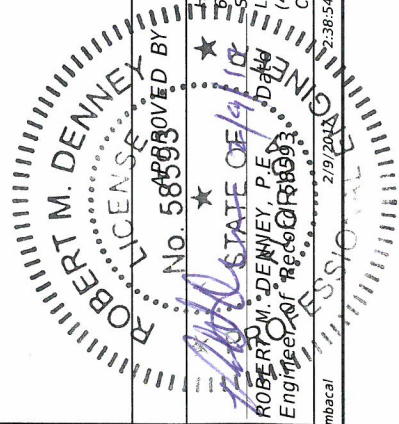
SECTION NO. 92130 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 7.885

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  
APOPKA VINELAND ROAD NB BRIDGE SECTION OVER HOTEL PLAZA



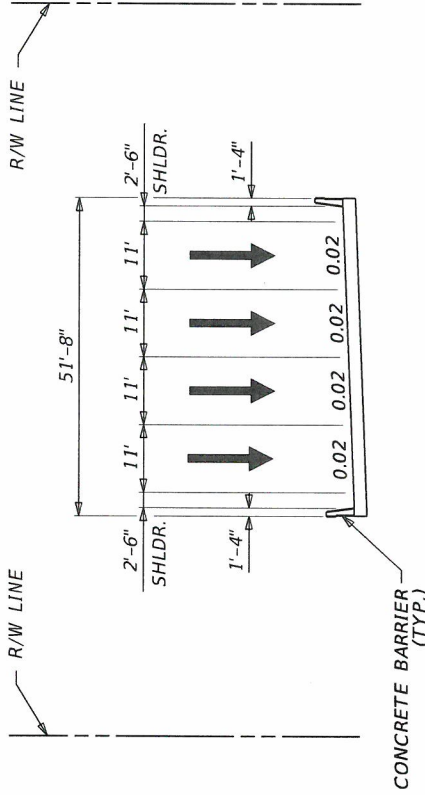
| SHEET 1B-27   |   |
|---|---|
| <p>APPROVED BY: <i>[Signature]</i></p> <p>DATE: <i>[Date]</i></p> <p>ENGINEER: <i>[Signature]</i></p> | <p>CONCRETE BARRIER (TYP.)</p>  |
| <p>FDOT CONCURRENCE</p> <p>ANNETTE K. BRENNAN, P.E.<br/>FDOT District Design Engineer</p> <p>Date</p> | <p>FHWA CONCURRENCE</p> <p>FHWA Transportation Engineer</p> <p>Date</p> |
| <p>CONCOUNTY CONCURRENCE</p>  | <p>CONCOUNTY CONCURRENCE</p> <p>County Engineer</p> <p>Date</p>         |



# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 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**  
**SR 535 SB BRIDGE SECTION OVER VINELAND AVENUE**

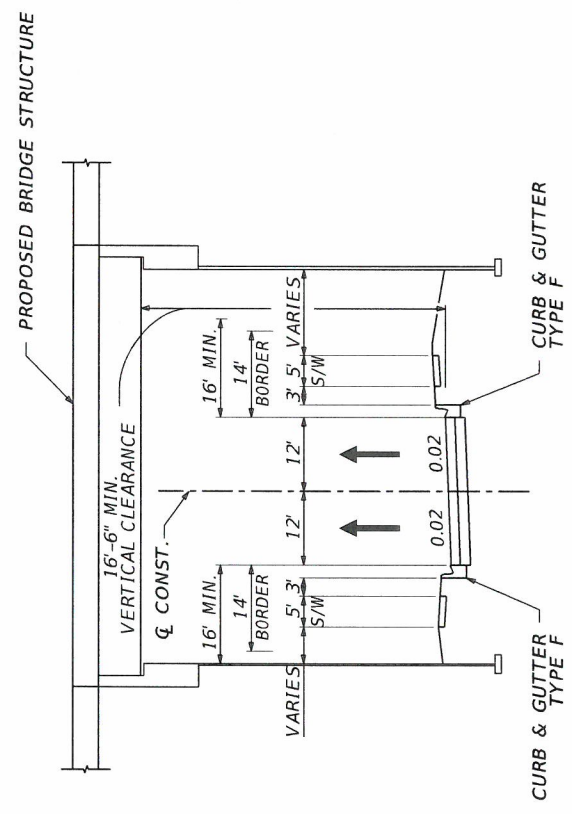
LICENSE APPROVED BY  
 No. 58593  
 ROBERT M. DENNEY, P.E.  
 Engineer of Record, 58593  
 Date: 2/19/2017  
 State: FL  
 EXP. DATE: 2/19/2021  
 mbb/gal

| FDOT CONCURRENCE  | FHWA CONCURRENCE                           | COUNTY CONCURRENCE            | SHEET 1B-28 |
|---|--|-------------------------------|-------------|
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date _____ | FHWA Transportation Engineer<br>Date _____ | County Engineer<br>Date _____ |             |

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 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**  
**HOTEL PLAZA LOOP RAMP UNDER APOPKA VINELAND ROAD NB**

|  |   |                                      |
|--|---|--------------------------------------|
| <b>SHEET 1B-29</b>   | FDOT CONCURRENCE  | FHWA CONCURRENCE                     |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO. 6500<br>2:38:55 PM<br>\\LKWOOD\pmwork\3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPD001-SEG-1.DGN | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | FHWA Transportation Engineer<br>Date |



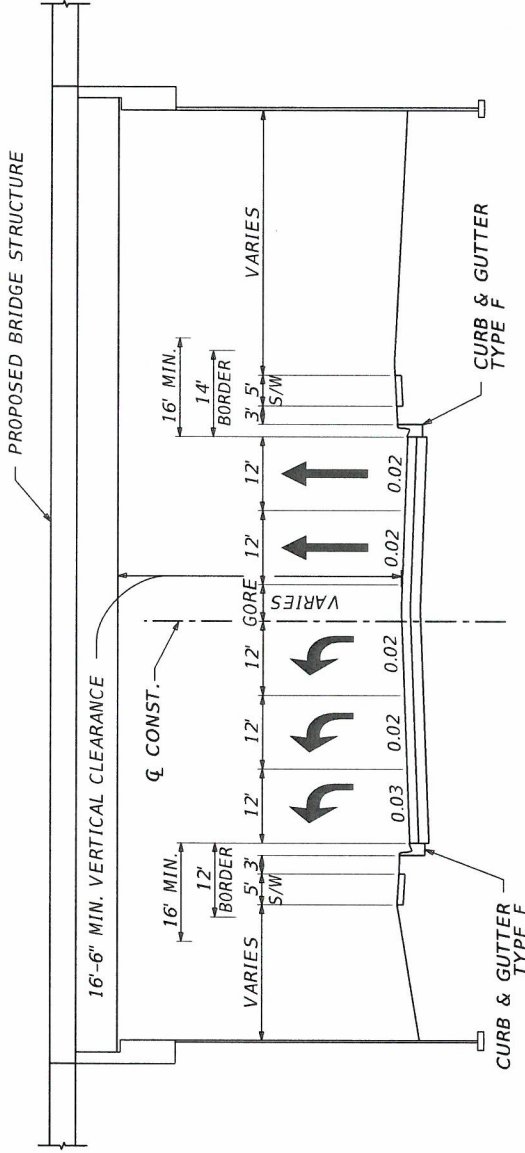
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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  
SR 400 (I-4) EB OFF RAMP UNDER SR 535 SB

SHEET 1B-30

|                              |                  |  |
|------------------------------|------------------|--|
| FHWA CONCURRENCE             | FDOT CONCURRENCE | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 |
| Date                         | Date             | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer  |
| FHWA Transportation Engineer | Date             | ROBERT M. DENNEY, P.E.<br>Professional Engineer<br>No. 58593   |

**PROFESSIONAL ENGINEER**  
**ROBERT M. DENNEY**  
 No. 58593  
 STATE OF FLORIDA  
 ENGINEER OF RECORD  
 Date: 2/2/2021  
 2:38:56 PM  
 \\LKHW00\pmwork\3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPDR001-SEG-1.DGN

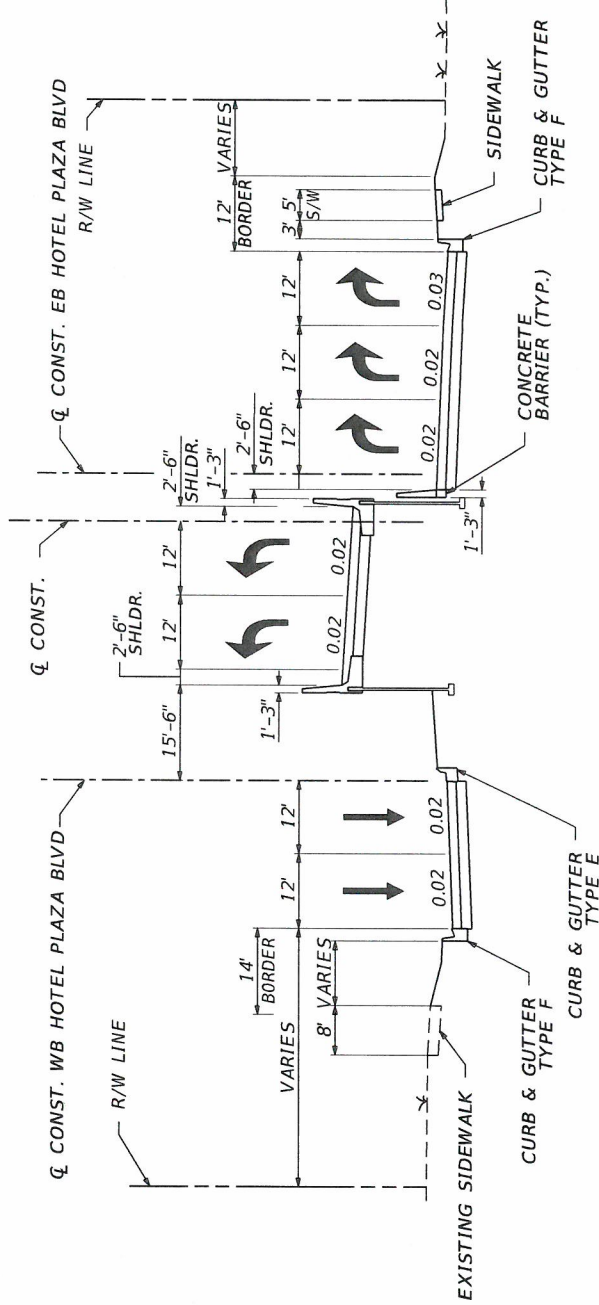
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 = 35 MPH  
HOTEL PLAZA BOULEVARD - ELEVATED LEFT TURNS

ROBERT M. DENNEY  
LICENSE NO. 58593  
Professional Engineer  
Date: 11/17/2021  
Record: 58593  
FLORIDA

|  |  |
|--|--|
| SHEET 1B-31  |  |
| FDOT CONCURRENCE   | FHWA CONCURRENCE   |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 | FHWA Transportation Engineer<br>Date   |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer  | Date   |
| 2:38:56 PM   | \\LKHW00\pmwork\3\Jobs\59219 - 14 SAMRTECHPROD\Typical Section Package\TYPRD01-SEG-1.DGN |

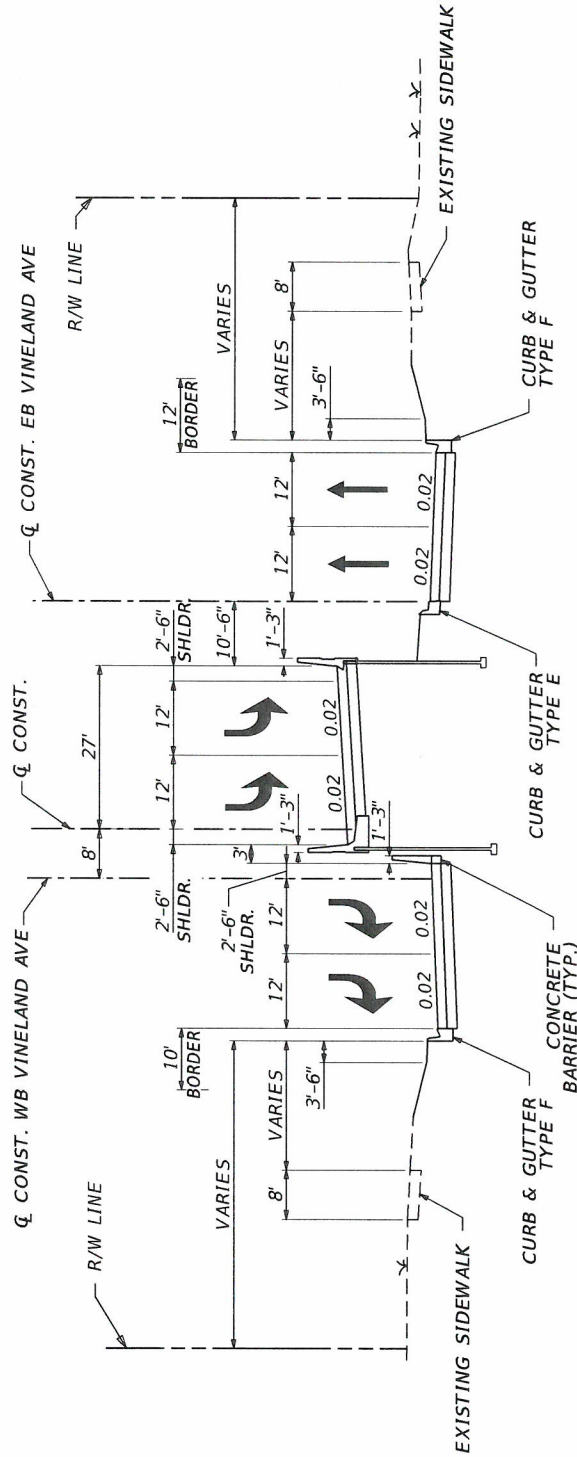
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

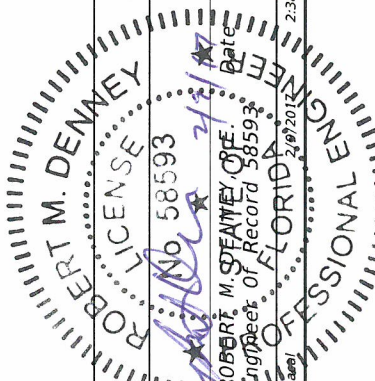
PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

## PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 35 MPH  
VINELAND AVENUE ROADWAY SECTION

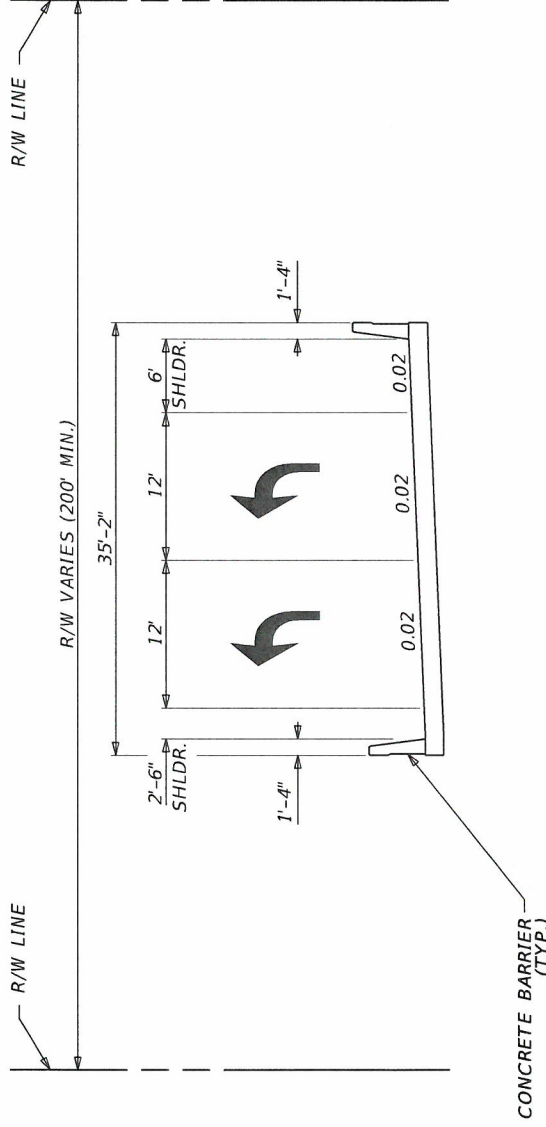
SHEET 1B-32

|                                      |   |   |
|--------------------------------------|---|---|
| FHWA CONCURRENCE                     | FDOT CONCURRENCE  | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500  |
| FHWA Transportation Engineer<br>Date | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date |  <p>ROBERT M. DENNEY<br/>LICENSE<br/>No. 58593<br/>STATE OF FLORIDA<br/>PROFESSIONAL ENGINEER<br/>2/2012</p> |

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 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 = 35 MPH**  
**HOTEL PLAZA BOULEVARD LEFT TURN**  
**FLYOVER OVER APOPKA VINELAND ROAD SB**

SHEET 1B-33

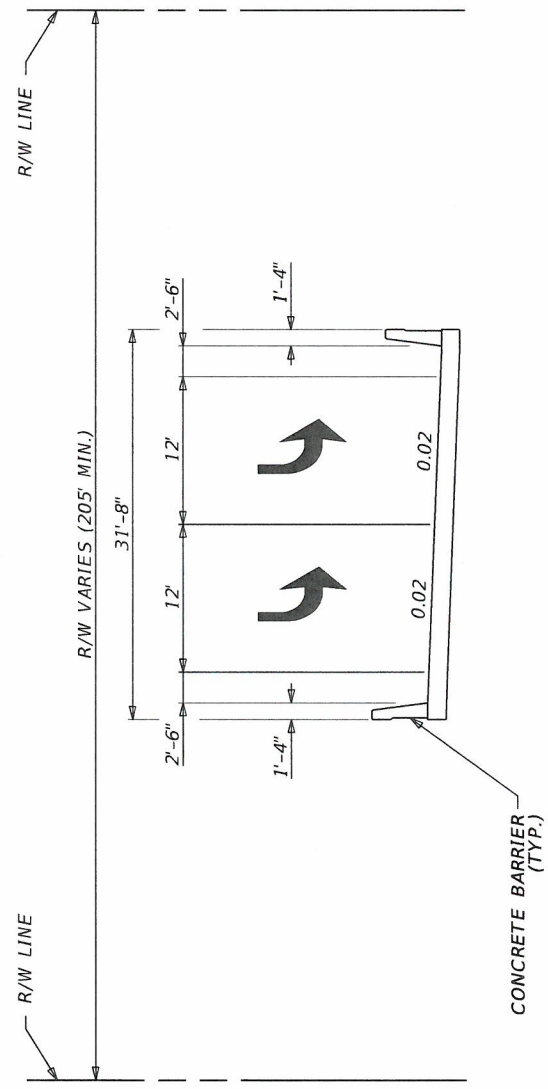
|   |   |                  |
|---|---|------------------|
|   | FDOT CONCURRENCE  | FHWA CONCURRENCE |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH. NO 6500<br>2/8/2012 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | Date<br>Date     |

**ROBERT M. DENNEY**  
 LICENSE APPROVED BY  
 No. 58593  
 ROBERT M. DENNEY, P.E.  
 Engineer of Record 58593  
 STATE OF FLORIDA  
 PROFESSIONAL ENGINEER

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 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 = 35 MPH**  
**VINELAND AVENUE LEFT TURN**  
**FLYOVER OVER SR 535 NB**

|  |   |                  |
|--|---|------------------|
| <b>SHEET 1B-34</b>   | FHWA CONCURRENCE  | FHWA CONCURRENCE |
| FDOT CONCURRENCE   | FDOT CONCURRENCE  | FDOT CONCURRENCE |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:57 PM | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | Date             |
| LICENSE APPROVED BY<br>NO. 58593<br>ROBERT M. DENNE<br>ENGINEER OF RECORD, 58593   | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer | Date             |

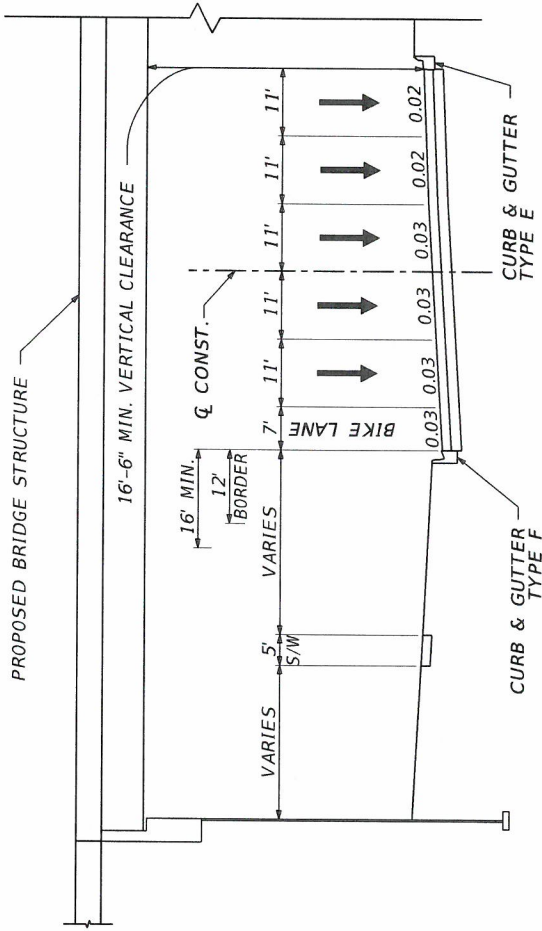
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

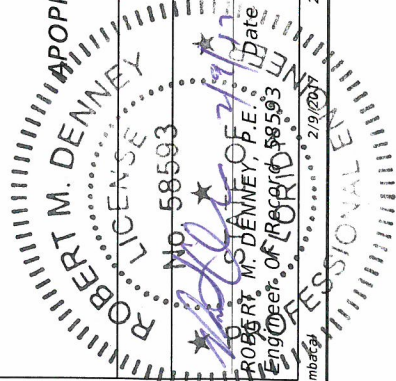
PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

## PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 45 MPH

APOPKA VINELAND ROAD SB ROADWAY SECTION UNDER HOTEL PLAZA BOULEVARD BRIDGE



|  |   |
|--|---|
| SHEET 1B-35  |   |
| FDOT CONCURRENCE   | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2:38:58 PM<br>\\LKHW00\pmw\or-k3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPDR01-SEG-1.DGN | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date |
| ROBERT M. DENNEY<br>LICENSE<br>No. 58593<br>STATE OF FLORIDA<br>PROFESSIONAL ENGINEER<br>Date  | FHWA Transportation Engineer<br>Date                              |



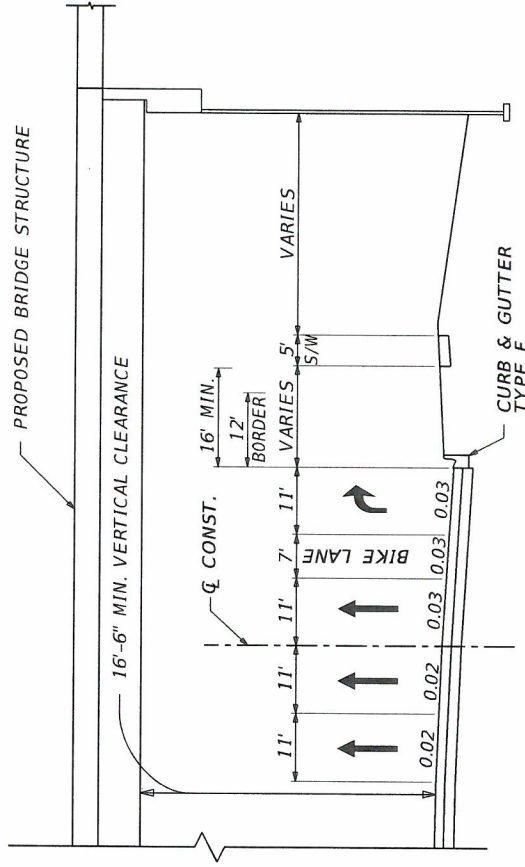
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

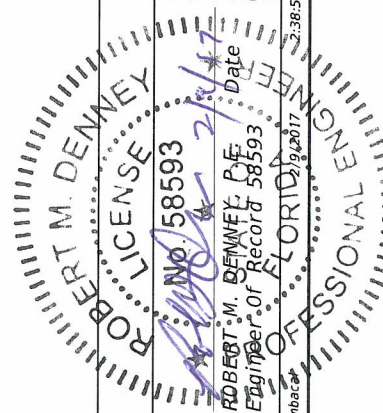
SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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  
SR 535 NB ROADWAY UNDER VINELAND AVENUE BRIDGE



|   |   |
|---|---|
| SHEET 1B-36   |   |
| FDOT CONCURRENCE  | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH. NO. 6500<br>No. 58593<br>Date 2/1/17<br>ROBERT M. DENNEY, P.E.<br>Engineer of Record 58593<br>FLORIDA | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date<br>FHWA Transportation Engineer<br>Date |

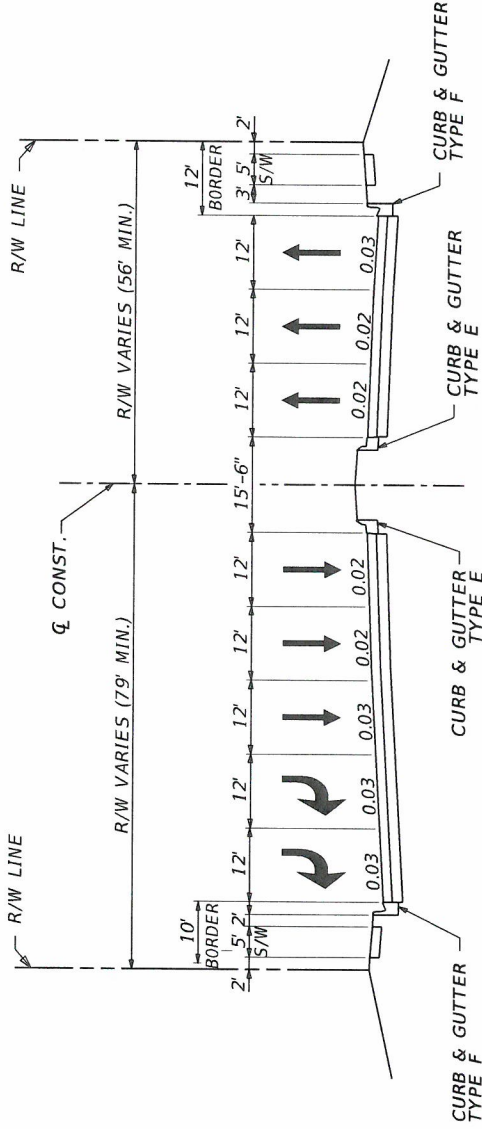
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

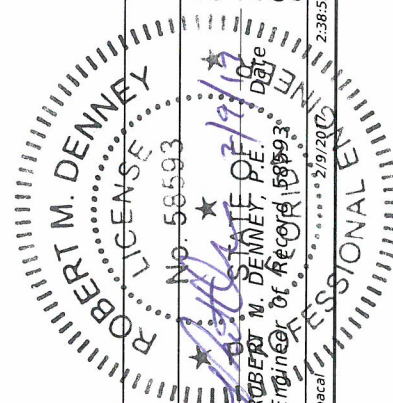
SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 = 30 MPH  
PALM PARKWAY ROADWAY SECTION



|   |   |
|---|---|
| SHEET 1B-37   |   |
| FDOT CONCURRENCE  | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH. NO. 6500  | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date _____<br>Date _____ |
| mbacal<br>2/19/2019 2:38:59 PM<br>\\LKHW00\pmwork\3\Jobs\59219 - 14 SAMR\TECHPROD\Typical Section Package\TYPRD01-SEG-1.DGN |   |

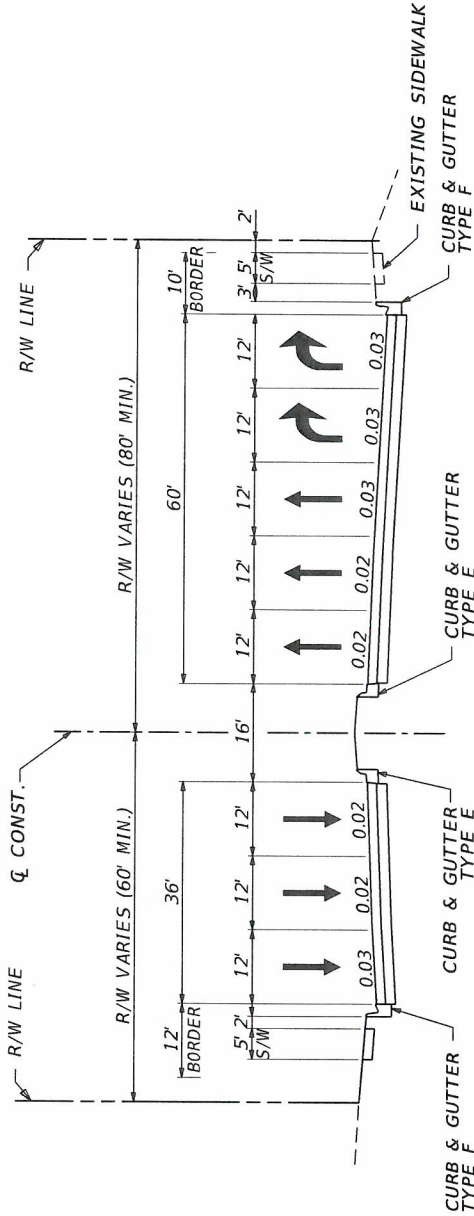
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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 = 35 MPH  
WINTER GARDEN VINELAND ROAD ROADWAY SECTION

SHEET 1B-38

|                                      |   |  |
|--------------------------------------|---|--|
| FHWA CONCURRENCE                     | FDOT CONCURRENCE  | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH. NO. 6500<br>2:39:06 PM |
| FHWA Transportation Engineer<br>Date | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date | PROFESSIONAL ENGINEER<br>LICENSE NO. 58593<br>STATE OF FLORIDA<br>ROBERT M. DENNEY, P.E.<br>ENGINEER OF RECORD<br>2/9/2017               |

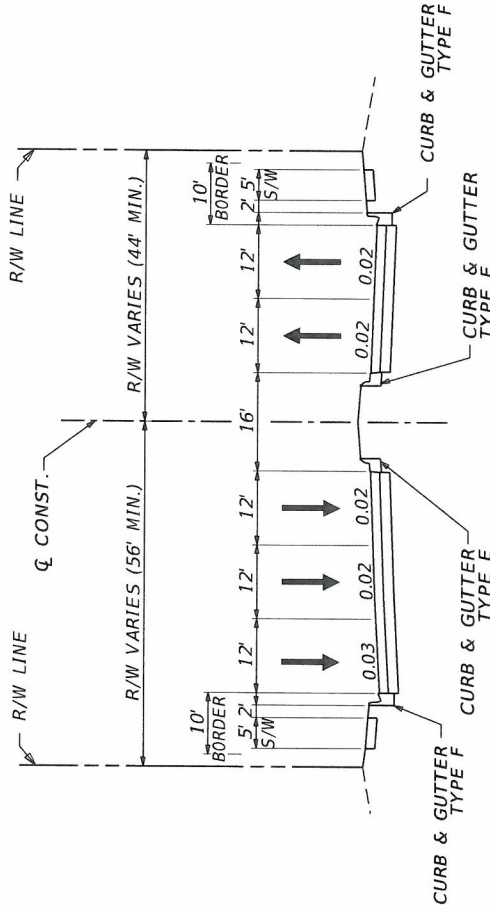
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

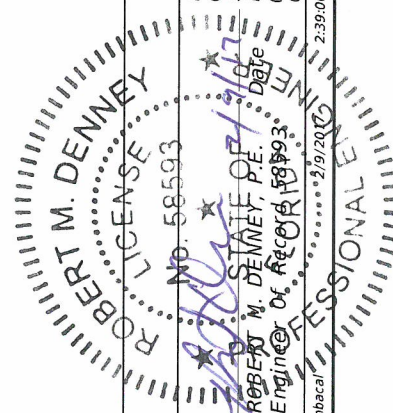
PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

## PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 30 MPH  
 GRAND CYPRESS BOULEVARD ROADWAY SECTION

|   |   |
|---|---|
| SHEET 1B-39   |   |
| FDOT CONCURRENCE  | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>No. 58593<br>STAFF OF 1/1/17<br>ROBERT M. DENNEY, P.E.<br>Engineer of Record 58593<br>Date 1/1/17 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date _____<br>FHWA Transportation Engineer<br>Date _____ |



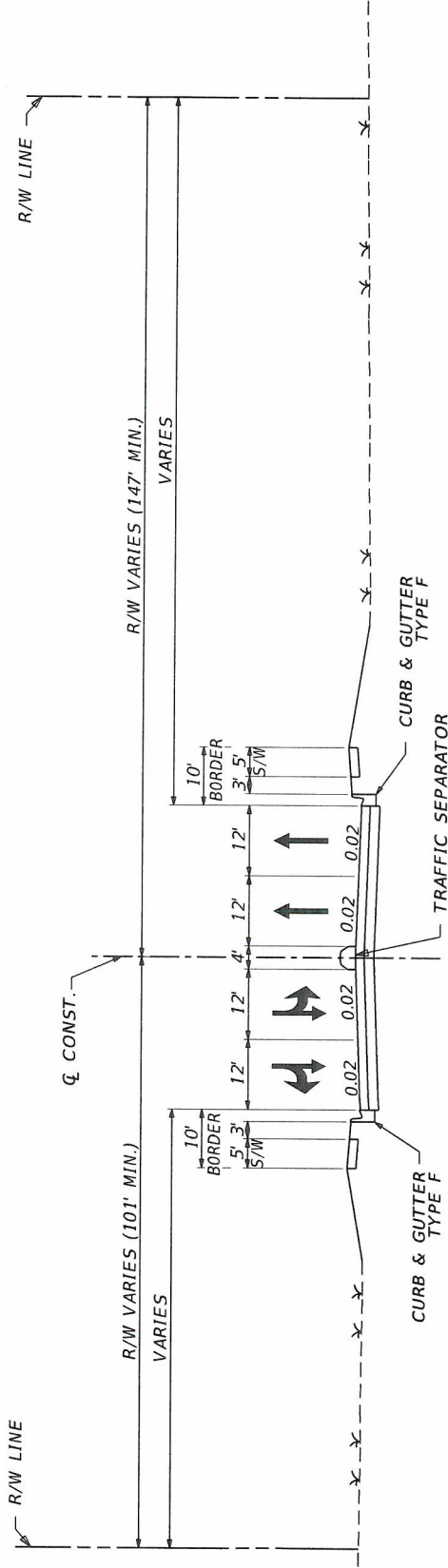
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

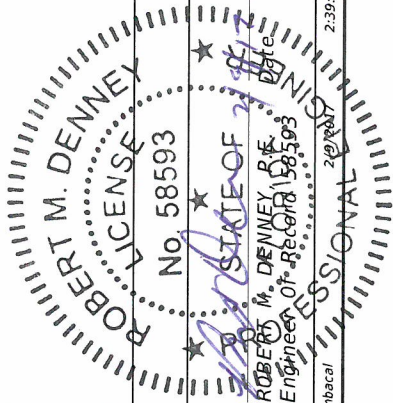
PROJECT DESCRIPTION WIDENING SR 400 (I-4) FROM WEST OF CR 532 TO WEST OF SR 435 KIRKMAN ROAD AND FROM 1 MILE EAST OF SR 434 TO 1/2 MILE EAST OF SR 472.

## PROPOSED ROADWAY TYPICAL SECTION



DESIGN SPEED = 30 MPH  
VININGS WAY BOULEVARD ROADWAY SECTION

|   |   |
|---|---|
| SHEET 1B-40   |   |
| FDOT CONCURRENCE  | FHWA CONCURRENCE  |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2/20/17 | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date |
| No. 58593<br>STATE OF FLORIDA<br>ROBERT M. DENNEY, P.E.<br>Engineer of Record 158593  | Date<br>Date  |



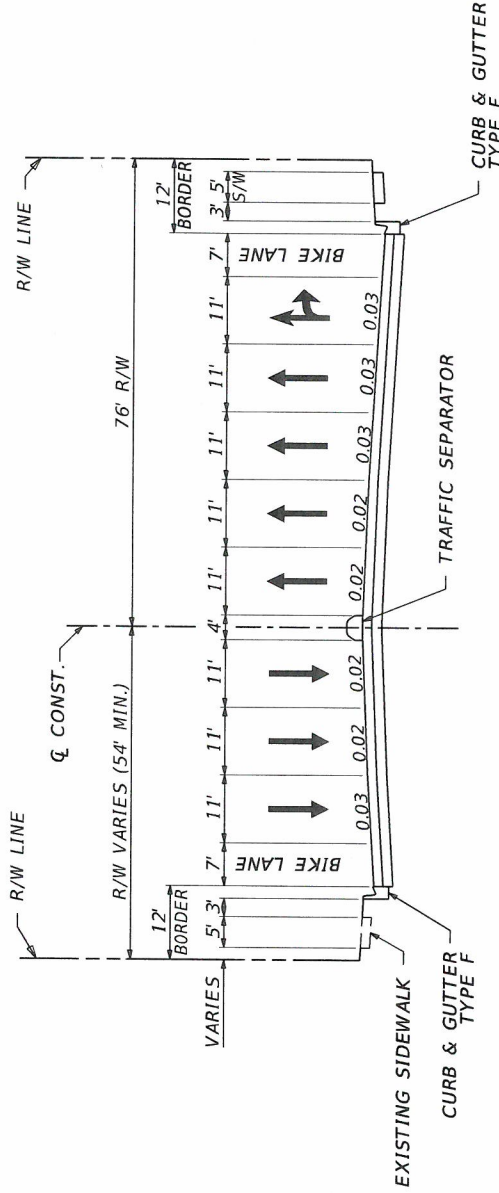
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

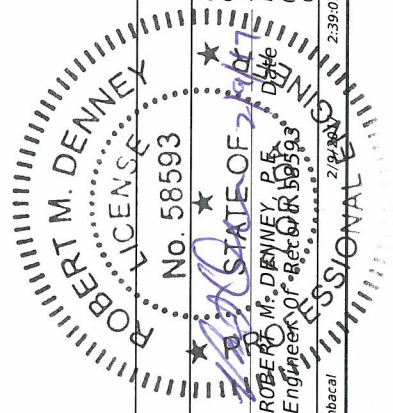
SECTION NO. 75280 ROAD DESIGNATION SR 400 (1-4) LIMITS/MILEPOST MP 0.000 - 9.528

PROJECT DESCRIPTION WIDENING SR 400 (1-4) 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  
 APOPKA VINELAND ROAD/CR 435 ROADWAY SECTION



|             |                              |                  |  |
|-------------|------------------------------|------------------|--|
| SHEET 1B-41 | FHWA CONCURRENCE             | FDOT CONCURRENCE | HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 |
|             | FHWA Transportation Engineer | Date             | Date   |
|             | Date                         | Date             | Date   |

**PROJECT IDENTIFICATION**

FINANCIAL PROJECT ID 432100-1-22-01 COUNTY (SECTION) ORANGE (75280)  
 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 (DARYL CARTER PARKWAY)**

| <p align="center"><u>FUNCTIONAL CLASSIFICATION</u></p> <p align="center"> <input type="checkbox"/> RURAL<br/> <input checked="" type="checkbox"/> URBAN                 </p> <p> <input type="checkbox"/> FREEWAY/EXPWY.    <input type="checkbox"/> MAJOR COLL.<br/> <input type="checkbox"/> PRINCIPAL ART.    <input type="checkbox"/> MINOR COLL.<br/> <input checked="" type="checkbox"/> MINOR ART.    <input type="checkbox"/> LOCAL                 </p>  | <p align="center"><u>HIGHWAY SYSTEM</u></p> <p>Yes No</p> <p> <input type="checkbox"/> <input checked="" type="checkbox"/> NATIONAL HIGHWAY SYSTEM<br/> <input type="checkbox"/> <input checked="" type="checkbox"/> FLORIDA INTRASTATE HIGHWAY SYSTEM<br/> <input type="checkbox"/> <input checked="" type="checkbox"/> STRATEGIC INTERMODAL SYSTEM<br/> <input type="checkbox"/> <input checked="" type="checkbox"/> STATE HIGHWAY SYSTEM<br/> <input checked="" type="checkbox"/> <input type="checkbox"/> OFF STATE HIGHWAY SYSTEM                 </p>  |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
|---|--|---------------|-------|------|--|--|---------|-------------|---------------|--|--|---------|-------------|---------------|--|--|--------|-------------|---------------|--|--|--------------|---------------|---|-----|--------------|---------------|---|-------|--|--|-----|-------|-------|--|--------------------------|------|-------|--|--------------------------------------|------|-------|--|
| <p align="center"><u>ACCESS CLASSIFICATION</u></p> <p> <input type="checkbox"/> 1 - FREEWAY<br/> <input type="checkbox"/> 2 - RESTRICTIVE w/Service Roads<br/> <input type="checkbox"/> 3 - RESTRICTIVE w/660 ft. Connection Spacing<br/> <input type="checkbox"/> 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing<br/> <input checked="" type="checkbox"/> 5 - RESTRICTIVE w/440 ft. Connection Spacing<br/> <input type="checkbox"/> 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing<br/> <input type="checkbox"/> 7 - BOTH MEDIAN TYPES                 </p> | <p align="center"><u>TRAFFIC</u></p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th align="center">YEAR</th> <th align="center">AADT</th> <th colspan="2"></th> </tr> </thead> <tbody> <tr> <td>OPENING</td> <td align="center"><u>2020</u></td> <td align="center"><u>27,000</u></td> <td colspan="2"></td> </tr> <tr> <td>INTERIM</td> <td align="center"><u>2030</u></td> <td align="center"><u>30,000</u></td> <td colspan="2"></td> </tr> <tr> <td>DESIGN</td> <td align="center"><u>2040</u></td> <td align="center"><u>34,000</u></td> <td colspan="2"></td> </tr> </tbody> </table><br><p align="right"><u>DISTRIBUTION</u></p> <table style="width:100%; border-collapse: collapse;"> <tr> <td>DESIGN SPEED</td> <td align="center"><u>40 MPH</u></td> <td align="center">K</td> <td align="right">7.4</td> </tr> <tr> <td>POSTED SPEED</td> <td align="center"><u>40 MPH</u></td> <td align="center">D</td> <td align="right">53.66</td> </tr> <tr> <td></td> <td></td> <td align="center">T24</td> <td align="right">10.8%</td> </tr> </table><br><p align="center"><i>DESIGN SPEED APPROVALS</i></p> <table style="width:100%; border-collapse: collapse;"> <tr> <td align="center" colspan="2"><hr/></td> </tr> <tr> <td align="center">DISTRICT DESIGN ENGINEER</td> <td align="center">DATE</td> </tr> <tr> <td align="center" colspan="2"><hr/></td> </tr> <tr> <td align="center">DISTRICT TRAFFIC OPERATIONS ENGINEER</td> <td align="center">DATE</td> </tr> <tr> <td align="center" colspan="2"><hr/></td> </tr> </table> |               | YEAR  | AADT |  |  | OPENING | <u>2020</u> | <u>27,000</u> |  |  | INTERIM | <u>2030</u> | <u>30,000</u> |  |  | DESIGN | <u>2040</u> | <u>34,000</u> |  |  | DESIGN SPEED | <u>40 MPH</u> | K | 7.4 | POSTED SPEED | <u>40 MPH</u> | D | 53.66 |  |  | T24 | 10.8% | <hr/> |  | DISTRICT DESIGN ENGINEER | DATE | <hr/> |  | DISTRICT TRAFFIC OPERATIONS ENGINEER | DATE | <hr/> |  |
|   | YEAR   | AADT          |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| OPENING   | <u>2020</u>  | <u>27,000</u> |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| INTERIM   | <u>2030</u>  | <u>30,000</u> |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| DESIGN  | <u>2040</u>  | <u>34,000</u> |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| DESIGN SPEED  | <u>40 MPH</u>  | K             | 7.4   |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| POSTED SPEED  | <u>40 MPH</u>  | D             | 53.66 |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
|   |  | T24           | 10.8% |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| <hr/>   |  |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| DISTRICT DESIGN ENGINEER  | DATE   |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| <hr/>   |  |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| DISTRICT TRAFFIC OPERATIONS ENGINEER  | DATE   |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| <hr/>   |  |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |
| <p align="center"><u>CRITERIA</u></p> <p> <input checked="" type="checkbox"/> NEW CONSTRUCTION / RECONSTRUCTION<br/> <input type="checkbox"/> RRR INTERSTATE / FREEWAY<br/> <input type="checkbox"/> RRR NON-INTERSTATE / FREEWAY<br/> <input type="checkbox"/> TDLC / NEW CONSTRUCTION / RECONSTRUCTION<br/> <input type="checkbox"/> TDLC / RRR<br/> <input type="checkbox"/> MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)                 </p>  |  |               |       |      |  |  |         |             |               |  |  |         |             |               |  |  |        |             |               |  |  |              |               |   |     |              |               |   |       |  |  |     |       |       |  |                          |      |       |  |                                      |      |       |  |

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

DARYL CARTER PARKWAY (754115)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE COUNTY UTILITIES)  
 ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

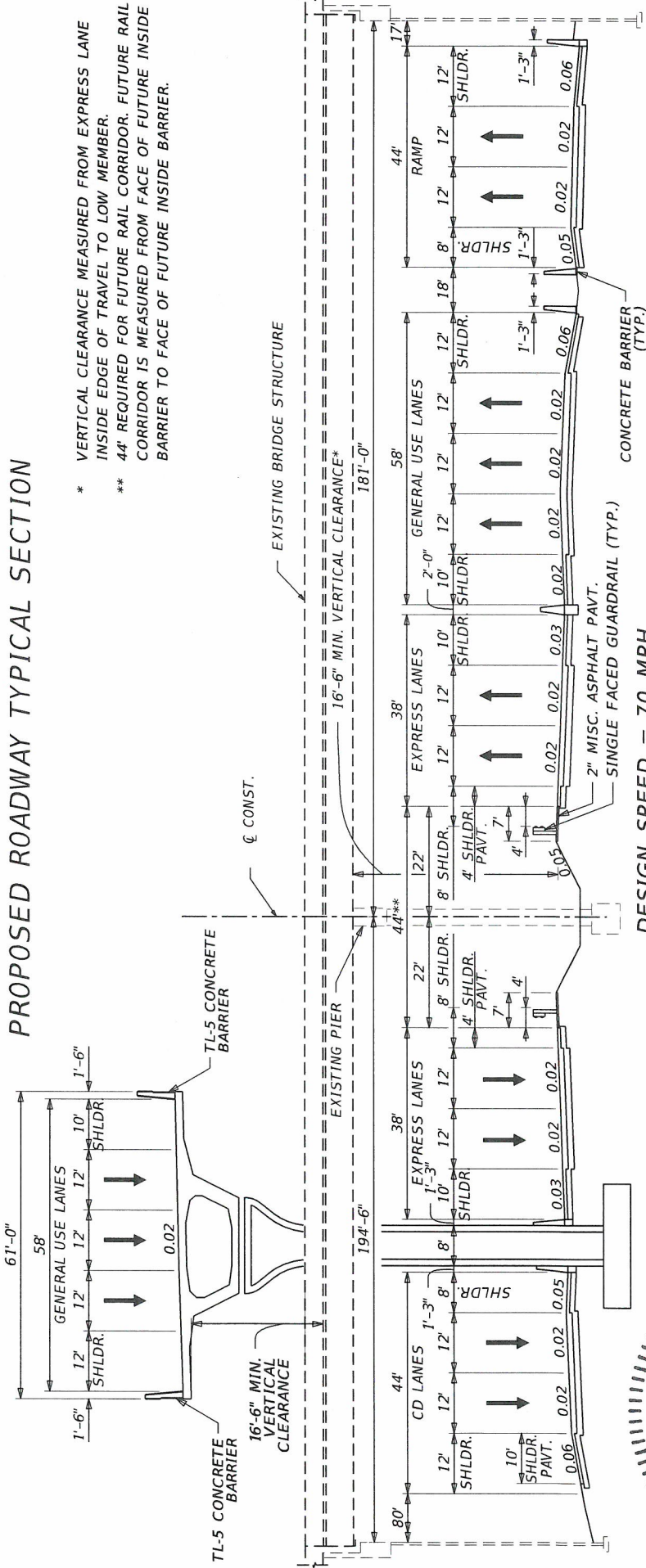
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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



\* 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.

DESIGN SPEED = 70 MPH  
 SR 400 (I-4) UNDER DARYL CARTER PARKWAY

SHEET 1B-43

|  |   |
|--|---|
| FHWA CONCURRENCE   |   |
| FHWA Transportation Engineer Date  |   |
| FDOT CONCURRENCE   | ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer<br>Date |
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 | 2/19/20<br>Date   |

Professional Engineer Seal for Robert M. Denney, License No. 58593, State of Florida. The seal includes the text 'ROBERT M. DENNEY', 'LICENSE NO. 58593', 'STATE OF FLORIDA', and 'PROFESSIONAL ENGINEER'. There is a signature over the seal and a date '2/19/20'.



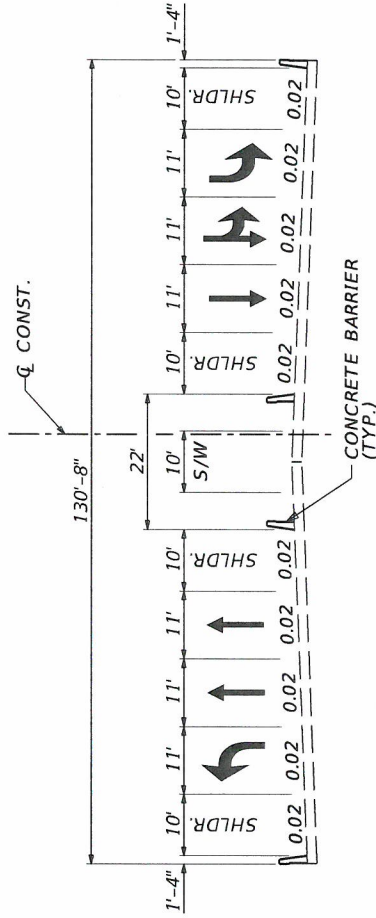
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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



## DARYL CARTER PARKWAY STRUCTURE SECTION DIVERGING DIAMOND INTERCHANGE

**ROBERT M. DENNEY**  
 LICENSE APPROVED BY  
 No. 58593  
 HNTB CORPORATION  
 610 CRESCENT EXEC. CT.  
 SUITE 400  
 LAKE MARY, FL 32746  
 (407) 805-0355  
 CERT OF AUTH NO 6500  
 Date: 02/09/2017  
 mbarry

| SHEET 1B-44  |  |                               |
|--|--|-------------------------------|
| FDOT CONCURRENCE   | FHWA CONCURRENCE                           | COUNTY CONCURRENCE            |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District<br>Design Engineer<br>Date _____ | FHWA Transportation Engineer<br>Date _____ | County Engineer<br>Date _____ |

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 COUNTY (SECTION) ORANGE (75280)  
 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 (CENTRAL FLORIDA PARKWAY)

| FUNCTIONAL CLASSIFICATION          | HIGHWAY SYSTEM                            |
|------------------------------------|---|
| ( ) RURAL                          | Yes No                                    |
| (X) URBAN                          | ( ) (X) NATIONAL HIGHWAY SYSTEM           |
| ( ) FREEWAY/EXPWY. ( ) MAJOR COLL. | ( ) (X) FLORIDA INTRASTATE HIGHWAY SYSTEM |
| ( ) PRINCIPAL ART. ( ) MINOR COLL. | ( ) (X) STRATEGIC INTERMODAL SYSTEM       |
| (X) MINOR ART. ( ) LOCAL           | ( ) (X) STATE HIGHWAY SYSTEM              |
|                                    | (X) ( ) OFF STATE HIGHWAY SYSTEM          |

| ACCESS CLASSIFICATION                             | TRAFFIC                            |
|---|------------------------------------|
| ( ) 1 - FREEWAY                                   | YEAR AADT                          |
| ( ) 2 - RESTRICTIVE w/Service Roads               | OPENING <u>2020</u> <u>44,000</u>  |
| ( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing  | INTERIM <u>2030</u> <u>53,000</u>  |
| ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing | DESIGN <u>2040</u> <u>60,000</u>   |
| (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing  |                                    |
| ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing | <u>DISTRIBUTION</u>                |
| ( ) 7 - BOTH MEDIAN TYPES                         | DESIGN SPEED <u>45 MPH</u> K 7.4   |
|   | POSTED SPEED <u>45 MPH</u> D 53.66 |
|   | T 24 3.8%                          |

| CRITERIA  | DESIGN SPEED APPROVALS |
|---|------------------------|
| (X) NEW CONSTRUCTION / RECONSTRUCTION   |                        |
| ( ) RRR INTERSTATE / FREEWAY  |                        |
| ( ) RRR NON-INTERSTATE / FREEWAY  |                        |
| ( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION  | _____ DATE             |
| ( ) TDLC / RRR  |                        |
| ( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY) | _____ DATE             |

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:

CENTRAL FLORIDA PARKWAY (750142, 750200, 750402)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

GAS (CENTRAL FLORIDA GAS)  
 WATER (ORANGE COUNTY UTILITIES)  
 COMMUNICATIONS (BRIGHTHOUSE NETWORKS, COMCAST, LEVEL 3, VERIZON)  
 WASTEWATER (ORANGE COUNTY UTILITIES)  
 ELECTRIC (DUKE ENERGY DISTRIBUTION, DUKE ENERGY TRANSMISSION)

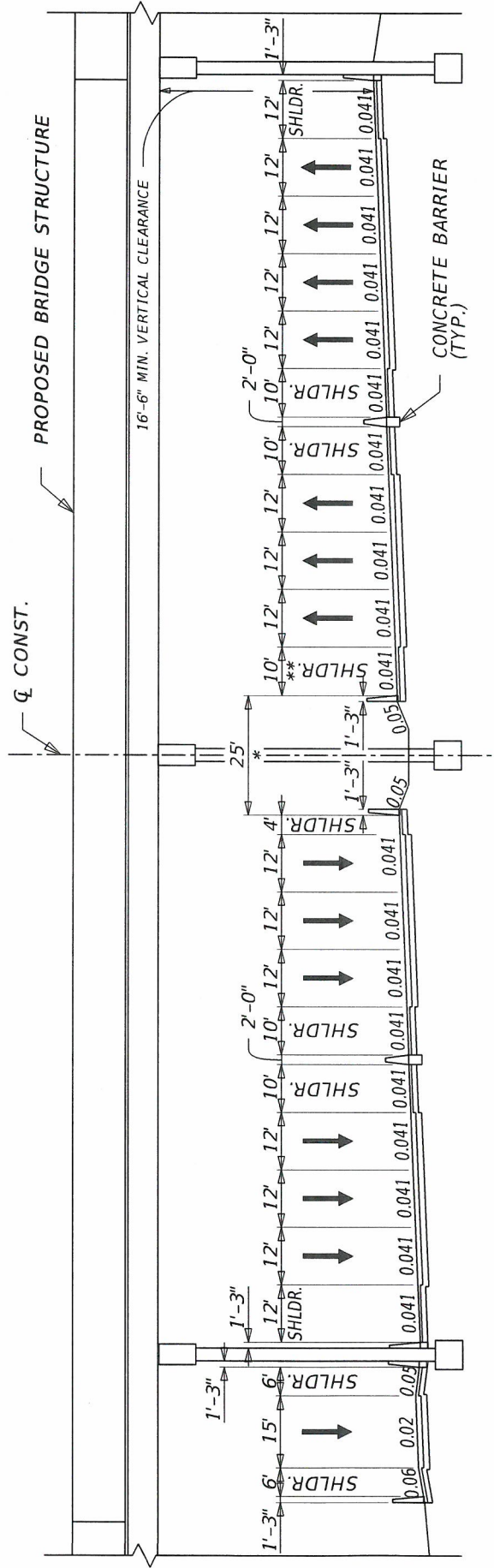
LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE  
 SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528  
 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 WESTBOUND CENTRAL FLORIDA PARKWAY RAMP

\* 25-FT REQUIRED FROM INSIDE FACE OF BARRIER TO INSIDE FACE OF BARRIER  
 (HIGH SPEED RAIL ELEVATED IN THIS AREA).  
 \*\* 10-FT WIDE SHOULDER USED IN LIEU OF 4-FT SHOULDER TO MEET STOPPING SIGHT DISTANCE.

SHEET 1B-46

|   |                  |                                      |
|---|------------------|--------------------------------------|
| HNTB CORPORATION<br>610 CRESCENT EXEC. CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500<br>2/19/2017<br>2:39:12 PM | FDOT CONCURRENCE | FHWA CONCURRENCE                     |
| ANNETTE K. BRENNAN, P.E.<br>FDOT District Design Engineer   | Date             | FHWA Transportation Engineer<br>Date |

APPROVED BY  
 No 5859  
 STATE OF FLORIDA  
 ROBERT M. DENNEY, P.E.  
 Engineer of Record  
 License No. 58599  
 PROFESSIONAL ENGINEER

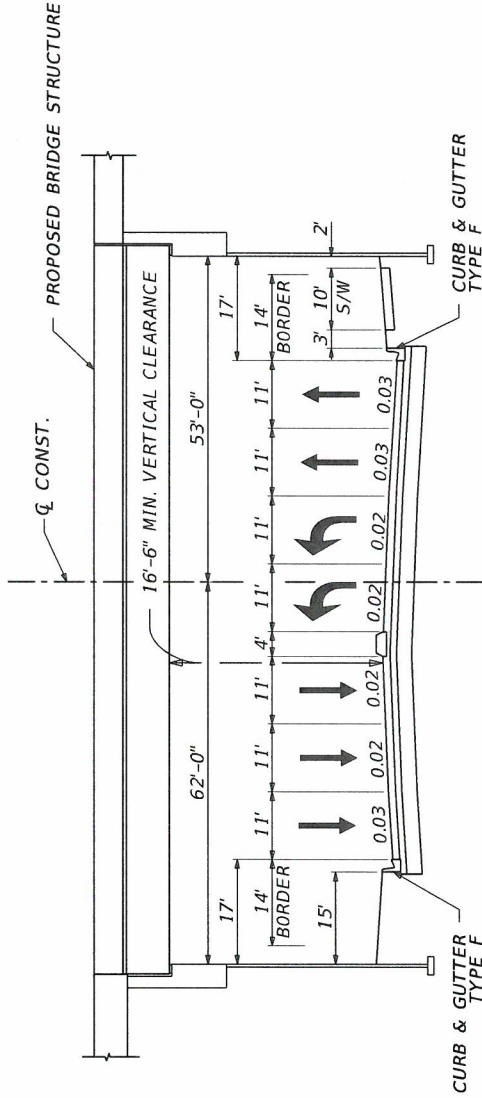
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 432100-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME ORANGE

SECTION NO. 75280 ROAD DESIGNATION SR 400 (I-4) LIMITS/MILEPOST MP 0.000 - 9.528

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

CENTRAL FLORIDA PARKWAY UNDER SR 400 (I-4)

| SHEET 1B-47  |   |  |
|--|---|--|
| FDOT CONCURRENCE   | FHWA CONCURRENCE  | COUNTY CONCURRENCE   |
| <p>ANNETTE K. BRENNAN, P.E.<br/>                     FDOT District Design Engineer<br/>                     Date _____</p> | <p>FHWA Transportation Engineer<br/>                     Date _____</p> | <p>County Engineer<br/>                     Date _____</p> |

**APPROVED BY**

NO. 58593

**ROBERT M. DENNEY, P.E.**

Professional Engineer License No. 18593

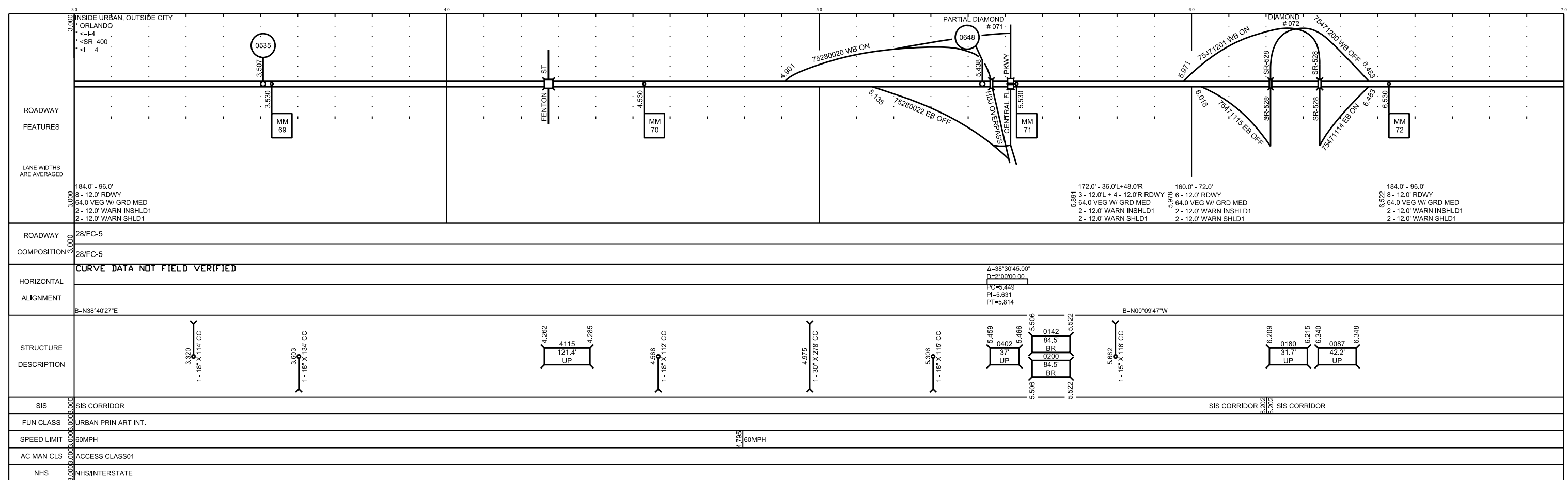
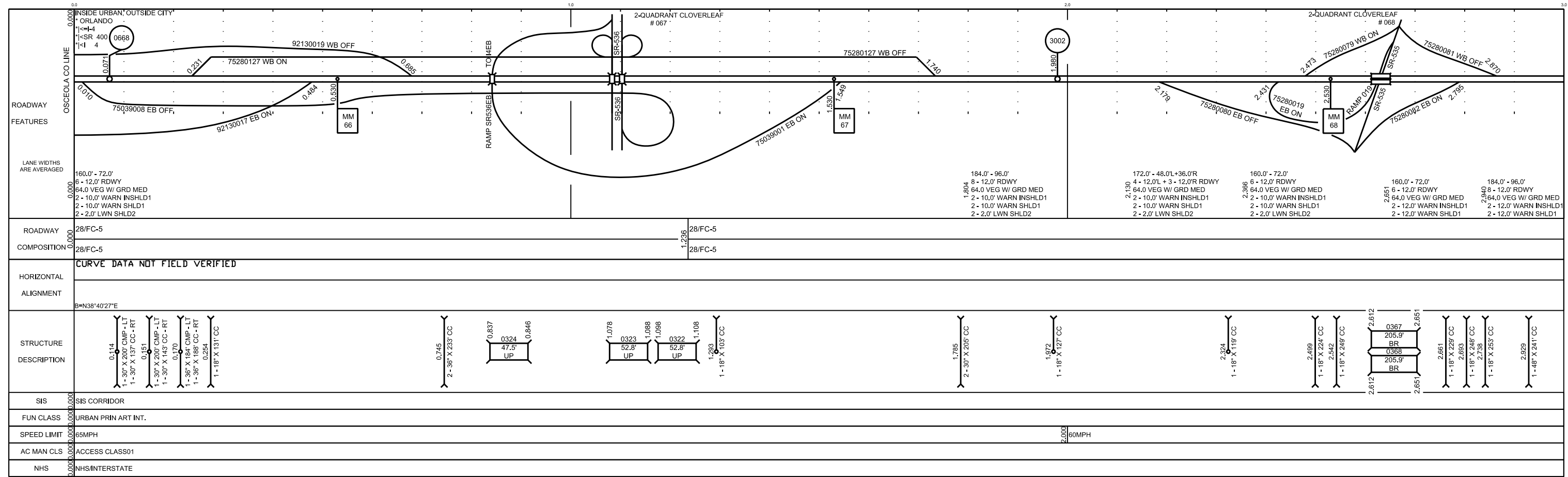
2/9/03

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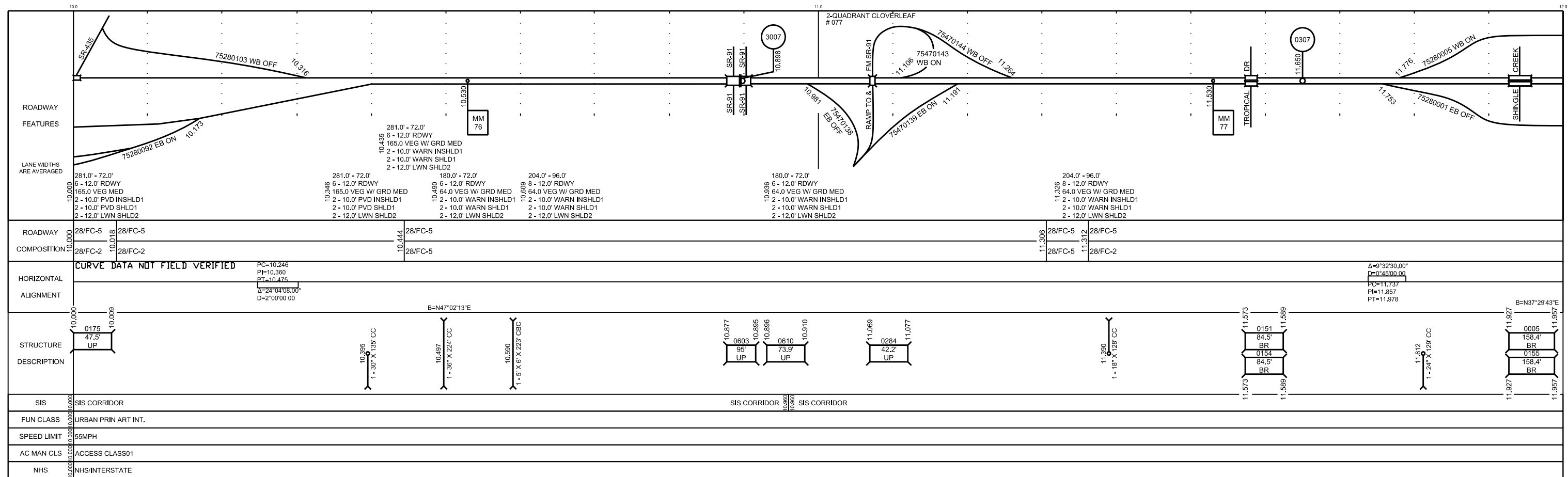
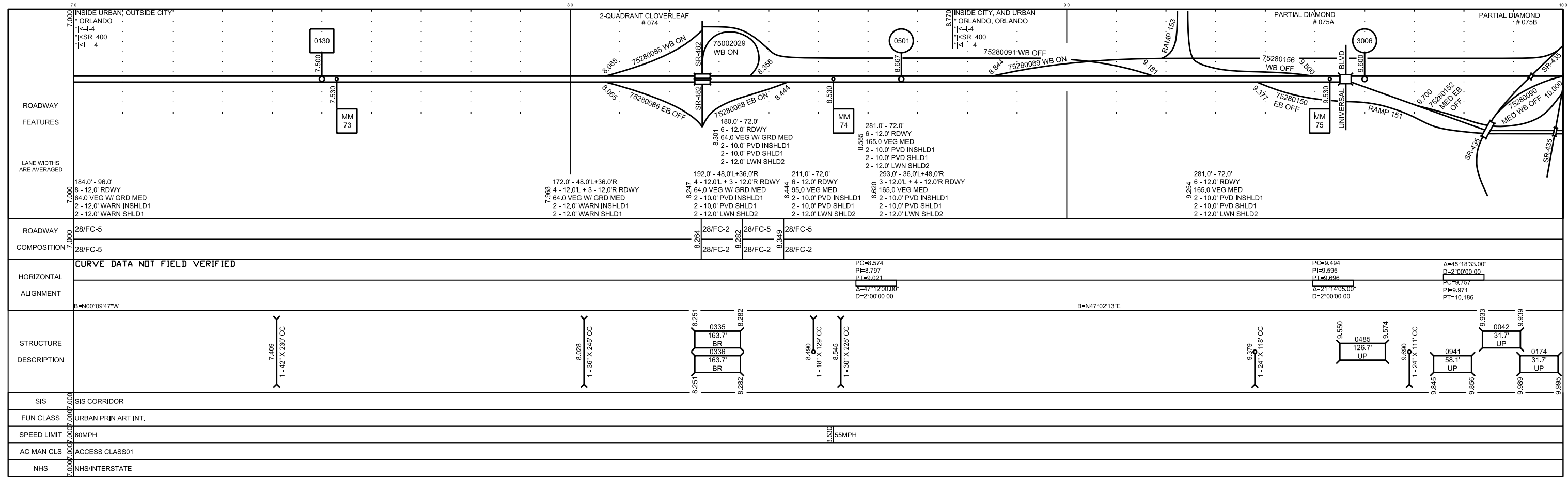
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**APPENDIX C**  
**STRAIGHT LINE DIAGRAM**

**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**STRAIGHT LINE DIAGRAM OF ROAD INVENTORY**



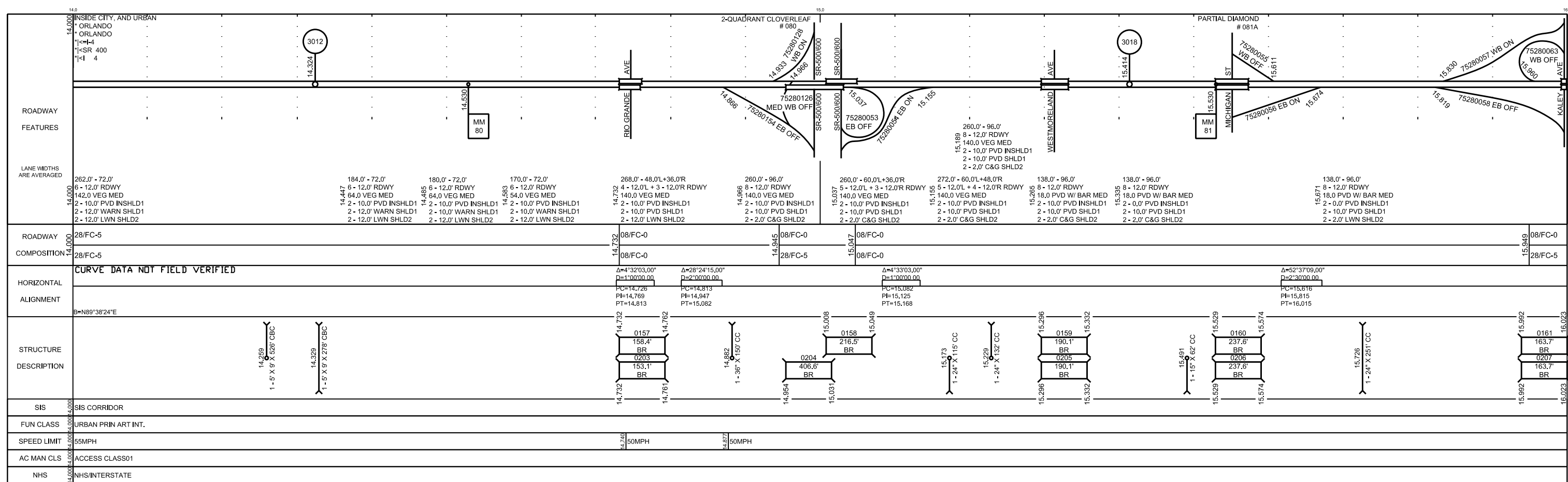
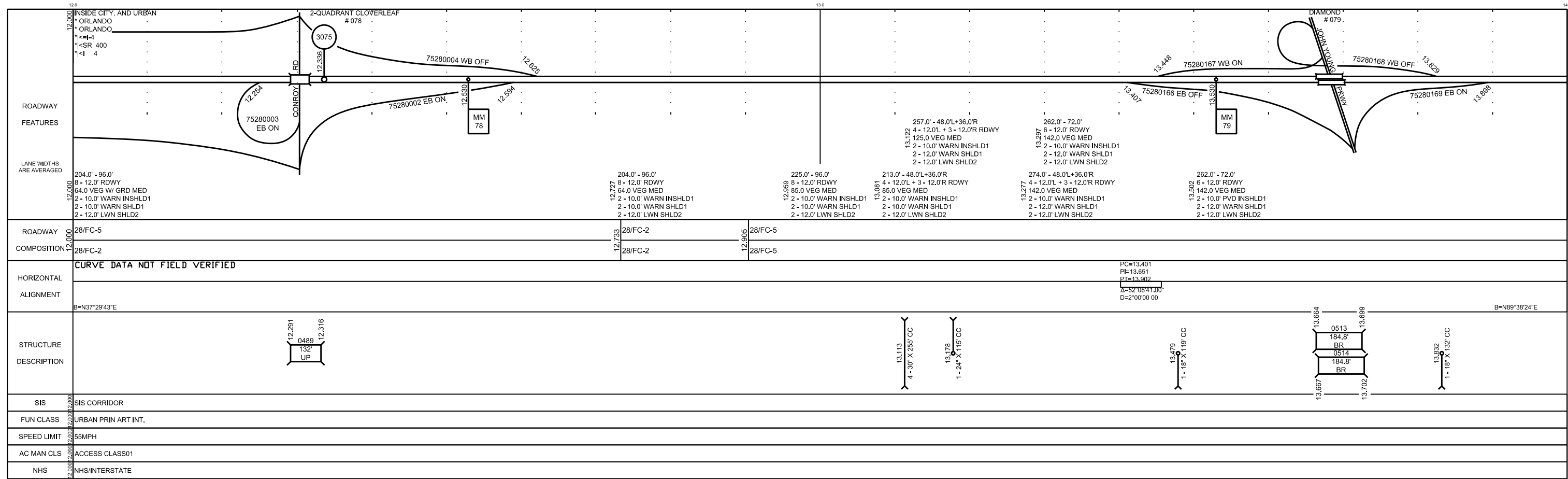
**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**STRAIGHT LINE DIAGRAM OF ROAD INVENTORY**



|      |                               |         |            |     |         |         |         |     |            |    |            |    |
|------|-------------------------------|---------|------------|-----|---------|---------|---------|-----|------------|----|------------|----|
| DATE | 06/23/2011                    | SLD REV | 08/17/2011 | BMP | 000.000 | EMP     | 024.673 | INV | 01/26/2015 | KA | 01/28/2015 | MR |
| BY   | Elizabeth Nelson/Kim Auerbach | URS     |            |     | 000.000 | 024.673 |         |     | 04/10/2014 | EN | 08/06/2014 | MR |

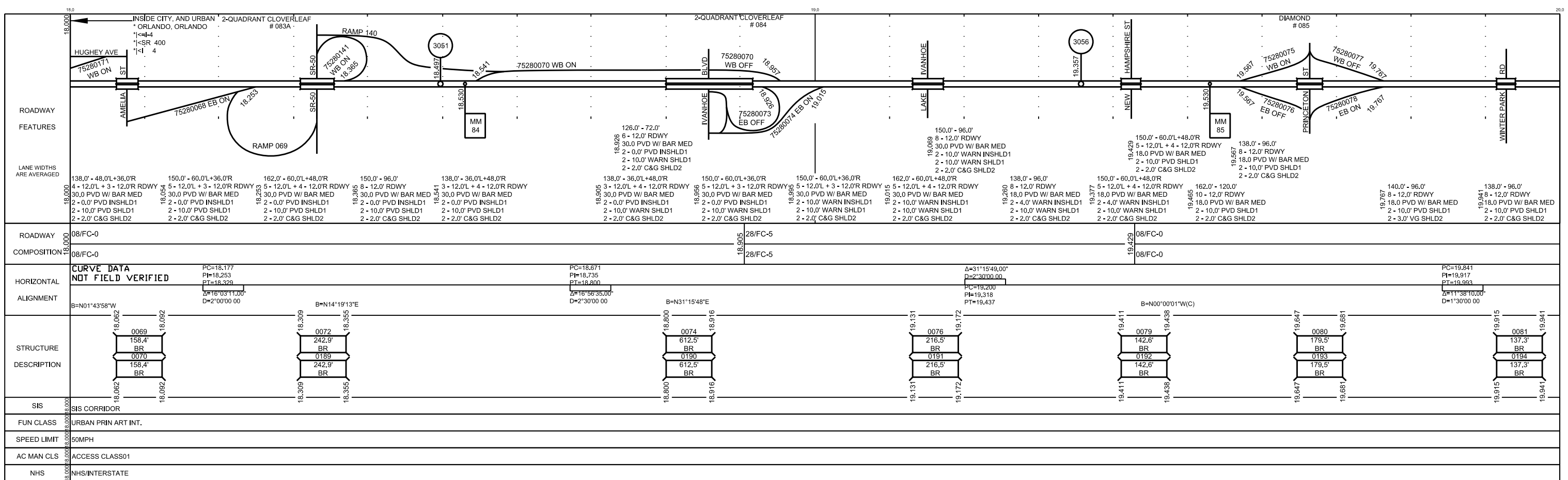
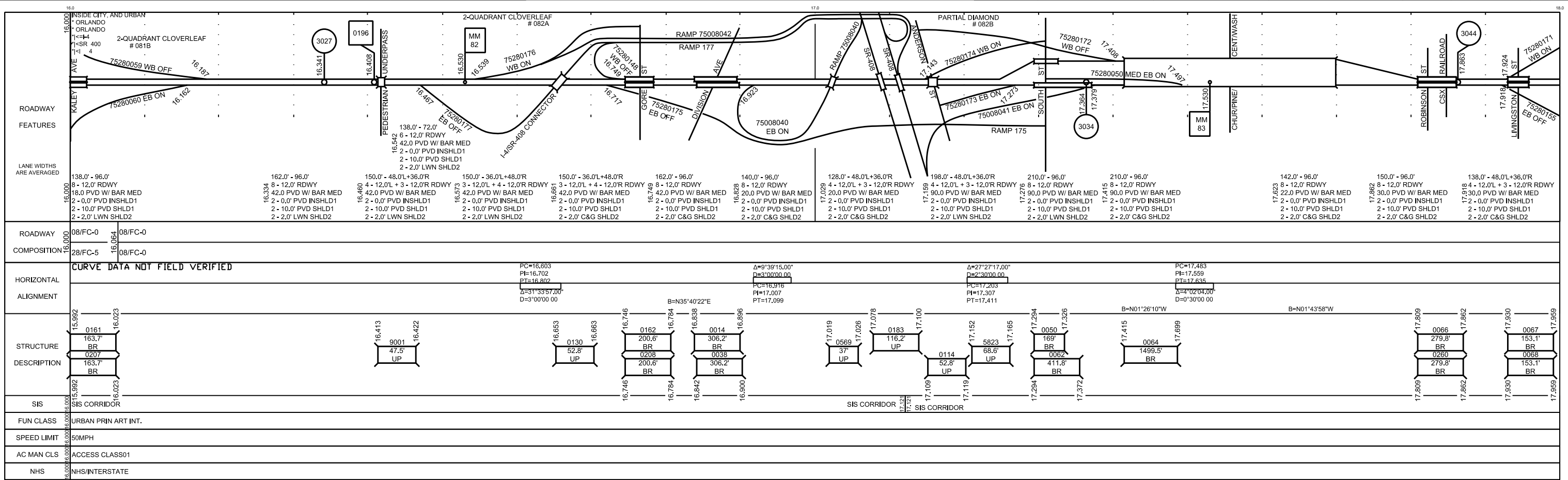
FLORIDA DEPARTMENT OF TRANSPORTATION  
**STRAIGHT LINE DIAGRAM OF ROAD INVENTORY**

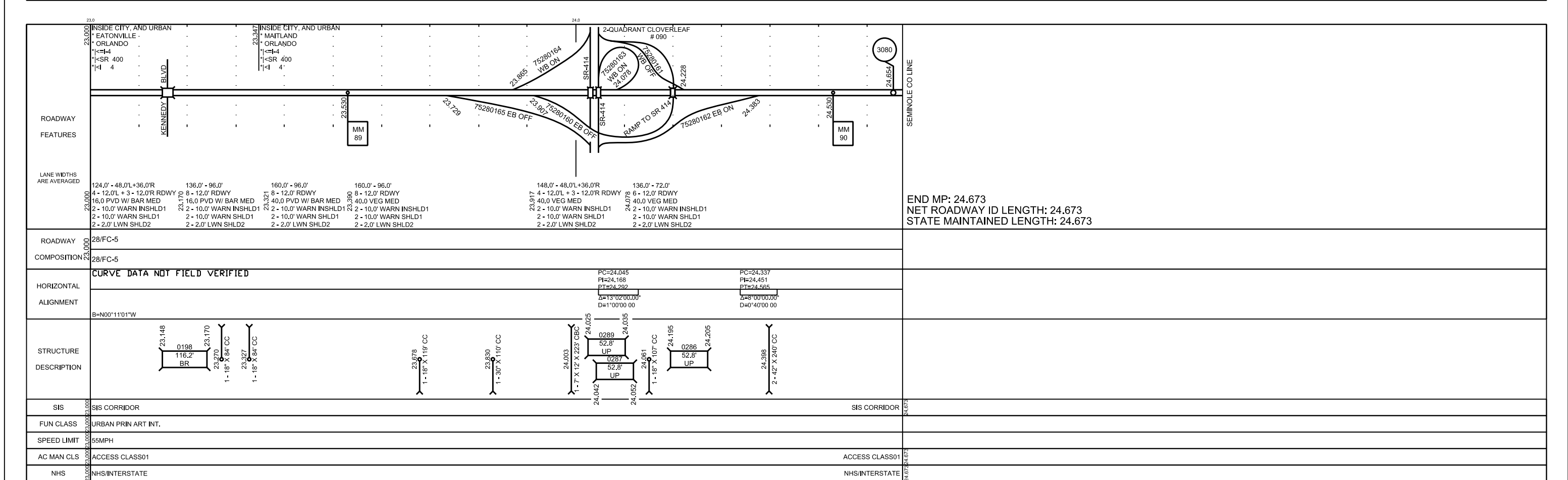
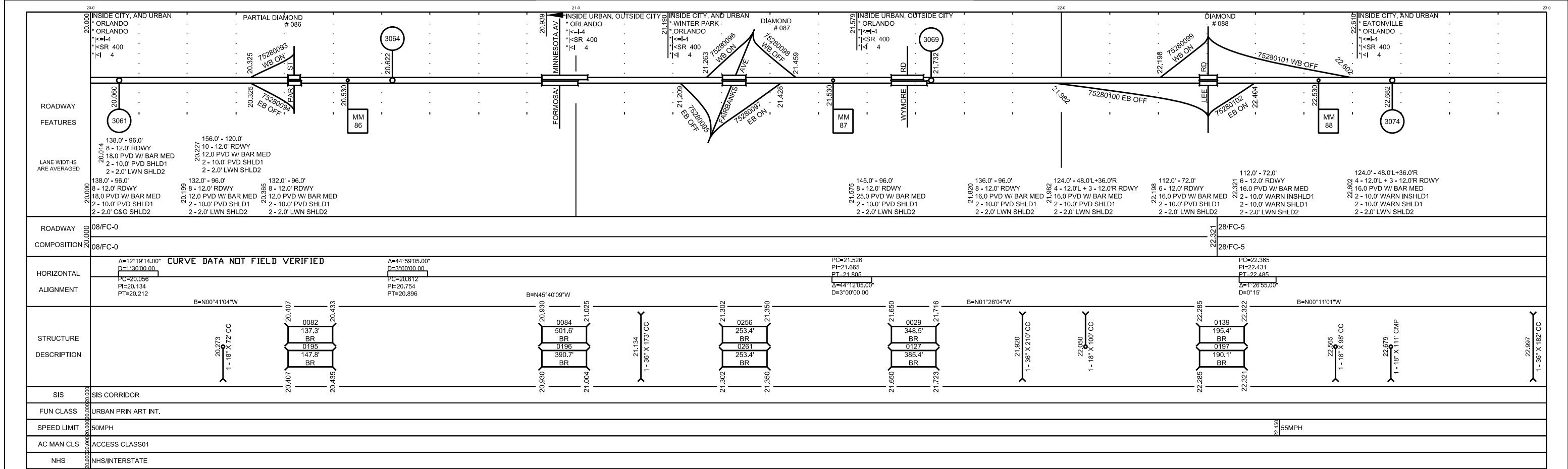
|                |                      |                |        |          |            |           |
|----------------|----------------------|----------------|--------|----------|------------|-----------|
| SECTION STATUS | INT. or US ROUTE NO. | STATE ROAD NO. | COUNTY | DISTRICT | ROADWAY ID | SHEET NO: |
| 02             | 14                   | SR 400         | ORANGE | 05       | 75280000   | 3 OF 5    |





## FLORIDA DEPARTMENT OF TRANSPORTATION STRAIGHT LINE DIAGRAM OF ROAD INVENTORY





**APPENDIX D**

**TRAFFIC PROJECTIONS, 18-KIP ESAL REPORT**

ESAL SUMMARY SHEET  
ORANGE 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  |
|              | UNABLE TO CONFIRM ESAL FROM FDOT TRAFFIC ONLINE   |
| *            | Average ESALS used for Ramps in Pavement Design   |
| **           | Palm Pkwy used for Grand Cypress (New Road)   |
| ***          | Used for CD Road ESAL   |

| County | Pavt Type | Design Year<br>ESAL (2040) | Location #           | Location<br>Description                | Design/Movement Description             | ROAD TYPE        | RAMP/BL |
|--------|-----------|----------------------------|----------------------|--|---|------------------|---------|
| SR 536 |           |                            |                      |  |   |                  |         |
| ORANGE | Asphalt   | 6,549,000                  | 750595 -<br>75039000 | SR 536 E of I-4                        | ON SR-536, 0.315 MI. W OF SR-535 (UCLP) | SR 536           | 536     |
| ORANGE | Asphalt   | 6,582,000                  | 750603 -<br>75039000 | SR 536 W of I-4                        | ON SR-536, 0.178 MI. NW OF I-4 (RC)     | SR 536           |         |
| ORANGE | Asphalt   | 4,891,000                  | 752005 -<br>75039005 | I-4 CD On Ramp<br>to I-4 SB            | I-4, RAMP FROM SR-536 EB TO I-4 WB      | Single Lane Ramp | A1_536  |
| ORANGE | Asphalt   | 6,259,000                  | 752005 -<br>75039001 | SR 536 EB to I-<br>4 NB-SB On<br>Ramps | I-4, RAMP FROM SR-536 EB TO I-4 WB      | Single Lane Ramp | A1_536  |
| ORANGE | Asphalt   | 1,869,000                  | 752005 -<br>7503005  | SR 536 EB On<br>Ramp to I-4 CD<br>SB   | I-4, RAMP FROM SR-536 EB TO I-4 WB      | Single Lane Ramp | A1_536  |
| ORANGE | Asphalt   | 633,000                    | 752001 New<br>Ramp   | SR 536 EB On<br>Ramp to I-4 CD<br>NB   |   | Single Lane Ramp | A2_536  |
| ORANGE | Asphalt   | 4,197,000                  | 752001 -<br>75039001 | SR 536 EB to I-4<br>NB On Ramps        | I-4, RAMP FROM SR-536 EB TO I-4 EB (UV) | Dual Lane Ramp   | A2_536  |
| ORANGE | Asphalt   | 2,763,000                  | 752004-<br>75039006  | I-4 CD SB Off<br>Ramp to SR<br>536 EB  | I-4, RAMP FROM I-4 WB TO SR-536 EB      | Single Lane Ramp | A3_536  |
| ORANGE | Asphalt   | 2,665,000                  | 752000 -<br>75039002 | I-4 CD NB Off<br>Ramp to SR 536<br>EB  | I-4, RAMP FROM I-4 EB TO SR-536 EB (UV) | Single Lane Ramp | B1_536  |

ESAL SUMMARY SHEET  
ORANGE COUNTY

| County | Pavt Type | Design Year<br>ESAL (2040) | Location #           | Location<br>Description                                     | Design/Movement Description             | ROAD TYPE        | RAMP/BL     |
|--------|-----------|----------------------------|----------------------|---|---|------------------|-------------|
| ORANGE | Asphalt   | 5,066,000                  | 752001 -<br>75039001 | SR 536 EB-WB<br>to I-4 NB GUL<br>On Ramp                    | I-4, RAMP FROM SR-536 EB TO I-4 EB (UV) | Dual Lane Ramp   | C1_536      |
| ORANGE | Asphalt   | 658,000                    | 752008 -<br>7503003  | SR 536 WB to I-<br>4 CD NB On<br>Ramp                       | I-4, RAMP FROM I-4 WB TO SR-535         | Single/Dual Ramp | C1_536      |
| ORANGE | Asphalt   | 3,217,000                  | 752008 -<br>75039003 | SR 536 WB to I-<br>4 NB GUL On<br>Ramp                      | I-4, RAMP FROM I-4 WB TO SR-535         | Single Lane Ramp | C1_536      |
| ORANGE | Asphalt   | 2,668,000                  | 752003 -<br>75239007 | SR 536 WB Off<br>Ramp to I-4 CD<br>SB                       | I-4, RAMP FROM SR-536 WB TO I-4 WB      | Single Lane Ramp | C3_536      |
| ORANGE | Asphalt   | 3,047,000                  | 752085 -<br>75039008 | I-4 CD NB Off<br>Ramp to SR 536<br>WB                       | I-4, RAMP I-4 EB TO SR-536 WB           | Single Lane Ramp | C4_536      |
| ORANGE | Asphalt   | 5,497,000                  | 752002 -<br>75039004 | I-4 GUL&CD SB<br>Off Ramp to SR<br>536 WB&Buena<br>Vista Dr | I-4, RAMP FROM I-4 WB TO SR-536 WB      | Dual Lane Ramp   | D1_536      |
| ORANGE | Asphalt   | 4,097,000                  | 752002 -<br>75039004 | I-4 GUL & ML<br>SB Off Ramps to<br>SR 536 WB                | I-4, RAMP FROM I-4 WB TO SR-536 WB      | Dual Lane Ramp   | D1_536      |
| ORANGE | Asphalt   | 3,289,000                  | 752002 New<br>Ramp   | I-4 CD SB Off<br>Ramp to Buena<br>Vista Drive               |   | Single LaneRamp  | D6_536      |
| SR 535 |           |                            |                      |   |   |                  |             |
| ORANGE | Asphalt   | 7,112,000                  | 750581 -<br>75035000 | SR 535 N of I-4   | SR-535, 0.15 MI. NW OF I-4 (HPMS)       | SR 535           | NB535/SB535 |
| ORANGE | Asphalt   | 5,334,000                  | 750630 -<br>75035001 | SR 535 S of I-4   | ON SR-535, 0.835 MI. NW OF SR-536 (UV)  | SR 535           | NB535/SB535 |
| ORANGE | Asphalt   | 5,163,000                  | 75280000 New<br>Ramp | SR 535 SB to I-4<br>EB On Ramp                              |   | Dual Lane Ramp   | A2_535      |
| ORANGE | Asphalt   | 6,531,000                  | 752006 -<br>75280080 | I-4 CD EB Off<br>Ramp to SR 535                             | I-4, RAMP I-4 EB TO SR-535              | EB CD            | B2_535      |

ESAL SUMMARY SHEET  
ORANGE COUNTY

| County            | Pavt Type | Design Year<br>ESAL (2040) | Location #           | Location<br>Description                       | Design/Movement Description                                     | ROAD TYPE                     | RAMP/BL             |
|-------------------|-----------|----------------------------|----------------------|---|---|-------------------------------|---------------------|
| ORANGE            | Asphalt   | 4,973,000                  | 752007 -<br>75280082 | SR 535 NB to I-4<br>EB On Ramp                | I-4, RAMP FROM SR-535 WB TO I-4 EB                              | Dual Lane Ramp                | C1_535              |
| ORANGE            | Asphalt   | 5,801,000                  | 752008 New<br>Ramp   | I-4 CD WB Off<br>Ramp to SR 535<br>SB         |   | Single Lane Ramp              | D1_535              |
| ORANGE            | Asphalt   | 4,868,000                  | 752008 New<br>Ramp   | I-4 CD WB Off<br>Ramp to SR 535<br>SB         |   | Single Lane Ramp              | D1_535              |
| ORANGE            | Asphalt   | 2,002,000                  | 75035000 New<br>Ramp | SR 535 NB Off<br>Ramp to Hotel<br>Plaza Blvd  |   | Single Lane Ramp              | D4_535              |
| ORANGE            | Asphalt   | 3,177,000                  | 758210-<br>75000371  | Vineland Ave - E<br>of SR 535                 |   | Vineland Ave                  | EB/WBVINE<br>LAND   |
| ORANGE            | Asphalt   | 4,292,000                  | 758116-<br>75000178  | Palm Pkwy - E<br>of SR SR 535 **              |   | Palm Pkwy                     | EB/WBPALM           |
| ORANGE            | Asphalt   | 972,000                    |                      | Meadow<br>Creeek Dr - E of<br>SR 535          |   | Meadow Creek Dr               | MEADOWCR<br>EEK     |
| ORANGE            | Asphalt   | 3,688,000                  | 757083-<br>75000324  | Hotel Plaza Blvd<br>- W of SR 535             |   | Hotel Plaza Blvd              | EB/WBHOTE<br>LPLAZA |
| ORANGE            | Asphalt   | 4,096,000                  | 750525-<br>75035000  | WinterGarden-<br>Vineland Rd - W<br>of SR 535 |   | Winter Garden-<br>Vineland Rd |                     |
| Daryl CARTER PKWY |           |                            |                      |   |   |                               |                     |
| ORANGE            | Asphalt   | 8,976,000                  | 758364 -<br>75000457 | Daryl Carter W<br>of I-4                      | DARYL CARTER PKWY, .25 MI N OF INTERNATIONAL<br>DR - OFF SYSTEM | Daryl Carter                  | DCP                 |
| ORANGE            | Asphalt   | 6,842,000                  | 758364 -<br>75000457 | Daryl Carter E<br>of I-4                      | DARYL CARTER PKWY, .25 MI N OF INTERNATIONAL<br>DR - OFF SYSTEM | Daryl Carter                  | DCP                 |
| ORANGE            | Asphalt   | 12,393,000                 | 75280000 New<br>Ramp | Daryl Carter<br>Pkwy to I-4 SB<br>on Ramp     |   | Single Lane Ramp              | A_DCP               |
| ORANGE            | Asphalt   | 11,754,000                 | 75280000 New<br>Ramp | I-4 NB Off Ramp<br>to Daryl Carter<br>Pkwy EB |   | Dual Lane Ramp                | B_DCP               |
| County            | Pavt Type | Design Year<br>ESAL (2040) | Location #           | Location<br>Description                       | Design/Movement Description                                     | ROAD TYPE                     | RAMP/BL             |

ESAL SUMMARY SHEET  
ORANGE COUNTY

|                       |         |            |                   |   |   |                  |       |
|-----------------------|---------|------------|-------------------|---|---|------------------|-------|
| ORANGE                | Asphalt | 11,754,000 | 75280000 New Ramp | Daryl Carter Pkwy to I-4 WB on Ramp       |   | Dual Lane Ramp   | C_DCP |
| CENTRAL FLORIDA PAKWY |         |            |                   |   |   |                  |       |
|                       |         | 5,910,000  | 75523000          | Central Florida Pkwy E of I-4             |   | CFP              | CFP   |
| ORANGE                | Asphalt | 4,422,000  | 75523000          | Central Florida Pkwy W of I-4             |   | CFP              | CFP   |
| ORANGE                | Asphalt | 3,143,000  | 752209 - 75280021 | Central Florida Pkwy EB to I-4 SB On Ramp | RAMP FROM CENTRAL FL PKWY TO I-4 WB       | Single Lane Ramp | A_CFP |
| ORANGE                | Asphalt | 7,630,000  | 750648-75280000   | I-4 NB Off Ramp to Central Florida Pkwy   | I-4, RAMP I-4 EB TO CENTRAL FL PKWY       | Dual Lane Ramp   | B_CFP |
| ORANGE                | Asphalt | 4,309,000  | 752085 - 75280127 | I-4 CD SB On Ramp to I-4 Gul & ML SB      | I-4, RAMP I-4 EB TO SR-536 WB***          | WB CD            | WBCD2 |
| ORANGE                | Asphalt | 4,409,000  | 752012 - 75800020 | Central Florida Pkwy WB to I-4 SB On Ramp | I-4, RAMP FROM CENTRAL FL PKWY. TO I-4 WB | Single Lane Ramp | C_CFP |
| ORANGE                | Asphalt | 5,792,000  | 75280000 New Ramp | I-4 SB Off Ramp to Central Florida Pkwy   |   | Dual Lane Ramp   | D_CFP |
| OP                    |         |            |                   |   |   |                  |       |
| ORANGE                | Asphalt | 260,000    | 752005 New Ramp   | I-4 CD SB to Osceola Pkwy                 |   | Single Lane Ramp | D1_OP |

| HIGH ESAL RAMPS             |                                |
|-----------------------------|--------------------------------|
| HIGH ESAL SINGLE LANE RAMPS | HIGH ESAL DUAL LANE ESAL RAMPS |
| A_DCP                       | B_DCP                          |
|                             | C_DCP                          |

**APPENDIX D**

**SR 536**



**ESAL Location 752000 - 75039002 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752000 - 75039002  
**LOCATION DESCRIPTION:** I-4 CD NB Off Ramp to SR 536 EB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |                          |       |
|-----------------|------|------|--------------------------|-------|
|                 | AADT |      | Daily Direction Split    |       |
| Existing Year   | N/A  | 0    | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 6660 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 7930 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 9120 | Existing to Opening Year | 5.10% |
|                 |      |      | Opening to Mid-Year      | 5.10% |
|                 |      |      | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 5/3/2016  
 Signature \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752000 - 75039002

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752000 - 75039002**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK

I-4 ESALs

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 6600 | 111             | 111              | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 6700 | 113             | 224              | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 6900 | 116             | 340              | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 7000 | 118             | 458              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 7100 | 119             | 577              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 7200 | 121             | 698              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 7400 | 124             | 822              | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 7500 | 126             | 948              | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 7600 | 128             | 1076             | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 7800 | 131             | 1207             | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 7900 | 133             | 1340             | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 8000 | 135             | 1475             | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 8100 | 136             | 1611             | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 8200 | 138             | 1749             | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 8400 | 141             | 1890             | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 8500 | 143             | 2033             | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 8600 | 145             | 2178             | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 8700 | 146             | 2324             | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 8800 | 148             | 2472             | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 9000 | 151             | 2623             | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 9100 | 153             | 2776             | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1229

Opening to Design Year ESAL Accumulation (1000s): 2665

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

5/3/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752000 - 75039002**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752000 - 75039002**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752000 - 75039002

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 | 6600 | 157          | 157           | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 6700 | 159          | 316           | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 6900 | 164          | 480           | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 7000 | 166          | 646           | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 7100 | 168          | 814           | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 7200 | 171          | 985           | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 7400 | 175          | 1160          | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 7500 | 178          | 1338          | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 7600 | 180          | 1518          | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 7800 | 185          | 1703          | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 7900 | 187          | 1890          | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 8000 | 190          | 2080          | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 8100 | 192          | 2272          | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 8200 | 194          | 2466          | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 8400 | 199          | 2665          | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 8500 | 201          | 2866          | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 8600 | 204          | 3070          | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 8700 | 206          | 3276          | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 8800 | 209          | 3485          | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 9000 | 213          | 3698          | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 9100 | 216          | 3914          | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1733

Opening to Design Year ESAL Accumulation (1000s): 3757

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

5/3/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

ESAL Location 752085 - 75039008 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 752085 - 75039008  
 LOCATION DESCRIPTION: I-4 CD NB Off Ramp to SR 536 WB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |       |                          |       |
|--|------|------|-------|--------------------------|-------|
| Existing Year  | N/A  | AADT | 0     | Daily Direction Split    | 100%  |
| Opening Year   | 2020 |      | 7610  | (50% or 100%)            |       |
| Mid-Design Year  | 2030 |      | 9060  | Lanes in One Direction   | 1     |
| Design Year  | 2040 |      | 10410 | <b>T24 values</b>        |       |
| Note: AADT values have been rounded to the nearest 100 |      |      |       | Existing to Opening Year | 5.10% |
|  |      |      |       | Opening to Mid-Year      | 5.10% |
|  |      |      |       | Mid-Year to Design-Year  | 5.10% |

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                  |
|-----------------------------|-------------------|------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT   |
|                             | SN = 5/THICK      | SN = 12/THICK    |
| RURAL FREEWAY:              | 1.050             | 1.600            |
| URBAN FREEWAY:              | 0.900 <u> X </u>  | 1.270 <u> X </u> |
| 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  
 \_\_\_\_\_  
 Date  4/28/2016   
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by:  Jason Learned   
 Name  
 Project Manager - Design Traffic FDOT - D5   
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752085 - 75039008

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752085 - 75039008**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 7600  | 128          | 128           | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 7700  | 130          | 258           | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 7900  | 133          | 391           | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 8000  | 135          | 526           | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 8100  | 136          | 662           | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 8300  | 140          | 802           | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 8400  | 141          | 943           | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 8600  | 145          | 1088          | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 8700  | 146          | 1234          | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 8900  | 150          | 1384          | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 9000  | 151          | 1535          | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 9100  | 153          | 1688          | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 9300  | 156          | 1844          | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 9400  | 158          | 2002          | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 9600  | 161          | 2163          | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 9700  | 163          | 2326          | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 9800  | 165          | 2491          | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 10000 | 168          | 2659          | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 10100 | 170          | 2829          | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 10200 | 171          | 3000          | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 10400 | 175          | 3175          | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1407  
 Opening to Design Year ESAL Accumulation (1000s): 3047

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  
 \_\_\_\_\_  
 Signature Date 4/28/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752085 - 75039008**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752085 - 75039008**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752085 - 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 | 7600  | 180          | 180           | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 7700  | 183          | 363           | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 7900  | 187          | 550           | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 8000  | 190          | 740           | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 8100  | 192          | 932           | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 8300  | 197          | 1129          | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 8400  | 199          | 1328          | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 8600  | 204          | 1532          | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 8700  | 206          | 1738          | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 8900  | 211          | 1949          | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 9000  | 213          | 2162          | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 9100  | 216          | 2378          | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 9300  | 220          | 2598          | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 9400  | 223          | 2821          | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 9600  | 227          | 3048          | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 9700  | 230          | 3278          | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 9800  | 232          | 3510          | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 10000 | 237          | 3747          | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 10100 | 239          | 3986          | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 10200 | 242          | 4228          | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 10400 | 246          | 4474          | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1982  
 Opening to Design Year ESAL Accumulation (1000s): 4294

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

**ESAL Location 752002 - New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752002 - New Ramp  
**LOCATION DESCRIPTION:** I-4 CD SB Off Ramp to Buena Vista Drive

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |   |
|-----------------|------|-------|---|
|                 | AADT |       | Daily Direction Split                         |
| Existing Year   | N/A  | 0     | (50% or 100%) <u>    100%    </u>             |
| Opening Year    | 2020 | 8500  | Lanes in One Direction <u>    1    </u>       |
| Mid-Design Year | 2030 | 9770  | <b>T24 values</b>                             |
| Design Year     | 2040 | 11040 | Existing to Opening Year <u>    5.10%    </u> |
|                 |      |       | Opening to Mid-Year <u>    5.10%    </u>      |
|                 |      |       | Mid-Year to Design-Year <u>    5.10%    </u>  |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>    X    </u>            | 1.270 <u>    X    </u>          |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/22/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 752002 - New Ramp

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752002 - New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|-------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 8500  | 143             | 143              | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 8600  | 145             | 288              | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 8700  | 146             | 434              | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 8800  | 148             | 582              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 9000  | 151             | 733              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 9100  | 153             | 886              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 9200  | 155             | 1041             | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 9300  | 156             | 1197             | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 9500  | 160             | 1357             | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 9600  | 161             | 1518             | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 9700  | 163             | 1681             | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 9800  | 165             | 1846             | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 10000 | 168             | 2014             | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 10100 | 170             | 2184             | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 10200 | 171             | 2355             | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 10400 | 175             | 2530             | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 10500 | 176             | 2706             | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 10600 | 178             | 2884             | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 10700 | 180             | 3064             | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 10900 | 183             | 3247             | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 11000 | 185             | 3432             | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1538

Opening to Design Year ESAL Accumulation (1000s): 3289

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date





**ESAL Location 752005 - New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752005 - New Ramp  
 I-4 CD SB Off Ramp to I-4 CD SB to Osceola Pkwy

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |     |                          |               |       |
|-----------------|------|------|-----|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0   | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 670 | Lanes in One Direction   |               | 1     |
| Mid-Design Year | 2030 |      | 790 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 910 | Existing to Opening Year |               | 5.10% |
|                 |      |      |     | Opening to Mid-Year      |               | 5.10% |
|                 |      |      |     | Mid-Year to Design-Year  |               | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |              |                |              |
|-----------------------------|-------------------|--------------|----------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT |              | RIGID PAVEMENT |              |
|                             | SN = 5/THICK      |              | SN = 12/THICK  |              |
| RURAL FREEWAY:              | 1.050             | _____        | 1.600          | _____        |
| URBAN FREEWAY:              | 0.900             | <u>  X  </u> | 1.270          | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/28/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752005 - New Ramp

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 600  | 11           | 11            | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 600  | 11           | 22            | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 600  | 11           | 33            | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 700  | 12           | 45            | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 700  | 12           | 57            | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 700  | 12           | 69            | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 700  | 12           | 81            | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 700  | 12           | 93            | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 700  | 12           | 105           | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 700  | 12           | 117           | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 700  | 12           | 129           | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 800  | 14           | 143           | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 800  | 14           | 157           | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 800  | 14           | 171           | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 800  | 14           | 185           | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 800  | 14           | 199           | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 800  | 14           | 213           | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 800  | 14           | 227           | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 800  | 14           | 241           | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 800  | 14           | 255           | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 900  | 16           | 271           | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 118  
 Opening to Design Year ESAL Accumulation (1000s): 260

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 752005 - New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752005 - 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 | 600  | 15           | 15            | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 600  | 15           | 30            | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 600  | 15           | 45            | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 700  | 17           | 62            | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 700  | 17           | 79            | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 700  | 17           | 96            | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 700  | 17           | 113           | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 700  | 17           | 130           | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 700  | 17           | 147           | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 700  | 17           | 164           | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 700  | 17           | 181           | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 800  | 19           | 200           | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 800  | 19           | 219           | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 800  | 19           | 238           | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 800  | 19           | 257           | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 800  | 19           | 276           | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 800  | 19           | 295           | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 800  | 19           | 314           | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 800  | 19           | 333           | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 800  | 19           | 352           | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 900  | 22           | 374           | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 166  
 Opening to Design Year ESAL Accumulation (1000s): 359

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

**ESAL Location 752004 - 75039006 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752004 - 75039006  
**LOCATION DESCRIPTION:** I-4 CD SB Off Ramp to SR 536 EB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |                          |       |
|-----------------|------|------|--------------------------|-------|
|                 | AADT |      | Daily Direction Split    |       |
| Existing Year   | N/A  | 0    | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 6930 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 8200 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 9480 | Existing to Opening Year | 5.10% |
|                 |      |      | Opening to Mid-Year      | 5.10% |
|                 |      |      | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/21/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 752004 - 75039006

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752004 - 75039006**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK

I-4 ESALs

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 6900 | 116             | 116              | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 7000 | 118             | 234              | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 7100 | 119             | 353              | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 7300 | 123             | 476              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 7400 | 124             | 600              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 7500 | 126             | 726              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 7600 | 128             | 854              | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 7800 | 131             | 985              | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 7900 | 133             | 1118             | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 8000 | 135             | 1253             | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 8200 | 138             | 1391             | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 8300 | 140             | 1531             | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 8400 | 141             | 1672             | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 8500 | 143             | 1815             | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 8700 | 146             | 1961             | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 8800 | 148             | 2109             | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 8900 | 150             | 2259             | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 9000 | 151             | 2410             | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 9200 | 155             | 2565             | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 9300 | 156             | 2721             | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 9400 | 158             | 2879             | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1275

Opening to Design Year ESAL Accumulation (1000s): 2763

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 752004 - 75039006**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752004 - 75039006**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752004 - 75039006

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALS

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 6900 | 164             | 164              | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 7000 | 166             | 330              | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 7100 | 168             | 498              | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 7300 | 173             | 671              | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 7400 | 175             | 846              | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 7500 | 178             | 1024             | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 7600 | 180             | 1204             | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 7800 | 185             | 1389             | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 7900 | 187             | 1576             | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 8000 | 190             | 1766             | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 8200 | 194             | 1960             | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 8300 | 197             | 2157             | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 8400 | 199             | 2356             | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 8500 | 201             | 2557             | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 8700 | 206             | 2763             | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 8800 | 209             | 2972             | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 8900 | 211             | 3183             | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 9000 | 213             | 3396             | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 9200 | 218             | 3614             | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 9300 | 220             | 3834             | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 9400 | 223             | 4057             | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1796

Opening to Design Year ESAL Accumulation (1000s): 3893

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

**ESAL Location 752085 - 75280127 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752085 - 75280127  
**LOCATION DESCRIPTION:** I-4 CD SB On Ramp to I-4 GUL & ML SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 10160 | Lanes in One Direction   |               | 1     |
| Mid-Design Year | 2030 |      | 12960 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 14970 | Existing to Opening Year |               | 5.10% |
|                 |      |      |       | Opening to Mid-Year      |               | 5.10% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                          |              |                       |              |
|-----------------------------|--------------------------|--------------|-----------------------|--------------|
| (selected with an X)        | <b>FLEXIBLE PAVEMENT</b> |              | <b>RIGID PAVEMENT</b> |              |
|                             | SN = 5/THICK             |              | SN = 12/THICK         |              |
| RURAL FREEWAY:              | 1.050                    | _____        | 1.600                 | _____        |
| URBAN FREEWAY:              | 0.900                    | <u>  X  </u> | 1.270                 | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/28/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_



Flexible Pavement 18 KIP ESAL Analysis - Location 752085 - 75280127

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752085 - 75280127**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 10100 | 170          | 170           | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 10400 | 175          | 345           | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 10700 | 180          | 525           | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 11000 | 185          | 710           | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 11200 | 188          | 898           | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 11500 | 193          | 1091          | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 11800 | 198          | 1289          | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 12100 | 203          | 1492          | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 12400 | 208          | 1700          | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 12600 | 212          | 1912          | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 12900 | 217          | 2129          | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 13100 | 220          | 2349          | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 13300 | 223          | 2572          | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 13500 | 227          | 2799          | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 13700 | 230          | 3029          | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 13900 | 233          | 3262          | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 14100 | 237          | 3499          | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 14300 | 240          | 3739          | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 14500 | 243          | 3982          | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 14700 | 247          | 4229          | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 14900 | 250          | 4479          | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1959  
 Opening to Design Year ESAL Accumulation (1000s): 4309

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 752085 - 75280127**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752085 - 75280127**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752085 - 75280127

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 | 10100 | 239          | 239           | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 10400 | 246          | 485           | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 10700 | 253          | 738           | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 11000 | 261          | 999           | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 11200 | 265          | 1264          | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 11500 | 272          | 1536          | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 11800 | 279          | 1815          | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 12100 | 287          | 2102          | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 12400 | 294          | 2396          | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 12600 | 298          | 2694          | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 12900 | 305          | 2999          | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 13100 | 310          | 3309          | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 13300 | 315          | 3624          | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 13500 | 320          | 3944          | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 13700 | 324          | 4268          | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 13900 | 329          | 4597          | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 14100 | 334          | 4931          | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 14300 | 339          | 5270          | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 14500 | 343          | 5613          | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 14700 | 348          | 5961          | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 14900 | 353          | 6314          | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2760  
 Opening to Design Year ESAL Accumulation (1000s): 6075

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

ESAL Location 752005 - 75039005 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 752005 - 75039005  
 LOCATION DESCRIPTION: I-4 CD SB On Ramp to I-4 SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |       |                          |               |       |
|--|------|------|-------|--------------------------|---------------|-------|
| Existing Year  | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year   | 2020 |      | 11720 | Lanes in One Direction   |               | 1     |
| Mid-Design Year  | 2030 |      | 14520 | <b>T24 values</b>        |               |       |
| Design Year  | 2040 |      | 17120 | Existing to Opening Year |               | 5.10% |
| Note: AADT values have been rounded to the nearest 100 |      |      |       | Opening to Mid-Year      |               | 5.10% |
|  |      |      |       | Mid-Year to Design-Year  |               | 5.10% |

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                  |
|-----------------------------|-------------------|------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT   |
|                             | SN = 5/THICK      | SN = 12/THICK    |
| RURAL FREEWAY:              | 1.050             | 1.600            |
| URBAN FREEWAY:              | 0.900 <u> X </u>  | 1.270 <u> X </u> |
| 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  
 \_\_\_\_\_  
 Date  4/28/2016   
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by:  Jason Learned   
 Name  
 Project Manager - Design Traffic FDOT - D5   
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752005 - 75039005

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75039005**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 11700 | 197          | 197           | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 12000 | 202          | 399           | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 12200 | 205          | 604           | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 12500 | 210          | 814           | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 12800 | 215          | 1029          | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 13100 | 220          | 1249          | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 13400 | 225          | 1474          | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 13600 | 228          | 1702          | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 13900 | 233          | 1935          | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 14200 | 238          | 2173          | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 14500 | 243          | 2416          | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 14700 | 247          | 2663          | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 15000 | 252          | 2915          | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 15300 | 257          | 3172          | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 15500 | 260          | 3432          | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 15800 | 265          | 3697          | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 16000 | 269          | 3966          | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 16300 | 274          | 4240          | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 16600 | 279          | 4519          | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 16800 | 282          | 4801          | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 17100 | 287          | 5088          | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2219

Opening to Design Year ESAL Accumulation (1000s): 4891

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

## Rigid Pavement 18 KIP ESAL Analysis - Location 752005 - 75039005

### 18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75039005

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752005 - 75039005

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|-------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 11700 | 277             | 277              | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 12000 | 284             | 561              | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 12200 | 289             | 850              | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 12500 | 296             | 1146             | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 12800 | 303             | 1449             | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 13100 | 310             | 1759             | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 13400 | 317             | 2076             | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 13600 | 322             | 2398             | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 13900 | 329             | 2727             | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 14200 | 336             | 3063             | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 14500 | 343             | 3406             | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 14700 | 348             | 3754             | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 15000 | 355             | 4109             | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 15300 | 362             | 4471             | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 15500 | 367             | 4838             | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 15800 | 374             | 5212             | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 16000 | 379             | 5591             | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 16300 | 386             | 5977             | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 16600 | 393             | 6370             | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 16800 | 398             | 6768             | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 17100 | 405             | 7173             | 1 | 5.10% | 1.000 | 1.270 |

|   |      |
|---|------|
| Opening to Mid-Design Year ESAL Accumulation (1000s): | 3129 |
| Opening to Design Year ESAL Accumulation (1000s):     | 6896 |

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

**ESAL Location 752002 - 75039004 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752002 - 75039004  
**LOCATION DESCRIPTION:** I-4 GUL & ML SB Off Ramps to SR 536 WB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |       |
|-----------------|------|-------|--------------------------|-------|
|                 | AADT |       | Daily Direction Split    |       |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 14040 | Lanes in One Direction   | 2     |
| Mid-Design Year | 2030 | 15850 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 17640 | Existing to Opening Year | 5.10% |
|                 |      |       | Opening to Mid-Year      | 5.10% |
|                 |      |       | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Date 4/22/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752002 - 75039004

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752002 - 75039004**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 14000 | 183          | 183           | 1 | 5.10% | 0.778 | 0.900 |
| 2021 | 14200 | 185          | 368           | 1 | 5.10% | 0.777 | 0.900 |
| 2022 | 14400 | 188          | 556           | 1 | 5.10% | 0.776 | 0.900 |
| 2023 | 14500 | 189          | 745           | 1 | 5.10% | 0.776 | 0.900 |
| 2024 | 14700 | 191          | 936           | 1 | 5.10% | 0.774 | 0.900 |
| 2025 | 14900 | 194          | 1130          | 1 | 5.10% | 0.773 | 0.900 |
| 2026 | 15100 | 196          | 1326          | 1 | 5.10% | 0.772 | 0.900 |
| 2027 | 15300 | 198          | 1524          | 1 | 5.10% | 0.771 | 0.900 |
| 2028 | 15400 | 199          | 1723          | 1 | 5.10% | 0.771 | 0.900 |
| 2029 | 15600 | 202          | 1925          | 1 | 5.10% | 0.769 | 0.900 |
| 2030 | 15800 | 204          | 2129          | 1 | 5.10% | 0.768 | 0.900 |
| 2031 | 16000 | 206          | 2335          | 1 | 5.10% | 0.767 | 0.900 |
| 2032 | 16200 | 208          | 2543          | 1 | 5.10% | 0.766 | 0.900 |
| 2033 | 16300 | 210          | 2753          | 1 | 5.10% | 0.766 | 0.900 |
| 2034 | 16500 | 212          | 2965          | 1 | 5.10% | 0.765 | 0.900 |
| 2035 | 16700 | 214          | 3179          | 1 | 5.10% | 0.764 | 0.900 |
| 2036 | 16900 | 216          | 3395          | 1 | 5.10% | 0.763 | 0.900 |
| 2037 | 17100 | 219          | 3614          | 1 | 5.10% | 0.762 | 0.900 |
| 2038 | 17200 | 220          | 3834          | 1 | 5.10% | 0.761 | 0.900 |
| 2039 | 17400 | 222          | 4056          | 1 | 5.10% | 0.760 | 0.900 |
| 2040 | 17600 | 224          | 4280          | 1 | 5.10% | 0.760 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1946

Opening to Design Year ESAL Accumulation (1000s): 4097

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752002 - 75039004**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752002 - 75039004**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75280000

**LOCATION #:** 752002 - 75039004

**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 | 14000 | 258          | 258           | 1 | 5.10% | 0.778 | 1.270 |
| 2021 | 14200 | 261          | 519           | 1 | 5.10% | 0.777 | 1.270 |
| 2022 | 14400 | 265          | 784           | 1 | 5.10% | 0.776 | 1.270 |
| 2023 | 14500 | 266          | 1050          | 1 | 5.10% | 0.776 | 1.270 |
| 2024 | 14700 | 270          | 1320          | 1 | 5.10% | 0.774 | 1.270 |
| 2025 | 14900 | 273          | 1593          | 1 | 5.10% | 0.773 | 1.270 |
| 2026 | 15100 | 276          | 1869          | 1 | 5.10% | 0.772 | 1.270 |
| 2027 | 15300 | 279          | 2148          | 1 | 5.10% | 0.771 | 1.270 |
| 2028 | 15400 | 281          | 2429          | 1 | 5.10% | 0.771 | 1.270 |
| 2029 | 15600 | 284          | 2713          | 1 | 5.10% | 0.769 | 1.270 |
| 2030 | 15800 | 288          | 3001          | 1 | 5.10% | 0.768 | 1.270 |
| 2031 | 16000 | 291          | 3292          | 1 | 5.10% | 0.767 | 1.270 |
| 2032 | 16200 | 294          | 3586          | 1 | 5.10% | 0.766 | 1.270 |
| 2033 | 16300 | 296          | 3882          | 1 | 5.10% | 0.766 | 1.270 |
| 2034 | 16500 | 299          | 4181          | 1 | 5.10% | 0.765 | 1.270 |
| 2035 | 16700 | 302          | 4483          | 1 | 5.10% | 0.764 | 1.270 |
| 2036 | 16900 | 305          | 4788          | 1 | 5.10% | 0.763 | 1.270 |
| 2037 | 17100 | 309          | 5097          | 1 | 5.10% | 0.762 | 1.270 |
| 2038 | 17200 | 310          | 5407          | 1 | 5.10% | 0.761 | 1.270 |
| 2039 | 17400 | 313          | 5720          | 1 | 5.10% | 0.760 | 1.270 |
| 2040 | 17600 | 317          | 6037          | 1 | 5.10% | 0.760 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2743

Opening to Design Year ESAL Accumulation (1000s): 5779

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date



**ESAL Location 752002 - 75039004 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752002 - 75039004  
**LOCATION DESCRIPTION:** I-4 GUL&CD SB Off Ramp to SR 536 WB&Buena Vista Dr

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |       |
|-----------------|------|-------|--------------------------|-------|
|                 | AADT |       | Daily Direction Split    |       |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 19590 | Lanes in One Direction   | 2     |
| Mid-Design Year | 2030 | 22020 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 24500 | Existing to Opening Year | 5.10% |
|                 |      |       | Opening to Mid-Year      | 5.10% |
|                 |      |       | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Date 4/22/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752002 - 75039004

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752002 - 75039004**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 19500 | 246          | 246           | 1 | 5.10% | 0.751 | 0.900 |
| 2021 | 19800 | 249          | 495           | 1 | 5.10% | 0.750 | 0.900 |
| 2022 | 20000 | 251          | 746           | 1 | 5.10% | 0.749 | 0.900 |
| 2023 | 20300 | 255          | 1001          | 1 | 5.10% | 0.748 | 0.900 |
| 2024 | 20500 | 257          | 1258          | 1 | 5.10% | 0.747 | 0.900 |
| 2025 | 20800 | 260          | 1518          | 1 | 5.10% | 0.746 | 0.900 |
| 2026 | 21000 | 263          | 1781          | 1 | 5.10% | 0.745 | 0.900 |
| 2027 | 21200 | 265          | 2046          | 1 | 5.10% | 0.744 | 0.900 |
| 2028 | 21500 | 268          | 2314          | 1 | 5.10% | 0.743 | 0.900 |
| 2029 | 21700 | 270          | 2584          | 1 | 5.10% | 0.742 | 0.900 |
| 2030 | 22000 | 274          | 2858          | 1 | 5.10% | 0.741 | 0.900 |
| 2031 | 22200 | 276          | 3134          | 1 | 5.10% | 0.740 | 0.900 |
| 2032 | 22500 | 279          | 3413          | 1 | 5.10% | 0.739 | 0.900 |
| 2033 | 22700 | 281          | 3694          | 1 | 5.10% | 0.739 | 0.900 |
| 2034 | 23000 | 285          | 3979          | 1 | 5.10% | 0.737 | 0.900 |
| 2035 | 23200 | 287          | 4266          | 1 | 5.10% | 0.737 | 0.900 |
| 2036 | 23500 | 290          | 4556          | 1 | 5.10% | 0.736 | 0.900 |
| 2037 | 23700 | 292          | 4848          | 1 | 5.10% | 0.735 | 0.900 |
| 2038 | 24000 | 296          | 5144          | 1 | 5.10% | 0.734 | 0.900 |
| 2039 | 24200 | 298          | 5442          | 1 | 5.10% | 0.733 | 0.900 |
| 2040 | 24500 | 301          | 5743          | 1 | 5.10% | 0.732 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2612

Opening to Design Year ESAL Accumulation (1000s): 5497

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  
 \_\_\_\_\_  
 Date 4/22/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Rigid Pavement 18 KIP ESAL Analysis - Location 752002 - 75039004

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752002 - 75039004**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000                                      LOCATION #: 752002 - 75039004                                      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 | 19500 | 347          | 347           | 1 | 5.10% | 0.751 | 1.270 |
| 2021 | 19800 | 351          | 698           | 1 | 5.10% | 0.750 | 1.270 |
| 2022 | 20000 | 355          | 1053          | 1 | 5.10% | 0.749 | 1.270 |
| 2023 | 20300 | 359          | 1412          | 1 | 5.10% | 0.748 | 1.270 |
| 2024 | 20500 | 362          | 1774          | 1 | 5.10% | 0.747 | 1.270 |
| 2025 | 20800 | 367          | 2141          | 1 | 5.10% | 0.746 | 1.270 |
| 2026 | 21000 | 370          | 2511          | 1 | 5.10% | 0.745 | 1.270 |
| 2027 | 21200 | 373          | 2884          | 1 | 5.10% | 0.744 | 1.270 |
| 2028 | 21500 | 378          | 3262          | 1 | 5.10% | 0.743 | 1.270 |
| 2029 | 21700 | 381          | 3643          | 1 | 5.10% | 0.742 | 1.270 |
| 2030 | 22000 | 386          | 4029          | 1 | 5.10% | 0.741 | 1.270 |
| 2031 | 22200 | 389          | 4418          | 1 | 5.10% | 0.740 | 1.270 |
| 2032 | 22500 | 394          | 4812          | 1 | 5.10% | 0.739 | 1.270 |
| 2033 | 22700 | 397          | 5209          | 1 | 5.10% | 0.739 | 1.270 |
| 2034 | 23000 | 401          | 5610          | 1 | 5.10% | 0.737 | 1.270 |
| 2035 | 23200 | 405          | 6015          | 1 | 5.10% | 0.737 | 1.270 |
| 2036 | 23500 | 409          | 6424          | 1 | 5.10% | 0.736 | 1.270 |
| 2037 | 23700 | 412          | 6836          | 1 | 5.10% | 0.735 | 1.270 |
| 2038 | 24000 | 417          | 7253          | 1 | 5.10% | 0.734 | 1.270 |
| 2039 | 24200 | 420          | 7673          | 1 | 5.10% | 0.733 | 1.270 |
| 2040 | 24500 | 425          | 8098          | 1 | 5.10% | 0.732 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3682  
 Opening to Design Year ESAL Accumulation (1000s): 7751

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  
  
 4/22/2016  
 Signature Date

Reviewed by: Jason Learned  
 Name  
 Project Manager - Design Traffic FDOT - D5  
 Title                                      Org. Unit or Firm  
  
 Signature Date

**ESAL Location 752001 - New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752001 - New Ramp  
 SR 536 EB On Ramp to I-4 CD NB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |      |                          |               |       |
|-----------------|------|------|------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0    | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 1590 | Lanes in One Direction   |               | 1     |
| Mid-Design Year | 2030 |      | 1900 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 2180 | Existing to Opening Year |               | 5.10% |
|                 |      |      |      | Opening to Mid-Year      |               | 5.10% |
|                 |      |      |      | Mid-Year to Design-Year  |               | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                    |                    |
|-----------------------------|--------------------|--------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT  | RIGID PAVEMENT     |
|                             | SN = 5/THICK       | SN = 12/THICK      |
| RURAL FREEWAY:              | 1.050              | 1.600              |
| URBAN FREEWAY:              | 0.900 <u>  X  </u> | 1.270 <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/28/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

**Flexible Pavement 18 KIP ESAL Analysis - Location 752001 - New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALS

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 1500 | 26              | 26               | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 1600 | 27              | 53               | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 1600 | 27              | 80               | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 1600 | 27              | 107              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 1700 | 29              | 136              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 1700 | 29              | 165              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 1700 | 29              | 194              | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 1800 | 31              | 225              | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 1800 | 31              | 256              | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 1800 | 31              | 287              | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 1900 | 32              | 319              | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 1900 | 32              | 351              | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 1900 | 32              | 383              | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 1900 | 32              | 415              | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 2000 | 34              | 449              | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 2000 | 34              | 483              | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 2000 | 34              | 517              | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 2000 | 34              | 551              | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 2100 | 36              | 587              | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 2100 | 36              | 623              | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 2100 | 36              | 659              | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 293  
 Opening to Design Year ESAL Accumulation (1000s): 633

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 752001 - New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752001 - 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 | 1500 | 36           | 36            | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 1600 | 38           | 74            | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 1600 | 38           | 112           | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 1600 | 38           | 150           | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 1700 | 41           | 191           | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 1700 | 41           | 232           | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 1700 | 41           | 273           | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 1800 | 43           | 316           | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 1800 | 43           | 359           | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 1800 | 43           | 402           | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 1900 | 45           | 447           | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 1900 | 45           | 492           | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 1900 | 45           | 537           | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 1900 | 45           | 582           | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 2000 | 48           | 630           | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 2000 | 48           | 678           | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 2000 | 48           | 726           | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 2000 | 48           | 774           | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 2100 | 50           | 824           | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 2100 | 50           | 874           | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 2100 | 50           | 924           | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 411  
 Opening to Design Year ESAL Accumulation (1000s): 888

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

ESAL Location 752005 - 75030005 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 752005 - 75030005  
 LOCATION DESCRIPTION: SR 536 EB On Ramp to I-4 CD SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |      |  |       |
|-----------------|------|------|------|--|-------|
| Existing Year   | N/A  | AADT | 0    | Daily Direction Split<br>(50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 4680 | Lanes in One Direction                 | 1     |
| Mid-Design Year | 2030 |      | 5550 | <b>T24 values</b>                      |       |
| Design Year     | 2040 |      | 6410 | Existing to Opening Year               | 5.10% |
|                 |      |      |      | Opening to Mid-Year                    | 5.10% |
|                 |      |      |      | Mid-Year to Design-Year                | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Date 4/28/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752005 - 75030005

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75030005**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 4600 | 78           | 78            | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 4700 | 79           | 157           | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 4800 | 81           | 238           | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 4900 | 83           | 321           | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 5000 | 84           | 405           | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 5100 | 86           | 491           | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 5200 | 88           | 579           | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 5200 | 88           | 667           | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 5300 | 89           | 756           | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 5400 | 91           | 847           | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 5500 | 93           | 940           | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 5600 | 94           | 1034          | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 5700 | 96           | 1130          | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 5800 | 98           | 1228          | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 5800 | 98           | 1326          | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 5900 | 99           | 1425          | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 6000 | 101          | 1526          | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 6100 | 103          | 1629          | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 6200 | 104          | 1733          | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 6300 | 106          | 1839          | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 6400 | 108          | 1947          | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 862  
 Opening to Design Year ESAL Accumulation (1000s): 1869

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



## Rigid Pavement 18 KIP ESAL Analysis - Location 752005 - 75030005

### 18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75030005

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752005 - 75030005

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALs

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 4600 | 109             | 109              | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 4700 | 112             | 221              | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 4800 | 114             | 335              | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 4900 | 116             | 451              | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 5000 | 119             | 570              | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 5100 | 121             | 691              | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 5200 | 123             | 814              | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 5200 | 123             | 937              | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 5300 | 126             | 1063             | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 5400 | 128             | 1191             | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 5500 | 131             | 1322             | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 5600 | 133             | 1455             | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 5700 | 135             | 1590             | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 5800 | 138             | 1728             | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 5800 | 138             | 1866             | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 5900 | 140             | 2006             | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 6000 | 142             | 2148             | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 6100 | 145             | 2293             | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 6200 | 147             | 2440             | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 6300 | 149             | 2589             | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 6400 | 152             | 2741             | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1213

Opening to Design Year ESAL Accumulation (1000s): 2632

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

**ESAL Location 752001 - 75039001 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752001 - 75039001  
 SR 536 EB On Ramp to I-4 NB GUL

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 | AADT | 11350 | Lanes in One Direction   |               | 2     |
| Mid-Design Year | 2030 | AADT | 11640 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 | AADT | 11820 | Existing to Opening Year |               | 5.10% |
|                 |      |      |       | Opening to Mid-Year      |               | 5.10% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                          |              |                       |              |
|-----------------------------|--------------------------|--------------|-----------------------|--------------|
| (selected with an X)        | <b>FLEXIBLE PAVEMENT</b> |              | <b>RIGID PAVEMENT</b> |              |
|                             | SN = 5/THICK             |              | SN = 12/THICK         |              |
| RURAL FREEWAY:              | 1.050                    | _____        | 1.600                 | _____        |
| URBAN FREEWAY:              | 0.900                    | <u>  X  </u> | 1.270                 | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/28/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752001 - 75039001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - 75039001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 11300 | 151          | 151           | 1 | 5.10% | 0.796 | 0.900 |
| 2021 | 11300 | 151          | 302           | 1 | 5.10% | 0.796 | 0.900 |
| 2022 | 11400 | 152          | 454           | 1 | 5.10% | 0.795 | 0.900 |
| 2023 | 11400 | 152          | 606           | 1 | 5.10% | 0.795 | 0.900 |
| 2024 | 11400 | 152          | 758           | 1 | 5.10% | 0.795 | 0.900 |
| 2025 | 11400 | 152          | 910           | 1 | 5.10% | 0.795 | 0.900 |
| 2026 | 11500 | 154          | 1064          | 1 | 5.10% | 0.795 | 0.900 |
| 2027 | 11500 | 154          | 1218          | 1 | 5.10% | 0.795 | 0.900 |
| 2028 | 11500 | 154          | 1372          | 1 | 5.10% | 0.795 | 0.900 |
| 2029 | 11600 | 155          | 1527          | 1 | 5.10% | 0.794 | 0.900 |
| 2030 | 11600 | 155          | 1682          | 1 | 5.10% | 0.794 | 0.900 |
| 2031 | 11600 | 155          | 1837          | 1 | 5.10% | 0.794 | 0.900 |
| 2032 | 11600 | 155          | 1992          | 1 | 5.10% | 0.794 | 0.900 |
| 2033 | 11600 | 155          | 2147          | 1 | 5.10% | 0.794 | 0.900 |
| 2034 | 11700 | 156          | 2303          | 1 | 5.10% | 0.793 | 0.900 |
| 2035 | 11700 | 156          | 2459          | 1 | 5.10% | 0.793 | 0.900 |
| 2036 | 11700 | 156          | 2615          | 1 | 5.10% | 0.793 | 0.900 |
| 2037 | 11700 | 156          | 2771          | 1 | 5.10% | 0.793 | 0.900 |
| 2038 | 11700 | 156          | 2927          | 1 | 5.10% | 0.793 | 0.900 |
| 2039 | 11800 | 157          | 3084          | 1 | 5.10% | 0.793 | 0.900 |
| 2040 | 11800 | 157          | 3241          | 1 | 5.10% | 0.793 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1531  
 Opening to Design Year ESAL Accumulation (1000s): 3090

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  
 \_\_\_\_\_  
 Signature Date 4/28/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date

Rigid Pavement 18 KIP ESAL Analysis - Location 752001 - 75039001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - 75039001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752001 - 75039001

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|-------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 11300 | 213             | 213              | 1 | 5.10% | 0.796 | 1.270 |
| 2021 | 11300 | 213             | 426              | 1 | 5.10% | 0.796 | 1.270 |
| 2022 | 11400 | 215             | 641              | 1 | 5.10% | 0.795 | 1.270 |
| 2023 | 11400 | 215             | 856              | 1 | 5.10% | 0.795 | 1.270 |
| 2024 | 11400 | 215             | 1071             | 1 | 5.10% | 0.795 | 1.270 |
| 2025 | 11400 | 215             | 1286             | 1 | 5.10% | 0.795 | 1.270 |
| 2026 | 11500 | 217             | 1503             | 1 | 5.10% | 0.795 | 1.270 |
| 2027 | 11500 | 217             | 1720             | 1 | 5.10% | 0.795 | 1.270 |
| 2028 | 11500 | 217             | 1937             | 1 | 5.10% | 0.795 | 1.270 |
| 2029 | 11600 | 218             | 2155             | 1 | 5.10% | 0.794 | 1.270 |
| 2030 | 11600 | 218             | 2373             | 1 | 5.10% | 0.794 | 1.270 |
| 2031 | 11600 | 218             | 2591             | 1 | 5.10% | 0.794 | 1.270 |
| 2032 | 11600 | 218             | 2809             | 1 | 5.10% | 0.794 | 1.270 |
| 2033 | 11600 | 218             | 3027             | 1 | 5.10% | 0.794 | 1.270 |
| 2034 | 11700 | 220             | 3247             | 1 | 5.10% | 0.793 | 1.270 |
| 2035 | 11700 | 220             | 3467             | 1 | 5.10% | 0.793 | 1.270 |
| 2036 | 11700 | 220             | 3687             | 1 | 5.10% | 0.793 | 1.270 |
| 2037 | 11700 | 220             | 3907             | 1 | 5.10% | 0.793 | 1.270 |
| 2038 | 11700 | 220             | 4127             | 1 | 5.10% | 0.793 | 1.270 |
| 2039 | 11800 | 222             | 4349             | 1 | 5.10% | 0.793 | 1.270 |
| 2040 | 11800 | 222             | 4571             | 1 | 5.10% | 0.793 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2160  
 Opening to Design Year ESAL Accumulation (1000s): 4358

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

ESAL Location 752001 - 75039001 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752001 - 75039001  
 SR 536 EB to I-4 NB On Ramps

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 | AADT | 18820 | Lanes in One Direction   |               | 3     |
| Mid-Design Year | 2030 | AADT | 19970 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 | AADT | 21140 | Existing to Opening Year |               | 5.10% |
|                 |      |      |       | Opening to Mid-Year      |               | 5.10% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/21/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752001 - 75039001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - 75039001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 18800 | 199          | 199           | 1 | 5.10% | 0.630 | 0.900 |
| 2021 | 18900 | 200          | 399           | 1 | 5.10% | 0.630 | 0.900 |
| 2022 | 19000 | 201          | 600           | 1 | 5.10% | 0.630 | 0.900 |
| 2023 | 19100 | 202          | 802           | 1 | 5.10% | 0.629 | 0.900 |
| 2024 | 19200 | 203          | 1005          | 1 | 5.10% | 0.629 | 0.900 |
| 2025 | 19300 | 204          | 1209          | 1 | 5.10% | 0.628 | 0.900 |
| 2026 | 19500 | 205          | 1414          | 1 | 5.10% | 0.627 | 0.900 |
| 2027 | 19600 | 206          | 1620          | 1 | 5.10% | 0.627 | 0.900 |
| 2028 | 19700 | 207          | 1827          | 1 | 5.10% | 0.627 | 0.900 |
| 2029 | 19800 | 208          | 2035          | 1 | 5.10% | 0.626 | 0.900 |
| 2030 | 19900 | 209          | 2244          | 1 | 5.10% | 0.626 | 0.900 |
| 2031 | 20000 | 210          | 2454          | 1 | 5.10% | 0.625 | 0.900 |
| 2032 | 20200 | 212          | 2666          | 1 | 5.10% | 0.624 | 0.900 |
| 2033 | 20300 | 213          | 2879          | 1 | 5.10% | 0.624 | 0.900 |
| 2034 | 20400 | 214          | 3093          | 1 | 5.10% | 0.624 | 0.900 |
| 2035 | 20500 | 215          | 3308          | 1 | 5.10% | 0.623 | 0.900 |
| 2036 | 20600 | 215          | 3523          | 1 | 5.10% | 0.623 | 0.900 |
| 2037 | 20700 | 216          | 3739          | 1 | 5.10% | 0.622 | 0.900 |
| 2038 | 20900 | 218          | 3957          | 1 | 5.10% | 0.622 | 0.900 |
| 2039 | 21000 | 219          | 4176          | 1 | 5.10% | 0.621 | 0.900 |
| 2040 | 21100 | 220          | 4396          | 1 | 5.10% | 0.621 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2045

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

4/21/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752001 - 75039001**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - 75039001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752001 - 75039001

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 | 18800 | 281          | 281           | 1 | 5.10% | 0.630 | 1.270 |
| 2021 | 18900 | 282          | 563           | 1 | 5.10% | 0.630 | 1.270 |
| 2022 | 19000 | 283          | 846           | 1 | 5.10% | 0.630 | 1.270 |
| 2023 | 19100 | 285          | 1131          | 1 | 5.10% | 0.629 | 1.270 |
| 2024 | 19200 | 286          | 1417          | 1 | 5.10% | 0.629 | 1.270 |
| 2025 | 19300 | 287          | 1704          | 1 | 5.10% | 0.628 | 1.270 |
| 2026 | 19500 | 290          | 1994          | 1 | 5.10% | 0.627 | 1.270 |
| 2027 | 19600 | 291          | 2285          | 1 | 5.10% | 0.627 | 1.270 |
| 2028 | 19700 | 292          | 2577          | 1 | 5.10% | 0.627 | 1.270 |
| 2029 | 19800 | 294          | 2871          | 1 | 5.10% | 0.626 | 1.270 |
| 2030 | 19900 | 295          | 3166          | 1 | 5.10% | 0.626 | 1.270 |
| 2031 | 20000 | 296          | 3462          | 1 | 5.10% | 0.625 | 1.270 |
| 2032 | 20200 | 299          | 3761          | 1 | 5.10% | 0.624 | 1.270 |
| 2033 | 20300 | 300          | 4061          | 1 | 5.10% | 0.624 | 1.270 |
| 2034 | 20400 | 301          | 4362          | 1 | 5.10% | 0.624 | 1.270 |
| 2035 | 20500 | 303          | 4665          | 1 | 5.10% | 0.623 | 1.270 |
| 2036 | 20600 | 304          | 4969          | 1 | 5.10% | 0.623 | 1.270 |
| 2037 | 20700 | 305          | 5274          | 1 | 5.10% | 0.622 | 1.270 |
| 2038 | 20900 | 308          | 5582          | 1 | 5.10% | 0.622 | 1.270 |
| 2039 | 21000 | 309          | 5891          | 1 | 5.10% | 0.621 | 1.270 |
| 2040 | 21100 | 310          | 6201          | 1 | 5.10% | 0.621 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2885

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

4/21/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

ESAL Location 752005 - 75390001 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752005 - 75390001  
**LOCATION DESCRIPTION:** SR 536 EB to I-4 NB-SB On Ramps

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|  | Existing Year | Opening Year | Mid-Design Year | Design Year | AADT                         | Daily Direction Split<br>(50% or 100%) | Lanes in One Direction | T24 values   |
|--|---------------|--------------|-----------------|-------------|------------------------------|--|------------------------|--|
|  | N/A           | 2020         | 2030            | 2040        | 0<br>23500<br>25520<br>27550 | 100%                                   | 2                      | Existing to Opening Year<br>Opening to Mid-Year<br>Mid-Year to Design-Year |
|  |               |              |                 |             |                              |  |                        | 5.10%<br>5.10%<br>5.10%  |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

(selected with an X)

|                             | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
|-----------------------------|-----------------------------------|---------------------------------|
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Date 4/21/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_



Flexible Pavement 18 KIP ESAL Analysis - Location 752005 - 75390001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75390001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 23500 | 290          | 290           | 1 | 5.10% | 0.736 | 0.900 |
| 2021 | 23700 | 292          | 582           | 1 | 5.10% | 0.735 | 0.900 |
| 2022 | 23900 | 295          | 877           | 1 | 5.10% | 0.734 | 0.900 |
| 2023 | 24100 | 297          | 1174          | 1 | 5.10% | 0.734 | 0.900 |
| 2024 | 24300 | 299          | 1473          | 1 | 5.10% | 0.733 | 0.900 |
| 2025 | 24500 | 301          | 1774          | 1 | 5.10% | 0.732 | 0.900 |
| 2026 | 24700 | 303          | 2077          | 1 | 5.10% | 0.732 | 0.900 |
| 2027 | 24900 | 305          | 2382          | 1 | 5.10% | 0.731 | 0.900 |
| 2028 | 25100 | 308          | 2690          | 1 | 5.10% | 0.730 | 0.900 |
| 2029 | 25300 | 310          | 3000          | 1 | 5.10% | 0.730 | 0.900 |
| 2030 | 25500 | 312          | 3312          | 1 | 5.10% | 0.729 | 0.900 |
| 2031 | 25700 | 314          | 3626          | 1 | 5.10% | 0.728 | 0.900 |
| 2032 | 25900 | 316          | 3942          | 1 | 5.10% | 0.728 | 0.900 |
| 2033 | 26100 | 318          | 4260          | 1 | 5.10% | 0.727 | 0.900 |
| 2034 | 26300 | 321          | 4581          | 1 | 5.10% | 0.726 | 0.900 |
| 2035 | 26500 | 323          | 4904          | 1 | 5.10% | 0.726 | 0.900 |
| 2036 | 26700 | 325          | 5229          | 1 | 5.10% | 0.725 | 0.900 |
| 2037 | 26900 | 327          | 5556          | 1 | 5.10% | 0.724 | 0.900 |
| 2038 | 27100 | 329          | 5885          | 1 | 5.10% | 0.724 | 0.900 |
| 2039 | 27300 | 331          | 6216          | 1 | 5.10% | 0.723 | 0.900 |
| 2040 | 27500 | 333          | 6549          | 1 | 5.10% | 0.723 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3022

Opening to Design Year ESAL Accumulation (1000s): 6259

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

Rigid Pavement 18 KIP ESAL Analysis - Location 752005 - 75390001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752005 - 75390001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752005 - 75390001

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 | 23500 | 409          | 409           | 1 | 5.10% | 0.736 | 1.270 |
| 2021 | 23700 | 412          | 821           | 1 | 5.10% | 0.735 | 1.270 |
| 2022 | 23900 | 415          | 1236          | 1 | 5.10% | 0.734 | 1.270 |
| 2023 | 24100 | 418          | 1654          | 1 | 5.10% | 0.734 | 1.270 |
| 2024 | 24300 | 422          | 2076          | 1 | 5.10% | 0.733 | 1.270 |
| 2025 | 24500 | 425          | 2501          | 1 | 5.10% | 0.732 | 1.270 |
| 2026 | 24700 | 428          | 2929          | 1 | 5.10% | 0.732 | 1.270 |
| 2027 | 24900 | 431          | 3360          | 1 | 5.10% | 0.731 | 1.270 |
| 2028 | 25100 | 434          | 3794          | 1 | 5.10% | 0.730 | 1.270 |
| 2029 | 25300 | 437          | 4231          | 1 | 5.10% | 0.730 | 1.270 |
| 2030 | 25500 | 440          | 4671          | 1 | 5.10% | 0.729 | 1.270 |
| 2031 | 25700 | 443          | 5114          | 1 | 5.10% | 0.728 | 1.270 |
| 2032 | 25900 | 446          | 5560          | 1 | 5.10% | 0.728 | 1.270 |
| 2033 | 26100 | 449          | 6009          | 1 | 5.10% | 0.727 | 1.270 |
| 2034 | 26300 | 452          | 6461          | 1 | 5.10% | 0.726 | 1.270 |
| 2035 | 26500 | 455          | 6916          | 1 | 5.10% | 0.726 | 1.270 |
| 2036 | 26700 | 458          | 7374          | 1 | 5.10% | 0.725 | 1.270 |
| 2037 | 26900 | 461          | 7835          | 1 | 5.10% | 0.724 | 1.270 |
| 2038 | 27100 | 464          | 8299          | 1 | 5.10% | 0.724 | 1.270 |
| 2039 | 27300 | 467          | 8766          | 1 | 5.10% | 0.723 | 1.270 |
| 2040 | 27500 | 470          | 9236          | 1 | 5.10% | 0.723 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4262

Opening to Design Year ESAL Accumulation (1000s): 8827

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

**ESAL Location 752001 - 75039001 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752001 - 75039001  
 SR 536 EB-WB to I-4 NB GUL On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |   |                          |       |
|-----------------|------|-------|---|--------------------------|-------|
| Existing Year   | N/A  | AADT  | 0 | Daily Direction Split    | 100%  |
| Opening Year    | 2020 | 18980 |   | (50% or 100%)            |       |
| Mid-Design Year | 2030 | 20150 |   | Lanes in One Direction   | 2     |
| Design Year     | 2040 | 21360 |   | <b>T24 values</b>        |       |
|                 |      |       |   | Existing to Opening Year | 5.10% |
|                 |      |       |   | Opening to Mid-Year      | 5.10% |
|                 |      |       |   | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                    |                    |
|-----------------------------|--------------------|--------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT  | RIGID PAVEMENT     |
|                             | SN = 5/THICK       | SN = 12/THICK      |
| RURAL FREEWAY:              | 1.050              | 1.600              |
| URBAN FREEWAY:              | 0.900 <u>  X  </u> | 1.270 <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/28/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 752001 - 75039001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752001 - 75039001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 18900 | 239          | 239           | 1 | 5.10% | 0.754 | 0.900 |
| 2021 | 19000 | 240          | 479           | 1 | 5.10% | 0.753 | 0.900 |
| 2022 | 19200 | 243          | 722           | 1 | 5.10% | 0.752 | 0.900 |
| 2023 | 19300 | 244          | 966           | 1 | 5.10% | 0.752 | 0.900 |
| 2024 | 19400 | 245          | 1211          | 1 | 5.10% | 0.751 | 0.900 |
| 2025 | 19500 | 246          | 1457          | 1 | 5.10% | 0.751 | 0.900 |
| 2026 | 19600 | 247          | 1704          | 1 | 5.10% | 0.751 | 0.900 |
| 2027 | 19700 | 248          | 1952          | 1 | 5.10% | 0.750 | 0.900 |
| 2028 | 19900 | 250          | 2202          | 1 | 5.10% | 0.749 | 0.900 |
| 2029 | 20000 | 251          | 2453          | 1 | 5.10% | 0.749 | 0.900 |
| 2030 | 20100 | 253          | 2706          | 1 | 5.10% | 0.749 | 0.900 |
| 2031 | 20200 | 254          | 2960          | 1 | 5.10% | 0.748 | 0.900 |
| 2032 | 20300 | 255          | 3215          | 1 | 5.10% | 0.748 | 0.900 |
| 2033 | 20500 | 257          | 3472          | 1 | 5.10% | 0.747 | 0.900 |
| 2034 | 20600 | 258          | 3730          | 1 | 5.10% | 0.747 | 0.900 |
| 2035 | 20700 | 259          | 3989          | 1 | 5.10% | 0.746 | 0.900 |
| 2036 | 20800 | 260          | 4249          | 1 | 5.10% | 0.746 | 0.900 |
| 2037 | 20900 | 261          | 4510          | 1 | 5.10% | 0.745 | 0.900 |
| 2038 | 21100 | 264          | 4774          | 1 | 5.10% | 0.745 | 0.900 |
| 2039 | 21200 | 265          | 5039          | 1 | 5.10% | 0.744 | 0.900 |
| 2040 | 21300 | 266          | 5305          | 1 | 5.10% | 0.744 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2467  
 Opening to Design Year ESAL Accumulation (1000s): 5066

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  
 \_\_\_\_\_  
 Signature Date 4/28/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date



**ESAL Location 750603 - 75039000 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75039000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 750603 - 75039000  
 SR 536 W of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |   |
|-----------------|------|-------|---|
|                 | AADT |       | Daily Direction Split                                 |
| Existing Year   | N/A  | 0     | (50% or 100%) <u>        50%        </u>              |
| Opening Year    | 2020 | 66100 | Lanes in One Direction <u>        3        </u>       |
| Mid-Design Year | 2030 | 74800 | <b>T24 values</b>                                     |
| Design Year     | 2040 | 83290 | Existing to Opening Year <u>        4.70%        </u> |
|                 |      |       | Opening to Mid-Year <u>        4.70%        </u>      |
|                 |      |       | Mid-Year to Design-Year <u>        4.70%        </u>  |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                   |                          |                |
|-----------------------------|-------------------|--------------------------|----------------|
| (selected with an X)        | FLEXIBLE PAVEMENT |                          | RIGID PAVEMENT |
|                             | SN = 5/THICK      |                          | 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             | <u>        X        </u> | 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/22/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 750603 - 75039000

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750603 - 75039000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75039000

COUNTY: Orange

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 | 66100 | 295          | 295           | 0.5 | 4.70% | 0.584 | 0.890 |
| 2021 | 66900 | 298          | 593           | 0.5 | 4.70% | 0.583 | 0.890 |
| 2022 | 67800 | 302          | 895           | 0.5 | 4.70% | 0.582 | 0.890 |
| 2023 | 68700 | 305          | 1200          | 0.5 | 4.70% | 0.581 | 0.890 |
| 2024 | 69500 | 308          | 1508          | 0.5 | 4.70% | 0.580 | 0.890 |
| 2025 | 70400 | 311          | 1819          | 0.5 | 4.70% | 0.579 | 0.890 |
| 2026 | 71300 | 315          | 2134          | 0.5 | 4.70% | 0.578 | 0.890 |
| 2027 | 72100 | 318          | 2452          | 0.5 | 4.70% | 0.577 | 0.890 |
| 2028 | 73000 | 321          | 2773          | 0.5 | 4.70% | 0.576 | 0.890 |
| 2029 | 73900 | 325          | 3098          | 0.5 | 4.70% | 0.575 | 0.890 |
| 2030 | 74800 | 328          | 3426          | 0.5 | 4.70% | 0.574 | 0.890 |
| 2031 | 75600 | 331          | 3757          | 0.5 | 4.70% | 0.573 | 0.890 |
| 2032 | 76400 | 334          | 4091          | 0.5 | 4.70% | 0.572 | 0.890 |
| 2033 | 77300 | 337          | 4428          | 0.5 | 4.70% | 0.571 | 0.890 |
| 2034 | 78100 | 340          | 4768          | 0.5 | 4.70% | 0.570 | 0.890 |
| 2035 | 79000 | 344          | 5112          | 0.5 | 4.70% | 0.569 | 0.890 |
| 2036 | 79800 | 347          | 5459          | 0.5 | 4.70% | 0.568 | 0.890 |
| 2037 | 80700 | 350          | 5809          | 0.5 | 4.70% | 0.567 | 0.890 |
| 2038 | 81500 | 353          | 6162          | 0.5 | 4.70% | 0.567 | 0.890 |
| 2039 | 82400 | 356          | 6518          | 0.5 | 4.70% | 0.566 | 0.890 |
| 2040 | 83200 | 359          | 6877          | 0.5 | 4.70% | 0.565 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3131

Opening to Design Year ESAL Accumulation (1000s): 6582

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 750603 - 75039000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750603 - 75039000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75039000

**LOCATION #:** 750603 - 75039000

**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 | 66100 | 404          | 404           | 0.5 | 4.70% | 0.584 | 1.220 |
| 2021 | 66900 | 409          | 813           | 0.5 | 4.70% | 0.583 | 1.220 |
| 2022 | 67800 | 413          | 1226          | 0.5 | 4.70% | 0.582 | 1.220 |
| 2023 | 68700 | 418          | 1644          | 0.5 | 4.70% | 0.581 | 1.220 |
| 2024 | 69500 | 422          | 2066          | 0.5 | 4.70% | 0.580 | 1.220 |
| 2025 | 70400 | 427          | 2493          | 0.5 | 4.70% | 0.579 | 1.220 |
| 2026 | 71300 | 431          | 2924          | 0.5 | 4.70% | 0.578 | 1.220 |
| 2027 | 72100 | 436          | 3360          | 0.5 | 4.70% | 0.577 | 1.220 |
| 2028 | 73000 | 440          | 3800          | 0.5 | 4.70% | 0.576 | 1.220 |
| 2029 | 73900 | 445          | 4245          | 0.5 | 4.70% | 0.575 | 1.220 |
| 2030 | 74800 | 449          | 4694          | 0.5 | 4.70% | 0.574 | 1.220 |
| 2031 | 75600 | 454          | 5148          | 0.5 | 4.70% | 0.573 | 1.220 |
| 2032 | 76400 | 458          | 5606          | 0.5 | 4.70% | 0.572 | 1.220 |
| 2033 | 77300 | 462          | 6068          | 0.5 | 4.70% | 0.571 | 1.220 |
| 2034 | 78100 | 466          | 6534          | 0.5 | 4.70% | 0.570 | 1.220 |
| 2035 | 79000 | 471          | 7005          | 0.5 | 4.70% | 0.569 | 1.220 |
| 2036 | 79800 | 475          | 7480          | 0.5 | 4.70% | 0.568 | 1.220 |
| 2037 | 80700 | 480          | 7960          | 0.5 | 4.70% | 0.567 | 1.220 |
| 2038 | 81500 | 484          | 8444          | 0.5 | 4.70% | 0.567 | 1.220 |
| 2039 | 82400 | 488          | 8932          | 0.5 | 4.70% | 0.566 | 1.220 |
| 2040 | 83200 | 492          | 9424          | 0.5 | 4.70% | 0.565 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4290

Opening to Design Year ESAL Accumulation (1000s): 9020

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date



**ESAL Location 752003 - 75039007 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752003 - 75039007  
 SR 536 WB Off Ramp to I-4 CD SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |                          |       |
|-----------------|------|------|--------------------------|-------|
|                 | AADT |      | Daily Direction Split    |       |
| Existing Year   | N/A  | 0    | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 6680 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 7930 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 9140 | Existing to Opening Year | 5.10% |
|                 |      |      | Opening to Mid-Year      | 5.10% |
|                 |      |      | Mid-Year to Design-Year  | 5.10% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/21/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752003 - 75039007

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752003 - 75039007**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK

I-4 ESALs

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 6600 | 111             | 111              | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 6800 | 114             | 225              | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 6900 | 116             | 341              | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 7000 | 118             | 459              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 7100 | 119             | 578              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 7300 | 123             | 701              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 7400 | 124             | 825              | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 7500 | 126             | 951              | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 7600 | 128             | 1079             | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 7800 | 131             | 1210             | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 7900 | 133             | 1343             | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 8000 | 135             | 1478             | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 8100 | 136             | 1614             | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 8200 | 138             | 1752             | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 8400 | 141             | 1893             | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 8500 | 143             | 2036             | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 8600 | 145             | 2181             | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 8700 | 146             | 2327             | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 8800 | 148             | 2475             | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 9000 | 151             | 2626             | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 9100 | 153             | 2779             | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1232

Opening to Design Year ESAL Accumulation (1000s): 2668

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

Rigid Pavement 18 KIP ESAL Analysis - Location 752003 - 75039007

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752003 - 75039007**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752003 - 75039007

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 | 6600 | 157          | 157           | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 6800 | 161          | 318           | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 6900 | 164          | 482           | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 7000 | 166          | 648           | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 7100 | 168          | 816           | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 7300 | 173          | 989           | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 7400 | 175          | 1164          | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 7500 | 178          | 1342          | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 7600 | 180          | 1522          | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 7800 | 185          | 1707          | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 7900 | 187          | 1894          | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 8000 | 190          | 2084          | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 8100 | 192          | 2276          | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 8200 | 194          | 2470          | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 8400 | 199          | 2669          | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 8500 | 201          | 2870          | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 8600 | 204          | 3074          | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 8700 | 206          | 3280          | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 8800 | 209          | 3489          | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 9000 | 213          | 3702          | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 9100 | 216          | 3918          | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1737

Opening to Design Year ESAL Accumulation (1000s): 3761

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

ESAL Location 752008 - 75030003 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 752008 - 75030003  
 LOCATION DESCRIPTION: SR 536 WB to I-4 CD NB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |      |                          |               |       |
|--|------|------|------|--------------------------|---------------|-------|
| Existing Year  | N/A  | AADT | 0    | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year   | 2020 |      | 1660 | Lanes in One Direction   |               | 1     |
| Mid-Design Year  | 2030 |      | 1970 | <b>T24 values</b>        |               |       |
| Design Year  | 2040 |      | 2270 | Existing to Opening Year |               | 5.10% |
| Note: AADT values have been rounded to the nearest 100 |      |      |      | Opening to Mid-Year      |               | 5.10% |
|  |      |      |      | Mid-Year to Design-Year  |               | 5.10% |

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                  |
|-----------------------------|-------------------|------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT   |
|                             | SN = 5/THICK      | SN = 12/THICK    |
| RURAL FREEWAY:              | 1.050             | 1.600            |
| URBAN FREEWAY:              | 0.900 <u> X </u>  | 1.270 <u> X </u> |
| 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  
 \_\_\_\_\_  
 Date  4/28/2016   
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by:  Jason Learned   
 Name  
 Project Manager - Design Traffic FDOT - D5   
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752008 - 75030003

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008 - 75030003**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK I-4 ESALS

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 1600 | 27              | 27               | 1 | 5.10% | 1.000 | 0.900 |
| 2021 | 1600 | 27              | 54               | 1 | 5.10% | 1.000 | 0.900 |
| 2022 | 1700 | 29              | 83               | 1 | 5.10% | 1.000 | 0.900 |
| 2023 | 1700 | 29              | 112              | 1 | 5.10% | 1.000 | 0.900 |
| 2024 | 1700 | 29              | 141              | 1 | 5.10% | 1.000 | 0.900 |
| 2025 | 1800 | 31              | 172              | 1 | 5.10% | 1.000 | 0.900 |
| 2026 | 1800 | 31              | 203              | 1 | 5.10% | 1.000 | 0.900 |
| 2027 | 1800 | 31              | 234              | 1 | 5.10% | 1.000 | 0.900 |
| 2028 | 1900 | 32              | 266              | 1 | 5.10% | 1.000 | 0.900 |
| 2029 | 1900 | 32              | 298              | 1 | 5.10% | 1.000 | 0.900 |
| 2030 | 1900 | 32              | 330              | 1 | 5.10% | 1.000 | 0.900 |
| 2031 | 2000 | 34              | 364              | 1 | 5.10% | 1.000 | 0.900 |
| 2032 | 2000 | 34              | 398              | 1 | 5.10% | 1.000 | 0.900 |
| 2033 | 2000 | 34              | 432              | 1 | 5.10% | 1.000 | 0.900 |
| 2034 | 2000 | 34              | 466              | 1 | 5.10% | 1.000 | 0.900 |
| 2035 | 2100 | 36              | 502              | 1 | 5.10% | 1.000 | 0.900 |
| 2036 | 2100 | 36              | 538              | 1 | 5.10% | 1.000 | 0.900 |
| 2037 | 2100 | 36              | 574              | 1 | 5.10% | 1.000 | 0.900 |
| 2038 | 2200 | 37              | 611              | 1 | 5.10% | 1.000 | 0.900 |
| 2039 | 2200 | 37              | 648              | 1 | 5.10% | 1.000 | 0.900 |
| 2040 | 2200 | 37              | 685              | 1 | 5.10% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 303  
 Opening to Design Year ESAL Accumulation (1000s): 658

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  
 \_\_\_\_\_  
 Signature Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date

## Rigid Pavement 18 KIP ESAL Analysis - Location 752008 - 75030003

### 18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008 - 75030003

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752008 - 75030003

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALS

D

| YEAR | AADT | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T     | LF    | EF    |
|------|------|-----------------|------------------|---|-------|-------|-------|
| 2020 | 1600 | 38              | 38               | 1 | 5.10% | 1.000 | 1.270 |
| 2021 | 1600 | 38              | 76               | 1 | 5.10% | 1.000 | 1.270 |
| 2022 | 1700 | 41              | 117              | 1 | 5.10% | 1.000 | 1.270 |
| 2023 | 1700 | 41              | 158              | 1 | 5.10% | 1.000 | 1.270 |
| 2024 | 1700 | 41              | 199              | 1 | 5.10% | 1.000 | 1.270 |
| 2025 | 1800 | 43              | 242              | 1 | 5.10% | 1.000 | 1.270 |
| 2026 | 1800 | 43              | 285              | 1 | 5.10% | 1.000 | 1.270 |
| 2027 | 1800 | 43              | 328              | 1 | 5.10% | 1.000 | 1.270 |
| 2028 | 1900 | 45              | 373              | 1 | 5.10% | 1.000 | 1.270 |
| 2029 | 1900 | 45              | 418              | 1 | 5.10% | 1.000 | 1.270 |
| 2030 | 1900 | 45              | 463              | 1 | 5.10% | 1.000 | 1.270 |
| 2031 | 2000 | 48              | 511              | 1 | 5.10% | 1.000 | 1.270 |
| 2032 | 2000 | 48              | 559              | 1 | 5.10% | 1.000 | 1.270 |
| 2033 | 2000 | 48              | 607              | 1 | 5.10% | 1.000 | 1.270 |
| 2034 | 2000 | 48              | 655              | 1 | 5.10% | 1.000 | 1.270 |
| 2035 | 2100 | 50              | 705              | 1 | 5.10% | 1.000 | 1.270 |
| 2036 | 2100 | 50              | 755              | 1 | 5.10% | 1.000 | 1.270 |
| 2037 | 2100 | 50              | 805              | 1 | 5.10% | 1.000 | 1.270 |
| 2038 | 2200 | 53              | 858              | 1 | 5.10% | 1.000 | 1.270 |
| 2039 | 2200 | 53              | 911              | 1 | 5.10% | 1.000 | 1.270 |
| 2040 | 2200 | 53              | 964              | 1 | 5.10% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 425

Opening to Design Year ESAL Accumulation (1000s): 926

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

ESAL Location 752008 - 75039003 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 752008 - 75039003  
 LOCATION DESCRIPTION: SR 536 WB to I-4 NB GUL On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |      |                          |               |       |
|-----------------|------|------|------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0    | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 7630 | Lanes in One Direction   |               | 1     |
| Mid-Design Year | 2030 |      | 8510 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 9540 | Existing to Opening Year |               | 5.70% |
|                 |      |      |      | Opening to Mid-Year      |               | 5.70% |
|                 |      |      |      | Mid-Year to Design-Year  |               | 5.70% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |              |                |              |
|-----------------------------|-------------------|--------------|----------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT |              | RIGID PAVEMENT |              |
|                             | SN = 5/THICK      |              | SN = 12/THICK  |              |
| RURAL FREEWAY:              | 1.050             | _____        | 1.600          | _____        |
| URBAN FREEWAY:              | 0.900             | <u>  X  </u> | 1.270          | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/28/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752008 - 75039003

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008 - 75039003**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 7600 | 143          | 143           | 1 | 5.70% | 1.000 | 0.900 |
| 2021 | 7700 | 145          | 288           | 1 | 5.70% | 1.000 | 0.900 |
| 2022 | 7800 | 147          | 435           | 1 | 5.70% | 1.000 | 0.900 |
| 2023 | 7800 | 147          | 582           | 1 | 5.70% | 1.000 | 0.900 |
| 2024 | 7900 | 148          | 730           | 1 | 5.70% | 1.000 | 0.900 |
| 2025 | 8000 | 150          | 880           | 1 | 5.70% | 1.000 | 0.900 |
| 2026 | 8100 | 152          | 1032          | 1 | 5.70% | 1.000 | 0.900 |
| 2027 | 8200 | 154          | 1186          | 1 | 5.70% | 1.000 | 0.900 |
| 2028 | 8300 | 156          | 1342          | 1 | 5.70% | 1.000 | 0.900 |
| 2029 | 8400 | 158          | 1500          | 1 | 5.70% | 1.000 | 0.900 |
| 2030 | 8500 | 160          | 1660          | 1 | 5.70% | 1.000 | 0.900 |
| 2031 | 8600 | 162          | 1822          | 1 | 5.70% | 1.000 | 0.900 |
| 2032 | 8700 | 163          | 1985          | 1 | 5.70% | 1.000 | 0.900 |
| 2033 | 8800 | 165          | 2150          | 1 | 5.70% | 1.000 | 0.900 |
| 2034 | 8900 | 167          | 2317          | 1 | 5.70% | 1.000 | 0.900 |
| 2035 | 9000 | 169          | 2486          | 1 | 5.70% | 1.000 | 0.900 |
| 2036 | 9100 | 171          | 2657          | 1 | 5.70% | 1.000 | 0.900 |
| 2037 | 9200 | 173          | 2830          | 1 | 5.70% | 1.000 | 0.900 |
| 2038 | 9300 | 175          | 3005          | 1 | 5.70% | 1.000 | 0.900 |
| 2039 | 9400 | 177          | 3182          | 1 | 5.70% | 1.000 | 0.900 |
| 2040 | 9500 | 178          | 3360          | 1 | 5.70% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1517  
 Opening to Design Year ESAL Accumulation (1000s): 3217

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



**Rigid Pavement 18 KIP ESAL Analysis - Location 752008 - 75039003**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008 - 75039003**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 752008 - 75039003

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 | 7600 | 201          | 201           | 1 | 5.70% | 1.000 | 1.270 |
| 2021 | 7700 | 204          | 405           | 1 | 5.70% | 1.000 | 1.270 |
| 2022 | 7800 | 207          | 612           | 1 | 5.70% | 1.000 | 1.270 |
| 2023 | 7800 | 207          | 819           | 1 | 5.70% | 1.000 | 1.270 |
| 2024 | 7900 | 209          | 1028          | 1 | 5.70% | 1.000 | 1.270 |
| 2025 | 8000 | 212          | 1240          | 1 | 5.70% | 1.000 | 1.270 |
| 2026 | 8100 | 215          | 1455          | 1 | 5.70% | 1.000 | 1.270 |
| 2027 | 8200 | 217          | 1672          | 1 | 5.70% | 1.000 | 1.270 |
| 2028 | 8300 | 220          | 1892          | 1 | 5.70% | 1.000 | 1.270 |
| 2029 | 8400 | 222          | 2114          | 1 | 5.70% | 1.000 | 1.270 |
| 2030 | 8500 | 225          | 2339          | 1 | 5.70% | 1.000 | 1.270 |
| 2031 | 8600 | 228          | 2567          | 1 | 5.70% | 1.000 | 1.270 |
| 2032 | 8700 | 230          | 2797          | 1 | 5.70% | 1.000 | 1.270 |
| 2033 | 8800 | 233          | 3030          | 1 | 5.70% | 1.000 | 1.270 |
| 2034 | 8900 | 236          | 3266          | 1 | 5.70% | 1.000 | 1.270 |
| 2035 | 9000 | 238          | 3504          | 1 | 5.70% | 1.000 | 1.270 |
| 2036 | 9100 | 241          | 3745          | 1 | 5.70% | 1.000 | 1.270 |
| 2037 | 9200 | 244          | 3989          | 1 | 5.70% | 1.000 | 1.270 |
| 2038 | 9300 | 246          | 4235          | 1 | 5.70% | 1.000 | 1.270 |
| 2039 | 9400 | 249          | 4484          | 1 | 5.70% | 1.000 | 1.270 |
| 2040 | 9500 | 252          | 4736          | 1 | 5.70% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2138  
 Opening to Design Year ESAL Accumulation (1000s): 4535

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

**ESAL Location 750595 - 75039000 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75039000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 750595 - 75039000  
 SR 536 E of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |       |
|-----------------|------|-------|--------------------------|-------|
|                 | AADT |       | Daily Direction Split    |       |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 50%   |
| Opening Year    | 2020 | 53910 | Lanes in One Direction   | 3     |
| Mid-Design Year | 2030 | 63200 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 72120 | Existing to Opening Year | 5.40% |
|                 |      |       | Opening to Mid-Year      | 5.40% |
|                 |      |       | Mid-Year to Design-Year  | 5.40% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>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                             | <u>  X  </u> | 1.220                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/22/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 750595 - 75039000

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750595 - 75039000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75039000

COUNTY: Orange

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 | 53900 | 284          | 284           | 0.5 | 5.40% | 0.601 | 0.890 |
| 2021 | 54800 | 289          | 573           | 0.5 | 5.40% | 0.599 | 0.890 |
| 2022 | 55700 | 293          | 866           | 0.5 | 5.40% | 0.598 | 0.890 |
| 2023 | 56600 | 297          | 1163          | 0.5 | 5.40% | 0.597 | 0.890 |
| 2024 | 57600 | 301          | 1464          | 0.5 | 5.40% | 0.595 | 0.890 |
| 2025 | 58500 | 305          | 1769          | 0.5 | 5.40% | 0.594 | 0.890 |
| 2026 | 59400 | 309          | 2078          | 0.5 | 5.40% | 0.593 | 0.890 |
| 2027 | 60400 | 314          | 2392          | 0.5 | 5.40% | 0.591 | 0.890 |
| 2028 | 61300 | 318          | 2710          | 0.5 | 5.40% | 0.590 | 0.890 |
| 2029 | 62200 | 322          | 3032          | 0.5 | 5.40% | 0.589 | 0.890 |
| 2030 | 63200 | 326          | 3358          | 0.5 | 5.40% | 0.588 | 0.890 |
| 2031 | 64000 | 330          | 3688          | 0.5 | 5.40% | 0.586 | 0.890 |
| 2032 | 64900 | 334          | 4022          | 0.5 | 5.40% | 0.585 | 0.890 |
| 2033 | 65800 | 338          | 4360          | 0.5 | 5.40% | 0.584 | 0.890 |
| 2034 | 66700 | 342          | 4702          | 0.5 | 5.40% | 0.583 | 0.890 |
| 2035 | 67600 | 346          | 5048          | 0.5 | 5.40% | 0.582 | 0.890 |
| 2036 | 68500 | 349          | 5397          | 0.5 | 5.40% | 0.581 | 0.890 |
| 2037 | 69400 | 353          | 5750          | 0.5 | 5.40% | 0.580 | 0.890 |
| 2038 | 70300 | 357          | 6107          | 0.5 | 5.40% | 0.579 | 0.890 |
| 2039 | 71200 | 361          | 6468          | 0.5 | 5.40% | 0.578 | 0.890 |
| 2040 | 72100 | 365          | 6833          | 0.5 | 5.40% | 0.577 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3074

Opening to Design Year ESAL Accumulation (1000s): 6549

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  
 \_\_\_\_\_  
 Date 4/22/2016  
 Signature \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Rigid Pavement 18 KIP ESAL Analysis - Location 750595 - 75039000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750595 - 75039000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75039000

**LOCATION #:** 750595 - 75039000

**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 | 53900 | 390          | 390           | 0.5 | 5.40% | 0.601 | 1.220 |
| 2021 | 54800 | 395          | 785           | 0.5 | 5.40% | 0.599 | 1.220 |
| 2022 | 55700 | 401          | 1186          | 0.5 | 5.40% | 0.598 | 1.220 |
| 2023 | 56600 | 407          | 1593          | 0.5 | 5.40% | 0.597 | 1.220 |
| 2024 | 57600 | 413          | 2006          | 0.5 | 5.40% | 0.595 | 1.220 |
| 2025 | 58500 | 418          | 2424          | 0.5 | 5.40% | 0.594 | 1.220 |
| 2026 | 59400 | 424          | 2848          | 0.5 | 5.40% | 0.593 | 1.220 |
| 2027 | 60400 | 430          | 3278          | 0.5 | 5.40% | 0.591 | 1.220 |
| 2028 | 61300 | 435          | 3713          | 0.5 | 5.40% | 0.590 | 1.220 |
| 2029 | 62200 | 441          | 4154          | 0.5 | 5.40% | 0.589 | 1.220 |
| 2030 | 63200 | 447          | 4601          | 0.5 | 5.40% | 0.588 | 1.220 |
| 2031 | 64000 | 452          | 5053          | 0.5 | 5.40% | 0.586 | 1.220 |
| 2032 | 64900 | 457          | 5510          | 0.5 | 5.40% | 0.585 | 1.220 |
| 2033 | 65800 | 463          | 5973          | 0.5 | 5.40% | 0.584 | 1.220 |
| 2034 | 66700 | 468          | 6441          | 0.5 | 5.40% | 0.583 | 1.220 |
| 2035 | 67600 | 473          | 6914          | 0.5 | 5.40% | 0.582 | 1.220 |
| 2036 | 68500 | 479          | 7393          | 0.5 | 5.40% | 0.581 | 1.220 |
| 2037 | 69400 | 484          | 7877          | 0.5 | 5.40% | 0.580 | 1.220 |
| 2038 | 70300 | 490          | 8367          | 0.5 | 5.40% | 0.579 | 1.220 |
| 2039 | 71200 | 495          | 8862          | 0.5 | 5.40% | 0.578 | 1.220 |
| 2040 | 72100 | 500          | 9362          | 0.5 | 5.40% | 0.577 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4211

Opening to Design Year ESAL Accumulation (1000s): 8972

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

4/22/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

**APPENDIX D**

**SR 535**

**ESAL Location 752006 - 75280080 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752006 - 75280080  
**LOCATION DESCRIPTION:** I-4 CD EB Off Ramp to SR 535

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |  |       |
|-----------------|------|------|-------|--|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split<br>(50% or 100%) | 100%  |
| Opening Year    | 2020 | AADT | 11140 | Lanes in One Direction                 | 1     |
| Mid-Design Year | 2030 | AADT | 12790 | <b>T24 values</b>                      |       |
| Design Year     | 2040 | AADT | 14080 | Existing to Opening Year               | 7.80% |
|                 |      |      |       | Opening to Mid-Year                    | 7.80% |
|                 |      |      |       | Mid-Year to Design-Year                | 7.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752006 - 75280080

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752006 - 75280080**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 11100 | 285          | 285           | 1 | 7.80% | 1.000 | 0.900 |
| 2021 | 11300 | 290          | 575           | 1 | 7.80% | 1.000 | 0.900 |
| 2022 | 11400 | 293          | 868           | 1 | 7.80% | 1.000 | 0.900 |
| 2023 | 11600 | 298          | 1166          | 1 | 7.80% | 1.000 | 0.900 |
| 2024 | 11800 | 303          | 1469          | 1 | 7.80% | 1.000 | 0.900 |
| 2025 | 11900 | 305          | 1774          | 1 | 7.80% | 1.000 | 0.900 |
| 2026 | 12100 | 311          | 2085          | 1 | 7.80% | 1.000 | 0.900 |
| 2027 | 12200 | 313          | 2398          | 1 | 7.80% | 1.000 | 0.900 |
| 2028 | 12400 | 318          | 2716          | 1 | 7.80% | 1.000 | 0.900 |
| 2029 | 12600 | 323          | 3039          | 1 | 7.80% | 1.000 | 0.900 |
| 2030 | 12700 | 326          | 3365          | 1 | 7.80% | 1.000 | 0.900 |
| 2031 | 12900 | 331          | 3696          | 1 | 7.80% | 1.000 | 0.900 |
| 2032 | 13000 | 334          | 4030          | 1 | 7.80% | 1.000 | 0.900 |
| 2033 | 13100 | 336          | 4366          | 1 | 7.80% | 1.000 | 0.900 |
| 2034 | 13300 | 341          | 4707          | 1 | 7.80% | 1.000 | 0.900 |
| 2035 | 13400 | 344          | 5051          | 1 | 7.80% | 1.000 | 0.900 |
| 2036 | 13500 | 346          | 5397          | 1 | 7.80% | 1.000 | 0.900 |
| 2037 | 13600 | 349          | 5746          | 1 | 7.80% | 1.000 | 0.900 |
| 2038 | 13800 | 354          | 6100          | 1 | 7.80% | 1.000 | 0.900 |
| 2039 | 13900 | 357          | 6457          | 1 | 7.80% | 1.000 | 0.900 |
| 2040 | 14000 | 359          | 6816          | 1 | 7.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3080

Opening to Design Year ESAL Accumulation (1000s): 6531

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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Rigid Pavement 18 KIP ESAL Analysis - Location 752006 - 75280080**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752006 - 75280080**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75280000

**LOCATION #:** 752006 - 75280080

**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 | 11100 | 402          | 402           | 1 | 7.80% | 1.000 | 1.270 |
| 2021 | 11300 | 409          | 811           | 1 | 7.80% | 1.000 | 1.270 |
| 2022 | 11400 | 413          | 1224          | 1 | 7.80% | 1.000 | 1.270 |
| 2023 | 11600 | 420          | 1644          | 1 | 7.80% | 1.000 | 1.270 |
| 2024 | 11800 | 427          | 2071          | 1 | 7.80% | 1.000 | 1.270 |
| 2025 | 11900 | 431          | 2502          | 1 | 7.80% | 1.000 | 1.270 |
| 2026 | 12100 | 438          | 2940          | 1 | 7.80% | 1.000 | 1.270 |
| 2027 | 12200 | 442          | 3382          | 1 | 7.80% | 1.000 | 1.270 |
| 2028 | 12400 | 449          | 3831          | 1 | 7.80% | 1.000 | 1.270 |
| 2029 | 12600 | 456          | 4287          | 1 | 7.80% | 1.000 | 1.270 |
| 2030 | 12700 | 460          | 4747          | 1 | 7.80% | 1.000 | 1.270 |
| 2031 | 12900 | 467          | 5214          | 1 | 7.80% | 1.000 | 1.270 |
| 2032 | 13000 | 471          | 5685          | 1 | 7.80% | 1.000 | 1.270 |
| 2033 | 13100 | 474          | 6159          | 1 | 7.80% | 1.000 | 1.270 |
| 2034 | 13300 | 481          | 6640          | 1 | 7.80% | 1.000 | 1.270 |
| 2035 | 13400 | 485          | 7125          | 1 | 7.80% | 1.000 | 1.270 |
| 2036 | 13500 | 489          | 7614          | 1 | 7.80% | 1.000 | 1.270 |
| 2037 | 13600 | 492          | 8106          | 1 | 7.80% | 1.000 | 1.270 |
| 2038 | 13800 | 499          | 8605          | 1 | 7.80% | 1.000 | 1.270 |
| 2039 | 13900 | 503          | 9108          | 1 | 7.80% | 1.000 | 1.270 |
| 2040 | 14000 | 507          | 9615          | 1 | 7.80% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4345

Opening to Design Year ESAL Accumulation (1000s): 9213

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date



**ESAL Location New Ramp - 75280000 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** New Ramp - 75280000  
**LOCATION DESCRIPTION:** I-4 CD EB Off Ramp to SR 535 SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |                          |       |
|-----------------|------|------|--------------------------|-------|
|                 | AADT |      | Daily Direction Split    |       |
| Existing Year   | N/A  | 0    | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 2510 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 3080 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 4010 | Existing to Opening Year | 7.80% |
|                 |      |      | Opening to Mid-Year      | 7.80% |
|                 |      |      | Mid-Year to Design-Year  | 7.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

**Flexible Pavement 18 KIP ESAL Analysis - Location New Ramp - 75280000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION New Ramp - 75280000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 2500 | 65           | 65            | 1 | 7.80% | 1.000 | 0.900 |
| 2021 | 2500 | 65           | 130           | 1 | 7.80% | 1.000 | 0.900 |
| 2022 | 2600 | 67           | 197           | 1 | 7.80% | 1.000 | 0.900 |
| 2023 | 2600 | 67           | 264           | 1 | 7.80% | 1.000 | 0.900 |
| 2024 | 2700 | 70           | 334           | 1 | 7.80% | 1.000 | 0.900 |
| 2025 | 2700 | 70           | 404           | 1 | 7.80% | 1.000 | 0.900 |
| 2026 | 2800 | 72           | 476           | 1 | 7.80% | 1.000 | 0.900 |
| 2027 | 2900 | 75           | 551           | 1 | 7.80% | 1.000 | 0.900 |
| 2028 | 2900 | 75           | 626           | 1 | 7.80% | 1.000 | 0.900 |
| 2029 | 3000 | 77           | 703           | 1 | 7.80% | 1.000 | 0.900 |
| 2030 | 3000 | 77           | 780           | 1 | 7.80% | 1.000 | 0.900 |
| 2031 | 3100 | 80           | 860           | 1 | 7.80% | 1.000 | 0.900 |
| 2032 | 3200 | 82           | 942           | 1 | 7.80% | 1.000 | 0.900 |
| 2033 | 3300 | 85           | 1027          | 1 | 7.80% | 1.000 | 0.900 |
| 2034 | 3400 | 88           | 1115          | 1 | 7.80% | 1.000 | 0.900 |
| 2035 | 3500 | 90           | 1205          | 1 | 7.80% | 1.000 | 0.900 |
| 2036 | 3600 | 93           | 1298          | 1 | 7.80% | 1.000 | 0.900 |
| 2037 | 3700 | 95           | 1393          | 1 | 7.80% | 1.000 | 0.900 |
| 2038 | 3800 | 98           | 1491          | 1 | 7.80% | 1.000 | 0.900 |
| 2039 | 3900 | 100          | 1591          | 1 | 7.80% | 1.000 | 0.900 |
| 2040 | 4000 | 103          | 1694          | 1 | 7.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 715  
 Opening to Design Year ESAL Accumulation (1000s): 1629

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  
 \_\_\_\_\_  
 4/27/2016  
 \_\_\_\_\_  
 Signature Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date

Rigid Pavement 18 KIP ESAL Analysis - Location New Ramp - 75280000

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION New Ramp - 75280000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: New Ramp - 75280000

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 | 2500 | 91           | 91            | 1 | 7.80% | 1.000 | 1.270 |
| 2021 | 2500 | 91           | 182           | 1 | 7.80% | 1.000 | 1.270 |
| 2022 | 2600 | 95           | 277           | 1 | 7.80% | 1.000 | 1.270 |
| 2023 | 2600 | 95           | 372           | 1 | 7.80% | 1.000 | 1.270 |
| 2024 | 2700 | 98           | 470           | 1 | 7.80% | 1.000 | 1.270 |
| 2025 | 2700 | 98           | 568           | 1 | 7.80% | 1.000 | 1.270 |
| 2026 | 2800 | 102          | 670           | 1 | 7.80% | 1.000 | 1.270 |
| 2027 | 2900 | 105          | 775           | 1 | 7.80% | 1.000 | 1.270 |
| 2028 | 2900 | 105          | 880           | 1 | 7.80% | 1.000 | 1.270 |
| 2029 | 3000 | 109          | 989           | 1 | 7.80% | 1.000 | 1.270 |
| 2030 | 3000 | 109          | 1098          | 1 | 7.80% | 1.000 | 1.270 |
| 2031 | 3100 | 113          | 1211          | 1 | 7.80% | 1.000 | 1.270 |
| 2032 | 3200 | 116          | 1327          | 1 | 7.80% | 1.000 | 1.270 |
| 2033 | 3300 | 120          | 1447          | 1 | 7.80% | 1.000 | 1.270 |
| 2034 | 3400 | 123          | 1570          | 1 | 7.80% | 1.000 | 1.270 |
| 2035 | 3500 | 127          | 1697          | 1 | 7.80% | 1.000 | 1.270 |
| 2036 | 3600 | 131          | 1828          | 1 | 7.80% | 1.000 | 1.270 |
| 2037 | 3700 | 134          | 1962          | 1 | 7.80% | 1.000 | 1.270 |
| 2038 | 3800 | 138          | 2100          | 1 | 7.80% | 1.000 | 1.270 |
| 2039 | 3900 | 142          | 2242          | 1 | 7.80% | 1.000 | 1.270 |
| 2040 | 4000 | 145          | 2387          | 1 | 7.80% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1007  
 Opening to Design Year ESAL Accumulation (1000s): 2296

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
 Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm

Signature

Date

**ESAL Location 752008-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752008-New Ramp  
 I-4 CD WB Off Ramp to SR 535 NB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|  | Existing Year | Opening Year | Mid-Design Year | Design Year | AADT                       | Daily Direction Split<br>(50% or 100%) | Lanes in One Direction | T24 values   |
|--|---------------|--------------|-----------------|-------------|----------------------------|--|------------------------|--|
|  | N/A           | 2020         | 2030            | 2040        | 0<br>7890<br>9260<br>11350 | 100%                                   | 1                      | Existing to Opening Year<br>Opening to Mid-Year<br>Mid-Year to Design-Year |
|  |               |              |                 |             |                            |  |                        | 7.80%<br>7.80%<br>7.80%  |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
|-----------------------------|-----------------------------------|---------------------------------|
| RURAL FREEWAY:              | 1.050 _____                       | 1.600 _____                     |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 752008-New Ramp

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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  | 200          | 200           | 1 | 7.80% | 1.000 | 0.900 |
| 2021 | 8000  | 205          | 405           | 1 | 7.80% | 1.000 | 0.900 |
| 2022 | 8100  | 208          | 613           | 1 | 7.80% | 1.000 | 0.900 |
| 2023 | 8300  | 213          | 826           | 1 | 7.80% | 1.000 | 0.900 |
| 2024 | 8400  | 216          | 1042          | 1 | 7.80% | 1.000 | 0.900 |
| 2025 | 8500  | 218          | 1260          | 1 | 7.80% | 1.000 | 0.900 |
| 2026 | 8700  | 223          | 1483          | 1 | 7.80% | 1.000 | 0.900 |
| 2027 | 8800  | 226          | 1709          | 1 | 7.80% | 1.000 | 0.900 |
| 2028 | 8900  | 229          | 1938          | 1 | 7.80% | 1.000 | 0.900 |
| 2029 | 9100  | 234          | 2172          | 1 | 7.80% | 1.000 | 0.900 |
| 2030 | 9200  | 236          | 2408          | 1 | 7.80% | 1.000 | 0.900 |
| 2031 | 9400  | 241          | 2649          | 1 | 7.80% | 1.000 | 0.900 |
| 2032 | 9600  | 246          | 2895          | 1 | 7.80% | 1.000 | 0.900 |
| 2033 | 9800  | 252          | 3147          | 1 | 7.80% | 1.000 | 0.900 |
| 2034 | 10000 | 257          | 3404          | 1 | 7.80% | 1.000 | 0.900 |
| 2035 | 10300 | 264          | 3668          | 1 | 7.80% | 1.000 | 0.900 |
| 2036 | 10500 | 270          | 3938          | 1 | 7.80% | 1.000 | 0.900 |
| 2037 | 10700 | 275          | 4213          | 1 | 7.80% | 1.000 | 0.900 |
| 2038 | 10900 | 280          | 4493          | 1 | 7.80% | 1.000 | 0.900 |
| 2039 | 11100 | 285          | 4778          | 1 | 7.80% | 1.000 | 0.900 |
| 2040 | 11300 | 290          | 5068          | 1 | 7.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2208

Opening to Design Year ESAL Accumulation (1000s): 4868

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752008-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75280000

**LOCATION #:** 752008-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  | 283          | 283           | 1 | 7.80% | 1.000 | 1.270 |
| 2021 | 8000  | 290          | 573           | 1 | 7.80% | 1.000 | 1.270 |
| 2022 | 8100  | 293          | 866           | 1 | 7.80% | 1.000 | 1.270 |
| 2023 | 8300  | 301          | 1167          | 1 | 7.80% | 1.000 | 1.270 |
| 2024 | 8400  | 304          | 1471          | 1 | 7.80% | 1.000 | 1.270 |
| 2025 | 8500  | 308          | 1779          | 1 | 7.80% | 1.000 | 1.270 |
| 2026 | 8700  | 315          | 2094          | 1 | 7.80% | 1.000 | 1.270 |
| 2027 | 8800  | 319          | 2413          | 1 | 7.80% | 1.000 | 1.270 |
| 2028 | 8900  | 322          | 2735          | 1 | 7.80% | 1.000 | 1.270 |
| 2029 | 9100  | 330          | 3065          | 1 | 7.80% | 1.000 | 1.270 |
| 2030 | 9200  | 333          | 3398          | 1 | 7.80% | 1.000 | 1.270 |
| 2031 | 9400  | 340          | 3738          | 1 | 7.80% | 1.000 | 1.270 |
| 2032 | 9600  | 348          | 4086          | 1 | 7.80% | 1.000 | 1.270 |
| 2033 | 9800  | 355          | 4441          | 1 | 7.80% | 1.000 | 1.270 |
| 2034 | 10000 | 362          | 4803          | 1 | 7.80% | 1.000 | 1.270 |
| 2035 | 10300 | 373          | 5176          | 1 | 7.80% | 1.000 | 1.270 |
| 2036 | 10500 | 380          | 5556          | 1 | 7.80% | 1.000 | 1.270 |
| 2037 | 10700 | 387          | 5943          | 1 | 7.80% | 1.000 | 1.270 |
| 2038 | 10900 | 395          | 6338          | 1 | 7.80% | 1.000 | 1.270 |
| 2039 | 11100 | 402          | 6740          | 1 | 7.80% | 1.000 | 1.270 |
| 2040 | 11300 | 409          | 7149          | 1 | 7.80% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3115

Opening to Design Year ESAL Accumulation (1000s): 6866

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

**ESAL Location 752008-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752008-New Ramp  
**LOCATION DESCRIPTION:** I-4 CD WB Off Ramp to SR 535 SB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |  |       |
|-----------------|------|------|-------|--|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split<br>(50% or 100%) | 100%  |
| Opening Year    | 2020 |      | 9620  | Lanes in One Direction                 | 1     |
| Mid-Design Year | 2030 |      | 11150 | <b>T24 values</b>                      |       |
| Design Year     | 2040 |      | 13160 | Existing to Opening Year               | 7.80% |
|                 |      |      |       | Opening to Mid-Year                    | 7.80% |
|                 |      |      |       | Mid-Year to Design-Year                | 7.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752008-New Ramp

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752008-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 9600  | 246          | 246           | 1 | 7.80% | 1.000 | 0.900 |
| 2021 | 9700  | 249          | 495           | 1 | 7.80% | 1.000 | 0.900 |
| 2022 | 9900  | 254          | 749           | 1 | 7.80% | 1.000 | 0.900 |
| 2023 | 10000 | 257          | 1006          | 1 | 7.80% | 1.000 | 0.900 |
| 2024 | 10200 | 262          | 1268          | 1 | 7.80% | 1.000 | 0.900 |
| 2025 | 10300 | 264          | 1532          | 1 | 7.80% | 1.000 | 0.900 |
| 2026 | 10500 | 270          | 1802          | 1 | 7.80% | 1.000 | 0.900 |
| 2027 | 10600 | 272          | 2074          | 1 | 7.80% | 1.000 | 0.900 |
| 2028 | 10800 | 277          | 2351          | 1 | 7.80% | 1.000 | 0.900 |
| 2029 | 10900 | 280          | 2631          | 1 | 7.80% | 1.000 | 0.900 |
| 2030 | 11100 | 285          | 2916          | 1 | 7.80% | 1.000 | 0.900 |
| 2031 | 11300 | 290          | 3206          | 1 | 7.80% | 1.000 | 0.900 |
| 2032 | 11500 | 295          | 3501          | 1 | 7.80% | 1.000 | 0.900 |
| 2033 | 11700 | 300          | 3801          | 1 | 7.80% | 1.000 | 0.900 |
| 2034 | 11900 | 305          | 4106          | 1 | 7.80% | 1.000 | 0.900 |
| 2035 | 12100 | 311          | 4417          | 1 | 7.80% | 1.000 | 0.900 |
| 2036 | 12300 | 316          | 4733          | 1 | 7.80% | 1.000 | 0.900 |
| 2037 | 12500 | 321          | 5054          | 1 | 7.80% | 1.000 | 0.900 |
| 2038 | 12700 | 326          | 5380          | 1 | 7.80% | 1.000 | 0.900 |
| 2039 | 12900 | 331          | 5711          | 1 | 7.80% | 1.000 | 0.900 |
| 2040 | 13100 | 336          | 6047          | 1 | 7.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2670

Opening to Design Year ESAL Accumulation (1000s): 5801

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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_





**ESAL Location 750581 - 75035000 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75035000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 750581 - 75035000  
 SR 535 N of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 50%   |
| Opening Year    | 2020 | AADT | 66450 | Lanes in One Direction   |               | 3     |
| Mid-Design Year | 2030 | AADT | 75470 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 | AADT | 86810 | Existing to Opening Year |               | 5.00% |
|                 |      |      |       | Opening to Mid-Year      |               | 5.00% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 5.00% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                          |              |                       |              |
|-----------------------------|--------------------------|--------------|-----------------------|--------------|
| (selected with an X)        | <b>FLEXIBLE PAVEMENT</b> |              | <b>RIGID PAVEMENT</b> |              |
|                             | SN = 5/THICK             |              | 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                    | <u>  X  </u> | 1.220                 | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date  
4/21/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date  
 \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 750581 - 75035000

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750581 - 75035000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK

I-4 ESALS

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 66400 | 315             | 315              | 0.5 | 5.00% | 0.583 | 0.890 |
| 2021 | 67300 | 319             | 634              | 0.5 | 5.00% | 0.582 | 0.890 |
| 2022 | 68200 | 322             | 956              | 0.5 | 5.00% | 0.581 | 0.890 |
| 2023 | 69100 | 326             | 1282             | 0.5 | 5.00% | 0.580 | 0.890 |
| 2024 | 70000 | 330             | 1612             | 0.5 | 5.00% | 0.579 | 0.890 |
| 2025 | 70900 | 333             | 1945             | 0.5 | 5.00% | 0.578 | 0.890 |
| 2026 | 71800 | 337             | 2282             | 0.5 | 5.00% | 0.577 | 0.890 |
| 2027 | 72700 | 341             | 2623             | 0.5 | 5.00% | 0.576 | 0.890 |
| 2028 | 73600 | 344             | 2967             | 0.5 | 5.00% | 0.575 | 0.890 |
| 2029 | 74500 | 348             | 3315             | 0.5 | 5.00% | 0.574 | 0.890 |
| 2030 | 75400 | 351             | 3666             | 0.5 | 5.00% | 0.573 | 0.890 |
| 2031 | 76600 | 356             | 4022             | 0.5 | 5.00% | 0.572 | 0.890 |
| 2032 | 77700 | 360             | 4382             | 0.5 | 5.00% | 0.570 | 0.890 |
| 2033 | 78800 | 365             | 4747             | 0.5 | 5.00% | 0.569 | 0.890 |
| 2034 | 80000 | 370             | 5117             | 0.5 | 5.00% | 0.568 | 0.890 |
| 2035 | 81100 | 374             | 5491             | 0.5 | 5.00% | 0.567 | 0.890 |
| 2036 | 82200 | 378             | 5869             | 0.5 | 5.00% | 0.566 | 0.890 |
| 2037 | 83400 | 383             | 6252             | 0.5 | 5.00% | 0.565 | 0.890 |
| 2038 | 84500 | 387             | 6639             | 0.5 | 5.00% | 0.564 | 0.890 |
| 2039 | 85600 | 392             | 7031             | 0.5 | 5.00% | 0.562 | 0.890 |
| 2040 | 86800 | 396             | 7427             | 0.5 | 5.00% | 0.561 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3351  
 Opening to Design Year ESAL Accumulation (1000s): 7112

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

\_\_\_\_\_  
 Signature Date 4/21/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm

\_\_\_\_\_  
 Signature Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 750581 - 75035000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750581 - 75035000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035000

LOCATION #: 750581 - 75035000

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 | 66400 | 432          | 432           | 0.5 | 5.00% | 0.583 | 1.220 |
| 2021 | 67300 | 437          | 869           | 0.5 | 5.00% | 0.582 | 1.220 |
| 2022 | 68200 | 442          | 1311          | 0.5 | 5.00% | 0.581 | 1.220 |
| 2023 | 69100 | 447          | 1758          | 0.5 | 5.00% | 0.580 | 1.220 |
| 2024 | 70000 | 452          | 2210          | 0.5 | 5.00% | 0.579 | 1.220 |
| 2025 | 70900 | 457          | 2667          | 0.5 | 5.00% | 0.578 | 1.220 |
| 2026 | 71800 | 462          | 3129          | 0.5 | 5.00% | 0.577 | 1.220 |
| 2027 | 72700 | 467          | 3596          | 0.5 | 5.00% | 0.576 | 1.220 |
| 2028 | 73600 | 472          | 4068          | 0.5 | 5.00% | 0.575 | 1.220 |
| 2029 | 74500 | 476          | 4544          | 0.5 | 5.00% | 0.574 | 1.220 |
| 2030 | 75400 | 481          | 5025          | 0.5 | 5.00% | 0.573 | 1.220 |
| 2031 | 76600 | 488          | 5513          | 0.5 | 5.00% | 0.572 | 1.220 |
| 2032 | 77700 | 494          | 6007          | 0.5 | 5.00% | 0.570 | 1.220 |
| 2033 | 78800 | 500          | 6507          | 0.5 | 5.00% | 0.569 | 1.220 |
| 2034 | 80000 | 506          | 7013          | 0.5 | 5.00% | 0.568 | 1.220 |
| 2035 | 81100 | 512          | 7525          | 0.5 | 5.00% | 0.567 | 1.220 |
| 2036 | 82200 | 518          | 8043          | 0.5 | 5.00% | 0.566 | 1.220 |
| 2037 | 83400 | 525          | 8568          | 0.5 | 5.00% | 0.565 | 1.220 |
| 2038 | 84500 | 531          | 9099          | 0.5 | 5.00% | 0.564 | 1.220 |
| 2039 | 85600 | 536          | 9635          | 0.5 | 5.00% | 0.562 | 1.220 |
| 2040 | 86800 | 543          | 10178         | 0.5 | 5.00% | 0.561 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4593  
 Opening to Design Year ESAL Accumulation (1000s): 9746

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

ESAL Location 75035000-New Ramp - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75035000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** SR 535 NB Off Ramp to Hotel Plaza Blvd  
**LOCATION #:** 75035000-New Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
 If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |      |                          |       |
|--|------|------|------|--------------------------|-------|
| Existing Year  | N/A  | AADT | 0    | Daily Direction Split    | 100%  |
| Opening Year   | 2020 |      | 5200 | (50% or 100%)            |       |
| Mid-Design Year  | 2030 |      | 5980 | Lanes in One Direction   | 1     |
| Design Year  | 2040 |      | 7110 | <b>T24 values</b>        |       |
| Note: AADT values have been rounded to the nearest 100 |      |      |      | 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 | RIGID PAVEMENT   |
|                             | SN = 5/THICK      | SN = 12/THICK    |
| RURAL FREEWAY:              | 1.050             | 1.600            |
| URBAN FREEWAY:              | 0.900 <u> X </u>  | 1.270 <u> X </u> |
| 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  
 \_\_\_\_\_  
 Date  4/28/2016   
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by:  Jason Learned   
 Name  
 Project Manager - Design Traffic FDOT - D5   
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Flexible Pavement 18 KIP ESAL Analysis - Location 75035000-New Ramp**

**8 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75035000-New Ram**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035000

COUNTY: Orange

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 | 5200 | 86           | 86            | 1 | 5.00% | 1.000 | 0.900 |
| 2021 | 5200 | 86           | 172           | 1 | 5.00% | 1.000 | 0.900 |
| 2022 | 5300 | 88           | 260           | 1 | 5.00% | 1.000 | 0.900 |
| 2023 | 5400 | 89           | 349           | 1 | 5.00% | 1.000 | 0.900 |
| 2024 | 5500 | 91           | 440           | 1 | 5.00% | 1.000 | 0.900 |
| 2025 | 5500 | 91           | 531           | 1 | 5.00% | 1.000 | 0.900 |
| 2026 | 5600 | 92           | 623           | 1 | 5.00% | 1.000 | 0.900 |
| 2027 | 5700 | 94           | 717           | 1 | 5.00% | 1.000 | 0.900 |
| 2028 | 5800 | 96           | 813           | 1 | 5.00% | 1.000 | 0.900 |
| 2029 | 5900 | 97           | 910           | 1 | 5.00% | 1.000 | 0.900 |
| 2030 | 5900 | 97           | 1007          | 1 | 5.00% | 1.000 | 0.900 |
| 2031 | 6000 | 99           | 1106          | 1 | 5.00% | 1.000 | 0.900 |
| 2032 | 6200 | 102          | 1208          | 1 | 5.00% | 1.000 | 0.900 |
| 2033 | 6300 | 104          | 1312          | 1 | 5.00% | 1.000 | 0.900 |
| 2034 | 6400 | 106          | 1418          | 1 | 5.00% | 1.000 | 0.900 |
| 2035 | 6500 | 107          | 1525          | 1 | 5.00% | 1.000 | 0.900 |
| 2036 | 6600 | 109          | 1634          | 1 | 5.00% | 1.000 | 0.900 |
| 2037 | 6700 | 111          | 1745          | 1 | 5.00% | 1.000 | 0.900 |
| 2038 | 6800 | 112          | 1857          | 1 | 5.00% | 1.000 | 0.900 |
| 2039 | 6900 | 114          | 1971          | 1 | 5.00% | 1.000 | 0.900 |
| 2040 | 7100 | 117          | 2088          | 1 | 5.00% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 921  
 Opening to Design Year ESAL Accumulation (1000s): 2002

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 75035000-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75035000-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035000

LOCATION #: 75035000-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 | 5200 | 121          | 121           | 1 | 5.00% | 1.000 | 1.270 |
| 2021 | 5200 | 121          | 242           | 1 | 5.00% | 1.000 | 1.270 |
| 2022 | 5300 | 123          | 365           | 1 | 5.00% | 1.000 | 1.270 |
| 2023 | 5400 | 126          | 491           | 1 | 5.00% | 1.000 | 1.270 |
| 2024 | 5500 | 128          | 619           | 1 | 5.00% | 1.000 | 1.270 |
| 2025 | 5500 | 128          | 747           | 1 | 5.00% | 1.000 | 1.270 |
| 2026 | 5600 | 130          | 877           | 1 | 5.00% | 1.000 | 1.270 |
| 2027 | 5700 | 133          | 1010          | 1 | 5.00% | 1.000 | 1.270 |
| 2028 | 5800 | 135          | 1145          | 1 | 5.00% | 1.000 | 1.270 |
| 2029 | 5900 | 137          | 1282          | 1 | 5.00% | 1.000 | 1.270 |
| 2030 | 5900 | 137          | 1419          | 1 | 5.00% | 1.000 | 1.270 |
| 2031 | 6000 | 140          | 1559          | 1 | 5.00% | 1.000 | 1.270 |
| 2032 | 6200 | 144          | 1703          | 1 | 5.00% | 1.000 | 1.270 |
| 2033 | 6300 | 147          | 1850          | 1 | 5.00% | 1.000 | 1.270 |
| 2034 | 6400 | 149          | 1999          | 1 | 5.00% | 1.000 | 1.270 |
| 2035 | 6500 | 151          | 2150          | 1 | 5.00% | 1.000 | 1.270 |
| 2036 | 6600 | 153          | 2303          | 1 | 5.00% | 1.000 | 1.270 |
| 2037 | 6700 | 156          | 2459          | 1 | 5.00% | 1.000 | 1.270 |
| 2038 | 6800 | 158          | 2617          | 1 | 5.00% | 1.000 | 1.270 |
| 2039 | 6900 | 160          | 2777          | 1 | 5.00% | 1.000 | 1.270 |
| 2040 | 7100 | 165          | 2942          | 1 | 5.00% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1298  
 Opening to Design Year ESAL Accumulation (1000s): 2821

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

**ESAL Location 752007 - 75280082 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 752007 - 75280082  
 SR 535 NB to I-4 EB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |       |
|-----------------|------|-------|--------------------------|-------|
|                 | AADT |       | Daily Direction Split    |       |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 10580 | Lanes in One Direction   | 2     |
| Mid-Design Year | 2030 | 12220 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 13920 | Existing to Opening Year | 7.80% |
|                 |      |       | Opening to Mid-Year      | 7.80% |
|                 |      |       | Mid-Year to Design-Year  | 7.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

(selected with an X)

|                             |                   |              |                |              |
|-----------------------------|-------------------|--------------|----------------|--------------|
|                             | FLEXIBLE PAVEMENT |              | RIGID PAVEMENT |              |
|                             | SN = 5/THICK      |              | SN = 12/THICK  |              |
| RURAL FREEWAY:              | 1.050             | _____        | 1.600          | _____        |
| URBAN FREEWAY:              | 0.900             | <u>  X  </u> | 1.270          | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date



Flexible Pavement 18 KIP ESAL Analysis - Location 752007 - 75280082

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752007 - 75280082**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 10500 | 216          | 216           | 1 | 7.80% | 0.802 | 0.900 |
| 2021 | 10700 | 220          | 436           | 1 | 7.80% | 0.801 | 0.900 |
| 2022 | 10900 | 224          | 660           | 1 | 7.80% | 0.799 | 0.900 |
| 2023 | 11000 | 226          | 886           | 1 | 7.80% | 0.798 | 0.900 |
| 2024 | 11200 | 229          | 1115          | 1 | 7.80% | 0.797 | 0.900 |
| 2025 | 11400 | 233          | 1348          | 1 | 7.80% | 0.795 | 0.900 |
| 2026 | 11500 | 235          | 1583          | 1 | 7.80% | 0.795 | 0.900 |
| 2027 | 11700 | 238          | 1821          | 1 | 7.80% | 0.793 | 0.900 |
| 2028 | 11800 | 240          | 2061          | 1 | 7.80% | 0.793 | 0.900 |
| 2029 | 12000 | 244          | 2305          | 1 | 7.80% | 0.791 | 0.900 |
| 2030 | 12200 | 247          | 2552          | 1 | 7.80% | 0.790 | 0.900 |
| 2031 | 12300 | 249          | 2801          | 1 | 7.80% | 0.789 | 0.900 |
| 2032 | 12500 | 253          | 3054          | 1 | 7.80% | 0.788 | 0.900 |
| 2033 | 12700 | 256          | 3310          | 1 | 7.80% | 0.786 | 0.900 |
| 2034 | 12900 | 260          | 3570          | 1 | 7.80% | 0.785 | 0.900 |
| 2035 | 13000 | 262          | 3832          | 1 | 7.80% | 0.785 | 0.900 |
| 2036 | 13200 | 265          | 4097          | 1 | 7.80% | 0.783 | 0.900 |
| 2037 | 13400 | 269          | 4366          | 1 | 7.80% | 0.782 | 0.900 |
| 2038 | 13500 | 271          | 4637          | 1 | 7.80% | 0.781 | 0.900 |
| 2039 | 13700 | 274          | 4911          | 1 | 7.80% | 0.780 | 0.900 |
| 2040 | 13900 | 278          | 5189          | 1 | 7.80% | 0.779 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2336

Opening to Design Year ESAL Accumulation (1000s): 4973

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 752007 - 75280082**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752007 - 75280082**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75280000

**LOCATION #:** 752007 - 75280082

**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 | 10500 | 305          | 305           | 1 | 7.80% | 0.802 | 1.270 |
| 2021 | 10700 | 310          | 615           | 1 | 7.80% | 0.801 | 1.270 |
| 2022 | 10900 | 315          | 930           | 1 | 7.80% | 0.799 | 1.270 |
| 2023 | 11000 | 318          | 1248          | 1 | 7.80% | 0.798 | 1.270 |
| 2024 | 11200 | 323          | 1571          | 1 | 7.80% | 0.797 | 1.270 |
| 2025 | 11400 | 328          | 1899          | 1 | 7.80% | 0.795 | 1.270 |
| 2026 | 11500 | 331          | 2230          | 1 | 7.80% | 0.795 | 1.270 |
| 2027 | 11700 | 336          | 2566          | 1 | 7.80% | 0.793 | 1.270 |
| 2028 | 11800 | 339          | 2905          | 1 | 7.80% | 0.793 | 1.270 |
| 2029 | 12000 | 344          | 3249          | 1 | 7.80% | 0.791 | 1.270 |
| 2030 | 12200 | 349          | 3598          | 1 | 7.80% | 0.790 | 1.270 |
| 2031 | 12300 | 351          | 3949          | 1 | 7.80% | 0.789 | 1.270 |
| 2032 | 12500 | 357          | 4306          | 1 | 7.80% | 0.788 | 1.270 |
| 2033 | 12700 | 362          | 4668          | 1 | 7.80% | 0.786 | 1.270 |
| 2034 | 12900 | 367          | 5035          | 1 | 7.80% | 0.785 | 1.270 |
| 2035 | 13000 | 369          | 5404          | 1 | 7.80% | 0.785 | 1.270 |
| 2036 | 13200 | 374          | 5778          | 1 | 7.80% | 0.783 | 1.270 |
| 2037 | 13400 | 379          | 6157          | 1 | 7.80% | 0.782 | 1.270 |
| 2038 | 13500 | 382          | 6539          | 1 | 7.80% | 0.781 | 1.270 |
| 2039 | 13700 | 387          | 6926          | 1 | 7.80% | 0.780 | 1.270 |
| 2040 | 13900 | 392          | 7318          | 1 | 7.80% | 0.779 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3293

Opening to Design Year ESAL Accumulation (1000s): 7013

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

**ESAL Location 750630 - 75035001 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75035001  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 750630 - 75035001  
 SR 535 S of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 50%   |
| Opening Year    | 2020 |      | 55730 | Lanes in One Direction   |               | 3     |
| Mid-Design Year | 2030 |      | 62170 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 72390 | Existing to Opening Year |               | 4.40% |
|                 |      |      |       | Opening to Mid-Year      |               | 4.40% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 4.40% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                          |              |                       |              |
|-----------------------------|--------------------------|--------------|-----------------------|--------------|
| (selected with an X)        | <b>FLEXIBLE PAVEMENT</b> |              | <b>RIGID PAVEMENT</b> |              |
|                             | SN = 5/THICK             |              | 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                    | <u>  X  </u> | 1.220                 | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/21/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 750630 - 75035001

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750630 - 75035001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035001

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 55700 | 239             | 239              | 0.5 | 4.40% | 0.598 | 0.890 |
| 2021 | 56300 | 241             | 480              | 0.5 | 4.40% | 0.597 | 0.890 |
| 2022 | 57000 | 243             | 723              | 0.5 | 4.40% | 0.596 | 0.890 |
| 2023 | 57600 | 246             | 969              | 0.5 | 4.40% | 0.595 | 0.890 |
| 2024 | 58300 | 248             | 1217             | 0.5 | 4.40% | 0.594 | 0.890 |
| 2025 | 58900 | 250             | 1467             | 0.5 | 4.40% | 0.593 | 0.890 |
| 2026 | 59500 | 252             | 1719             | 0.5 | 4.40% | 0.592 | 0.890 |
| 2027 | 60200 | 255             | 1974             | 0.5 | 4.40% | 0.592 | 0.890 |
| 2028 | 60800 | 257             | 2231             | 0.5 | 4.40% | 0.591 | 0.890 |
| 2029 | 61500 | 260             | 2491             | 0.5 | 4.40% | 0.590 | 0.890 |
| 2030 | 62100 | 262             | 2753             | 0.5 | 4.40% | 0.589 | 0.890 |
| 2031 | 63100 | 265             | 3018             | 0.5 | 4.40% | 0.588 | 0.890 |
| 2032 | 64200 | 269             | 3287             | 0.5 | 4.40% | 0.586 | 0.890 |
| 2033 | 65200 | 273             | 3560             | 0.5 | 4.40% | 0.585 | 0.890 |
| 2034 | 66200 | 277             | 3837             | 0.5 | 4.40% | 0.584 | 0.890 |
| 2035 | 67200 | 280             | 4117             | 0.5 | 4.40% | 0.582 | 0.890 |
| 2036 | 68300 | 284             | 4401             | 0.5 | 4.40% | 0.581 | 0.890 |
| 2037 | 69300 | 288             | 4689             | 0.5 | 4.40% | 0.580 | 0.890 |
| 2038 | 70300 | 291             | 4980             | 0.5 | 4.40% | 0.579 | 0.890 |
| 2039 | 71300 | 295             | 5275             | 0.5 | 4.40% | 0.578 | 0.890 |
| 2040 | 72300 | 298             | 5573             | 0.5 | 4.40% | 0.576 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2514  
 Opening to Design Year ESAL Accumulation (1000s): 5334

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 750630 - 75035001**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 750630 - 75035001**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75035001

LOCATION #: 750630 - 75035001

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 | 55700 | 327          | 327           | 0.5 | 4.40% | 0.598 | 1.220 |
| 2021 | 56300 | 330          | 657           | 0.5 | 4.40% | 0.597 | 1.220 |
| 2022 | 57000 | 333          | 990           | 0.5 | 4.40% | 0.596 | 1.220 |
| 2023 | 57600 | 336          | 1326          | 0.5 | 4.40% | 0.595 | 1.220 |
| 2024 | 58300 | 340          | 1666          | 0.5 | 4.40% | 0.594 | 1.220 |
| 2025 | 58900 | 343          | 2009          | 0.5 | 4.40% | 0.593 | 1.220 |
| 2026 | 59500 | 346          | 2355          | 0.5 | 4.40% | 0.592 | 1.220 |
| 2027 | 60200 | 349          | 2704          | 0.5 | 4.40% | 0.592 | 1.220 |
| 2028 | 60800 | 352          | 3056          | 0.5 | 4.40% | 0.591 | 1.220 |
| 2029 | 61500 | 356          | 3412          | 0.5 | 4.40% | 0.590 | 1.220 |
| 2030 | 62100 | 359          | 3771          | 0.5 | 4.40% | 0.589 | 1.220 |
| 2031 | 63100 | 364          | 4135          | 0.5 | 4.40% | 0.588 | 1.220 |
| 2032 | 64200 | 369          | 4504          | 0.5 | 4.40% | 0.586 | 1.220 |
| 2033 | 65200 | 374          | 4878          | 0.5 | 4.40% | 0.585 | 1.220 |
| 2034 | 66200 | 379          | 5257          | 0.5 | 4.40% | 0.584 | 1.220 |
| 2035 | 67200 | 384          | 5641          | 0.5 | 4.40% | 0.582 | 1.220 |
| 2036 | 68300 | 389          | 6030          | 0.5 | 4.40% | 0.581 | 1.220 |
| 2037 | 69300 | 394          | 6424          | 0.5 | 4.40% | 0.580 | 1.220 |
| 2038 | 70300 | 399          | 6823          | 0.5 | 4.40% | 0.579 | 1.220 |
| 2039 | 71300 | 404          | 7227          | 0.5 | 4.40% | 0.578 | 1.220 |
| 2040 | 72300 | 409          | 7636          | 0.5 | 4.40% | 0.576 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3444  
 Opening to Design Year ESAL Accumulation (1000s): 7309

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

**ESAL Location 75280000-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 75280000-New Ramp  
 SR 535 SB to I-4 EB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%  |
| Opening Year    | 2020 | AADT | 11220 | Lanes in One Direction   |               | 2     |
| Mid-Design Year | 2030 | AADT | 12770 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 | AADT | 14330 | Existing to Opening Year |               | 7.80% |
|                 |      |      |       | Opening to Mid-Year      |               | 7.80% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 7.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Flexible Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 11200 | 229          | 229           | 1 | 7.80% | 0.797 | 0.900 |
| 2021 | 11300 | 231          | 460           | 1 | 7.80% | 0.796 | 0.900 |
| 2022 | 11500 | 235          | 695           | 1 | 7.80% | 0.795 | 0.900 |
| 2023 | 11600 | 236          | 931           | 1 | 7.80% | 0.794 | 0.900 |
| 2024 | 11800 | 240          | 1171          | 1 | 7.80% | 0.793 | 0.900 |
| 2025 | 11900 | 242          | 1413          | 1 | 7.80% | 0.792 | 0.900 |
| 2026 | 12100 | 246          | 1659          | 1 | 7.80% | 0.790 | 0.900 |
| 2027 | 12300 | 249          | 1908          | 1 | 7.80% | 0.789 | 0.900 |
| 2028 | 12400 | 251          | 2159          | 1 | 7.80% | 0.788 | 0.900 |
| 2029 | 12600 | 255          | 2414          | 1 | 7.80% | 0.787 | 0.900 |
| 2030 | 12700 | 256          | 2670          | 1 | 7.80% | 0.786 | 0.900 |
| 2031 | 12900 | 260          | 2930          | 1 | 7.80% | 0.785 | 0.900 |
| 2032 | 13000 | 262          | 3192          | 1 | 7.80% | 0.785 | 0.900 |
| 2033 | 13200 | 265          | 3457          | 1 | 7.80% | 0.783 | 0.900 |
| 2034 | 13300 | 267          | 3724          | 1 | 7.80% | 0.783 | 0.900 |
| 2035 | 13500 | 271          | 3995          | 1 | 7.80% | 0.781 | 0.900 |
| 2036 | 13700 | 274          | 4269          | 1 | 7.80% | 0.780 | 0.900 |
| 2037 | 13800 | 276          | 4545          | 1 | 7.80% | 0.780 | 0.900 |
| 2038 | 14000 | 280          | 4825          | 1 | 7.80% | 0.778 | 0.900 |
| 2039 | 14100 | 282          | 5107          | 1 | 7.80% | 0.778 | 0.900 |
| 2040 | 14300 | 285          | 5392          | 1 | 7.80% | 0.777 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2441  
 Opening to Design Year ESAL Accumulation (1000s): 5163

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  
 \_\_\_\_\_  
 4/27/2016  
 \_\_\_\_\_  
 Signature Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature Date





**APPENDIX D**

**DARYL CARTER PARKWAY (DCP)**

ESAL Location 758364 - 75000457 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75000457  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 758364 - 75000457  
 LOCATION DESCRIPTION: Daryl Carter Pkwy E of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |        |
|-----------------|------|------|-------|--------------------------|---------------|--------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 50%    |
| Opening Year    | 2020 |      | 21910 | Lanes in One Direction   |               | 2      |
| Mid-Design Year | 2030 |      | 24350 | <b>T24 values</b>        |               |        |
| Design Year     | 2040 |      | 27780 | Existing to Opening Year |               | 10.80% |
|                 |      |      |       | Opening to Mid-Year      |               | 10.80% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 10.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                |
|-----------------------------|-------------------|----------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT |
|                             | SN = 5/THICK      | 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             | 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  
 \_\_\_\_\_  
 Date 4/21/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 758364 - 75000457

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 758364 - 75000457**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75000457

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALS

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T      | LF    | EF    |
|------|-------|-----------------|------------------|-----|--------|-------|-------|
| 2020 | 21900 | 307             | 307              | 0.5 | 10.80% | 0.799 | 0.890 |
| 2021 | 22100 | 310             | 617              | 0.5 | 10.80% | 0.798 | 0.890 |
| 2022 | 22300 | 312             | 929              | 0.5 | 10.80% | 0.797 | 0.890 |
| 2023 | 22600 | 316             | 1245             | 0.5 | 10.80% | 0.796 | 0.890 |
| 2024 | 22800 | 319             | 1564             | 0.5 | 10.80% | 0.795 | 0.890 |
| 2025 | 23100 | 322             | 1886             | 0.5 | 10.80% | 0.794 | 0.890 |
| 2026 | 23300 | 325             | 2211             | 0.5 | 10.80% | 0.794 | 0.890 |
| 2027 | 23600 | 329             | 2540             | 0.5 | 10.80% | 0.793 | 0.890 |
| 2028 | 23800 | 331             | 2871             | 0.5 | 10.80% | 0.792 | 0.890 |
| 2029 | 24100 | 335             | 3206             | 0.5 | 10.80% | 0.791 | 0.890 |
| 2030 | 24300 | 337             | 3543             | 0.5 | 10.80% | 0.790 | 0.890 |
| 2031 | 24600 | 341             | 3884             | 0.5 | 10.80% | 0.789 | 0.890 |
| 2032 | 25000 | 346             | 4230             | 0.5 | 10.80% | 0.788 | 0.890 |
| 2033 | 25300 | 350             | 4580             | 0.5 | 10.80% | 0.787 | 0.890 |
| 2034 | 25700 | 355             | 4935             | 0.5 | 10.80% | 0.786 | 0.890 |
| 2035 | 26000 | 358             | 5293             | 0.5 | 10.80% | 0.785 | 0.890 |
| 2036 | 26400 | 363             | 5656             | 0.5 | 10.80% | 0.783 | 0.890 |
| 2037 | 26700 | 367             | 6023             | 0.5 | 10.80% | 0.782 | 0.890 |
| 2038 | 27000 | 371             | 6394             | 0.5 | 10.80% | 0.781 | 0.890 |
| 2039 | 27400 | 376             | 6770             | 0.5 | 10.80% | 0.780 | 0.890 |
| 2040 | 27700 | 379             | 7149             | 0.5 | 10.80% | 0.779 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3236

Opening to Design Year ESAL Accumulation (1000s): 6842

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

**Rigid Pavement 18 KIP ESAL Analysis - Location 758364 - 75000457**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 758364 - 75000457**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75000457

LOCATION #: 758364 - 75000457

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 | 21900 | 421          | 421           | 0.5 | 10.80% | 0.799 | 1.220 |
| 2021 | 22100 | 425          | 846           | 0.5 | 10.80% | 0.798 | 1.220 |
| 2022 | 22300 | 428          | 1274          | 0.5 | 10.80% | 0.797 | 1.220 |
| 2023 | 22600 | 433          | 1707          | 0.5 | 10.80% | 0.796 | 1.220 |
| 2024 | 22800 | 437          | 2144          | 0.5 | 10.80% | 0.795 | 1.220 |
| 2025 | 23100 | 442          | 2586          | 0.5 | 10.80% | 0.794 | 1.220 |
| 2026 | 23300 | 445          | 3031          | 0.5 | 10.80% | 0.794 | 1.220 |
| 2027 | 23600 | 450          | 3481          | 0.5 | 10.80% | 0.793 | 1.220 |
| 2028 | 23800 | 454          | 3935          | 0.5 | 10.80% | 0.792 | 1.220 |
| 2029 | 24100 | 459          | 4394          | 0.5 | 10.80% | 0.791 | 1.220 |
| 2030 | 24300 | 462          | 4856          | 0.5 | 10.80% | 0.790 | 1.220 |
| 2031 | 24600 | 467          | 5323          | 0.5 | 10.80% | 0.789 | 1.220 |
| 2032 | 25000 | 474          | 5797          | 0.5 | 10.80% | 0.788 | 1.220 |
| 2033 | 25300 | 479          | 6276          | 0.5 | 10.80% | 0.787 | 1.220 |
| 2034 | 25700 | 486          | 6762          | 0.5 | 10.80% | 0.786 | 1.220 |
| 2035 | 26000 | 491          | 7253          | 0.5 | 10.80% | 0.785 | 1.220 |
| 2036 | 26400 | 498          | 7751          | 0.5 | 10.80% | 0.783 | 1.220 |
| 2037 | 26700 | 503          | 8254          | 0.5 | 10.80% | 0.782 | 1.220 |
| 2038 | 27000 | 508          | 8762          | 0.5 | 10.80% | 0.781 | 1.220 |
| 2039 | 27400 | 515          | 9277          | 0.5 | 10.80% | 0.780 | 1.220 |
| 2040 | 27700 | 520          | 9797          | 0.5 | 10.80% | 0.779 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4435  
 Opening to Design Year ESAL Accumulation (1000s): 9376

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

**ESAL Location 75280000-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION DESCRIPTION:** \_\_\_\_\_ **LOCATION #:** 75280000-New Ramp  
 Daryl Carter Pkwy to I-4 SB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |        |
|-----------------|------|------|-------|--------------------------|---------------|--------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 100%   |
| Opening Year    | 2020 | AADT | 15810 | Lanes in One Direction   |               | 1      |
| Mid-Design Year | 2030 | AADT | 17220 | <b>T24 values</b>        |               |        |
| Design Year     | 2040 | AADT | 19410 | Existing to Opening Year |               | 10.80% |
|                 |      |      |       | Opening to Mid-Year      |               | 10.80% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 10.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

**Flexible Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 15800 | 561          | 561           | 1 | 10.80% | 1.000 | 0.900 |
| 2021 | 15900 | 565          | 1126          | 1 | 10.80% | 1.000 | 0.900 |
| 2022 | 16000 | 568          | 1694          | 1 | 10.80% | 1.000 | 0.900 |
| 2023 | 16200 | 575          | 2269          | 1 | 10.80% | 1.000 | 0.900 |
| 2024 | 16300 | 579          | 2848          | 1 | 10.80% | 1.000 | 0.900 |
| 2025 | 16500 | 586          | 3434          | 1 | 10.80% | 1.000 | 0.900 |
| 2026 | 16600 | 589          | 4023          | 1 | 10.80% | 1.000 | 0.900 |
| 2027 | 16700 | 593          | 4616          | 1 | 10.80% | 1.000 | 0.900 |
| 2028 | 16900 | 600          | 5216          | 1 | 10.80% | 1.000 | 0.900 |
| 2029 | 17000 | 604          | 5820          | 1 | 10.80% | 1.000 | 0.900 |
| 2030 | 17200 | 611          | 6431          | 1 | 10.80% | 1.000 | 0.900 |
| 2031 | 17400 | 618          | 7049          | 1 | 10.80% | 1.000 | 0.900 |
| 2032 | 17600 | 625          | 7674          | 1 | 10.80% | 1.000 | 0.900 |
| 2033 | 17800 | 632          | 8306          | 1 | 10.80% | 1.000 | 0.900 |
| 2034 | 18000 | 639          | 8945          | 1 | 10.80% | 1.000 | 0.900 |
| 2035 | 18300 | 650          | 9595          | 1 | 10.80% | 1.000 | 0.900 |
| 2036 | 18500 | 657          | 10252         | 1 | 10.80% | 1.000 | 0.900 |
| 2037 | 18700 | 664          | 10916         | 1 | 10.80% | 1.000 | 0.900 |
| 2038 | 18900 | 671          | 11587         | 1 | 10.80% | 1.000 | 0.900 |
| 2039 | 19100 | 678          | 12265         | 1 | 10.80% | 1.000 | 0.900 |
| 2040 | 19400 | 689          | 12954         | 1 | 10.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 5870  
 Opening to Design Year ESAL Accumulation (1000s): 12393

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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Rigid Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 75280000-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 | 15800 | 792          | 792           | 1 | 10.80% | 1.000 | 1.270 |
| 2021 | 15900 | 797          | 1589          | 1 | 10.80% | 1.000 | 1.270 |
| 2022 | 16000 | 802          | 2391          | 1 | 10.80% | 1.000 | 1.270 |
| 2023 | 16200 | 812          | 3203          | 1 | 10.80% | 1.000 | 1.270 |
| 2024 | 16300 | 817          | 4020          | 1 | 10.80% | 1.000 | 1.270 |
| 2025 | 16500 | 827          | 4847          | 1 | 10.80% | 1.000 | 1.270 |
| 2026 | 16600 | 832          | 5679          | 1 | 10.80% | 1.000 | 1.270 |
| 2027 | 16700 | 837          | 6516          | 1 | 10.80% | 1.000 | 1.270 |
| 2028 | 16900 | 847          | 7363          | 1 | 10.80% | 1.000 | 1.270 |
| 2029 | 17000 | 852          | 8215          | 1 | 10.80% | 1.000 | 1.270 |
| 2030 | 17200 | 862          | 9077          | 1 | 10.80% | 1.000 | 1.270 |
| 2031 | 17400 | 872          | 9949          | 1 | 10.80% | 1.000 | 1.270 |
| 2032 | 17600 | 882          | 10831         | 1 | 10.80% | 1.000 | 1.270 |
| 2033 | 17800 | 892          | 11723         | 1 | 10.80% | 1.000 | 1.270 |
| 2034 | 18000 | 902          | 12625         | 1 | 10.80% | 1.000 | 1.270 |
| 2035 | 18300 | 917          | 13542         | 1 | 10.80% | 1.000 | 1.270 |
| 2036 | 18500 | 927          | 14469         | 1 | 10.80% | 1.000 | 1.270 |
| 2037 | 18700 | 937          | 15406         | 1 | 10.80% | 1.000 | 1.270 |
| 2038 | 18900 | 947          | 16353         | 1 | 10.80% | 1.000 | 1.270 |
| 2039 | 19100 | 957          | 17310         | 1 | 10.80% | 1.000 | 1.270 |
| 2040 | 19400 | 972          | 18282         | 1 | 10.80% | 1.000 | 1.270 |

|   |       |
|---|-------|
| Opening to Mid-Design Year ESAL Accumulation (1000s): | 8285  |
| Opening to Design Year ESAL Accumulation (1000s):     | 17490 |

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title

Org. Unit or Firm

Signature

Date

ESAL Location 758364-75000457 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75000457  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 758364-75000457  
**LOCATION DESCRIPTION:** Daryl Carter Pkwy W of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
 If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |       |                          |        |
|--|------|------|-------|--------------------------|--------|
| Existing Year  | N/A  | AADT | 0     | Daily Direction Split    | 50%    |
| Opening Year   | 2020 |      | 29670 | (50% or 100%)            |        |
| Mid-Design Year  | 2030 |      | 33140 | Lanes in One Direction   | 2      |
| Design Year  | 2040 |      | 37370 | <b>T24 values</b>        |        |
| Note: AADT values have been rounded to the nearest 100 |      |      |       | Existing to Opening Year | 10.80% |
|  |      |      |       | Opening to Mid-Year      | 10.80% |
|  |      |      |       | Mid-Year to Design-Year  | 10.80% |

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                   |                |
|-----------------------------|-------------------|----------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT |
|                             | SN = 5/THICK      | 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             | 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  
 \_\_\_\_\_  
 Signature  
4/27/2016  
 Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date



Flexible Pavement 18 KIP ESAL Analysis - Location 758364-75000457

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 758364-75000457**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75000457

COUNTY: Orange

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 | 29600 | 402          | 402           | 0.5 | 10.80% | 0.774 | 0.890 |
| 2021 | 30000 | 407          | 809           | 0.5 | 10.80% | 0.773 | 0.890 |
| 2022 | 30300 | 411          | 1220          | 0.5 | 10.80% | 0.772 | 0.890 |
| 2023 | 30700 | 416          | 1636          | 0.5 | 10.80% | 0.771 | 0.890 |
| 2024 | 31000 | 419          | 2055          | 0.5 | 10.80% | 0.770 | 0.890 |
| 2025 | 31400 | 424          | 2479          | 0.5 | 10.80% | 0.769 | 0.890 |
| 2026 | 31700 | 428          | 2907          | 0.5 | 10.80% | 0.768 | 0.890 |
| 2027 | 32000 | 431          | 3338          | 0.5 | 10.80% | 0.767 | 0.890 |
| 2028 | 32400 | 436          | 3774          | 0.5 | 10.80% | 0.766 | 0.890 |
| 2029 | 32700 | 440          | 4214          | 0.5 | 10.80% | 0.766 | 0.890 |
| 2030 | 33100 | 444          | 4658          | 0.5 | 10.80% | 0.765 | 0.890 |
| 2031 | 33500 | 449          | 5107          | 0.5 | 10.80% | 0.764 | 0.890 |
| 2032 | 33900 | 454          | 5561          | 0.5 | 10.80% | 0.763 | 0.890 |
| 2033 | 34400 | 460          | 6021          | 0.5 | 10.80% | 0.761 | 0.890 |
| 2034 | 34800 | 465          | 6486          | 0.5 | 10.80% | 0.760 | 0.890 |
| 2035 | 35200 | 469          | 6955          | 0.5 | 10.80% | 0.760 | 0.890 |
| 2036 | 35600 | 474          | 7429          | 0.5 | 10.80% | 0.759 | 0.890 |
| 2037 | 36100 | 480          | 7909          | 0.5 | 10.80% | 0.757 | 0.890 |
| 2038 | 36500 | 485          | 8394          | 0.5 | 10.80% | 0.757 | 0.890 |
| 2039 | 36900 | 490          | 8884          | 0.5 | 10.80% | 0.756 | 0.890 |
| 2040 | 37300 | 494          | 9378          | 0.5 | 10.80% | 0.755 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4256

Opening to Design Year ESAL Accumulation (1000s): 8976

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

Rigid Pavement 18 KIP ESAL Analysis - Location 758364-75000457

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 758364-75000457**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75000457

LOCATION #: 758364-75000457

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 | 29600 | 551          | 551           | 0.5 | 10.80% | 0.774 | 1.220 |
| 2021 | 30000 | 558          | 1109          | 0.5 | 10.80% | 0.773 | 1.220 |
| 2022 | 30300 | 563          | 1672          | 0.5 | 10.80% | 0.772 | 1.220 |
| 2023 | 30700 | 570          | 2242          | 0.5 | 10.80% | 0.771 | 1.220 |
| 2024 | 31000 | 575          | 2817          | 0.5 | 10.80% | 0.770 | 1.220 |
| 2025 | 31400 | 581          | 3398          | 0.5 | 10.80% | 0.769 | 1.220 |
| 2026 | 31700 | 586          | 3984          | 0.5 | 10.80% | 0.768 | 1.220 |
| 2027 | 32000 | 591          | 4575          | 0.5 | 10.80% | 0.767 | 1.220 |
| 2028 | 32400 | 598          | 5173          | 0.5 | 10.80% | 0.766 | 1.220 |
| 2029 | 32700 | 603          | 5776          | 0.5 | 10.80% | 0.766 | 1.220 |
| 2030 | 33100 | 609          | 6385          | 0.5 | 10.80% | 0.765 | 1.220 |
| 2031 | 33500 | 616          | 7001          | 0.5 | 10.80% | 0.764 | 1.220 |
| 2032 | 33900 | 622          | 7623          | 0.5 | 10.80% | 0.763 | 1.220 |
| 2033 | 34400 | 630          | 8253          | 0.5 | 10.80% | 0.761 | 1.220 |
| 2034 | 34800 | 637          | 8890          | 0.5 | 10.80% | 0.760 | 1.220 |
| 2035 | 35200 | 643          | 9533          | 0.5 | 10.80% | 0.760 | 1.220 |
| 2036 | 35600 | 650          | 10183         | 0.5 | 10.80% | 0.759 | 1.220 |
| 2037 | 36100 | 658          | 10841         | 0.5 | 10.80% | 0.757 | 1.220 |
| 2038 | 36500 | 665          | 11506         | 0.5 | 10.80% | 0.757 | 1.220 |
| 2039 | 36900 | 671          | 12177         | 0.5 | 10.80% | 0.756 | 1.220 |
| 2040 | 37300 | 677          | 12854         | 0.5 | 10.80% | 0.755 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 5834

Opening to Design Year ESAL Accumulation (1000s): 12303

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
 Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

**ESAL Location 75280000-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 75280000-New Ramp  
**LOCATION DESCRIPTION:** Daryl Carter Pkwy WB to I-4 NB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |        |
|-----------------|------|-------|--------------------------|--------|
|                 | AADT |       | Daily Direction Split    |        |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%   |
| Opening Year    | 2020 | 13270 | Lanes in One Direction   | 2      |
| Mid-Design Year | 2030 | 16480 | <b>T24 values</b>        |        |
| Design Year     | 2040 | 18940 | Existing to Opening Year | 10.80% |
|                 |      |       | Opening to Mid-Year      | 10.80% |
|                 |      |       | Mid-Year to Design-Year  | 10.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp

**8 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ram**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 13200 | 367          | 367           | 1 | 10.80% | 0.783 | 0.900 |
| 2021 | 13500 | 375          | 742           | 1 | 10.80% | 0.781 | 0.900 |
| 2022 | 13900 | 385          | 1127          | 1 | 10.80% | 0.779 | 0.900 |
| 2023 | 14200 | 392          | 1519          | 1 | 10.80% | 0.777 | 0.900 |
| 2024 | 14500 | 399          | 1918          | 1 | 10.80% | 0.776 | 0.900 |
| 2025 | 14800 | 407          | 2325          | 1 | 10.80% | 0.774 | 0.900 |
| 2026 | 15100 | 414          | 2739          | 1 | 10.80% | 0.772 | 0.900 |
| 2027 | 15500 | 424          | 3163          | 1 | 10.80% | 0.770 | 0.900 |
| 2028 | 15800 | 431          | 3594          | 1 | 10.80% | 0.768 | 0.900 |
| 2029 | 16100 | 439          | 4033          | 1 | 10.80% | 0.767 | 0.900 |
| 2030 | 16400 | 446          | 4479          | 1 | 10.80% | 0.765 | 0.900 |
| 2031 | 16700 | 453          | 4932          | 1 | 10.80% | 0.764 | 0.900 |
| 2032 | 16900 | 458          | 5390          | 1 | 10.80% | 0.763 | 0.900 |
| 2033 | 17200 | 465          | 5855          | 1 | 10.80% | 0.761 | 0.900 |
| 2034 | 17400 | 470          | 6325          | 1 | 10.80% | 0.760 | 0.900 |
| 2035 | 17700 | 477          | 6802          | 1 | 10.80% | 0.759 | 0.900 |
| 2036 | 17900 | 482          | 7284          | 1 | 10.80% | 0.758 | 0.900 |
| 2037 | 18200 | 489          | 7773          | 1 | 10.80% | 0.757 | 0.900 |
| 2038 | 18400 | 494          | 8267          | 1 | 10.80% | 0.756 | 0.900 |
| 2039 | 18600 | 499          | 8766          | 1 | 10.80% | 0.755 | 0.900 |
| 2040 | 18900 | 506          | 9272          | 1 | 10.80% | 0.754 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 4112

Opening to Design Year ESAL Accumulation (1000s): 8905

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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

## Rigid Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp

### 18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ramp

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 75280000-New Ramp

FIN #: 0

RIGID PAVEMENT URBAN FREEWAY 1.270

SN=12/THICK

I-4 ESALS

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D | T      | LF    | EF    |
|------|-------|-----------------|------------------|---|--------|-------|-------|
| 2020 | 13200 | 518             | 518              | 1 | 10.80% | 0.783 | 1.270 |
| 2021 | 13500 | 529             | 1047             | 1 | 10.80% | 0.781 | 1.270 |
| 2022 | 13900 | 543             | 1590             | 1 | 10.80% | 0.779 | 1.270 |
| 2023 | 14200 | 553             | 2143             | 1 | 10.80% | 0.777 | 1.270 |
| 2024 | 14500 | 563             | 2706             | 1 | 10.80% | 0.776 | 1.270 |
| 2025 | 14800 | 574             | 3280             | 1 | 10.80% | 0.774 | 1.270 |
| 2026 | 15100 | 584             | 3864             | 1 | 10.80% | 0.772 | 1.270 |
| 2027 | 15500 | 598             | 4462             | 1 | 10.80% | 0.770 | 1.270 |
| 2028 | 15800 | 608             | 5070             | 1 | 10.80% | 0.768 | 1.270 |
| 2029 | 16100 | 619             | 5689             | 1 | 10.80% | 0.767 | 1.270 |
| 2030 | 16400 | 629             | 6318             | 1 | 10.80% | 0.765 | 1.270 |
| 2031 | 16700 | 639             | 6957             | 1 | 10.80% | 0.764 | 1.270 |
| 2032 | 16900 | 646             | 7603             | 1 | 10.80% | 0.763 | 1.270 |
| 2033 | 17200 | 656             | 8259             | 1 | 10.80% | 0.761 | 1.270 |
| 2034 | 17400 | 663             | 8922             | 1 | 10.80% | 0.760 | 1.270 |
| 2035 | 17700 | 673             | 9595             | 1 | 10.80% | 0.759 | 1.270 |
| 2036 | 17900 | 680             | 10275            | 1 | 10.80% | 0.758 | 1.270 |
| 2037 | 18200 | 690             | 10965            | 1 | 10.80% | 0.757 | 1.270 |
| 2038 | 18400 | 697             | 11662            | 1 | 10.80% | 0.756 | 1.270 |
| 2039 | 18600 | 704             | 12366            | 1 | 10.80% | 0.755 | 1.270 |
| 2040 | 18900 | 714             | 13080            | 1 | 10.80% | 0.754 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 5800

Opening to Design Year ESAL Accumulation (1000s): 12562

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

**ESAL Location 75280000-New Ramp - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 75280000-New Ramp  
**LOCATION DESCRIPTION:** I-4 NB Off Ramp to Daryl Carter Pkwy EB

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |        |
|-----------------|------|-------|--------------------------|--------|
|                 | AADT |       | Daily Direction Split    |        |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%   |
| Opening Year    | 2020 | 16000 | Lanes in One Direction   | 1      |
| Mid-Design Year | 2030 | 16650 | <b>T24 values</b>        |        |
| Design Year     | 2040 | 17010 | Existing to Opening Year | 10.80% |
|                 |      |       | Opening to Mid-Year      | 10.80% |
|                 |      |       | Mid-Year to Design-Year  | 10.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u>  X  </u>                | 1.270 <u>  X  </u>              |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

**Flexible Pavement 18 KIP ESAL Analysis - Location 75280000-New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000-New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 16000 | 568          | 568           | 1 | 10.80% | 1.000 | 0.900 |
| 2021 | 16000 | 568          | 1136          | 1 | 10.80% | 1.000 | 0.900 |
| 2022 | 16100 | 572          | 1708          | 1 | 10.80% | 1.000 | 0.900 |
| 2023 | 16100 | 572          | 2280          | 1 | 10.80% | 1.000 | 0.900 |
| 2024 | 16200 | 575          | 2855          | 1 | 10.80% | 1.000 | 0.900 |
| 2025 | 16300 | 579          | 3434          | 1 | 10.80% | 1.000 | 0.900 |
| 2026 | 16300 | 579          | 4013          | 1 | 10.80% | 1.000 | 0.900 |
| 2027 | 16400 | 582          | 4595          | 1 | 10.80% | 1.000 | 0.900 |
| 2028 | 16500 | 586          | 5181          | 1 | 10.80% | 1.000 | 0.900 |
| 2029 | 16500 | 586          | 5767          | 1 | 10.80% | 1.000 | 0.900 |
| 2030 | 16600 | 589          | 6356          | 1 | 10.80% | 1.000 | 0.900 |
| 2031 | 16600 | 589          | 6945          | 1 | 10.80% | 1.000 | 0.900 |
| 2032 | 16700 | 593          | 7538          | 1 | 10.80% | 1.000 | 0.900 |
| 2033 | 16700 | 593          | 8131          | 1 | 10.80% | 1.000 | 0.900 |
| 2034 | 16700 | 593          | 8724          | 1 | 10.80% | 1.000 | 0.900 |
| 2035 | 16800 | 597          | 9321          | 1 | 10.80% | 1.000 | 0.900 |
| 2036 | 16800 | 597          | 9918          | 1 | 10.80% | 1.000 | 0.900 |
| 2037 | 16900 | 600          | 10518         | 1 | 10.80% | 1.000 | 0.900 |
| 2038 | 16900 | 600          | 11118         | 1 | 10.80% | 1.000 | 0.900 |
| 2039 | 16900 | 600          | 11718         | 1 | 10.80% | 1.000 | 0.900 |
| 2040 | 17000 | 604          | 12322         | 1 | 10.80% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 5788  
 Opening to Design Year ESAL Accumulation (1000s): 11754

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date





**APPENDIX D**

**CENTRAL FLORIDA PARKWAY (CFP)**

ESAL Location 75523000 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75523000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 75523000  
 LOCATION DESCRIPTION: Central Florida Pkwy E of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:         D        

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |       |                          |               |       |
|-----------------|------|------|-------|--------------------------|---------------|-------|
| Existing Year   | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 50%   |
| Opening Year    | 2020 |      | 35860 | Lanes in One Direction   |               | 2     |
| Mid-Design Year | 2030 |      | 42620 | <b>T24 values</b>        |               |       |
| Design Year     | 2040 |      | 49260 | Existing to Opening Year |               | 5.70% |
|                 |      |      |       | Opening to Mid-Year      |               | 5.70% |
|                 |      |      |       | Mid-Year to Design-Year  |               | 5.70% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                |
|-----------------------------|-------------------|----------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT |
|                             | SN = 5/THICK      | 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             | 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  
 \_\_\_\_\_  
 Date 4/20/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm \_\_\_\_\_  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Flexible Pavement 18 KIP ESAL Analysis - Location 75523000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75523000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75523000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK

I-4 ESALS

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 35800 | 252             | 252              | 0.5 | 5.70% | 0.758 | 0.890 |
| 2021 | 36500 | 256             | 508              | 0.5 | 5.70% | 0.757 | 0.890 |
| 2022 | 37200 | 261             | 769              | 0.5 | 5.70% | 0.755 | 0.890 |
| 2023 | 37800 | 264             | 1033             | 0.5 | 5.70% | 0.754 | 0.890 |
| 2024 | 38500 | 269             | 1302             | 0.5 | 5.70% | 0.752 | 0.890 |
| 2025 | 39200 | 273             | 1575             | 0.5 | 5.70% | 0.751 | 0.890 |
| 2026 | 39900 | 277             | 1852             | 0.5 | 5.70% | 0.749 | 0.890 |
| 2027 | 40500 | 281             | 2133             | 0.5 | 5.70% | 0.748 | 0.890 |
| 2028 | 41200 | 285             | 2418             | 0.5 | 5.70% | 0.747 | 0.890 |
| 2029 | 41900 | 290             | 2708             | 0.5 | 5.70% | 0.745 | 0.890 |
| 2030 | 42600 | 294             | 3002             | 0.5 | 5.70% | 0.744 | 0.890 |
| 2031 | 43200 | 298             | 3300             | 0.5 | 5.70% | 0.743 | 0.890 |
| 2032 | 43900 | 302             | 3602             | 0.5 | 5.70% | 0.741 | 0.890 |
| 2033 | 44600 | 306             | 3908             | 0.5 | 5.70% | 0.740 | 0.890 |
| 2034 | 45200 | 310             | 4218             | 0.5 | 5.70% | 0.739 | 0.890 |
| 2035 | 45900 | 314             | 4532             | 0.5 | 5.70% | 0.738 | 0.890 |
| 2036 | 46600 | 318             | 4850             | 0.5 | 5.70% | 0.736 | 0.890 |
| 2037 | 47200 | 322             | 5172             | 0.5 | 5.70% | 0.735 | 0.890 |
| 2038 | 47900 | 326             | 5498             | 0.5 | 5.70% | 0.734 | 0.890 |
| 2039 | 48500 | 330             | 5828             | 0.5 | 5.70% | 0.733 | 0.890 |
| 2040 | 49200 | 334             | 6162             | 0.5 | 5.70% | 0.732 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2750

Opening to Design Year ESAL Accumulation (1000s): 5910

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

## Rigid Pavement 18 KIP ESAL Analysis - Location 75523000

### **18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75523000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75523000

LOCATION #: 75523000

FIN #: 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK

I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 35800 | 345             | 345              | 0.5 | 5.70% | 0.758 | 1.220 |
| 2021 | 36500 | 351             | 696              | 0.5 | 5.70% | 0.757 | 1.220 |
| 2022 | 37200 | 357             | 1053             | 0.5 | 5.70% | 0.755 | 1.220 |
| 2023 | 37800 | 362             | 1415             | 0.5 | 5.70% | 0.754 | 1.220 |
| 2024 | 38500 | 368             | 1783             | 0.5 | 5.70% | 0.752 | 1.220 |
| 2025 | 39200 | 374             | 2157             | 0.5 | 5.70% | 0.751 | 1.220 |
| 2026 | 39900 | 380             | 2537             | 0.5 | 5.70% | 0.749 | 1.220 |
| 2027 | 40500 | 385             | 2922             | 0.5 | 5.70% | 0.748 | 1.220 |
| 2028 | 41200 | 391             | 3313             | 0.5 | 5.70% | 0.747 | 1.220 |
| 2029 | 41900 | 397             | 3710             | 0.5 | 5.70% | 0.745 | 1.220 |
| 2030 | 42600 | 403             | 4113             | 0.5 | 5.70% | 0.744 | 1.220 |
| 2031 | 43200 | 408             | 4521             | 0.5 | 5.70% | 0.743 | 1.220 |
| 2032 | 43900 | 413             | 4934             | 0.5 | 5.70% | 0.741 | 1.220 |
| 2033 | 44600 | 419             | 5353             | 0.5 | 5.70% | 0.740 | 1.220 |
| 2034 | 45200 | 424             | 5777             | 0.5 | 5.70% | 0.739 | 1.220 |
| 2035 | 45900 | 430             | 6207             | 0.5 | 5.70% | 0.738 | 1.220 |
| 2036 | 46600 | 436             | 6643             | 0.5 | 5.70% | 0.736 | 1.220 |
| 2037 | 47200 | 441             | 7084             | 0.5 | 5.70% | 0.735 | 1.220 |
| 2038 | 47900 | 447             | 7531             | 0.5 | 5.70% | 0.734 | 1.220 |
| 2039 | 48500 | 452             | 7983             | 0.5 | 5.70% | 0.733 | 1.220 |
| 2040 | 49200 | 457             | 8440             | 0.5 | 5.70% | 0.732 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3768

Opening to Design Year ESAL Accumulation (1000s): 8095

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

**ESAL Location 752209 - 75280021 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752209 - 75280021  
**LOCATION DESCRIPTION:** Central Florida Pkwy EB to I-4 SB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |      |                          |       |
|-----------------|------|------|--------------------------|-------|
|                 | AADT |      | Daily Direction Split    |       |
| Existing Year   | N/A  | 0    | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 7040 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 8370 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 9620 | Existing to Opening Year | 5.70% |
|                 |      |      | Opening to Mid-Year      | 5.70% |
|                 |      |      | Mid-Year to Design-Year  | 5.70% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 \_\_\_\_\_  
 Org. Unit or Firm  
 \_\_\_\_\_  
 Signature  
 \_\_\_\_\_  
 Date

Flexible Pavement 18 KIP ESAL Analysis - Location 752209 - 75280021

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752209 - 75280021**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 7000 | 132          | 132           | 1 | 5.70% | 1.000 | 0.900 |
| 2021 | 7100 | 133          | 265           | 1 | 5.70% | 1.000 | 0.900 |
| 2022 | 7300 | 137          | 402           | 1 | 5.70% | 1.000 | 0.900 |
| 2023 | 7400 | 139          | 541           | 1 | 5.70% | 1.000 | 0.900 |
| 2024 | 7500 | 141          | 682           | 1 | 5.70% | 1.000 | 0.900 |
| 2025 | 7700 | 145          | 827           | 1 | 5.70% | 1.000 | 0.900 |
| 2026 | 7800 | 147          | 974           | 1 | 5.70% | 1.000 | 0.900 |
| 2027 | 7900 | 148          | 1122          | 1 | 5.70% | 1.000 | 0.900 |
| 2028 | 8100 | 152          | 1274          | 1 | 5.70% | 1.000 | 0.900 |
| 2029 | 8200 | 154          | 1428          | 1 | 5.70% | 1.000 | 0.900 |
| 2030 | 8300 | 156          | 1584          | 1 | 5.70% | 1.000 | 0.900 |
| 2031 | 8400 | 158          | 1742          | 1 | 5.70% | 1.000 | 0.900 |
| 2032 | 8600 | 162          | 1904          | 1 | 5.70% | 1.000 | 0.900 |
| 2033 | 8700 | 163          | 2067          | 1 | 5.70% | 1.000 | 0.900 |
| 2034 | 8800 | 165          | 2232          | 1 | 5.70% | 1.000 | 0.900 |
| 2035 | 8900 | 167          | 2399          | 1 | 5.70% | 1.000 | 0.900 |
| 2036 | 9100 | 171          | 2570          | 1 | 5.70% | 1.000 | 0.900 |
| 2037 | 9200 | 173          | 2743          | 1 | 5.70% | 1.000 | 0.900 |
| 2038 | 9300 | 175          | 2918          | 1 | 5.70% | 1.000 | 0.900 |
| 2039 | 9400 | 177          | 3095          | 1 | 5.70% | 1.000 | 0.900 |
| 2040 | 9600 | 180          | 3275          | 1 | 5.70% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 1452

Opening to Design Year ESAL Accumulation (1000s): 3143

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned

Name

Project Manager - Design Traffic FDOT - D5

Title

Org. Unit or Firm

Signature

Date

Rigid Pavement 18 KIP ESAL Analysis - Location 752209 - 75280021

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752209 - 75280021**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

SECTION #: 75280000 LOCATION #: 752209 - 75280021 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 | 7000 | 185          | 185           | 1 | 5.70% | 1.000 | 1.270 |
| 2021 | 7100 | 188          | 373           | 1 | 5.70% | 1.000 | 1.270 |
| 2022 | 7300 | 193          | 566           | 1 | 5.70% | 1.000 | 1.270 |
| 2023 | 7400 | 196          | 762           | 1 | 5.70% | 1.000 | 1.270 |
| 2024 | 7500 | 199          | 961           | 1 | 5.70% | 1.000 | 1.270 |
| 2025 | 7700 | 204          | 1165          | 1 | 5.70% | 1.000 | 1.270 |
| 2026 | 7800 | 207          | 1372          | 1 | 5.70% | 1.000 | 1.270 |
| 2027 | 7900 | 209          | 1581          | 1 | 5.70% | 1.000 | 1.270 |
| 2028 | 8100 | 215          | 1796          | 1 | 5.70% | 1.000 | 1.270 |
| 2029 | 8200 | 217          | 2013          | 1 | 5.70% | 1.000 | 1.270 |
| 2030 | 8300 | 220          | 2233          | 1 | 5.70% | 1.000 | 1.270 |
| 2031 | 8400 | 222          | 2455          | 1 | 5.70% | 1.000 | 1.270 |
| 2032 | 8600 | 228          | 2683          | 1 | 5.70% | 1.000 | 1.270 |
| 2033 | 8700 | 230          | 2913          | 1 | 5.70% | 1.000 | 1.270 |
| 2034 | 8800 | 233          | 3146          | 1 | 5.70% | 1.000 | 1.270 |
| 2035 | 8900 | 236          | 3382          | 1 | 5.70% | 1.000 | 1.270 |
| 2036 | 9100 | 241          | 3623          | 1 | 5.70% | 1.000 | 1.270 |
| 2037 | 9200 | 244          | 3867          | 1 | 5.70% | 1.000 | 1.270 |
| 2038 | 9300 | 246          | 4113          | 1 | 5.70% | 1.000 | 1.270 |
| 2039 | 9400 | 249          | 4362          | 1 | 5.70% | 1.000 | 1.270 |
| 2040 | 9600 | 254          | 4616          | 1 | 5.70% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2048  
 Opening to Design Year ESAL Accumulation (1000s): 4431

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
 Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

ESAL Location 75523000 - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75523000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 75523000  
 LOCATION DESCRIPTION: Central Florida Pkwy W of I-4

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
 If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |       |                          |               |       |
|--|------|------|-------|--------------------------|---------------|-------|
| Existing Year  | N/A  | AADT | 0     | Daily Direction Split    | (50% or 100%) | 50%   |
| Opening Year   | 2020 |      | 25910 | Lanes in One Direction   |               | 2     |
| Mid-Design Year  | 2030 |      | 30760 | <b>T24 values</b>        |               |       |
| Design Year  | 2040 |      | 35640 | Existing to Opening Year |               | 5.70% |
| Note: AADT values have been rounded to the nearest 100 |      |      |       | Opening to Mid-Year      |               | 5.70% |
|  |      |      |       | Mid-Year to Design-Year  |               | 5.70% |

**1995 EQUIVALENCY FACTORS [u(1)]**

|                             |                   |                |
|-----------------------------|-------------------|----------------|
| (selected with an X)        | FLEXIBLE PAVEMENT | RIGID PAVEMENT |
|                             | SN = 5/THICK      | 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             | 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  
 \_\_\_\_\_  
 Date  4/20/2016   
 Signature \_\_\_\_\_

Reviewed by:  Jason Learned   
 Name  
 Project Manager - Design Traffic FDOT - D5   
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_



**Flexible Pavement 18 KIP ESAL Analysis - Location 75523000**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75523000**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75523000

COUNTY: Orange

FIN #: 0

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK I-4 ESALS

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 25900 | 189             | 189              | 0.5 | 5.70% | 0.785 | 0.890 |
| 2021 | 26300 | 191             | 380              | 0.5 | 5.70% | 0.784 | 0.890 |
| 2022 | 26800 | 195             | 575              | 0.5 | 5.70% | 0.782 | 0.890 |
| 2023 | 27300 | 198             | 773              | 0.5 | 5.70% | 0.781 | 0.890 |
| 2024 | 27800 | 201             | 974              | 0.5 | 5.70% | 0.779 | 0.890 |
| 2025 | 28300 | 204             | 1178             | 0.5 | 5.70% | 0.778 | 0.890 |
| 2026 | 28800 | 207             | 1385             | 0.5 | 5.70% | 0.776 | 0.890 |
| 2027 | 29300 | 211             | 1596             | 0.5 | 5.70% | 0.775 | 0.890 |
| 2028 | 29700 | 213             | 1809             | 0.5 | 5.70% | 0.774 | 0.890 |
| 2029 | 30200 | 216             | 2025             | 0.5 | 5.70% | 0.772 | 0.890 |
| 2030 | 30700 | 220             | 2245             | 0.5 | 5.70% | 0.771 | 0.890 |
| 2031 | 31200 | 223             | 2468             | 0.5 | 5.70% | 0.769 | 0.890 |
| 2032 | 31700 | 226             | 2694             | 0.5 | 5.70% | 0.768 | 0.890 |
| 2033 | 32200 | 229             | 2923             | 0.5 | 5.70% | 0.767 | 0.890 |
| 2034 | 32700 | 232             | 3155             | 0.5 | 5.70% | 0.766 | 0.890 |
| 2035 | 33200 | 235             | 3390             | 0.5 | 5.70% | 0.764 | 0.890 |
| 2036 | 33600 | 238             | 3628             | 0.5 | 5.70% | 0.763 | 0.890 |
| 2037 | 34100 | 241             | 3869             | 0.5 | 5.70% | 0.762 | 0.890 |
| 2038 | 34600 | 244             | 4113             | 0.5 | 5.70% | 0.761 | 0.890 |
| 2039 | 35100 | 247             | 4360             | 0.5 | 5.70% | 0.760 | 0.890 |
| 2040 | 35600 | 251             | 4611             | 0.5 | 5.70% | 0.759 | 0.890 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2056

Opening to Design Year ESAL Accumulation (1000s): 4422

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

## Rigid Pavement 18 KIP ESAL Analysis - Location 75523000

### 18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75523000

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75523000

LOCATION #: 75523000

FIN #: 0

RIGID PAVEMENT URBAN HIGHWAY 1.220

SN=12/THICK I-4 ESALs

D

| YEAR | AADT  | ESAL<br>(1000S) | ACCUM<br>(1000s) | D   | T     | LF    | EF    |
|------|-------|-----------------|------------------|-----|-------|-------|-------|
| 2020 | 25900 | 258             | 258              | 0.5 | 5.70% | 0.785 | 1.220 |
| 2021 | 26300 | 262             | 520              | 0.5 | 5.70% | 0.784 | 1.220 |
| 2022 | 26800 | 266             | 786              | 0.5 | 5.70% | 0.782 | 1.220 |
| 2023 | 27300 | 271             | 1057             | 0.5 | 5.70% | 0.781 | 1.220 |
| 2024 | 27800 | 275             | 1332             | 0.5 | 5.70% | 0.779 | 1.220 |
| 2025 | 28300 | 280             | 1612             | 0.5 | 5.70% | 0.778 | 1.220 |
| 2026 | 28800 | 284             | 1896             | 0.5 | 5.70% | 0.776 | 1.220 |
| 2027 | 29300 | 289             | 2185             | 0.5 | 5.70% | 0.775 | 1.220 |
| 2028 | 29700 | 292             | 2477             | 0.5 | 5.70% | 0.774 | 1.220 |
| 2029 | 30200 | 296             | 2773             | 0.5 | 5.70% | 0.772 | 1.220 |
| 2030 | 30700 | 301             | 3074             | 0.5 | 5.70% | 0.771 | 1.220 |
| 2031 | 31200 | 305             | 3379             | 0.5 | 5.70% | 0.769 | 1.220 |
| 2032 | 31700 | 310             | 3689             | 0.5 | 5.70% | 0.768 | 1.220 |
| 2033 | 32200 | 314             | 4003             | 0.5 | 5.70% | 0.767 | 1.220 |
| 2034 | 32700 | 318             | 4321             | 0.5 | 5.70% | 0.766 | 1.220 |
| 2035 | 33200 | 323             | 4644             | 0.5 | 5.70% | 0.764 | 1.220 |
| 2036 | 33600 | 326             | 4970             | 0.5 | 5.70% | 0.763 | 1.220 |
| 2037 | 34100 | 330             | 5300             | 0.5 | 5.70% | 0.762 | 1.220 |
| 2038 | 34600 | 335             | 5635             | 0.5 | 5.70% | 0.761 | 1.220 |
| 2039 | 35100 | 339             | 5974             | 0.5 | 5.70% | 0.760 | 1.220 |
| 2040 | 35600 | 343             | 6317             | 0.5 | 5.70% | 0.759 | 1.220 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2816

Opening to Design Year ESAL Accumulation (1000s): 6059

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

**ESAL Location 752012-75800020 - Analysis Information/Factors**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

**FIN #: 0**  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

**LOCATION #:** 752012-75800020  
**LOCATION DESCRIPTION:** Central Florida Pkwy WB to I-4 SB On Ramp

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility

Choose A, B, C, or D here:     D    

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If ""C", or "D" continue to next section

**DESIGN INFORMATION**

|                 |      |       |                          |       |
|-----------------|------|-------|--------------------------|-------|
|                 | AADT |       | Daily Direction Split    |       |
| Existing Year   | N/A  | 0     | (50% or 100%)            | 100%  |
| Opening Year    | 2020 | 14770 | Lanes in One Direction   | 1     |
| Mid-Design Year | 2030 | 17580 | <b>T24 values</b>        |       |
| Design Year     | 2040 | 20210 | Existing to Opening Year | 3.80% |
|                 |      |       | Opening to Mid-Year      | 3.80% |
|                 |      |       | Mid-Year to Design-Year  | 3.80% |

Note: AADT values have been rounded to the nearest 100

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |              |                                 |              |
|-----------------------------|-----------------------------------|--------------|---------------------------------|--------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK |              | RIGID PAVEMENT<br>SN = 12/THICK |              |
| RURAL FREEWAY:              | 1.050                             | _____        | 1.600                           | _____        |
| URBAN FREEWAY:              | 0.900                             | <u>  X  </u> | 1.270                           | <u>  X  </u> |
| 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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 752012-75800020

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752012-75800020**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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  | 14700 | 184          | 184           | 1 | 3.80% | 1.000 | 0.900 |
| 2021  | 15000 | 188          | 372           | 1 | 3.80% | 1.000 | 0.900 |
| 2022  | 15300 | 191          | 563           | 1 | 3.80% | 1.000 | 0.900 |
| 2023  | 15600 | 195          | 758           | 1 | 3.80% | 1.000 | 0.900 |
| 2024  | 15800 | 198          | 956           | 1 | 3.80% | 1.000 | 0.900 |
| 2025  | 16100 | 201          | 1157          | 1 | 3.80% | 1.000 | 0.900 |
| 2026  | 16400 | 205          | 1362          | 1 | 3.80% | 1.000 | 0.900 |
| 2027  | 16700 | 209          | 1571          | 1 | 3.80% | 1.000 | 0.900 |
| 2028  | 17000 | 213          | 1784          | 1 | 3.80% | 1.000 | 0.900 |
| 2029  | 17200 | 215          | 1999          | 1 | 3.80% | 1.000 | 0.900 |
| 2030  | 17500 | 219          | 2218          | 1 | 3.80% | 1.000 | 0.900 |
| 2031  | 17800 | 223          | 2441          | 1 | 3.80% | 1.000 | 0.900 |
| 2032  | 18100 | 226          | 2667          | 1 | 3.80% | 1.000 | 0.900 |
| 2033  | 18300 | 229          | 2896          | 1 | 3.80% | 1.000 | 0.900 |
| 2034  | 18600 | 233          | 3129          | 1 | 3.80% | 1.000 | 0.900 |
| 2035  | 18800 | 235          | 3364          | 1 | 3.80% | 1.000 | 0.900 |
| 2036  | 19100 | 239          | 3603          | 1 | 3.80% | 1.000 | 0.900 |
| 2037  | 19400 | 243          | 3846          | 1 | 3.80% | 1.000 | 0.900 |
| 2038  | 19600 | 245          | 4091          | 1 | 3.80% | 1.000 | 0.900 |
| 2039  | 19900 | 249          | 4340          | 1 | 3.80% | 1.000 | 0.900 |
| 2040  | 20200 | 253          | 4593          | 1 | 3.80% | 1.000 | 0.900 |
| Opening to Mid-Design Year ESAL Accumulation (1000s): |       |              |               |   |       |       | 2034  |
| Opening to Design Year ESAL Accumulation (1000s):     |       |              |               |   |       |       | 4409  |

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  
 \_\_\_\_\_  
 Date 4/27/2016  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title Org. Unit or Firm  
 \_\_\_\_\_  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

**Rigid Pavement 18 KIP ESAL Analysis - Location 752012-75800020**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 752012-75800020**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS  
 YEARS: 2020 to 2040

**SECTION #:** 75280000

**LOCATION #:** 752012-75800020

**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 | 14700 | 259          | 259           | 1 | 3.80% | 1.000 | 1.270 |
| 2021 | 15000 | 265          | 524           | 1 | 3.80% | 1.000 | 1.270 |
| 2022 | 15300 | 270          | 794           | 1 | 3.80% | 1.000 | 1.270 |
| 2023 | 15600 | 275          | 1069          | 1 | 3.80% | 1.000 | 1.270 |
| 2024 | 15800 | 279          | 1348          | 1 | 3.80% | 1.000 | 1.270 |
| 2025 | 16100 | 284          | 1632          | 1 | 3.80% | 1.000 | 1.270 |
| 2026 | 16400 | 289          | 1921          | 1 | 3.80% | 1.000 | 1.270 |
| 2027 | 16700 | 295          | 2216          | 1 | 3.80% | 1.000 | 1.270 |
| 2028 | 17000 | 300          | 2516          | 1 | 3.80% | 1.000 | 1.270 |
| 2029 | 17200 | 303          | 2819          | 1 | 3.80% | 1.000 | 1.270 |
| 2030 | 17500 | 309          | 3128          | 1 | 3.80% | 1.000 | 1.270 |
| 2031 | 17800 | 314          | 3442          | 1 | 3.80% | 1.000 | 1.270 |
| 2032 | 18100 | 319          | 3761          | 1 | 3.80% | 1.000 | 1.270 |
| 2033 | 18300 | 323          | 4084          | 1 | 3.80% | 1.000 | 1.270 |
| 2034 | 18600 | 328          | 4412          | 1 | 3.80% | 1.000 | 1.270 |
| 2035 | 18800 | 332          | 4744          | 1 | 3.80% | 1.000 | 1.270 |
| 2036 | 19100 | 337          | 5081          | 1 | 3.80% | 1.000 | 1.270 |
| 2037 | 19400 | 342          | 5423          | 1 | 3.80% | 1.000 | 1.270 |
| 2038 | 19600 | 346          | 5769          | 1 | 3.80% | 1.000 | 1.270 |
| 2039 | 19900 | 351          | 6120          | 1 | 3.80% | 1.000 | 1.270 |
| 2040 | 20200 | 356          | 6476          | 1 | 3.80% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2869

Opening to Design Year ESAL Accumulation (1000s): 6217

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned

Name  
Project Manager - Design Traffic FDOT - D5  
 Title  
 Org. Unit or Firm

Signature

Date

ESAL Location 75280000 -New Ramp - Analysis Information/Factors

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 0  
 COUNTY: Orange  
 ROADWAY ID: 75280000  
 PROJECT DESCRIPTION: I-4 ESALs

LOCATION #: 75280000 -New Ramp  
 LOCATION DESCRIPTION: I-4 SB Off Ramp to Central Florida Pkwy

**GROWTH RATE FORMULA**

A: Interpolation  
 B: Enter Growth Rate  
 C: Enter All AADTs  
 D: New Facility  
 Choose A, B, C, or D here:  D   
 Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)  
 If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|  |      |      |       |  |       |
|--|------|------|-------|--|-------|
| Existing Year  | N/A  | AADT | 0     | Daily Direction Split<br>(50% or 100%) | 100%  |
| Opening Year   | 2020 | AADT | 12950 | Lanes in One Direction                 | 1     |
| Mid-Design Year  | 2030 | AADT | 15410 | <b>T24 values</b>                      |       |
| Design Year  | 2040 | AADT | 17710 | Existing to Opening Year               | 5.70% |
| Note: AADT values have been rounded to the nearest 100 |      |      |       | Opening to Mid-Year                    | 5.70% |
|  |      |      |       | Mid-Year to Design-Year                | 5.70% |

**1995 EQUIVALENCY FACTORS |u(1)|**

|                             |                                   |                                 |
|-----------------------------|-----------------------------------|---------------------------------|
| (selected with an X)        | FLEXIBLE PAVEMENT<br>SN = 5/THICK | RIGID PAVEMENT<br>SN = 12/THICK |
| RURAL FREEWAY:              | 1.050                             | 1.600                           |
| URBAN FREEWAY:              | 0.900 <u> X </u>                  | 1.270 <u> X </u>                |
| 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  
 Signature \_\_\_\_\_ Date 4/27/2016

Reviewed by: Jason Learned  
 Name  
 Project Manager - Design Traffic FDOT - D5  
 Title \_\_\_\_\_ Org. Unit or Firm  
 Signature \_\_\_\_\_ Date \_\_\_\_\_

Flexible Pavement 18 KIP ESAL Analysis - Location 75280000 -New Ramp

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000 -New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

COUNTY: Orange

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 | 12900 | 242          | 242           | 1 | 5.70% | 1.000 | 0.900 |
| 2021 | 13100 | 246          | 488           | 1 | 5.70% | 1.000 | 0.900 |
| 2022 | 13400 | 251          | 739           | 1 | 5.70% | 1.000 | 0.900 |
| 2023 | 13600 | 255          | 994           | 1 | 5.70% | 1.000 | 0.900 |
| 2024 | 13900 | 261          | 1255          | 1 | 5.70% | 1.000 | 0.900 |
| 2025 | 14100 | 265          | 1520          | 1 | 5.70% | 1.000 | 0.900 |
| 2026 | 14400 | 270          | 1790          | 1 | 5.70% | 1.000 | 0.900 |
| 2027 | 14600 | 274          | 2064          | 1 | 5.70% | 1.000 | 0.900 |
| 2028 | 14900 | 279          | 2343          | 1 | 5.70% | 1.000 | 0.900 |
| 2029 | 15100 | 283          | 2626          | 1 | 5.70% | 1.000 | 0.900 |
| 2030 | 15400 | 289          | 2915          | 1 | 5.70% | 1.000 | 0.900 |
| 2031 | 15600 | 293          | 3208          | 1 | 5.70% | 1.000 | 0.900 |
| 2032 | 15800 | 296          | 3504          | 1 | 5.70% | 1.000 | 0.900 |
| 2033 | 16100 | 302          | 3806          | 1 | 5.70% | 1.000 | 0.900 |
| 2034 | 16300 | 306          | 4112          | 1 | 5.70% | 1.000 | 0.900 |
| 2035 | 16500 | 309          | 4421          | 1 | 5.70% | 1.000 | 0.900 |
| 2036 | 16700 | 313          | 4734          | 1 | 5.70% | 1.000 | 0.900 |
| 2037 | 17000 | 319          | 5053          | 1 | 5.70% | 1.000 | 0.900 |
| 2038 | 17200 | 323          | 5376          | 1 | 5.70% | 1.000 | 0.900 |
| 2039 | 17400 | 326          | 5702          | 1 | 5.70% | 1.000 | 0.900 |
| 2040 | 17700 | 332          | 6034          | 1 | 5.70% | 1.000 | 0.900 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 2673  
 Opening to Design Year ESAL Accumulation (1000s): 5792

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

4/27/2016

Signature

Date

Reviewed by: Jason Learned  
 Name  
Project Manager - Design Traffic FDOT - D5  
 Title                      Org. Unit or Firm

Signature

Date

**Rigid Pavement 18 KIP ESAL Analysis - Location 75280000 -New Ramp**

**18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 75280000 -New Ramp**

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: 2020 to 2040

SECTION #: 75280000

LOCATION #: 75280000 -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 | 12900 | 341          | 341           | 1 | 5.70% | 1.000 | 1.270 |
| 2021 | 13100 | 347          | 688           | 1 | 5.70% | 1.000 | 1.270 |
| 2022 | 13400 | 355          | 1043          | 1 | 5.70% | 1.000 | 1.270 |
| 2023 | 13600 | 360          | 1403          | 1 | 5.70% | 1.000 | 1.270 |
| 2024 | 13900 | 368          | 1771          | 1 | 5.70% | 1.000 | 1.270 |
| 2025 | 14100 | 373          | 2144          | 1 | 5.70% | 1.000 | 1.270 |
| 2026 | 14400 | 381          | 2525          | 1 | 5.70% | 1.000 | 1.270 |
| 2027 | 14600 | 386          | 2911          | 1 | 5.70% | 1.000 | 1.270 |
| 2028 | 14900 | 394          | 3305          | 1 | 5.70% | 1.000 | 1.270 |
| 2029 | 15100 | 399          | 3704          | 1 | 5.70% | 1.000 | 1.270 |
| 2030 | 15400 | 407          | 4111          | 1 | 5.70% | 1.000 | 1.270 |
| 2031 | 15600 | 413          | 4524          | 1 | 5.70% | 1.000 | 1.270 |
| 2032 | 15800 | 418          | 4942          | 1 | 5.70% | 1.000 | 1.270 |
| 2033 | 16100 | 426          | 5368          | 1 | 5.70% | 1.000 | 1.270 |
| 2034 | 16300 | 431          | 5799          | 1 | 5.70% | 1.000 | 1.270 |
| 2035 | 16500 | 436          | 6235          | 1 | 5.70% | 1.000 | 1.270 |
| 2036 | 16700 | 442          | 6677          | 1 | 5.70% | 1.000 | 1.270 |
| 2037 | 17000 | 450          | 7127          | 1 | 5.70% | 1.000 | 1.270 |
| 2038 | 17200 | 455          | 7582          | 1 | 5.70% | 1.000 | 1.270 |
| 2039 | 17400 | 460          | 8042          | 1 | 5.70% | 1.000 | 1.270 |
| 2040 | 17700 | 468          | 8510          | 1 | 5.70% | 1.000 | 1.270 |

Opening to Mid-Design Year ESAL Accumulation (1000s): 3770

Opening to Design Year ESAL Accumulation (1000s): 8169

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

4/27/2016

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 (PTSR)**



**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



**BEYOND** the  
**ULTIMATE**

# 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

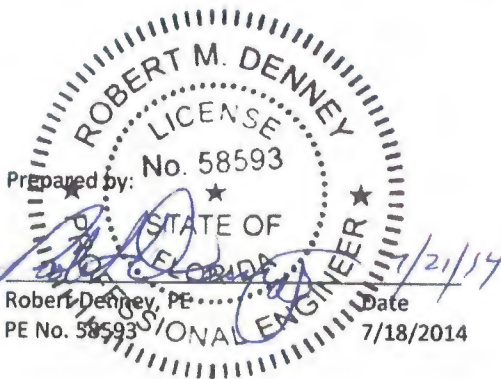
Florida Department of Transportation

District 5

DeLand, Florida




July 18, 2014



HNTB CORPORATION  
610 Crescent Executive Ct, Suite 400  
Lake Mary, Florida 32746  
(407) 805-0355  
CA No.: 6500

Concurrence by:

 8/2/2014  
Annette K. Brennan, PE Date  
District Design Engineer, District

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## 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**

| <b>SR 400 (I-4) PD&amp;E West Section</b> |  |
|---|--|
| 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)                                   |
| <b>SR 400 (I-4) PD&amp;E East Section</b> |  |
| 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)**

| <b>Concrete Pavement (PCC)</b>              |         |      |                    |   |                     |   | <b><u>PRESENT<br/>WORTH</u></b> |
|---|---------|------|--------------------|---|---------------------|---|---------------------------------|
|   |         |      | <b><u>Cost</u></b> |   | <b><u>P / F</u></b> | = |                                 |
|   | Initial | 2020 | <u>\$6,814,177</u> | * | <u>1.00000</u>      | = | <u>\$6,814,177</u>              |
| 23  | Year    | 2043 | <u>\$669,827</u>   | * | <u>0.45329</u>      | = | <u>\$303,623</u>                |
| 33  | Year    | 2053 | <u>\$895,107</u>   | * | <u>0.32134</u>      | = | <u>\$287,636</u>                |
| <b>TOTAL AGENCY COSTS</b>                   |         |      |                    |   |                     | = | <b>\$7,405,436</b>              |
| <b>USER COSTS</b>                           |         |      |                    |   |                     | = | <b>N/A</b>                      |
| <b>SALVAGE VALUE</b>                        |         |      |                    |   |                     | = | <b>N/A</b>                      |
| <b>TOTAL PRESENT WORTH LIFE-CYCLE COSTS</b> |         |      |                    |   |                     | = | <b>\$7,405,436</b>              |
| <b>Asphalt Pavement (AC)</b>                |         |      |                    |   |                     |   | <b><u>PRESENT<br/>WORTH</u></b> |
|   |         |      | <b><u>Cost</u></b> |   | <b><u>P / F</u></b> | = |                                 |
|   | Initial | 2020 | <u>\$4,975,718</u> | * | <u>1.00000</u>      | = | <u>\$4,975,718</u>              |
| 13  | Year    | 2033 | <u>\$1,565,945</u> | * | <u>0.63940</u>      | = | <u>\$1,001,272</u>              |
| 26  | Year    | 2046 | <u>\$1,565,945</u> | * | <u>0.40884</u>      | = | <u>\$640,217</u>                |
| 39  | Year    | 2059 | <u>\$1,565,945</u> | * | <u>0.26141</u>      | = | <u>\$409,358</u>                |
| <b>TOTAL AGENCY COSTS</b>                   |         |      |                    |   |                     | = | <b>\$7,026,565</b>              |
| <b>USER COSTS</b>                           |         |      |                    |   |                     | = | <b>N/A</b>                      |
| <b>SALVAGE VALUE</b>                        |         |      |                    |   |                     | = | <b>\$365,090</b>                |
| <b>TOTAL PRESENT WORTH LIFE-CYCLE COSTS</b> |         |      |                    |   |                     | = | <b>\$6,661,475</b>              |

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)

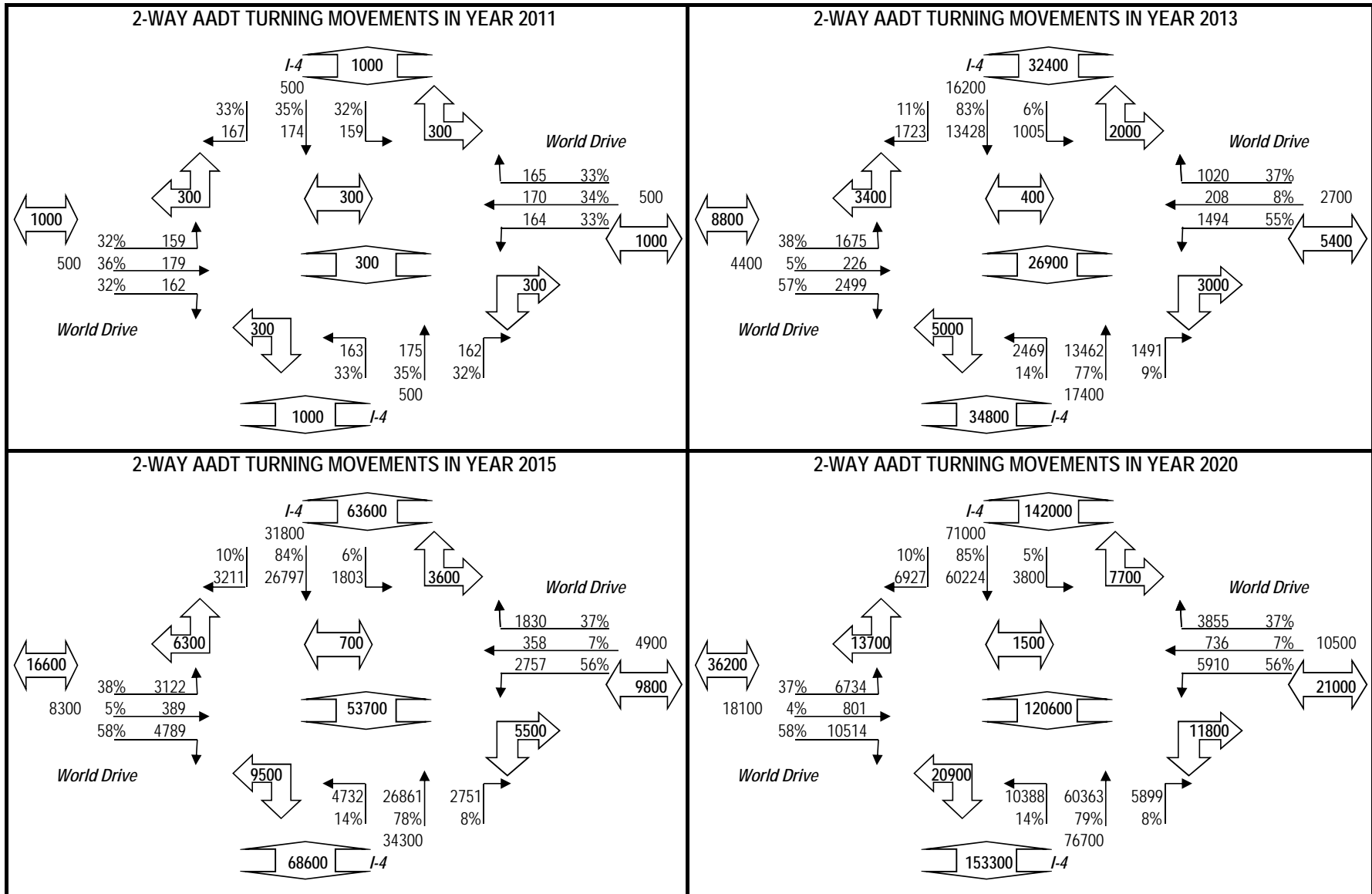
| YEAR | AADT  |   | DIRECTION 1 | DIRECTION 2 | *K FACTOR | D FACTOR | T FACTOR |
|------|-------|---|-------------|-------------|-----------|----------|----------|
| 2012 | 75500 | C | E 37500     | W 38000     | 9.00      | 51.20    | 8.60     |
| 2011 | 61000 | C | E 29500     | W 31500     | 9.00      | 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

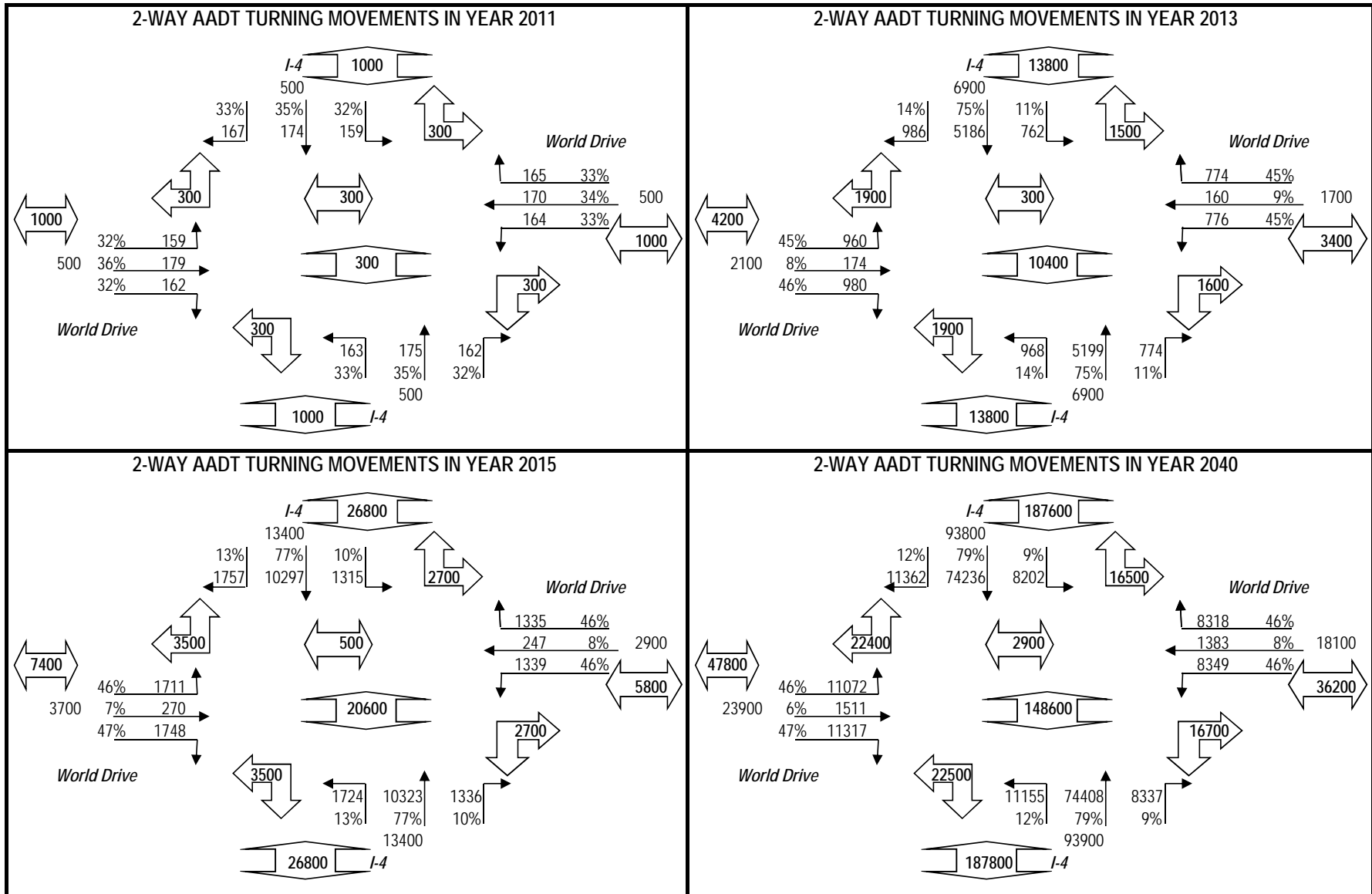
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; X = UNKNOWN

\*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

# PROJECT TRAFFIC FOR I-4 AT World Drive: TO



# PROJECT TRAFFIC FOR I-4 AT World Drive: TO



# 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 DESCRIPTION:** \_\_\_\_\_

**LOCATION #:** 1  
 Mainline

**GROWTH RATE FORMULA**

- A: Interpolation
- B: Enter Growth Rate
- C: Enter All AADTs
- D: New Facility

Choose A, B, C, or D here: C

Linear Growth Rate \_\_\_\_\_ %  
 Compounded Growth Rate \_\_\_\_\_ %  
 Decaying Growth Rate \_\_\_\_\_ %  
 (select one)

If "A" select an interpolation function  
 If "B" enter rate as decimals (1%=1.01)  
 If "C", or "D" continue to next section

**DESIGN INFORMATION**

|                 | Year | AADT   |
|-----------------|------|--------|
| Existing Year   | 2011 | 61000  |
| Opening Year    | 2020 | 142000 |
| Mid-Design Year | 2030 | 164800 |
| Design Year     | 2040 | 187600 |

| Daily Direction Split    |          |
|--------------------------|----------|
| (50% or 100%)            |          |
| Lanes in One Direction   | <u>3</u> |
| 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<br>SN = 5/THICK |          | RIGID PAVEMENT<br>SN = 12/THICK |          |
|-----------------------------|-----------------------------------|----------|---------------------------------|----------|
| RURAL FREEWAY:              | 1.050                             | _____    | 1.600                           | _____    |
| URBAN FREEWAY:              | 0.900                             | <u>X</u> | 1.270                           | <u>X</u> |
| 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: HNTB<br>Org. Unit or Firm | 610 Crescent Executive Ct, Suite 400<br>Lake Mary, FL 32746 | Robert Denney, PE<br>Name      | 4/23/2014<br>Date |
| Signature<br>Mark Robinson, PE         | District 5 Design   | FDOT - D5<br>Org. Unit or Firm |                   |
| Reviewed by: Name                      | Title   |                                | 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  
 FLEXIBLE PAVEMENT URBAN FREEWAY 0.900  
 SN=5/THICK SR 400 (I-4) - E. of World Drive

ITEM #: 0

| YEAR | AADT   | ESAL<br>(1000S) | ACCUM<br>(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.

610 Crescent Executive Ct, Suite 400  
 Lake Mary, FL 32746

Prepared by: HNTB      Robert Denney, PE      4/23/2014  
 Org. Unit or Firm      Name      Date

Signature: [Signature]      District 5 Design      FDOT - D5  
 Name      Title      Org. Unit or F      Date

Signature: \_\_\_\_\_



# **APPENDIX B**

## **GEOTECHNICAL INFORMATION**





**Geotechnical Professional  
Associates, Inc.**

*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.

|             | <b>Roadway<br/>LBR Samples<br/>(1 - 24)</b> |
|-------------|---|
| 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



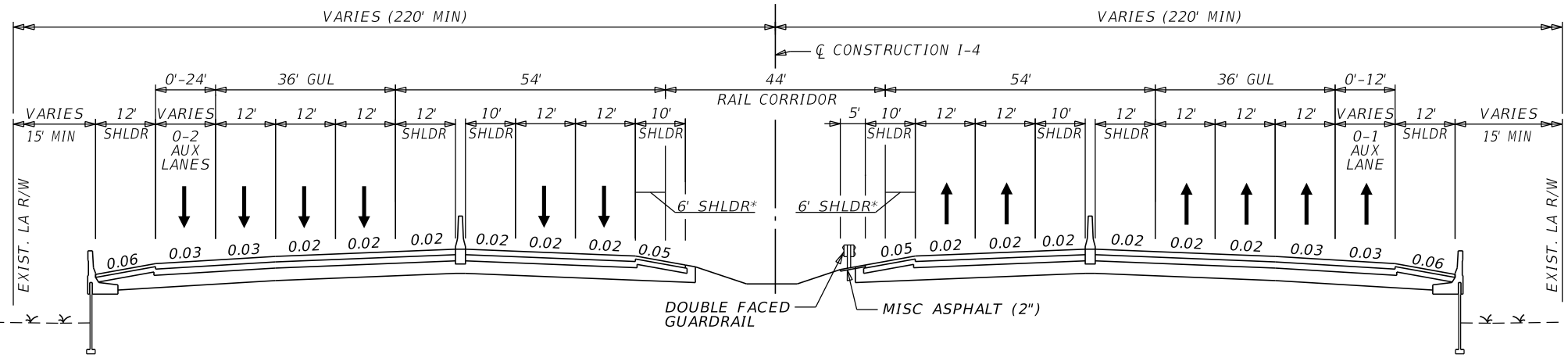
# **APPENDIX C**

## **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:<br><br>_____<br>ROBERT M. DENNEY, P.E.    Date<br>Engineer Of Record 58593                                      | FDOT CONCURRENCE<br><br>_____<br>ANNETTE K. BRENNAN, P.E.    Date<br>FDOT District Design Engineer | FHWA CONCURRENCE<br><br>_____<br>FHWA Transportation Engineer    Date |
| HNTB CORPORATION<br>610 CRESCENT EXECUTIVE CT.<br>SUITE 400<br>LAKE MARY, FL 32746<br>(407) 805-0355<br>CERT OF AUTH NO 6500 |  |   |

# **APPENDIX D**

## **PAVEMENT DESIGN CALCULATIONS**

TABLE A.4A

REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)  
 90% RELIABILITY (%R)  
 RESILIENT MODULUS (M<sub>R</sub>) RANGE 4000 PSI TO 18000 PSI

RESILIENT MODULUS (M<sub>R</sub>), (PSI x 1000)

| ESAL <sub>D</sub> | M <sub>R</sub> = 8.75 |      |      |      |      |      |      |      |      |      |      |      |      |      |      |  |  |  |
|-------------------|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|
|                   | 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<sub>D</sub>  
 I-4 Mainline  
 Shoulder =  
 1,352,850

ESAL<sub>D</sub>  
 I-4 Mainline =  
 45,095,000



## Pavement Design For New Pavement (Flexible)

**Project:** SR 400 (I-4) Mainline Shoulder

Opening Year 2020

Design Year 2040

**Given:**

ESAL<sub>D</sub> = 1,352,850

Traffic Level B

M<sub>R</sub> = 8,750 psi

Assume a 90% reliability

1.0 From table 5.3, the Structural Number Required (SN<sub>R</sub>) = 3.44

2.0

$$\begin{aligned}
 SN_R &= SN_C \\
 3.44 &= a_1 D_1 + a_2 D_2 + a_3 D_3 + a_4 D_4 \\
 3.44 &= 0 \cdot 0.75 + a_2 D_2 + a_3 D_3 + 0.08 \cdot 12 \\
 3.44 &= 0.00 + a_2 D_2 + a_3 D_3 + 0.96 \\
 2.48 &= a_2 D_2 + a_3 D_3
 \end{aligned}$$

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  $a_2 D_2 + a_3 D_3$  ratio

4.0 Calculate the Structural number (SN<sub>C</sub>), so that it is equal to or larger than SN<sub>R</sub>.

| Material                            | Thickness | Coefficient | SN <sub>C</sub> |
|-------------------------------------|-----------|-------------|-----------------|
| Structural Course (Traffic Level B) | 2.00      | 0.44        | 0.88            |
| Base (OBG 8 - 9.5" LBR 100)         | 9.50      | 0.18        | 1.71            |
| Stabilization (LBR 40)              | 12.00     | 0.08        | 0.96            |
|                                     |           |             |                 |
|                                     |           |             |                 |

see table 5.4  
see table 5.6

SN<sub>C</sub> = 3.55

$$\begin{aligned}
 SN_C &\geq SN_R \\
 3.55 &\geq 3.44
 \end{aligned}$$



# **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<br>Conts | Weighted<br>Average | Total<br>Amount       | Total<br>Quantity    | Unit<br>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       |                    |
| <b>0160 4</b>    | <b>75</b>       | <b>\$2.94</b>       | <b>\$6,786,939.17</b> | <b>2,306,819.900</b> | <b>SY</b>    | <b>N</b> | <b>TYPE B STABILIZATION</b>                  | <b>Use \$3.25</b>  |
| 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     |                    |
| <b>0285701</b>   | <b>43</b>       | <b>\$8.75</b>       | <b>\$2,143,465.88</b> | <b>245,052.400</b>   | <b>SY</b>    | <b>N</b> | <b>OPTIONAL BASE,BASE GROUP 01</b>           |                    |
| 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                  |                    |
| <b>0285708</b>   | <b>2</b>        | <b>\$25.85</b>      | <b>\$31,955.10</b>    | <b>1,236.000</b>     | <b>SY</b>    | <b>N</b> | <b>OPTIONAL BASE,BASE GROUP 08</b>           |                    |
| 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                  |                    |
| <b>0285712</b>   | <b>7</b>        | <b>\$11.34</b>      | <b>\$1,839,643.30</b> | <b>162,288.400</b>   | <b>SY</b>    | <b>N</b> | <b>OPTIONAL BASE,BASE GROUP 12</b>           | <b>Use \$15.00</b> |
| 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                |                    |
| <b>0327 70 1</b> | <b>52</b>       | <b>\$2.45</b>       | <b>\$2,864,985.08</b> | <b>1,169,586.100</b> | <b>SY</b>    | <b>N</b> | <b>MILLING EXIST ASPH PAVT, 1" AVG DEPTH</b> |                    |
| 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     |                    |
| <b>0327 70 4</b> | <b>24</b>       | <b>\$2.05</b>       | <b>\$2,458,346.15</b> | <b>1,197,643.100</b> | <b>SY</b>    | <b>N</b> | <b>MILLING EXIST ASPH PAVT, 3" AVG DEPTH</b> |                    |
| 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**  
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**From: 0102 1 To: 9999999**

| Item             | No. of<br>Conts | Weighted<br>Average | Total<br>Amount       | Total<br>Quantity | Unit<br>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             |   |
| <b>0334 1 12</b> | <b>22</b>       | <b>\$81.26</b>      | <b>\$7,519,027.79</b> | <b>92,531.440</b> | <b>TN</b>    | <b>N</b> | <b>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</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        |   |
| <b>0334 1 25</b> | <b>2</b>        | <b>\$83.95</b>      | <b>\$5,003,179.12</b> | <b>59,598.600</b> | <b>TN</b>    | <b>N</b> | <b>SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA</b> | Use \$92.00 as recommended for SP TRAF D, PG76-22 |
| 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"                      |   |
| <b>0350 1 13</b> | <b>1</b>        | <b>\$51.00</b>      | <b>\$1,922,190.00</b> | <b>37,690.000</b> | <b>SY</b>    | <b>N</b> | <b>PLAIN CEMENT CONC PAVT, 11 1/2"</b>          |   |
| 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"                 |   |

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| Item           | No. of<br>Conts | Weighted<br>Average | Total<br>Amount        | Total<br>Quantity | Unit<br>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                    |              |
| <b>0353 70</b> | <b>4</b>        | <b>\$565.74</b>     | <b>\$11,234,177.50</b> | <b>19,857.450</b> | <b>CY</b>    | <b>N</b> | <b>CONC PAVT SLAB REPLACEMENT</b>         | 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        | GRITTING PRCSST DECK PNL, NON-SHRINK GRIT |              |
| 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               | \$9.97              | \$331,702.60           | 340,723.200       | SF           | N        | CLEAN & COAT CONCRETE SURF, CLASS 5       |              |

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| Item       | No. of<br>Conts | Weighted<br>Average | Total<br>Amount | Total<br>Quantity | Unit<br>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  | 1               | \$78.25             | \$175,280.00    | 2,240.000         | LF           | N    | CORE-PILOT HOLE,DRILLED SHAFT EXCAV      |
| 0455120 7  | 3               | \$677.78            | \$677,100.00    | 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               | \$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:**

|                               |                    |
|-------------------------------|--------------------|
| <b>Financial Project ID:</b>  | 432100-1-22-01     |
| <b>State Road Number:</b>     | SR 400             |
| <b>County:</b>                | Osceola, Orange    |
| <b>Project Length:</b>        | 13.535 Miles       |
| <b>Roadway ID:</b>            | 92130000, 75280000 |
| <b>Begining MP:</b>           |                    |
| <b>Ending MP:</b>             |                    |
| <b>Transportation System:</b> |                    |
| <b>Type of Work</b>           |                    |
| <i>Design Version</i>         |                    |



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**  
**JOINED 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*



**Definitions:**

|                         |         |        |
|-------------------------|---------|--------|
| Length of Section:      | 5280    | Ft     |
| Passing Lane Width:     | 12      | Ft     |
| Travel Lane Width:      | 14      | Ft     |
| Inside Shoulder Width:  | 22      | Ft     |
| Outside Shoulder Width: | 18      | Ft     |
| Total Pavement Area:    | 675,840 | Sq. Ft |
| Total Shoulder Area:    | 422,400 | Sq. Ft |

63,360 Long. Concrete Joints (Ft)

|                               |      |
|-------------------------------|------|
| Analysis Period:              | 40   |
| Discount Rate:                | 3.5  |
| Initial Year of Construction: | 2020 |
| No. of Passing Lanes:         | 3    |
| No. of Travel Lanes:          | 2    |
| No. of Travel Directions:     | 2    |

45,056 Trans. Concrete Joints (Ft)

| CONSTRUCTION ITEMS | THK. | QTY. | UNIT | UNIT PRICE | ST DEV | COST | PRESENT WORTH |
|--------------------|------|------|------|------------|--------|------|---------------|
|--------------------|------|------|------|------------|--------|------|---------------|

|                                      |          |          |        |          |        |             |             |
|--------------------------------------|----------|----------|--------|----------|--------|-------------|-------------|
| <b>INITIAL CONSTRUCTION IN YEAR:</b> | <b>0</b> |          |        |          |        |             |             |
| <b>MAINLINE:</b>                     |          |          |        |          |        |             |             |
| 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     |
| <b>SHOULDER:</b>                     |          |          |        |          |        |             |             |
| 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   |
| <b>DESIGN COSTS:</b>                 |          |          |        | Subtotal |        |             |             |
| <b>MOT COSTS:</b>                    |          |          |        | Subtotal |        |             |             |
| <b>CEI COSTS:</b>                    |          |          |        | Subtotal |        |             |             |

|                                |           |          |        |          |        |           |           |
|--------------------------------|-----------|----------|--------|----------|--------|-----------|-----------|
| <b>REHABILITATION IN YEAR:</b> | <b>23</b> |          |        |          |        |           |           |
| <b>MAINLINE:</b>               |           |          |        |          |        |           |           |
| CPR - Slab Replacement (3%)    | 13.5      | 844.8    | Cu. Yd | \$400.00 | \$0.00 | \$337,920 | \$153,174 |
| <b>SHOULDER:</b>               |           |          |        |          |        |           |           |
| 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  |
| <b>DESIGN COSTS:</b>           |           |          |        | Subtotal |        |           |           |
| <b>MOT COSTS:</b>              |           |          |        | Subtotal |        |           |           |
| <b>CEI COSTS:</b>              |           |          |        | 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*



**Definitions:**

|                         |         |        |
|-------------------------|---------|--------|
| Length of Section:      | 5280    | Ft     |
| Passing Lane Width:     | 12      | Ft     |
| Travel Lane Width:      | 14      | Ft     |
| Inside Shoulder Width:  | 22      | Ft     |
| Outside Shoulder Width: | 18      | Ft     |
| Total Pavement Area:    | 675,840 | Sq. Ft |
| Total Shoulder Area:    | 422,400 | Sq. Ft |

63,360 Long. Concrete Joints (Ft)

|                                    |      |
|------------------------------------|------|
| Analysis Period:                   | 40   |
| Discount Rate:                     | 3.5  |
| Initial Year of Construction:      | 2020 |
| No. of Passing Lanes:              | 3    |
| No. of Travel Lanes:               | 2    |
| No. of Travel Directions:          | 2    |
| 45,056 Trans. Concrete Joints (Ft) |      |

| CONSTRUCTION ITEMS                                  | THK. | QTY.      | UNIT     | UNIT PRICE | ST DEV | COST        | PRESENT WORTH |
|---|------|-----------|----------|------------|--------|-------------|---------------|
| <b>REHABILITATION IN YEAR:</b>                      |      | <b>33</b> |          |            |        |             |               |
| <b>MAINLINE:</b>                                    |      |           |          |            |        |             |               |
| CPR - Slab Replacement (5%)                         | 13.5 | 1,408.0   | Cu. Yd   | \$400.00   | \$0.00 | \$563,200   | \$180,980     |
| <b>SHOULDER:</b>                                    |      |           |          |            |        |             |               |
| 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      |
| <b>DESIGN COSTS:</b>                                |      |           | Subtotal |            |        |             |               |
| <b>MOT COSTS:</b>                                   |      |           | Subtotal |            |        |             |               |
| <b>CEI COSTS:</b>                                   |      |           | Subtotal |            |        |             |               |
| <b>REHABILITATION IN YEAR:</b>                      |      | <b>40</b> |          |            |        |             |               |
| <b>MAINLINE:</b>                                    |      |           |          |            |        |             |               |
| <b>SHOULDER:</b>                                    |      |           |          |            |        |             |               |
| <b>DESIGN COSTS:</b>                                |      |           | Subtotal |            |        |             |               |
| <b>MOT COSTS:</b>                                   |      |           | Subtotal |            |        |             |               |
| <b>CEI COSTS:</b>                                   |      |           | Subtotal |            |        |             |               |
| <b>REHABILITATION IN YEAR:</b>                      |      |           |          |            |        |             |               |
| <b>TOTAL INITIAL CONSTRUCTION COST (YEAR 2020):</b> |      |           |          |            |        | \$6,814,177 |               |
| <b>TOTAL PRESENT WORTH REHABILITATION COST:</b>     |      |           |          |            |        | \$591,259   |               |
| <b>TOTAL PRESENT WORTH SALVAGE VALUE:</b>           |      |           |          |            |        | \$0         |               |
| <b>PRESENT WORTH:</b>                               |      |           |          |            |        | \$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     |
| Passing Lane Width:     | 12      | Ft     |
| Travel Lane Width:      | 12      | Ft     |
| Inside Shoulder Width:  | 22      | Ft     |
| Outside Shoulder Width: | 22      | Ft     |
| Total Pavement Area:    | 633,600 | Sq. Ft |
| Total Shoulder Area:    | 464,640 | Sq. Ft |

|                               |      |
|-------------------------------|------|
| Analysis Period:              | 40   |
| Discount Rate:                | 3.5  |
| Initial Year of Construction: | 2020 |
| No. of Passing Lanes:         | 5    |
| No. of Travel Lanes:          |      |
| No. of Travel Directions:     | 2    |

| CONSTRUCTION ITEMS | THK. | QTY. | UNIT | UNIT PRICE | ST DEV | COST | PRESENT WORTH |
|--------------------|------|------|------|------------|--------|------|---------------|
|--------------------|------|------|------|------------|--------|------|---------------|

|                                      |          |          |        |         |        |             |             |
|--------------------------------------|----------|----------|--------|---------|--------|-------------|-------------|
| <b>INITIAL CONSTRUCTION IN YEAR:</b> | <b>0</b> |          |        |         |        |             |             |
| <b>MAINLINE:</b>                     |          |          |        |         |        |             |             |
| 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 |        |         |        |             |             |
| <b>SHOULDER:</b>                     |          |          |        |         |        |             |             |
| 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   |
| <b>DESIGN COSTS:</b>                 |          |          |        |         |        |             | Subtotal    |
| <b>MOT COSTS:</b>                    |          |          |        |         |        |             | Subtotal    |
| <b>CEI COSTS:</b>                    |          |          |        |         |        |             | Subtotal    |

|                                 |           |          |        |         |        |           |           |
|---------------------------------|-----------|----------|--------|---------|--------|-----------|-----------|
| <b>REHABILITATION IN YEAR:</b>  | <b>13</b> |          |        |         |        |           |           |
| <b>MAINLINE:</b>                |           |          |        |         |        |           |           |
| 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 |
| <b>SHOULDER:</b>                |           |          |        |         |        |           |           |
| 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 |
| <b>DESIGN COSTS:</b>            |           |          |        |         |        |           | Subtotal  |
| <b>MOT COSTS:</b>               |           |          |        |         |        |           | Subtotal  |
| <b>CEI COSTS:</b>               |           |          |        |         |        |           | 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*  
*Beginning MP: , Ending MP:*



**Definitions:**

|                         |         |        |
|-------------------------|---------|--------|
| Length of Section:      | 5280    | Ft     |
| Passing Lane Width:     | 12      | Ft     |
| Travel Lane Width:      | 12      | Ft     |
| Inside Shoulder Width:  | 22      | Ft     |
| Outside Shoulder Width: | 22      | Ft     |
| Total Pavement Area:    | 633,600 | Sq. Ft |
| Total Shoulder Area:    | 464,640 | Sq. Ft |

|                               |      |
|-------------------------------|------|
| Analysis Period:              | 40   |
| Discount Rate:                | 3.5  |
| Initial Year of Construction: | 2020 |
| No. of Passing Lanes:         | 5    |
| No. of Travel Lanes:          |      |
| No. of Travel Directions:     | 2    |

| CONSTRUCTION ITEMS                                  | THK. | QTY.      | UNIT     | UNIT PRICE | ST DEV | COST      | PRESENT WORTH |
|---|------|-----------|----------|------------|--------|-----------|---------------|
| <b>REHABILITATION IN YEAR:</b>                      |      | <b>26</b> |          |            |        |           |               |
| <b>MAINLINE:</b>                                    |      |           |          |            |        |           |               |
| 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     |
| <b>SHOULDER:</b>                                    |      |           |          |            |        |           |               |
| 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      |
| <b>DESIGN COSTS:</b>                                |      |           | Subtotal |            |        |           |               |
| <b>MOT COSTS:</b>                                   |      |           | Subtotal |            |        |           |               |
| <b>CEI COSTS:</b>                                   |      |           | Subtotal |            |        |           |               |
| <b>REHABILITATION IN YEAR:</b>                      |      | <b>39</b> |          |            |        |           |               |
| <b>MAINLINE:</b>                                    |      |           |          |            |        |           |               |
| 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      |
| <b>SHOULDER:</b>                                    |      |           |          |            |        |           |               |
| 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      |
| <b>DESIGN COSTS:</b>                                |      |           | Subtotal |            |        |           |               |
| <b>MOT COSTS:</b>                                   |      |           | Subtotal |            |        |           |               |
| <b>CEI COSTS:</b>                                   |      |           | Subtotal |            |        |           |               |
| <b>REHABILITATION IN YEAR:</b>                      |      | <b>52</b> |          |            |        |           |               |
| <b>TOTAL INITIAL CONSTRUCTION COST (YEAR 2020):</b> |      |           |          |            |        |           | \$4,975,718   |
| <b>TOTAL PRESENT WORTH REHABILITATION COST:</b>     |      |           |          |            |        |           | \$2,050,847   |
| <b>TOTAL PRESENT WORTH SALVAGE VALUE:</b>           |      |           |          |            |        |           | \$365,090     |
| <b>PRESENT WORTH:</b>                               |      |           |          |            |        |           | \$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**

|   |                               | <u>Cost</u> | * | <u>P / F</u> | = | <u>PRESENT WORTH</u> |
|---|-------------------------------|-------------|---|--------------|---|----------------------|
|   | 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                          |             |   |              |   |                      |
| <b>TOTAL AGENCY COSTS</b>                   |                               |             |   |              |   | <b>\$7,405,436</b>   |
| <b>USER COSTS</b>                           |                               |             |   |              |   | <b>=</b>             |
| <b>PW of Last Rehab at Year 40</b>          |                               |             |   |              |   | <b>=</b>             |
|   | <u>Remaining Service Life</u> |             |   |              |   |                      |
| <b>SALVAGE VALUE</b>                        | <u>0 / 7</u>                  |             | * | \$226,079    | = | <b>\$0</b>           |
| <b>TOTAL PRESENT WORTH LIFE-CYCLE COSTS</b> |                               |             |   |              |   | <b>\$7,405,436</b>   |

**AC PAVEMENT**

|   |                               | <u>Cost</u> | * | <u>P / F</u> | = | <u>PRESENT WORTH</u> |
|---|-------------------------------|-------------|---|--------------|---|----------------------|
|   | 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                          |             |   |              |   |                      |
| <b>TOTAL AGENCY COSTS</b>                   |                               |             |   |              |   | <b>\$7,026,565</b>   |
| <b>USER COSTS</b>                           |                               |             |   |              |   | <b>=</b>             |
| <b>PW of Last Rehab at Year 40</b>          |                               |             |   |              |   | <b>=</b>             |
|   | <u>Remaining Service Life</u> |             |   |              |   |                      |
| <b>SALVAGE VALUE</b>                        | <u>12 / 13</u>                |             | * | \$395,515    | = | <b>\$365,090</b>     |
| <b>TOTAL PRESENT WORTH LIFE-CYCLE COSTS</b> |                               |             |   |              |   | <b>\$6,661,475</b>   |

**COST COMPARISON**

|  |          |                    |
|--|----------|--------------------|
| <b>DIFFERENCE IN TOTAL PRESENT WORTH LIFE-CYCLE COSTS</b>      | <b>=</b> | <b>\$743,961</b>   |
| <b>AVERAGE TOTAL PRESENT WORTH</b>                             | <b>=</b> | <b>\$7,033,455</b> |
| <b>PERCENT DIFFERENCE IN TOTAL PRESENT WORTH</b>               | <b>=</b> | <b>10.6%</b>       |
|  |          |                    |
| <b>DIFFERENCE IN ESTIMATED INITIAL COSTS</b>                   | <b>=</b> | <b>\$1,838,459</b> |
| <b>PERCENT DIFFERENCE IN ESTIMATED INITIAL COSTS</b>           | <b>=</b> | <b>36.9%</b>       |
|  |          |                    |
| <b>TOTAL PRESENT WORTH COST OF REHAB FOR PCC PAVEMENT</b>      | <b>=</b> | <b>\$591,259</b>   |
| <b>TOTAL PRESENT WORTH COST OF REHAB FOR AC PAVEMENT</b>       | <b>=</b> | <b>\$2,050,847</b> |
| <b>DIFFERENCE IN TOTAL PRESENT WORTH OF REHAB COSTS (LCCF)</b> | <b>=</b> | <b>\$1,459,588</b> |

# **APPENDIX F**

## **PAVEMENT PERFORMANCE DATA**

## **Rehabilitation Age by Year**

*For Osceola County*

*18APR2014*

*Other Conditions: Pavement= Asphalt*

| <b>Year<br/>Rehabilitated</b> | <b>Lane Miles<br/>Rehabilitated</b> | <b>Average<br/>Rehabilitation<br/>Age</b> | <b>Standard<br/>Deviation</b> |
|-------------------------------|-------------------------------------|---|-------------------------------|
| 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<br>Rehabilitated | Lane Miles<br>Rehabilitated | Average<br>Rehabilitation<br>Age | Standard<br>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                   |

Deficient Rehabilitation age by  
Year

13JUN2012

For Hillsborough County  
Other Conditions: Pavement= Concrete

Surface Type in (CONC)

| Year<br>Rehabilitated | Lane Miles<br>Rehabilitated | Average<br>Rehabilitation<br>Age | Standard<br>Deviation |
|-----------------------|-----------------------------|----------------------------------|-----------------------|
| 2006                  | 10.8                        | 20                               | 0                     |
| 2007                  | 26.7                        | 25                               | 0                     |
| 2008                  | 9.3                         | 22                               | 0                     |

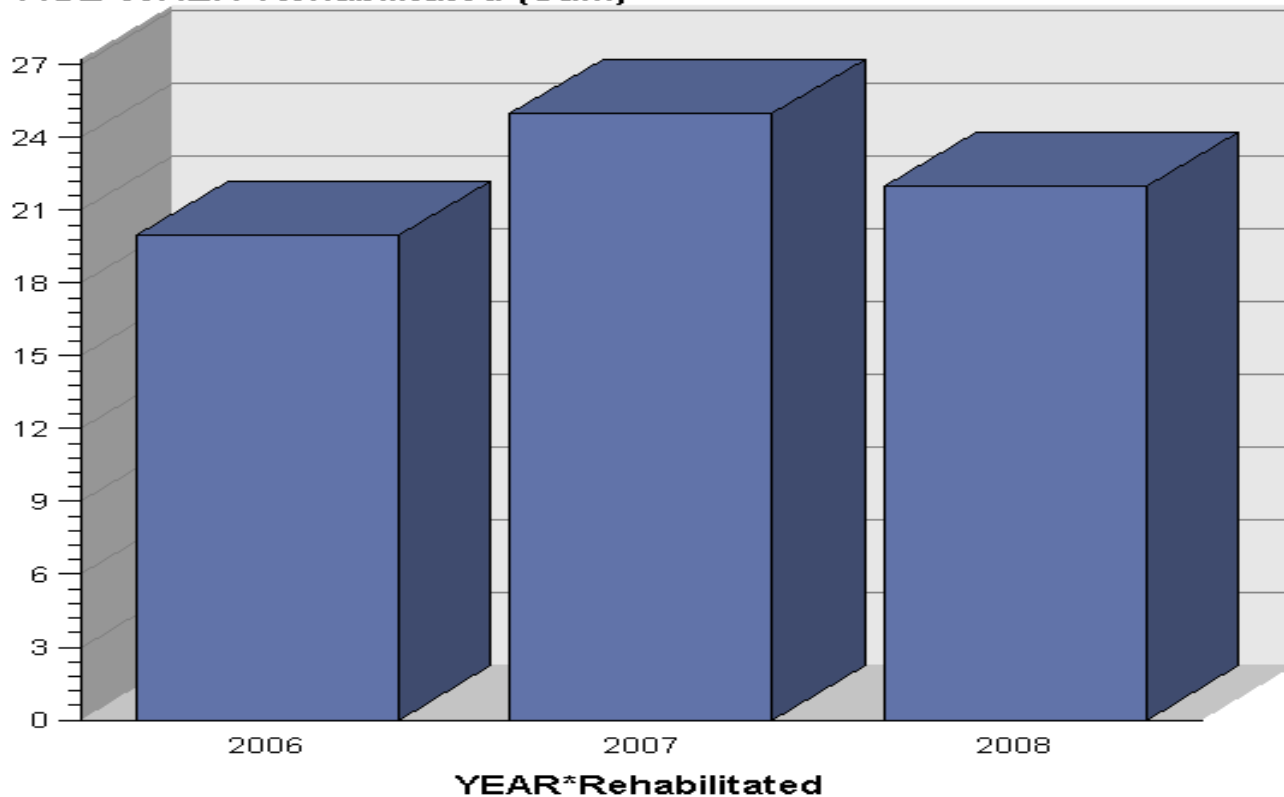
Deficient Rehabilitation age by  
Year

13JUN2012

For Hillsborough County  
Other Conditions: Pavement= Concrete

Surface Type in (CONC)

AGE WHEN\*Rehabilitated (Sum)





## **APPENDIX G**

### **QUALITY CONTROL CHECKLIST**

**PAVEMENT TYPE SELECTION**  
**QUALITY CONTROL CHECKLIST**

Satisfactory

Yes / No

|   |            |
|---|------------|
| Project Description.....                  | <u>Yes</u> |
| Financial Project ID / Annual Report..... | <u>Yes</u> |
| State Road No.....                        | <u>Yes</u> |
| County.....                               | <u>Yes</u> |
| Project Length.....                       | <u>Yes</u> |
| Transportation System.....                | <u>Yes</u> |

**Flexible Pavement Design**

|                                 |            |
|---------------------------------|------------|
| ESAL.....                       | <u>Yes</u> |
| Level of Reliability.....       | <u>Yes</u> |
| Initial Design Period.....      | <u>Yes</u> |
| Structural Number .....         | <u>Yes</u> |
| Friction Course.....            | <u>Yes</u> |
| Structural Thickness.....       | <u>Yes</u> |
| Base Thickness.....             | <u>Yes</u> |
| Number of Through<br>Lanes..... | <u>Yes</u> |
| Lane Width.....                 | <u>Yes</u> |
| Shoulder Width.....             | <u>Yes</u> |

**Rigid Pavement Design**

|                            |            |
|----------------------------|------------|
| ESAL.....                  | <u>yes</u> |
| Level of Reliability.....  | <u>yes</u> |
| Initial Design Period..... | <u>yes</u> |
| Thickness.....             | <u>yes</u> |

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

2/14/14  
\_\_\_\_\_  
Date

**APPENDIX F**  
**REVIEW CHECKLIST**

### FLEXIBLE PAVEMENT DESIGN QUALITY CONTROL CHECKLIST

State Proj. No. I-4 BTU Federal Aid No. \_\_\_\_\_

FP ID No. 242484-8-32-01 County ORANGE

| <u>Flexible Pavement Design Review</u>   | <u>Satisfactory<br/>Yes/No/NA</u> |
|--|-----------------------------------|
| Pavement Design Summary Sheet. ....  | <u>YES</u>                        |
| Project Location and Description . . . . .   | <u>YES</u>                        |
| Traffic Data and ESAL <sub>D</sub> Calculations . . . . .  | <u>YES</u>                        |
| Resilient Modulus (M <sub>R</sub> ) . . . . .  | <u>YES</u>                        |
| Reduced Resilient Modulus (M <sub>R</sub> ) for base high-<br>water clearance less than 3ft. . . . . | <u>YES</u>                        |
| Required Structural Number (SN <sub>R</sub> ) Calculations. . .                                      | <u>YES</u>                        |
| Calculated Structural Number (SN <sub>C</sub> ) Calculations. .                                      | <u>YES</u>                        |
| Base Material Selection. . . . .   | <u>YES</u>                        |
| Friction Course Selection. . . . .   | <u>YES</u>                        |
| Stabilized Subgrade Evaluation . . . . .   | <u>YES</u>                        |
| Shoulder Design. . . . .   | <u>YES</u>                        |
| Coordination with Other Offices. . . . .   | <u>YES</u>                        |
| Other Special Details. . . . .   | <u>N/A</u>                        |
| Final Pavement Design Drawing or Narrative . . . .   | <u>YES</u>                        |

**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<sub>o</sub>) 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 *Richard Phillips*

Date 6/28/17

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

Prepared By: AECOM

Date Prepared: 10/24/2017

State Project No.: 242484-8-32-01

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: 45,095,000 (PTSR Page 2 - Appendix E)

% R: 90%

**SN Required: SN Computed:**

Travelway: 5.81                      5.85

Shoulder: 3.46                        3.54

Description: I-4 GUL Mainline Pavement and Shoulders

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

**MAINLINE**

**FRICITION 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 2 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) (220 LBS/SY)  
 OPTIONAL BASE GROUP 05  
 12" TYPE B STABILIZATION (LBR 40)**

Submitted by:

Concurrence by:

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

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

Approved by:

Approved by:

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

Nahir DeTizio, P.E.    Date:  
 FHWA Senior Transportation Engineer                      i-1



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

State Project No.: 242484-8-32-01  
 State Road No.: SR 400

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

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

**A. DESIGN FACTORS**

|           |             |   |
|-----------|-------------|---|
|           | <u>2020</u> | Opening 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 <b>New</b> limited access roadway facilities (Table 5.2)<br>95% - 99% Reliability for <b>Rehabilitation</b> 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 "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).

**C. EXISTING STRUCTURE:**

(Used Avg. depths for the project)

| <u>Layer/Material</u>  | <u>Thickness</u> | <u>Condition</u>              | <u>Coefficient *</u> | <u>SN<sub>e</sub></u> |
|------------------------|------------------|-------------------------------|----------------------|-----------------------|
| 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                  |
|                        |                  | <b>TOTAL SN<sub>e</sub> =</b> |                      | <b>0.00</b>           |

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

**D. DETERMINING REQUIRED STRUCTURAL NUMBER (SN<sub>R</sub>)**

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

**NEW CONSTRUCTION**

|             | <u>45,000,000</u> |             | <u>50,000,000</u> |                         | <u>45,100,000</u> |                |
|-------------|-------------------|-------------|-------------------|-------------------------|-------------------|----------------|
| 8000 psi    | 5.97              | 8000 psi    | 6.06              | 45,000,000              | 5.81              |                |
| 8750 psi    | SN <sub>r</sub>   | 8750 psi    | SN <sub>r</sub>   | 45,100,000              | SN <sub>r</sub>   |                |
| 9000 psi    | 5.76              | 9000 psi    | 5.84              | 50,000,000              | 5.90              |                |
| <b>SN =</b> | <b>5.81</b>       | <b>SN =</b> | <b>5.90</b>       | <b>SN<sub>R</sub> =</b> | <b>5.81</b>       | (Min. SN Req.) |

**SHOULDERS**

|             | <u>1,400,000</u> |             | <u>1,500,000</u> |                         | <u>1,400,000</u> |                |
|-------------|------------------|-------------|------------------|-------------------------|------------------|----------------|
| 8000 psi    | 3.39             | 8000 psi    | 3.62             | 1,000,000               | 3.28             |                |
| 8750 psi    | SN <sub>r</sub>  | 8750 psi    | SN <sub>r</sub>  | 1,400,000               | SN <sub>r</sub>  |                |
| 9000 psi    | 3.24             | 9000 psi    | 3.46             | 1,500,000               | 3.50             |                |
| <b>SN =</b> | <b>3.28</b>      | <b>SN =</b> | <b>3.50</b>      | <b>SN<sub>R</sub> =</b> | <b>3.46</b>      | (Min. SN Req.) |

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

**E. DETERMINE PAVEMENT LAYER FOR NEW CONSTRUCTION**

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

**5.81** = (0.00 x 0.75) + (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12) From Page 4.1.0 and Table 4.1 of the FDOT Flexible  
**4.85** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) 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: Limited Access Min Structural Course = 4" & Min OBG = 9. From Table 5.9, use OBG = 12.

Structural Course: 4.85 = (a<sub>2</sub> x D<sub>2</sub>) + 2.25 a<sub>2</sub> = 0.44  
**D<sub>2</sub>** = **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                  |
| <b>Total SNC =</b>        |                 |               | <b>5.85</b>           |
|                           |                 |               | <b>&gt; 5.81 O.K.</b> |

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

**F. DETERMINE PAVEMENT LAYER FOR SHOULDER DESIGN**

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

ESAL's = 1,400,000  
 Use Superpave Traffic Level "C," Recommended for use on all Limited Access Shoulders.

**3.46** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>) + (0.08 x 12)  
**2.50** = (a<sub>2</sub> x D<sub>2</sub>) + (a<sub>3</sub> x D<sub>3</sub>)

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

Structural Course: 2.50 = (a<sub>2</sub> x D<sub>2</sub>) + 1.32 + (a<sub>3</sub> x D<sub>3</sub>) a<sub>3</sub> = 0.18  
**D<sub>3</sub>** = **6.53 Use OBG 05 (7.0")**

|                           | 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                  |
| <b>Total SNC =</b>        |                 |               | <b>3.54</b>           |
|                           |                 |               | <b>&gt; 3.46 O.K.</b> |

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