DISTRICT ONE DESIGN

PAVEMENT DESIGN

FOR

445296-1-22-01

Collier County

Pine Ridge Road (CR 896) DDI

I-75 MP # 56.145

Nicole B. Harris, P.E.
FDOT GEC Project Manager

PAVEMENT DESIGN PACKAGE

FINANCIAL PROJECT ID :	445296-1-22-01
WPI NO.:	NA
STATE PROJECT NO.:	NA
COUNTY SECTION NO.:	03175
FEDERAL AID PROJECT NO.:	NA
COUNTY:	Collier County
PROJECT NAME:	Pine Ridge Road (CR 896) DDI
FROM:	1400 ft. west of I-75
TO:	1230 ft. east of I-75

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DONALD ROBERT HOLCOMB LICENSE No. 71870 STATE OF FLORIDA PROFESSIONAL ENGINEER

Approved by
Donald R. Holcomb, P.E.
Responsible Engineer
9-29-20
Date

SAM K JOSEPH Digitally signed by SAM K JOSEPH Date: 2020.11.23 14:09:41 -05'00'

Concurrence by
Sam Joseph, P.E.
District Design Engineer

Date

Concurrence by

County Design Engineer

12/04/2020
Date

FLEXIBLE PAVEMENT DESIGN
QUALITY CONTROL CHECKLIST

Financial Project ID: 445296-1-22-01 Federal Aid No.: NA

WPI No.: -------- County: Collier County

Ref. No.	Flexible Pavement Design Review	Satisfactory Yes/No
1.	Pavement Design Summary Sheet	X
2.	Project Location and Description	X
3.	Traffic Data and ESALD Calculations	X
4.	Resilient Modulus (MR)	X
5.	Required Structural Number (SNR) Calculations	X
6.	Calculated Structural Number (SNC) Calculations	X
7.	Base Material Selection	X
8.	Friction Course Selection	X
9.	Stabilized Subgrade Evaluation	
10.	Shoulder Design	X
11.	Coordination with Other Offices	X
12.	Other Special Details	X
13.	Final Pavement Design Drawing or Narrative	X
	Rehabilitation	
14.	Field Evaluation of Project	X
15.	Pavement Coring and Evaluation	X
16.	Distress Evaluation	X
17.	Existing Cross-Slope and Correction Method	
18.	Milling Depth and Purpose	X
19.	Overlay Structural Number (SNO) Calculations	
20.	Leveling/Overbuild Recommendation	
21.	Composition Report	
	Projects That Do Not Require Design Calculations	
22.	Existing Pavement Evaluation	
23.	Existing Cross-Slope and Correction method	
24.	Asphalt Thickness	
25.	Base Type and Thickness	
26.	Future Milling Considerations	
27.	Structural Evaluation	
	Plans Review	
28.	Plans Conform to Pavement Design	
29.	Cross-Slope correction addressed	
30.	Design Details Adequately Covered	
31.	Standard Indexes Properly Referenced	
32.	Project is Constructable with Current Technology	

Comments(by Ref. No.)

QA by: Thomas A. Quinn, PE Date: 8/20/2020

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

FINANCIAL PROJECT ID 445296-1-22-01

COLLIER COUNTY (03175)

COUNTY ROAD NO. 896

BEGIN PROJECT
MP 56.145

END PROJECT
MP 56.145

PROJECT LOCATION MAP

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) at I-75 (SR 93)
Limits: From 1400 ft. west of I-75 to 1230 ft. east of I-75
County: Collier (03175)
FPID: 445296-1-22-01

Intent and Nature of Project:

The purpose of the project is to provide operational improvements to the I-75/Pine Ridge Road interchange. The intent of the Pine Ridge Road interchange project is to rehabilitate the surface road function as a diverging diamond interchange (DDI), which will significantly reduce delay on Pine Ridge Road, increase the storage capacity of the NB and SB off ramps, and reduce the number of conflict points to improve overall safety.

Project Description

The project improvements for the interchange of I-75 (SR 93) and Pine Ridge Road, (CR 896) is located in Sections 7, 8, 17, 18, T-49-S, R-26-E in western Collier County. Elevations referenced in this report are based on North American Vertical Datum of 1988 (NAVD-1988). Conversion of NGVD-1929 elevations use the equation; NGVD – 1.30 FT = NAVD.

I-75 overpasses Pine Ridge Road as a 6-lane urban principal arterial interstate with an Access Classification of 1. There are no changes proposed to the I-75 typical section width. Pine Ridge Road is a 6-lane urban minor arterial. The Pine Ridge Road existing typical section consists of 12-foot through and center left turn lanes, curb and gutter outside shoulders, and curb and gutter inside shoulders.

AADT and T% (24 Hour) Traffic Data were taken from the Volume Development for the Project Traffic Analysis Report (PTAR) Draft (see appendices), provided by FDOT District One Traffic Operations for the following sites within the project limits:

- Pine Ridge Road, West of I-75: 2019 AADT: 47,500, 2045 AADT: 66,800, T_{24}=6.1%
- Pine Ridge Road, DDI Core: 2019 AADT: 41,600, 2045 AADT: 61,800, T_{24}=6.1%
- Pine Ridge Road, East of I-75: 2019 AADT: 37,000, 2045 AADT: 54,500, T_{24}=6.1%
- I-75 SB on-Ramp A: 2019 AADT: 6,600, 2045 AADT: 7,300, T_{24}= 7.5%
- I-75 NB off-Ramp B: 2019 AADT: 5,600, 2045 AADT: 7,200, T_{24}= 7.5%
- I-75 NB on-Ramp C: 2019 AADT: 10,500, 2045 AADT: 14,400, T_{24}= 7.5%
- I-75 SB off-Ramp D: 2019 AADT: 11,000, 2045 AADT: 14,600, T_{24}= 7.5%

Pavement Survey and Evaluation Report provided by the FDOT (see appendices) is used in this report to assess existing pavement structural Numbers (S_N) and feasible milling and resurfacing schemes for Pine Ridge Road and interchange ramps, based on 2020 FDOT Flexible Pavement Design Manual (FPDM) procedures.

The Resilient Modulus Value of 8,100 psi (LBR 22.83) used in the pavement designs is based on the Embankment Resilient Modulus Pavement Design Report dated May 6, 2020 by the FDOT State Geotechnical Materials Engineer.

The project is within the urban area buffer. No additional projects have been identified within the vicinity of this project.

Proposed DDI Improvements:

The project limits include the SB I-75 on-ramp (Ramp A), the NB I-75 off-ramp (Ramp B), the NB I-75 on- ramp (Ramp C), the SB I-75 off-ramp (Ramp D), and Pine Ridge Road (CR 896) underpass (DDI Core).

Milling and resurfacing with strip widening of Pine Ridge Road, and new construction of the I-75 ramp connections to the DDI crossovers are required to construct a diverging diamond interchange (DDI). Prepare six pavement designs; one for the new ramp construction, one for the ramp shoulders, one for the ramp milling and resurfacing, one for the Pine Ridge Road new roadway construction, one for the paved shoulder on Pine Ridge Road, and one for the milling and

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) at I-75 (SR 93)
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FPID: 445296-1-22-01

resurfacing of Pine Ridge Road.

SR 93 (I-75) SB on ramp (Ramp A):

- Remove a portion of the existing receiving lane from Pine Ridge Road. Construct one receiving lane from EB Pine Ridge Road (Ramp A1) and one receiving lane from WB Pine Ridge Road (Ramp A2). Mill and resurface the ramp beyond the merge of Ramp A1 and Ramp A2.
- Remove a portion of the existing 1-lane ramp from Pine Ridge Road to the point at which Ramp A1 and Ramp A2 merge.
- Construct a receiving lane from EB Pine Ridge Road (Ramp A1) with a return radius and taper to existing single lane SB entrance Ramp A.
- Construct a wide receiving lane from WB Pine Ridge Road (Ramp A2) with a return radius and transition taper.
- Mill and resurface the 1-lane ramp beyond the point at which Ramp A1 and Ramp A2 merge.

SR 93 (I-75) NB off ramp (Ramp B):

- Remove a portion of the existing departing lane to Pine Ridge Road. Construct two departing lanes to WB Pine Ridge Road (Ramp B1) and one departing lane to EB Pine Ridge Road (Ramp B2). Mill and resurface the ramp prior to the fork of Ramp B1 and Ramp B2.
- Remove a portion of the existing 3-lane ramp from the point at which Ramp B1 and Ramp B2 fork to Pine Ridge Road.
- Construct two departing lanes to WB Pine Ridge Road (Ramp B1) with a return radius and transition taper.
- Construct a departing lane to EB Pine Ridge Road (Ramp B2) with a return radius and transition taper.
- Mill and resurface the 3-lane ramp prior to the point at which Ramp B1 and Ramp B2 fork.

SR 93 (I-75) NB on ramp (Ramp C):

- Remove a portion of the existing receiving lane from Pine Ridge Road. Construct two receiving lanes from EB Pine Ridge Road (Ramp C1) and one receiving lane from WB Pine Ridge Road (Ramp C2). Mill and resurface the ramp beyond the merge of Ramp C1 and Ramp C2.
- Remove a portion of the existing 2-lane ramp from Pine Ridge Road to the point at which Ramp C1 and Ramp C2 merge.
- Construct two receiving lanes from EB Pine Ridge Road (Ramp C1) with a return radius and lane transition taper.
- Construct a receiving lane from WB Pine Ridge Road (Ramp C2) with a return radius and a length of tangent run out lane, plus an initial lane taper with a conjoined terminal taper.
- Mill and resurface the 2-lane ramp beyond the point at which Ramp C1 and Ramp C2 merge.

SR 93 (I-75) SB off ramp (Ramp D):

- Remove a portion of the existing departing lane to Pine Ridge Road. Construct two departing lanes to EB Pine Ridge Road (Ramp D1) and three departing lanes to WB Pine Ridge Road (Ramp D2). Widen, mill and resurface the ramp prior to the fork of Ramp D1 and Ramp D2.
- Remove a portion of the existing 4-lane ramp from the point at which Ramp D1 and Ramp D2 fork to Pine Ridge Road.

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) at I-75 (SR 93)
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- Construct two departing lanes to EB Pine Ridge Road (Ramp D1) with a return radius and tangent run out lanes.
- Construct three departing lanes to WB Pine Ridge Road (Ramp D2) with a return radius and approaching lanes.

- Widen the ramp prior to the point at which Ramp D1 and Ramp D2 fork to provide for five receiving lanes.
- Mill and resurface the taper and single lane ramp prior to the point at which the 5-lane widening of the ramp begins.

Pine Ridge Road:

- Construct diverging diamond interchange (DDI) on Pine Ridge Road from west of the I-75 SB Ramps to east of the I-75 NB ramps.
- Mill and resurface with strip widening, approximately 2,630 feet of Pine Ridge Road for 6-lane diverging diamond interchange (DDI).
- Pine Ridge Road eastbound and westbound profile grades will be developed though the ramp crossovers and DDI core to meet longitudinal grade requirements of the FDOT Design Manual and Drainage Manual. The profile grading will endeavor to maximize the use existing curb lines, maintain 16.0-FT vertical clearance of the I-75 overpass and minimize the requirement of overbuild pavement.
- Eastbound Pine Ridge Road from the I-75 SB on-ramp (Ramp A1) to the I-75 SB off-ramp (Ramp D1) will be rehabilitated as a 4-lane roadway. The eastbound (reversed) outside fourth lane thorough the DDI core will form an entrance lane to the NB entrance Ramp C. Other segments of the Pine Ridge Road DDI are 3-lanes per direction.
- Pine Ridge Road will have a 16.67 FT. +/- median width from inside edge of pavement to inside edge of pavement.
- The existing horizontal clearance between the bridge piers under the existing I-75 bridges of 103 feet must be maintained with the proposed DDI intersection rehabilitation. This limited horizontal clearance precludes adequate width for the seven lane DDI core to provide 7-FT wide bike lanes per the FDOT Design Manual.
- The existing sidewalk along the north side of Pine Ridge Road will be reconstructed within 16.67-FT+/- wide center median of the DDI core with curb barrier walls. The median sidewalk will cross to the outside at the signal control DDI crossover points, and connect to the existing sidewalks at the begin and end of project limits.
- The Pine Ridge DDI core lanes (I-75 underpass) will be reconfigured to 11-FT lanes widths to accommodate the widened median for the barrier protected center sidewalk.

The Pavement Design for this project is based upon an anticipated opening year of 2025 and a 2045 design year. This Pavement Design is evaluated to not require a reduction of the resilient modulus design for the pavement widening design section, since the Pine Ridge Road interchange DDI core and ramps have excess of three feet roadway base clearance above the Base Clearance Water Elevation (BCWE); (2020 Flexible Pavement Design Manual, Section 5.2.2). The estimated BCWE in excess of 3.0-ft. is based on Basin 3 roadside linear pond Control EL. 8.0 (NAVD) from as-built plans for Pine Ridge Road (County Project 60111).

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) DDI at I-75
Limits: Pine Ridge Road at SR 93 (I-75) Interchange
County: Collier (03175)
FPID: 445296-1-22-01

PLAN NOTES:

THE PINE RIDGE ROAD DDI PAVEMENT DESCRIPTION IN THE PLANS SHALL READ:

MILLING AND RESURFACING- PINE RIDGE ROAD DDI
Mill 3" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (1-1/2")
and Friction Course (FC-12.5) (Traffic C) (1-1/2") (PG76-22)

WIDENING & NEW CONSTRUCTION– PINE RIDGE ROAD DDI AND RAMP RETURNS
Optional Base Group 9 with
Type SP Structural Course (Traffic Level C) (6")
and Friction Course (FC-12.5) (Traffic C) (1-1/2") (PG76-22)

THE RAMP A PAVEMENT DESCRIPTION IN THE PLANS SHALL READ:

MILLING AND RESURFACING- RAMP A TRAVEL LANE
Mill 1-1/2" Avg. Depth
Resurface with Type SP Structural Course (Traffic Level C) (2")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

NEW CONSTRUCTION & WIDENING – RAMP A TRAVEL LANES
Optional Base Group 11 with
Type SP Structural Course (Traffic C) (3")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

MILLING AND RESURFACING- RAMP A SHOULDERS
Mill 3/4" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (2")

NEW CONSTRUCTION & WIDENING – RAMP A SHOULDERS
Optional Base Group 1 with
Type SP Structural Course (Traffic C) (1-1/2")

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THE RAMP B PAVEMENT DESCRIPTION IN THE PLANS SHALL READ:

MILLING AND RESURFACING- RAMP B TRAVEL LANE
Mill 1-1/2" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (2-1/2")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

NEW CONSTRUCTION & WIDENING – RAMP B TRAVEL LANES
Optional Base Group 11 with
Type SP Structural Course (Traffic C) (3")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

MILLING AND RESURFACING- RAMP B SHOULDERS
Mill 3/4" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (2-1/2")

NEW CONSTRUCTION & WIDENING –RAMP B SHOULDERS
Optional Base Group 1 with
Type SP Structural Course (Traffic C) (1-1/2")

THE RAMP C PAVEMENT DESCRIPTION IN THE PLANS SHALL READ:

MILLING AND RESURFACING- RAMP C TRAVEL LANE
Mill 1-1/2" Avg. Depth
Resurface with Type SP Structural Course (Traffic Level C) (2-1/2")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

NEW CONSTRUCTION & WIDENING – RAMP C TRAVEL LANES
Optional Base Group 11 with
Type SP Structural Course (Traffic C) (4")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

MILLING AND RESURFACING- RAMP C SHOULDERS
Mill 3/4" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (2-1/2")

NEW CONSTRUCTION & WIDENING –RAMP C SHOULDERS
Optional Base Group 1 with
Type SP Structural Course (Traffic C) (2")

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) DDI at I-75
Limits: Pine Ridge Road at SR 93 (I-75) Interchange
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THE RAMP D PAVEMENT DESCRIPTION IN THE PLANS SHALL READ:

MILLING AND RESURFACING- RAMP D TRAVEL LANE
Mill 1-1/2" Avg. Depth
Resurface with Type SP Structural Course (Traffic Level C) (3")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

NEW CONSTRUCTION & WIDENING –RAMP D TRAVEL LANES
Optional Base Group 11 with
Type SP Structural Course (Traffic C) (4")
and Friction Course (FC-5) (Traffic C) (3/4") (PG76-22)

MILLING AND RESURFACING- RAMP D SHOULDERS
Mill 3/4" Avg. Depth
Resurface with Type SP Structural Course (Traffic C) (3")

NEW CONSTRUCTION & WIDENING –RAMP D SHOULDERS
Optional Base Group 1 with
Type SP Structural Course (Traffic C) (2")

DESIGN NOTES:

1. The Design Speed is 35 MPH for the Pine Ridge DDI, and design speed for all ramps is 55 MPH (25-45 MPH at ramp terminals per Typical Section Package). Based on the Pavement Survey and Evaluation Report provided by the FDOT, the existing flexible pavement has been categorized as being in "Fair Condition" for Pine Ridge Road and all ramps within the interchange.

2. The existing pavement is flexible; therefore, flexible pavement is recommended for all locations within the project limits. The flexible pavement design is based on the FDOT Flexible Pavement Design Manual, (January 2020).

3. The Pavement Survey and Evaluation Report provided by the FDOT, identified some longitudinal cracking and slippage in the SB exit ramp outside right turn lane to Pine Ridge Road. Therefore, this report recommends extending the Pine Ridge Road mainline pavement (with dense graded friction course) into the ramp returns in all four quadrants of the DDI. This recommendation is based on FPDM Section 4.2 Friction Course option to use dense graded friction course on ramps with heavy volume truck traffic and / or turning and stopping movements.

4. All proposed travel lane and shoulder widening and reconstruction will include Type B Stabilization (LBR 40) (12").

5. AADT volumes for the FDOT's ESAL Analysis for Pine Ridge Road and the interchange ramps are provided from the Volume Development for the Project Traffic Analysis Report "Draft" and Forecast 2045 traffic Volumes provided by FDOT District One Traffic Operations. AADT for the existing year 2019 and projection for the 2025 opening year and 2045 20-year design. From this information and the FDOT Flexible Pavement Design Manual, the projected mainline opening year to design year ESAL accumulated and required Structural Number SN_R are as follows:

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Project: Pine Ridge Road (County Road 896) DDI at I-75
Limits: Pine Ridge Road at SR 93 (I-75) Interchange
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PINE RIDGE ROAD DDI AADT / SNr SUMMARY							
Facility	2019 Existing AADT	2025 Opening AADT	2045 Design AADT	ESALd	Traffic Level	T-24%	SNr
Pine Ridge Rd. (*)	47,500	53,800	66,800	8,824,978	C	6.1	4.78
Ramp A	6,600	6,900	7,300	3,503,453	C	7.5	4.36
Ramp B	5,600	6,500	7,200	3,383961	C	7.5	4.32
Ramp C	10,500	12,100	14,400	7,103,096	C	7.5	4.80
Ramp D	11,000	12,600	14,600	6,726,038	C	7.5	4.82

(*) The AADT for Pine Ridge Road (West of I-75) results in the greatest ESAL counts and is used in the flexible pavement designs for milling and resurfacing, widening and reconstruction, unless otherwise noted for location specific analysis for areas of existing add-on widening.

6. The Pine Ridge Road widening pavement design is based on matching the pavement and base types and thicknesses of the adjoining existing pavement (FPDM Chapter 6), in conjunction with meeting the SNr derived from the ESALd. For design consistency and pavement structure uniformity, pavement reconstruction within the DDI crossovers are intended to utilize the widening pavement design.

7. The Pine Ridge Road milling and resurface analysis provides location specific evaluations for the existing EB and SB outside lane taper to Ramp A and the existing WB to NB outside lane taper for Ramp C. These lanes were add-on widening pavement from the County Project I60111 (See Appendix F). There was no pavement core data performed for these locations; therefore, the analysis assumes this project's AADT / ESAL counts applied to the as-built plans widening pavement details from County Project 60111, and assuming the 0.25 reduced SN from the Core Report. Based on the above design assumptions, the analysis recommends both of these existing outside left turn lane tapers be reconstructed to meet the required Structural SN.

8. The Pine Ridge Road milling and resurface analysis also provides location specific evaluations for the existing Pine Ridge Road WB to SB median left turn lane to Ramp A and the EB to NB median left turn lane to Ramp C, both at the overpass using pavement cores 26 and 40, respectively. The analysis estimates the existing WB to SB left turn lane and the existing EB to NB left turn lane can be integrated into the DDI crossover using the proposed milling and resurfacing design.

9. This report investigates the increased milling depth and resurfacing required to meet the 16.0' vertical clearance at the proposed median (reversed WB) lane at DDI Core Sta. 135+25, LT. The required pavement structural number (Sn) can be achieved with $ESAL_D$ derived from the updated 2045 AADT 61,800, with a 90% Reliability (Urban Arterial Rehabilitation). Meeting the 16.0' vertical clearance at the high inside edge of proposed inside lane widening (Sta. 135+25, LT) requires milling the outside lane cross slope to 0.025 and the middle and inside 11' lanes at 0.015. The proposed inside lane widening would be placed with a 0.01 cross slope to the outside (see sketch on Page 14). The maximum milling depth at the existing inside lane requires 2.33" milling for the bridge clearance, plus 4.5" milling for the required resurfacing, which requires variable milling from 4.5" at the outside edge to 6.83" maximum depth at the inside existing lane. The variable depth milling should be able to transition to uniform milling within 150', or the east edge of the NB I-75 Bridge meeting vertical clearance. Positive longitudinal grade is maintained by the variable depth milling "control point" matching the outside existing rigid curb and gutter barrier wall.

10. The Pine Ridge Road interchange ramps shoulder milling and resurfacing, and new construction required Structural Number for the flexible pavement was evaluated using 3% of rounded design for each respective

ramp. All of the interchange ramps have ESALDd less than 10 million. As such, FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SNR values in Table 5.5 (1.5" structural and OBG-1 = 1.52) in lieu of pavement design based on 3% of ESALd. The milled and resurfaced shoulders use a structural course type and thickness that matches the top lift of the contiguous travel lane for constructability. As such the milled and resurface shoulders exceed minimum SNR requirements and approximate 3% of ESALd. From this information and the FDOT Flexible Pavement Design Manual, the projected mainline opening year to design year ESAL accumulated and required Structural Number SN_R for the ramp shoulders are as follows:

PINE RIDGE ROAD RAMP SHOULDER SNr SUMMARY				
Facility	Ramp Shoulder SNr		Milling and Resurfacing	New Const.
	SNr (Minimum Required)	SNr 3% ESALd	SNr Provided	SNr Provided
Ramp A	1.52	2.46	2.36	2.70
Ramp B	1.52	2.46	2.39	2.70
Ramp C	1.52	2.74	2.66	2.92
Ramp D	1.52	2.74	5.71	2.92

11. The Resilient Modulus of 8,100 psi was provided in the Embankment Resilient Modulus Pavement Design Report dated May 6, 2020 by the FDOT State Geotechnical Materials Engineer. The required Structural Number for Pine Ridge Road were obtained from Table A.6A, and the structural numbers for the ramps were obtained from Table A.7A of the FDOT Flexible Pavement Design Manual.

12. An evaluation of the required reduction in resilient modulus is provided on each pavement design ESAL Determination sheet, based on estimation of the design base highwater clearance elevation (BCWE). The BCWE for the interchange is based on the permitted control elevation 8.0 NAVD for Basin 3 linear ponds adjacent to Pine Ridge Road, as derived form as-built plans for Pine Ridge Road (County Project 60111). Based on review of projected low edges of pavement and depth of the existing pavement systems, the BCWE clearance exceeds 3-FT throughout the interchange. Therefore, no reduction in the resilient modulus is anticipated for the pavement designs.

13. The minimum recommended 1-1/2 inches of milling depth and 1-1/2 inches of Friction Course Type FC-12.5 (PG 76-22) were obtained from the FDOT Pavement Survey and Evaluation Report of SR 93 (I-75), Collier County (03175) prepared on 3/23/2020. An average core method was used to represent the existing SN. Only cores with mile post designations within the milling and resurfacing pavement sections were used to represent the existing SN.

14. Asphalt layers are shown in per inch thickness in the plans. Superpave tonnage is based on 110 LBS / SY per one inch thickness.

15. A reliability factor of 94% is used for the Pine Ridge Road rehabilitation for DDI operation improvements, with the exception of the use of a 90% reliability factor where variable depth milling is required to meet 16.0-ft. bridge vertical clearance for the north side DDI core lane. A reliability factor of 95% is used for the Pine Ridge Road interchange ramps.

16. A design life of 20 years (2025 Opening Year, 2045 Design Year) has been selected for the flexible pavement design per the Flexible Pavement Design Manual, Table 3.1.

17. The functional classification of the SR 93 (I-75) is an Urban Principal Arterial Interstate. The functional classification of Pine Ridge Road is a Minor Arterial.

FLEXIBLE PAVEMENT DESIGN PACKAGE

Project: Pine Ridge Road (County Road 896) DDI at I-75
Limits: Pine Ridge Road at SR 93 (I-75) Interchange
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18. FC-5 (PG 76-22) has been selected for use on the SR 93 (I-75) entrance and exit ramps of the project based on a multilane facility with a 55 mph design speed (25-45 MPH at ramp terminals per Typical Section Package). FC-12.5 (PG 76-22) has been selected for use on Pine Ridge Road based on a multilane DDI facility with a 35 mph design speed. The Pine Ridge Road DDI 35 MPH design speed is at the Flexible Pavement Design Manual (FPDM) Table 4-1 minimum threshold for the use of a friction course. The RFP scope recommends the use of a dense graded friction course to augment the DDI curvature friction factors and turning maneuvers.

REFERENCES:

FDOT FLEXIBLE PAVEMENT DESIGN MANUAL (FPDM), January 2020
FDOT STANDARD PLANS, (FY 2020-21)
FDOT DESIGN MANUAL, 2020

DESIGN SKETCH 1 (Pine Ridge Road Milling and Resurfacing)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.782**	
SNR Provided:	**4.920**	

Roadway Existing Pavement	Mainline Milling & Resurfacing	Roadway Lane Widening Outside Shoulder Construction (See Design Sequence 2)
Mill 3.0" Average Depth		
FC-9.5 1.16" Avg. (Existing) 1.16"	FC-12.5 1.50" (Traffic C) (PG 76-22) 1.50"	
Type SP 1.84" Avg. (Existing) 3.00"	Type SP 1.5" (Traffic C) 3.00"	
(Existing Surface) Type SP 4.70" Avg. (Existing) 7.70"	(Existing Surface) Type SP 4.70" Avg. (Existing) 7.70"	
Limerock 8.14" (Existing) 15.84"	Limerock 8.14" (Existing) 15.84"	
Stabilization 12.00" (Existing) (Not Drawn to Scale) 27.84"	Stabilization 12.00" (Existing) (Not Drawn to Scale) 27.84"	

DESIGN SKETCH 2 (Pine Ridge Road Widening & New Construction)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.783**		
SNR Provided:	**6.060**		

Milling 3.0" Avg. Depth

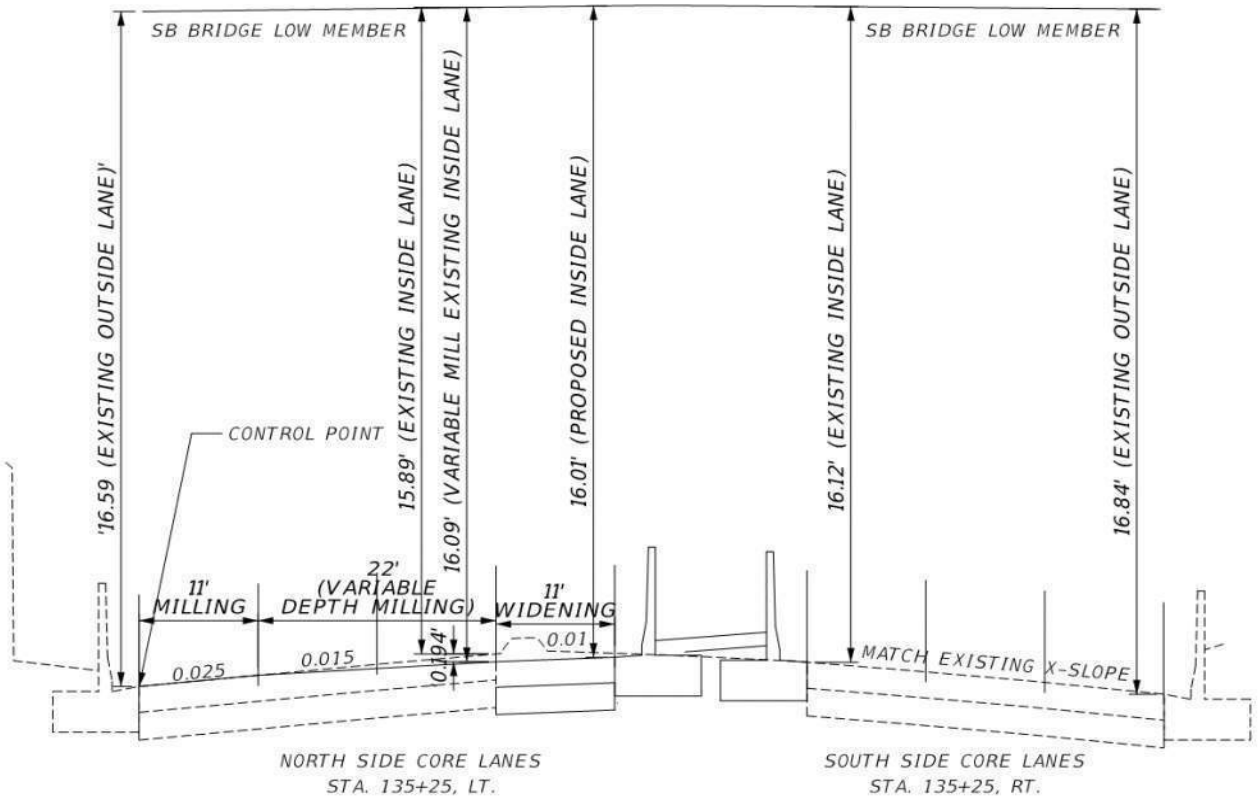
Roadway Lane Widening	Mainline Milling and Resurfacing (See Design Seq. 1)	Roadway Lane Widening
FC-12.5 1.50" (Traffic C) (PG 76-22) 1.50"	FC-12.5 1.50" (Traffic C) (PG 76-22) 1.50"	FC-12.5 1.50" (Traffic C) (PG 76-22) 1.50"
Type SP 6" (Level C) 7.50"	Type SP 1.50" Traffic C 3.00" Type SP 4.70" Avg. (Existing) 7.70"	Type SP 6" (Level C) 7.50"
Optional Base Group 9, 10" 17.50"	Limerock 8.14" (Exist.) 15.84"	Optional Base Group 9, 10" 17.50"
Type B Stabilization, 12" (Not Drawn to Scale) 29.50"	Type B Stabilization, 12" (Existing) (Not Drawn to Scale) 27.84"	Type B Stabilization, 12" (Not Drawn to Scale) 29.50"

DESIGN SKETCH (Pine Ridge Road) WB DDI

Deep Milling and Resurfacing for meeting 16.0-ft Bridge Vertical Clearance

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.533**	
SNR Provided:	**4.622**	



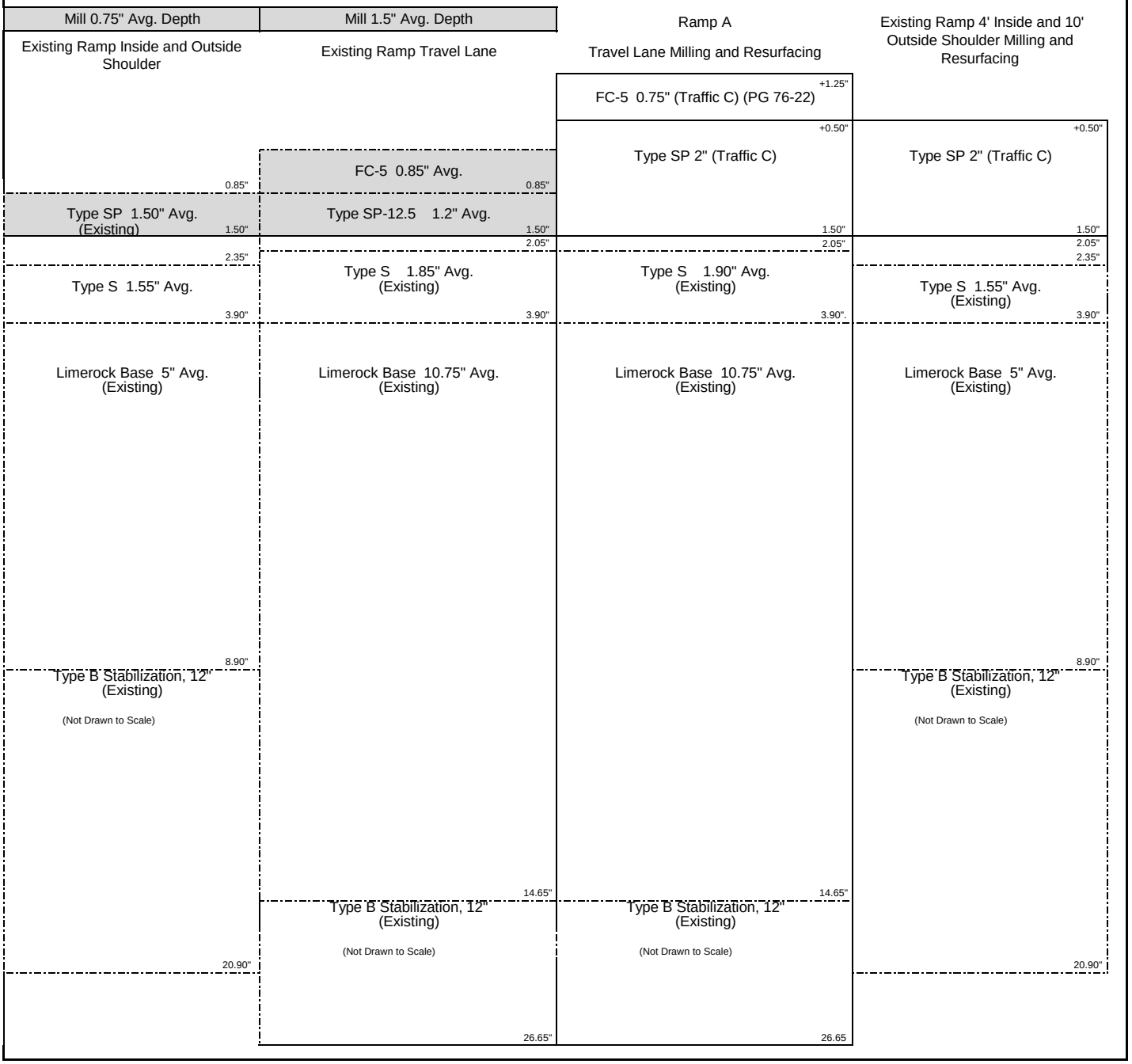
This report investigates the increased milling depth and resurfacing required to meet the 16.0' vertical clearance at the proposed median (reversed WB) lane at DDI Core Sta. 135+25, LT. The required pavement structural number (Sn) can be achieved with $ESAL_D$ derived from the updated 2045 AADT 61,800, with a 90% Reliability (Urban Arterial Rehabilitation). Meeting the 16.0' vertical clearance at the high inside edge of proposed inside lane widening (Sta. 135+25, LT) requires milling the outside lane cross slope to 0.025 and the middle and inside 11' lanes at 0.015. The proposed inside lane widening would be placed with a 0.01 cross slope to the outside (see above sketch). The maximum milling depth at the existing inside lane requires 2.33" milling for the bridge clearance, plus 4.5" milling for the required resurfacing, which requires variable milling from 4.5" at the outside edge to 6.83" maximum depth at the inside existing lane. The variable depth milling should be able to transition to uniform milling within 150', or the east edge of the NB I-75 Bridge meeting vertical clearance. Positive longitudinal grade is maintained by the variable depth milling "control point" matching the outside existing rigid curb and gutter barrier wall.

DESIGN SKETCH 3A1 (Ramp A Milling and Resurfacing)

(Not Drawn To Scale)

FPID:	445296-1-22-01	DATE:	8/19/2020
SNR Required:	4.360	2.340	
SNR Provided:	4.375	2.355	(**)

(**) Note: Ramps have $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 (1.5" structural and OBG-1) in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder meets minimum SN_R requirements.

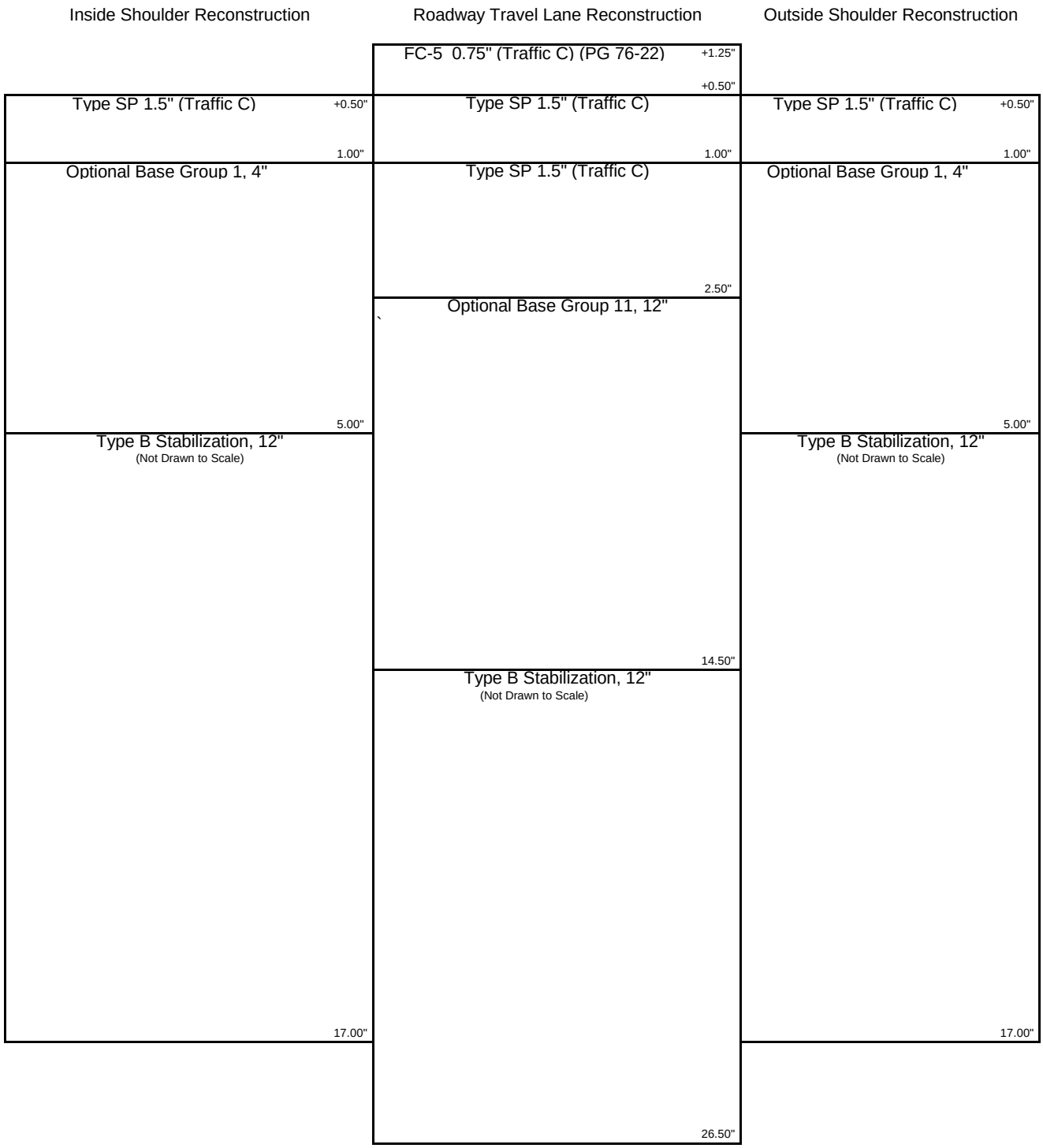


DESIGN SKETCH 3A2 (Ramp A Reconstruction)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.360**	**2.340**
SNR Provided:	**4.440**	**2.340**

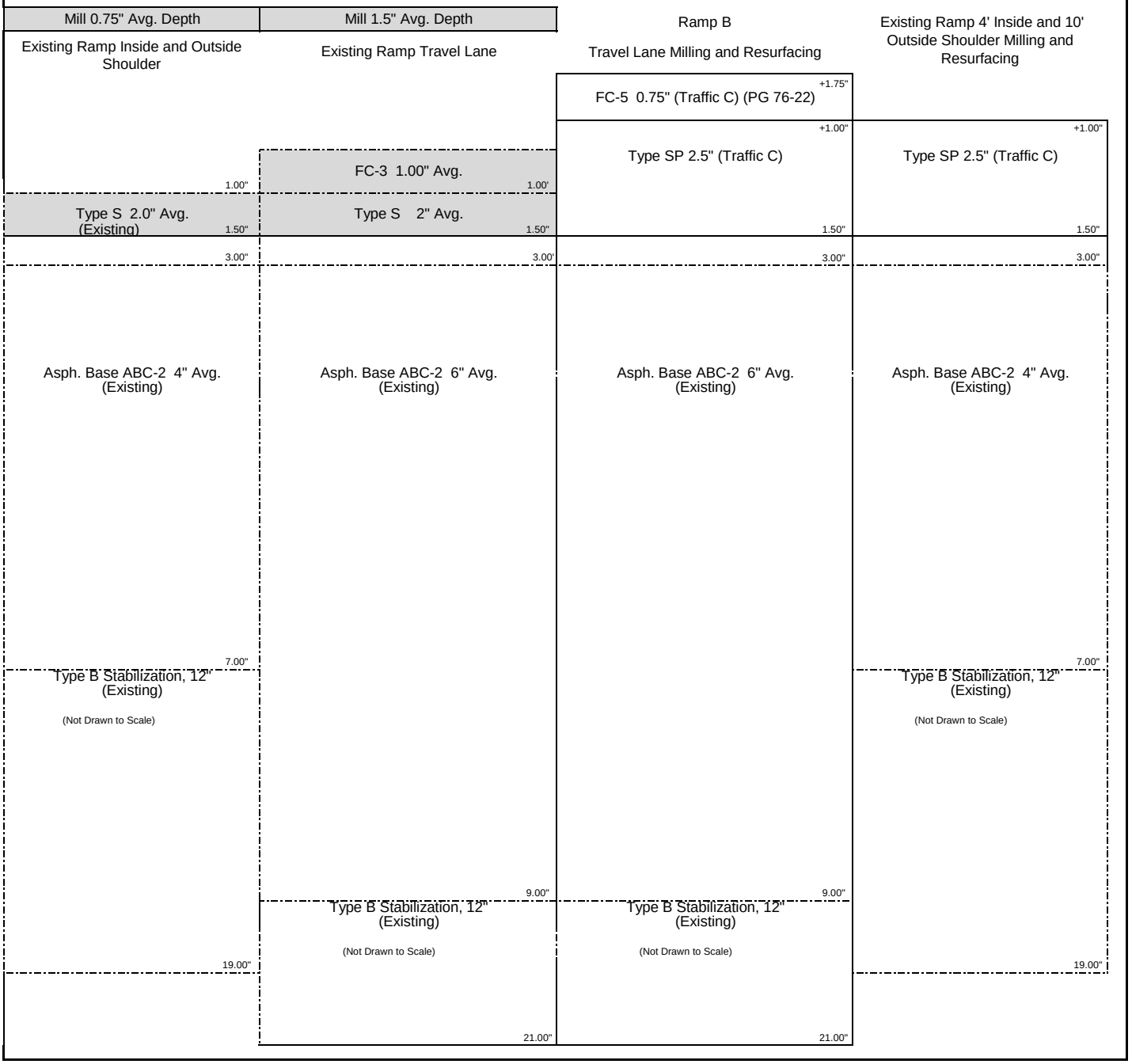


DESIGN SKETCH 3B1 (Ramp B Milling and Resurfacing)

(Not Drawn To Scale)

FPID:	445296-1-22-01	DATE:	8/19/2020	
	SNR Required:	4.318	2.340	
	SNR Provided:	4.448	2.340	(**)

(**) Note: Ramps have $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 (1.5" structural and OBG-1) in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder meets minimum SN_R requirements.

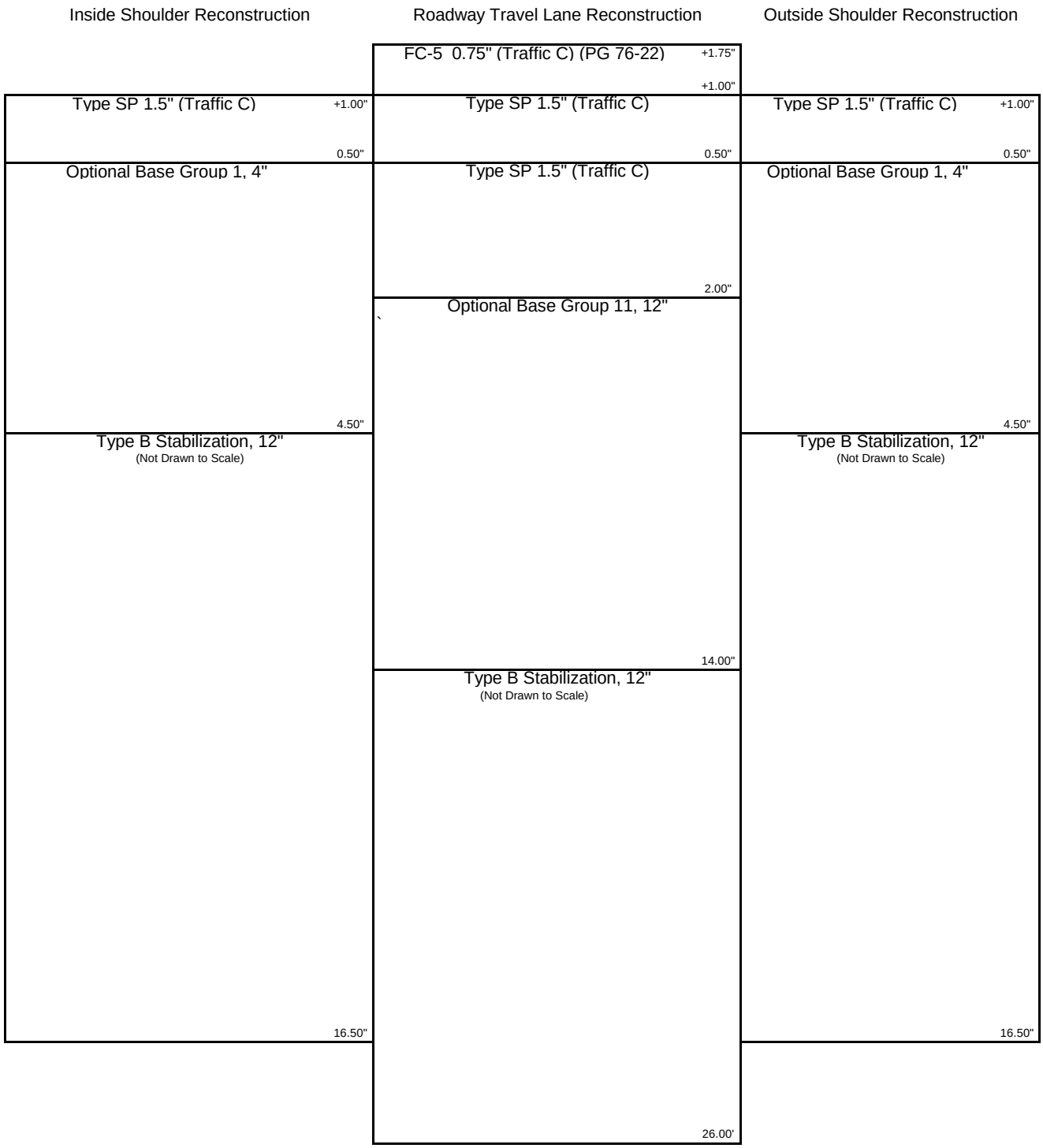


DESIGN SKETCH 3B2 (Ramp B Reconstruction)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.318**	**2.340**
SNR Provided:	**4.440**	**2.340**

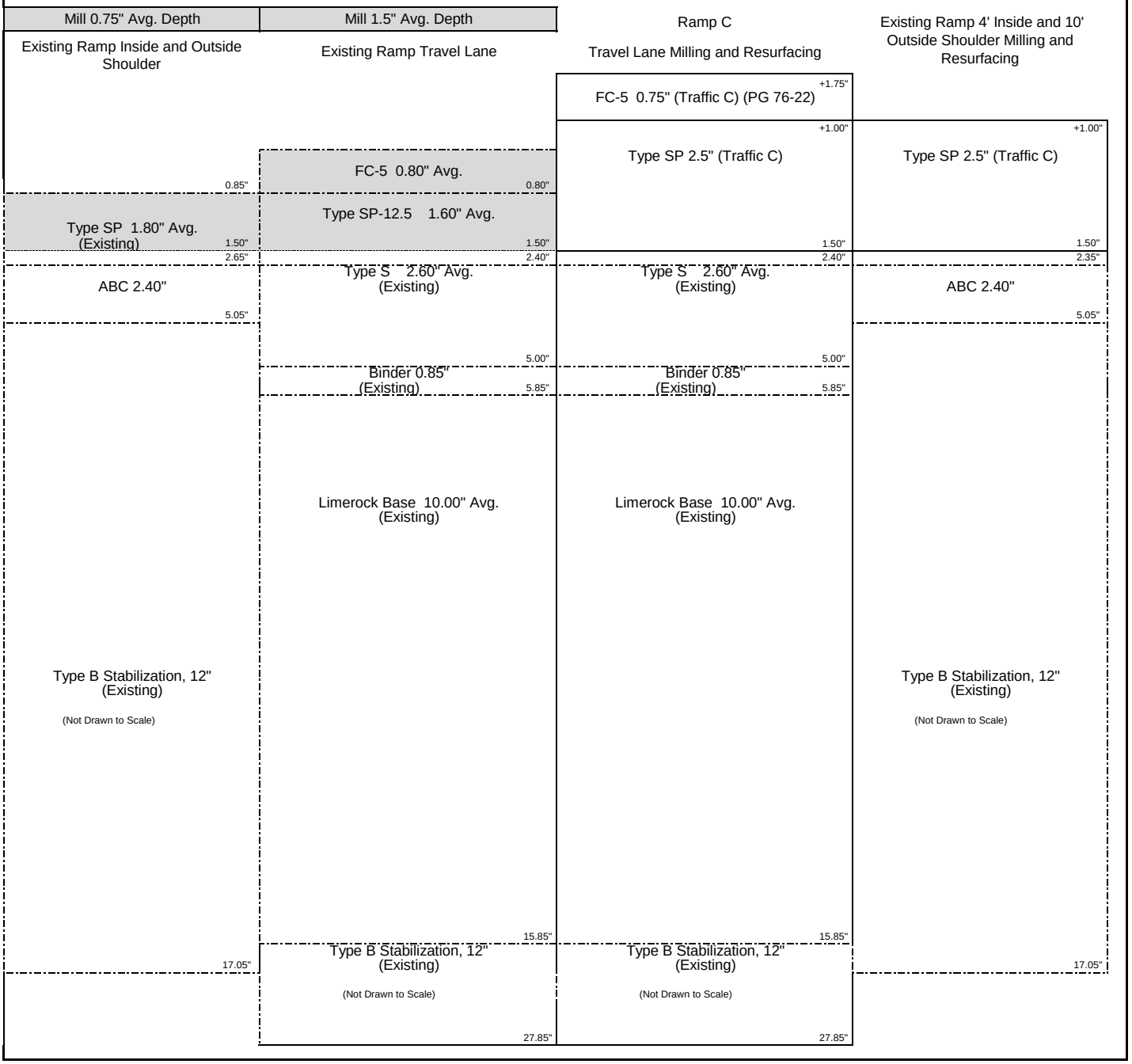


DESIGN SKETCH 4A (Ramp C Milling and Resurfacing)

(Not Drawn To Scale)

FPID:	445296-1-22-01	DATE:	8/19/2020	
	SNR Required:	4.802	2.340	
	SNR Provided:	4.905	2.659	(**)

(**) Note: Ramps have $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 (1.5" structural and OBG-1) in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder meets minimum SN_R requirements.

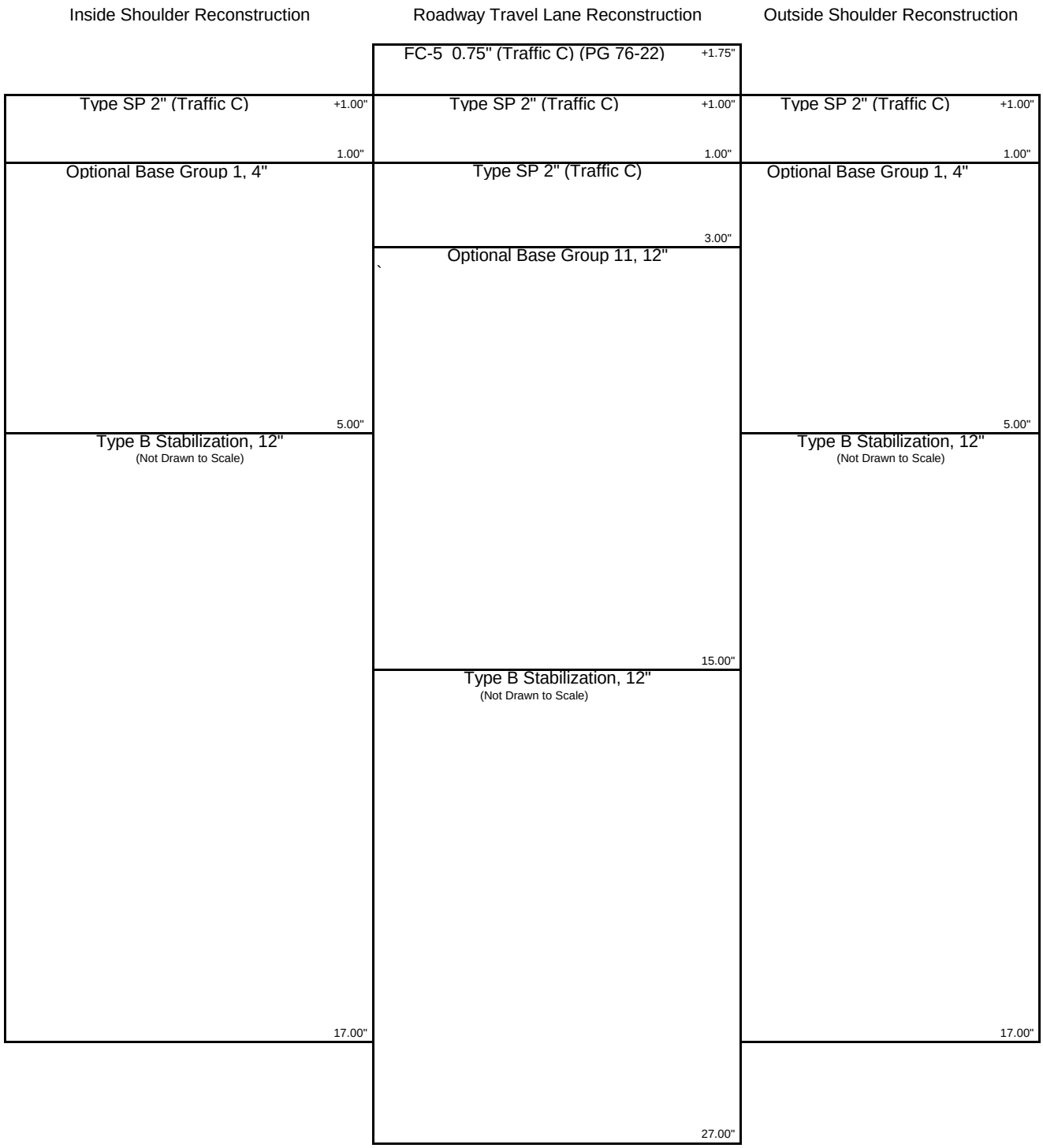


DESIGN SKETCH 4B (Ramp C Reconstruction)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.802**	**2.340**
SNR Provided:	**4.880**	**2.560**

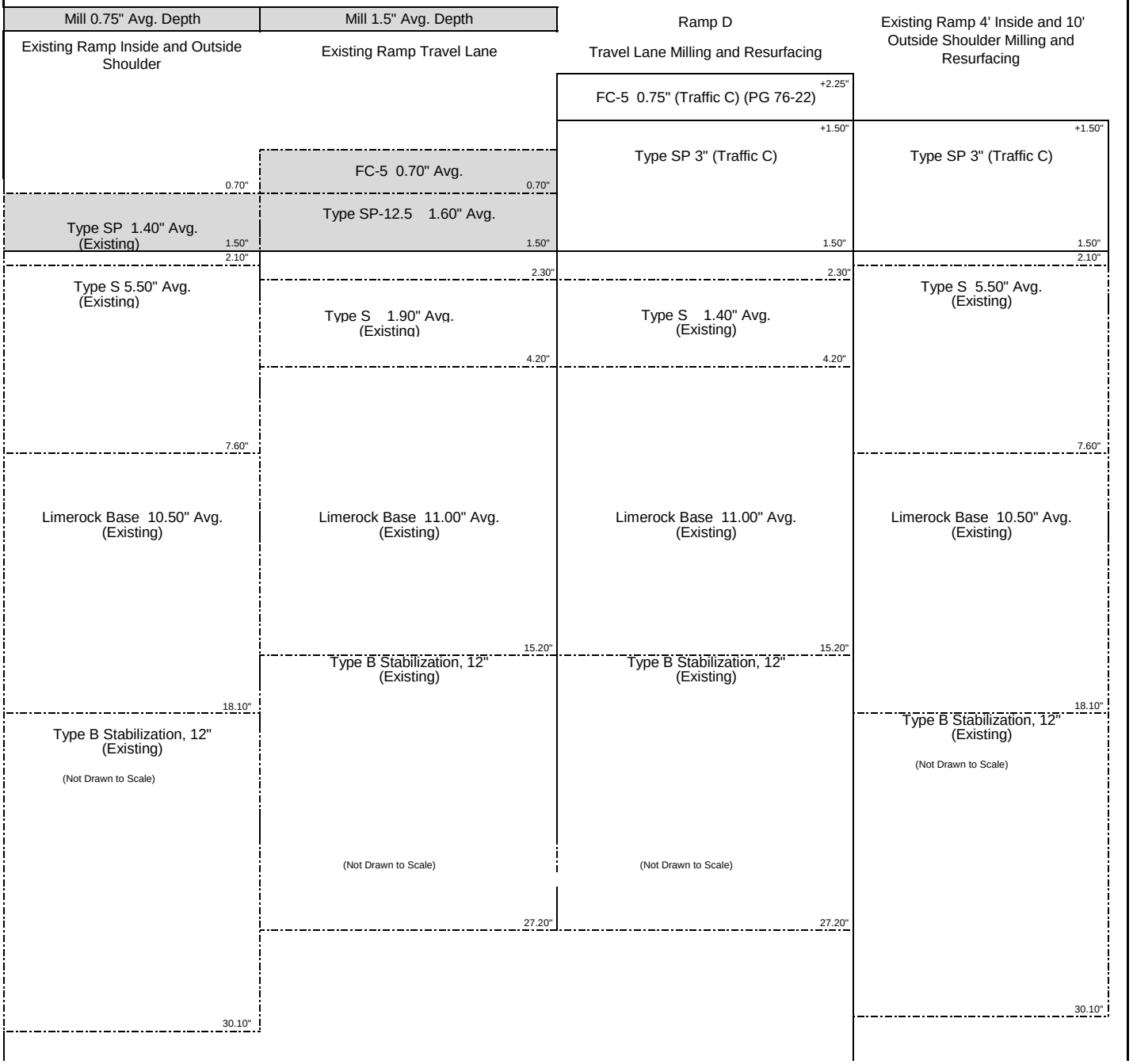


DESIGN SKETCH 5A (Ramp D Milling and Resurfacing)

(Not Drawn To Scale)

FPID:	445296-1-22-01	DATE:	8/19/2020
SNR Required:	4.809	2.340	
SNR Provided:	4.935	5.708	(**)

(**) Note: Ramps have $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 (1.5" structural and OBG-1) in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder meets minimum SN_R requirements.

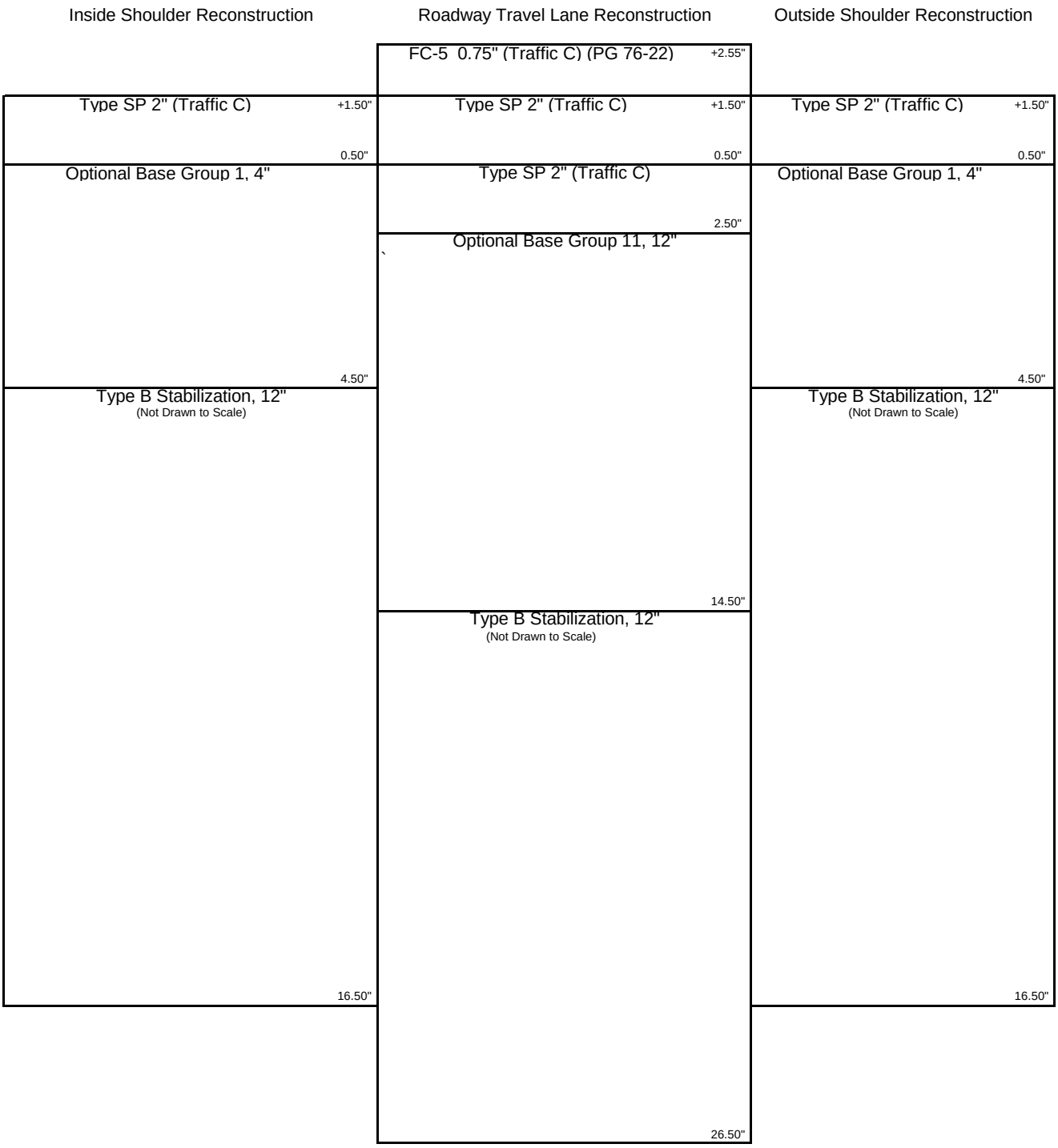


DESIGN SKETCH 5B (Ramp D Reconstruction)

(Not Drawn To Scale)

FPID: 445296-1-22-01 **DATE: 8/19/2020**

SNR Required:	**4.809**	**2.340**
SNR Provided:	**4.880**	**2.560**



Appendix A

Design Traffic, 18-KIP ESAL and BCWE Check Information

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1A

Pine Ridge Road (West of DDI Core)
Given Traffic Data: **PTAR Location 7**

K factor = 9%
D factor = 62.1%
T24 = 6.1% (Site INTID 213 West Leg: Pine Ridge Rd. & I-75 SB Ramps)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	47,500		
2045	66,800		19,300

AADT to use **47,500**

T24 =	6.1%	(Percent of heavy trucks during 24 hour period)
Df =	50.0%	(two ways of traffic counted)
Lv =	1	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	0.59	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.89	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**47,500**	6.1%	0.5	0.6111	0.89	287,598	
2020	48,200	6.1%	0.5	0.610	0.89	292,000	
2021	48,900	6.1%	0.5	0.609	0.89	295,000	
2022	49,700	6.1%	0.5	0.607	0.89	300,000	
2023	50,400	6.1%	0.5	0.606	0.89	303,000	
2024	51,200	6.1%	0.5	0.605	0.89	307,000	
2025	51,900	6.1%	0.5	0.604	0.89	311,000	311,000
2026	52,600	6.1%	0.5	0.603	0.89	315,000	626,000
2027	53,400	6.1%	0.5	0.601	0.89	319,000	945,000
2028	54,100	6.1%	0.5	0.600	0.89	322,000	1,267,000
2029	54,900	6.1%	0.5	0.599	0.89	326,000	1,593,000
2030	55,600	6.1%	0.5	0.598	0.89	330,000	1,923,000
2031	56,400	6.1%	0.5	0.597	0.89	334,000	2,257,000
2032	57,100	6.1%	0.5	0.596	0.89	338,000	2,595,000
2033	57,800	6.1%	0.5	0.595	0.89	341,000	2,936,000
2034	58,600	6.1%	0.5	0.594	0.89	345,000	3,281,000
2035	59,300	6.1%	0.5	0.593	0.89	349,000	3,630,000
2036	60,100	6.1%	0.5	0.592	0.89	353,000	3,983,000
2037	60,800	6.1%	0.5	0.591	0.89	356,000	4,339,000
2038	61,600	6.1%	0.5	0.590	0.89	360,000	4,699,000
2039	62,300	6.1%	0.5	0.589	0.89	364,000	5,063,000
2040	63,000	6.1%	0.5	0.588	0.89	367,000	5,430,000
2041	63,800	6.1%	0.5	0.587	0.89	372,000	5,802,000
2042	64,500	6.1%	0.5	0.586	0.89	375,000	6,177,000
2043	65,300	6.1%	0.5	0.585	0.89	379,000	6,556,000
2044	66,000	6.1%	0.5	0.584	0.89	382,000	6,938,000
2045	**66,800**	6.1%	0.5	0.5830	0.89	385,858	7,323,858

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1A

ESALd =	**7,012,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	94	Table 5.2, Urban Arterials-Rehabilitation, pg 5.8)

=> SNr = 4.78

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.6A, pg A-13:		ESALd =	7,000,000	=> SNr =	4.80	4.61	
	(Interpolation)	**ESALd =**	**7,012,000**	**=> SNr =**	**4.80**	**4.61**	**Use SNr = 4.78**
		ESALd =	8,000,000	=> SNr =	4.90	4.70	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.40
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.53
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.53 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1B

WB Pine Ridge Road (DDI Core)
Given Traffic Data: **PTAR Locations 8 & 9**

K factor = 9%
D factor = 65.6%
T24 = 6.1% (Site INTID 214 West Leg: Pine Ridge Rd. & I-75 NB Ramps)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	41,600		
2045	61,800	2.4279%	20,200

AADT to use **41,600**

T24 =	6.1%	(Percent of heavy trucks during 24 hour period)
Df =	50.0%	(two ways of traffic counted)
Lv =	1	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	0.59	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.89	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**41,600**	6.1%	0.5	0.622	0.89	257,000	
2020	42,300	6.1%	0.5	0.621	0.89	261,000	
2021	43,100	6.1%	0.5	0.619	0.89	265,000	
2022	43,900	6.1%	0.5	0.618	0.89	269,000	
2023	44,700	6.1%	0.5	0.616	0.89	273,000	
2024	45,400	6.1%	0.5	0.615	0.89	277,000	
2025	46,200	6.1%	0.5	0.613	0.89	281,000	281,000
2026	47,000	6.1%	0.5	0.612	0.89	285,000	566,000
2027	47,800	6.1%	0.5	0.611	0.89	290,000	856,000
2028	48,500	6.1%	0.5	0.609	0.89	293,000	1,149,000
2029	49,300	6.1%	0.5	0.608	0.89	297,000	1,446,000
2030	50,100	6.1%	0.5	0.607	0.89	302,000	1,748,000
2031	50,900	6.1%	0.5	0.605	0.89	306,000	2,054,000
2032	51,700	6.1%	0.5	0.604	0.89	310,000	2,364,000
2033	52,400	6.1%	0.5	0.603	0.89	314,000	2,678,000
2034	53,200	6.1%	0.5	0.602	0.89	318,000	2,996,000
2035	54,000	6.1%	0.5	0.601	0.89	322,000	3,318,000
2036	54,800	6.1%	0.5	0.599	0.89	326,000	3,644,000
2037	55,500	6.1%	0.5	0.598	0.89	329,000	3,973,000
2038	56,300	6.1%	0.5	0.597	0.89	334,000	4,307,000
2039	57,100	6.1%	0.5	0.596	0.89	338,000	4,645,000
2040	57,900	6.1%	0.5	0.595	0.89	342,000	4,987,000
2041	58,600	6.1%	0.5	0.595	0.89	346,000	5,333,000
2042	59,400	6.1%	0.5	0.595	0.89	351,000	5,684,000
2043	60,200	6.1%	0.5	0.595	0.89	355,000	6,039,000
2044	61,000	6.1%	0.5	0.595	0.89	360,000	6,399,000
2045	**61,800**	6.1%	0.5	0.595	0.89	365,000	6,764,000

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1B

ESALd =	**6,483,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	94	Table 5.2, Urban Arterials-Rehabilitation, pg 5.8)

=> SNr = 4.72

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.6A, pg A-13:		ESALd =	6,000,000	=> SNr =	4.69	4.51	
	(Interpolation)	**ESALd =**	**6,483,000**	**=> SNr =**	**4.74**	**4.56**	**Use SNr = 4.72**
		ESALd =	7,000,000	=> SNr =	4.80	4.61	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.40
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.53
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.53 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1C

EB Pine Ridge Road (East of DDI Core) for existing WB to SB Lane Taper to Ramp C
Given Traffic Data:

K factor = 9%
D factor = 63.4%
T24 = 6.1% (Site INTID 214 East Leg for Pine Ridge Rd.)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	37,200		
2045	54,500	2.3253%	17,300

AADT to use **37,000**

T24 =	6.1%	(Percent of heavy trucks during 24 hour period)
Df =	50.0%	(two ways of traffic counted)
Lv =	1	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	0.61	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.89	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**37,000**	6.1%	0.5	0.6317	0.89	231,589	231,589
2020	37,600	6.1%	0.5	0.6304	0.89	234,849	466,438
2021	38,300	6.1%	0.5	0.6289	0.89	238,643	705,081
2022	39,000	6.1%	0.5	0.6274	0.89	242,427	947,507
2023	39,600	6.1%	0.5	0.6261	0.89	245,661	1,193,168
2024	40,300	6.1%	0.5	0.6247	0.89	249,426	1,442,594
2025	41,000	6.1%	0.5	0.6233	0.89	253,181	1,695,775
2026	41,700	6.1%	0.5	0.6219	0.89	256,925	1,952,701
2027	42,300	6.1%	0.5	0.6207	0.89	260,128	2,212,828
2028	43,000	6.1%	0.5	0.6193	0.89	263,855	2,476,683
2029	43,700	6.1%	0.5	0.6180	0.89	267,573	2,744,256
2030	44,400	6.1%	0.5	0.6167	0.89	271,281	3,015,537
2031	45,000	6.1%	0.5	0.6156	0.89	274,453	3,289,990
2032	45,700	6.1%	0.5	0.6143	0.89	278,145	3,568,135
2033	46,400	6.1%	0.5	0.6130	0.89	281,828	3,849,963
2034	47,000	6.1%	0.5	0.6120	0.89	284,978	4,134,941
2035	47,700	6.1%	0.5	0.6108	0.89	288,645	4,423,586
2036	48,400	6.1%	0.5	0.6095	0.89	292,304	4,715,890
2037	49,100	6.1%	0.5	0.6084	0.89	295,955	5,011,845
2038	49,700	6.1%	0.5	0.6074	0.89	299,077	5,310,922
2039	50,400	6.1%	0.5	0.6062	0.89	302,713	5,613,635
2040	51,100	6.1%	0.5	0.6051	0.89	306,340	5,919,975
2041	51,800	6.1%	0.5	0.6039	0.89	309,960	6,229,935
2042	52,400	6.1%	0.5	0.6030	0.89	313,056	6,542,991
2043	53,100	6.1%	0.5	0.6019	0.89	316,662	6,859,653
2044	53,800	6.1%	0.5	0.6008	0.89	320,259	7,179,913
2045	**54,500**	6.1%	0.5	0.5997	0.89	323,850	7,503,762

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1C

ESALd =	**5,808,000**	**(2025 - 2045)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	94	Table 5.2, Urban Arterials-Rehabilitation, pg 5.8)

=> SNr = 4.65

				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.6A, pg A-13:	ESALd =	5,000,000	=> SNr =	4.57	4.38	
(Interpolation)	**ESALd =**	**5,808,000**	**=> SNr =**	**4.67**	**4.49**	**Use SNr = 4.65**
	ESALd =	6,000,000	=> SNr =	4.69	4.51	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.40
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.53
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.53 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1B

WB Pine Ridge Road (DDI Core) - Variable Milling for 16.0' Bridge Clearance
Given Traffic Data: **PTAR Locations 8 & 9**

K factor = 9%
D factor = 65.6%
T24 = 6.1% (Site INTID 214 West Leg: Pine Ridge Rd. & I-75 NB Ramps)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	41,600		
2045	61,800	2.4279%	20,200

AADT to use **41,600**

T24 =	6.1%	(Percent of heavy trucks during 24 hour period)
Df =	50.0%	(two ways of traffic counted)
Lv =	1	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	0.59	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.89	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**41,600**	6.1%	0.5	0.6221	0.89	256,391	256,391
2020	42,300	6.1%	0.5	0.621	0.89	261,000	
2021	43,100	6.1%	0.5	0.619	0.89	265,000	
2022	43,900	6.1%	0.5	0.618	0.89	269,000	
2023	44,700	6.1%	0.5	0.616	0.89	273,000	
2024	45,400	6.1%	0.5	0.615	0.89	277,000	
2025	46,200	6.1%	0.5	0.613	0.89	281,000	281,000
2026	47,000	6.1%	0.5	0.612	0.89	285,000	566,000
2027	47,800	6.1%	0.5	0.611	0.89	290,000	856,000
2028	48,500	6.1%	0.5	0.609	0.89	293,000	1,149,000
2029	49,300	6.1%	0.5	0.608	0.89	297,000	1,446,000
2030	50,100	6.1%	0.5	0.607	0.89	302,000	1,748,000
2031	50,900	6.1%	0.5	0.605	0.89	306,000	2,054,000
2032	51,700	6.1%	0.5	0.604	0.89	310,000	2,364,000
2033	52,400	6.1%	0.5	0.603	0.89	314,000	2,678,000
2034	53,200	6.1%	0.5	0.602	0.89	318,000	2,996,000
2035	54,000	6.1%	0.5	0.601	0.89	322,000	3,318,000
2036	54,800	6.1%	0.5	0.599	0.89	326,000	3,644,000
2037	55,500	6.1%	0.5	0.598	0.89	329,000	3,973,000
2038	56,300	6.1%	0.5	0.597	0.89	334,000	4,307,000
2039	57,100	6.1%	0.5	0.596	0.89	338,000	4,645,000
2040	57,900	6.1%	0.5	0.595	0.89	342,000	4,987,000
2041	58,600	6.1%	0.5	0.595	0.89	346,000	5,333,000
2042	59,400	6.1%	0.5	0.595	0.89	351,000	5,684,000
2043	60,200	6.1%	0.5	0.595	0.89	355,000	6,039,000
2044	61,000	6.1%	0.5	0.595	0.89	360,000	6,399,000
2045	**61,800**	6.1%	0.5	0.5947	0.89	364,167	6,763,167

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 1B

ESALd =	**6,471,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	90	Table 5.2, Urban Arterials-Rehabilitation, pg 5.8)

=> SNr = 4.53

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.4A, pg A-9:		ESALd =	6,000,000	=> SNr =	4.50	4.32	
	(Interpolation)	**ESALd =**	**6,471,000**	**=> SNr =**	**4.55**	**4.37**	**Use SNr = 4.53**
		ESALd =	7,000,000	=> SNr =	4.61	4.42	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.40
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.53
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.53 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 2

Pine Ridge Road Proposed Widening
Given Traffic Data:

K factor = 9%
D factor = 62.1%
T24 = 6.1% (Site INTID 213 West Leg: Pine Ridge Rd. & I-75 SB Ramps)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	45,020		
2045	66,800	1.8607%	21,780

AADT to use	**47,500**

T24 =	6.1%	(Percent of heavy trucks during 24 hour period)
Df =	50.0%	(two ways of traffic counted)
Lv =	1	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	0.59	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.89	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**47,500**	6.1%	0.5	0.6111	0.89	287,598	287,598
2020	48,200	6.1%	0.5	0.610	0.89	292,000	
2021	48,900	6.1%	0.5	0.609	0.89	295,000	
2022	49,700	6.1%	0.5	0.607	0.89	300,000	
2023	50,400	6.1%	0.5	0.606	0.89	303,000	
2024	51,200	6.1%	0.5	0.605	0.89	307,000	
2025	51,900	6.1%	0.5	0.604	0.89	311,000	311,000
2026	52,600	6.1%	0.5	0.603	0.89	315,000	626,000
2027	53,400	6.1%	0.5	0.601	0.89	319,000	945,000
2028	54,100	6.1%	0.5	0.600	0.89	322,000	1,267,000
2029	54,900	6.1%	0.5	0.599	0.89	326,000	1,593,000
2030	55,600	6.1%	0.5	0.598	0.89	330,000	1,923,000
2031	56,400	6.1%	0.5	0.597	0.89	334,000	2,257,000
2032	57,100	6.1%	0.5	0.596	0.89	338,000	2,595,000
2033	57,800	6.1%	0.5	0.595	0.89	341,000	2,936,000
2034	58,600	6.1%	0.5	0.594	0.89	345,000	3,281,000
2035	59,300	6.1%	0.5	0.593	0.89	349,000	3,630,000
2036	60,100	6.1%	0.5	0.592	0.89	353,000	3,983,000
2037	60,800	6.1%	0.5	0.591	0.89	356,000	4,339,000
2038	61,600	6.1%	0.5	0.590	0.89	360,000	4,699,000
2039	62,300	6.1%	0.5	0.589	0.89	364,000	5,063,000
2040	63,000	6.1%	0.5	0.588	0.89	367,000	5,430,000
2041	63,800	6.1%	0.5	0.588	0.89	372,000	5,802,000
2042	64,500	6.1%	0.5	0.588	0.89	376,000	6,178,000
2043	65,300	6.1%	0.5	0.588	0.89	381,000	6,559,000
2044	66,000	6.1%	0.5	0.588	0.89	385,000	6,944,000
2045	**66,800**	6.1%	0.5	0.5878	0.89	389,016	7,333,016

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 2

ESALd =	**7,022,016**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	94	Table 5.2, Urban Arterials-Rehabilitation, pg 5.8)

=> SNr = 4.78

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.6A, pg A-13:		ESALd =	7,000,000	=> SNr =	4.80	4.61	
	(Interpolation)	**ESALd =**	**7,022,016**	**=> SNr =**	**4.80**	**4.61**	**Use SNr = 4.78**
		ESALd =	8,000,000	=> SNr =	4.90	4.70	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.40
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.53
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.53 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 3

SB Entrance Ramp A
Given Traffic Data:

K factor = 9%
D factor = 100%
T24 = 7.5% INTID (Site 213 South Leg for SB On-Ramp A.)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	6,600		
2045	7,300	0.5303%	700

AADT to use	**6,500**	
T24 =	7.5%	(Percent of heavy trucks during 24 hour period)
Df =	1.00	(One way ramp traffic counted)
Lv =	0	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	1.00	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.9	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**6,500**	7.5%	1	1.0000	0.9	160,144	160,144
2020	6,500	7.5%	1	1.000	0.9	161,000	
2021	6,500	7.5%	1	1.000	0.9	161,000	
2022	6,500	7.5%	1	1.000	0.9	161,000	
2023	6,600	7.5%	1	1.000	0.9	163,000	
2024	6,600	7.5%	1	1.000	0.9	163,000	
2025	6,600	7.5%	1	1.000	0.9	163,000	163,000
2026	6,700	7.5%	1	1.000	0.9	166,000	329,000
2027	6,700	7.5%	1	1.000	0.9	166,000	495,000
2028	6,700	7.5%	1	1.000	0.9	166,000	661,000
2029	6,800	7.5%	1	1.000	0.9	168,000	829,000
2030	6,800	7.5%	1	1.000	0.9	168,000	997,000
2031	6,800	7.5%	1	1.000	0.9	168,000	1,165,000
2032	6,900	7.5%	1	1.000	0.9	170,000	1,335,000
2033	6,900	7.5%	1	1.000	0.9	170,000	1,505,000
2034	6,900	7.5%	1	1.000	0.9	170,000	1,675,000
2035	6,900	7.5%	1	1.000	0.9	170,000	1,845,000
2036	7,000	7.5%	1	1.000	0.9	173,000	2,018,000
2037	7,000	7.5%	1	1.000	0.9	173,000	2,191,000
2038	7,000	7.5%	1	1.000	0.9	173,000	2,364,000
2039	7,100	7.5%	1	1.000	0.9	175,000	2,539,000
2040	7,100	7.5%	1	1.000	0.9	175,000	2,714,000
2041	7,100	7.5%	1	1.000	0.9	175,000	2,889,000
2042	7,200	7.5%	1	1.000	0.9	178,000	3,067,000
2043	7,200	7.5%	1	1.000	0.9	178,000	3,245,000
2044	7,200	7.5%	1	1.000	0.9	178,000	3,423,000
2045	**7,300**	7.5%	1	1.0000	0.9	179,854	3,602,854

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 3

ESALd =	**3,440,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	95	Table 5.2, Limited Access -Rehabilitation, pg 5.8)

=> SNr = 4.36

				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	ESALd =	3,000,000	=> SNr =	4.29	4.11	
(Interpolation)	**ESALd =**	**3,440,000**	**=> SNr =**	**4.38**	**4.20**	**Use SNr = 4.36**
	ESALd =	3,500,000	=> SNr =	4.39	4.21	

ESALD < 10,000,000; use 2.34 Minimum SN, FPDM Table 5.5

				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	0.03 ESALd	100,000	=> SNr =	2.46	2.35	
(Interpolation)	**0.03 ESALd**	**103,200**	**=> SNr =**	**2.47**	**2.35**	**Use SNr = 2.34**
	0.03 ESALd	150,000	=> SNr =	2.63	2.42	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.00
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.13
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.13 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 3

NB Exit Ramp B
Given Traffic Data:

K factor = 9%
D factor = 100%
T24 = 7.5% (Site INTID 214 South Leg for NB Off-Ramp B.)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	5,700		
2045	7,200	1.3158%	1,500

AADT to use **5,500**

T24 =	7.5%	(Percent of heavy trucks during 24 hour period)
Df =	1.00	(One way ramp traffic counted)
Lv =	0	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	1.00	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.9	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**5,500**	7.5%	1	1.0000	0.9	135,506	135,506
2020	5,500	7.5%	1	1.000	0.9	136,000	
2021	5,600	7.5%	1	1.000	0.9	138,000	
2022	5,600	7.5%	1	1.000	0.9	138,000	
2023	5,700	7.5%	1	1.000	0.9	141,000	
2024	5,800	7.5%	1	1.000	0.9	143,000	
2025	5,800	7.5%	1	1.000	0.9	143,000	143,000
2026	5,900	7.5%	1	1.000	0.9	146,000	289,000
2027	6,000	7.5%	1	1.000	0.9	148,000	437,000
2028	6,000	7.5%	1	1.000	0.9	148,000	585,000
2029	6,100	7.5%	1	1.000	0.9	151,000	736,000
2030	6,200	7.5%	1	1.000	0.9	153,000	889,000
2031	6,200	7.5%	1	1.000	0.9	153,000	1,042,000
2032	6,300	7.5%	1	1.000	0.9	156,000	1,198,000
2033	6,400	7.5%	1	1.000	0.9	158,000	1,356,000
2034	6,400	7.5%	1	1.000	0.9	158,000	1,514,000
2035	6,500	7.5%	1	1.000	0.9	161,000	1,675,000
2036	6,600	7.5%	1	1.000	0.9	163,000	1,838,000
2037	6,600	7.5%	1	1.000	0.9	163,000	2,001,000
2038	6,700	7.5%	1	1.000	0.9	166,000	2,167,000
2039	6,800	7.5%	1	1.000	0.9	168,000	2,335,000
2040	6,800	7.5%	1	1.000	0.9	168,000	2,503,000
2041	6,900	7.5%	1	1.000	0.9	170,000	2,673,000
2042	7,000	7.5%	1	1.000	0.9	173,000	2,846,000
2043	7,000	7.5%	1	1.000	0.9	173,000	3,019,000
2044	7,100	7.5%	1	1.000	0.9	175,000	3,194,000
2045	**7,200**	7.5%	1	1.0000	0.9	177,390	3,371,390

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 3

ESALd =	**3,229,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	95	Table 5.2, Limited Access -Rehabilitation, pg 5.8)

=> SNr = 4.32

				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	ESALd =	3,000,000	=> SNr =	4.29	4.11	
(Interpolation)	**ESALd =**	**3,229,000**	**=> SNr =**	**4.34**	**4.16**	**Use SNr = 4.32**
	ESALd =	3,500,000	=> SNr =	4.39	4.21	

ESALD < 10,000,000; use 2.34 Minimum SN, FPDM Table 5.5

				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	0.03 ESALd	100,000	=> SNr =	2.46	2.35	
(Interpolation)	**0.03 ESALd**	**100,000**	**=> SNr =**	**2.46**	**2.35**	**Use SNr = 2.34**
	0.03 ESALd	150,000	=> SNr =	2.46	2.35	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.00
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.13
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.13 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 4

NB Entrance Ramp C
Given Traffic Data:

K factor = 9%
D factor = 100%
T24 = 7.5% (Site INTID 214 North Leg for NB On-Ramp C.)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	8,800		
2045	13,900	2.8977%	5,100

AADT to use **11,500**

T24 =	7.5%	(Percent of heavy trucks during 24 hour period)
Df =	1.00	(One way ramp traffic counted)
Lv =	0	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	1.00	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.9	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**11,500**	7.5%	1	1.0000	0.9	283,331	283,331
2020	11,600	7.5%	1	1.000	0.9	286,000	
2021	11,700	7.5%	1	1.000	0.9	289,000	
2022	11,800	7.5%	1	1.000	0.9	291,000	
2023	11,900	7.5%	1	1.000	0.9	294,000	
2024	12,000	7.5%	1	1.000	0.9	296,000	
2025	12,100	7.5%	1	1.000	0.9	299,000	299,000
2026	12,200	7.5%	1	1.000	0.9	301,000	600,000
2027	12,300	7.5%	1	1.000	0.9	304,000	904,000
2028	12,500	7.5%	1	1.000	0.9	308,000	1,212,000
2029	12,600	7.5%	1	1.000	0.9	311,000	1,523,000
2030	12,700	7.5%	1	1.000	0.9	313,000	1,836,000
2031	12,800	7.5%	1	1.000	0.9	316,000	2,152,000
2032	12,900	7.5%	1	1.000	0.9	318,000	2,470,000
2033	13,000	7.5%	1	1.000	0.9	321,000	2,791,000
2034	13,100	7.5%	1	1.000	0.9	323,000	3,114,000
2035	13,200	7.5%	1	1.000	0.9	326,000	3,440,000
2036	13,300	7.5%	1	1.000	0.9	328,000	3,768,000
2037	13,500	7.5%	1	1.000	0.9	333,000	4,101,000
2038	13,600	7.5%	1	1.000	0.9	336,000	4,437,000
2039	13,700	7.5%	1	1.000	0.9	338,000	4,775,000
2040	13,800	7.5%	1	1.000	0.9	340,000	5,115,000
2041	13,900	7.5%	1	1.000	0.9	343,000	5,458,000
2042	14,000	7.5%	1	1.000	0.9	345,000	5,803,000
2043	14,100	7.5%	1	1.000	0.9	348,000	6,151,000
2044	14,200	7.5%	1	1.000	0.9	350,000	6,501,000
2045	**14,400**	7.5%	1	1.0000	0.9	354,780	6,855,780

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 4

ESALd =	**6,557,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	95	Table 5.2, Limited Access -Rehabilitation, pg 5.8

=> SNr = 4.80

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	ESALd =	6,000,000	=> SNr =		4.76	4.57	
(Interpolation)	**ESALd =**	**6,557,000**	**=> SNr =**		**4.82**	**4.63**	**Use SNr = 4.80**
	ESALd =	7,000,000	=> SNr =		4.87	4.68	

ESALD < 10,000,000; use 2.34 Minimum SN, FPDM Table 5.5

					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:	0.03 ESALd	150,000	=> SNr =		2.63	2.52	
(Interpolation)	**0.03 ESALd**	**196,710**	**=> SNr =**		**2.75**	**2.63**	**Use SNr = 2.34**
	0.03 ESALd	200,000	=> SNr =		2.76	2.64	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.00
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.13
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.13 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8.10

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 5

SB Exit Ramp D
Given Traffic Data:

K factor = 9%
D factor = 100%
T24 = 7.5% (Site INTID 213 North Leg for SB Off-Ramp D.)

Year	Traffic Count	Avg. annual % change	AADT increase by
2019	8,700		
2045	14,600	3.3908%	5,900

AADT to use	**11,500**

T24 =	7.5%	(Percent of heavy trucks during 24 hour period)
Df =	1.00	(One way ramp traffic counted)
Lv =	0	(0 if # lanes one way is 2, 1 if # lanes one way is 3+) (Table D.2, pg D-4)
Lf =	1.00	1.567-(0.0826*LN(AADT/2))-(0.12368*Lv) (LN = natural logarithm) (Table D.2, pg D-4)
E18 =	0.9	Urban Arterial/Collectors - Flexible Pavement (Table D.3, pg D-5)

ESALd = (AADT * T24*Df *Lf*E18*365)

Year	AADT	T24	Df	Lf	E18	Annual ESALd	Accumulated ESALd
2019	**11,500**	7.5%	1	1.0000	0.9	283,331	283,331
2020	11,600	7.5%	1	1.000	0.9	286,000	
2021	11,700	7.5%	1	1.000	0.9	289,000	
2022	11,800	7.5%	1	1.000	0.9	291,000	
2023	11,900	7.5%	1	1.000	0.9	294,000	
2024	12,000	7.5%	1	1.000	0.9	296,000	
2025	12,200	7.5%	1	1.000	0.9	301,000	301,000
2026	12,300	7.5%	1	1.000	0.9	304,000	605,000
2027	12,400	7.5%	1	1.000	0.9	306,000	911,000
2028	12,500	7.5%	1	1.000	0.9	308,000	1,219,000
2029	12,600	7.5%	1	1.000	0.9	311,000	1,530,000
2030	12,800	7.5%	1	1.000	0.9	316,000	1,846,000
2031	12,900	7.5%	1	1.000	0.9	318,000	2,164,000
2032	13,000	7.5%	1	1.000	0.9	321,000	2,485,000
2033	13,100	7.5%	1	1.000	0.9	323,000	2,808,000
2034	13,200	7.5%	1	1.000	0.9	326,000	3,134,000
2035	13,400	7.5%	1	1.000	0.9	331,000	3,465,000
2036	13,500	7.5%	1	1.000	0.9	333,000	3,798,000
2037	13,600	7.5%	1	1.000	0.9	336,000	4,134,000
2038	13,700	7.5%	1	1.000	0.9	338,000	4,472,000
2039	13,800	7.5%	1	1.000	0.9	340,000	4,812,000
2040	14,000	7.5%	1	1.000	0.9	345,000	5,157,000
2041	14,100	7.5%	1	1.000	0.9	348,000	5,505,000
2042	14,200	7.5%	1	1.000	0.9	350,000	5,855,000
2043	14,300	7.5%	1	1.000	0.9	353,000	6,208,000
2044	14,400	7.5%	1	1.000	0.9	355,000	6,563,000
2045	**14,600**	7.5%	1	1.0000	0.9	359,708	6,922,708

Pine Ridge Road at I-75 (SR 93)
ESAL Determination - Design Segment 5

ESALd =	**6,622,000**	**(2025 - 2045 (See FDOT ESAL data in Appendix I)**
LBR =	22.83	(Calibrated to FDOT Embankment Resilient Modulus Pavement Design 5-6-2020)
=> M_R =	8100	Calculated from LBR M_R (PSI) = $10^{[0.7365 * \log (LBR)]}$*809
%R =	95	Table 5.2, Limited Access -Rehabilitation, pg 5.8

=> SNr =	**4.81**				MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:		ESALd =	6,000,000	=> SNr =	4.76	4.57	
	(Interpolation)	**ESALd =**	**6,622,000**	**=> SNr =**	**4.83**	**4.64**	**Use SNr = 4.81**
		ESALd =	7,000,000	=> SNr =	4.87	4.68	

ESALD < 10,000,000; use 2.34 Minimum SN, FPDM Table 5.5					MR = 8000	MR = 9000	MR = 8100 SNr Interpolation
From Table A.7A, pg A-15:		0.03 ESALd =	150,000	=> SNr =	2.63	2.52	
	(Interpolation)	**0.03 ESALd**	**198,660**	**=> SNr =**	**2.76**	**2.64**	**Use SNr = 2.34**
		0.03 ESALd =	200,000	=> SNr =	2.76	2.64	

Design Base Highwater Clearance

Proposed Low Edge of Pavement Surface =	EL 13.00
Friction Course Thickness =	1.00 IN
Struct. Course Thickness =	2.50 IN
Base Course Thickness =	7.00 IN
Bottom of Base =	EL 12.13
Pond 3 Control (NAVD) =	EL 8.00
Design Base Highwater Clearance =	4.13 FT

No Modulus Reduction Required

=> M_R (x1000) = 8.10 x 1.00 Mr Reduction Factor = 8

Appendix B

Pavement Survey and Evaluation Report

Florida Department of
TRANSPORTATION

Pavement Survey and Evaluation Report

State Road 93 (I-75)

Collier County

Financial Project Number 445296-1

Milepost 56.145 (Pine Ridge Road)

District 1 & 7 Materials

Authors
Marlene Hebert
V. Seth Collie, PE

Date of Report
March 23, 2020

PAVEMENT SURVEY AND EVALUATION REPORT
SR 93 (I-75) AT PINE RIDGE ROAD (OFF SYSTEM ROAD)

INTRODUCTION

In response to your request, the District Materials Office conducted a pavement survey and evaluation of Pine Ridge Road in Collier County for the subject project. We understand this project involves the design of a diverging diamond interchange and milling and resurfacing at SR 93 and Pine Ridge Road (Off System Road).

The objective of this work was to identify the existing pavement composition and to assess the pavement conditions, based on which to make recommendations for milling depth and resurfacing plan. This work involves a field review, pavement coring, data analysis, and reporting.

FIELD REVIEW

The objective of the field review is to gain a good understanding of the overall pavement condition, and to help determine the layout of the core locations. This review was performed on February 26, 2020 by our asphalt field specialist, Brent Grubbs, and the results of this review are included in Appendix 1.

Typical Section

There are three main typical sections within the project limits. Pine Ridge Road and Livingston Road consist of a six-lane divided asphalt pavement structure with curb and gutter and turn lanes. The SR 93 On and Off ramps consists of one lane with turn lanes and paved shoulders.

Pavement Condition

The pavement has a dense-graded friction course with the exception of the ramps where an open-graded friction course was found. The overall condition of these sections is fair with minimal cracking. The exception is Napa Blvd. which is in fair condition with moderate to severe cracking throughout.

CORING INFORMATION

The pavement coring was performed on February 26 and 27, 2020 according to Section 3.2 of the Materials Manual- *Flexible Pavement Coring and Evaluation*.

A total of fifty-five (55) cores were extracted, twenty-five (25) cores from Pine Ridge, nine (9) cores from Livingston, three (3) from Napa Blvd., four 4) from Whippoorwill Lane and fourteen (14) from the ramps. Pictures of core samples and locations are illustrated in Appendix 2. The coring data, including cross slope and the type of base materials, are presented in Appendix 3.

REHABILITATION RECOMMENDATION

Considering the existing pavement conditions, we render the following recommendation for milling and resurfacing.

MAINLINE, TURN LANES AND SHOULDERS (EXCEPTION BELOW)

- Mill 1.5 inches
- Resurface with 1.5 inches of FC 12.5.

EXCEPTION
NAPA LANE

- Mill 2.0 inches
- Resurface with 2.0 inches of FC 12.5.

Appendix 4 provides an illustration of the milling and resurfacing recommendations.

COMMENTS AND GENERAL NOTES

In addition to the recommendations made within this report, the following items should be considered when preparing the contract documents for the subject project:

Notes to the Designer

1. Due to the variable asphalt pavement thickness, and the frequency in which the preliminary pavement cores were taken, isolated areas of the base may be exposed.

2. Milling may need to be adjusted at the beginning and end of the project, side streets, bridge deck, approach slabs or areas in which constraints dictate. Appropriate plan details need to be illustrated in the plans in accordance with the FDOT Flexible Pavement Design Manual (FPDM).

The identification of the different pavement layers is based on visual classification as well as familiarity with the site. The actual classification may be different due to variability in asphalt mixes and roadway construction. The information in this report is based on the conditions found at the time of our investigation. The engineer shall notify us if the type of work proposed for the project changes and/or existing conditions change prior to the letting of the project. This report is based on the fact the project will be designed and constructed in accordance with the Standard Specifications, Standard Plans, Flexible Pavement Design Manual and other available information unless stated otherwise within this report.

Please contact this office if additional service is required or if there are any questions regarding this report at D1-D7Pavement@dot.state.fl.us

Marlene Hebert

Marlene Hebert
District Materials Pavement Coordinator

V. Sea Coll

Vincent S Collie, PE 79305
District Pavement Evaluation Engineer

APPENDIX

1. Field Review Findings

2. Core Sample and Location Pictures

3. Core Data and Layout

4. Illustration of Milling and Resurfacing Recommendations

5. Asphalt Survey Request

APPENDIX 1

Field Review Findings

445296-1

Naples, Collier County

I-75 @ Pine Ridge – Only Ramps, Pine Ridge Rd, Livingston Rd, Whippoorwill Ln and Napa Blvd

Inspected By : Brent Grubbs 2/26/2020

Pine Ridge/ CR 869 – Off System Roadway

From W of Livingston Rd to Napa Blvd, MP 0.000 – 1.360

6 – Lanes C & G, C & G median, Center TLS, TLS and Side Streets.

MPH – 45

Right Roadway

R-1 and R-2

MP 0.000 – 1.360 has lite longitudinal cracking, worming throughout and .2 - .5 rutting.

R-3

MP 0.000 – 1.010 has lite longitudinal cracking, worming throughout and .2 - .5 rutting.

Patch MP 1.010 – 1.050 - is in good condition with .2 rutting.

MP 1.050 – 1.360 has lite longitudinal cracking, worming throughout and .2 - .5 rutting.

Left Roadway

L-1, 2 and 3

MP 1.360 – 1.076 has lite longitudinal cracking, worming throughout and .2 - .5 rutting.

Patch MP 1.076 – 1.000 - is in good condition with .2 rutting.

MP 1.000 – 0.000 has lite longitudinal cracking, worming throughout and .2 - .5 rutting.

Center Turn Lanes – have some lite longitudinal cracking.

Turn Lanes - have some lite longitudinal cracking. Also, slippage in the right turn lane to Whippoorwill Lane, **Pic 1.**

Side Streets – have lite longitudinal cracking.

Livingston Rd – Off System Rdwy

From Phoenix Associates Entrance to Urgent Care Building – MP 0.000 – 0.230.

6 – Lanes with C & G, TLS, C & G Median.

MPH – 45

Right Roadway

R-1, 2 and 3
MP 0.000 – 0.230 has lite longitudinal cracking throughout with .3 - .4 rutting and some worming.

Left Roadway

L-1, 2 and 3
MP 0.230 – 0.000 has lite longitudinal cracking throughout with .3 - .4 rutting and some worming.

Turn Lanes – have lite longitudinal cracking.

Whippoorwill Lane – Side Street

Has lite to severe cracking throughout.

Napa Blvd - Side Street

Has severe cracking throughout.

Ramps at I-75 and Pineridge Road

North Bound on Ramp – has lite longitudinal cracking.
South Bound off Ramp – has some lite longitudinal cracking. Also, slippage in outside right turn lane to Pine Ridge Rd.
South Bound on Ramp – is in fair condition.
North Bound off Ramp – is in fair condition.

APPENDIX 2

Core Sample and Location Pictures

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Livingston Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Livingston Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Livingston Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Livingston Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	**DATE:** 2/26/2020	**BEGIN MP:** 56.145	**END MP:** 56.145	**COUNTY / ROADWAY ID:** Collier / Livingston Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

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CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

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PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Pine Ridge Road

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Whippoorwill Lane

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Whippoorwill Lane

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/6/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Napa

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	**DATE:** 2/6/2020	**BEGIN MP:** 56.145	**END MP:** 56.145	**COUNTY / ROADWAY ID:** Collier / Napa

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

PAVEMENT CORE PHOTO PAGE		FPID: 445296-1	PROJECT DESCRIPTION: SR 93 (I-75)	
CORED BY: Brent Grubbs	DATE: 2/26/2020	BEGIN MP: 56.145	END MP: 56.145	COUNTY / ROADWAY ID: Collier / Ramps

APPENDIX 3

Core Data Spreadsheet

445296-1 / Collier County
SR 93 (I-75) at Pine Ridge Road

MAINLINE LIVINGSTON								SUB-SOILS					
CORE	**MP**	**LANE**	**W/P**	**FC 9.5**	**S**	**TOTAL ASPHALT THICKNESS**	**CRACK DEPTH**	**LR**	**ABC**	**STAB**	**RUT**	**SLOPE**	**COMMENTS**
2	0.049	L1	N	1.1	2.7	3.8		13		12		0.9	
3	0.024	R1	N	1.0	2.7	3.7	0.5	12		12.0	0.2	1.2	
4	0.041	R3	Y	1.0	2.3	3.3	0.9	12.5		12.0	0.3	1.0	
5	0.189	L2	N	1.0	2.7	3.7	1.2	11		12.0	0.2	1.0	
6	0.154	R1	N	0.9	2.7	3.6		12.5		12.0	0.4	1.2	
7	0.165	R3	Y	0.9	3.6	4.5		13		12.0	0.2	0.9	
AVG				**0.98**		**3.77**	**0.87**	**12.33**		**12.00**			

TURN LANES								SUB-SOILS					
CORE	**MP**	**LANE**	**W/P**	**FC 9.5**	**S**	**TOTAL ASPHALT DEPTH**	**CRACK DEPTH**	**LR**	**ABC**	**STAB**	**RUT**	**SLOPE**	**COMMENTS**
1	0.005	L3	Y	1.0	2.8	3.8	0.3	13		12.0	0.1	1.0	Right Turn Lane
8	0.190	R3	N	0.8	3.3	4.1		11.5		12.0	0.1	1.1	Right Turn Lane to Pine Ridge Road
11	0.120	R3	N	0.9	4.5	5.4			7.0	12	0.1	0.5	Right Turn Lane to Pine Ridge Road
AVG.				**0.90**	**3.53**	**4.43**	**0.30**	**12.25**	**7.00**	**12.00**	**0.10**	**0.87**	

445296-1 / Collier County
SR 93 (I-75) at Pine Ridge Road

MAINLINE PINE RIDGE											SUB-SOILS					
CORE	MP	LANE	W/P	FC 9.5	FC 5	FC 3	S		TOTAL ASPHALT THICKNESS	CRACK DEPTH	LR	ABC	STAB	RUT	SLOPE	COMMENTS
12	0.140	L1	N	1.2			9.8		11.0	0.3	7.5		12.0	0.2	1.5	
13	0.025	R1	N	1.0			10.8		11.8		9.5		12.0	0.4	1.5	
15	0.836	R2	N	1.1			6.5		7.6	0.3	9		12.0	0.4	1.2	
16	1.024	R2	N	1.2			5.0		6.2	0.3	9.5		12.0	0.4	1.3	
17	1.167	R2	Y	1.5			5.0		6.5	0.4	10		12.0	0.4	1.2	
18	1.169	L2	N	1.2			7.7		8.9	0.2	7.5		12.0	0.7	1.7	
19	1.013	L2	N	1.1			7.1		8.2		8		12.0	0.1	1.6	
20	0.831	L2	N	1.0			6.4		7.4		8.5		12.0	0.3	1.4	
21	0.974	R1	Y	1.1			5.5		6.6		11		12.0	0.4	1.5	
22	1.049	L1	Y	1.0			6.9		7.9		9		12.0	0.3	1.5	
23	1.073	R3	N	1.1			6.0		7.1		5		12.0	0.5	2.6	
24	0.963	L3	N	1.4			8.3		9.7	0.9	4		12.0	0.8	2.1	
28	0.424	L1	N	1.5			7.3		8.8	0.3	9.5		12.0	0.3	1.5	
39	1.028	R3	N	1.1			7.5		8.6		7.5		12.0	0.1	1.5	
AVG				**1.18**			**7.13**		**8.31**	**0.39**	**8.25**		**12.00**			

TURN LANES											SUB-SOILS					
CORE	MP	LANE	W/P	FC 9.5	FC 5	FC 3	BINDER	S	TOTAL ASPHALT DEPTH	CRACK DEPTH	LR	ABC	STAB	RUT	SLOPE	COMMENTS
9	0.132	L3	N	1.5				2.7	4.2			5.8	12.0	0.3	1.7	Righ Turn Lane
10	0.111	L1	Y	0.7				2.3	3.0			5.9	12	0.2	1.5	Left Turn Lane
13	0.025	R1	N	1.0				10.8	11.8		9.5		12.0	0.4	1.5	Outside Left Turn Lane
14	0.007	R3	Y	1.5				2.1	3.6	0.4		7.1	12	0.3	1.7	Right Turn Lane
25	1.239	R1	N	1.3				3.0	4.3			5.8	12	0.2	1.0	Left Turn Lane to Napa Lane
26	0.976	L1	N	1.4				6.2	7.6	0.3	11.5		12	0.1	1.4	Left Turn Lane to I-75
27	0.424	L1	Y	0.9				2.3	3.2	1.0		5.9	12	0.2	1.6	Left Turn Lane
29	0.249	L1	Y	1.1				1.8	2.9			5.0	12	0.1	0.9	Left Turn Lane
30	0.364	R3	N	1.0				2.9	3.9	1.6		7.0	12	0.1	0.8	Right Turn Lane
31	0.538	R3	Y	1.2				7.6	8.8		2.5		12	0.2	1.1	Right Turn Lane
40	1.031	R1	N	1.0				4.0	5.0			5.2	12	0.1	0.7	Left Turn Lane
55	0.440	L3	Y	1.3				3.0	4.3	0.4		4.5	12	0.2	1.6	Right Turn Lane
AVG.				**1.16**				**4.06**	**5.22**	**0.74**	**7.83**	**5.80**	**12.00**	**0.20**	**1.29**	

445296-1 / Collier County
SR 93 (I-75) at Pine Ridge Road

MAINLINE NAPA BLVD.								SUB-SOILS				
CORE	MP	LANE	W/P	FC 3	S	TOTAL ASPHALT THICKNESS	CRACK DEPTH	LR	STAB	RUT	SLOPE	COMMENTS
36	1.360	R1	N	1.1		1.1	1.1	7	12.0	0.1	1.8	Base Cracked
37	1.360	L1	N	1.3		1.3	1	9	12.0	0.1	1.3	Base Cracked
38	1.360	L1	N	1.1	7.5	8.6		7	12.0	0.1	1.5	Left Turn Lane
AVG					**7.50**	**3.67**	**1.05**	**7.67**	**12.00**			

445296-1 / Collier County
SR 93 (I-75) at Pine Ridge Road

MAINLINE WHIPPOORWILL								SUB-SOILS				
CORE	MP	LANE	W/P	FC 3	S	TOTAL ASPHALT THICKNESS	CRACK DEPTH	LR	STAB	RUT	SLOPE	COMMENTS
32	0.576	L1	N	0.6	5.5	6.1	0.4	11	12.0	0.1	0.9	Whippiorwill Lane
33	0.576	R1	Y	1.1	3.5	4.6		9	12.0	0.3	0.6	Whippiorwill Lane
34	0.576	R1	Y	1.4		1.4		9.5	12.0	0.1	0.5	Whippiorwill Lane
35	0.576	L1	Y	1.6		1.6		9.5	12.0		1.4	Whippiorwill Lane
AVG				**1.18**	**4.50**	**3.43**	**0.40**	**9.75**	**12.00**			

445296--1 / Collier County
SR 93 (I-75) at Pine Ridge Road

MAINLINE RAMPS										SUB-SOILS					
CORE	**MP**	**LANE**	**W/P**	**FC 5**	**SP2F**	**BINDER**	**S**	**TOTAL ASPHALT THICKNESS**	**CRACK DEPTH**	**ABC**	**LR**	**STAB**	**RUT**	**SLOPE**	**COMMENTS**
41	56.619	R3	Y	0.8	1.5	0.7	2.4	5.4			10.0	12.0		4.5	NB ON RAMP
43	56.619	R2	N	0.8	1.7	1.0	2.8	6.3			10.0	12.0		1.1	NB ON RAMP
47	55.948	L1	Y	0.8	1.4		2.0	4.2			11.5	12.0		4.0	SB ON RAMP
49	56.948	L1	Y	0.9	1.0		1.7	3.6			10.0	12.0		0.9	SB ON RAMP
AVG				**0.83**	**1.40**	**0.85**	**2.23**	**4.88**			**10.38**	**12.00**			

SHOULDERS RAMPS										SUB-SOILS					
CORE	**MP**	**LANE**	**W/P**	**FC5**	**SP2F**		**S**	**TOTAL ASPHALT DEPTH**	**CRACK DEPTH**	**ABC**	**LR**	**STAB**	**RUT**	**SLOPE**	**COMMENTS**
42	56.619	OR	N		1.8		3.6	5.4			8.5	12		4	NB ON RAMP
44	56.619	OR	N		1.8			1.8		2.4		12		5.8	NB ON RAMP
46	56.628	OL	N		1.4		5.5	6.9			10.5	12		2.9	SB ON RMP
48	55.948	OL	N		1.6		1.5	3.1			5	12		3.2	SB ON RMP
50	55.948	OL	N		1.4		1.6	3.0			5	12		2.8	SB ON RMP
52	55.940	OR	N		1.4		7.7	9.1			5	1		2.3	NB OFF RAMP
53	55.940	IR	N		1.8		6.0	7.8			6	12		1.6	NB OFF RAMP
54	5.940	IR	N		1.1		0.6	1.7			11	12		1.6	AUX LANE NB OFF RAMP
AVG					**1.54**		**3.79**	**4.85**			**7.29**	**10.63**			

TURN LANES											SUB-SOILS				
CORE	**MP**	**LANE**	**W/P**	**FC5**	**SP2F**	**S2**	**BINDER**	**TOTAL ASPHALT DEPTH**	**CRACK DEPTH**	**ABC**	**LR**	**STAB**	**RUT**	**SLOPE**	**COMMENTS**
45	56.628	L2	N	0.7	1.6	1.9		4.2			11.0	12.0		0.4	Left turn lane on SB off ramp
51	55.940	R2	N	0.9	1.8	2.8					5.0	12		2.0	NB OFF RAMP AND Left Turn Lane
AVG.				**0.80**	**1.70**	**2.35**		**4.20**			**8.00**	**12.00**		**1.20**	

APPENDIX 4

Illustration of Milling and Resurfacing Recommendations

Illustration of Milling and Resurfacing Recommendation

Design Sketch Not Drawn To Scale

MAINLINE	TURN LANES	SHOULDERS
FC 12.5 / 1.5” Mill 1.5”		FC 12.5/ 1.5” Mill 1.5”
Remaining Asphalt After Milling	Remaining Asphalt After Milling	Remaining Asphalt After Milling
Existing Base	Existing Base	Existing Base
Subgrade	Subgrade	Subgrade

Note:

- **Structural requirements were not calculated in this design.**
- **In the event that the depicted pavement design will not be adequate based on structural calculations, overbuild thickness should be adjusted to meet the required structural number and/or other constructability purposes. If modification to the milling depth will be necessary to meet the required structural number contact this office for a revised recommendation.**

APPENDIX 5

Pavement Survey Request

Asphalt Survey Request

ID	125
Request Viewed	☐
Project Status	Phase I
Project Manager:	Nicole Harris
District	1
FM No:	445296-1
Project Type:	Preliminary
County:	Collier
Roadway ID:	
SR:	93
US:	
Project Description:	The project involves the design of DDI at the interchange of I-75 and Pine Ridge Road at MP 56.145, in Collier County. Additional improvements at Livingston Road, Whippoorwill Lane, and Napa Boulevard are also included in the full scope of work.
Begin MP:	56.145
End MP:	56.145
Survey Request Date	2/4/2020
Survey Report Due Date	5/30/2020
Supplementary Data:	Location Map
Please specify if the project has any realignment involved and/or locations of widening/reconstruction)	The project has the potential for realignment of ramps and widening at the intersections.
Typical Section:	Urban
Spec Year:	
Friction Course Type:	
Traffic Level:	
Pavement Condition:	
Cracking:	
Structures:	
Areas of Concern:	
Is this a "Goes With" project?	Yes
If yes, Lead Project Number:	442519-2
Charge to Financial Project ID:	445296-1
Email Address	nicole.harris@dot.state.fl.us
Cored By:	
Phase I and Brent FR Due Date	3/21/2020
Field Review Completion Date	
Phase I Completion Date	
Phase 2 Due Date	4/4/2020

Phase 2 Completion Date	
Phase 3 Due Date	5/2/2020
Cored Date 1	
Cored Date 2	
Cored Date 3	
Phase 3 Completion Date	
Phase 4 Due Date	5/16/2020
Phase 4 Completion Date	
Report Completed Date	
Existing ARMI Layer	
Mill Mainline	
Mill Shoulders	
Mill Turn Lanes	
Mill Crossovers	
Crack Relief Recommended	
Structural Type Recommended	
Structural Thickness Recommended	
Friction Type Recommended	
Friction Thickness Recommended	
Binder	
Warranty Request Date	
Warranty Inspection Date	
Comments	Please contact me if you have any questions.
Contract	
Days to Deadline	116
Days Ahead or Behind schedule	43,981
Attachments	Core Lane Designations pg 2 of 5.pdf Core Layout Aerial pgs 3,4,5 of 5.pdf Core Locations pg 1 of 5.pdf LA to LA_Pavement Core Request_1.pdf

Version: 1.0
Created at 2/4/2020 5:38 PM by Harris, Nicole
Last modified at 2/4/2020 5:38 PM by Harris, Nicole

Enhanced with DFFS

Edit Item Close

Appendix C

Pavement Design Calculations and Design Summary Sheets

FPN# 445296-1-22-01 **Project Name** Pine Ridge Road (CR 896) DDI **Design Section No.** 1

Pine Ridge Road Travel Lanes

												Cracking	
Core #	MP	Lane	FC-9.5	Type S	S3	S2	ABC-2	Binder	Total	LR	STAB	Rut	Slope
15	0.836	R2	1.10	6.50	0.00	0.00	0.00	0.00	**7.60**	9.50	12.00	0.40	1.20
16	1.024	R2	1.20	5.00	0.00	0.00	0.00	0.00	**6.20**	9.50	12.00	0.40	1.30
17	1.167	R2	1.50	5.00	0.00	0.00	0.00	0.00	**6.50**	10.00	12.00	0.40	1.20
18	1.169	L2	1.20	7.70	0.00	0.00	0.00	0.00	**8.90**	7.50	12.00	0.70	1.70
19	1.013	L2	1.10	7.10	0.00	0.00	0.00	0.00	**8.20**	8.00	12.00	0.10	1.60
20	0.831	L2	1.00	6.40	0.00	0.00	0.00	0.00	**7.40**	8.50	12.00	0.30	1.40
21	0.974	R1	1.10	5.50	0.00	0.00	0.00	0.00	**6.60**	11.00	12.00	0.40	1.50
22	1.049	L1	1.00	6.90	0.00	0.00	0.00	0.00	**7.90**	9.00	12.00	0.30	1.50
23	1.073	R3	1.10	6.00	0.00	0.00	0.00	0.00	**7.10**	5.00	12.00	0.50	2.60
24	0.963	L3	1.40	8.30	0.00	0.00	0.00	0.00	**9.70**	4.00	12.00	0.80	2.10
39	1.028	R3	1.10	7.50	0.00	0.00	0.00	0.00	**8.60**	7.50	12.00	0.10	1.50
			1.16	6.54	0.00	0.00	0.00	0.00		8.14	12.00	0.40	1.60

Material		Thickness	Coeff	SN
FC-9.5		1.16	0.25	0.29
Type S		6.54	0.25	1.63
S3		0.00	0	0.00
S2		0.00	0	0.00
ABC-2		0.00	0	0.00
Binder		0.00	0	0.00
LR		8.14	0.18	1.46
STAB		12.00	0.08	0.96
			Existing SN =	4.35

Design SN Variables:

M_r =	8,100	psi
Design ESAL =	7,012,000	
Design Traffic =	63,800	(20 year)
% R =	94	(New Urban Arterial, Table 5.2 of FPDM)

=> 4.78 (Interpolation)

From Table
A.6 A

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET
Pine Ridge Road (West of DDI Core)

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	7,012,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.78		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	**No**

PINE RIDGE RD. - MILLING & RESURFACING **MILLING 3.00**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-9.5	1.16	0.25	0.29
Type S	6.54	0.25	1.63
LR	8.14	0.18	1.46
STAB	12.00	0.08	0.96
		Existing Total SN=	4.35

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	1.50	0.44	0.66
Overbuild		0.00	0.00	0.00
Milling		-3.00	0.25	-0.75
			Existing Total SN=	4.35
			Design Total SN=	4.92
		Design SN Difference From Required SN:		0.14

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Pine Ridge Road (West of DDI Core) **Existing EB to SB Lane Taper to Ramp A (*)**

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	7,012,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.78		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	No

(*) Note: No pavement core data was provided for the outside lane taper to Ramp A. Pavement design assumes as-built plans widening pavement design from County Project 60111.

PINE RIDGE RD. - MILLING & RESURFACING **MILLING** **3.50**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-3	1.00	0.25	0.25
Type S	2.50	0.25	0.63
Asph Base	5.50	0.30	1.65
STAB	12.00	0.08	0.96
		Existing Total SN=	3.49

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	2.00	0.44	0.88
Overbuild		0.00	0.00	0.00
Milling		-3.50	0.25	-0.88
			Existing Total SN=	3.49
			Design Total SN=	4.15
		Design SN Difference From Required SN:		-0.63 (**)

(**) Note: Maximum allowed milling depth of existing structural asphalt with equivalent resurfacing will not meet required structural SN. Recommend area of lane taper to Ramp A to be reconstructed.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Pine Ridge Road (West of DDI Core) **Existing WB to SB Median LT Turn Lane W. of Core**

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	7,012,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.78		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	No

(*) Note: Pavement Core 26 data is used to evaluate existing WB to SB left turn lane west of DDI core.

PINE RIDGE RD. - MILLING & RESURFACING **MILLING** **3.00**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-9.5	1.40	0.25	0.35
Type S	6.20	0.25	1.55
Limerock Base	11.50	0.18	2.07
STAB	12.00	0.08	0.96
		Existing Total SN=	4.93

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	1.50	0.44	0.66
Overbuild		0.00	0.00	0.00
Milling		-3.00	0.25	-0.75
			Existing Total SN=	4.93
			Design Total SN=	5.50
		Design SN Difference From Required SN:		0.72 (**)

(**) Note: Proposed milling and resurfacing design for Pine Ridge Road (West of I-75) will meet required structural SN for the existing WB to SB left turn lane pavement for the DDI core.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Pine Ridge Road (West of DDI Core) **Existing EB to NB Median LT Turn Lane E. of Core**

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	7,012,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.78		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	No

(*) Note: Pavement Core 40 data is used to evaluate existing EB to NB left turn lane east of DDI core.

PINE RIDGE RD. - MILLING & RESURFACING **MILLING** **5.00**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-9.5	1.40	0.25	0.35
Type S	4.00	0.25	1.00
ABC-2	5.20	0.30	1.56
STAB	12.00	0.08	0.96
		Existing Total SN=	3.87

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	3.50	0.44	1.54
Overbuild		0.00	0.00	0.00
Milling		-5.00	0.25	-1.25
			Existing Total SN=	3.87
			Design Total SN=	4.82
		Design SN Difference From Required SN:		0.04 (**)

(**) Note: Maximum allowed milling depth of existing structural asphalt with equivalent resurfacing will meet required structural SN. Recommend mill and resurface EB to NB left turn lane.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Pine Ridge Road (West of DDI Core) **Existing WB to NB Lane Taper to Ramp C (*)**

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	5,808,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.65		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	No

(*) Note: No pavement core data was provided for the outside lane taper to Ramp C. Pavement design assumes as-built plans widening pavement design from County Project 60111.

PINE RIDGE RD. - MILLING & RESURFACING **MILLING** **3.50**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-3	1.00	0.25	0.25
Type S	2.50	0.25	0.63
Asph Base	5.50	0.30	1.65
STAB	12.00	0.08	0.96
		Existing Total SN=	3.49

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	2.00	0.44	0.88
Overbuild		0.00	0.00	0.00
Milling		-3.50	0.25	-0.88
			Existing Total SN=	3.49
			Design Total SN=	4.15
		Design SN Difference From Required SN:		-0.50 (**)

(**) Note: Maximum allowed milling depth of existing structural asphalt with equivalent resurfacing will not meet required structural SN. Recommend area of lane taper to Ramp C to be reconstructed.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET
WB Pine Ridge Road (DDI Core)

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,483,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.72		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	**No**

PINE RIDGE RD. - MILLING & RESURFACING **MILLING 3.00**

Existing Travel Lanes:

Layer	Thickness	Coef.	SN
FC-9.5	1.16	0.25	0.29
Type S	6.54	0.25	1.63
LR	8.14	0.18	1.46
STAB	12.00	0.08	0.96
		Existing Total SN=	4.35

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	1.50	0.44	0.66
Overbuild		0.00	0.00	0.00
Milling		-3.00	0.25	-0.75
			Existing Total SN=	4.35
			Design Total SN=	4.92
		Design SN Difference From Required SN:		0.19

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET
WB Pine Ridge Road (DDI Core) - Variable Milling for 16.0' Bridge Clearance

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	90
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,471,000	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.53		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	1
		Cross Slope Correction	**No**

PINE RIDGE RD. - MILLING & RESURFACING **PAVEMENT MILLING** **4.50**

Existing Travel Lanes: **BRIDGE CLEARANCE MILLING** **-2.33**

Layer	Thickness	Coef.	SN
FC-9.5	1.16	0.25	0.29
Type S	6.54	0.25	1.63
LR	8.14	0.18	1.46
STAB	12.00	0.08	0.96
		Existing Total SN=	4.35

Recommended Travel Lanes Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-12.5	(Level C)	1.50	0.44	0.66
Type SP	(Level C)	3.00	0.44	1.32
Overbuild		0.00	0.00	0.00
Milling		-6.83	0.25	-1.71
			Existing Total SN=	4.35
			Design Total SN=	4.62
		Design SN Difference From Required SN:		0.09

Approved by
Responsible Engineer
Date: _____

FPN# 445296-1-22-01 **Project Name** Pine Ridge Road (CR 896) DDI **Design Section No.** 2

Pine Ridge Road Travel Lanes

												Cracking	
Core #	MP	Lane	FC-5	SP12.5	S3	S2	ABC-2	Binder	Total	LR	STAB	Depth	Avg
15	0.836	R2	1.10	6.50	0.00	0.00	0.00	0.00	**7.60**	9.50	12.00	0.40	1.20
16	1.024	R2	1.20	5.00	0.00	0.00	0.00	0.00	**6.20**	9.50	12.00	0.40	1.30
17	1.167	R2	1.50	5.00	0.00	0.00	0.00	0.00	**6.50**	10.00	12.00	0.40	1.20
18	1.169	L2	1.20	7.70	0.00	0.00	0.00	0.00	**8.90**	7.50	12.00	0.70	1.70
19	1.013	L2	1.10	7.10	0.00	0.00	0.00	0.00	**8.20**	8.00	12.00	0.10	1.60
20	0.831	L2	1.00	6.40	0.00	0.00	0.00	0.00	**7.40**	8.50	12.00	0.30	1.40
21	0.974	R1	1.10	5.50	0.00	0.00	0.00	0.00	**6.60**	11.00	12.00	0.40	1.50
22	1.049	L1	1.00	6.90	0.00	0.00	0.00	0.00	**7.90**	9.00	12.00	0.30	1.50
23	1.073	R3	1.10	6.00	0.00	0.00	0.00	0.00	**7.10**	5.00	12.00	0.50	2.60
24	0.963	L3	1.40	8.30	0.00	0.00	0.00	0.00	**9.70**	4.00	12.00	0.80	2.10
39	1.028	R3	1.10	7.50	0.00	0.00	0.00	0.00	**8.60**	7.50	12.00	0.10	1.50
			1.16	6.54	0.00	0.00	0.00	0.00		8.14	12.00	0.40	1.60

Material		Thickness	Coeff	SN
FC-5		1.16	0.25	0.29
SP12.5		6.54	0.25	1.63
S3		0.00	0	0.00
S2		0.00	0	0.00
ABC-2		0.00	0	0.00
Binder		0.00	0	0.00
LR		8.14	0.18	1.46
STAB		12.00	0.08	0.96
			Existing SN =	**4.35**

Design SN Variables:

M_r =	**8,100**	psi
Design ESAL =	**7,022,016**	
Design Traffic =	**63,800**	(20 year)
% R =	**94**	(New Urban Arterial, Table 5.2 of FPDM)

=> **4.78** (Interpolation)

From Table
A.6 A

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	94
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	7,022,016	**Design Speed:**	35 **MPH**
$ESAL_D$ - Shoulder NA	NA	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.78		
SN_R - Shoulder NA	NA	**Design Seq. No.:**	2
		Cross Slope Correction	**No**

PINE RIDGE RD. - WIDENING & NEW CONSTRUCTION

Recommended Travel Lanes Widening Pavement Design:

Layer		Thickness		Coef.	SN
FC-12.5	(Traffic C)	1.50		0.44	0.66
Type SP	(Traffic C)	6.00	(*)	0.44	2.64
Optional Base Group 9		10.00		0.18	1.80
Type B Stabilization		12.00		0.08	0.96

(*) Pavement and base thicknesses match adjoining existing plus overlay pavement; FPDM Chapter 6.

Design Total SN= 6.06

Design SN Difference From Required SN: 1.28

Approved by
Responsible Engineer
Date: _____

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI **Design Section No.** **3**

SB Entrance Ramp A from Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP-12.5	S	S2	ABC-2	Binder	Total	LR	STAB	Depth	Avg
47	55.948	L1	0.80	1.40	2.00				**4.20**	11.50	12.00		
49	56.948	L1	0.90	1.00	1.70				**3.60**	10.00	12.00		
			0.85	1.20	1.85					10.75	12.00		

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI

Paved Shoulder - SB Entrance Ramp from Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP12.5	S	S2	ABC-2	Binder	Total	LR	STAB	Depth	Slope
46	Not Used								**0.00**				
48	55.948	OL	0.00	1.60	1.50				**3.10**	5.00	12.00		3.20
50	55.948	OL	0.00	1.40	1.60				**3.00**	5.00	12.00		2.80
			0.00	1.50	1.55					5.00	12.00		

Material		Thickness	Coeff	SN
FC-5		0.85	0.00	0.00
SP-12.5		1.20	0.25	0.30
S		1.85	0.25	0.46
S2			0	0.00
ABC-2			0	0.00
Binder			0	0.00
LR		10.75	0.18	1.94
STAB		12.00	0.08	0.96
			Existing SN =	**3.66**

Design SN Variables:

M_r = **8,100** psi
Design ESAL = **3,440,000**
Design Traffic = **7,100** (20 year)
% R = **95** (New Urban Arterial, Table 5.2 of FPDM)

=> **4.36** (Interpolation)

From Table
A.7 A

Material		Thickness	Coeff	SN
FC-5			0.00	0.00
SP12.5		1.50	0.25	0.38
S		1.55	0.25	0.39
S2			0.00	0.00
ABC-2			0	0.00
Binder			0	0.00
LR		5.00	0.18	0.90
STAB		12.00	0.08	0.96
			Existing SN =	**2.62**

Design SN:

M_r = **8,100** psi
Design ESAL = **103,200** (3% of Design ESAL's - CH. 8 FPDM)
Design Traffic = **7,100** (20 year)
% R = **95** (Interpolation - PPM Pg. 2-22)

=> **2.34** (Interpolation)

From Table
A.7 A

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	3,440,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	103,200	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.36		
SN_R - Shoulder	2.34	**Design Seq. No.:**	3A1
		Cross Slope Correction	**No**

Existing Travel Lane:

SB ON-RAMP A LANE MILLING AND RESURFACING **MILLING** **1.50**

Existing Travel Lane:

Layer	Thickness	Coef.	SN
FC-5	0.85	0.00	0.00
SP-12.5	1.20	0.25	0.30
Type S	1.85	0.25	0.46
Limerock Base	10.75	0.18	1.94
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	3.66

Recommended Travel Lane Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-5	(Traffic C)	0.75	0.00	0.00
Type SP	(Traffic C)	2.00	0.44	0.88
Overbuild		0.00	0.00	0.00
Milling	1.50	-0.65	0.25	-0.16
			Existing Total SN=	3.66
			Design Total SN=	4.38
		Design SN Difference From Required SN:		0.02

Approved by
Responsible Engineer

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	3,440,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	103,200	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.36		
SN_R - Shoulder	2.34	**Design Seq. No.:**	3A2
		Cross Slope Correction	**No**

Existing Ramp Shoulders:

SB ON-RAMP A LANE MILLING & RESURFACING **MILLING 0.75**

Layer	Thickness	Coef.	SN
SP-12.5	1.50	0.25	0.38
Type S	1.55	0.25	0.39
Limerock Base	5.00	0.18	0.90
Type B Stabilization	0.00	0.08	0.00
		Existing Total SN=	1.66

Recommended Shoulder Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
Type SP	(Traffic C)	2.00	0.44	0.88
Overbuild		0.00	0.00	0.00
Milling	0.75	-0.75	0.25	-0.19
			Existing Total SN=	1.66
			Design Total SN=	2.36
		Design SN Difference From Required SN:		0.02 (**)

(**) Note: Ramp has $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder matches structural structural pavement type, thickness and traffic level of adjoining travel lane pavement, and meets minimum SN_R requirements.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**$M_{R:}$**	8,100 **PSI**
$ESAL_D$ - Mainline	3,440,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	103,200	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.36		
SN_R - Shoulder	2.34	**Design Seq. No.:**	3A3
		Cross Slope Correction	**No**

SB ON-RAMP A
Recommended Travel Lane Reconstruction Pavement Design:

Layer	Thickness	Coef.	SN
FC-5	0.75	0.00	0.00
Type SP (Level C)	3.00	0.44	1.32
Optional Base Group 11	12.00	0.18	2.16
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	4.44
		Design SN Difference From Required SN:	0.08

Recommended Shoulder Reconstruction Pavement Design:

Layer	Thickness	Coef.	SN
Type SP (Level C)	1.50	0.44	0.66
Optional Base Group 1	4.00	0.18	0.72
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	2.34
		Design SN Difference From Required SN:	0.00

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	3,229,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	100,000	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.32		
SN_R - Shoulder	2.46	**Design Seq. No.:**	3B1
		Cross Slope Correction	**No**

Existing Travel Lane:

NB OFF-RAMP B (*) LANE MILLING AND RESURFACING
(*) Note: Ramp B has no Core Data. Existing pavement assumed from As-Built plans for Ramp B realignment - County proj. 60111
Existing Travel Lane:

Layer	Thickness	Coef.	SN
FC-3	1.00	0.25	0.25
Type S	2.00	0.25	0.50
Base ABC-2	6.00	0.30	1.80
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	3.51

Recommended Travel Lane Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-5	(Traffic C)	0.75	0.00	0.00
Type SP	(Traffic C)	2.50	0.44	1.10
Overbuild		0.00	0.00	0.00
Milling	1.50	-0.65	0.25	-0.16
			Existing Total SN=	3.51
			Design Total SN=	4.45
		Design SN Difference From Required SN:		0.13

Approved by
Responsible Engineer

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	3,229,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	100,000	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.34		
SN_R - Shoulder	2.34	**Design Seq. No.:**	3B2
		Cross Slope Correction	**No**

Existing Ramp Shoulders:

NB OFF-RAMP B (*) LANE MILLING & RESURFACING
(*) Note: Ramp B has no Core Data. Existing pavement assumed from As-Built plans for Ramp B realignment - County proj. 60111

Layer	Thickness	Coef.	SN
Type S	2.00	0.25	0.50
Base ABC-2	4.00	0.30	1.20
Type B Stabilization	0.00	0.08	0.00
		Existing Total SN=	1.70

Recommended Shoulder Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
Type SP	(Traffic C)	2.00	0.44	0.88
Overbuild		0.00	0.00	0.00
Milling	0.75	-0.75	0.25	-0.19
			Existing Total SN=	1.70
			Design Total SN=	2.39
		Design SN Difference From Required SN:		0.05 (**)

(**) Note: Ramp has $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder matches structural structural pavement type, thickness and traffic level of adjoining travel lane pavement, and meets minimum SN_R requirements.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**$M_{R:}$**	8,100 **PSI**
$ESAL_D$ - Mainline	3,229,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	100,000	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.32		
SN_R - Shoulder	2.34	**Design Seq. No.:**	3B3
		Cross Slope Correction	**No**

NB OFF-RAMP B

Recommended Travel Lane Reconstruction Pavement Design:

Layer	Thickness	Coef.	SN
FC-5	0.75	0.00	0.00
Type SP (Level C)	3.00	0.44	1.32
Optional Base Group 11	12.00	0.18	2.16
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	4.44
		Design SN Difference From Required SN:	0.12

Recommended Shoulder Reconstruction Pavement Design:

Layer	Thickness	Coef.	SN
Type SP (Level C)	1.50	0.44	0.66
Optional Base Group 1	4.00	0.18	0.72
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	2.34
		Design SN Difference From Required SN:	0.00

Approved by
Responsible Engineer
Date: _____

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI **Design Section No.** 4

NB Entrance Ramp C from Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP-12.5	S	S2	ABC-2	Binder	Total	LR	STAB	Depth	Avg
41	56.619	R3	0.80	1.50	2.40			0.70	**5.40**	10.00	12.00		
43	56.169	R2	0.80	1.70	2.80			1.00	**6.30**	10.00	12.00		
			0.80	1.60	2.60			0.85		10.00	12.00		

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI

Paved Shoulder - NB Entrance Ramp from Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP12.5	S	S2	ABC	Binder	Total	LR	STAB	Depth	Slope
									0.00				
44	56.619	OR	0.00	1.80	0.00		2.40		**4.20**	0.00	12.00		5.80
			0.00	1.80	0.00		2.40			0.00	12.00		

Sheet 1 of 1

Material		Thickness	Coeff	SN
FC-5		0.80	0.00	0.00
SP-12.5		1.60	0.25	0.40
S		2.60	0.25	0.65
S2			0	0.00
ABC-2			0	0.00
Binder		0.85	0.2	0.17
LR		10.00	0.18	1.80
STAB		12.00	0.08	0.96
			Existing SN =	3.98

Design SN Variables:

M_r =	8,100	psi
Design ESAL =	6,557,000	
Design Traffic =	13,900	(20 year)
% R =	95	(New Urban Arterial, Table 5.2 of FPDM)

=> 4.80 (Interpolation)

From Table
A.7 A

Sheet 2 of 2

Material		Thickness	Coeff	SN
FC-5			0.00	0.00
SP12.5		1.80	0.25	0.45
S		0.00	0.25	0.00
S2			0.00	0.00
ABC		2.40	0.14	0.34
Binder			0.2	0.00
LR		0.00	0.18	0.00
STAB		12.00	0.08	0.96
			Existing SN =	1.75

Design SN:

M_r =	8,100	psi
Design ESAL =	196,710	(3% of Design ESAL's - CH. 8 FPDM)
Design Traffic =	13,900	(20 year)
% R =	95	(Interpolation - PPM Pg. 2-22)

=> 2.34 (Interpolation)

From Table
A.7 A

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,557,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	196,710	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.80		
SN_R - Shoulder	2.34	**Design Seq. No.:**	4A
		Cross Slope Correction	**No**

Existing Travel Lane:

NB ON-RAMP C LANE MILLING AND RESURFACING **MILLING** **1.50**

Existing Travel Lane:

Layer	Thickness	Coef.	SN
FC-5	0.80	0.00	0.00
SP-12.5	1.60	0.25	0.40
Binder	0.85	0.20	0.17
Type S	2.60	0.25	0.65
Limerock Base	10.00	0.18	1.80
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	3.98

Recommended Travel Lane Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-5	(Traffic C)	0.75	0.00	0.00
Type SP	(Traffic C)	2.50	0.44	1.10
Overbuild	(Traffic C)	0.00	0.00	0.00
Milling	1.50	-0.70	0.25	-0.18
			Existing Total SN=	3.98
			Design Total SN=	4.91
		Design SN Difference From Required SN:		0.10

Approved by
Responsible Engineer

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,557,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	196,710	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.80		
SN_R - Shoulder	2.34	**Design Seq. No.:**	4B
		Cross Slope Correction	**No**

Existing Ramp Shoulders:

NB ON-RAMP C MILLING & RESURFACING **MILLING 0.75**

Layer	Thickness	Coef.	SN
SP-12.5	1.80	0.25	0.45
ABC	2.40	0.14	0.34
Limerock Base	0.00	0.18	0.00
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	1.75

Recommended Shoulder Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
Type SP	(Traffic C)	2.50	0.44	1.10
Overbuild		0.00	0.00	0.00
Milling	0.75	-0.75	0.25	-0.19
			Existing Total SN=	1.75
			Design Total SN=	2.66
		Design SN Difference From Required SN:		0.32 (**)

(**) Note: Ramp has $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder matches structural structural pavement type, thickness and traffic level of adjoining travel lane pavement, and meets minimum SN_R requirements.

Approved by
Responsible Engineer
Date: _____

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896)
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.14
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,557,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	196,710	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.80		
SN_R - Shoulder	2.34	**Design Seq. No.:**	4C
		Cross Slope Correction	**No**

Recommended Travel Lane Reconstruction Pavement Design:

NB ON-RAMP C

Layer	Thickness	Coef.	SN
FC-5	0.75	0.00	0.00
Type SP (Traffic C)	4.00	0.44	1.76
Optional Base Group 11	12.00	0.18	2.16
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	4.88
		Design SN Difference From Required SN:	0.08

Recommended Shoulder Resconstruction Pavement Design:

Layer	Thickness	Coef.	SN
Type SP (Traffic C)	2.00	0.44	0.88
Optional Base Group 1	4.00	0.18	0.72
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	2.56
		Design SN Difference From Required SN:	0.22

Approved by
Responsible Engineer
Date: _____

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI **Design Section No.** 4

SB Exit Ramp D to Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP-12.5	S	S2	ABC-2	Binder	Total	LR	STAB	Depth	Avg
45	56.628	L2	0.70	1.60	1.90				**4.20**	11.00	12.00		
			0.70	1.60	1.90					11.00	12.00		

FPN# **445296-1-22-01** **Project Name** Pine Ridge Road (CR 896) DDI

Paved Shoulder - SB Exit Ramp D to Pine Ridge Road

												Cracking	
Core #	MP	Lane	FC-5	SP12.5	S	S2	ABC	Binder	Total	LR	STAB	Depth	Slope
46	56.628	OL	0.00	1.40	5.50				**6.90**	10.50	12.00		5.80
			0.00	1.40	5.50					10.50	12.00		

Material		Thickness	Coeff	SN
FC-5		0.70	0.00	0.00
SP-12.5		1.60	0.25	0.40
S		1.90	0.25	0.48
S2			0	0.00
ABC-2			0	0.00
Binder		0.00	0.2	0.00
LR		11.00	0.18	1.98
STAB		12.00	0.08	0.96
			Existing SN =	**3.82**

Design SN Variables:

	8,100	
M_r =		psi
Design ESAL =	**6,622,000**	
Design Traffic =	**14,100**	(20 year)
% R =	**95**	(New Urban Arterial, Table 5.2 of FPDM)

=> **4.81** (Interpolation)

From Table
A.7 A

Material		Thickness	Coeff	SN
FC-5			0.00	0.00
SP12.5		1.40	0.25	0.35
S		5.50	0.25	1.38
S2		0.00	0.00	0.00
ABC		0.00	0.14	0.00
Binder		0.00	0.2	0.00
LR		10.50	0.18	1.89
STAB		12.00	0.08	0.96
			Existing SN =	**4.58**

Design SN:

M_r =	**8,100**	psi
Design ESAL =	**198,660**	(3% of Design ESAL's - CH. 8 FPDM)
Design Traffic =	**14,100**	(20 year)
% R =	**95**	(Interpolation - PPM Pg. 2-22)

=> **2.34** (Interpolation)

From Table
A.7 A

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,622,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	198,660	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.81		
SN_R - Shoulder	2.34	**Design Seq. No.:**	5A
		Cross Slope Correction	**No**

Existing Travel Lane:

SB OFF-RAMP D LANE MILLING AND RESURFACING **MILLING 1.50**

Existing Travel Lane:

Layer	Thickness	Coef.	SN
FC-5	0.70	0.00	0.00
SP-12.5	1.60	0.25	0.40
Binder	0.00	0.20	0.00
Type S	1.90	0.25	0.48
Limerock Base	11.00	0.18	1.98
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	3.82

Recommended Travel Lane Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
FC-5	(Traffic C)	0.75	0.00	0.00
Type SP	(Traffic C)	3.00	0.44	1.32
Overbuild		0.00	0.00	0.00
Milling	1.50	-0.80	0.25	-0.20
			Existing Total SN=	3.82
			Design Total SN=	4.94
		Design SN Difference From Required SN:		0.13

Approved by
Responsible Engineer

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,622,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	198,660	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.81		
SN_R - Shoulder	2.34	**Design Seq. No.:**	5B
		Cross Slope Correction	**No**

Existing Ramp Shoulders:

SB OFF-RAMP D LANE MILLING & RESURFACING **MILLING** **0.75**

Layer	Thickness	Coef.	SN
SP-12.5	1.40	0.25	0.35
Type S	5.50	0.25	1.38
Limerock	10.50	0.18	1.89
Type B Stabilization	12.00	0.08	0.96
		Existing Total SN=	4.58

Recommended Shoulder Resurfacing Pavement Design:

Layer		Thickness	Coef.	SN
Type SP	(Level C)	3.00	0.44	1.32
Overbuild		0.00	0.00	0.00
Milling	0.75	-0.75	0.25	-0.19
			Existing Total SN=	4.58
			Design Total SN=	5.71
		Design SN Difference From Required SN:		3.37

(**) Note: Ramp has $ESAL_D$ less than 10 million, therefore FPDM Chapter 8.1 allows paved shoulder milled and resurfaced pavement types and thicknesses to use minimum SN_R values in Table 5.5 in lieu of pavement design based on 3% of $ESAL_D$. Milled and resurfaced shoulder matches structural structural pavement type, thickness and traffic level of adjoining travel lane pavement, and meets minimum SN_R requirements.

Approved by
Responsible Engineer

FLORIDA DEPARTMENT OF TRANSPORTATION
FLEXIBLE PAVEMENT DESIGN SUMMARY SHEET

Prepared by:	Jason L Starr, P.E.	**Date Prepared:**	8/19/20
Financial Project No.	445296-1-22-01	**Project Name:**	Pine Ridge Road (CR 896) DDI
WPI No.	--------	**From:**	1400 ft. west of I-75
State Project No.	NA	**To:**	1230 ft. east of I-75
County Section No.	03175	**Begin MP:**	I-75 MP # 56.145
FAP No.	NA	**End MP:**	I-75 MP # 56.145
County:	Collier County	**Project Length (Mi)**	0.498
Type Work:	Milling & Resurfacing and Widening		
Opening Year:	2025	**% R:**	95
Design Year:	2045	**M_R:**	8,100 **PSI**
$ESAL_D$ - Mainline	6,622,000	**Design Speed:**	55 MPH (25-45 Ramp Terminals)
$ESAL_D$ - Shoulder	198,660	**Functional Class:**	Minor Arterial
SN_R - Mainline	4.81		
SN_R - Shoulder	2.34	**Design Seq. No.:**	5C
		Cross Slope Correction	**No**

Recommended Travel Lane Reconstruction Pavement Design:

Layer	Thickness	Coef.	SN
FC-5	0.75	0.00	0.00
Type SP (Traffic C)	4.00	0.44	1.76
Optional Base Group 11	12.00	0.18	2.16
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	4.88
		Design SN Difference From Required SN:	0.07

Recommended Shoulder Resconstruction Pavement Design:

Layer	Thickness	Coef.	SN
Type SP (Level C)	2.00	0.44	0.88
Optional Base Group 1	4.00	0.18	0.72
Type B Stabilization	12.00	0.08	0.96
		Design Total SN=	2.56
		Design SN Difference From Required SN:	0.22

Approved by
Responsible Engineer
Date: _____

Appendix D

FDOT Mr Report - April 2020

Florida Department of Transportation
605 Suwannee Street
Tallahassee, FL 32399-0450

RON DESANTIS
GOVERNOR

KEVIN J. THIBAULT
SECRETARY

MEMORANDUM

DATE: May 6, 2020

TO: Teresa Puckett, District Geotechnical Materials Engineer

FROM: David Horhota, State Geotechnical Materials Engineer

SUBJECT: Embankment Resilient Modulus Pavement Design
District 1, Collier County
FPN 445296-1: I-75 at Pine Ridge Road

Six (6), 2-bag samples were received by the State Materials Office (SMO) for determination of an embankment (roadbed) resilient modulus for pavement design. After visual observation of the six samples, it was determined that the material from each 2-bag sample looked visually similar and the material from each of the bags were combined to form one sample from each location. After combining materials from the bags, samples from each location were obtained for classification tests (Atterberg limits, particle size analysis, and organic content), Proctor density, and resilient modulus. The classification test results are reported in Tables 1 and 2. Information provided for this project by Tierra, Inc. indicated all samples were collected from between 0.0 and 2.0 feet in depth.

Table 1. Summary of Initial Soil Gradation Results

Sample ID	Passing 3/4" (%)	Passing 1/2" (%)	Passing 3/8" (%)	Passing No. 4 (%)	Passing No. 10 (%)	Passing No. 40 (%)	Passing No. 60 (%)	Passing No. 100 (%)	Passing No. 200 (%)
MR-1	100.0	100.0	100.0	100.0	99.9	96.5	76.0	23.9	2.5
MR-2	100.0	100.0	100.0	100.0	100.0	96.5	75.5	23.3	2.3
MR-3	100.0	100.0	100.0	100.0	100.0	96.6	75.4	25.4	1.4
MR-4	100.0	100.0	100.0	100.0	100.0	96.2	75.8	24.6	1.5
MR-5	100.0	100.0	100.0	100.0	100.0	95.9	74.3	24.4	1.6
MR-6	100.0	100.0	100.0	100.0	99.9	96.3	75.6	22.8	1.5

Table 2. Summary of Soil Classification and Organic Content Results

Sample ID	Location	Soil Class.	Organic Content (%)	LL/PI
MR-1	414211, 683368	A-3	1.0	N.P.
MR-2	414543, 683358	A-3	1.3	N.P.
MR-3	414418, 682997	A-3	0.3	N.P.
MR-4	415055, 683214	A-3	0.2	N.P.
MR-5	415216, 683559	A-3	0.1	N.P.
MR-6	415452, 683208	A-3	0.2	N.P.

In addition to the classification testing, the following test program was conducted:

(1) Standard Proctor, AASHTO T 99
(2) Resilient Modulus (M_R), AASHTO T 307.

A summary of laboratory test results is included in Table 3. The resilient modulus values listed in this table were obtained using the relationship developed from each individual test (resilient modulus versus bulk stress - with bulk stress, **Θ,** defined as $\Theta = \sigma_1 + \sigma_2 + \sigma_3$), and using a bulk stress of 11 psi, which is the recommendation from Dr. Ping's research work in modeling the embankment in-situ stresses for Florida pavement conditions. Two results are listed for each location because two samples were prepared for each location and they represent the individual test result from each sample tested. The resilient modulus samples were compacted to within 1 pound per cubic foot (pcf) of the maximum density and 0.5 percent of the optimum moisture content as determined by AASHTO T99.

Table 3. Summary of T-99 and M_R Test Results

Sample ID	Passing No. 200, %	Standard Proctor Density, pcf	Optimum Moisture Content, %	Resilient Modulus @ Θ=11psi (psi)
MR-1	3	101.2	14.6	8,640
				8,867
MR-2	2	108.8	12.5	11,829
				12,080
MR-3	1	103.3	14.2	9,879
				10,352
MR-4	2	101.4	13.6	10,027
				9,616
MR-5	2	104.7	12.4	10,465
				11,036
MR-6	2	99.0	14.9	7,528
				7,966

To obtain a design embankment resilient modulus, a 90 percent method was used as outlined in both the Flexible Pavement Design Manual and Soils and Foundations Handbook. The resilient modulus values were ranked in ascending order and the percentage of values which were greater than or equal to the individual value were determined. The results of this analysis are recorded in Table 4 and the corresponding graph of these results is included as Figure 1.

Table 4. Ranked M_R Test Results for 90 Percent Method

Rank	Sample ID	% ≥	M_R (psi)
1	MR-6 (2)	100	7,528
2	MR-6 (1)	92	7,966
3	MR-1 (1)	83	8,640
4	MR-1 (2)	75	8,867
5	MR-4 (2)	67	9,616
6	MR-3 (1)	58	9,879
7	MR-4 (1)	50	10,027
8	MR-3 (2)	42	10,352
9	MR-5 (1)	33	10,465
10	MR-5 (2)	25	11,036
11	MR-2 (1)	17	11,829
12	MR-2 (2)	8	12,080

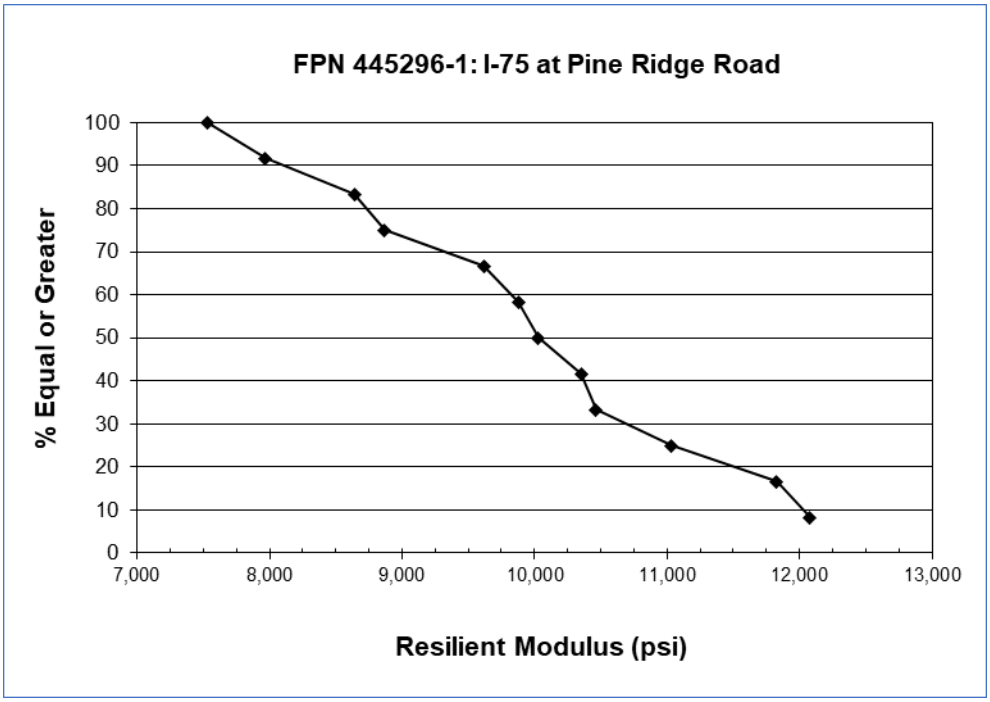


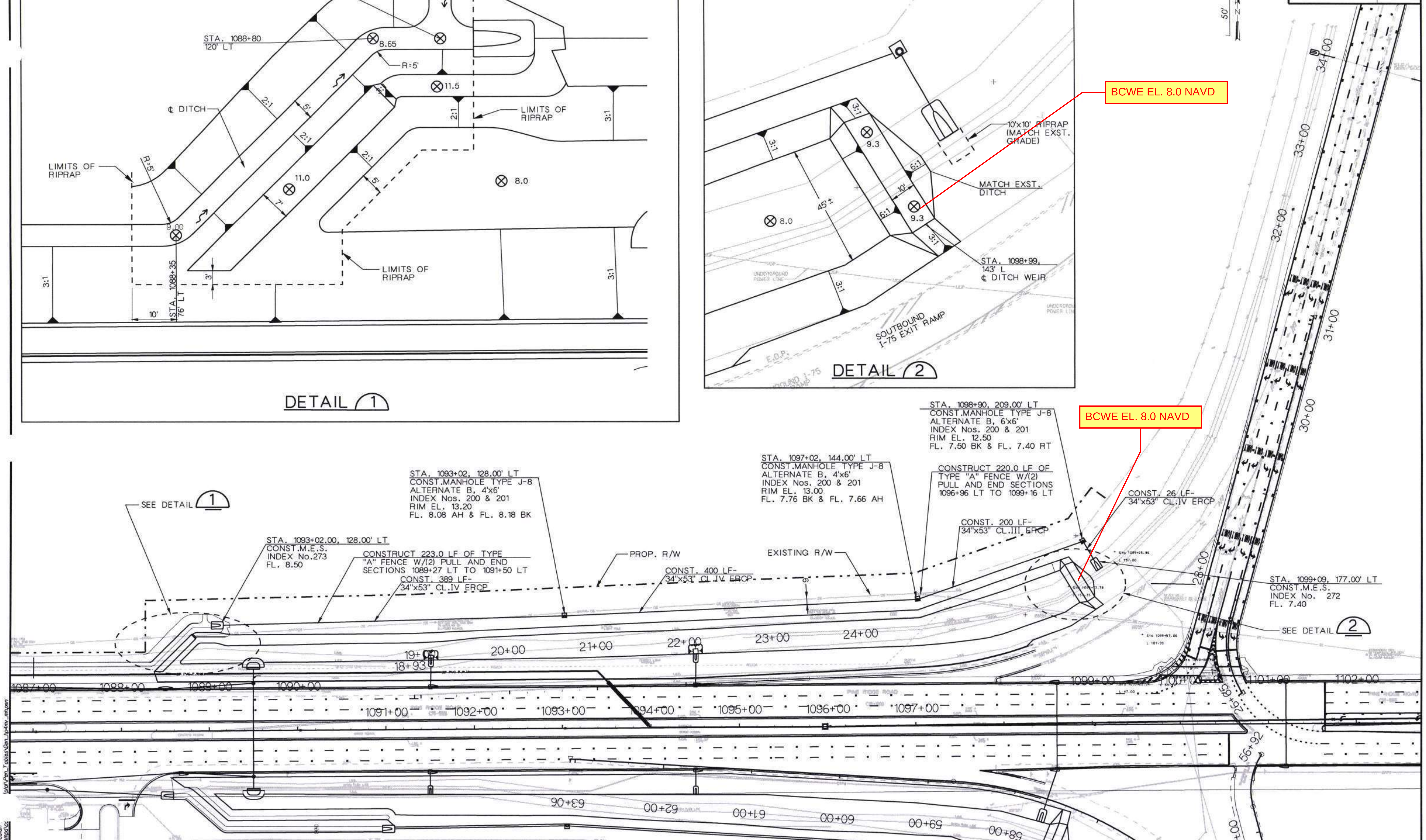
Figure 1. Ranked M_R Test Results for 90% Method

Based on the results shown in Table 4 and Figure 1, the resilient modulus corresponding to a 90th percentile is **8,100 psi**, which would represent the design embankment M_R value.

Appendix E

BASE CLEARANCE WATER ELEVATION DETERMINATION

COUNTY PROJ. NO.	SHEET NO.
60111	91



REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ______________ Date ______

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL, THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

	NAME	DATE		NAME	DATE
DESIGNED BY	R. ENGBERG	AUG. 01	DRAWN BY	E. CABALE	AUG. 01
CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	R. ENGBERG	AUG. 01
SUPERVISED BY : R. ENGBERG					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

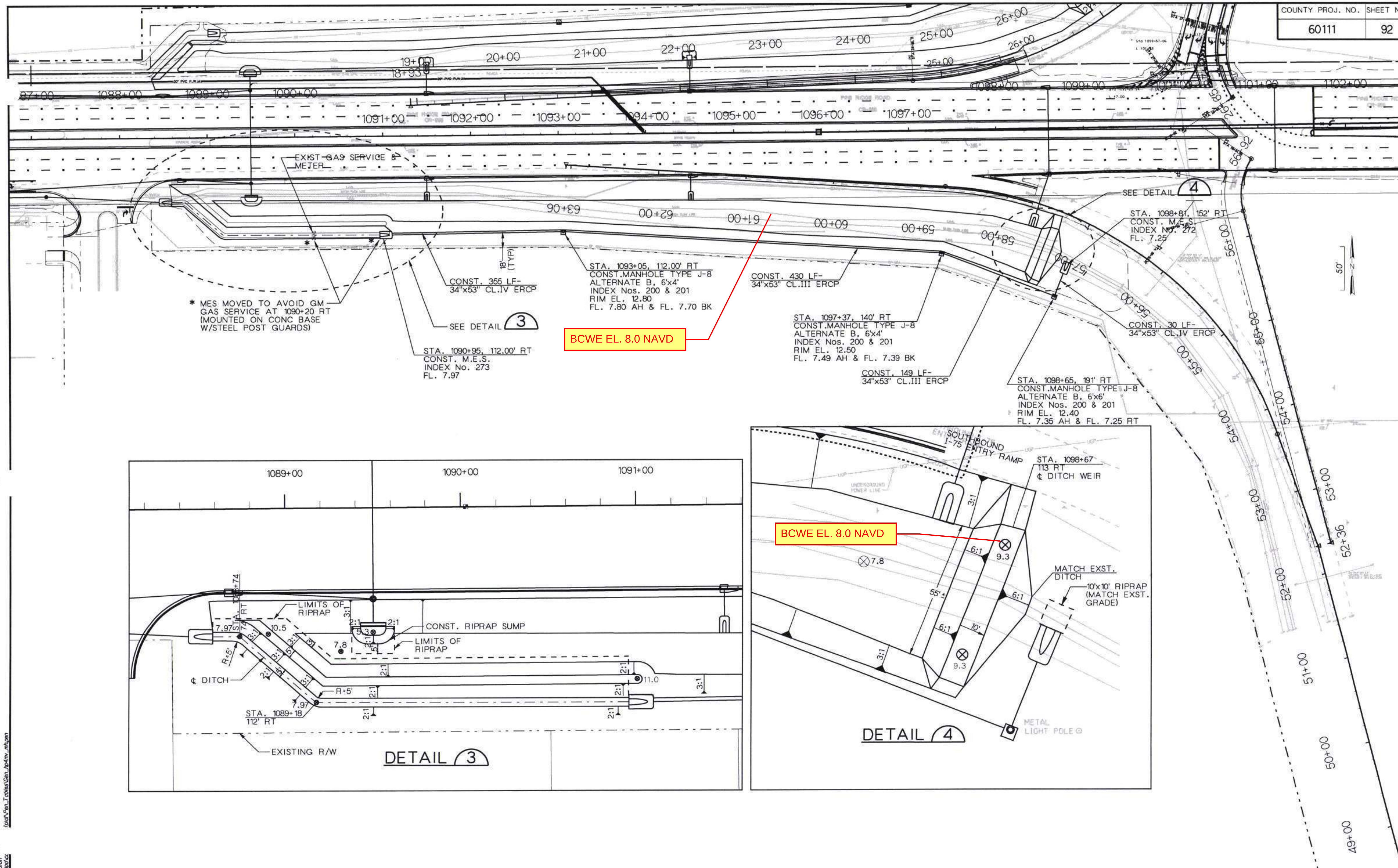
APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

LATERAL DITCH PLAN

09-SEP-2002 15:19

COUNTY PROJ. NO.	SHEET NO.
60111	92



REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ____________ Date ______

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	NAME	DATE		NAME	DATE
DESIGNED BY	R. ENGBERG	AUG. 01	DRAWN BY	E. CABALE	AUG. 01
CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	R. ENGBERG	AUG. 01

SUPERVISED BY : R. ENGBERG

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

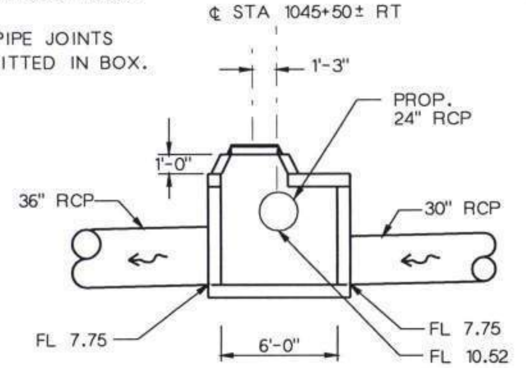
CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

LATERAL DITCH PLAN

09-SEP-2002 15:19
P:\Projects\48414\Deliver\7583d002.dlv
County_Roads
design

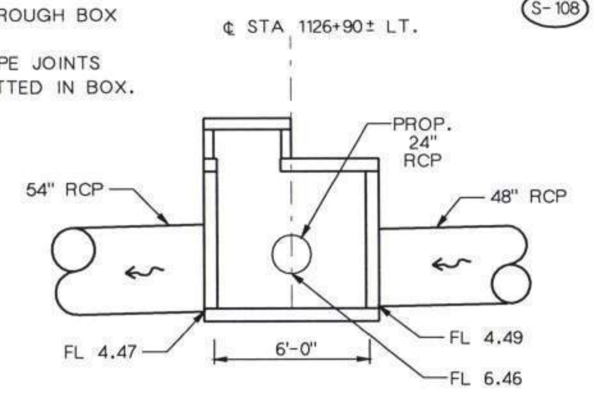
COUNTY PROJ. NO.	SHEET NO.
60111	93

NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX.
2) NO PIPE JOINTS PERMITTED IN BOX.

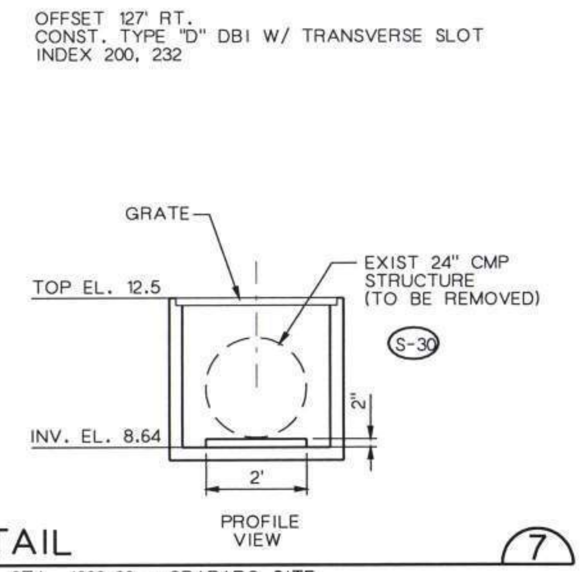


DETAIL 1
SCALE: 1" = 5'-0"

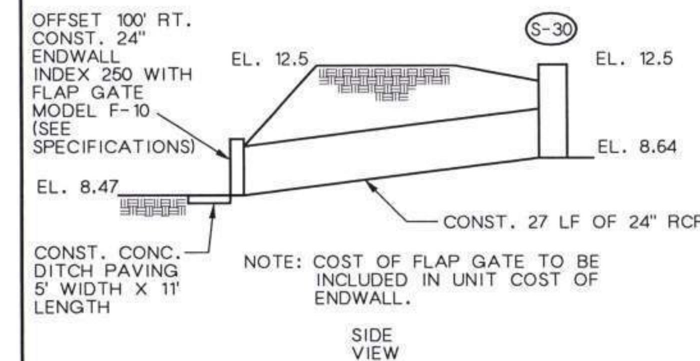
NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX
2) NO PIPE JOINTS PERMITTED IN BOX.



DETAIL 2
SCALE: 1" = 5'-0"

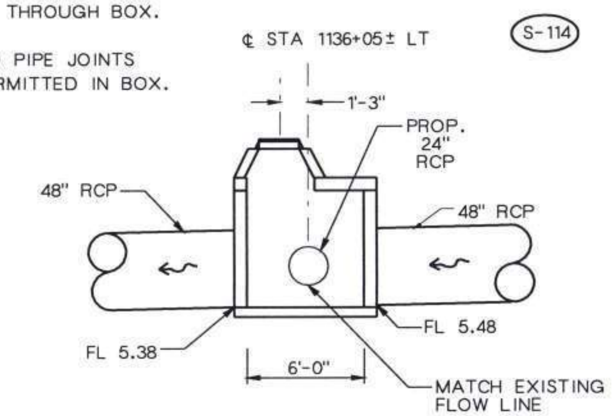


DETAIL 7
NTS STA. 1066+90 - CRAPARO SITE



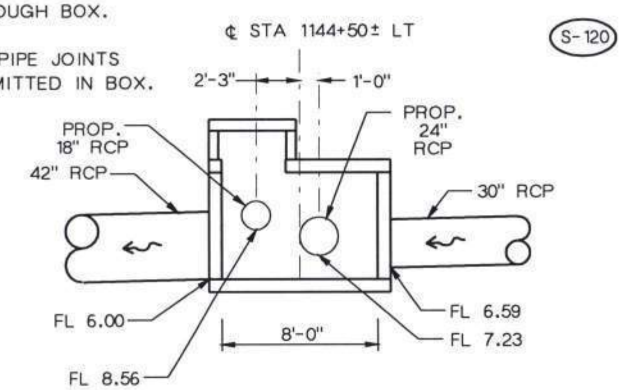
DETAIL 8
NTS STA. 1066+90 - CRAPARO SITE

NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX.
2) NO PIPE JOINTS PERMITTED IN BOX.

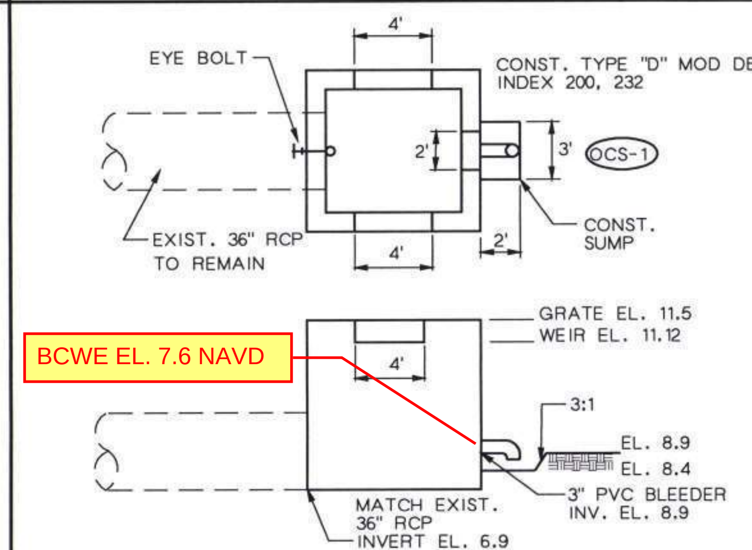


DETAIL 3
SCALE: 1" = 5'-0"

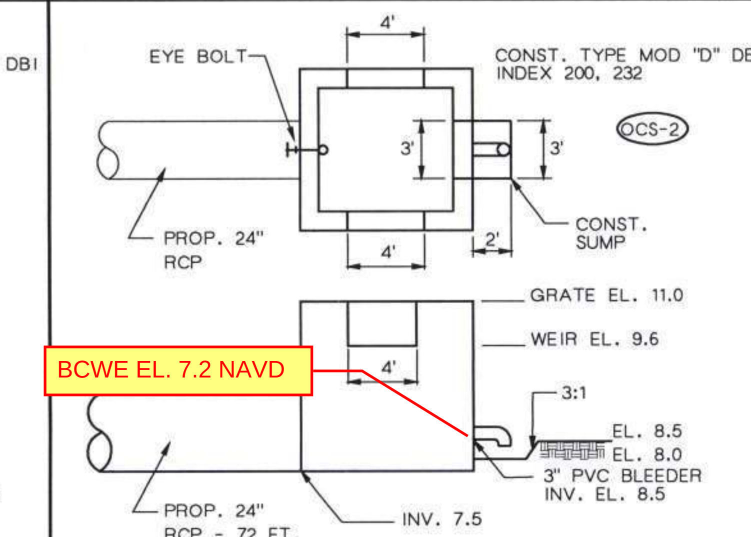
NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX.
2) NO PIPE JOINTS PERMITTED IN BOX.



DETAIL 4
SCALE: 1" = 5'-0"

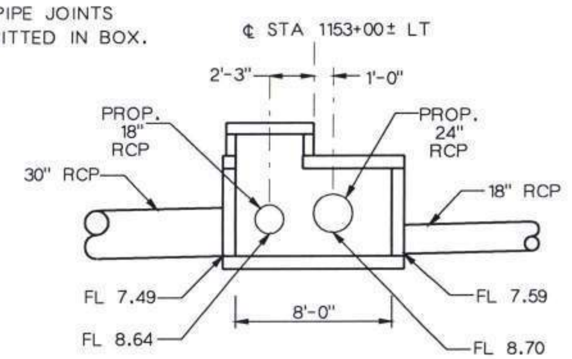


OCS - 1 PLAN & PROFILE VIEW 9
NTS STA. 1001+15, 93' RT



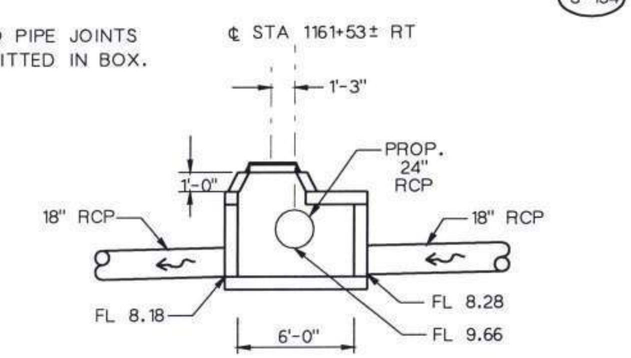
OCS - 2 PLAN & PROFILE VIEW 10
NTS STA. 1116+60, 103' RT

NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX.
2) NO PIPE JOINTS PERMITTED IN BOX.

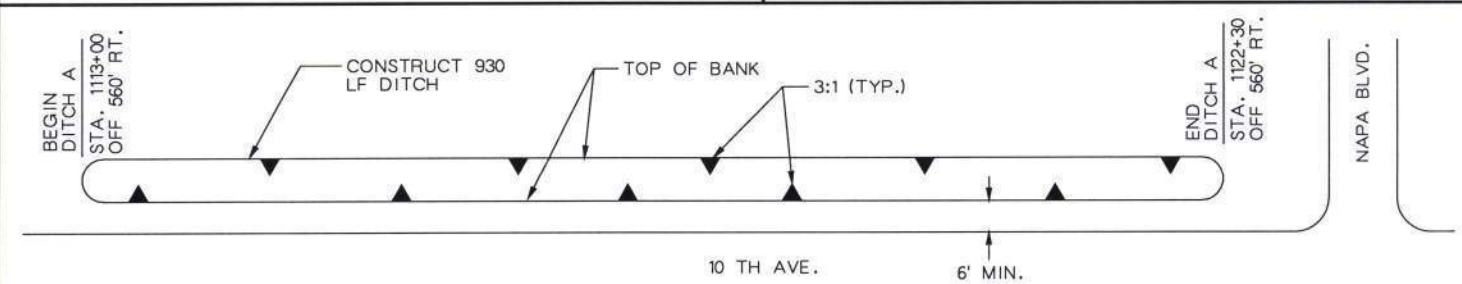


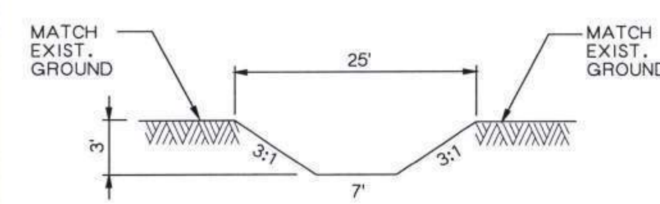
DETAIL 5
SCALE: 1" = 5'-0"

NOTES:
1) PROPOSED 24" RCP TO BE THROUGH BOX.
2) NO PIPE JOINTS PERMITTED IN BOX.



DETAIL 6
SCALE: 1" = 5'-0"





DITCH A CROSS SECTION

10TH AVE. DRAINAGE DITCH A
NTS

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ________ Date ______

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	NAME	DATE		NAME	DATE
DESIGNED BY	R. ENGBERG	JAN. 00	DRAWN BY	D. ESCALANTE	JAN. 00
CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	R. ENGBERG	JAN. 00
SUPERVISED BY : J. WISE					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

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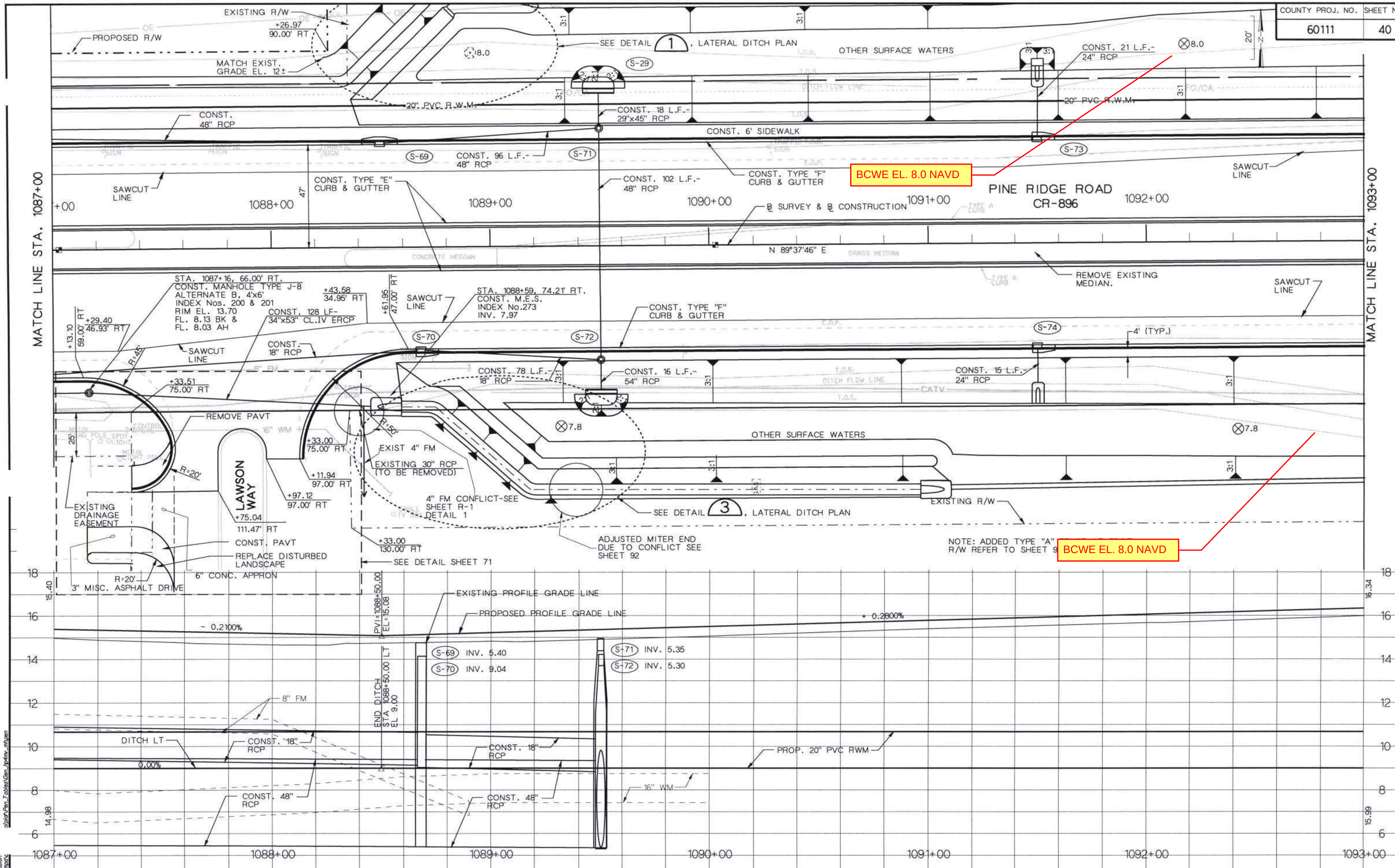
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

DRAINAGE DETAILS

09-SEP-2002 15:59



COUNTY PROJ. NO. 60111
SHEET NO. 40
EXISTING R/W
PROPOSED R/W
+26.97 90.00' RT
MATCH EXIST. GRADE EL. 12±
SEE DETAIL 1, LATERAL DITCH PLAN
OTHER SURFACE WATERS
CONST. 21 L.F.- 24" RCP
20" PVC R.W.M.
CONST. 48" RCP
CONST. 18 L.F.- 29"x45" RCP
CONST. 6' SIDEWALK
CONST. 96 L.F.- 48" RCP
CONST. TYPE "E" CURB & GUTTER
CONST. 102 L.F.- 48" RCP
CONST. TYPE "F" CURB & GUTTER
BCWE EL. 8.0 NAVD
SAWCUT LINE
PINE RIDGE ROAD CR-896
Ⓑ SURVEY & Ⓑ CONSTRUCTION
N 89°37'46" E
CONCRETE MEDIAN
GRASS MEDIAN
REMOVE EXISTING MEDIAN.
MATCH LINE STA. 1087+00
MATCH LINE STA. 1093+00
1088+00
1089+00
1090+00
1091+00
1092+00
STA. 1087+16, 66.00' RT. CONST. MANHOLE TYPE J-8 ALTERNATE B, 4'x6' INDEX Nos. 200 & 201 RIM EL. 13.70 FL. 8.13 BK & FL. 8.03 AH
+43.58 34.95' RT
CONST. 128 LF- 34"x53" CL.IV ERCP
STA. 1088+59, 74.21' RT. CONST. M.E.S. INDEX No.273 INV. 7.97
CONST. TYPE "F" CURB & GUTTER
4' (TYP.)
CONST. 18" RCP
CONST. 78 L.F.- 18" RCP
CONST. 16 L.F.- 54" RCP
CONST. 15 L.F.- 24" RCP
REMOVE PAVT
EXIST 4" FM
EXISTING 30" RCP (TO BE REMOVED)
4" FM CONFLICT-SEE SHEET R-1 DETAIL 1
SEE DETAIL 3, LATERAL DITCH PLAN
EXISTING R/W
LAWSON WAY
EXISTING DRAINAGE EASEMENT
CONST. PAVT
REPLACE DISTURBED LANDSCAPE
6" CONC. APPRON
3" MISC. ASPHALT DRIVE
ADJUSTED MITER END DUE TO CONFLICT SEE SHEET 92
NOTE: ADDED TYPE "A" R/W REFER TO SHEET 9
SEE DETAIL SHEET 71
EXISTING PROFILE GRADE LINE
PROPOSED PROFILE GRADE LINE
- 0.2100%
+ 0.2800%
PVI=1088+50.00 EL=15.08
END DITCH STA 1088+50.00 LT EL 9.00
S-69 INV. 5.40
S-70 INV. 9.04
S-71 INV. 5.35
S-72 INV. 5.30
8" FM
DITCH LT
0.00%
CONST. 18" RCP
CONST. 48" RCP
16" WM
PROP. 20" PVC RWM
1087+00
1093+00

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

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CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01

SUPERVISED BY : R. ENGBERG

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

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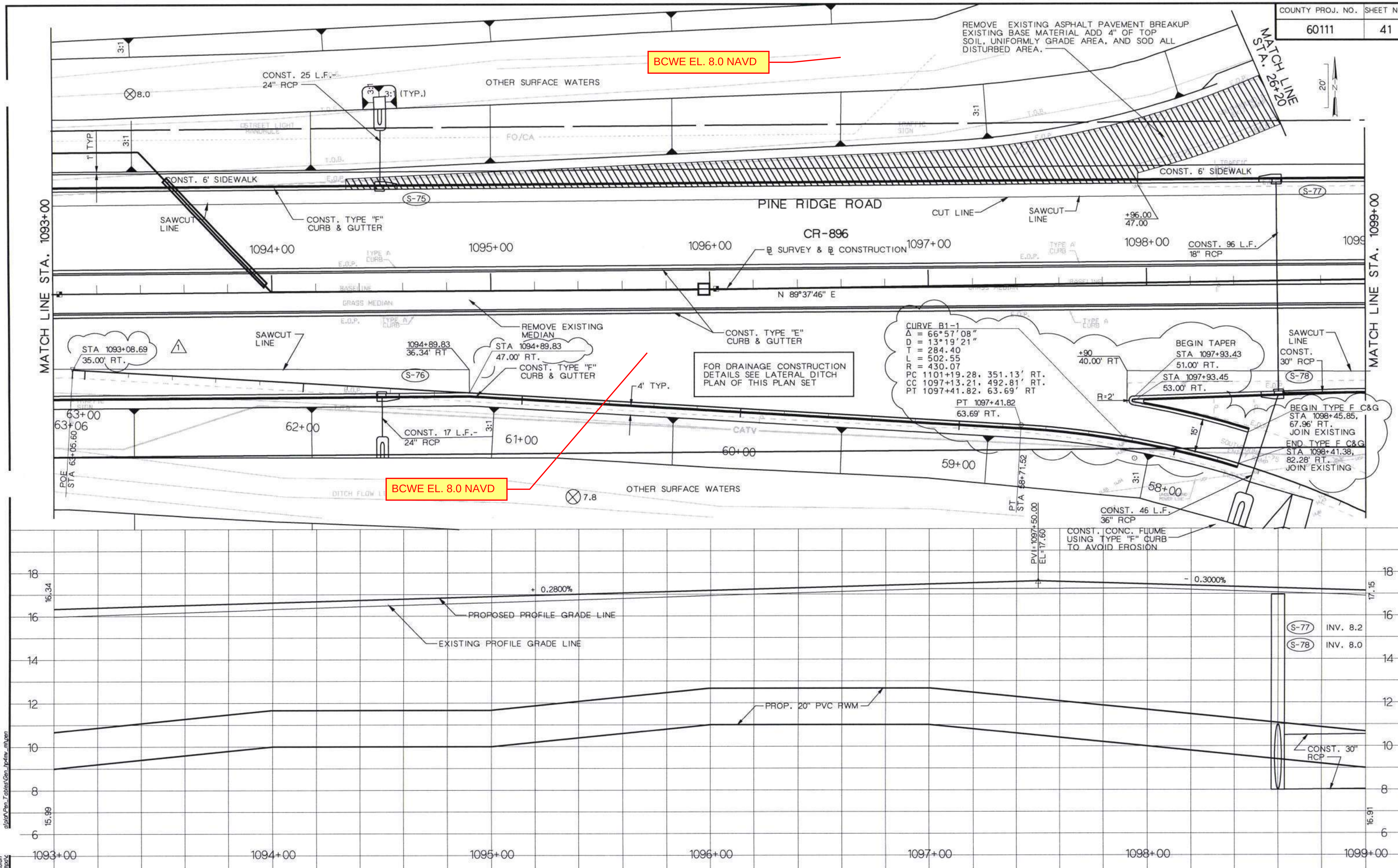
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1087+00 TO STA. 1093+00

09-SEP-2002 12:27


COUNTY PROJ. NO. 60111
SHEET NO. 41
MATCH LINE STA. 26+20
REMOVE EXISTING ASPHALT PAVEMENT BREAKUP EXISTING BASE MATERIAL ADD 4" OF TOP SOIL, UNIFORMLY GRADE AREA, AND SOD ALL DISTURBED AREA.
BCWE EL. 8.0 NAVD
CONST. 25 L.F. 24" RCP
3:1 (TYP.)
OTHER SURFACE WATERS
8.0
1' TYP
3:1
FO/CA
CONST. 6' SIDEWALK
S-75
S-77
SAWCUT LINE
CONST. TYPE "F" CURB & GUTTER
PINE RIDGE ROAD
CR-896
CUT LINE
SAWCUT LINE
+96.00 47.00
1094+00
1095+00
1096+00
1097+00
1098+00
℄ SURVEY & ℄ CONSTRUCTION
CONST. 96 L.F. 18" RCP
MATCH LINE STA. 1093+00
MATCH LINE STA. 1099+00
BASELINE
GRASS MEDIAN
N 89°37'46" E
E.O.P.
SAWCUT LINE
REMOVE EXISTING MEDIAN
CONST. TYPE "E" CURB & GUTTER
STA 1093+08.69 35.00' RT.
1094+89.83 36.34' RT
STA 1094+89.83 47.00' RT.
CONST. TYPE "F" CURB & GUTTER
S-76
FOR DRAINAGE CONSTRUCTION DETAILS SEE LATERAL DITCH PLAN OF THIS PLAN SET
CURVE B1-1
Δ = 66°57'08"
D = 13°19'21"
T = 284.40
L = 502.55
R = 430.07
PC 1101+19.28, 351.13' RT.
CC 1097+13.21, 492.81' RT.
PT 1097+41.82, 63.69' RT
PT 1097+41.82 63.69' RT.
+90 40.00' RT
R=2'
BEGIN TAPER STA 1097+93.43 51.00' RT.
STA 1097+93.45 53.00' RT.
SAWCUT LINE
CONST. 30" RCP
S-78
BEGIN TYPE F C&G STA 1098+45.85, 67.96' RT., JOIN EXISTING
END TYPE F C&G STA 1098+41.38, 82.28' RT., JOIN EXISTING
4' TYP.
63+00
63+06
62+00
61+00
60+00
59+00
58+00
CATV
CONST. 17 L.F. 24" RCP
15'
POE STA 63+05.60
BCWE EL. 8.0 NAVD
7.8
OTHER SURFACE WATERS
PT STA 58+71.52
CONST. 46 L.F. 36" RCP
CONST. CONC. FLUME USING TYPE "F" CURB TO AVOID EROSION
PVI= 1097+50.00 EL= 17.60
+ 0.2800%
- 0.3000%
16.34
17.15
PROPOSED PROFILE GRADE LINE
EXISTING PROFILE GRADE LINE
S-77 INV. 8.2
S-78 INV. 8.0
PROP. 20" PVC RWM
CONST. 30" RCP
15.99
16.91
18
16
14
12
10
8
6
1093+00
1094+00
1095+00
1096+00
1097+00
1098+00
1099+00

REVISIONS		
DATE	BY	DESCRIPTION
NOV 00	PEP	⚠1 ADJUST COGO FOR RAMP APPROACH

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

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DESIGNED BY	R. ENGBERG	AUG. 01	DRAWN BY	E. CABALE	AUG. 01
CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01
SUPERVISED BY : R. ENGBERG					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

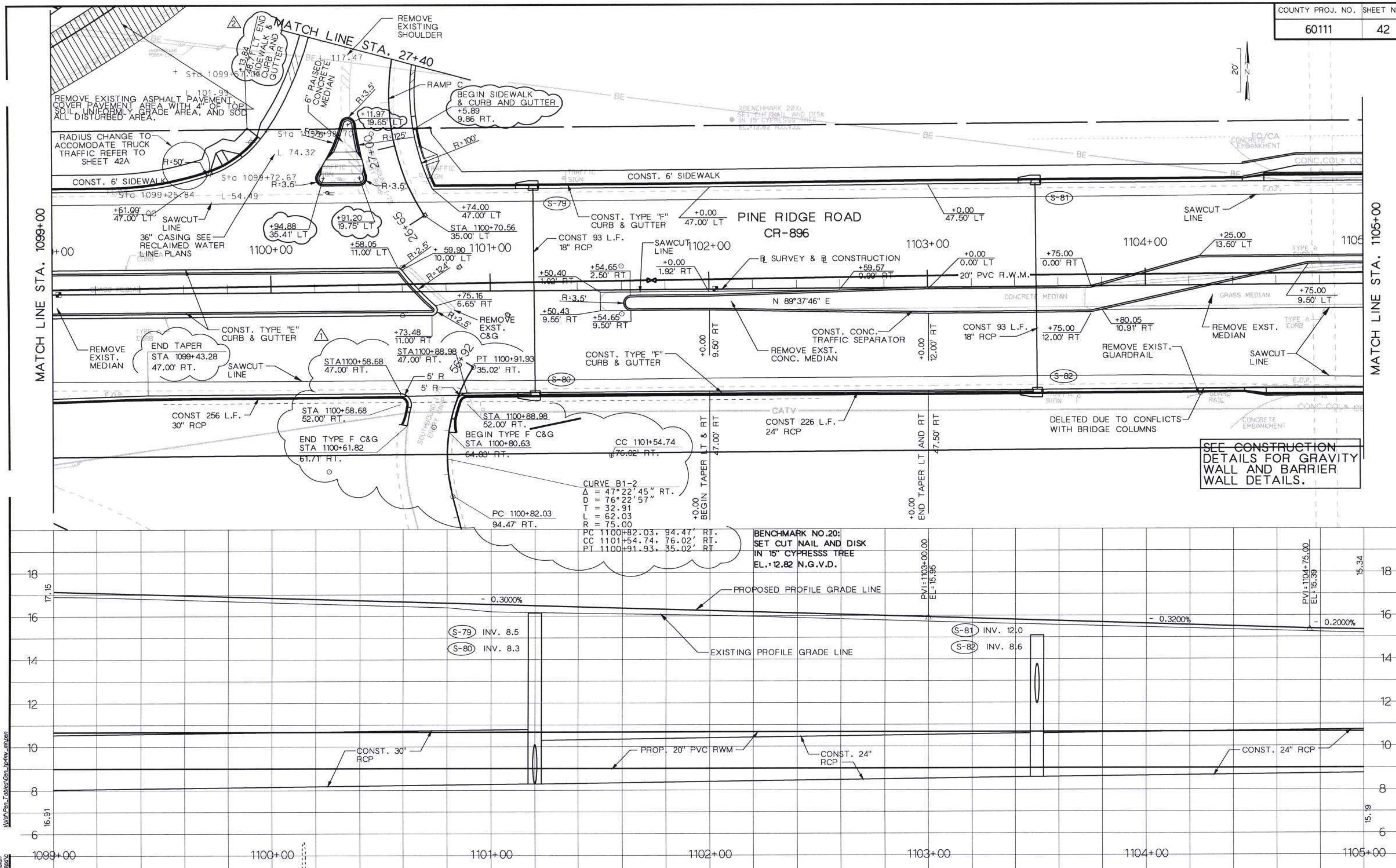
APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1093+00 TO STA. 1099+00

09-SEP-2002 12:42

COUNTY PROJ. NO.	SHEET NO.
60111	42



MATCH LINE STA. 27+40
REMOVE EXISTING SHOULDER
+13.84 48.71' LT END SIDEWALK & CURB AND GUTTER
6" RAISED CONCRETE MEDIAN
RAMP C
BEGIN SIDEWALK & CURB AND GUTTER +5.89 9.86 RT.
REMOVE EXISTING ASPHALT PAVEMENT. COVER PAVEMENT AREA WITH 4" OF TOP SOIL. UNIFORMLY GRADE AREA, AND SOD ALL DISTURBED AREA.
RADIUS CHANGE TO ACCOMODATE TRUCK TRAFFIC REFER TO SHEET 42A
L 101.99
L 74.32
L 54.49
Sta 1099+72.67
Sta 1099+25.84
R=50'
R=3.5'
R=125'
R=100'
+11.97 19.65' LT
CONST. 6' SIDEWALK
+61.00' 47.00' LT
SAWCUT LINE
36" CASING SEE RECLAIMED WATER LINE PLANS
+94.88 35.41' LT
+91.20 19.75' LT
+58.05 11.00' LT
+74.00 47.00' LT
STA 1100+70.56 35.00' LT
+59.90 10.00' LT
R=2.5'
R=124'
S-79
CONST. TYPE "F" CURB & GUTTER
+0.00 47.00' LT
PINE RIDGE ROAD CR-896
+0.00 47.50' LT
S-81
SAWCUT LINE
CONST 93 L.F. 18" RCP
SAWCUT LINE
+0.00 1.92' RT
℄ SURVEY & ℄ CONSTRUCTION
+59.57 0.00' RT
+0.00 0.00' LT
20" PVC R.W.M.
+75.00 0.00' RT
+25.00 13.50' LT
+54.65 2.50' RT
+50.40 1.02' RT
R=3.5'
+50.43 9.55' RT
+54.65 9.50' RT
N 89°37'46" E
+75.16 6.65' RT
R=2.5'
REMOVE EXST. C&G
+75.00 9.50' LT
1099+00
1100+00
1101+00
1102+00
1103+00
1104+00
MATCH LINE STA. 1099+00
MATCH LINE STA. 1105+00
REMOVE EXIST. MEDIAN
CONST. TYPE "E" CURB & GUTTER
END TAPER STA 1099+43.28 47.00' RT.
SAWCUT LINE
+73.48 11.00' RT
STA1100+58.68 47.00' RT.
STA1100+88.98 47.00' RT.
PT 1100+91.93 35.02' RT.
5' R
CONST. TYPE "F" CURB & GUTTER
+0.00 9.50' RT
CONST. CONC. TRAFFIC SEPARATOR
REMOVE EXIST. CONC. MEDIAN
+0.00 12.00' RT
CONST 93 L.F. 18" RCP
+75.00 12.00' RT
+80.05 10.91' RT
REMOVE EXIST. GUARDRAIL
REMOVE EXST. MEDIAN
SAWCUT LINE
S-80
S-82
CONST 256 L.F. 30" RCP
STA 1100+58.68 52.00' RT.
END TYPE F C&G STA 1100+61.82 61.71' RT.
STA 1100+88.98 52.00' RT.
BEGIN TYPE F C&G STA 1100+80.63 64.89' RT.
CC 1101+54.74 76.02' RT.
CONST 226 L.F. 24" RCP
DELETED DUE TO CONFLICTS WITH BRIDGE COLUMNS
SEE CONSTRUCTION DETAILS FOR GRAVITY WALL AND BARRIER WALL DETAILS.
+0.00 BEGIN TAPER LT & RT 47.00' RT
+0.00 END TAPER LT AND RT 47.50' RT
CURVE B1-2
Δ = 47°22'45" RT.
D = 76°22'57"
T = 32.91
L = 62.03
R = 75.00
PC 1100+82.03, 94.47' RT.
CC 1101+54.74, 76.02' RT.
PT 1100+91.93, 35.02' RT.
PC 1100+82.03 94.47' RT.
BENCHMARK NO.20: SET CUT NAIL AND DISK IN 15" CYPRESSS TREE EL.=12.82 N.G.V.D.
PVI=1103+00.00 EL=15.95
PVI=1104+75.00 EL=15.39
17.15
15.34
- 0.3000%
- 0.3200%
- 0.2000%
PROPOSED PROFILE GRADE LINE
EXISTING PROFILE GRADE LINE
S-79 INV. 8.5
S-80 INV. 8.3
S-81 INV. 12.0
S-82 INV. 8.6
CONST. 30" RCP
PROP. 20" PVC RWM
CONST. 24" RCP
CONST. 24" RCP
16.91
15.19
18
16
14
12
10
8
6
1099+00
1100+00
1101+00
1102+00
1103+00
1104+00
1105+00

REVISIONS		
DATE	BY	DESCRIPTION
NOV 00	PEP	1 ADJUST COGO FOR RAMP AND MAINLINE TRANSITION
JUN 01	WJG	2 ADJUST RAMP RETURN AND SIDEWALK

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

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CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01

SUPERVISED BY : R. ENGBERG

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

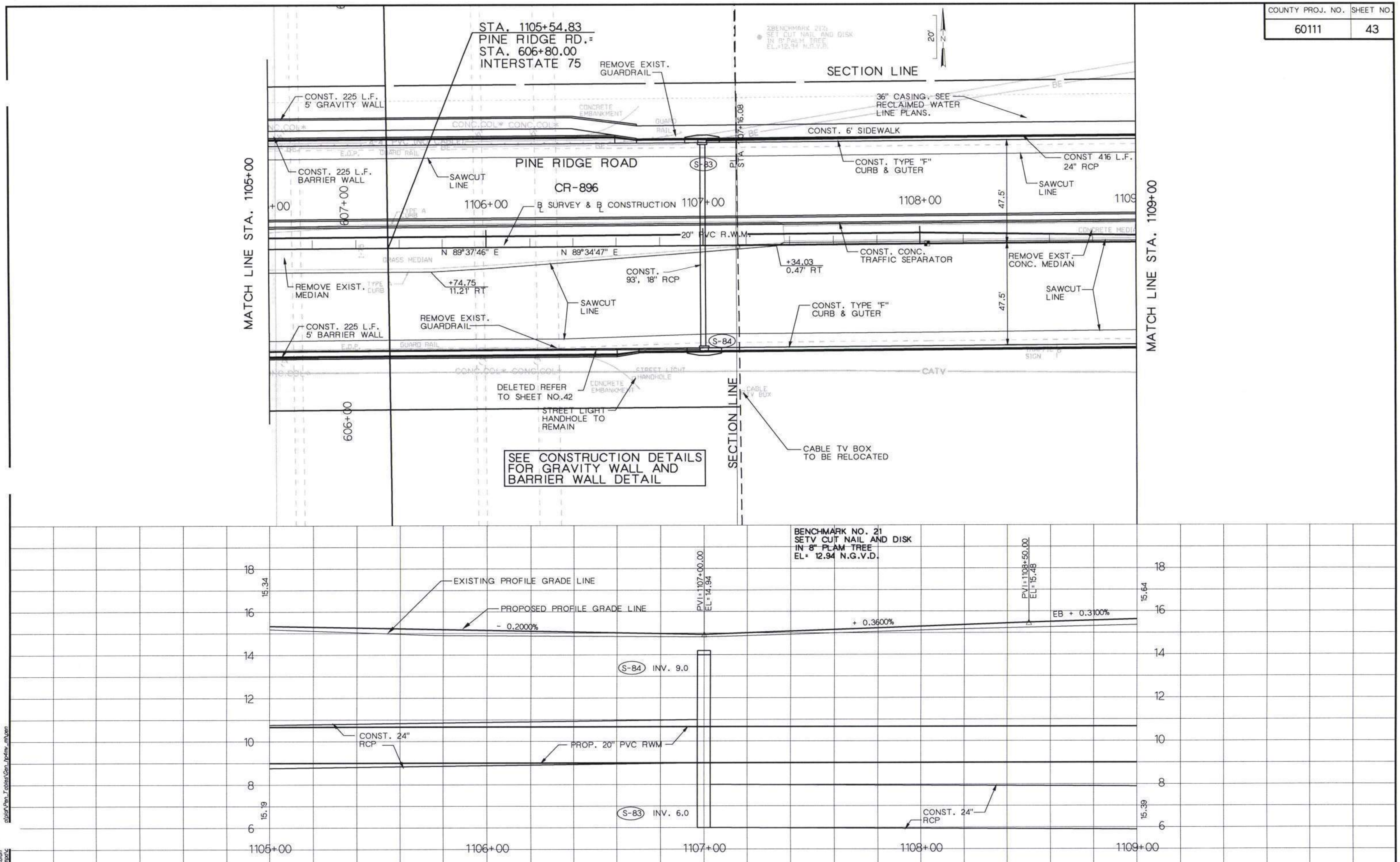
APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1099+00 TO STA. 1105+00

09-SEP-2002 12:43

COUNTY PROJ. NO.	SHEET NO.
60111	43



STA. 1105+54.83
PINE RIDGE RD.=
STA. 606+80.00
INTERSTATE 75
REMOVE EXIST. GUARDRAIL
SECTION LINE
CONST. 225 L.F. 5' GRAVITY WALL
36" CASING. SEE RECLAIMED WATER LINE PLANS.
CONST. 6' SIDEWALK
PINE RIDGE ROAD
CR-896
CONST. 225 L.F. BARRIER WALL
SAWCUT LINE
CONST. TYPE "F" CURB & GUTER
CONST 416 L.F. 24" RCP
MATCH LINE STA. 1105+00
MATCH LINE STA. 1109+00
1106+00
1107+00
1108+00
607+00
606+00
B SURVEY & B CONSTRUCTION
20" PVC R.W.M.
N 89°37'46" E
N 89°34'47" E
CONST. 93', 18" RCP
+34.03 0.47' RT
CONST. CONC. TRAFFIC SEPARATOR
REMOVE EXIST. CONC. MEDIAN
REMOVE EXIST. MEDIAN
+74.75 11.21' RT
47.5'
CONST. 225 L.F. 5' BARRIER WALL
REMOVE EXIST. GUARDRAIL
S-83
S-84
DELETED REFER TO SHEET NO.42
STREET LIGHT HANDHOLE TO REMAIN
CABLE TV BOX TO BE RELOCATED
SEE CONSTRUCTION DETAILS FOR GRAVITY WALL AND BARRIER WALL DETAIL
BENCHMARK NO. 21
SETV CUT NAIL AND DISK
IN 8" PLAM TREE
EL= 12.94 N.G.V.D.
EXISTING PROFILE GRADE LINE
PROPOSED PROFILE GRADE LINE
- 0.2000%
+ 0.3600%
EB + 0.3100%
PVI=1107+00.00 EL=14.94
PVI=1108+50.00 EL=15.48
15.34
15.64
15.19
15.39
S-84 INV. 9.0
S-83 INV. 6.0
CONST. 24" RCP
PROP. 20" PVC RWM
1105+00
1109+00

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ____________ Date ______

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DESIGNED BY	R. ENGBERG	AUG. 01	DRAWN BY	E. CABALE	AUG. 01
CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01

SUPERVISED BY : R. ENGBERG

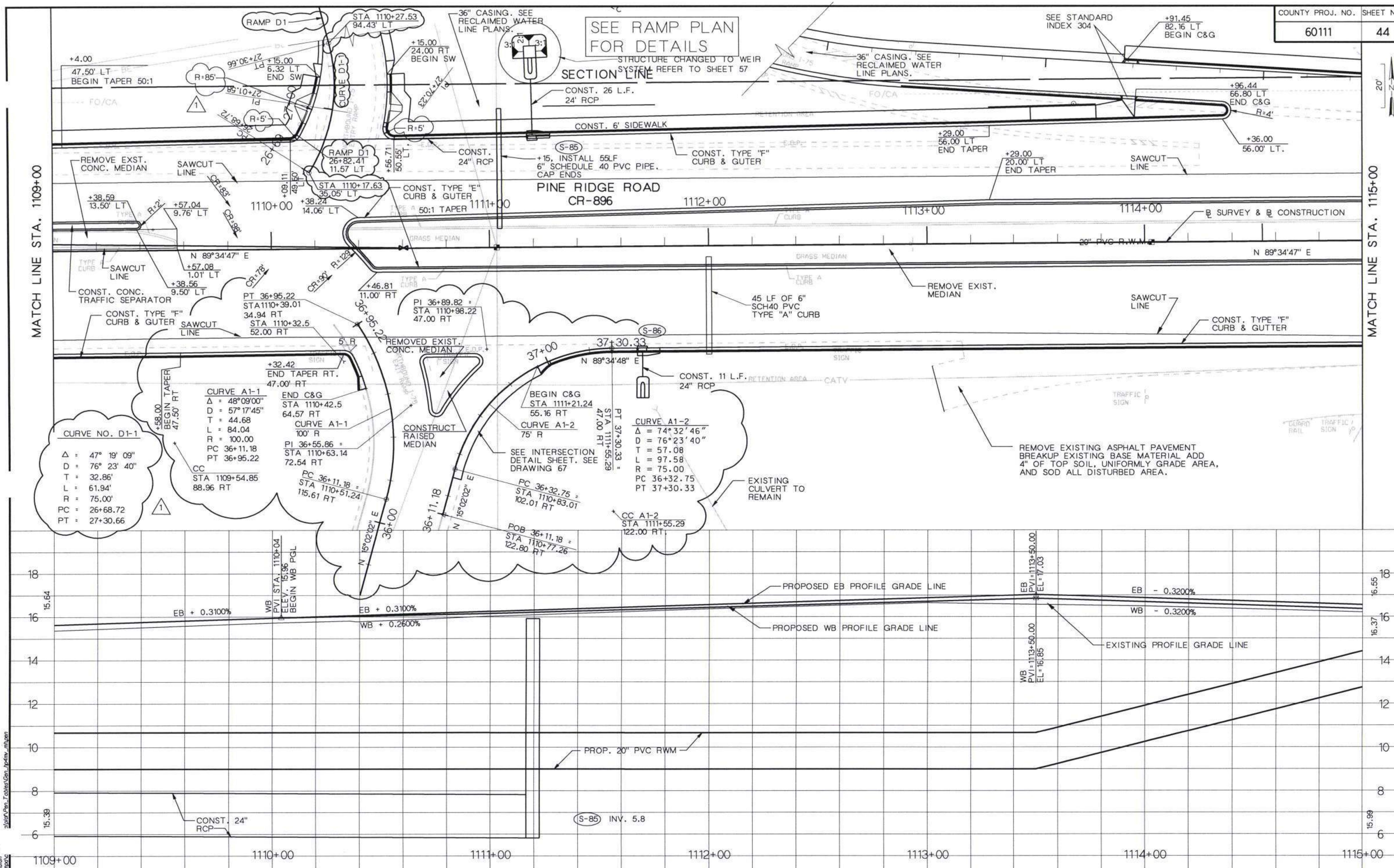
BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1105+00 TO STA. 1109+00

COUNTY PROJ. NO.	SHEET NO.
60111	44



SEE RAMP PLAN FOR DETAILS
SECTION LINE
RAMP D1
STA 1110+27.53 94.43' LT
36" CASING. SEE RECLAIMED WATER LINE PLANS.
STRUCTURE CHANGED TO WEIR SYSTEM REFER TO SHEET 57
36" CASING. SEE RECLAIMED WATER LINE PLANS.
SEE STANDARD INDEX 304
+91.45 82.16 LT BEGIN C&G
+96.44 66.80 LT END C&G
R=4'
+36.00 56.00' LT.
+4.00 47.50' LT BEGIN TAPER 50:1
+15.00 24.00 RT BEGIN SW
+15.00 6.32 LT END SW
CONST. 26 L.F. 24' RCP
CONST. 6' SIDEWALK
CURVE D1-1
R=85'
R=5'
RAMP D1 26+82.41 11.57 LT
+56.71 50.55' LT.
CONST. 24" RCP
S-85
+15. INSTALL 55LF 6" SCHEDULE 40 PVC PIPE. CAP ENDS
CONST. TYPE "F" CURB & GUTER
+29.00 56.00 LT END TAPER
+29.00 20.00' LT END TAPER
SAWCUT LINE
REMOVE EXST. CONC. MEDIAN
SAWCUT LINE
+09.11 49.50' LT
STA 1110+17.63 35.05' LT
CONST. TYPE "E" CURB & GUTER
PINE RIDGE ROAD
CR-896
+38.59 13.50' LT
+57.04 9.76' LT
+38.24 14.06' LT
50:1 TAPER
1110+00
1111+00
1112+00
1113+00
1114+00
℄ SURVEY & ℄ CONSTRUCTION
20" PVC R.W.M.
N 89°34'47" E
N 89°34'47" E
SAWCUT LINE
+57.08 1.01' LT
+38.56 9.50' LT
CONST. CONC. TRAFFIC SEPARATOR
GRASS MEDIAN
REMOVE EXIST. MEDIAN
+46.81 11.00' RT
45 LF OF 6" SCH40 PVC TYPE "A" CURB
SAWCUT LINE
CONST. TYPE "F" CURB & GUTTER
CONST. TYPE "F" CURB & GUTER
SAWCUT LINE
PT 36+95.22 STA1110+39.01 34.94 RT
STA 1110+32.5 52.00 RT
PI 36+89.82 = STA 1110+98.22 47.00 RT
S-86
37+30.33
N 89°34'48" E
REMOVED EXIST. CONC. MEDIAN
37+00
+32.42 END TAPER RT. 47.00' RT
CONST. 11 L.F. 24" RCP
+58.00 BEGIN TAPER 47.50' RT
CURVE A1-1
Δ = 48°09'00"
D = 57°17'45"
T = 44.68
L = 84.04
R = 100.00
PC 36+11.18
PT 36+95.22
END C&G STA 1110+42.5 64.57 RT
CURVE A1-1 100' R
PI 36+55.86 = STA 1110+63.14 72.54 RT
CONSTRUCT RAISED MEDIAN
BEGIN C&G STA 1111+21.24 55.16 RT
CURVE A1-2 75' R
PT 37+30.33 = STA 1111+55.29 47.00 RT
CURVE A1-2
Δ = 74°32'46"
D = 76°23'40"
T = 57.08
L = 97.58
R = 75.00
PC 36+32.75
PT 37+30.33
REMOVE EXISTING ASPHALT PAVEMENT BREAKUP EXISTING BASE MATERIAL ADD 4" OF TOP SOIL, UNIFORMLY GRADE AREA, AND SOD ALL DISTURBED AREA.
CURVE NO. D1-1
Δ = 47° 19' 09"
D = 76° 23' 40"
T = 32.86'
L = 61.94'
R = 75.00'
PC = 26+68.72
PT = 27+30.66
CC STA 1109+54.85 88.96 RT
PC 36+11.18 = STA 1110+51.24 115.61 RT
SEE INTERSECTION DETAIL SHEET. SEE DRAWING 67
PC 36+32.75 = STA 1110+83.01 102.01 RT
EXISTING CULVERT TO REMAIN
CC A1-2 STA 1111+55.29 122.00 RT.
POB 36+11.18 = STA 1110+77.26 122.80 RT
N 15°02'02" E
36+00
36+11.18
36+95.22
MATCH LINE STA. 1109+00
MATCH LINE STA. 1115+00
WB PVI STA. 1110+04 ELEV. 15.96 BEGIN WB PGL
EB + 0.3100%
EB + 0.3100%
WB + 0.2600%
PROPOSED EB PROFILE GRADE LINE
PROPOSED WB PROFILE GRADE LINE
EB PVI=1113+50.00 EL=17.03
WB PVI=1113+50.00 EL=16.85
EB - 0.3200%
WB - 0.3200%
EXISTING PROFILE GRADE LINE
PROP. 20" PVC RWM
CONST. 24" RCP
S-85 INV. 5.8
15.64
15.39
16.55
16.37
15.99
18
16
14
12
10
8
6
1109+00
1110+00
1111+00
1112+00
1113+00
1114+00
1115+00

REVISIONS		
DATE	BY	DESCRIPTION
NOV 00	PEP	△ ADJUST COGO FOR RAMPS

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL, THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

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DESIGNED BY	R. ENGBERG	AUG. 01	DRAWN BY	E. CABALE	AUG. 01
CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01

SUPERVISED BY : R. ENGBERG

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

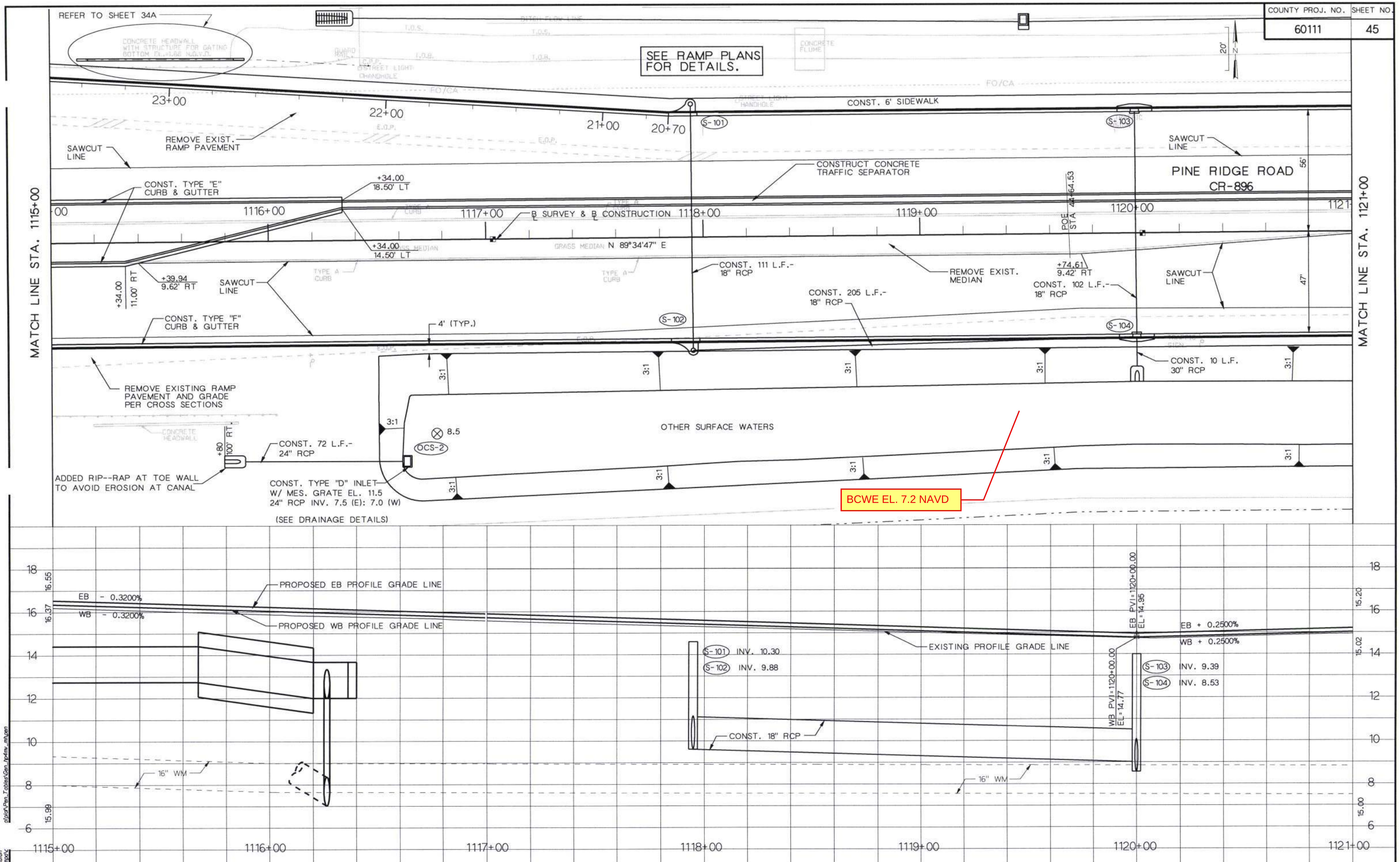
APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1109+00 TO STA. 1115+00

09-SEP-2002 12:43

COUNTY PROJ. NO.	SHEET NO.
60111	45


REFER TO SHEET 34A
SEE RAMP PLANS FOR DETAILS.
CONST. 6' SIDEWALK
23+00
22+00
21+00
20+70
S-101
S-103
SAWCUT LINE
REMOVE EXIST. RAMP PAVEMENT
CONSTRUCT CONCRETE TRAFFIC SEPARATOR
PINE RIDGE ROAD
CR-896
CONST. TYPE "E" CURB & GUTTER
+34.00 18.50' LT
1116+00
1117+00
B SURVEY & B CONSTRUCTION 1118+00
1119+00
1120+00
POE STA 44+64.53
GRASS MEDIAN N 89°34'47" E
+34.00 14.50' LT
CONST. 111 L.F.- 18" RCP
REMOVE EXIST. MEDIAN
+74.61 9.42' RT
CONST. 102 L.F.- 18" RCP
+39.94 9.62' RT
+34.00 11.00' RT
CONST. 205 L.F.- 18" RCP
CONST. TYPE "F" CURB & GUTTER
4' (TYP.)
S-102
S-104
CONST. 10 L.F. 30" RCP
MATCH LINE STA. 1115+00
MATCH LINE STA. 1121+00
REMOVE EXISTING RAMP PAVEMENT AND GRADE PER CROSS SECTIONS
3:1
OTHER SURFACE WATERS
8.5
OCS-2
+80 100' RT
CONST. 72 L.F.- 24" RCP
ADDED RIP--RAP AT TOE WALL TO AVOID EROSION AT CANAL
CONST. TYPE "D" INLET W/ MES. GRATE EL. 11.5 24" RCP INV. 7.5 (E); 7.0 (W)
(SEE DRAINAGE DETAILS)
BCWE EL. 7.2 NAVD
PROPOSED EB PROFILE GRADE LINE
EB - 0.3200%
WB - 0.3200%
PROPOSED WB PROFILE GRADE LINE
EXISTING PROFILE GRADE LINE
EB PVI = 1120+00.00 EL = 14.95
WB PVI = 1120+00.00 EL = 14.77
EB + 0.2500%
WB + 0.2500%
S-101 INV. 10.30
S-102 INV. 9.88
S-103 INV. 9.39
S-104 INV. 8.53
CONST. 18" RCP
16" WM
16.55
16.37
15.99
15.20
15.02
15.00
1115+00
1116+00
1117+00
1118+00
1119+00
1120+00
1121+00

REVISIONS		
DATE	BY	DESCRIPTION
4-01	SLW	HEADWALL EXTENSION

RECORD DRAWINGS: Revisions Drawn By ____________ Date ______

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CHECKED BY	S. WALLACE	AUG. 01	CHECKED BY	B. GRAMER	AUG. 01

SUPERVISED BY : R. ENGBERG

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

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Tampa, Florida 33607-4155

PLAN AND PROFILE
STA. 1115+00 TO STA. 1121+00

09-SEP-2002 12:43

Appendix F

Existing Typical Sections

COUNTY PROJ. NO.	SHEET NO.
60111	1

COLLIER COUNTY
PUBLIC WORKS ENGINEERING DEPARTMENT
PLANS OF PROPOSED
PINE RIDGE ROAD (C.R. 31 TO LOGAN BLVD.)

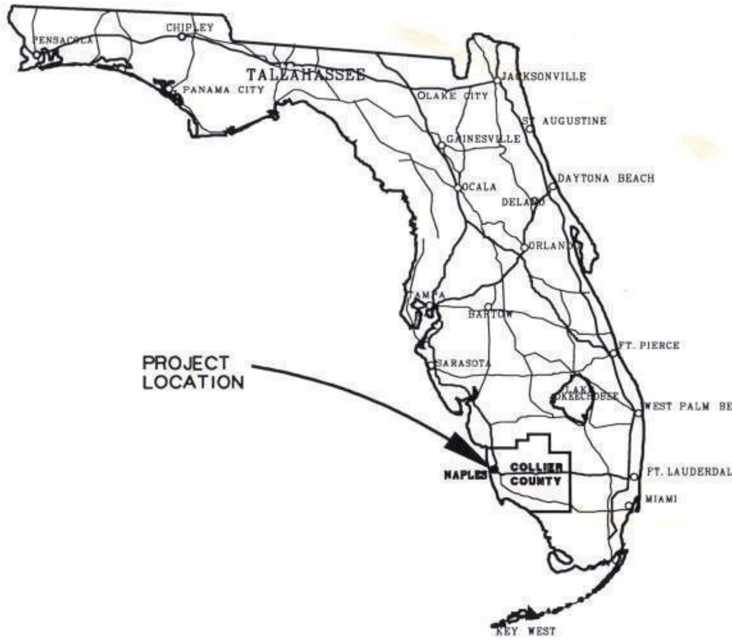
COUNTY PROJECT NO. 60111

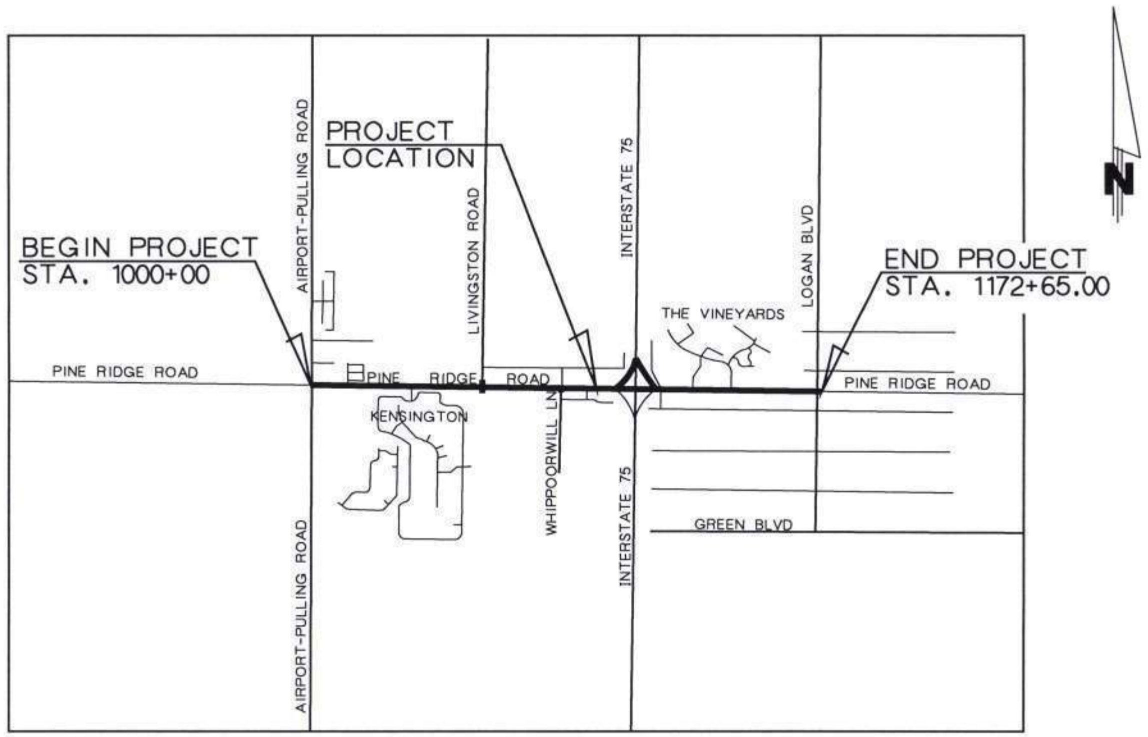
THIS CONTRACT PLAN SET INCLUDES:

- ROADWAY PLANS
- SIGNING AND PAVEMENT MARKING PLANS
- SIGNALIZATION PLANS
- LIGHTING PLANS

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	GENERAL NOTES
3-8	DRAINAGE MAPS
9-13	TYPICAL SECTIONS
14-15	SUMMARY OF QUANTITIES
16-19	SUMMARY OF DRAINAGE STRUCTURES
20	SURVEY CONTROL SHEET
21	PROJECT LAYOUT SHEET
22-64	PLAN AND PROFILE SHEETS
65-71	CONSTRUCTION DETAIL SHEETS
72-90	DRAINAGE STRUCTURES
91-92	LATERAL DITCH PLAN SHEETS
93	DRAINAGE DETAILS
94	SOIL SURVEY SHEET
95-153	CROSS SECTIONS
154-184	TRAFFIC CONTROL PLANS
185-204	RECLAIMED WATER LINE PLANS
R1-R4	RECORD REVISIONS
S1-S16	SIGNING AND PAVEMENT MARKING PLANS
FM1 - FM21	FORCE MAIN RELOCATION PLANS
T1-T34	SIGNALIZATION PLANS, DETAILS, QUANTITIES
L1-L12	LIGHTING PLANS, DETAILS, QUANTITIES





SITE LOCATION MAP

PREPARED BY:

CH2MHILL

CH2M HILL
4350 W. Cypress Street
Suite Number 600
Tampa, Florida

ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION. THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS, DATED 1991 AND SUPPLEMENTS DATED 1991 AND SUPPLEMENTS DATED 1994, THERETO IF NOTED IN THE SPECIAL "PROVISIONS FOR THIS PROJECT.

APPROVED BY: ______________________ DATE: ____________
JONATHON WISE, P.E. (NO. 39793)
CH2M HILL

ACCEPTED BY: ______________________ DATE: ____________
MICAH K. MASSAQUOI, P.E., PMP
COLLIER COUNTY PUBLIC WORKS ENGINEERING

ACCEPTED BY: ______________________ DATE: ____________
JEFF BIBBY, P.E.
COLLIER COUNTY PUBLIC WORKS ENGINEERING DIRECTOR

ACCEPTED BY: ______________________ DATE: ____________
EDWARD J. KANT, P.E.
COLLIER COUNTY TRANSPORTATION SERVICES DIRECTOR

RECORD DRAWINGS

Revisions Drawn By ____________________ Date ______________

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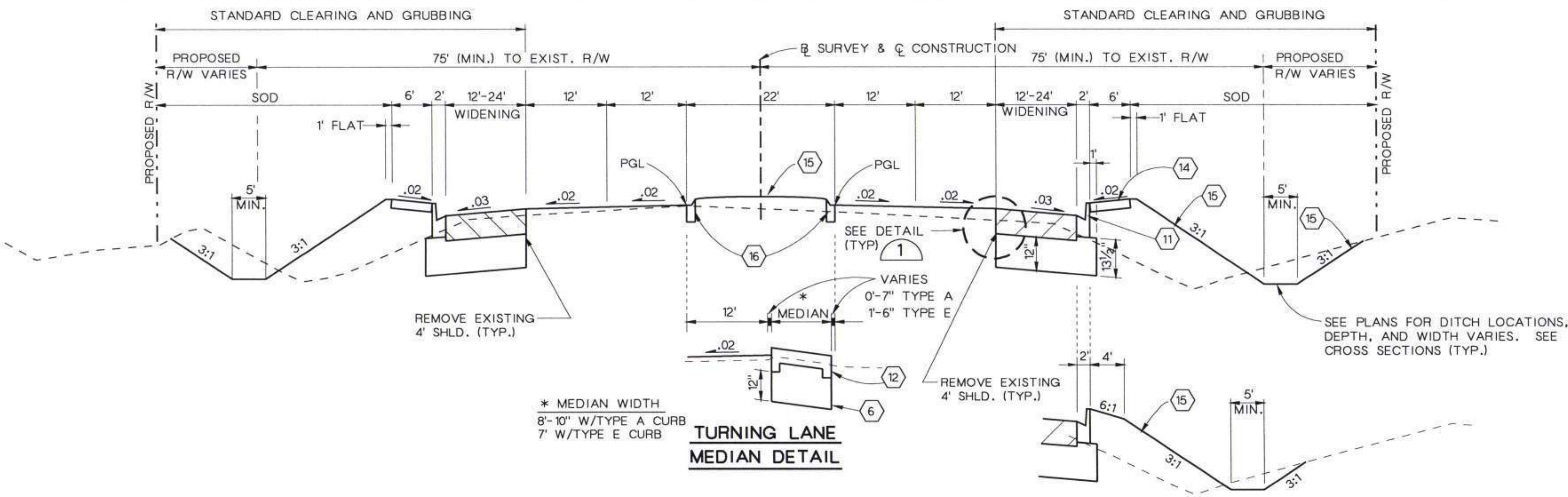
AT LEAST 72 HOURS IN ADVANCE OF BEGINNING CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL CONTACT THE LOCAL MAINTENANCE F.D.O.T. ENGINEER'S OFFICE TO SECURE GENERAL USE PERMITS AND/OR OTHER PERMITS AS REQUIRED FOR WORKING WITHIN THE DEPARTMENT'S RIGHT-OF-WAY.

LENGTH OF PROJECT		
	LINEAR FT.	MILES
ROADWAY	17265.00	3.27
BRIDGES	0.00	0.00
NET LENGTH OF PROJ.	17265.00	3.27
EXCEPTIONS	0.00	0.00
GROSS LENGTH OF PROJ.	17265.00	3.27

REVISIONS		
DATE	BY	DESCRIPTION

COUNTY PROJ. NO.	SHEET NO.
60111	9



TURNING LANE MEDIAN DETAIL

SLOPE TREATMENT FOR AREAS WITH NO SIDEWALK

PINE RIDGE ROAD

TYPICAL SECTION-22' MEDIAN

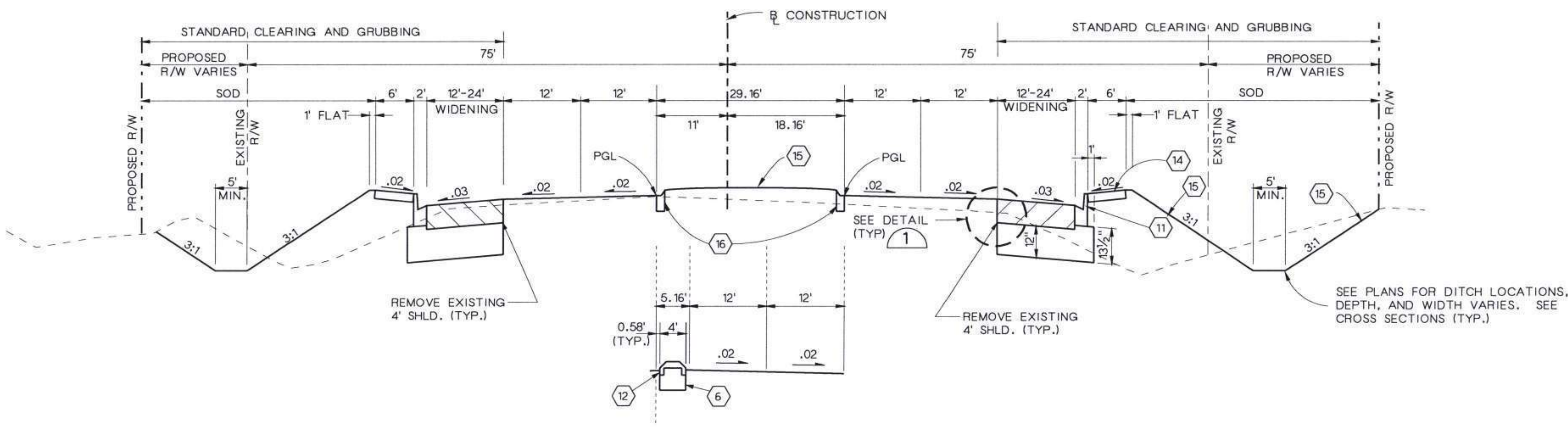
NTS

FROM BEGIN TO STA. 1045+65
STA. 1063+60 TO STA. 1102+00
STA. 1031+86 TO STA. END

GENERAL NOTES:

1. MILL AND RESURFACE EXISTING PAVEMENT TO REMAIN.
2. EXISTING ⅝" FRICTION COURSE WILL BE MILLED OFF (3/4") BEFORE EXISTING PAVEMENT IS OVERLAYED 1".
3. MEDIAN TREATMENT SHOWN FOR ONE DIRECTION ONLY. MEDIAN TREATMENT IS THE SAME FOR THE WESTBOUND AND EASTBOUND TRAFFIC. SEE PLANS FOR LOCATIONS.

- (1) ASPHALT FRICTION COURSE, TYPE FC-3 1" THICK
- (2) ASPHALT CONCRETE PAVEMENT, TYPE S OVERBUILD, THICKNESS VARIES, (MIN. 1½" THICK)
- (3) ASPHALT CONCRETE PAVEMENT, TYPE S, 2½" THICK
- (4) TYPE S BASE COURSE 5½" THICK, MAXIMUM COMPACTED LAYER THICKNESS OF 3" WITH TACK COAT APPLIED BETWEEN LAYERS.
- (5) TACK COAT
- (6) TYPE B STABILIZATION, LBR 40 (12" THICK)
- (7) EXISTING ASPHALT CONCRETE PAVEMENT TYPE FC-2, ⅝" (SHALL BE REMOVED BY MILLING AND REPLACED WITH TYPE S OVERBUILD)
- (8) EXISTING ASPHALT CONCRETE PAVEMENT TYPE S-1, 2"
- (9) EXISTING LIMEROCK BASE, 12"
- (10) EXISTING STABILIZED SUBGRADE, TYPE B, 12"
- (11) CONCRETE CURB AND GUTTER, TYPE F
- (12) CONCRETE TRAFFIC SEPARATOR, WIDTH VARIES
- (13) NOT USED
- (14) 4" CONCRETE SIDEWALK, NOTE: SIDEWALK TO BE 6" AT ALL DRIVEWAYS. REFER TO STANDARD INDEX 515
- (15) SODDING REQUIRED ON ALL DISTURBED AREAS
- (16) CONCRETE CURB AND GUTTER, TYPE A OR TYPE E (SEE PLANS)
- (17) MISCELLANEOUS ASPHALT
- (18) CONCRETE BARRIER WALL, REFER TO FDOT STANDARD INDEX 410 SHT. 8 OF 15
- (19) GRAVITY WALL - REFER TO FDOT STANDARD INDEX 520



TURNING LANE MEDIAN DETAIL

TRAFFIC DATA

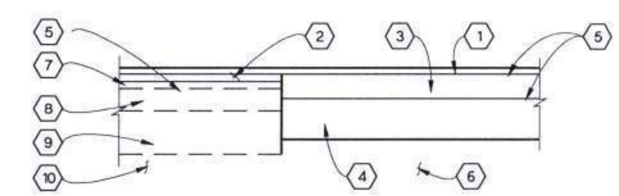
DESIGN SPEED = 50 MPH
POSTED SPEED = 45 MPH
DESIGN VEHICLE = WB-50
DESIGN YEAR = 2015

PINE RIDGE ROAD

TYPICAL SECTION-29.16' MEDIAN

NTS

FROM STA. 1049+25 TO STA. 1060+00



TYPICAL PINE RIDGE ROAD PAVEMENT WIDENING AND RESURFACING SECTION 1

09-SEP-2002 11:34

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ________ Date ______

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DESIGNED BY	S. WALLACE	JAN. 00	DRAWN BY	D. ESCALANTE	JAN. 00
CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	R. ENGBERG	JAN. 00
SUPERVISED BY : J. WISE					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
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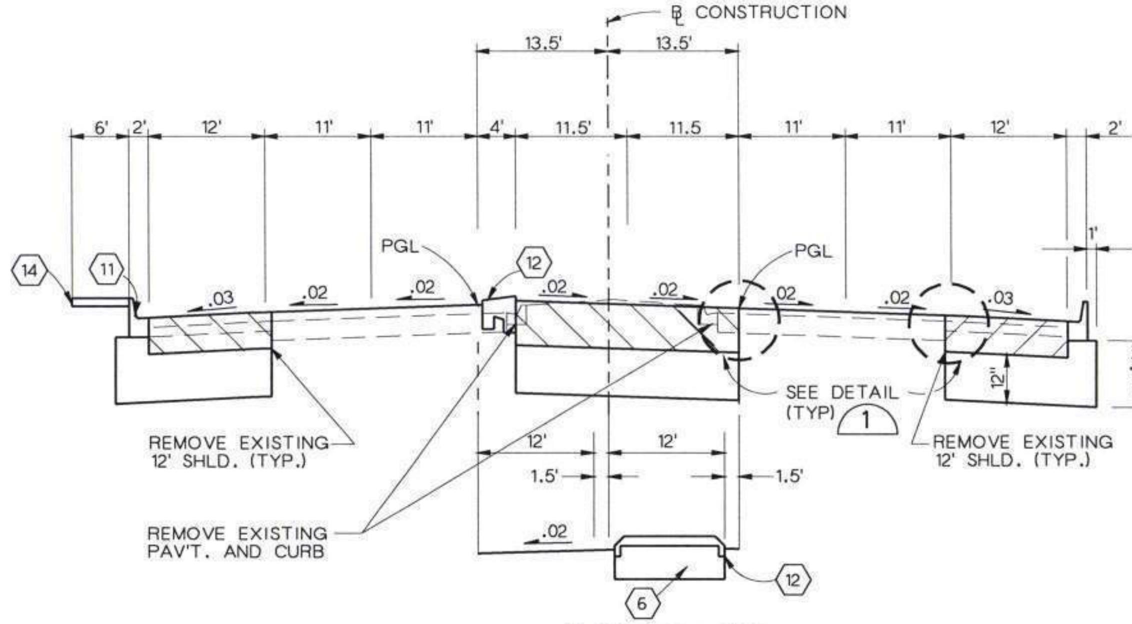
TYPICAL SECTION

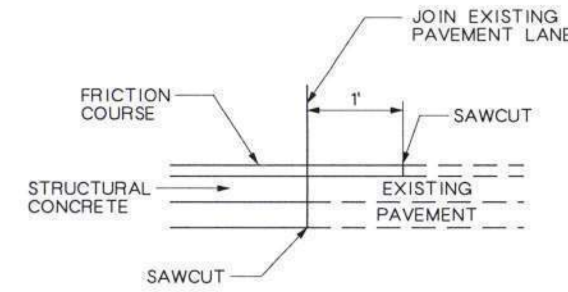
COUNTY PROJ. NO.	SHEET NO.
60111	10



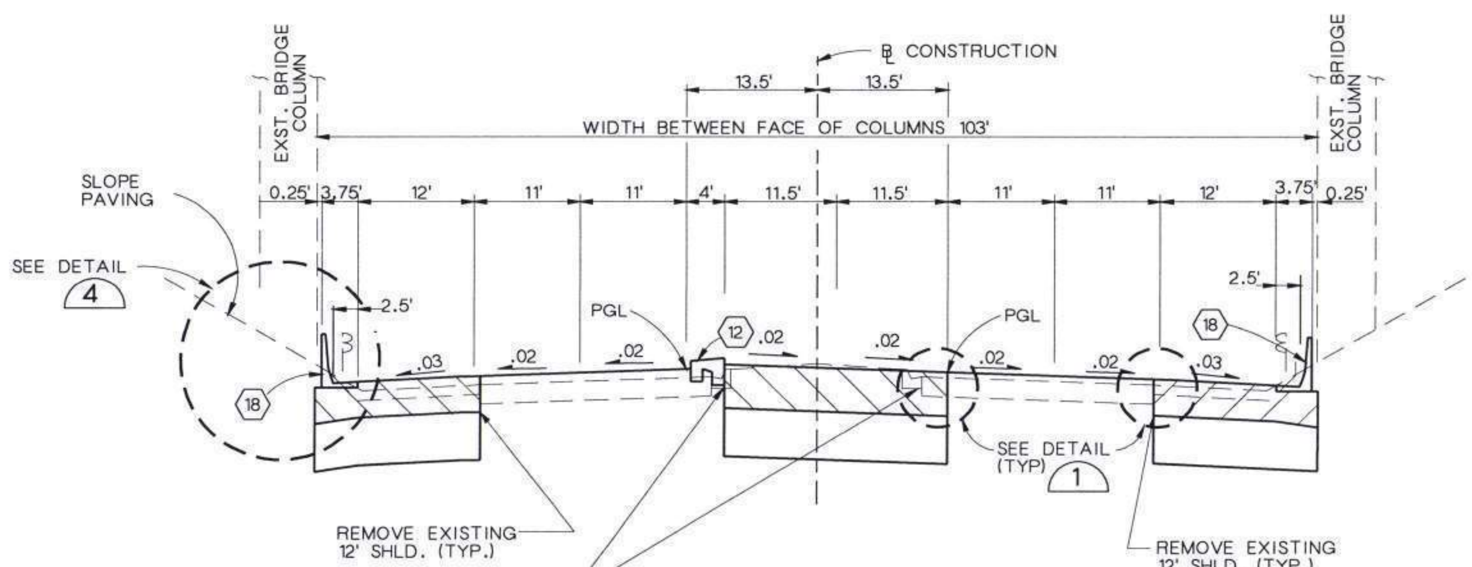
TURNING LANE
MEDIAN DETAIL

PINE RIDGE ROAD
TYPICAL SECTION-27' MEDIAN
NTS

FROM STA. 1103+00 TO STA. 1104+45
STA. 1106+70 TO STA. 1109+58

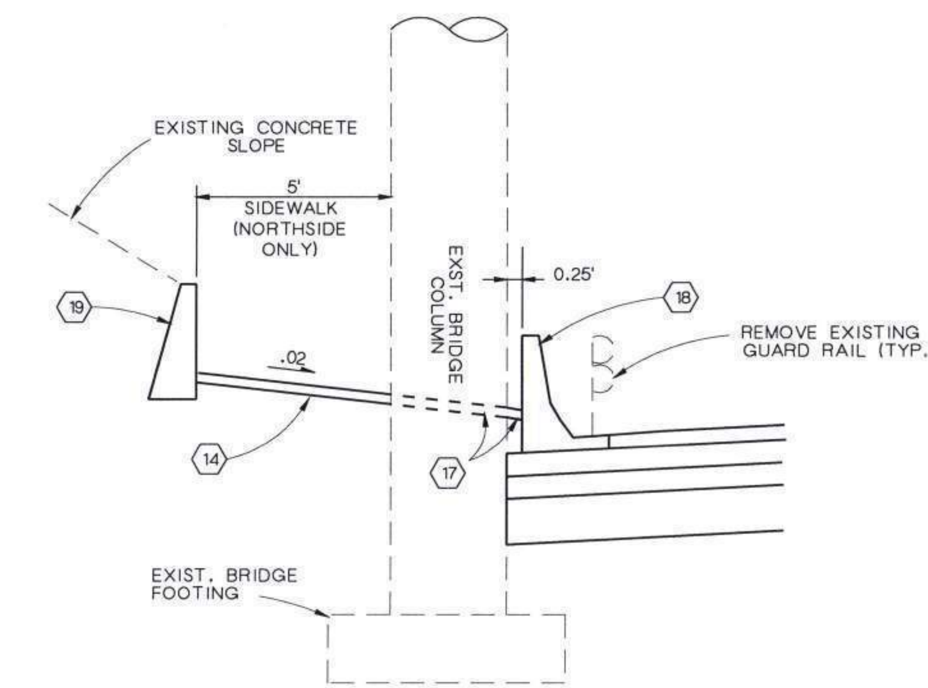


JOIN EXISTING PAVEMENT DETAIL
NTS



PINE RIDGE ROAD
TYPICAL SECTION - 27' MEDIAN
UNDER I-75 STRUCTURE

NTS
FROM STA. 1104+45 TO STA. 1106+70



DETAIL 4
NTS

NOTES:

1. PLACE ½" PERFORMED JOINT FILLER BETWEEN WALL AND SIDEWALK AND COLUMN AND SIDEWALK.
2. DAMAGED SLOPE PAVING UNDER BRIDGES SHALL BE RECONSTRUCTED, IN ACCORDANCE WITH FDOT STANDARD INDEX, AND PAID FOR UNDER COST OF GRAVITY WALL.

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ____ Date ____

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CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	S. WALLACE	JAN. 00

SUPERVISED BY : J. WISE

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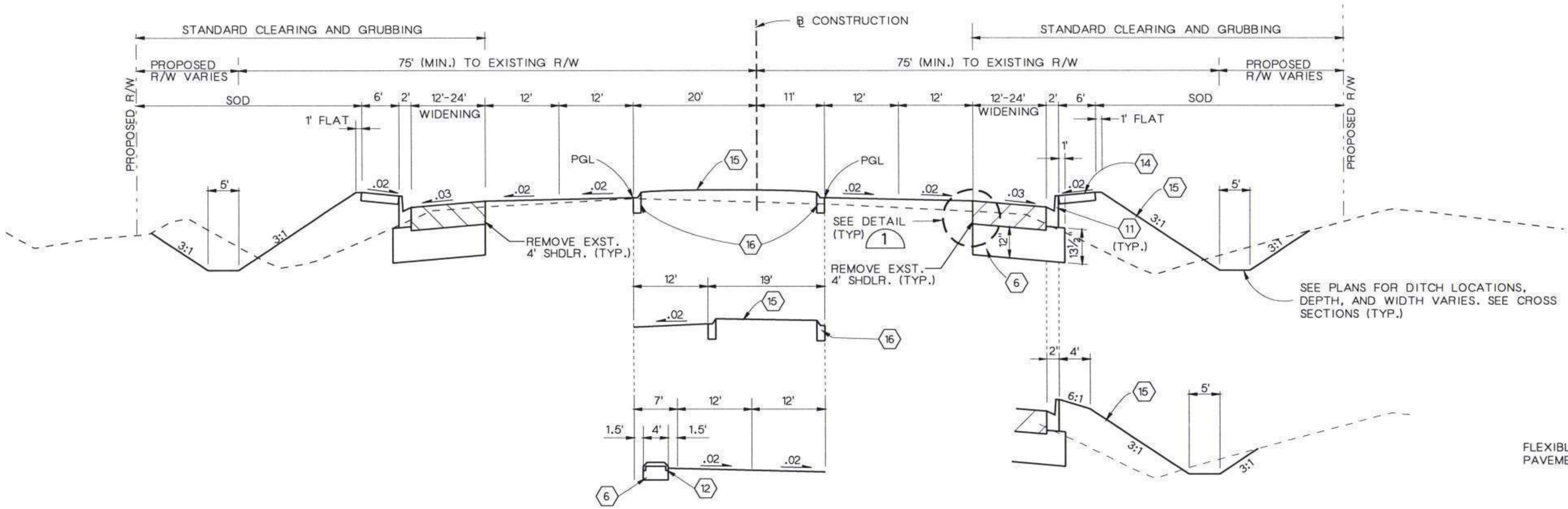
Tampa, Florida 33607-4155

TYPICAL SECTION

09-SEP-2002 11:34



TURNING LANE MEDIAN DETAIL

SLOPE TREATMENT FOR AREAS WITH NO SIDEWALK

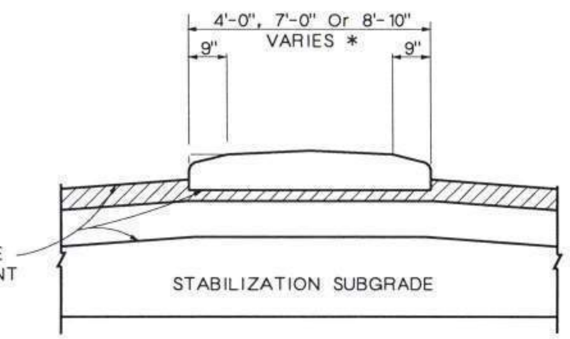
PINE RIDGE ROAD TYPICAL SECTION-31' MEDIAN

NTS

FROM STA. 1113+29 TO STA. 1127+36

GENERAL NOTES:

1. MILL AND RESURFACE EXISTING PAVEMENT TO REMAIN.
2. EXISTING ⅝" FRICTION COURSE WILL BE MILLED OFF (3/4") BEFORE EXISTING PAVEMENT IS OVERLAYED 1".
3. MEDIAN TREATMENT SHOWN FOR ONE DIRECTION ONLY. MEDIAN TREATMENT IS THE SAME FOR WESTBOUND AND EASTBOUND TRAFFIC. SEE PLANS FOR LOCATIONS.

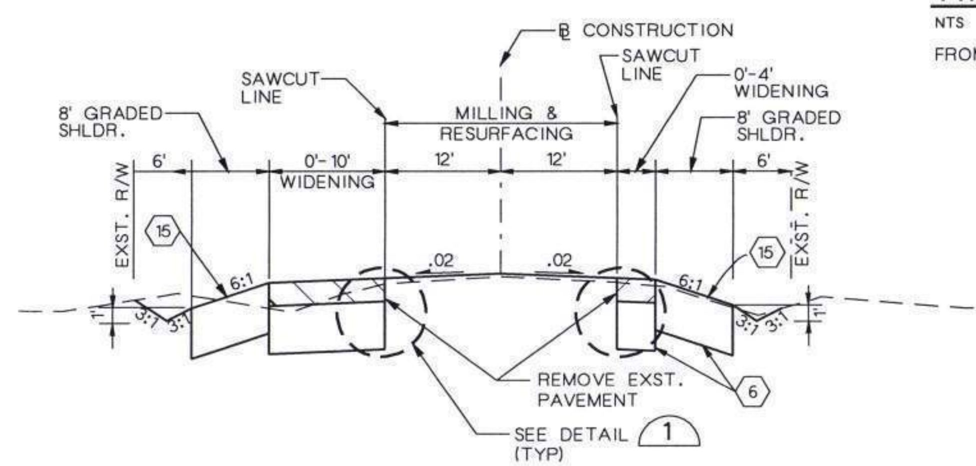


TRAVERSE SECTION

TYPE I OPTION II CONCRETE TRAFFIC SEPARATOR

N.T.S. SEE FDOT INDEX NO. 302 FOR DETAILS.

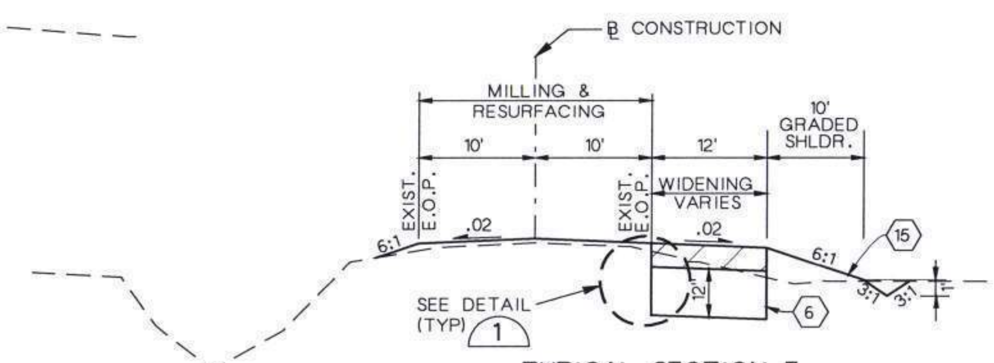
* SEE PLANS FOR LOCATION



TYPICAL SECTION G WHIPPOORWILL LANE

NTS

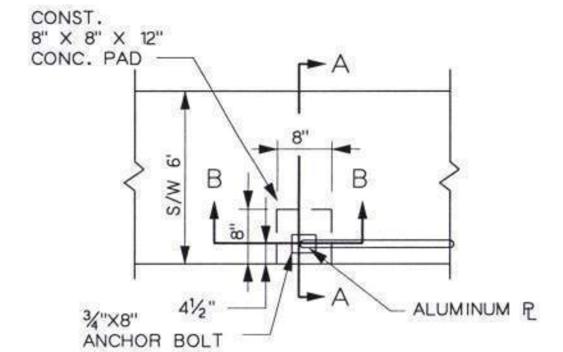
STA. 25+50 TO STA. 29+04.51



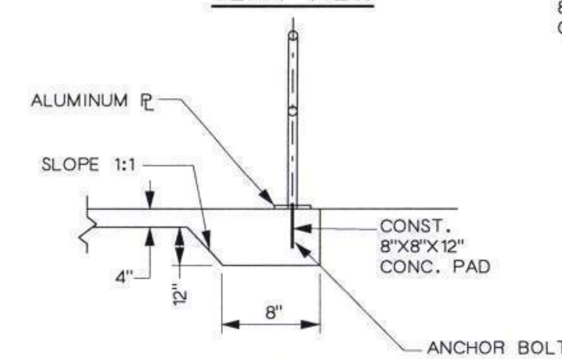
TYPICAL SECTION F LIVINGSTON ROAD

NTS

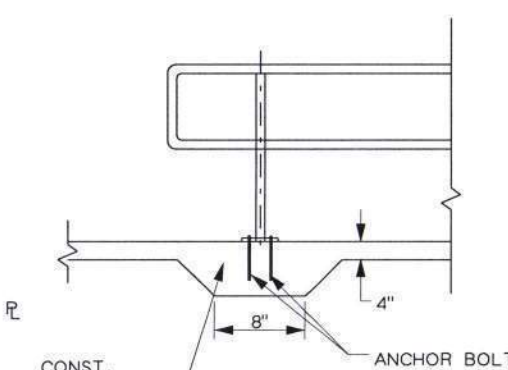
STA. 297+80 TO STA. 298+85



PLAN VIEW



SECTION A-A



SECTION B-B

TYPICAL ALUMINUM RAILS CONC. PAD

N.T.S.

NOTE:

1. FOR ADDITIONAL DETAILS REFER TO FDOT INDEX NO. 282 & 520
2. ALL COSTS ASSOCIATED WITH THE CONSTRUCTION OF THE CONC. PAD ARE TO BE INCLUDED IN THE COST OF ALUMINUM RAIL.

09-SEP-2002 11:34

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ____________ Date ______

THESE RECORD DRAWINGS HAVE BEEN PREPARED, IN PART, ON THE BASIS OF INFORMATION COMPILED BY OTHERS. THEY ARE NOT INTENDED TO REPRESENT IN DETAIL, THE EXACT LOCATION, TYPE OF COMPONENT NOR MANNER OF CONSTRUCTION. THE ENGINEER WILL NOT BE RESPONSIBLE FOR ANY ERRORS OR OMISSIONS WHICH HAVE BEEN INCORPORATED INTO THE RECORD DRAWINGS.

	NAME	DATE		NAME	DATE
DESIGNED BY	S. WALLACE	JAN. 00	DRAWN BY	D. ESCALANTE	JAN. 00
CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	S. WALLACE	JAN. 00

SUPERVISED BY : J. WISE

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

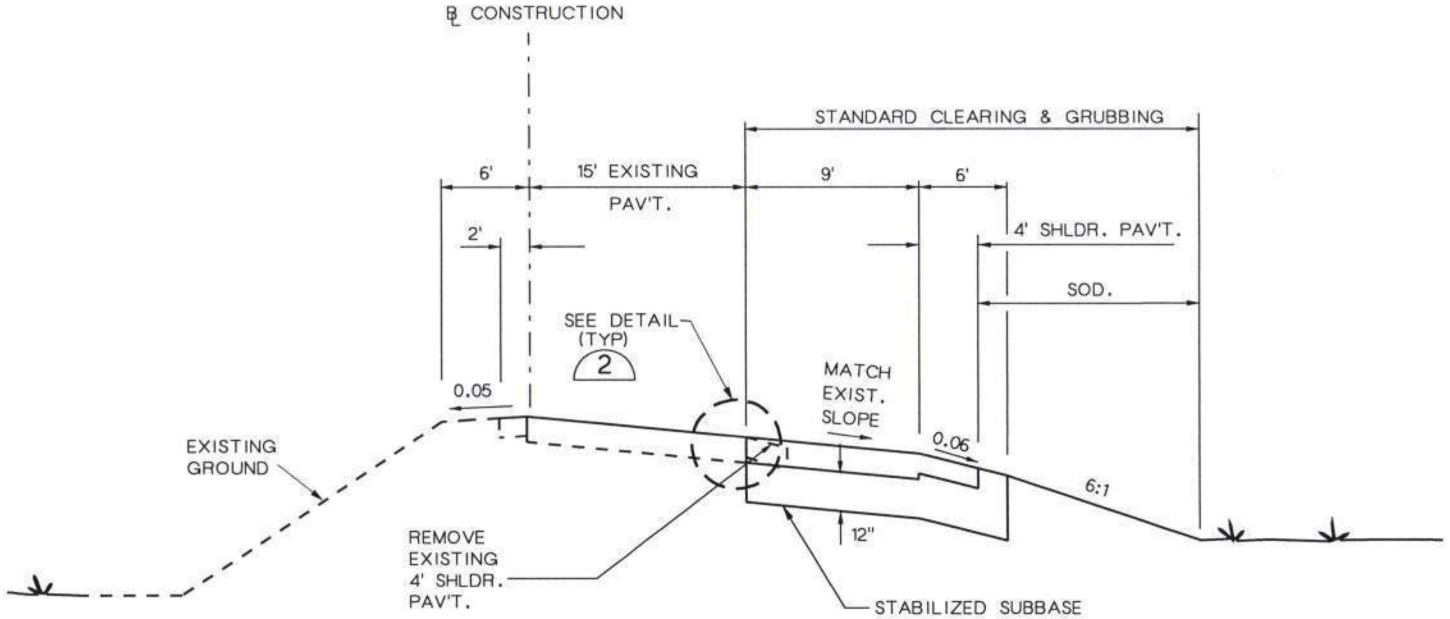
CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

TYPICAL SECTION

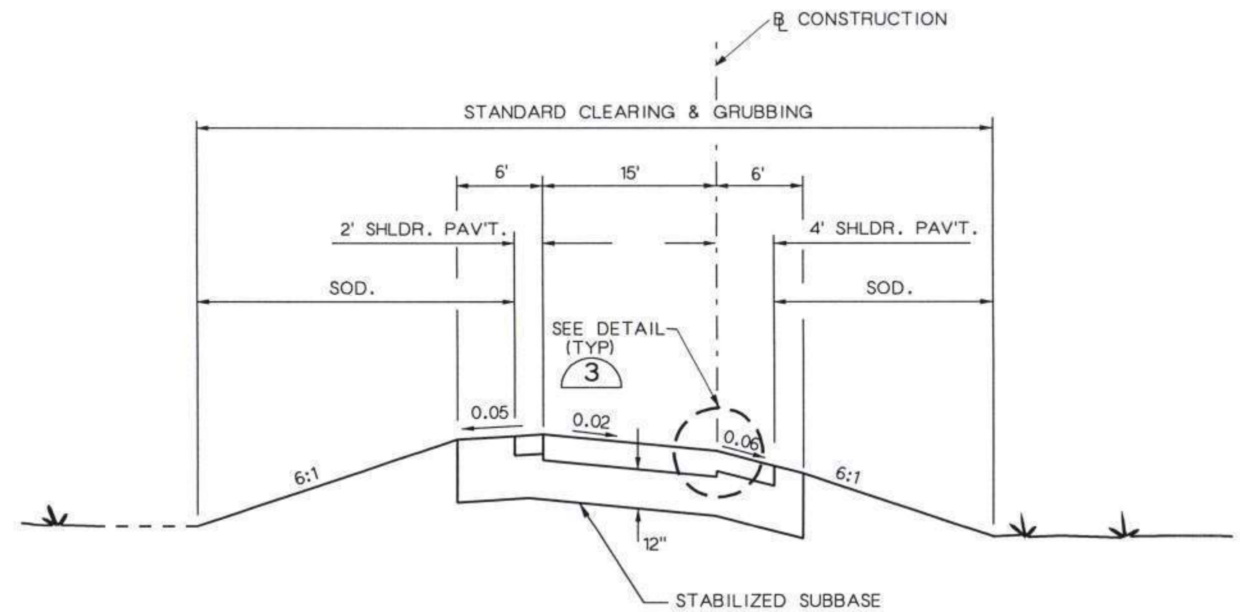
COUNTY PROJ. NO.	SHEET NO.
60111	12

RAMP NOTES:

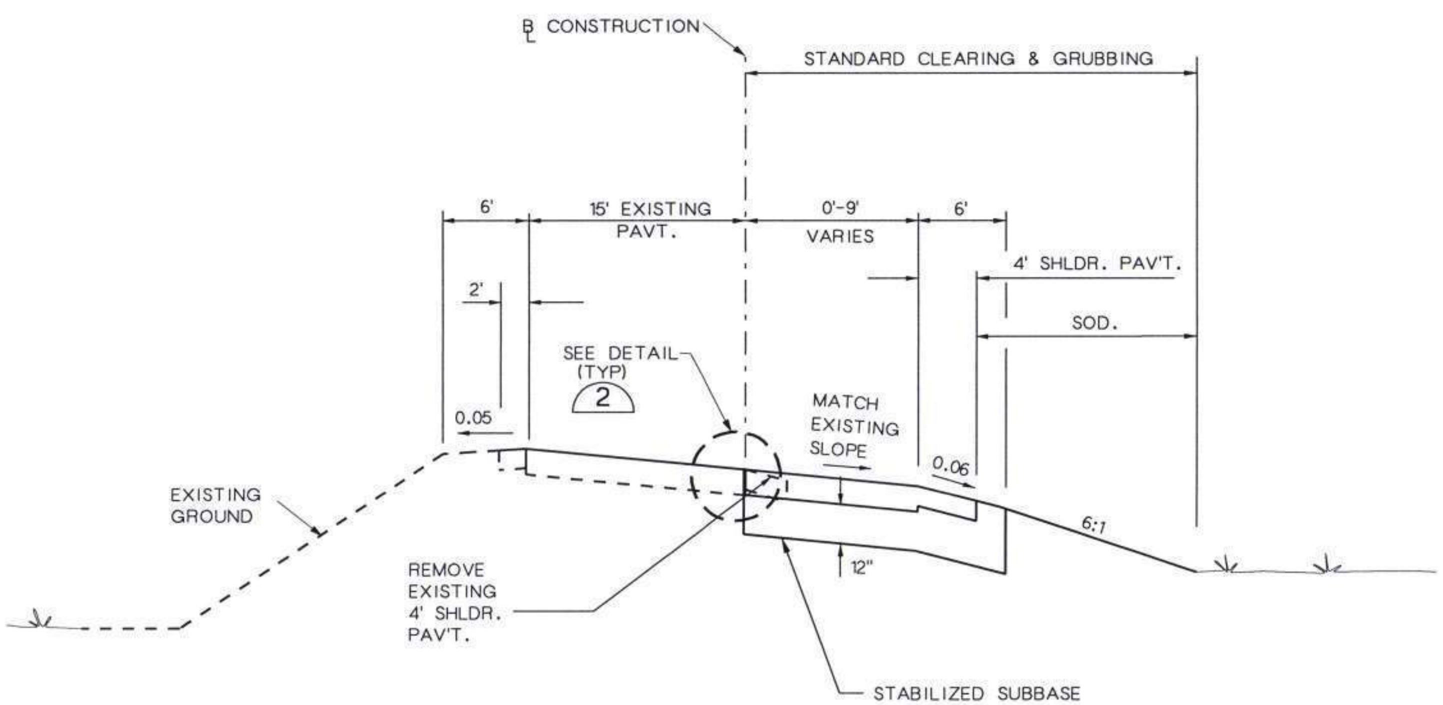
1. MILL AND RESURFACE EXISTING PAVEMENT TO REMAIN.
2. EXISTING 5/8" FRICTION COURSE WILL BE MILLED OFF (3/4") BEFORE EXISTING PAVEMENT IS OVERLAYED 1".
3. SEE PLANS FOR LIMITS OF CONSTRUCTION IN GORE AREAS AND PAVEMENT TRANSITIONS.



NORTH BOUND ON-RAMP
RAMP "D-1" TYPICAL SECTION
NTS
FROM STA. 26+68.72 TO STA. 31+26.14



NORTH BOUND ON-RAMP
RAMP "D-2" TYPICAL SECTION
NTS
FROM STA. 20+70 TO STA. 33+18



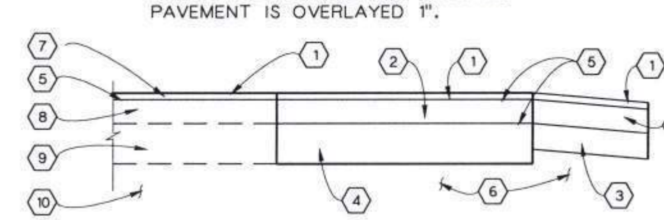
NORTH BOUND ON-RAMP
RAMP "D" TYPICAL SECTION
NTS
FROM STA. 31+26.14 TO STA. 50+54.05

RAMP PAVEMENT

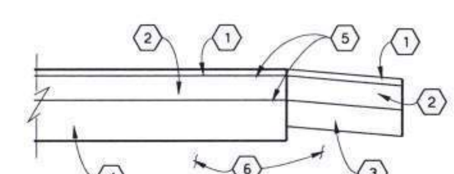
1. ASPHALT FRICTION COURSE, TYPE FC-3, 1" THICK
2. ASPHALT CONCRETE PAVEMENT TYPE S 2" THICK
3. TYPE S BASE COURSE 4" THICK, MAXIMUM COMPACTED LAYER THICKNESS 2" WITH TACK COAT APPLIED BETWEEN LAYERS
4. TYPE S BASE COURSE 6" THICK, MAXIMUM COMPACTED LAYER THICKNESS 3" WITH TACK COAT APPLIED BETWEEN LAYERS
5. TACK COAT
6. TYPE B STABILIZATION, LBR 40, 12" THICK
7. EXISTING ASPHALT CONCRETE PAVEMENT TYPE FC-2, 5/8" SHALL BE REMOVED BY MILLING 3/4" AND REPLACED WITH 1" TYPE FC-3 FRICTION COURSE
8. EXISTING ASPHALT CONCRETE PAVEMENT TYPE S-1, 2"
9. EXISTING ABC BASE COURSE 6" THICK
10. EXISTING STABILIZED SUBGRADE, TYPE B, 12"

NOTE:

1. EXISTING 5/8" FRICTION COURSE WILL BE MILLED OFF (3/4") BEFORE EXISTING PAVEMENT IS OVERLAYED 1".



TYPICAL RAMP PAVEMENT WIDENING AND RESURFACING SECTION (2)
NTS



TYPICAL RAMP PAVEMENT SECTION (3)
NTS

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

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	NAME	DATE		NAME	DATE
DESIGNED BY	S. WALLACE	JAN. 00	DRAWN BY	D. ESCALANTE	JAN. 00
CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	R. ENGBERG	JAN. 00
SUPERVISED BY : J. WISE					

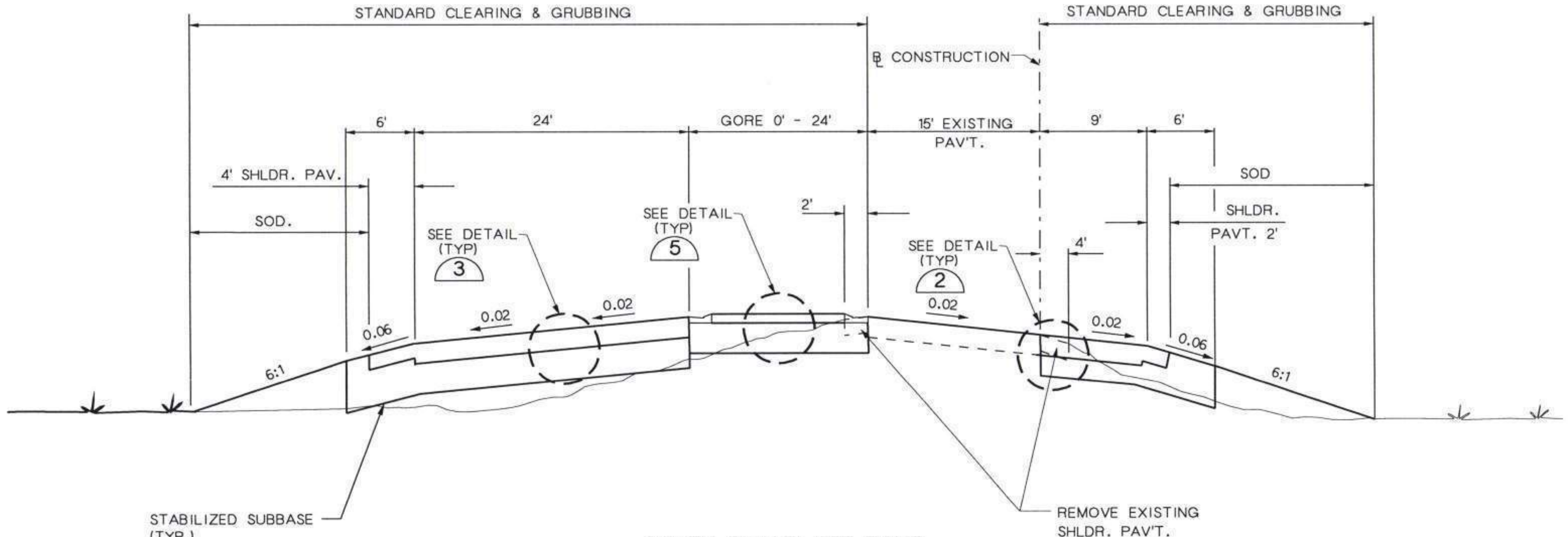
BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

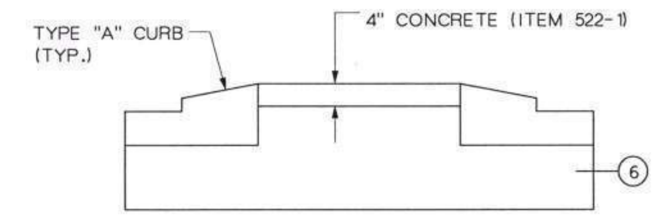
CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

TYPICAL SECTION
NORTH BOUND ON-RAMP

COUNTY PROJ. NO.	SHEET NO.
60111	13

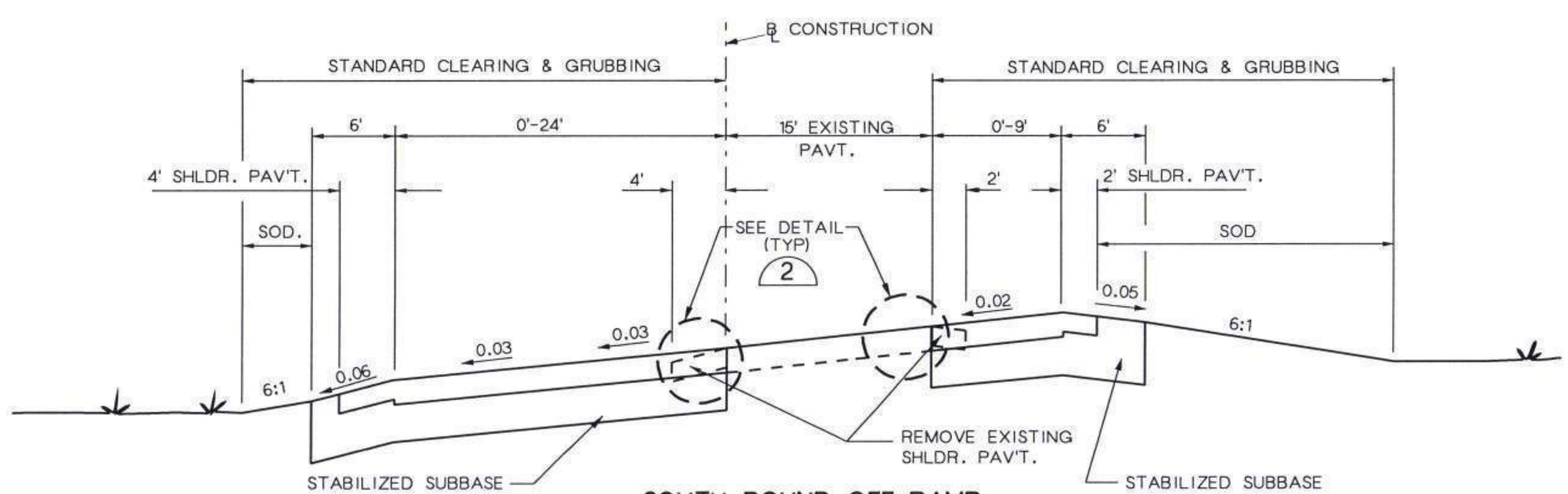


SOUTH BOUND OFF-RAMP
RAMP "C" TYPICAL SECTION
NTS
FROM STA. 26+78.71 TO STA. 27+49.08



6" RAISED CONCRETE ISLAND 5

I-75 N.B. OFF-RAMP
I-75 S.B. OFF-RAMP
NTS



SOUTH BOUND OFF-RAMP
RAMP "C" TYPICAL SECTION
NTS
FROM STA. 27+49.08 TO STA. 37+50

REVISIONS		
DATE	BY	DESCRIPTION

RECORD DRAWINGS: Revisions Drawn By ______ Date ______

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	NAME	DATE		NAME	DATE
DESIGNED BY	S. WALLACE	JAN. 00	DRAWN BY	D. ESCALANTE	JAN. 00
CHECKED BY	B. GRAMER	JAN. 00	CHECKED BY	S. WALLACE	JAN. 00
SUPERVISED BY : J. WISE					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DEPARTMENT
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

TYPICAL SECTION
SOUTH BOUND OFF-RAMP

COUNTY PROJ. NO.	SHEET NO.
60111	1 OF 31

THIS CONTRACT PLAN SET INCLUDES:

ROADWAY PLANS
SIGNALIZATION PLANS

COLLIER COUNTY
PUBLIC WORKS ENGINEERING DEPARTMENT
PLANS OF PROPOSED
PINE RIDGE ROAD
INTERSTATE 75 TO NAPA BLVD.

COUNTY PROJECT NO. 60111

A DETAILED INDEX APPEARS ON THE KEY SHEET OF EACH GROUP OF PLANS

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
1	KEY SHEET
2	GENERAL NOTES
3	TYPICAL SECTIONS
4-8	ROADWAY PLAN-PROFILE SHEETS
9	INTERSECTION DETAIL I-75 N.B. OFF RAMP/PRR
10-14	SIGNING AND MARKING SHEETS
15-17	CROSS SECTIONS
18-31	TRAFFIC CONTROL SHEETS
T1-T7	SIGNALIZATION PLANS

THESE PLANS HAVE BEEN PREPARED IN ACCORDANCE WITH AND ARE GOVERNED BY THE STATE OF FLORIDA. DEPARTMENT OF TRANSPORTATION, ROADWAY AND TRAFFIC DESIGN STANDARDS BOOKLET (DATED JANUARY, 1994).

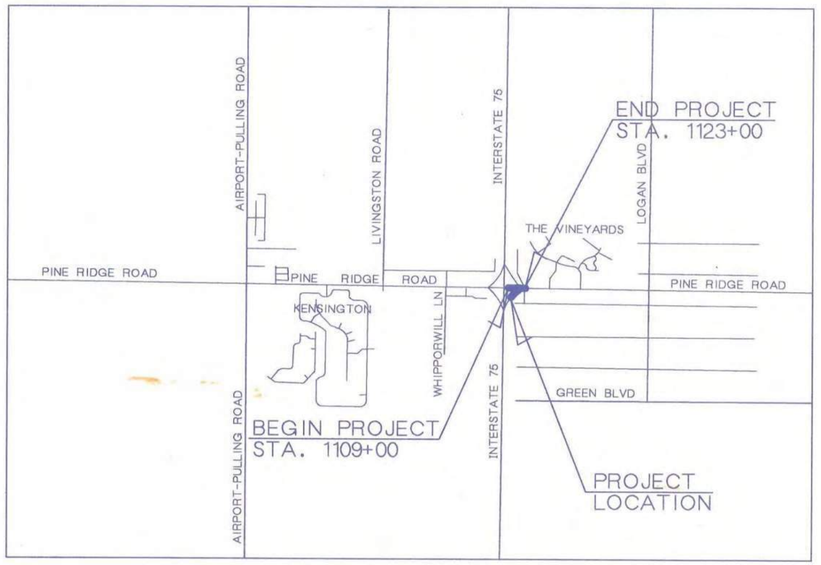
AT LEAST 72 HOURS IN ADVANCE OF BEGINING CONSTRUCTION OF THE PROJECT, THE CONTRACTOR SHALL CONTACT THE LOCAL MAINTENANCE F.D.O.T. ENGINEER'S OFFICE TO SECURE GENERAL USE PERMITS AND/OR OTHER PERMITS AS REQUIRED FOR WORKING WITHIN THE DEPARTMENT'S RIGHT-OF-WAY.

ROADWAY AND TRAFFIC DESIGN STANDARDS
(BOOKLET DATED JANUARY 1994)

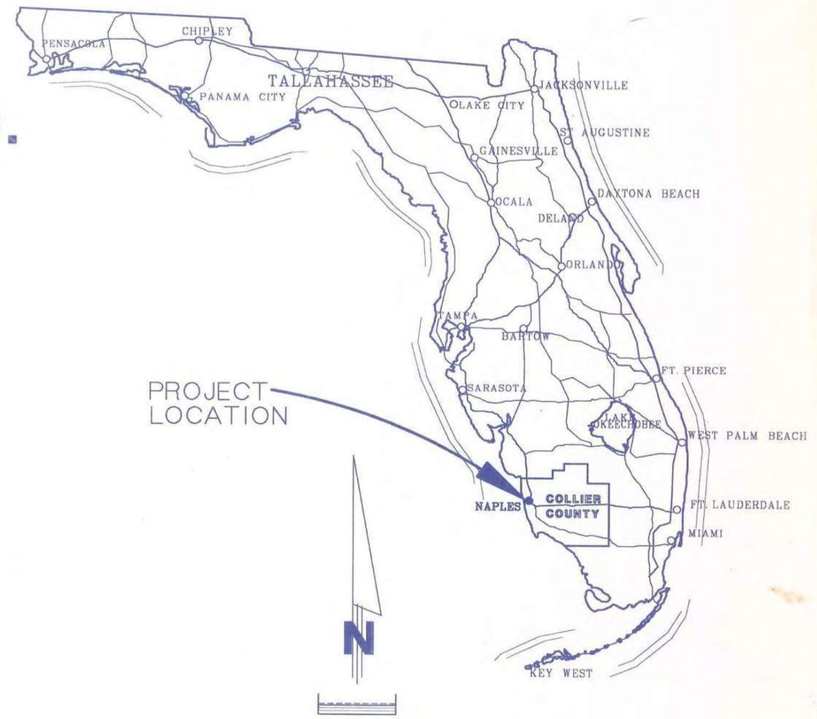
PREPARED BY

CH2MHILL

4350 W. Cypress Street
Suite Number 600
Tampa, Florida 33607-4178



SITE LOCATION MAP



ATTENTION IS DIRECTED TO THE FACT THAT THESE PLANS MAY HAVE BEEN REDUCED IN SIZE BY REPRODUCTION.THIS MUST BE CONSIDERED WHEN OBTAINING SCALED DATA.

GOVERNING SPECIFICATIONS: STATE OF FLORIDA, DEPARTMENT OF TRANSPORTATION,STANDARD SPECIFICATIONS,DATED 1991 AND SUPPLEMENTS THERETO IF NOTED IN THE SPECIAL PROVISIONS FOR THIS PROJECT.

REVIEWED BY: _____ DATE: _____
PUBLIC WORKS ENGINEERING DEPARTMENT

SUBMITTED BY: _____ DATE: _____
CH2M HILL

APPROVED BY: _____ DATE: _____
ENGINEER OF RECORD

AUTHORIZED BY: _____ DATE: _____
TRANSPORTATION SERVICES DIRECTOR

LENGTH OF PROJECT

	LINEAR FT.	MILES
ROADWAY	1400.00	0.265
BRIDGES	0.00	0.000
NET LENGTH OF PROJ.	1400.00	0.265
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJ.	1400.00	0.265

RM BOX #154

PLAN ROOM
TRANSPORTATION SERVICES DIVISION
2885 SOUTH HORSESHOE DRIVE
NAPLES, FL 34104
ATTN: RamonMagsumbol@colliergov.net
SCAN 10-11-12 KSM

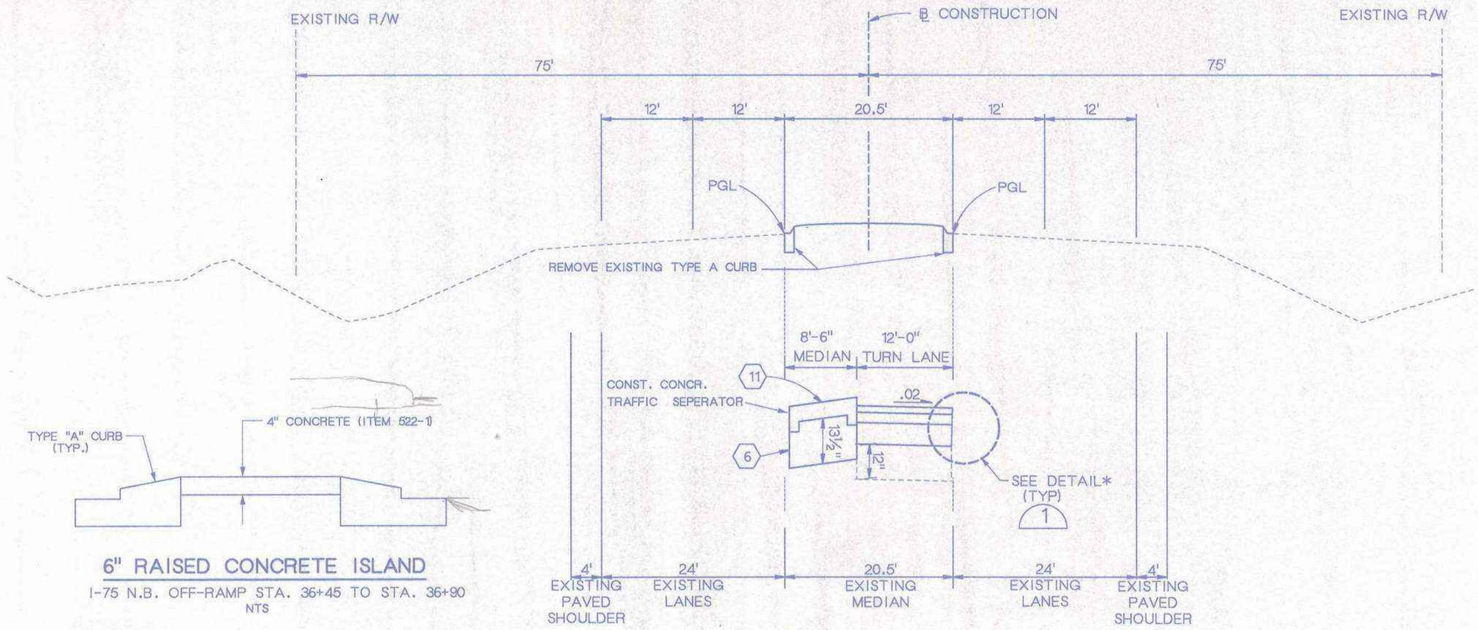
REVISIONS		
DATE	BY	DESCRIPTION

11-18-98 100 %

MOD : 18-NOV-1998 PLOT : 06:27:08 keysrd01.dgn

100% SUBMITTAL 9/18/98

COUNTY PROJ. NO.	SHEET NO.
60111	3 OF 31



TYPICAL SECTION A *

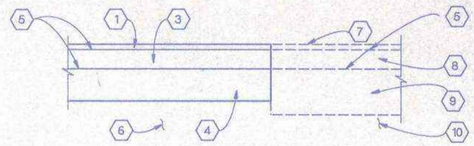
NTS PINE RIDGE ROAD

* STA. 1119+35 TO STA. 1121+34

6" RAISED CONCRETE ISLAND

I-75 N.B. OFF-RAMP STA. 36+45 TO STA. 36+90

NTS



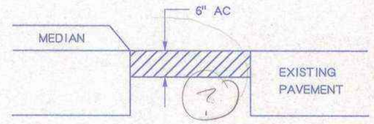
MEDIAN SECTION * 1

NTS

* SECTION TO BE USED IN AREAS OF MEDIAN MODIFICATIONS

NOTE: EXISTING LEFT TURN LANE TO BE LENGTHENED TO 300' WITH A 50' TAPER PINE RIDGE ROAD MEDIAN TO BE MODIFIED 0'-12'.

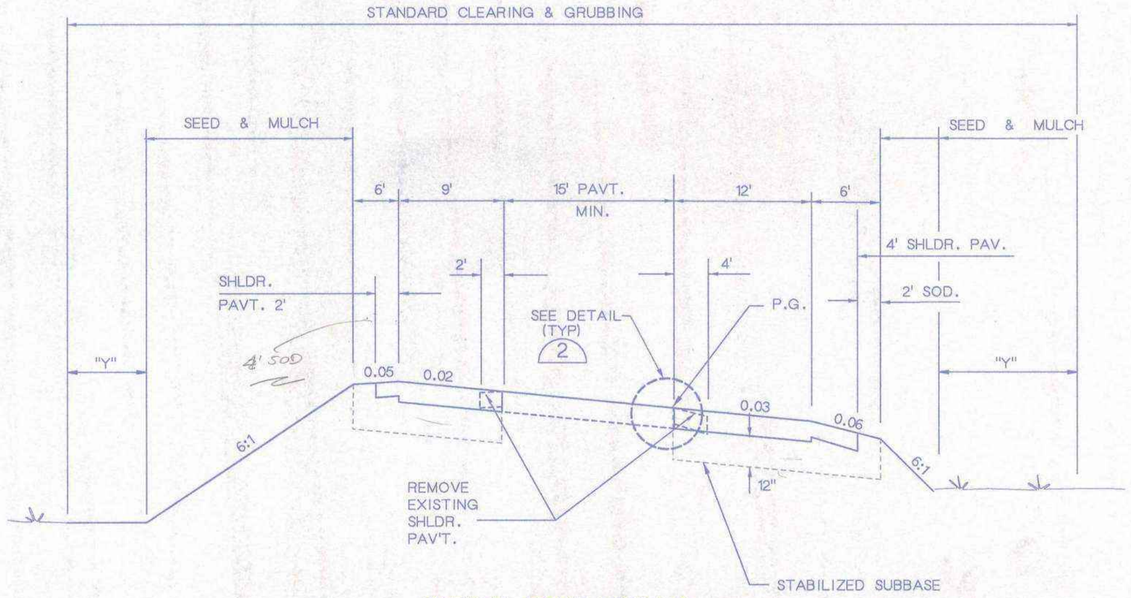
1. ASPHALT FRICTION COURSE, TYPE FC-3, 1" THICK
3. ASPHALT CONCRETE PAVEMENT, TYPE S, 2½" THICK
4. ABC BASE COURSE 5½" THICK, MAXIMUM COMPACTED LAYER THICKNESS OF 3" WITH TACK COAT APPLIED BETWEEN LAYERS.
5. TACK COAT
6. TYPE B STABILIZATION, LBR 40
7. EXISTING ASPHALT CONCRETE PAVEMENT TYPE FC-2, ⅝"
8. EXISTING ASPHALT CONCRETE PAVEMENT TYPE S-1, 2"
9. EXISTING LIMEROCK BASE, 12"
10. EXISTING STABILIZED SUBGRADE, TYPE B, 12"
11. CONCRETE TRAFFIC SEPARATOR, TYPE I, OPTION I,



MEDIAN NOSE MODIFICATIONS

NTS PRR STA. 1109+29 TO 1109+60
1110+30 TO 1110+50
REMOVE EXISTING MEDIAN
REPLACE WITH 6" AC

1. ASPHALT FRICTION COURSE, TYPE FC-3, 1" THICK
2. ABC BASE COURSE 4" THICK, MAXIMUM COMPACTED LAYER THICKNESS 3" WITH TACK COAT APPLIED BETWEEN LAYERS
3. ASPHALT CONCRETE PAVEMENT TYPE S 2" THICK
4. ABC BASE COURSE 6" THICK, MAXIMUM COMPACTED LAYER THICKNESS 3" WITH TACK COAT APPLIED BETWEEN LAYERS
5. TACK COAT
6. TYPE B STABALIZATION, LBR 40
7. EXISTING ASPHALT CONCRETE PAVEMENT TYPE FC-2, ⅝" SHALL BE REMOVED BY MILLING ¾" AND REPLACED WITH 1" TYPE FC-3 FRICTION COURSE
8. EXISTING ASPHALT CONCRETE PAVEMENT TYPE S-1, 2"
9. EXISTING ABC BASE COURSE 6" THICK
10. EXISTING STABILIZED SUBGRADE, TYPE B, 12"

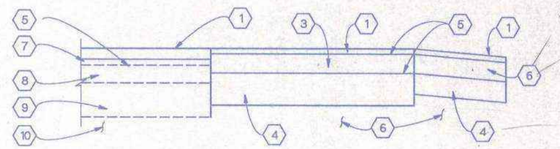


TYPICAL RAMP SECTION

FROM STA. 29+95 TO STA. 36+95.22

NOTE:

1. EXISTING ⅝" FRICTION COURSE WILL BE MILLED OFF (3/4") BEFORE EXISTING PAVEMENT IS OVERLAYED 1".



TYPICAL PAVEMENT WIDENING AND RESURFACING SECTION 2

NTS

GENERAL NOTES:

1. ALL PERMANENT GRASS AREAS RECEIVE A TOPSOIL TREATMENT.
2. FOR MEDIAN STABILIZING SEE STANDARD INDEX 500.
3. FOR STABILIZING AT INTERSECTIONS, TURNOUTS AND GRADED CONNECTIONS, SEE STANDARD INDEX 515. SEE TYPICAL SECTION FOR DEPTH AND STABILIZED SUBBASE.
4. "Y" = 15'± OR AREA DISTURBED DURING CONSTRUCTION.

REVISIONS								
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION

	NAME	DATE		NAME	DATE
DESIGNED BY	B. GRAMER	SEP 98	DRAWN BY	D. ESCALANTE	SEP 98
CHECKED BY	R. ENGBERG	NOV 98	CHECKED BY	S. WALLACE	NOV 98
SUPERVISED BY :					

BOARD OF COUNTY COMMISSIONERS
TRANSPORTATION SERVICES DIVISION
COLLIER COUNTY, FLORIDA

APPROVED BY : DATE :

CH2MHILL
4350 West Cypress Street, Ste 600
Tampa, Florida 33607-4155

TYPICAL SECTION

FILE NO.

17-NOV-1998 PLOT: 15:04:58 typsrd01.dgn

100% SUBMITTAL 11/17/98

Appendix G

PTAR Volume Development Draft Report - 7-24-20

DRAFT

VOLUME DEVELOPMENT for the PROJECT TRAFFIC ANALYSIS REPORT

Florida Department of Transportation, District 1

I-75 (SR 93) Project Development and Environment (PD&E) Study

Pine Ridge Road (CR 896) from Whippoorwill Lane to Napa Boulevard

Collier County, Florida

Financial Project ID: 445296-1-22-01
ETDM No.: NA

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated December 14, 2016, and executed by FHWA and FDOT.

_____/_____/_____
Date

_____
Joseph Samus, Jr., P.E.
P.E. No. 80489

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1.0 Traffic Data Collection

Traffic counts were collected by FTE, Inc. between Tuesday, February 19, 2019 and Thursday, February 21, 2019. On Wednesday, February 20, 2019, turning movement counts were collected at all study intersections. There was one 72-hour bi-directional classification count, fourteen 72-hour bi-directional volume counts, and thirteen turning movement counts (TMCs) collected between 7:00 AM to 9:00 AM and 4:00 PM to 6:00 PM. **Table 1.1** provides a list of all data collection efforts, which can be found in **Appendix A**. An analysis of these counts indicates the AM peak hour occurred between 7:45 AM and 8:45 AM and the PM peak hour occurred between 4:45 PM and 5:45 PM.

Table 1.1: Traffic Data Collection

Location	Type of Count
I-75 Ramps to/from Pine Ridge Road	
Southbound On-Ramp	72-Hour Volume Count
Southbound Off-Ramp	72-Hour Volume Count
Northbound On-Ramp	72-Hour Volume Count
Northbound Off-Ramp	72-Hour Volume Count
Along Pine Ridge Road	
West of Livingston Road	72-Hour Volume Count
West of I-75 Southbound Ramps	72-Hour Volume Count
East of I-75 Northbound Ramps	72-Hour Volume Count
West of Logan Boulevard	72-Hour Classification Count
East of Logan Boulevard	72-Hour Volume Count
Along Side Streets	
Meridian Plaza, east of Livingston Road	72-Hour Volume Count
Livingston Road, north of Pine Ridge Road	72-Hour Volume Count
Livingston Road, south of Pine Ridge Road	72-Hour Volume Count
Whippoorwill Lane, south of Pine Ridge Road	72-Hour Volume Count
Logan Boulevard, north of Pine Ridge Road	72-Hour Volume Count
Logan Boulevard, south of Pine Ridge Road	72-Hour Volume Count
Intersections	
Pine Ridge Road and Livingston Road	Turning Movement Count
Livingston Road and Uniforms Unlimited	Turning Movement Count
Pine Ridge Road and Starbucks	Turning Movement Count
Pine Ridge Road and Meridian Plaza	Turning Movement Count
Pine Ridge Road and Kraft Road	Turning Movement Count
Pine Ridge Road and Whippoorwill Road	Turning Movement Count
Whippoorwill Road and Dudley Drive	Turning Movement Count
Pine Ridge Road and Larson Way	Turning Movement Count
Pine Ridge Road and I-75 Southbound Ramp Terminal	Turning Movement Count
Pine Ridge Road and I-75 Northbound Ramp Terminal	Turning Movement Count
Pine Ridge Road and Napa Boulevard	Turning Movement Count
Pine Ridge Road and Vineyards Boulevard	Turning Movement Count
Pine Ridge Road and Logan Boulevard	Turning Movement Count

2.0 Development of Existing Year (2019) Traffic Volumes

This section discusses the development of the existing year (2019) design traffic volumes for the I-75 and Pine Ridge Road interchange. The volumes were developed based on the collected traffic data and the procedures outlined in the FDOT's *Project Traffic Forecasting Handbook (2019)*.

2.1 Field Collected AADT

Existing year (2019) field collected annual average daily traffic (AADT) was computed by multiplying the three-day average of the 72-hour count data by seasonal and axle adjustment factors. The exception to this was on the I-75 mainline where counts were not collected as part of this study effort and AADTs from Florida Traffic Online were used directly (COSITE 030191 north of Pine Ridge Road and COSITE 032003 south of Pine Ridge Road). Seasonal and axle correction factors for February 2019 were downloaded from Florida Traffic Online for 2018, prior to the release of the 2019 data. The seasonal factor for Collier County for the week of February 18, 2018 is 0.86, compared to a seasonal factor for Collier County for the week of February 17, 2019 of 0.88. There was not an axle correction factor available for Pine Ridge Road from Florida Traffic Online and so axle correction factors from SR-84 west of US-41 (just to the south of the study area with similar land uses) was used as a surrogate. The axle correction factor for that location for February 18, 2018 was 0.98, compared to 0.99 in the 2019 data. This comparison of the 2018 seasonal and axle correction factors to the recently released 2019 data indicates only minimal differences and so the 2018 correction factors were not updated to 2019. **Table 2.1** summarizes the field collected existing year (2019) AADT volumes.

Table 2.1: Field Collected Existing Year (2019) AADT

Location	2019 Count	Seasonal Factor	Axle Factor	2019 AADT	2019 AADT (Rounded)**
I-75 Mainline					
North of Pine Ridge Road	N/A	N/A	N/A	89,215	89,000
South of Pine Ridge Road	N/A	N/A	N/A	79,000	79,000
I-75 Ramps to/from Pine Ridge Road					
Southbound On-Ramp	7,888	0.86	0.98	6,648	6,600
Southbound Off-Ramp	13,053	0.86	0.98	11,001	11,000
Northbound On-Ramp	12,186	0.86	0.98	10,270	10,500
Northbound Off-Ramp	6,667	0.86	0.98	5,619	5,600
Along Pine Ridge Road					
West of Livingston Road	54,531	0.86	0.98	45,959	46,000
West of I-75 Southbound Ramps	56,393	0.86	0.98	47,528	47,500
East of I-75 Northbound Ramps	43,993	0.86	0.98	37,077	37,000
West of Logan Boulevard*	40,222	0.86	N/A	34,591	34,500
East of Logan Boulevard	24,158	0.86	0.98	20,360	20,500
Along Side Streets					
Meridian Plaza, east of Livingston Road	1,555	0.86	0.98	1,311	1,300
Livingston Road, north of Pine Ridge Road	31,107	0.86	0.98	26,217	26,000
Livingston Road, south of Pine Ridge Road	31,153	0.86	0.98	26,256	26,500
Whippoorwill Lane, south of Pine Ridge Road	14,992	0.86	0.98	12,635	12,500
Logan Boulevard, north of Pine Ridge Road	13,742	0.86	0.98	11,852	11,500
Logan Boulevard, south of Pine Ridge Road	30,195	0.86	0.98	25,448	25,500

*This count was a vehicle classification count.
**AADT volumes were rounded in accordance with the *Project Traffic Forecasting Handbook (2019)*.

2.2 Design Traffic Factors

This section presents the design traffic factors that were developed for this study. The factors were determined based on the collected traffic data, historically observed factors, and forecasted factors from the model. The factors were developed based on the procedures outlined in the FDOT's *Project Traffic Forecasting Handbook (2019)*. These design traffic factors used in the development of the existing year (2019), opening year (2025), and design year (2040) design traffic volumes.

2.2.1 Peak Hour Factor

The peak hour factor (PHF) represents the fluctuation in the arrival rate of traffic during the peak hour by converting the hourly volume into the flow rate for the peak 15-minute period. The PHF measured at each intersection within the study area was used for the existing year (2019) for the AM and PM peak hours. **Table 2.2** summarizes the existing AM and PM PHFs for the 14 intersections in the study area. During the AM peak hour, the PHF ranges from 0.89 to 0.96 with a weighted average of 0.93. During the PM peak hour, the PHF ranges from 0.91 to 0.98 with a weighted average of 0.95.

Table 2.2: Field Measured Peak Hour Factors

Intersection	Peak Hour Factor	
	AM Peak Hour	PM Peak Hour
Pine Ridge Road and Livingston Road	0.94	0.97
Livingston Road and Uniforms Unlimited	0.92	0.95
Pine Ridge Road and Starbucks	0.92	0.93
Pine Ridge Road and Meridian Plaza	0.94	0.94
Pine Ridge Road and Kraft Road	0.95	0.92
Pine Ridge Road and Whippoorwill Road	0.96	0.93
Whippoorwill Road and Dudley Drive	0.93	0.91
Pine Ridge Road and Larson Way	0.95	0.94
Pine Ridge Road and I-75 Southbound Ramp Terminal	0.92	0.97
Pine Ridge Road and I-75 Northbound Ramp Terminal	0.92	0.96
Pine Ridge Road and Napa Boulevard	0.93	0.97
Pine Ridge Road and Vineyards Boulevard	0.91	0.98
Pine Ridge Road and Logan Boulevard	0.89	0.98
Average	**0.93**	**0.95**

However, a PHF of 0.95 is recommended for opening year (2025) and design year (2040) analysis.

2.2.2 Peak to Daily Ratio

The peak to daily ratio (PTD) represents the proportion of AADT occurring during the design hour. **Table 2.3** summarizes the PTD that occurred during the AM and PM peak hours. The weighted average of the AM PTD is 8.3 percent. The weighted average of the PM PTD is 8.8 percent. Based on the FDOT's *Project Traffic Forecasting Handbook (2019)*, a standard PTD of 9.0 percent is used for arterials in an urban area. The slightly lower PTD observed during the data collection would indicate some amount of congestion and possibly peak spreading. However, the standard PTD of 9.0 percent was used in the development of traffic volumes for the Pine Ridge Road Interchange Study.

Table 2.3: Field Measured Peak to Daily Ratio

Location	AADT	AM Peak Hour		PM Peak Hour	
		Volume	PTD	Volume	PTD
I-75 Mainline					
North of Pine Ridge Road	89,215	8,029	9.0%	8,006	9.0%
South of Pine Ridge Road	79,000	7,427	9.4%	7,481	9.5%
I-75 Ramps to/from Pine Ridge Road					
Southbound On-Ramp	6,648	518	7.8%	488	7.3%
Southbound Off-Ramp	11,001	764	6.9%	784	7.1%
Northbound On-Ramp	10,270	685	6.7%	774	7.5%
Northbound Off-Ramp	5,619	425	7.6%	490	8.7%
Along Pine Ridge Road					
West of Livingston Road	45,959	2,877	6.3%	3,508	7.6%
West of I-75 Southbound Ramps	47,528	3,393	7.1%	3,792	8.0%
East of I-75 Northbound Ramps	37,077	2,832	7.6%	3,085	8.3%
West of Logan Boulevard	34,591	2,741	7.9%	2,936	8.5%
East of Logan Boulevard	20,360	1,711	8.4%	1,712	8.4%
Along Side Streets					
Meridian Plaza, east of Livingston Road	1,311	184	14.0%	119	9.1%
Livingston Road, north of Pine Ridge Road	26,217	2,338	8.9%	2,203	8.4%
Livingston Road, south of Pine Ridge Road	26,256	2,173	8.3%	2,260	8.6%
Whippoorwill Lane, south of Pine Ridge Road	12,635	965	7.6%	993	7.9%
Logan Boulevard, north of Pine Ridge Road	11,582	943	8.1%	1,095	9.5%
Logan Boulevard, south of Pine Ridge Road	25,448	1,955	7.7%	2,307	9.1%

2.2.3 Directional Factor

The directional distribution (D) factor is the proportion of traffic traveling in the peak direction relative to the sum of the traffic volume in both directions during the design hour. The D factor was determined from FDOT Florida Traffic Online (2018) for the I-75 mainline and calculated from the 72-hour bi-directional approach counts for each counted location within the study area. **Tables 2.5** and **2.6** summarize the AM and PM peak hour directional distribution percentages (D factors) for the I-75 and Pine Ridge Road interchange. The D factor ranged from 67.3 percent to 76.6 percent during the AM peak hour along Pine Ridge Road, with a peak direction of west throughout. During the PM peak hour the D factors are not quite as extreme on Pine Ridge Road, but still high with an east peak direction. This indicates that Pine Ridge Road is used as a commuting facility towards Naples and the beaches in the morning and away from Naples and the beaches in the afternoon.

The directional distribution on I-75 compares well to the D factors found on Florida Traffic Online. I-75 to the north of Pine Ridge Road has a D factor of 56.5 percent during the AM peak hour and 57.0 percent during the PM peak hour, compared to a D factor of 56.4 percent on Florida Traffic Online. This particular count from Florida Traffic Online is a telemetered count and therefore there is confidence in the D factor value. I-75 to the south of Pine Ridge Road has a D factor of 57.5 percent during the AM peak hour and 57.3 percent during the PM peak hour, compared to a D factor of 55 percent on Florida Traffic Online. The D factors on I-75 south of Pine Ridge Road compare favorably to the Florida Traffic Online value. This count on Florida Traffic Online is a portable traffic monitoring site and a brief review of the associated synopsis report indicates that the D factor may be higher than 55.0 percent.

Table 2.4: Field Measured D Factors – AM Peak Hour

Location	Northbound/ Eastbound Volume	Southbound/ Westbound Volume	Field Data D Factor	Balanced D Factor**	Peak Direction
I-75 Mainline					
North of Pine Ridge Road	N/A*	N/A*	56.4%	56.5%	South
South of Pine Ridge Road	N/A*	N/A*	55.0%	57.5%	South
Along Pine Ridge Road					
West of Livingston Road	915	1,962	68.2%	67.5%	West
West of I-75 Southbound Ramps	1,127	2,266	66.8%	67.3%	West
East of I-75 Northbound Ramps	845	1,987	70.2%	71.4%	West
West of Logan Boulevard	662	2,079	75.8%	76.6%	West
East of Logan Boulevard	430	1,281	74.9%	75.4%	West
Along Side Streets					
Meridian Plaza, east of Livingston Road	96	88	52.2%	52.7%	East
Livingston Road, north of Pine Ridge Road	1,065	1,273	54.4%	55.3%	South
Livingston Road, south of Pine Ridge Road	1,044	1,129	52.0%	52.6%	South
Whippoorwill Lane, south of Pine Ridge Road	547	418	56.7%	58.4%	North
Logan Boulevard, north of Pine Ridge Road	468	475	50.4%	53.1%	South
Logan Boulevard, south of Pine Ridge Road	1,171	784	59.9%	61.3%	North

*D Factor taken from Florida Traffic Online.
**Resulting D Factor after volume balancing procedures were conducted.

Table 2.5: Field Measured D Factors – PM Peak Hour

Location	Northbound/ Eastbound Volume	Southbound/ Westbound Volume	Field Data D Factor	Balanced D Factor**	Peak Direction
I-75 Mainline					
North of Pine Ridge Road	N/A*	N/A*	56.4%	57.0%	North
South of Pine Ridge Road	N/A*	N/A*	55.0%	57.3%	North
Along Pine Ridge Road					
West of Livingston Road	2,116	1,392	60.3%	59.8%	East
West of I-75 Southbound Ramps	2,353	1,439	62.1%	61.3%	East
East of I-75 Northbound Ramps	1,957	1,128	63.4%	63.4%	East
West of Logan Boulevard	1,937	999	66.0%	65.5%	East
East of Logan Boulevard	1,198	514	70.0%	69.9%	East
Along Side Streets					
Meridian Plaza, east of Livingston Road	59	60	50.4%	50.0%	West
Livingston Road, north of Pine Ridge Road	1,250	953	56.7%	57.2%	North
Livingston Road, south of Pine Ridge Road	1,318	942	58.3%	57.8%	North
Whippoorwill Lane, south of Pine Ridge Road	486	507	51.1%	51.9%	South
Logan Boulevard, north of Pine Ridge Road	565	530	51.6%	51.8%	North
Logan Boulevard, south of Pine Ridge Road	1,061	1,246	54.0%	53.6%	South

*D Factor taken from Florida Traffic Online.
**Resulting D Factor after volume balancing procedures were conducted.

The balanced D factors shown above were used to develop the traffic volumes for the study area. In cases where the balanced D factors exceed the recommended D factors defined in the FDOT's *Project Traffic Forecasting Handbook (2019)*, then the maximum value of 67.1 percent was used for the surface streets and 61.2 percent was used for the I-75 mainline.

2.2.4 Daily and Design Hour Truck Factors

The daily truck (T_{24}) factor is the percentage of medium and heavy truck traffic in a 24-hour period. **Table 2.6** summarizes the only classification count collected as a part of this study effort on Pine Ridge Road, west of Logan Boulevard. This count was collected from February 19, 2019 to February 21, 2019. This table indicates that the T_{24} factor for Pine Ridge Road, west of Logan Boulevard is 6.1 percent. While Pine Ridge Road is not a major freight corridor, there are several commercial uses which would facilitate some truck traffic for deliveries. This is supported by the high proportion of trucks being classified as medium trucks.

Table 2.6: Field Measured Daily Vehicle Composition

Direction	Total Vehicles	Medium Trucks		Heavy Trucks		Total Trucks (T_{24})		Buses	
		Count	%	Count	%	Count	%	Count	%
February 19, 2019									
Eastbound	16,802	1,025	6.1%	77	0.5%	1,102	6.6%	78	0.5%
Westbound	17,350	982	5.7%	28	0.2%	1,010	5.8%	24	0.1%
Two-Way	34,152	2,007	5.9%	105	0.3%	2,112	6.2%	102	0.3%
February 20, 2019									
Eastbound	17,120	1,025	6.0%	64	0.4%	1,089	6.4%	74	0.4%
Westbound	17,670	951	5.4%	37	0.2%	988	5.6%	23	0.1%
Two-Way	34,790	1,976	5.7%	101	0.3%	2,077	6.0%	97	0.3%
February 21, 2019									
Eastbound	17,211	1,083	6.3%	65	0.4%	1,148	6.7%	68	0.4%
Westbound	17,621	972	5.5%	25	0.1%	997	5.7%	23	0.1%
Two-Way	34,832	2,055	5.9%	90	0.3%	2,145	6.2%	91	0.3%
Three-Day Average									
Two-Way	34,591	2,013	5.8%	99	0.3%	2,111	6.1%	97	0.3%

Table 2.7 summarizes the historical AADT and T_{24} factors for I-75, south of Pine Ridge Road and Pine Ridge Road, west of I-75. These are the two counts found on Florida Traffic Online which have classification counts within the study area. Daily truck percentages have been relatively stable during the past five years. Because AADT has increased overall during the past five years on I-75, the daily truck volume has also increased from 6,200 in 2014 to 7,800 in 2018. AADT on Pine Ridge Road has remained relatively flat despite a small spike in 2015 and 2016. The classification count collected on Pine Ridge Road, west of Logan Boulevard is slightly higher than the classification count obtained from Florida Traffic Online on Pine Ridge Road, west of I-75, although this difference is only about one percent.

Table 2.7: Historical AADT and T_{24} Factors

Year	I-75, South of Pine Ridge Road (COSITE = 032003)		Pine Ridge Road, West of I-75 (COSITE = 034628)		Livingston Road, North of Pine Ridge Road (COSITE = 034575)		Logan Boulevard, South of Pine Ridge Road (COSITE = 034155)	
	AADT	Daily Trucks (T_{24})	AADT	Daily Trucks (T_{24})	AADT	Daily Trucks (T_{24})	AADT	Daily Trucks (T_{24})
2018	76,500	9.5%	51,000	4.9%	26,000	4.7%	31,000	4.1%
2017	79,000	9.1%	51,500	4.3%	26,500	4.4%	28,500	4.8%
2016	72,500	9.3%	57,000	4.3%	25,500	3.8%	27,500	4.0%
2015	70,000	9.7%	56,000	4.6%	24,500	4.2%	28,500	4.0%
2014	64,000	9.3%	52,500	4.5%	23,500	4.2%	27,500	3.7%

The design hour truck (DHT) factor is the percentage of medium and heavy truck traffic during the peak hour. **Table 2.8** summarizes the 2019 AM peak hour volumes and truck volumes that were collected at the classification count on Pine Ridge Road, west of Logan Boulevard. According to the FDOT's *Project Traffic Forecasting Handbook (2019)*, DHT factor is estimated to be one half of the daily truck percentage. However, this table indicates that the vehicle composition during the AM peak hour is like the daily vehicle composition. Medium trucks make up around 6.1 percent of vehicles during the AM peak hour, compared to 5.8 percent of daily vehicles. Heavy trucks make up 0.3 percent of vehicles in both the AM peak hour and daily, and buses make up 0.2 percent of vehicles in the AM peak hour and 0.3 percent daily.

Table 2.8: Field Measured Peak Hour Vehicle Composition – AM Peak Hour

Direction	Total Vehicles	Medium Trucks		Heavy Trucks		Total Trucks (DHT)		Buses	
		Count	%	Count	%	Count	%	Count	%
February 19, 2019									
Eastbound	663	65	9.8%	9	1.4%	74	11.2%	4	0.6%
Westbound	2,084	127	6.1%	1	0.0%	128	6.1%	0	0.0%
Two-Way	2,747	192	7.0%	10	0.4%	202	7.4%	4	0.1%
February 20, 2019									
Eastbound	642	46	7.2%	3	0.5%	49	7.6%	7	1.1%
Westbound	2,138	113	5.3%	2	0.1%	115	5.4%	0	0.0%
Two-Way	2,780	159	5.7%	5	0.2%	164	5.9%	7	0.3%
February 21, 2019									
Eastbound	679	59	8.7%	5	0.7%	64	9.4%	8	1.2%
Westbound	2,013	95	4.7%	1	0.0%	96	4.8%	0	0.0%
Two-Way	2,692	154	5.7%	6	0.2%	160	5.9%	8	0.3%
Three-Day Average									
Two-Way	2,740	168	6.1%	7	0.3%	175	6.4%	6	0.2%

Table 2.9 summarizes the same vehicle composition information, for the PM peak hour instead of the AM peak hour. The PM peak hour vehicle composition is again very similar to the daily vehicle composition and the AM peak hour composition. This, along with the higher composition of medium trucks compared to heavy trucks, indicates that much of the freight activity is related to service and delivery vehicles. Based on the observed daily, AM peak hour, and PM peak hour truck percentages, the truck percentages have remained relatively stable and the AM and PM peak hours do not differ significantly from each other or from the daily truck percentage.

Table 2.9: Field Measured Peak Hour Vehicle Composition – PM Peak Hour

Direction	Total Vehicles	Medium Trucks		Heavy Trucks		Total Trucks (DHT)		Buses	
		Count	%	Count	%	Count	%	Count	%
February 19, 2019									
Eastbound	1,916	110	5.7%	8	0.4%	118	6.2%	4	0.2%
Westbound	976	43	4.4%	0	0.0%	43	4.4%	0	0.0%
Two-Way	2,892	153	5.3%	8	0.3%	161	5.6%	4	0.1%
February 20, 2019									
Eastbound	1,924	97	5.0%	8	0.4%	105	5.5%	2	0.1%
Westbound	1,041	50	4.8%	0	0.0%	50	4.8%	0	0.0%
Two-Way	2,965	147	5.0%	8	0.3%	155	5.2%	2	0.1%
February 21, 2019									
Eastbound	1,975	129	6.5%	8	0.4%	137	6.9%	3	0.2%
Westbound	979	53	5.4%	1	0.1%	54	5.5%	0	0.0%
Two-Way	2,954	182	6.2%	9	0.3%	191	6.5%	3	0.1%
Three-Day Average									
Two-Way	2,937	161	5.5%	8	0.3%	169	5.8%	3	0.1%

To develop design truck factors for the study area Florida Traffic Online and the 72-hour classification count were reviewed for each major segment group within the study area. **Table 2.10** provides the T_{24} and design hourly truck factor (DHT) for each of these locations.

Table 2.10: Design Truck Factors

Location	Count Site	T_{24}	DHT
I-75 mainline	032003	9.5%	5.0%
I-75 southbound off ramp	037024	7.5%	4.0%
I-75 southbound on ramp	037022	7.5%	4.0%
I-75 northbound off ramp	037021	7.5%	4.0%
I-75 northbound on ramp	037023	7.5%	4.0%
Pine Ridge Road	72-hour classification count	6.1%	4.0%
Cross Streets*	034575	4.7%	3.0%

*Design truck factor for cross streets is the maximum observed cross street truck factor from Florida Traffic Online

2.3 Existing Year (2019) Turning Movement Volumes

A review of the peak hour turning movement count data obtained at all study intersections and minor cross streets was reviewed within the area of influence for the previously defined AM and PM peak hours. Volumes were tied to origin-destination (OD) level trip patterns and balanced statistically utilizing data smoothing principles supported by the FDOT's *Project Traffic Forecasting Handbook (2019)* and the Transportation Research Board's *National Cooperative Highway Research Program Report 765: Analytical Travel Forecasting Approaches for Project-Level Planning and Design*. A detailed accounting of the statistical accuracy between the field collected turning movement volumes and the normalized existing conditions can be found in the *Existing Conditions Assignment Calibration Memorandum* in **Appendix C**. The adjusted existing year (2019) AM and PM peak hour volumes for the signalized intersections within the area of influence are graphically illustrated in **Figure 2.1**.

2.4 Existing Year (2019) AADT

Existing year (2019) AADT is calculated through the application of seasonal and axle correction factors applied to counted daily traffic as provided in **Figure 2.1** above. For any location where a count was not collected, AADT was derived from the application of the standard PTD (9.0 percent) to the maximum of the AM or PM bi-directional peak hour balanced volumes and then rounded. **Figure 2.2** shows the existing year (2019) AADT volumes for the I-75 and Pine Ridge Road study area.

Figure 2.1: Existing Year (2019) Turning Movement Volumes

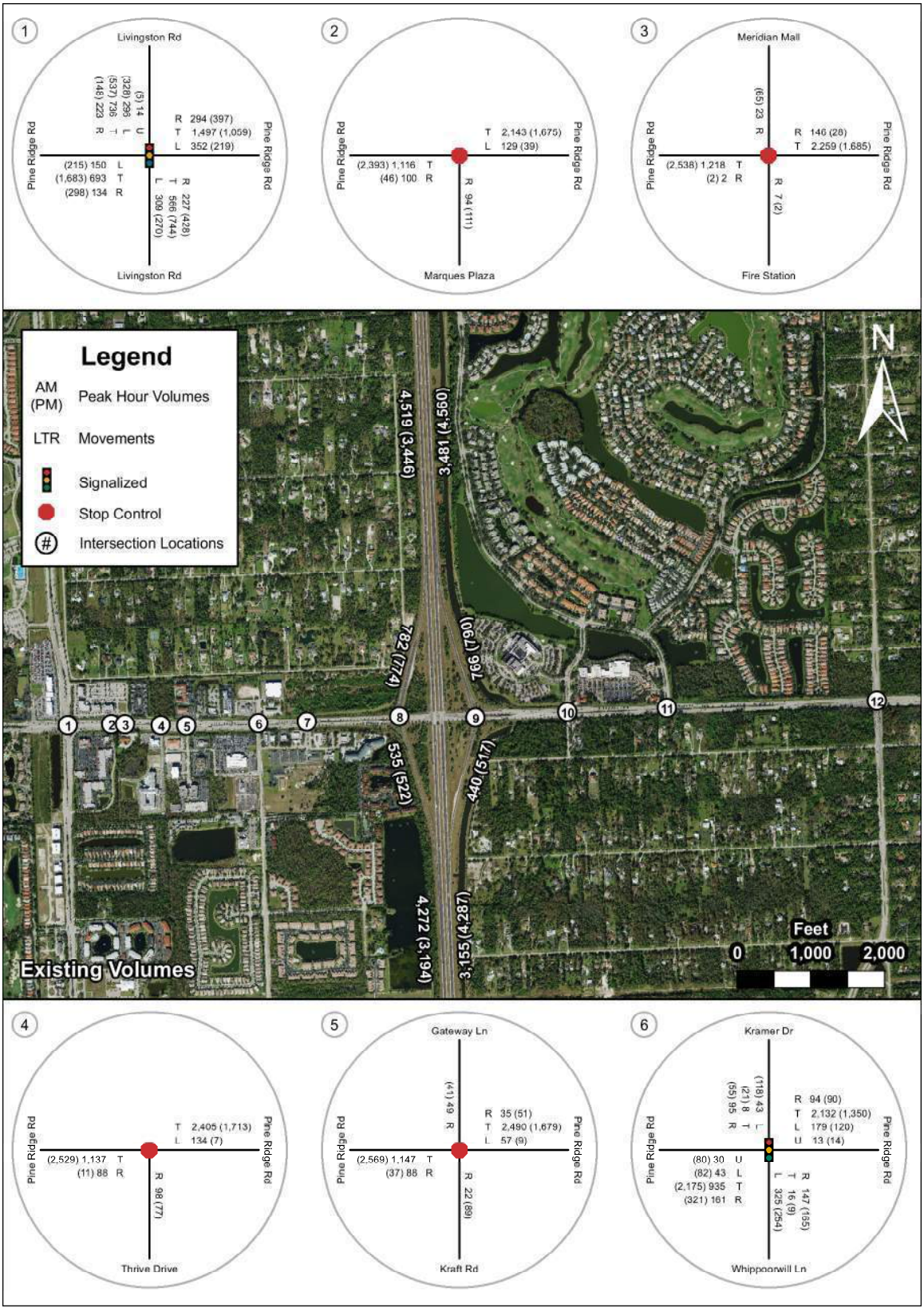


Figure 2.1 (continued): Existing Year (2019) Turning Movement Volumes

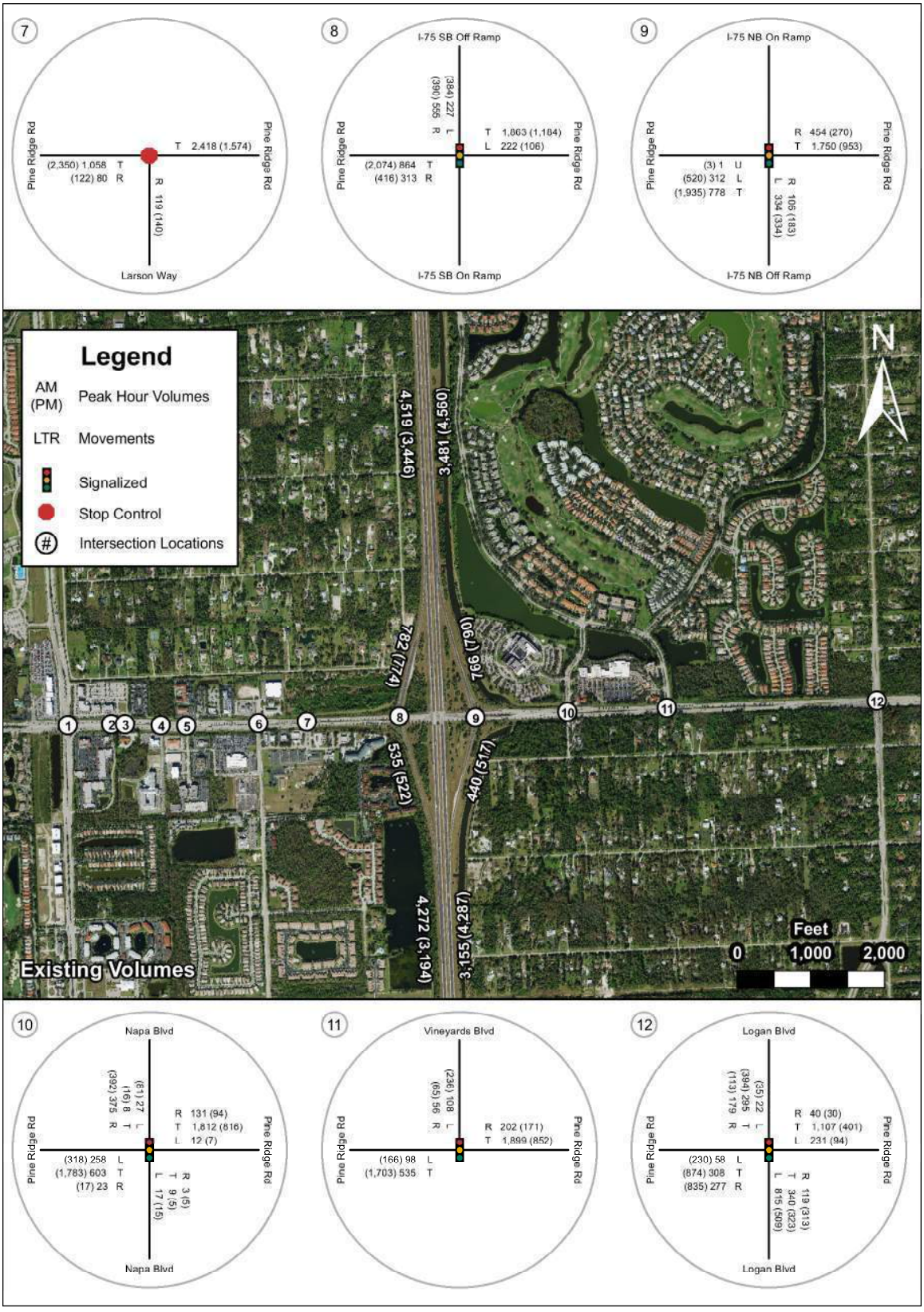


Figure 2.2: Existing Year (2019) AADT

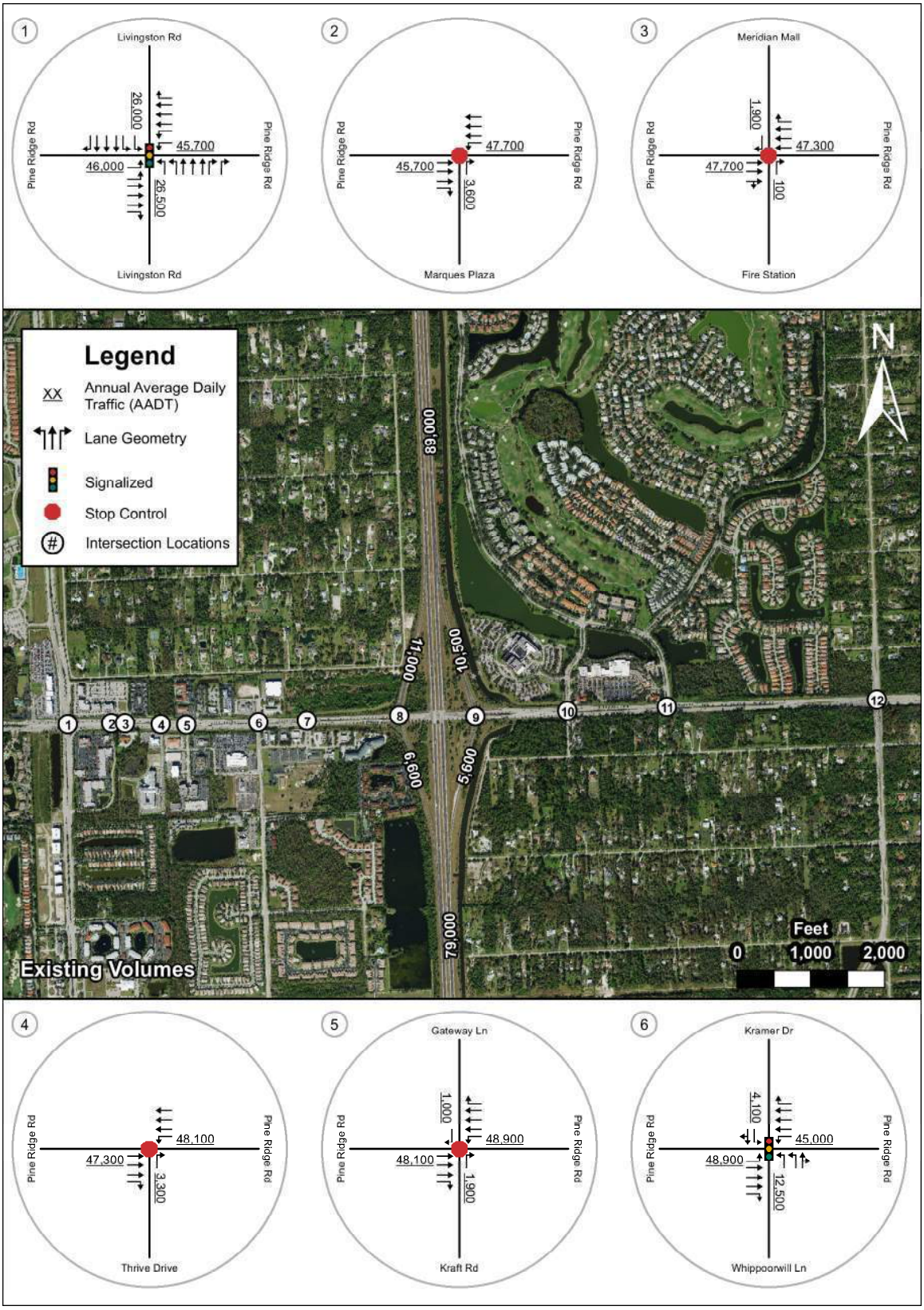
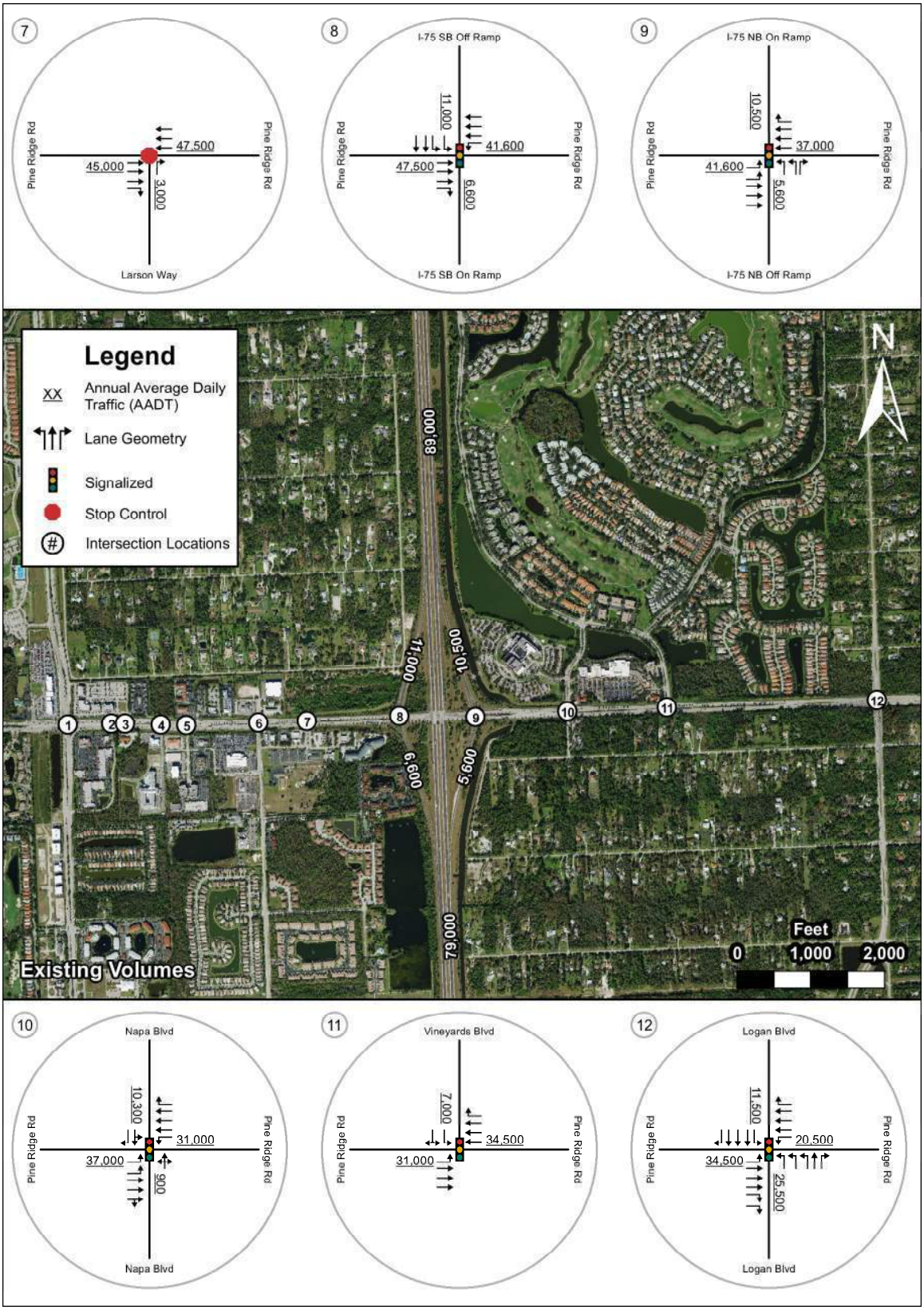


Figure 2.2 (continued): Existing Year (2019) AADT



3.0 Development of Future Traffic

3.1 Design Year (2040) Growth Rate Development

Model outputs from the District 1 Regional Planning Model v 1.0.3 (D1RPM), which was provided by the Department and validated for the I-75 and Pine Ridge Road Interchange Study in May of 2018, were used to forecast volumes for the study area. The *Traffic Forecast Modeling Technical Memorandum* created for this validation can be found in **Appendix D**. The study area network was extracted from the model and network resolution was increased for forecasting and is illustrated in **Figure 3.1**.

For all corridor connections which correspond directly with a link in the D1RPM, the 2010 to 2040 growth rate was reviewed for reasonableness and used directly where possible to grow the existing year (2019) AADT.

For corridor connections that were identified as residential or business access driveways, the growth rate was limited to 0.5 percent which corresponds to the University of Florida's Bureau of Economic and Business Research (BEBR) "low growth" in population for Collier County through 2045. This was used to avoid very high growth rates in relatively low volume locations where significant growth is not expected.

For corridor connections that do not correspond directly to a model link but represent local roads not accounted for in the D1RPM network, a weighted average interchange area annual growth rate of 1.7 percent was applied. This weighted average interchange area annual growth rate was derived from growth rates extracted from surface streets within the D1RPM Pine Ridge Road subarea.

As a final check for excessively high model growth, particularly on low volume links, the link growth rates were compared to BEBR high forecast for population growth in Collier County through 2045 of 2.5 percent annual growth. In the event of significant model growth, further examination of model volumes was conducted to ensure that these high growth rates were rational.

After all the AADTs at external links to the study corridor were forecasted, the number of trips entering and exiting this closed system were balanced to ensure no loss of trips. As a conservative approach, trips were always balanced upwards. **Table 3.1** summarizes the forecasts at the peripheral links along the corridor. While the ramps to and from I-75 are not external to the study area network and are therefore not used directly in the forecasting procedure, they are provided in **Table 3.1** for informational purposes only to show how the ramps will grow.

Figure 3.1: VISUM Model Network

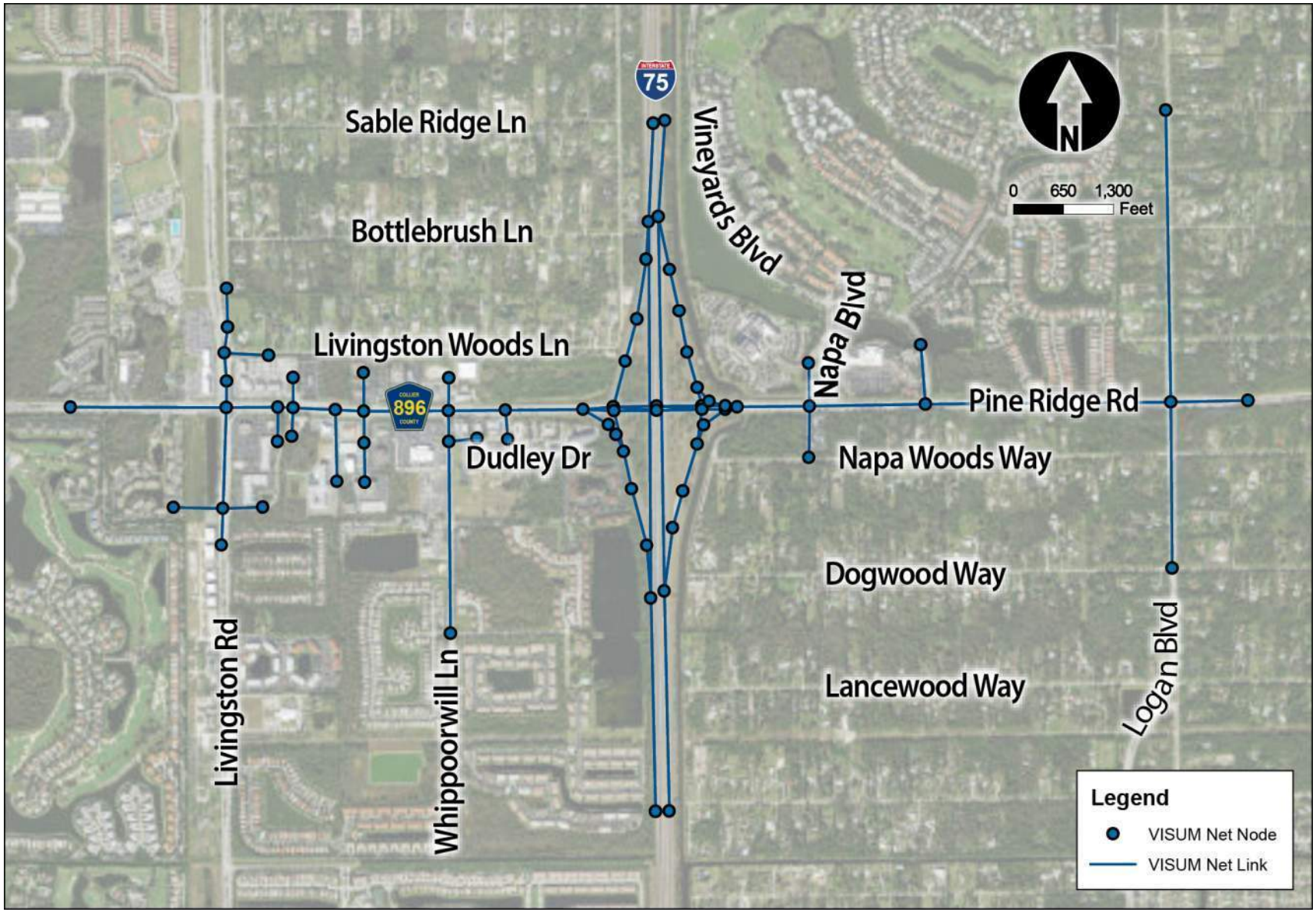


Table 3.1: Forecasts of External Network Links

Location	Model Outputs			Existing 2019 AADT	2040 AADT
	2010 AADT	2040 AADT	Annual Growth		
I-75 Mainline					
North of Pine Ridge Road	63,500	104,500	2.1%	89,000	129,100
South of Pine Ridge Road	54,000	89,000	2.2%	79,000	115,200
I-75 Ramps to/from Pine Ridge Road*					
Southbound On-Ramp	5,800	5,400	0.5%*	6,600	7,100
Southbound Off-Ramp	9,600	12,500	1.0%	11,000	14,000
Northbound On-Ramp	10,000	13,500	1.2%	10,500	13,700
Northbound Off-Ramp	4,100	5,300	1.0%	5,600	6,700
Surface Streets					
Pine Ridge Road, west of Livingston Road	46,500	59,000	0.9%	46,000	54,600
Livingston Road, north of Pine Ridge Road	25,500	44,000	2.4%	26,000	39,000
Meridian Plaza, east of Livingston Road	NA	NA	0.5%*	1,300	1,400
Meridian Plaza, north of Pine Ridge Road	NA	NA	0.5%*	1,900	2,100
Driveway/Kraft Road, north of Pine Ridge Road	NA	NA	0.5%*	1,000	1,100
Kramer Drive, north of Pine Ridge Road	1,200	3,200	0.5%*	4,100	4,500
Napa Boulevard, north of Pine Ridge Road	8,700	10,000	0.5%*	10,300	11,400
Vineyards Boulevard, north of Pine Ridge Road	3,200	4,700	1.6%	7,000	9,300
Logan Boulevard, north of Pine Ridge Road	8,900	16,500	2.9%	11,500	17,500
Pine Ridge Road, east of Logan Boulevard	18,500	33,500	2.6%	20,500	31,100
Logan Boulevard, south of Pine Ridge Road	23,000	30,000	1.1%	25,500	31,200
Napa Boulevard, south of Pine Ridge Road	NA	NA	1.7%**	900	1,200
Larson Way, south of Pine Ridge Road	NA	NA	0.5%*	3,000	3,300
Whippoorwill Lane, south of Pine Ridge Road	7,300	8,900	0.7%	12,500	14,400
Dudley Drive, south of Pine Ridge Road	NA	NA	0.5%*	2,200	2,400
Kraft Road, south of Pine Ridge Road	NA	NA	0.5%*	1,900	2,100
Fire Station, south of Pine Ridge Road	NA	NA	0.5%*	100	100
Marquesa Plaza, south of Pine Ridge Road	NA	NA	0.5%*	3,600	4,000
Driveway/Marquesa Plaza, east of Livingston Road	NA	NA	0.5%*	1,900	2,100
Livingston Road, south of Pine Ridge Road	24,500	43,500	2.6%	26,500	40,200
Driveway/Marquesa Plaza, west of Livingston Road	NA	NA	0.5%*	100	100
Thrive Drive, south of Pine Ridge Road	NA	NA	0.5%*	3,300	3,600

*Business/Residential Access or Negative Model Growth- BEBR 'Low' growth rate of 0.5% used.
**Local Road non-driveway - D1RPM interchange area surface street weighted average growth rate of 1.7% used.
***I-75 Ramps to/from Pine Ridge Road are included as informational items only. These are not external links to the network and are not used as direct inputs to the forecasting procedure.

3.2 Design Year (2040) Peak Hour Volumes

The design year (2040) AM and PM peak hour volumes were developed utilizing the calibrated existing VISUM network for the study area as documented in the *Traffic Methodology Statement* included in **Appendix B** of this report. Initial AADTs developed through the forecasting process, outlined previously, were used in conjunction with the standard K factors, D-factors, and truck percentages discussed in **Section 2.0**, to assign demand to the network. The resultant network input peak hour volumes can be found in **Table 3.2**.

These input peak hour volumes were assigned to the network using a user-equilibrium assignment procedure. The resulting assignment was checked for the reasonableness between the existing year (2019) and design year (2040) by ensuring both the OD relationship and intersection level turning movements either remained the same or increased over time. Any resulting growth at either the OD or movement level was compared against the interchange level growth for reasonableness. Turning movement volumes were extracted from this assignment at each of the study intersections. Design year (2040) AADT and AM and PM peak hours turning movement volumes are shown in **Figure 3.2** and **Figure 3.3**.

Table 3.2: Design Year (2040) Network Inputs

Location	AM Peak Hour			PM Peak Hour		
	Northbound/ Eastbound Volume	Southbound / Westbound Volume	D Factor	Northbound/ Eastbound Volume	Southbound/ Westbound Volume	D Factor
I-75 Mainline						
North of Pine Ridge Road	5,066	6,678	56.5%	6,650	5,011	57.0%
South of Pine Ridge Road	4,491	5,971	57.5%	5,960	4,458	57.3%
Surface Streets						
Pine Ridge Road, west of Livingston Road	1,598	3,256	67.1%	2,948	1,989	59.8%
Livingston Road, north of Pine Ridge Road	1,592	1,994	55.6%	2,023	1,515	57.1%
Meridian Plaza, east of Livingston Road	98	88	52.7%	72	63	50.0%
Meridian Plaza, north of Pine Ridge Road	170	33	52.7%	55	146	50.0%
Driveway/Kraft Road, north of Pine Ridge Road	45	66	58.8%	61	53	53.8%
Kramer Drive, north of Pine Ridge Road	215	215	51.2%	209	227	52.3%
Napa Boulevard, north of Pine Ridge Road	515	542	50.7%	496	570	54.0%
Vineyards Boulevard, north of Pine Ridge Road	549	308	64.7%	452	402	52.8%
Logan Boulevard, north of Pine Ridge Road	749	856	53.1%	828	767	51.8%
Pine Ridge Road, east of Logan Boulevard	931	1,923	67.1%	1,893	931	67.1%
Logan Boulevard, south of Pine Ridge Road	1,764	1,093	61.3%	1,327	1,540	53.6%
Napa Boulevard, south of Pine Ridge Road	53	70	59.7%	48	71	61.5%
Larson Way, south of Pine Ridge Road	186	125	60.0%	167	146	53.6%
Whippoorwill Lane, south of Pine Ridge Road	784	542	58.9%	668	650	50.8%
Dudley Drive, south of Pine Ridge Road	119	115	51.2%	147	96	60.3%
Kraft Road, south of Pine Ridge Road	26	173	67.1%	132	67	66.9%
Fire Station, south of Pine Ridge Road	8	4	67.1%	6	6	50.0%
Marquesa Plaza, south of Pine Ridge Road	117	265	67.1%	212	162	56.9%
Driveway/Marquesa Plaza, east of Livingston Road	92	109	67.1%	85	113	56.9%
Livingston Road, south of Pine Ridge Road	1,728	1,907	52.9%	2,087	1,541	57.6%
Driveway/Marquesa Plaza, west of Livingston Road	5	6	50.0%	5	6	50.0%
Thrive Drive, south of Pine Ridge Road	108	242	67.1%	243	90	67.1%

Figure 3.2: Design Year (2040) AADT

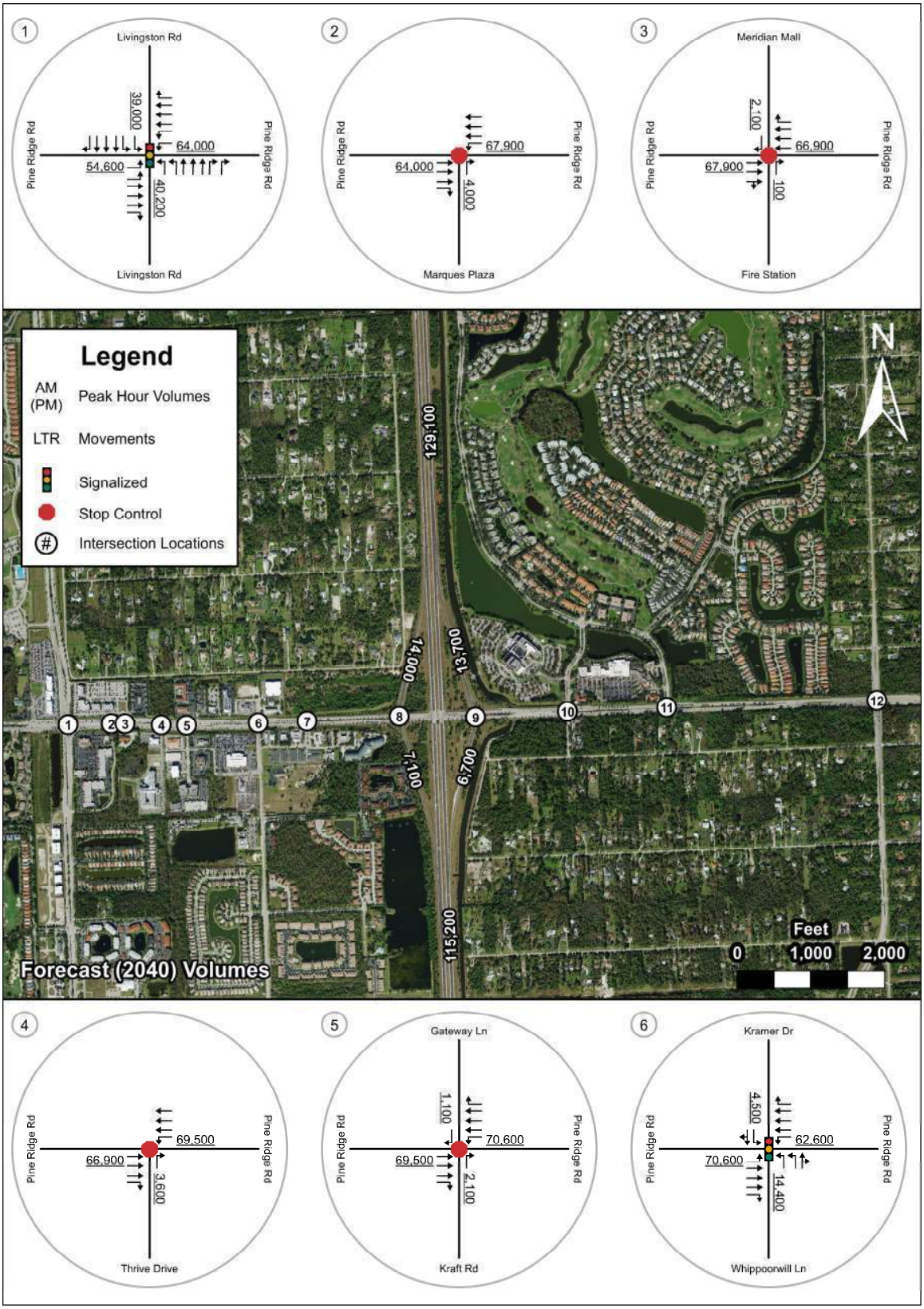


Figure 3.2 (continued): Design Year (2040) AADT

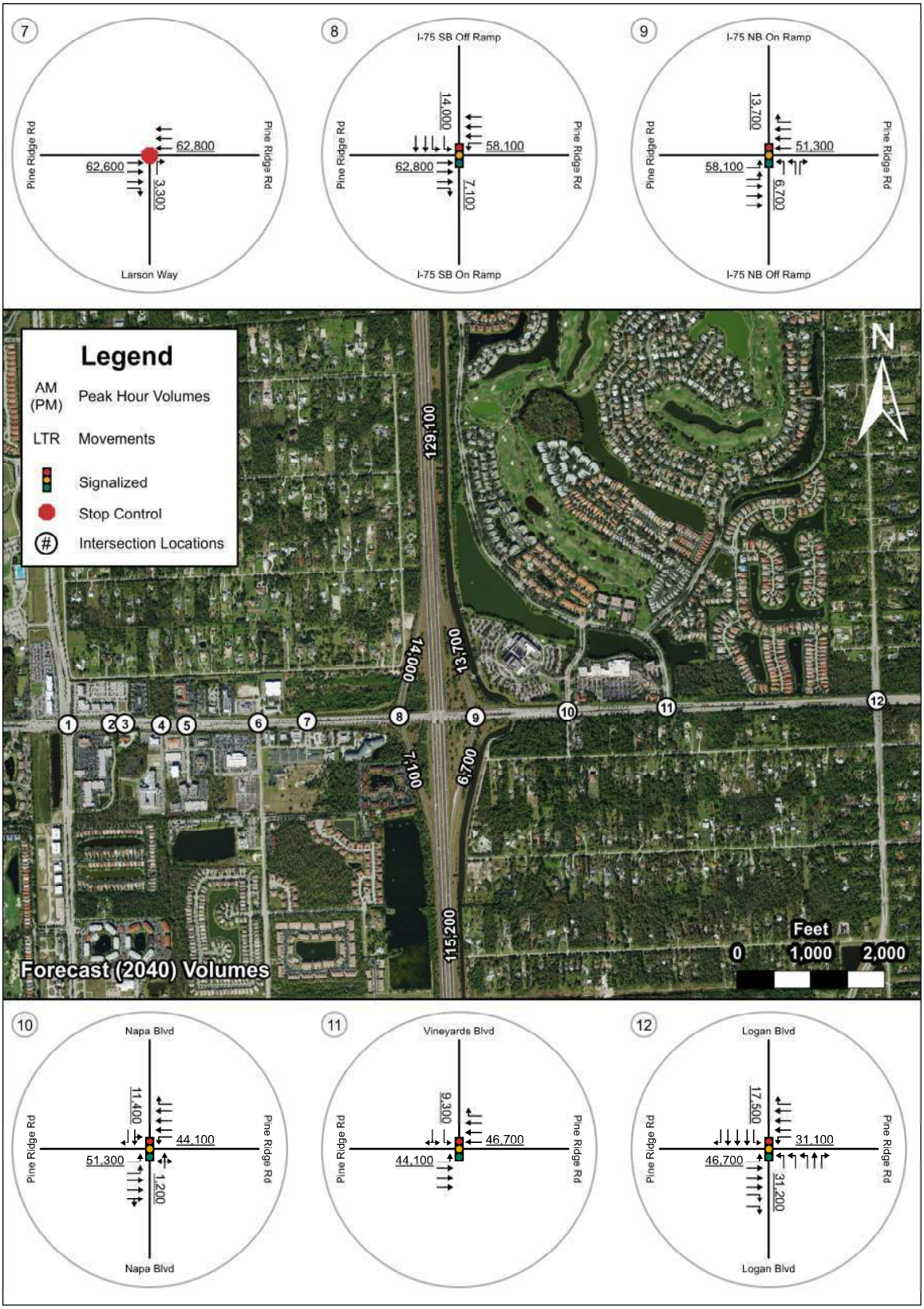


Figure 3.3: Design Year (2040) Turning Movement Volumes

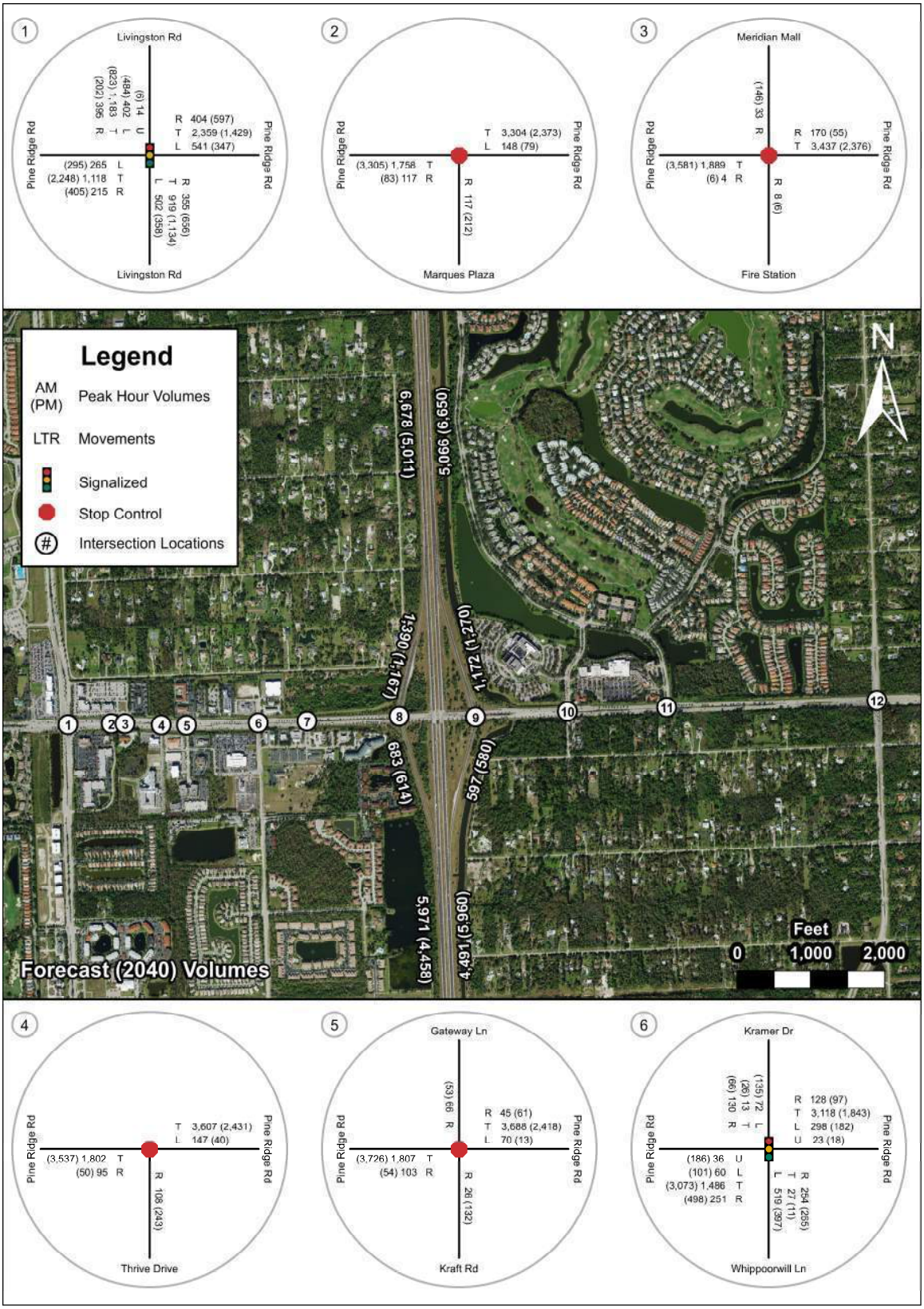
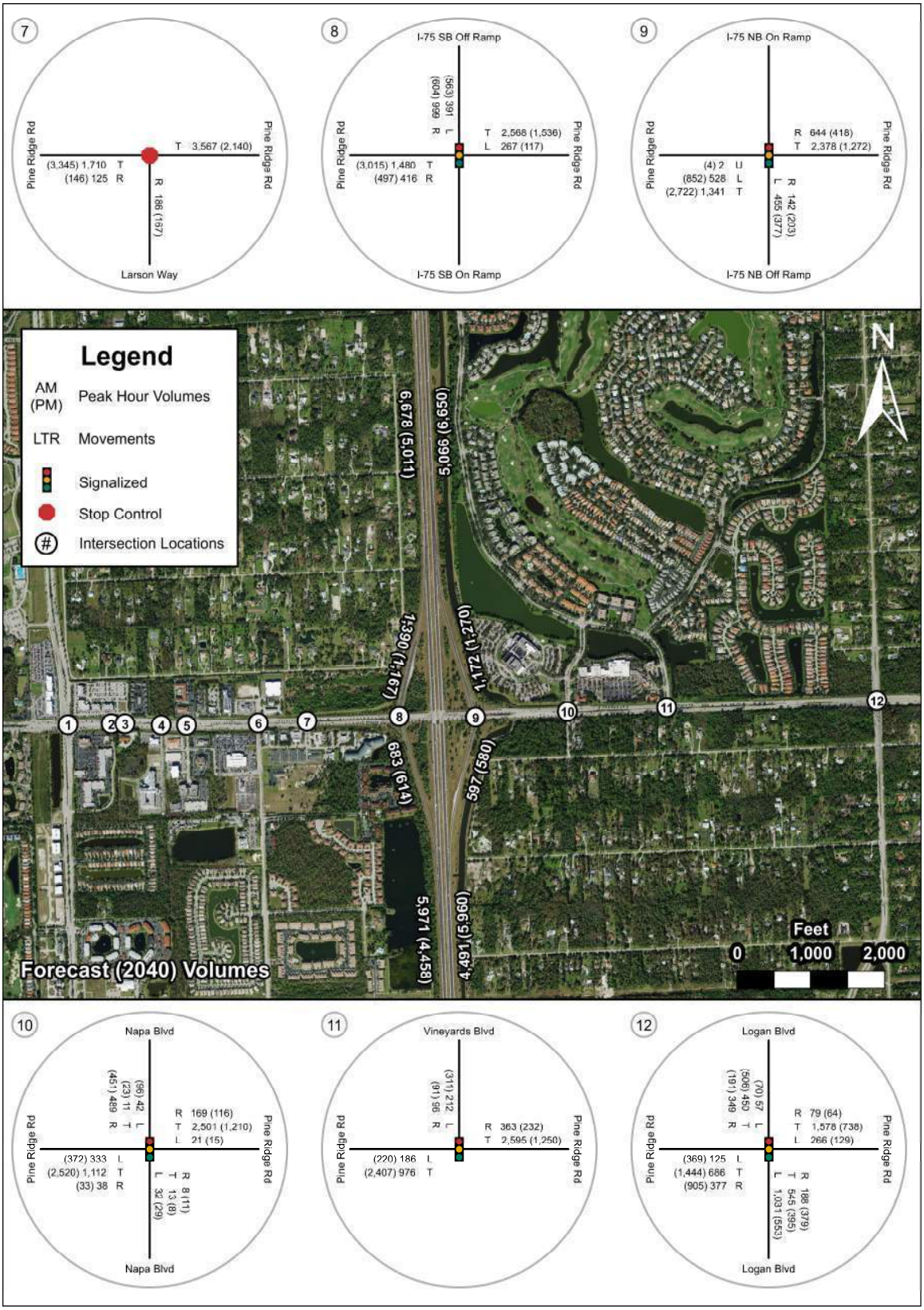


Figure 3.3 (continued): Design Year (2040) Turning Movement Volumes



As an additional check for distribution accuracy, D factors were recalculated from the design year (2040) turning movement volumes, at locations where 72-hour count data was originally collected, to compare them to the existing year (2019) D factors. This comparison is summarized in **Table 3.3** and **Table 3.4**, respectively. As evident by the results, network assignment has provided flexibility by allowing various OD relationships and movements to grow dynamically while still reflecting reasonable directionality. This is particularly evident within the interchange area where significant peak direction characteristics and directionality were maintained.

Table 3.3: Design Year (2040) D Factors – AM Peak Hour

Location	Northbound/ Eastbound Volume	Southbound/ Westbound Volume	2019 D Factor	2040 D Factor*	Peak Direction
I-75 Mainline					
North of Pine Ridge Road	5,066	6,678	56.5%	56.9%	South
South of Pine Ridge Road	4,491	5,971	57.5%	57.1%	South
Along Pine Ridge Road					
West of Livingston Road	1,598	3,256	67.5%	67.1%	West
West of I-75 Southbound Ramps	1,896	3,567	67.3%	65.3%	West
East of I-75 Northbound Ramps	1,483	3,022	71.4%	67.1%	West
West of Logan Boulevard	1,188	2,958	76.6%	71.3%	West
Along Side Streets					
Livingston Road, north of Pine Ridge Road	1,602	1,994	55.3%	55.5%	South
Livingston Road, south of Pine Ridge Road	1,776	1,939	52.6%	52.2%	South
Whippoorwill Lane, south of Pine Ridge Road	800	562	58.4%	58.7%	North

*Resulting D Factor after volume balancing procedures were conducted.

Table 3.4: Design Year (2040) D Factors – PM Peak Hour

Location	Northbound/ Eastbound Volume	Southbound/ Westbound Volume	2019 D Factor	2040 D Factor*	Peak Direction
I-75 Mainline					
North of Pine Ridge Road	6,650	5,011	56.4%	57.0%	North
South of Pine Ridge Road	5,960	4,458	55.0%	57.2%	North
Along Pine Ridge Road					
West of Livingston Road	2,948	1,989	60.3%	59.7%	East
West of I-75 Southbound Ramps	3,512	2,140	62.1%	62.1%	East
East of I-75 Northbound Ramps	2,925	1,690	63.4%	63.4%	East
West of Logan Boulevard	2,718	1,482	66.0%	64.7%	East
Along Side Streets					
Livingston Road, north of Pine Ridge Road	2,032	1,515	56.7%	57.3%	North
Livingston Road, south of Pine Ridge Road	2,148	1,575	58.3%	57.7%	North
Whippoorwill Lane, south of Pine Ridge Road	673	706	51.1%	51.2%	South

*Resulting D Factor after volume balancing procedures were conducted.

3.3 Opening Year (2025) Traffic Volumes

Opening year (2025) peak hour volumes were subsequently derived by interpolating between the existing year (2019) and design year (2040) peak hour volumes at the network periphery. The volumes were then again assigned utilizing the calibrated VISUM network. The resulting opening year (2025) AADTs and turning movement volumes can be found in **Figures 3.4** and **3.5,** respectively.

Figure 3.4: Opening Year (2025) AADT

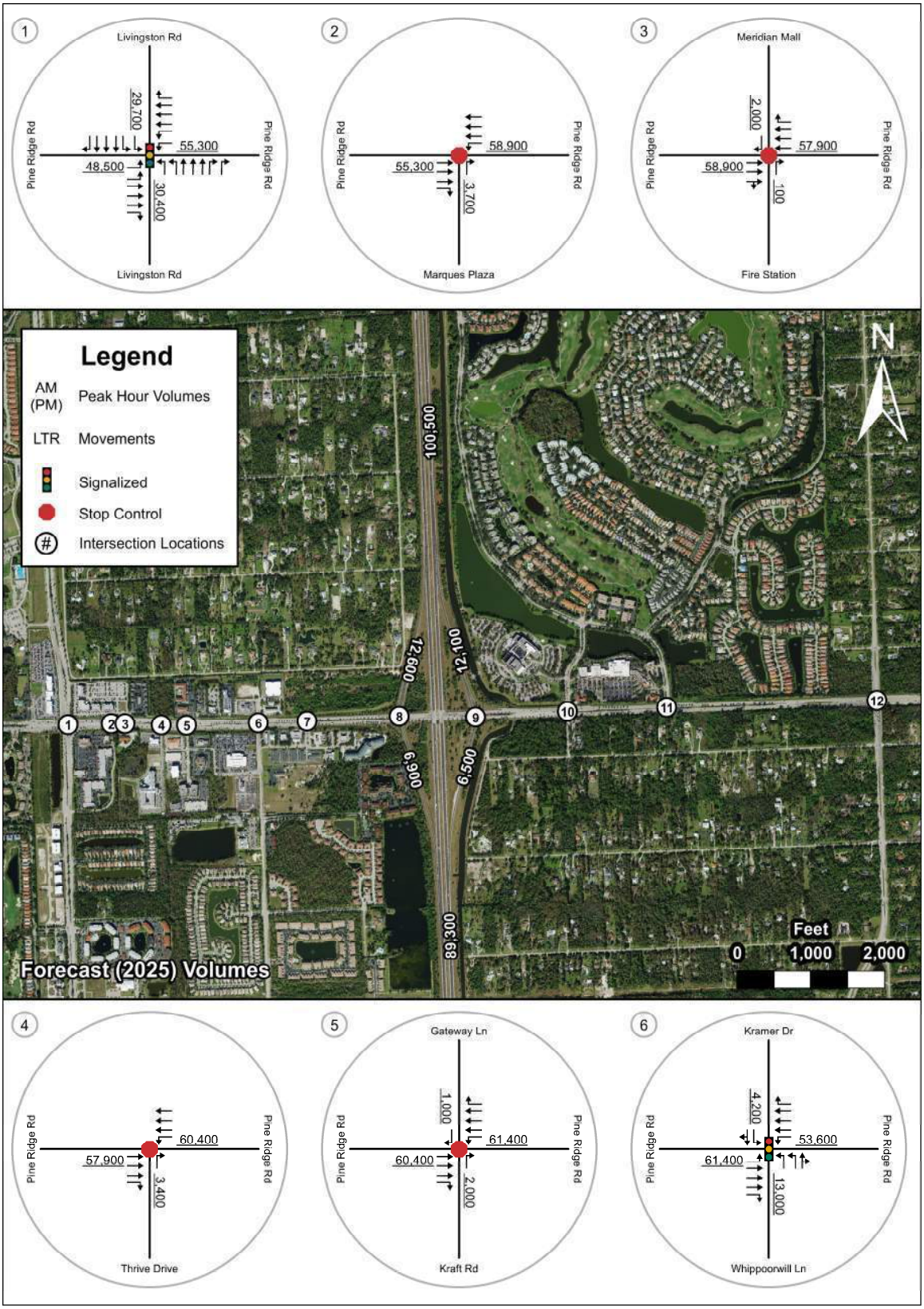


Figure 3.4 (continued): Opening Year (2025) AADT

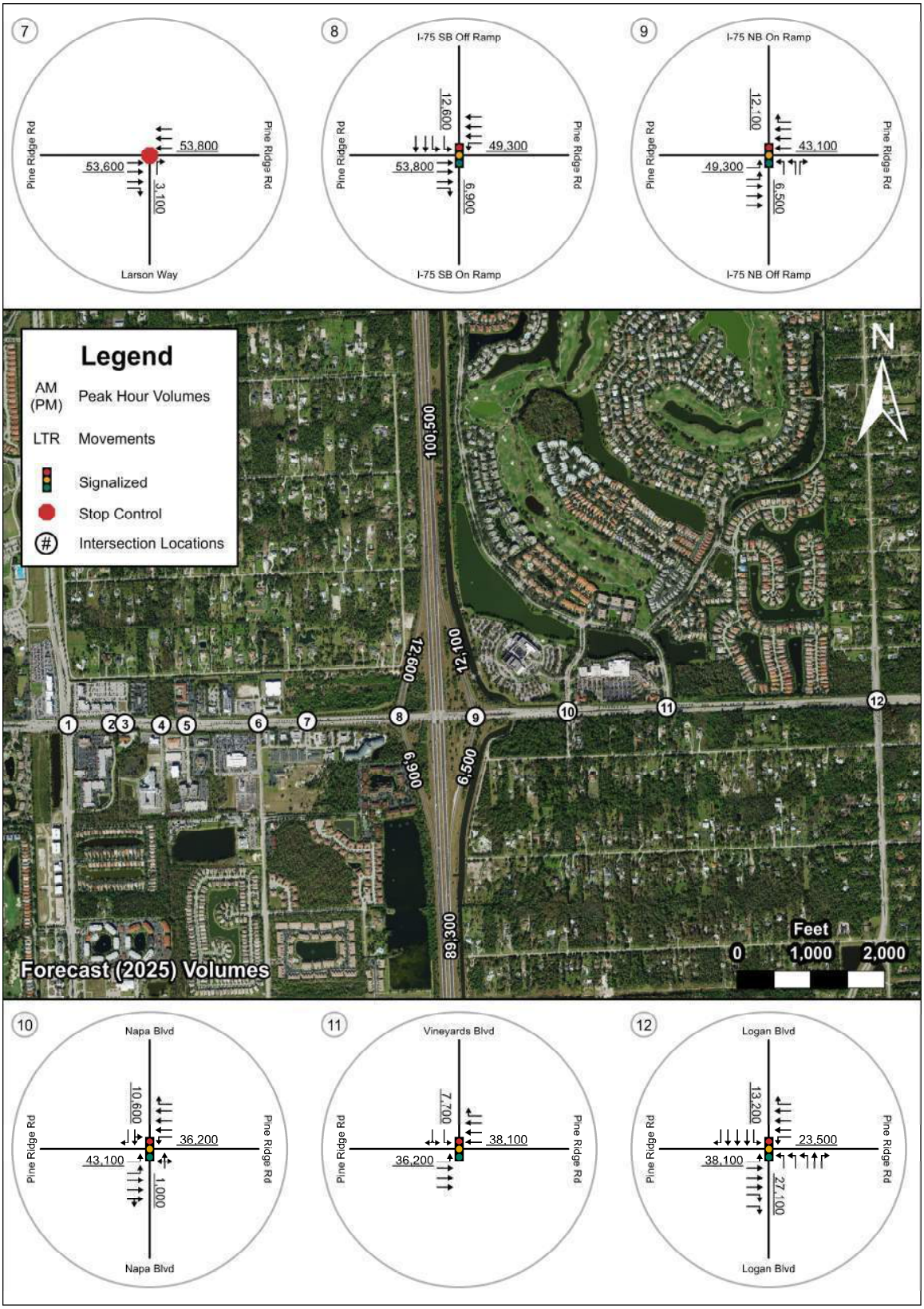


Figure 3.5: Opening Year (2025) Turning Movement Volumes

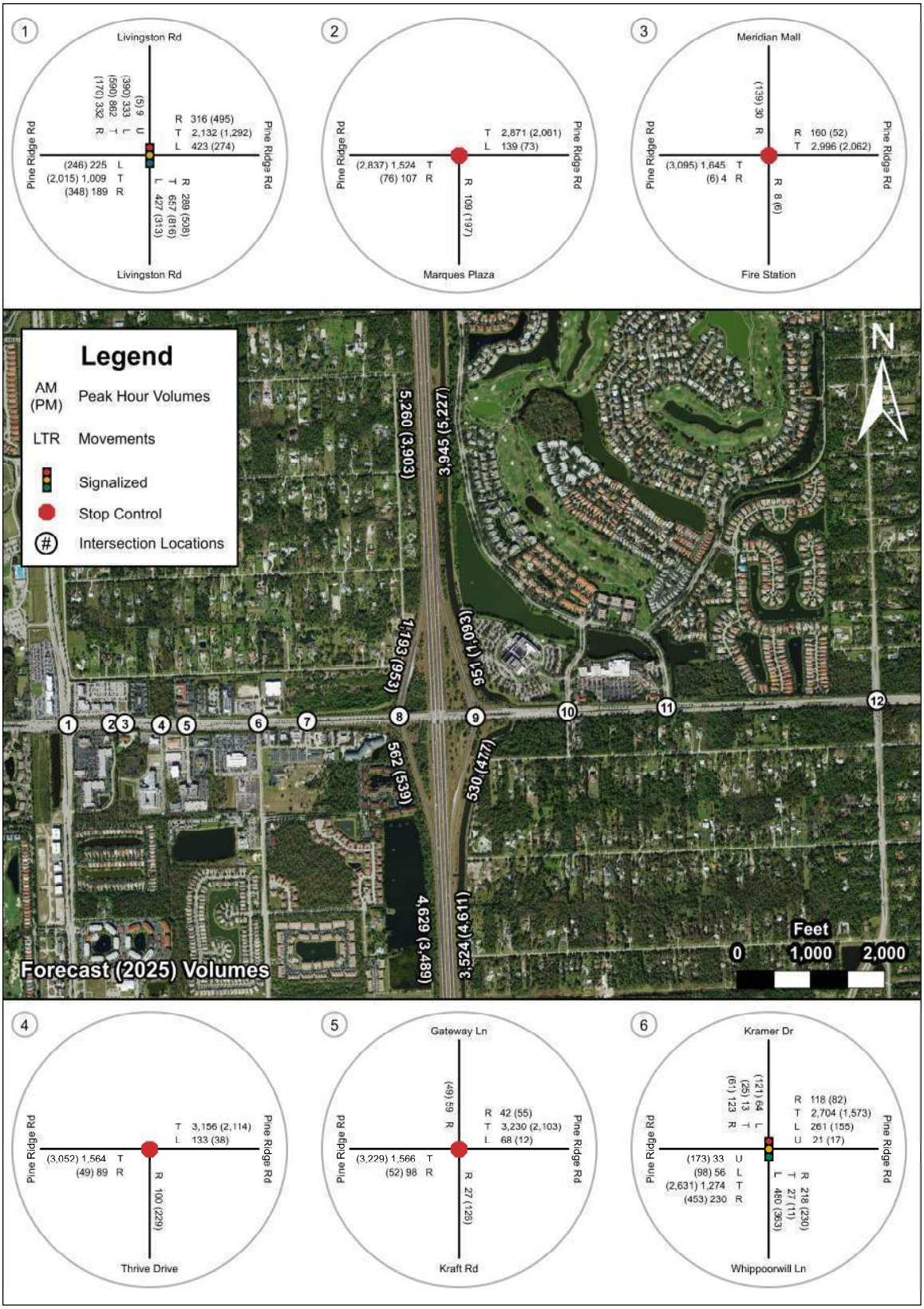
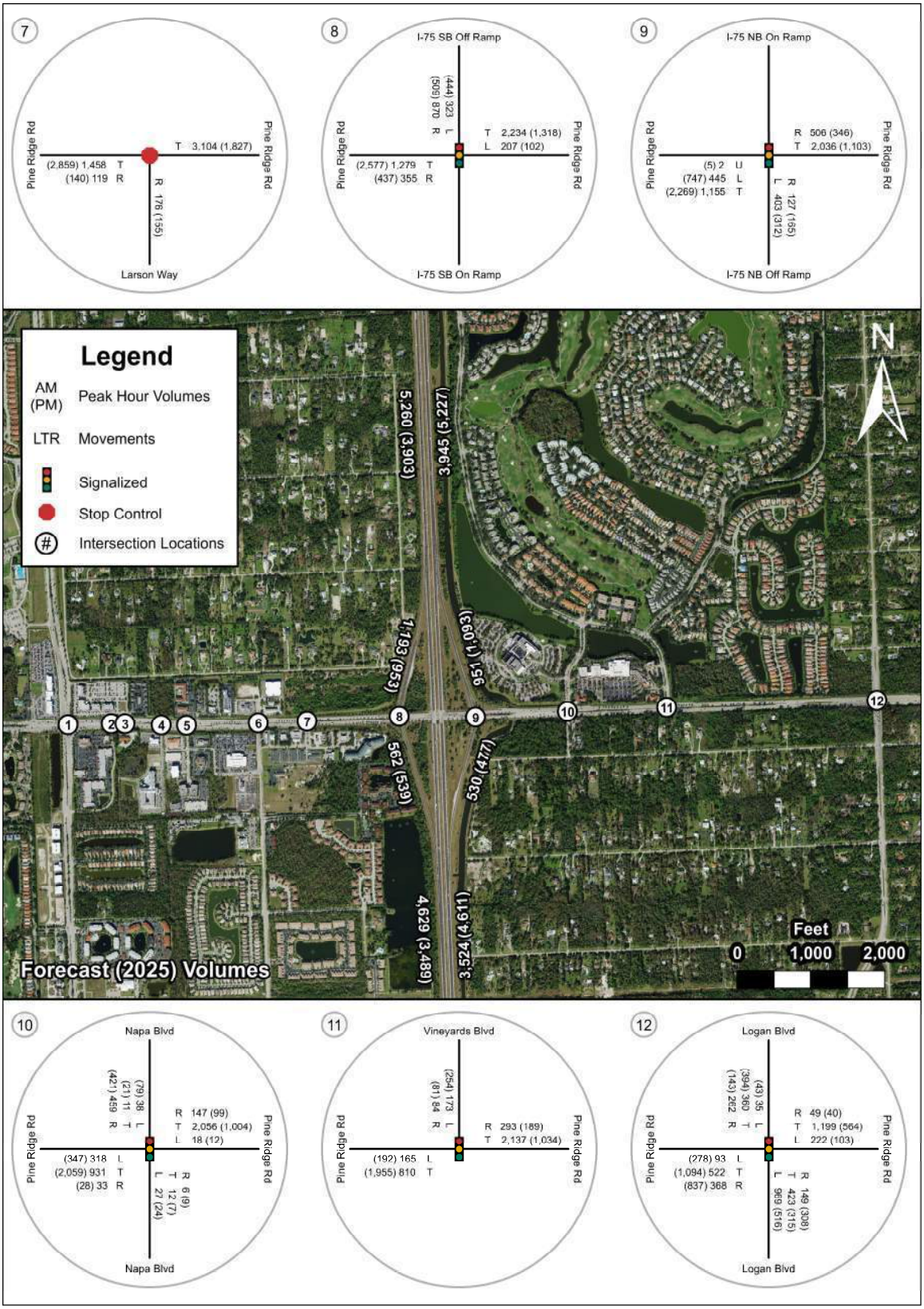


Figure 3.5 (continued): Opening Year (2025) Turning Movement Volumes



Appendices

Appendix H

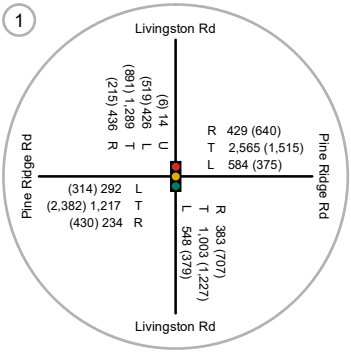
Pine Ridge Road - 2045 AADT and TMC Maps


1
Livingston Rd
43,400
Pine Ridge Rd
68,200
60,000
44,900
Pine Ridge Rd
Livingston Rd
2
Pine Ridge Rd
72,000
68,200
4,600
Pine Ridge Rd
Marques Plaza
3
Meridian Mall
2,500
Pine Ridge Rd
70,900
72,000
130
Pine Ridge Rd
Fire Station
Legend
AM (PM) Peak Hour Volumes
LTR Movements
Signalized
Stop Control
Intersection Locations
138,500
14,600
14,400
7,300
7,200
124,000
N
1
2
3
4
5
6
7
8
9
10
11
12
Feet
0
1,000
2,000
Forecast (2045) Volumes
4
Pine Ridge Rd
74,300
70,900
4,700
Pine Ridge Rd
Thrive Drive
5
Gateway Ln
Pine Ridge Rd
1,300
75,400
74,300
2,300
Pine Ridge Rd
Kraft Rd
6
Kramer Dr
Pine Ridge Rd
5,100
66,500
75,400
16,500
Pine Ridge Rd
Whippoorwill Ln

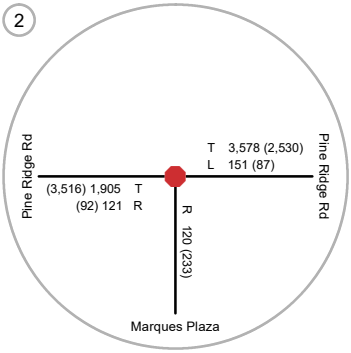

7
Pine Ridge Rd
Pine Ridge Rd
66,800
66,500
3,700
Larson Way
8
I-75 SB Off Ramp
14,600
61,800
66,800
7,300
I-75 SB On Ramp
9
I-75 NB On Ramp
14,400
54,500
61,800
7,200
I-75 NB Off Ramp
Legend
AM (PM) Peak Hour Volumes
LTR Movements
Signalized
Stop Control
Intersection Locations
N
138,500
14,600
14,400
7,300
7,200
124,000
1
2
3
4
5
6
7
8
9
10
11
12
Feet
0
1,000
2,000
Forecast (2045) Volumes
10
Napa Blvd
12,400
47,100
54,500
1,500
Napa Blvd
11
Vineyards Blvd
10,500
49,800
47,100
12
Logan Blvd
19,600
34,400
49,800
33,800
Logan Blvd


Legend
AM (PM) Peak Hour Volumes
LTR Movements
Signalized
Stop Control
Intersection Locations
N
7,189 (5,382)
5,443 (7,145)
1,532 (1,259)
1,268 (1,382)
717 (635)
633 (595)
6,374 (4,758)
4,808 (6,358)
1 2 3 4 5 6 7 8 9 10 11 12
Feet
0 1,000 2,000
Forecast (2045) Volumes

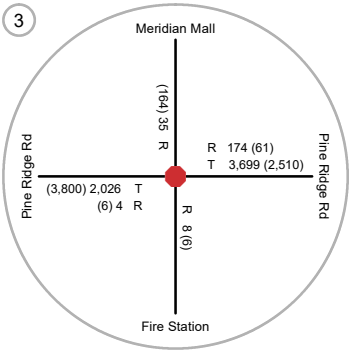
1


Livingston Rd
Pine Ridge Rd
Pine Ridge Rd
Livingston Rd
(6) 14 U
(519) 426 L
(891) 1,289 T
(215) 436 R
R 429 (640)
T 2,565 (1,515)
L 584 (375)
(314) 292 L
(2,382) 1,217 T
(430) 234 R
L 548 (379)
T 1,003 (1,227)
R 383 (707)

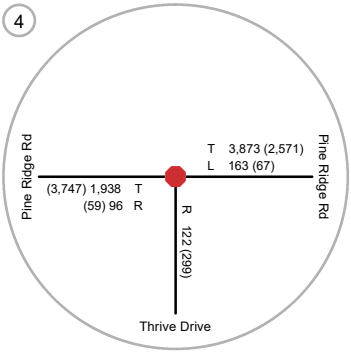
2


Pine Ridge Rd
Pine Ridge Rd
Marques Plaza
T 3,578 (2,530)
L 151 (87)
(3,516) 1,905 T
(92) 121 R
R 120 (233)

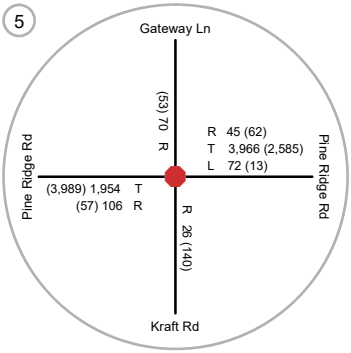
3


Meridian Mall
Pine Ridge Rd
Pine Ridge Rd
Fire Station
(164) 35 R
R 174 (61)
T 3,699 (2,510)
(3,800) 2,026 T
(6) 4 R
R 8 (6)

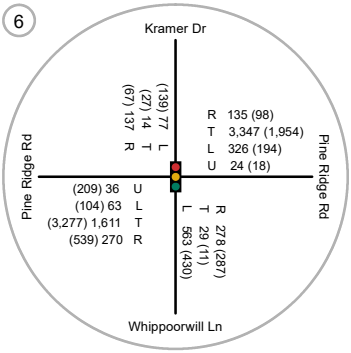
4


Pine Ridge Rd
Pine Ridge Rd
Thrive Drive
T 3,873 (2,571)
L 163 (67)
(3,747) 1,938 T
(59) 96 R
R 122 (299)

5


Gateway Ln
Pine Ridge Rd
Pine Ridge Rd
Kraft Rd
(53) 70 R
R 45 (62)
T 3,966 (2,585)
L 72 (13)
(3,989) 1,954 T
(57) 106 R
R 26 (140)

6


Kramer Dr
Pine Ridge Rd
Pine Ridge Rd
Whippoorwill Ln
(139) 77 L
(27) 14 T
(67) 137 R
R 135 (98)
T 3,347 (1,954)
L 326 (194)
U 24 (18)
(209) 36 U
(104) 63 L
(3,277) 1,611 T
(539) 270 R
R 278 (287)
T 29 (11)
L 563 (430)


7
Pine Ridge Rd
Pine Ridge Rd
T 3,832 (2,264)
(3,571) 1,856 T
(150) 134 R
R 201 (173)
Larson Way
8
I-75 SB Off Ramp
(606) 429 L
(653) 1,103 R
T 2,729 (1,611)
L 277 (120)
(3,229) 1,617 T
(515) 440 R
I-75 SB On Ramp
9
I-75 NB On Ramp
R 690 (453)
T 2,521 (1,340)
(4) 2 U
(929) 578 L
(2,902) 1,466 T
L 483 (387)
R 150 (208)
I-75 NB Off Ramp
Legend
AM (PM) Peak Hour Volumes
LTR Movements
Signalized
Stop Control
Intersection Locations
7,189 (5,382)
5,443 (7,145)
1,532 (1,259)
1,268 (1,382)
717 (635)
633 (595)
6,374 (4,758)
4,808 (6,358)
N
Feet
0 1,000 2,000
Forecast (2045) Volumes
10
Napa Blvd
(100) 46 L
(25) 12 T
(464) 515 R
R 178 (121)
T 2,662 (1,297)
L 23 (16)
(384) 350 L
(2,690) 1,226 T
(36) 40 R
L 34 (32)
T 14 (9)
R 8 (11)
Napa Blvd
11
Vineyards Blvd
(328) 236 L
(96) 104 R
R 401 (246)
T 2,759 (1,338)
(230) 206 L
(2,571) 1,074 T
12
Logan Blvd
(78) 65 L
(533) 487 T
(207) 388 R
R 88 (72)
T 1,690 (816)
L 274 (137)
(401) 139 L
(1,578) 773 T
(920) 398 R
L 1,082 (561)
T 594 (412)
R 204 (395)
Logan Blvd
Pine Ridge Rd

Appendix I

FDOT ESALs

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: August 3. 2020
To: Joshua Jester EXT 2251

From: Brittany Nichols, Traffic Analyst/RCI Coordinator
Subject: Financial Project No: 445296-1-22-01
Roadway ID: 03175000
Project Name: I-75 South of Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 55.940 – 56.280

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	55.0 %
24 Hour T =	10.2 %
Design Hour T =	5.1 %
2019 AADT =	79000
Functional Class =	Urban Prin Arterial Int.

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 032003.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175000
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 1

LOCATION DESCRIPTION: I-75 South of Pine Ridge Rd (MP: 55.94 - 56.628)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	79000
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	124000

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 10.20%
Opening to Mid-Year: 10.20%
Mid-Year to Design-Year: 10.20%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/3/2020 | 5:05 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/4/2020 | 6:54 AM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 1

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175000 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	79000	754	0	0.5	10.20%	0.569	0.900
2020	80700	768	0	0.5	10.20%	0.567	0.900
2021	82400	781	0	0.5	10.20%	0.566	0.900
2022	84100	795	0	0.5	10.20%	0.564	0.900
2023	85900	810	0	0.5	10.20%	0.562	0.900
2024	87600	823	0	0.5	10.20%	0.561	0.900
2025	89300	837	837	0.5	10.20%	0.559	0.900
2026	91100	851	1688	0.5	10.20%	0.557	0.900
2027	92800	865	2553	0.5	10.20%	0.556	0.900
2028	94500	878	3431	0.5	10.20%	0.554	0.900
2029	96300	892	4323	0.5	10.20%	0.553	0.900
2030	98000	906	5229	0.5	10.20%	0.551	0.900
2031	99700	919	6148	0.5	10.20%	0.550	0.900
2032	101500	933	7081	0.5	10.20%	0.548	0.900
2033	103200	946	8027	0.5	10.20%	0.547	0.900
2034	104900	959	8986	0.5	10.20%	0.546	0.900
2035	106600	973	9959	0.5	10.20%	0.544	0.900
2036	108400	987	10946	0.5	10.20%	0.543	0.900
2037	110100	1000	11946	0.5	10.20%	0.542	0.900
2038	111800	1013	12959	0.5	10.20%	0.540	0.900
2039	113600	1026	13985	0.5	10.20%	0.539	0.900
2040	115300	1039	15024	0.5	10.20%	0.538	0.900
2041	117000	1052	16076	0.5	10.20%	0.537	0.900
2042	118800	1066	17142	0.5	10.20%	0.535	0.900
2043	120500	1079	18221	0.5	10.20%	0.534	0.900
2044	122200	1092	19313	0.5	10.20%	0.533	0.900
2045	124000	1105	20418	0.5	10.20%	0.532	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 9122

Opening to Design Year ESAL Accumulation (1000s): 19581

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 06/11/2019
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	79	72	60	43	254	80	63	56	57	256	510
0100	34	33	43	29	139	37	45	57	42	181	320
0200	45	25	31	38	139	42	35	27	32	136	275
0300	35	31	50	64	180	36	31	43	46	156	336
0400	52	47	76	91	266	55	65	86	113	319	585
0500	92	117	150	187	546	129	145	221	318	813	1359
0600	196	326	381	423	1326	289	510	708	843	2350	3676
0700	382	489	577	566	2014	785	845	980	946	3556	5570
0800	528	557	559	533	2177	912	911	842	757	3422	5599
0900	454	464	484	455	1857	654	615	600	601	2470	4327
1000	449	485	497	523	1954	574	538	534	568	2214	4168
1100	502	548	517	505	2072	549	565	489	590	2193	4265
1200	493	504	539	490	2026	505	529	525	554	2113	4139
1300	506	511	539	537	2093	536	483	505	520	2044	4137
1400	531	595	590	625	2341	502	493	519	523	2037	4378
1500	635	712	702	830	2879	530	466	520	602	2118	4997
1600	686	777	846	841	3150	552	531	550	548	2181	5331
1700	761	888	789	765	3203	548	612	583	579	2322	5525
1800	547	537	486	397	1967	527	408	380	347	1662	3629
1900	387	346	325	298	1356	292	342	281	269	1184	2540
2000	246	228	235	265	974	235	254	239	238	966	1940
2100	247	233	183	185	848	224	217	193	166	800	1648
2200	116	154	146	135	551	150	140	107	119	516	1067
2300	113	101	107	84	405	99	114	102	100	415	820
24-Hour Totals:					34717					36424	71141

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2228	730	3749	730	5977
P.M.	1630	3336	1700	2322	1630	5594
Daily	1630	3336	730	3749	730	5977

Truck Percentage 10.54 10.97 10.76

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	25	22004	9028	97	1357	384	10	476	1269	26	19	14	8	0	0	3660	34717
S	14	21164	11252	199	1750	258	143	516	1032	58	16	16	6	0	0	3994	36424

Generated by SPS 5.0.49P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 10/02/2019
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	61	57	56	46	220	66	77	54	59	256	476
0100	38	28	31	22	119	48	26	32	38	144	263
0200	21	22	14	30	87	28	36	31	34	129	216
0300	48	34	48	41	171	30	42	54	48	174	345
0400	45	66	55	79	245	35	58	73	94	260	505
0500	87	136	141	196	560	122	168	214	340	844	1404
0600	246	312	416	403	1377	341	572	754	830	2497	3874
0700	395	525	627	591	2138	797	920	968	864	3549	5687
0800	606	573	560	470	2209	785	855	868	741	3249	5458
0900	526	532	564	489	2111	602	559	684	644	2489	4600
1000	494	505	496	542	2037	571	553	614	588	2326	4363
1100	557	474	500	483	2014	546	558	567	589	2260	4274
1200	567	545	493	548	2153	576	554	531	561	2222	4375
1300	530	595	543	573	2241	567	600	558	641	2366	4607
1400	591	616	654	625	2486	515	531	533	549	2128	4614
1500	721	666	868	802	3057	559	591	595	601	2346	5403
1600	834	844	815	816	3309	562	522	656	592	2332	5641
1700	861	925	850	662	3298	642	597	635	596	2470	5768
1800	603	567	482	418	2070	548	511	404	393	1856	3926
1900	366	352	362	281	1361	357	344	291	293	1285	2646
2000	304	268	226	225	1023	249	277	252	229	1007	2030
2100	217	201	205	193	816	234	241	205	196	876	1692
2200	146	124	120	98	488	165	166	117	89	537	1025
2300	101	76	87	62	326	115	106	84	65	370	696
24-Hour Totals:					35916					37972	73888

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2397	700	3549	715	5886
P.M.	1645	3452	1630	2487	1645	5918
Daily	1645	3452	700	3549	1645	5918

Truck Percentage 10.61 10.97 10.79

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	32	22709	9366	105	1430	503	43	413	1229	45	24	13	4	0	0	3809	35916
S	16	23016	10775	187	1684	306	303	483	1099	60	21	20	2	0	0	4165	37972

Generated by SPS 5.0.49P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 11/12/2019
Start Time: 1200

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	68	68	71	42	249	66	75	57	45	243	492
0100	34	38	40	24	136	40	31	31	30	132	268
0200	24	30	30	25	109	29	29	38	35	131	240
0300	38	35	55	50	178	29	47	45	51	172	350
0400	70	71	69	93	303	42	55	86	107	290	593
0500	105	135	146	209	595	136	201	264	329	930	1525
0600	246	370	390	442	1448	401	586	879	942	2808	4256
0700	500	592	644	647	2383	930	950	998	1002	3880	6263
0800	628	711	614	538	2491	977	830	867	974	3648	6139
0900	512	519	511	564	2106	908	730	697	650	2985	5091
1000	607	565	618	625	2415	619	656	672	629	2576	4991
1100	619	621	594	593	2427	621	605	673	630	2529	4956
1200	650	608	572	630	2460	590	595	704	587	2476	4936
1300	587	603	603	650	2443	582	617	682	630	2511	4954
1400	619	666	709	657	2651	652	643	683	682	2660	5311
1500	711	822	906	980	3419	651	676	659	650	2636	6055
1600	881	884	945	930	3640	643	680	681	675	2679	6319
1700	915	937	857	815	3524	700	723	695	625	2743	6267
1800	658	602	502	439	2201	518	519	463	388	1888	4089
1900	373	420	332	297	1422	317	337	319	312	1285	2707
2000	288	284	233	257	1062	254	224	240	231	949	2011
2100	223	226	177	173	799	273	248	212	194	927	1726
2200	154	146	113	85	498	178	142	139	121	580	1078
2300	106	90	82	78	356	107	79	82	67	335	691
24-Hour Totals:					39315					41993	81308

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2630	715	3927	715	6438
P.M.	1630	3727	1645	2793	1630	6506
Daily	1630	3727	715	3927	1630	6506
Truck Percentage	10.20		9.70		9.94	

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	47	25275	9981	149	1492	488	41	458	1291	52	21	16	4	0	0	4012	39315
S	38	26926	10955	172	1618	281	319	472	1090	74	23	22	3	0	0	4074	41993

Generated by SPS 5.0.49P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 04/02/2019
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	88	64	83	60	295	61	67	52	66	246	541
0100	34	43	33	33	143	40	27	25	37	129	272
0200	29	50	38	24	141	31	36	40	36	143	284
0300	50	50	58	74	232	27	46	58	48	179	411
0400	76	96	102	122	396	58	87	126	144	415	811
0500	119	146	163	218	646	189	239	292	322	1042	1688
0600	259	361	408	443	1471	525	742	846	920	3033	4504
0700	486	579	620	723	2408	983	1048	1002	938	3971	6379
0800	680	671	681	587	2619	933	882	843	823	3481	6100
0900	560	586	617	589	2352	799	773	840	824	3236	5588
1000	590	599	597	672	2458	738	688	675	603	2704	5162
1100	627	679	658	687	2651	711	667	676	693	2747	5398
1200	669	715	713	688	2785	675	602	606	586	2469	5254
1300	623	643	643	741	2650	692	685	703	654	2734	5384
1400	647	683	732	830	2892	632	617	688	703	2640	5532
1500	754	853	898	967	3472	725	717	694	723	2859	6331
1600	935	925	948	927	3735	693	691	695	696	2775	6510
1700	931	916	863	798	3508	730	661	645	606	2642	6150
1800	692	697	575	563	2527	520	503	446	361	1830	4357
1900	434	469	435	360	1698	394	371	339	321	1425	3123
2000	367	359	367	303	1396	283	318	298	284	1183	2579
2100	273	306	227	193	999	298	249	211	208	966	1965
2200	185	182	153	146	666	169	168	141	127	605	1271
2300	124	124	91	86	425	122	102	84	81	389	814
24-Hour Totals:					42565					43843	86408

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	745	2755	700	3971	715	6523
P.M.	1545	3775	1500	2859	1545	6577
Daily	1545	3775	700	3971	1545	6577

Truck Percentage 9.28 9.43 9.36

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	21	28309	10284	146	1470	437	31	448	1347	26	27	16	3	0	0	3951	42565
S	30	26006	13674	197	1792	300	189	497	1099	25	15	17	2	0	0	4133	43843

Generated by SPS 5.0.48P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 03/28/2018
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	101	105	65	80	351	107	89	47	60	303	654
0100	58	57	54	65	234	57	37	38	44	176	410
0200	44	42	36	30	152	33	41	34	30	138	290
0300	26	48	52	65	191	27	49	43	47	166	357
0400	65	99	92	117	373	61	73	84	113	331	704
0500	120	156	200	191	667	112	159	235	330	836	1503
0600	218	296	437	430	1381	343	547	704	814	2408	3789
0700	481	532	647	737	2397	786	873	970	924	3553	5950
0800	652	666	667	682	2667	939	929	958	915	3741	6408
0900	608	630	653	623	2514	899	905	845	841	3490	6004
1000	577	639	634	678	2528	823	712	755	766	3056	5584
1100	654	729	712	709	2804	713	725	748	693	2879	5683
1200	738	732	707	699	2876	657	690	708	689	2744	5620
1300	668	741	699	720	2828	692	665	631	706	2694	5522
1400	729	738	794	877	3138	695	668	731	712	2806	5944
1500	788	856	931	1007	3582	710	748	738	751	2947	6529
1600	954	972	1030	932	3888	717	710	744	675	2846	6734
1700	972	1052	947	896	3867	644	734	725	641	2744	6611
1800	849	787	624	573	2833	596	575	553	522	2246	5079
1900	535	508	446	456	1945	469	409	412	397	1687	3632
2000	386	443	335	355	1519	397	385	400	348	1530	3049
2100	346	346	318	247	1257	359	331	319	298	1307	2564
2200	239	239	208	176	862	222	278	269	177	946	1808
2300	147	146	136	118	547	167	166	136	127	596	1143
24-Hour Totals:					45401					46170	91571

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	745	2722	730	3762	745	6472
P.M.	1630	3986	1515	2954	1545	6885
Daily	1630	3986	730	3762	1545	6885

Truck Percentage 7.38 7.65 7.52

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	29	33385	8637	45	1184	354	22	430	1243	34	22	16	0	0	0	3350	45401
S	27	32311	10300	113	1424	270	125	413	1102	50	19	12	4	0	0	3532	46170

Generated by SPS 5.0.48P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 06/06/2018
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	75	77	57	57	266	70	58	27	45	200	466
0100	40	52	24	37	153	51	38	43	36	168	321
0200	39	27	26	22	114	22	53	28	27	130	244
0300	38	29	43	44	154	29	36	24	36	125	279
0400	46	57	62	87	252	50	55	72	87	264	516
0500	75	118	146	163	502	124	131	191	261	707	1209
0600	195	296	378	414	1283	260	447	693	742	2142	3425
0700	429	496	623	564	2112	808	828	915	1057	3608	5720
0800	553	585	508	520	2166	864	876	882	905	3527	5693
0900	459	462	439	529	1889	692	662	650	613	2617	4506
1000	445	473	465	472	1855	594	556	607	599	2356	4211
1100	488	503	471	476	1938	567	516	504	536	2123	4061
1200	517	530	481	548	2076	488	493	526	578	2085	4161
1300	460	550	543	570	2123	514	531	543	549	2137	4260
1400	574	599	599	642	2414	553	488	534	566	2141	4555
1500	621	709	704	782	2816	555	571	593	546	2265	5081
1600	848	784	824	849	3305	585	600	566	572	2323	5628
1700	788	872	823	756	3239	580	648	587	572	2387	5626
1800	675	525	486	445	2131	525	494	408	395	1822	3953
1900	377	364	357	327	1425	371	300	272	260	1203	2628
2000	287	288	252	246	1073	267	237	230	209	943	2016
2100	235	221	215	173	844	223	224	185	211	843	1687
2200	153	146	128	149	576	166	143	163	121	593	1169
2300	90	109	96	83	378	103	102	98	79	382	760
24-Hour Totals:					35084					37091	72175

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2325	730	3712	730	6037
P.M.	1630	3333	1645	2387	1645	5719
Daily	1630	3333	730	3712	730	6037

Truck Percentage 10.72 10.32 10.51

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	58	21916	9350	92	1441	504	21	502	1126	37	22	14	1	0	0	3760	35084
S	27	23488	9749	146	1499	333	290	473	989	53	22	20	2	0	0	3827	37091

Generated by SPS 5.0.48P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 09/05/2018
Start Time: 1200

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	59	47	57	45	208	50	49	44	27	170	378
0100	51	49	40	30	170	33	34	20	27	114	284
0200	24	32	27	26	109	30	29	34	24	117	226
0300	32	28	22	33	115	27	24	48	43	142	257
0400	36	40	46	71	193	49	60	89	94	292	485
0500	64	97	107	139	407	98	151	207	281	737	1144
0600	190	252	333	440	1215	346	514	705	846	2411	3626
0700	409	428	584	589	2010	830	1003	961	954	3748	5758
0800	653	569	564	499	2285	868	873	867	785	3393	5678
0900	463	416	434	461	1774	709	688	645	596	2638	4412
1000	451	404	438	492	1785	563	513	538	556	2170	3955
1100	449	486	454	475	1864	501	510	528	521	2060	3924
1200	445	443	465	476	1829	525	520	506	496	2047	3876
1300	472	462	497	522	1953	468	520	531	538	2057	4010
1400	499	513	588	607	2207	504	506	546	527	2083	4290
1500	599	604	714	780	2697	547	526	554	567	2194	4891
1600	866	812	785	824	3287	545	515	566	538	2164	5451
1700	815	815	865	789	3284	564	548	634	554	2300	5584
1800	692	658	545	443	2338	476	429	404	354	1663	4001
1900	429	359	335	309	1432	284	318	284	233	1119	2551
2000	315	277	286	240	1118	215	216	213	214	858	1976
2100	211	195	205	166	777	182	224	208	156	770	1547
2200	150	154	135	94	533	110	124	124	101	459	992
2300	110	102	82	85	379	63	82	70	66	281	660
24-Hour Totals:					33969					35987	69956

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2395	715	3786	730	6051
P.M.	1645	3319	1700	2300	1645	5603
Daily	1645	3319	715	3786	730	6051

Truck Percentage 10.88 10.75 10.81

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	33	21275	8965	93	1471	455	21	463	1124	25	24	18	2	0	0	3696	33969
S	15	22388	9716	151	1592	296	242	477	1026	47	21	16	0	0	0	3868	35987

Generated by SPS 5.0.48P

County: 03
Station: 2003
Description: SR 93/I-75, SOUTH OF CR 896/PINE RIDGE ROAD
Start Date: 11/14/2018
Start Time: 0000

	Direction: N					Direction: S					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	60	76	52	50	238	65	60	43	33	201	439
0100	52	30	39	41	162	41	38	38	38	155	317
0200	42	40	39	39	160	41	36	36	31	144	304
0300	33	33	39	55	160	40	40	37	50	167	327
0400	57	72	114	86	329	42	45	80	109	276	605
0500	105	127	171	187	590	124	177	232	320	853	1443
0600	191	307	418	485	1401	352	496	763	903	2514	3915
0700	479	545	656	713	2393	919	788	781	850	3338	5731
0800	601	637	615	560	2413	744	746	716	796	3002	5415
0900	490	533	540	494	2057	791	806	811	896	3304	5361
1000	551	586	582	604	2323	849	697	607	677	2830	5153
1100	549	604	565	565	2283	605	589	598	603	2395	4678
1200	540	564	642	526	2272	617	596	580	604	2397	4669
1300	586	629	647	647	2509	548	641	592	627	2408	4917
1400	592	664	692	725	2673	645	579	691	695	2610	5283
1500	708	740	876	962	3286	718	688	723	697	2826	6112
1600	925	910	877	979	3691	664	689	643	700	2696	6387
1700	939	1027	908	826	3700	654	695	652	678	2679	6379
1800	746	664	614	425	2449	649	566	520	419	2154	4603
1900	393	391	350	356	1490	429	363	381	293	1466	2956
2000	313	328	288	262	1191	250	260	276	253	1039	2230
2100	247	239	214	187	887	242	233	233	202	910	1797
2200	151	160	150	130	591	178	164	143	124	609	1200
2300	136	108	114	80	438	97	120	78	76	371	809
24-Hour Totals:					39686					41344	81030

Peak Volume Information

	Direction: N		Direction: S		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	730	2607	645	3391	700	5731
P.M.	1645	3853	1500	2826	1645	6554
Daily	1645	3853	645	3391	1645	6554

Truck Percentage 9.86 9.31 9.58

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
N	50	25755	9966	105	1493	475	20	471	1269	32	27	19	4	0	0	3915	39686
S	27	27831	9637	135	1508	263	255	466	1148	32	24	16	2	0	0	3849	41344

Generated by SPS 5.0.48P

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **August 3. 2020**
To: **Joshua Jester** **EXT 2251**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**
Subject: **Financial Project No: 445296-1-22-01**
Roadway ID: 03175000
Project Name: I-75 North of Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 56.280 – 56.628

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K	=	9.0 %
D	=	56.4 %
24 Hour T	=	8.0 %
Design Hour T	=	4.0 %
2019 AADT	=	89215
Functional Class	=	Urban Prin Arterial Int.

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 030191.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175000
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 2

LOCATION DESCRIPTION: I-75 North of Pine Ridge Rd (MP: 55.94 - 56.628)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	89215
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	138500

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 8.00%
Opening to Mid-Year: 8.00%
Mid-Year to Design-Year: 8.00%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.

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: Brittany Nichols — Traffic Analyst Consultant — ATKINS
Name — Title — Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE...
8/3/2020 | 5:05 PM EDT
Signature — Date

Reviewed by: Kyle Purvis — District Statistics Administrator — FDOT
Name — Title — Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4...
8/4/2020 | 6:54 AM EDT
Signature — Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 2

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175000 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	89200	656	0	0.5	8.00%	0.559	0.900
2020	91100	668	0	0.5	8.00%	0.557	0.900
2021	93000	679	0	0.5	8.00%	0.556	0.900
2022	94900	691	0	0.5	8.00%	0.554	0.900
2023	96700	702	0	0.5	8.00%	0.552	0.900
2024	98600	714	0	0.5	8.00%	0.551	0.900
2025	100500	726	726	0.5	8.00%	0.549	0.900
2026	102400	737	1463	0.5	8.00%	0.548	0.900
2027	104300	749	2212	0.5	8.00%	0.546	0.900
2028	106200	761	2973	0.5	8.00%	0.545	0.900
2029	108100	772	3745	0.5	8.00%	0.543	0.900
2030	110000	784	4529	0.5	8.00%	0.542	0.900
2031	111900	795	5324	0.5	8.00%	0.540	0.900
2032	113800	806	6130	0.5	8.00%	0.539	0.900
2033	115700	818	6948	0.5	8.00%	0.538	0.900
2034	117600	829	7777	0.5	8.00%	0.536	0.900
2035	119500	840	8617	0.5	8.00%	0.535	0.900
2036	121400	852	9469	0.5	8.00%	0.534	0.900
2037	123300	863	10332	0.5	8.00%	0.532	0.900
2038	125200	874	11206	0.5	8.00%	0.531	0.900
2039	127100	885	12091	0.5	8.00%	0.530	0.900
2040	129000	896	12987	0.5	8.00%	0.529	0.900
2041	130900	908	13895	0.5	8.00%	0.527	0.900
2042	132800	919	14814	0.5	8.00%	0.526	0.900
2043	134700	930	15744	0.5	8.00%	0.525	0.900
2044	136600	941	16685	0.5	8.00%	0.524	0.900
2045	138500	952	17637	0.5	8.00%	0.523	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 7891

Opening to Design Year ESAL Accumulation (1000s): 16911

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

DATE 04/06/20

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC COUNTS
HOURLY CONTINUOUS COUNTS FINAL REPORT
NOVEMBER 2019

COUNTY NAME: COLLIER STATION: 0191 DIRECTION: N LANE: 0
DESCRIPTION: SR-93/I-75,0.5 MI N OF CR-896,COLLIER CO.
LOCATION: COUNTY 03 SECTION 175 SUBSECTION 000 MILEPOST 60.100 ROUTES: I-75 SR-93

DY	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	2
1	F																								
2	A																								
3	S																								
4	M																								
5	T																								
6	W																								
7	R																								
8	F																								
9	A																								
10	S																								
11	M																								
12	T																								
13	W																								
14	R																								
15	F	270	163	135	190	415	683	1680	2767	2810	2619	2872	2962	3189	3138	3397	3869	3948	3782	2753	1992	1600	1404	1091	683
16	A	494	406	236	201	296	478	1059	1619	2123	2452	2694	2826	2965	2817	2684	2832	2811	2668	2302	1682	1292	1245	972	769
17	S	406	261	228	134	278	373	639	973	1505	1920	2282	2466	2754	2547	2562	2602	2625	2647	2483	2159	1545	1365	1010	540
18	M	252	155	133	198	461	795	1840	3034	2872	2593	2718	3018	2957	2850	3228	4003	4192	4104	2694	1705	1267	907	649	402
19	T	223	162	103	213	430	690	1781	2918	2858	2598	2520	2489	2625	2595	3058	3857	4167	4088	2841	1772	1291	1011	624	430
20	W	211	173	119	181	397	700	1792	2926	2876	2522	2664	2672	2625	2775	3123	3926	4246	4121	2691	1801	1373	1038	713	414
21	R	232	159	114	213	422	745	1864	2835	2926	2769	2729	2654	2864	2779	3240	4048	4317	4018	2797	1890	1429	1111	699	482
22	F	294	181	130	224	418	698	1780	2761	2891	2836	2777	2987	3017	3101	3621	4245	4358	4058	3043	2221	1780	1311	941	682
23	A	405	280	202	190	312	498	1082	1706	2041	2472	2710	2897	2848	2707	2594	2739	2707	2598	2274	1717	1220	1106	908	639
24	S	455	258	199	151	301	348	654	1062	1529	1958	2456	2702	2704	2423	2372	2439	2500	2464	2170	1732	1311	1085	744	426
25	M	249	167	147	205	458	788	1788	2816	2756	2758	2834	2858	3038	2875	2956	3784	4064	4004	2700	1750	1359	1123	753	473
26	T	268	173	147	227	415	738	1735	2757	2681	2734	2729	2844	2904	2889	3206	3931	4119	4088	2909	1918	1541	1289	914	613
27	W	392	203	157	248	423	677	1699	2623	2720	2743	3039	3194	3544	3466	3945	4104	3845	3878	3458	2629	2006	1699	1219	773
28	R	423	301	221	193	249	412	613	1053	1538	2090	2542	2739	3085	2474	2202	1860	1743	1724	1883	1775	1651	1349	1028	821
29	F	558	298	172	148	322	485	1085	1697	2094	2529	2857	3216	3300	3219	3392	3347	3127	2895	2529	2019	1551	1198	895	653
30	A	395	223	183	222	383	478	905	1412	1818	2380	2873	3135	3184	2915	2926	2792	2883	2683	2352	1934	1539	1267	1012	746

WEEKDAY AVERAGE = 46182 SATURDAY AVERAGE = 39805 SUNDAY AVERAGE = 35374 NUMBER OF GOOD DAYS 16 TOTAL MONTHLY COUNT = 69
MONTHLY AVERAGE = 43727

"B"=====> BAD DAY
"N"=====> NORMAL DAY
"A"=====> ATYPICAL DAY
"H"=====> ATYPICAL DAY (HOLIDAY)
"S"=====> ATYPICAL DAY (SPECIAL EVENT)

COMMENTS:
11/02, 06, 08-09, 13, 18, 22, 23, 24-27, 29-30: HERTZ (FMLY GERMAIN) ARENA EVENT
11/03: DAYLIGHT SAVING TIME ENDS
11/11: VETERAN'S DAY; 11/28: THANKSGIVING DAY

NOTE: ATYPICAL DAYS HAVE COUNTS THAT ARE HIGHER OR LOWER THAN NORMAL, BUT STILL REASONABLE, AND NO LOCAL SPECIAL EVENTS ARE KN

DATE 04/06/20

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC COUNTS
HOURLY CONTINUOUS COUNTS FINAL REPORT
NOVEMBER 2019

COUNTY NAME: COLLIER STATION: 0191 DIRECTION: S LANE: 0
DESCRIPTION: SR-93/I-75,0.5 MI N OF CR-896,COLLIER CO.
LOCATION: COUNTY 03 SECTION 175 SUBSECTION 000 MILEPOST 60.100 ROUTES: I-75 SR-93

DY	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	2
1	F																								
2	A																								
3	S																								
4	M																								
5	T																								
6	W																								
7	R																								
8	F																								
9	A																								
10	S																								
11	M																								
12	T																								
13	W																								
14	R																								
15	F	341	221	146	207	343	1150	3497	4096	3418	3325	2957	3081	3033	3147	2996	3263	3402	2813	2074	2216	1484	1275	961	685
16	A	454	275	192	170	228	649	1495	2071	2468	2862	3041	2997	2798	2970	2770	2626	2711	2453	2086	1628	1151	1119	859	754
17	S	421	313	195	159	160	416	726	1094	1716	2289	2585	2641	2640	2809	2689	2807	2995	2694	2388	1737	1393	1028	721	440
18	M	268	176	156	177	432	1318	3709	4292	3908	3258	2992	2796	2697	2721	2787	2780	3051	3001	2258	1357	1165	865	594	340
19	T	252	118	119	158	358	1206	3596	4431	3929	3300	3001	2728	2620	2688	2764	2907	3025	2757	1803	1757	1198	997	639	382
20	W	212	123	141	164	339	1216	3662	4313	3972	3225	3087	2834	2630	2686	2772	2972	3045	3106	2277	1442	1143	1034	788	436
21	R	271	154	155	186	356	1190	3716	4252	3883	3240	3006	2923	2796	2756	2913	3058	3147	3114	2260	1609	1324	1086	789	463
22	F	333	199	163	182	364	1065	3484	4112	3798	3137	2987	3071	2932	3090	3033	3207	3310	3052	2792	1928	1613	1420	1120	679
23	A	550	273	244	194	279	658	1496	2055	2427	2781	3007	3077	2878	2904	2768	2790	2615	2580	2186	1704	1373	1280	947	634
24	S	463	316	208	143	172	465	707	972	1454	1987	2429	2596	2557	2701	2653	2706	2652	2520	2144	1736	1366	1038	946	674
25	M	291	229	162	193	437	1209	3398	4236	3827	3447	3122	3005	2688	2835	2860	2922	3079	3149	2322	1473	1188	911	762	460
26	T	304	195	136	194	360	1119	3307	4084	3806	3111	3077	3072	2895	2986	2972	3070	3115	2851	2477	1615	1329	1142	917	543
27	W	425	195	179	182	375	1109	3266	3876	3597	3097	3143	3212	3383	3357	3263	3404	3129	3372	2624	2054	1962	1369	1128	801
28	R	509	276	235	177	186	434	897	944	1325	1887	2419	2822	2643	2468	2135	1858	1692	1852	1914	1842	1738	1311	1071	700
29	F	507	374	276	254	306	774	1769	2270	2390	2583	2926	3236	3123	3274	3147	3151	2946	2842	2458	1783	1489	1224	878	562
30	A	414	246	221	192	216	572	1142	1571	2108	2600	3015	3127	3084	2920	3232	3173	3042	2745	2567	1860	1494	1308	1071	685

WEEKDAY AVERAGE = 46998 SATURDAY AVERAGE = 41711 SUNDAY AVERAGE = 36331 NUMBER OF GOOD DAYS 16 TOTAL MONTHLY COUNT = 71
MONTHLY AVERAGE = 44719

"B"=====> BAD DAY
"N"=====> NORMAL DAY
"A"=====> ATYPICAL DAY
"H"=====> ATYPICAL DAY (HOLIDAY)
"S"=====> ATYPICAL DAY (SPECIAL EVENT)

COMMENTS:
11/02, 06, 08-09, 13, 18, 22, 23, 24-27, 29-30: HERTZ (FMLY GERMAIN) ARENA EVENT
11/03: DAYLIGHT SAVING TIME ENDS
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NOTE: ATYPICAL DAYS HAVE COUNTS THAT ARE HIGHER OR LOWER THAN NORMAL, BUT STILL REASONABLE, AND NO LOCAL SPECIAL EVENTS ARE KN

DATE 04/06/20

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC COUNTS
HOURLY CONTINUOUS COUNTS FINAL REPORT
DECEMBER 2019

COUNTY NAME: COLLIER STATION: 0191 DIRECTION: N LANE: 0
DESCRIPTION: SR-93/I-75,0.5 MI N OF CR-896,COLLIER CO.
LOCATION: COUNTY 03 SECTION 175 SUBSECTION 000 MILEPOST 60.100 ROUTES: I-75 SR-93

DY	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	2
1	S	403	243	202	244	398	411	661	955	1553	2264	2817	3208	3433	3061	3185	2982	2945	2739	2734	2369	1708	1201	758	4
2	M	286	164	146	237	417	627	1590	2823	2772	2655	2686	2805	2942	2772	3114	3967	3982	3919	2638	1660	1347	952	634	3
3	T	234	152	126	210	454	738	1822	2829	2911	2601	2593	2589	2564	2693	3200	3889	4114	4029	2805	1740	1408	1186	759	4
4	W	240	187	122	173	411	785	1839	2743	2886	2619	2664	2607	2640	2660	3032	3826	3895	3769	2965	1768	1359	997	748	4
5	R	284	178	138	191	420	805	1790	2785	2875	2606	2578	2636	2824	2745	3209	3993	4250	4094	2591	1768	1436	1158	815	5
6	F	264	159	135	206	392	750	1706	2756	2848	2591	2756	2894	3111	3053	3452	4341	4257	3934	3064	2257	1711	1610	1162	7
7	A	417	261	208	194	323	543	1039	1810	2097	2423	2728	2824	3041	2652	2666	2626	2609	2667	2471	1848	1525	1359	1136	7
8	S	472	277	203	173	280	343	672	1026	1460	1948	2208	2455	2864	2549	2454	2578	2549	2655	2284	1705	1509	1109	722	4
9	M	293	166	138	189	442	820	1867	2834	2904	2645	2732	2713	2748	2689	3062	3880	4196	4002	2661	1703	1380	1009	665	4
10	T	261	157	137	189	417	753	1832	2719	2837	2506	2482	2646	2597	2681	3091	3983	3903	3913	2531	1783	1571	1135	754	4
11	W	274	158	119	191	343	724	1837	2711	2866	2535	2577	2540	2542	2794	3064	3996	4260	4008	2628	1709	1342	1092	767	4
12	R	251	189	130	195	397	779	1852	2855	2807	2603	2506	2652	2758	2880	3239	4078	3977	3685	2449	1782	1458	1171	806	5
13	F	315	181	153	218	404	759	1796	2699	2685	2810	2867	3161	3416	3177	3572	4317	4095	3691	2963	2294	1845	1522	1161	8
14	A	491	296	218	198	331	558	1163	1722	2162	2387	2575	2803	2915	2637	2575	2657	2638	2717	2253	1737	1607	1453	1217	886
15	S	448	286	228	174	264	401	626	1027	1581	2053	2496	2623	2852	2478	2536	2512	2490	2436	2261	1833	1467	1202	745	477
16	M	297	179	168	203	433	778	1850	2696	2863	2437	2498	2683	2721	2664	3055	3693	3934	3935	2667	1785	1400	1011	773	536
17	T	272	176	143	206	380	730	1776	2823	2723	2475	2570	2634	2529	2792	3108	3972	4060	3955	2738	1819	1389	1114	763	516
18	W	279	183	112	214	334	699	1790	2626	2767	2530	2638	2765	2782	2918	3156	3831	4263	3395	2625	1748	1373	1086	757	493
19	R	309	192	118	238	412	757	1730	2700	2867	2599	2673	2909	2938	2878	3317	4068	4242	4110	2797	1835	1616	1268	979	603
20	F	384	193	180	244	421	718	1726	2619	2767	2625	3025	3247	3366	3325	3752	4271	4142	3875	3161	2257	1824	1541	1142	835
21	A	476	361	248	247	345	508	1019	1556	2049	2560	2951	3093	3128	2901	2824	2893	2780	2705	2415	1818	1475	1317	1069	791
22	S	442	260	244	234	307	375	501	808	1309	1853	2454	2532	2604	2557	2472	2419	2343	2295	1999	1638	1302	1114	785	549
23	M	384	237	163	227	387	672	1413	2212	2559	2537	2924	3120	3333	3123	3386	3983	4084	3755	2823	2043	1733	1384	1027	717
24	T	410	283	184	217	300	490	1094	1696	1878	2116	2736	3013	3433	3180	3168	3202	2996	2607	2133	1786	1391	1236	1009	701
25	W	494	356	271	165	148	241	363	577	824	1192	1559	1941	2169	2153	2227	2204	2001	2028	2055	1902	1629	1334	786	566
26	R	312	181	138	205	387	675	1329	2129	2357	2562	2899	3096	3380	3267	3351	3912	3936	3582	2639	1994	1579	1332	981	649
27	F	355	231	156	257	451	637	1360	2146	2510	2660	3081	3463	3511	3396	3462	4096	4187	3834	3175	2399	1837	1461	1147	788
28	A	477	289	285	233	336	475	1010	1518	1981	2478	2997	3217	3270	3179	3126	3118	2998	2877	2619	2074	1545	1372	1062	853
29	S	521	314	239	231	326	421	579	1004	1614	2116	2731	2881	3068	2830	2918	2933	2883	2871	2573	1902	1545	1193	888	677
30	M	384	213	172	205	417	691	1463	2363	2569	2729	2907	3199	3405	3284	3467	3968	4148	4137	3059	2056	1653	1387	950	652
31	T	474	428	319	213	415	607	1267	1995	2158	2352	2866	3068	3442	3294	3383	3691	3406	2964	2458	1922	1801	1155	961	641

WEEKDAY AVERAGE = 46158 SATURDAY AVERAGE = 41339 SUNDAY AVERAGE = 36807 NUMBER OF GOOD DAYS 31 TOTAL MONTHLY COUNT = 136
MONTHLY AVERAGE = 44134

"B"=====> BAD DAY
"N"=====> NORMAL DAY
"A"=====> ATYPICAL DAY
"H"=====> ATYPICAL DAY (HOLIDAY)
"S"=====> ATYPICAL DAY (SPECIAL EVENT)

COMMENTS:
12/25: CHRISTMAS DAY; 12/31: NEW YEAR'S EVE

NOTE: ATYPICAL DAYS HAVE COUNTS THAT ARE HIGHER OR LOWER THAN NORMAL, BUT STILL REASONABLE, AND NO LOCAL SPECIAL EVENTS ARE KN

DATE 04/06/20

FLORIDA DEPARTMENT OF TRANSPORTATION
TRAFFIC COUNTS
HOURLY CONTINUOUS COUNTS FINAL REPORT
DECEMBER 2019

COUNTY NAME: COLLIER STATION: 0191 DIRECTION: S LANE: 0
DESCRIPTION: SR-93/I-75,0.5 MI N OF CR-896,COLLIER CO.
LOCATION: COUNTY 03 SECTION 175 SUBSECTION 000 MILEPOST 60.100 ROUTES: I-75 SR-93

DY	D	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	2
1	S	504	315	249	195	224	513	727	1093	1715	2519	2971	3168	3324	3461	3456	3513	3500	3018	2650	2003	1514	1099	870	4
2	M	380	247	195	206	465	1363	3654	4225	3485	3460	3138	2999	2690	2831	2925	2888	3055	2500	2521	1386	1146	966	635	3
3	T	259	144	148	171	391	1211	3545	4239	3898	3215	2955	2805	2842	2791	2919	3137	3024	2991	2033	1605	1144	932	751	5
4	W	312	168	137	185	378	1208	3507	4313	3997	3236	2943	2948	2531	2394	2699	3398	3003	2938	2285	1407	1190	947	742	5
5	R	309	192	150	182	386	1202	3454	3813	3514	3467	3329	2931	2839	2729	2776	3163	3089	3093	2356	1559	1230	1164	832	4
6	F	363	224	171	197	391	1158	3489	4207	3852	3145	3191	3026	3079	3122	3282	3363	3432	3378	2710	1799	1521	1383	1058	6
7	A	450	243	252	156	258	657	1586	2098	2404	2808	2809	2885	2732	2748	2808	2797	2934	2645	2304	1564	1358	1194	1043	6
8	S	405	264	213	159	178	340	694	1043	1586	2141	2449	2573	2662	2823	2701	2803	2845	2662	2219	1779	1522	1256	774	5
9	M	344	182	133	194	402	1297	3683	4204	3849	3309	3072	2786	2675	2730	2796	2835	2981	2923	2162	1418	1118	885	581	3
10	T	281	140	160	172	368	1229	3553	4101	3995	3249	2990	2678	2684	2698	2840	2930	3225	3106	2164	1338	1109	961	623	4
11	W	331	156	129	178	387	1204	3542	4244	3865	3285	2940	2674	2570	2647	2738	3046	2968	2862	2248	1414	1085	853	846	4
12	R	339	150	174	176	386	1159	3517	4188	3876	3157	2879	2748	2685	2860	2921	3012	3005	2968	2228	1504	1257	1062	765	5
13	F	366	188	160	204	381	1149	3452	3961	3876	3220	2980	2959	3027	3035	3168	3274	3504	3509	2600	1767	1369	1267	945	7
14	A	550	302	237	180	253	628	1436	1872	2201	2638	2817	2794	2966	2795	2855	2898	2943	2715	2251	1634	1337	1297	1206	776
15	S	519	331	286	176	178	449	748	946	1525	1936	2256	2585	2718	2753	2852	2883	2921	2909	2452	1887	1584	1133	827	553
16	M	341	172	142	184	388	1269	3626	4473	3784	3217	3022	2856	2826	2793	2788	2709	2863	2940	2232	1429	1154	942	700	440
17	T	350	153	144	185	390	1175	3413	4100	3958	3198	2857	2767	2663	2729	2677	2816	2932	2986	2231	1436	1137	942	774	501
18	W	370	205	169	171	378	1138	3409	3759	3988	3151	2965	2747	2674	2838	2849	3022	3026	2990	2139	1493	1288	1014	882	551
19	R	351	213	178	173	400	1147	3468	4232	3645	3177	2853	2951	2899	2994	3053	2988	3075	3208	2361	1645	1384	1330	903	603
20	F	423	254	211	227	376	1120	3243	3955	3726	3467	3223	3175	3068	3087	3213	3315	3454	3350	2627	2018	1553	1371	1107	806
21	A	591	391	343	232	263	645	1418	1838	2351	2686	3001	3088	3085	3039	3040	2962	2885	2584	2276	1799	1491	1355	1168	804
22	S	513	450	265	174	196	381	636	883	1336	1945	2513	2504	2657	2736	2789	2748	2625	2490	2036	1625	1367	1080	817	600
23	M	404	329	197	218	398	1044	2974	3349	3376	3310	3232	3255	3151	3103	3139	3176	3027	3006	2725	1954	1536	1356	1044	744
24	T	510	292	195	224	313	778	2211	2504	2380	2398	2759	3121	3072	2567	3332	2460	2948	2492	2145	1562	1326	1112	990	662
25	W	490	294	207	121	113	255	421	502	774	1142	1682	2041	2204	2335	2249	2208	2183	2092	2104	2035	1640	1225	940	551
26	R	373	251	162	202	376	955	2686	3135	3043	2991	3362	3550	3479	3254	3230	3463	3226	3265	2561	1797	1435	1262	906	785
27	F	466	288	247	259	387	950	2568	3280	3276	3029	3544	3535	3523	3302	3519	3557	3528	3323	2820	2313	1913	1521	1243	828
28	A	628	347	234	203	276	621	1351	1708	2216	2803	3071	3525	3405	3205	3204	3264	3074	2958	2557	2164	1565	1469	1137	755
29	S	575	483	309	186	209	455	760	942	1459	2278	2917	3191	3344	3176	3206	3262	3220	2933	2642	2057	1604	1624	995	705
30	M	392	382	194	220	397	1129	2955	3707	3515	3392	3549	3812	3698	3482	3442	3561	3512	3393	2674	2068	1517	1209	973	596
31	T	416	334	156	243	345	941	2573	3114	2946	2726	3162	3255	3304	3145	3251	3132	3240	2885	2372	1777	1238	1007	806	559

WEEKDAY AVERAGE = 47787 SATURDAY AVERAGE = 43010 SUNDAY AVERAGE = 38998 NUMBER OF GOOD DAYS 31 TOTAL MONTHLY COUNT = 141
MONTHLY AVERAGE = 45849

"B"=====> BAD DAY
"N"=====> NORMAL DAY
"A"=====> ATYPICAL DAY
"H"=====> ATYPICAL DAY (HOLIDAY)
"S"=====> ATYPICAL DAY (SPECIAL EVENT)

COMMENTS:
12/25: CHRISTMAS DAY; 12/31: NEW YEAR'S EVE

NOTE: ATYPICAL DAYS HAVE COUNTS THAT ARE HIGHER OR LOWER THAN NORMAL, BUT STILL REASONABLE, AND NO LOCAL SPECIAL EVENTS ARE KN

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **August 3. 2020**
To: **Joshua Jester** **EXT 2251**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**
Subject: **Financial Project No: 445296-1-22-01**
Roadway ID: 03175009
Project Name: I-75 NB off ramp to Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 0.000 – 0.348

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the Method Letter of Understanding (MLOU) calculated from traffic counts provided by FDOT.

K = 9.0 %
D = 99.9 %
24 Hour T = 7.5 %
Design Hour T = 3.75 %
2019 AADT = 5500
Functional Class = Active Exclusive (Interstate Ramp)

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 037021.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175009
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 3

LOCATION DESCRIPTION: I-75 NB off ramp to Pine Ridge Rd (MP: 0.000 - 0.348)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	5500
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	7200

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	7.50%
Opening to Mid-Year	7.50%
Mid-Year to Design-Year	7.50%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/3/2020 | 5:05 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/4/2020 | 6:54 AM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 3

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175009 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	5500	136	0	1	7.50%	1.000	0.900
2020	5500	136	0	1	7.50%	1.000	0.900
2021	5600	138	0	1	7.50%	1.000	0.900
2022	5600	138	0	1	7.50%	1.000	0.900
2023	5700	141	0	1	7.50%	1.000	0.900
2024	5800	143	0	1	7.50%	1.000	0.900
2025	5800	143	143	1	7.50%	1.000	0.900
2026	5900	146	289	1	7.50%	1.000	0.900
2027	6000	148	437	1	7.50%	1.000	0.900
2028	6000	148	585	1	7.50%	1.000	0.900
2029	6100	151	736	1	7.50%	1.000	0.900
2030	6200	153	889	1	7.50%	1.000	0.900
2031	6200	153	1042	1	7.50%	1.000	0.900
2032	6300	156	1198	1	7.50%	1.000	0.900
2033	6400	158	1356	1	7.50%	1.000	0.900
2034	6400	158	1514	1	7.50%	1.000	0.900
2035	6500	161	1675	1	7.50%	1.000	0.900
2036	6600	163	1838	1	7.50%	1.000	0.900
2037	6600	163	2001	1	7.50%	1.000	0.900
2038	6700	166	2167	1	7.50%	1.000	0.900
2039	6800	168	2335	1	7.50%	1.000	0.900
2040	6800	168	2503	1	7.50%	1.000	0.900
2041	6900	170	2673	1	7.50%	1.000	0.900
2042	7000	173	2846	1	7.50%	1.000	0.900
2043	7000	173	3019	1	7.50%	1.000	0.900
2044	7100	175	3194	1	7.50%	1.000	0.900
2045	7200	178	3372	1	7.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1532

Opening to Design Year ESAL Accumulation (1000s): 3229

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

County: 03
Station: 7021
Description: SR93/I-75 NB,OFF-RAMP TO CR896/PINE RIDGE RD X107
Start Date: 03/07/2018
Start Time: 0000

Direction: N

Time	1st	2nd	3rd	4th	Total
0000	3	6	5	6	20
0100	6	3	2	3	14
0200	2	3	4	9	18
0300	13	7	4	7	31
0400	8	13	4	7	32
0500	14	22	19	28	83
0600	32	44	63	100	239
0700	80	116	132	124	452
0800	119	124	117	98	458
0900	79	91	98	110	378
1000	104	90	94	110	398
1100	92	112	119	107	430
1200	119	109	114	128	470
1300	101	120	95	103	419
1400	100	104	97	109	410
1500	134	128	114	109	485
1600	92	98	136	121	447
1700	129	141	117	118	505
1800	117	109	102	91	419
1900	83	58	68	44	253
2000	55	53	50	52	210
2100	48	40	36	32	156
2200	20	19	25	13	77
2300	19	15	12	10	56
24-Hour Totals:					6460

Peak Volume Information

	Hour	Volume
A.M.	730	499
P.M.	1630	527
Daily	1630	527

Generated by SPS 5.0.48P

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: August 3. 2020
To: Joshua Jester EXT 2251

From: Brittany Nichols, Traffic Analyst/RCI Coordinator
Subject: Financial Project No: 445296-1-22-01
Roadway ID: 03175015
Project Name: I-75 NB on ramp from Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 0.000 – 0.390

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	99.9 %
24 Hour T =	7.5 %
Design Hour T =	3.75 %
2019 AADT =	11500
Functional Class =	Active Exclusive (Interstate Ramp)

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 037023.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

District One – Traffic Operations
801 North Broadway Avenue * Post Office Box 1249 * Bartow, FL 33831-1249
(863) 519-2553 * (863) 534-0915 (Fax) * MS 1-8
www.dot.state.fl.us

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175015
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 4

LOCATION DESCRIPTION: I-75 NB on ramp from Pine Ridge Rd (MP: 0.000 - 0.390)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	11500
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	14400

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%)	100%
Lanes in One Direction	1
T24 values	
Existing to Opening Year	7.50%
Opening to Mid-Year	7.50%
Mid-Year to Design-Year	7.50%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/3/2020 | 5:05 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/4/2020 | 6:54 AM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 4

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175015 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	11500	284	0	1	7.50%	1.000	0.900
2020	11600	286	0	1	7.50%	1.000	0.900
2021	11700	289	0	1	7.50%	1.000	0.900
2022	11800	291	0	1	7.50%	1.000	0.900
2023	11900	294	0	1	7.50%	1.000	0.900
2024	12000	296	0	1	7.50%	1.000	0.900
2025	12100	299	299	1	7.50%	1.000	0.900
2026	12200	301	600	1	7.50%	1.000	0.900
2027	12300	304	904	1	7.50%	1.000	0.900
2028	12500	308	1212	1	7.50%	1.000	0.900
2029	12600	311	1523	1	7.50%	1.000	0.900
2030	12700	313	1836	1	7.50%	1.000	0.900
2031	12800	316	2152	1	7.50%	1.000	0.900
2032	12900	318	2470	1	7.50%	1.000	0.900
2033	13000	321	2791	1	7.50%	1.000	0.900
2034	13100	323	3114	1	7.50%	1.000	0.900
2035	13200	326	3440	1	7.50%	1.000	0.900
2036	13300	328	3768	1	7.50%	1.000	0.900
2037	13500	333	4101	1	7.50%	1.000	0.900
2038	13600	336	4437	1	7.50%	1.000	0.900
2039	13700	338	4775	1	7.50%	1.000	0.900
2040	13800	340	5115	1	7.50%	1.000	0.900
2041	13900	343	5458	1	7.50%	1.000	0.900
2042	14000	345	5803	1	7.50%	1.000	0.900
2043	14100	348	6151	1	7.50%	1.000	0.900
2044	14200	350	6501	1	7.50%	1.000	0.900
2045	14400	355	6856	1	7.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3141

Opening to Design Year ESAL Accumulation (1000s): 6557

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

County: 03
Station: 7023
Description: SR93/I-75 NB,ON-RAMP FROM CR896/PINE RIDGE RD X107
Start Date: 03/07/2018
Start Time: 0000

Direction: N

Time	1st	2nd	3rd	4th	Total
0000	17	13	16	12	58
0100	14	1	12	12	39
0200	2	1	7	7	17
0300	5	15	13	16	49
0400	22	29	32	39	122
0500	52	57	86	84	279
0600	96	185	177	173	631
0700	199	212	273	258	942
0800	216	241	218	211	886
0900	181	165	178	170	694
1000	156	179	175	196	706
1100	183	200	186	199	768
1200	192	196	176	177	741
1300	161	194	202	236	793
1400	206	204	202	247	859
1500	247	282	283	264	1076
1600	278	210	271	237	996
1700	255	238	256	235	984
1800	225	200	147	160	732
1900	151	156	126	130	563
2000	112	120	101	108	441
2100	64	112	84	69	329
2200	60	65	39	45	209
2300	37	36	18	21	112
24-Hour Totals:					13026

Peak Volume Information

	Hour	Volume
A.M.	730	988
P.M.	1515	1107
Daily	1515	1107

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Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **August 3. 2020**
To: **Joshua Jester** **EXT 2251**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**
Subject: **Financial Project No: 445296-1-22-01**
Roadway ID: 03175013
Project Name: I-75 SB off ramp to Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 0.000 – 0.346

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	99.9 %
24 Hour T =	7.5 %
Design Hour T =	3.75 %
2019 AADT =	11500
Functional Class =	Active Exclusive (Interstate Ramp)

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 037024.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175013
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 5

LOCATION DESCRIPTION: I-75 SB off ramp to Pine Ridge Rd (MP: 0.000 - 0.346)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	11500
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	14600

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 1

T24 values
Existing to Opening Year: 7.50%
Opening to Mid-Year: 7.50%
Mid-Year to Design-Year: 7.50%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/3/2020 | 5:05 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/4/2020 | 6:54 AM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 5

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175013 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	11500	284	0	1	7.50%	1.000	0.900
2020	11600	286	0	1	7.50%	1.000	0.900
2021	11700	289	0	1	7.50%	1.000	0.900
2022	11800	291	0	1	7.50%	1.000	0.900
2023	11900	294	0	1	7.50%	1.000	0.900
2024	12000	296	0	1	7.50%	1.000	0.900
2025	12200	301	301	1	7.50%	1.000	0.900
2026	12300	304	605	1	7.50%	1.000	0.900
2027	12400	306	911	1	7.50%	1.000	0.900
2028	12500	308	1219	1	7.50%	1.000	0.900
2029	12600	311	1530	1	7.50%	1.000	0.900
2030	12800	316	1846	1	7.50%	1.000	0.900
2031	12900	318	2164	1	7.50%	1.000	0.900
2032	13000	321	2485	1	7.50%	1.000	0.900
2033	13100	323	2808	1	7.50%	1.000	0.900
2034	13200	326	3134	1	7.50%	1.000	0.900
2035	13400	331	3465	1	7.50%	1.000	0.900
2036	13500	333	3798	1	7.50%	1.000	0.900
2037	13600	336	4134	1	7.50%	1.000	0.900
2038	13700	338	4472	1	7.50%	1.000	0.900
2039	13800	340	4812	1	7.50%	1.000	0.900
2040	14000	345	5157	1	7.50%	1.000	0.900
2041	14100	348	5505	1	7.50%	1.000	0.900
2042	14200	350	5855	1	7.50%	1.000	0.900
2043	14300	353	6208	1	7.50%	1.000	0.900
2044	14400	355	6563	1	7.50%	1.000	0.900
2045	14600	360	6923	1	7.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 3164

Opening to Design Year ESAL Accumulation (1000s): 6622

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

County: 03
Station: 7024
Description: SR93/I-75 SB,OFF-RAMP TO CR896/PINE RIDGE RD X107
Start Date: 03/06/2018
Start Time: 1400

Direction: S

Time	1st	2nd	3rd	4th	Total
0000	19	18	22	14	73
0100	9	15	12	10	46
0200	9	15	7	7	38
0300	4	10	13	19	46
0400	3	16	17	36	72
0500	45	57	65	91	258
0600	95	170	210	247	722
0700	176	241	223	233	873
0800	170	225	220	214	829
0900	259	241	238	218	956
1000	158	168	175	164	665
1100	188	172	209	203	772
1200	190	208	210	206	814
1300	171	216	184	201	772
1400	194	195	212	214	815
1500	201	205	236	252	894
1600	204	201	238	207	850
1700	249	273	238	221	981
1800	234	211	202	168	815
1900	164	166	133	111	574
2000	99	93	97	101	390
2100	112	101	90	94	397
2200	59	88	56	41	244
2300	45	31	35	28	139
24-Hour Totals:					13035

Peak Volume Information

	Hour	Volume
A.M.	845	952
P.M.	1700	981
Daily	1700	981

Generated by SPS 5.0.48P

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: August 3. 2020
To: Joshua Jester EXT 2251

From: Brittany Nichols, Traffic Analyst/RCI Coordinator
Subject: Financial Project No: 445296-1-22-01
Roadway ID: 03175011
Project Name: I-75 SB on ramp from Pine Ridge Road
County: Collier
Type of Work: Reconstruction – Interchange Improvements
From MP: 0.000 – 0.364

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	99.9 %
24 Hour T =	7.5 %
Design Hour T =	3.75 %
2019 AADT =	6500
Functional Class =	Active Exclusive (Interstate Ramp)

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 037022.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03175011
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 6

LOCATION DESCRIPTION: I-75 SB on ramp from Pine Ridge Rd (MP: 0.000 - 0.364)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	6500
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	7300

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 100%
Lanes in One Direction: 1

T24 values
Existing to Opening Year: 7.50%
Opening to Mid-Year: 7.50%
Mid-Year to Design-Year: 7.50%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	X	1.270	____
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 December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/3/2020 | 5:05 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/4/2020 | 6:54 AM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 6

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03175011 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN FREEWAY 0.900

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	6500	161	0	1	7.50%	1.000	0.900
2020	6500	161	0	1	7.50%	1.000	0.900
2021	6500	161	0	1	7.50%	1.000	0.900
2022	6500	161	0	1	7.50%	1.000	0.900
2023	6600	163	0	1	7.50%	1.000	0.900
2024	6600	163	0	1	7.50%	1.000	0.900
2025	6600	163	163	1	7.50%	1.000	0.900
2026	6700	166	329	1	7.50%	1.000	0.900
2027	6700	166	495	1	7.50%	1.000	0.900
2028	6700	166	661	1	7.50%	1.000	0.900
2029	6800	168	829	1	7.50%	1.000	0.900
2030	6800	168	997	1	7.50%	1.000	0.900
2031	6800	168	1165	1	7.50%	1.000	0.900
2032	6900	170	1335	1	7.50%	1.000	0.900
2033	6900	170	1505	1	7.50%	1.000	0.900
2034	6900	170	1675	1	7.50%	1.000	0.900
2035	6900	170	1845	1	7.50%	1.000	0.900
2036	7000	173	2018	1	7.50%	1.000	0.900
2037	7000	173	2191	1	7.50%	1.000	0.900
2038	7000	173	2364	1	7.50%	1.000	0.900
2039	7100	175	2539	1	7.50%	1.000	0.900
2040	7100	175	2714	1	7.50%	1.000	0.900
2041	7100	175	2889	1	7.50%	1.000	0.900
2042	7200	178	3067	1	7.50%	1.000	0.900
2043	7200	178	3245	1	7.50%	1.000	0.900
2044	7200	178	3423	1	7.50%	1.000	0.900
2045	7300	180	3603	1	7.50%	1.000	0.900

Opening to Mid-Design Year ESAL Accumulation (1000s): 1682

Opening to Design Year ESAL Accumulation (1000s): 3440

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/3/2020 | 5:05 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/4/2020 | 6:54 AM EDT

Signature | Date

County: 03
Station: 7022
Description: SR93/I-75 SB,ON-RAMP FROM CR896/PINE RIDGE RD X107
Start Date: 03/06/2018
Start Time: 1400

Direction: S

Time	1st	2nd	3rd	4th	Total
0000	11	5	8	10	34
0100	10	4	2	3	19
0200	1	3	3	4	11
0300	4	4	5	7	20
0400	2	7	7	16	32
0500	14	27	21	31	93
0600	33	75	73	92	273
0700	105	138	166	154	563
0800	150	132	166	123	571
0900	117	111	120	152	500
1000	123	129	128	123	503
1100	135	101	111	134	481
1200	123	141	130	107	501
1300	135	127	128	138	528
1400	123	163	132	123	541
1500	154	134	131	128	547
1600	136	136	141	158	571
1700	149	136	142	107	534
1800	111	92	96	94	393
1900	103	83	77	53	316
2000	58	60	57	57	232
2100	52	61	50	48	211
2200	39	31	33	18	121
2300	21	22	17	9	69
24-Hour Totals:					7664

Peak Volume Information

	Hour	Volume
A.M.	715	608
P.M.	1645	585
Daily	715	608

Generated by SPS 5.0.48P

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **August 18. 2020**

To: **Joshua Jester** **EXT 2251**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**

Subject: **Financial Project No: 445296-1-22-01**

Roadway ID: 03504000

Project Name: Pine Ridge Road west of I-75

County: Collier

Type of Work: Reconstruction – Interchange Improvements

From MP: 3.140 – 3.809

Per your request, the attached traffic data forecasts are provided for the above roadway. These estimates were taken from the 2045 AADT PDF calculated from traffic counts provided by FDOT.

K =	9.0 %
D =	62.1 %
24 Hour T =	6.1 %
Design Hour T =	3.05 %
2019 AADT =	47500
Functional Class =	Urban Minor Art.

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

As requested, we have included the 24-hour traffic count for site 034526 & 034628.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03504000
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 7

LOCATION DESCRIPTION: Pine Ridge Rd west of I-75 (MP: 3.140 - 3.467)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility

If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	47500
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	66800

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 6.10%
Opening to Mid-Year: 6.10%
Mid-Year to Design-Year: 6.10%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	____	1.270	____
RURAL HIGHWAY:	0.960	____	1.350	____
URBAN HIGHWAY:	0.890	X	1.220	____
OTHER (Enter Factor and X):		____		____

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated December 1, 2000.
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: Brittany Nichols — Traffic Analyst Consultant — ATKINS
Name — Title — Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE...
8/18/2020 | 12:32 PM EDT
Signature — Date

Reviewed by: Kyle Purvis — District Statistics Administrator — FDOT
Name — Title — Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4...
8/18/2020 | 1:44 PM EDT
Signature — Date

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 7

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03504000 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	47500	288	0	0.5	6.10%	0.611	0.890
2020	48200	292	0	0.5	6.10%	0.610	0.890
2021	48900	295	0	0.5	6.10%	0.609	0.890
2022	49700	300	0	0.5	6.10%	0.607	0.890
2023	50400	303	0	0.5	6.10%	0.606	0.890
2024	51200	307	0	0.5	6.10%	0.605	0.890
2025	51900	311	311	0.5	6.10%	0.604	0.890
2026	52600	315	626	0.5	6.10%	0.603	0.890
2027	53400	319	945	0.5	6.10%	0.601	0.890
2028	54100	322	1267	0.5	6.10%	0.600	0.890
2029	54900	326	1593	0.5	6.10%	0.599	0.890
2030	55600	330	1923	0.5	6.10%	0.598	0.890
2031	56400	334	2257	0.5	6.10%	0.597	0.890
2032	57100	338	2595	0.5	6.10%	0.596	0.890
2033	57800	341	2936	0.5	6.10%	0.595	0.890
2034	58600	345	3281	0.5	6.10%	0.594	0.890
2035	59300	349	3630	0.5	6.10%	0.593	0.890
2036	60100	353	3983	0.5	6.10%	0.592	0.890
2037	60800	356	4339	0.5	6.10%	0.591	0.890
2038	61600	360	4699	0.5	6.10%	0.590	0.890
2039	62300	364	5063	0.5	6.10%	0.589	0.890
2040	63000	367	5430	0.5	6.10%	0.588	0.890
2041	63800	371	5801	0.5	6.10%	0.587	0.890
2042	64500	375	6176	0.5	6.10%	0.586	0.890
2043	65300	379	6555	0.5	6.10%	0.585	0.890
2044	66000	382	6937	0.5	6.10%	0.584	0.890
2045	66800	386	7323	0.5	6.10%	0.583	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 3319

Opening to Design Year ESAL Accumulation (1000s): 7012

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE...

8/18/2020 | 12:32 PM EDT

Signature | Date

Reviewed by: Kyle Purvis | District Statistics Administrator | FDOT

Name | Title | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4...

8/18/2020 | 1:44 PM EDT

Signature | Date

County: 03
Station: 4628
Description: PINE RIDGE RD, E OF CR 881/LIVINGSTON RD NHS CC
Start Date: 06/20/2019
Start Time: 0000

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	53	52	47	27	179	37	25	21	17	100	279
0100	28	31	27	30	116	16	12	22	11	61	177
0200	28	27	12	9	76	21	12	13	7	53	129
0300	13	12	19	18	62	14	16	27	21	78	140
0400	18	22	34	27	101	16	29	47	80	172	273
0500	26	32	51	65	174	57	114	159	185	515	689
0600	95	127	152	145	519	183	336	454	670	1643	2162
0700	175	213	267	311	966	496	631	767	684	2578	3544
0800	274	289	361	319	1243	664	604	677	584	2529	3772
0900	298	314	303	300	1215	469	481	505	478	1933	3148
1000	302	340	355	330	1327	413	433	429	412	1687	3014
1100	349	392	376	372	1489	401	390	392	423	1606	3095
1200	425	403	432	373	1633	356	446	435	433	1670	3303
1300	429	442	430	406	1707	407	402	395	402	1606	3313
1400	460	434	519	472	1885	352	344	370	371	1437	3322
1500	502	555	533	560	2150	339	385	382	411	1517	3667
1600	605	606	691	663	2565	355	382	376	404	1517	4082
1700	765	723	712	538	2738	352	375	369	363	1459	4197
1800	529	522	340	400	1791	314	298	301	239	1152	2943
1900	396	351	358	284	1389	255	201	190	213	859	2248
2000	261	287	315	266	1129	173	182	176	146	677	1806
2100	271	237	219	178	905	126	128	142	111	507	1412
2200	193	167	130	121	611	100	87	90	79	356	967
2300	104	96	78	63	341	65	48	49	31	193	534
24-Hour Totals:					26311					25905	52216

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	830	1292	715	2746	745	3864
P.M.	1645	2863	1215	1721	1645	4363
Daily	1645	2863	715	2746	1645	4363

Truck Percentage 5.03 4.71 4.87

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	84	19511	5393	25	741	118	27	308	96	6	0	0	2	0	0	1323	26311
W	80	19319	5285	24	641	112	36	314	83	6	0	0	5	0	0	1221	25905

Generated by SPS 5.0.48P

County: 03
Station: 4628
Description: PINE RIDGE RD, E OF CR 881/LIVINGSTON RD NHS CC
Start Date: 07/25/2018
Start Time: 1300

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	39	48	36	42	165	33	23	24	20	100	265
0100	23	16	24	20	83	15	18	9	7	49	132
0200	12	16	16	14	58	23	17	17	15	72	130
0300	15	11	20	14	60	14	23	28	13	78	138
0400	15	32	26	33	106	16	38	65	65	184	290
0500	44	42	61	73	220	106	113	181	177	577	797
0600	112	138	157	144	551	308	442	518	464	1732	2283
0700	229	238	289	271	1027	597	681	631	549	2458	3485
0800	253	286	280	291	1110	570	531	599	466	2166	3276
0900	309	283	301	295	1188	449	457	443	369	1718	2906
1000	265	318	330	322	1235	414	376	411	353	1554	2789
1100	371	367	361	380	1479	388	388	407	380	1563	3042
1200	411	399	390	397	1597	381	360	399	343	1483	3080
1300	391	414	427	363	1595	362	386	326	333	1407	3002
1400	446	416	412	448	1722	342	325	352	310	1329	3051
1500	491	501	556	526	2074	359	358	350	359	1426	3500
1600	598	618	590	641	2447	360	383	374	360	1477	3924
1700	628	644	523	441	2236	389	374	382	319	1464	3700
1800	429	398	382	340	1549	334	283	277	226	1120	2669
1900	358	316	258	286	1218	230	180	155	190	755	1973
2000	310	261	248	227	1046	161	165	155	153	634	1680
2100	220	226	188	144	778	119	127	98	99	443	1221
2200	126	103	84	109	422	90	79	84	58	311	733
2300	91	59	60	32	242	35	46	30	31	142	384
24-Hour Totals:					24208					24242	48450

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	1184	700	2458	700	3485
P.M.	1630	2503	1615	1506	1630	4000
Daily	1630	2503	700	2458	1630	4000

Truck Percentage 4.36 4.29 4.32

Classification Summary Database

Dir	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TotTrk	TotVol
E	111	18484	4557	13	543	114	5	266	111	3	0	0	1	0	0	1056	24208
W	108	18511	4584	7	527	88	23	295	86	12	0	0	1	0	0	1039	24242

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County: 03
Station: 4526
Description: CR-896/PINE RIDGE RD, 700 FT W OF LOGAN BLVD
Start Date: 07/10/2018
Start Time: 1500

	Direction: E					Direction: W					Combined
Time	1st	2nd	3rd	4th	Total	1st	2nd	3rd	4th	Total	Total
0000	29	36	37	26	128	14	18	12	10	54	182
0100	16	21	19	15	71	9	8	8	4	29	100
0200	8	13	9	5	35	5	12	7	15	39	74
0300	13	8	14	6	41	7	12	17	12	48	89
0400	0	1	2	0	3	15	28	60	75	178	181
0500	3	6	18	39	66	64	109	149	178	500	566
0600	58	90	103	124	375	215	351	463	521	1550	1925
0700	108	137	141	145	531	458	599	665	576	2298	2829
0800	146	142	182	190	660	491	447	471	419	1828	2488
0900	176	149	207	189	721	365	292	357	308	1322	2043
1000	191	184	206	198	779	266	297	276	275	1114	1893
1100	226	226	247	258	957	264	281	265	271	1081	2038
1200	292	314	301	312	1219	243	262	261	247	1013	2232
1300	266	283	291	275	1115	223	250	264	253	990	2105
1400	257	313	339	339	1248	225	255	273	234	987	2235
1500	327	357	388	460	1532	252	244	244	280	1020	2552
1600	435	422	524	542	1923	236	222	231	292	981	2904
1700	512	616	560	494	2182	237	265	273	276	1051	3233
1800	510	185	164	148	1007	187	200	175	198	760	1767
1900	167	254	276	236	933	180	139	135	135	589	1522
2000	225	253	215	199	892	112	105	109	83	409	1301
2100	216	192	173	132	713	74	97	70	48	289	1002
2200	151	111	103	84	449	44	38	39	46	167	616
2300	104	70	59	39	272	41	28	25	21	115	387
24-Hour Totals:					17852					18412	36264

Peak Volume Information

	Direction: E		Direction: W		Combined Directions	
	Hour	Volume	Hour	Volume	Hour	Volume
A.M.	845	722	715	2331	715	2900
P.M.	1645	2230	1645	1067	1645	3297
Daily	1645	2230	715	2331	1645	3297

Generated by SPS 5.0.48P

Florida Department of Transportation

RON DESANTIS
GOVERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

KEVIN J. THIBALT, P.E.
SECRETARY

MEMORANDUM

Date: **August 18. 2020**

To: **Joshua Jester** **EXT 2251**

From: **Brittany Nichols, Traffic Analyst/RCI Coordinator**

Subject: **Financial Project No: 445296-1-22-01**

Roadway ID: 03504000

Project Name: DDI Core under I-75 overpass

County: Collier

Type of Work: Reconstruction – Interchange Improvements

From MP: 3.140 – 3.809

Per your request, the attached traffic data forecasts are provided for the above roadway. The estimated numbers used were collected and projected as a part of the project and provided by the consultant project manager: Nicole Harris (Nicole.Harris@stantec.com).

K =	9.0 %
D =	65.7 %
24 Hour T =	6.1 %
Design Hour T =	3.05 %
2019 AADT =	41600
Functional Class =	Urban Minor Art.

The attached 18-KIP Equivalent Single Axle Loading Accumulations are based on the above information and have been prepared in accordance with the Central Offices memo of December 1, 2000, reflecting the current Equivalency Factors.

Please feel free to contact Brittany Nichols at extension 2753 if you have any questions.

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

FIN #: 445296-1-52-01
COUNTY: Collier
ROADWAYID: 03504000
PROJECT DESCRIPTION: Reconstruction - Interchange Improvements

LOCATION #: 9

LOCATION DESCRIPTION: DDI Core under I-75 overpass (MP: 3.467 - 3.809)

GROWTH RATE FORMULA

A: Interpolation
B: Enter Growth Rate
C: Enter All AADTs
D: New Facility
If "A" select an interpolation function
If "B" enter rate as decimals (1%=1.01)
If ""C", or "D" continue to next section

Choose A, B, C, or D here: A

Linear Growth Rate X %
Compounded Growth Rate ____ %
Decaying Growth Rate ____ %
(select one)

DESIGN INFORMATION

		AADT
Existing Year	2019	41600
Opening Year	2025	N/A
Mid-Design Year	2035	N/A
Design Year	2045	61800

Note: AADT values have been rounded to the nearest 100

Daily Direction Split (50% or 100%): 50%
Lanes in One Direction: 3

T24 values
Existing to Opening Year: 6.10%
Opening to Mid-Year: 6.10%
Mid-Year to Design-Year: 6.10%

2000 EQUIVALENCY FACTORS |u(1)|

(selected with an X)	FLEXIBLE PAVEMENT SN = 5/THICK		RIGID PAVEMENT SN = 12/THICK	
RURAL FREEWAY:	1.050	____	1.600	____
URBAN FREEWAY:	0.900	____	1.270	____
RURAL HIGHWAY:	0.960	____	1.350	____
URBAN HIGHWAY:	0.890	X	1.220	____
OTHER (Enter Factor and X):		____		____

(1) Equivalency Factors are based on Updated Pavement Damage Factors Memorandum, dated December 1, 2000.
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:	Brittany Nichols	Traffic Analyst Consultant	ATKINS
	Name	Title	Org. Unit or Firm
	DocuSigned by: Brittany Nichols 3491A225DF874FE...	8/18/2020 | 12:32 PM EDT	
	Signature	Date	
Reviewed by:	Kyle Purvis	District Statistics Administrator	FDOT
	Name	Title	Org. Unit or Firm
	DocuSigned by: Kyle Purvis 35E9D52E12B14A4...	8/18/2020 | 1:44 PM EDT	
	Signature	Date	

18 kip EQUIVALENT SINGLE AXLE LOAD ANALYSIS - LOCATION 9

PROJECT TRAFFIC FOR PD&E and DESIGN ANALYSIS INFO / FACTORS

YEARS: *2019 to 2045*

SECTION #: 03504000 **COUNTY:** Collier **FIN #:** 445296-1-52-01

FLEXIBLE PAVEMENT URBAN HIGHWAY 0.890

SN=5/THICK Reconstruction - Interchange Improvements A

YEAR	AADT	ESAL (1000S)	ACCUM (1000s)	D	T	LF	EF
2019	41600	257	0	0.5	6.10%	0.622	0.890
2020	42300	261	0	0.5	6.10%	0.621	0.890
2021	43100	265	0	0.5	6.10%	0.619	0.890
2022	43900	269	0	0.5	6.10%	0.618	0.890
2023	44700	273	0	0.5	6.10%	0.616	0.890
2024	45400	277	0	0.5	6.10%	0.615	0.890
2025	46200	281	281	0.5	6.10%	0.613	0.890
2026	47000	285	566	0.5	6.10%	0.612	0.890
2027	47800	290	856	0.5	6.10%	0.611	0.890
2028	48500	293	1149	0.5	6.10%	0.609	0.890
2029	49300	297	1446	0.5	6.10%	0.608	0.890
2030	50100	302	1748	0.5	6.10%	0.607	0.890
2031	50900	306	2054	0.5	6.10%	0.605	0.890
2032	51700	310	2364	0.5	6.10%	0.604	0.890
2033	52400	314	2678	0.5	6.10%	0.603	0.890
2034	53200	318	2996	0.5	6.10%	0.602	0.890
2035	54000	322	3318	0.5	6.10%	0.601	0.890
2036	54800	326	3644	0.5	6.10%	0.599	0.890
2037	55500	329	3973	0.5	6.10%	0.598	0.890
2038	56300	334	4307	0.5	6.10%	0.597	0.890
2039	57100	338	4645	0.5	6.10%	0.596	0.890
2040	57900	342	4987	0.5	6.10%	0.595	0.890
2041	58600	345	5332	0.5	6.10%	0.594	0.890
2042	59400	349	5681	0.5	6.10%	0.593	0.890
2043	60200	353	6034	0.5	6.10%	0.592	0.890
2044	61000	357	6391	0.5	6.10%	0.590	0.890
2045	61800	361	6752	0.5	6.10%	0.589	0.890

Opening to Mid-Design Year ESAL Accumulation (1000s): 3037

Opening to Design Year ESAL Accumulation (1000s): 6471

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: Brittany Nichols | Traffic Analyst Consultant | ATKINS

Name | Title | Org. Unit or Firm

DocuSigned by: Brittany Nichols 3491A225DF874FE... 8/18/2020 | 12:32 PM EDT

Signature | Date

Kyle Purvis | District Statistics Administrator | FDOT

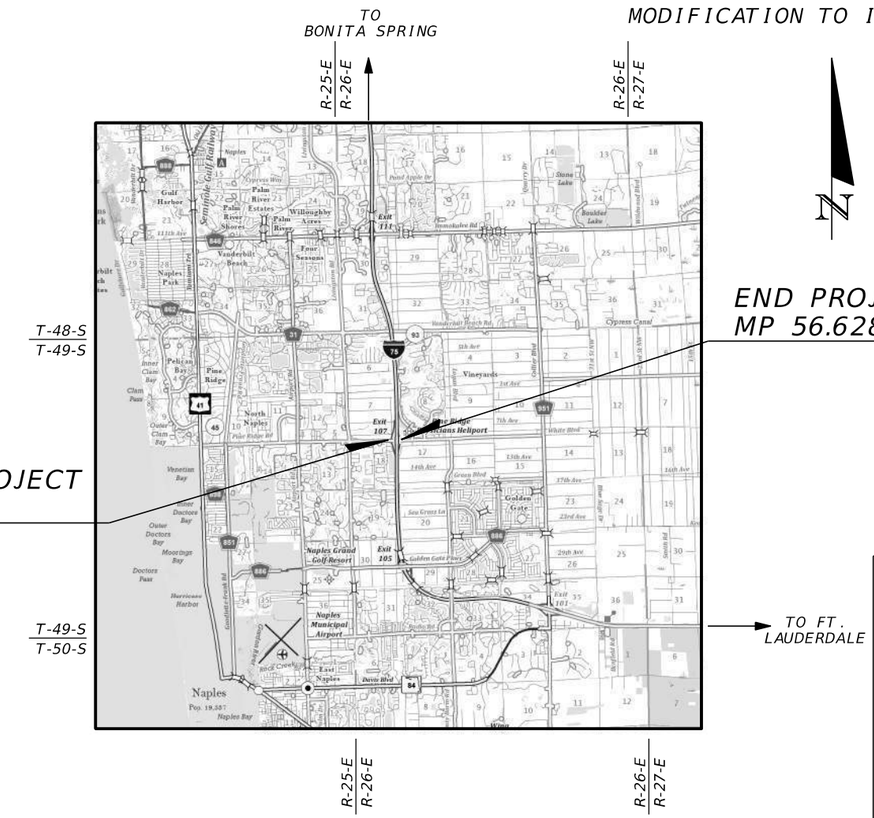
Reviewed by: Name | Org. Unit or Firm

DocuSigned by: Kyle Purvis 35E9D52E12B14A4... 8/18/2020 | 1:44 PM EDT

Signature | Date

Appendix J

Pine Ridge Road Typical Section Package



STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 445296-1-22-01
COLLIER COUNTY (03175)
STATE ROAD NO. 93 (I-75)
MODIFICATION TO I-75 RAMPS AND PINE RIDGE ROAD

APPROVED BY:

DONALD R. HOLCOMB
No 51970

THIS DOCUMENT HAS BEEN DIGITALLY
SIGNED AND SEALED BY:

PRINTED COPIES OF THIS DOCUMENT
NOT ARE CONSIDERED SIGNED AND SEALED
THE SIGNATURE MUST BE VERIFIED
ON THE ELECTRONIC COPIES.

HDR
2601 CATTLEMEN ROAD, SUITE 400
SARASOTA, FL 34232-6233
DONALD R. HOLCOMB, PE NO. 51970

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

TYPICAL SECTION PACKAGE

SHEET NO.	SHEET DESCRIPTION
1	COVER SHEET
2-10	TYPICAL SECTION NO. 1 TO NO. 9

TYPICAL SECTION CONCURRENCE

FDOT DISTRICT DESIGN ENGINEER

COUNTY DESIGN ENGINEER

DESIGN SPEED AND POSTED SPEED CONCURRENCE:

FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

FDOT DISTRICT DESIGN ENGINEER

CONTEXT CLASSIFICATION CONCURRENCE:

FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER

8/18/2020 7:26:12 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	(X)	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- (X) STRATEGIC INTERMODAL SYSTEM
- ( ) 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

CRITERIA

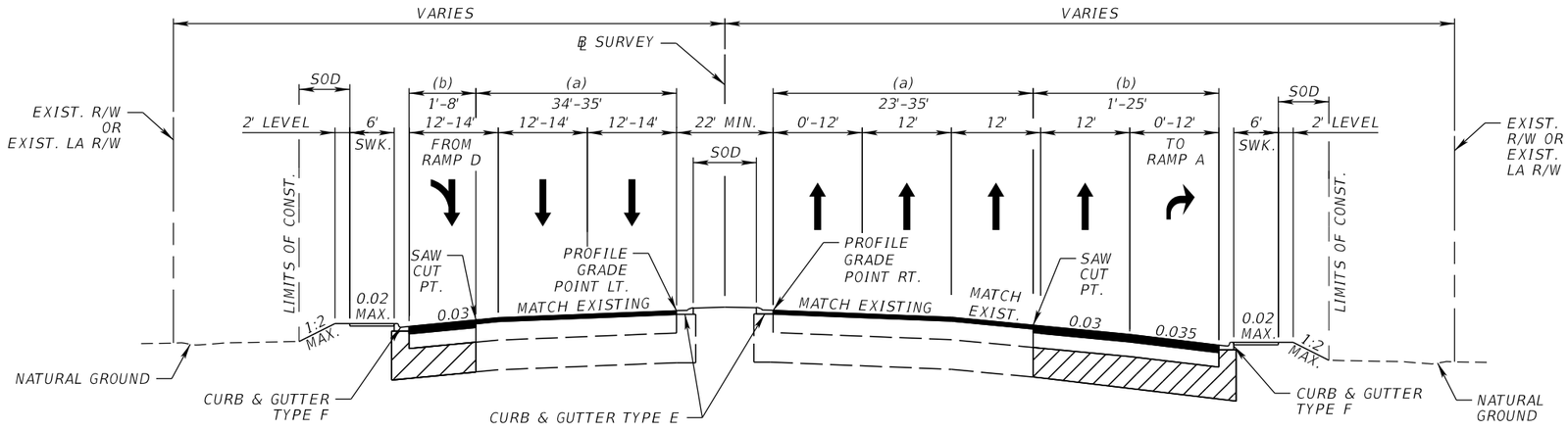
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH
2. BIKE LANES
3. MULTIPLE LANES HAVE CROSS SLOPES IN SAME DIRECTION

TYPICAL SECTION No. 1



(a) MILLING & RESURFACING
(b) WIDENING

TYPICAL SECTION No. 1
PINE RIDGE ROAD
WEST OF DIVERGING DIAMOND INTERCHANGE CROSS-OVER

STA. 122+03.86 TO STA 128+26.62 (RT.)
STA. 125+83.74 TO STA. 128+76.84 (LT.)

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 47,500
ESTIMATED OPENING YEAR = 2025 AADT = 53,800
ESTIMATED DESIGN YEAR = 2045 AADT = 66,800
K = 9% D = 62.1% T = 6.1% (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

FINANCIAL PROJECT ID	SHEET NO.
445296-1-22-01	2

8/18/2020 7:05:11 PM

PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
(X) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
( ) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
(X) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
(X) STRATEGIC INTERMODAL SYSTEM
( ) 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

CRITERIA

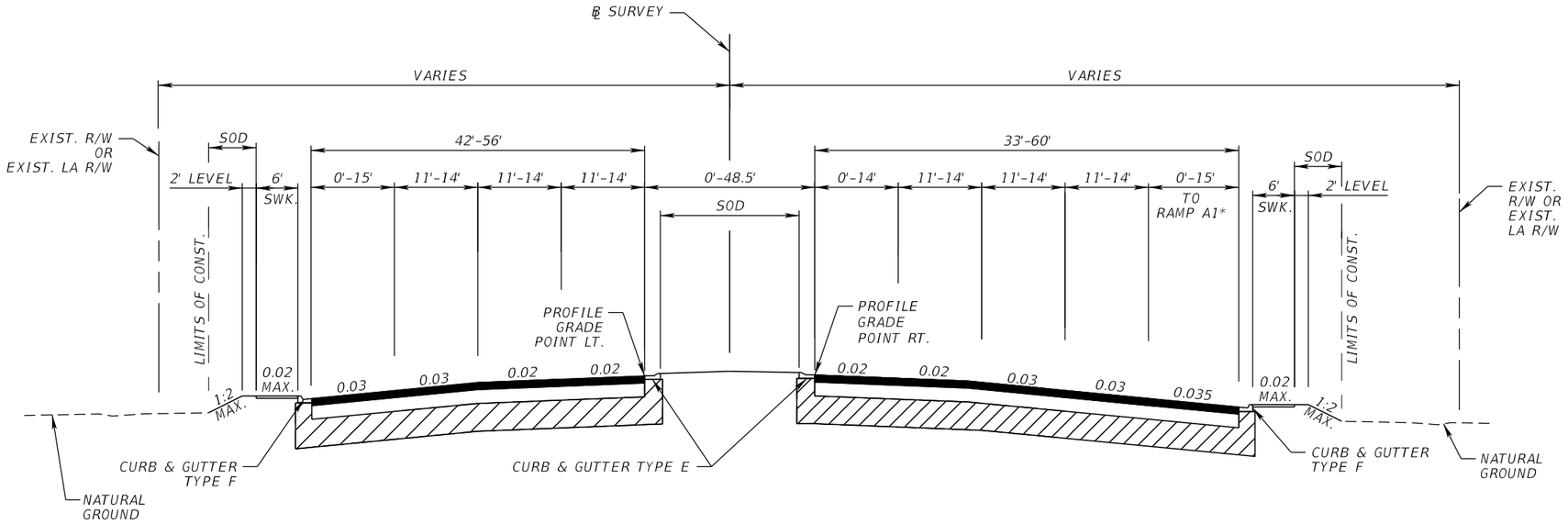
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH
2. BIKE LANES
3. MULTIPLE LANES HAVE CROSS SLOPES IN SAME DIRECTION

TYPICAL SECTION No. 2



TYPICAL SECTION No. 2
PINE RIDGE ROAD - DIVERGING DIAMOND

STA. 128+26.62 TO STA. 134+56.06 (RT.)*
STA. 128+76.84 TO STA. 132+72.41 (LT.)*

STA. 139+61.98 TO STA. 143+49.34 (RT.)**
STA. 137+30.16 TO STA. 143+81.22 (LT.)**

TRAFFIC DATA*

CURRENT YEAR = 2019 AADT = 47,500
ESTIMATED OPENING YEAR = 2025 AADT = 53,800
ESTIMATED DESIGN YEAR = 2045 AADT = 66,800
K = 9% D = 62.1% T = 6.1% (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

TRAFFIC DATA**

CURRENT YEAR = 2019 AADT = 41,600
ESTIMATED OPENING YEAR = 2025 AADT = 49,300
ESTIMATED DESIGN YEAR = 2045 AADT = 61,800
K = 9% D = 65.7% T = 6.1% (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

FINANCIAL PROJECT ID	SHEET NO.
445296-1-22-01	3

8/18/2020 7:05:19 PM

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	(X)	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

( )	NATIONAL HIGHWAY SYSTEM
(X)	STRATEGIC INTERMODAL SYSTEM
( )	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

CRITERIA

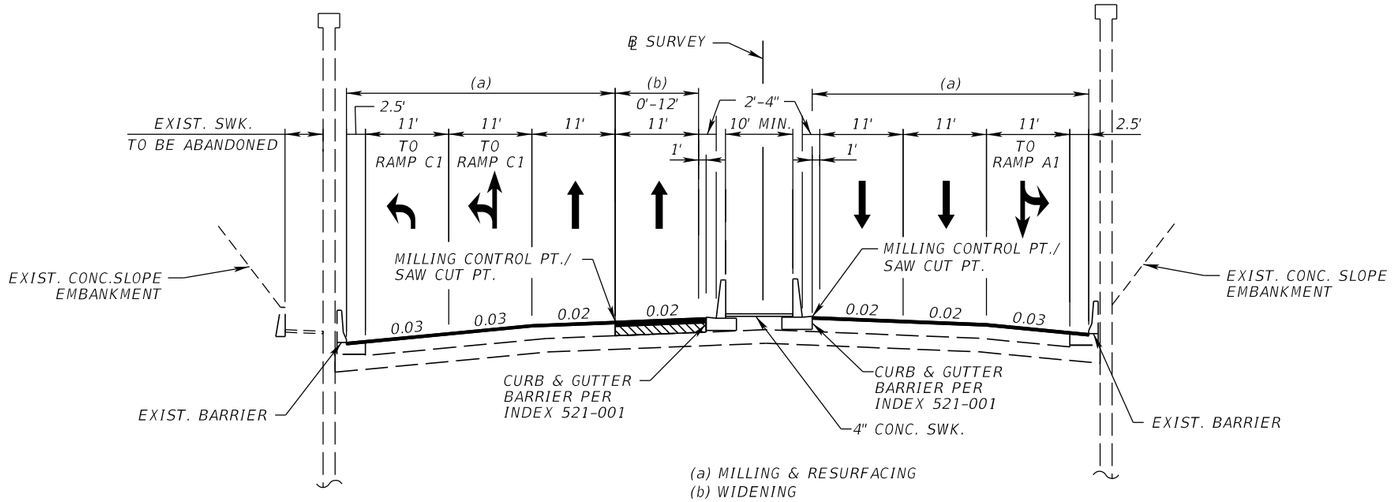
(X)	NEW CONSTRUCTION / RECONSTRUCTION
( )	RESURFACING (LA FACILITIES)
( )	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH
2. BIKE LANES
3. MULTIPLE LANES HAVE CROSS SLOPES IN SAME DIRECTION

TYPICAL SECTION No. 3



(a) MILLING & RESURFACING
(b) WIDENING

TYPICAL SECTION No. 3
PINE RIDGE ROAD - UNDER I-75 OVERPASS

STA. 134+56.06 TO STA. 139+61.98 (RT.)
STA. 132+72.41 TO STA. 137+30.16 (LT.)

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 41,600
ESTIMATED OPENING YEAR = 2025 AADT = 49,300
ESTIMATED DESIGN YEAR = 2045 AADT = 61,800
K = 9% D = 65.7% T = 6.1% (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	(X)	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- (X) STRATEGIC INTERMODAL SYSTEM
- ( ) 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

CRITERIA

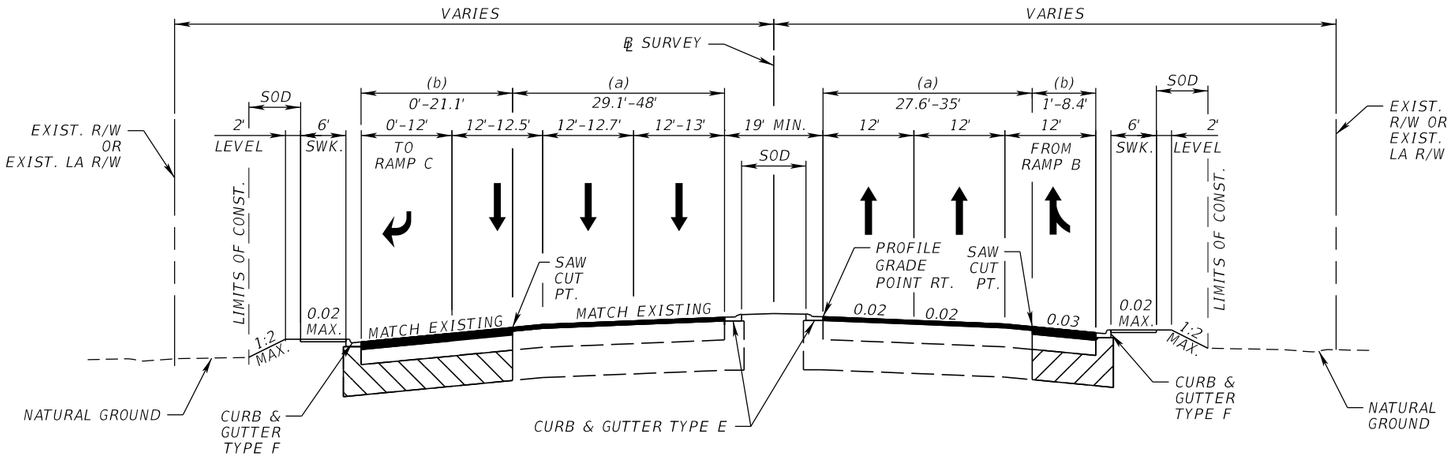
- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH
2. BIKE LANES
3. MULTIPLE LANES HAVE CROSS SLOPES IN SAME DIRECTION

TYPICAL SECTION No. 4



(a) MILLING & RESURFACING
(b) WIDENING

TYPICAL SECTION No. 4
PINE RIDGE ROAD
EAST OF DIVERGING DIAMOND INTERCHANGE CROSS-OVER

STA. 143+49.34 TO STA 145+61.24 (RT.)
STA. 143+81.22 TO STA. 148+31.68 (LT.)

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 37,000
ESTIMATED OPENING YEAR = 2025 AADT = 43,100
ESTIMATED DESIGN YEAR = 2045 AADT = 54,500
K = 9% D = 63.4% T = 6.1% (24 HOUR)
DESIGN SPEED = 35 MPH
POSTED SPEED = 35 MPH

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
( ) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
(X) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

(X) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
( ) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

(X) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

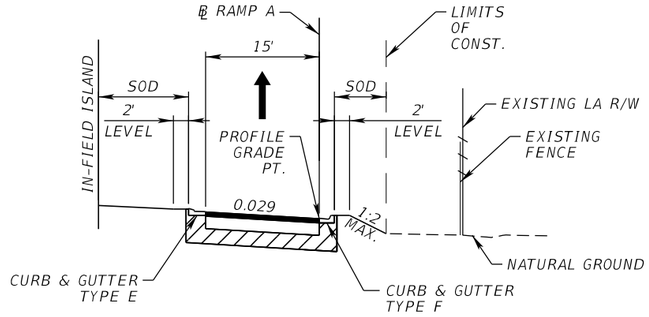
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

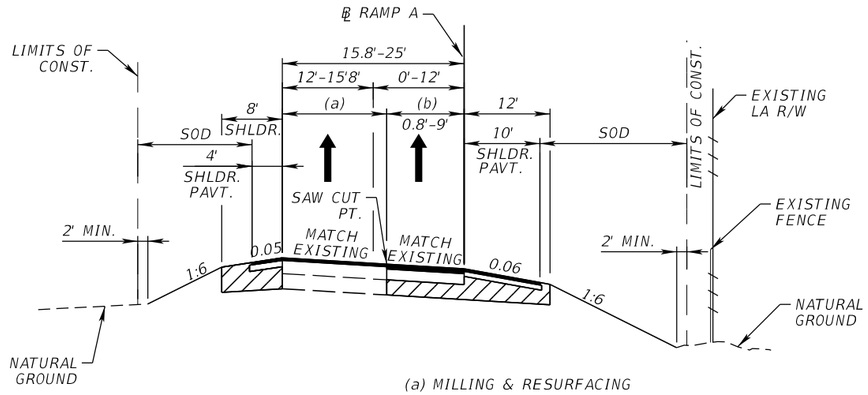
1. BORDER WIDTH

TYPICAL SECTION No. 5A & 5B



TYPICAL SECTION No. 5A
EB PINE RIDGE RD. TO I-75 SB ON-RAMP (RAMP A)

STA. 203+50.11 TO STA 206+87.68



(a) MILLING & RESURFACING
(b) WIDENING

TYPICAL SECTION No. 5B
I-75 SB ON-RAMP (RAMP A)

STA. 200+00.00 TO STA 203+50.11

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 6,600
ESTIMATED OPENING YEAR = 2025 AADT = 6,900
ESTIMATED DESIGN YEAR = 2045 AADT = 7,300
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

(X)	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

(X) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

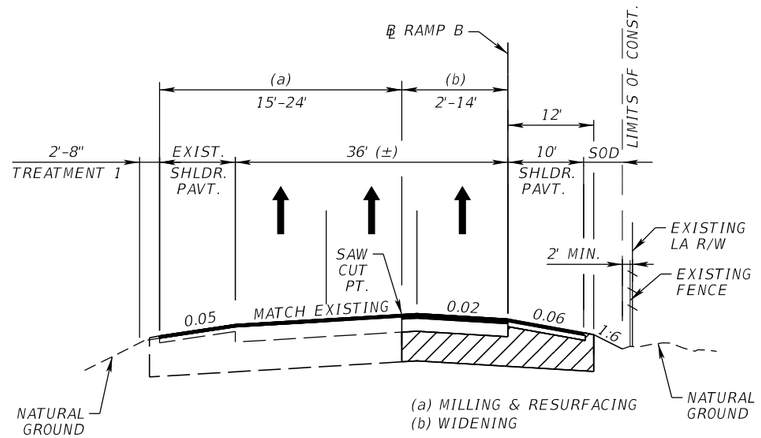
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH

TYPICAL SECTION No. 6A & 6B



TYPICAL SECTION No. 6A
I-75 NB OFF-RAMP (RAMP B)
STA. 502+49.26 TO STA. 507+50.95

TYPICAL SECTION No. 6B
I-75 NB OFF-RAMP TO EB PINE RIDGE RD. (RAMP B)
STA. 507+50.95 TO STA. 509+81.04

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 5,600
ESTIMATED OPENING YEAR = 2025 AADT = 6,500
ESTIMATED DESIGN YEAR = 2045 AADT = 7,200
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

FINANCIAL PROJECT ID	SHEET NO.
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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

(X)	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

(X) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

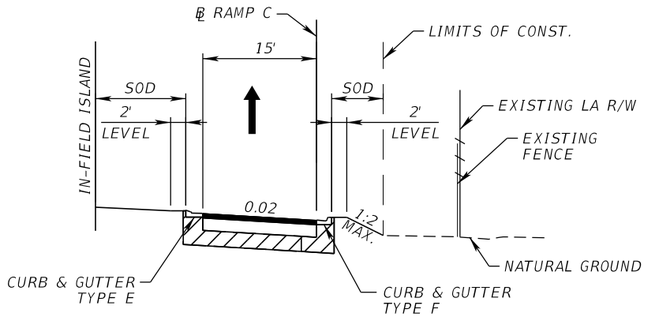
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

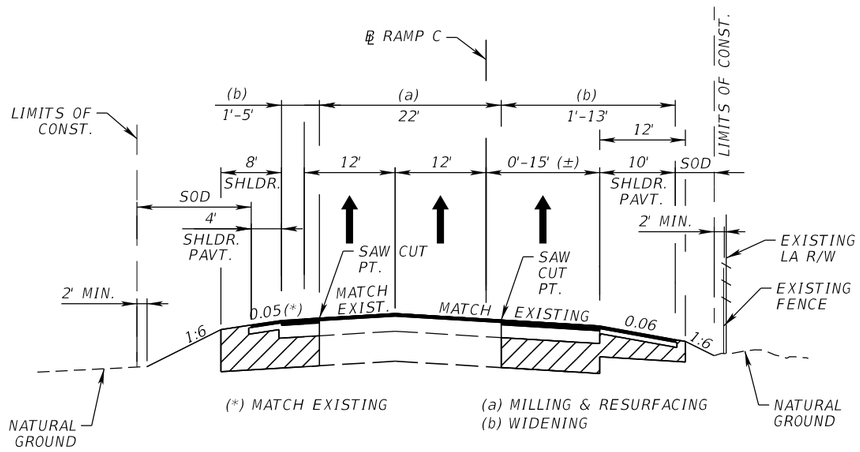
1. BORDER WIDTH

TYPICAL SECTION No. 7A & 7B



TYPICAL SECTION No. 7A
WB PINE RIDGE RD. TO I-75 NB ON-RAMP (RAMP C)

STA. 600+58.27 TO STA. 604+17.14



TYPICAL SECTION No. 7B
I-75 NB ON-RAMP (RAMP C)

STA. 604+17.14 TO STA. 608+68.30

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 10,500
ESTIMATED OPENING YEAR = 2025 AADT = 12,100
ESTIMATED DESIGN YEAR = 2045 AADT = 14,400
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

FINANCIAL PROJECT ID	SHEET NO.
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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

(X)	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

(X) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
( ) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
( ) 3 - RESTRICTIVE w/660 ft. Connection Spacing
( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing
( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

CRITERIA

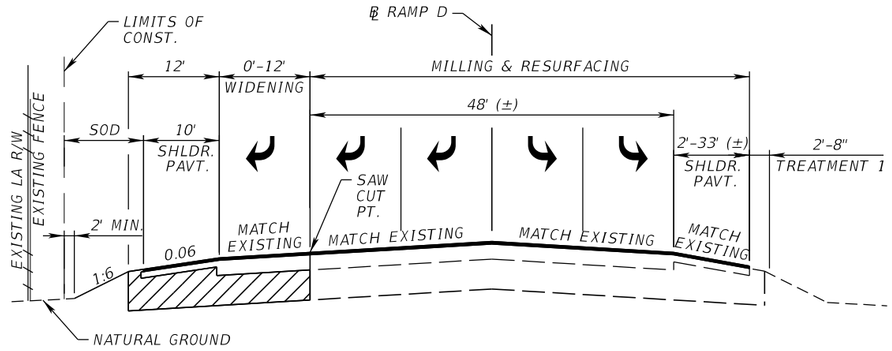
(X) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

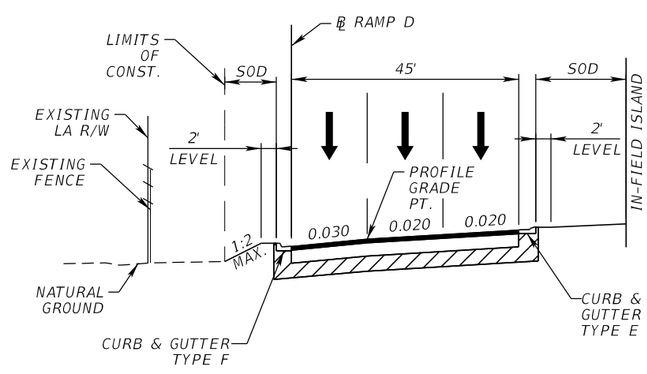
1. BORDER WIDTH

TYPICAL SECTION No. 8A & 8B



TYPICAL SECTION No. 8A
I-75 SB OFF-RAMP (RAMP D)

STA. 903+51.94 TO STA. 910+95.02



TYPICAL SECTION No. 8B
I-75 SB OFF-RAMP TO WB PINE RIDGE RD. (RAMP D)

STA 900+92.84 TO STA. 903+51.94

TRAFFIC DATA

CURRENT YEAR = 2019 AADT = 11,000
ESTIMATED OPENING YEAR = 2025 AADT = 12,600
ESTIMATED DESIGN YEAR = 2045 AADT = 14,600
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	( )	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
(X)	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

(X)	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
( )	MINOR ARTERIAL		

HIGHWAY SYSTEM

(X)	NATIONAL HIGHWAY SYSTEM
( )	STRATEGIC INTERMODAL SYSTEM
( )	STATE HIGHWAY SYSTEM
( )	OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

(X)	1 - FREEWAY
( )	2 - RESTRICTIVE w/Service Roads
( )	3 - RESTRICTIVE w/660 ft. Connection Spacing
( )	4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
( )	5 - RESTRICTIVE w/440 ft. Connection Spacing
( )	6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( )	7 - BOTH MEDIAN TYPES

CRITERIA

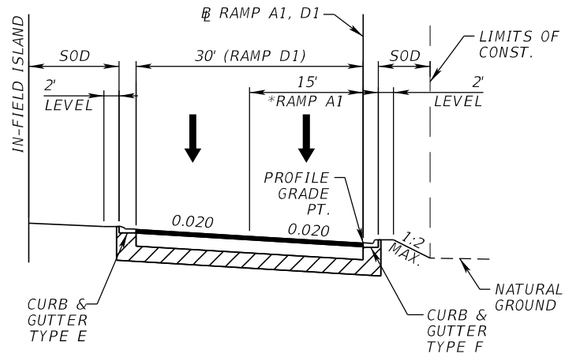
(X)	NEW CONSTRUCTION / RECONSTRUCTION
( )	RESURFACING (LA FACILITIES)
( )	RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

DESIGN VARIATIONS

1. BORDER WIDTH

TYPICAL SECTION No. 9A & 9B

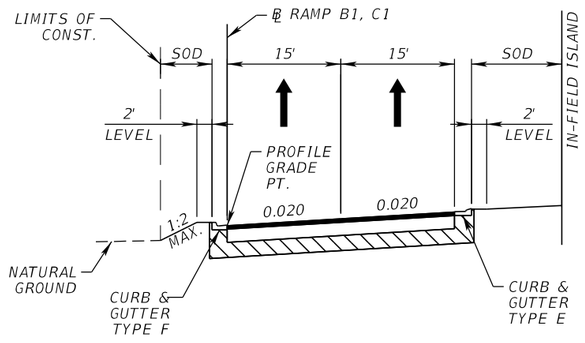


*RAMP D1 SHOWN, RAMP A1 IS MIRROR OF CROSS SLOPE AND LANE DIRECTION ARROW

TYPICAL SECTION No. 9A

WB PINE RIDGE RD. TO I-75 SB ON-RAMP (RAMP A1)
I-75 SB OFF-RAMP TO EB PINE RIDGE RD. (RAMP D1)

STA. 300+68.98 TO STA. 302+29.02 (RAMP A1)
STA. 800+60.71 TO STA. 801+38.03 (RAMP D1)



TYPICAL SECTION No. 9B

I-75 NB OFF-RAMP TO WB PINE RIDGE RD. (RAMP B1)
EB PINE RIDGE RD. TO I-75 NB ON-RAMP (RAMP C1)

STA. 400+47.99 TO STA. 401+35.07 (RAMP B1)
STA. 701+41.73 TO STA. 703+31.07 (RAMP C1)

TRAFFIC DATA - RAMP A1

CURRENT YEAR = 2019 AADT = 6,600
ESTIMATED OPENING YEAR = 2025 AADT = 6,900
ESTIMATED DESIGN YEAR = 2045 AADT = 7,300
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

TRAFFIC DATA - RAMP B1

CURRENT YEAR = 2019 AADT = 5,600
ESTIMATED OPENING YEAR = 2025 AADT = 6,500
ESTIMATED DESIGN YEAR = 2045 AADT = 7,200
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

TRAFFIC DATA - RAMP C1

CURRENT YEAR = 2019 AADT = 10,500
ESTIMATED OPENING YEAR = 2025 AADT = 12,100
ESTIMATED DESIGN YEAR = 2045 AADT = 14,400
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

TRAFFIC DATA - RAMP D1

CURRENT YEAR = 2019 AADT = 11,000
ESTIMATED OPENING YEAR = 2025 AADT = 12,600
ESTIMATED DESIGN YEAR = 2045 AADT = 14,600
K = 9% D = 100% T = 7.5% (24 HOUR)
DESIGN SPEED = 45 MPH / 25 MPH
POSTED SPEED = 45 MPH / 25 MPH

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