I-75/SR 884 Interchange Modification Report (IMR) Reevaluation

Financial Project ID: 413065-1

Prepared for:

Florida Department of Transportation – District 1

6/9/2020

Interchange Modification Report (IMR) Reevaluation

I-75/SR 884 IMR Reevaluation

FPID #: 413065-1

Florida Department of Transportation

Determination of Engineering and Operational Acceptability

Acceptance of this document indicates successful completion of the review and determination of engineering and operational acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

Requestor	DocuSigned by: Kati Sherrard F32DDD591732411...	6/11/2020 | 5:18 PM
	Kati Sherrard, PE, CPM District One Interstate Program Manager	Date
Interchange Review Coordinator	DocuSigned by: Christopher Simpron E637CC312BAD4D3...	6/11/2020 | 5:47 PM E
	Christopher Simpron District One Interchange Coordinator	Date
Systems Management Administrator	DocuSigned by: Jenna Bowman 4AD03E6A337F4C1...	7/1/2020 | 4:53 PM EDT
	Jenna Bowman, PE Systems Implementation Office – Central Office	Date
State Chief Engineer	DocuSigned by: Will Watts, P.E. 022E6284290B41A...	7/7/2020 | 4:21 PM EDT
	Will Watts, PE Central Office	Date

SYSTEMS IMPLEMENTATION OFFICE

QUALITY CONTROL CERTIFICATION FOR INTERCHANGE ACCESS REQUEST SUBMITTAL

Submittal Date: 4/25/2020

FM Number: 413065-1

Project Title: I-75/SR 884 Interchange Modification Report (IMR) Re-evaluation

District: Five

Requestor: Kati Sherrard Phone: 863-519-2590

District IRC: Christopher Simpron Phone: 863-519-2343

Document Type: ☐ MLOU ☐ IJR ☐ IMR ☐ IOAR ☒ OTHER IMR Re-evaluation

Status of Document (Only complete documents will be submitted for review; however, depending on the complexity of the project, interim reviews may be submitted as agreed upon in the MLOU)

Quality Control (QC) Statement

This document has been prepared following FDOT Procedure Topic No. 525-030-160 (New or Modified Interchanges) and complies with the FHWA two policy requirements. Appropriate District level quality control reviews have been conducted and all comments and issues have been resolved to their satisfaction. A record of all comments and responses provided during QC review is available in the project file or Electronic Review Comments (ERC) system.

DocuSigned by:
Kati Sherrard
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Requestor _____ Date: 6/11/2020 | 5:18 PM EDT

Kati Sherrard

DocuSigned by:
Christopher Simpron
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IRC _____ Date: 6/11/2020 | 5:47 PM EDT

Christopher Simpron

Quality Control Checklist and Review Log
Interchange Access Request Proposals

Project Name: **I-75/SR 884 Interchange Modification Report (IMR) Re-evaluation**

FDOT Project Manager: **Kati Sherrard**

FPID No. **413065-1**

IRC: **Christopher Simpron**

No.	ITEM	READY FOR REVIEW	
		CHECKED BY	DATE
1	**Travel Demand Forecasting**		
	Has the latest version of approved model been used? Have all adjustments been made per FDOT guidelines and MLOU and reviewed?		5/27/2020
	Have the traffic factors been reviewed and checked to make sure K, D, and T factors are reasonable?		5/27/2020
	Did the project traffic development follow FDOT Traffic Forecasting Handbook and MLOU?		5/27/2020
	Have existing and future traffic volumes been checked for reasonableness?		5/27/2020
2	**Operational Analysis**		
	Are the inputs into traffic software correct?	P. Rajashekaru	5/27/2020
	Has the validation/calibration of microsimulation been properly documented?	P. Rajashekaru	5/27/2020
	Are operational analysis results reasonable?	P. Rajashekaru	5/27/2020
3	**Safety Analysis**		
	Has appropriate safety analysis been performed to quantify impacts of the recommended improvements?	P. Rajashekaru	5/27/2020
4	**Concept Design**		
	Does the proposed design meet minimum design standards?		5/27/20
	Have the exceptions and variations, if any, been justified?		5/27/20
5	**Conceptual Signing Plan**		
	Has a conceptual signing plan been reviewed, checked to make sure it can be signed and meets MUTCD?		5/27/20
6	**FHWA's Two Policy Points**		
	Does the proposal satisfy FHWA's policy points?	P. Rajashekaru	5/27/2020
7	**Report Review**		
	Has the report been reviewed for grammatical and editorial errors?		6/09/2020

PROFESSIONAL ENGINEER CERTIFICATE

Financial Project ID: 413065-1

Project: I-75 at SR 884 Interchange Modification Report (IMR) Reevaluation

County: Lee

FDOT District: One

I, Jorge, Florida P.E. Number 67397, have prepared and reviewed the I-75 at SR 884 IMR Reevaluation. I have specifically followed the guidelines as adopted by the Florida Department of Transportation, FDOT Policy No. 000-525-015-h, and FDOT Procedure No. 525-030-160-i. Based on traffic count information, general data sources, and other pertinent information, the IMR Reevaluation has been prepared using current traffic engineering, transportation planning, and Florida Department of Transportation practices and procedures.

Vanasse Hangen Brustlin, Inc.

225 East Robinson Street, Suite 300,

Orlando, FL 32801

Jorge Tolosa, P.E. # 67397

June 9, 2020

Date

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Executive Summary

Introduction

The Florida Department of Transportation (FDOT) is conducting this Interchange Modification Report (IMR) re-evaluation for the I-75 at SR 884 (Colonial Boulevard) interchange, located in Lee County, Florida. I-75 is a six lane (three lanes in each direction) north-south interstate facility in the vicinity of the existing SR 884 interchange. The posted speed limit on I-75 is 70 mph. SR 884 is a six-lane divided urban principal arterial in the vicinity of the interchange.

The IMR was approved on August 7, 2017 documenting the future reconstruction of the interchange to a Diverging Diamond Interchange (DDI) configuration. Other improvements along SR 884 include a Continuous Flow Intersection (CFI) to the west at the intersection of Six Mile Cypress Parkway/Ortiz Avenue and a Superstreet intersection to the east at the Forum Boulevard intersection. The approved 2017 IMR also considered construction of northbound and southbound auxiliary lanes on I-75 between the SR 884 and SR 82 (MLK Jr. Boulevard) interchange to the north. Reconstruction of the interchange is scheduled to be let in June 2020 and will proceed as a design-build project.

This re-evaluation of the IMR is developed in accordance with the FDOT Policy No. 000-525-015, "Approval of New or Modified Access to Limited Access Highways on the State Highway System (SHS)"; FDOT Interchange Access Request User's Guide (IARUG), New or Modified Interchanges FDOT Procedure No. 525-030-160; and the Project Traffic Forecasting FDOT Procedure No. 525-030-120.

The objective of the IMR re-evaluation is to accommodate the following proposed modifications to the approved 2017 IMR concept as part of the design-build process:

- The northbound on-ramp at the I-75 at SR 884 interchange will be widened from the approved one lane to proposed two lanes at the gore point to provide for improved operations at the ramp merge area.
- The I-75 southbound off ramp at the SR 884 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.
- Similarly, the northbound off ramp at the I-75 at SR 82 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.

The project location map is shown in **Figure A.**

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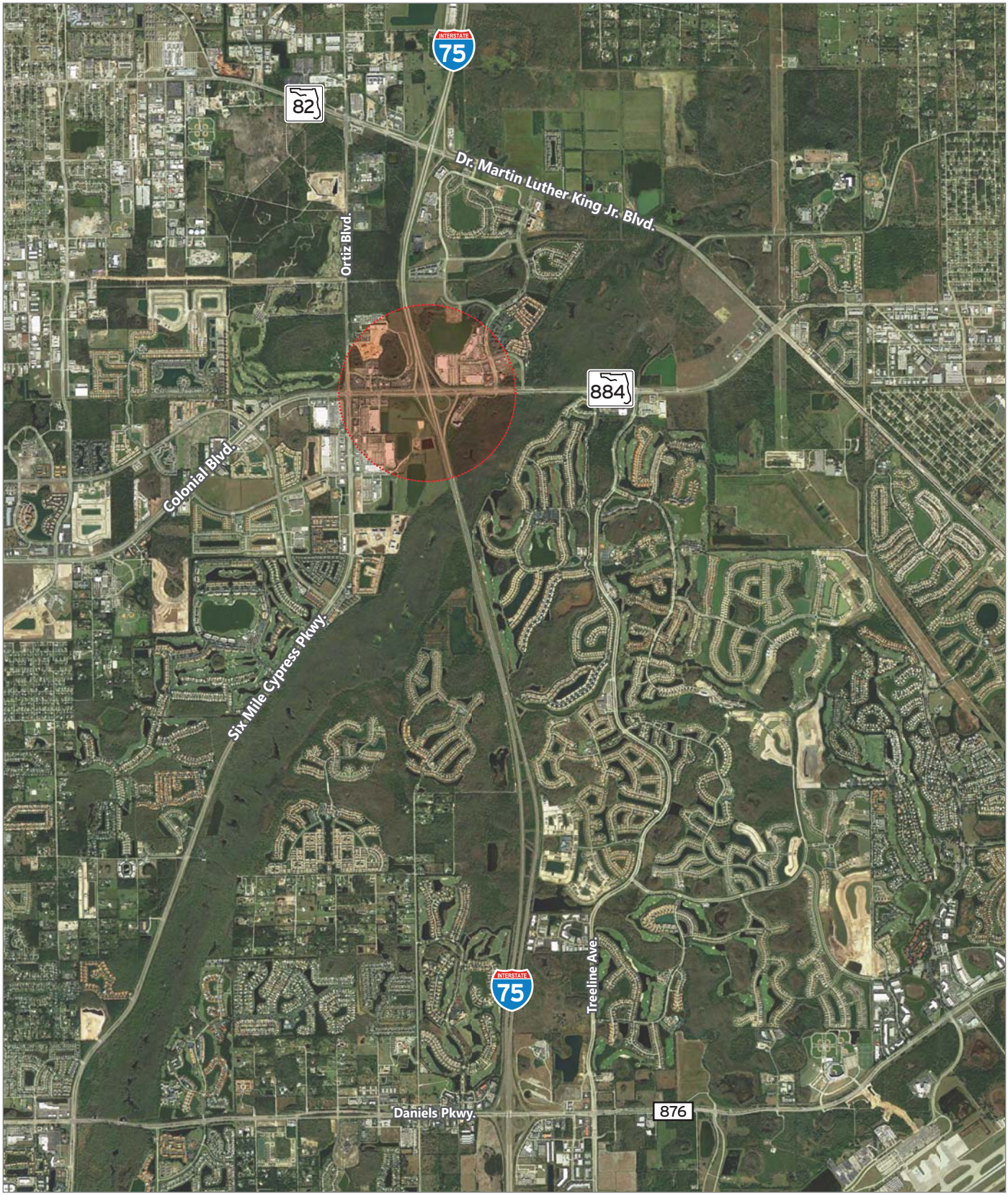

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Project Location

FDOT

Figure A

Project Location
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation

Purpose and Need

The purpose and need for the interchange modifications were identified in the previously approved 2017 IMR and are summarized below:

- To help serve travel demands created by anticipated countywide population and employment growth and is anticipated to contribute to better traffic operation.
- To enhance overall safety, capacity, and mobility within Lee County, since SR 884 is a major principal arterial and the future land use designation along this corridor is intensive commercial.
- SR 884, a regional facility, is part of the evacuation route network established by the Florida Division of Emergency Management. The improvements to interchange of I-75 and SR 884 are anticipated to enhance evacuation capacity and traffic circulation, which will improve evacuation and response times

Compliance with FHWA Policy Points

***Policy Point 1**: An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, and ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (Title 23, Code of Federal Regulations (CFR), paragraphs 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access should include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

Response:

As demonstrated in the study analysis results, the proposed improvements under the Build alternative provide traffic operational benefit over the No Build alternative within the study area. Based on safety analysis, the Build alternative is anticipated to have a similar or a better safety profile compared to the No Build

Alternative. The Build alternative provides lane balance per AASHTO standards at the I-75 NB exit ramp to SR 82 and I-75 southbound SB exit ramp to SR 884 and is therefore anticipated to provide a safer freeway weave segment with reduced number of lane changes.

Operational Analysis

A detailed traffic operational analysis for the opening year (2018) and design year (2038) conditions was conducted for this IMR Re-evaluation within the reduced area of influence per the approved MLOU. Key performance measures from the HCS freeway analysis including densities and LOS, and ramp volume over capacity ratios are used in this IMR. Based on the operational analysis, the following high-level operational analysis observations are noted:

- Freeway weave segment analysis indicates that the Build alternative is expected to operate at a much better LOS compared to the No Build alternative. The Build alternative is anticipated to operate at LOS C or better, while the No Build alternative is anticipated to operate at LOS F for the I-75 weave segment between SR 884 and SR 82 (see **Table A**).
- The Build alternative, introducing the 2 lanes at the I-75 northbound exit ramp to SR 82 and the I-75 southbound exit ramp to SR 884 will provide lane balance per AASHTO standards and will consequently reduce the number of lane changes and improve safety.
- Under the No Build alternative design year 2038 conditions, the ramp segments for the I-75 northbound off-ramp to SR 82 and the I-75 southbound off-ramp to SR 884 are close to capacity (with volume over capacity ratios of greater than 0.8).
- Under the Build alternative design year 2038 conditions, all the ramp segments have volume over capacity ratios of less than 0.5, which will help with both SR 884 and SR 82 operations as well.

Table A: Year 2038 I-75 Weave Segment LOS Summary

Alternative		No Build				Build			
Mainline Segment	Segment Type	AM		PM		AM		PM	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 Northbound									
SR 884 On-Ramp to SR 82 Off-Ramp	Weave	20.6	F*	14.5	F*	24.8	C	21.5	C
I-75 Southbound									
SR 82 On-Ramp to SR 884 Off-Ramp	Weave	15.1	F*	18.7	F*	22.0	C	23.6	C

*Note: *Demand exceeds capacity and therefore the reported LOS is F.*

Safety Analysis

Due to the geometric configuration of the No-Build and Build alternatives, and as noted in **Table B**, the application of HSM methodologies is limited in that there is not a distinct difference in the estimated crash frequencies per year between the two (2) alternatives. Based on the safety analysis, there is a slight increase in expected number of crashes in the Build alternative compared to the No Build alternative for the ramp segments. However, there is a slight reduction in expected number of crashes in the Build alternative compared to the No Build alternative for the freeway segment. Based on estimated average crash frequency during the study period (2018-2038) for the No Build and Build alternatives, the Build alternative is expected to have slightly more crashes per year (0.19) compared to the No Build alternative.

Table B: Expected Number of Crashes for Years 2018 through 2038

Crash Segment Type	Crash Segment	No Build	Build	Difference (Build minus No Build)
Ramp	NB On-Ramp & SB Off-Ramp at I-75/SR 884 NB Off-Ramp at I-75/SR 82	36.81	46.43	9.62
Freeway	I-75 between SR 884 and SR 82	321.28	315.68	-5.60
Estimated Number of Crashes during Study Period		**358.09**	**362.11**	**4.02**
Estimated Average Crash Frequency during Study Period (crashes/year)		**17.05**	**17.24**	**0.19**

Even though the expected number of crashes and expected crash frequencies resulting from the HSM analysis are similar between the two alternatives, the proposed improvements from the Build Alternative provide for a safer operation because of the following:

- Under the No Build alternative, a merge condition is present on the I-75 NB on-ramp before the freeway-ramp gore point, whereas the Build alternative will provide an additional 1,650 feet distance for the outside ramp lane to merge with the inside lane. The enhanced merge condition under the Build alternative is anticipated to provide safer operations with more distance and smooth merging.
- The lane balance provided under the Build alternative because of choice lane at the I-75 exit ramps (NB off-ramp to SR 82 and SB off-ramp to SR 884) will provide safer operations as evidenced by the freeway operational results. The freeway operational results show that the demand on I-75 segment between SR 884 and SR 82 will exceed capacity resulting in LOS F under the No Build alternative, which may contribute to a higher number of crashes compared to the Build alternative.
- The Build condition does not need a lane change from the freeway to ramp and this condition is anticipated to reduce the sideswipe crashes.

Conceptual Signing Plan

A conceptual signing plan is developed (**included in Appendix F**) for the proposed Build alternative. Modifications to the existing roadway signs were evaluated in conjunction with the proposed modifications to ensure that a proper signing plan is implemented within the study area.

Policy Point 2: *The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit or high occupancy vehicle and high occupancy toll lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections, - mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

Response:

Full access interchange conditions, as offered by the existing interchange at I-75 and SR 884, will remain with the proposed modification improvements. In addition, the proposed modifications will achieve benefits to the transportation system with no adverse impact to the public. The proposed improvements have been, and will continue to be, coordinated with the public and local government agencies. The design of the proposed improvements will follow the applicable FHWA and FDOT design standards.

1 Introduction

1.1 Introduction

The existing I-75 at SR 884 (Colonial Boulevard) interchange is located in Lee County, Florida. I-75 is a six lane (three lanes in each direction) north-south interstate facility in the vicinity of the existing SR 884 interchange. The posted speed limit on I-75 is 70 mph. SR 884 is a six-lane divided urban principal arterial in the vicinity of the interchange.

An Interchange Modification Report (IMR) was approved on August 7, 2017 documenting the future reconstruction of the interchange to a Diverging Diamond Interchange (DDI) configuration. Other improvements along SR 884 include a Continuous Flow Intersection (CFI) to the west at the intersection of Six Mile Cypress Parkway/Ortiz Avenue and a Superstreet intersection to the east at the Forum Boulevard intersection. The approved 2017 IMR also considered construction of northbound and southbound auxiliary lanes on I-75 between the SR 884 and SR 82 (MLK Jr. Boulevard) interchange to the north. Reconstruction of the interchange is scheduled to be let in June 2020 and will proceed as a design-build project.

This re-evaluation of the IMR is developed in accordance with the FDOT Policy No. 000-525-015, "Approval of New or Modified Access to Limited Access Highways on the State Highway System (SHS)"; FDOT Interchange Access Request User's Guide (IARUG), New or Modified Interchanges FDOT Procedure No. 525-030-160; and the Project Traffic Forecasting FDOT Procedure No. 525-030-120.

The objective of the IMR re-evaluation is to accommodate the following proposed modifications to the approved 2017 IMR concept as part of the design-build process:

- The northbound on-ramp at the I-75 at SR 884 interchange will be widened from the approved one lane to proposed two lanes at the gore point to provide for improved operations at the ramp merge area.

This IMR re-evaluation will provide an operational and safety assessment of the proposed modification to widen the northbound on-ramp to two lanes at the gore point, and the associated merge into one mainline auxiliary lane beyond.

Other refinements to the I-75 at SR 884 interchange design-build project associated with the implementation of northbound and southbound auxiliary lanes include:

- The I-75 southbound off ramp at the SR 884 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.
- Similarly, the northbound off ramp at the I-75 at SR 82 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.

The project location map is shown in **Figure 1**.

1.2 Purpose and Need

The purpose and need for the interchange modifications were identified in the previously approved 2017 IMR and are summarized below:

- To help serve travel demands created by anticipated countywide population and employment growth and is anticipated to contribute to better traffic operation.
- To enhance overall safety, capacity, and mobility within Lee County, since SR 884 is a major principal arterial and the future land use designation along this corridor is intensive commercial.
- SR 884, a regional facility, is part of the evacuation route network established by the Florida Division of Emergency Management. The improvements to interchange of I-75 and SR 884 are anticipated to enhance evacuation capacity and traffic circulation, which will improve evacuation and response times.

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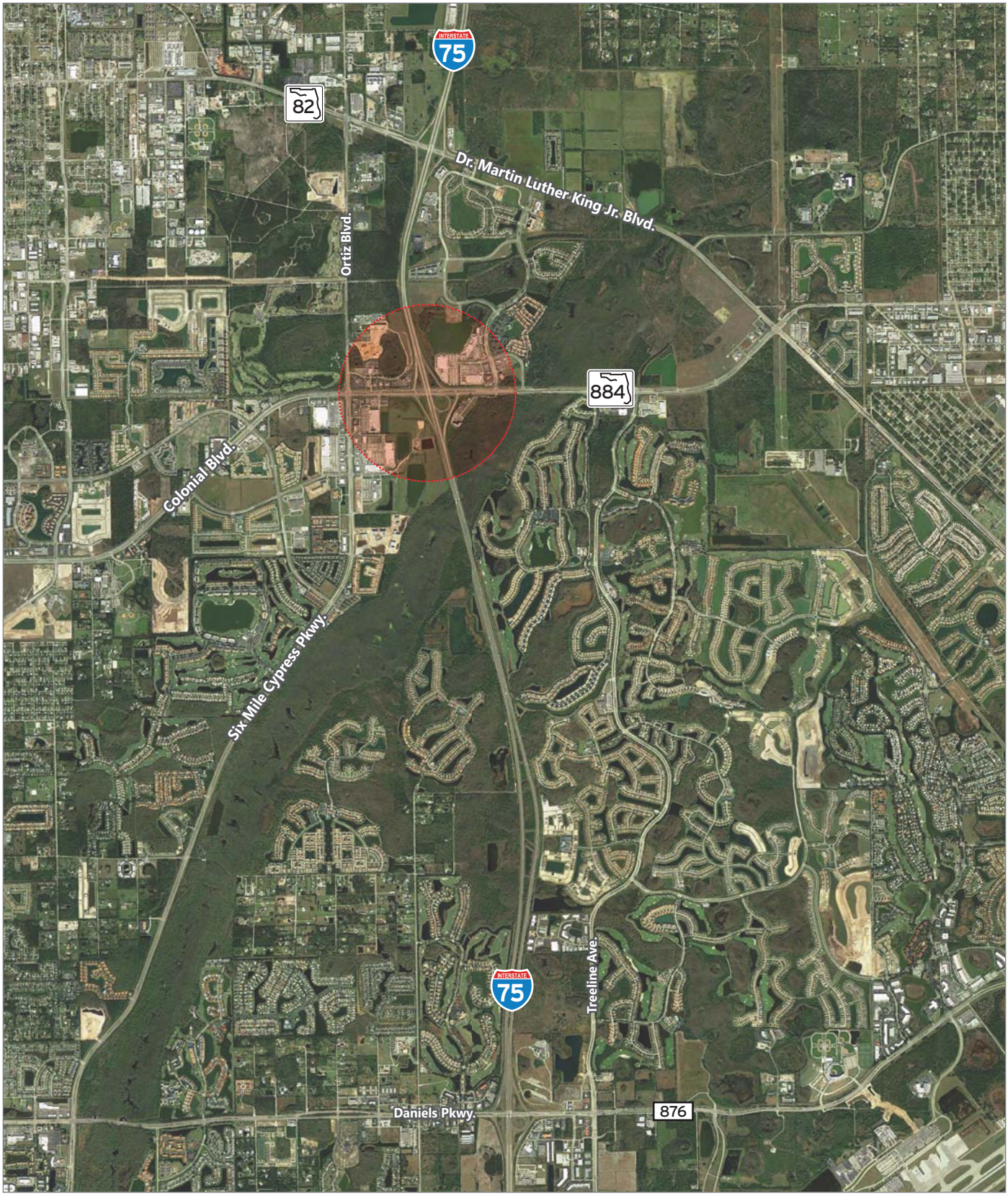

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Project Location

FDOT

Figure 1

Project Location
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation

1.3 Methodology

A Methodology Letter of Understanding (MLOU) was prepared in coordination with the FDOT Systems Implementation Office (SIO) and approved on April 1, 2020. This IMR re-evaluation was prepared based on guidance provided in the FDOT IARUG User's Guide (January 2018) and conforms to the assumptions and methodologies identified in the approved MLOU provided in **Appendix A**.

The Area of Influence (AOI) for this IMR re-evaluation is consistent with the AOI from the approved 2017 IMR. As seen in **Figure 2,** the AOI along I-75 extends from southbound off/northbound on ramps at Daniels Parkway (County Highway 876) interchange in the south to southbound on/northbound off ramps at SR 82 in the north. Along SR 884, the AOI limits extend from ¼ mile west of Ortiz Avenue to ¼ mile east of Dynasty Drive. The analysis will be limited to the freeway elements that are changing as part of this IMR re-evaluation. The analysis from the approved 2017 IMR will not change for the interchange elements that are not being changed.

1.4 Analysis Years

A. Traffic Forecasting
    1. Base year – 2007 *
    2. Horizon year – 2035 *

    *The base and horizon years from the Lee-Collier FSUTMS Cost Feasible Model remain consistent with the approved 2017 IMR and were used for this IMR Reevaluation.

B. Traffic Operational Analysis
    1. Opening year – 2018 **
    2. Design year – 2038 **

    **IMR Re-evaluation will use traffic forecasts from the approved 2017 IMR.

The previously approved preferred alternative concept from the 2017 IMR serves as the basis for comparison to the Preferred Build Alternative from the current IMR re-evaluation study. A traffic validation analysis approved by FDOT Central Office determined that the approved 2017 IMR traffic forecasts are conservative and are still relevant for evaluating minor design changes to the previously approved IMR preferred alternative. The excerpts from the approved 2017 IMR included in **Appendix B** provide the opening year 2018 and design year 2038 AADTs and peak hour volumes that will be used in the IMR re-evaluation.

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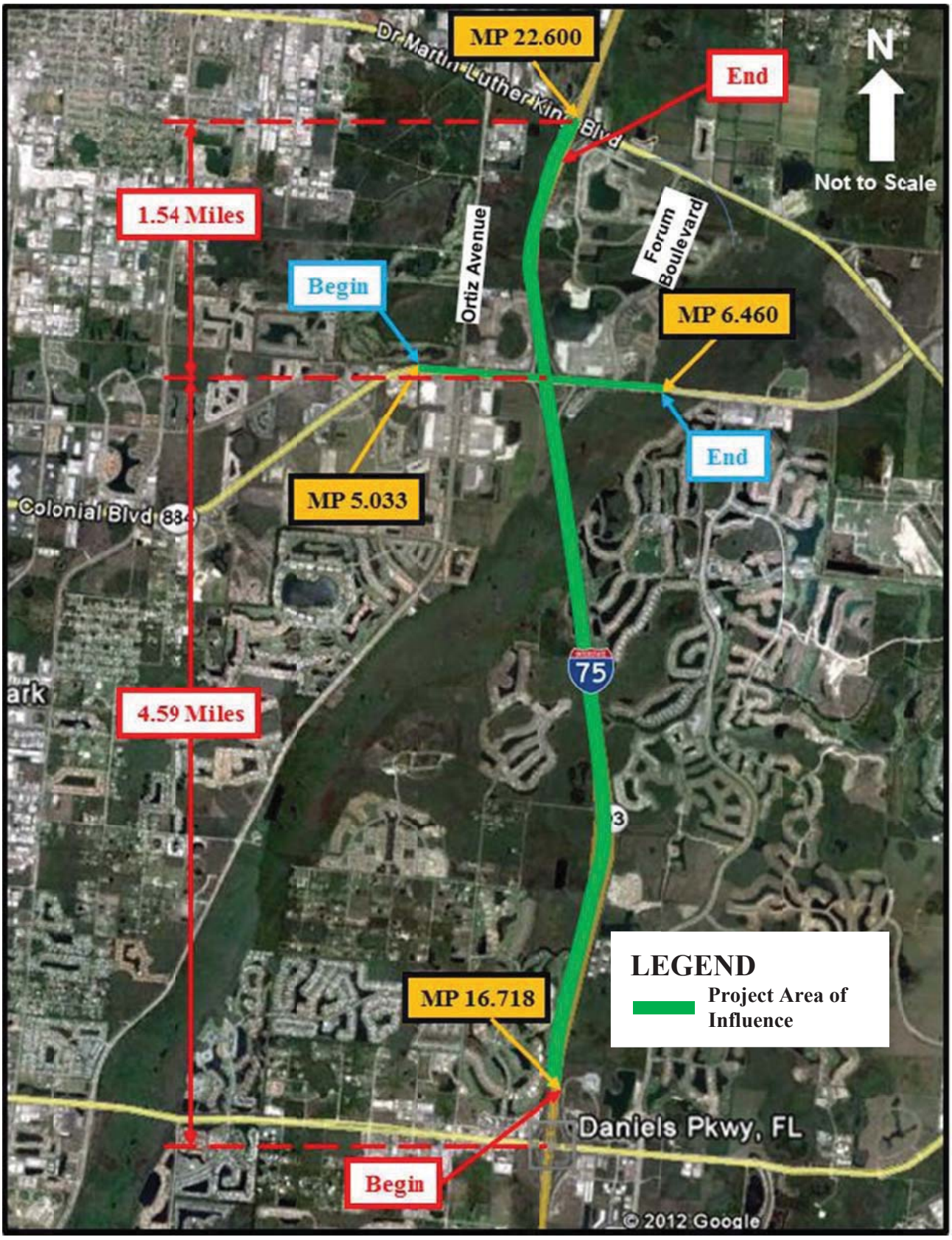


*The Area of Influence figure was obtained from the I-75 at Colonial Boulevard (SR 884) Interchange Modification Report (IMR) approved in 2017.

** Analysis area will be limited to the freeway elements that are changing as part of this IMR Re-evaluation.

FDOT

Figure 2

Area of Influence
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation

2 Existing Conditions

The existing conditions are based on the information provided in the approved 2017 IMR. For the purpose of the IMR re-evaluation, the existing conditions section will not be used and instead the analysis will focus on the 2018 Opening Year, and 2038 Horizon Year. Please refer to the excerpts from the approved 2017 IMR provided in **Appendix B** for the existing conditions analysis.

3 Future Traffic Forecast

This section documents the traffic validation analysis used to determine that the previously approved 2017 IMR traffic forecasts are conservative and are still relevant for evaluating the proposed alternative in this current IMR re-evaluation. Relevant correspondence on the traffic validation is included in **Appendix C.**

3.1 Validation of Traffic

The traffic validation analysis was performed by following the format included in the Interchange Access Request (IAR) tracking SharePoint site. The traffic validation analysis included:

1. A review of short-term traffic (Year 2018) forecasts from the approved 2017 IMR against the actual traffic counts, and
2. A comparison of the long-term (Year 2040) model forecasts in the approved 2017 IMR to those being generated by the most current version of the District 1 Regional Planning Model (D1RPM).

As shown in the **Table 1**, the IMR 2018 traffic projections along SR 884 were found to be accurate as they are within 10% of the actual traffic counts obtained from the Florida Traffic Online (FTO) database and traffic counts collected by the I-75 Managed Lanes PD&E. The IMR 2018 traffic projections along I-75 proved to be approximately 27% lower than the actual traffic counts obtained from the FTO database. It is to be noted that the high growth in traffic volumes over the last 6 to 7 years is associated with the upturn in the economy and has been documented in in many locations throughout the state.

The design year (2038) traffic forecasts developed in the 2017 IMR were primarily based on the Lee-Collier (LC) travel demand model that was the current model at the time of the 2017 IMR traffic study. The LC model utilized a horizon year of 2035. The D1RPM with horizon year of 2040 is the current adopted travel demand model used throughout the District. To assess the reasonableness of the IMR's forecasts, the IMR's opening year 2018 and design year 2038 traffic were extrapolated to develop "IMR 2040 AADT" forecasts, which were subsequently compared to the year 2040 AADT projections obtained from the most recent version of the 2040 D1RPM. To ensure that the D1RPM was up to date, the most recent future (2040) socio-economic data was requested and obtained from Lee County late in 2019 as part of the I-75 Managed Lanes PD&E travel demand modeling efforts. The **Table 1** summarizes the assessment and comparison of the "IMR 2040 AADT" and the D1RPM 2040 AADT. The comparison shows that the IMR forecasted volumes along I-75 are approximately 17% to 22% higher than those of the D1RPM. Along SR 884, the two methods are more consistent, showing similar year 2040 volumes.

Table 1: Comparison of AADTs at I-75 / SR 884 Interchange

FDOT Station #	Location	FDOT Traffic Count 2012 AADT	FDOT Traffic Count 2018 AADT	IMR 2018 AADT	Existing Count vs 2018 IMR	IMR 2040 AADT [4]	D1RPM 2040 AADT	2040 D1RPM vs 2040 IMR
120058	I-75 North of SR 884	59,500	93,500	73,500	27%	144,500	119,300	-17%
120057	I-75 South of SR 884	65,000	100,500	79,000	27%	151,600	118,500	-22%
NA [1]	SR 884 East of I-75	42,500 [2]	56,400 [3]	51,200	10%	83,300	80,900	-3%
120063	SR 884 West of I-75	75,000	85,000	78,400	8%	101,800	106,800	5%
	All Locations		335,400	282,100	19%	481,200	425,500	-12%

Notes:

1. No FDOT Count Station available.

2. 2012 AADT obtained from IMR

3. Obtained from 2019 traffic counts collected by the I-75 Managed Lanes PD&E Team

4. Extrapolated using 2018 and 2038 IMR AADT

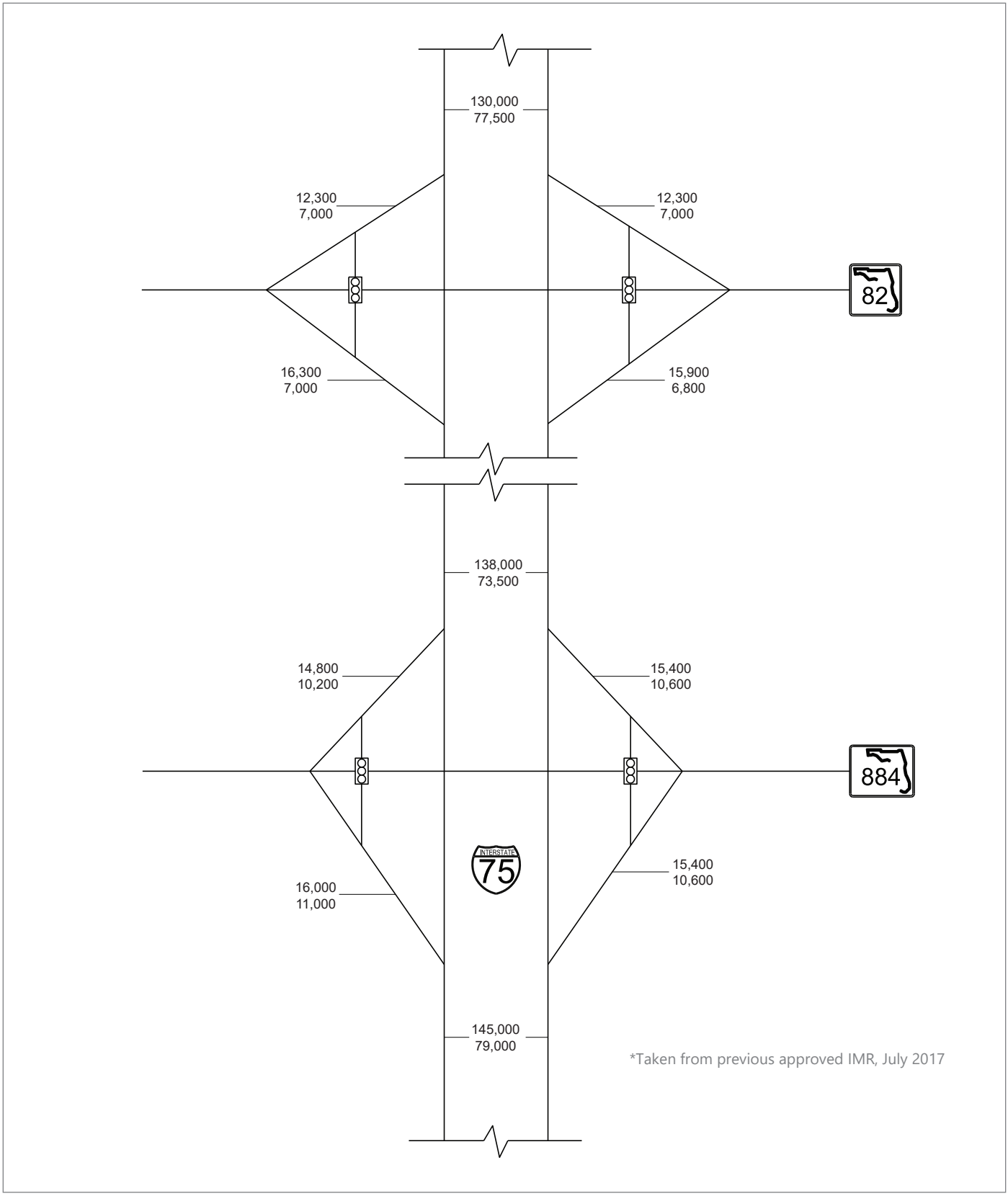
Even though the short-term 2018 traffic forecasts from the IMR are relatively lower than the existing FDOT traffic counts, the IMR preferred alternative was developed using the IMR long-term forecasts which are generally higher or in line with the latest D1RPM forecasts. **Therefore, it is concluded that the approved 2017 IMR traffic forecasts are conservative and are still relevant for this IMR Reevaluation.**

3.2 Traffic Factors

The Traffic Factors for this IMR Reevaluation were obtained from the previously approved 2017 IMR. Relevant excerpts from the approved 2017 IMR are included in **Appendix B**.

3.3 Opening Year 2018 and Design Year 2038 Traffic Volumes

As mentioned in the MLOU and discussed in the previous section 3.1, the future year traffic information was obtained from previously approved 2017 IMR. The future year AADT volumes for the no-build and the build scenarios are provided in **Figure 3.** The AM and PM peak hour volumes for the no-build and the build scenarios for opening year (2018) and design year (2038) are provided in **Figures 4** and **5,** respectively.



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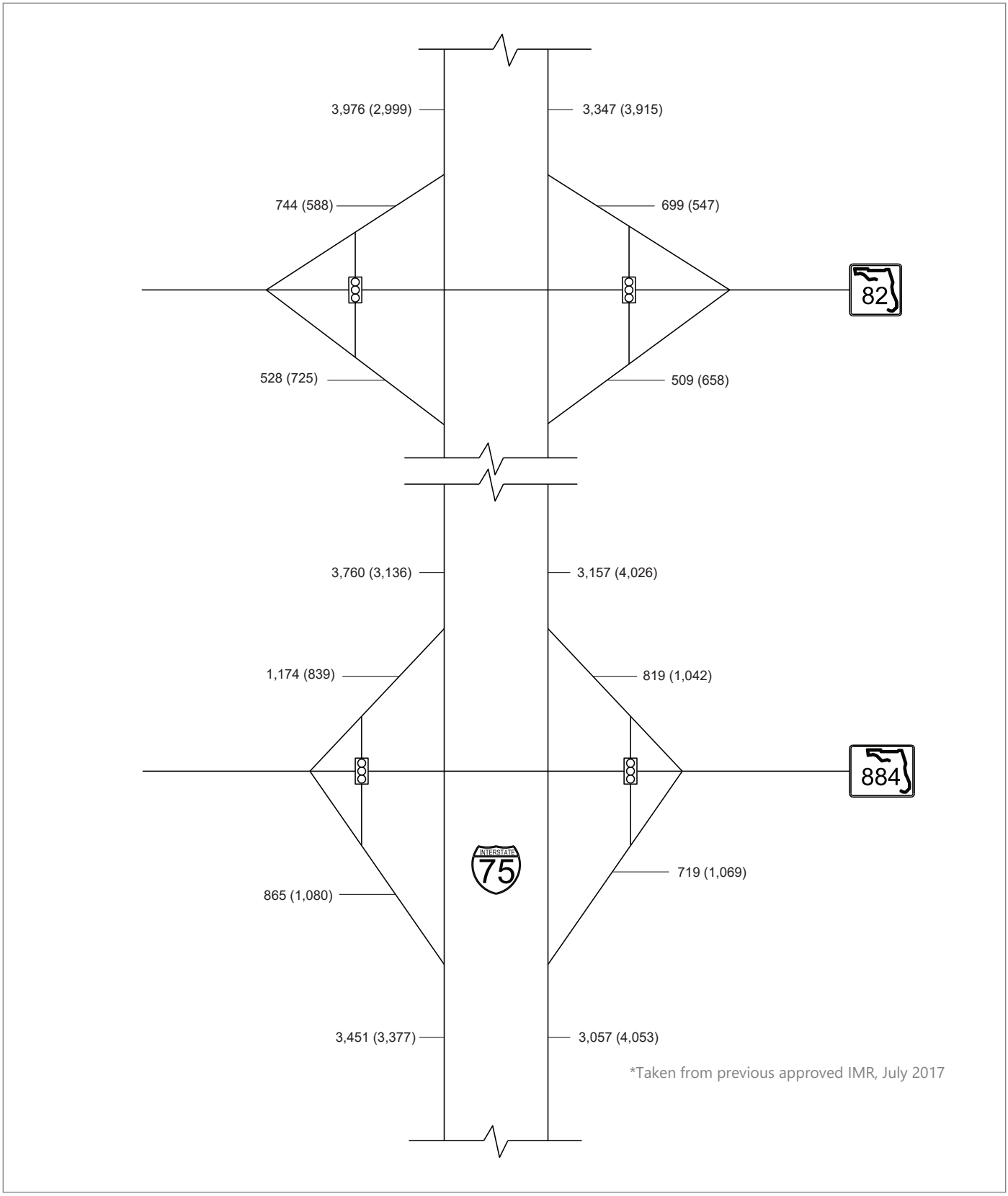
Traffic Signal

STOP Stop Sign

2038 - AADT
2018 - AADT

Figure 3

Annual Average Daily Traffic Build & No-Build
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation



N.T.S.

Traffic Signal

STOP Stop Sign

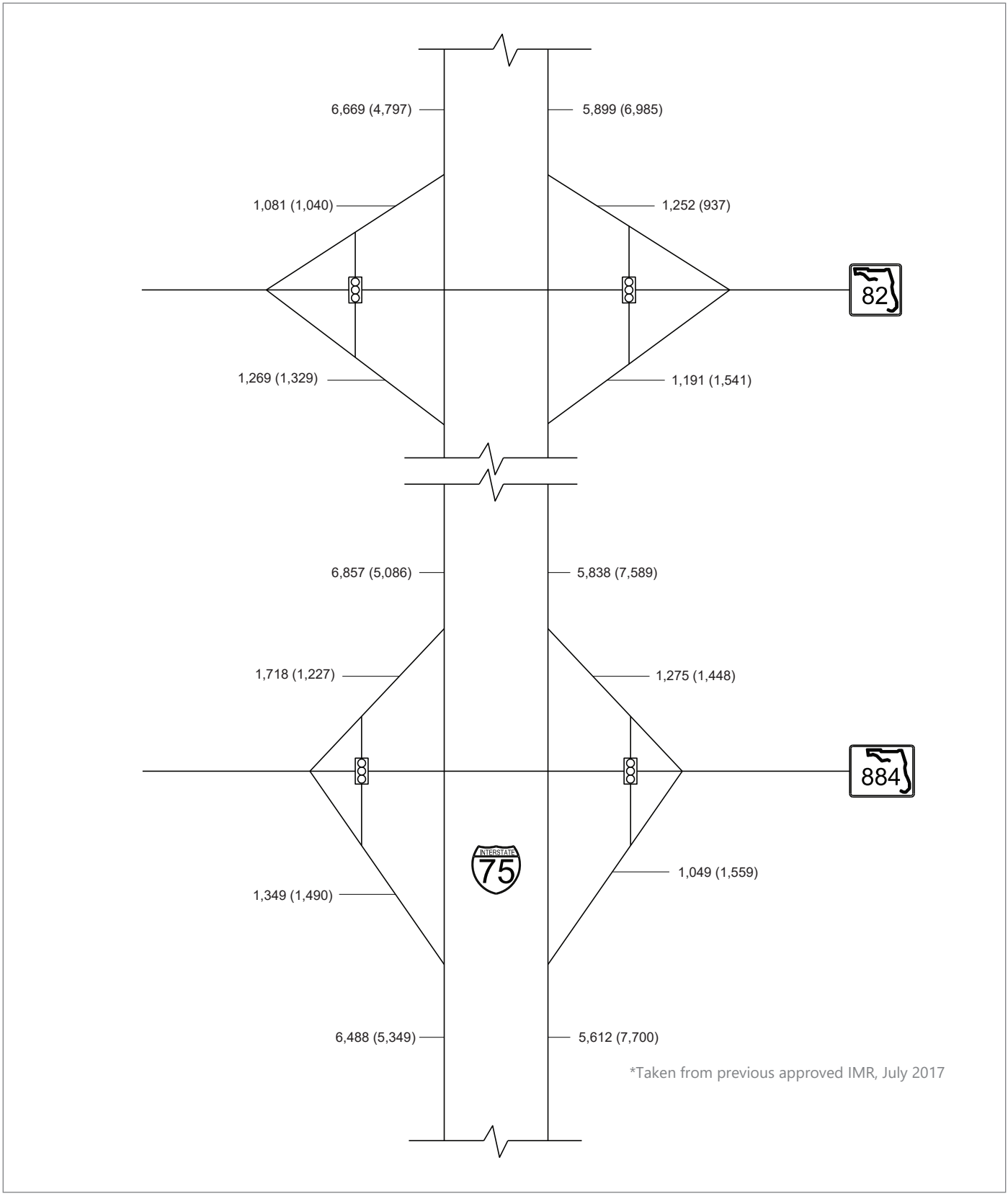
XXXX AM Peak Volume

(XXXX) (PM Peak Volume)

FDOT

Figure 4

Opening Year AM & PM Peak Hour Traffic Volumes
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation



N.T.S.

Traffic Signal

STOP Stop Sign

XXXX AM Peak Volume

(XXXX) (PM Peak Volume)

Figure 5

Design Year AM & PM Peak Hour Traffic Volumes
I-75 at SR 884 (Colonial Blvd)

4 Alternatives

As mentioned in the MLOU, a No Build alternative and one Build alternative were evaluated in this study. As the Transportation Systems Management and Operations (TSM&O) alternatives were addressed in the approved 2017 IMR, they are not considered (or applicable) in this IMR re-evaluation.

No Build: This represents the interchange configuration approved as part of the 2017 IMR. This scenario includes a northbound on-ramp with a single lane at the gore point that feeds directly into a mainline auxiliary lane between the SR 884 and SR 82 interchanges with I-75.

Build: This represents a modified version of the interchange configuration approved as part of the 2017 IMR. The Build scenario includes a modified northbound on-ramp with two lanes at the gore point that will merge into one mainline auxiliary lane beyond. Other refinements to the I-75 at SR 884 interchange design-build project associated with the implementation of northbound and southbound auxiliary lanes include:

- The I-75 southbound off ramp at the SR 884 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.
- Similarly, the northbound off ramp at the I-75 at SR 82 interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.

The No Build and Build alternative geometries are shown in **Figure 6.**

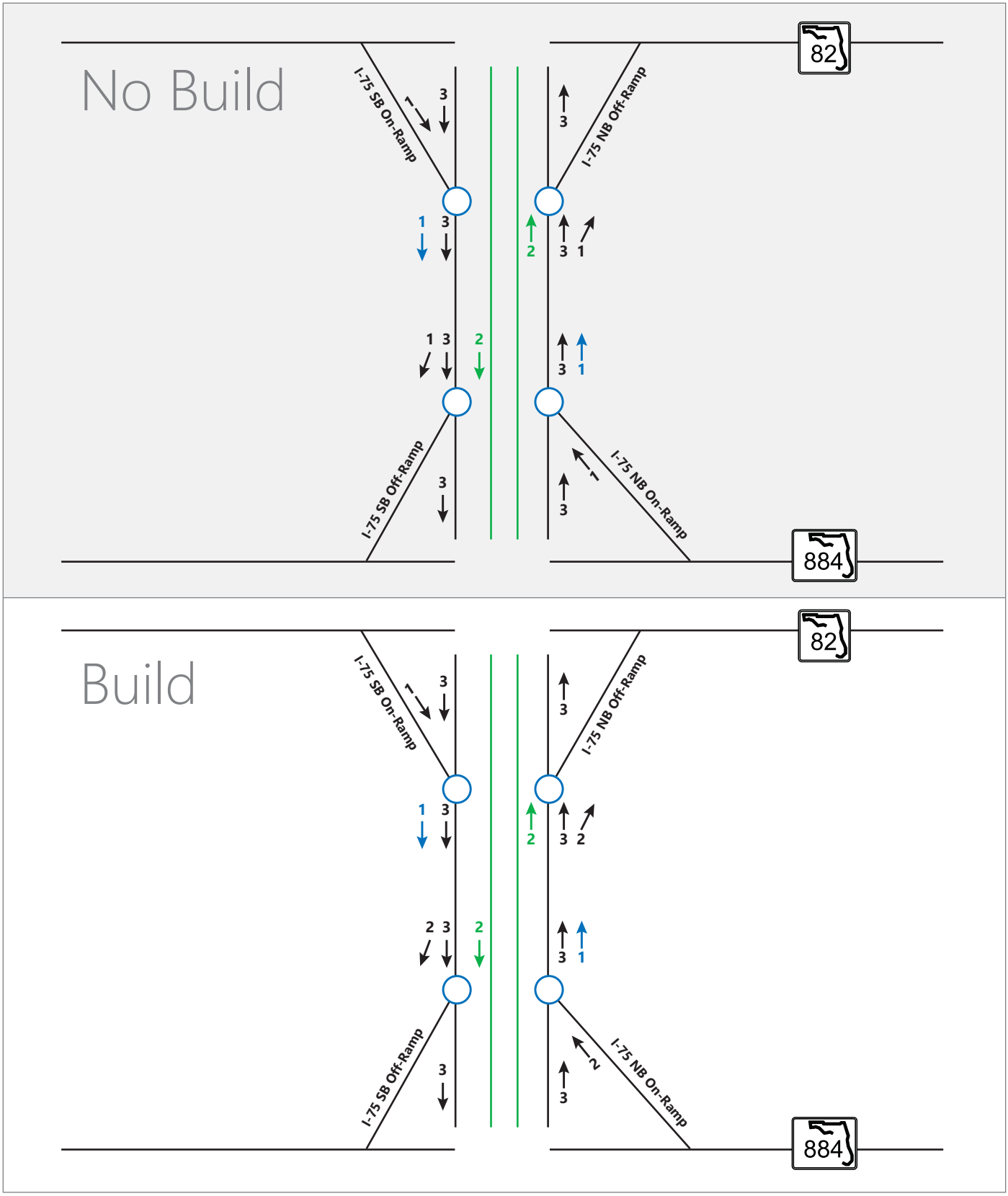


Figure 6

No Build and Build Geoemtry
I-75 at SR 884 (Colonial Blvd)
IMR Re-evaluation

5 Future Operational Analysis

This section describes the results of the traffic operational analysis for the No Build and Build alternatives.

5.1 Traffic Operational Analysis

An opening year (2018) and a design year (2038) freeway operational analyses were performed for the No Build and Build alternatives using the latest Highway Capacity Software (HCS) 7. The freeway operational analysis was conducted for the I-75 segments between SR 884 and SR 82. In addition, a ramp capacity analysis was conducted for the I-75 northbound on-ramp from SR 884, I-75 northbound off-ramp to SR 82, and I-75 southbound off-ramp to SR 884 for the analysis years.

Peak hour traffic volumes used in the HCS and ramp capacity analysis for the 2018 and 2038 conditions were obtained from the 2017 IMR. Consistent with the assumptions from the approved 2017 IMR, the HCS analysis assumes that managed lanes will be present by the design year 2038. As such, the traffic volume splits between managed lanes and general use lanes used in the HCS analysis are consistent with the volumes used in the approved 2017 IMR. These volume assumptions are noted in the HCS printouts. For the weave segment analyzes, the ramp to ramp volumes were assumed to be 0. These assumptions provide for a conservative analysis and are consistent with the analysis assumptions utilized in the approved 2017 IMR.

5.1.1 Freeway Analysis

For the purpose of the HCS freeway analysis, the freeway-ramp, ramp-ramp, and ramp-freeway volume assumptions were carried over from the 2017 IMR. The following **Table 2** shows the input HCS parameters for the I-75 freeway analysis for the two alternatives.

Table 2: HCS Input Parameters for I-75 Freeway Analysis

Segment Input Parameter		Northbound Direction		Southbound Direction	
		No Build	Build	No Build	Build
Number of Maneuver Lanes (N_{WL})		2	3	2	3
Minimum Freeway-Ramp Lane Changes (LC_{FR})		1	0	1	0
On-Ramp Lanes		1	2	1	1
Off-Ramp Lanes		1	2	1	2
Total Ramp Density (ramps/mile)	Basic Segment South of SR 884	0.8	0.8	0.8	0.8
	Basic Segment North of SR 82	1.0	1.0	1.0	1.0
Interchange Density (interchanges/mile)	Weave Segment b/w SR 884 and SR 82	0.5	0.5	0.5	0.5
Ramp Speed – On/Off-Ramps (miles/hour)		35	35	35	35

Notes:
1. N_{WL} is the number of lanes from which weaving maneuvers may be made with either one or no lane changes.
2. LC_{FR} is the minimum number of lane changes that a freeway-to-ramp weaving vehicle must make to complete the freeway-to-ramp movement successfully.
3. The default HCS 7 ramp speed of 35 MPH was used in the analysis.

The HCM LOS criteria as shown in **Table 3** is used to estimate LOS for the freeway segments.

Table 3: Freeway Segments HCM 6th Edition Level of Service Criteria

LOS	Basic Segment Density (HCM Exhibit 12-15)	Weaving Segment Density (HCM Exhibit 13-6)
A	≤ 11	0-10
B	> 11-18	> 10-20
C	> 18-26	> 20-28
D	> 26-35	> 28-35
E	> 35-45	35-43
F	Demand exceeds capacity or density >45	Demand exceeds capacity or density >43

Note: Density is reported as passenger cars per mile per lane (pc/mi/ln)

Tables 4 and **5** show the HCS analysis results for the opening year 2018 and design year 2038 conditions, respectively.

Table 4: Year 2018 Freeway LOS Analysis Summary

Alternative		No Build				Build			
Mainline Segment	Segment Type	AM		PM		AM		PM	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 Northbound									
South of SR 884 On-Ramp	Basic	12.1	B	15.5	B	12.1	B	15.5	B
SR 884 On-Ramp to SR 82 Off-Ramp	Weave	14.4	B	19.2	B	13.7	B	18.1	B
North of SR 82 Off-Ramp	Basic	13.8	B	17.7	B	13.8	B	17.7	B
I-75 Southbound									
North of SR 82 On-Ramp	Basic	16.9	B	12.6	B	16.9	B	12.6	B
SR 82 On-Ramp to SR 884 Off-Ramp	Weave	17.8	B	14.4	B	16.1	B	13.5	B
South of SR 884 Off-Ramp	Basic	13.4	B	11.9	B	13.4	B	11.9	B

Tables 5 shows the HCS analysis results for the design year 2038 conditions.

Table 5: Year 2038 Freeway LOS Analysis Summary

Alternative		No Build				Build			
Mainline Segment	Segment Type	AM		PM		AM		PM	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 Northbound									
S. of SR 884 On-Ramp	Basic	21.7	C	16.9	B	21.7	C	16.9	B
SR 884 On-Ramp to SR 82 Off-Ramp	Weave	20.6	F*	14.5	F*	24.8	C	21.5	C
N. of SR 82 Off-Ramp#	Basic	16.2	B	8.2	A	22.3	C	16.4	B
I-75 Southbound									
N. of SR 82 On-Ramp	Basic	18.9	C	19.9	C	18.9	C	19.9	C
SR 82 On-Ramp to SR 884 Off-Ramp	Weave	15.1	F*	18.7	F*	22.0	C	23.6	C
S. of SR 884 Off-Ramp#	Basic	7.8	A	14.1	B	16.3	B	20.4	C

Notes
*1. *Demand exceeds capacity and therefore the reported LOS is F.*
2. # The freeway density/LOS for this segment is reported to be better in the No Build alternative compared to the Build alternative because of the lower number of processed vehicles in the upstream segment.

5.1.2 Ramp Capacity Analysis

A ramp capacity analysis was conducted for the study ramp segments as shown in **Table 6**. Ramp capacities for 1-lane and 2-lane ramps from Exhibit 14-12 of the HCM (6th Edition) were adjusted for ramp truck percentage and peak hour factor and used in the capacity analysis.

Table 6: Ramp Capacity Analysis Summary

Analysis Year	Ramps	Ramp Volume		V/C Ratio - No Build				V/C Ratio - Build			
		AM	PM	Lanes	Capacity (vph)	AM	PM	Lanes	Capacity (vph)	AM	PM
Opening Year 2018	I-75 NB Off-Ramp to SR 82	509	658	1	1,836 [1]	0.28	0.36	2	3,671[1]	0.14	0.18
	I-75 NB On-Ramp from SR 884	819	1,042	1		0.45	0.57	2		0.22	0.28
	I-75 SB Off-Ramp to SR 884	1,174	839	1		0.64	0.46	2		0.32	0.23
Design Year 2038	I-75 NB Off-Ramp to SR 82	1,191	1,541	1		0.65	0.84	2		0.32	0.42
	I-75 NB On-Ramp from SR 884	1,275	1,448	1		0.69	0.79	2		0.35	0.39
	I-75 SB Off-Ramp to SR 884	1,718	1,227	1		0.94	0.67	2		0.47	0.33

Notes:
1. Ramp capacity from HCM Exhibit 14-12 is adjusted for truck percentage and peak hour factor. A truck percentage of 7.0% and PHF of 0.95 are used.
2. Highlighted cells show V/C ratio greater than 0.8, which indicates that the ramp is close to reaching one-lane capacity.

5.1.3 Operational Analysis Results Discussion

Based on the HCS freeway and ramp capacity analyses, the following conclusions are drawn.

5.1.3.1 Freeway Analysis

- As seen in the above tables, the differences in number of maneuver lanes and minimum freeway-ramp lane changes have a significant difference in weave segment capacity. The freeway weave segment analysis indicates that the Build alternative is expected to operate at a much better LOS compared to the No Build alternative. The Build alternative is anticipated to operate at LOS C or better, while the No Build alternative is anticipated to operate at LOS F for the I-75 weave segment between SR 884 and SR 82.
- The Build alternative, introducing the 2 lanes at the I-75 northbound exit ramp to SR 82 and the I-75 southbound exit ramp to SR 884 will provide lane balance per AASHTO standards and will consequently reduce the number of lane changes and improve safety.

5.1.3.2 Ramp Capacity Analysis

- Under the No Build alternative design year 2038 conditions, the ramp segments for the I-75 northbound off-ramp to SR 82 and the I-75 southbound off-ramp to SR 884 are close to capacity (with volume over capacity ratios of greater than 0.8).
- Under the Build alternative design year 2038 conditions, all the ramp segments have volume over capacity ratios of less than 0.5, which will help with both SR 884 and SR 82 operations as well.

Traffic operational results and output reports from HCS 7 are included in **Appendix D.**

6 Safety (Crash) Analysis

As part of this study, a safety analysis was conducted based on the guidance from the FDOT 2018 IARUG and per the approved MLOU. The objective is to evaluate the safety of the study alternatives based on the anticipated geometric design differences, and provide a recommendation based on the number of expected crashes for year 2038 conditions. The safety analysis explained herein follows the criteria contained in the Highway Safety Manual (HSM). The safety analysis was based on the following methodology:

- Identifying the Crash Type & Crash Severity
- Calculation of Crash Rates
- Description of Existing Crash Trends
- Development of Expected Number of Crashes using Safety Performance Functions (SPF's) for the No Build and Build Alternatives
- Comparison of Expected Number of Crashes for the No Build and Build Alternatives

6.1 Existing Crash Data Information

Crash statistics along I-75 between SR 884 and SR 82 were obtained from the Crash Analysis Reporting System (CARS) database based on the latest available five years of crash data (from January 1, 2013 to December 31, 2017). As shown below, the crash segmentation process used for this study is based on the description of alternatives per the approved MLOU:

- I-75 SB Merge from SR 82
- I-75 SB between SR 82 & SR 884
- I-75 SB Diverge to SR 884
- I-75 & SR 884 SB Off Ramp
- I-75 NB On-Ramp from WB SR 884
- I-75 NB Merge from WB SR 884
- I-75 NB between SR 884 & SR 82
- I-75 NB Diverge to SR 82

Table 7 summarizes the crashes (by severity and conditions) for the freeway mainline, ramp merge/diverge areas, and ramp terminal intersections.

Table 7: Crash Summary by Severity & Conditions (Jan 2013-Dec 2017)

Crash Segment	5 Year Crash Type Summary									
	Total	Fatal	Injury	Property Damage Only	Daylight	Dark	Dusk	Dawn	Dry	Wet
I-75 SB Merge from SR 82	15	0	2	13	13	2	0	0	10	5
I-75 SB between SR 82 & SR 884	10	0	2	8	8	1	0	1	8	2
I-75 SB Diverge to SR 884	13	0	3	10	8	1	0	4	10	3
I-75 & SR 884 SB Off-Ramp	16	0	6	10	13	2	0	1	12	4
I-75 NB On-Ramp from WB SR 884	7	0	1	6	3	3	0	1	3	4
I-75 NB Merge from WB SR 884	14	0	3	11	10	3	0	1	8	6
I-75 NB between SR 884 & SR 82	3	0	1	2	3	0	0	0	0	3
I-75 NB Diverge to SR 82	7	0	3	4	6	1	0	0	7	0
Total	**85**	**0**	**21**	**64**	**64**	**13**	**0**	**8**	**58**	**27**
Percentage of Total	**100%**	**0.0%**	**24.7%**	**75.3%**	**75.3%**	**15.3%**	**0.0%**	**9.4%**	**68.2%**	**31.8%**

As shown in **Table 7**, a total of 85 crashes occurred during the five (5) year analysis period from January 2013 to December 2017. Out of the 85 total crashes there were zero fatal crashes, 21 injury crashes and 64 property damage only crashes. A total of 64 crashes occurred during the daylight hours and 21 crashes were reported to have occurred during dark conditions (at night, dawn and dusk). In addition, a total of 58 crashes occurred during dry roadway conditions with the remaining 27 occurring during wet conditions.

6.2 Crash Summary by Crash Type

Table 8 shows the summary of the crashes by crash types. Per the summary, Rear End crashes accounted for the predominant crash type (about 29.4%) within the study area, followed by and Off Road (about 27.1%), and Sideswipe (21.2%) crashes.

Table 8: 5 Year Crash Summary by Type

Crash Segment	Crash Type											Total
	Rear End	Head On	Sideswipe	Roll Over	Angle	Left Turn	Right Turn	Off Road	Pedestrian & Bicycle	Animal	Other	
I-75 SB Merge from SR 82	4	0	1	0	0	0	0	7	0	0	3	15
I-75 SB between SR 82 & SR 884	3	0	2	0	0	0	0	2	0	0	3	10
I-75 SB Diverge to SR 884	4	0	3	0	0	0	0	3	0	0	3	13
I-75 & SR 884 SB Off-Ramp	9	0	4	0	1	0	0	1	0	0	1	16
I-75 NB On-Ramp from WB SR 884	0	0	3	2	0	0	0	1	0	0	1	7
I-75 NB Merge from WB SR 884	2	0	4	0	0	0	0	5	0	0	3	14
I-75 NB between SR 884 & SR 82	1	0	0	0	0	0	0	2	0	0	0	3
I-75 NB Diverge to SR 82	2	0	1	0	0	0	0	2	0	0	2	7
Total	**25**	**0**	**18**	**2**	**1**	**0**	**0**	**23**	**0**	**0**	**16**	**85**
Percentage of Total	**29.4%**	**0.0%**	**21.2%**	**2.4%**	**1.2%**	**0.0%**	**0.0%**	**27.1%**	**0.0%**	**0.0%**	**18.8%**	**100%**

6.3 Crash Frequency & Crash Rate Development

Based on the required procedures and methodology for an IMR per the FDOT SIO, crash rates and frequencies for crash segments were developed based on the five (5) year crash information. **Table 9** summarizes the crash frequency and rates for each safety analysis segmentation for the study area.

The crash rates for the mainline segments are expressed as the number of crashes per million vehicle-miles traveled. The following equation was utilized to develop the crash frequency and crash rates for this study:

$$Crash\ Rate\ of\ Segment = \frac{Total\ Number\ of\ Crashes\ x\ 1{,}000{,}000}{AADT\ x\ 365\ x\ Number\ of\ Years\ x\ Length\ of\ Roadway\ Segment}$$

6.3.1 Crash Rate Comparison

In addition to developing the 5-year existing crash rates, a comparison of these actual crash rates with the FDOT statewide crash rates was conducted based on the most current FDOT CAR reporting database. For I-75, the freeway segment has a lower crash rate (0.16) compared to the FDOT statewide crash rate of 0.924.

Based on discussions with FDOT Central Office (Crash Records and Research Department), FDOT does not provide crash rate statistics for merge and diverge segments. Based on available statewide data, crash rates are not provided for urban ramp segments.

Table 9: 5 Year Crash Frequency & Rate Summary

Crash Segment	Crash Frequency & Rate					
	Severity	No. of Crashes	Daily Volume*	Segment Length (miles)	No. of Crashes Per Year	Total Crash Rate
I-75 between SR 884 & SR 82	Total	**13**	93,500	0.46	2.60	0.16
	FI	3				
	PDO	10				
I-75 SB Merge from SR 82	Total	**15**	46,750	0.29	3.00	0.62
	FI	2				
	PDO	13				
I-75 SB Diverge to SR 884	Total	**13**	46,750	0.29	2.60	0.53
	FI	3				
	PDO	10				
I-75 & SR 884 SB Off-Ramp	Total	**16**	11,500	0.22	3.20	3.48
	FI	6				
	PDO	10				
I-75 NB On-Ramp from WB SR 884	Total	**7**	2,200	0.36	1.40	4.88
	FI	1				
	PDO	6				
I-75 NB Merge from WB SR 884	Total	**14**	46,750	0.29	2.80	0.58
	FI	3				
	PDO	11				
I-75 NB Diverge to SR 82	Total	**7**	46,750	0.29	1.40	0.29
	FI	3				
	PDO	4				

*Note: *Daily volume is 2018 AADT from the Florida Traffic Online (FTO) Website*

6.4 HSM based Safety Analysis

For the purpose of this IMR Re-evaluation, the Enhanced Safety Analysis Tool (ISATe) was used to calculate the expected crashes for the No Build and Build alternatives. The objective is to evaluate the safety of the study alternatives based on the anticipated geometric design differences, and provide a recommendation based on the number of expected crashes for the time period from year 2018 through 2038.

The ISATe tool implements the predictive methods in Part C of the HSM to develop Safety Performance Functions (SPFs) that predict crash frequency for a given set of site conditions. The predictive method utilizes traffic volumes and roadway characteristics as inputs to evaluate safety performance. Based on the guidance provided by FDOT, the Empirical Bayes (EB) method is not applicable to this project since both the Build

alternatives consider lane widening. Input data for the freeway and ramp segments was gathered from the conceptual design plans and other available sources.

To identify the safety differences between the study alternatives, expected number of crashes were calculated using the ISATe tool for the segments (as shown below) that will have dissimilar geometric design as stated in the approved MLOU.

1. I-75 northbound on-ramp from SR 884
2. I-75 southbound off-ramp to SR 884
3. I-75 northbound off-ramp to SR 82
4. I-75 mainline between SR 884 and SR 82

6.4.1 I-75 Northbound On-Ramp Segment from SR 884

The No Build alternative includes a northbound on-ramp with a single lane at the gore point that feeds directly into the mainline auxiliary lane. Under this alternative, there will be two lanes from the eastbound left turn movement, and a single lane from the westbound right turn movement with a yield control. The two lanes on the on-ramp will merge into one lane before the gore point and eventually feed into the auxiliary lane.

The Build alternative includes a modified northbound on-ramp with two lanes at the gore point that will merge into one mainline auxiliary lane beyond. Under the Build alternative, there will be two lanes from the eastbound left turn movement and a single lane from the westbound right turn movement with a yield control.

6.4.2 I-75 Southbound Off-Ramp Segment from SR 884

The main difference between the study alternatives is a two-lane off-ramp under the Build alternative compared to a single lane off-ramp under the No Build alternative.

6.4.3 I-75 North Off-Ramp Segment to SR 82

The main difference between the study alternatives is a two-lane off-ramp under the Build alternative compared to a single lane off-ramp under the No Build alternative.

6.4.4 I-75 Segment Between SR 884 and SR 82

Differences between the study alternatives include the two-lane off-ramps at the gore points (both northbound and southbound directions) under the Build alternative compared to single lane off-ramps under the No Build alternative. At the I-75 northbound off-ramp to SR 82 and the I-75 southbound off-ramp to SR 884, the outside lanes originate from the auxiliary lanes while the inside ramp lanes are choice lanes.

The other difference involves the addition of a second lane on the I-75 northbound on-ramp from SR 884 that will continue after the gore point with the inside lane feeding into the auxiliary lane and the outside lane merging into the auxiliary lane approximately 880 feet downstream of the gore point.

Because of the unique geometric configuration of the No Build and Build Alternatives, the freeway segment is evaluated using the following assumptions:

- Due to the HSM limitations, a segment which is more 4,500 feet in length cannot be evaluated as a weave segment.
- Under the No Build alternative, lane-add and lane-drop are assumed at the gores, but the lane added is counted as an additional through lane (4 instead of 3).
- Under the Build alternative, three segments (speed-change-add, basic segment, speed-change-drop) are evaluated. These 3 segments are coded to have 4 directional through lanes rather than three.
- Consistent with the approved 2017 IMR, this analysis assumes that managed lanes will be in place by 2038. As such, the I-75 mainline 2038 AADT coded in the ISATe analysis is the assumed portion of the AADT that would be present in the general use lanes. The split in daily traffic volumes between the general use lanes and managed lanes was not provided in the approved 2017 IMR. Therefore, for the safety analysis in this IMR Reevaluation, the 2038 AADT for the I-75 general use lanes between SR 884 and SR 82 was estimated using the peak hour volumes for the general use lanes obtained from the HCS analysis included the approved 2017 IMR.

6.5 Safety Comparison

Table 10 summarizes the expected crashes for the study alternatives. **Appendix E** contains the safety performance analysis worksheets and crash data utilized for this study.

Due to the geometric configuration of the No-Build and Build alternatives, and as noted in **Table 10**, the application of HSM methodologies is limited in that there is not a distinct difference in the estimated crash frequencies per year between the two (2) alternatives. Based on the safety analysis, there is a slight increase in expected number of crashes in the Build alternative compared to the No Build alternative for the ramp segments. However, there is a slight reduction in expected number of crashes in the Build alternative compared to the No Build alternative for the freeway segment. Based on estimated average crash frequency during the study period (2018-2038) for the No Build and Build alternatives, the Build alternative is expected to have slightly more crashes per year (0.19) compared to the No Build alternative.

Table 10: Expected Number of Crashes for Years 2018 through 2038

Crash Segment Type	Crash Segment	No Build	Build	Difference (Build minus No Build)
Ramp	NB On-Ramp & SB Off-Ramp at I-75/SR 884 NB Off-Ramp at I-75/SR 82	36.81	46.43	9.62
Freeway	I-75 between SR 884 and SR 82	321.28	315.68	-5.60
Estimated Number of Crashes during Study Period		**358.09**	**362.11**	**4.02**
Estimated Average Crash Frequency during Study Period (crashes/year)		**17.05**	**17.24**	**0.19**

Even though the expected number of crashes and expected crash frequencies resulting from the HSM analysis are similar between the two alternatives, the proposed improvements from the Build Alternative provide for a safer operation because of the following:

- Under the No Build alternative, a merge condition is present on the I-75 NB on-ramp before the freeway-ramp gore point, whereas the Build alternative will provide an additional 1,650 feet distance for the outside ramp lane to merge with the inside lane. The enhanced merge condition under the Build alternative is anticipated to provide safer operations with more distance and smooth merging.
- The lane balance provided under the Build alternative because of choice lane at the I-75 exit ramps (NB off-ramp to SR 82 and SB off-ramp to SR 884) will provide safer operations as evidenced by the freeway operational results. The freeway operational results show that the demand on I-75

segment between SR 884 and SR 82 will exceed capacity resulting in LOS F under the No Build alternative, which may contribute to a higher number of crashes compared to the Build alternative.

- The Build condition does not need a lane change from the freeway to ramp and this condition is anticipated to reduce the sideswipe crashes.

7 Conceptual Signing Plan

The purpose of this section is to provide a preliminary signing plan based on the proposed alternative design modifications. Modifications to the existing roadway signs were evaluated in conjunction with the proposed interchange modifications to ensure that a proper signing plan is implemented at the interchange. A schematic of the proposed conceptual signing plan showing their locations is provided in **Appendix F** for the proposed alternative. The conceptual signing plan is based on the requirements described in Chapter 2D, and Chapter 2E through section 2H of the 2009 Manual on Uniform Traffic Control Devices (MUTCD).

8 Qualifying Provisions

FHWA Requirements and Guidelines state that the following two policy points and criteria be examined and addressed in the IMR documentation:

8.1 Policy Point 1

1. *An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, and ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections. The analysis should, particularly in urbanized areas, include at least the first adjacent existing or proposed interchange on either side of the proposed change in access (Title 23, Code of Federal Regulations (CFR), paragraphs 625.2(a), 655.603(d) and 771.111(f)). The crossroads and the local street network, to at least the first major intersection on either side of the proposed change in access, should be included in this analysis to the extent necessary to fully evaluate the safety and operational impacts that the proposed change in access and other transportation improvements may have on the local street network (23 CFR 625.2(a) and 655.603(d)). Requests for a proposed change in access should include a description and assessment of the impacts and ability of the proposed changes to safely and efficiently collect, distribute, and accommodate traffic on the Interstate facility, ramps, intersection of ramps with crossroad, and local street network (23 CFR 625.2(a) and 655.603(d)). Each request should also include a conceptual plan of the type and location of the signs proposed to support each design alternative (23 U.S.C. 109(d) and 23 CFR 655.603(d)).*

Response:

As demonstrated in the study analysis results, the proposed improvements under the Build alternative provide traffic operational benefit over the No Build alternative within the study area. Based on safety analysis, the Build alternative is anticipated to have a similar or a better safety profile compared to the No Build Alternative. The Build alternative provides lane balance per AASHTO standards at the I-75 NB exit ramp to SR 82 and I-75 southbound SB exit ramp to SR 884 and is therefore anticipated to provide a safer freeway weave segment with reduced number of lane changes.

8.1.1 Operational Analysis

A detailed traffic operational analysis for the opening year (2018) and design year (2038) conditions was conducted for this IMR Re-evaluation within the reduced area of influence per the approved MLOU. Key performance measures from the HCS freeway analysis including densities and LOS, and ramp volume over capacity ratios are used in this IMR. Based on the operational analysis, the following high-level operational analysis observations are noted:

8.1.1.1 Freeway Operational Analysis

- Freeway weave segment analysis indicates that the Build alternative is expected to operate at a much better LOS compared to the No Build alternative. The Build alternative is anticipated to operate at LOS C or better, while the No Build alternative is anticipated to operate at LOS F for the I-75 weave segment between SR 884 and SR 82 (see **Table 11**).
- The Build alternative, introducing the 2 lanes at the I-75 northbound exit ramp to SR 82 and the I-75 southbound exit ramp to SR 884 will provide lane balance per AASHTO standards and will consequently reduce the number of lane changes and improve safety.

Table 11: Year 2038 I-75 Weave Segment LOS Summary

Alternative		No Build				Build			
Mainline Segment	Segment Type	AM		PM		AM		PM	
		Density	LOS	Density	LOS	Density	LOS	Density	LOS
I-75 Northbound									
SR 884 On-Ramp to SR 82 Off-Ramp	Weave	20.6	F*	14.5	F*	24.8	C	21.5	C
I-75 Southbound									
SR 82 On-Ramp to SR 884 Off-Ramp	Weave	15.1	F*	18.7	F*	22.0	C	23.6	C

*Note: *Demand exceeds capacity and therefore the reported LOS is F.*

8.1.1.2 Ramp Capacity Analysis

- Under the No Build alternative design year 2038 conditions, the ramp segments for the I-75 northbound off-ramp to SR 82 and the I-75 southbound off-ramp to SR 884 are close to capacity, with volume over capacity ratios of greater than 0.8 (see **Table 12**).
- Under the Build alternative design year 2038 conditions, all the ramp segments have volume over capacity ratios of less than 0.5, which will help with both SR 884 and SR 82 operations as well (see **Table 12**).

Table 12: Design Year 2038 Ramp Capacity Analysis Summary

Analysis Year	Ramps	Ramp Volume		V/C Ratio - No Build				V/C Ratio - Build			
		AM	PM	Lanes	Capacity (vph)	AM	PM	Lanes	Capacity (vph)	AM	PM
Opening Year 2018	I-75 NB Off-Ramp to SR 82	1,191	1,541	1	1,836*	0.65	0.84	2	3,671*	0.32	0.42
	I-75 NB On-Ramp from SR 884	1,275	1,448	1		0.69	0.79	2		0.35	0.39
	I-75 SB Off-Ramp to SR 884	1,718	1,227	1		0.94	0.67	2		0.47	0.33

Notes:
1. Ramp capacity from HCM Exhibit 14-12 is adjusted for truck percentage and peak hour factor. A truck percentage of 7.0% and PHF of 0.95 are used.
2. Highlighted cells show V/C ratio greater than 0.8, which indicates that the ramp is close to reaching one-lane capacity.

8.1.2 Safety Analysis

Due to the geometric configuration of the No-Build and Build alternatives, and as noted in **Table 13**, the application of HSM methodologies is limited in that there is not a distinct difference in the estimated crash frequencies per year between the two (2) alternatives. Based on the safety analysis, there is a slight increase in expected number of crashes in the Build alternative compared to the No Build alternative for the ramp segments. However, there is a slight reduction in expected number of crashes in the Build alternative compared to the No Build alternative for the freeway segment. Based on estimated average crash frequency during the study period (2018-2038) for the No Build and Build alternatives, the Build alternative is expected to have slightly more crashes per year (0.19) compared to the No Build alternative.

Table 13: Expected Number of Crashes for Years 2018 through 2038

Crash Segment Type	Crash Segment	No Build	Build	Difference (Build minus No Build)
Ramp	NB On-Ramp & SB Off-Ramp at I-75/SR 884 NB Off-Ramp at I-75/SR 82	36.81	46.43	9.62
Freeway	I-75 between SR 884 and SR 82	321.28	315.68	-5.60
Estimated Number of Crashes during Study Period		**358.09**	**362.11**	**4.02**
Estimated Average Crash Frequency during Study Period (crashes/year)		**17.05**	**17.24**	**0.19**

Even though the expected number of crashes and expected crash frequencies resulting from the HSM analysis are similar between the two alternatives, the proposed improvements from the Build Alternative provide for a safer operation because of the following:

- Under the No Build alternative, a merge condition is present on the I-75 NB on-ramp before the freeway-ramp gore point, whereas the Build alternative will provide an additional 1,650 feet distance for the outside ramp lane to merge with the inside lane. The enhanced merge condition under the Build alternative is anticipated to provide safer operations with more distance and smooth merging.
- The lane balance provided under the Build alternative because of choice lane at the I-75 exit ramps (NB off-ramp to SR 82 and SB off-ramp to SR 884) will provide safer operations as evidenced by the freeway operational results. The freeway operational results show that the demand on I-75 segment between SR 884 and SR 82 will exceed capacity resulting in LOS F under the No Build alternative, which may contribute to a higher number of crashes compared to the Build alternative.
- The Build condition does not need a lane change from the freeway to ramp and this condition is anticipated to reduce the sideswipe crashes.

8.1.3 Conceptual Signing Plan

A conceptual signing plan is developed (**included in Appendix F**) for the proposed Build alternative. Modifications to the existing roadway signs were evaluated in conjunction with the proposed modifications to ensure that a proper signing plan is implemented within the study area.

8.2 Policy Point 2

2. *The proposed access connects to a public road only and will provide for all traffic movements. Less than "full interchanges" may be considered on a case-by-case basis for applications requiring special access, such as managed lanes (e.g., transit or high occupancy vehicle and high occupancy toll lanes) or park and ride lots. The proposed access will be designed to meet or exceed current standards (23 CFR 625.2(a), 625.4(a)(2), and 655.603(d)). In rare instances where all basic movements are not provided by the proposed design, the report should include a full-interchange option with a comparison of the operational and safety analyses to the partial-interchange option. The report should also include the mitigation proposed to compensate for the missing movements, including wayfinding signage, impacts on local intersections,- mitigation of driver expectation leading to wrong-way movements on ramps, etc. The report should describe whether future provision of a full interchange is precluded by the proposed design.*

Response:

Full access interchange conditions, as offered by the existing interchange at I-75 and SR 884, will remain with the proposed modification improvements. In addition, the proposed modifications will achieve benefits to the transportation system with no adverse impact to the public. The proposed improvements have been, and will continue to be, coordinated with the public and local government agencies. The design of the proposed improvements will follow the applicable FHWA and FDOT design standards.

8.3 Conclusions and Recommendations

The results of the analysis indicate that the proposed improvements under the Build alternative provide operational and safety benefits to the study area. The Build alternative offers significant benefits in terms of increased ramp segment capacities, improved LOS, and safer operations. As such, this IMR Reevaluation recommends that the proposed modifications to the approved 2017 IMR concept be implemented as part of the design-build process. The recommended improvements include:

- Widening the northbound on-ramp at the I-75 at SR 884 interchange from one lane to two lanes at the gore point to provide for improved operations at the ramp merge area.
- Widening the southbound off ramp at the I-75 at SR 884 interchange from one lane to two lanes at the diverge point from the mainline.
- Widening the northbound off ramp at the I-75 at SR 82 interchange from one lane to two lanes at the diverge point from the mainline.

9 Appendices

Appendix A – Methodology Letter of Understanding (MLOU)

Appendix B – Excerpts from 2017 IMR

Appendix C – Relevant Correspondence on Traffic Validation

Appendix D – Operational Analysis Outputs

Appendix E – Crash Data Information / Safety Analysis Worksheets

Appendix F – Conceptual Signing Plan

Appendix A

Methodology Letter of Understanding (MLOU)

Florida Department of Transportation Interchange Access Request

Methodology Letter of Understanding (MLOU)

Type of request	☐	IJR	☒	IMR Re-evaluation	☐	IOAR
Type of Process	☒	Programmatic	☐	Non-Programmatic		

I-75 at SR 884 (Colonial Boulevard) Interchange Modification Report (IMR) Re-evaluation

FPID: 413065-1

Coordination of assumptions, procedures, data, networks, and outputs for project traffic review during the access request process will be maintained throughout the evaluation process.

Full compliance with all MLOU requirements does not obligate the Acceptance Authorities to accept the IAR.

The Requestor shall inform the approval authorities of any changes to the approved methodology in the MLOU and an amendment shall be prepared if determined to be necessary.

Requestor

DocuSigned by: Kati Sherrard, P.E., CPM
F32DDD591732411...

Kati Sherrard, P.E., CPM — 3/31/2020 | 3:43 PM EDT

District One Interstate Program Manager — *Date*

Interchange Review Coordinator

DocuSigned by: Christopher Simpron
E637CC312BAD4D3...

Christopher Simpron — 3/31/2020 | 4:11 PM EDT

District One Interchange Coordinator — *Date*

Systems Management Administrator

DocuSigned by: Jenna Bowman
4AD03E6A337F4C1...

Jenna Bowman, PE — 4/1/2020 | 7:40 AM EDT

Systems Implementation Office – Central Office — *Date*

1.0 Project Description

Provide background or supporting information that explains the basis for the request.

The existing I-75 at SR 884 (Colonial Boulevard) interchange is located in Lee County, Florida. I-75 is a six lane (three lanes in each direction) north-south interstate facility in the vicinity of the existing SR 884 (Colonial Boulevard) interchange. The posted speed limit on I-75 is 70 mph. SR 884 (Colonial Boulevard) is a six-lane divided urban principal arterial in the vicinity of the interchange.

An Interchange Modification Report (IMR) was approved on August 7, 2017 documenting the future reconstruction of the interchange to a Diverging Diamond Interchange (DDI) configuration. Other improvements along SR 884 (Colonial Boulevard) include a Continuous Flow Intersection (CFI) to the west at the intersection of Six Mile Cypress Parkway/Ortiz Avenue and a Superstreet intersection to the east at the-Forum Boulevard intersection. The approved IMR also considered construction of northbound and southbound auxiliary lanes on I-75 between the SR 884 (Colonial Boulevard) and SR 82 (MLK Jr. Boulevard) interchange to the north. Reconstruction of the interchange is scheduled to be let in June 2020 and will proceed as a design-build project.

This MLOU for a re-evaluation of the IMR is developed in accordance with the FDOT Policy No. 000-525-015, "Approval of New or Modified Access to Limited Access Highways on the State Highway System (SHS)"; FDOT Interchange Access Request User's Guide (IARUG), New or Modified Interchanges FDOT Procedure No. 525-030-160; and the Project Traffic Forecasting FDOT Procedure No. 525-030-120.

The objective of the IMR Re-evaluation is to accommodate the following proposed modifications to the approved IMR concept as part of the design-build process:

- The northbound on-ramp at the I-75 at SR 884 (Colonial Boulevard) interchange will be widened from the approved one lane to proposed two lanes at the gore point to provide for improved operations at the ramp merge area.

This IMR Re-evaluation will provide an operational and safety assessment of the proposed modification to widen the northbound on-ramp to two lanes at the gore point, and the associated merge into one mainline auxiliary lane beyond.

Other refinements to the I-75 at SR 884 (Colonial Boulevard) interchange design-build project associated with the implementation of northbound and southbound auxiliary lanes include:

- The I-75 southbound off ramp at the SR 884 (Colonial Boulevard) interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.

- Similarly, the northbound off ramp at the I-75 at SR 82 (MLK Jr. Boulevard) interchange will be widened from the existing one lane to two lanes at the diverge point from the mainline.

A. Purpose and Need Statement

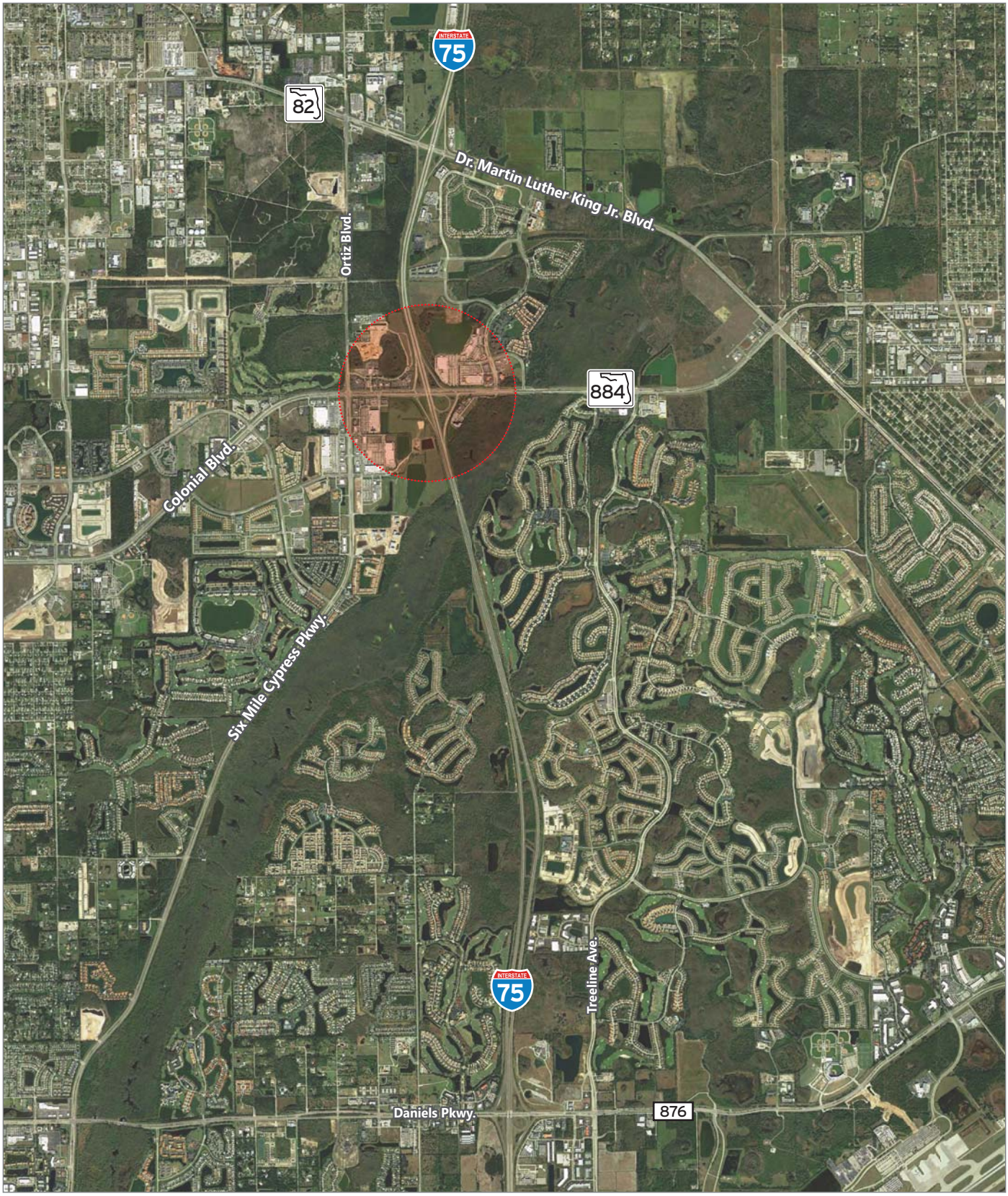
The purpose and need remains consistent with that of the approved IMR (associated excerpts from the approved IMR included in Appendix A).

B. Project Location

The I-75 at SR 884 (Colonial Boulevard) interchange is located in Lee County, Florida. I-75 is a six lane (three lanes in each direction) north-south interstate facility in the vicinity of the existing SR 884 (Colonial Boulevard) interchange. The posted speed limit on I-75 is 70 mph. SR 884 (Colonial Boulevard) is a six-lane divided urban principal arterial in the vicinity of the interchange. The interchange location is illustrated on Figure 1.

\\vhb\gbl\proj\Orlando\63551.01 Gen Transp Plan Support\Graphics\FIGURES\I-75 and SR 884\AI

Source: Google Earth Pro



N

N.T.S.

Project Location

FDOT

Figure 1

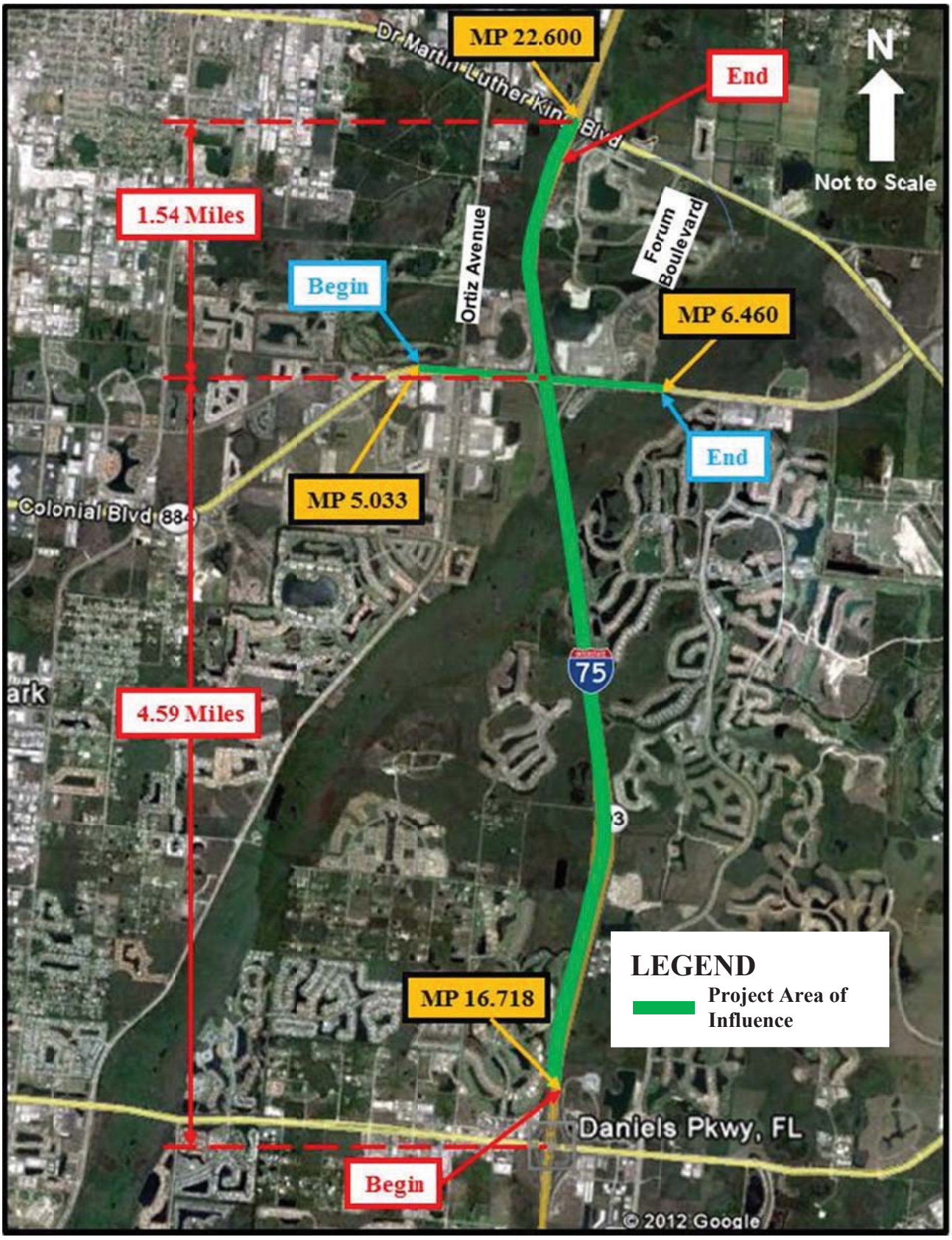
Project Location
I-75 at SR 884 (Colonial Blvd)

C. *Area of Influence*

The Area of Influence (AOI) for this IMR Re-evaluation is consistent with the AOI from the approved 2017 IMR. As seen in Figure 2, the AOI along I-75 extends from southbound off/northbound on ramps at Daniels Parkway (County Highway 876) interchange in the south to southbound on/northbound off ramps at SR 82 (MLK Jr. Boulevard) in the north. Along Colonial Boulevard, the AOI limits extend from ¼ mile west of Ortiz Avenue to ¼ mile east of Dynasty Drive. The analysis will be limited to the freeway elements that are changing as part of this IMR Re-evaluation. The analysis from the approved 2017 IMR will not change for the interchange elements that are not being changed.

\\vhb\gbl\proj\Orlando\63551.01 Gen Transp Plan Support\Graphics\FIGURES\I-75 and SR 884\AI

Source: Google Earth



*The Area of Influence figure was obtained from the I-75 at Colonial Boulevard (SR 884) Interchange Modification Report (IMR) approved in 2017.

** Analysis area will be limited to the freeway elements that are changing as part of this IMR Re-evaluation.

FDOT

Figure 2

Area of Influence
I-75 at SR 884 (Colonial Blvd)

D. Project Schedule

Identify the schedule of production activities consistent with a proposed conceptual funding plan and opening year.

The following is the anticipated schedule for this project:

- IMR Re-evaluation – Underway
- Design Change Re-evaluation – Underway
- Design-Build RFP Procurement - Underway
- Construction - Scheduled to be let in June 2020

2.0 Analysis Years

A. Traffic Forecasting

- Base year *
- Horizon year *

**Base and horizon years remain consistent with the approved IMR*

B. Traffic Operational Analysis

- Opening year – 2018 *
- Design year – 2038 *

**IMR Re-evaluation will use traffic forecasts from the approved IMR*

A traffic validation analysis approved by FDOT Central Office determined that the approved IMR traffic forecasts are conservative and are still relevant for evaluating minor design changes to the previously approved IMR preferred alternative. Relevant correspondence on the traffic validation is included in Appendix B.

The excerpts from the approved IMR included in Appendix A provide the opening year 2018 and design year 2038 AADTs and peak hour volumes that will be used in the IMR Re-evaluation.

3.0 Alternatives

The No-Build and Build alternatives shall be analyzed in the IAR. Details of all reasonable build alternatives considered, including those eliminated from further considerations, shall be documented. The documentation for the alternatives eliminated can be minimal like a summary of what was considered, reasons for elimination etc. Build Alternatives meeting purpose and need of the project shall have a more detailed description and evaluated in the IAR.

No Build: This represents the interchange configuration approved as part of the 2017 IMR. This scenario includes a northbound on-ramp with a single lane at the gore point that feeds directly into a mainline auxiliary lane between the SR 884 (Colonial Boulevard) and SR 82 (MLK Jr. Boulevard) interchanges with I-75.

Build: This represents a modified version of the interchange configuration approved as part of the 2017 IMR. The Build scenario includes a modified northbound on-ramp with two lanes at the gore point that will merge into one mainline auxiliary lane beyond. This improvement will be the focus of the analysis in the IMR Re-evaluation.

TSM&O: The implementation of other TSM&O alternatives was addressed in the approved IMR and is not applicable for this IMR Re-evaluation.

4.0 Data Collection

The type of data that may be used should be identified.

*A. Transportation System Data**
*B. Existing and Historical Traffic Data**
*C. Land Use Data**
*D. Environmental Data**
*E. Planned and Programmed Projects**

** The IMR Re-evaluation will use the data collection performed as part of the approved IMR. No additional data collection will be performed.*

5.0 Travel Demand Forecasting

A traffic validation analysis approved by FDOT Central Office determined that the approved IMR traffic forecasts are conservative and are still relevant for evaluating minor design changes to the previously approved IMR preferred alternative. Relevant correspondence on the traffic validation is included in Appendix B.

*A. Selected Travel Demand Model(s) **
*B. Project Traffic Forecast Development Methodology **
*C. Validation Methodology **
*D. Adjustment Procedures **
*E. Traffic Factors **

** The IMR Re-evaluation will use the future traffic forecasts included in the approved IMR. The excerpts from the approved IMR included in **Appendix A** provide the opening year 2018 and design year 2038 AADTs and peak hour volumes that will be used in the IMR Re-evaluation.*

6.0 Traffic Operational Analysis

The area type, traffic conditions, and analysis tools to be used are summarized in this section.

A. Existing Area Type/Traffic Conditions

Area Type	Conditions	
	Under Saturated	Saturated
Rural	☐	☐
Urban Area/Transitioning Area	☐	☒

B. Traffic Analysis Software Used

Software		System Component					
		Freeway				Crossroad	
Name	Version	Basic Segment	Weaving	Ramp Merge	Ramp Diverge	Arterials	Intersections
HCS/HCM	7/6	☒	☒	☐	☐	☐	☐
Synchro		☐	☐	☐	☐	☐	☐
SimTraffic		☐	☐	☐	☐	☐	☐
Corsim		☐	☐	☐	☐	☐	☐
Vissim		☐	☐	☐	☐	☐	☐
Other*		☐	☒	☐	☐	☐	☐

Note: Other traffic analysis method includes volume over count ratio for the northbound on-ramp segment.*

C. Calibration Methodology

- *Calibration methodology and parameters utilized will be documented.*
- *Calibration Measures of Effectiveness (MOEs) and calibration targets.*

Not applicable

D. Selection of Measures of Effectiveness (MOE)

- *The Level of Service criteria for each roadway classification, including mainline, ramps, ramp terminal intersections and the crossroad beyond the interchange ramp terminal intersections are identified below.*

  Level of Service Targets for I-75 mainline and ramps is LOS D per the State Highway System, Policy No. 000-525-006c, effective April 19, 2017.

  I-75 northbound facility (basic and weave segments) between SR 884 (Colonial Boulevard) and SR 82 (MLK Jr. Boulevard) and the northbound on-ramp from SR 884 (Colonial Boulevard) to I-75 will be evaluated following Highway Capacity Manual (HCM) Level of Service (LOS) guidelines. LOS will be based on density for the freeway segment and V/C ratio will be used to assess the ramp segment capacity.

- *In addition to the Level of Service criteria, state other operational MOEs to be utilized for the evaluation of alternatives.*

  Not applicable

7.0 Safety Analysis

☒ Detailed crash data within the AOI will be analyzed and documented.
Years: 2013-2017 (or most current approved 5-year data set)
Source: FDOT Crash Analysis Reporting System (CARS)

☒ Highway Safety Manual (HSM) methodologies will be utilized to assess the geometric options for the ramps and freeway segment in the study area. The safety analysis will be performed for the most recently FDOT-approved five years of crash data. Safety analysis will document crash rate, crash patterns, crash types, and their contributing causes for existing conditions and will provide safety impact (positive or negative) of the proposed improvements for the design year.
Due to the unique geometric configuration and operational plan being proposed, the application of HSM methodologies is limited. HSM methodologies will be explored for applicability to the proposed alternative.

8.0 Consistency with Other Plans/Projects *

A. *The request will be reviewed for consistency with facility Master Plans, Actions Plans, SIS Plan, MPO Long Range Transportation Plans, Local Government Comprehensive Plans or development applications, etc.*

B. *Where the request is inconsistent with any plan, steps to bring the plan into consistency will be developed.*

C. *The operational relationship of this request to the other interchanges will be reviewed and documented. The following other IARs are located within the area of influence.*

*A review of consistency with other plans was performed during the preparation of the approved IMR. Additional review for consistency with other plans is not applicable to this IMR Re-evaluation.

9.0 Environmental Considerations

A. *Status of Environmental Approval and permitting process.*

An environmental assessment is not needed for this project as this project is classified as a Design Change Re-evaluation.

B. *Identify the environmental considerations that could influence the outcome of the alternative development and selection process.*

This is not applicable to this project as this project is classified as a Design Change Re-evaluation.

10.0 Coordination *

Yes	No/NA	
☐	☒	An appropriate effort of coordination will be made with appropriate proposed developments in the area.
☐	☒	Request will identify and include (if applicable) a commitment to complete the other non-interchange/non-intersection improvements that are necessary for the interchange/intersection to function as proposed.
☐	☒	Request will document whether the project requires financial or infrastructure commitments from other agencies, organizations, or private entities.
☐	☒	Request will document any pre-condition contingencies required in regards to the timing of other improvements and their inclusion in a TIP/STIP/LRTP prior to the Interstate access approval (final approval of NEPA document).
☐	☒	Request will document the funding and phasing.

** Extensive coordination was performed as part of the approved IMR. No additional coordination is needed for the purpose of this IMR Re-evaluation.*

11.0 Anticipated Design Exceptions and Variations

☒ *Design exceptions/variations are not anticipated, but if an exception/variation should arise it will be processed per FHWA and FDOT standards.*

☐ *The following exceptions/variations to FDOT, AASHTO or FHWA rules, policies, standards, criteria or procedures have been identified:*

12.0 Conceptual Signing Plan

A conceptual signing and marking plan will be prepared and included in the access request.

13.0 Access Management Plan

☒ *Access management plan within the area of influence will not be changed by the proposed improvements to the interchange.*

☐ *The improvement will affect access management within the area of influence will be changed. An access management plan will be developed within the area of influence to complement the improvements to the interchange:*

14.0 FHWA Policy Points

The following FHWA Policy on Access to the Interstate System requirements (updated May 22, 2017) will be specifically addressed within the request unless identified as not applicable:

1. Operational and Safety Analysis: An operational and safety analysis has concluded that the proposed change in access does not have a significant adverse impact on the safety and operation of the Interstate facility (which includes mainline lanes, existing, new, or modified ramps, ramp intersections with crossroad) or on the local street network based on both the current and the planned future traffic projections.

2. Access Connections and Design: The proposed access connects to a public road only and will provide for all traffic movements.

Appendix A

Approved 2017 IMR Excerpts

Modification Report (SIMR) approved on 8/8/2008 and also, in Interchange Operational Analysis Report (IOAR) prepared for Lee County and approved by FHWA on 7/20/2009. When the auxiliary lane is built, I-75 NB Off Ramp to SR 82 needs to be modified to a two-lane diverge for lane balance purposes per AASHTO standards. In this context, the I-75 SB Off Ramp to SR 884 would also be a two-lane diverge when the auxiliary lane is built for lane balance purposes.

- The intersection analysis shows that all the intersections within the study limits operate with average delay at an overall acceptable level of service D or better for the Build scenario.

DESIGN YEAR 2038 ANALYSIS

The design year for this IMR is considered to be 2038. Interchange alternatives were evaluated for the design year and preferred build Alternative 4 Improved was selected based upon traffic operations and feasibility of construction relative to conserving the recently widened I-75 bridges. As stated earlier, Alternative 4 Improved is recommended – the Diverging Diamond Interchange (DDI) alternative with the Ortiz Avenue intersection converted into a Continuous Flow Intersection (CFI) and the Forum Boulevard intersection converted into a Superstreet (SS).

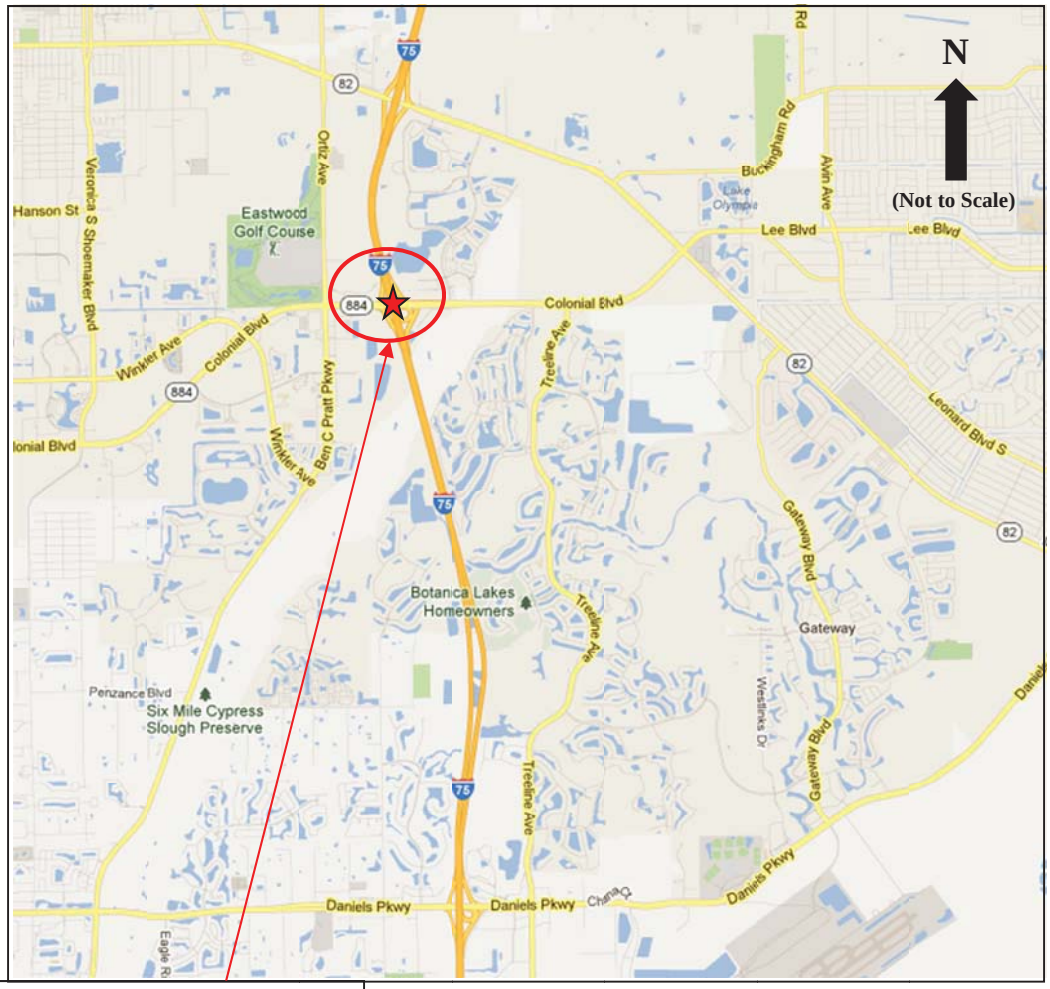
- Under the No-Build condition all of the freeway segments and ramp merge/diverge junctions do not operate at an acceptable level of service during the AM peak period or the PM peak period, or during both the peak periods.
- Under the Build condition, all of the freeway segments and the ramp merge/diverge junctions within the study area operate at an acceptable level of service under the Build condition, with the exception of a weaving segment along I-75 between Colonial Boulevard and SR 82. This weaving segment fails to operate at an acceptable level of service in both northbound and southbound directions based on volume-over-capacity ratios. Therefore, under the Build condition, an additional auxiliary lane was added along I-75 in each direction between Colonial Boulevard and SR 82 to mitigate the weaving issue. When the auxiliary lane is built, the I-75 NB

Construction funding for the DDI with a Continuous Flow Intersection (CFI) to the west of the interchange and a Superstreet (SS) to the east as the current preferred alternative is programmed in 2019.

PURPOSE AND NEED

An Interchange Modification Report (IMR) for the interchange of I-75 and SR 884 (Colonial Boulevard) was prepared per request from FDOT District 1. The project limits for the study along Colonial Boulevard extend from approximately ¼ mile west of Ortiz Avenue to approximately ¼ mile east of Dynasty Drive. The subject interchange is located in the City of Fort Myers. Colonial Boulevard, within the project limits, is located in Lee County, Florida. The location of the interchange is depicted in **Figure 2-1**.

Figure 2-1 Interchange Project Location Map



INTERCHANGE LOCATION

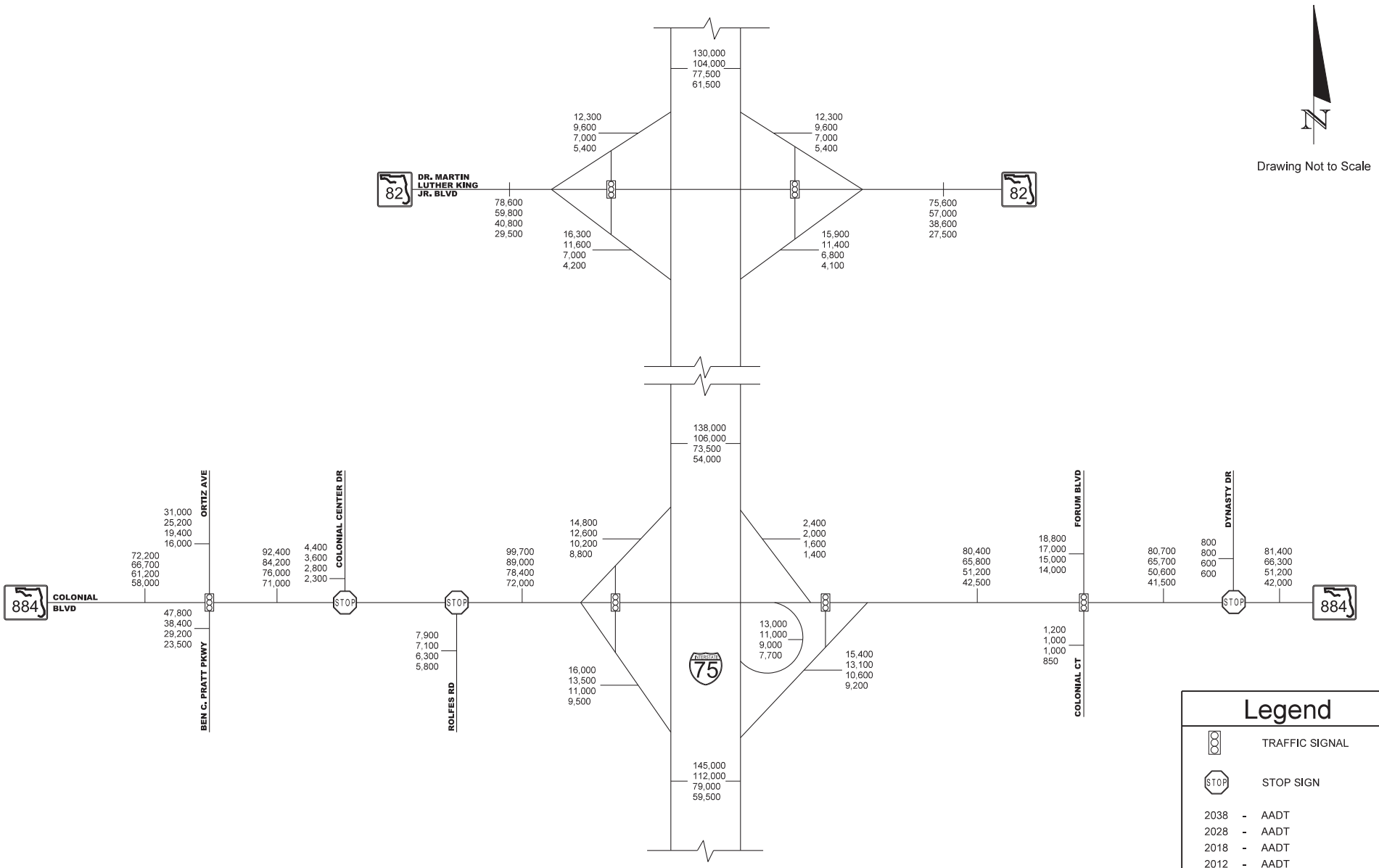
The purpose of this project is to re-evaluate the preferred alternative at the study interchange for improved operations to meet future traffic needs. Prior actions at this location include a Type 2 Categorical Exclusion approved by FHWA on 12/30/2002 and a System Interchange Modification Report (SIMR) approved on 8/8/2008 that recommended reconfiguring the interchange to a Single Point Urban Interchange (SPUI) as the preferred alternative. Implementing the SIMR preferred alternative would require replacement of the recently reconstructed I-75 bridges over Colonial Boulevard. An Interchange Operational Analysis Report (IOAR) was prepared by Lee County and approved by FHWA on 7/20/2009. Recently in 2011, FDOT widened I-75 to six lanes and widened the existing bridges over Colonial Boulevard. Also, Lee County widened Colonial Boulevard to six lanes in 2012. In order to salvage the newly widened bridges, FHWA suggested to FDOT a reassessment of the study interchange may be appropriate. This analysis was performed in accordance with the approved Methodology Letter of Understanding (MLOU), the guidelines and methodologies consistent with FHWA, FDOT and Lee County.

According to the 2035 Collier and Lee Counties Long Range Transportation Plan (LRTP), the study section of Colonial Boulevard will be a deficient corridor. Under the existing condition as of year 2009, the level of service (LOS) for the section of Colonial Boulevard from Ortiz Avenue to I-75 is LOS F. According to the Collier and Lee Counties 2035 LRTP, the population of Lee County is expected to increase from 593,136 in 2007 to 1,034,400 in 2035 (increase = 74%) and the employment from 278,203 to 440,334 (increase = 58%).

The proposed interchange improvement at I-75 and Colonial Boulevard and the widening of Colonial Boulevard is needed to help serve travel demands created by anticipated countywide population and employment growth and is anticipated to contribute to better traffic operation. The project is anticipated to enhance overall safety, capacity, and mobility within Lee County, since Colonial Boulevard is a major principal arterial and the future land use designation along this corridor is intensive commercial. In addition, the planned improvements will enhance access to I-75. Colonial Boulevard, a regional facility, is part of the evacuation route network established by the Florida Division of Emergency Management. The improvements to interchange of I-75 and Colonial Boulevard are anticipated to enhance evacuation capacity

and traffic circulation, which will improve evacuation and response times. As a result, the safety of Lee County residents will be enhanced.

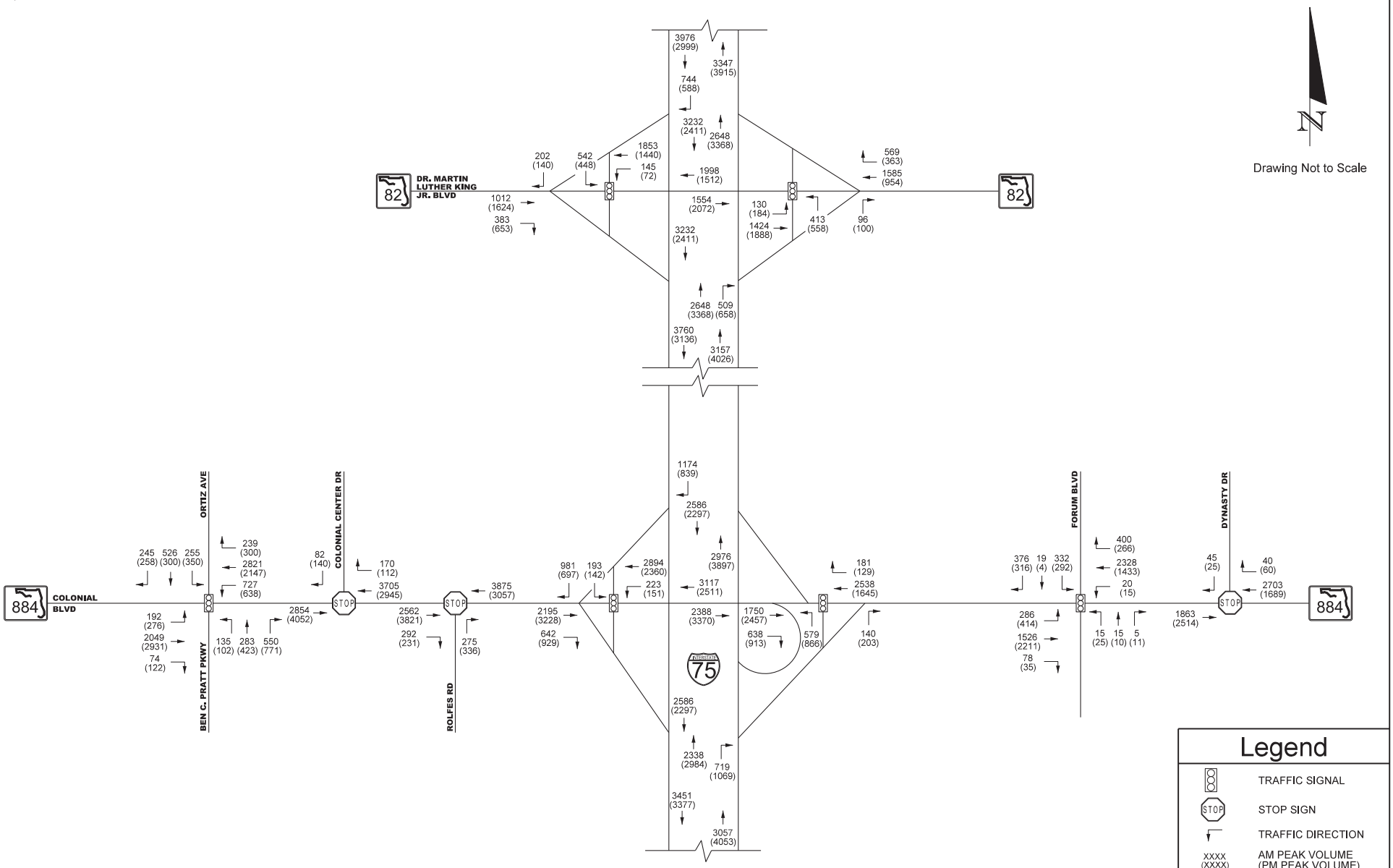
The need for this interchange improvement at I-75 and Colonial Boulevard is identified in the 2035 Highway Needs Plan and also identified on the Lee County Highway Cost Feasible Plan included in Collier and Lee Counties 2035 Regional LRTP. This has been included in **Appendix A**. The project's identified objectives meet the provisions of the Moving Ahead for Progress in the 21st Century (MAP-21) Act. Recently in 2011, FDOT widened I-75 to six lanes and widened the existing bridges over Colonial Boulevard. Also, Lee County widened Colonial Boulevard to six lanes in 2012. A number of proposed alternatives that can salvage the newly widened bridges will be considered and analyzed to address these needs.



I-75 at SR 884 (Colonial Blvd) IMR

(FPN: 413065-1-32-01)

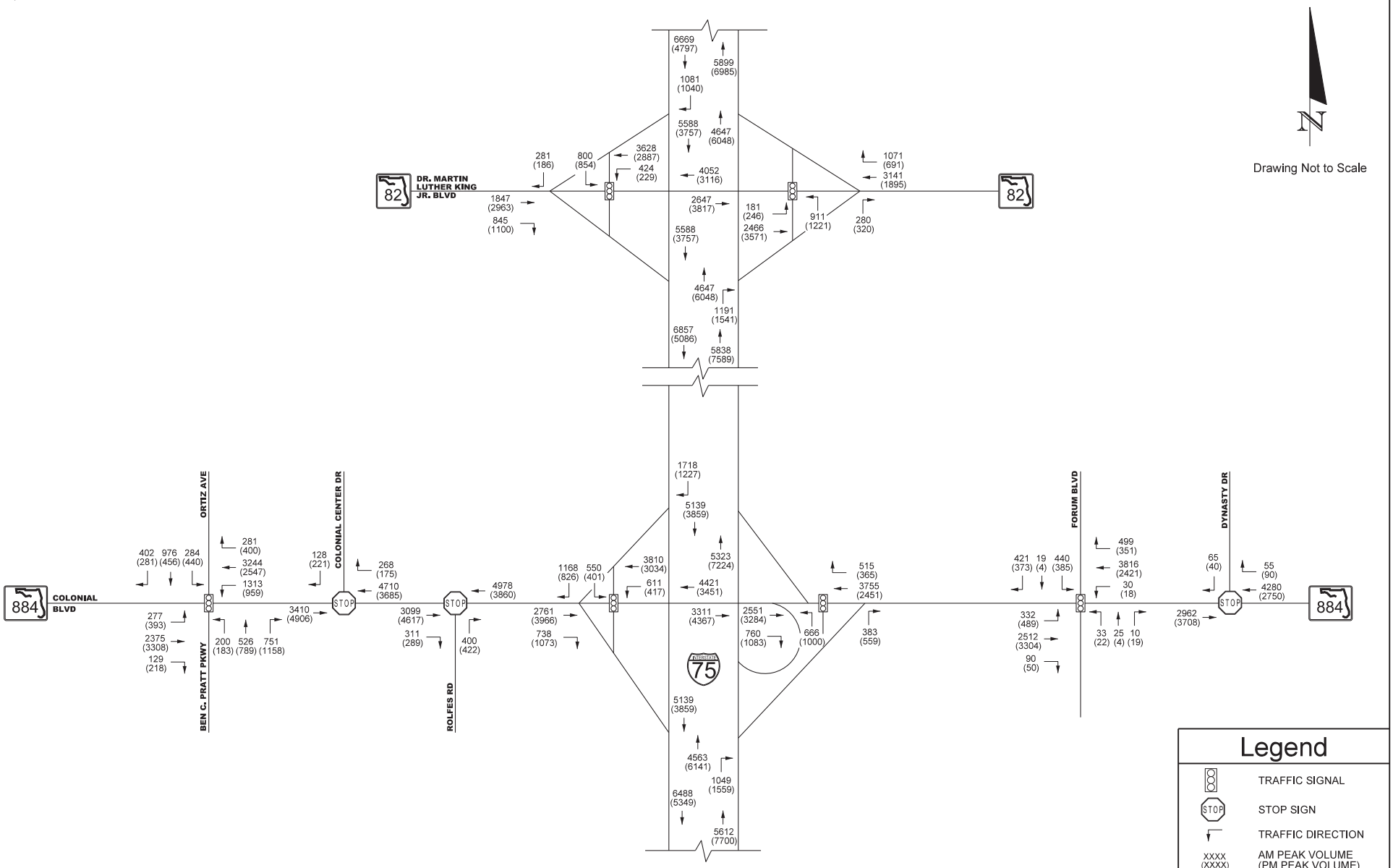
Figure 10-1
Future No-Build and Build AADT



I-75 at SR 884 (Colonial Blvd) IMR

(FPN: 413065-1-32-01)

Figure 10-2
Opening Year 2018 Peak Hour Traffic Volumes



I-75 at SR 884 (Colonial Blvd) IMR

(FPN: 413065-1-32-01)

Figure 10-4
Design Year 2038 Peak Hour Traffic Volumes

Appendix B

Approved IMR Traffic Validation

From: Bowman, Jenna <Jenna.Bowman@dot.state.fl.us>
Sent: Thursday, February 27, 2020 4:20 PM
To: Simpron, Christopher
Cc: Causseaux, Amy; Edmonston, Chris; Mills, Nicole; Massey, Lawrence; Sherrard, Kati; Jester, Joshua
Subject: RE: I-75 at Colonial Traffic Validation

Chris,

I have reviewed the Validation submitted and we will accept it based on the information that the 2040 projects from the IMR are higher than the anticipated volumes. Your below justification should be included in the document as the justification. Please let me know if you have any questions. I will be traveling Monday and Tuesday next week but will response as soon as I am available. Let me know if you have any questions.

Jenna Bowman, PE
Systems Management Administrator
Systems Implementation Office
Florida Department of Transportation
605 Suwannee Street |MS 19 | Burns Building Tallahassee, FL 32399-0450
PH: 850-414-4909
EMAIL: jenna.bowman@dot.state.fl.us

From: Simpron, Christopher <Christopher.Simpron@dot.state.fl.us>
Sent: Thursday, February 27, 2020 10:08 AM
To: Bowman, Jenna <Jenna.Bowman@dot.state.fl.us>
Cc: Causseaux, Amy <Amy.Causseaux@dot.state.fl.us>; Edmonston, Chris <Chris.Edmonston@dot.state.fl.us>; Mills, Nicole <Nicole.Mills@dot.state.fl.us>; Massey, Lawrence <Lawrence.Massey@dot.state.fl.us>; Sherrard, Kati <Kati.Sherrard@dot.state.fl.us>; Jester, Joshua <Joshua.Jester@dot.state.fl.us>
Subject: I-75 at Colonial Traffic Validation
Importance: High

Jenna,

As you previously-mentioned and as agreed during our conference call on February 24, 2020 for the proposed modification of the I-75/Colonial northbound on-ramp, we have developed a table summarizing the "traffic validation" (following the format included in the IAR tracking sharepoint site) for the Final Interchange Modification Report (IMR) for the I-75 (SR-93) at SR 884 (Colonial Boulevard) approved in August 2017. The traffic validation analysis involved:

1. A review of short-term traffic forecasts from the IMR against the actual traffic counts that have been conducted since the IMR was completed, and

2. A comparison of the long-term model forecasts in the IMR to those being generated by the most current version of the District 1 Regional Planning Model (D1RPM).

As seen in the table, the IMR 2018 traffic projections along SR 884 were found to be accurate as they are within 10% of the actual traffic counts obtained from the Florida Traffic Online (FTO) database and traffic counts collected by the I-75 Managed Lanes PD&E. The IMR 2018 traffic projections along I-75 proved to be approximately 27% lower than the actual traffic counts obtained from the FTO database. It is to be noted that the high growth in traffic volumes over the last 6 to 7 years is associated with the upturn in the economy and has been documented in in many locations throughout the state.

The design year (2038) traffic forecasts developed in the IMR were primarily based on the Lee-Collier (LC) travel demand model that was the current model at the time of the IMR traffic study. The LC model utilized a horizon year of 2035. District 1 has since developed a districtwide model (D1RPM) that utilizes a horizon year of 2040. The D1RPM is the current adopted travel demand model used throughout the District. To assess the reasonableness of the IMR's forecasts, the IMR's opening year 2018 and design year 2038 traffic were extrapolated to develop "IMR 2040 AADT" forecasts, which were subsequently compared to the year 2040 AADT projections obtained from the most recent version of the 2040 D1RPM. To ensure that the D1RPM was up to date, the most recent future (2040) socio-economic data was requested and obtained from Lee County late in 2019 as part of the I-75 Managed Lanes PD&E travel demand modeling efforts. The attached table summarizes the assessment and comparison of the "IMR 2040 AADT" and the D1RPM 2040 AADT. The comparison shows that the IMR forecasted volumes along I-75 that are approximately 17% to 22% higher than those of the D1RPM. Along SR 884, the two methods are more consistent, showing similar year 2040 volumes.

Even though the short-term 2018 traffic forecasts from the IMR are relatively lower than the existing traffic counts, the IMR preferred alternative was developed using the IMR long-term forecasts which are generally higher or in line with the latest D1RPM forecasts. **Therefore, it is concluded that the IMR traffic forecasts are conservative and are still relevant for evaluating minor design changes to the previously-approved IMR preferred alternative.**

As you may already be aware, Bikram can't be involved on this review since Hanson is a sub of one of the D-B firms pursuing for this design-build contract in D1. As agreed during our 02/24 conference call, we will submit a "simplified" MLOU in ERC (with 5 business days review period) outlining the operational and safety analysis you recommended during our call for CO review and approval.

Thank you for your continued support!

Christopher Simpron
Transportation Planner/Modeler
FDOT-District One
Intermodal Systems Development
Systems Planning Office
Phone (863) 519-2343

Comparison of AADTs at I-75 / Colonial Boulevard Interchange

FDOT Station #	Location	FDOT Traffic Count 2012 AADT	FDOT Traffic Count 2018 AADT	IMR 2018 AADT	Existing Count vs. 2018 IMR	IMR 2040 AADT [4]	D1RPM 2040 AADT	2040 D1RPM vs. 2040 IMR
120058	I-75 North of Colonial Blvd	59,500	93,500	73,500	27%	144,500	119,300	-17%
120057	I-75 South of Colonial Blvd	65,000	100,500	79,000	27%	151,600	118,500	-22%
NA [1]	Colonial Blvd East of I-75	42,500 [2]	56,400 [3]	51,200	10%	83,300	80,900	-3%
120063	Colonial Blvd West of I-75	75,000	85,000	78,400	8%	101,800	106,800	5%
	All Locations		**335,400**	**282,100**	**19%**	**481,200**	**425,500**	**-12%**

1. No FDOT count station available.

2. 2012 AADT obtained from IMR

3. Obtained from 2019 traffic counts collected by the I-75 Managed Lanes PD&E Team

4. Extrapolated using 2018 and 2038 IMR AADT

Appendix B

Excerpts from 2017 IMR

INTERSTATE 75 AND STATE ROAD 884 (COLONIAL BOULEVARD) INTERCHANGE

LEE COUNTY, FLORIDA

INTERCHANGE MODIFICATION REPORT

Prepared for:

Florida Department of Transportation – District One

July 2017

Interchange Modification Report (IMR)

I-75 and SR 884 (Colonial Blvd.) Interchange

Financial Project Number 413065-1-32-01

Florida Department of Transportation

Determination of Engineering and Operational Acceptability

Acceptance of this document indicates successful completion of the review and determination of engineering and operational acceptability of the Interchange Access Request. Approval of the access request is contingent upon compliance with applicable Federal requirements, specifically the National Environmental Policy Act (NEPA) or Department's Project Development and Environment (PD&E) Procedures. Completion of the NEPA/PD&E process is considered approval of the project location design concept described in the environmental document.

Requestor	Justin Reck Design Office – District One	8/1/17 Date
Interchange Review Coordinator	Christopher Simpron Systems Planning Office – District One	8/1/17 Date
State Interchange Review Coordinator	Andrew Young Systems Planning Office – Central Office	8/2/17 Date
State Chief Engineer	Courtney Drummond, P.E.	8/2/17 Date

Interchange Modification Report
Interstate 75 and State Road 884 (Colonial Boulevard), Lee County, Florida

I, Akram M. Hussein, Florida P.E. Number 58069, have prepared or reviewed/supervised the traffic analysis contained in this study. The study has been prepared in accordance and following guidelines and methodologies consistent with FHWA, FDOT and Lee County policies and technical standards. Based on traffic count information, general data sources, and other pertinent information, I certify that this traffic analysis has been prepared using current and acceptable traffic engineering and transportation planning practices and procedures.

AKRAM M. HUSSEIN LICENSE No. 58069 STATE OF FLORIDA PROFESSIONAL ENGINEER

Akram M. Hussein, P.E. #58069

08/12/2019

Date

Table 4-1 Approved K, D, T Factors

Roadway	K	D_{30}	T_{daily}	DHT = 0.5* T_{daily} (Design Hour Truck)
I-75	9.0%	57.0%	13.0%	7.0%
SR 884	9.0%	59.0%	5.5%	3.0%
SR 82[1]	9.0%	62.0%	8.5%	4.0%
SR 884 and SR 82 Ramps	9.0%	-[2]	8.5%[1]	4.0%

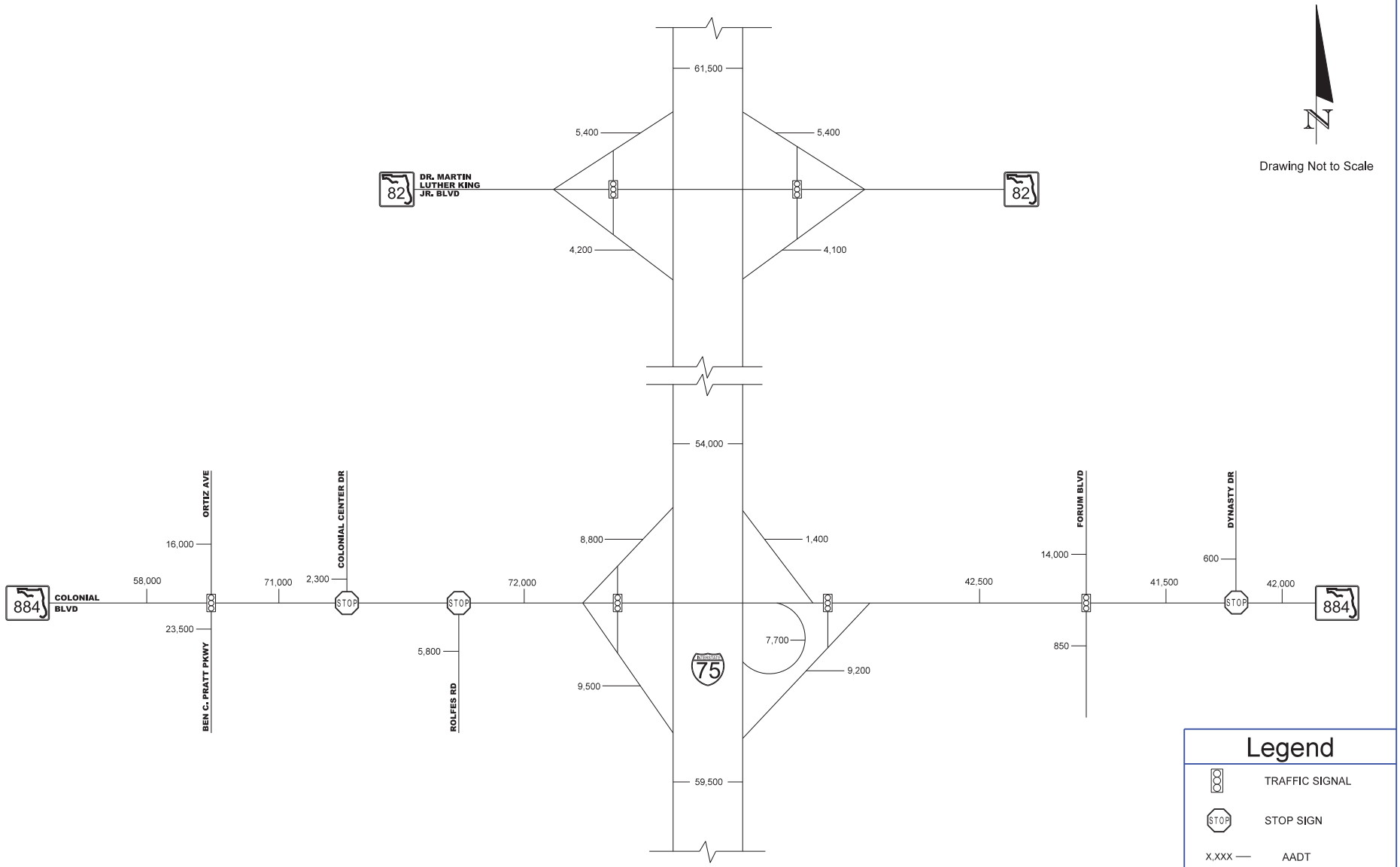
[1] From 2011 FTI CD.
[2] As appropriate.

Table 4-2 Traffic Trends

Count Location	FDOT Count Station	Traffic Count			Annual Historic Growth Rate	
		2006	2012	2016	2012 to 2016	2006 to 2016
Colonial Blvd East of Treeline Ave	124616	N/A	39500	52500	9.33%	N/A
Colonial Blvd West of I-75	120063	83000	75000	85000	3.96%	0.35%
I-75 North of Colonial Blvd	120058	79500	59500	86000	10.33%	1.27%
I-75 South of Colonial Blvd	120057	78500	65000	90000	10.19%	2.02%

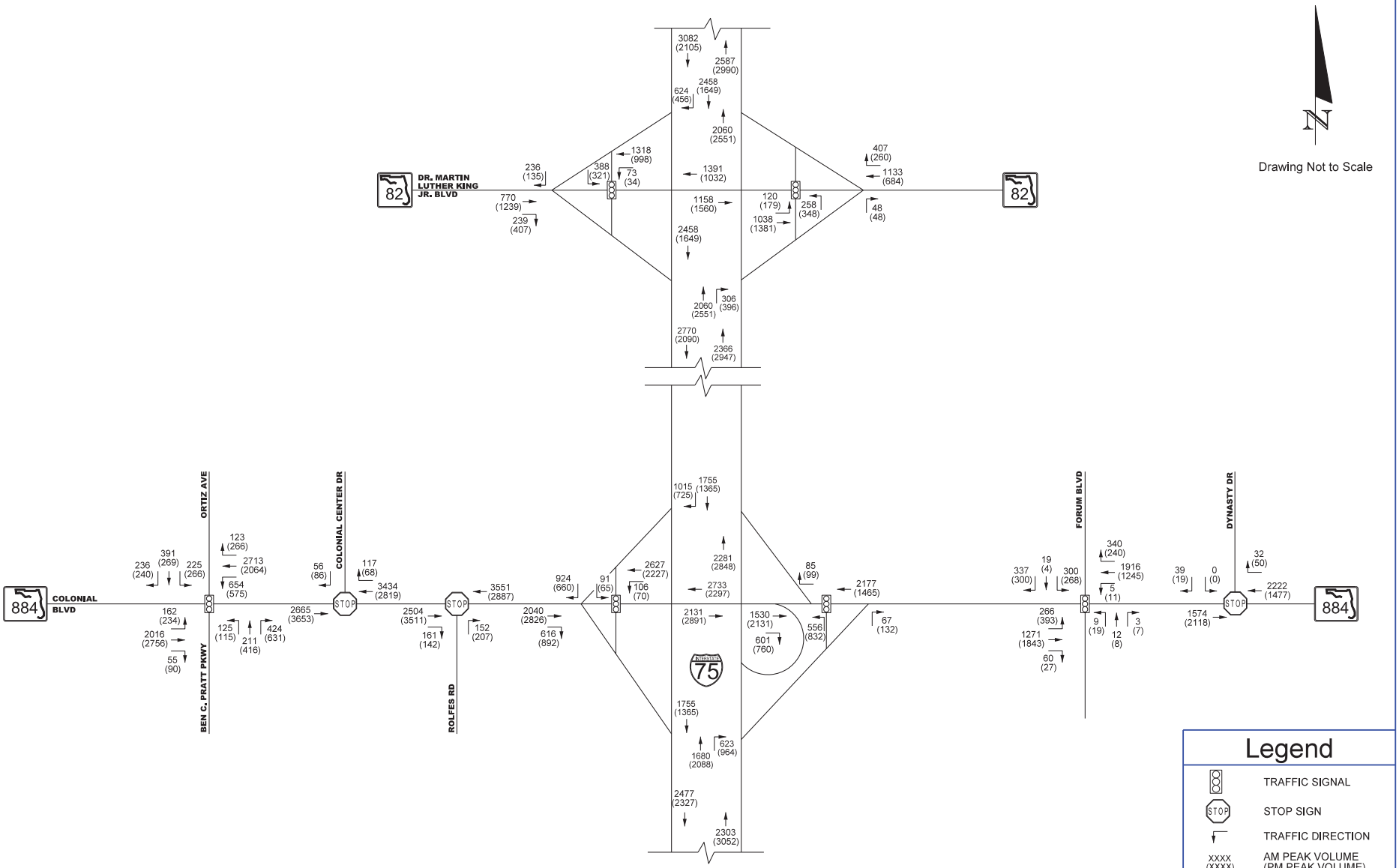
Table 4-3 Traffic Comparison Vehicle/Day

Location	2035	2040	2038
Colonial Blvd East of I-75	81,700	88,700	80,400
Colonial Blvd West of I-75	106,200	111,900	99,700
I-75 North of Colonial Blvd	157,600	108,800	138,000
I-75 South of Colonial Blvd	167,900	108,200	145,000
Ben C. Pratt Pkwy South of Colonial	60,500	41,200	47,800



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

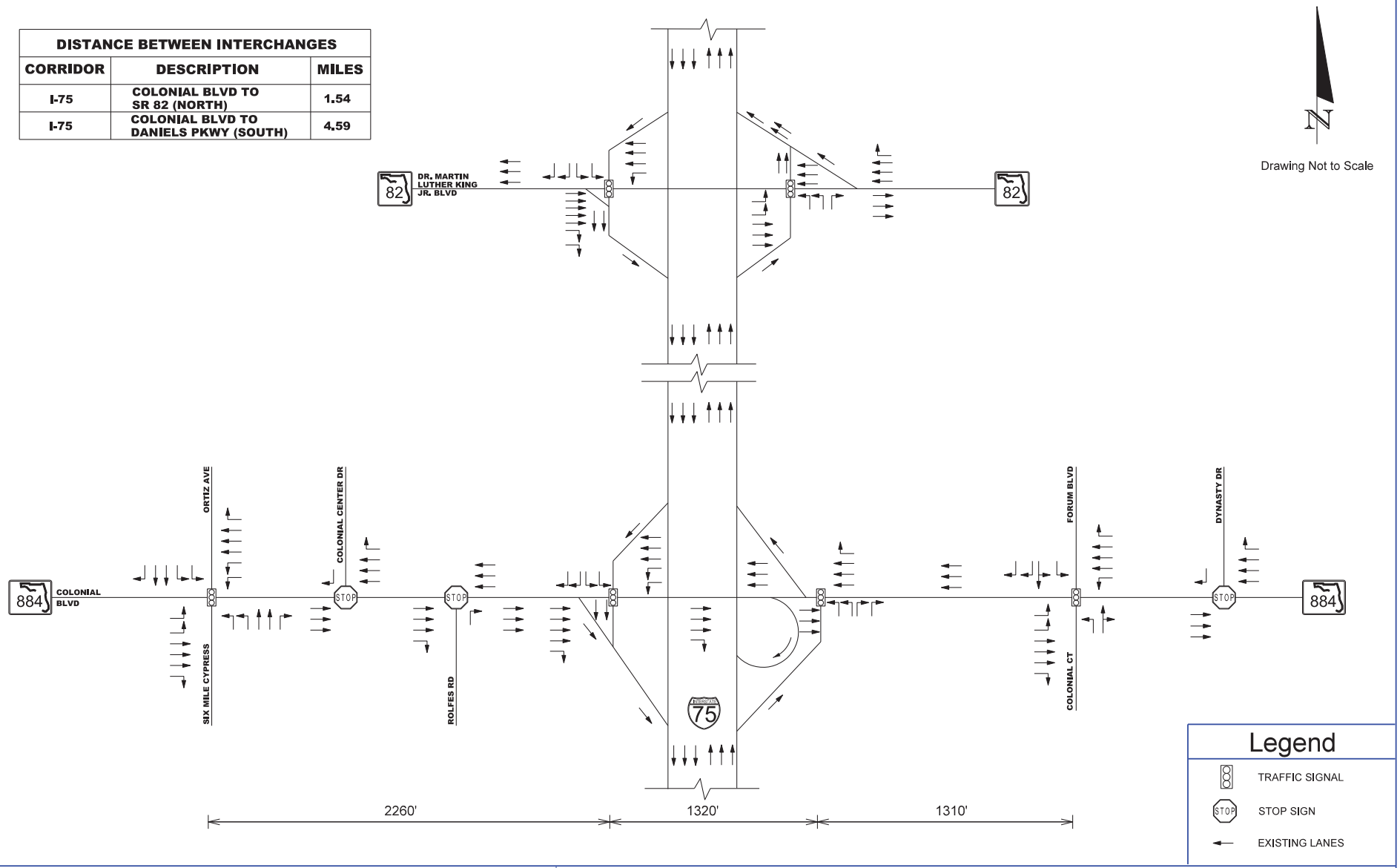
Figure 4-2
Existing Year 2012 AADT



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 4-3
Existing Year (2012) Peak Hour Traffic Volumes

DISTANCE BETWEEN INTERCHANGES		
CORRIDOR	**DESCRIPTION**	**MILES**
I-75	COLONIAL BLVD TO SR 82 (NORTH)	1.54
I-75	COLONIAL BLVD TO DANIELS PKWY (SOUTH)	4.59



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 4-4
Existing Intersection Lane Geometry

USER: 5guhaa 5/30/2014 1:56:06 PM F:\PROJECT\5121884\FileCabinet\C. Design Documentation\C.14 Traffic\Cadd\I-75 at Colo.

Table 6-1 Maximum Weaving Distance Calculation along I-75

Year	Direction	Peak	Weaving Volume	Non-Weaving Volume	Total Volume	VR	N_{WL}	Max Weaving Length in feet (L_{MAX})	Base Length in feet (L_B)	Weaving Segment ? ($L_B \leq L_{MAX}$)
2018	NB	AM	1328	1829	3157	0.421	2	6,914	4,700	Yes
		PM	1700	2326	4026	0.422	2	6,932		Yes
2038		AM	2466	2872	5338	0.462	2	7,385		Yes
		PM	2989	1700	4689	0.637	2	9,477		Yes
2018	SB	AM	1702	2058	3760	0.453	2	7,278	4,750	Yes
		PM	1564	1572	3136	0.499	2	7,812		Yes
2038		AM	2987	1870	4857	0.615	2	9,201		Yes
		PM	2556	2530	5086	0.503	2	7,856		Yes

Table 7-1 Existing Year (2012) AM/PM HCS Freeway and Ramp Merge/Diverge Area Summary

Location	I-75 Freeway			I-75 Merge/Diverge Area		
	Freeway Volume (veh/hr)	Density (pc/mi/ln)	LOS	Ramp Volume (veh/hr)	Density (pc/mi/ln)	LOS
NB Freeway Segment S. of Colonial Boulevard	2303/3052	11.9/15.8	B/B			
NB Off-Ramp to Colonial Boulevard	2303/3052			623/964	18.7/23.7	B/C
NB On-Loop Ramp from eastbound Colonial Boulevard	1680/2088			601/760	12.3/15.7	B/B
NB On-Ramp from westbound Colonial Boulevard	2281/2848			85/99	15.6/18.6	B/B
NB Freeway Segment N. of Colonial Boulevard	2366/2947	12.3/15.3	B/B			
NB Off-Ramp to SR 82	2366/2947			306/396	18.4/21.9	B/C
NB On-Ramp from SR 82	2060/2551			527/439	18.0/19.7	B/B
NB Freeway Segment N. of SR 82	2587/2990	13.4/15.5	B/B			
SB Freeway Segment N. of SR 82	3082/2105	16.0/10.9	B/A			
SB Off-Ramp to SR 82	3082/2105			624/456	23.1/17.2	C/B
SB On-Ramp from SR 82	2458/1649			312/441	18.9/15.9	B/B
SB Freeway Segment N. of Colonial Boulevard	2770/2090	14.4/10.8	B/A			
SB Off-Ramp to Colonial Boulevard	2770/2090			1015/725	22.3/17.7	C/B
SB On-Ramp from Colonial Boulevard	1755/1365			722/962	18.0/18.0	B/B
SB Freeway Segment S. of Colonial Boulevard	2477/2327	12.9/12.1	B/B			

Table 7-2 Existing Year (2012) AM/PM Intersection Analysis – VISSIM Summary

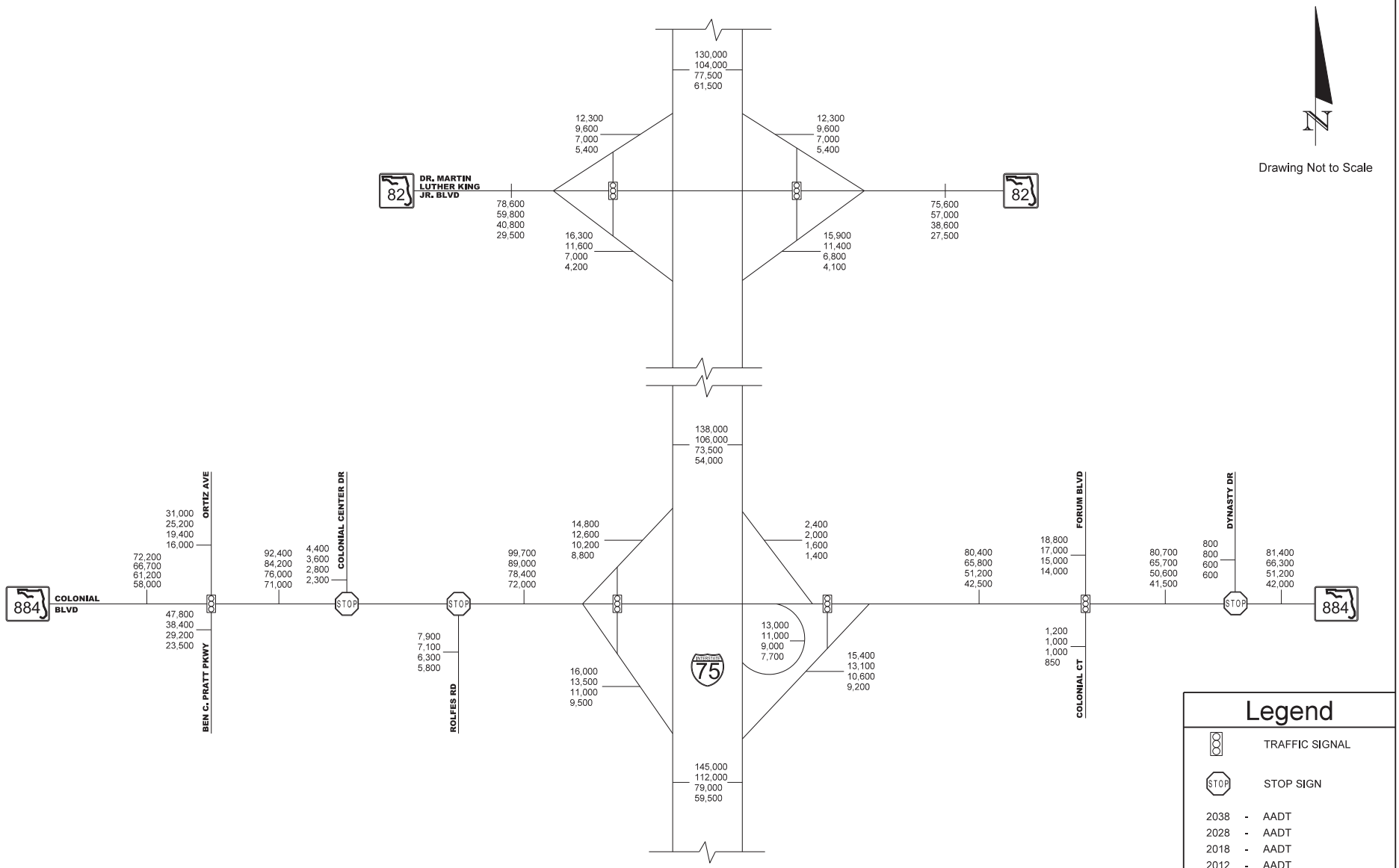
Intersection	Control Type	Overall Average Delay (sec/veh)
Colonial Boulevard at Ortiz Avenue	Signalized	42.0/>80.0[(1)]
Colonial Boulevard at Colonial Center Drive	Un-signalized	11.8/3.6
Colonial Boulevard at Rolfes Road	Un-signalized	2.1/15.9
Colonial Boulevard at I-75 SB Ramps	Signalized	30.7/18.7
Colonial Boulevard at I-75 NB Ramps	Signalized	15.6/20.3
Colonial Boulevard at Forum Boulevard	Signalized	29.8/31.0
Colonial Boulevard at Dynasty Drive	Un-signalized	1.5/0.1
SR 82 @ I-75 SB Ramps	Signalized	17.4/14.7
SR 82 @ I-75 NB Ramps	Signalized	14.9/17.5

(1) Excessive delay values.

Table 7-3 Existing Year (2012) AM/PM Intersection Analysis – SYNCHRO Summary

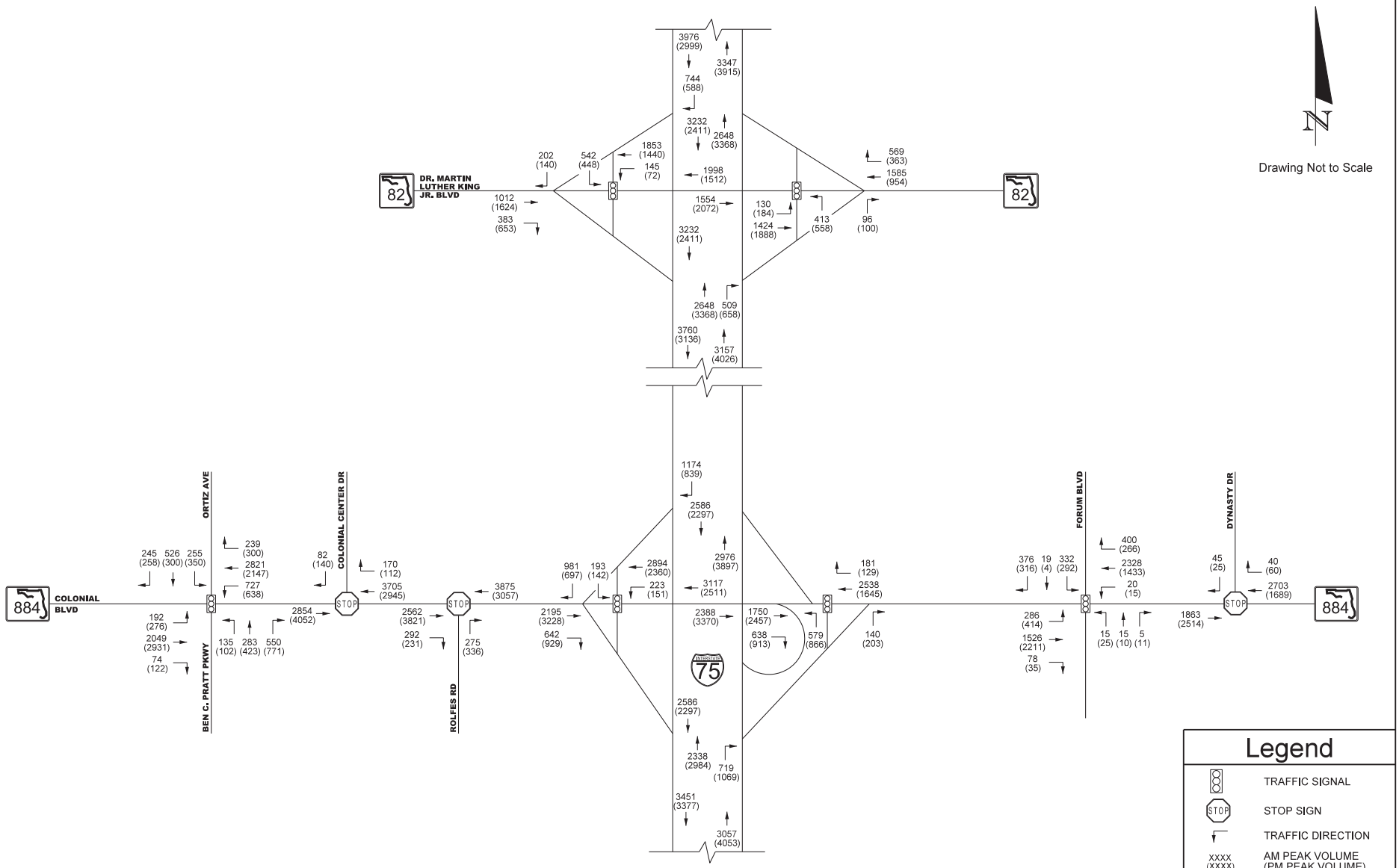
Intersection	Control Type	Overall Average Delay (sec/veh)	Overall LOS
Colonial Boulevard at Ortiz Avenue	Signalized	292.7/158.7	F/F
Colonial Boulevard at Colonial Center Drive	Un-signalized	-[(1)]/ -[(1)]	-/-
Colonial Boulevard at Rolfes Road	Un-signalized	-[(1)]/ -[(1)]	-/-
Colonial Boulevard at I-75 SB Ramps	Signalized	44.8/42.0	D/D
Colonial Boulevard at I-75 NB Ramps	Signalized	18.3/31.6	B/C
Colonial Boulevard at Forum Boulevard	Signalized	31.8/29.4	C/C
Colonial Boulevard at Dynasty Drive	Un-signalized	0.2/0.1	A/A
SR 82 @ I-75 SB Ramps	Signalized	18.5/15.1	B/B
SR 82 @ I-75 NB Ramps	Signalized	15.6/18.6	B/B

(1) Results not provided by SYNCHRO.



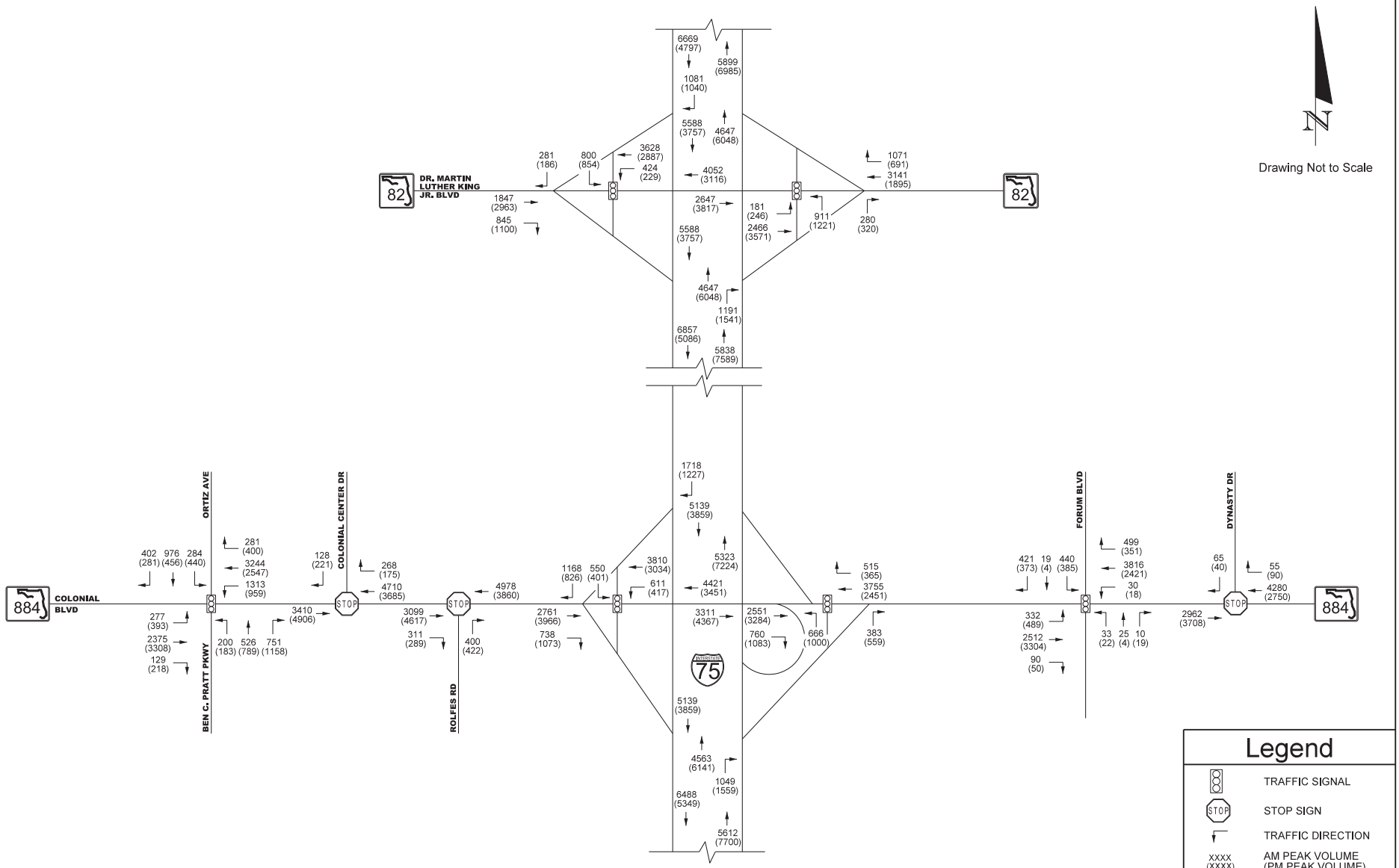
I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 10-1
Future No-Build and Build AADT



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 10-2
Opening Year 2018 Peak Hour Traffic Volumes



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 10-4
Design Year 2038 Peak Hour Traffic Volumes

Table 11-1 Design Year (2038) No-Build AM/PM HCS Freeway and Ramp Merge/Diverge Area Summary

Location	I-75 Freeway			I-75 Merge/Diverge Area		
	Freeway Volume (veh/hr)	Density (pc/mi/ln)	LOS	Ramp Volume (veh/hr)	Density (pc/mi/ln)	LOS
NB Freeway Segment S. of Colonial Boulevard	5612/7700	32.9/69.1	D/F			
NB Off-Ramp to Colonial Boulevard	5612/7700			1049/1559	36.0/51.4	D/F
NB On-Loop Ramp from eastbound Colonial Boulevard	4563/6141			760/1083	28.4/39.1	D/F
NB On-Ramp from westbound Colonial Boulevard	5323/7224			515/365	34.2/46.8	D/F
NB Freeway Segment N. of Colonial Boulevard	5838/7589	35.2/65.8	E/F			
NB Off-Ramp to SR 82	5838/7589			1191/1541	37.1/50.3	E/F
NB On-Ramp from SR 82	4647/6048			1252/937	36.6/41.3	E/F
NB Freeway Segment N. of SR 82	5899/6985	35.9/51.5	E/F			
SB Freeway Segment N. of SR 82	6669/4797	46.0/26.2	F/D			
SB Off-Ramp to SR 82	6669/4797			1081/1040	41.7/32.5	F/D
SB On-Ramp from SR 82	5588/3757			1269/1329	41.9/33.3	F/D
SB Freeway Segment N. of Colonial Boulevard	6857/5086	49.1/28.4	F/D			
SB Off-Ramp to Colonial Boulevard	6857/5086			1718/1227	43.5/34.2	F/D
SB On-Ramp from Colonial Boulevard	5139/3859			1349/1490	39.8/34.5	E/D
SB Freeway Segment S. of Colonial Boulevard	6488/5349	43.2/30.6	E/D			

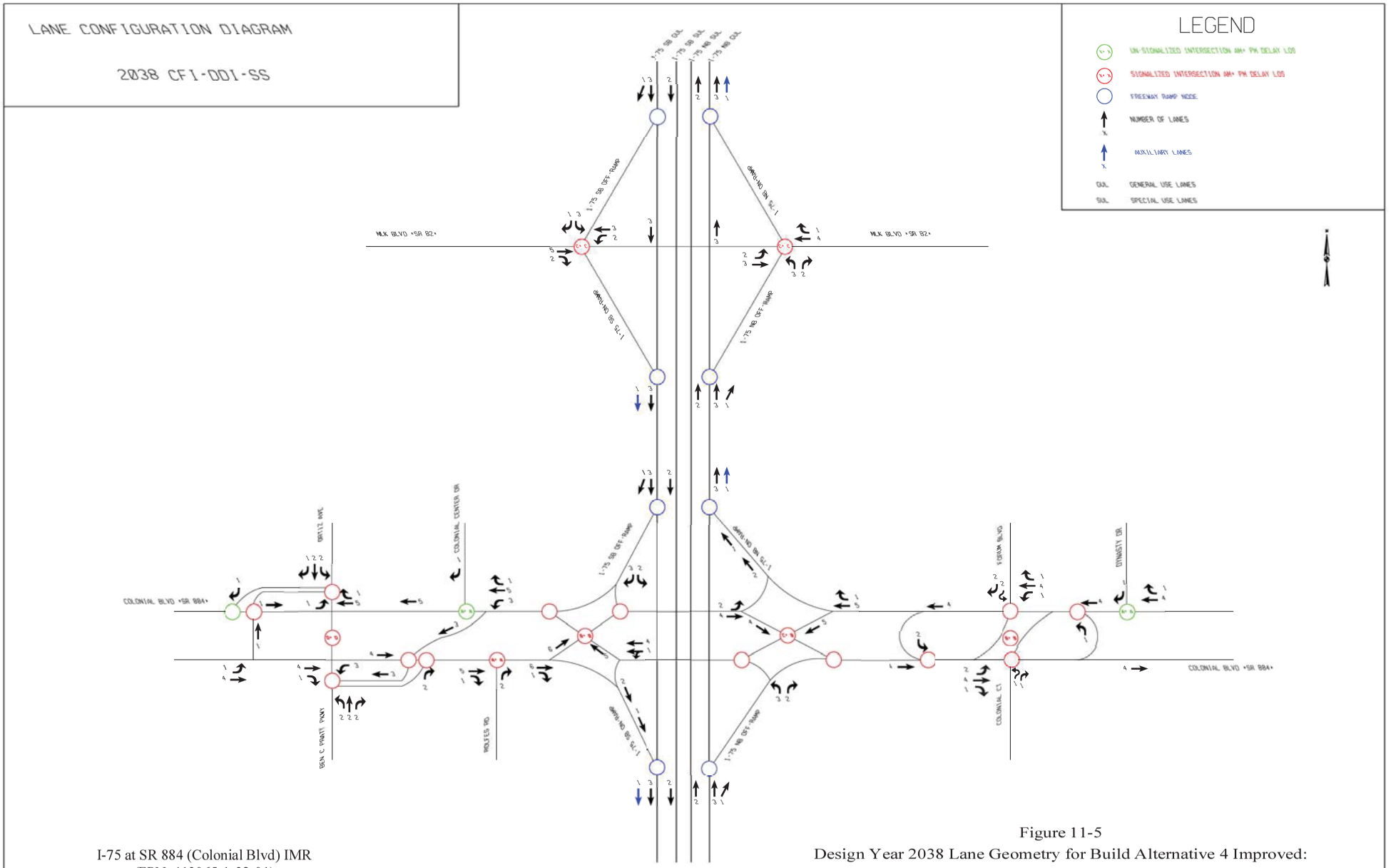
Table 11-2 Design Year (2038) No-Build AM/PM Intersection Analysis – VISSIM Summary

Intersection	Control Type	Overall Average Delay (sec/veh)
Colonial Boulevard at Ortiz Avenue	Signalized	>80.0/>80.0(1)
Colonial Boulevard at Colonial Center Drive	Un-signalized	>80.0/>80.0(1)
Colonial Boulevard at Rolfes Road	Un-signalized	17.9/17.3
Colonial Boulevard at I-75 SB Ramps	Signalized	>80.0/>80.0(1)
Colonial Boulevard at I-75 NB Ramps	Signalized	15.8/69.3
Colonial Boulevard at Forum Boulevard	Signalized	>80.0/>80.0(1)
Colonial Boulevard at Dynasty Drive	Un-signalized	>80.0/>80.0(1)
SR 82 @ I-75 SB Ramps	Signalized	>80.0/>80.0(1)
SR 82 @ I-75 NB Ramps	Signalized	>80.0/77.8(1)

(1) Excessive delay values.

Table 11-3 Design Year (2038) Build for Alt 1, Alt 2, Alt 3 and Alt 4 AM/PM HCS Freeway and Ramp Merge/Diverge Area Summary

Location	I-75 Freeway			I-75 Merge/Diverge Area		
	Freeway Volume (veh/hr)	Density (pc/mi/ln)	LOS	Ramp Volume (veh/hr)	Density (pc/mi/ln)	LOS
NB Freeway Segment S. of Colonial Boulevard	5112/4800	28.6/26.2	D/D			
NB Off-Ramp to Colonial Boulevard	5112/4800			1049/1559	22.2/22.0	C/C
NB Freeway Segment N. of Colonial Boulevard	5338/4689	-/-(1)	F/F			
NB On-Ramp from SR 82	4147/3148			1252/937	27.8/20.0	C/C
NB Freeway Segment N. of SR 82	5399/4085	21.3/15.9	C/B			
SB Freeway Segment N. of SR 82	4669/4797	18.2/18.7	C/C			
SB Off-Ramp to SR 82	4669/4797			1081/1040	20.3/20.8	C/C
SB Freeway Segment N. of Colonial Boulevard	4857/5086	-/-(1)	F/F			
SB On-Ramp from Colonial Boulevard	3139/3859			1349/1490	23.2/28.1	C/D
SB Freeway Segment S. of Colonial Boulevard	4488/5349	24.0/30.6	C/D			



I-75 at SR 884 (Colonial Blvd) IMR
(FPN: 413065-1-32-01)

Figure 11-5
Design Year 2038 Lane Geometry for Build Alternative 4 Improved:
Diverging Diamond Interchange (CFI-DDI-SS) at I-75 and Colonial Boulevard

Table 11-14 Alternative 4 Improved: Continuous Flow Intersection-Diverging Diamond Interchange-Superstreet (CFI-DDI-SS) – Design Year (2038) Build AM/PM Intersection Analysis – VISSIM Summary

Intersection	Control Type	Overall Average Delay (sec/veh)
Colonial Boulevard at Ortiz Avenue	Signalized	39.2/43.1
Colonial Boulevard at Colonial Center Drive	Un-signalized	2.8/1.8
Colonial Boulevard at Rolfes Road	Signalized	10.1/7.1
Colonial Boulevard at I-75 SB Ramps	Signalized	19.5/18.1
Colonial Boulevard at I-75 NB Ramps	Signalized	19.5/19.1
Colonial Boulevard at Forum Boulevard	Signalized	16.7/16.4
Colonial Boulevard at Dynasty Drive	Un-signalized	13.2/2.9
SR 82 @ I-75 SB Ramps	Signalized	24.4/29.6
SR 82 @ I-75 NB Ramps	Signalized	25.8/30.9

Table 11-15 Alternative 4 Improved: Continuous Flow Intersection-Diverging Diamond Interchange-Superstreet (CFI-DDI-SS) – Design Year 2038 AM/PM Arterial Level Of Service VISSIM Summary

Roadway	Direction	Segment	Travel Speed (mph)	Build CFI-DDI-SS LOS (1)
Colonial Boulevard (SR 884)	EB	Ortiz Avenue to Rolfes Road	31.58/34.61	C/B
		Rolfes Road to I-75 SB Ramps	21.29/25.74	D/C
		I-75 SB ramps to I-75 NB Ramps	30.92/26.84	C/C
		I-75 NB Ramps to Forum Boulevard	40.09/37.97	B/B
		Forum Boulevard to Dynasty Drive	43.69/40.90	A/B
Colonial Boulevard (SR 884)	WB	Dynasty Drive to Forum Boulevard	22.55/24.00	D/D
		Forum Boulevard to I-75 NB Ramps	23.78/22.50	D/D
		I-75 NB ramps to I-75 SB Ramps	22.75/22.93	D/D
		I-75 SB ramps to Ortiz Avenue	29.57/32.89	C/C

(1) LOS based on V/C ratio < =1 from Exhibit 17-2 of HCM 2010.

Table 11-16 Alternative 4 Improved: Continuous Flow Intersection-Diverging Diamond Interchange-Superstreet (CFI-DDI-SS) – Design Year 2038 AM/PM Queue Length Calculations

Intersections	Existing Storage Length (feet per lane)	2038 No-Build Queue (feet per lane)	2038 Build Alt 4 Improved – CFI-DDI-SS Scenario Queue (feet per lane)
Colonial Boulevard @ I-75 Southbound Ramps			
Southbound Left	930	320/338	269/246
Southbound Right	930	13266/13265	548/340
Colonial Boulevard @ I-75 Northbound Ramps			
Northbound Left	1450	603/5485	316/451
Northbound Right	1450	331/390	232/386
SR 82 @ I-75 Southbound Ramps			
Southbound Left	525	5093/5105	553/470
Southbound Right	525	210/168	559/488
SR 82 @ I-75 Northbound Ramps			
Northbound Left	475	13695/13701	556/609
Northbound Right	475	13705/13709	231/596

Table 11-17 Alternative 4 Improved: Continuous Flow Intersection-Diverging Diamond Interchange-Superstreet (CFI-DDI-SS) – Design Year (2038) – Build Recommended Turn Lane Lengths

Colonial Boulevard Intersections	Approach	Movement	Recommended Turn Lane Length (feet)
Ortiz Avenue	Eastbound	Left	1075*
		Right	700*
	Westbound	Left	1175*
		Right	1075*
	Northbound	Left	450
		Right	1450
	Southbound	Left	700
		Right	1100
Colonial Center Drive** (un-signalized)	Westbound	Right	475
	Southbound	Right	200
Rolfes Road	Eastbound	Right	900*
	Northbound	Right	700
I-75 SB Ramps	Eastbound	Right	2500*
	Westbound	Left	1525*
	Southbound	Left	750
		Right	975
I-75 NB Ramps	Eastbound	Left	1375*
	Westbound	Right	1325*
	Northbound	Left	850
		Right	750
Forum Boulevard	Eastbound	Left	750*
		Right	450
	Westbound	Left	325
		Right	1300*
	Northbound	Left	325
		Right	300
	Southbound	Left	700
		Right	700
Dynasty Drive** (un-signalized)	Westbound	Right	350
	Southbound	Right	75

* Actual distances to be accommodated are shown in the Conceptual Plans included in Appendix U.
** For un-signalized intersections, turn lane lengths estimated from *Florida Greenbook, May 2011*.
Signalized intersections based on *Plans Preparation Manual revised July 1, 2013*.

Table 11-18 Opening Year (2018) No-Build AM/PM HCS Freeway and Ramp Merge/Diverge Area Summary

Location	I-75 Freeway			I-75 Merge/Diverge Area		
	Freeway Volume (veh/hr)	Density (pc/mi/ln)	LOS	Ramp Volume (veh/hr)	Density (pc/mi/ln)	LOS
NB Freeway Segment S. of Colonial Boulevard	3057/4053	15.9/21.3	B/C			
NB Off-Ramp to Colonial Boulevard	3057/4053			719/1069	23.2/29.1	C/D
NB On-Loop Ramp from eastbound Colonial Boulevard	2338/2984			638/913	16.0/21.5	B/C
NB On-Ramp from westbound Colonial Boulevard	2976/3897			181/129	19.8/24.0	B/C
NB Freeway Segment N. of Colonial Boulevard	3157/4026	16.4/21.1	B/C			
NB Off-Ramp to SR 82	3157/4026			509/658	23.3/28.1	C/D
NB On-Ramp from SR 82	2648/3368			699/547	22.3/24.7	C/C
NB Freeway Segment N. of SR 82	3347/3915	17.4/20.5	B/C			
SB Freeway Segment N. of SR 82	3976/2999	20.8/15.6	C/B			
SB Off-Ramp to SR 82	3976/2999			744/588	28.0/22.6	D/C
SB On-Ramp from SR 82	3232/2411			528/725	24.4/21.9	C/C
SB Freeway Segment N. of Colonial Boulevard	3760/3136	19.6/16.3	C/B			
SB Off-Ramp to Colonial Boulevard	3760/3136			1174/839	27.9/23.9	C/C
SB On-Ramp from Colonial Boulevard	2586/2297			865/1080	23.3/23.6	C/C
SB Freeway Segment S. of Colonial Boulevard	3451/3377	17.9/17.5	B/B			

Table 11-19 Opening Year (2018) No-Build AM/PM Intersection Analysis – VISSIM Summary

Intersection	Control Type	Overall Average Delay (sec/veh)
Colonial Boulevard at Ortiz Avenue	Signalized	54.8/>80.0(1)
Colonial Boulevard at Colonial Center Drive	Un-signalized	>80.0/30.2(1)
Colonial Boulevard at Rolfes Road	Un-signalized	8.3/19.2
Colonial Boulevard at I-75 SB Ramps	Signalized	42.5/25.9
Colonial Boulevard at I-75 NB Ramps	Signalized	46.1/19.4
Colonial Boulevard at Forum Boulevard	Signalized	72.6/28.5
Colonial Boulevard at Dynasty Drive	Un-signalized	61.6/0.5
SR 82 @ I-75 SB Ramps	Signalized	20.4/21.0
SR 82 @ I-75 NB Ramps	Signalized	18.3/24.6

(1) Excessive delay values.

Table 11-20 Opening Year (2018) Build AM/PM HCS Freeway and Ramp Merge/Diverge Area Summary

Location	I-75 Freeway			I-75 Merge/Diverge Area		
	Freeway Volume (veh/hr)	Density (pc/mi/ln)	LOS	Ramp Volume (veh/hr)	Density (pc/mi/ln)	LOS
NB Freeway Segment S. of Colonial Boulevard	3057/4053	15.9/21.3	B/C			
NB Off-Ramp to Colonial Boulevard	3057/4053			719/1069	11.5/17.4	B/B
NB Freeway Segment N. of Colonial Boulevard	3157/4026	14.9/19.9	B/B			
NB On-Ramp from SR 82	2648/3368			699/547	15.5/18.1	B/B
NB Freeway Segment N. of SR 82	3347/3915	13.0/15.2	B/B			
SB Freeway Segment N. of SR 82	3976/2999	15.5/11.7	B/B			
SB Off-Ramp to SR 82	3976/2999			744/588	16.3/10.9	B/B
SB Freeway Segment N. of Colonial Boulevard	3760/3136	18.4/14.9	B/B			
SB On-Ramp from Colonial Boulevard	2586/2297			865/1080	16.5/16.7	B/B
SB Freeway Segment S. of Colonial Boulevard	3451/3377	17.9/17.5	B/B			

Table 11-21 Opening Year (2018) Build Scenario AM/PM Intersection Analysis – VISSIM Summary

Intersection	Control Type	Overall Average Delay (sec/veh)
Colonial Boulevard at Ortiz Avenue	Signalized	27.3/29.9
Colonial Boulevard at Colonial Center Drive	Un-signalized	1.3/0.7
Colonial Boulevard at Rolfes Road	Signalized	8.4/5.7
Colonial Boulevard at I-75 SB Ramps	Signalized	16.4/16.4
Colonial Boulevard at I-75 NB Ramps	Signalized	14.1/17.7
Colonial Boulevard at Forum Boulevard	Signalized	16.7/15.3
Colonial Boulevard at Dynasty Drive	Un-signalized	1.9/0.9
SR 82 @ I-75 SB Ramps	Signalized	19.2/20.4
SR 82 @ I-75 NB Ramps	Signalized	17.9/23.5

Table 11-22 Opening Year 2018 AM/PM Arterial Level of Service VISSIM Summary

Roadway	Direction	Segment	Travel Speed (mph)	Build CFI-DDI-SS LOS (1)
Colonial Boulevard (SR 884)	EB	Ortiz Avenue to Rolfes Road	37.91/35.81	B/B
		Rolfes Road to I-75 SB Ramps	23.09/23.47	D/D
		I-75 SB ramps to I-75 NB Ramps	25.54/26.43	C/C
		I-75 NB Ramps to Forum Boulevard	37.49/38.48	B/B
		Forum Boulevard to Dynasty Drive	43.93/43.81	A/A
Colonial Boulevard (SR 884)	WB	Dynasty Drive to Forum Boulevard	22.54/23.99	D/D
		Forum Boulevard to I-75 NB Ramps	31.26/25.01	C/C
		I-75 NB ramps to I-75 SB Ramps	29.07/23.94	C/D
		I-75 SB ramps to Ortiz Avenue	36.84/38.23	B/B

(1) LOS based on V/C ratio < =1 from Exhibit 17-2 of HCM 2010.

Table 11-23 Opening Year 2018 AM/PM Queue Length Calculations

Intersections	Existing Storage Length (feet per lane)	2018 No-Build Queue (feet per lane)	2018 Build Alt 4 Improved – CFI-DDI-SS Scenario Queue (feet per lane)
Colonial Boulevard @ I-75 Southbound Ramps			
Southbound Left	930	124/152	126/121
Southbound Right	930	4937/8258	509/300
Colonial Boulevard @ I-75 Northbound Ramps			
Northbound Left	1450	1024/5486	316/335
Northbound Right	1450	134/164	166/191
SR 82 @ I-75 Southbound Ramps			
Southbound Left	525	380/388	392/361
Southbound Right	525	272/231	409/374
SR 82 @ I-75 Northbound Ramps			
Northbound Left	475	304/460	225/398
Northbound Right	475	241/362	129/146

Table 12-2 Draft Cost Estimate for Alternative 4 Improved: Continuous Flow Intersection-Diverging Diamond Interchange-Superstreet (CFI-DDI-SS)

DDI Alternative 4 Improved with CFI-SS Draft Cost Estimate					
Roadway Pay Items					
Pay Item	Description	Quantity	Unit	Unit Price	Total
101-1	Mobilization (10%)	1	LS	$1,452,020.99	$1,452,020.99
102-1	Maintenance of Traffic (10%)	1	LS	$1,452,020.99	$1,452,020.99
104-10-3	Sediment Barrier	30,768	LF	$0.38	$11,691.84
104-11	Floating Turbidity Barrier	1,120	LF	$4.80	$5,376.00
104-12	Staked Turbidity Barrier	1,120	LF	$2.45	$2,744.00
104-15	Soil Tracking Prevention Device	5	EA	$1,295.81	$6,479.05
107-1	Litter Removal	8.24	AC	$34.91	$287.66
107-2	Mowing	8.24	AC	$34.91	$287.66
110-1-1	Clearing and Grubbing	55.52	AC	$2,401.34	$133,322.40
120-6	Embankment	248,760	CY	$5.24	$1,303,502.40
160-4	Stabilization, Type B	207,932	SY	$3.59	$746,475.88
285-711	Optional Base, Base Group 11	197,054	SY	$13.16	$2,593,230.64
334-1-23	SuperPave Asphalt Concrete (Traffic C) (4") (PG 76-22) (PMA)	42,810.0	TN	$88.67	$3,795,962.70
337-7-43	Asphaltic Concrete Friction Course (Traffic C) (PG 76-22) (PMA)	15,056.7	TN	$97.90	$1,474,050.93
520-1-10	Concrete Curb & Gutter, Type F	39,764	LF	$17.50	$695,870.00
520-5-21	Concrete Traffic Separator, Type II, 4' Wide	2,784	LF	$24.53	$68,291.52
522-1	Sidewalk Concrete 4"	9,704	SY	$29.73	$288,488.03
570-1-1	Performance Turf	56,542	SY	$0.73	$41,275.37
700-3-225	SIGN PANEL, F&I, OVERHEAD MOUNT	8	EA	$350.00	$2,800.00
700-3-304	SIGN PANEL, F&I, BRIDGE MOUNT	4	EA	$3,167.62	$12,670.48
700-4-113	Overhead Static Sign Structure, F&I, Cantilever, 31-40FT	2	AS	$73,571.37	$147,142.74
700-4-126	Overhead Static Sign Structure, F&I, Span 101-150FT	6	AS	$181,186.10	$1,087,116.60
	TOTAL				$15,321,107.87
Signing and Pavement Marking Pay Items					
706-3	Retro-Reflective Pavement Marker	3,173	EA	$3.31	$10,501.25
	10-30 Skip @ 40' CC	1,398			
	Intersection, Ramps, gores @ 20' CC	1,775			
710-11-111	Painted Pavement Markings, White, Solid, 6"	13.073	NM	$844.89	$11,045.28
710-11-122	Painted Pavement Markings, White, Solid, 8"	4,944	LF	$0.29	$1,433.90
710-11-123	Painted Pavement Markings, White, Solid, 12"	3,152	LF	$0.58	$1,828.02
710-11-124	Painted Pavement Markings, White, Solid, 18"	5,450	LF	$0.83	$4,523.24
710-11-125	Painted Pavement Markings, White, Solid, 24"	3,856	LF	$1.12	$4,318.59
710-11-131	Painted Pavement Markings, White,10-30 Skip, 6"	10.589	GM	$342.80	$3,630.04
710-11-151	Painted Pavement Markings, White, 2-4 Skip, 6"	14,735	LF	$0.25	$3,683.75
710-11-160	Pavement Message "ONLY"	36	EA	$36.10	$1,299.60
710-11-170	Directional Arrows	255	EA	$21.56	$5,497.80
710-11-211	Painted Pavement Markings, Yellow, Solid, 6"	5.409	NM	$846.54	$4,579.13
710-11-222	Painted Pavement Markings, Yellow, Solid, 8"	85	LF	$0.30	$25.56
710-11-224	Painted Pavement Markings, Yellow, Solid, 18"	109	LF	$0.97	$105.90
	TOTAL				$52,472.06
Signalization Pay Items					
630-2-11	Conduit, F&I, Open Trench	4,925	LF	$5.42	$26,693.50
630-2-12	Conduit, F&I, Directional Bore	2,075	LF	$15.23	$31,602.25
632-7-1	Signal Cable - New or Reconstructed Intersection, F&I	17	PI	$3,492.77	$59,377.09
635-2-11	Pull & Splice Box, F&I, 13"x24"	151	EA	$448.39	$67,706.89
639-1-112	Electrical Power Service, F&I, OH. Meter Purchased by Contractor	17	AS	$2,102.12	$35,736.04
639-2-1	Electrical Service Wire	1,020	LF	$2.52	$2,570.40
641-2-11	Prestressed Conc. Pole, F&I, Type P-II, Pedestal	17	EA	$833.24	$14,165.08
649-1-10	Steel Strain Pole, F&I, Pedestal	17	EA	$700.00	$11,900.00
649-31-105	Mast Arm, F&I, Wind Speed-150, Single Arm, w/o Luminaire-78	30	EA	$37,248.55	$1,117,456.50
650-1-311	Traffic Signal, F&I, 3 Section, 1 Way, Aluminum	101	AS	$1,000.24	$101,024.24
653-191	Pedestrian Signal, F&I, LED-Countdown, 1 Direction	52	AS	$669.55	$34,816.60
660-1-102	Loop Detector Inductive, F&I, Type 2	101	EA	$165.00	$16,665.00
660-2-106	Loop Assembly, F&I, Type F	101	AS	$650.71	$65,721.71
665-1-11	Pedestrian Detector, F&I, Standard	52	EA	$173.65	$9,029.80
670-5-111	Traffic Controller Assembly, F&I, NEMA, 1 Preemption	17	AS	$23,771.30	$404,112.10
700-5-22	Internally Illuminated Sign, F&I, OM, 12-18 SF	30	EA	$3,485.56	$104,566.80
	TOTAL				$2,103,144.00
Right of Way					
--	Right of Way Costs (Colonial Blvd at Ortiz Avenue)	1	LS	$129,269.59	$129,269.59
	TOTAL				$129,269.59
				Grand Total	**$17,605,994**

Appendix C

Relevant Correspondence on Traffic Validation

From: Bowman, Jenna <Jenna.Bowman@dot.state.fl.us>
Sent: Thursday, February 27, 2020 4:20 PM
To: Simpron, Christopher
Cc: Causseaux, Amy; Edmonston, Chris; Mills, Nicole; Massey, Lawrence; Sherrard, Kati; Jester, Joshua
Subject: RE: I-75 at Colonial Traffic Validation

Chris,

I have reviewed the Validation submitted and we will accept it based on the information that the 2040 projects from the IMR are higher than the anticipated volumes. Your below justification should be included in the document as the justification. Please let me know if you have any questions. I will be traveling Monday and Tuesday next week but will response as soon as I am available. Let me know if you have any questions.

Jenna Bowman, PE
Systems Management Administrator
Systems Implementation Office
Florida Department of Transportation
605 Suwannee Street |MS 19 | Burns Building Tallahassee, FL 32399-0450
PH: 850-414-4909
EMAIL: jenna.bowman@dot.state.fl.us

From: Simpron, Christopher <Christopher.Simpron@dot.state.fl.us>
Sent: Thursday, February 27, 2020 10:08 AM
To: Bowman, Jenna <Jenna.Bowman@dot.state.fl.us>
Cc: Causseaux, Amy <Amy.Causseaux@dot.state.fl.us>; Edmonston, Chris <Chris.Edmonston@dot.state.fl.us>; Mills, Nicole <Nicole.Mills@dot.state.fl.us>; Massey, Lawrence <Lawrence.Massey@dot.state.fl.us>; Sherrard, Kati <Kati.Sherrard@dot.state.fl.us>; Jester, Joshua <Joshua.Jester@dot.state.fl.us>
Subject: I-75 at Colonial Traffic Validation
Importance: High

Jenna,

As you previously-mentioned and as agreed during our conference call on February 24, 2020 for the proposed modification of the I-75/Colonial northbound on-ramp, we have developed a table summarizing the "traffic validation" (following the format included in the IAR tracking sharepoint site) for the Final Interchange Modification Report (IMR) for the I-75 (SR-93) at SR 884 (Colonial Boulevard) approved in August 2017. The traffic validation analysis involved:

1. A review of short-term traffic forecasts from the IMR against the actual traffic counts that have been conducted since the IMR was completed, and

2. A comparison of the long-term model forecasts in the IMR to those being generated by the most current version of the District 1 Regional Planning Model (D1RPM).

As seen in the table, the IMR 2018 traffic projections along SR 884 were found to be accurate as they are within 10% of the actual traffic counts obtained from the Florida Traffic Online (FTO) database and traffic counts collected by the I-75 Managed Lanes PD&E. The IMR 2018 traffic projections along I-75 proved to be approximately 27% lower than the actual traffic counts obtained from the FTO database. It is to be noted that the high growth in traffic volumes over the last 6 to 7 years is associated with the upturn in the economy and has been documented in in many locations throughout the state.

The design year (2038) traffic forecasts developed in the IMR were primarily based on the Lee-Collier (LC) travel demand model that was the current model at the time of the IMR traffic study. The LC model utilized a horizon year of 2035. District 1 has since developed a districtwide model (D1RPM) that utilizes a horizon year of 2040. The D1RPM is the current adopted travel demand model used throughout the District. To assess the reasonableness of the IMR's forecasts, the IMR's opening year 2018 and design year 2038 traffic were extrapolated to develop "IMR 2040 AADT" forecasts, which were subsequently compared to the year 2040 AADT projections obtained from the most recent version of the 2040 D1RPM. To ensure that the D1RPM was up to date, the most recent future (2040) socio-economic data was requested and obtained from Lee County late in 2019 as part of the I-75 Managed Lanes PD&E travel demand modeling efforts. The attached table summarizes the assessment and comparison of the "IMR 2040 AADT" and the D1RPM 2040 AADT. The comparison shows that the IMR forecasted volumes along I-75 that are approximately 17% to 22% higher than those of the D1RPM. Along SR 884, the two methods are more consistent, showing similar year 2040 volumes.

Even though the short-term 2018 traffic forecasts from the IMR are relatively lower than the existing traffic counts, the IMR preferred alternative was developed using the IMR long-term forecasts which are generally higher or in line with the latest D1RPM forecasts. **Therefore, it is concluded that the IMR traffic forecasts are conservative and are still relevant for evaluating minor design changes to the previously-approved IMR preferred alternative.**

As you may already be aware, Bikram can't be involved on this review since Hanson is a sub of one of the D-B firms pursuing for this design-build contract in D1. As agreed during our 02/24 conference call, we will submit a "simplified" MLOU in ERC (with 5 business days review period) outlining the operational and safety analysis you recommended during our call for CO review and approval.

Thank you for your continued support!

Christopher Simpron
Transportation Planner/Modeler
FDOT-District One
Intermodal Systems Development
Systems Planning Office
Phone (863) 519-2343

Appendix D

Operational Analysis Outputs

HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Northbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2632	7200	0.37	72.2	12.1	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3554	5701	0.62	61.9	14.4	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2981	7200	0.41	71.8	13.8	B

Facility Time Period Results

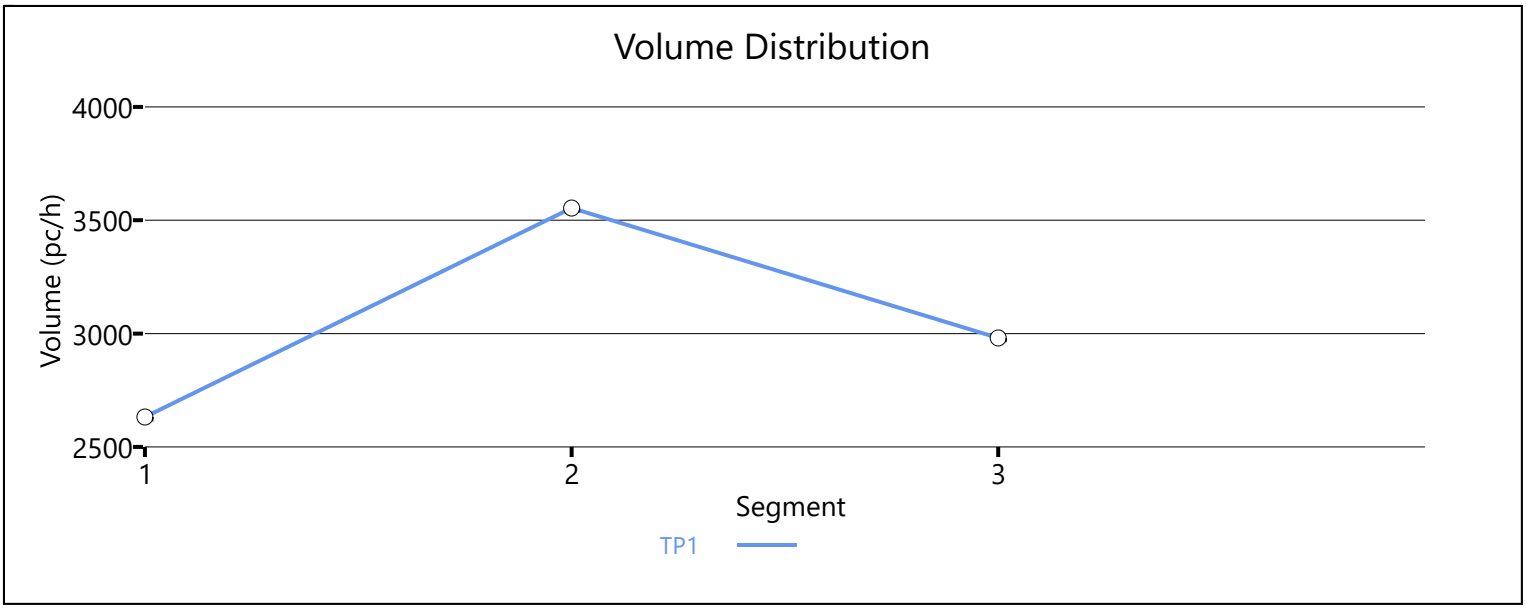
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	66.4	13.7	12.5	2.10	B

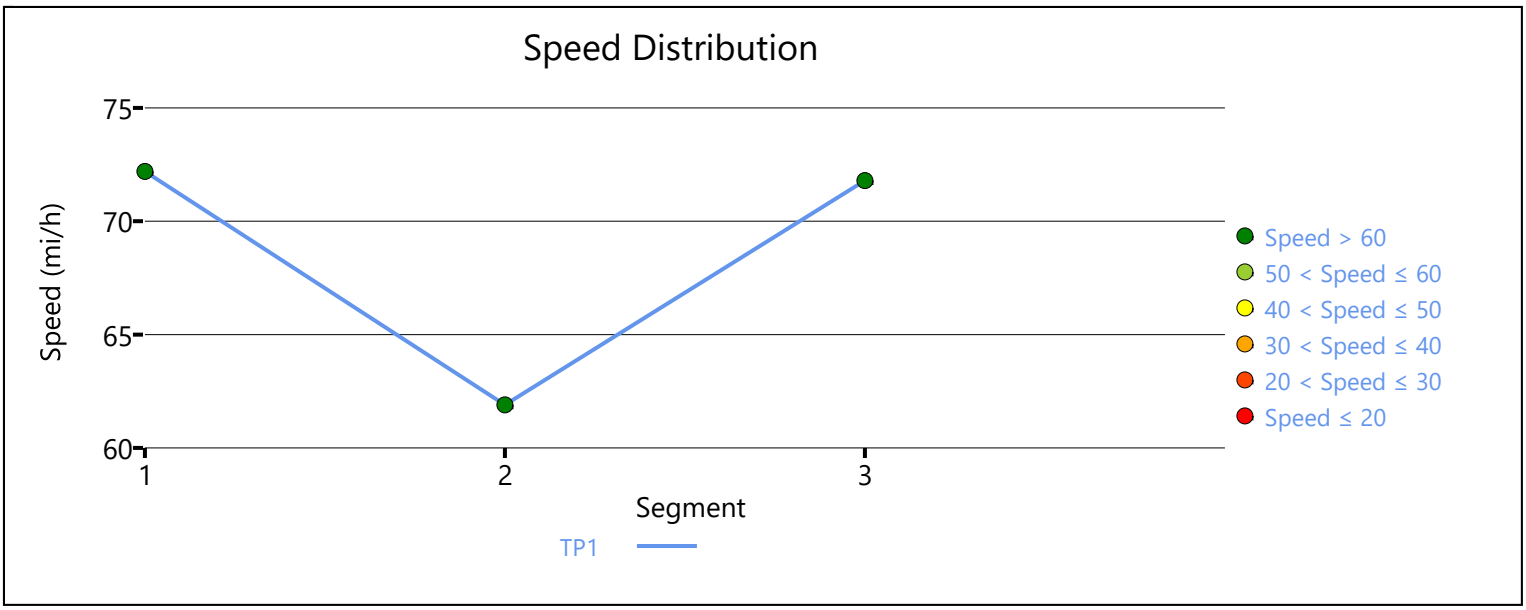
Facility Overall Results

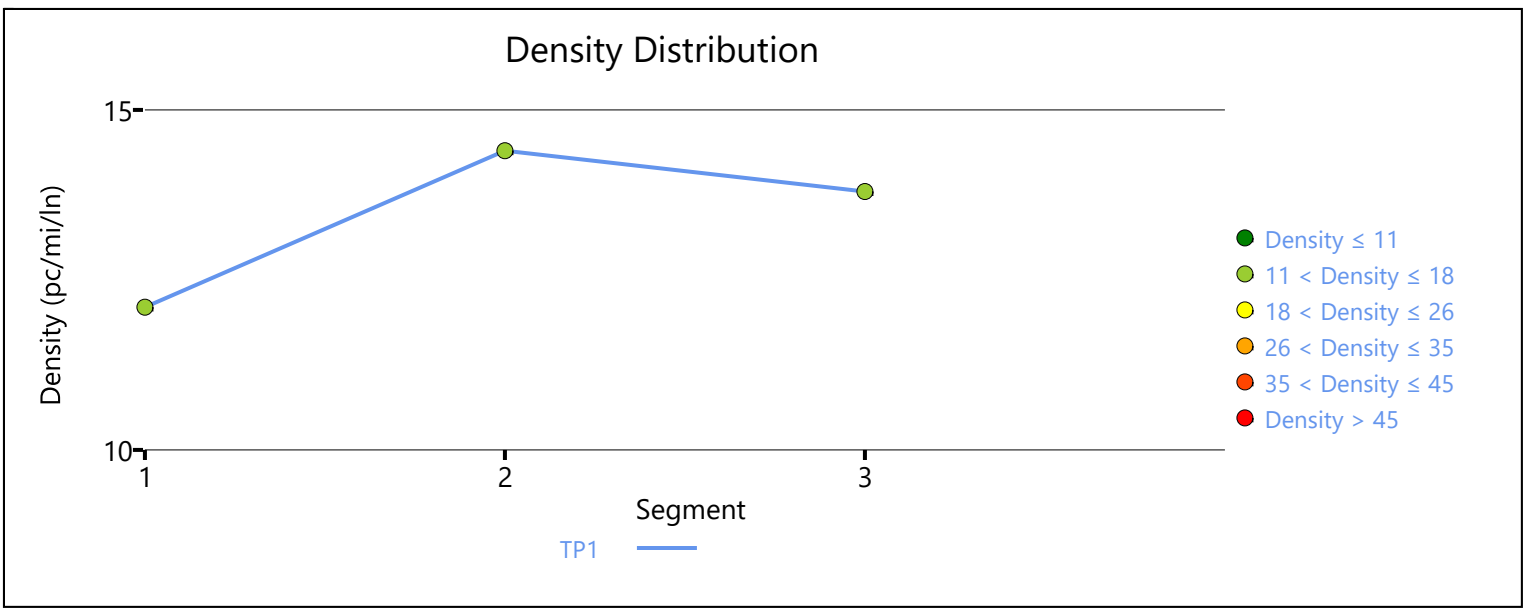
Space Mean Speed, mi/h	66.4	Density, veh/mi/ln	12.5
Average Travel Time, min	2.10	Density, pc/mi/ln	13.7

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Northbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3359	7200	0.47	72.2	15.5	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4533	5688	0.80	59.0	19.2	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3792	7200	0.53	71.6	17.7	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	64.5	18.0	16.3	2.20	B

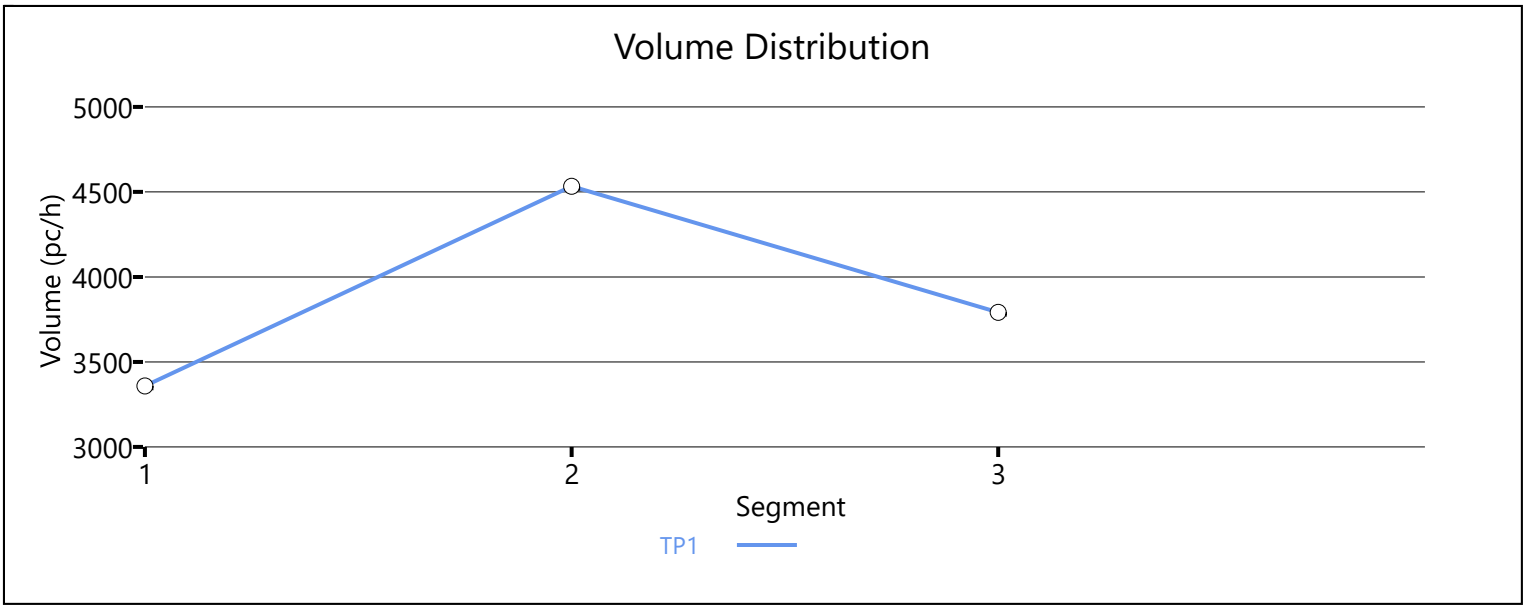
Facility Overall Results

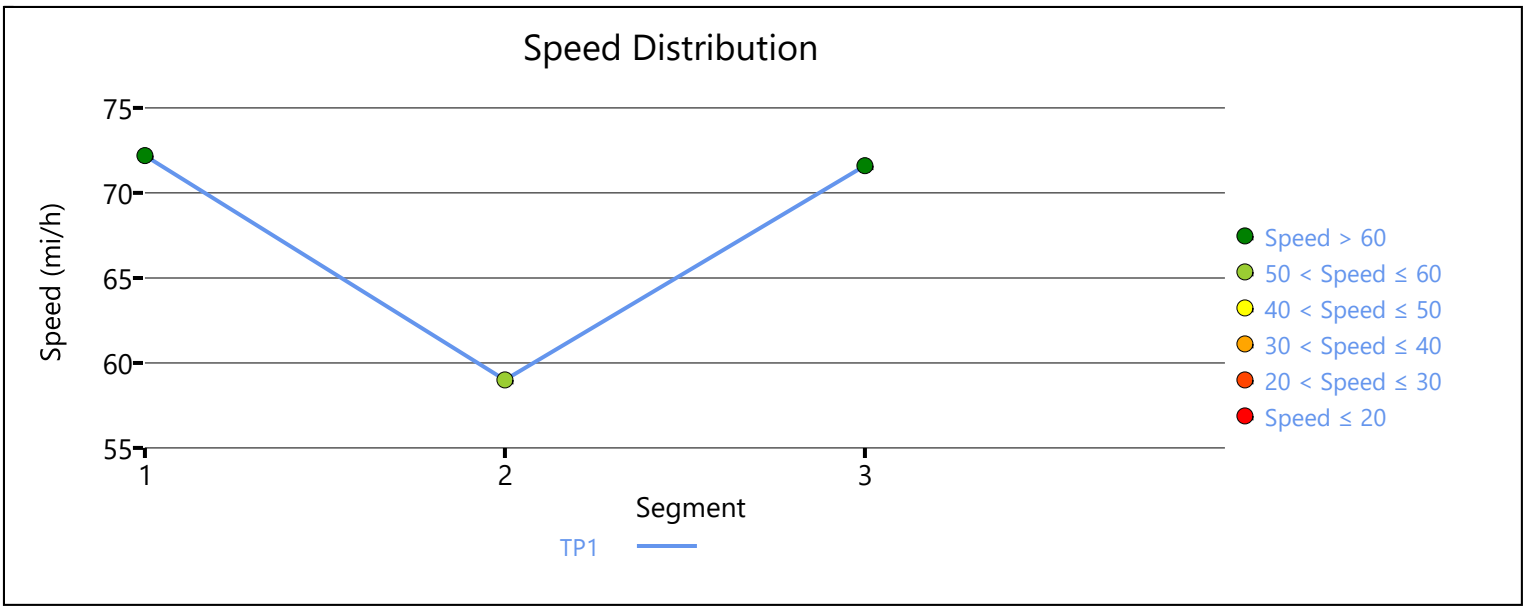
Space Mean Speed, mi/h	64.5	Density, veh/mi/ln	16.3
Average Travel Time, min	2.20	Density, pc/mi/ln	18.0

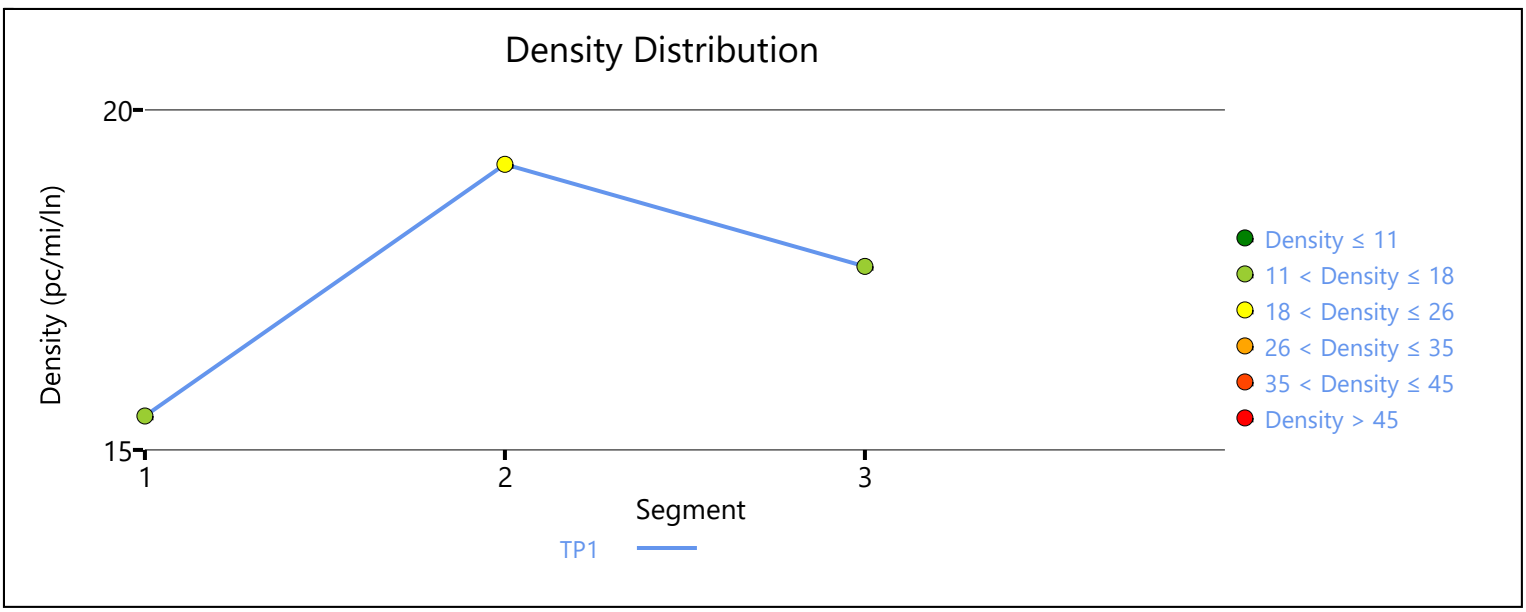
Messages

INFORMATION 1	Density for segment 3 in time period 1 is within 0.5 pc/mi/ln of LOS boundary. Be cautious when comparing LOS results.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Southbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3639	7200	0.51	71.7	16.9	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4233	5298	0.80	59.4	17.8	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2911	7200	0.40	72.2	13.4	B

Facility Time Period Results

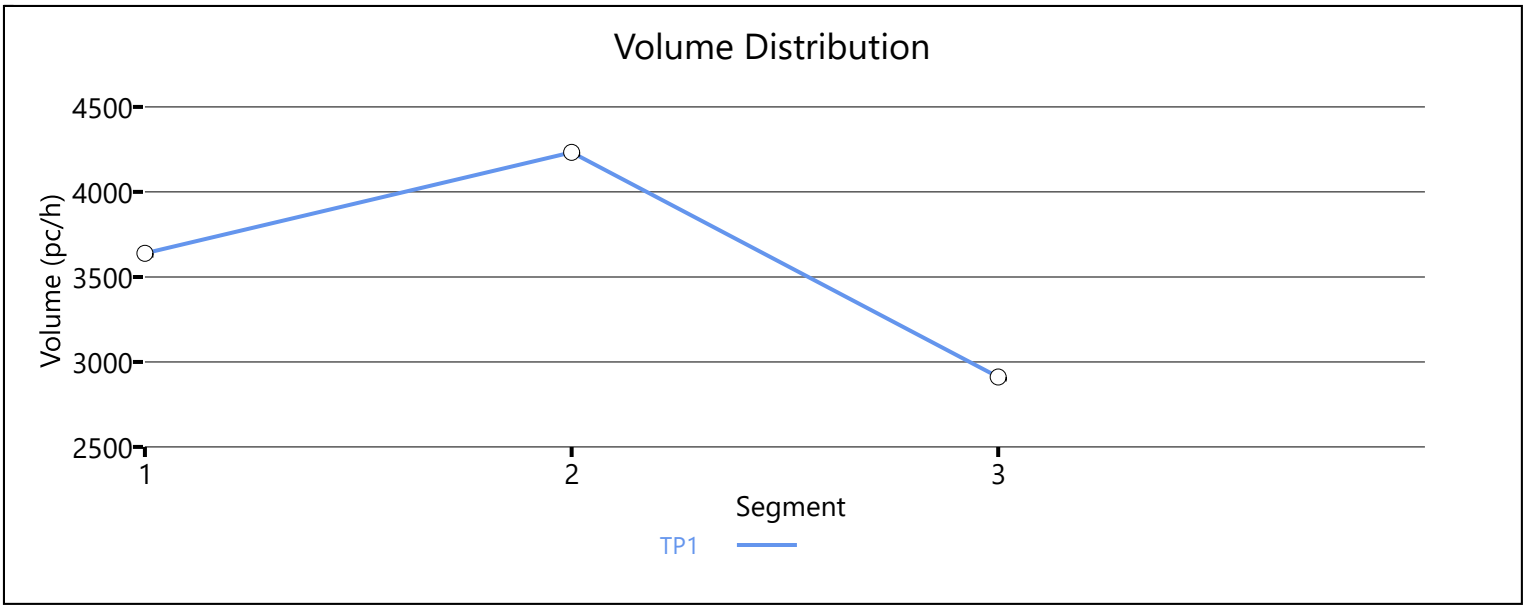
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	64.5	16.7	15.1	2.10	B

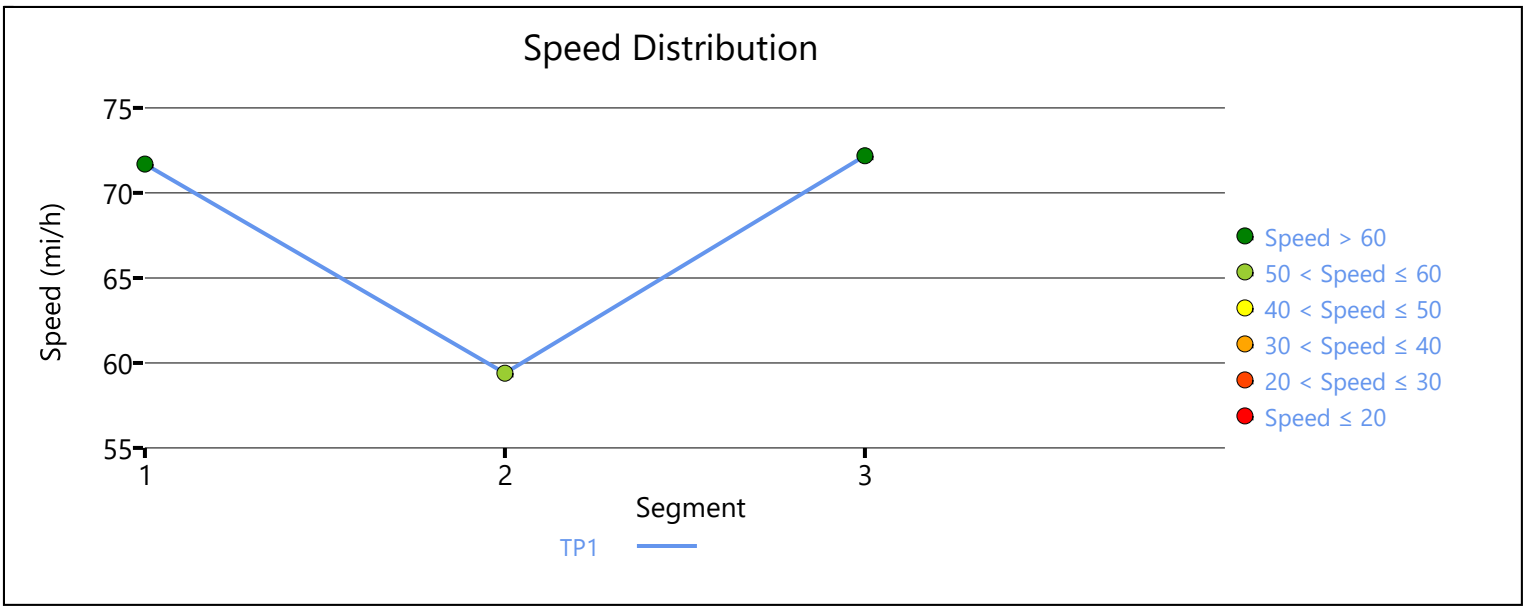
Facility Overall Results

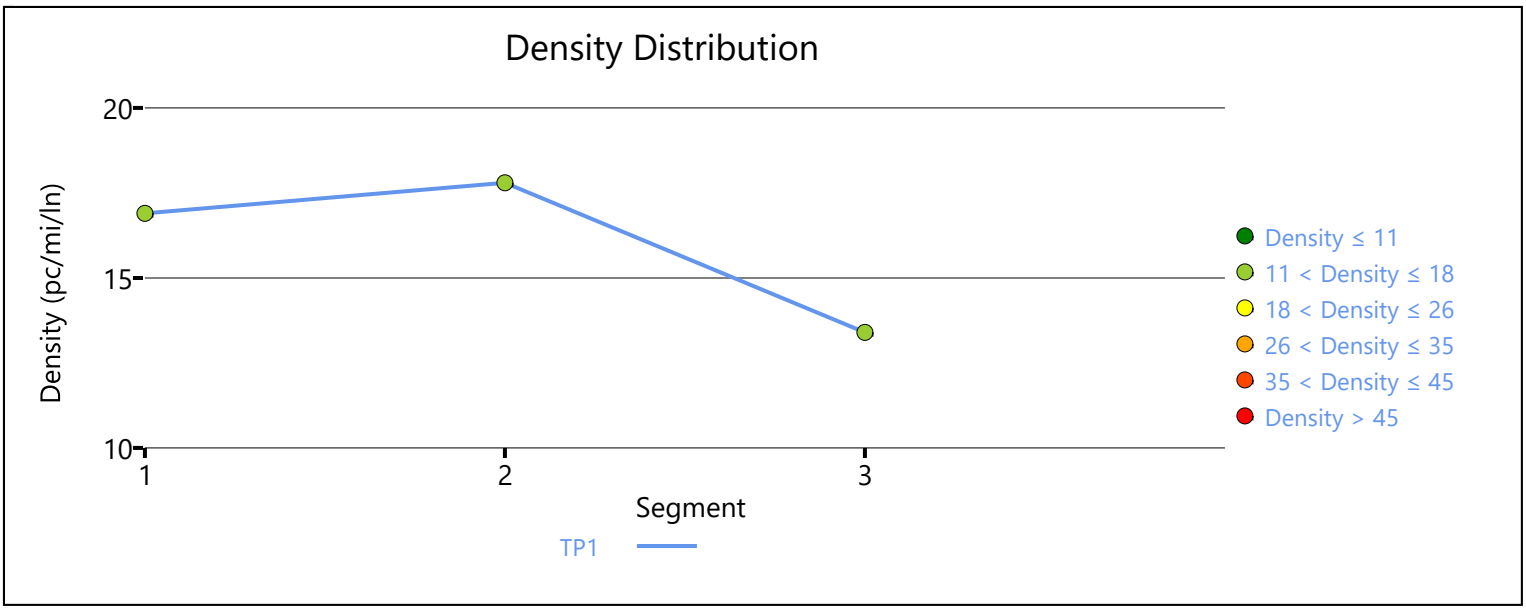
Space Mean Speed, mi/h	64.5	Density, veh/mi/ln	15.1
Average Travel Time, min	2.10	Density, pc/mi/ln	16.7

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Southbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2714	7200	0.38	71.8	12.6	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3531	4810	0.73	61.1	14.4	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2586	7200	0.36	72.2	11.9	B

Facility Time Period Results

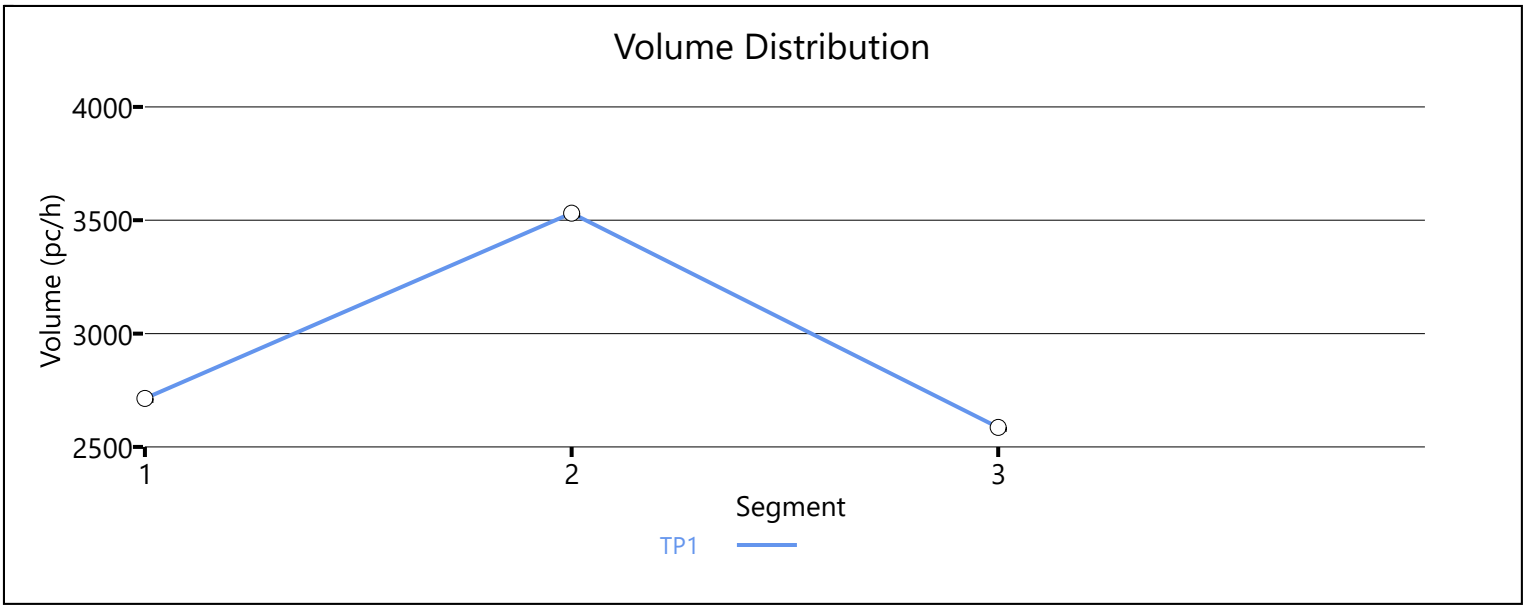
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	65.5	13.5	12.2	2.00	B

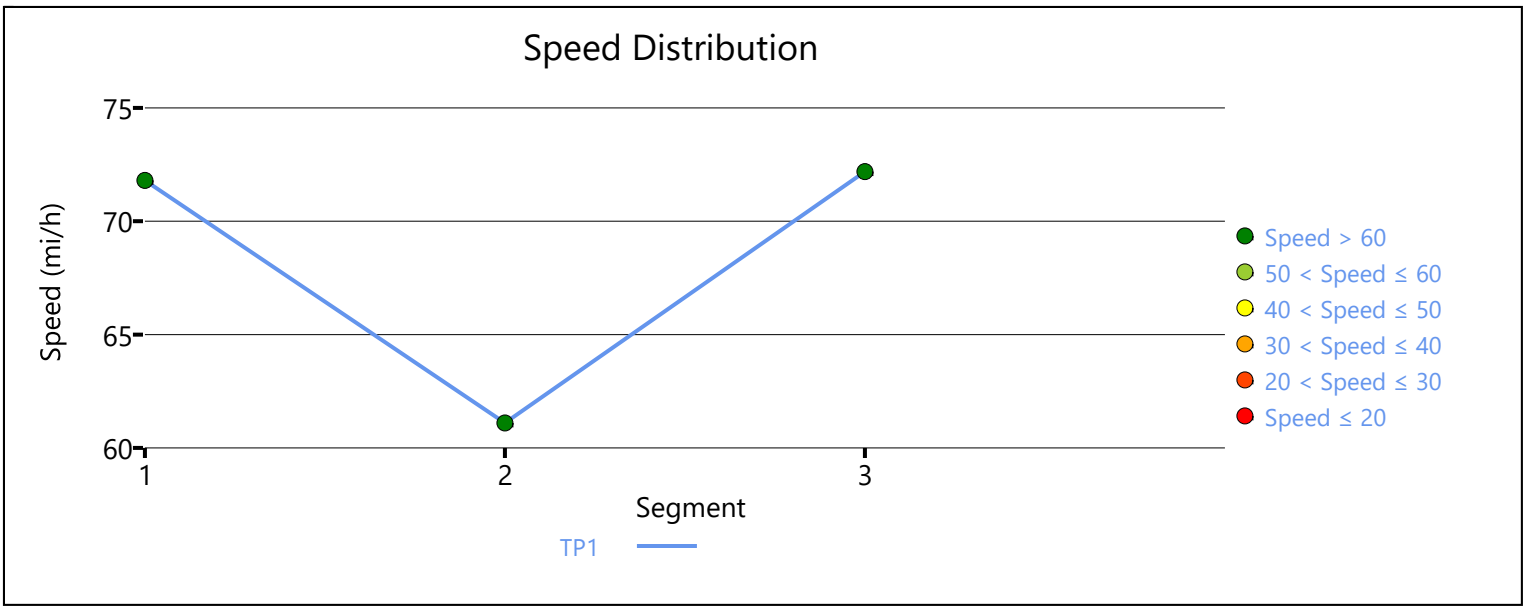
Facility Overall Results

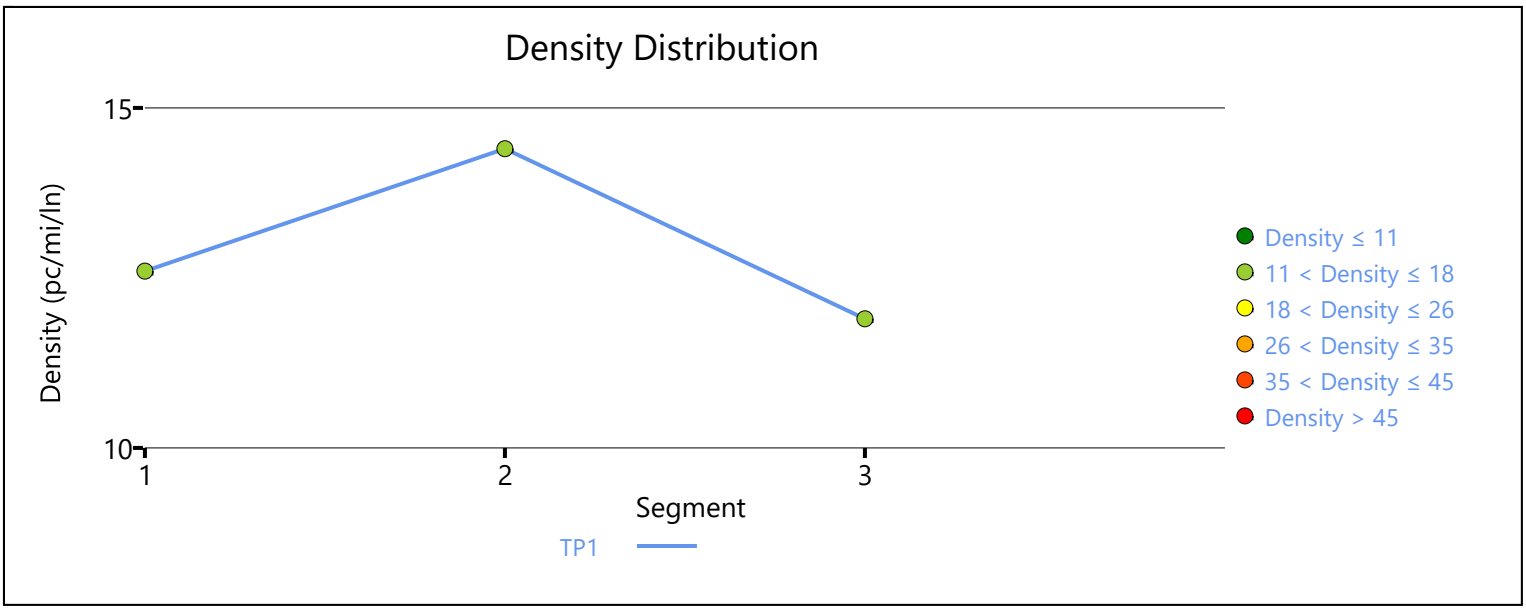
Space Mean Speed, mi/h	65.5	Density, veh/mi/ln	12.2
Average Travel Time, min	2.00	Density, pc/mi/ln	13.5

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Northbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2632	7200	0.37	72.2	12.1	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3554	8313	0.43	64.7	13.7	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2981	7200	0.41	71.8	13.8	B

Facility Time Period Results

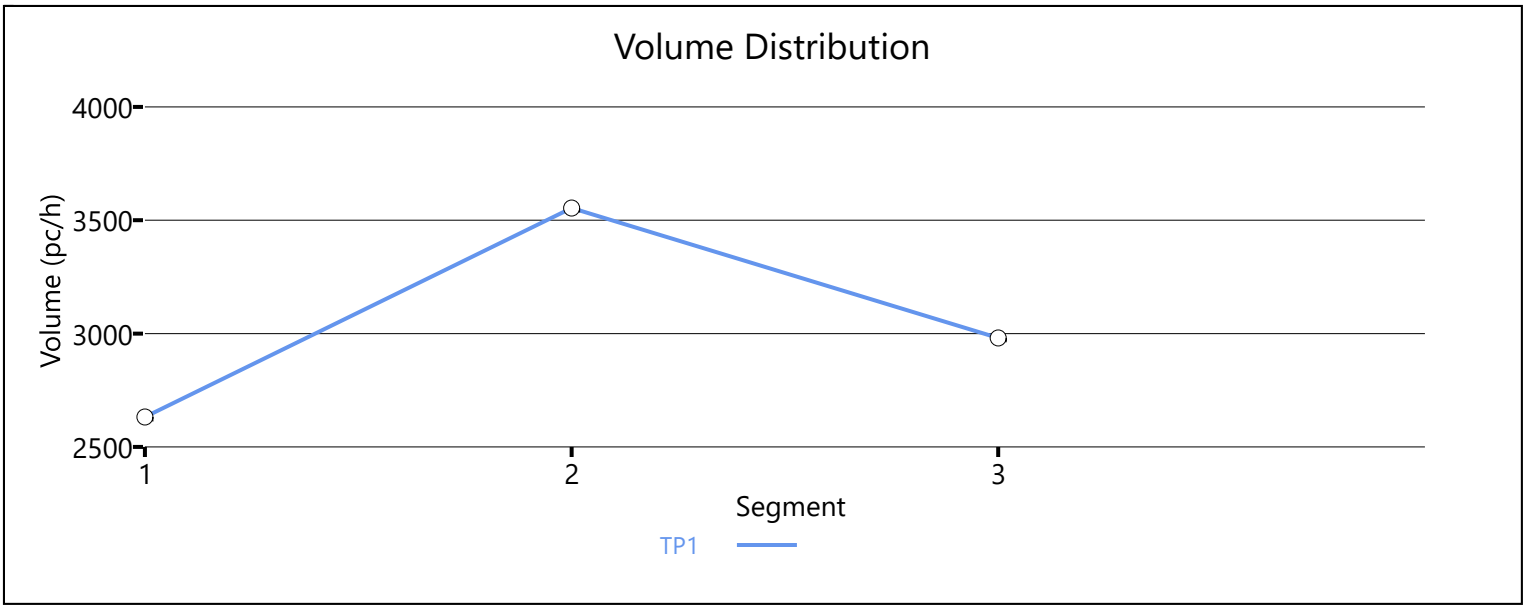
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	68.0	13.3	12.1	2.10	B

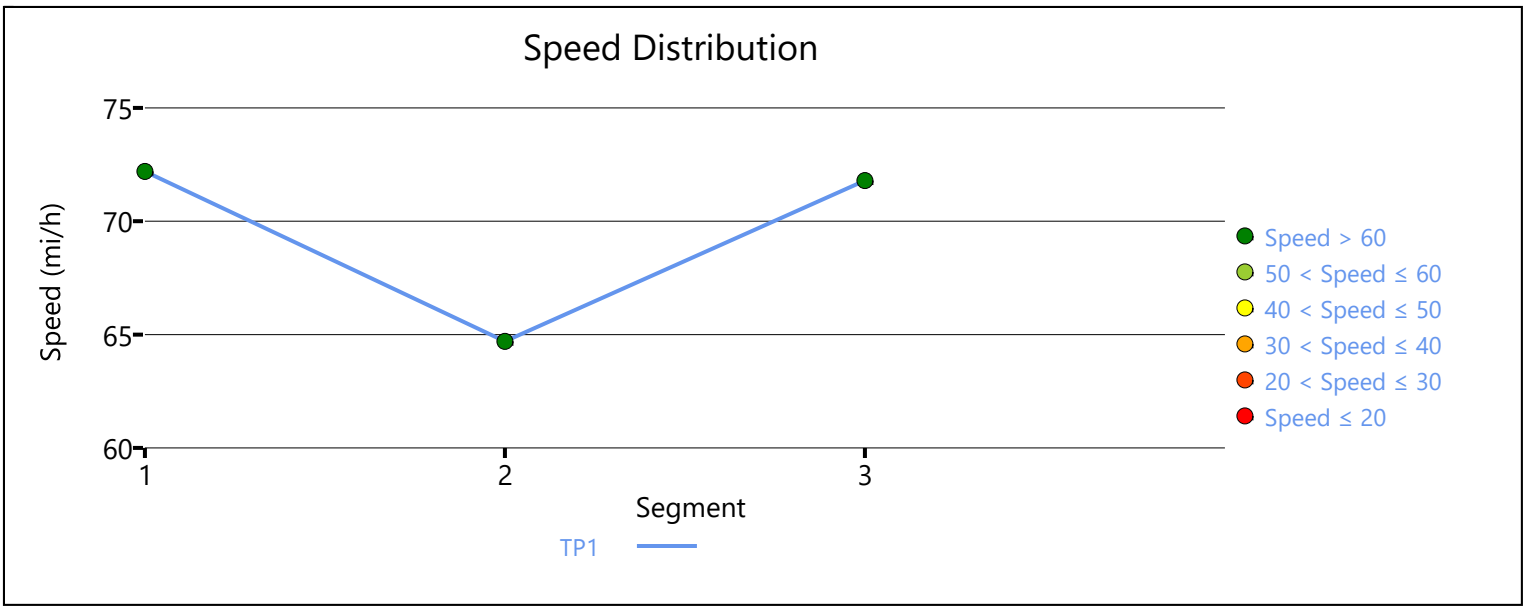
Facility Overall Results

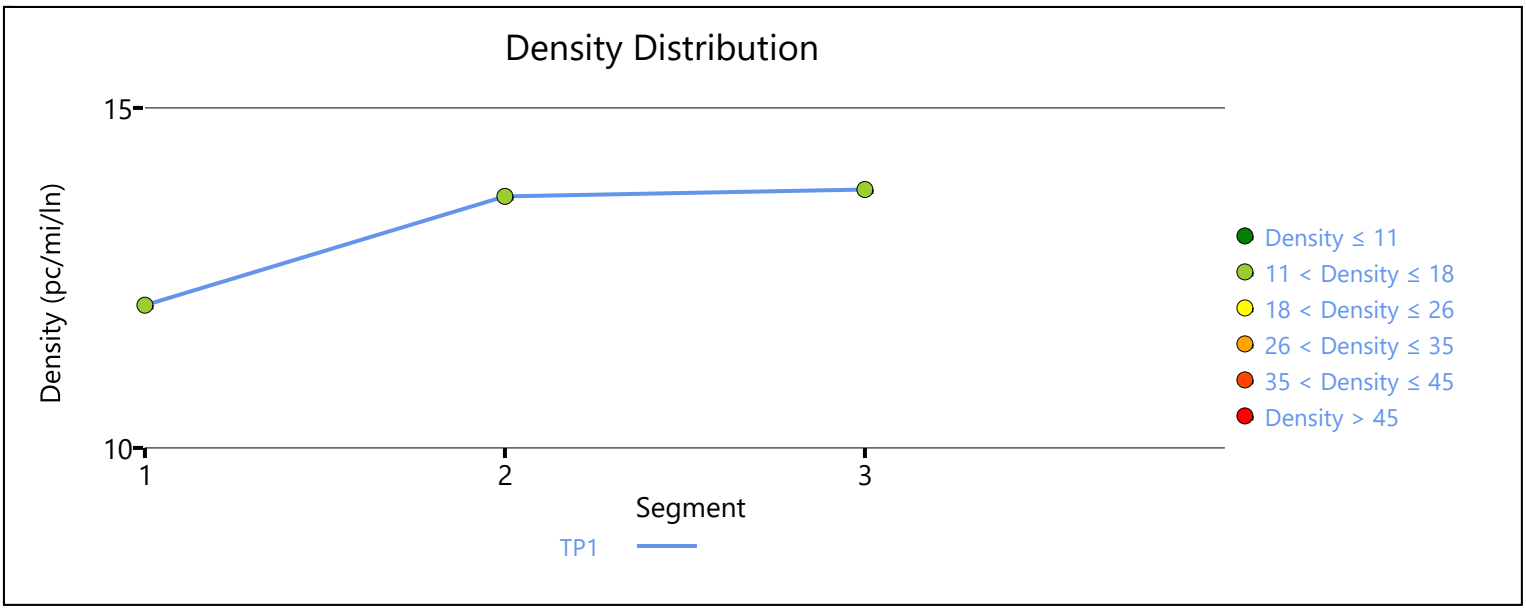
Space Mean Speed, mi/h	68.0	Density, veh/mi/ln	12.1
Average Travel Time, min	2.10	Density, pc/mi/ln	13.3

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Northbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3359	7200	0.47	72.2	15.5	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4533	8294	0.55	62.7	18.1	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3792	7200	0.53	71.6	17.7	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	66.8	17.4	15.8	2.10	B

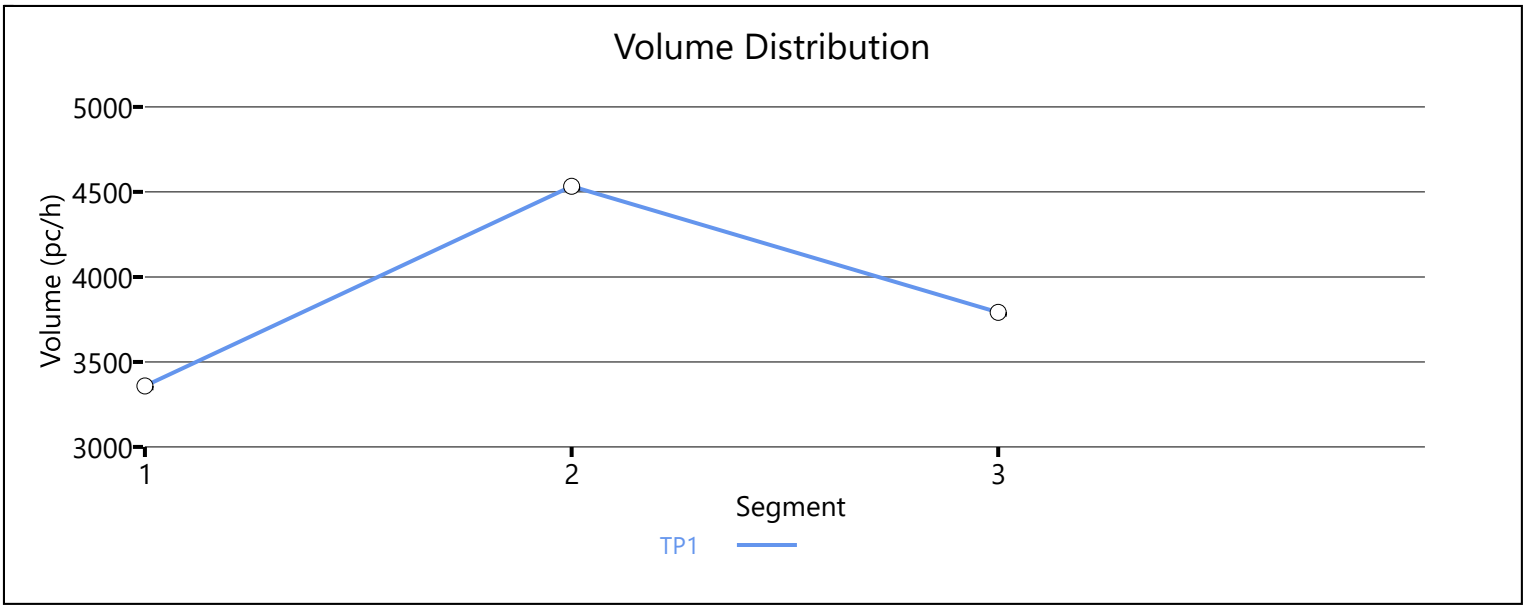
Facility Overall Results

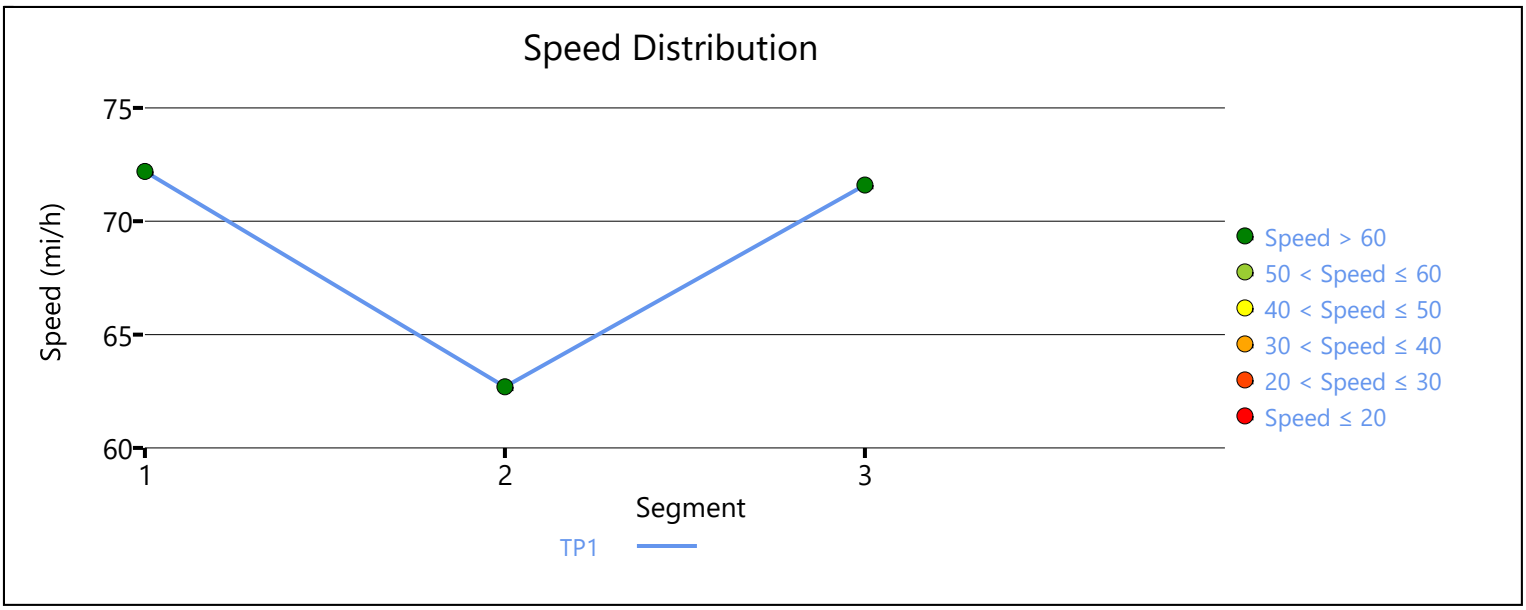
Space Mean Speed, mi/h	66.8	Density, veh/mi/ln	15.8
Average Travel Time, min	2.10	Density, pc/mi/ln	17.4

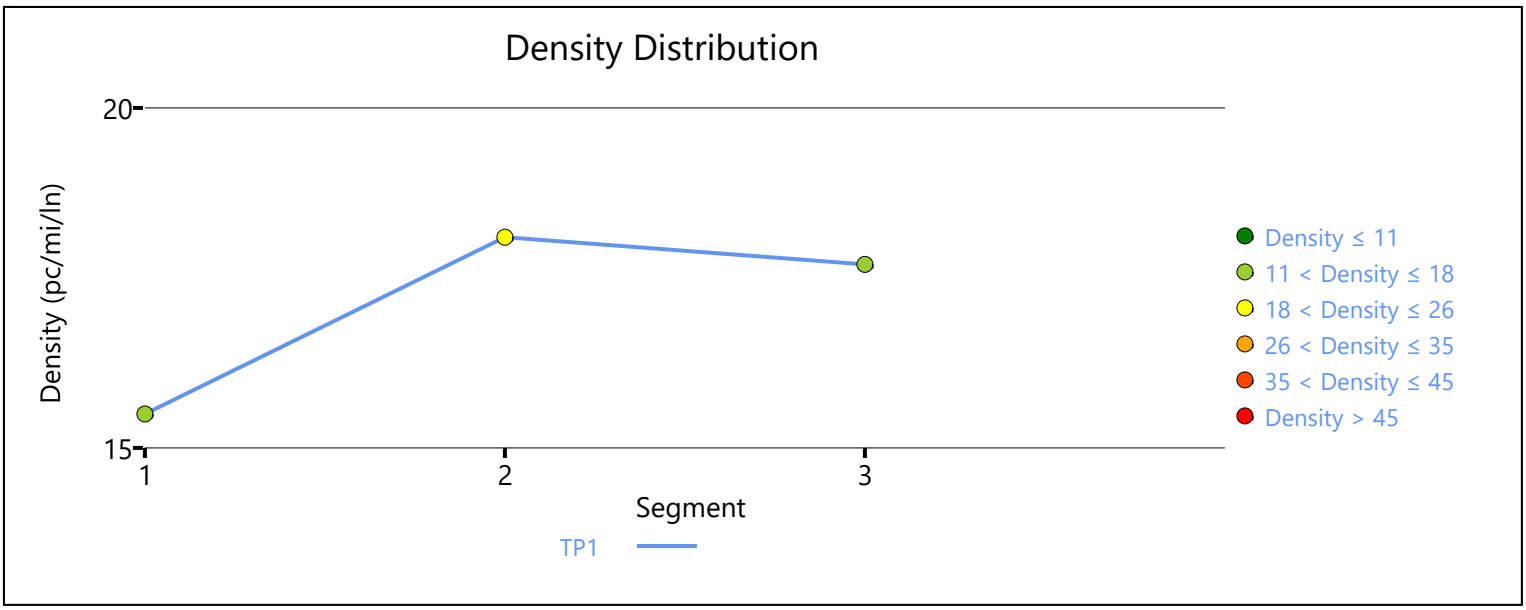
Messages

INFORMATION 1	Density for segment 3 in time period 1 is within 0.5 pc/mi/ln of LOS boundary. Be cautious when comparing LOS results.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	AM Peak
Project Description	Southbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3639	7200	0.51	71.7	16.9	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4233	7726	0.55	65.8	16.1	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2911	7200	0.40	72.2	13.4	B

Facility Time Period Results

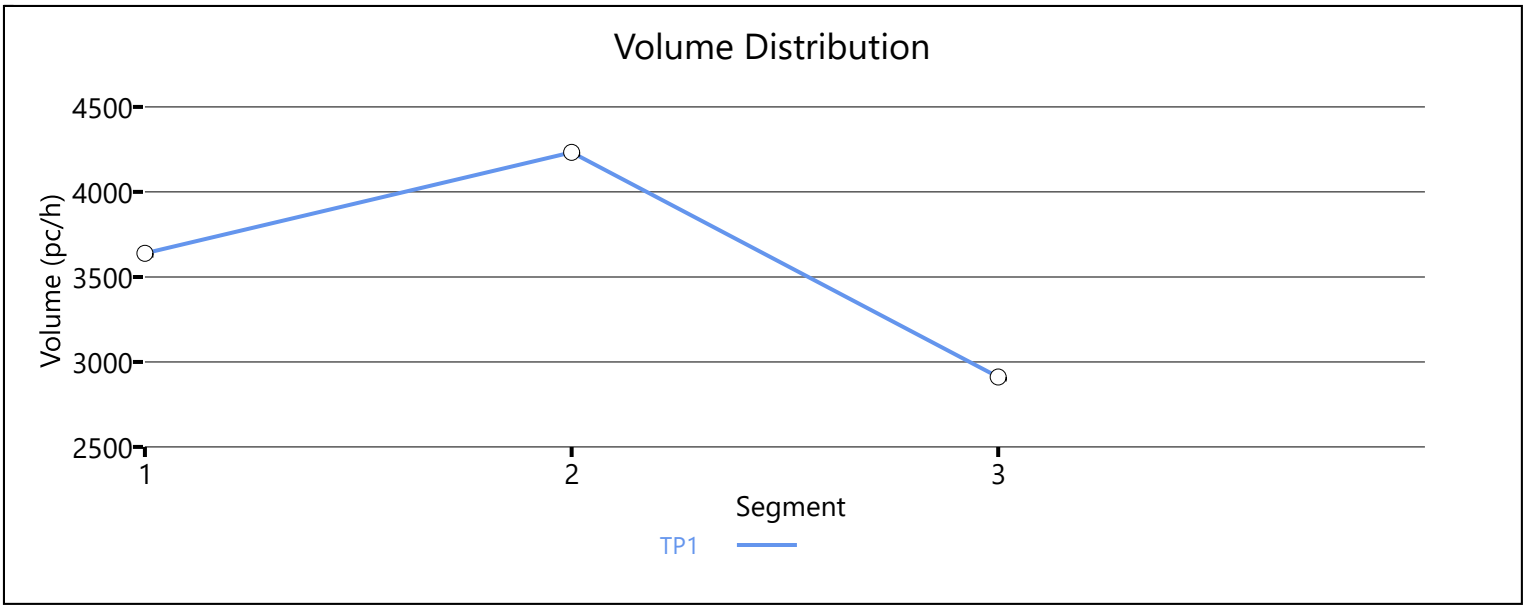
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	68.4	15.7	14.3	1.90	B

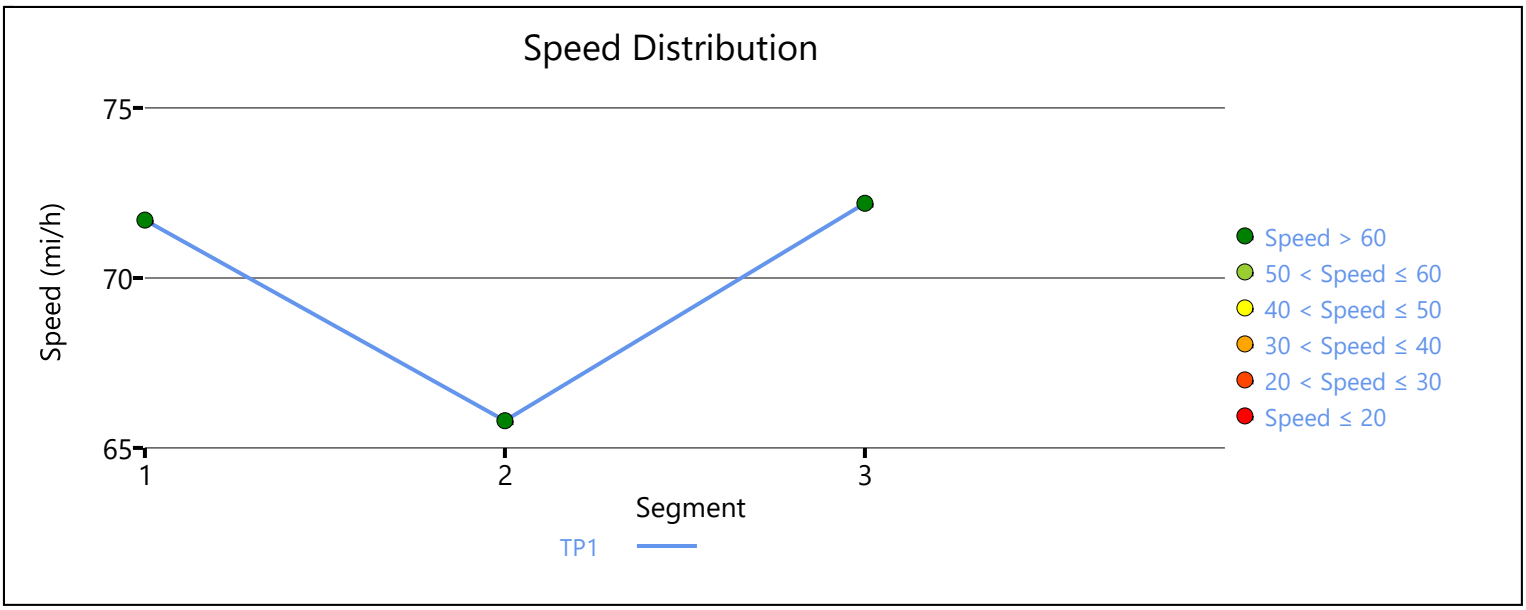
Facility Overall Results

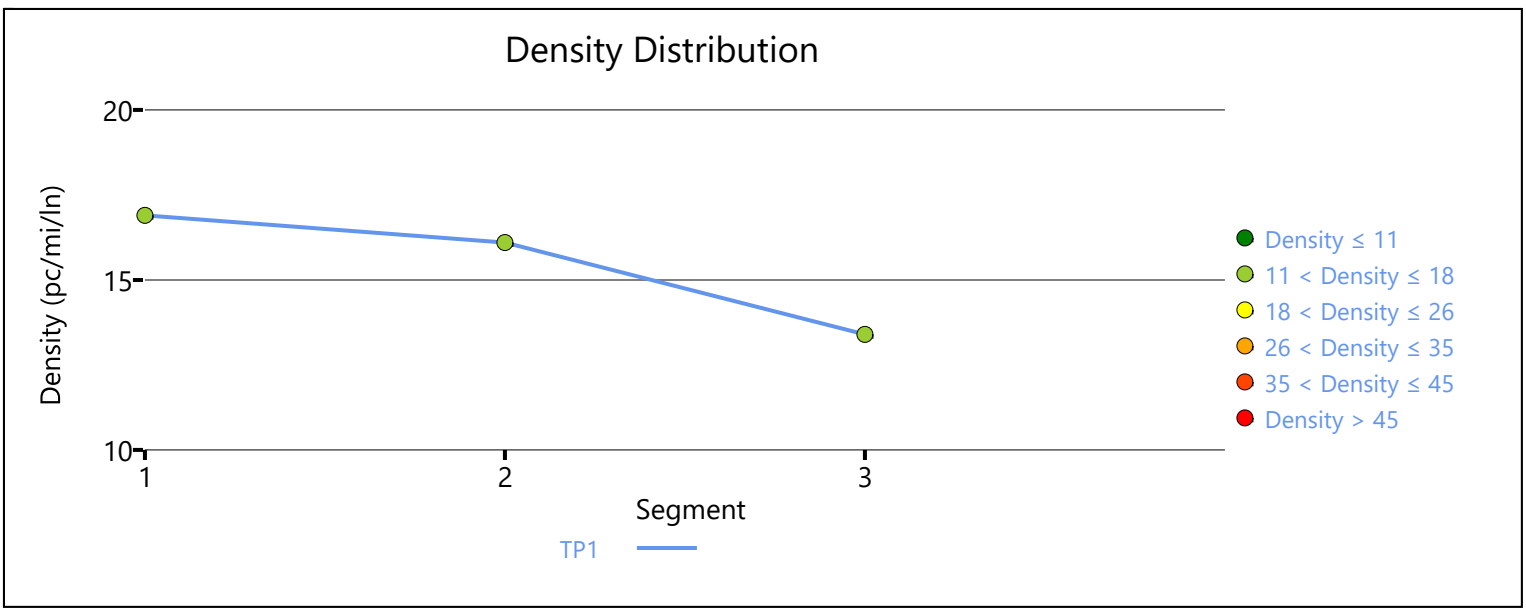
Space Mean Speed, mi/h	68.4	Density, veh/mi/ln	14.3
Average Travel Time, min	1.90	Density, pc/mi/ln	15.7

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2018
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Southbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2714	7200	0.38	71.8	12.6	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3531	7014	0.50	65.4	13.5	B

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	2586	7200	0.36	72.2	11.9	B

Facility Time Period Results

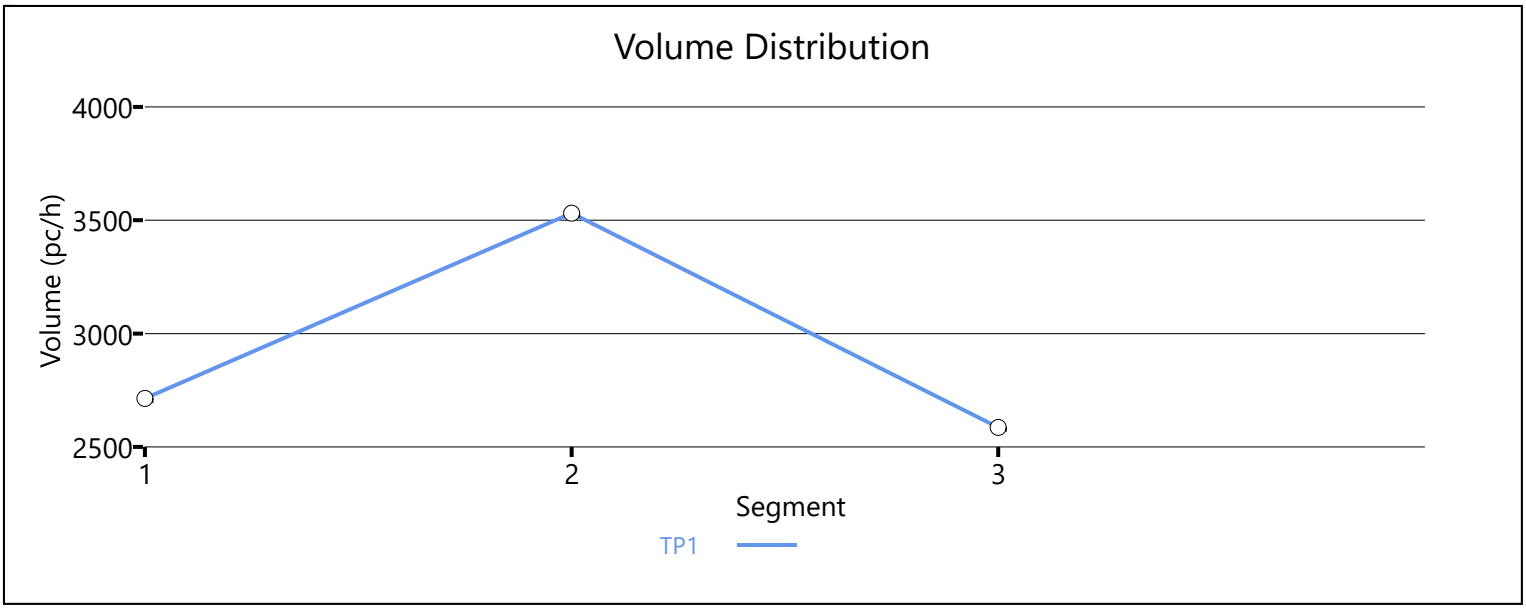
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	68.2	13.0	11.8	2.00	B

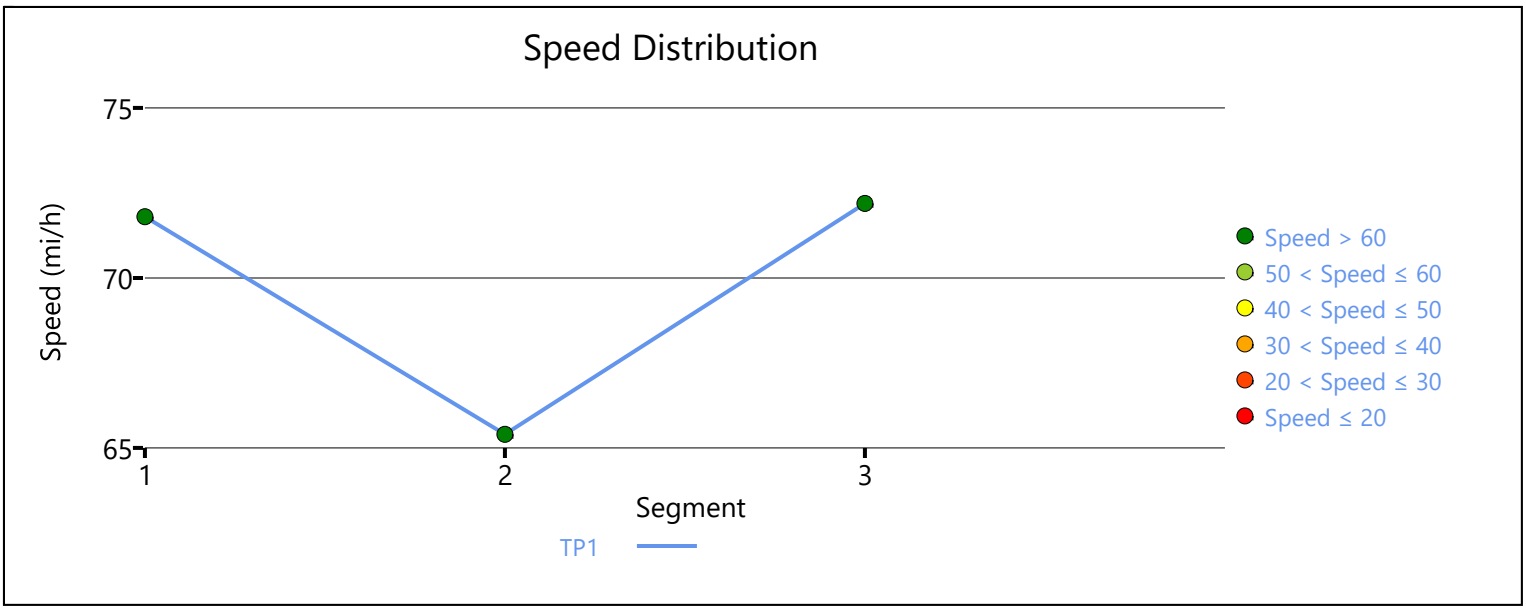
Facility Overall Results

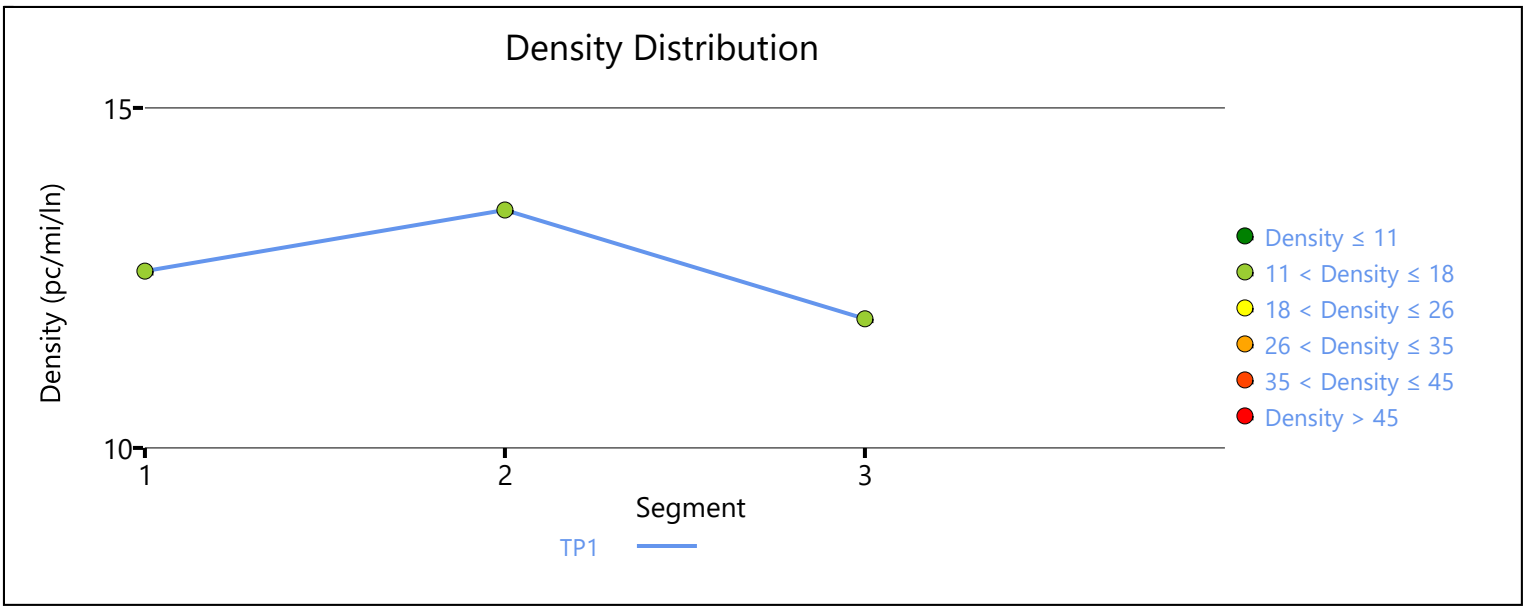
Space Mean Speed, mi/h	68.2	Density, veh/mi/ln	11.8
Average Travel Time, min	2.00	Density, pc/mi/ln	13.0

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*500 Trips in Managed Lane	Time Period Analyzed	AM Peak
Project Description	Northbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4574	7200	0.64	70.3	21.7	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4837	5195	1.16	58.6	20.6	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3497	7200	0.65	71.8	16.2	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	48.7	25.6	23.9	2.90	F

Facility Overall Results

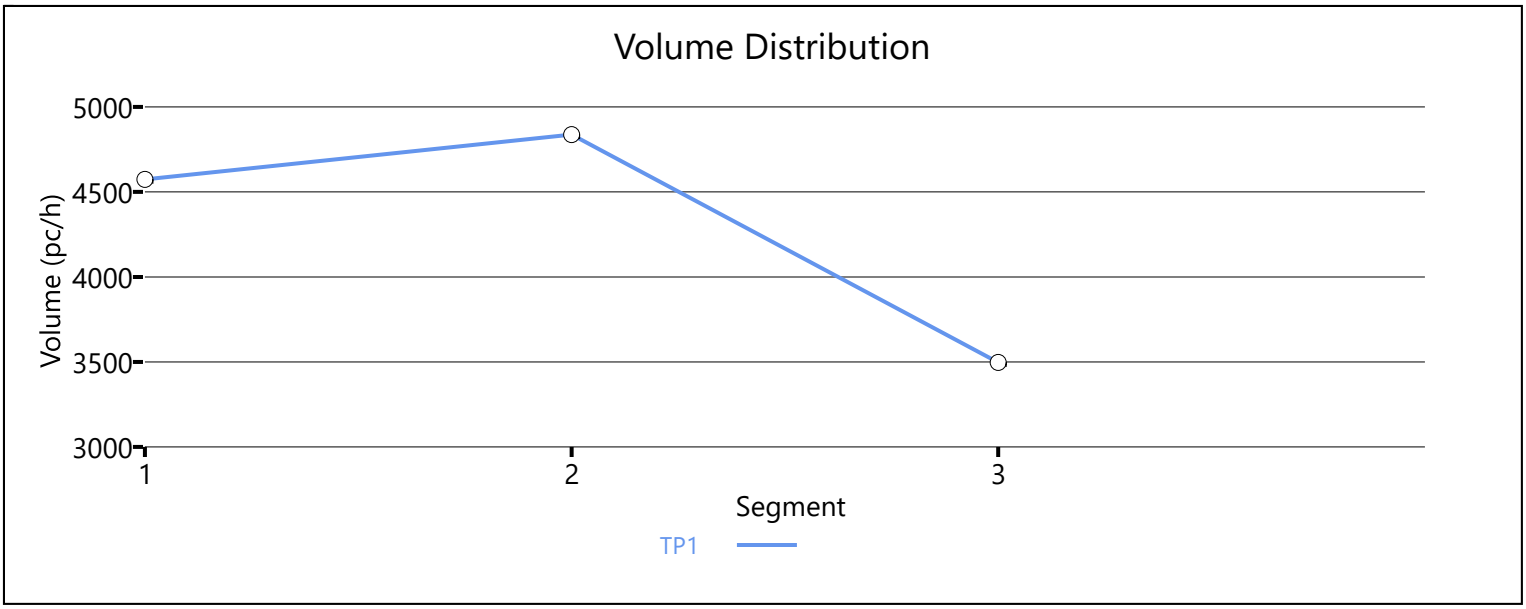
Space Mean Speed, mi/h	48.7	Density, veh/mi/ln	23.9
Average Travel Time, min	2.90	Density, pc/mi/ln	25.6

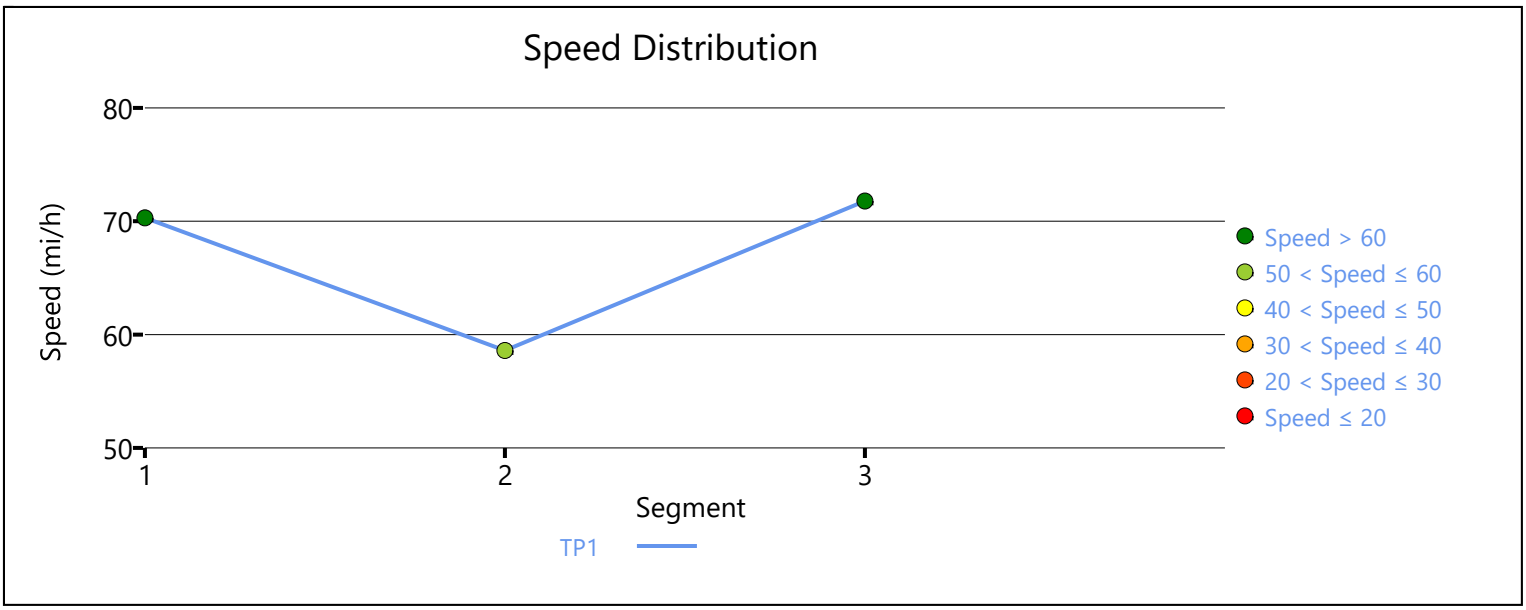
Messages

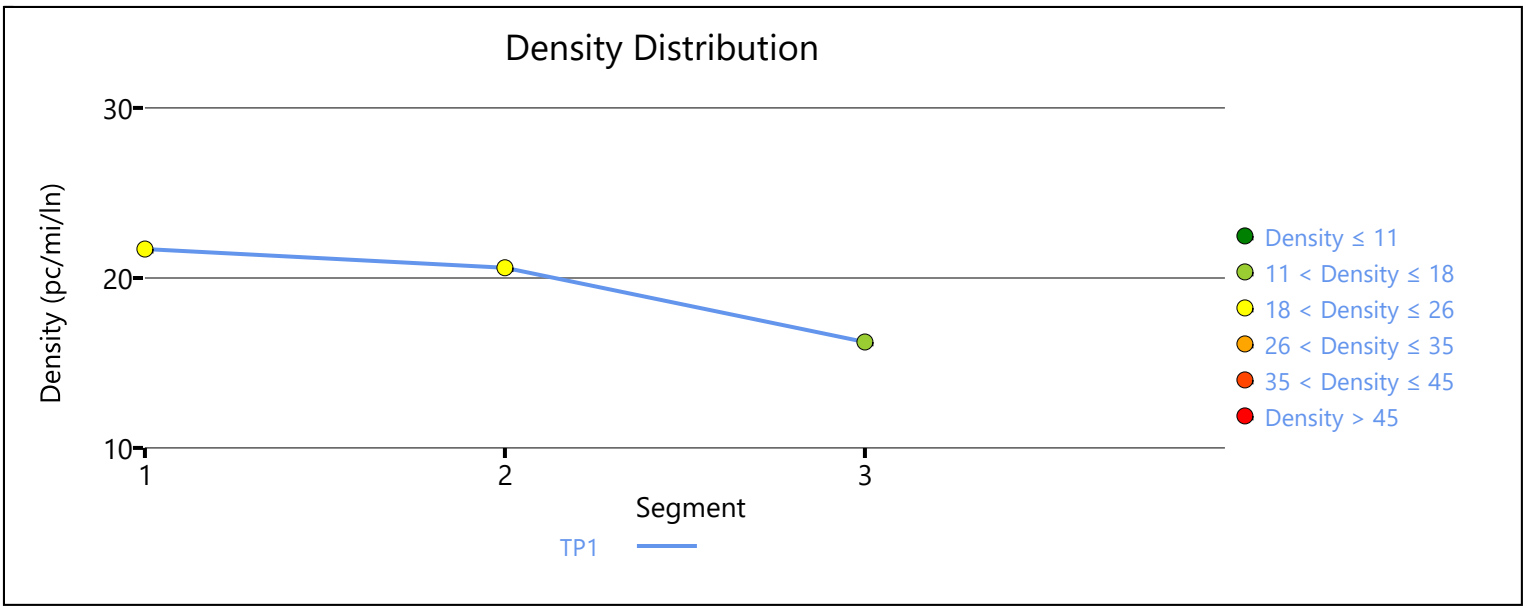
WARNING 1	Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.
INFORMATION 1	Oversaturated procedure is being used. Be sure to review values set for Jam Density, Density at

	Capacity, and Queue Discharge Capacity Drop on General page.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*2900 Trips in Managed Lane	Time Period Analyzed	PM Peak
Project Description	Northbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3649	7200	0.51	72.1	16.9	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3509	3768	1.40	60.7	14.5	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	1774	7200	0.49	71.8	8.2	A

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	36.4	23.3	21.8	3.90	F

Facility Overall Results

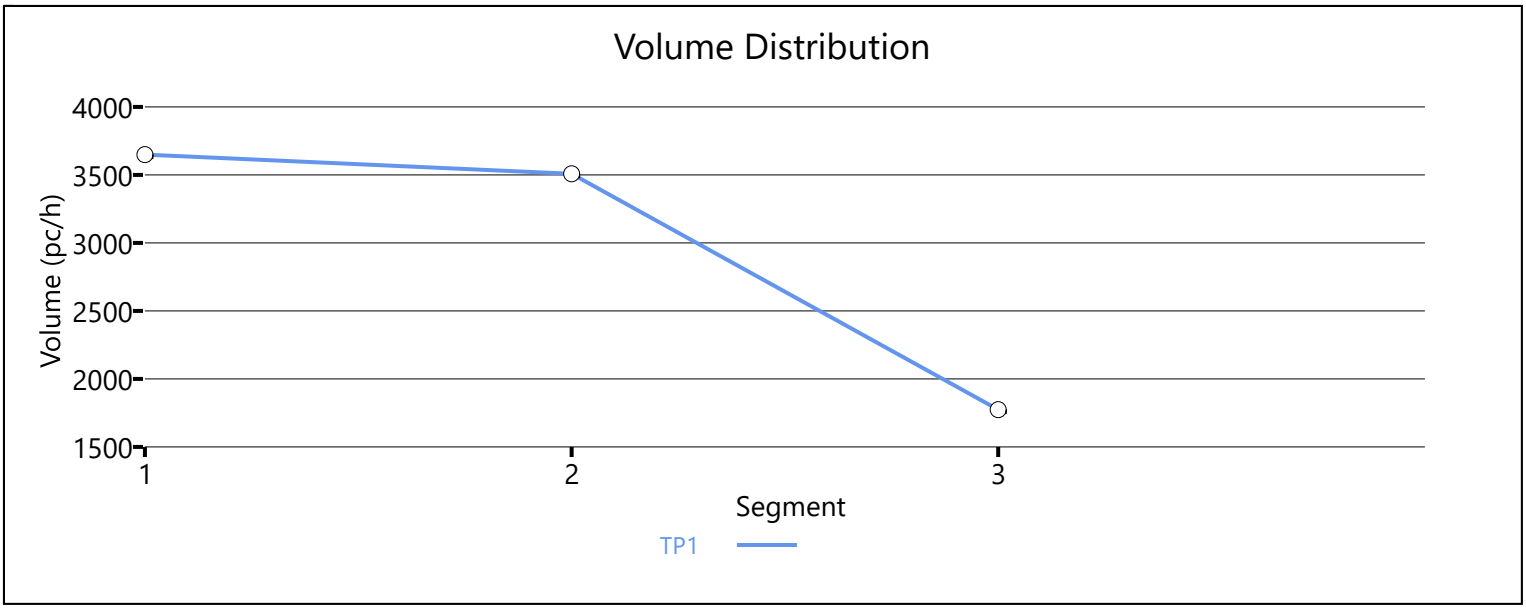
Space Mean Speed, mi/h	36.4	Density, veh/mi/ln	21.8
Average Travel Time, min	3.90	Density, pc/mi/ln	23.3

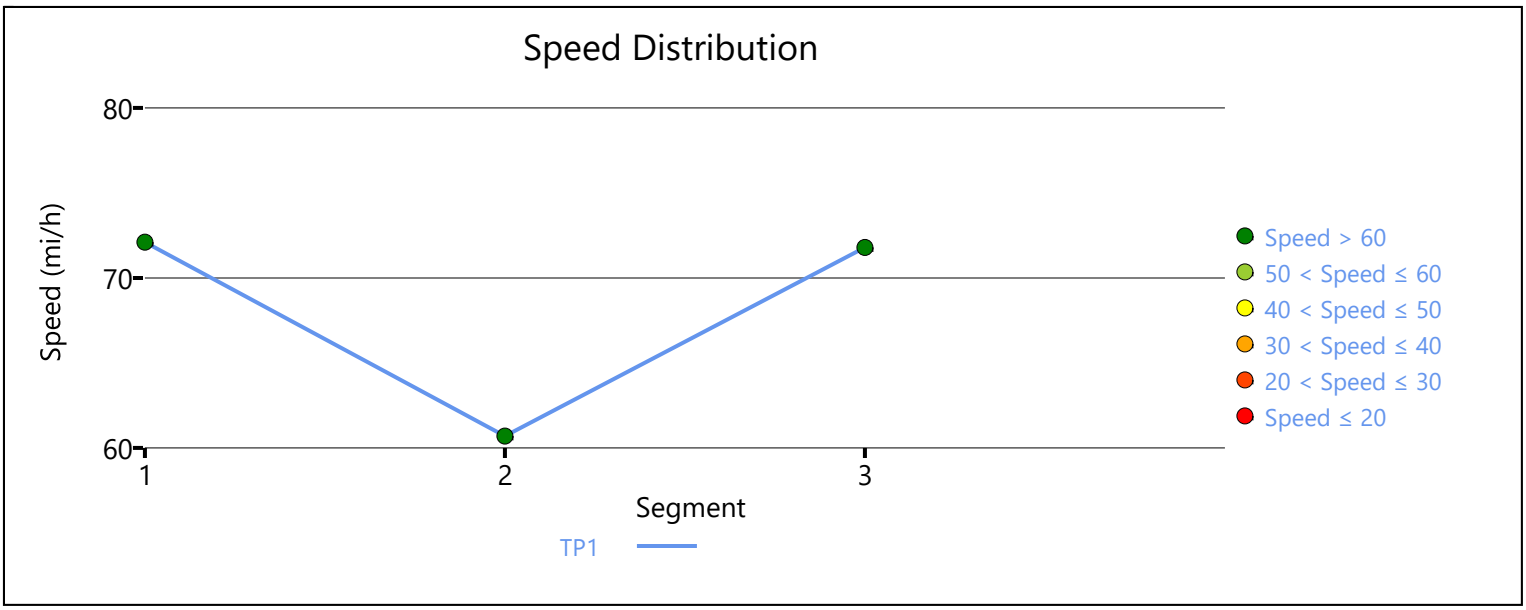
Messages

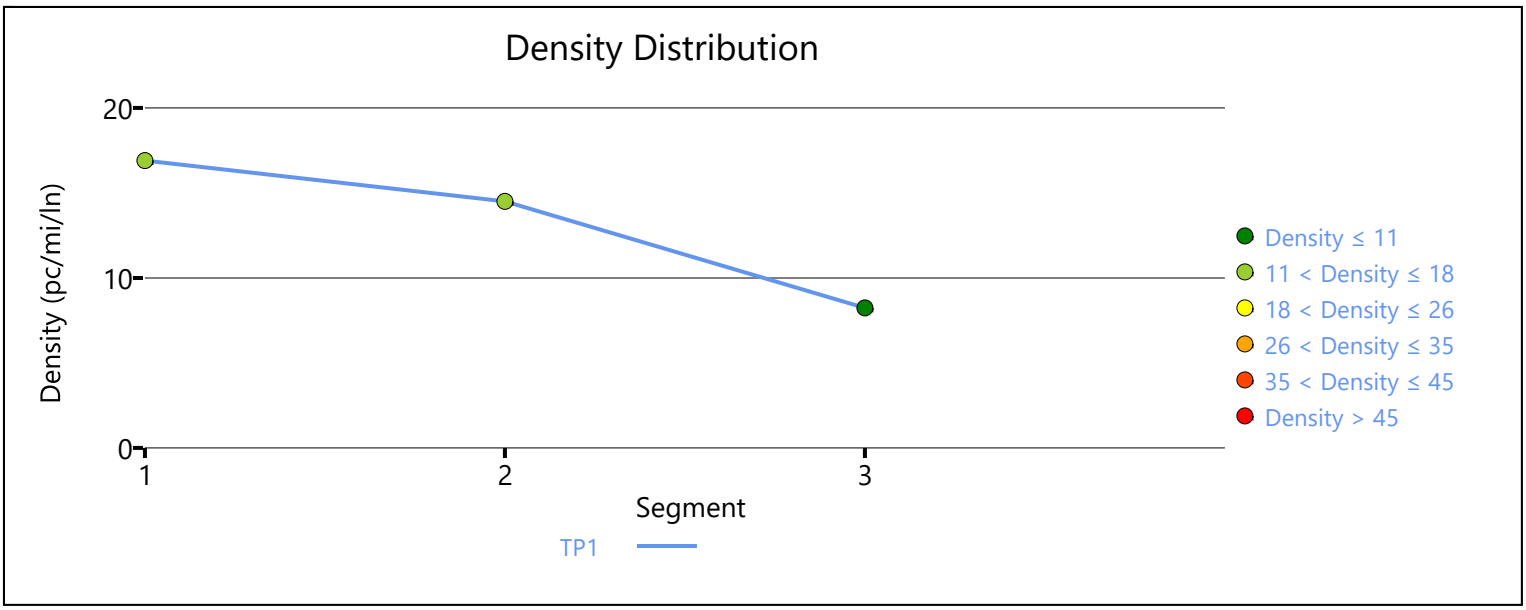
WARNING 1	Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.
INFORMATION 1	Oversaturated procedure is being used. Be sure to review values set for Jam Density, Density at

	Capacity, and Queue Discharge Capacity Drop on General page.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*2000 Trips in Managed Lanes	Time Period Analyzed	AM Peak
Project Description	Southbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4039	7200	0.56	71.3	18.9	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3634	3903	1.40	60.3	15.1	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	1700	7200	0.49	72.2	7.8	A

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	30.1	29.1	27.2	4.40	F

Facility Overall Results

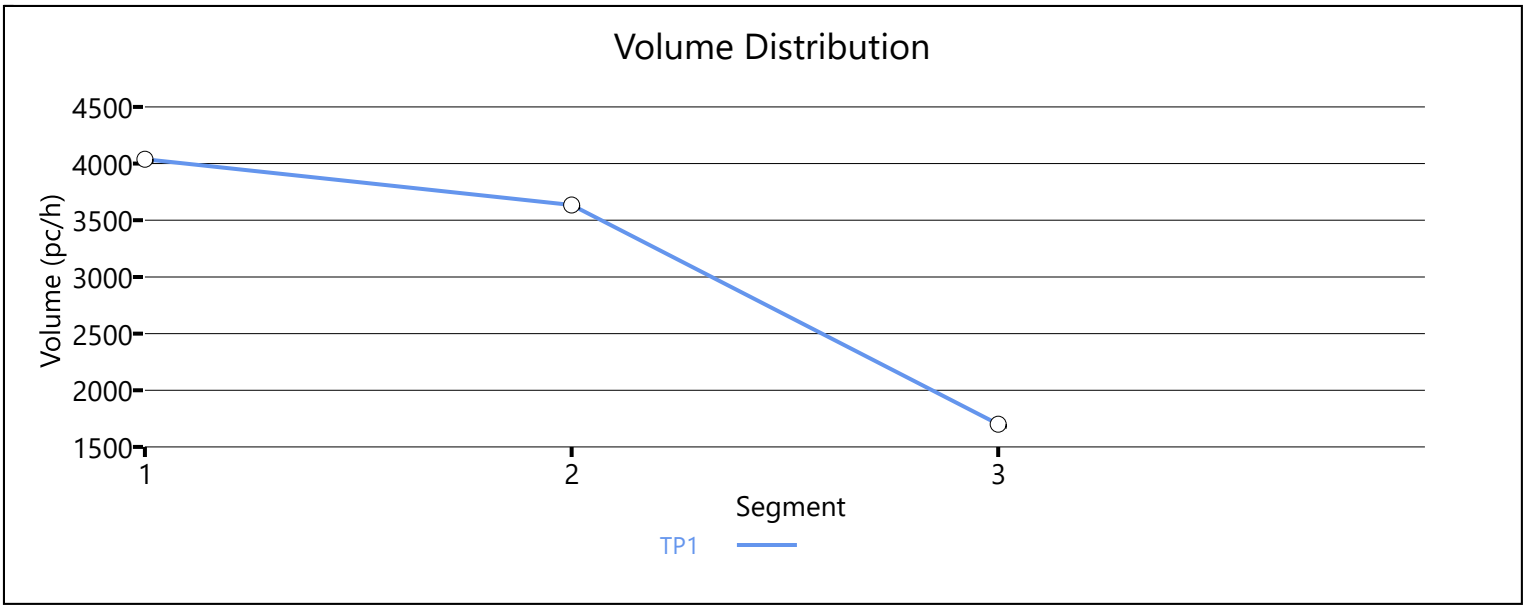
Space Mean Speed, mi/h	30.1	Density, veh/mi/ln	27.2
Average Travel Time, min	4.40	Density, pc/mi/ln	29.1

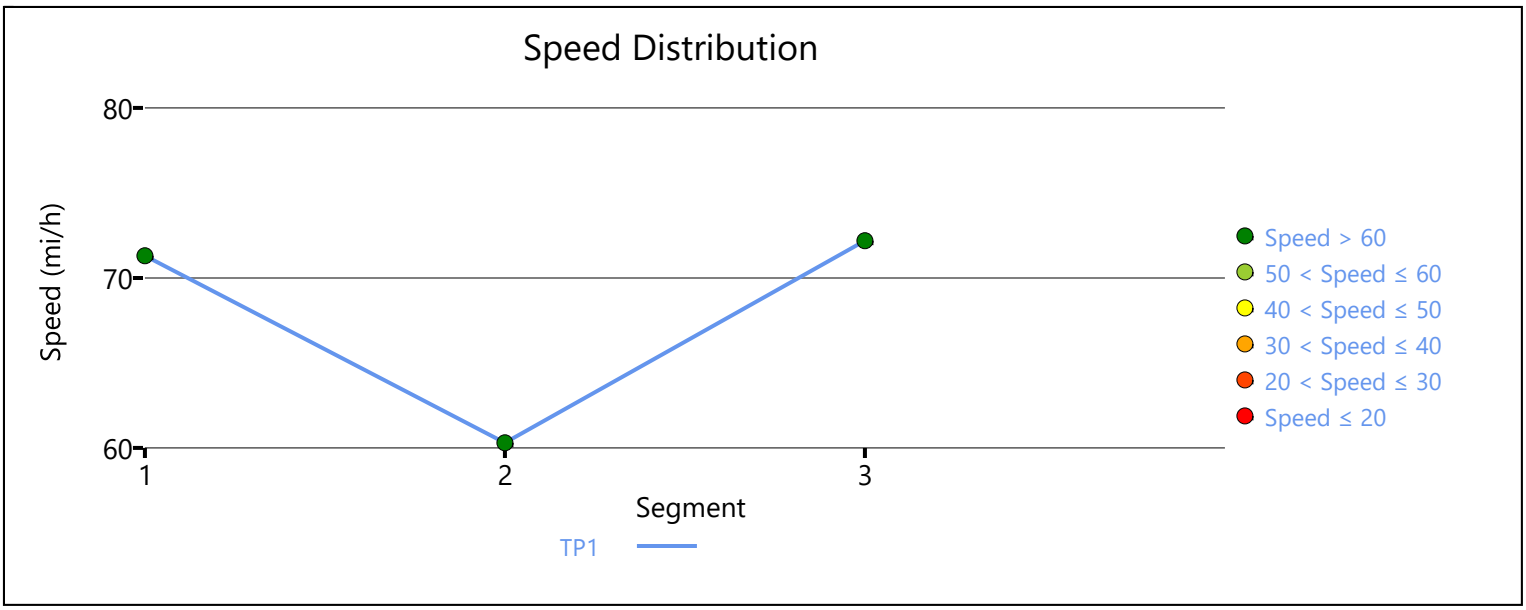
Messages

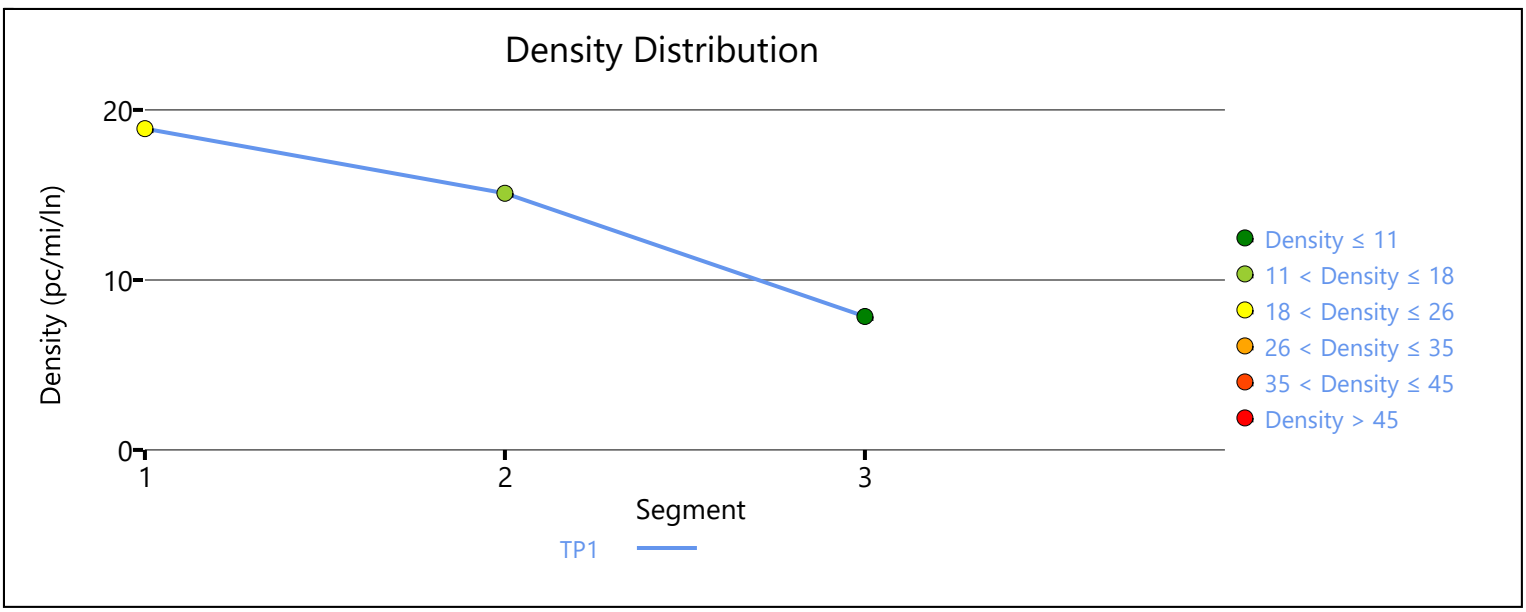
WARNING 1	Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.
WARNING 2	Queue extends past the beginning of the facility on time period 1. Consider expanding the length

	of the facility to account for these vehicles performance and affect on upstream segments.
INFORMATION 1	Oversaturated procedure is being used. Be sure to review values set for Jam Density, Density at Capacity, and Queue Discharge Capacity Drop on General page.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Southbound No-Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4230	7200	0.59	70.9	19.9	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4443	4771	1.20	59.4	18.7	F

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3061	7200	0.60	72.2	14.1	B

Facility Time Period Results

T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	47.1	24.1	22.5	2.80	F

Facility Overall Results

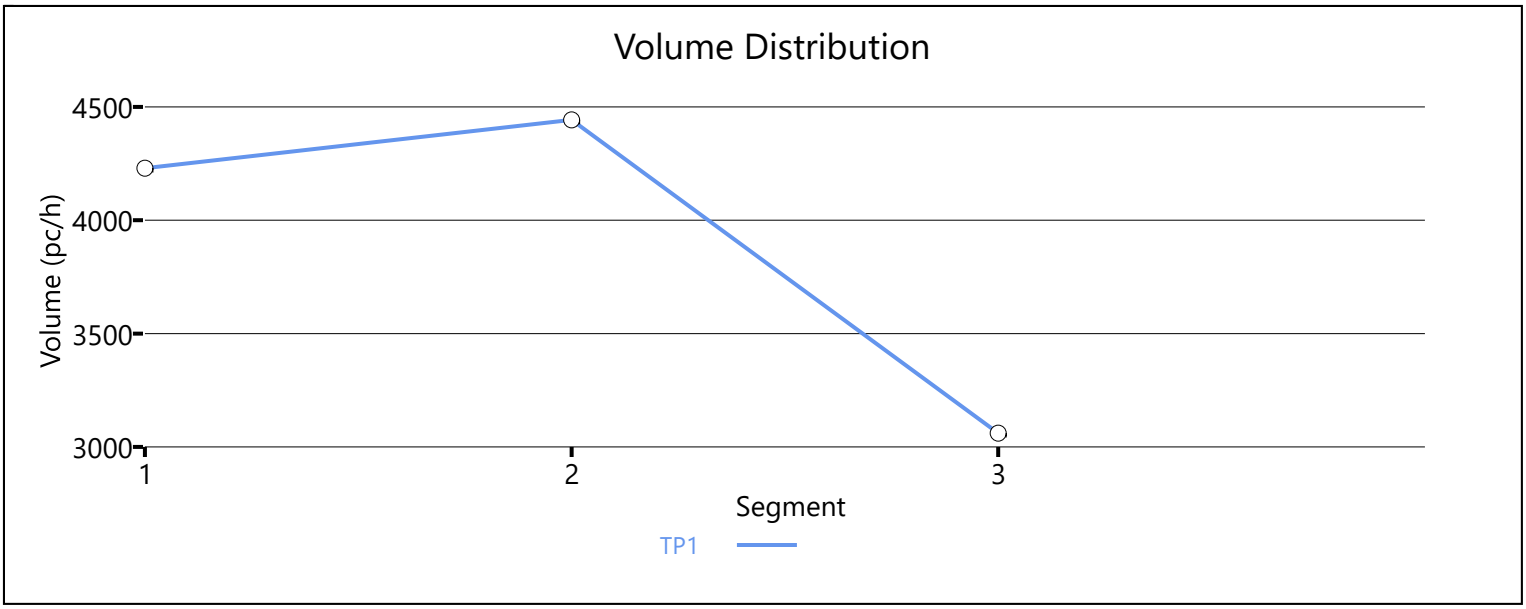
Space Mean Speed, mi/h	47.1	Density, veh/mi/ln	22.5
Average Travel Time, min	2.80	Density, pc/mi/ln	24.1

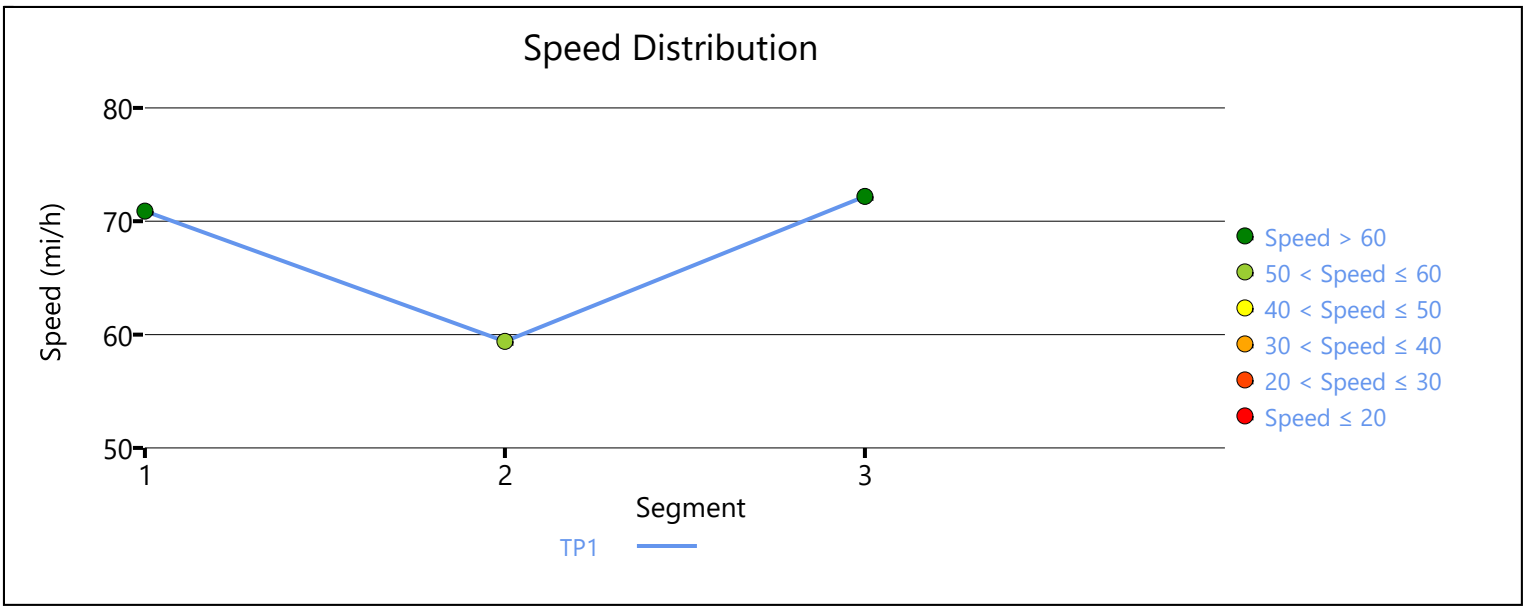
Messages

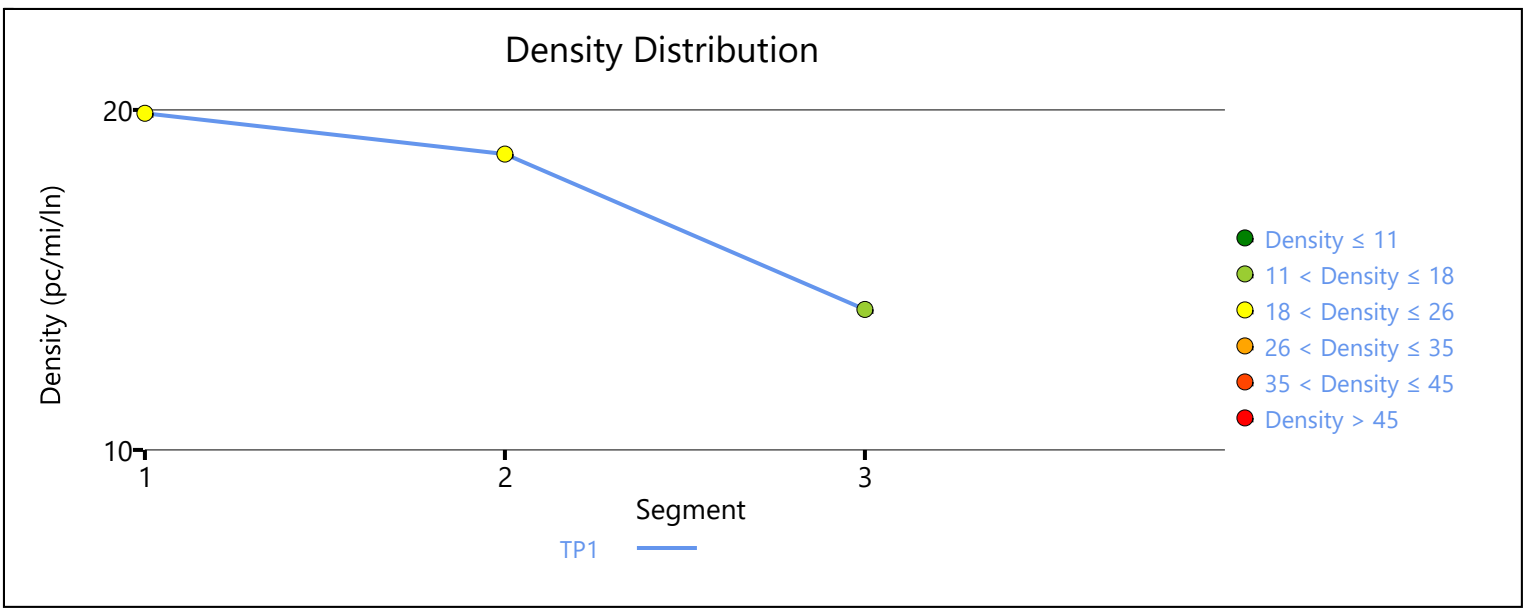
WARNING 1	Oversaturated conditions currently exist in boundary time period 1. Results may not be reliable. Consider expanding analysis in time and/or space to resolve this warning.
INFORMATION 1	Oversaturated procedure is being used. Be sure to review values set for Jam Density, Density at

	Capacity, and Queue Discharge Capacity Drop on General page.

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*500 Trips in Managed Lane	Time Period Analyzed	AM Peak
Project Description	Northbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4574	7200	0.64	70.3	21.7	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	6009	7575	0.79	60.5	24.8	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4669	7200	0.65	69.7	22.3	C

Facility Time Period Results

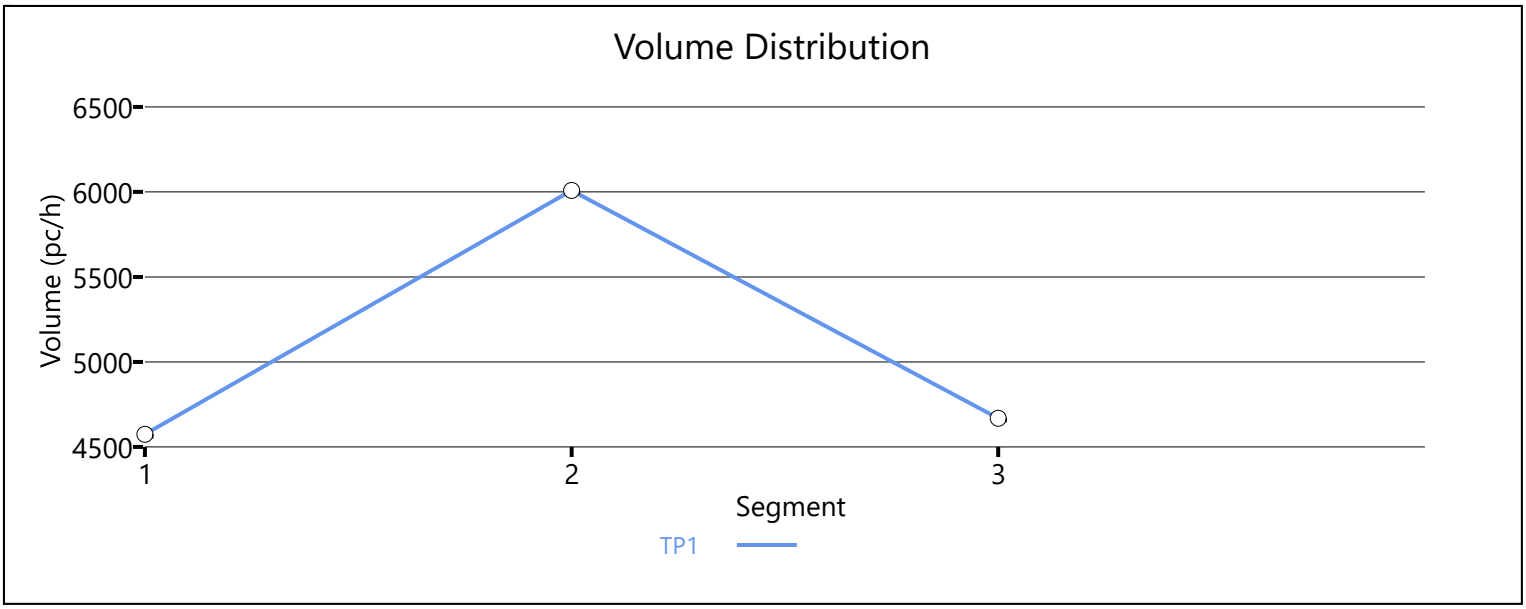
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	64.6	23.5	21.3	2.20	C

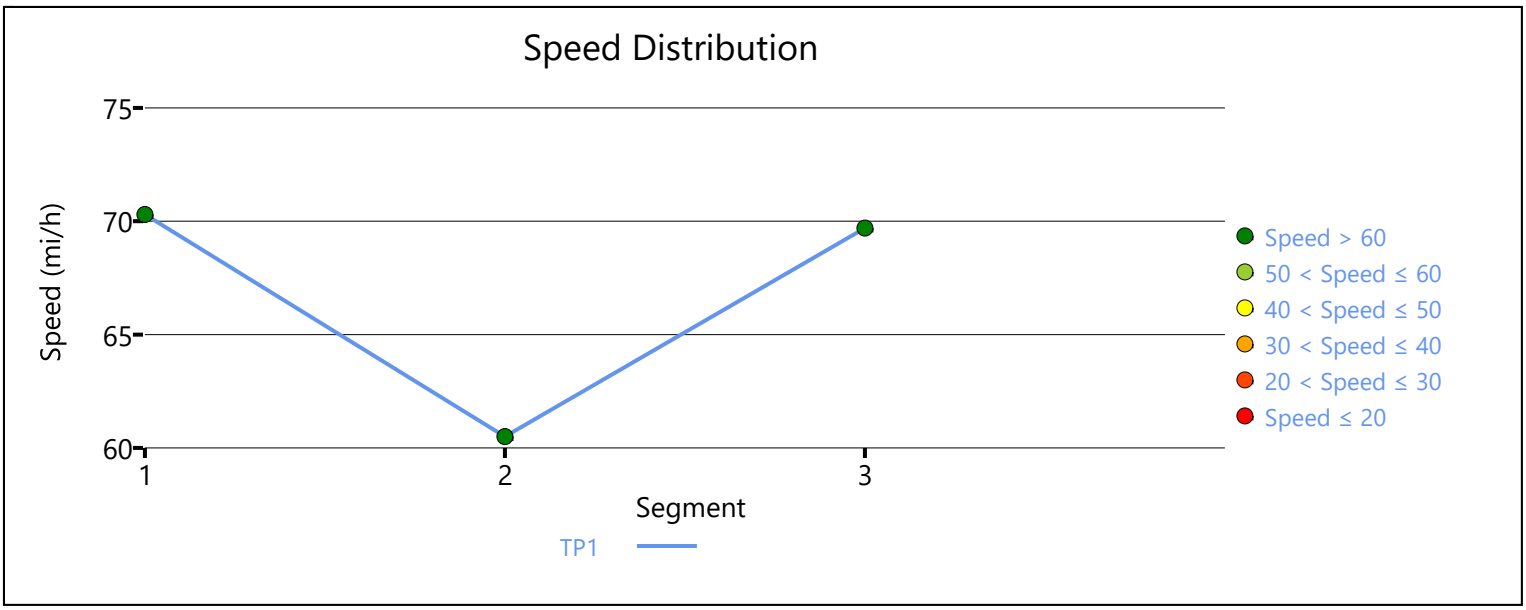
Facility Overall Results

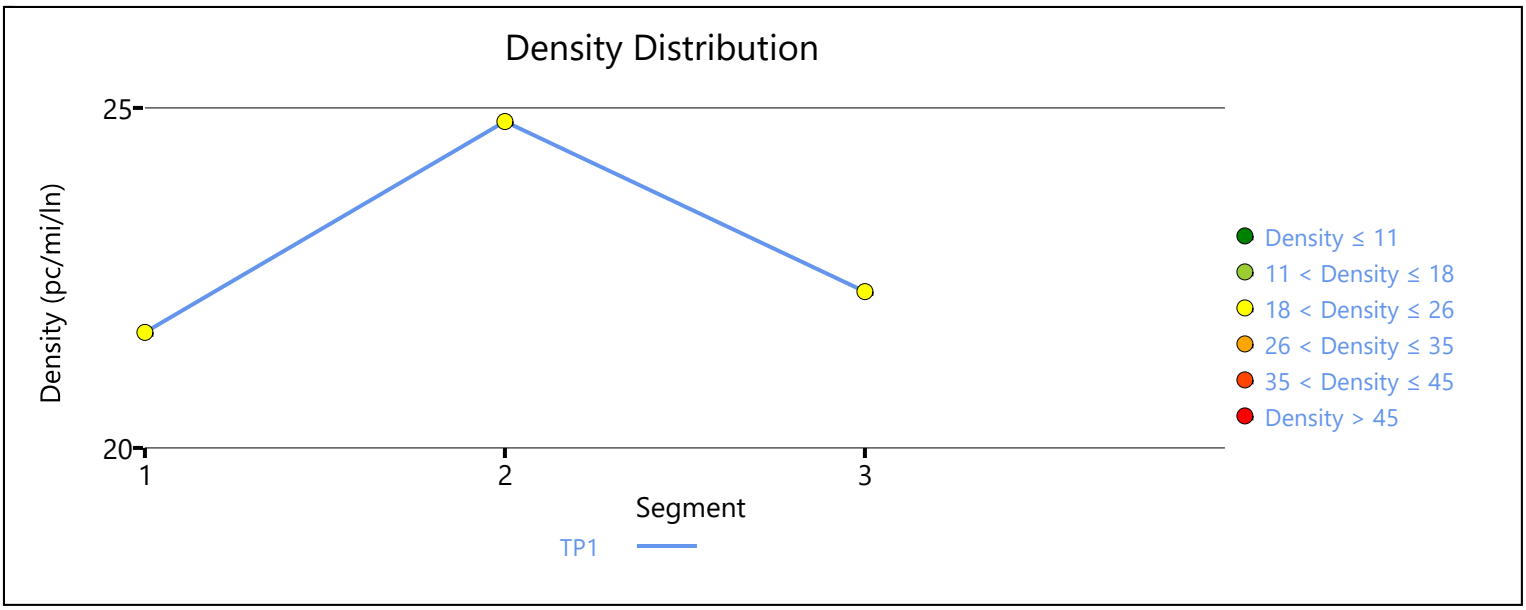
Space Mean Speed, mi/h	64.6	Density, veh/mi/ln	21.3
Average Travel Time, min	2.20	Density, pc/mi/ln	23.5

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*2900 Trips in Managed Lane	Time Period Analyzed	PM Peak
Project Description	Northbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.34		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	S of SR 884	3423	3
2	Weaving	Weaving	SR 884 to MLK Jr	5700	4
3	Basic	Basic	N of MLK Jr Off Ramp	3209	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3649	7200	0.51	72.1	16.9	B

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	5279	5494	0.96	61.5	21.5	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3544	7200	0.49	71.8	16.4	B

Facility Time Period Results

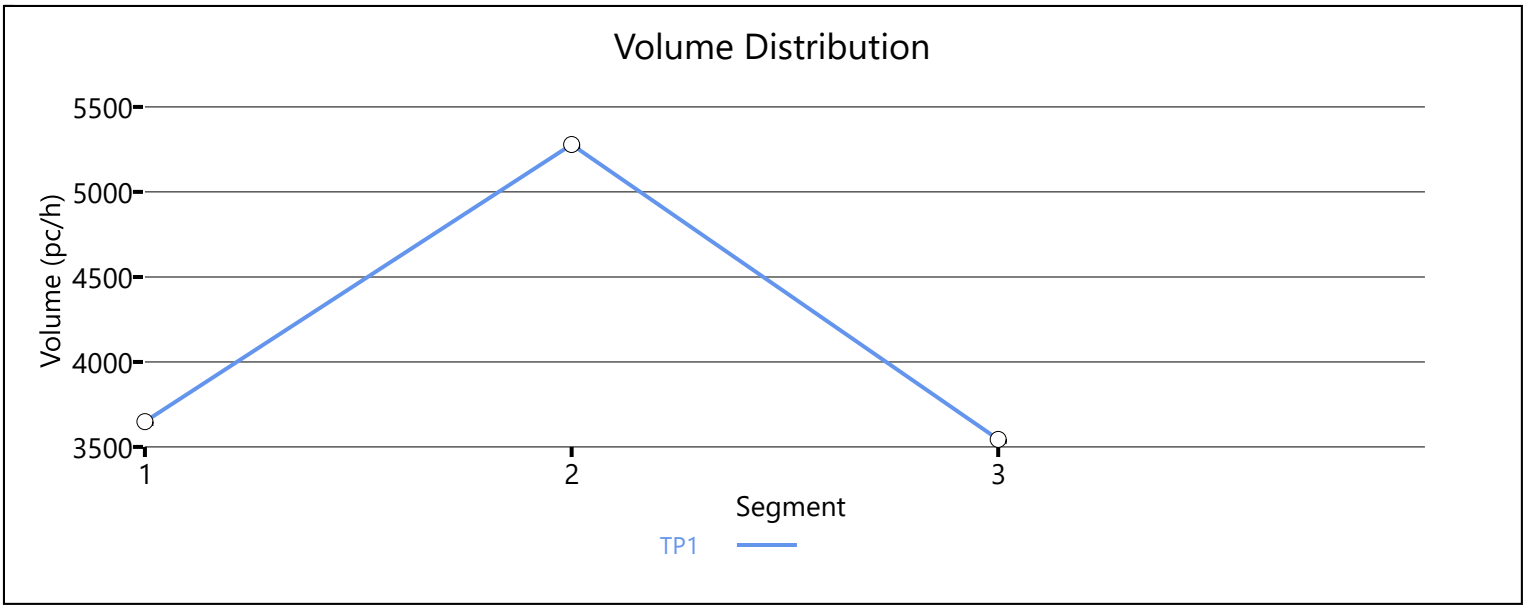
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	65.7	19.2	17.5	2.10	C

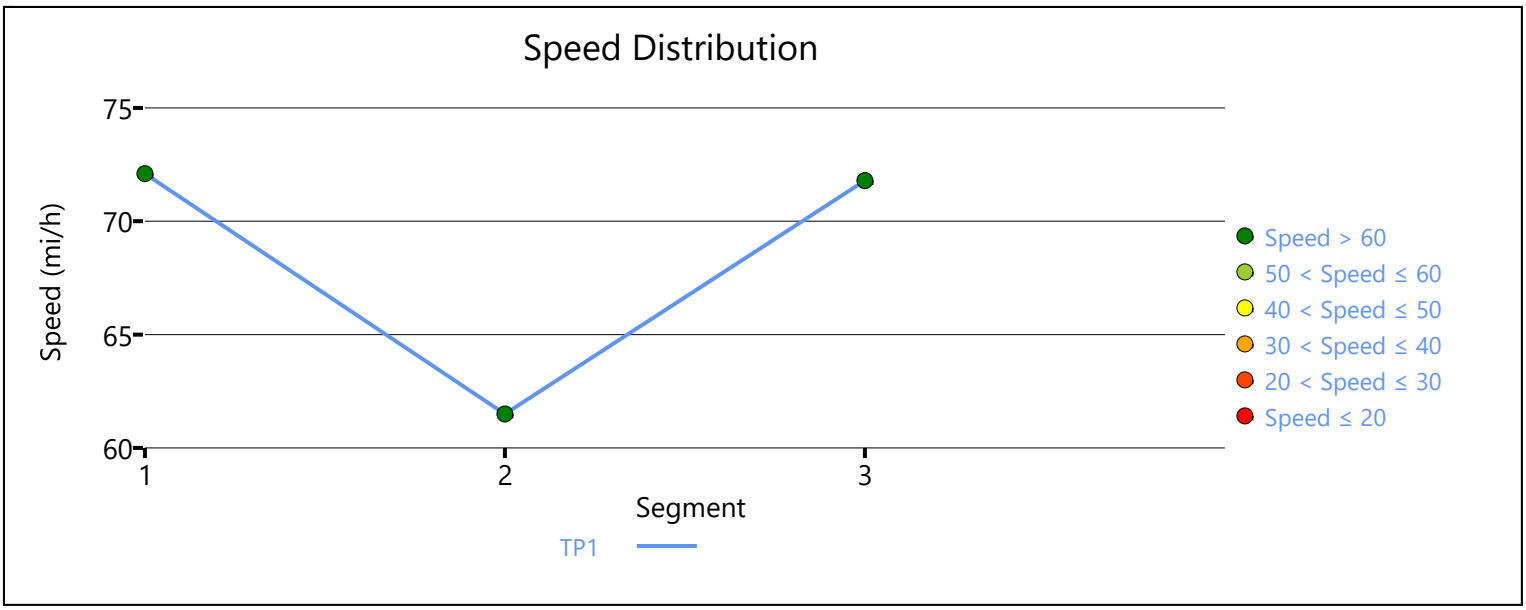
Facility Overall Results

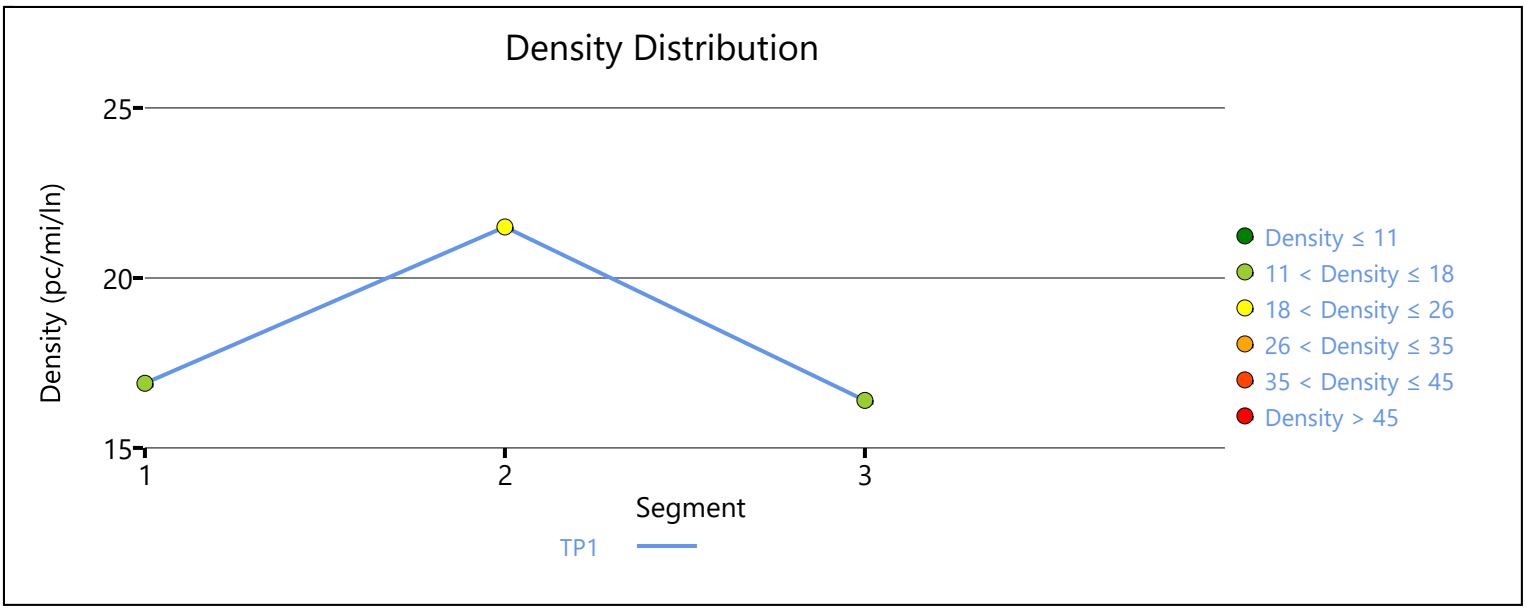
Space Mean Speed, mi/h	65.7	Density, veh/mi/ln	17.5
Average Travel Time, min	2.10	Density, pc/mi/ln	19.2

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction	*2000 Trips in Managed Lanes	Time Period Analyzed	AM Peak
Project Description	Southbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4039	7200	0.56	71.3	18.9	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	5468	5691	0.96	62.0	22.0	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	3534	7200	0.49	72.2	16.3	B

Facility Time Period Results

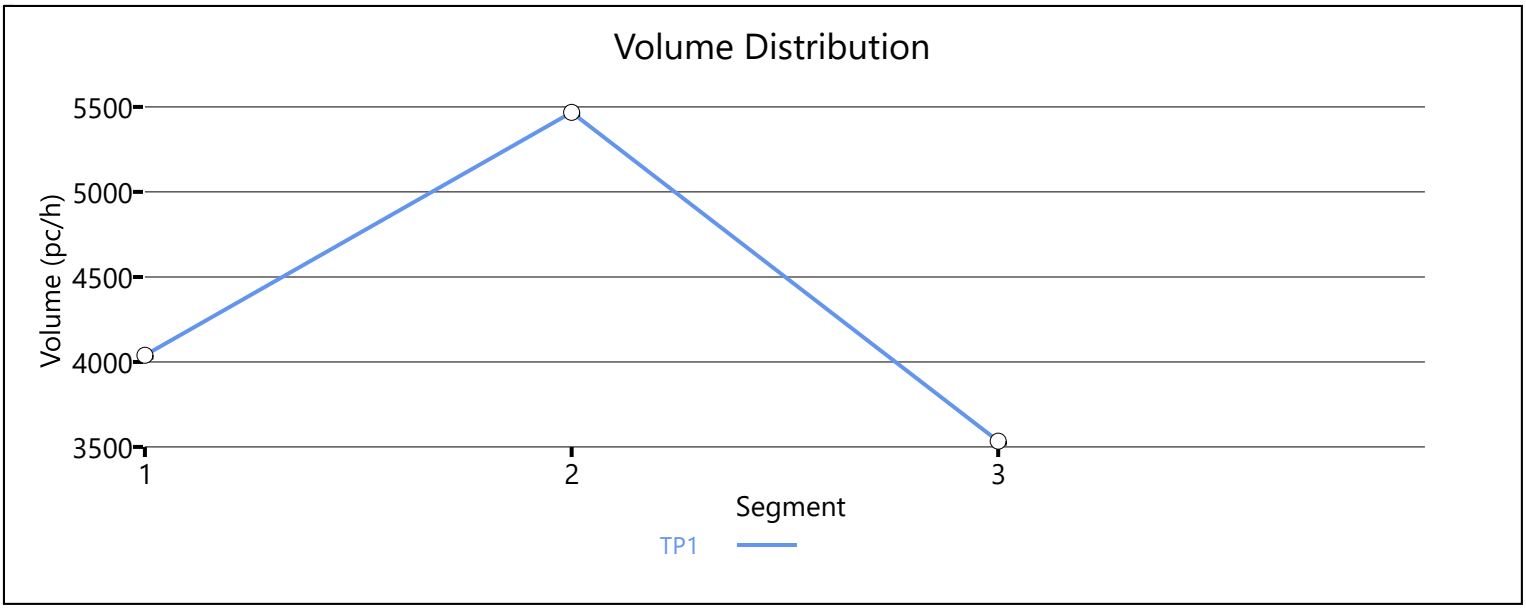
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	65.8	20.1	18.2	2.00	C

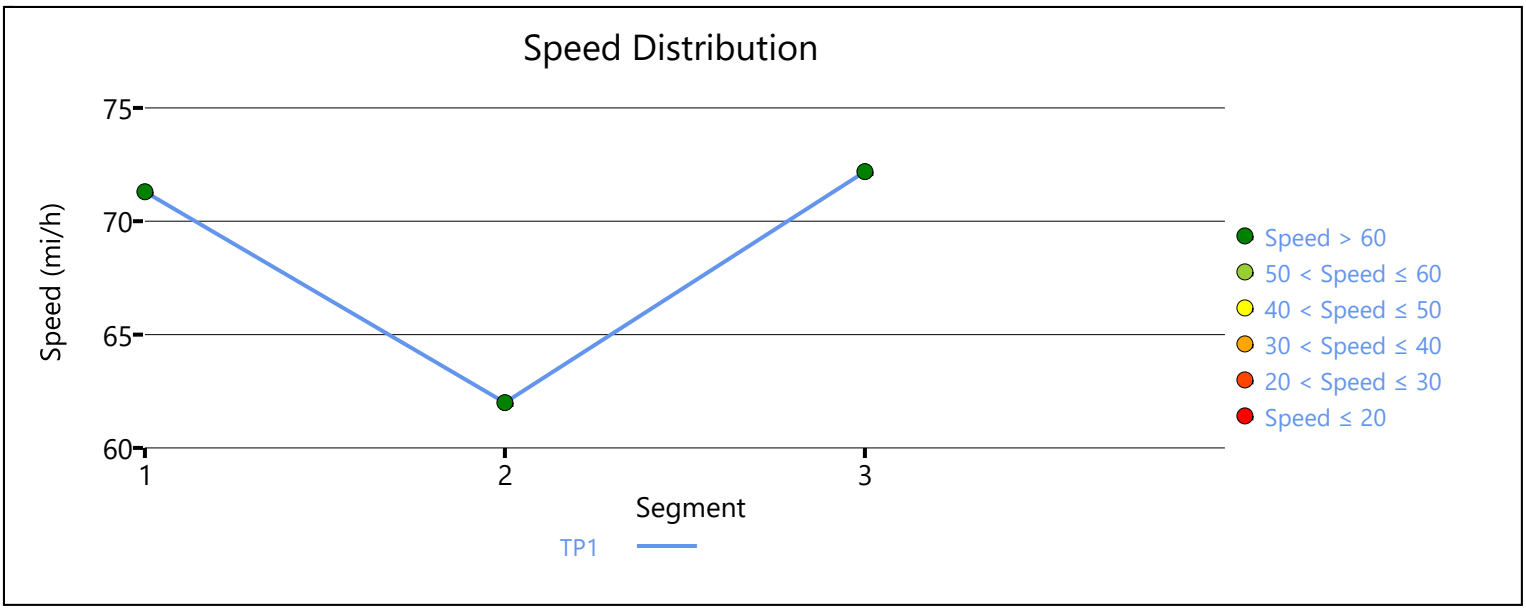
Facility Overall Results

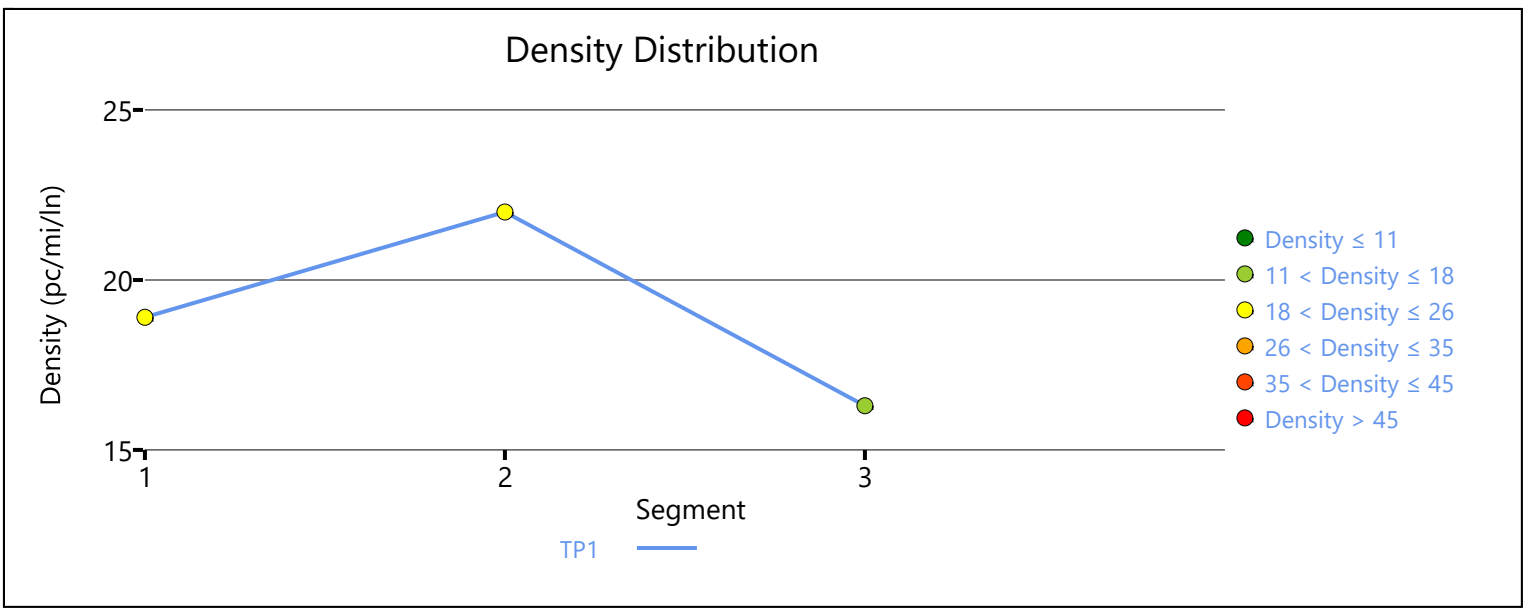
Space Mean Speed, mi/h	65.8	Density, veh/mi/ln	18.2
Average Travel Time, min	2.00	Density, pc/mi/ln	20.1

Messages

Comments







HCS7 Freeway Facilities Report

Project Information

Analyst	TKW	Date	2/21/2020
Agency		Analysis Year	2038
Jurisdiction		Time Period Analyzed	PM Peak
Project Description	Southbound Build		

Facility Global Input

Jam Density, pc/mi/ln	190.0	Density at Capacity, pc/mi/ln	45.0
Queue Discharge Capacity Drop, %	7	Total Segments	3
Total Time Periods	1	Time Period Duration, min	15
Facility Length, mi	2.22		

Facility Segment Data

No.	Coded	Analyzed	Name	Length, ft	Lanes
1	Basic	Basic	N of MLK Jr On Ramp	3209	3
2	Weaving	Weaving	MLK Jr SR 884	5700	4
3	Basic	Basic	S of SR 884	2806	3

Facility Segment Data

Segment 1: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4230	7200	0.59	70.9	19.9	C

Segment 2: Weaving

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	5725	6958	0.82	60.7	23.6	C

Segment 3: Basic

Time Period	PHF	fHV	Flow Rate (pc/h)	Capacity (pc/h)	d/c Ratio	Speed (mi/h)	Density (pc/mi/ln)	LOS
1	0.95	0.935	4344	7200	0.60	70.9	20.4	C

Facility Time Period Results

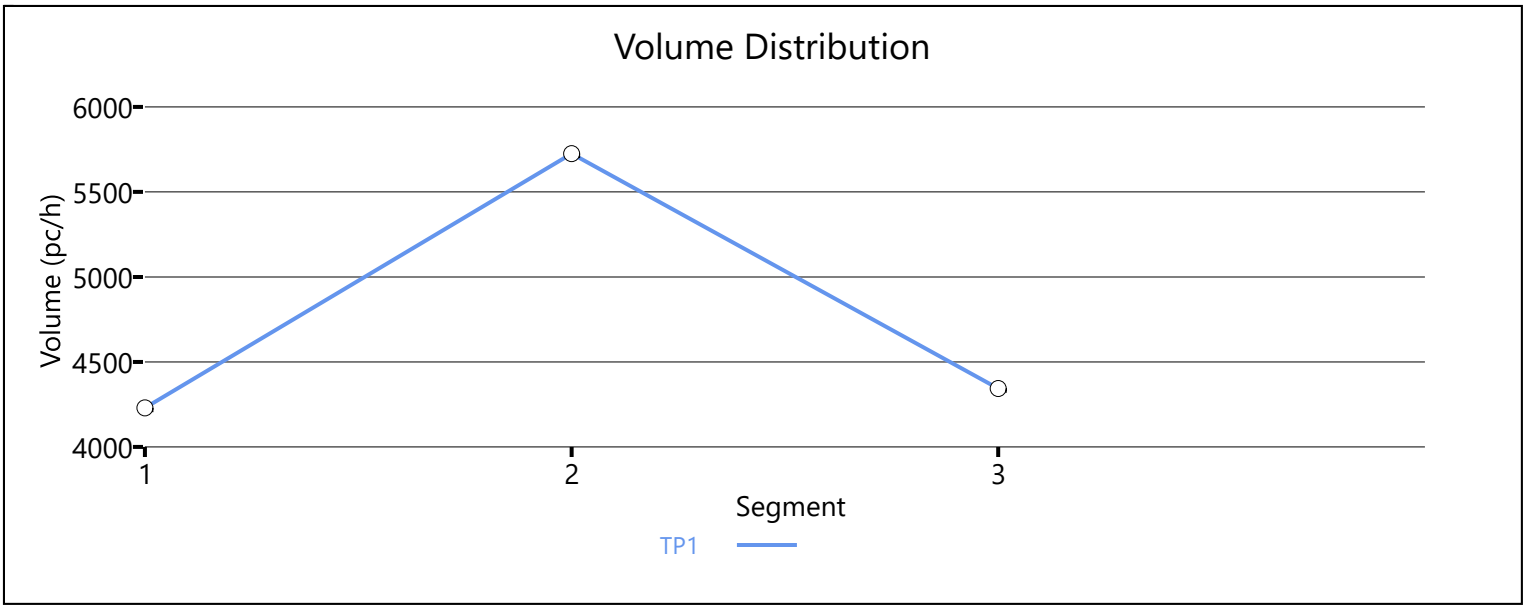
T	Speed, mi/h	Density, pc/mi/ln	Density, veh/mi/ln	Travel Time, min	LOS
1	64.8	22.1	20.0	2.10	C

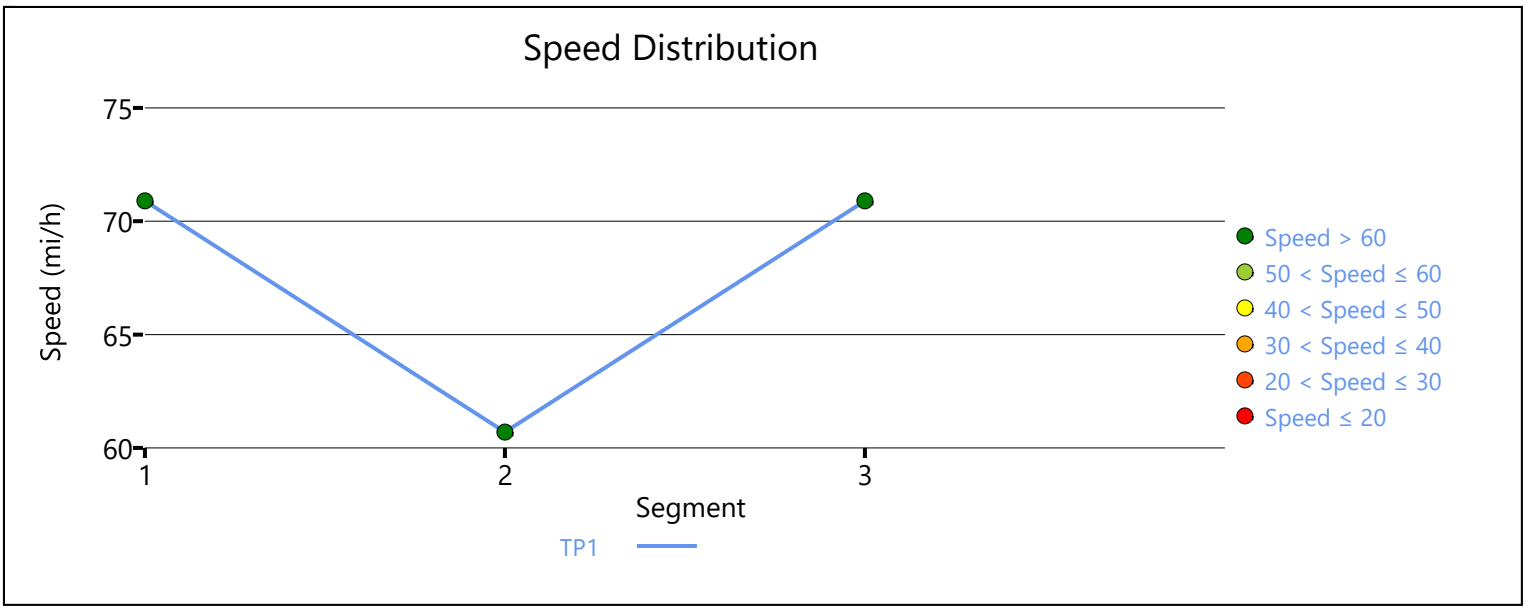
Facility Overall Results

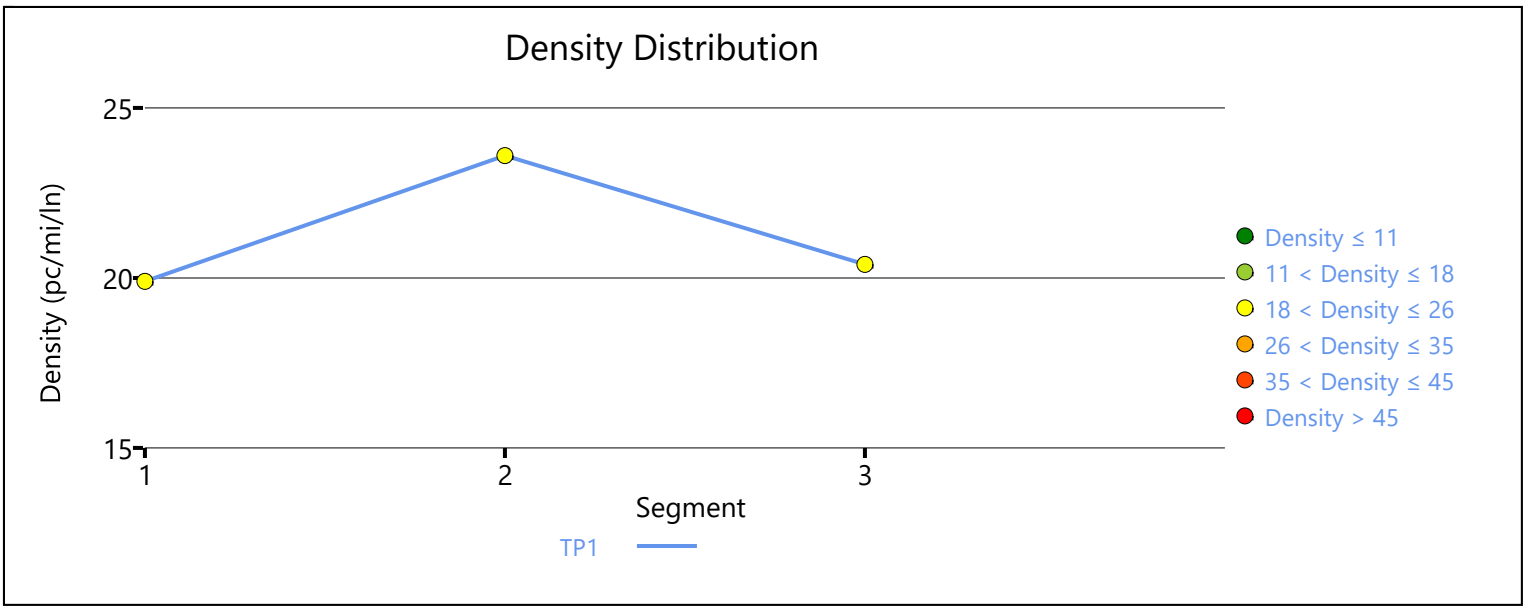
Space Mean Speed, mi/h	64.8	Density, veh/mi/ln	20.0
Average Travel Time, min	2.10	Density, pc/mi/ln	22.1

Messages

Comments







Appendix E

Crash Data Information

Safety Analysis Worksheet

Crash Data Summary - I-75 SB Diverge

No.	Crash ID	Date	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	849561240	1/24/2015	Saturday	6:14 AM	6	2015	Sideswipe	Property Damage Only	0	0	$0	Dawn	Wet
2	862189690	3/3/2016	Thursday	12:43 PM	12	2016	Rear End	Property Damage Only	0	0	$7,000	Daylight	Dry
3	845560160	3/5/2015	Thursday	5:05 AM	5	2015	Other	Property Damage Only	0	0	$1,500	Dawn	Dry
4	854101090	1/23/2017	Monday	7:40 AM	7	2017	Sideswipe	Property Damage Only	0	0	$2,100	Daylight	Wet
5	845615800	1/23/2015	Friday	3:31 PM	15	2015	Off Road	Injury	0	1	$13,000	Daylight	Dry
6	851205560	10/27/2015	Tuesday	7:56 AM	7	2015	Rear End	Injury	0	1	$12,000	Daylight	Dry
7	845615660	1/6/2015	Tuesday	2:50 PM	14	2015	Other	Property Damage Only	0	0	$5,000	Daylight	Dry
8	855056450	5/3/2017	Wednesday	1:12 PM	13	2017	Off Road	Injury	0	1	$6,000	Daylight	Dry
9	837317850	1/24/2014	Friday	5:58 PM	17	2014	Other	Property Damage Only	0	0	$6,200	Dark - Not Lighted	Dry
10	851846060	9/29/2015	Tuesday	7:50 AM	7	2015	Rear End	Property Damage Only	0	0	$4,000	Dawn	Wet
11	838398830	3/31/2015	Tuesday	11:15 AM	11	2015	Sideswipe	Property Damage Only	0	0	$5,000	Daylight	Dry
12	852890050	3/24/2016	Thursday	6:57 AM	6	2016	Off Road	Property Damage Only	0	0	$11,000	Dawn	Dry
13	854896530	3/24/2017	Friday	9:29 AM	9	2017	Rear End	Property Damage Only	0	0	$18,800	Daylight	Dry

Crash Data Analysis_ I-75 SB Diverge

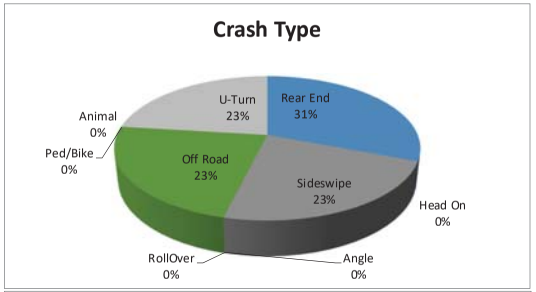
From: 1/1/2013 to 12/31/2017

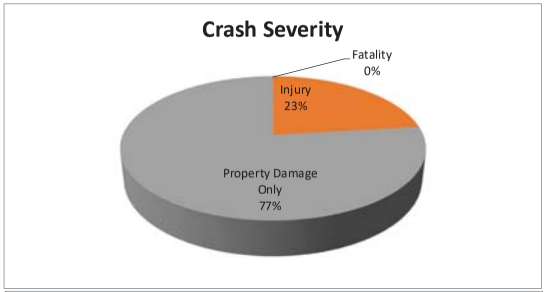
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	2	1	1	***4***	31%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	2	0	1	***3***	23%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	0	0	1	1	1	***3***	23%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	0	1	2	0	0	***3***	23%
Total	***0***	***1***	***7***	***2***	***3***	***13***	100%

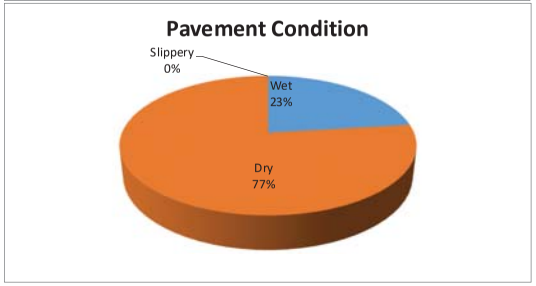
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	2	0	1	***3***	23%
Property Damage Only	0	1	5	2	2	***10***	77%
Total	***0***	***1***	***7***	***2***	***3***	***13***	100%

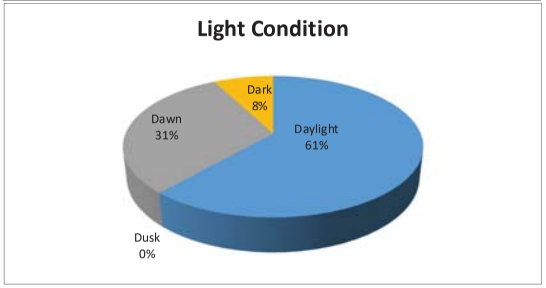
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	0	0	2	0	1	***3***	23%
Dry	0	1	5	2	2	***10***	77%
Slippery	0	0	0	0	0	***0***	0%
Total	***0***	***1***	***7***	***2***	***3***	***13***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	0	0	4	1	3	***8***	62%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	3	1	0	***4***	31%
Dark	0	1	0	0	0	***1***	8%
Total	***0***	***1***	***7***	***2***	***3***	***13***	100%









Crash Data Summary - I-75 SB Segment

No.	Crash ID	Date	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	820214980	2/12/2016	Friday	7:44 AM	7	2016	Rear End	Property Damage Only	0	0	$8,000	Daylight	Dry
2	838315670	3/20/2017	Monday	12:55 PM	12	2017	Other	Property Damage Only	0	0	$6,500	Daylight	Dry
3	851471900	10/14/2015	Wednesday	3:25 PM	15	2015	Sideswipe	Property Damage Only	0	0	$6,200	Daylight	Dry
4	852266830	2/29/2016	Monday	6:33 AM	6	2016	Off Road	Injury	0	1	$5,500	Dawn	Dry
5	852266840	2/29/2016	Monday	7:36 AM	7	2016	Rear End	Property Damage Only	0	0	$9,000	Daylight	Dry
6	853952340	11/8/2016	Tuesday	7:47 AM	7	2016	Rear End	Injury	0	2	$19,500	Daylight	Dry
7	855056900	7/31/2017	Monday	6:03 AM	6	2017	Other	Property Damage Only	0	0	$6,000	Dark - Not Lighted	Wet
8	855228330	6/28/2017	Wednesday	7:06 PM	19	2017	Off Road	Property Damage Only	0	0	$800	Daylight	Wet
9	853340140	8/3/2016	Wednesday	6:39 AM	6	2016	Sideswipe	Property Damage Only	0	0	$9,500	Daylight	Dry
10	851205580	11/5/2015	Thursday	8:40 AM	8	2015	Other	Property Damage Only	0	0	$12,000	Daylight	Dry

Crash Data Analysis_ I-75 SB Segment

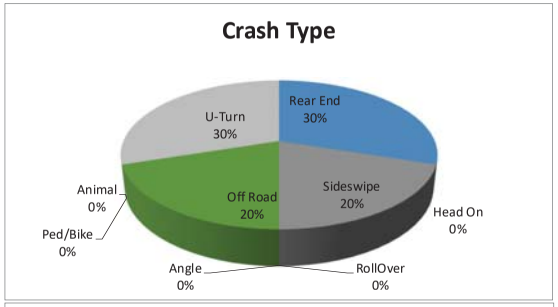
From: 1/1/2013 to 12/31/2017

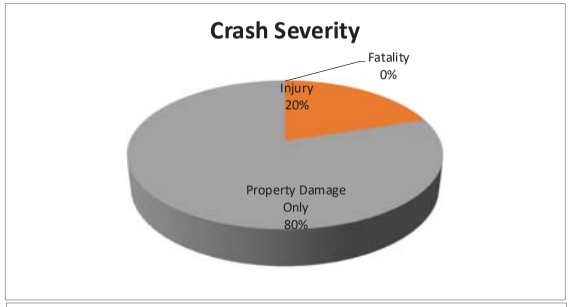
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	0	3	0	***3***	30%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	1	1	0	***2***	20%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	0	0	0	1	1	***2***	20%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	0	0	1	0	2	***3***	30%
Total	***0***	***0***	***2***	***5***	***3***	***10***	100%

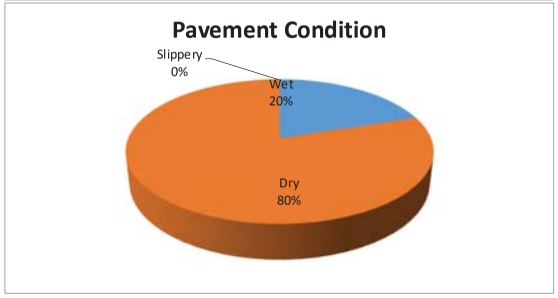
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	0	2	0	***2***	20%
Property Damage Only	0	0	2	3	3	***8***	80%
Total	***0***	***0***	***2***	***5***	***3***	***10***	100%

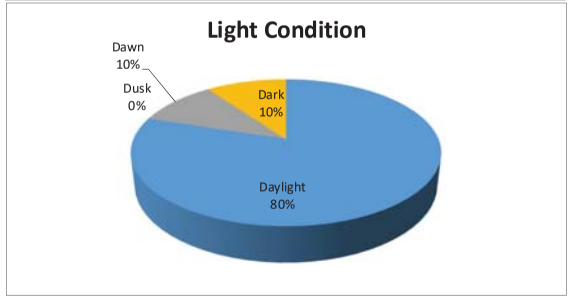
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	0	0	0	0	2	***2***	20%
Dry	0	0	2	5	1	***8***	80%
Slippery	0	0	0	0	0	***0***	0%
Total	***0***	***0***	***2***	***5***	***3***	***10***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	0	0	2	4	2	***8***	80%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	0	1	0	***1***	10%
Dark	0	0	0	0	1	***1***	10%
Total	***0***	***0***	***2***	***5***	***3***	***10***	100%









Crash Data Summary - I-75 SB Merge

No.	Crash ID	Date	Day #	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	852433400	3/12/2016	7	Saturday	3:40 PM	15	2016	Other	Property Damage Only	0	0	$50	Daylight	Dry
2	844858350	12/28/2014	1	Sunday	5:03 PM	17	2014	Off Road	Property Damage Only	0	0	$3,500	Daylight	Dry
3	831599400	6/26/2016	1	Sunday	5:30 PM	17	2016	Off Road	Property Damage Only	0	0	$5,000	Daylight	Wet
4	832649110	6/22/2013	7	Saturday	2:37 PM	14	2013	Off Road	Property Damage Only	0	0	$25,000	Daylight	Dry
5	832649190	7/5/2013	6	Friday	6:53 PM	18	2013	Off Road	Property Damage Only	0	0	$16,000	Daylight	Wet
6	832828650	12/5/2016	2	Monday	6:30 AM	6	2016	Rear End	Property Damage Only	0	0	$8,000	Dark - Not Lighted	Dry
7	833102130	5/15/2014	5	Thursday	6:53 PM	18	2014	Off Road	Property Damage Only	0	0	$8,000	Daylight	Wet
8	852431500	3/25/2016	6	Friday	5:17 AM	5	2016	Other	Property Damage Only	0	0	$5,000	Dark - Not Lighted	Wet
9	852470070	3/5/2016	7	Saturday	12:20 PM	12	2016	Other	Injury	0	1	$6,500	Daylight	Dry
10	852762600	2/12/2016	6	Friday	11:38 AM	11	2016	Sideswipe	Property Damage Only	0	0	$1,000	Daylight	Dry
11	854416100	2/13/2017	2	Monday	6:32 PM	18	2017	Rear End	Property Damage Only	0	0	$1,000	Daylight	Dry
12	855419350	12/1/2017	6	Friday	7:53 AM	7	2017	Rear End	Property Damage Only	0	0	$5,200	Daylight	Dry
13	855481370	6/24/2017	7	Saturday	4:18 PM	16	2017	Rear End	Property Damage Only	0	0	$8,500	Daylight	Wet
14	854509770	1/30/2017	2	Monday	12:53 PM	12	2017	Off Road	Property Damage Only	0	0	$3,500	Daylight	Dry
15	871055520	12/10/2017	1	Sunday	9:45 AM	9	2017	Off Road	Injury	0	1	$14,000	Daylight	Dry

Crash Data Analysis_ I-75 SB Merge

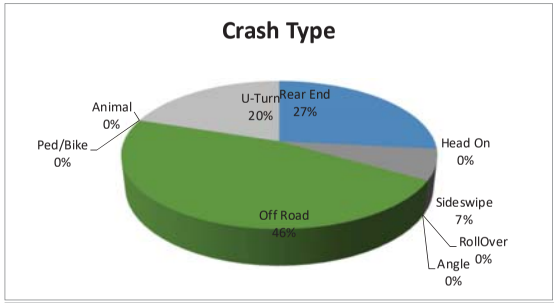
From: 1/1/2013 to 12/31/2017

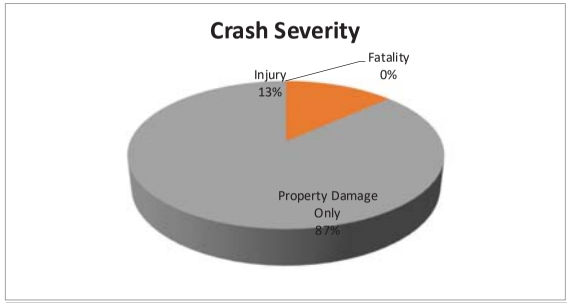
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	0	1	3	***4***	27%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	0	1	0	***1***	7%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	2	2	0	1	2	***7***	47%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	0	0	0	3	0	***3***	20%
Total	***2***	***2***	***0***	***6***	***5***	***15***	100%

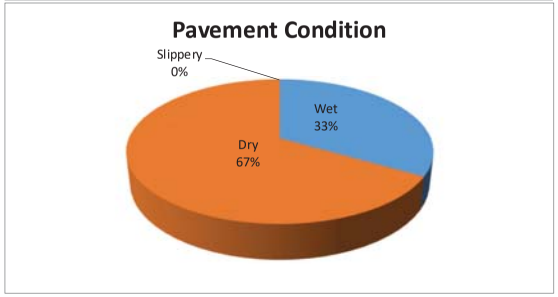
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	0	1	1	***2***	13%
Property Damage Only	2	2	0	5	4	***13***	87%
Total	***2***	***2***	***0***	***6***	***5***	***15***	100%

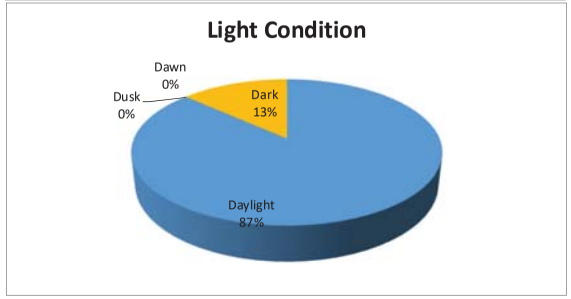
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	1	1	0	2	1	***5***	33%
Dry	1	1	0	4	4	***10***	67%
Slippery	0	0	0	0	0	***0***	0%
Total	***2***	***2***	***0***	***6***	***5***	***15***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	2	2	0	4	5	***13***	87%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	0	0	0	***0***	0%
Dark	0	0	0	2	0	***2***	13%
Total	***2***	***2***	***0***	***6***	***5***	***15***	100%









Crash Data Summary - I-75 SB Off

No.	Crash ID	Date	Day #	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	833014660	8/7/2013	4	Wednesday	6:08 PM	18	2013	Other	Property Damage Only	0	0	$3,000	Daylight	Wet
2	833031310	4/15/2013	2	Monday	9:35 AM	9	2013	Sideswipe	Property Damage Only	0	0	$2,500	Daylight	Dry
3	833373890	6/23/2013	1	Sunday	5:17 PM	17	2013	Off Road	Property Damage Only	0	0	$8,000	Daylight	Wet
4	845856290	3/5/2014	4	Wednesday	1:23 PM	13	2014	Angle	Injury	0	2	$1,800	Daylight	Dry
5	845856480	3/7/2014	6	Friday	10:40 AM	10	2014	Rear End	Property Damage Only	0	0	$4,000	Daylight	Dry
6	845859210	4/1/2014	3	Tuesday	3:41 PM	15	2014	Rear End	Injury	0	1	$4,000	Daylight	Dry
7	845863640	5/12/2014	2	Monday	6:56 PM	18	2014	Rear End	Property Damage Only	0	0	$50	Daylight	Dry
8	849542230	7/21/2014	2	Monday	9:59 AM	9	2014	Sideswipe	Property Damage Only	0	0	$4,000	Daylight	Dry
9	849559010	1/4/2015	1	Sunday	10:55 AM	10	2015	Rear End	Injury	0	2	$225	Daylight	Dry
10	849561240	1/24/2015	7	Saturday	6:14 AM	6	2015	Sideswipe	Property Damage Only	0	0	$0	Dawn	Wet
11	851454950	11/23/2015	2	Monday	7:12 PM	19	2015	Sideswipe	Property Damage Only	0	0	$4,500	Dark - Lighted	Dry
12	855478470	9/6/2017	4	Wednesday	7:42 AM	7	2017	Rear End	Injury	0	1	$7,500	Daylight	Dry
13	865550320	4/28/2016	5	Thursday	5:19 AM	5	2016	Rear End	Injury	0	1	$5,500	Dark - Not Lighted	Dry
14	865557690	6/30/2016	5	Thursday	6:58 PM	18	2016	Rear End	Injury	0	1	$600	Daylight	Dry
15	865559750	7/18/2016	2	Monday	7:40 AM	7	2016	Rear End	Property Damage Only	0	0	$3,000	Daylight	Dry
16	873813440	11/13/2017	2	Monday	9:08 AM	9	2017	Rear End	Property Damage Only	0	0	$7,500	Daylight	Wet

Crash Data Analysis_ I-75 SB Off

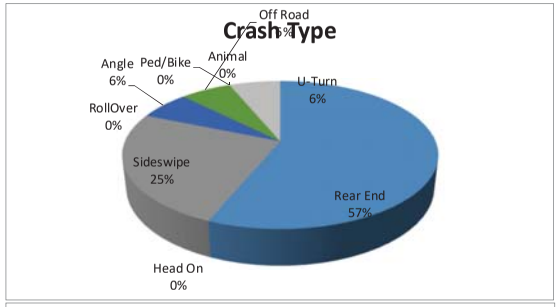
From: 1/1/2013 to 12/31/2017

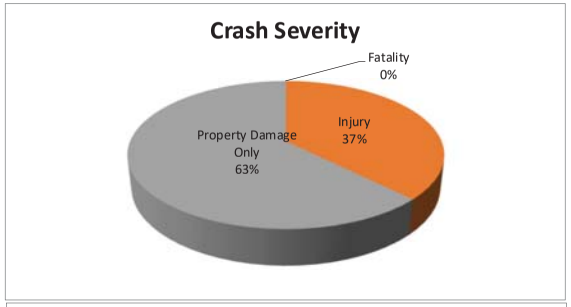
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	3	1	3	2	***9***	56%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	1	1	2	0	0	***4***	25%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	1	0	0	0	***1***	6%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	1	0	0	0	0	***1***	6%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	1	0	0	0	0	***1***	6%
Total	***3***	***5***	***3***	***3***	***2***	***16***	100%

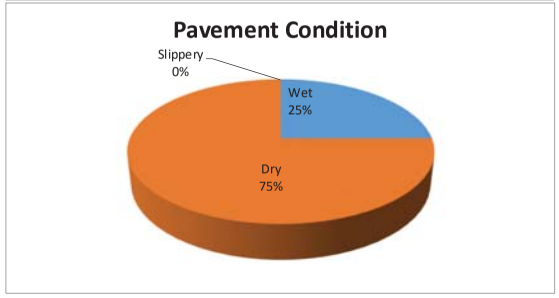
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	2	1	2	1	***6***	38%
Property Damage Only	3	3	2	1	1	***10***	63%
Total	***3***	***5***	***3***	***3***	***2***	***16***	100%

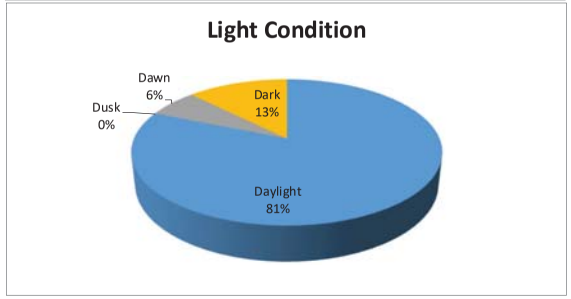
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	2	0	1	0	1	***4***	25%
Dry	1	5	2	3	1	***12***	75%
Slippery	0	0	0	0	0	***0***	0%
Total	***3***	***5***	***3***	***3***	***2***	***16***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	3	5	1	2	2	***13***	81%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	1	0	0	***1***	6%
Dark	0	0	1	1	0	***2***	13%
Total	***3***	***5***	***3***	***3***	***2***	***16***	100%









Crash Data Summary - I-75 NB On

No.	Crash ID	Date	Day #	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	833014660	8/7/2013	4	Wednesday	6:08 PM	18	2013	Other	Property Damage Only	0	0	$3,000	Daylight	Wet
2	833373890	6/23/2013	1	Sunday	5:17 PM	17	2013	Off Road	Property Damage Only	0	0	$8,000	Daylight	Wet
3	838828150	4/20/2013	7	Saturday	11:33 AM	11	2013	Rollover	Property Damage Only	0	0	$10,000	Dark - Lighted	Wet
4	845464880	1/27/2015	3	Tuesday	8:40 PM	20	2015	Sideswipe	Property Damage Only	0	0	$1,525	Dark - Lighted	Dry
5	849561240	1/24/2015	7	Saturday	6:14 AM	6	2015	Sideswipe	Property Damage Only	0	0	$0	Dawn	Wet
6	851454950	11/23/2015	2	Monday	7:12 PM	19	2015	Sideswipe	Property Damage Only	0	0	$4,500	Dark - Lighted	Dry
7	852282810	2/2/2016	3	Tuesday	5:30 PM	17	2016	Rollover	Injury	0	1	$6,000	Daylight	Dry

Crash Data Analysis_ I-75 NB On

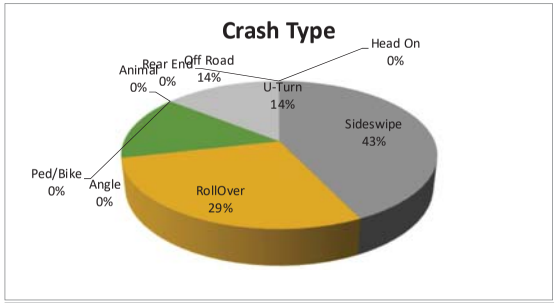
From: 1/1/2013 to 12/31/2017

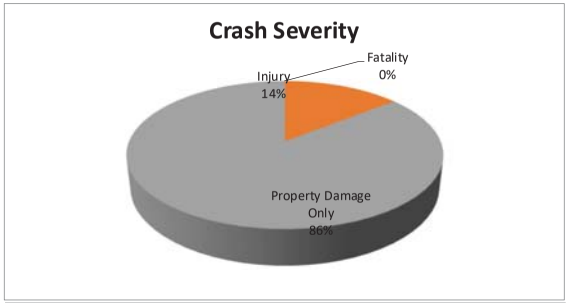
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	0	0	0	***0***	0%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	3	0	0	***3***	43%
RollOver	1	0	0	1	0	***2***	29%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	1	0	0	0	0	***1***	14%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	1	0	0	0	0	***1***	14%
Total	***3***	***0***	***3***	***1***	***0***	***7***	100%

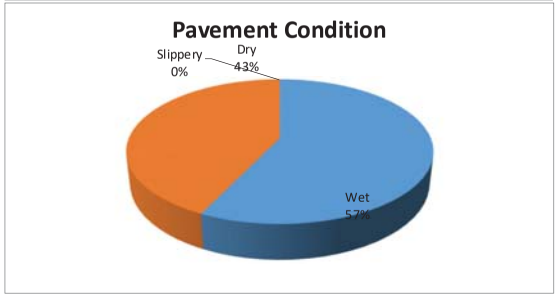
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	0	1	0	***1***	14%
Property Damage Only	3	0	3	0	0	***6***	86%
Total	***3***	***0***	***3***	***1***	***0***	***7***	100%

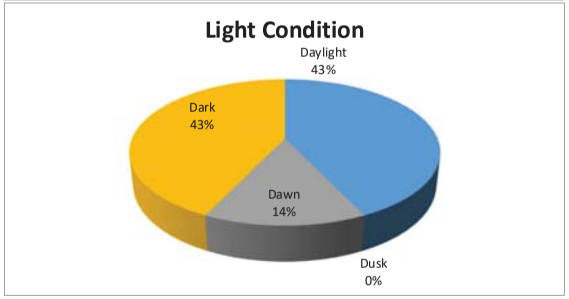
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	3	0	1	0	0	***4***	57%
Dry	0	0	2	1	0	***3***	43%
Slippery	0	0	0	0	0	***0***	0%
Total	***3***	***0***	***3***	***1***	***0***	***7***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	2	0	0	1	0	***3***	43%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	1	0	0	***1***	14%
Dark	1	0	2	0	0	***3***	43%
Total	***3***	***0***	***3***	***1***	***0***	***7***	100%









Crash Data Summary - I-75 NB Merge

No.	Crash ID	Date	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	833014660	8/7/2013	Wednesday	6:08 PM	18	2013	Other	Property Damage Only	0	0	$3,000	Daylight	Wet
2	833373890	6/23/2013	Sunday	5:17 PM	17	2013	Off Road	Property Damage Only	0	0	$8,000	Daylight	Wet
3	849561240	1/24/2015	Saturday	6:14 AM	6	2015	Sideswipe	Property Damage Only	0	0	$0	Dawn	Wet
4	851454950	11/23/2015	Monday	7:12 PM	19	2015	Sideswipe	Property Damage Only	0	0	$4,500	Dark - Lighted	Dry
5	855032390	7/12/2017	Wednesday	4:14 PM	16	2017	Sideswipe	Injury	0	6	$35,000	Daylight	Wet
6	848703360	5/12/2015	Tuesday	6:10 PM	18	2015	Rear End	Injury	0	2	$12,500	Daylight	Wet
7	851574530	9/7/2015	Monday	4:07 PM	16	2015	Sideswipe	Property Damage Only	0	0	$200	Daylight	Dry
8	853971660	12/19/2016	Monday	10:50 PM	22	2016	Off Road	Injury	0	1	$5,100	Dark - Lighted	Wet
9	819541050	2/11/2016	Thursday	8:45 AM	8	2016	Off Road	Property Damage Only	0	0	$5,000	Daylight	Dry
10	851299880	5/28/2015	Thursday	3:16 PM	15	2015	Other	Property Damage Only	0	0	$1,000	Daylight	Dry
11	853191410	5/15/2016	Sunday	3:50 AM	3	2016	Rear End	Property Damage Only	0	0	$3,000	Dark - Not Lighted	Dry
12	838311640	6/14/2014	Saturday	9:21 AM	9	2014	Off Road	Property Damage Only	0	0	$11,500	Daylight	Dry
13	853358080	7/12/2016	Tuesday	10:37 AM	10	2016	Other	Property Damage Only	0	0	$3,500	Daylight	Dry
14	854416240	3/17/2017	Friday	4:56 PM	16	2017	Off Road	Property Damage Only	0	0	$1,000	Daylight	Dry

Crash Data Analysis_ I-75 NB Merge

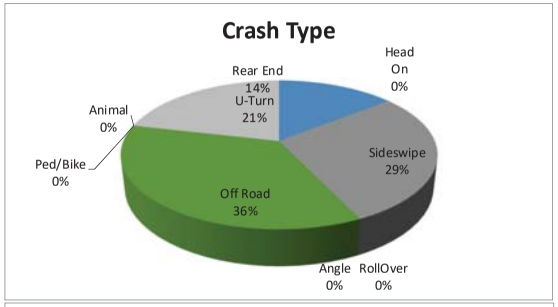
From: 1/1/2013 to 12/31/2017

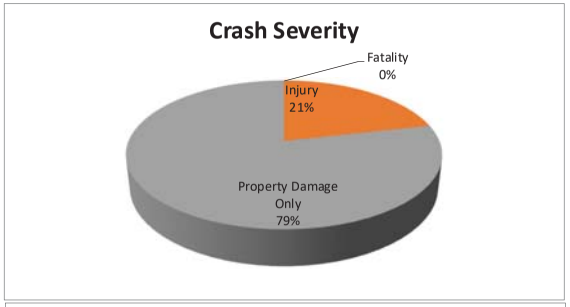
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	1	1	0	***2***	14%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	3	0	1	***4***	29%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	1	1	0	2	1	***5***	36%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	1	0	1	1	0	***3***	21%
Total	***2***	***1***	***5***	***4***	***2***	***14***	100%

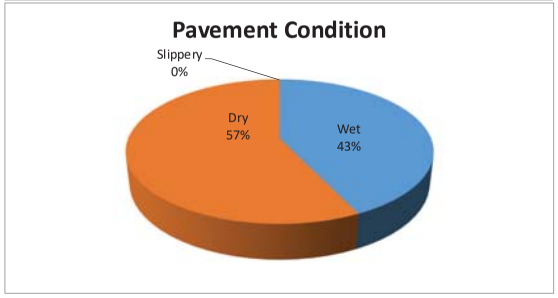
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	1	1	1	***3***	21%
Property Damage Only	2	1	4	3	1	***11***	79%
Total	***2***	***1***	***5***	***4***	***2***	***14***	100%

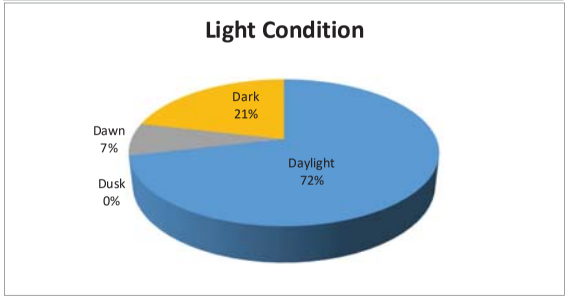
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	2	0	2	1	1	***6***	43%
Dry	0	1	3	3	1	***8***	57%
Slippery	0	0	0	0	0	***0***	0%
Total	***2***	***1***	***5***	***4***	***2***	***14***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	2	1	3	2	2	***10***	71%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	1	0	0	***1***	7%
Dark	0	0	1	2	0	***3***	21%
Total	***2***	***1***	***5***	***4***	***2***	***14***	100%









Crash Data Summary - I-75 NB Segment

No.	Crash ID	Date	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	853488610	8/31/2016	Wednesday	7:48 AM	7	2016	Rear End	Injury	0	2	$6,500	Daylight	Wet
2	838336180	9/17/2014	Wednesday	5:09 PM	17	2014	Off Road	Property Damage Only	0	0	$15,000	Daylight	Wet
3	848994300	8/5/2015	Wednesday	5:38 PM	17	2015	Off Road	Property Damage Only	0	0	$2,750	Daylight	Wet

Crash Data Analysis_ I-75 NB Segment

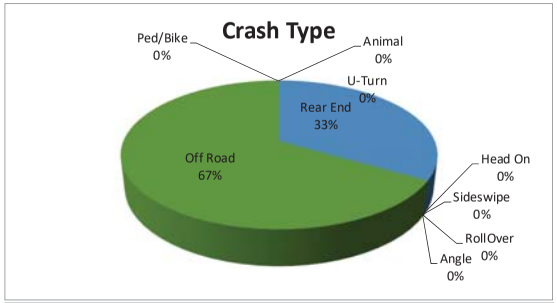
From: 1/1/2013 to 12/31/2017

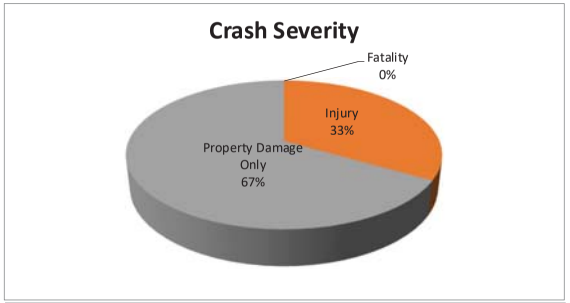
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	0	0	1	0	***1***	33%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	0	0	0	0	***0***	0%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	0	1	1	0	0	***2***	67%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	0	0	0	0	0	***0***	0%
Total	***0***	***1***	***1***	***1***	***0***	***3***	100%

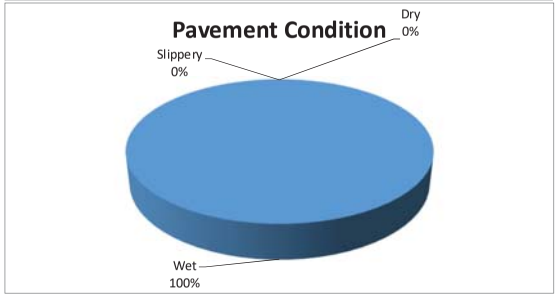
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	0	0	1	0	***1***	33%
Property Damage Only	0	1	1	0	0	***2***	67%
Total	***0***	***1***	***1***	***1***	***0***	***3***	100%

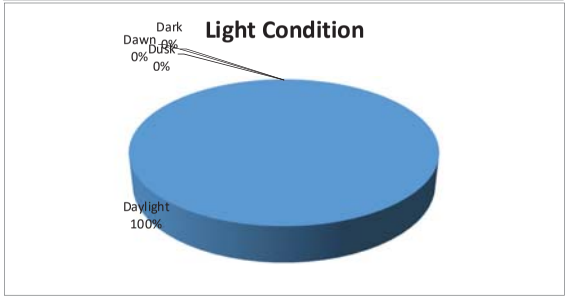
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	0	1	1	1	0	***3***	100%
Dry	0	0	0	0	0	***0***	0%
Slippery	0	0	0	0	0	***0***	0%
Total	***0***	***1***	***1***	***1***	***0***	***3***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	0	1	1	1	0	***3***	100%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	0	0	0	***0***	0%
Dark	0	0	0	0	0	***0***	0%
Total	***0***	***1***	***1***	***1***	***0***	***3***	100%









Crash Data Summary - I-75 NB Diverge

No.	Crash ID	Date	Day	Time	Hour	Year	Crash Type	Crash Severity	Fatalities	Injuries	Property Damage	Day/Night	Wet/Dry
1	852433400	3/12/2016	Saturday	3:40 PM	15	2016	Unknown	Property Damage Only	0	0	Property Da	Daylight	Dry
2	853824580	11/27/2016	Sunday	4:30 PM	16	2016	Off Road	Injury	0	1	Injury	Daylight	Dry
3	837168710	7/3/2014	Thursday	1:40 PM	13	2014	Rear End	Injury	0	4	Injury	Daylight	Dry
4	838199800	6/23/2014	Monday	9:25 PM	21	2014	Sideswipe	Property Damage Only	0	0	Property Da	Dark - Lighted	Dry
5	852470070	3/5/2016	Saturday	12:20 PM	12	2016	Unknown	Injury	0	1	Injury	Daylight	Dry
6	837432980	2/14/2014	Friday	3:40 PM	15	2014	Rear End	Property Damage Only	0	0	Property Da	Daylight	Dry
7	852889890	3/5/2016	Saturday	7:08 AM	7	2016	Off Road	Property Damage Only	0	0	Property Da	Daylight	Dry

Crash Data Analysis_ I-75 NB Diverge

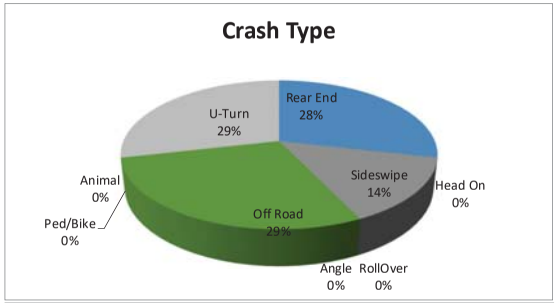
From: 1/1/2013 to 12/31/2017

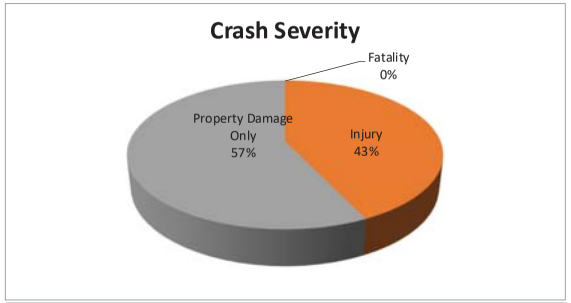
Crash Type	2013	2014	2015	2016	2017	*Total*	Proportion
Rear End	0	2	0	0	0	***2***	29%
Head On	0	0	0	0	0	***0***	0%
Sideswipe	0	1	0	0	0	***1***	14%
RollOver	0	0	0	0	0	***0***	0%
Angle	0	0	0	0	0	***0***	0%
Left Turn	0	0	0	0	0	***0***	0%
Right Turn	0	0	0	0	0	***0***	0%
Off Road	0	0	0	2	0	***2***	29%
Pedestrian & Biclycle	0	0	0	0	0	***0***	0%
Animal	0	0	0	0	0	***0***	0%
Other	0	0	0	2	0	***2***	29%
Total	***0***	***3***	***0***	***4***	***0***	***7***	100%

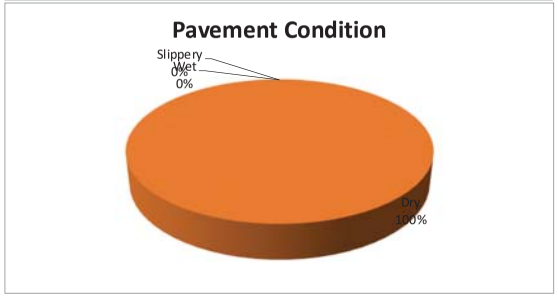
Crash Severity	2013	2014	2015	2016	2017	*Total*	Proportion
Fatality	0	0	0	0	0	***0***	0%
Injury	0	1	0	2	0	***3***	43%
Property Damage Only	0	2	0	2	0	***4***	57%
Total	***0***	***3***	***0***	***4***	***0***	***7***	100%

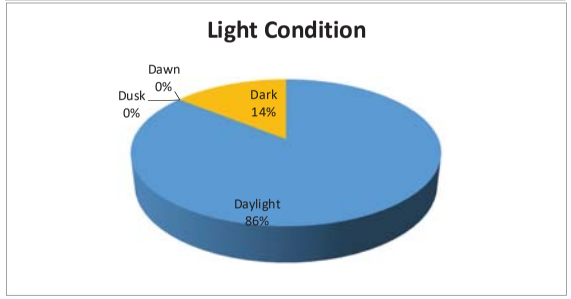
Pavement Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Wet	0	0	0	0	0	***0***	0%
Dry	0	3	0	4	0	***7***	100%
Slippery	0	0	0	0	0	***0***	0%
Total	***0***	***3***	***0***	***4***	***0***	***7***	100%

Light Condition	2013	2014	2015	2016	2017	*Total*	Proportion
Daylight	0	2	0	4	0	***6***	86%
Dusk	0	0	0	0	0	***0***	0%
Dawn	0	0	0	0	0	***0***	0%
Dark	0	1	0	0	0	***1***	14%
Total	***0***	***3***	***0***	***4***	***0***	***7***	100%









Statewide Crash Rates by Facility Type

District	County	Crash Rate Category	Average Crash Rate	Influence Area Crashes	Crash Count	Millions Entering Vehicles	Total Centerline Miles	Average Economic Loss Per Crash	Average Economic Loss Per Injury	Total Property Damage Only Crashes	Total Crashes With Highest Injury Possible	Total Crashes With Highest Injury Non Incapacitating	Total Crashes With Highest Injury Incapacitating	Total Crashes Involving Traffic Fatality	Total Crashes With Only Injury Non Traffic Fatality	Total Non Injured Persons	Total Persons With Possible Injury	Total Persons With Non Incapacitating Injury	Total Persons With Incapacitating Injury	Total Traffic Fatalities	Total Non Traffic Fatalities
Statewide		Interstate Urban	0.92433	933	127812	139285	4051	147656	153130	80781	26956	15171	4971	801	65	257080	48773	21511	6641	920	77
Statewide		Interstate Rural	0.4385	27	19491	44511	3426	291943	327385	11986	3108	2744	1329	341	10	36239	6566	4434	1960	414	15
Statewide		Toll Road Urban	0.73693	690	36546	50528	2379	124478	125353	24425	7217	4314	1083	186	11	69864	12596	5999	1394	210	12
Statewide		Toll Road Rural	0.41288	12	3716	9029	900	234676	265763	2222	691	575	185	49	6	6834	1466	994	285	58	7
Statewide		Urban Other Limited Access	1.93587	3737	22553	13580	634	98117	95129	18002	5362	2235	586	91	14	55067	9400	3076	748	95	17
Statewide		Rural Other Limited Access	0.76086	19	15	45	23	354448	336989	25	3	5	0	1	0	76	4	6	1	1	0
Statewide		Ramp Urban	0	59159	16960	4081	1101	104847	100770	50560	15567	7619	2094	261	18	147957	25637	10079	2580	286	22
Statewide		Ramp Rural	0	55982	37574	9391	4367	128774	125929	59103	20100	10608	3269	446	30	187187	33994	14422	4081	485	37
Statewide		Urban 2-3Ln 2Wy Divd Rasd	6.57533	2398	2777	787	194	100581	96464	3173	1204	624	163	11	0	11151	2025	828	206	11	0
Statewide		Urban 2-3Ln 2Wy Divd Pavd	5.39119	3731	10394	2620	621	116888	111860	8712	3143	1755	459	51	5	30511	5192	2346	558	54	6
Statewide		Urban 2-3Ln 2Wy Undivd	3.33058	2047	5563	2285	899	133909	124618	4635	1572	1071	294	35	3	15954	2569	1392	344	36	3
Statewide		Suburban 2-3Ln 2Wy Divd Rasd	3.30867	928	2258	963	233	180256	191853	1855	724	402	180	24	1	6812	1374	602	241	28	1
Statewide		Suburban 2-3Ln 2Wy Divd Pavd	2.58255	4208	19118	9032	2023	194171	202843	12772	5506	3609	1230	201	8	49145	10602	5260	1659	223	9
Statewide		Suburban 2-3Ln 2Wy Undivd	1.11885	1861	17278	17106	5841	261176	267397	10231	4191	3192	1251	265	9	37656	7875	4764	1725	285	13
Statewide		Rural 2-3Ln 2Wy Divd Rasd	1.1717	171	593	652	166	298403	289961	433	136	125	57	13	0	1575	268	175	79	13	0
Statewide		Rural 2-3Ln 2Wy Divd Pavd	1.7799	734	4222	2784	998	324115	365237	2520	1069	885	387	92	3	9296	2237	1395	564	112	6
Statewide		Rural 2-3Ln 2Wy Undivd	0.73644	1456	18624	27266	18643	466638	523727	10211	3619	3653	1971	614	12	30679	7170	5646	3019	745	16
Statewide		Urban 4-5Ln 2Wy Divd Rasd	3.41251	21009	102269	36125	4360	141191	135600	73552	28232	16162	4641	654	37	269804	47810	22012	5673	678	50
Statewide		Urban 4-5Ln 2Wy Divd Pavd	5.60009	21830	89497	19879	2414	114791	109900	72630	22764	12103	3366	446	18	248787	38506	16157	4079	475	30
Statewide		Urban 4-5Ln 2Wy Undivd	6.31988	2357	14851	2723	458	120946	112896	11367	3292	1889	578	76	6	38631	5385	2535	679	79	8
Statewide		Suburban 4-5Ln 2Wy Divd Rasd	1.66973	5300	75759	48546	5536	228544	232326	43034	19548	12757	4775	912	33	166842	35989	18597	6461	975	43
Statewide		Suburban 4-5Ln 2Wy Divd Pavd	2.30454	1027	9533	4582	474	177660	171500	6392	2331	1332	407	93	5	23380	4022	1830	536	95	7
Statewide		Suburban 4-5Ln 2Wy Undivd	1.62206	52	314	226	44	207971	190276	187	80	71	25	3	0	861	137	95	27	3	0
Statewide		Rural 4-5Ln 2Wy Divd Rasd	0.68389	393	11866	17925	4511	436565	472365	6102	2400	2298	1098	346	15	19518	4799	3710	1586	401	20
Statewide		Rural 4-5Ln 2Wy Divd Pavd	0.51745	6	414	812	237	489042	509661	219	78	69	39	14	1	628	134	88	56	16	1
Statewide		Rural 4-5Ln 2Wy Undivd	0	0	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Statewide		Urban 6+Ln 2Wy Divd Rasd	4.4316	44348	274909	72041	4663	126043	121685	201100	70417	35511	10700	1471	58	712797	118337	48785	13352	1544	81
Statewide		Urban 6+Ln 2Wy Divd Pavd	5.02607	3317	19224	4485	321	155217	150677	13689	4941	2740	1029	140	2	50727	8803	3800	1307	143	3
Statewide		Urban 6+Ln 2Wy Undivd	58.78478	33	324	6	2	54906	41650	283	36	28	10	0	0	813	49	30	11	0	0
Statewide		Suburban 6+Ln 2Wy Divd Rasd	2.58627	5433	64170	26912	1651	163982	166384	39220	17854	8648	3419	443	19	153959	31662	12300	4538	479	34
Statewide		Suburban 6+Ln 2Wy Divd Pavd	1.08671	118	1865	1825	78	169146	161853	1255	396	233	83	16	0	4165	649	306	103	17	0
Statewide		Suburban 6+Ln 2Wy Undivd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Statewide		Rural 6+Ln 2Wy Divd Rasd	1.01472	10	250	256	54	273276	452956	127	61	55	13	4	0	589	135	86	14	9	0
Statewide		Rural 6+Ln 2Wy Divd Pavd	0.06096	0	1	16	6	106215	70810	0	1	0	0	0	0	0	1	0	0	0	0
Statewide		Rural 6+Ln 2Wy Undivd	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Statewide		Urban One Way	10.20245	9952	28212	3741	959	87706	78848	27386	6410	3339	913	101	15	87519	10145	4432	1055	102	23
Statewide		Suburban One Way	2.31175	1823	4821	2874	501	129530	118448	4524	1216	693	171	40	0	14872	2003	893	205	40	1
Statewide		Rural One Way	4.54199	621	371	218	126	108071	98212	623	218	116	31	3	1	2023	342	149	36	3	2
Statewide		Undefined	0	11462	3774	0	0	113883	112397	9883	3195	1629	466	59	4	31831	5494	2231	573	66	6
Statewide		Not Coded	1.86459	28217	1047918	577140	72897	159091	159400	657152	233594	133530	44042	7466	351	2266520	407086	186972	57244	8171	470

No Build Alternative

Output Summary

General Information

Project description:	I-75 @ SR 884 IMR Reevaluation - IMR Approved Concept (No Build)				
Analyst:	VHB	Date:	6/4/2020	Area type:	Urban
First year of analysis:	2018				
Last year of analysis:	2038				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	358.1	3.2	8.7	43.6	63.2	239.4
Estimated average crash freq. during Study Period, crashes/yr:	17.1	0.2	0.4	2.1	3.0	11.4

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	1	321.3	2.8	7.4	37.3	55.1	218.8
Ramp segments, crashes:	4	36.8	0.4	1.3	6.3	8.2	20.6
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2018	12.6	0.1	0.3	1.6	2.3	8.2
	2019	13.0	0.1	0.3	1.7	2.4	8.5
	2020	13.5	0.1	0.3	1.7	2.5	8.8
	2021	13.9	0.1	0.3	1.7	2.5	9.1
	2022	14.3	0.1	0.4	1.8	2.6	9.4
	2023	14.7	0.1	0.4	1.8	2.7	9.7
	2024	15.2	0.1	0.4	1.9	2.7	10.0
	2025	15.6	0.1	0.4	1.9	2.8	10.4
	2026	16.1	0.1	0.4	2.0	2.9	10.7
	2027	16.5	0.2	0.4	2.0	2.9	11.0
	2028	17.0	0.2	0.4	2.1	3.0	11.3
	2029	17.4	0.2	0.4	2.1	3.1	11.7
	2030	17.9	0.2	0.4	2.2	3.1	12.0
	2031	18.4	0.2	0.4	2.2	3.2	12.3
	2032	18.8	0.2	0.5	2.3	3.3	12.7
	2033	19.3	0.2	0.5	2.3	3.4	13.0
	2034	19.8	0.2	0.5	2.4	3.4	13.4
	2035	20.3	0.2	0.5	2.4	3.5	13.7
	2036	20.8	0.2	0.5	2.5	3.6	14.1
	2037	21.3	0.2	0.5	2.5	3.6	14.4
	2038	21.8	0.2	0.5	2.6	3.7	14.8
	2039						
	2040						
	2041						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.8	0.0	0.0	0.2	0.3	0.3
	Right-angle crashes:	4.3	0.1	0.1	0.7	1.1	2.3
	Rear-end crashes:	139.3	1.4	3.6	18.2	26.8	89.4
	Sideswipe crashes:	47.0	0.3	0.9	4.3	6.4	35.1
	Other multiple-vehicle crashes:	5.9	0.1	0.2	0.9	1.3	3.6
	Total multiple-vehicle crashes:	197.3	1.8	4.8	24.3	35.8	130.7
Single vehicle	Crashes with animal:	2.3	0.0	0.0	0.1	0.1	2.1
	Crashes with fixed object:	117.1	1.0	2.8	13.9	19.8	79.6
	Crashes with other object:	15.5	0.1	0.2	0.8	1.2	13.3
	Crashes with parked vehicle:	2.4	0.0	0.1	0.3	0.4	1.7
	Other single-vehicle crashes	23.4	0.3	0.9	4.3	6.0	11.9
	Total single-vehicle crashes:	160.8	1.4	3.9	19.3	27.5	108.6
	Total crashes:	358.1	3.2	8.7	43.6	63.2	239.4

Evaluation Site Summary

General Information

Project description:	I-75 @ SR 884 IMR Reevaluation - IMR Approved Concept (No Build)				
Analyst:	VHB	Date:	6/4/2020	Area type:	Urban
First year of analysis:	2018	Total length of freeway segments for Study Period (mi):	0.890		
Last year of analysis:	2038				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description
1	8	0.890	I-75 b/w SR 884 & SR 82
2	0	0.000	0
3	0	0.000	0
4	0	0.000	0
5	0	0.000	0
6	0	0.000	0
7	0	0.000	0
8	0	0.000	0
9	0	0.000	0
10	0	0.000	0
11	0	0.000	0
12	0	0.000	0
13	0	0.000	0
14	0	0.000	0
15	0	0.000	0
16	0	0.000	0
17	0	0.000	0
18	0	0.000	0
19	0	0.000	0
20	0	0.000	0

Ramp Segments

Number	Study Period Description	Number	Study Period Description
1	NB On 1 @ SR 884 (2 lane	21	0
2	NB On 2 @ SR 884 (segme	22	0
3	SB Off 1 @ SR 884 (segme	23	0
4	NB Off Ramp @ SR 82 (se	24	0
5	0	25	0
6	0	26	0
7	0	27	0
8	0	28	0
9	0	29	0
10	0	30	0
11	0	31	0
12	0	32	0
13	0	33	0
14	0	34	0
15	0	35	0
16	0	36	0
17	0	37	0
18	0	38	0
19	0	39	0
20	0	40	0

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description
1	0	0	0
2	0	0	0
3	0	0	0
4	0	0	0
5	0	0	0
6	0	0	0

Input Worksheet for Freeway Segments

Clear | Echo Input Values (View results in Column AV) | Check Input Values (View results in Advisory Messages)

		Segment 1 Study Period	Segment 2 Study Period	Segment 3 Study Period
Basic Roadway Data				
	Number of through lanes (n):	8		
	Freeway segment description:	I-75 b/w SR 884 & SR 82		
	Segment length (L), mi:	0.890152		
Alignment Data				
Horizontal Curve Data	←See note			
1	Horizontal curve in segment?:	Both Dir.		
	Curve radius (R_1), ft:	5730		
	Length of curve (L_{c1}), mi:	0.567992		
	Length of curve in segment ($L_{c1,seg}$), mi:	0.567992		
2	Horizontal curve in segment?:	No		
	Curve radius (R_2), ft:			
	Length of curve (L_{c2}), mi:			
	Length of curve in segment ($L_{c2,seg}$), mi:			
3	Horizontal curve in segment?:			
	Curve radius (R_3), ft:			
	Length of curve (L_{c3}), mi:			
	Length of curve in segment ($L_{c3,seg}$), mi:			
Cross Section Data				
	Lane width (W_l), ft:	12		
	Outside shoulder width (W_s), ft:	12		
	Inside shoulder width (W_{is}), ft:	12		
	Median width (W_m), ft:	40		
	Rumble strips on outside shoulders?:	Yes		
	Length of rumble strips for travel in increasing milepost direction, mi:	0.890152		
	Length of rumble strips for travel in decreasing milepost direction, mi:	0.890152		
	Rumble strips on inside shoulders?:	Yes		
	Length of rumble strips for travel in increasing milepost direction, mi:	0.890152		
	Length of rumble strips for travel in decreasing milepost direction, mi:	0.890152		
	Presence of barrier in median:	Center		
1	Length of barrier ($L_{ib,1}$), mi:	0.890152		
	Distance from edge of traveled way to barrier face ($W_{off,in,1}$), ft:	20		
2	Length of barrier ($L_{ib,2}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,2}$), ft:			
3	Length of barrier ($L_{ib,3}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,3}$), ft:			
4	Length of barrier ($L_{ib,4}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,4}$), ft:			
5	Length of barrier ($L_{ib,5}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,5}$), ft:			
	Median barrier width (W_{ib}), ft:	1		

Nearest distance from edge of traveled way to barrier face (W_{near}), ft:				
Roadside Data				
Clear zone width (W_{hc}), ft:		12		
Presence of barrier on roadside:		None		
1	Length of barrier ($L_{ob,1}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,1}$), ft:			
2	Length of barrier ($L_{ob,2}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,2}$), ft:			
3	Length of barrier ($L_{ob,3}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,3}$), ft:			
4	Length of barrier ($L_{ob,4}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,4}$), ft:			
5	Length of barrier ($L_{ob,5}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,5}$), ft:			
Distance from edge of traveled way to barrier face, increasing milepost ($W_{off,inc}$), ft:				
Distance from edge of traveled way to barrier face, decreasing milepost ($W_{off,dec}$), ft:				
Ramp Access Data				
Travel in Increasing Milepost Direction				
Entrance Ramp	Ramp entrance in segment? (If yes, indicate type.):	Lane Add		
	Distance from begin milepost to upstream entrance ramp gore ($X_{b,ent}$), mi:			
	Length of ramp entrance ($L_{en,inc}$), mi:			
	Length of ramp entrance in segment ($L_{en,seg,inc}$), mi:			
	Entrance side?:			
Exit Ramp	Ramp exit in segment? (If yes, indicate type.):	Lane Drop		
	Distance from end milepost to downstream exit ramp gore ($X_{e,ext}$), mi:			
	Length of ramp exit ($L_{ex,inc}$), mi:			
	Length of ramp exit in segment ($L_{ex,seg,inc}$), mi:			
	Exit side?:			
Weave	Type B weave in segment?:	No		
	Length of weaving section ($L_{wev,inc}$), mi:			
	Length of weaving section in segment ($L_{wev,seg,inc}$), mi:			
Travel in Decreasing Milepost Direction				
Entrance Ramp	Ramp entrance in segment? (If yes, indicate type.):	Lane Add		
	Distance from end milepost to upstream entrance ramp gore ($X_{e,ent}$), mi:			
	Length of ramp entrance ($L_{en,dec}$), mi:			
	Length of ramp entrance in segment ($L_{en,seg,dec}$), mi:			
	Entrance side?:			
Exit Ramp	Ramp exit in segment? (If yes, indicate type.):	Lane Drop		
	Distance from begin milepost to downstream exit ramp gore ($X_{b,ext}$), mi:			
	Length of ramp exit ($L_{ex,dec}$), mi:			
	Length of ramp exit in segment ($L_{ex,seg,dec}$), mi:			
	Exit side?:			
Weave	Type B weave in segment?:	No		
	Length of weaving section ($L_{wev,dec}$), mi:			
	Length of weaving section in segment ($L_{wev,seg,dec}$), mi:			
Traffic Data	**Year**			
Proportion of AADT during high-volume hours (P_{hv}):				

Freeway Segment Data	2018	73500		
Average daily traffic ($AADT_{fs}$) by year, veh/d:	2019			
(enter data only for those years for which	2020			
it is available, leave other years blank)	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	111000		
	2039			
	2040			
	2041			
Entrance Ramp Data for Travel in Increasing Milepost Dir.	**Year**			
Average daily traffic ($AADT_{b,ent}$) by year, veh/d:	2018	10600		
(enter data only for those years for which	2019			
it is available, leave other years blank)	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	15400		
	2039			
	2040			
	2041			
Exit Ramp Data for Travel in Increasing Milepost Direction	**Year**			
Average daily traffic ($AADT_{e,ext}$) by year, veh/d:	2018	6800		

(enter data only for those years for which it is available, leave other years blank)	2019			
	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	15900		
	2039			
	2040			
	2041			
Entrance Ramp Data for Travel in Decreasing Milepost Dir.	**Year**			
Average daily traffic ($AADT_{e,ent}$) by year, veh/d:	2018	7000		
(enter data only for those years for which it is available, leave other years blank)	2019			
	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	16300		
	2039			
	2040			
	2041			
Exit Ramp Data for Travel in Decreasing Milepost Direction	**Year**			
Average daily traffic ($AADT_{b,ext}$) by year, veh/d:	2018	10200		
(enter data only for those years for which	2019			

it is available, leave other years blank)

2020				
2021				
2022				
2023				
2024				
2025				
2026				
2027				
2028				
2029				
2030				
2031				
2032				
2033				
2034				
2035				
2036				
2037				
2038	14800			
2039				
2040				
2041				

Crash Data	**Year**	Segment Crashes -->			
Count of Fatal-and-Injury (FI) Crashes by Year					
Multiple-vehicle crashes (not ramp related) ($N_{o,fs,n,mv,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Single-vehicle crashes (not ramp related) ($N_{o,fs,n,sv,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Ramp-entrance-related crashes ($N_{o,sc,EN,at,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Ramp-exit-related crashes ($N_{o,sc,EX,at,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Count of Property-Damage-Only (PDO) Crashes by Year					
Multiple-vehicle crashes (not ramp related) ($N_{o,fs,n,mv,pdo}$)	2018				
	2019				
	2020				
	2021				
	2022				
Single-vehicle crashes	2018				

	(not ramp related) ($N_{o,fs,n,sv,pdo}$)	2019				
		2020				
		2021				
		2022				
	Ramp-entrance-related crashes ($N_{o,sc,EN,at,pdo}$)	2018				
		2019				
		2020				
		2021				
		2022				
	Ramp-exit-related crashes ($N_{o,sc,EX,at,pdo}$)	2018				
		2019				
		2020				
		2021				
		2022				

Advisory Messages

Input Worksheet for Ramp Segments

Clear | Echo Input Values (View results in Column CJ) | Check Input Values (View results in Advisory Messages)

		Segment 1 Study Period	Segment 2 Study Period	Segment 3 Study Period	Segment 4 Study Period
Basic Roadway Data					
	Number of through lanes (n):	2	1	1	1
	Ramp segment description:	NB On 1 @ S	NB On 2 @ S	SB Off 1 @ S	NB Off Ramp
	Segment length (L), mi:	0.074432	0.214394	0.104167	0.227273
	Average traffic speed on the freeway (V_{frwy}), mi/h:	70	70	70	70
	Segment type (ramp or collector-distributor road):	Entrance	Entrance	Exit	Exit
	Type of control at crossroad ramp terminal:	Signal	Signal	Signal	Signal
Alignment Data					
Horizontal Curve Data	←See notes →				
1	Horizontal curve?:	No	No	No	In Seg.
	Curve radius (R_1), ft:				1950
	Length of curve (L_{c1}), mi:				0.136364
	Length of curve in segment ($L_{c1,seg}$), mi:				0.136364
	Ramp-mile of beginning of curve in direction of travel (X_1), mi:				0.092803
2	Horizontal curve?:				No
	Curve radius (R_2), ft:				
	Length of curve (L_{c2}), mi:				
	Length of curve in segment ($L_{c2,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_2), mi:				
3	Horizontal curve?:				
	Curve radius (R_3), ft:				
	Length of curve (L_{c3}), mi:				
	Length of curve in segment ($L_{c3,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_3), mi:				
4	Horizontal curve?:				
	Curve radius (R_4), ft:				
	Length of curve (L_{c4}), mi:				
	Length of curve in segment ($L_{c4,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_4), mi:				
5	Horizontal curve?:				
	Curve radius (R_5), ft:				
	Length of curve (L_{c5}), mi:				
	Length of curve in segment ($L_{c5,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_5), mi:				
Cross Section Data					
	Lane width (W_l), ft:	12	12	12	12
	Right shoulder width (W_{rs}), ft:	10	10	10	10
	Left shoulder width (W_{ls}), ft:	4	4	4	4
	Presence of lane add or lane drop by taper:	No	Lane Drop	No	No
	Length of taper in segment ($L_{add,seg}$ or $L_{drop,seg}$), mi:		0.072348		
Roadside Data					
	Presence of barrier on <u>right</u> side of roadway:	No	No	No	No
1	Length of barrier ($L_{rb,1}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,1}$), ft:				
2	Length of barrier ($L_{rb,2}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,2}$), ft:				

3	Length of barrier ($L_{rb,3}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,3}$), ft:				
4	Length of barrier ($L_{rb,4}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,4}$), ft:				
5	Length of barrier ($L_{rb,5}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,5}$), ft:				
Presence of barrier on left side of roadway:		No	No	No	No
1	Length of barrier ($L_{lb,1}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,1}$), ft:				
2	Length of barrier ($L_{lb,2}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,2}$), ft:				
3	Length of barrier ($L_{lb,3}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,3}$), ft:				
4	Length of barrier ($L_{lb,4}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,4}$), ft:				
5	Length of barrier ($L_{lb,5}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,5}$), ft:				
Ramp Access Data	↖ See note				
Ramp Entrance	Ramp entrance in segment? (If yes, indicate type.):	No	No	No	No
	Length of entrance s-c lane in segment ($L_{en,seg}$), mi:				
Ramp Exit	Ramp exit in segment? (If yes, indicate type.):	No	No	No	No
	Length of exit s-c lane in segment ($L_{ex,seg}$), mi:				
Weaving Section	Weave section in collector-distributor road segment?:				
	Length of weaving section (L_{wev}), mi:				
	Length of weaving section in segment ($L_{wev,seg}$), mi:				

Traffic Data	**Year**				
Average daily traffic ($AADT_r$ or $AADT_c$) by year, veh/d:	2018	10600	10600	10200	6800
(enter data only for those years for which it is available, leave other years blank)	2019				
	2020				
	2021				
	2022				
	2023				
	2024				
	2025				
	2026				
	2027				
	2028				
	2029				
	2030				
	2031				
	2032				
	2033				
	2034				
	2035				
	2036				
	2037				
	2038	15400	15400	14800	15900
	2039				
	2040				
	2041				

Crash Data	**Year**		Segment Crashes -->			
Count of Fatal-and-Injury (FI) Crashes by Year						
Multiple-vehicle crashes	2018					

	($N_{o,w,n,mv,fi}$)	2019					
		2020					
		2021					
		2022					
	Single-vehicle crashes ($N_{o,w,n,sv,fi}$)	2018					
		2019					
		2020					
		2021					
		2022					
Count of Property-Damage-Only (PDO) Crashes by Year							
	Multiple-vehicle crashes ($N_{o,w,n,mv,pdo}$)	2018					
		2019					
		2020					
		2021					
		2022					
	Single-vehicle crashes ($N_{o,w,n,sv,pdo}$)	2018					
		2019					
		2020					
		2021					
		2022					

Advisory Messages

Build Alternative

Output Summary

General Information

Project description:	I-75 @ SR 884 IMR Reevaluation - Desing Build Concept (Build)				
Analyst:	VHB	Date:	6/4/2020	Area type:	Urban
First year of analysis:	2018				
Last year of analysis:	2038				

Crash Data Description

Freeway segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp segments	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	
Ramp terminals	Segment crash data available?	No	First year of crash data:	
	Project-level crash data available?	No	Last year of crash data:	

Estimated Crash Statistics

Crashes for Entire Facility	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during Study Period, crashes:	362.1	2.9	7.5	39.1	64.2	248.4
Estimated average crash freq. during Study Period, crashes/yr:	17.2	0.1	0.4	1.9	3.1	11.8

Crashes by Facility Component	**Nbr. Sites**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Freeway segments, crashes:	3	315.7	2.4	6.3	34.0	54.6	218.4
Ramp segments, crashes:	4	46.4	0.4	1.3	5.1	9.6	30.0
Crossroad ramp terminals, crashes:	0	0.0	0.0	0.0	0.0	0.0	0.0

Crashes for Entire Facility by Year	**Year**	**Total**	**K**	**A**	**B**	**C**	**PDO**
Estimated number of crashes during the Study Period, crashes:	2018	12.9	0.1	0.3	1.4	2.3	8.7
	2019	13.3	0.1	0.3	1.5	2.4	9.0
	2020	13.7	0.1	0.3	1.5	2.5	9.3
	2021	14.1	0.1	0.3	1.6	2.5	9.6
	2022	14.5	0.1	0.3	1.6	2.6	9.9
	2023	15.0	0.1	0.3	1.6	2.7	10.2
	2024	15.4	0.1	0.3	1.7	2.8	10.5
	2025	15.8	0.1	0.3	1.7	2.8	10.8
	2026	16.3	0.1	0.3	1.8	2.9	11.1
	2027	16.7	0.1	0.3	1.8	3.0	11.4
	2028	17.2	0.1	0.4	1.9	3.1	11.8
	2029	17.6	0.1	0.4	1.9	3.1	12.1
	2030	18.1	0.1	0.4	1.9	3.2	12.4
	2031	18.5	0.1	0.4	2.0	3.3	12.8
	2032	19.0	0.1	0.4	2.0	3.3	13.1
	2033	19.5	0.2	0.4	2.1	3.4	13.4
	2034	20.0	0.2	0.4	2.1	3.5	13.8
	2035	20.4	0.2	0.4	2.2	3.6	14.1
	2036	20.9	0.2	0.4	2.2	3.6	14.5
	2037	21.4	0.2	0.4	2.3	3.7	14.8
	2038	21.9	0.2	0.4	2.3	3.8	15.2
	2039						
	2040						
	2041						

Distribution of Crashes for Entire Facility

Crash Type	**Crash Type Category**	**Estimated Number of Crashes During the Study Period**					
		Total	**K**	**A**	**B**	**C**	**PDO**
Multiple vehicle	Head-on crashes:	0.9	0.0	0.0	0.2	0.3	0.3
	Right-angle crashes:	4.3	0.0	0.1	0.7	1.1	2.4
	Rear-end crashes:	144.7	1.3	3.3	17.7	28.7	93.7
	Sideswipe crashes:	49.9	0.3	0.8	4.3	6.9	37.6
	Other multiple-vehicle crashes:	6.3	0.1	0.2	0.8	1.4	3.9
	Total multiple-vehicle crashes:	206.1	1.7	4.4	23.7	38.3	138.0
Single vehicle	Crashes with animal:	2.2	0.0	0.0	0.1	0.1	2.0
	Crashes with fixed object:	114.3	0.8	2.2	11.1	18.6	81.5
	Crashes with other object:	15.1	0.0	0.1	0.7	1.1	13.2
	Crashes with parked vehicle:	2.3	0.0	0.0	0.2	0.4	1.6
	Other single-vehicle crashes	22.2	0.3	0.7	3.4	5.8	12.0
	Total single-vehicle crashes:	156.0	1.2	3.1	15.4	25.9	110.5
	Total crashes:	362.1	2.9	7.5	39.1	64.2	248.4

Evaluation Site Summary

General Information

Project description:	I-75 @ SR 884 IMR Reevaluation - Desing Build Concept (Build)				
Analyst:	VHB	Date:	6/4/2020	Area type:	Urban
First year of analysis:	2018	Total length of freeway segments for Study Period (mi):	0.890		
Last year of analysis:	2038				

Site Description

Freeway Segments

Number	Lanes	Study Period Length (mi)	Study Period Description	
1	8	0.189	I-75/SR 884 SC Lane	
2	8	0.606	I-75 b/w SR 884 & SR 82	
3	8	0.095	I-75/SR 82 SC Lane	
4	0	0.000	0	
5	0	0.000	0	
6	0	0.000	0	
7	0	0.000	0	
8	0	0.000	0	
9	0	0.000	0	
10	0	0.000	0	
11	0	0.000	0	
12	0	0.000	0	
13	0	0.000	0	
14	0	0.000	0	
15	0	0.000	0	
16	0	0.000	0	
17	0	0.000	0	
18	0	0.000	0	
19	0	0.000	0	
20	0	0.000	0	

Ramp Segments

Number	Study Period Description		Number	Study Period Description	
1	NB On 1 @ SR 884 (2 lane		21	0	
2	NB On 2 @ SR 884 (2 lane		22	0	
3	SB Off 1 @ SR 884 (2-lane		23	0	
4	NB Off Ramp @ SR 82 (2 l		24	0	
5	0		25	0	
6	0		26	0	
7	0		27	0	
8	0		28	0	
9	0		29	0	
10	0		30	0	
11	0		31	0	
12	0		32	0	
13	0		33	0	
14	0		34	0	
15	0		35	0	
16	0		36	0	
17	0		37	0	
18	0		38	0	
19	0		39	0	
20	0		40	0	

Crossroad Ramp Terminals

Number	Config.	Control	Study Period Description	
1	0	0	0	
2	0	0	0	
3	0	0	0	
4	0	0	0	
5	0	0	0	
6	0	0	0	

Input Worksheet for Freeway Segments

Clear | Echo Input Values (View results in Column AV) | Check Input Values (View results in Advisory Messages)

		Segment 1 Study Period	Segment 2 Study Period	Segment 3 Study Period
Basic Roadway Data				
	Number of through lanes (n):	8	8	8
	Freeway segment description:	I-75/SR 884 S	I-75 b/w SR 8	I-75/SR 82 SC
	Segment length (L), mi:	0.189394	0.606061	0.094697
Alignment Data				
Horizontal Curve Data	←See note			
1	Horizontal curve in segment?:	No	Both Dir.	No
	Curve radius (R_1), ft:		5729	
	Length of curve (L_{c1}), mi:		0.568182	
	Length of curve in segment ($L_{c1,seg}$), mi:		0.568182	
2	Horizontal curve in segment?:			
	Curve radius (R_2), ft:			
	Length of curve (L_{c2}), mi:			
	Length of curve in segment ($L_{c2,seg}$), mi:			
3	Horizontal curve in segment?:			
	Curve radius (R_3), ft:			
	Length of curve (L_{c3}), mi:			
	Length of curve in segment ($L_{c3,seg}$), mi:			
Cross Section Data				
	Lane width (W_l), ft:	12	12	12
	Outside shoulder width (W_s), ft:	12	12	12
	Inside shoulder width (W_{is}), ft:	12	12	12
	Median width (W_m), ft:	40	40	40
	Rumble strips on outside shoulders?:	Yes	Yes	Yes
	Length of rumble strips for travel in increasing milepost direction, mi:	0.189394	0.606061	0.094697
	Length of rumble strips for travel in decreasing milepost direction, mi:	0.189394	0.606061	0.094697
	Rumble strips on inside shoulders?:	Yes	Yes	Yes
	Length of rumble strips for travel in increasing milepost direction, mi:	0.189394	0.606061	0.094697
	Length of rumble strips for travel in decreasing milepost direction, mi:	0.189394	0.606061	0.094697
	Presence of barrier in median:	Center	Center	Center
1	Length of barrier ($L_{ib,1}$), mi:	0.189394	0.606061	0.094697
	Distance from edge of traveled way to barrier face ($W_{off,in,1}$), ft:	20	20	20
2	Length of barrier ($L_{ib,2}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,2}$), ft:			
3	Length of barrier ($L_{ib,3}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,3}$), ft:			
4	Length of barrier ($L_{ib,4}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,4}$), ft:			
5	Length of barrier ($L_{ib,5}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,in,5}$), ft:			
	Median barrier width (W_{ib}), ft:	1	1	1

Nearest distance from edge of traveled way to barrier face (W_{near}), ft:				
Roadside Data				
Clear zone width (W_{hc}), ft:		12	12	12
Presence of barrier on roadside:		None	None	None
1	Length of barrier ($L_{ob,1}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,1}$), ft:			
2	Length of barrier ($L_{ob,2}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,2}$), ft:			
3	Length of barrier ($L_{ob,3}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,3}$), ft:			
4	Length of barrier ($L_{ob,4}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,4}$), ft:			
5	Length of barrier ($L_{ob,5}$), mi:			
	Distance from edge of traveled way to barrier face ($W_{off,o,5}$), ft:			
Distance from edge of traveled way to barrier face, increasing milepost ($W_{off,inc}$), ft:				
Distance from edge of traveled way to barrier face, decreasing milepost ($W_{off,dec}$), ft:				
Ramp Access Data				
Travel in Increasing Milepost Direction				
Entrance Ramp	Ramp entrance in segment? (If yes, indicate type.):	S-C Lane	No	No
	Distance from begin milepost to upstream entrance ramp gore ($X_{b,ent}$), mi:		0.189394	0.795455
	Length of ramp entrance ($L_{en,inc}$), mi:	0.166667		
	Length of ramp entrance in segment ($L_{en,seg,inc}$), mi:	0.166667		
	Entrance side?:	Right		
Exit Ramp	Ramp exit in segment? (If yes, indicate type.):	No	No	S-C Lane
	Distance from end milepost to downstream exit ramp gore ($X_{e,ext}$), mi:	0.700758	0.094697	
	Length of ramp exit ($L_{ex,inc}$), mi:			0.042614
	Length of ramp exit in segment ($L_{ex,seg,inc}$), mi:			0.042614
	Exit side?:			Right
Weave	Type B weave in segment?:	No	No	No
	Length of weaving section ($L_{wev,inc}$), mi:			
	Length of weaving section in segment ($L_{wev,seg,inc}$), mi:			
Travel in Decreasing Milepost Direction				
Entrance Ramp	Ramp entrance in segment? (If yes, indicate type.):	No	No	S-C Lane
	Distance from end milepost to upstream entrance ramp gore ($X_{e,ent}$), mi:	0.700758	0.094697	
	Length of ramp entrance ($L_{en,dec}$), mi:			0.047348
	Length of ramp entrance in segment ($L_{en,seg,dec}$), mi:			0.047348
	Entrance side?:			Right
Exit Ramp	Ramp exit in segment? (If yes, indicate type.):	S-C Lane	No	No
	Distance from begin milepost to downstream exit ramp gore ($X_{b,ext}$), mi:		0.700758	0.795455
	Length of ramp exit ($L_{ex,dec}$), mi:	0.047348		
	Length of ramp exit in segment ($L_{ex,seg,dec}$), mi:	0.047348		
	Exit side?:	Right		
Weave	Type B weave in segment?:	No	No	No
	Length of weaving section ($L_{wev,dec}$), mi:			
	Length of weaving section in segment ($L_{wev,seg,dec}$), mi:			
Traffic Data	**Year**			
Proportion of AADT during high-volume hours (P_{hv}):				

Freeway Segment Data	2018	73500	73500	73500
Average daily traffic ($AADT_{fs}$) by year, veh/d:	2019			
(enter data only for those years for which	2020			
it is available, leave other years blank)	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	111000	111000	111000
	2039			
	2040			
	2041			
Entrance Ramp Data for Travel in Increasing Milepost Dir.	**Year**			
Average daily traffic ($AADT_{b,ent}$) by year, veh/d:	2018	10600	10600	10600
(enter data only for those years for which	2019			
it is available, leave other years blank)	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	15400	15400	15400
	2039			
	2040			
	2041			
Exit Ramp Data for Travel in Increasing Milepost Direction	**Year**			
Average daily traffic ($AADT_{e,ext}$) by year, veh/d:	2018	6800	6800	6800

(enter data only for those years for which it is available, leave other years blank)	2019			
	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	15900	15900	15900
	2039			
	2040			
	2041			
Entrance Ramp Data for Travel in Decreasing Milepost Dir.	**Year**			
Average daily traffic ($AADT_{e,ent}$) by year, veh/d:	2018	7000	7000	7000
(enter data only for those years for which it is available, leave other years blank)	2019			
	2020			
	2021			
	2022			
	2023			
	2024			
	2025			
	2026			
	2027			
	2028			
	2029			
	2030			
	2031			
	2032			
	2033			
	2034			
	2035			
	2036			
	2037			
	2038	16300	16300	16300
	2039			
	2040			
	2041			
Exit Ramp Data for Travel in Decreasing Milepost Direction	**Year**			
Average daily traffic ($AADT_{b,ext}$) by year, veh/d:	2018	10200	10200	10200
(enter data only for those years for which	2019			

it is available, leave other years blank)

2020			
2021			
2022			
2023			
2024			
2025			
2026			
2027			
2028			
2029			
2030			
2031			
2032			
2033			
2034			
2035			
2036			
2037			
2038	14800	14800	14800
2039			
2040			
2041			

Crash Data	**Year**	Segment Crashes -->			
Count of Fatal-and-Injury (FI) Crashes by Year					
Multiple-vehicle crashes (not ramp related) ($N_{o,fs,n,mv,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Single-vehicle crashes (not ramp related) ($N_{o,fs,n,sv,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Ramp-entrance-related crashes ($N_{o,sc,EN,at,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Ramp-exit-related crashes ($N_{o,sc,EX,at,fi}$)	2018				
	2019				
	2020				
	2021				
	2022				
Count of Property-Damage-Only (PDO) Crashes by Year					
Multiple-vehicle crashes (not ramp related) ($N_{o,fs,n,mv,pdo}$)	2018				
	2019				
	2020				
	2021				
	2022				
Single-vehicle crashes	2018				

	(not ramp related) ($N_{o,fs,n,sv,pdo}$)	2019				
		2020				
		2021				
		2022				
	Ramp-entrance-related crashes ($N_{o,sc,EN,at,pdo}$)	2018				
		2019				
		2020				
		2021				
		2022				
	Ramp-exit-related crashes ($N_{o,sc,EX,at,pdo}$)	2018				
		2019				
		2020				
		2021				
		2022				

Advisory Messages

Input Worksheet for Ramp Segments

Clear | Echo Input Values (View results in Column CJ) | Check Input Values (View results in Advisory Messages)

		Segment 1 Study Period	Segment 2 Study Period	Segment 3 Study Period	Segment 4 Study Period
Basic Roadway Data					
	Number of through lanes (n):	2	2	2	2
	Ramp segment description:	NB On 1 @ S	NB On 2 @ S	SB Off 1 @ S	NB Off Ramp
	Segment length (L), mi:	0.066288	0.222538	0.104167	0.227273
	Average traffic speed on the freeway (V_{frwy}), mi/h:	70	70	70	70
	Segment type (ramp or collector-distributor road):	Entrance	Entrance	Exit	Exit
	Type of control at crossroad ramp terminal:	Signal	Signal	Signal	Signal
Alignment Data					
Horizontal Curve Data	←See notes→				
1	Horizontal curve?:	No	No	No	In Seg.
	Curve radius (R_1), ft:				1950
	Length of curve (L_{c1}), mi:				0.136364
	Length of curve in segment ($L_{c1,seg}$), mi:				0.136364
	Ramp-mile of beginning of curve in direction of travel (X_1), mi:				0.092803
2	Horizontal curve?:				No
	Curve radius (R_2), ft:				
	Length of curve (L_{c2}), mi:				
	Length of curve in segment ($L_{c2,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_2), mi:				
3	Horizontal curve?:				
	Curve radius (R_3), ft:				
	Length of curve (L_{c3}), mi:				
	Length of curve in segment ($L_{c3,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_3), mi:				
4	Horizontal curve?:				
	Curve radius (R_4), ft:				
	Length of curve (L_{c4}), mi:				
	Length of curve in segment ($L_{c4,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_4), mi:				
5	Horizontal curve?:				
	Curve radius (R_5), ft:				
	Length of curve (L_{c5}), mi:				
	Length of curve in segment ($L_{c5,seg}$), mi:				
	Ramp-mile of beginning of curve in direction of travel (X_5), mi:				
Cross Section Data					
	Lane width (W_l), ft:	12	12	12	12
	Right shoulder width (W_{rs}), ft:	10	10	10	10
	Left shoulder width (W_{ls}), ft:	4	4	4	4
	Presence of lane add or lane drop by taper:	No	No	No	No
	Length of taper in segment ($L_{add,seg}$ or $L_{drop,seg}$), mi:				
Roadside Data					
	Presence of barrier on <u>right</u> side of roadway:	No	No	No	No
1	Length of barrier ($L_{rb,1}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,1}$), ft:				
2	Length of barrier ($L_{rb,2}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,2}$), ft:				

3	Length of barrier ($L_{rb,3}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,3}$), ft:				
4	Length of barrier ($L_{rb,4}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,4}$), ft:				
5	Length of barrier ($L_{rb,5}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,r,5}$), ft:				
Presence of barrier on left side of roadway:		No	No	No	No
1	Length of barrier ($L_{lb,1}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,1}$), ft:				
2	Length of barrier ($L_{lb,2}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,2}$), ft:				
3	Length of barrier ($L_{lb,3}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,3}$), ft:				
4	Length of barrier ($L_{lb,4}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,4}$), ft:				
5	Length of barrier ($L_{lb,5}$), mi:				
	Distance from edge of traveled way to barrier face ($W_{off,l,5}$), ft:				
Ramp Access Data	↖ See note				
Ramp Entrance	Ramp entrance in segment? (If yes, indicate type.):	No	No	No	No
	Length of entrance s-c lane in segment ($L_{en,seg}$), mi:				
Ramp Exit	Ramp exit in segment? (If yes, indicate type.):	No	No	No	No
	Length of exit s-c lane in segment ($L_{ex,seg}$), mi:				
Weaving Section	Weave section in collector-distributor road segment?:				
	Length of weaving section (L_{wev}), mi:				
	Length of weaving section in segment ($L_{wev,seg}$), mi:				

Traffic Data	**Year**				
Average daily traffic ($AADT_r$ or $AADT_c$) by year, veh/d:	2018	10600	10600	10200	6800
(enter data only for those years for which it is available, leave other years blank)	2019				
	2020				
	2021				
	2022				
	2023				
	2024				
	2025				
	2026				
	2027				
	2028				
	2029				
	2030				
	2031				
	2032				
	2033				
	2034				
	2035				
	2036				
	2037				
	2038	15400	15400	14800	15900
	2039				
	2040				
	2041				

Crash Data	**Year**		Segment Crashes -->			
Count of Fatal-and-Injury (FI) Crashes by Year						
Multiple-vehicle crashes	2018					

	($N_{o,w,n,mv,fi}$)	2019					
		2020					
		2021					
		2022					
	Single-vehicle crashes ($N_{o,w,n,sv,fi}$)	2018					
		2019					
		2020					
		2021					
		2022					
Count of Property-Damage-Only (PDO) Crashes by Year							
	Multiple-vehicle crashes ($N_{o,w,n,mv,pdo}$)	2018					
		2019					
		2020					
		2021					
		2022					
	Single-vehicle crashes ($N_{o,w,n,sv,pdo}$)	2018					
		2019					
		2020					
		2021					
		2022					

Advisory Messages

Appendix F

Conceptual Signing Plan