

**INTERSECTIONS ANALYSIS**  
**For**  
**State Road 535 (S. Apopka Vineland Drive)**

Orange County and Osceola County

**SR 535 at Kyngs Heath Road**  
**SR 535 at Poinciana Boulevard**  
**SR 535 at Polynesian Isle Boulevard**  
**SR 535 at LBV Factory Stores Drive**

Prepared for:

**FDOT**

Prepared by:

**Vanasse Hangen Brustlin, Inc.**  
**225 East Robinson Street, Suite 300**  
**Orlando, FL 32801**

March 2022

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# PROFESSIONAL ENGINEER CERTIFICATE

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I hereby certify that I am a registered professional engineer in the State of Florida, practicing with VHB/Vanasse Hangen Brustlin, Inc., a corporation authorized to operate as a Professional Engineering business by the State of Florida Department of Professional Regulation, Board of Professional Engineers, and that I have approved the Intersection Control Evaluation for the SR 535 Concept Development and Evaluation Study in Osceola County and Orange County, Florida, dated March 2022.

PROJECT: SR 535 Concept Development and Evaluation Study

LOCATION: Orange County and Osceola County, Florida

CLIENT: FDOT

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

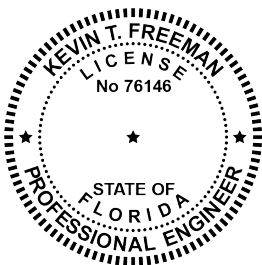
SIGNATURE: \_\_\_\_\_

NAME: Kevin T. Freeman, P.E.

P.E.

NUMBER: 76146

DATE: 3/28/2022



## Intersection Control Evaluation (Stage 1)

Stage 1 of an Intersection Control Evaluation (ICE) Analysis was performed for the following four intersections on State Road (SR) 535 (Apopka Vineland Road) as part of the SR 535 Concept Development and Evaluation Study:

- Kyngs Heath Road
- Poinciana Boulevard
- Polynesian Isle Boulevard
- LBV Factory Stores Drive

The SR 535 Concept Development and Evaluation Study is being conducted as an interim project for the SR 535 Project Development & Environment (PD&E) Study. The SR 535 PD&E Study has limits from US 192 to SR 536/World Center Drive and is evaluating the widening of SR 535 from four to six lanes along with multimodal and Transportation Systems Management & Operations (TSM&O) improvements. This concept development study will identify short term/interim improvements that can be included with the Resurfacing, Restoration, and Rehabilitation (RRR) project that is planned to go to design in the future. The ongoing PD&E study will identify the long term build condition for the corridor.

The purpose of the ICE Analysis is to determine viable candidates for intersection control based on capacity, safety, and geometric constraints to be recommended for the upcoming resurfacing project.

Operations for each intersection were evaluated for the Interim Design Year 2035 in order to ensure that the intersection control alternatives provide sufficient operations through the interim design year with the understanding that the PD&E study will provide the ultimate solution. Therefore, only the more easily implemented solutions were analyzed as part of the ICE Analysis.

### Data Sources

The intersection geometry, existing and future annual average daily traffic (AADT), and future turning movement counts (TMCs) were all gathered from the data used to develop the Project Traffic Analysis Report (PTAR) (dated April, 2021). Traffic data was gathered for the following key years to conduct the analyses:

- Existing Year: 2019
- Opening Year: 2025
- Interim Design Year: 2035

Existing traffic conditions (AADTs and TMCs) on SR 535 were developed using traffic count data collected between January 2020 and February 2020 (48-hour bi-directional classification counts, 72-hour bi-directional classification counts, and 8-hour TMCs). Future traffic projections were determined using the CFRPM V6.1 travel demand model, historical traffic trends analysis, and population projections. The projected 2035 AADTs, along with the developed K and D factors were then input into the TMTTool program to develop future TMCs. For the ICE analysis, in cases where the AADT along a roadway differed on either side of the intersection, the average of the two AADTs was used. Truck factors for the intersection approaches were taken from the recommended design characteristics.

## Analysis

### SR 535 at Kyngs Heath Road

For the Stage 1 ICE Analysis of the intersection at Kyngs Heath Road, the following control strategies were evaluated:

- Signalized Intersection
- Signalized Restricted Crossing U-Turn (RCUT)
- Partial Median U-Turn (MUT)

Each control strategy was evaluated for capacity and multimodal performance using the Capacity Analysis at Junctions (CAP-X) tool and for safety using the Safety Performance for ICE (SPICE) tool. The results of the analysis are shown in the table below.

Control Strategy	Capacity (v/c)		Multimodal	SPICE
	2035 AM	2035 PM	Score	Ranking
Signalized Intersection	0.63	0.62	4.8	3
Signalized RCUT	0.63	0.57	6.3	2
Partial MUT	0.60	0.62	6.3	1

As shown in the table, all three alternatives meet the projected capacity needs of the intersection, and both the Signalized RCUT and the Partial MUT provide safety improvements over the Signalized Intersection. All three alternatives will be moved forward to the Stage 2 ICE Analysis.

The ICE forms, CAPX analyses, and SPICE analysis for the intersection with Kyngs Heath Road are included in Attachment A.

### SR 535 at Poinciana Boulevard

For the Stage 1 ICE Analysis of the intersection at Poinciana Boulevard, the following control strategies were evaluated:

- Signalized Intersection
- Signalized RCUT
- Partial MUT

Each control strategy was evaluated for capacity and multimodal performance using the Capacity Analysis at Junctions (CAP-X) tool and for safety using the Safety Performance for ICE (SPICE) tool. The results of the analysis are shown in the table below.

Control Strategy	Capacity (v/c)		Multimodal	SPICE
	2035 AM	2035 PM	Score	Ranking
Signalized Intersection	0.98	0.76	4.8	2
Signalized RCUT	0.81	0.70	6.3	3
Partial MUT	0.77	0.65	6.3	1

As shown in the table, all three alternatives meet the projected capacity needs of the intersection, however the Signalized intersection is projected to operate very close to capacity in the AM peak hour.

The Signalized Intersection and Partial MUT will be moved forward to the Stage 2 ICE Analysis. The Signalized RCUT will not be advanced as it has a significantly lower safety rating than that for the Signalized Intersection.

The ICE forms, CAPX analyses, and SPICE analysis for the intersection with Poinciana Boulevard are included in Attachment B.

#### SR 535 at Polynesian Isle Boulevard

For the Stage 1 ICE Analysis of the intersection at Polynesian Isle Boulevard the following control strategies were evaluated:

- Signalized Intersection
- Signalized RCUT
- Partial MUT

Each control strategy was evaluated for capacity and multimodal performance using the Capacity Analysis at Junctions (CAP-X) tool and for safety using the Safety Performance for ICE (SPICE) tool. The results of the analysis are shown in the table below.

Control Strategy	Capacity (v/c)		Multimodal	SPICE
	2035 AM	2035 PM	Score	Ranking
Signalized Intersection	1.02	0.94	4.8	3
Signalized RCUT	0.83	0.71	6.3	2
Partial MUT	0.92	0.76	6.3	1

As shown in the table, the Signalized Intersection does not meet the projected capacity needs of the intersection. Both the Signalized RCUT and Partial MUT will be able to accommodate projected traffic volumes, with the Signalized RCUT approaching capacity in the AM peak hour. The Partial MUT will be advanced to the Stage 2 ICE Analysis based on the results of the capacity and safety analysis, and the Signalized Intersection will be advanced as it is the existing control strategy at the intersection.

The SPICE rankings indicate that the Signalized RCUT provides a better safety performance than the Signalized Intersection. This is because the ranking is heavily influenced by the projected number of fatality and injury crashes for each control alternative. However, as shown in the table below, even though the Signalized RCUT is projected to result in fewer fatal and injury crashes, it is projected to have almost double the volume of total crashes at the Signalized Intersection. For this reason, the Signalized RCUT will not be advanced to the Stage 2 ICE Analysis.

Control Strategy	Design Year		Total Project Life Cycle	
	Total Crashes	Fatal & Injury Crashes	Total Crashes	Fatal & Injury Crashes
Signalized Intersection	22.12	10.30	228.88	106.56
Signalized RCUT	40.04	9.61	400.40	93.81

The ICE forms, CAPX analyses, and SPICE analysis for the intersection with Polynesian Isle Boulevard are included in Attachment C.

## SR 535 at LBV Factory Stores Drive

For the Stage 1 ICE Analysis of the intersection at LBV Factory Stores Drive the following control strategies were evaluated:

- Signalized Intersection
- Signalized RCUT
- Partial MUT

Each control strategy was evaluated for capacity and multimodal performance using the Capacity Analysis at Junctions (CAP-X) tool and for safety using the Safety Performance for ICE (SPICE) tool. The results of the analysis are shown in the table below.

Control Strategy	Capacity (v/c)		Multimodal Score	SPICE Ranking
	2035 AM	2035 PM		
Signalized Intersection	0.99	1.01	4.8	3
Signalized RCUT	0.90	0.81	6.3	2
Partial MUT	0.92	0.76	6.3	1

As shown in the table, both the Signalized RCUT and Partial MUT are projected to meet the capacity needs of the intersection. The Signalized Intersection is shown to be at capacity in the AM peak hour and over capacity in the PM peak hour. The v/c ratios calculated for the Signalized Intersection appeared to be unexpectedly high, so the intersection was modeled in Synchro 10.0 and analyzed using the Highway Capacity Manual (HCM) 6<sup>th</sup> Edition methodology. Based on the HCM analysis, the Signalized Intersection is projected to operate at LOS C in both the AM and PM peak hours (with overall intersection delays of 28.9 seconds and 33.3 seconds, respectively).

Based on the results of the capacity and safety analysis, all three alternatives will be moved forward to the Stage 2 ICE Analysis.

The ICE forms, CAPX analyses, SPICE analysis, and HCM analysis for the intersection with LBV Factory Stores Drive are included in Attachment D.

## Conclusion

The improvement strategies for each intersection which will be advanced to Stage 2 of the ICE analysis are shown in the following table.

Intersection	Alternative to be Advanced
SR 535 at Kyngs Heath Road	Signalized Intersection Signalized RCUT Partial MUT
SR 535 at Poinciana Boulevard	Signalized Intersection Partial MUT
SR 535 at Polynesian Isle Boulevard	Signalized Intersection Partial MUT
SR 535 at LBV Factory Stores Drive	Signalized Intersection Signalized RCUT Partial MUT

Attachment A  
SR 535 at Kyngs Heath Road



# Florida Department of Transportation

## Intersection Control Evaluation (ICE) Form

### Stage 1: Screening

Intersection Control Evaluation Form 750-010-003

To fulfill the requirements of Stage 1 (Screening) of FDOT's ICE procedures, complete the following form and append all supporting documentation. Completed forms can be submitted to the District Traffic Operations Engineer (DTOE) and District Design Engineer (DDE) for the project's approval.

Project Name	SR 535 Concept Development Study		FDOT Project #	405854-1	
Submitted By	VHB	Agency/Company	FDOT	Date	3/7/2022
Email	<a href="mailto:kfreeman@vhb.com">kfreeman@vhb.com</a>	FDOT District	District 5	County	Osceola
Project Locality (City/Town/Village)	Kissimmee		Project Type	Corridor Improvement Project	
Project Funding Source	Federal	FDOT Context Classification	C3C - Suburban Commercial		
Project Purpose (What is the catalyst for this project and why is it being undertaken?)	This Concept Development Study is being conducted in parallel with the FM 437174-2 PD&E Study for SR 535. It's purpose is to identify short term/interim improvements that can be included with the 3R project that is planned to go to design in the future. The ongoing PD&E study will identify the long term build condition for the corridor.				
Project Setting Description (Describe the area surrounding the intersection)	The land surrounding the intersection is fully commercially developed, with residential land uses behind the commercial properties on both the west side and east side of the intersection.				
Multimodal Context (Describe the pedestrian, bicycle, and transit activity in the area and the potential for activity based on surrounding land uses and development patterns)	Based on the presence of sidewalks on all approaches to the intersection, the residential land uses to the east and west, and the commercial properties surrounding the intersection, pedestrian and bicycle traffic is expected to be significant. No transit routes exist on either the mainline or sidestreet.				

Major Street Information								
Route #:	SR 535	Route Name(s)	Kissimmee Vineland Road			Milepost	0.185	
Existing Control Type	Signal		Existing AADT	31,000	Design Year AADT	33,250		
Design Vehicle	Florida Interstate Semitrailer (WB-62FL)		Control Vehicle	Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification			Urban Minor Arterial		Design Speed (mph)	45		
Secondary Functional Classification (if app.)					Target Speed (mph) [if app.]	45		
Approach #1	Direction	Northbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	Yes	Through	2	Left	33	Left	37
	Multi-Use Path?	Yes	Left-Through-Right	0	Through	1,360	Through	1,237
	Scheduled Bus Service?	No	Through-Right	0	Right	102	Right	118
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		9.4%	
Approach #2	Direction	Southbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	158	Left	184
	Multi-Use Path?	Yes	Left-Through-Right	0	Through	913	Through	1,364
	Scheduled Bus Service?	No	Through-Right	0	Right	107	Right	122
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		8.3%	

Minor Street Information																	
Route #:			Route Name(s)		Kyng's Heath Road				Milepost (if app.)								
Existing Control Type			Signal			Existing AADT		2,300		Design Year AADT		4,800					
Design Vehicle		Florida Interstate Semitrailer (WB-62FL)				Control Vehicle		Florida Interstate Semitrailer (WB-62FL)									
Primary Functional Classification				Urban Local				Design Speed (mph)				30					
Secondary Functional Classification (if app.)								Target Speed (mph) [if app.]									
Approach #1	Direction		Eastbound			Number of Lanes			Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes					
	Sidewalks along:		Both sides of the approach			Left-Turn		1									
	Crosswalk on Approach?		Yes			Left-Through		0		Weekday AM Peak			Weekday PM Peak				
	On-Street Bike Facilities?		No			Through		0		Left		63		Left		86	
	Multi-Use Path?		No			Left-Through-Right		0		Through		15		Through		39	
	Scheduled Bus Service?		No			Through-Right		1		Right		61		Right		60	
	Bus Stop on Approach?		No			Right-Turn		0		Daily Truck %			4.0%				
Approach #2	Direction		Westbound			Number of Lanes			Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes					
	Sidewalks along:		One side of the approach			Left-Turn		1									
	Crosswalk on Approach?		Yes			Left-Through		1		Weekday AM Peak			Weekday PM Peak				
	On-Street Bike Facilities?		No			Through		0		Left		93		Left		93	
	Multi-Use Path?		No			Left-Through-Right		0		Through		13		Through		34	
	Scheduled Bus Service?		No			Through-Right		0		Right		218		Right		155	
	Bus Stop on Approach?		No			Right-Turn		1		Daily Truck %			4.0%				
Approach #3	Direction					Number of Lanes			Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes					
	Sidewalks along:					Left-Turn											
	Crosswalk on Approach?					Left-Through				Weekday AM Peak			Weekday PM Peak				
	On-Street Bike Facilities?					Through				Left				Left			
	Multi-Use Path?					Left-Through-Right				Through				Through			
	Scheduled Bus Service?					Through-Right				Right				Right			
	Bus Stop on Approach?					Right-Turn				Daily Truck %							

Crash History (Existing Intersections Only)
<p>Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:</p> <p>34 crashes occurred at this intersection between 2014 and 2018. 17 resulted in injuries and one resulted in a fatality. Of the crashes, 5 were Angle crashes, 1 were Left-Turn crashes, and 2 were Sideswipe crashes occurred, indicating that geometry is not a safety issue at this intersection. One pedestrian crash occurred (fatality), and one bicycle crash occurred (property damage only).</p>





Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
Control Strategy	CAP-X Outputs			SPICE Ranking	Strategy to Be Advanced?	Justification
	V/C Ratio		Multimodal Score			
	Weekday AM Peak	Weekday PM Peak				
Two-Way Stop-Controlled	-	-	-	-	No	-
All-Way Stop-Controlled	-	-	-	-	No	-
Signalized Control	0.63	0.62	4.8	3	Yes	Existing Control - ample capacity and adequate safety.
Roundabout	-	-	-	-	No	-
Median U-Turn	-	-	-	-	No	-
RCUT (Signalized)	0.63	0.57	6.3	2	Yes	Provides capcity and safety improvement over signalized intersection.
RCUT (Unsignalized)	-	-	-	-	No	-
Jughandle				-	No	-
Displaced Left-Turn	-	-	-	-	No	-
Continuous Green Tee	-	-	-	-	No	-
Quadrant Roadway	-	-	-		No	-
Partial MUT	0.60	0.62	6.3	1	Yes	Provides capcity and safety improvement over signalized intersection.
Other 2 (Type)						

Resolution					
<i>To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer</i>					
Project Determination		Multiple Viable Alternatives Identified: Continue to Stage 2			
Comments	Analyze Signalized Intersection, Signalized RCUT, and Partial MUT in Stage 2.				
DTOE Name		Signature		Date	
DDE Name		Signature		Date	

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Kyngs Heath Rd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	63	15	61	2.00%	0.00%
Westbound	0	93	13	218	2.00%	0.00%
Southbound	0	158	913	107	4.15%	0.00%
Northbound	0	33	1360	102	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at Kyngs Heath Rd
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Location:	Osceola County, FL
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	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
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Westbound	0	93	13	218	2.00%	0.00%
Southbound	0	158	913	107	4.15%	0.00%
Northbound	0	33	1360	102	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

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Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<a href="#">FULL</a>	/	1	2	1	/	1	2	1	/	1	1	0	/	1	1	1
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1	1	2	1	1	1	2	1	/	/	/	1	/	/	/	1
Partial Median U-Turn	<a href="#">N-S</a>	1	/	2	1	1	/	2	1	/	1	1	0	/	1	1	1

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R



# Capacity Analysis for Planning of Junctions

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## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1072	<u>0.63</u>	0.63	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	749	<u>0.42</u>	882	<u>0.49</u>	1132	<u>0.63</u>	689	<u>0.38</u>			0.63	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	657	<u>0.37</u>	989	<u>0.55</u>					1058	<u>0.60</u>	0.60	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

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## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				





## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Kyngs Heath Rd
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Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	86	39	60	2.00%	0.00%
Westbound	0	93	34	155	2.00%	0.00%
Southbound	0	184	1364	122	4.15%	0.00%
Northbound	0	37	1237	118	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





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# Capacity Analysis for Planning of Junctions















Detailed Report - Page 1 of 4

Project Name:	SR 535 at Kyngs Heath Rd
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	Volume (Veh/hr)				Percent (%)	
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Eastbound	0	86	39	60	2.00%	0.00%
Westbound	0	93	34	155	2.00%	0.00%
Southbound	0	184	1364	122	4.15%	0.00%
Northbound	0	37	1237	118	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
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# Capacity Analysis for Planning of Junctions

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Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<a href="#">FULL</a>		1	2	1		1	2	1		1	1	0		1	1	1
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1	1	2	1	1	1	2	1				1				1
Partial Median U-Turn	<a href="#">N-S</a>	1		2	1	1		2	1		1	1	0		1	1	1

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

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## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1061	<u>0.62</u>	0.62	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1033	<u>0.57</u>	889	<u>0.49</u>	1030	<u>0.57</u>	980	<u>0.54</u>			0.57	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	919	<u>0.51</u>	969	<u>0.54</u>					1085	<u>0.62</u>	0.62	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 4 of 4

## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				

## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				



Federal Highway Administration (FHWA)							
Safety Performance for Intersection Control Evaluation Tool							
Results							
Summary of crash prediction results for each alternative							
Project Information							
Project Name:	SR 535 Concept Development Study			Intersection Type		At-Grade Intersections	
Intersection:	SR 535 at Kyngs Heath Road			Opening Year		2025	
Agency:	FDOT			Design Year		2035	
Project Reference:	405854-1			Facility Type		On Urban and Suburban Arterial	
City:	Osceola County			Number of Legs		4-leg	
State:	Florida			1-Way/2-Way		2-way Intersecting 2-way	
Date:	10/11/2021			# of Major Street Lanes (both directions)		5 or fewer	
Analyst:	Amanda Johnson			Major Street Approach Speed		Less than 55 mph	
Crash Prediction Summary							
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal	Total	6.71	7.85	80.24	3	Yes	Calibrated SPF
	Fatal & Injury	2.86	3.34	34.13			
Median U-Turn (MUT)	Total	5.70	6.67	68.20	1	N/A	CMF
	Fatal & Injury	2.00	2.34	23.89			
Signalized RCUT	Total	11.18	14.42	141.16	2	Yes	Uncalibrated SPF
	Fatal & Injury	2.10	2.91	27.65			

Attachment B  
SR 535 at Poinciana Boulevard

# Florida Department of Transportation

## Intersection Control Evaluation (ICE) Form

### Stage 1: Screening

Intersection Control Evaluation Form 750-010-003

To fulfill the requirements of Stage 1 (Screening) of FDOT's ICE procedures, complete the following form and append all supporting documentation. Completed forms can be submitted to the District Traffic Operations Engineer (DTOE) and District Design Engineer (DDE) for the project's approval.

Project Name	SR 535 Concept Development Study		FDOT Project #	405854-1	
Submitted By	VHB	Agency/Company	FDOT	Date	10/18/2021
Email	<a href="mailto:kfreeman@vhb.com">kfreeman@vhb.com</a>	FDOT District	District 5	County	Osceola
Project Locality (City/Town/Village)	Kissimmee		Project Type	Corridor Improvement Project	
Project Funding Source	Federal	FDOT Context Classification	C3C - Suburban Commercial		
Project Purpose (What is the catalyst for this project and why is it being undertaken?)	This Concept Development Study is being conducted in parallel with the FM 437174-2 PD&E Study for SR 535. It's purpose is to identify short term/interim improvements that can be included with the 3R project that is planned to go to design in the future. The ongoing PD&E study will identify the long term build condition for the corridor.				
Project Setting Description (Describe the area surrounding the intersection)	The land in the northwest, northeast, and southwest quadrants of the intersection is fully commercially developed, with residential land uses behind the commercial properties on the west side of the intersection and additional planned apartment complexes behind the commercial properties to the east of the intersection. The land in the southeast quadrant is part of the Right of Way for Osceola Parkway.				
Multimodal Context (Describe the pedestrian, bicycle, and transit activity in the area and the potential for activity based on surrounding land uses and development patterns)	Based on the presence of sidewalks on all approaches to the intersection, the residential land uses to the west (existing) and east (future), and the commercial properties surrounding the intersection, pedestrian and bicycle traffic is expected to be significant. No transit routes exist on either the mainline or sidestreet.				

Major Street Information								
Route #:	535	Route Name(s)	Kissimmee Vineland Road			Milepost	0.704	
Existing Control Type	Signal		Existing AADT	93,500	Design Year AADT	50,250		
Design Vehicle	Florida Interstate Semitrailer (WB-62FL)		Control Vehicle	Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification			Urban Minor Arterial		Design Speed (mph)	50		
Secondary Functional Classification (if app.)					Target Speed (mph) [if app.]			
Approach #1	Direction	Northbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along	One side of the approach	Left-Turn	2				
	Crosswalk on Approach?	No	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	69	Left	101
	Multi-Use Path?	No	Left-Through-Right	0	Through	1,224	Through	1,024
	Scheduled Bus Service?	No	Through-Right	0	Right	140	Right	115
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		9.4%	
Approach #2	Direction	Southbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	160	Left	123
	Multi-Use Path?	No	Left-Through-Right	0	Through	1,158	Through	1,799
	Scheduled Bus Service?	No	Through-Right	1	Right	358	Right	603
	Bus Stop on Approach?	No	Right-Turn	0	Daily Truck %		10.2%	

Minor Street Information										
Route #:		Route Name(s)		Poinciana Boulevard			Milepost (if app.)			
Existing Control Type		Signal		Existing AADT		14,350		Design Year AADT		
Design Vehicle		Florida Interstate Semitrailer (WB-62FL)		Control Vehicle		Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification				Urban Local		Design Speed (mph)		30		
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]				
Approach #1	Direction		Eastbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		Both sides of the approach		Left-Turn		2			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		1		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #2	Direction		Westbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		One side of the approach		Left-Turn		2			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		1		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #3	Direction				Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:				Left-Turn					
	Crosswalk on Approach?				Left-Through				Weekday AM Peak	
	On-Street Bike Facilities?				Through				Left	
	Multi-Use Path?				Left-Through-Right				Through	
	Scheduled Bus Service?				Through-Right				Right	
	Bus Stop on Approach?				Right-Turn				Daily Truck %	

Crash History (Existing Intersections Only)	
<p>Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:</p> <p>101 crashes occurred at this intersection between 2014 and 2018. 43 resulted in injuries, none resulted in fatalities. Of the crashes 8 were Angle crashes, 9 were Left-Turn crashes, and 16 were Sideswipe crashes occurred, indicating that geometry may be a safety issue at this intersection. One pedestrian crash occurred, resulting in injuries.</p>	





Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
Control Strategy	CAP-X Outputs			SPICE Ranking	Strategy to Be Advanced?	Justification
	V/C Ratio		Multimodal Score			
	Weekday AM Peak	Weekday PM Peak				
Two-Way Stop-Controlled	-	-	-	-	No	-
All-Way Stop-Controlled	-	-	-	-	No	-
Signalized Control	0.98	0.76	4.8	2	Yes	Existing control - provides adequate capacity and safety
Roundabout	-	-	-	-	No	-
Median U-Turn	-	-	-	-	No	-
RCUT (Signalized)	0.81	0.70	6.3	3	No	Projected to have significantly more crashes than a signalized intersection.
RCUT (Unsignalized)	-	-	-	-	No	-
Jughandle				-	No	-
Displaced Left-Turn	-	-	-	-	No	-
Continuous Green Tee	-	-	-	-	No	-
Quadrant Roadway	-	-	-		No	-
Partial MUT	0.77	0.65	6.3	1	Yes	Provides capacity and safety improvement over signalized intersection.
Other 2 (Type)						

Resolution					
<i>To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer</i>					
Project Determination		Multiple Viable Alternatives Identified: Continue to Stage 2			
Comments	Analyze Signalized Intersection and Partial MUT in Stage 2.				
DTOE Name		Signature		Date	
DDE Name		Signature		Date	

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Poinciana Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	1016	68	57	4.10%	0.00%
Westbound	0	76	52	186	2.00%	0.00%
Southbound	0	160	1158	358	5.10%	0.00%
Northbound	0	69	1224	140	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions

Summary Report - Page 2 of 2





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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at Poinciana Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction:	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	1016	68	57	4.10%	0.00%
Westbound	0	76	52	186	2.00%	0.00%
Southbound	0	160	1158	358	5.10%	0.00%
Northbound	0	69	1224	140	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 2 of 4

Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<u>FULL</u>	/	2	2	1	/	1	3	0	/	2	2	0	/	2	2	0
Signalized Restricted Crossing U-Turn	<u>N-S</u>	1	2	2	1	2	1	3	1	/	/	/	3	/	/	/	2
Partial Median U-Turn	<u>N-S</u>	2	/	2	1	1	/	3	1	/	2	2	0	/	1	2	0

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 3 of 4

## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1505	<u>0.98</u>	0.98	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	751	<u>0.42</u>	1456	<u>0.81</u>	1359	<u>0.75</u>	971	<u>0.54</u>			0.81	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	632	<u>0.35</u>	961	<u>0.53</u>					1355	<u>0.77</u>	0.77	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 4 of 4

## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				





## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Poinciana Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	520	76	65	4.10%	0.00%
Westbound	0	174	119	243	2.00%	0.00%
Southbound	0	123	1799	603	5.10%	0.00%
Northbound	0	101	1024	115	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





Summary Report - Page 2 of 2

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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at Poinciana Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction:	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	520	76	65	4.10%	0.00%
Westbound	0	174	119	243	2.00%	0.00%
Southbound	0	123	1799	603	5.10%	0.00%
Northbound	0	101	1024	115	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 2 of 4

Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<a href="#">FULL</a>	/	2	2	1	/	1	3	1	/	2	2	0	/	2	2	0
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1	2	2	1	2	1	3	1	/	/	/	3	/	/	/	2
Partial Median U-Turn	<a href="#">N-S</a>	2	/	2	1	1	/	3	1	/	2	2	0	/	1	2	0

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R



# Capacity Analysis for Planning of Junctions

Detailed Report - Page 3 of 4

## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1158	<u>0.76</u>	0.76	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1257	<u>0.70</u>	1037	<u>0.58</u>	1128	<u>0.63</u>	1158	<u>0.64</u>			0.70	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	951	<u>0.53</u>	810	<u>0.45</u>					1143	<u>0.65</u>	0.65	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 4 of 4

## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				

## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

Federal Highway Administration (FHWA)								
Safety Performance for Intersection Control Evaluation Tool								
Results								
Summary of crash prediction results for each alternative								
Project Information								
Project Name:	SR 535 Concept Development Study			Intersection Type		At-Grade Intersections		
Intersection:	SR 535 at Poinciana Boulevard			Opening Year		2025		
Agency:	FDOT			Design Year		2035		
Project Reference:	405854-1			Facility Type		On Urban and Suburban Arterial		
City:	Osceola County			Number of Legs		4-leg		
State:	Florida			1-Way/2-Way		2-way Intersecting 2-way		
Date:	10/11/2021			# of Major Street Lanes (both directions)		5 or fewer		
Analyst:	Amanda Johnson			Major Street Approach Speed		Less than 55 mph		
Crash Prediction Summary								
Control Strategy		Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal		Total	19.89	21.43	227.24	3	Yes	Calibrated SPF
		Fatal & Injury	7.73	8.35	88.41			
Median U-Turn (MUT)		Total	16.90	18.22	193.15	1	N/A	CMF
		Fatal & Injury	5.41	5.84	61.89			
Signalized RCUT		Total	31.25	34.55	361.83	2	No	Uncalibrated SPF
		Fatal & Injury	7.48	8.41	87.36			

Attachment C  
SR 535 at Polynesian Isle Boulevard

# Florida Department of Transportation

## Intersection Control Evaluation (ICE) Form

### Stage 1: Screening

Intersection Control Evaluation Form 750-010-003

To fulfill the requirements of Stage 1 (Screening) of FDOT's ICE procedures, complete the following form and append all supporting documentation. Completed forms can be submitted to the District Traffic Operations Engineer (DTOE) and District Design Engineer (DDE) for the project's approval.

Project Name	SR 535 Concept Development Study		FDOT Project #	405854-1	
Submitted By	VHB	Agency/Company	FDOT	Date	3/7/2022
Email	<a href="mailto:kfreeman@vhb.com">kfreeman@vhb.com</a>	FDOT District	District 5	County	Osceola
Project Locality (City/Town/Village)	Kissimmee		Project Type	Corridor Improvement Project	
Project Funding Source	Federal	FDOT Context Classification	C3C - Suburban Commercial		
Project Purpose (What is the catalyst for this project and why is it being undertaken?)	This Concept Development Study is being conducted in parallel with the FM 437174-2 PD&E Study for SR 535. It's purpose is to identify short term/interim improvements that can be included with the 3R project that is planned to go to design in the future. The ongoing PD&E study will identify the long term build condition for the corridor.				
Project Setting Description (Describe the area surrounding the intersection)	The land in the northwest, southwest, and southeast quadrants of the intersection is fully commercially developed, with residential land uses behind the commercial properties on the west side of the intersection. The land in the northwest quadrant is vacant.				
Multimodal Context (Describe the pedestrian, bicycle, and transit activity in the area and the potential for activity based on surrounding land uses and development patterns)	Based on the presence of sidewalks on all approaches to the intersection, the residential land uses to the west, and the commercial properties surrounding the intersection, pedestrian and bicycle traffic is expected to be significant. No transit routes exist on either the mainline or sidestreet.				

Major Street Information								
Route #:	535	Route Name(s)	Kissimmee Vineland Road		Milepost	1.061		
Existing Control Type	Signal		Existing AADT	55,000	Design Year AADT	59,000		
Design Vehicle	Florida Interstate Semitrailer (WB-62FL)		Control Vehicle	Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification			Urban Minor Arterial		Design Speed (mph)	50		
Secondary Functional Classification (if app.)					Target Speed (mph) [if app.]	45		
Approach #1	Direction	Northbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along	Both sides of the approach	Left-Turn	2				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	124	Left	175
	Multi-Use Path?	No	Left-Through-Right	0	Through	1,997	Through	1,574
	Scheduled Bus Service?	No	Through-Right	0	Right	160	Right	67
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		10.2%	
Approach #2	Direction	Southbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	No	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	89	Left	134
	Multi-Use Path?	No	Left-Through-Right	0	Through	1,485	Through	2,180
	Scheduled Bus Service?	No	Through-Right	0	Right	273	Right	371
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		4.7%	

Minor Street Information										
Route #:		Route Name(s)		Polynesian Isle Boulevard			Milepost (if app.)			
Existing Control Type		Signal		Existing AADT		8,150		Design Year AADT		
Design Vehicle		Florida Interstate Semitrailer (WB-62FL)		Control Vehicle		Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification			Urban Local			Design Speed (mph)		30		
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]				
Approach #1	Direction		Eastbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		Both sides of the approach		Left-Turn		2			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		0		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #2	Direction		Westbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		One side of the approach		Left-Turn		1			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		1		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #3	Direction				Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:				Left-Turn					
	Crosswalk on Approach?				Left-Through				Weekday AM Peak	
	On-Street Bike Facilities?				Through				Left	
	Multi-Use Path?				Left-Through-Right				Through	
	Scheduled Bus Service?				Through-Right				Right	
	Bus Stop on Approach?				Right-Turn				Daily Truck %	

Crash History (Existing Intersections Only)	
Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:	
95 crashes occurred at this intersection between 2014 and 2018. 48 resulted in injuries, none resulted in fatalities. Of the crashes 7 were Angle crashes, 4 were Left-Turn crashes, and 10 were Sideswipe crashes occurred, indicating that geometry is not a safety issue at this intersection. One pedestrian crash occurred, resulting in injuries.	

Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
Control Strategy	CAP-X Outputs			SPICE Ranking	Strategy to Be Advanced?	Justification
	V/C Ratio		Multimodal Score			
	Weekday AM Peak	Weekday PM Peak				
Two-Way Stop-Controlled	-	-	-	-	No	-
All-Way Stop-Controlled	-	-	-	-	No	-
Signalized Control	1.02	0.94	4.8	3	Yes	Existing control.
Roundabout	-	-	-	-	No	-
Median U-Turn	-	-	-	-	No	-
RCUT (Signalized)	0.83	0.71	6.3	2	No	Projected to have significantly higher crash volumes than signalized intersection.
RCUT (Unsignalized)	-	-	-	-	No	-
Jughandle				-	No	-
Displaced Left-Turn	-	-	-	-	No	-
Continuous Green Tee	-	-	-	-	No	-
Quadrant Roadway	-	-	-		No	-
Partial MUT	0.92	0.76	6.3	1	Yes	Provides capacity and safety improvement over signalized intersection.
Other 2 (Type)						





Resolution					
<i>To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer</i>					
Project Determination		Multiple Viable Alternatives Identified: Continue to Stage 2			
Comments	Analyze Signalized Intersection and Partial MUT in Stage 2.				
DTOE Name		Signature		Date	
DDE Name		Signature		Date	



# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Polynesian Isle Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	379	38	204	2.80%	0.00%
Westbound	0	66	97	245	2.80%	0.00%
Southbound	0	89	1485	273	4.70%	0.00%
Northbound	0	124	1997	160	5.10%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





Summary Report - Page 2 of 2

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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at Polynesian Isle Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction:	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	379	38	204	2.80%	0.00%
Westbound	0	66	97	245	2.80%	0.00%
Southbound	0	89	1485	273	4.70%	0.00%
Northbound	0	124	1997	160	5.10%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 2 of 4

Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<u>FULL</u>	/	2	2	1	/	1	3	1	/	2	1	0	/	1	1	1
Signalized Restricted Crossing U-Turn	<u>N-S</u>	1	2	2	1	2	1	3	1	/	/	/	2	/	/	/	2
Partial Median U-Turn	<u>N-S</u>	2	/	2	1	1	/	3	1	/	2	1	1	/	1	1	1

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 3 of 4

## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1557	<u>1.02</u>	1.02	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	855	<u>0.47</u>	1467	<u>0.81</u>	1492	<u>0.83</u>	917	<u>0.51</u>			0.83	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	726	<u>0.40</u>	1315	<u>0.73</u>					1616	<u>0.92</u>	0.92	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 4 of 4

## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				





## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at Polynesian Isle Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	290	89	204	2.80%	0.00%
Westbound	0	132	130	170	2.80%	0.00%
Southbound	0	134	2180	371	4.70%	0.00%
Northbound	0	175	1615	67	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00	2.00	
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800	1800	
		3-phase signal		Suggested = 1750	1750	
		4-phase signal		Suggested = 1700	1700	

## Capacity Analysis for Planning of Junctions

Summary Report - Page 2 of 2





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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at Polynesian Isle Blvd
Project Number:	405854-1
Location:	Osceola County, FL
Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction:	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	290	89	204	2.80%	0.00%
Westbound	0	132	130	170	2.80%	0.00%
Southbound	0	134	2180	371	4.70%	0.00%
Northbound	0	175	1615	67	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 2 of 4

Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<a href="#">FULL</a>	/	2	2	1	/	1	3	1	/	2	1	0	/	1	1	1
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1	2	2	1	2	1	3	1	/	/	/	2	/	/	/	2
Partial Median U-Turn	<a href="#">N-S</a>	2	/	2	1	1	/	3	1	/	2	1	1	/	1	1	1

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 3 of 4

## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1445	<u>0.94</u>	0.94	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1274	<u>0.71</u>	1215	<u>0.68</u>	1256	<u>0.70</u>	1158	<u>0.64</u>			0.71	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	1051	<u>0.58</u>	1147	<u>0.64</u>					1327	<u>0.76</u>	0.76	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 4 of 4

## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				

## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

Federal Highway Administration (FHWA)							
Safety Performance for Intersection Control Evaluation Tool							
Results							
Summary of crash prediction results for each alternative							
Project Information							
Project Name:	SR 535 Cocept Development Study			Intersection Type		At-Grade Intersections	
Intersection:	SR 535 at Polynesian Isle Blvd			Opening Year		2025	
Agency:	FDOT			Design Year		2035	
Project Reference:	405854-1			Facility Type		On Urban and Suburban Arterial	
City:	Osceola County			Number of Legs		4-leg	
State:	Florida			1-Way/2-Way		2-way Intersecting 2-way	
Date:	10/11/2021			# of Major Street Lanes (both directions)		5 or fewer	
Analyst:	Amanda Johnson			Major Street Approach Speed		Less than 55 mph	
Crash Prediction Summary							
Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal	Total	19.45	22.12	228.88	3	Yes	Calibrated SPF
	Fatal & Injury	9.06	10.30	106.56			
Median U-Turn (MUT)	Total	16.53	18.80	194.55	1	N/A	CMF
	Fatal & Injury	6.34	7.21	74.59			
Signalized RCUT	Total	32.67	40.04	400.40	2	No	Uncalibrated SPF
	Fatal & Injury	7.43	9.61	93.81			

Attachment D  
SR 535 at LBV Factory Stores Drive

# Florida Department of Transportation

## Intersection Control Evaluation (ICE) Form

### Stage 1: Screening

Intersection Control Evaluation Form 750-010-003

To fulfill the requirements of Stage 1 (Screening) of FDOT's ICE procedures, complete the following form and append all supporting documentation. Completed forms can be submitted to the District Traffic Operations Engineer (DTOE) and District Design Engineer (DDE) for the project's approval.

Project Name	SR 535 Concept Development Study		FDOT Project #	405854-1	
Submitted By	VHB	Agency/Company	FDOT	Date	3/7/2022
Email	<a href="mailto:kfreeman@vhb.com">kfreeman@vhb.com</a>	FDOT District	District 5	County	Orange
Project Locality (City/Town/Village)	Kissimmee		Project Type	Corridor Improvement Project	
Project Funding Source	Federal	FDOT Context Classification	C3C - Suburban Commercial		
Project Purpose (What is the catalyst for this project and why is it being undertaken?)	This Concept Development Study is being conducted in parallel with the FM 437174-2 PD&E Study for SR 535. It's purpose is to identify short term/interim improvements that can be included with the 3R project that is planned to go to design in the future. The ongoing PD&E study will identify the long term build condition for the corridor.				
Project Setting Description (Describe the area surrounding the intersection)	The land in the southeast quadrant is fully commercially developed, and a gas station is located in the southwest quadrant of the intersection. Apart from this, the land surrounding the intersection is undeveloped.				
Multimodal Context (Describe the pedestrian, bicycle, and transit activity in the area and the potential for activity based on surrounding land uses and development patterns)	The nearest residences are over 0.5 miles away, and vehicular travel is the primary mode of transportation intended to access the commercial area at this intersection, therefore, pedestrian and bicycle traffic is not expected to be significant. No transit routes exist on either the mainline or sidestreet.				

Major Street Information									
Route #:	535	Route Name(s)	Kissimmee Vineland Road			Milepost	0.247		
Existing Control Type	Signal		Existing AADT	52,000	Design Year AADT	59,500			
Design Vehicle	Florida Interstate Semitrailer (WB-62FL)		Control Vehicle	Florida Interstate Semitrailer (WB-62FL)					
Primary Functional Classification			Urban Minor Arterial			Design Speed (mph)		50	
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]		45	
Approach #1	Direction	Northbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along	Both sides of the approach		Left-Turn	1				
	Crosswalk on Approach?	Yes		Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	Yes		Through	2	Left	9	Left	8
	Multi-Use Path?	No		Left-Through-Right	0	Through	2,381	Through	1,883
	Scheduled Bus Service?	No		Through-Right	0	Right	154	Right	124
	Bus Stop on Approach?	No		Right-Turn	1	Daily Truck %		9.4%	
Approach #2	Direction	Southbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	One side of the approach		Left-Turn	2				
	Crosswalk on Approach?	No		Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	Yes		Through	2	Left	74	Left	254
	Multi-Use Path?	No		Left-Through-Right	0	Through	1,667	Through	2,493
	Scheduled Bus Service?	No		Through-Right	0	Right	29	Right	55
	Bus Stop on Approach?	No		Right-Turn	1	Daily Truck %		8.4%	

Minor Street Information										
Route #:		Route Name(s)		LBV Factory Stores Drive			Milepost (if app.)			
Existing Control Type		Signal		Existing AADT		2,700		Design Year AADT		
Design Vehicle		Florida Interstate Semitrailer (WB-62FL)		Control Vehicle		Florida Interstate Semitrailer (WB-62FL)				
Primary Functional Classification				Urban Local		Design Speed (mph)		25		
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]				
Approach #1	Direction		Eastbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		Both sides of the approach		Left-Turn		1			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		0		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #2	Direction		Westbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:		One side of the approach		Left-Turn		1			
	Crosswalk on Approach?		Yes		Left-Through		0		Weekday AM Peak	
	On-Street Bike Facilities?		No		Through		0		Left	
	Multi-Use Path?		No		Left-Through-Right		0		Through	
	Scheduled Bus Service?		No		Through-Right		1		Right	
	Bus Stop on Approach?		No		Right-Turn		0		Daily Truck %	
Approach #3	Direction				Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:				Left-Turn					
	Crosswalk on Approach?				Left-Through				Weekday AM Peak	
	On-Street Bike Facilities?				Through				Left	
	Multi-Use Path?				Left-Through-Right				Through	
	Scheduled Bus Service?				Through-Right				Right	
	Bus Stop on Approach?				Right-Turn				Daily Truck %	

Crash History (Existing Intersections Only)	
<p>Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:</p> <p>57 crashes occurred at this intersection between 2014 and 2018. 28 resulted in injuries, none resulted in fatalities. Only one Angle crash and 6 sideswipe crashes occurred, indicating that geometry is not a safety issue at this intersection. One pedestrian crash occurred, resulting in injuries.</p>	







Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
Control Strategy	CAP-X Outputs			SPICE Ranking	Strategy to Be Advanced?	Justification
	V/C Ratio		Multimodal Score			
	Weekday AM Peak	Weekday PM Peak				
Two-Way Stop-Controlled	-	-	-	-	No	-
All-Way Stop-Controlled	-	-	-	-	No	-
Signalized Control	0.99	1.01	4.8	3	Yes	Existing control, provides adequate operations and safety performance.
Roundabout	-	-	-	-	No	-
Median U-Turn	-	-	-	-	No	-
RCUT (Signalized)	0.90	0.81	6.3	2	Yes	Provides capacity and safety improvement over signalized intersection.
RCUT (Unsignalized)	-	-	-	-	No	-
Jughandle				-	No	-
Displaced Left-Turn	-	-	-	-	No	-
Continuous Green Tee	-	-	-	-	No	-
Quadrant Roadway	-	-	-		No	-
Partial MUT	0.82	0.77	6.3	1	Yes	Provides capacity and safety improvement over signalized intersection.
Other 2 (Type)						

Resolution					
<i>To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer</i>					
Project Determination		Multiple Viable Alternatives Identified: Continue to Stage 2			
Comments	Analyze Signalized Intersection, Signalized RCUT, and Partial MUT in Stage 2.				
DTOE Name		Signature		Date	
DDE Name		Signature		Date	

# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at LBV Factory Stores Dr
Project Number:	405854-1
Location:	Orange County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	12	3	6	2.15%	0.00%
Westbound	0	143	5	162	2.15%	0.00%
Southbound	0	74	1667	29	4.20%	0.00%
Northbound	0	9	2381	154	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





Summary Report - Page 2 of 2

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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at LBV Factory Stores Dr
Project Number:	405854-1
Location:	Orange County, FL
Date:	2035 AM
Number of Intersection Legs:	4
Major Street Direction:	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	12	3	6	2.15%	0.00%
Westbound	0	143	5	162	2.15%	0.00%
Southbound	0	74	1667	29	4.20%	0.00%
Northbound	0	9	2381	154	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 2 of 4

Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<u>FULL</u>	/	1	2	1	/	1	2	1	/	1	1	0	/	1	1	0
Signalized Restricted Crossing U-Turn	<u>N-S</u>	1	1	2	1	1	1	2	1	/	/	/	1	/	/	/	1
Partial Median U-Turn	<u>N-S</u>	1	/	2	1	1	/	2	1	/	1	1	0	/	1	1	0

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

Detailed Report - Page 3 of 4

## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1514	<u>0.89</u>	0.89	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1111	<u>0.62</u>	1350	<u>0.75</u>	1624	<u>0.90</u>	966	<u>0.54</u>			0.90	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	933	<u>0.52</u>	1428	<u>0.79</u>					1434	<u>0.82</u>	0.82	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

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## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				

## Results for Interchanges





TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				



# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 535 at LBV Factory Stores Dr
Project Number:	405854-1
Location:	Orange County, FL
Date:	2035 PM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	11	1	13	2.15%	0.00%
Westbound	0	241	2	144	2.15%	0.00%
Southbound	0	254	2493	55	4.20%	0.00%
Northbound	0	8	1883	124	4.70%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	0.80	0.95		0.85		
Truck to PCE Factor				Suggested = 2.00		2.00
FDOT Context Zone		C3C-Suburban Commercial				
Critical Lane Volume Threshold		2-phase signal		Suggested = 1800		1800
		3-phase signal		Suggested = 1750		1750
		4-phase signal		Suggested = 1700		1700

## Capacity Analysis for Planning of Junctions





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# Capacity Analysis for Planning of Junctions

Detailed Report - Page 1 of 4

Project Name:	SR 535 at LBV Factory Stores Dr
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		3-phase signal		Suggested = 1750		1750
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# Capacity Analysis for Planning of Junctions

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Number of Lanes for Non-roundabout Intersections																	
TYPE OF INTERSECTION	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R
Traffic Signal	<a href="#">FULL</a>	/	1	2	1	/	1	3	1	/	1	1	0	/	1	1	0
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1	1	2	1	1	1	3	1	/	/	/	1	/	/	/	1
Partial Median U-Turn	<a href="#">N-S</a>	1	/	2	1	1	/	3	1	/	1	1	0	/	1	1	0

Number of Lanes for Interchanges																	
TYPE OF INTERCHANGE	Sheet	Northbound				Southbound				Eastbound				Westbound			
		U	L	T	R	U	L	T	R	U	L	T	R	U	L	T	R

# Capacity Analysis for Planning of Junctions

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## Results for Non-roundabout Intersections

TYPE OF INTERSECTION	Sheet	Zone 1 (North)		Zone 2 (South)		Zone 3 (East)		Zone 4 (West)		Zone 5 (Center)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				
Traffic Signal	<a href="#">FULL</a>									1553	<a href="#">1.01</a>	1.01	Fair	Fair	Good
Signalized Restricted Crossing U-Turn	<a href="#">N-S</a>	1283	<a href="#">0.71</a>	1070	<a href="#">0.59</a>	1456	<a href="#">0.81</a>	977	<a href="#">0.54</a>			0.81	Good	Good	Fair
Partial Median U-Turn	<a href="#">N-S</a>	983	<a href="#">0.55</a>	1386	<a href="#">0.77</a>					1263	<a href="#">0.72</a>	0.77	Good	Good	Fair

# Capacity Analysis for Planning of Junctions

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## Results for Roundabouts

TYPE OF ROUNDABOUT	Zone 1 (North)			Zone 3 (East)			Zone 2 (South)			Zone 4 (West)			Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3	Lane 1	Lane 2	Lane 3				

## Results for Interchanges

TYPE OF INTERCHANGE	Sheet	Zone 1 (Rt Mrg)		Zone 2 (Lt Mrg)		Zone 3 (Ctr. 1)		Zone 4 (Ctr. 2)		Zone 5 (Lt Mrg)		Zone 6 (Rt Mrg)		Overall v/c Ratio	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
		CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C	CLV	V/C				

Federal Highway Administration (FHWA)								
Safety Performance for Intersection Control Evaluation Tool								
Results								
Summary of crash prediction results for each alternative								
Project Information								
Project Name:	SR 535 Concept Development Study			Intersection Type		At-Grade Intersections		
Intersection:	SR 535 at LBV Factory Stores Drive			Opening Year		2025		
Agency:	FDOT			Design Year		2035		
Project Reference:	405854-1			Facility Type		On Urban and Suburban Arterial		
City:	Orange County			Number of Legs		4-leg		
State:	Florida			1-Way/2-Way		2-way Intersecting 2-way		
Date:	10/11/2021			# of Major Street Lanes (both directions)		5 or fewer		
Analyst:	Amanda Johnson			Major Street Approach Speed		Less than 55 mph		
Crash Prediction Summary								
Control Strategy		Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal		Total	12.17	15.95	155.14	3	Yes	Calibrated SPF
		Fatal & Injury	5.73	7.53	73.16			
Median U-Turn (MUT)		Total	10.34	13.56	131.87	2	N/A	CMF
		Fatal & Injury	4.01	5.27	51.21			
Signalized RCUT		Total	18.29	27.57	252.90	1	Yes	Uncalibrated SPF
		Fatal & Injury	3.32	5.53	48.74			