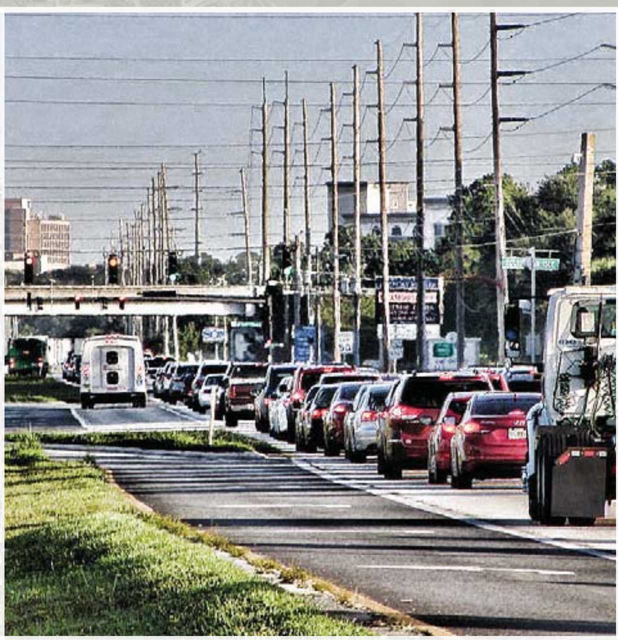
CORRIDOR
SR 535
PLANNING STUDY

Final Report

US 192 to I-4 | November 2017

FM 437174-1 & 437175-1



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FDOT

FINAL REPORT

SR 535 Corridor Planning Study

From US 192 to Vineland Avenue
FM 437174-1 & 437175-1

Orange and Osceola Counties, Florida

Prepared For:
Florida Department of Transportation, District Five
719 South Woodland Boulevard
DeLand, FL 32720

November 2017

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Report Purpose

This document serves as the final report for the SR 535 Corridor Planning Study. This report provides an overview of the study, defines the purpose and need, analyzes existing conditions and future no build/build conditions, and reviews the future alternative development and analysis. This final report will provide potential improvement alternatives for future phases of project development (i.e. Concept Development or a Project Development and Environment (PD&E) Study).

Introduction

Project Description

The Florida Department of Transportation (FDOT) District Five conducted a Corridor Planning Study to evaluate the future needs of SR 535 between US 192 and I-4/Vineland Avenue in northwest Osceola County/southwest Orange County. The purpose of the Corridor Planning Study was to identify and evaluate multi-modal alternatives that will be carried forward into future phases of project development.

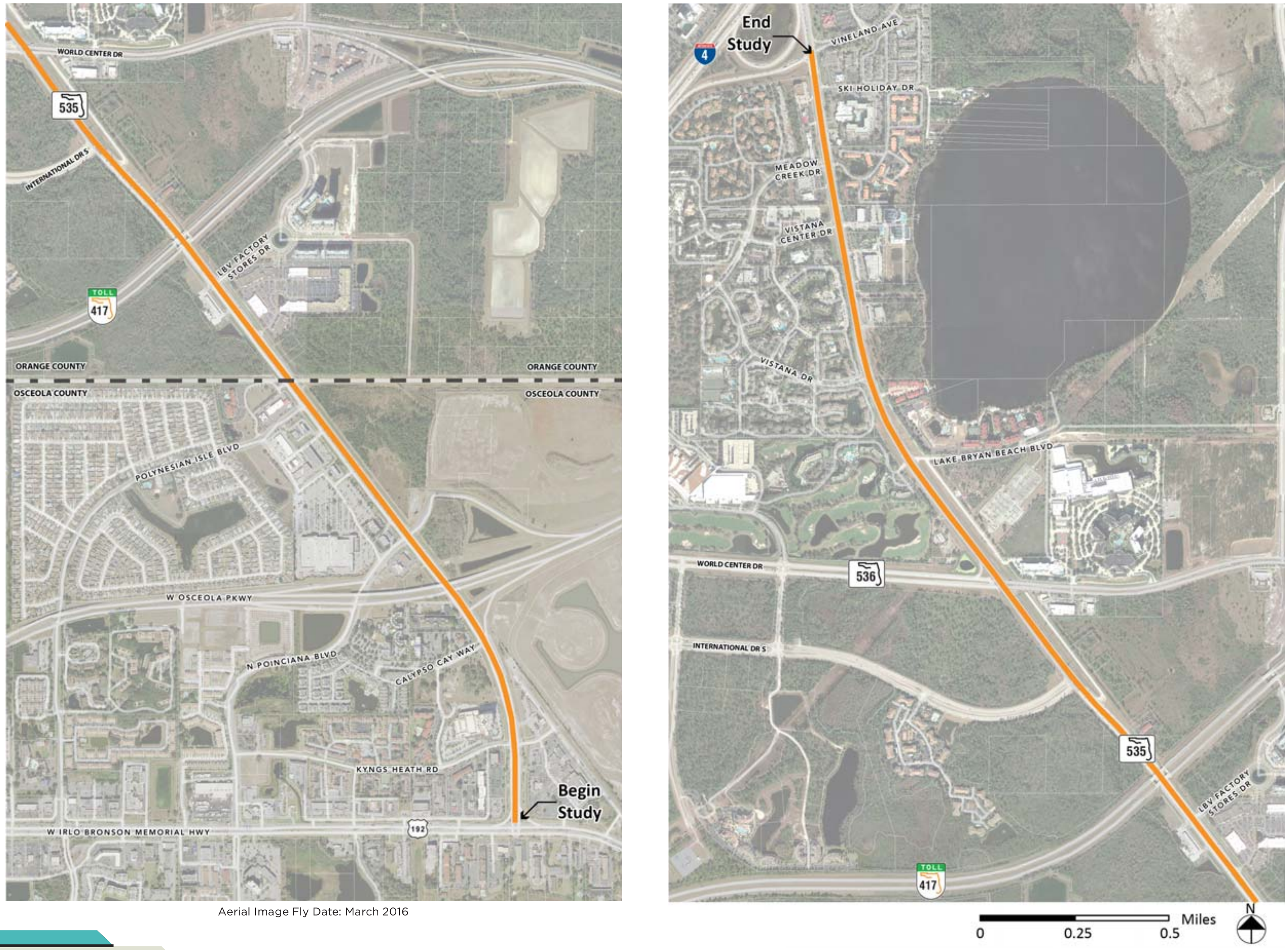
The Corridor Planning Study was a precursor to the SR 535 PD&E Study, which is scheduled in MetroPlan Orlando's Transportation Improvement Program (TIP) for fiscal year 2019/20. The long term planning alternative from MetroPlan Orlando's Long Range Transportation Plan (LRTP) Cost Feasible Report identified SR 535 to be widened from four to six lanes from US 192 to SR 536 and widened from six lanes to eight lanes from SR 536 to Vineland Avenue. Due to policy constraints from the local jurisdictions, the eight lane widening north of SR 536 was removed from consideration for this study. Applicable pages from the TIP and LRTP are located in **Appendix A**.

Study Area Description

SR 535 from US 192 to Vineland Avenue is classified as an urban minor arterial oriented southeast to northwest in unincorporated Osceola and Orange Counties. There are two distinct clusters of developed parcels at either end of the study corridor separated by large areas of vacant land or conservation open spaces. The southern cluster from US 192 to the Orange County/Osceola County Line is characterized by strip suburban retail centers and hotels on the western side of the study corridor. The majority of land between the Orange County/Osceola County Line and SR 536/World Center Drive is vacant or marked as conservation or open space. Only a few commercial parcels like the Lake Buena Vista Factory Stores and a RaceTrac gas station are developed within this segment. The northern cluster from SR 536/World Center Drive to Vineland Avenue is characterized by hotels, resorts, multi-family vacation rental apartment complexes, and retail development. The SR 535 study corridor is displayed in **Figure 1**.

Figure No. 1
Study Corridor

Study Corridor
County Line



Aerial Image Fly Date: March 2016

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CORRIDOR SR 535 PLANNING STUDY

Purpose and Need

Purpose

The purpose of the SR 535 Corridor Planning Study is to develop and evaluate alternatives to accommodate future traffic demand and improve bicycle, pedestrian, and transit connectivity.

Need

The need for the project is based on three primary factors: transportation demand, modal interrelationships, and safety:

Transportation Demand

Six of the eight segments along SR 535 are operating at level of service (LOS) E or F during the weekday peak hours, based on the 2016 existing conditions analysis and field review observations. The Annual Average Daily Traffic (AADT) volumes in 2016 range from a low of 26,900 vehicles per day (vpd) in the four lane segment to a high of 49,700 in the six lane segment of SR 535. The projected future year 2040 AADT are anticipated to range from 42,000 vpd in the four lane segment to 70,000 vpd in the six lane segment of SR 535. 2040 demand is projected to be approximately 10,000 to 25,000 vpd higher than the roadway capacities.

Modal Interrelationships

Pedestrian facilities are missing on both the east and west sides of SR 535 between Kyngs Heath Road and Vistana Drive. There are no bicycle facilities present along the entire length of SR 535 within the study limits. Large areas of vacant land separate the two developed areas of the study corridor. As vacant land continues to develop, the need for pedestrian, bicycle, and transit facilities along the SR 535 corridor from Kyngs Heath Road to just south of Vistana Drive to accommodate all modes of transportation will increase.

Safety

There were a total of 1,142 reported crashes between 2010 and 2014, 521 of which (46 percent) resulted in at least one injury and seven (7) of which resulted in at least one fatality. The highest crash type observed was rear end, comprising 61 percent of the total crashes, indicating congestion. Angle (11 percent) and sideswipe (8 percent) were the second and third highest crash types. Crashes during non-daylight conditions accounted for 42 percent of the overall crashes.

Of the 1,142 reported crashed between 2010 and 2014, there were 13 pedestrian crashes and five (5) bicycle crashes during the analysis period and of the seven total fatal crashes, four involved a pedestrian or bicycle. Six (6) of the 18 pedestrian/bicycle crashes occurred when pedestrians/bicyclists were walking on the paved shoulder in areas where no sidewalks are present, with two of those crashes resulting in a fatality. Four (4) pedestrian crashes occurred within marked crosswalks at Meadow Creek Drive, one of which resulted in a fatality. Analysis of the crash data indicates a need for complete and enhanced pedestrian/bicycle facilities along the study corridor. More detail on the safety data presented in this section can be found in the *SR 535 Existing Conditions Summary* located in **Appendix B**.

Developments of Regional Impact (DRIs) and Future Roadway Improvements

APPROVED DRIS

Figure 2 represents a map of the approved DRIs within the vicinity of the study corridor. The following is the list of DRIs along the corridor and their current status:

- Little England (west of SR 535, between Osceola Parkway and Orange County/Osceola County Line) – This DRI is mostly constructed.
- Legacy Park (Osceola Trace) (east of SR 535, between US 192 and Orange County/Osceola County Line) – land in northwest corner of this DRI (southeast corner of SR 535 and Osceola Parkway) is currently under construction. Final completion of this DRI is planned for 2017.
- World Gateway (west of SR 535, between Orange County/Osceola County Line and SR 536/World Center Drive) – This DRI has had a few multi-family developments constructed but for the most part is undeveloped land.
- Wind Song (west of SR 535, between SR 536/World Center Drive and the southern end of the Sheraton Vistana Resort property) – This DRI is fully constructed.
- Sierra Land (east of SR 535, between SR 536/World Center Drive and Lake Bryan Beach Boulevard) – This DRI is fully constructed.
- Holiday Inn (east of SR 535, between Meadow Creek Drive and Ski Holiday Drive) – This DRI is fully constructed.
- Little Lake Bryan (east of SR 535, between Ski Holiday Drive and Vineland Avenue) – This DRI is fully constructed.

SR 535/VINELAND AVENUE INTERSECTION IMPROVEMENTS

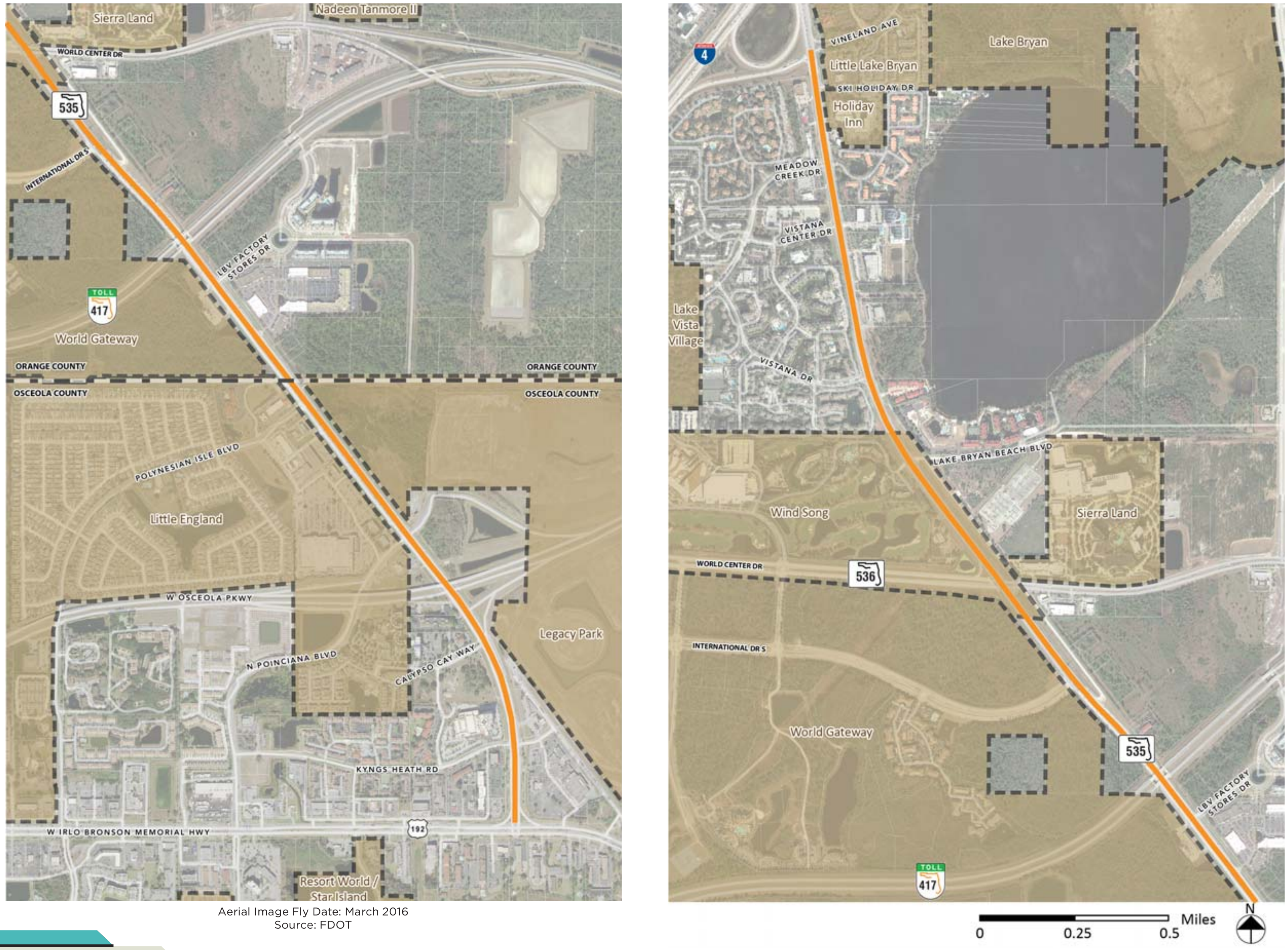
Orange County in coordination with FDOT District 5 will be constructing a second westbound right turn lane at the SR 535/Vineland Avenue intersection along with an auxiliary turn lane to I-4 eastbound. This project is ranked #4 in the Management and Operations Projects Section of the MetroPlan Orlando Prioritized Project List for fiscal year 2019/20 through 2039/40.

I-4 BEYOND THE ULTIMATE (BTU)

As part of the I-4 BtU project, the SR 535/Vineland Avenue intersection is proposed to be improved during the reconstruction of the I-4/SR 535 interchange. The following summarizes the improvements:

Figure No. 2
Developments of Regional Impact

DRI
Study Corridor
County Line



Aerial Image Fly Date: March 2016
Source: FDOT

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- The loop ramp from southbound SR 535 to eastbound I-4 will be removed. This will allow the I-4 eastbound off ramp to SR 535 to be shifted north to better align with Vineland Avenue.
    - The eastbound off ramp will feature triple left turn lanes to go northbound onto SR 535.
    - The eastbound right turn lane to go southbound on SR 535 is being removed from this approach. A new loop ramp will take drivers over the SR 535/Vineland Avenue intersection if they wish to travel southbound on SR 535.
- The southbound through lanes on SR 535 will be grade separated from the SR 535/Vineland Avenue intersection.
- The westbound dual left turn lanes on Vineland Avenue will be grade separated from the SR 535/Vineland Avenue intersection.
- The northbound right turn lane will be converted to a shared through/right turn lane that will feed into the auxiliary turn lane onto I-4 eastbound.

Figure 3 displays the SR 535/Vineland Avenue proposed improvements as part of the I-4 BtU project.

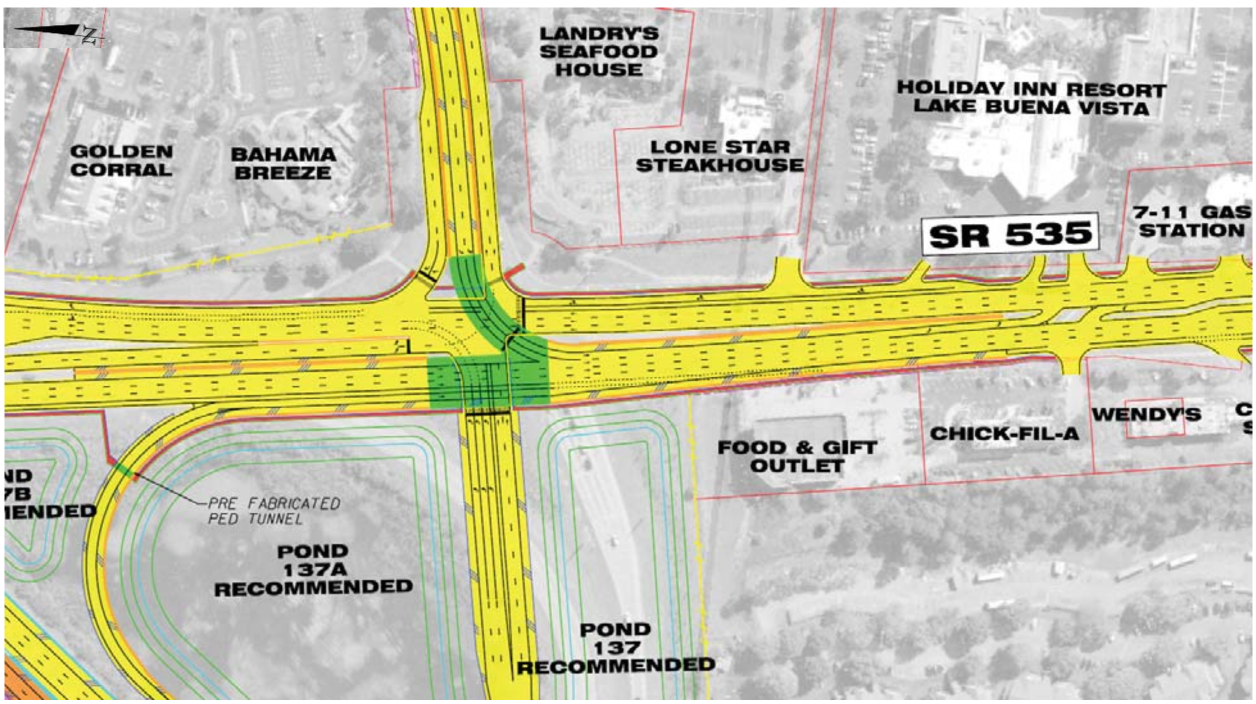


Figure 3: SR 535/Vineland Avenue Proposed Improvements

Existing Environmental, Utility, and Drainage Features

Environmental Features

Figure 4 displays the wetlands along the SR 535 study corridor. Overall there are not many wetlands immediately adjacent to the SR 535 study corridor. A large wetland is located in Orange County around SR 417 on the west side of SR 535. The southern end of a wetland area is located near the SR 535/Poinciana Boulevard intersection just north of Osceola Parkway but is outside of the roadway right-of-way.

Figure 5 shows habitats for threatened and endangered animal species near the SR 535 study corridor. Bird habitats for Scrub Jay and Caracara, as well as lizard habitat for Sand Skink exist within the vicinity of the study corridor. There are two documented locations of Black Bear occurrences in the northern half of SR 535 study area.

Existing Utilities

A Sunshine One Call ticket was requested for SR 535 within the project limits in Orange and Osceola Counties. The Sunshine One Call verified the following utilities along the study corridor:

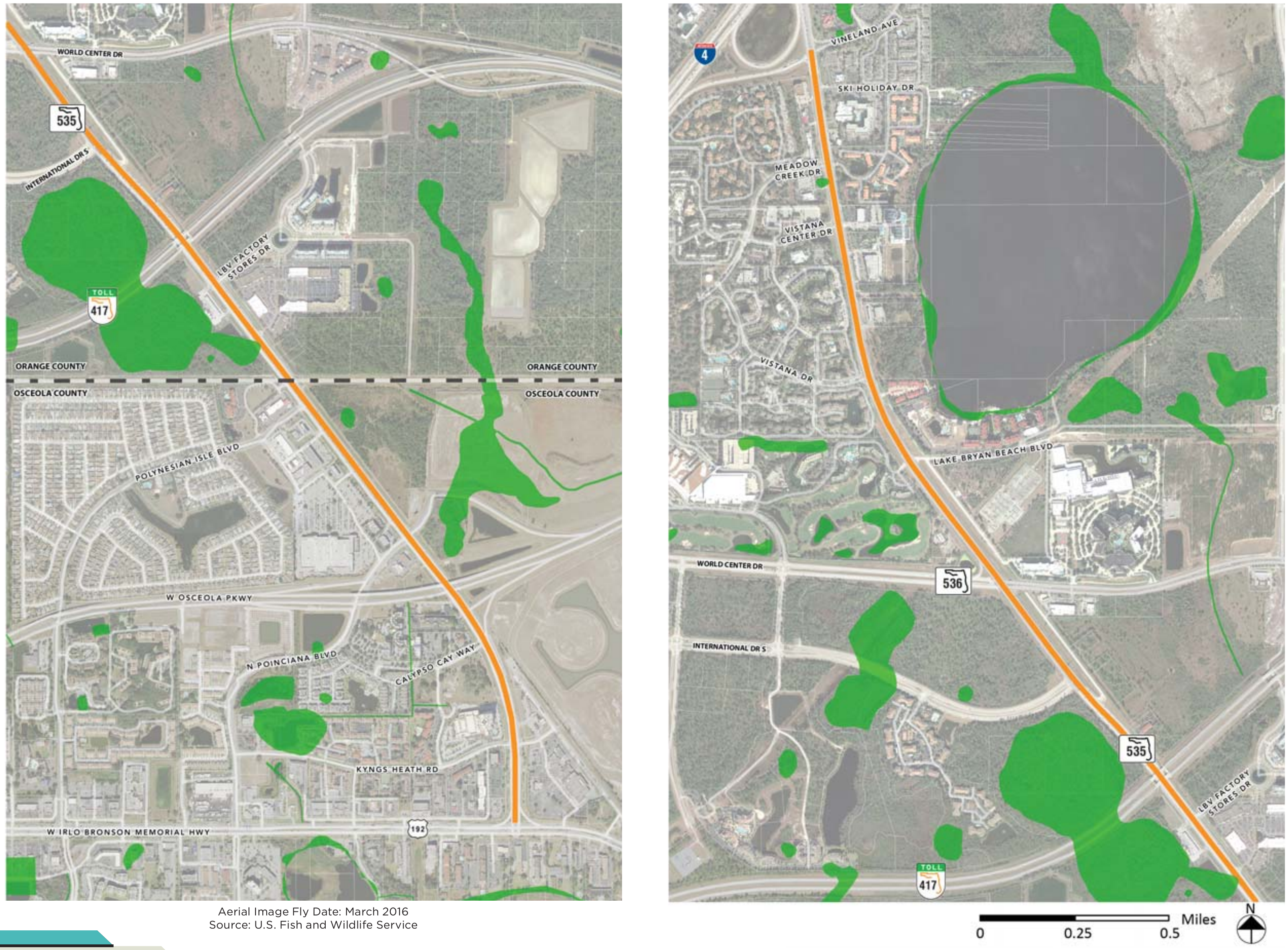
- Communications/Electric;
- Gas Pipeline;
- Fiber CATV and Phone Lines;
- Wastewater and Reclaimed Water;
- Fiber Optic;
- Traffic Signals and Fiber;
- Water;
- Telephone;
- Sewer;
- Oil; and
- Telecom Cable and Fiber.

Existing Drainage Features

The following drainage features are present along the SR 535 study corridor:

- Kyngs Heath Road to Poinciana Boulevard and International Drive to Vistana Drive –
    - Roadside swales and median ditch bottom inlets (DBIs) with underground pipe.
- Poinciana Boulevard to International Drive –
    - Roadside swales; and
    - Medians are open drainage with some east/west culverts that drain under roadway to the roadside.

Figure No. 4
Wetlands



Aerial Image Fly Date: March 2016
Source: U.S. Fish and Wildlife Service

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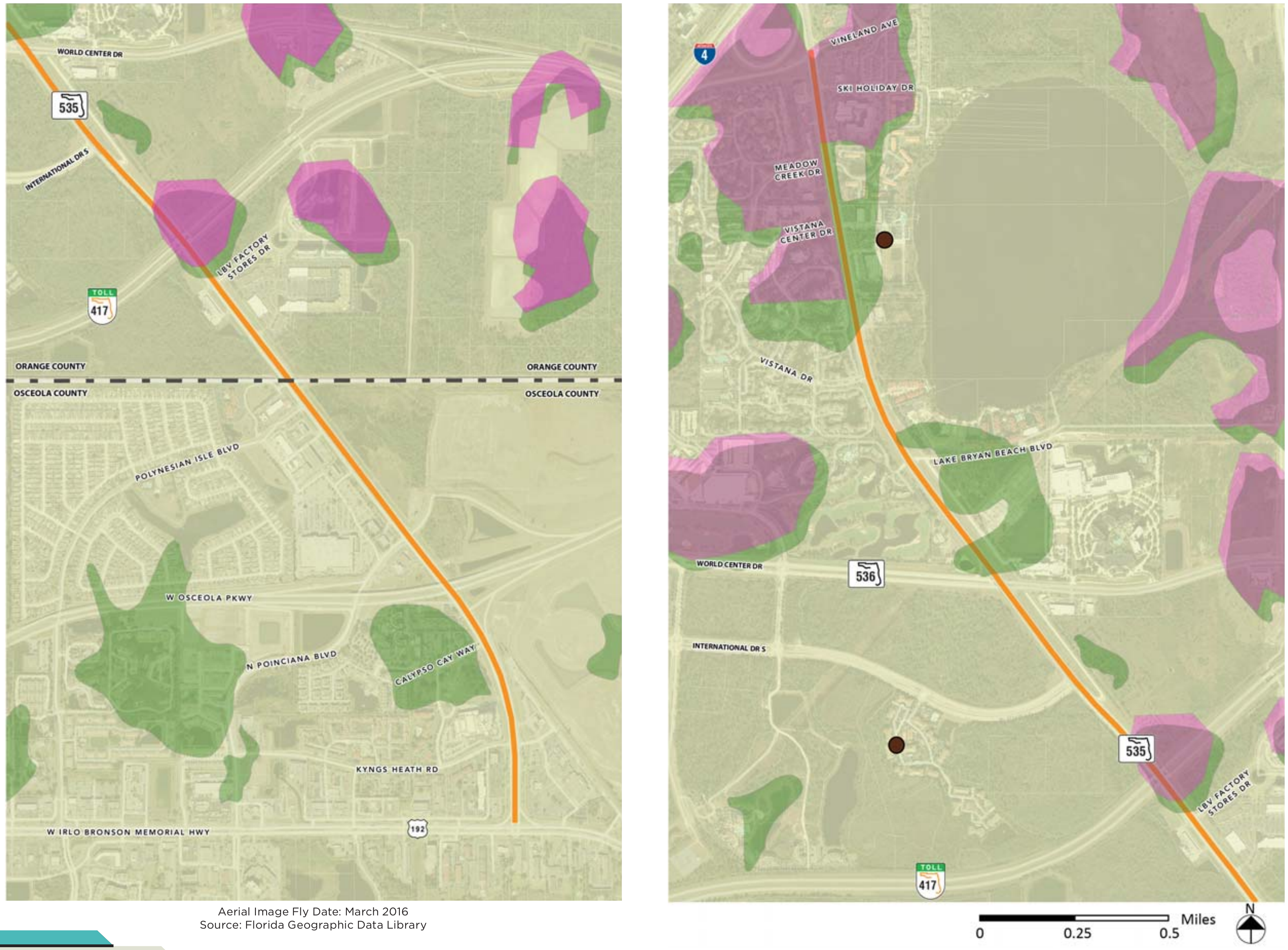
Figure No. 5

Threatened & Endangered Species' Habitat

- Black Bear Occurrences
- Scrub Jay Habitat
- Sand Skink Habitat
- Caracara Habitat
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016
Source: Florida Geographic Data Library

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- International Drive to Vistana Drive –
  - Roadside swales and median ditch bottom inlets (DBIs) with underground pipe.
- Vistana Drive to Vineland Avenue –
  - Curb and gutter with existing pipes roadside and in median.

The study corridor falls within the jurisdiction of the South Florida Water Management District (SFWMD), and is located within the Upper Kissimmee Basin. Lake Kissimmee is an impaired water body within this basin per reports from the SFWMD website. Reedy Creek Improvement District is the closest special drainage district to the study corridor, located directly northwest of the corridor.

Within the Upper Kissimmee Basin, SR 535 lies fully within the Shingle Creek Basin in northwest Osceola County as displayed by the red star on **Figure 6**. In southwest Orange County, SR 535 lies on the border between the Reedy Creek Drainage Basin and the Shingle Creek Basin as show by the red circle on **Figure 7**.

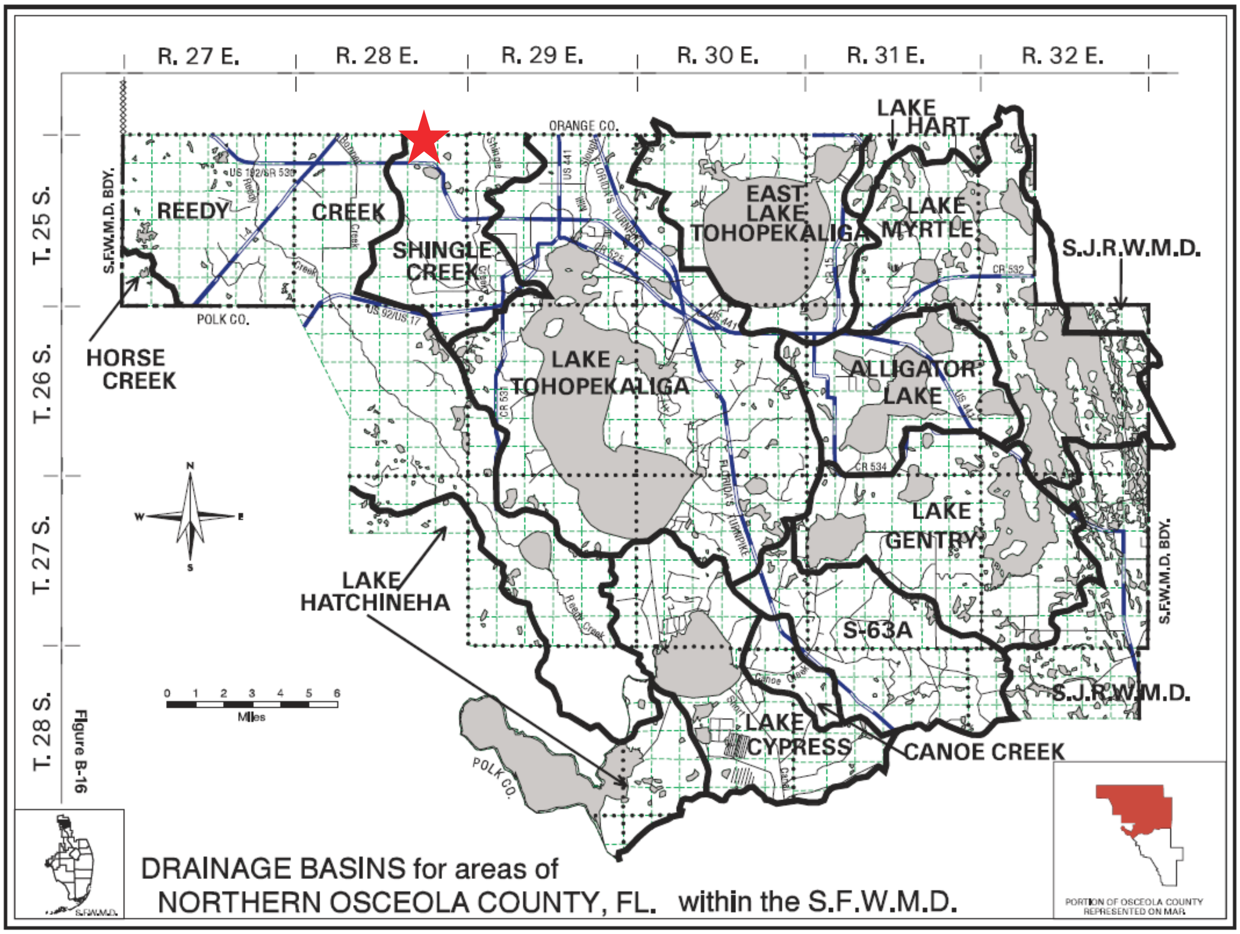


Figure 6: Northwest Osceola County Drainage Basins

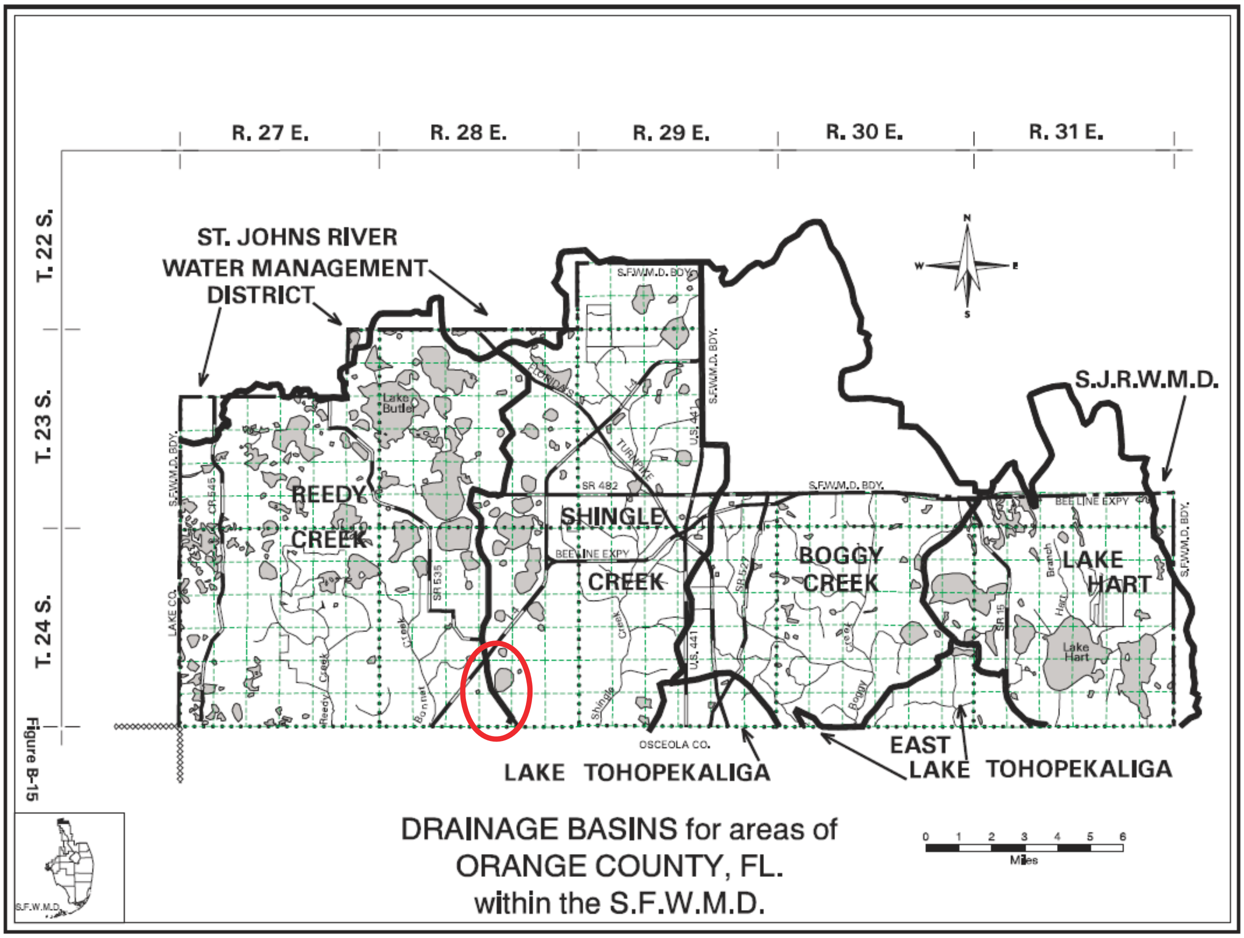


Figure 7: Southwest Orange County Drainage Basins

Existing and Future Traffic Summary

The information presented in this section has been summarized from the *SR 535 Existing Conditions Summary* (**Appendix B**) and the *SR 535 Future Conditions Summary* (**Appendix C**). For more detail on the existing and future no-build analyses, please reference these two reports.

Existing Year Volumes

The classification counts and turning movement counts taken as a part of this study were adjusted using a seasonal adjustment factor, obtained from 2015 Florida Traffic Information (FTI) per FDOT procedures, to estimate 2016 AADT along the segments and turning movement volumes at the intersections. The collected classification counts did not require axle adjustments. These seasonally adjusted AADT's and turning movement volumes were used for the existing conditions analysis. The existing 2016 segment AADT's along the study corridor are presented in **Table 1** and in **Figure 8**.

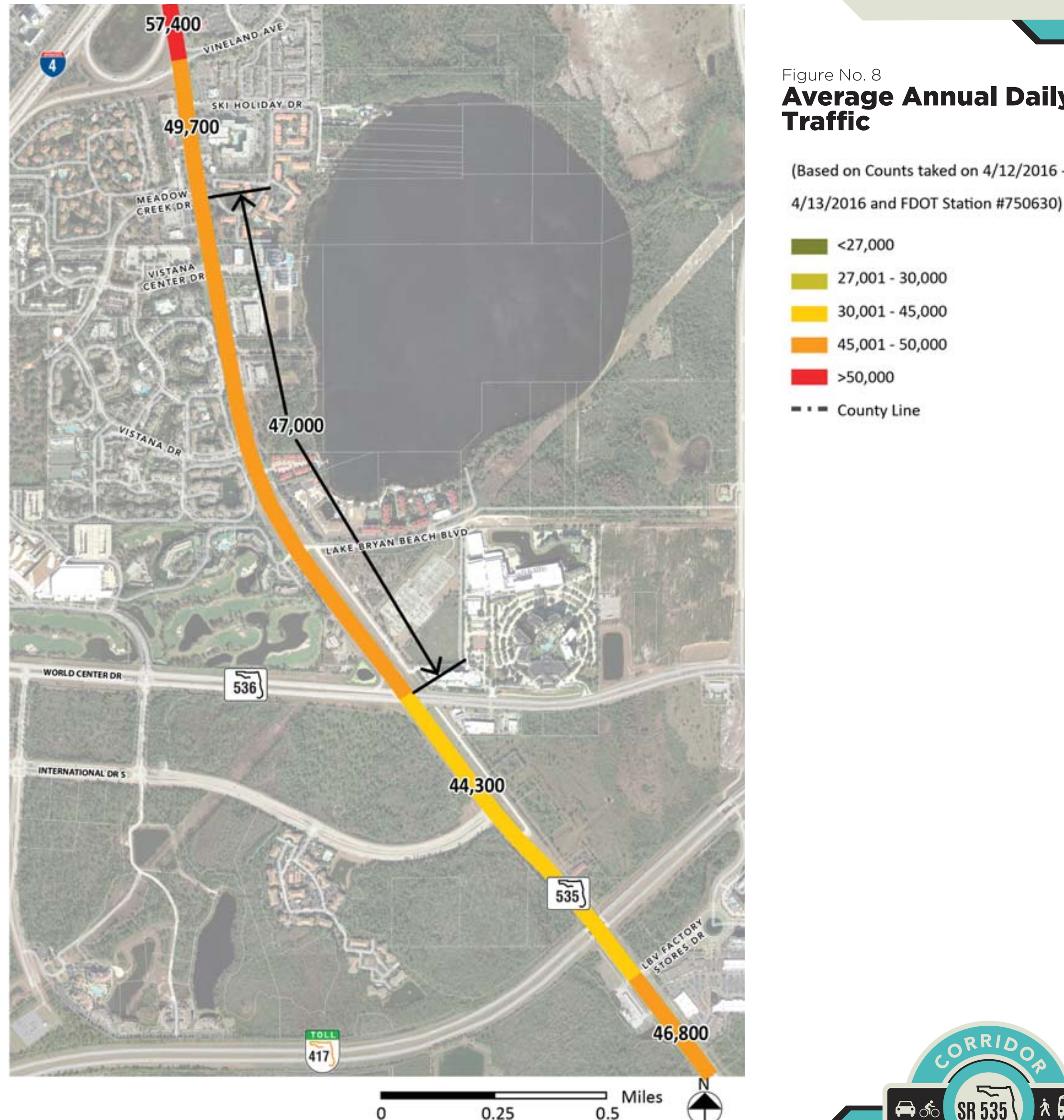
Table 1: Existing Segment Volumes

Roadway	Count Type	Count Dates	ADT	Axle Adj. Factor	Seasonal Adj. Factor	AADT
US 192 to Kyngs Heath Road	48-Hour Classification	4/12/16 - 4/13/16	28,570	1.00	0.99	28,300
Kyngs Heath Road to Poinciana Boulevard	48-Hour Classification	4/12/16 - 4/13/16	27,170	1.00	0.99	26,900
Poinciana Boulevard to Polynesian Isle Boulevard	48-Hour Classification	4/12/16 - 4/13/16	47,271	1.00	0.99	46,800
Polynesian Isle Boulevard to World Center Drive	48-Hour Classification	4/12/16 - 4/13/16	44,733	1.00	0.99	44,300
World Center Drive to Meadow Creek Drive	FDOT Count Station #750630	2015	-	-	-	47,000
Meadow Creek Drive to Vineland Avenue	48-Hour Classification	4/12/16 - 4/13/16	50,178	1.00	0.99	49,700
North of Vineland Avenue	48-Hour Classification	4/12/16 - 4/13/16	57,934	1.00	0.99	57,400

Figure No. 8
Average Annual Daily Traffic

(Based on Counts taked on 4/12/2016 - 4/13/2016 and FDOT Station #750630)

Aerial Image Fly Date: March 2016



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Existing Traffic Operations

In order to identify problem segments and intersections along the SR 535 study corridor, an existing traffic operations analysis was completed using Highway Capacity Manual (HCM) methodologies. This section describes the AM and PM peak hour HCM segment/intersection analysis results which helped in identifying future improvements.

Existing Segment Operations

The FDOT maintains a policy and procedure addressing the operating LOS targets for the State Highway System. The term "level of service" is defined as the system of six designated ranges from "A" (best) to "F" (worst) used to evaluate roadway facility performance. The LOS targets for a specific facility are defined by the area type it is located within. Roadways classified as within an urbanized area have a LOS target of D whereas roadways classified outside an urbanized area have a LOS target of C. Due to SR 535 being classified as an urban minor arterial, the LOS target is D within the study limits.

For the purpose of the segment analysis, SR 535 was divided into eight (8) individual segments between the nine (9) signalized intersections included in the study area. The eight segments are displayed on **Figure 9** and summarized below:

- Segment 1 – SR 535 from US 192 to Kyngs Heath Road
- Segment 2 – SR 535 from Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp
- Segment 3 – SR 535 from Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard
- Segment 4 – SR 535 from Poinciana Boulevard to Polynesian Isle Boulevard
- Segment 5 – SR 535 from Polynesian Isle Boulevard to LBV Factory Stores Drive
- Segment 6 – SR 535 from LBV Factory Stores Drive to SR 536/World Center Drive
- Segment 7 – SR 535 from SR 536/World Center Drive to Meadow Creek Drive
- Segment 8 – SR 535 from Meadow Creek Drive to Vineland Avenue

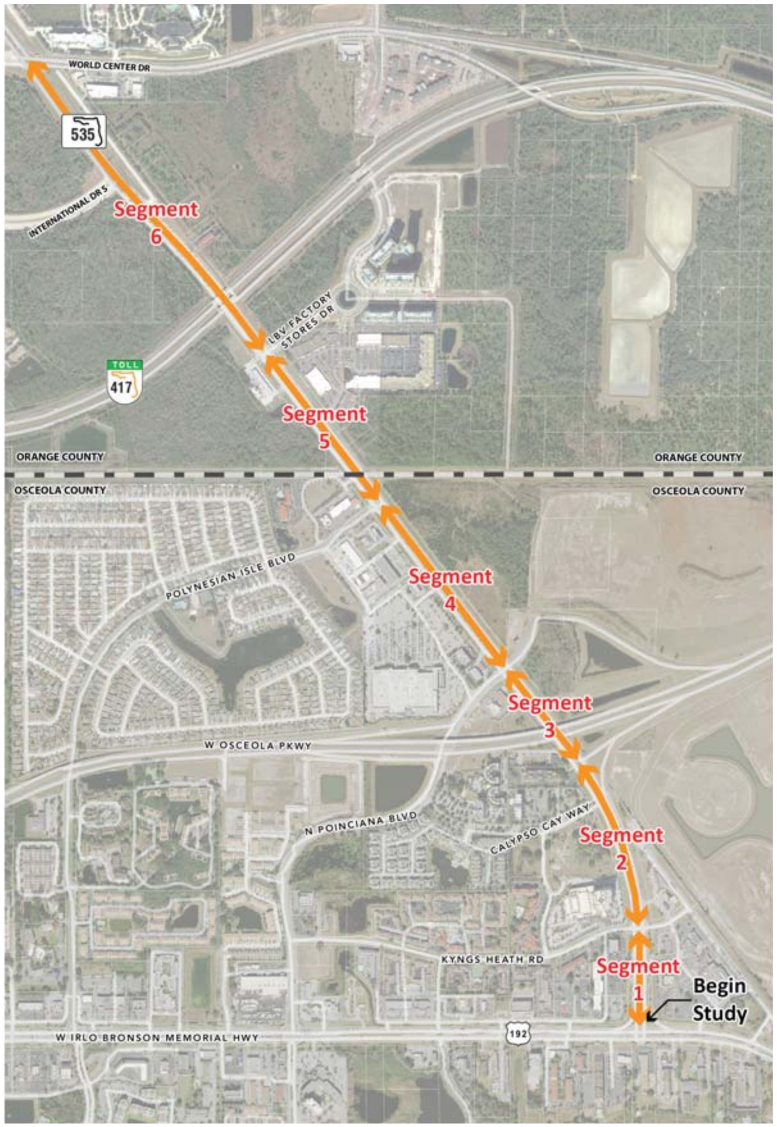
Two analyses were performed to identify segment deficiencies along the SR 535 corridor:

1. LOS evaluation based on the FDOT Generalized LOS Tables; and
2. LOS evaluation based on HCM (2010) Methodologies.

FDOT GENERALIZED LOS EVALUATION

An evaluation of the existing LOS along SR 535 was performed by comparing segment AADT's versus the LOS volume threshold from the FDOT Generalized LOS Tables found in the 2013 FDOT Quality/LOS Handbook. Every segment of SR 535 is characterized as an urban state signalized arterial with a 40 MPH or higher posted speed limit, thus Class 1 volume thresholds from Table 1 – Generalized Annual Average Daily Volumes for Urbanized Areas were used. The volume thresholds were increased by 5 percent due to the presence of exclusive right turn lanes at the signalized intersections.

Figure No. 9
Segments for Operational Analysis



Aerial Image Fly Date: March 2016

Segment for Operational Analysis

County Line

Segment 1 –
SR 535 from US 192 to Kyngs Heath Road

Segment 2 –
SR 535 from Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp

Segment 3 –
SR 535 from Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard

Segment 4 –
SR 535 from Poinciana Boulevard to Polynesian Isle Boulevard

Segment 5 –
SR 535 from Polynesian Isle Boulevard to LBV Factory Stores Drive

Segment 6 –
SR 535 from LBV Factory Stores Drive to SR 536/World Center Drive

Segment 7 –
SR 535 from SR 536/World Center Drive to Meadow Creek Drive

Segment 8 –
SR 535 from Meadow Creek Drive to Vineland Avenue

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The volume threshold for the segment between Poinciana Boulevard and Polynesian Isle Boulevard was obtained from the FDOT District 5 LOS_ALL_Spreadsheet because no volume threshold for a five lane facility is present in the Generalized LOS Tables. **Appendix D** contains Table 1 from the Generalized LOS Tables.

As displayed in **Table 2**, SR 535 between Polynesian Isle Boulevard and SR 536/World Center Drive does not meet the LOS target based on the FDOT generalized LOS evaluation.

Table 2: FDOT Generalized LOS Analysis

Segment	AADT	Area Type	Segment Type	Speed Limit	FDOT LOS Target	Adjusted LOS Volume Target	Existing Volumes Below LOS Target?
US 192 to Kyngs Heath Road	28,300	Urban	Signalized Arterial	50	D	41,790	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	26,900	Urban	Signalized Arterial	50	D	41,790	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	26,900	Urban	Signalized Arterial	50	D	41,790	N
Poinciana Boulevard to Polynesian Isle Boulevard	46,800	Urban	Signalized Arterial	50	D	52,340	N
Polynesian Isle Boulevard to LBV Factory Stores Drive	**44,300**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**44,300**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47,000	Urban	Signalized Arterial	50	D	62,900	N
Meadow Creek Drive to Vineland Avenue	49,700	Urban	Signalized Arterial	45	D	62,900	N

*Source: *2013 FDOT Quality/LOS Handbook Tables*

The FDOT generalized LOS analysis methodology is a sketch-planning level tool developed to provide a quick review of capacity and LOS for the roadway being studied. HCM methodologies are the most widely used for analyzing existing facilities and future improvements to corridors. A more detailed analysis is needed beyond what the generalized LOS tables can provide thus the reason for a HCM level segment and intersection analysis.

EXISTING CONDITIONS SEGMENT LOS EVALUATION

A HCM 2010 Urban Street Segment analysis was performed for the eight SR 535 study segments. This methodology is applicable for segments less than two miles in length between signalized intersections. The HCM 2010 section 17.1 was referenced to evaluate the segment LOS based on the average travel speed (ATS) as a percentage of the base free flow speed (%BFFS). The LOS thresholds for urban street segments are summarized in **Table 3**.

Table 3: LOS for Urban Street Segments (HCM 2010)

LOS	Travel Speed as a Percentage of Free Flow Speed (%)
A	>85
B	>67 – 85
C	>50 – 67
D	>40 – 50
E	>30 – 40
F	≤30

The segment analysis was performed for the AM and PM peak hours in the northbound and southbound directions for each SR 535 segment. **Table 4** and **Table 5** display the results from the HCM analysis and the existing conditions LOS for each segment. **Appendix D** contains the HCM inputs and the various outputs/calculations for the segment analysis.

From field reviews performed by the Study Team, significant queuing was observed along SR 535 in both the southbound and northbound directions during the peak hours. In most cases, the queuing extended through adjacent signalized intersections. Due to this level of congestion, the signalized intersections are not processing the full traffic demand volumes of the corridor. With latent demand not being accounted for in the operational analysis, some segments are being reported as having acceptable LOS where the Study Team observed significant queuing and delays. Thus in cases where a segment was experiencing significant queuing extending through adjacent signalized intersections, a default LOS of F was reported.

As displayed in **Table 4**, SR 535 in the northbound direction between Osceola Parkway and SR 536/World Center Drive experiences LOS E or lower in the AM peak hour. This was confirmed during the field review, where queued traffic was observed extending from LBV Factory Stores Drive through the Polynesian Isle Boulevard signalized intersection to Poinciana Boulevard.

During the PM peak hour, multiple northbound segments of SR 535 experienced LOS E or F conditions, as displayed in **Table 5**. Primary queuing/congestion was observed between Osceola Parkway and Poinciana Boulevard, Polynesian Isle Boulevard to SR 536/World Center Drive, and Meadow Creek Drive to Vineland Avenue.

During the PM peak hour in the southbound direction, queuing was observed extending from the LBV Factory Stores intersection through SR 536/World Center Drive intersection to the Meadow Creek Drive intersection (a distance of 1.65 miles).

SR 535 from Kyngs Heath Road to US 192 in the southbound direction experiences low average travel speeds and a LOS of F in both the AM and PM peak hours due to the short segment length and the southbound delay experienced at the SR 535/US 192 intersection.

Table 4: HCM LOS Evaluation Results – AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.0	63%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	32.5	65%	C	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**8.2**	**16%**	**F**	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**N/A**	**N/A**	**N/A**	**F***	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**20.7**	**41%**	**F**	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**50.4**	**18.9**	**38%**	**E**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	34.3	72%	B	N
Meadow Creek Drive to Vineland Avenue	43.7	29.6	68%	B	N
Southbound Direction					
Vineland Avenue to Meadow Creek Drive	43.8	23.8	54%	C	N
Meadow Creek Drive to SR 536/World Center Drive	47.7	21.8	46%	D	N
SR 536/World Center Drive to LBV Factory Stores Drive	50.4	31.8	63%	C	N
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	36.7	73%	B	N
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	26.2	52%	C	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	25.2	50%	D	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	26.6	53%	C	N
Kyngs Heath Road to US 192	**46.2**	**7.3**	**16%**	**F**	**Y**

* During field observations, traffic queuing extended entire segment causing stop and go driving conditions. HCM 2010 methodologies do not support a LOS calculation under this type of driving condition leading to a default segment LOS of F.

Table 5: HCM LOS Evaluation Results – PM Peak Hour

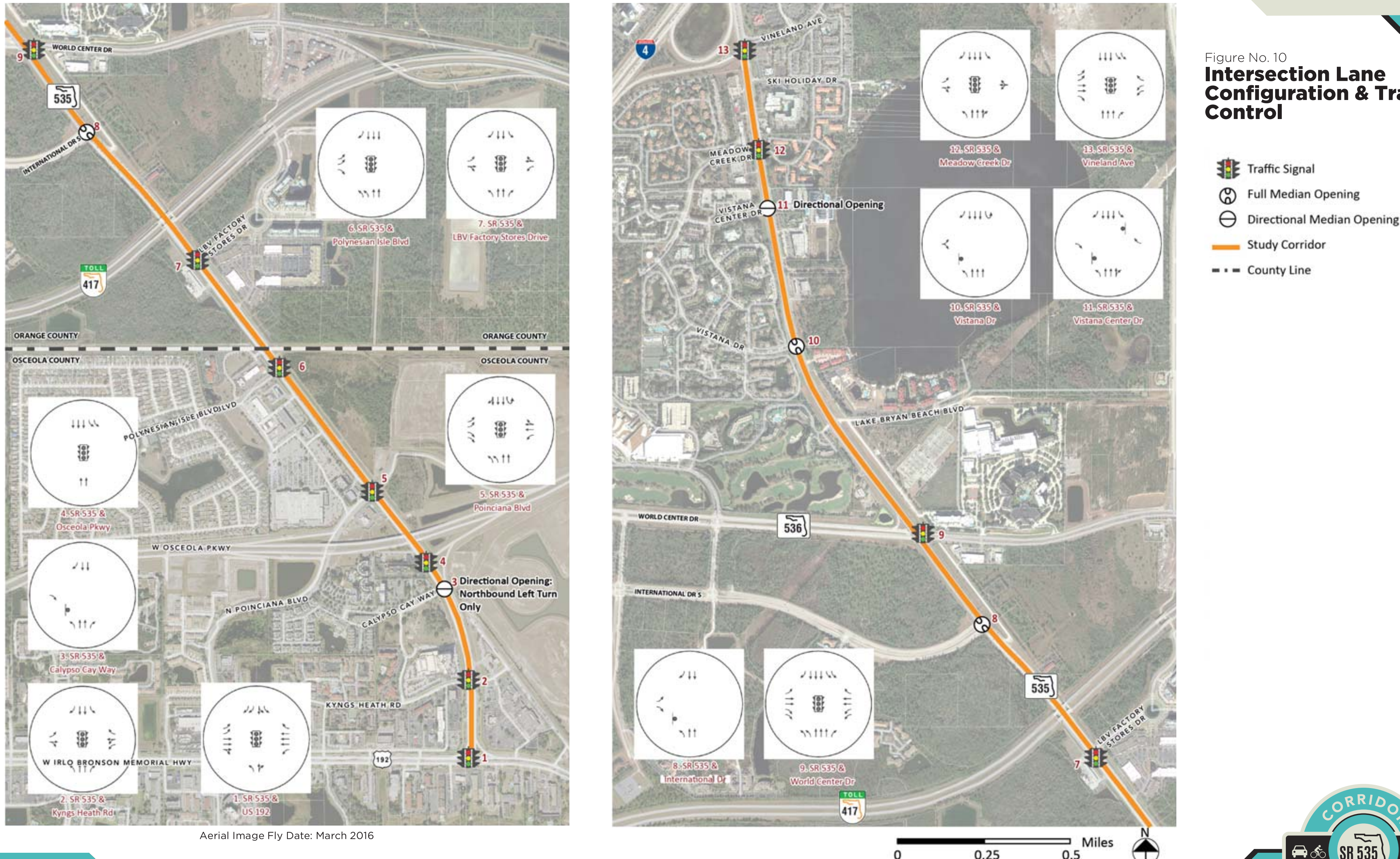
Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	30.1	65%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	26.7	53%	C	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**14.3**	**28%**	**F**	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	50.5	27.7	55%	C	N
Polynesian Isle Boulevard to LBV Factory Stores Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**50.4**	**18.4**	**37%**	**E**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	30.6	64%	C	N
Meadow Creek Drive to Vineland Avenue	**43.7**	**11.6**	**27%**	**F**	**Y**
Southbound Direction					
Vineland Avenue to Meadow Creek Drive	43.8	19.4	44%	D	N
Meadow Creek Drive to SR 536/World Center Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
SR 536/World Center Drive to LBV Factory Stores Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	35.4	71%	B	N
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	30.9	61%	C	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	23.9	48%	D	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	22.2	44%	D	N
Kyngs Heath Road to US 192	**46.2**	**7.1**	**15%**	**F**	**Y**

* During field observations, traffic queuing extended entire segment causing stop and go driving conditions. HCM 2010 methodologies do not support a LOS calculation under this type of driving condition leading to a default segment LOS of F.

Existing Peak Hour Intersection Operations

Thirteen (13) intersections along the study corridor were analyzed. Nine of the intersections are signalized, while the other four are full or directional median openings with stop control on the minor street approach. The existing intersection lane configurations and traffic control can be seen in **Figure 10**. Intersection geometry was determined through the use of aerial and street view imagery from Google Earth taken in 2016. The Study Team performed a field review on April 19, 2016 to verify the intersection lane configurations.

Figure No. 10
Intersection Lane Configuration & Traffic Control



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CORRIDOR SR 535 PLANNING STUDY

The existing intersection operating conditions (2016) were evaluated for the weekday AM and PM peak hour traffic volume conditions. The intersection LOS was analyzed using *HCM* methodologies as implemented by Synchro Version 9.1. **Figure 11** summarizes the existing AM and PM peak hour intersection operations and turning movement volumes. For the signalized intersections, overall intersection LOS and delay are presented. For the unsignalized intersections, the LOS and delay are presented for the critical movement at the intersection. The following summarizes the LOS deficiencies for the existing intersection operating conditions:

- AM Peak Hour –
    - Poinciana Boulevard (signalized) operates at LOS E;
        - Experiences an eastbound left turn volume of just over 900 in the AM peak hour with a 0.95 volume to capacity ratio, thus contributing to delays at this intersection.
    - International Drive (unsignalized) operates at LOS F; and
    - Vistana Centre Drive (unsignalized) operates at LOS E.
- PM Peak Hour –
    - Poinciana Boulevard operates at LOS F;
    - International Drive (unsignalized) operates at LOS F;
    - SR 536/World Center Drive (signalized) operates at LOS E; and
    - Vistana Centre Drive (unsignalized) operates at LOS E.

Detailed HCM output reports are located in **Appendix D**.

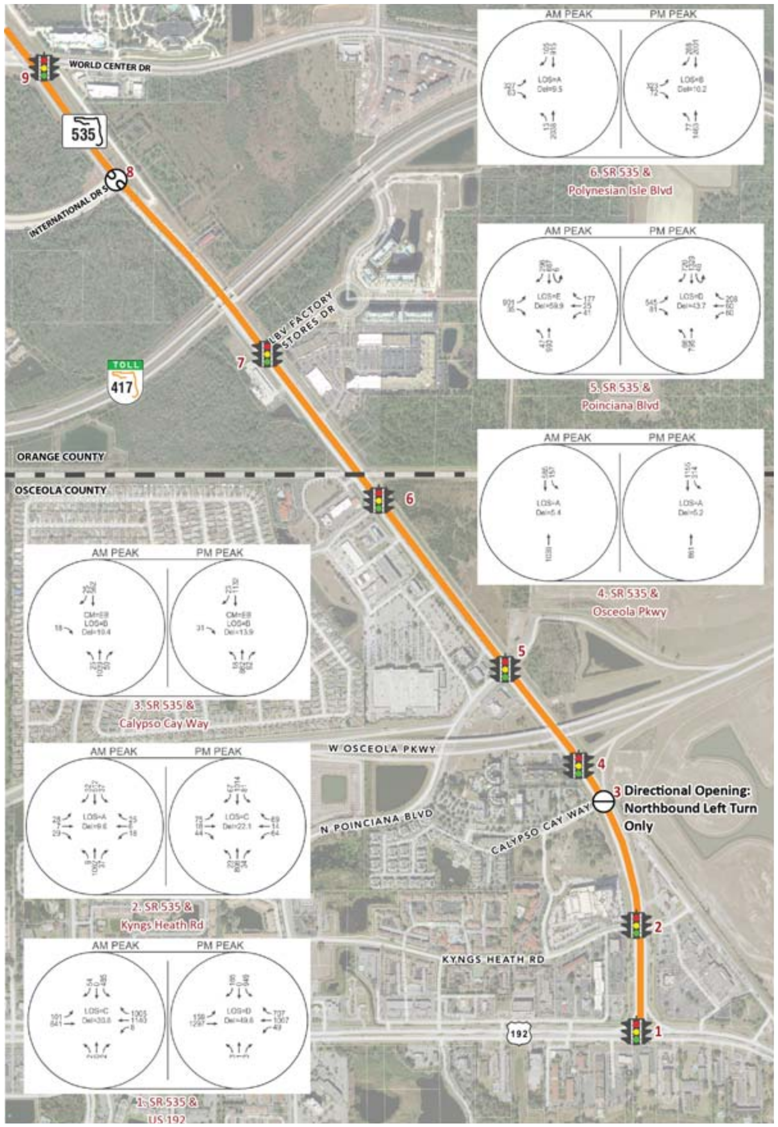
SELECTION OF APPLIED GROWTH RATE

To select a growth rate for the study corridor, the Study Team completed a preliminary sensitivity analysis using applied linear growth rates of one, two, three, four, and five percent. Segment and intersection operational analyses were completed to gain an understanding of the potential operational implications of each growth rate. The sensitivity analysis showed approximately 54 percent of the segments and 68 percent of the intersections operating at LOS of E or worse with an applied growth rate of two percent.

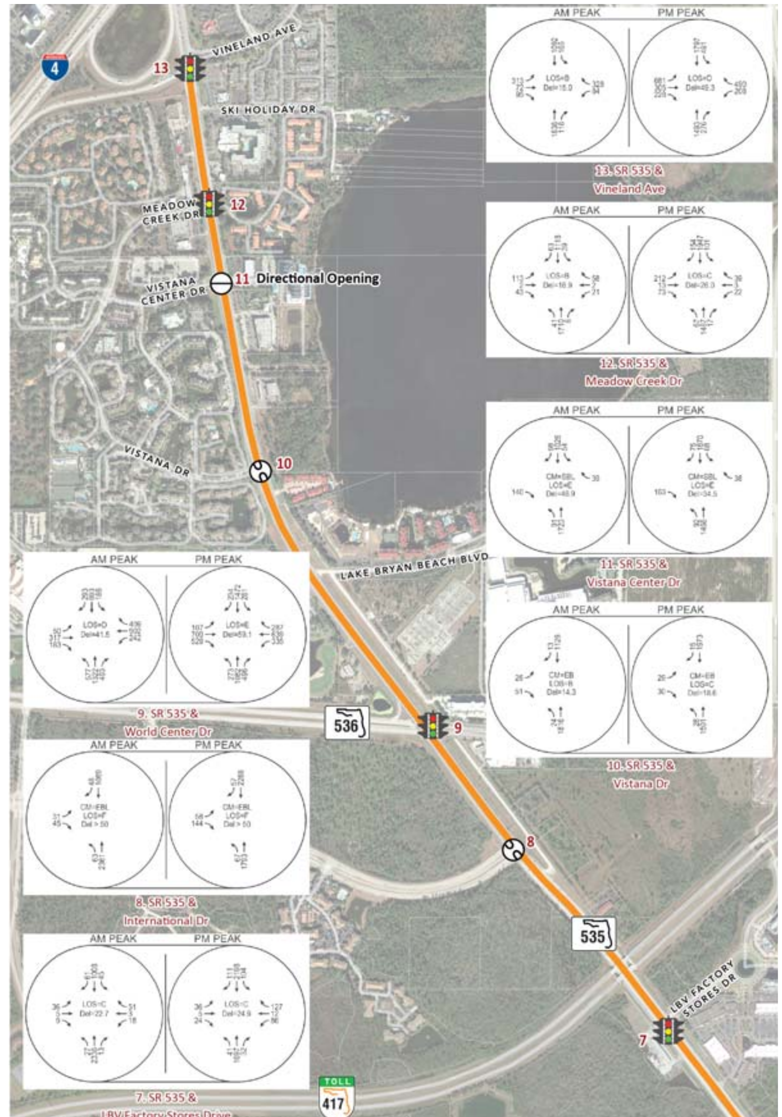
The Study Team, along with members of FDOT, Orange County, and Osceola County, concluded that an applied annual linear growth rate of two percent is reasonable for the study corridor based on a review of the historical, population, and model growth rates. A summary of the sensitivity analysis and the various growth rates reviewed is included in **Appendix E**.

Traffic volumes were developed for a future Design Year (2040) to be used in the future conditions operational analysis. Future intersection turning movements were forecast by applying the selected two percent growth rate to existing (2016) segment and intersection turning movement volumes along the SR 535 corridor within the project limits.

Figure No. 11
Existing Peak Hour Intersection Operations



Aerial Image Fly Date: March 2016



Traffic Signal
Full Median Opening
Directional Median Opening
Study Corridor
County Line

FM #437174-1 and #437175-1

FDOT

CORRIDOR SR 535 PLANNING STUDY

FUTURE YEAR TRAFFIC VOLUMES AND LOS

The following sections summarize the future no-build AM and PM peak hour segment and intersection operations for the Design Year (2040). A LOS evaluation based on the FDOT Generalized LOS Tables (segments only) and HCM 2010 methodologies (segment and intersection operations) was conducted as part of the future no-build operational analysis. The selected two percent annual linear growth rate was applied to the existing year (2016) volumes to estimate future year 2040 AADTs and turning movement volumes, as noted in the previous section.

2040 No-Build Operational Network Changes

The following summarizes the SR 535 network changes for the 2040 No-Build analysis:

- A signal at the intersection of SR 535 and International Drive was constructed and is operational as of the summer of 2017. The segmentation in this area was adjusted to analyze two segments:
    - LBV Factory Stores to International Drive; and
    - International Drive to SR 536/World Center Drive.
- SR 535 from Meadow Creek Drive to I-4, including the Vineland Avenue intersection, is being evaluated as part of the I-4 BtU System Access Modification Report (SAMR). SR 535 from Meadow Creek Drive to I-4 was not included in the 2040 No-Build segment analysis. The SR 535/Vineland Avenue intersection, also included in the I-4 BtU analysis, was not included in the future design year analysis.

The following summarizes the intersection improvements included in the 2040 No-Build analysis:

- Turn lane additions at the intersection of SR 535 and Poinciana Boulevard as part of the Sunrise City development project (located adjacent to SR 535 between Poinciana Boulevard and Polynesian Isle Boulevard):
    - Northbound right turn lane;
    - Second westbound left turn lane;
    - Convert the existing eastbound outside right turn lane into a shared through/right lane; and
    - Convert the existing eastbound inside right turn lane into a through lane.
- Turn lane additions at the intersection of SR 535 and Polynesian Isle Boulevard as part of the Sunrise City development project:
    - Northbound right turn lane;
    - Westbound left-turn lane;
    - Westbound through lane;
    - Westbound shared through/right lane;
    - Southbound left-turn lane; and
    - Convert the eastbound right turn lane to be a shared through/right.

- As noted above, the intersection of SR 535 and International Drive was signalized during this study. The following turn lane additions were also constructed with the signal:
  - Third southbound through lane;
  - Southbound U-turn lane; and
  - Second eastbound left-turn lane.
- Eastbound left-turn lane addition at SR 535 and Meadow Creek Drive as part of the I-4 BtU SAMR study.

FDOT Generalized LOS Evaluation

A Generalized LOS Evaluation was completed by comparing the future 2040 segment volumes to the LOS volume threshold from the FDOT Generalized LOS Tables included in the 2013 FDOT Quality/LOS Handbook. The selected two percent annual linear growth rate was applied to the existing year (2016) AADTs to estimate the future 2040 AADTs (shown in **Figure 12**).

Table 6 summarizes the 2040 AADT for each study segment and the results of the Generalized LOS Evaluation. As summarized in **Table 6**, SR 535 from US 192 to Kyngs Heath Road and from Poinciana Boulevard to Meadow Creek Drive are not anticipated to meet the LOS target based on the FDOT generalized LOS evaluation.

Table 6: 2040 No-Build FDOT Generalized LOS Evaluation

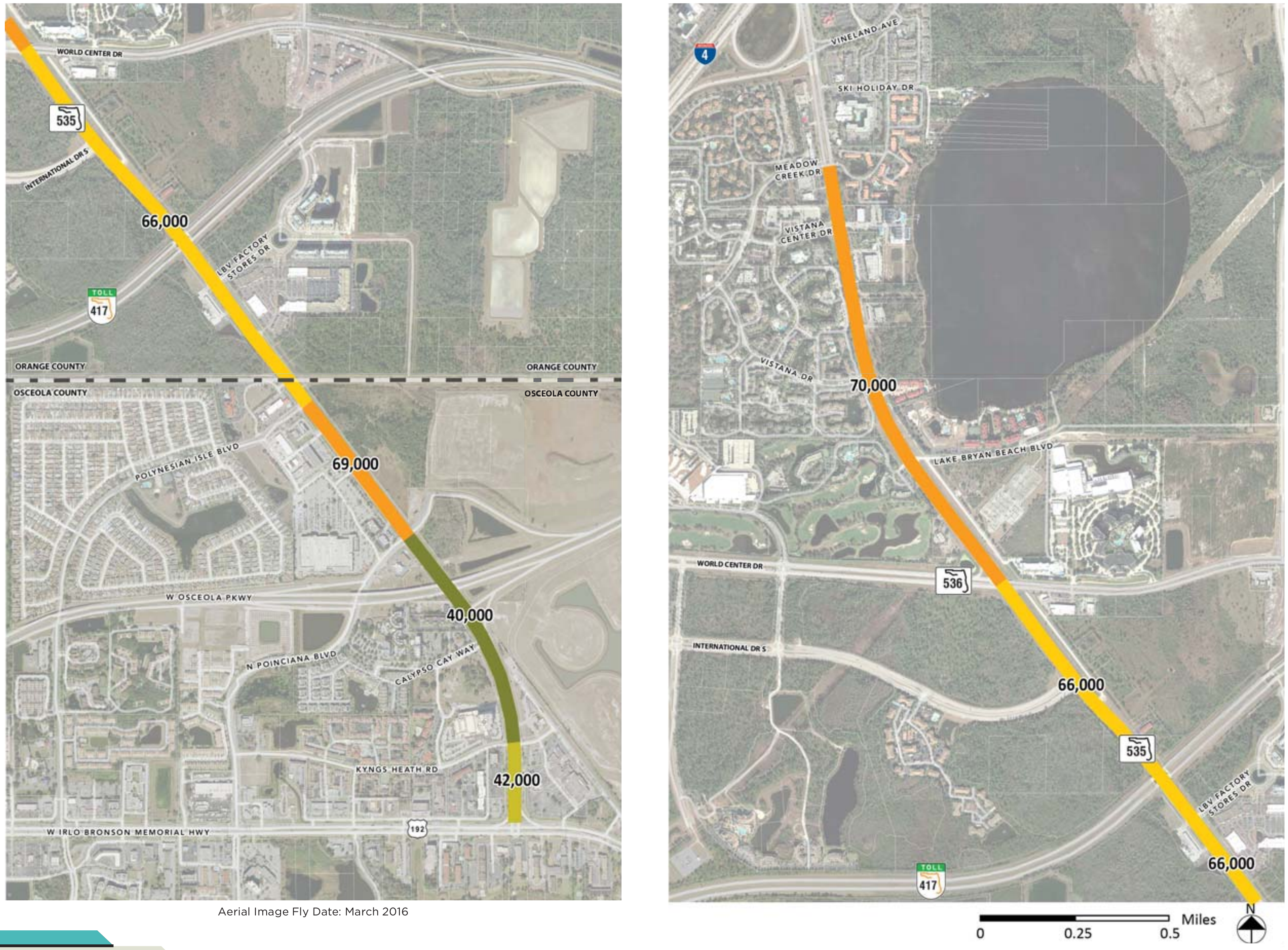
Segment	2016 AADT	2040 AADT	Area Type	Segment Type	Speed Limit	FDOT LOS Target	Adjusted LOS Volume Target**	2040 Volumes Exceeds Volume Target?
US 192 to Kyngs Heath Road	28,300	**42,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	26,900	40,000	Urban	Signalized Arterial	50	D	41,790	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	26,900	40,000	Urban	Signalized Arterial	50	D	41,790	N
Poinciana Boulevard to Polynesian Isle Boulevard	46,800	**69,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**52,340**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
LBV Factory Stores Drive to International Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
International Drive to SR 536/World Center Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47,000	**70,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**

***Note:** Segment was below LOS target under 2016 volumes
****Source:** *2013 FDOT Quality/LOS Handbook Tables*

Figure No. 12

2040 Annual Average Daily Traffic

- ≤40,000
- 40,001 - 60,000
- 60,001 - 66,000
- 66,001 - 70,000
- County Line



Aerial Image Fly Date: March 2016

2040 No-Build Segment LOS Evaluation

A HCM 2010 Urban Street Segment analysis was performed for the eight SR 535 study segments. This methodology is applicable for segments less than two miles in length between signalized intersections. The HCM 2010 section 17.1 was referenced to evaluate the segment LOS based on the average travel speed (ATS) as a percentage of the base free flow speed (%BFFS). The LOS thresholds for urban street segments are summarized in **Table 3**.

The segment analysis was performed for the 2040 AM and PM peak hours in the northbound and southbound directions for each SR 535 segment. **Table 7** and **Table 8** display the 2040 No-Build peak hour results from the HCM analysis and the LOS for each segment. The bolded rows in the tables represent segments that are anticipated to operate below the FDOT LOS D target. **Appendix F** contains the HCM inputs and the various outputs/calculations for the segment analysis. The following summarizes the anticipated deficiencies (by direction) identified as part of the 2040 AM peak hour HCM segment operations (shown in bold in **Table 7**):

- Northbound –
    - SR 535 between the Osceola Parkway Eastbound On-Ramp and SR 536/World Center Drive is anticipated to operate at LOS F.
- Southbound –
    - SR 535 between Meadow Creek Drive and SR 536/World Center Drive is anticipated to operate at LOS F.
    - SR 535 between LBV Factory Store Drive and Polynesian Isle Boulevard is anticipated to operate at LOS E.
    - SR 535 between Kyngs Heath Road and US 192 is anticipated to operate at LOS F.

The following briefly summarizes the anticipated deficiencies (by direction) identified as part of the 2040 PM peak hour segment operations (shown in **Table 8**):

- Northbound –
    - SR 535 between the Osceola Parkway Ramps and SR 536/World Center Drive is anticipated to operate at LOS F.
- Southbound –
    - SR 535 from Meadow Creek Drive to Poinciana Boulevard and from Kyngs Heath Road to US 192 is anticipated to operate at LOS F.

Table 7: No-Build HCM LOS Evaluation Results – 2040 AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.4	64%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	35.1	70%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**4.8**	**10%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**3.3**	**7%**	**F***	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**3.4**	**7%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**5.0**	**10%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**4.6**	**9%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	32.5	68%	B	N
Southbound Direction					
Meadow Creek Drive to SR 536/World Center Drive	**47.7**	**14.9**	**31%**	**F**	**Y**
SR 536/World Center Drive to International Drive	50.6	23.1	46%	D	N
International Drive to LBV Factory Stores Drive	50.6	25.6	51%	C	N
LBV Factory Store Drive to Polynesian Isle Boulevard	**50.2**	**20.3**	**40%**	**E**	**Y**
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	25.9	51%	C	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	32.9	65%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	28.6	57%	C	N
Kyngs Heath Road to US 192	**46.2**	**6.8**	**15%**	**F***	**Y**

***Note:** Segment was below LOS target under 2016 volumes

Table 8: No-Build HCM LOS Evaluation Results – 2040 PM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.2	63%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	34.7	69%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**9.3**	**18%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**7.9**	**16%**	**F**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**6.1**	**12%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**10.5**	**21%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**8.7**	**17%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	31.8	67%	C	N
Southbound Direction					
Meadow Creek Drive to SR 536/World Center Drive	**47.7**	**9.9**	**21%**	**F***	**Y**
SR 536/World Center Drive to International Drive	**50.6**	**4.2**	**8%**	**F***	**Y**
International Drive to LBV Factory Stores Drive	**50.6**	**4.4**	**9%**	**F***	**Y**
LBV Factory Store Drive to Polynesian Isle Boulevard	**50.2**	**9.2**	**18%**	**F**	**Y**
Polynesian Isle Boulevard to Poinciana Boulevard	**50.4**	**4.7**	**9%**	**F**	**Y**
Poinciana Boulevard to Osceola Parkway Ramps	50.2	32.9	65%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	21.2	42%	D	Y
Kyngs Heath Road to US 192	**46.2**	**5.7**	**12%**	**F***	**Y**

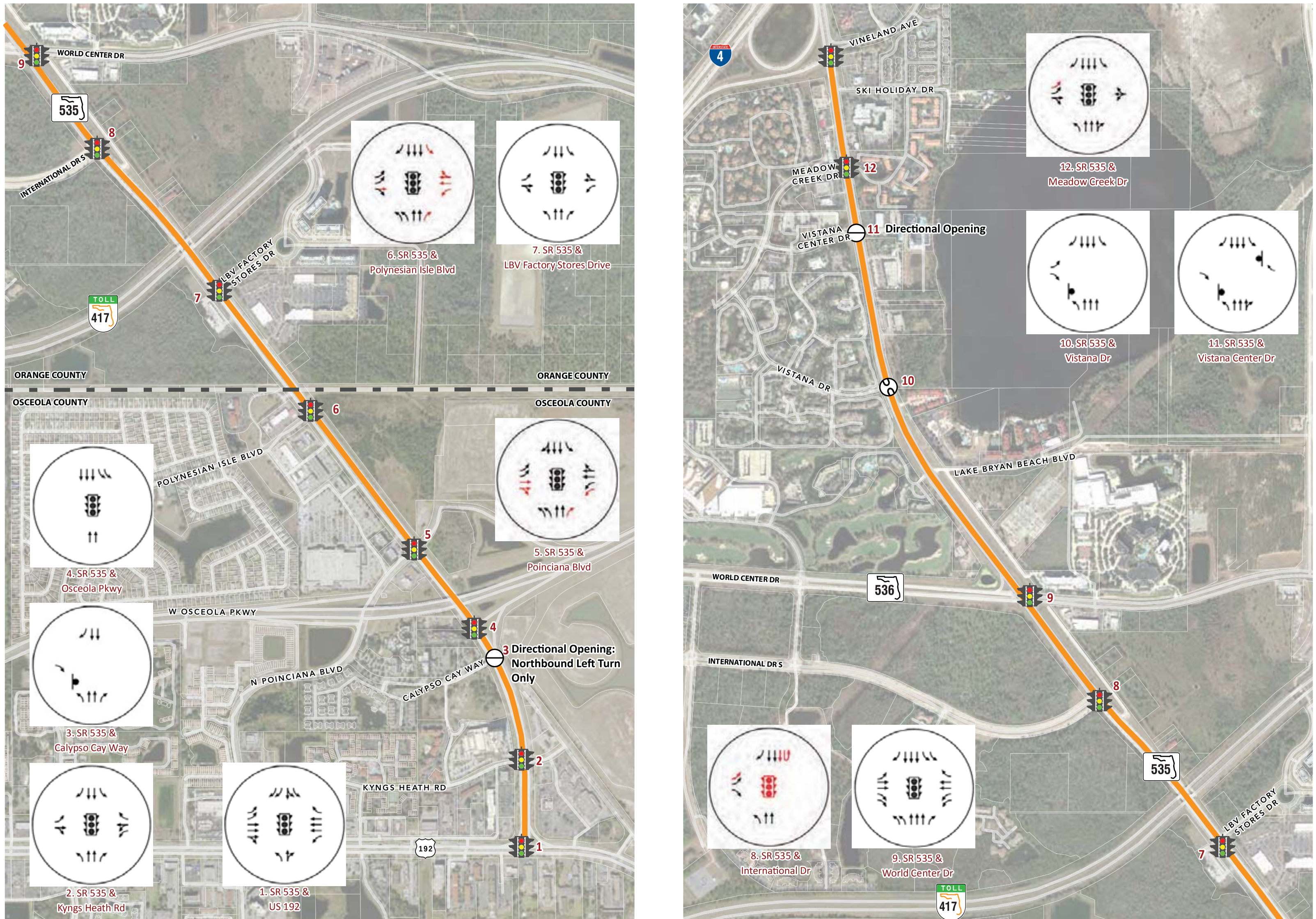
***Note:** Segment was failing under 2016 volumes

2040 No-Build Peak Hour Intersection Operations

Twelve (12) intersections were evaluated as part of the 2040 No-Build peak hour intersection operational analysis. Of the 12 study intersections, nine were evaluated as a signalized intersection and three were evaluated as an unsignalized intersection with stop-control along the minor street. The future 2040 No-Build intersection lane configurations are summarized in **Figure 13**. The planned lane turn additions and changes in traffic control discussed in the **No-Build Operational Network Changes** section are displayed in red on the figure.

Figure No. 13
2040 No-Build Intersection Lane Configurations & Traffic Control

- Traffic Signal
- Full Median Opening
- Directional Median Opening
- Study Corridor
- County Line
- Lane Addition
- Change in Traffic Control



Aerial Image Fly Date: March 2016

The selected two percent annual linear growth rate was applied to the existing turning movement volumes. For land uses/parcels where full build out has occurred adjacent to an intersection leg, the selected growth rate was not applied to the associated turning movements. Signal timing improvements (signal splits and coordination offset updates) were made to the existing timings.

The approved Traffic Impact Analysis for the Sunrise City development on the east leg of the SR 535/Polynesian Isle Boulevard intersection was reviewed for future intersection turning movement volumes. These approach/departure volumes for the development were included as part of the AM and PM peak hour analysis for the Polynesian Isle Boulevard intersection. The anticipated turn lanes at the intersection were included in the operational analysis as previously discussed in the **No-Build Operational Network Changes** section.

The intersection LOS was analyzed using HCM methodologies as implemented by Synchro Version 9.1. **Figure 14** summarizes the peak hour intersection operations and turning movement volumes for the 2040 No-Build scenario. For the signalized intersections, overall intersection LOS and delay are presented. For the unsignalized intersections, the LOS and delay are presented for the critical movement at the intersection. Detailed HCM output reports are located in **Appendix F**.

OVERALL INTERSECTION LOS DEFICIENCIES

During the 2040 AM peak hour, five signalized and two unsignalized intersections are anticipated to operate below LOS D:

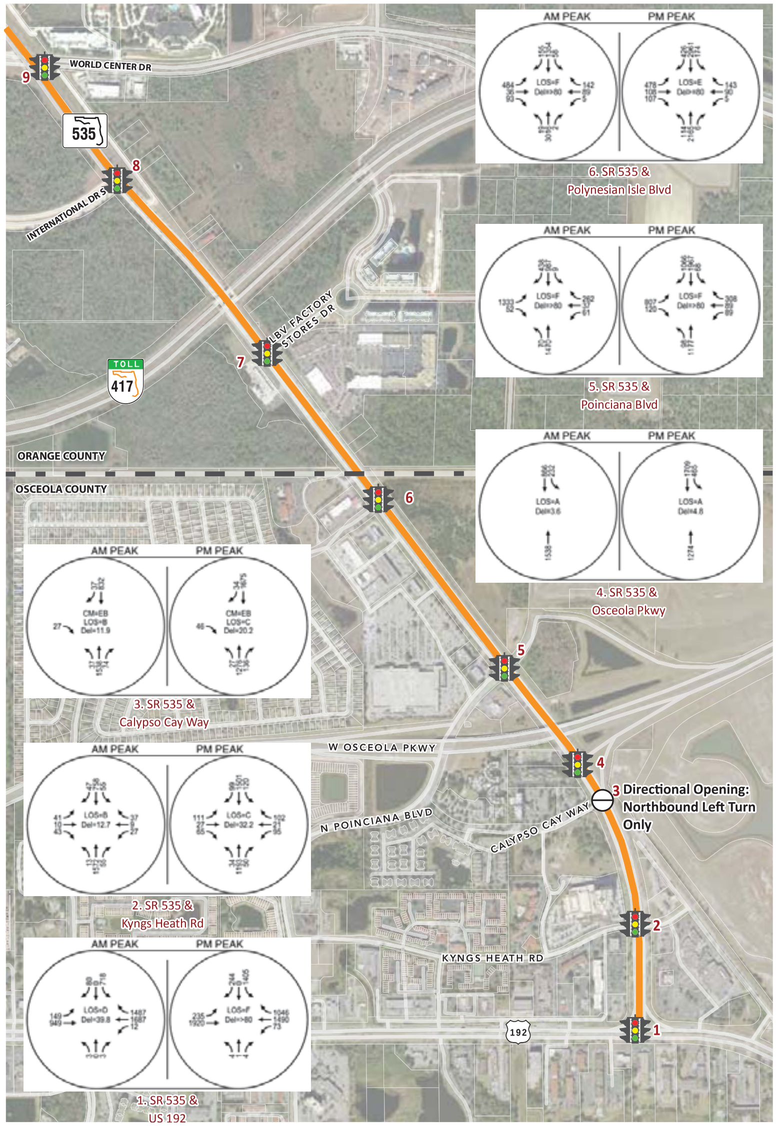
- Poinciana Boulevard;
- Polynesian Isle;
- LBV Factory Stores;
- International Drive;
- World Center Drive;
- Vistana Drive (unsignalized); and
- Vistana Centre Drive (unsignalized).

The same capacity constraints anticipated during the 2040 AM peak hour are anticipated to be present during the 2040 PM peak hour. The intersections below are anticipated to operate below LOS D:

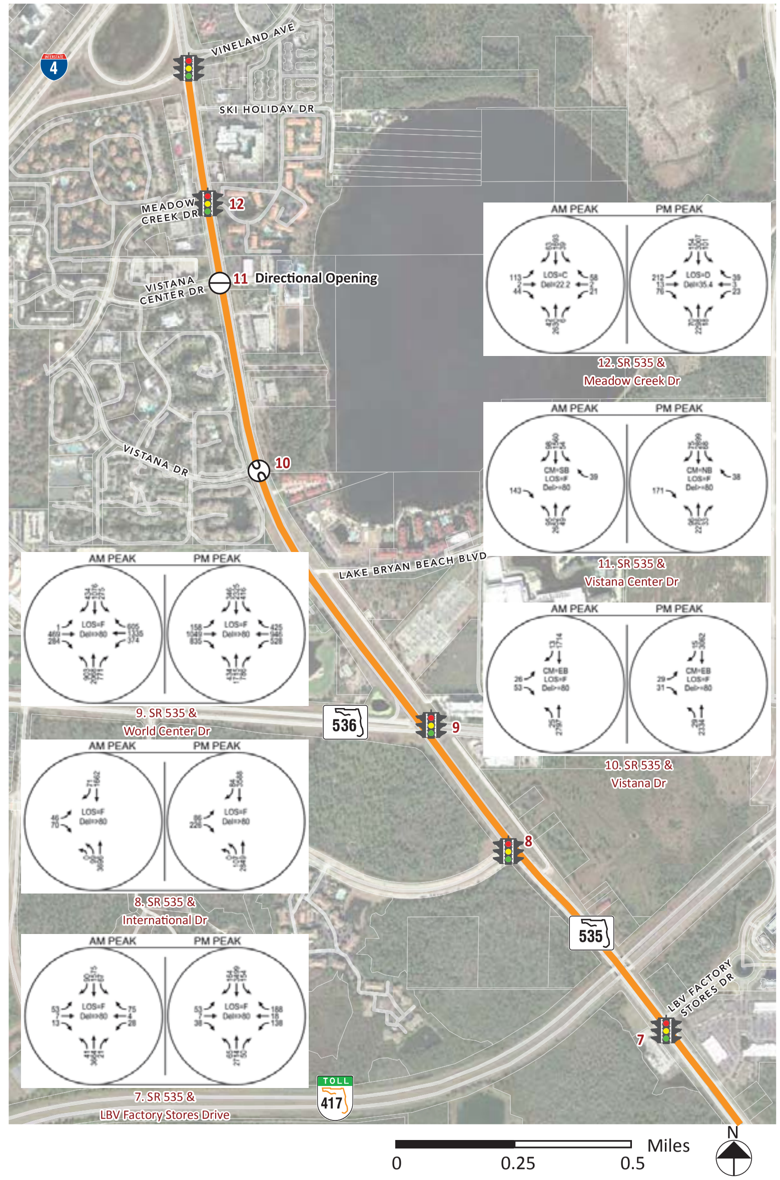
- US 192;
- Poinciana Boulevard;
- Polynesian Isle;
- LBV Factory Stores;
- International Drive;
- World Center Drive;
- Vistana Drive (unsignalized); and
- Vistana Centre Drive (unsignalized).

Figure No. 14

2040 No-Build Peak Hour Intersection Operations



Aerial Image Fly Date: March 2016



- Traffic Signal
- Full Median Opening
- Directional Median Opening
- Study Corridor
- County Line

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INTERSECTION MOVEMENT DEFICIENCIES

The following summarizes movement deficiencies (volume-to-capacity (v/c) ratio greater than 1.0) at the study signalized intersections during the 2040 peak hours:

AM Peak Hour

- Kyngs Heath Road
  - Southbound left-turn (v/c ratio of 1.05)
- Poinciana Boulevard
  - Eastbound left-turn (v/c ratio of 2.19)
  - Northbound through (v/c ratio of 1.19)
- Polynesian Isle Boulevard
  - Southbound left-turn (v/c ratio of 1.08)
  - Northbound through (v/c ratio of 1.74)
- LBV Factory Stores
  - Northbound through (v/c ratio of 1.66)
  - Southbound left-turn (v/c ratio of 1.27)
- International Drive
  - Northbound through (v/c ratio of 1.51)
- World Center Drive
  - Northbound left-turn (v/c ratio of 1.20)
  - Northbound through (v/c ratio of 1.27)
  - Southbound left-turn (v/c ratio of 1.19)
  - Southbound through (v/c ratio of 1.11)

PM Peak Hour

- US 192
  - Eastbound through/right-turn (v/c ratio of 1.04)
  - Southbound left-turn (v/c ratio of 1.09)
- Kyngs Heath Road
  - Southbound left-turn (v/c ratio of 1.30)
- Poinciana Boulevard
  - Eastbound left-turn (v/c ratio of 1.51)
  - Northbound left-turn (v/c ratio of 1.04)
  - Southbound through (v/c ratio of 1.42)
  - Southbound right-turn (v/c ratio of 1.67)
- Polynesian Isle Boulevard
  - Northbound left-turn (v/c ratio of 1.19)
  - Northbound through (v/c ratio of 1.28)
  - Southbound left-turn (v/c ratio of 1.30)
  - Southbound through (v/c ratio of 1.12)

- LBV Factory Stores
  - Northbound left-turn (v/c ratio of 1.39)
  - Northbound through (v/c ratio of 1.27)
  - Southbound left-turn (v/c ratio of 1.52)
  - Southbound through (v/c ratio of 1.55)
- International Drive
  - Eastbound right-turn (v/c ratio of 1.67)
  - Northbound through (v/c ratio of 1.18)
  - Southbound through (v/c ratio of 1.40)
- World Center Drive
  - Eastbound left-turn (v/c ratio of 1.04)
  - Westbound left-turn (v/c ratio of 1.25)
  - Northbound left-turn (v/c ratio of 1.08)
  - Southbound left-turn (v/c ratio of 1.37)
  - Southbound through (v/c ratio of 1.36)

Alternative Analysis and Development

Based upon the existing and future conditions no-build analysis, issues and opportunities were identified along the SR 535 corridor. This section discusses the issues/opportunities identified and reviews the various alternatives analyzed to address those issues/opportunities.

Identified Issues and Opportunities

Throughout stakeholder interviews and the existing roadway, operational, and safety conditions analysis, the Study Team identified opportunities for improvement along the SR 535 study corridor as displayed in **Figure 15** (pedestrian/bicycle facilities and transit service) and **Figure 16** (operational performance and vehicular/pedestrian/bicycle safety). The issues/opportunities summarized below helped define the purpose and need as presented earlier in the report:

- There is a desire and need for enhanced/continuous pedestrian and bicycle facilities along the corridor.
    - Sidewalks/bicycle facilities are missing from Kyngs Heath Road to just north of SR 536/World Center Drive. Nine (9) of the 18 pedestrian/bicycle crashes occurred along this section with three (3) resulting in a fatality.
    - Of the nine (9) pedestrian/bicycle crashes, five (5) occurred with the pedestrian/bicyclist walking on the shoulder. Three (3) of the nine (9) crashes occurred when pedestrians attempted to cross SR 535 near intersections without marked crosswalks.
- Operational issues existed in both the AM and PM peak hours, with queuing extending ¼ to over 1.5 miles in certain areas.
    - During the AM peak hour, SR 535 from south of Poinciana Boulevard to LBV Factory Stores Drive experienced 1 mile queues in the northbound direction.
    - Eastbound queuing during the AM peak hour at the Poinciana Boulevard intersection extended approximately 850 feet west of SR 535.
    - Southbound queuing in the PM peak hour extended from LBV Factory Stores Drive through SR 536/World Center Drive to Meadow Creek Drive, a distance of approximately 1.65 miles.
        - Due to southbound queue spillback, the westbound left and eastbound right turn movements were not fully served leading to vehicles blocking the SR 536/World Center Drive intersection.
    - Northbound queuing in the PM peak hour extended from LBV Factory Stores Drive to Polynesian Isle Boulevard, a distance of approximately 0.30 miles. Northbound queuing also extended from Vineland Avenue to approximately 0.50 miles south of the Meadow Creek Drive intersection, a total distance of approximately 0.75 miles.
        - Due to southbound queue spillback, eastbound queuing along Meadow Creek Drive extended approximately 600 feet, with a majority of these vehicles turning left to go north onto SR 535.

- Safety is a concern with a total of 1,142 reported crashes from 2010 to 2014, of which 521 (46 percent) resulted in at least one injury and seven (7) of which resulted in at least one fatality.
    - Crashes at the nine signalized intersections accounted for 909 of the 1,142 crashes (80 percent) along the SR 535 corridor. An additional 77 crashes (7 percent) occurred at the unsignalized intersection of SR 535 and International Drive.
    - SR 536/World Center Drive is the location with the highest number of crashes, accounting for 212 of the 1,142 crashes (19 percent). Polynesian Isle Boulevard (133 crashes), Vineland Avenue (123 crashes), and LBV Factory Stores Drive (101 crashes) were the next highest crash frequency locations.
    - The highest crash type observed was rear end, comprising 61 percent of the total crashes. Angle (11 percent) and sideswipe (8 percent) were the second and third highest crash types.
    - There were 13 pedestrian and 5 bicycle crashes over the five years resulting in five (5) of the seven (7) fatal crashes.
- With no transit routes/stops provided south of SR 536/World Center Drive, local commuter trips between the south and north sides of the SR 535 corridor must be made by vehicle.
    - From stakeholder interviews, there is a desire to extend the current transit service south to US 192 and possibly connect with a future bus rapid transit system that would operate between Kissimmee and Disney World.

Figure No. 15
SR 535 Multimodal Issues & Opportunities

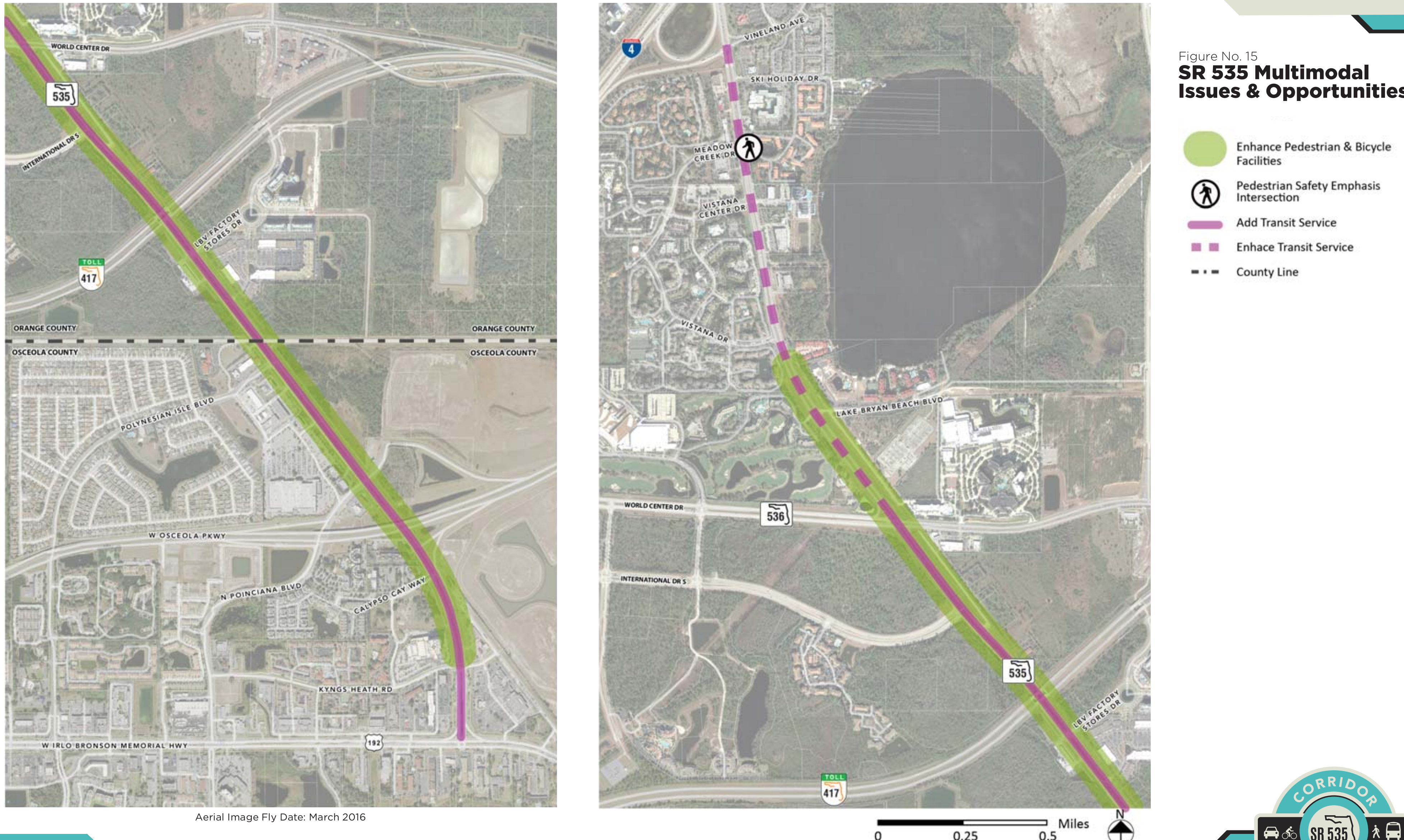

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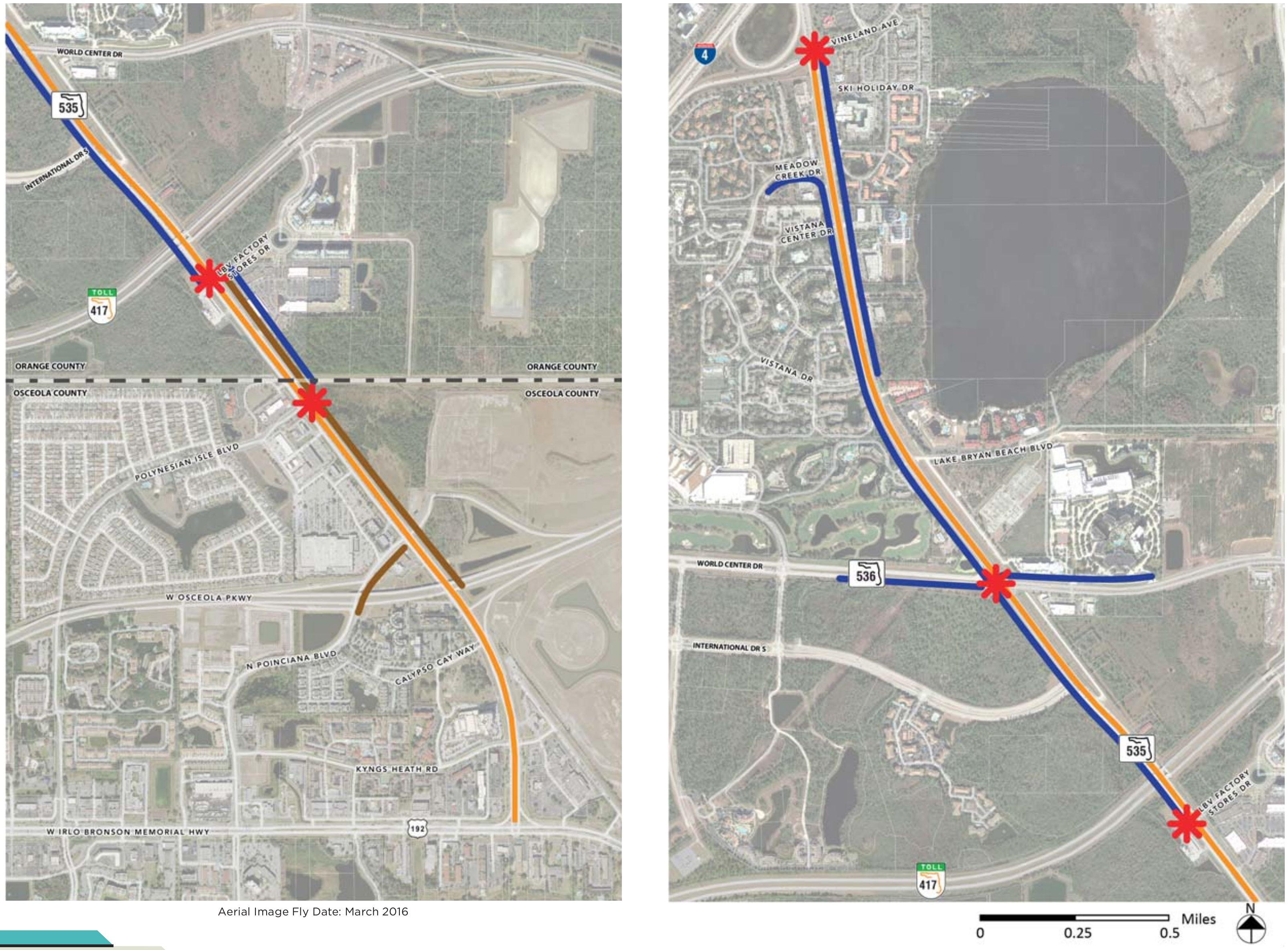
Figure No. 16
SR 535 Vehicular Issues & Opportunities

- AM Peak Hour Queuing
- PM Peak Hour Queuing
- High Crash Frequency Intersections
- Study Corridor
- County Line



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FDOT

CORRIDOR SR 535 PLANNING STUDY

TSM&O and Multi-Modal Alternatives

To address some of the issues and opportunities identified for the SR 535 corridor, the following short term improvements were discussed with the Project Visioning Team (PVT) (the PVT is further defined in the **Public Involvement** section). It is anticipated these improvements will be further explored during the PD&E Study.

- **PedSafe** – PedSafe is an innovative pedestrian and bicycle collision avoidance system currently being designed by FDOT. PedSafe will connect advanced signal controller capability, use of Connected Vehicle (CV) technologies, and existing communication capabilities to reduce the occurrence of pedestrian and bicycle crashes. As a region and a state that annually tops the Dangerous by Design list of most dangerous areas for walking, development and implementation of PedSafe is an immediate priority with multiple benefits. The PedSafe improvement could be installed at the nine signalized intersections along the corridor.
- **Innovative Intersection Treatments** – The study analyzed the following potential innovative intersection treatments: 1) Displaced Left-Turn (DLT) at the intersection of SR 535 at SR536/World Center Drive; and 2) Restricted Crossing U-Turns (RCUTs) from Vistana Drive to Meadow Creek Drive. The **Alternative Analysis and Development** section provides detailed discussion and analysis for these potential improvements.
- **Adaptive Signal Control** – Can be implemented to better accommodate the fluctuation of traffic due to non-recurrent network traffic change such as accidents, special events, etc. This corridor is adjacent to various theme parks and event centers, thus having some type of adaptive signal control will allow signal operators to adjust green times and cycle lengths to "flush" congested traffic through the corridor. Adaptive signal control in the form of InSync is already in place in Orange County thus this improvement would apply to the Osceola County portion of the project.
- **Transit Enhancements** – For the transit service between SR 536/World Center Drive and Vineland Avenue, additional stops and increased headways would be beneficial to tourists staying in resorts/hotels in the northern portion of the corridor. With virtually no opportunity to widen SR 535 from six to eight lanes north of SR 536/World Center Drive, increasing transit would provide a non-automobile alternative for locals/tourists to traverse from the north to the south sides of the corridor. Based on LYNX's 2015 Transit Development Plan, a new transit route is planned for the SR 535 corridor starting in 2023.
- **LED Corridor Lighting** – Roadway lighting benefits motorists by improving their ability to see roadway geometry and other vehicles at extended distances ahead. Intersection lighting allows for greater visibility of pedestrians that may be crossing the roadway as well. Currently SR 535 is unlit for a majority of the corridor with approximately 42 percent of crashes occurring in non-daylight conditions. Approximately 72 percent of the pedestrian/bicycle crashes along the corridor occurred in non-daylight conditions as well. LED lighting is consistent with what FDOT is implementing for most new lighting installations.

The short term improvements are displayed in **Figure 17**.

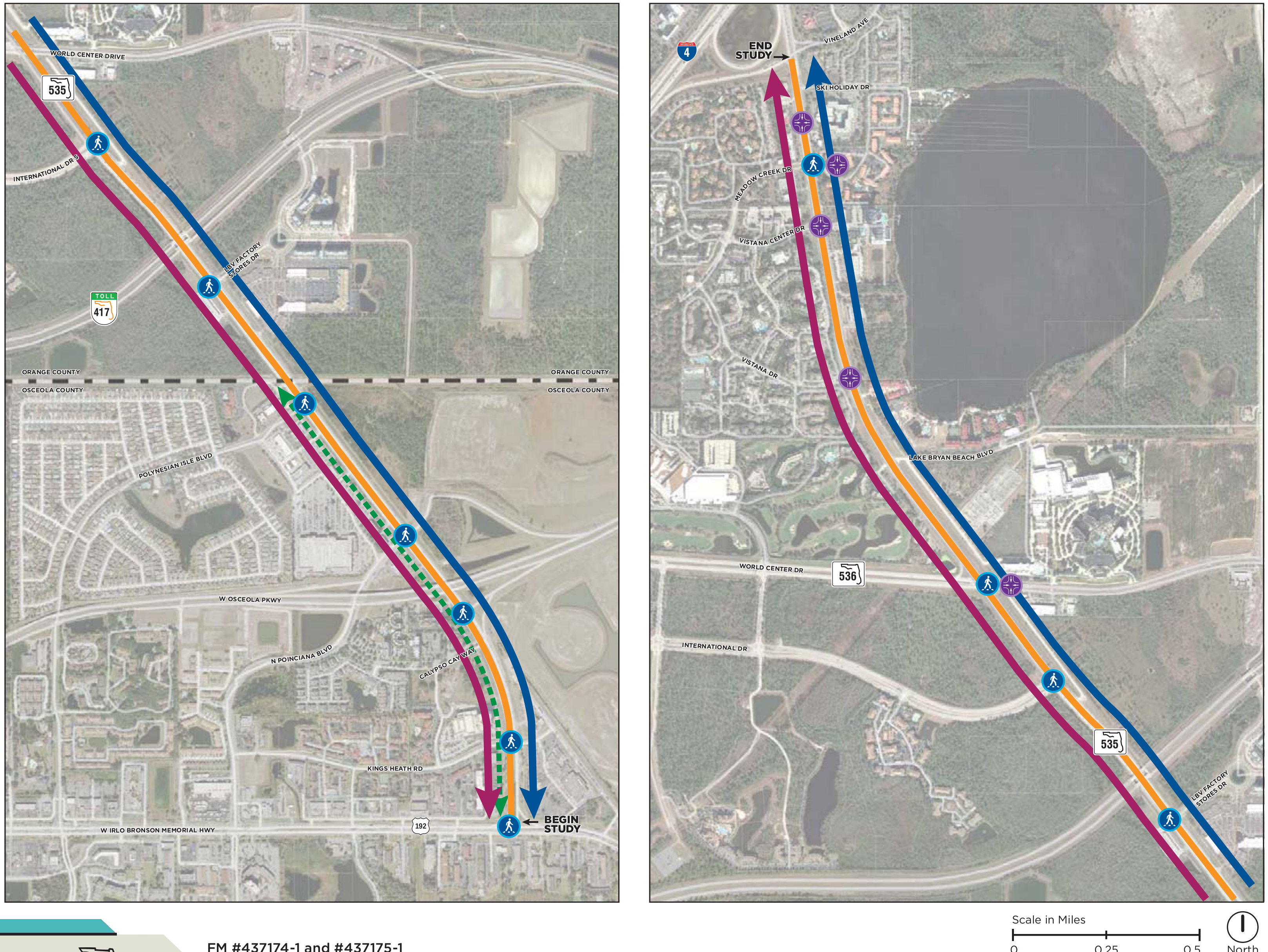


Figure No. 17
Short Term Improvements

- Study Corridor
- County Line
- PedSafe
- Innovative Intersection
- Adaptive Signal Control
- Transit Enhancements
- LED Corridor Lighting

DESIGN CRITERIA

As discussed in the next section, a rural and an urban 50 mile per hour (MPH) typical section are being considered for SR 535 from Kyngs Heath Road to Vistana Drive. From Vistana Drive to I-4, variations of a 45 MPH urban section are being considered. The design control list for each typical section type is listed in **Table 9**. The current design criteria used for developing roadway typical sections and typical sections under bridge structures are listed in **Table 10** and **Table 11**.

Table 9: Design Control List

Design Control		Kyngs Heath Rd. to Vistana Dr. – 50 MPH Rural Typical Section	Kyngs Heath Rd. to Vistana Dr. – 50 MPH Urban Typical Section	Vistana Drive to I-4 – 45 MPH Urban Typical Section	Source
General Criteria	Functional Class	Minor Arterial	Minor Arterial	Minor Arterial	FDM Table 200.2.1
	Context Classification	C3C – Suburban Commercial	C3C – Suburban Commercial	C3C – Suburban Commercial	FDM Table 200.4.1
	Proposed Access Management Classification	3	5	5	FDM Table 201.3.2
	Design/Posted Speed	50	50	45	FDM Table 201.4.1
	Design Year	2040	2040	2040	Planning Study Documentation
	Travel Lanes	6	6	6	Selected by Study
	Facility within Urban Boundary	Yes	Yes	Yes	Florida Urban Area Buffer Maps
	Stormwater Management Facilities	Open	Closed	Closed	Selected by Study

Table 10: Design Standards List for Typical Sections

Design Standards		SR 535 – 50 MPH Rural Typical Section	SR 535 – 50 MPH Urban Typical Section	SR 535 – 45 MPH Urban Typical Section	Source
Typical Section Element	Typical Section Type	Rural	Suburban	Urban	Selected by Study
	Lane Widths	12 ft.	12 ft.	11 ft.	FDM Table 210.2.1
	Median Width (ft) (min)	40	30	22	FDM Table 210.3.1
	Outside Shoulder Width (Full/Paved) (ft.)	10/5	N/A	N/A	FDM Table 210.4.1
	Inside Shoulder Width (Full/Paved) (ft.)	8/4	4 (paved)	N/A	FDM Table 210.4.1
	Curb & Gutter Type	N/A	Type E, F	Type E, F	FDM Section 210.5
	Sidewalk Width (ft.)	8 ft.	8 ft.	9 ft.	Selected by Study
	Bicycle Lane Width	7 ft. buffered	7 ft. buffered	7 ft. buffered	Selected by Study
	Shared Use Path Width	12 ft.	N/A	10 ft. to 12 ft.	Selected by Study
	Clear Zone	24 ft.	24 ft.	Varies	FDM Table 215.2.1

Table 11: Design Standards List for Typical Sections under Bridge Structures

Design Standards		Osceola Parkway Bridge	SR 417 Bridge	Source
Typical Section Element	Outside Roadway Barrier Type	Nested W-Beams w/Post Spacing at 3’	Nested W-Beams w/Post Spacing at 3’	FDM Section 215.4.5.1
	Inside Roadway Barrier Type	Rigid Barrier	Rigid Barrier	FDM Section 215.4.5.1
	Outside Deflection Distance	3 ft.	3 ft.	FDM Table 215.4.1
	Inside Deflection Distance	0 ft.	0 ft.	FDM Table 215.4.1
	Outside Lateral Barrier Offset	7 ft.	7 ft.	FDM Figure 215.4.6
	Nested W-Beam Width	1.25 ft.	1.25 ft.	Design Standard Index 400
	Rigid Barrier Width	1.25 ft.	1.25 ft.	Design Standard Index 410

TYPICAL SECTION ALTERNATIVES

The existing SR 535 corridor typical section varies from US 192 to I-4/Vineland Avenue, as noted below:

- US 192 to Kyngs Heath Road –
  - Urban 6 lane typical section with raised median and closed drainage curb/gutter;
  - 10’-12’ shared use paths on the east and west sides; and
  - Right-of-way (ROW) varies from 150’ to 190’.
- Kyngs Heath Road to International Drive –
  - Rural 4 lane typical section with grass median and open swales in both the median and roadside;
  - Paved shoulders and incomplete sidewalks; and
  - ROW varies from 216’ to 224’.
- International Drive to Vistana Drive –
  - Rural 6 lane typical section with grass median and open swales in both the median and roadside;
  - Paved shoulders and incomplete sidewalks; and
  - ROW is 186’.
- Vistana Drive to I-4/Vineland Avenue –
  - Urban 6 lane typical section with raised median and closed drainage curb/gutter;

- o Sidewalks present on both the east and west sides; and
- o ROW is 130'.

Based on the above existing typical sections, the following alternatives were evaluated as part of this study:

- Typical Section Location A: Kyngs Heath Road to Vistana Drive –
  - o Assessed a 6 lane widening to the outside alternative (applicable from Kyngs Heath Road to International Drive).
  - o Assessed a 6 lane widening to the inside alternative (applicable from Kyngs Heath Road to International Drive).
  - o Assessed adding various pedestrian and bicycle facilities (applicable from Kyngs Heath Road to Vistana Drive).
- Typical Section Location B: Vistana Drive to I-4/Vineland Avenue –
  - o Assessed adding various pedestrian and bicycle facilities.

No typical section alternatives were reviewed between US 192 and Kyngs Heath Road because the roadway is 6 lanes with adequate pedestrian facilities. It is anticipated that the preferred alternative typical section selected during the PD&E study will tie-in with the existing SR 535 section south of Kyngs Heath Road. The remainder of this section reviews each typical section alternative in further detail.

Typical Section Location A: Kyngs Heath Road to Vistana Drive

Figure 18 displays the existing 4 lane typical section from Kyngs Heath Road to International Drive. The existing roadway has four 12' travel lanes with two lanes in each direction. There are 4' paved outside shoulders and 52' median separating the two directions of travel.

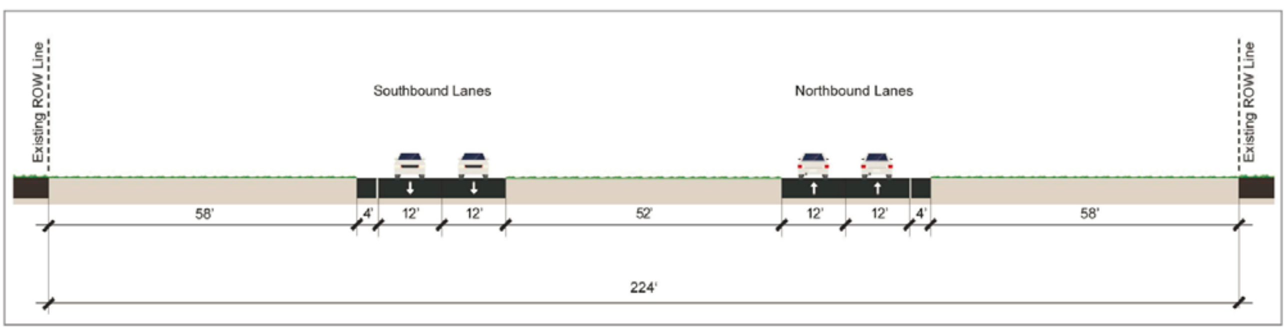


Figure 18: Location A Existing Typical Section

6 LANE WIDENING TO OUTSIDE ALTERNATIVES

Alternative 1, as displayed in **Figure 19**, has the following typical section elements:

- Add one 12’ travel lane in each direction to the outside of existing lanes;
- Widen outside shoulders to 5’;
- Add 4’ inside shoulders; and
- Provide a 12’ shared-use path near the east and west ROW lines.

This option would also maintain the rural typical section with open swales in both the median and roadside. The design speed for this typical section would be 50 MPH, consistent with the existing posted speed limit.

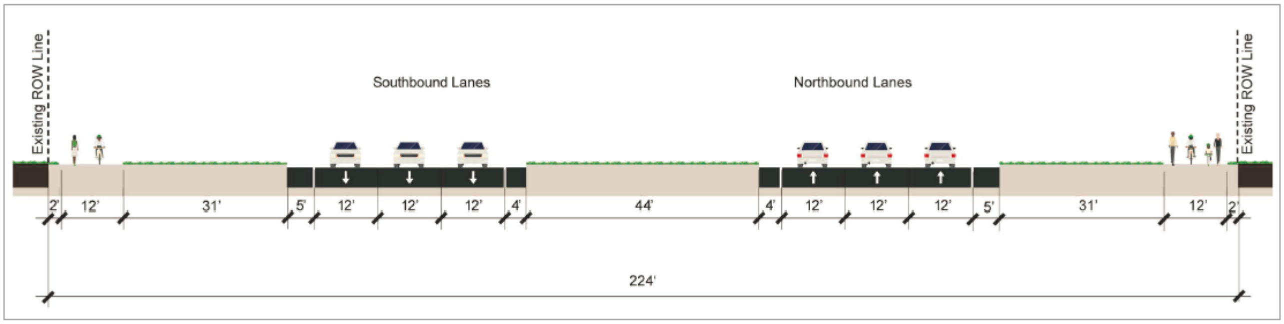


Figure 19: Alternative 1 – Rural 6 Lane Widening with Shared Use Path

Alternative 2, as displayed in **Figure 20**, has the following typical section elements:

- Add one 12’ travel lane in each direction to the outside of existing lanes;
- Provide a 7’ buffered bicycle lanes outside of travel lanes;
- Add 4’ inside shoulders; and
- Provide an 8’-12’ shared-use path near the east and west ROW lines.

This option would also maintain the rural typical section with open swales in both the median and roadside. The design speed for this typical section would be 50 MPH, consistent with the existing posted speed limit.

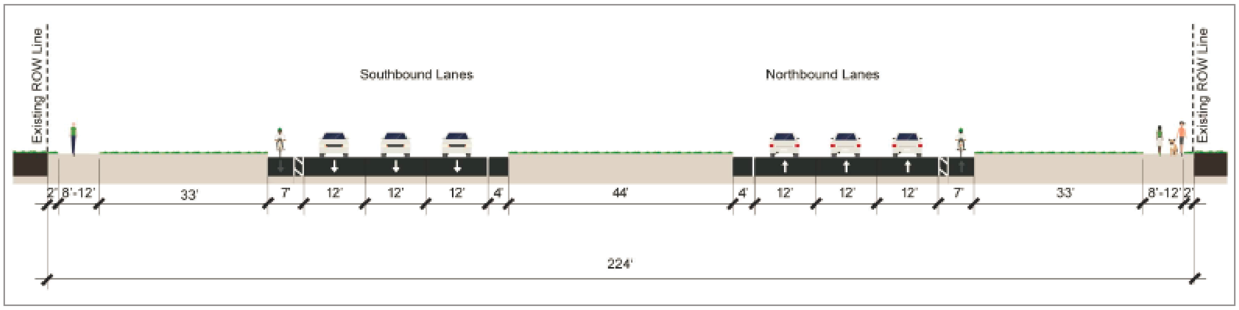


Figure 20: Alternative 2 – Rural 6 Lane Widening with Buffered Bike Lane

Alternative 3, as displayed in **Figure 21**, has the following typical section elements:

- Add one 12’ travel lane in each direction to the outside of existing lanes;
- Provide 7’ buffered bicycle lanes outside of travel lanes;

- Add 4’ inside shoulders;
- Add curb and gutter to both inside and outside shoulders; and
- Provide 8’-12’ shared-use path near the east and west ROW lines.

This option would convert the rural typical section into an urban typical section with a design speed of 50 MPH, consistent with the existing posted speed limit.

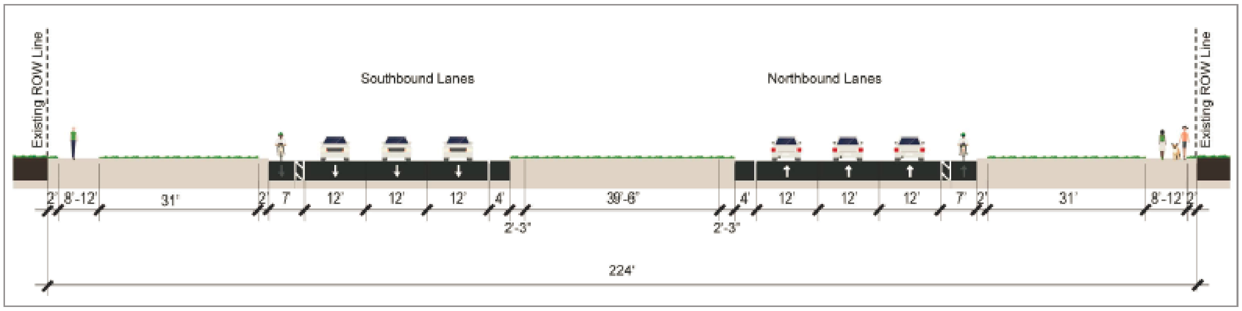


Figure 21: Alternative 3 – Urban 6 Lane Widening with Buffered Bike Lane

<u>6 LANE WIDENING TO INSIDE ALTERNATIVES</u>

Alternative 1, as displayed in **Figure 22**, has the following typical section elements:

- Add one 12’ travel lane in each direction to the inside of existing lanes;
- Widen outside shoulders to 5’;
- Add 4’ inside shoulders;
- Add curb and gutter to inside shoulders; and
- Provide a 12’ shared-use path near the east and west ROW lines.

This option would maintain the rural typical section with open swales on the roadside. The design speed for this typical section would be 50 MPH, consistent with the existing posted speed limit.

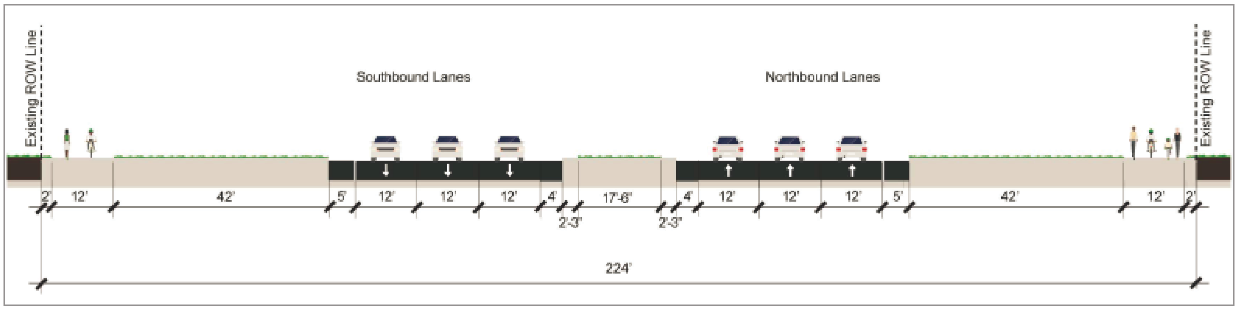


Figure 22: Alternative 1 – Rural 6 Lane Widening with Shared Use Path

Alternative 2, as displayed in **Figure 23**, has the following typical section elements:

- Add one 12’ travel lane in each direction to the inside of existing lanes;
- Provide a 7’ buffered bicycle lanes outside of travel lanes;

- Add 4' inside shoulders;
- Add curb and gutter to inside shoulders; and
- Provide an 8'-12' shared-use path near the east and west ROW lines.

This option would maintain the rural typical section with open swales on the roadside. The design speed for this typical section would be 50 MPH, consistent with the existing posted speed limit.

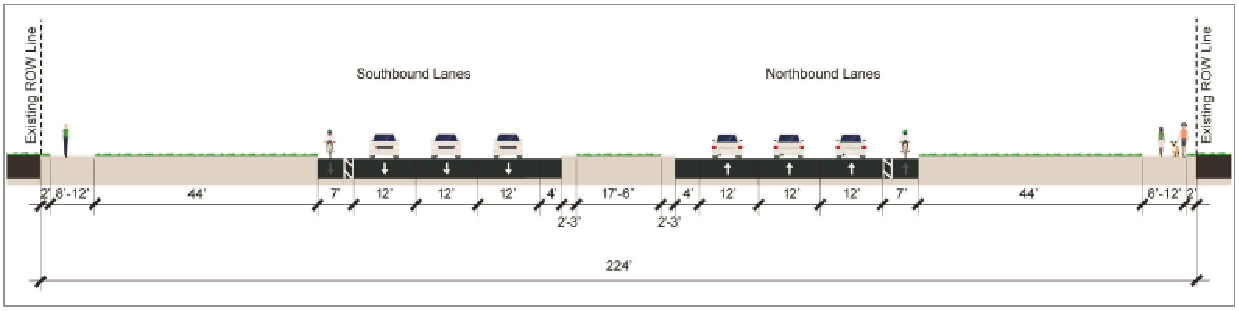


Figure 23: Alternative 2 – Rural 6 Lane Widening with Buffered Bike Lane

Alternative 3, as displayed in **Figure 24**, has the following typical section elements:

- Add one 12' travel lane in each direction to the inside of existing lanes;
- Provide 7' buffered bicycle lanes outside of travel lanes;
- Add 4' inside shoulders;
- Add curb and gutter to both inside and outside shoulders; and
- Provide 8'-12' shared-use path near the east and west ROW lines.

This option would convert the rural typical section into an urban typical section with a design speed of 50 MPH, consistent with the existing posted speed limit.

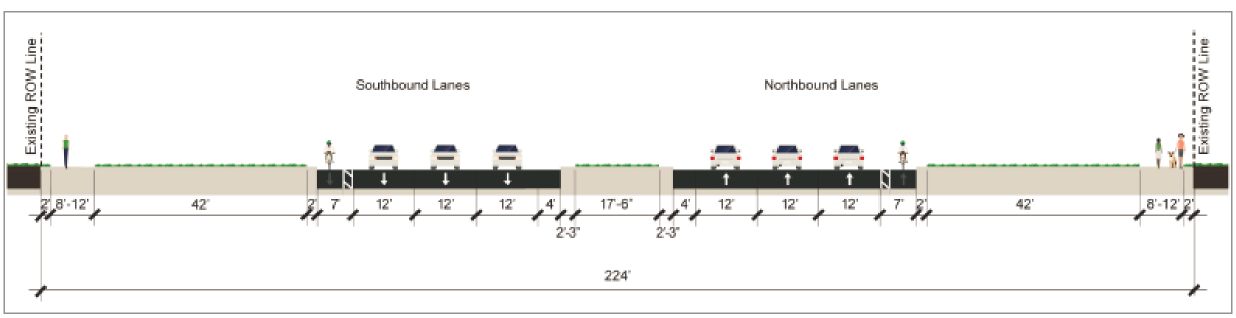


Figure 24: Alternative 3 – Urban 6 Lane Widening with Buffered Bike Lane

Typical Section Location B: Vistana Drive to I-4/Vineland Avenue

Figure 25 displays the existing 6 lane typical section from Vistana Drive to I-4/Vineland Avenue. The existing roadway has six 12' travel lanes with three lanes in each direction. Curb and gutter is present both in the median and on the roadside. A 5' sidewalk is located approximately 3' from the back of curb on both sides of the roadway.

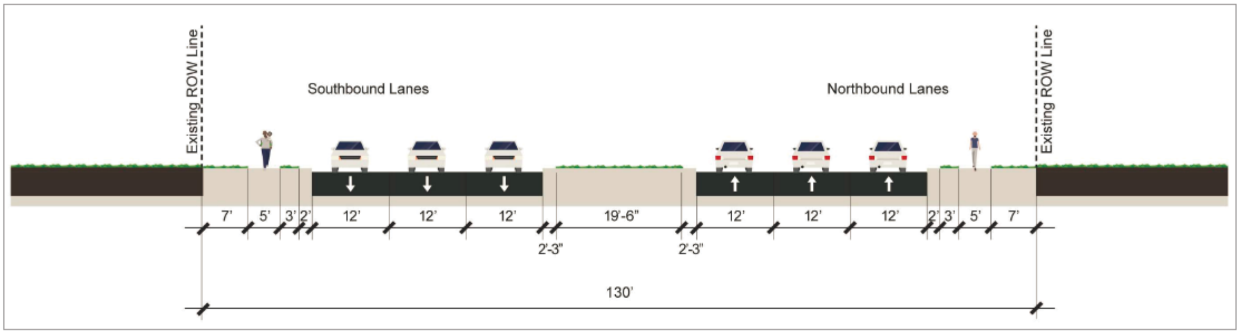


Figure 25: Location B Existing Typical Section

Alternative 1, as displayed in **Figure 26**, has the following typical section elements:

- Narrow lane widths to 11';
- Rebuild curb and gutter on outside shoulder; and
- Widen existing sidewalk to be a 12' shared-use path.

This option would maintain the urban typical section with curb and gutter on both the median and roadside. The design speed for this typical section would be 45 MPH, consistent with the existing posted speed limit.

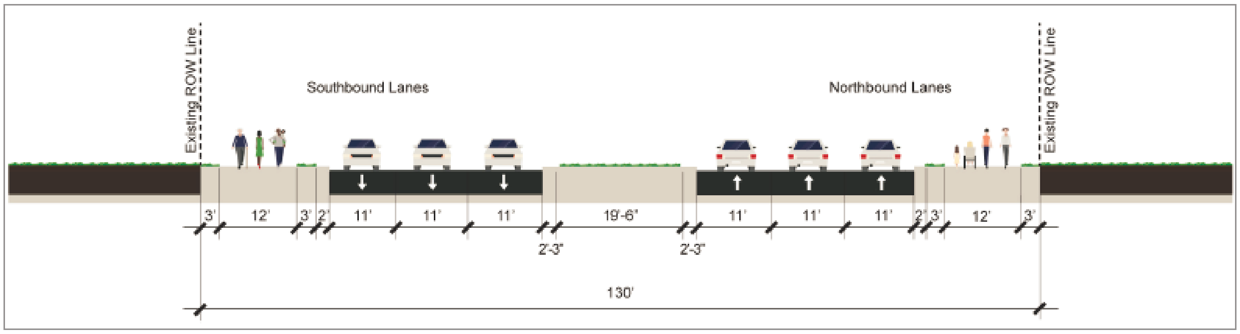


Figure 26: Alternative 1 – Shared Use Path

Alternative 2, as displayed in **Figure 27**, has the following typical section elements:

- Narrow lane widths to 11';
- Provide 7' buffered bicycle lanes outside of travel lanes;
- Rebuild curb and gutter on outside shoulder; and
- Widen sidewalk to be a 9' shared-use path.

This option would maintain the urban typical section with curb and gutter on both the median and roadside. The design speed for this typical section would be 45 MPH, consistent with the existing posted speed limit.

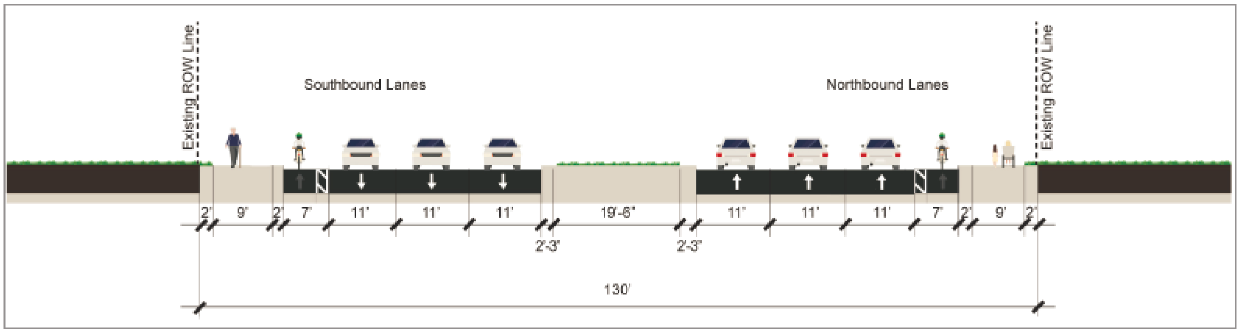


Figure 27: Alternative 2 – Buffered Bike Lane

Alternative 3, as displayed in **Figure 28**, has the following typical section elements:

- Narrow lane widths to 11';
- Narrow median to 22' from 24' and rebuilds inside shoulder curb and gutter;
- Provide 7' buffered bicycle lanes outside of travel lanes;
- Rebuild curb and gutter on outside shoulder; and
- Widen sidewalk to be a 10' shared-use path.

This option would maintain the urban typical section with curb and gutter on both the median and roadside. The design speed for this typical section would be 45 MPH, consistent with the existing posted speed limit.

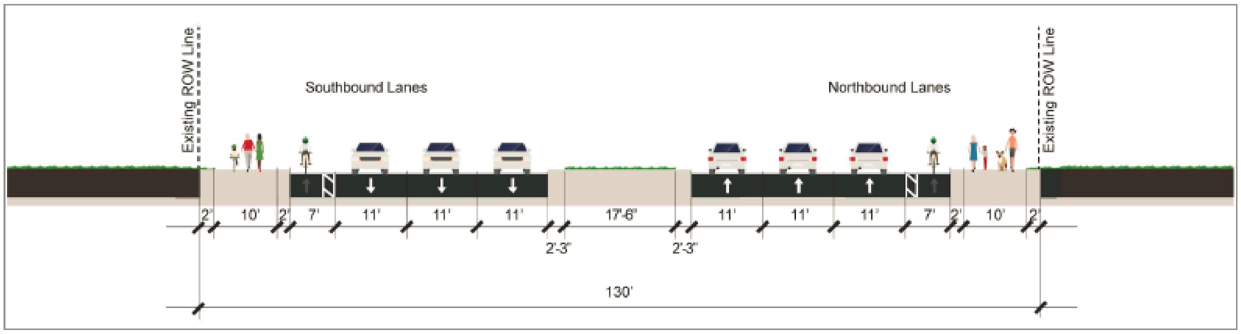


Figure 28: Alternative 3 – Buffered Bike Lane and Shared Use Path

Typical Sections Under Osceola Parkway and SR 417 Bridges

Two bridge overpasses are present along the study corridor, one for the Osceola Parkway and another for SR 417. These locations provide the narrowest typical section locations along the corridor. To assess if the six lane widening options were feasible, typical sections were created under the two bridge structures. The following sections detail the alternatives considered under the Osceola Parkway and SR 417.

OSCEOLA PARKWAY

The existing typical section under the Osceola Parkway bridge is displayed in **Figure 29**. The following typical section elements are present under the bridge:

- Three 12’ travel lanes in the southbound direction and two 12’ lanes in the northbound direction;
- 4’ paved outside shoulders;
- Two 12’ southbound left turn lanes for the Osceola Parkway Eastbound Ramps intersection;
- Pier with jersey barrier protection in the middle of the structure; and
- Varying widths on the inside and outside shoulder to the middle pier and outside structure.

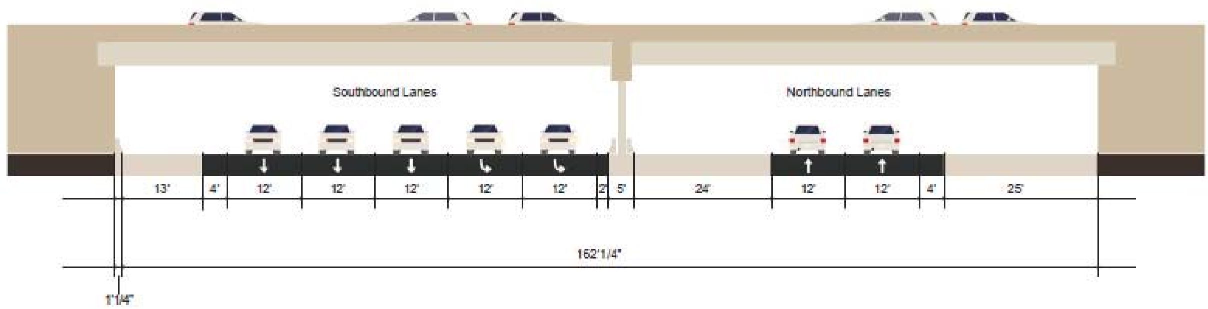


Figure 29: SR 535 under Osceola Parkway Bridge – Existing

The proposed typical section under the Osceola Parkway bridge is displayed in **Figure 30**. The following typical section elements are present under the bridge:

- Maintain the three 12’ travel lanes southbound and two southbound left turn lanes;
- Widen outside shoulders to 5’ and provide a 4’ inside paved shoulder in the northbound direction;
- Add a third 12’ lane northbound; and
- Add a 12’ shared-use path northbound and a sidewalk in the southbound direction, separated from the travel lanes by a guardrail.

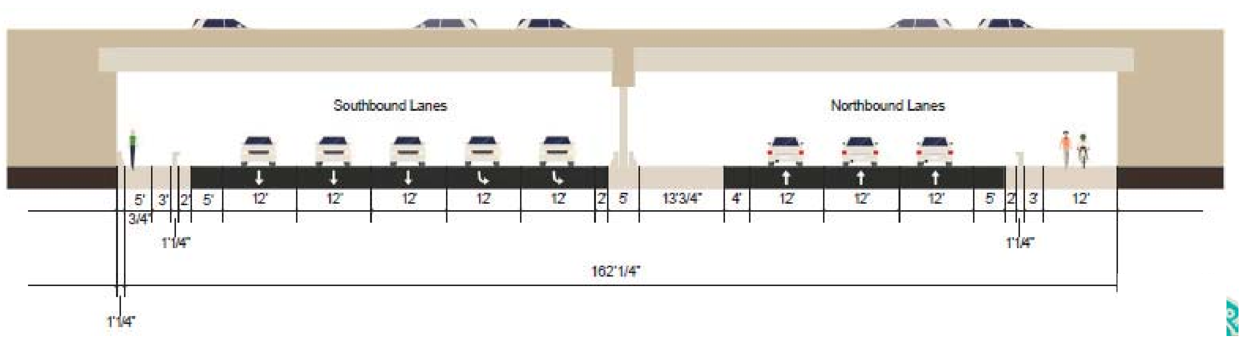


Figure 30: SR 535 under Osceola Parkway Bridge – Proposed

SR 417

The existing typical section under the SR 417 bridge is displayed in **Figure 31**. The following typical section elements are present under the bridge:

- Two 12’ travel lanes in the southbound and northbound direction;
- One 11’ southbound left turn lane for the Lake Buena Vista Factory Stores intersection;

- 4’ paved outside shoulders;
- 5’ wide pier in the middle of the structure; and
- Varying widths on the inside and outside shoulder to the middle pier and outside structure.

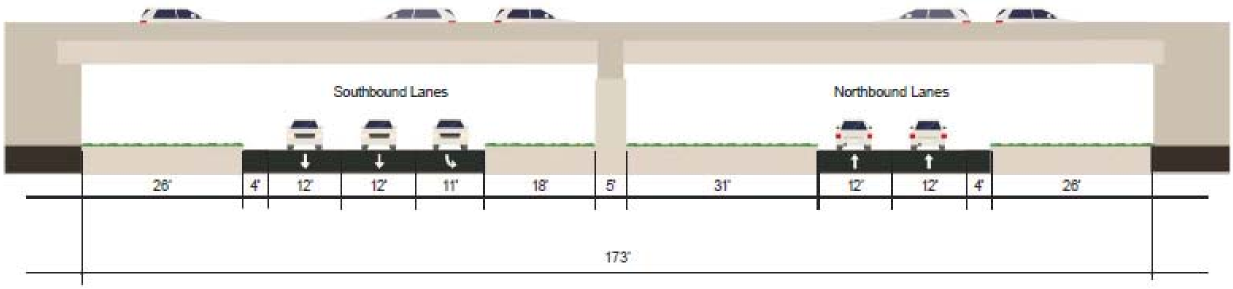


Figure 31: SR 535 under SR 417 Bridge – Existing

The proposed typical section under the SR 417 bridge is displayed in **Figure 32**. The following typical section elements are present under the bridge:

- Add a third 12’ lane in both the northbound and southbound directions;
- Maintain the southbound left turn lane;
- Widen outside shoulders to 5’ and provide a 4’ inside paved shoulder in the northbound direction; and
- Add a 12’ shared-use path in both the northbound and southbound directions, separated from the travel lanes by a guardrail.

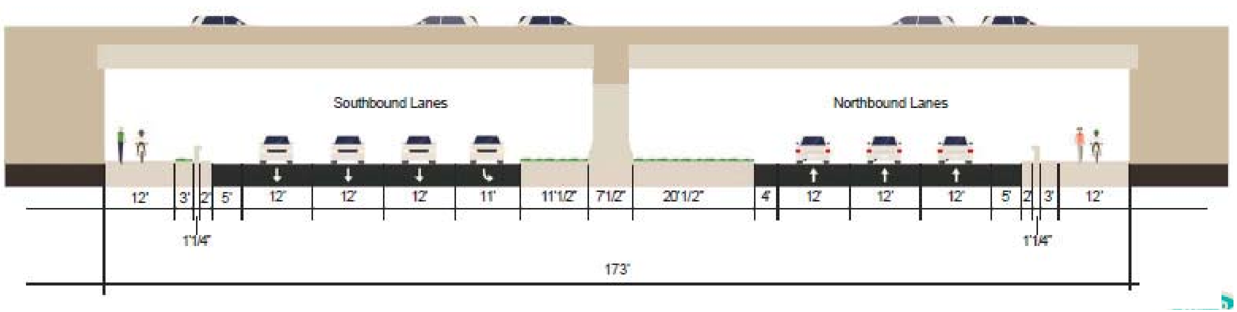


Figure 32: SR 535 under SR 417 Bridge – Proposed

Typical Section Alternatives Comparison Matrix

The alternative typical sections for SR 535 from Kings Heath Road to Vistana Drive are compared in **Table 12** based on metrics such as pedestrian/bicycle mobility, overall safety, supports transit, ROW impacts, drainage impacts, utility impacts, and cost. A summary of the high, moderate, and low ratings for each option is provided after the table.

Table 12: Typical Section Measures of Effectiveness – Kyngs Heath Road to Vistana Drive

MOE	Widen to Outside			Widen to Inside		
	Alt. 1 (Rural)	Alt. 2 (Rural)	Alt. 3 (Urban)	Alt. 1 (Rural)	Alt. 2 (Rural)	Alt. 3 (Urban)
Improve Pedestrian Mobility/Safety	Moderate	Moderate	High	High	High	High
Improve Bicycle Mobility/Safety	High					
Improve Vehicular Mobility	High					
Improve Vehicular Safety	Low	Low	Moderate	Low	Low	Moderate
Support Efforts to Increase Transit	Same/Negligible Difference					
ROW Impacts	None Anticipated					
Drainage Impacts	Moderate	Moderate	High	Moderate	Moderate	High
Utility Impacts	Low					
Cost Comparison	Moderate	Moderate	High	Low	Low	Moderate

- **Improve Pedestrian Mobility/Safety** – Each of the alternatives provides either wide sidewalks or shared-use paths near the ROW line. The difference between the high and moderate rating is the distance from the edge of the travel lane to the pedestrian facilities. Between the rural options, the widen to the inside would provide a greater distance to the pedestrian facilities thus the high rating. The two urban alternatives would provide a curb and gutter providing physical separation between the travel lanes and the pedestrian facilities thus the high rating.
- **Improve Bicycle Mobility/Safety** – Each of the typical section alternatives are providing some type of bicycle facility where it is not currently present today, either in the form of a shared-use path or buffered bicycle lane. Thus the reason for the high rating for each alternative.
- **Improve Vehicular Mobility** – By adding an additional travel lane in each direction, mobility will be increased thus the high rating.
- **Improve Vehicular Safety** – The existing roadway has inside shoulders and outside shoulders that do not meet current standards. Each alternative will provide an inside shoulder and increase the width of the outside shoulder. Increasing the roadway capacity will lead to higher vehicular volumes, and thus higher crashes. The anticipated higher vehicular crashes is why the rural options have a low rating. The two urban options provide curb and gutter which will reduce run-off-the-road crashes which is why those were given moderate ratings.
- **Support Efforts to Increase Transit** – Each of the alternatives provide the same opportunity to increase transit along the corridor.
- **ROW Impacts** – Each of the alternatives should fit within the available ROW along the corridor.
- **Drainage Impacts** – Each of the widening alternatives would need at least one pond site to treat the excess runoff created by the new travel lanes. The rural inside and outside widening alternatives would impact the median and roadside swales. For the inside widening alternative, the roadside swales may still be able to be used for drainage attenuation. The two

urban alternatives would introduce curb and gutter and it would be anticipated that pipes and a closed drainage system would also be required, thus the high rating.

- **Utility Impacts** – Power lines are located near the ROW line and underground fiber optic cable, water, and sewer lines are present along the corridor. The power lines are not anticipated to be impacted by the widening. The PD&E Study will need to evaluate the impacts the widening will have on underground utilities along the corridor.
- **Cost Comparison** – The overall roadway widening cost would be similar for the various alternatives. The primary cost difference between the alternatives is the amount of drainage work that will be needed. The rural widening to the inside alternatives would be the lowest relative cost because only the median drainage facilities would be impacted but the roadside swales would not. The rural widening to the outside alternatives would impact drainage swales along the roadside thus making the construction higher than inside options. The two urban alternatives would be the highest cost because of the need for curb and gutter.

The alternative typical sections for SR 535 from Vistana Drive to I-4/Vineland Avenue are compared in **Table 13** based on metrics discussed above. A bullet list of the high, moderate, and low ratings for each option is provided after the table.

Table 13: Typical Section Measures of Effectiveness – Vistana Drive to I-4/Vineland Avenue

MOE	Alt. 1	Alt. 2	Alt. 3
Improve Pedestrian Mobility/Safety	High	High	High
Improve Bicycle Mobility/Safety	Moderate	High	High
Improve Vehicular Mobility	Same/Negligible Difference		
Improve Vehicular Safety	Same/Negligible Difference	Moderate	Moderate
Support Efforts to Increase Transit	Same/Negligible Difference		
ROW Impacts	Low		
Drainage Impacts	Moderate	Moderate	High
Utility Impacts	Moderate	Moderate	Moderate
Cost Comparison	Low	Moderate	High

- **Improve Pedestrian Mobility/Safety** – Each of the alternatives provides wider sidewalks along the corridor, thus the high rating for each alternative.
- **Improve Bicycle Mobility/Safety** – Each of the typical section alternatives are providing some type of bicycle facility where it is not currently present today, either in the form of a shared-use path or buffered bicycle lane. Alternative 1 only provides a shared-use path but no on-street bicycle facility thus the reason for the moderate instead of high rating.
- **Improve Vehicular Mobility** – Each of the alternatives will be reducing the overall lane width but this should not impact overall mobility of vehicles along the corridor.
- **Improve Vehicular Safety** – Alternative 1 will be narrowing the lane widths but this should not impact overall safety along the corridor. Alternatives 2 and 3 will be adding a buffered bicycle

lane, increasing the buffer to the curb and gutter where there isn't one today. This can potentially reduce fixed-object crashes related to the curb and gutter.

- **Support Efforts to Increase Transit** – Each of the alternatives provide the same opportunity to increase transit along the corridor.
- **ROW Impacts** – Each of the alternatives should fit within the available ROW along the corridor. The next phase of study should assess specific parcel-by-parcel impacts of each typical section alternative.
- **Drainage Impacts** – It is not anticipated that pond sites will be needed because no new travel lanes are being added for this section of the project. Alternative 1 and 2 have a moderate rating because the outside curb and gutter would need to be reconstructed. Alternative 3 would have a high impact because both the inside and outside curb and gutter would need to be reconstructed. It is anticipated that wherever curb and gutter would need to be reconstructed, additional pipes and drainage connections would be needed.
- **Utility Impacts** – Power lines are located near the ROW line and underground fiber optic cable, water, and sewer lines are present along the corridor. The power lines may potentially be impacted by the widening of the sidewalk. The next phase of study will need to evaluate the impacts to the underground utilities along the corridor.
- **Cost Comparison** – Alternative 1 would have the lowest potential cost, as widening sidewalk and rebuilding outside curb and gutter would be the primary construction costs. Alternative 2 would have a moderate cost because of the extra pavement addition to the existing roadway, while also widening the sidewalk and rebuilding outside curb and gutter. Alternative 3 would have the highest overall cost due to the aforementioned factors in addition to rebuilding the median curb and gutter.

TYPICAL SECTION LOS ANALYSIS

To assess the future segment LOS based on a six lane SR 535 between Kyngs Heath Road and SR 536/World Center Drive, an FDOT generalized LOS evaluation and HCM 2010 LOS evaluation was performed.

FDOT Generalized LOS Evaluation

Table 14 summarizes the 2040 AADT for each study segment and the results of the Generalized LOS Evaluation based on a six lane SR 535. Poinciana Boulevard to SR 536/World Center Drive is still not anticipated to meet the LOS targets based on the FDOT generalized LOS evaluation, even with the six lane widening. The HCM analysis discussed in the next section provides greater detail on the overall benefit of the six-lane widening, beyond just the generalized daily numbers.

Table 14: 2040 Future Build FDOT Generalized LOS Evaluation

Segment	2016 AADT	2040 AADT	Area Type	Segment Type	Speed Limit	FDOT LOS Target	Adjusted LOS Volume Standard**	2040 Volumes Exceeds Volume Target?
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	26,900	40,000	Urban	Signalized Arterial	50	D	62,900	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	26,900	40,000	Urban	Signalized Arterial	50	D	62,900	N
Poinciana Boulevard to Polynesian Isle Boulevard	**46,800**	**69,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**44,300***	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**
LBV Factory Stores Drive to International Drive	**44,300***	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**
International Drive to SR 536/World Center Drive	**44,300***	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**

***Note:** Segment was below LOS standard under 2016 volumes
****Source:** *2013 FDOT Quality/LOS Handbook Tables*

Build Segment LOS Evaluation

The segment analysis was performed for the 2040 AM and PM peak hours in the northbound and southbound directions for the four to six lane widening sections of SR 535. **Table 15** and **Table 16** display the 2040 future build peak hour results from the HCM analysis and the LOS for each segment. With the six lane widening improvements from Kyngs Heath Road to SR 536, eight segments across the AM and PM peak hours are still anticipated to operate below LOS D. The future no-build conditions had 15 segments across both peak hours anticipated to operate below LOS D. *Note that the future build at-grade intersection improvements discussed in the next section were incorporated into the build segment analysis and results presented in this section.*

The following summarizes the anticipated deficiencies (by direction) identified as part of the 2040 AM peak hour HCM segment operations (shown in bold in **Table 15**):

- Northbound –
  - SR 535 between the Osceola Parkway Eastbound On-Ramp and Poinciana Boulevard is anticipated to operate at LOS F.
  - SR 535 between the Polynesian Isle Boulevard and LBV Factory Stores Drive is anticipated to operate at LOS E.
  - SR 535 between the International Drive and SR 536/World Center Drive is anticipated to operate at LOS F.
- Southbound –
  - SR 535 between Polynesian Isle Boulevard and Poinciana Boulevard is anticipated to operate at LOS E.

Table 15: Future Build HCM LOS Evaluation Results – 2040 AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	36.8	73%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**10.7**	**21%**	**F**	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	50.5	37.5	74%	B	N
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**20.2**	**40%**	**E**	**Y**
LBV Factory Stores Drive to International Drive	50.4	31.7	63%	C	N
International Drive to SR 536/World Center Drive	**50.6**	**11.5**	**23%**	**F**	**Y**
Southbound Direction					
SR 536/World Center Drive to International Drive	50.6	35.8	71%	B	N
International Drive to LBV Factory Stores Drive	50.6	39.2	77%	B	N
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	33.2	66%	C	N
Polynesian Isle Boulevard to Poinciana Boulevard	**50.4**	**19.0**	**38%**	**E**	**Y**
Poinciana Boulevard to Osceola Parkway Ramps	50.2	33.3	66%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	29.3	58%	C	N

The following briefly summarizes the anticipated deficiencies (by direction) identified as part of the 2040 PM peak hour segment operations (shown in **Table 16**):

- Northbound –
  - SR 535 between the Poinciana Boulevard and Polynesian Isle Boulevard is anticipated to operate at LOS E.
  - SR 535 between the International Drive and SR 536/World Center Drive is anticipated to operate at LOS E.
- Southbound –
  - SR 535 between LBV Factory Store Drive and Poinciana Boulevard is anticipated to operate at LOS F or LOS E.

Table 16: Future Build HCM LOS Evaluation Results – 2040 PM Peak Hour

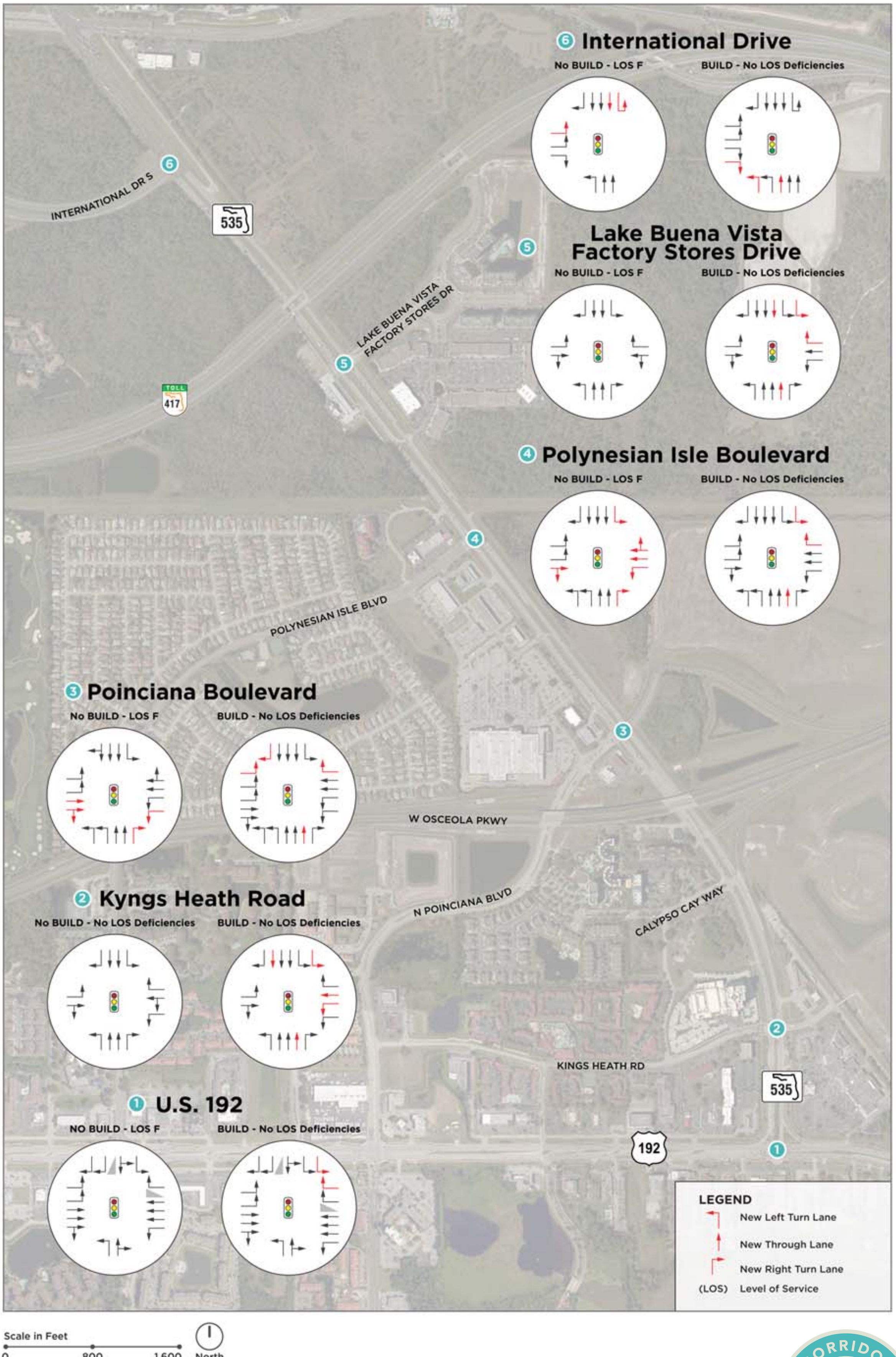
Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	35.0	69%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	50.6	23.8	47%	D	N
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**19.4**	**38%**	**E**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	50.5	23.5	47%	D	N
LBV Factory Stores Drive to International Drive	50.4	31.8	63%	C	N
International Drive to SR 536/World Center Drive	**50.6**	**16.5**	**33%**	**E**	**Y**
Southbound Direction					
SR 536/World Center Drive to International Drive	50.6	35.8	71%	B	N
International Drive to LBV Factory Stores Drive	50.6	22.2	44%	D	N
LBV Factory Store Drive to Polynesian Isle Boulevard	**50.2**	**15.0**	**30%**	**F**	**Y**
Polynesian Isle Boulevard to Poinciana Boulevard	**50.4**	**18.6**	**37%**	**E**	**Y**
Poinciana Boulevard to Osceola Parkway Ramps	50.2	33.3	66%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	23.4	46%	D	N

Appendix G contains the HCM inputs and the various outputs/calculations for the segment analysis.

AT-GRADE INTERSECTION ALTERNATIVES

The no-build operational analysis identified capacity constraints and deficiencies along the study corridor from a daily perspective (FDOT General LOS Tables) and during the AM and PM peak hours. In addition to the six lane widening, specific at-grade intersection improvements in the form of turn lane additions were also assessed from US 192 to International Drive. The goal of the at-grade intersection improvements is to improve the LOS of those intersections while also trying to reduce the number of movements with a v/c ratio >1.0. **Figure 33** displays the future build intersection lane configurations compared to the future no-build configurations. The remainder of this section details the specific improvements evaluated at each intersection.

Figure No. 33
Build Intersection Improvements



- US 192 – Alternative 1
    - Second exclusive southbound left turn lane;
    - Second westbound right turn lane; and
    - Place the westbound channelized right turn lanes under signal control.
- US 192 – Alternative 2
    - Second exclusive southbound left turn lane;
    - Second westbound right turn lane; and
    - Remove the channelization for the westbound right turn lanes and bring them under the signal control at the intersection.
- Kyngs Heath Road
    - Second southbound left turn lane;
    - Third southbound through lane;
    - Third northbound through lane; and
    - Convert westbound shared through/left lane to an through lane and exclusive left turn lane.
- Poinciana Boulevard
    - Third northbound through lane;
    - Third eastbound left turn lane;
    - Convert southbound shared through/right lane to an through lane and exclusive right turn lane; and
    - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
- Polynesian Isle Boulevard
    - Second southbound left turn lane;
    - Third northbound through lane; and
    - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
- LBV Factory Stores Drive
    - Second southbound left turn lane;
    - Third northbound and southbound through lane; and
    - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
- International Drive
    - Third northbound through lane;
    - Second northbound left turn lane; and
    - Second eastbound right turn lane.

As noted in the previous section, the above intersection improvements were incorporated into the overall HCM segment analysis. In addition to the segment analysis, AM and PM peak hour analyses were performed on the six intersections to determine if the improvements improved LOS and v/c ratios. This analysis resulted in the six intersections from US 192 to International Drive operating at LOS D or better based on the intersection improvements noted above. The v/c ratios for each movement at each intersection are less than 1.0. **Figure 33** also displays the LOS comparison between the no-build and build conditions. Detailed HCM output reports are located in **Appendix G**.

SR 535 AT SR 536

Based on the no-build conditions, SR 535 at SR 536 experiences LOS E/F operations with six over capacity movements in the AM and PM peak hours. Traditional at-grade intersection improvements in the form of turn lane additions yielded less than acceptable results, with triple left turn lanes and dual right turn lanes being needed on multiple approaches. Even with these turn lane additions, the intersection was still anticipated to operate at LOS E/F during the peak hours. The turn lane additions would also make pedestrian crossings even more challenging at this location. In order to improve traffic operations and try to maintain pedestrian mobility/safety, innovative intersection treatments and grade separated alternatives were explored at a high level for the SR 535/SR 536 intersection.

Innovative Intersection Treatment – Displaced Left Turn (DLT)[1]

A high level screening using the Federal Highway Administration's (FHWA) Capacity Analysis for Planning of Junctions (CAP-X) Tool identified the Displaced Left Turn (DLT) as a possible at-grade alternative to increase intersection capacity. The DLT intersection implements unopposed left turns at intersections by moving traffic over to the other side of the road in advance. Traffic crosses opposing through lanes at a separate signalized intersection before the main intersection, entering a parallel left turn lane separated from opposing lanes. At the main intersection, left turning and through traffic move simultaneously, increasing efficiency and safety by reducing conflict. **Figure 34** illustrates a representative sketch of a partial DLT.

The DLT is best-suited to intersections with moderate to high overall traffic volumes, and especially to those with very high or unbalanced left turn volumes. It can be a competitive alternative to a full, grade-separated interchange. The following are additional advantages of a DLT:

- Reduces total number and overall severity of vehicle-to-vehicle conflict points;
- Studies showed a partial DLT with crossovers on only select intersection approaches increased throughput by about 20 percent and significantly reduced delay by up to 30-40 percent; and
- DLT intersections have been constructed in several states, including Colorado, Louisiana, Maryland, Missouri, New York, Ohio, Texas, and Utah.

[1] Information obtained from FHWA's Dis placed Left Turn Intersection Brochure;
https://safety.fhwa.dot.gov/intersection/innovative/crossover/brochures/dlt/dlt_brochure.pdf

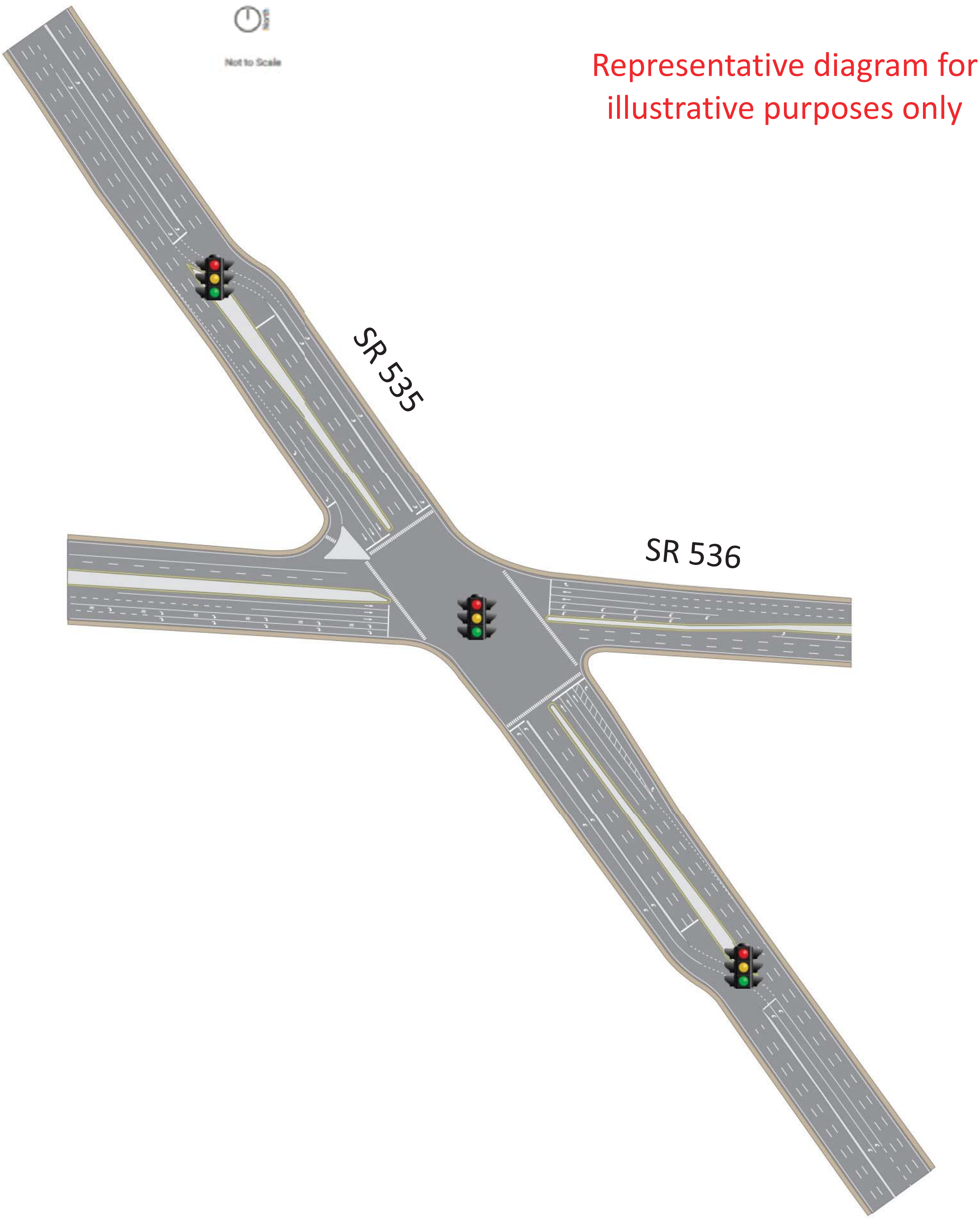


Figure 34: SR 535/SR 536 Partial DLT Sketch

A partial DLT in the north-south direction was analyzed. The same no-build lane configuration was assessed for the DLT analysis so a comparative analysis could be made between the no-build and build scenarios. A HCM level analysis was performed on the partial DLT intersection which resulted in the intersection operating at LOS E during the 2040 AM and PM peak hour. The westbound left turn movement is the only movement operating with v/c ratio >1.0 (1.01 during the PM peak hour). The v/c ratios for the other movements are less than 1.0 during both peak hours. **Figure 34** illustrates a representative sketch of a partial DLT at the SR 535/SR 536 intersection. Detailed HCM output reports are located in **Appendix G**.

Grade Separated Alternatives

In addition to the partial DLT, the FHWA CAP-X screening was also performed for grade separated options. The following alternatives were identified based strictly on capacity of the interchange junctions:

- Diverging Diamond Interchange (DDI); and
- Single Point Urban Interchange (SPUI).

Table 17 displays the v/c results from the preliminary CAP-X analysis. As displayed in the table, each interchange configuration is anticipated to have v/c ratios <1.0, whether SR 535 is at-grade or SR 536 is at-grade.

Table 18 displays the measures of effectiveness that could be utilized during the next phases of study. A bullet list of the high, moderate, and low ratings for each option is provided after the table.

Table 17: CAP-X Results

Peak Hour	SR 536 At Grade		SR 535 At Grade	
	DDI	SPUI	DDI	SPUI
Max V/C (Peak Hour)	0.95 (PM)	0.82 (AM and PM)	0.94 (AM)	0.94 (AM)

Table 18: Measures of Effectiveness – Grade Separated Alternatives

MOE	SR 536 At Grade		SR 535 At Grade	
	DDI	SPUI	DDI	SPUI
ROW	Moderate	Moderate	Moderate	Moderate
Driveway Impacts	Low	Low	High	High
Drainage Impacts	High	High	High	High
Utility Impacts	Moderate	Moderate	Moderate	Moderate
Cost	High	High	High	High

- **ROW** – The current ROW is approximately 200' along the SR 535 corridor through the SR 536 intersection. A frontage road is also adjacent to SR 535 along the east side from International Drive to Lake Bryan Beach Boulevard.
- **Driveway Impacts** – Only one driveway is present along SR 535 between International Drive and Lake Bryan Beach Boulevard thus driveway impacts would be minimal if SR 535 was the grade separated roadway. If SR 536 became the grade separated roadway, there would be impacts to the two hotels in the northeast corner of the intersection.
- **Drainage Impacts** – For each of the interchange alternatives, a pond site would likely be required based on discussions with FDOT Drainage Department staff.
- **Utility Impacts** – Underground utilities and overhead power/transmission lines are present along the SR 535 corridor. It is anticipated that existing utilities would be moderately impacted for any of the interchange configurations.
- **Cost** – Planning level cost estimates for grade separated interchanges in urban environments can range from \$25 million to \$50 million, depending on the ROW, utility, and drainage impacts.

SR 535 FROM VISTANA DRIVE TO MEADOW CREEK DRIVE

Congestion between SR 536 and I-4 was a key issue identified during the existing conditions analysis. This section of SR 535 is already six lanes and as stated previously, local jurisdictions did not want to explore an eight lane alternative. The portion of SR 535 between Vistana Drive and I-4/Vineland Avenue has a more constrained ROW than the section south to US 192, thus traditional turn lane addition type improvements may not fit within the available ROW. For this reason, innovative intersection treatments were explored.

A high level screening using CAP-X identified the Restricted Crossing U-Turn (RCUT) as a possible at-grade alternative to increase intersection capacity. The RCUT is an innovative intersection design that improves safety and operations by changing how minor road traffic crosses or turns left at a major road. At an RCUT, drivers stopped at the minor road waiting to cross or turn left instead make a right turn followed by a U-turn at a designated location to continue in the desired direction. The RCUT is suitable for a wide variety of locations and circumstances, such as a corridor treatment along signalized routes to minimize travel times while maximizing capacity and managing speed.[2] RCUTs work well when consistently used at intersections along a corridor, but they also can be used effectively at individual intersections. The following are additional advantages of a RCUT:

- The total number of conflict points is reduced from 32 to 18;
- Improves overall roadway operations, even when considering the additional distance traffic entering from the minor road must travel;

[2] Information obtained from FHWA's Dis Restricted Crossing U-Turn Intersection Brochure; https://safety.fhwa.dot.gov/intersection/innovative/uturn/brochures/rcut_brochure/rcut_brochure.pdf

- Been shown to decrease delay during periods of higher volumes;
- Access to local businesses and commercial areas can be maintained because the U-Turns accommodate all movements; and
- Can accommodate pedestrian crossings and can include phases that accommodate both pedestrians and bicycles.

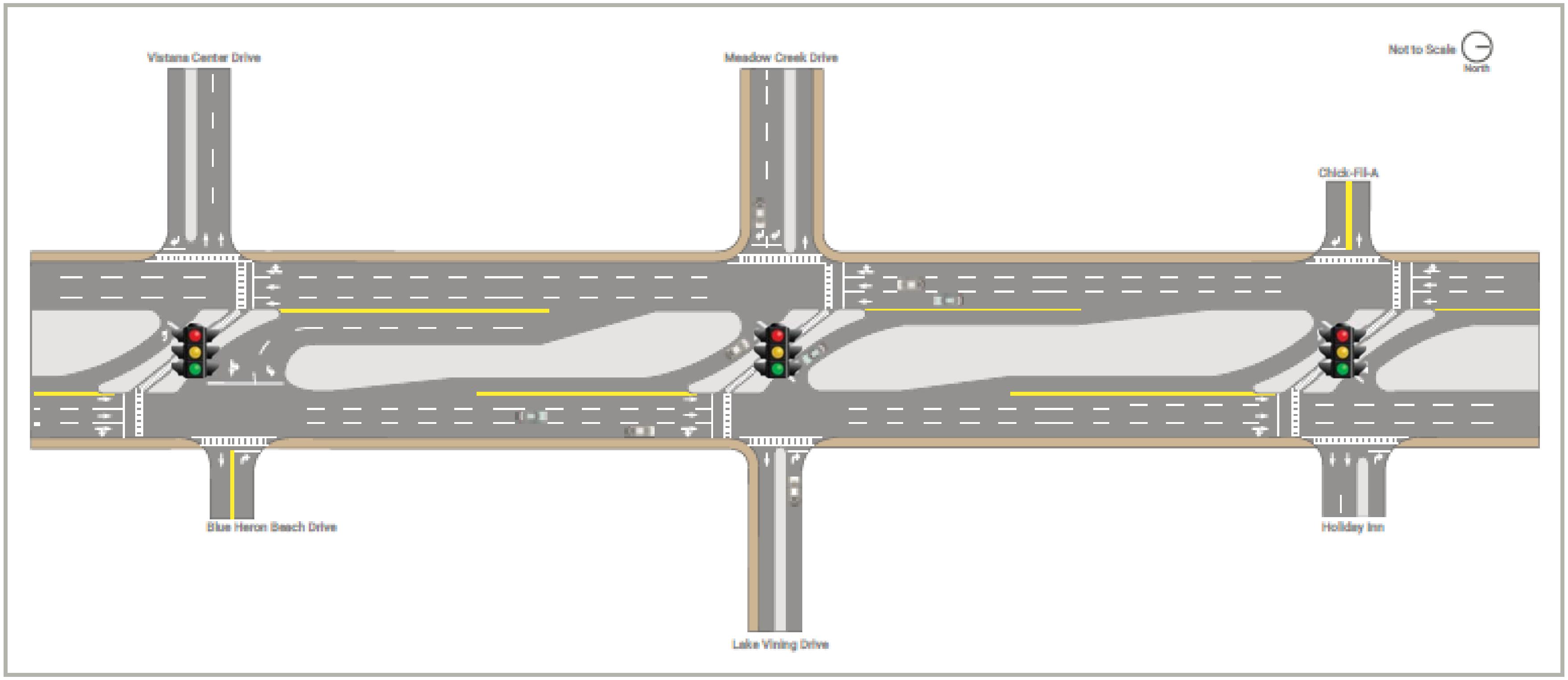
Figure 35 illustrates a representative sketch for an RCUT configuration from Vistana Center Drive to north of Meadow Creek Drive. **Figure 36** demonstrates the potential RCUT intersection lane configurations from Vistana Drive to north of Meadow Creek Drive. The remainder of this section details the operational analysis performed for the potential RCUT concept from Vistana Drive to north of Meadow Creek Drive.

LOS Evaluation

The 2040 AM peak hour segment operation results are shown in **Table 19** and the 2040 PM peak hour segment operation results are shown in **Table 20**. SR 535 (southbound) between Meadow Creek Drive and Vistana Centre Drive is the only segment anticipated to operate below LOS D during both peak hours.

Table 19: Future Build HCM LOS Evaluation Results – 2040 AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
SR 536/World Center Dr. to Median Opening	50.3	31.0	62%	C	N
Median Opening to Vistana Dr.	50.4	27.8	55%	C	N
Vistana Dr. to Vistana Centre Dr.	43.8	24.5	56%	C	N
Vistana Centre Dr. to Meadow Creek Dr.	43.9	19.0	43%	D	N
Southbound Direction					
Meadow Creek Dr. to Vistana Centre Dr.	**43.9**	**16.4**	**37%**	**E**	**Y**
Vistana Centre Dr. to Vistana Dr.	44.1	31.3	71%	B	N
Vistana Dr. to SR 536/World Center Dr.	50.5	39.2	78%	B	N



Representative diagram for illustrative purposes only

Figure 35: Vistana Center Drive to Meadow Creek Drive RCUT Sketch

Figure No. 36

Potential RCUT Intersection Lane Configurations

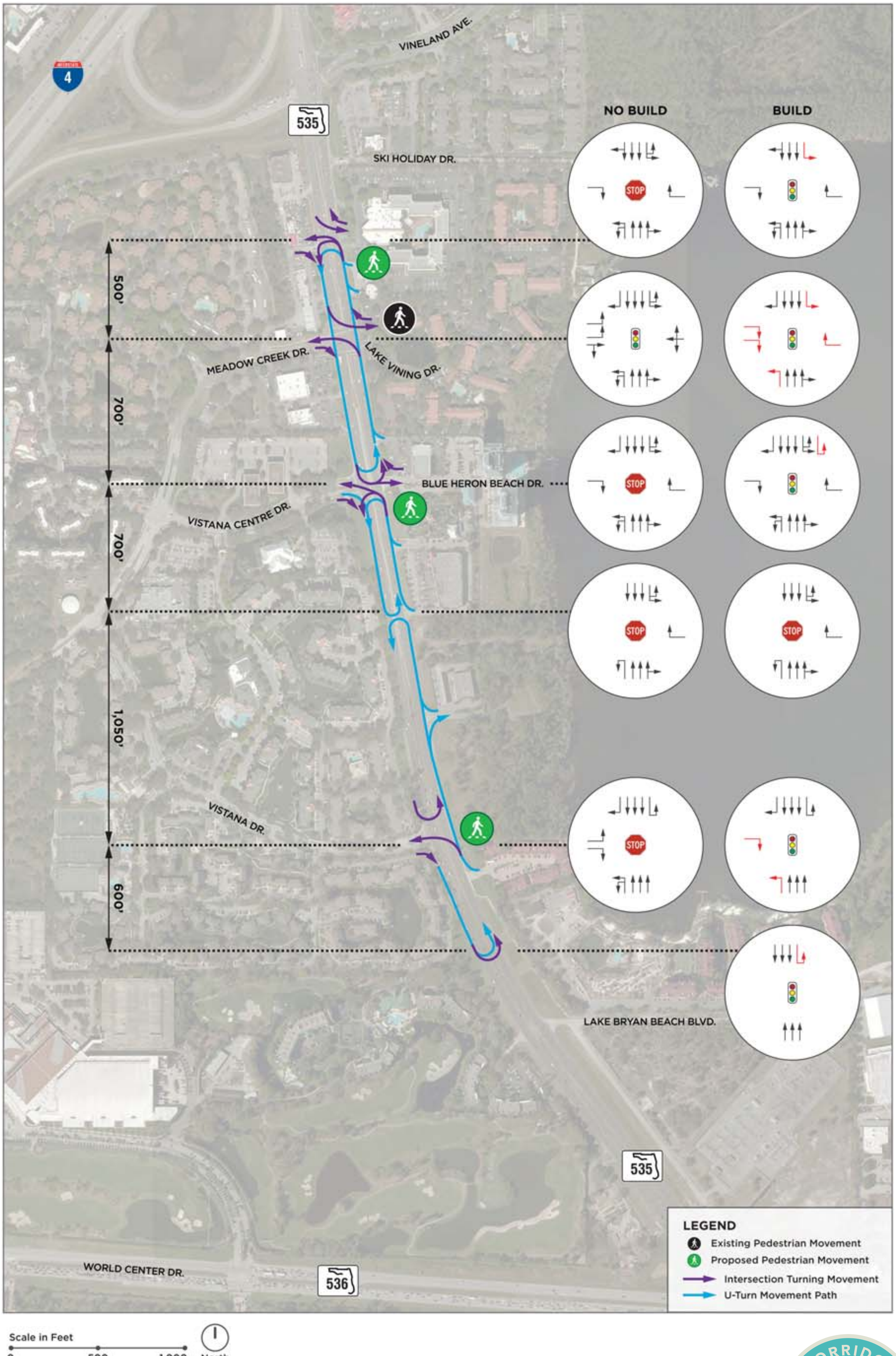


Table 20: Future Build HCM LOS Evaluation Results – 2040 PM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Target?
Northbound Direction					
SR 536/World Center Dr. to Median Opening	50.3	32.0	64%	C	N
Median Opening to Vistana Dr.	50.4	28.2	56%	C	N
Vistana Dr. to Vistana Centre Dr.	43.8	27.1	62%	C	N
Vistana Centre Dr. to Meadow Creek Dr.	43.9	23.6	54%	C	N
Southbound Direction					
Meadow Creek Dr. to Vistana Centre Dr.	**43.9**	**9.9**	**22%**	**F**	**Y**
Vistana Centre Dr. to Vistana Dr.	44.1	28.3	64%	C	N
Vistana Dr. to SR 536/World Center Dr.	50.5	38.1	75%	B	N

During the 2040 AM and PM peak hour, the intersections from Vistana Drive to north of Meadow Creek Drive are anticipated to operate at LOS C or better. The v/c ratios for the turning movements at the intersections are <1.0. Under the future No-Build scenario, the intersection of SR 535 at Vistana Drive and Vistana Centre Drive are anticipated to operate at LOS F in AM and PM peak hours. The RCUT configuration is anticipated to remove the over-capacity movements, and improve the overall intersection levels of service along the segment. Detailed HCM output reports are located in **Appendix G**.

ALTERNATIVES ANALYSIS SUMMARY

Table 21 summarizes the segment LOS evaluation between no-build and build alternatives. **Table 22** summarized the intersection LOS evaluation between no-build and build alternatives.

Table 21: No-Build and Build HCM Segment LOS Evaluation Results

Direction	Segment	No-Build		Build	
		AM	PM	AM	PM
Northbound	US 192 to Kyngs Heath Rd.	C	C	C	C
	Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	B	B	B	B
	Osceola Parkway Ramps to Poinciana Blvd.	F	F	F	D
	Poinciana Blvd. to Polynesian Isle Blvd.	F	F	B	E
	Polynesian Isle Blvd. to LBV Factory Stores Dr.	F	F	E	D
	LBV Factory Stores Dr. to International Dr.	F	F	C	C
	International Dr. to SR 536/World Center Dr.	F	F	F	E
	SR 536/World Center Dr. to Vistana Dr.	B	C	C	C
	Vistana Dr. to Vistana Centre Dr.	B	C	C	C
	Vistana Centre Dr. to Meadow Creek Dr.	B	C	D	C
Southbound	Meadow Creek Dr. to Vistana Centre Dr.	F	F	E	F
	Vistana Centre Dr. to Vistana Dr.	F	F	B	C
	Vistana Dr. to SR 536/World Center Dr.	F	F	B	B
	SR 536/World Center Dr. to International Dr.	D	F	B	B
	International Dr. to LBV Factory Stores Dr.	C	F	B	D
	LBV Factory Store Dr. to Polynesian Isle Blvd.	E	F	C	F
	Polynesian Isle Blvd. to Poinciana Blvd.	C	F	E	E
	Poinciana Blvd. to Osceola Parkway Ramps	C	C	C	C
	Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	C	D	C	D
	Kyngs Heath Rd. to US 192	F	F	F	F

Table 22: No-Build and Build HCM Intersection LOS Evaluation Results

Intersection	No-Build			Build		
	Control Type	AM	PM	Control Type	AM	PM
SR 535 & US 192	Signalized	D	F	Signalized	D	D
SR 535 & Kyngs Heath Rd	Signalized	B	C	Signalized	B	C
SR 535 & Calypso Cay Way	Unsignalized	B	C	Unsignalized	B	D
SR 535 & Osceola Parkway	Signalized	A	A	Signalized	A	A
SR 535 & N Poinciana Blvd	Signalized	F	F	Signalized	D	D
SR 535 & Polynesian Isle Blvd	Signalized	F	F	Signalized	B	D
SR 535 & LBV Factory Stores Dr.	Signalized	F	F	Signalized	C	C
SR 535 & International Dr.	Signalized	F	F	Signalized	B	D
SR 535 & World Center Dr.	Signalized	F	F	Signalized	E	E
SR 535 & Vistana Dr.	Unsignalized	F	F	Signalized	A	A
SR 535 & Vistana Centre Dr.	Unsignalized	F	F	Signalized	B	C
SR 535 & Meadow Creek Dr.	Signalized	C	D	Signalized	B	B

Public Involvement

SUMMARY OF PUBLIC INVOLVEMENT

A Corridor Planning Study represents an ideal opportunity to engage local and regional groups in the identification of issues, establishment of planning goals, and project visioning leading to the identification of potential improvement alternatives. Three key groups were met with during the course of the study to solicit guidance and input: 1. Project Visioning Team, 2. Local Stakeholders, and 3. Members of the Public.

Due to the relatively high number of hotels and resorts present along the corridor, tourist activity is prevalent and was considered in the recommendations from this study. The Study Team interacted with tourists about the walking/driving conditions of SR 535 during initial field review activities. Overall the tourists commented that alternative modes of transportation would be a positive improvement along the corridor.

Project websites for the Study can be found at http://www.cflroads.com/project/437175-1/SR_535_Corridor_Study (for Osceola County, FM #437175-1) http://www.cflroads.com/project/437174-1/SR_535_Corridor_Study (for Orange County, FM #437174-1). The project websites contained files such as the Existing and Future Conditions Summaries and public meeting materials.

PROJECT VISIONING TEAM

A PVT comprised of regional agency and municipal representatives was established to help guide the planning process throughout the study. The PVT acted as the initial sounding board for the Study Team as it shares findings and develops alternative strategies for the corridor. The PVT met three times throughout the study process. The PVT is comprised of members from the following partner organizations:

- LYNX;
- MetroPlan Orlando;
- Orange County Planning and Traffic Engineering; and
- Osceola County Planning and Traffic Engineering.

A kick-off meeting was held with the PVT group on April 21, 2016 to discuss the corridor planning study process, the major work tasks for the study, initial traffic operations and safety issues, and stakeholder outreach. The second meeting was held on November 3, 2016 to review the existing conditions, issues/opportunities, and guiding principles for the SR 535 corridor. The third meeting was held on September 20, 2017 to review the future build alternatives for the SR 535 corridor. The presentation and meeting notes from each of the PVT meetings can be found in the *SR 535 Public Involvement Comments and Coordination Summary* located in **Appendix H**.

STAKEHOLDER MEETINGS

Stakeholder meetings were conducted throughout the study with key area stakeholders to identify current land use, economic development, and transportation issues and opportunities that could guide and inform the Corridor Planning Study. The meetings were completed in an informal setting and while there were several key questions asked during each meeting, conversations were mostly free-flowing. The Study Team met with the several stakeholders throughout the course of the Study. The following summarizes those meetings and major discussion topics that occurred during those meetings:

- June 29, 2016 – East Central Florida Regional Planning Council and W192 Development Authority
  - Important to connect US 192 Bus Rapid Transit (BRT) to northern part of study corridor through new transit routes or by extending the current transit route.
  - International tourists are used to riding transit and will use it if the option exists.
  - Better bus stop shelters will induce transit ridership demand.
  - Pedestrian and bicycle improvements along the corridor are important to consider as part of the planning process.
  - Good idea to incorporate sidewalks/bicycle lanes/shared use path along SR 535.
  - New street connections are planned or are getting built along SR 535 corridor. This will help in relieving some congestion along SR 535, especially reducing local trips connecting neighborhoods and retail destinations along the corridor.
- July 18, 2016 – Central Florida Hotel & Lodging Association
  - Stakeholder outreach with hotels and resorts along the corridor is important to understand the needs of tourists.
  - Potential 6-8 lane widening is not being considered north of SR 536/World Center Drive. The existing four lane section from US 192 to SR 536/World Center Drive may be considered for 4-6 lane widening.
  - New street connections like International Drive to reduce local trips. Orange County is looking into this new connection.
  - New signal at International Drive and SR 535 intersection is now in final design and will be operational within the next few years.
  - Additional marked crosswalks along the corridor would be well received.
  - Adding transit along the corridor will help tourists as well as connect resorts near I-4 to US 192 area.
  - Many hotels/resorts provide shuttles to nearby areas and theme parks. There are some hotels/resorts that have high ridership on shuttles.
- February 1, 2017 – Representatives from Lake Buena Vista Factory Stores and local developers from the Sunrise City Development
  - Sunrise City located east of SR 535 between Poinciana Boulevard and Polynesian Isle Boulevard. The first phase of the development included a Publix and was finished in late summer 2017.

        - The development will also include apartments and mixed use land uses.
        - An internal roadway is planned to connect the development with the future Lake Buena Vista developments.
        - A connection to Storey Lake Boulevard to the south at Osceola Parkway is also planned in the future.
    - LYNX drops off and picks up employees at 8 AM and 5 PM daily at the LBV stores.
    - Many employees along the corridor could benefit from a more consistent fixed transit route.
    - Employees walk to work and have to cross the SR 535 and SR 536 intersection daily.
    - Lake Buena Vista Factory Stores/resort approved for an expansion of 11 acres to the south of the existing parcel. A roadway connection is planned to connect the LBV development with the development on the southeast corner of SR 535 and SR 536 – no timeframe has been established and is dependent upon development of the parcel.
- August 24, 2017 – Mr. Zachary E. Stoumbos, Esq.
    - Property located at 14445 SR 535, Orlando, FL 32821. This parcel is at the northeast corner of the SR 535/SR 536 intersection between the Buena Vista Suites and the electrical power substation.
    - Property entitled for 280 room hotel, which is planning on being built out within the next 3 years.
    - Possibly reviewing if a right in/right out driveway along the east side of SR 535 north of the 536 intersection would work with access management spacing standards.
    - As property develops, would look to rebuild the frontage road to accommodate ped/bike facilities to/from the site.
    - Internal coordination with FDOT Traffic Operations would be needed to discuss the possible driveway.

Detailed notes from the stakeholder meetings can be found in the *SR 535 Public Involvement Comments and Coordination Summary* located in **Appendix H**.

PUBLIC MEETINGS

The Study Team obtained public feedback and input on the project through two public meetings. The Existing Conditions Public Meeting was held on December 13, 2016 and the Alternatives Public Meeting was held on November 2, 2017. The two meetings are summarized below.

<u>*Existing Condition Public Meeting*</u>

The Existing Conditions Public Meeting was an open house type format, with 30 minutes reserved at the beginning for the public to review the concept boards/handouts and ask questions of the study team staff. Once the initial question and answer time finished a presentation was given outlining the following topics about the project:

- Overview of the Corridor Planning Study Process
- Project Background/Overview
- Existing Conditions Analysis Results
- Issues/Opportunities along Corridor
- Purpose and Need
- Schedule and Next Steps

After the presentation was completed, the public was encouraged to review the concept boards and ask any additional questions of study team staff. The Public Meeting adjourned at 7:30 PM. A summary of the comments from the public meeting, in additional to the public meeting materials, can be found in the *SR 535 Public Involvement Comments and Coordination Summary* located in **Appendix H**.

Alternatives Public Meeting

The Alternatives Public Meeting was an open house type format, lasting for two hours from 5:30 PM to 7:30 PM. The open house was set up in four stations:

1. Roadway Improvement Alternatives –
    a. Typical section alternative boards; and
    b. At-grade intersection improvement board.
2. RCUT Information –
    a. Board with FHWA RCUT information; and
    b. Video explaining the RCUT concept and providing case study examples.
3. DLT Information –
    a. Board with FHWA DLT information; and
    b. Video explaining the DLT concept and providing case study examples.
4. Comments and Feedback – Station where the public could fill out comment forms.

The public was encouraged to review the various boards at the stations and ask any additional questions of the Study Team. A summary of the comments from the public meeting, in additional to the public meeting materials, can be found in the *SR 535 Public Involvement Comments and Coordination Summary* located in **Appendix H**.

Next Steps/Summary

A PD&E Study is programmed for fiscal year 2020. While this corridor planning study identified purpose, need, and various solutions for the issues along the corridor, the PD&E Study will evaluate the alternatives to a greater level of detail and select a preferred alternative. A Concept Development Study could also be performed on the section of SR 535 from SR 536 to I-4/Vineland Avenue where non-widening options were explored. The following summarizes the improvements identified in the SR 535 Corridor Planning Study:

- TSM&O and multi-modal improvements including adaptive PedSafe, signal control, transit enhancements, and LED corridor lighting.
- Typical section alternatives –
    - Three four-to-six lane widen to the outside alternatives from Kyngs Heath Road to Vistana Drive;
    - Three four-to-six lane widen to the inside alternatives from Kyngs Heath Road to Vistana Drive; and
    - Three alternatives addressing pedestrian/bicycle mobility from Vistana Drive to I-4/Vineland Avenue.
- Intersection turn lane improvements from US 192 to International Drive –
    - US 192 – Alternative 1
        - Second exclusive southbound left turn lane;
        - Second westbound right turn lane; and
        - Place the westbound channelized right turn lanes under signal control.
    - US 192 – Alternative 2
        - Second exclusive southbound left turn lane;
        - Second westbound right turn lane; and
        - Remove the channelization for the westbound right turn lanes and bring them under the signal control at the intersection.
    - Kyngs Heath Road
        - Second southbound left turn lane;
        - Third southbound through lane;
        - Third northbound through lane; and
        - Convert westbound shared through/left lane to an through lane and exclusive left turn lane.
    - Poinciana Boulevard
        - Third northbound through lane;
        - Third eastbound left turn lane;
        - Convert southbound shared through/right lane to an through lane and exclusive right turn lane; and
        - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
    - Polynesian Isle Boulevard

    - Second southbound left turn lane;
    - Third northbound through lane; and
    - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
  - LBV Factory Stores Drive
    - Second southbound left turn lane;
    - Third northbound and southbound through lane; and
    - Convert westbound shared through/right lane to an through lane and exclusive right turn lane.
  - International Drive
    - Third northbound through lane;
    - Second northbound left turn lane; and
    - Second eastbound right turn lane.
- Grade-separated interchange alternatives at SR 535 and SR 536/World Center Drive –
  - Diverging Diamond Interchange (DDI); and
  - Single Point Urban Interchange (SPUI).
- Innovative intersection treatments –
  - Displaced Left-Turn (DLT) at SR 535 and SR 536/World Center Drive; and
  - Restricted Crossing U-Turns (RCUT) from Vistana Drive to just north of Meadow Creek Drive.

APPENDIX A – SR 535 REFERENCES IN TIP AND LRTP

MetroPlan Orlando
Transportation Improvement Program
State Highway Projects
Orange County

FDOT Financial Management Number	Project Name or Designation	Project Description: From	Project Description: To	Project Description: Length (Miles)	Project Description: Work Description	2040 LRTP Reference	Historic Cost Prior to 2016/17 ($000's)	Project Status and Cost ($000's): 2016/17	2017/18	2018/19	2019/20	2020/21	Funding Sources	Project Phases	Estimated Future Cost After 2020/21 ($000's)	Total Project Cost ($000's)	Responsible Agency
4242171	SR 414/Maitland Blvd.	I-4	Maitland Ave.	1.39	Widen to 6 Lanes	Tech. Rep. 3 page 18		500	0	0	0	0	DDR	PE			FDOT
								5	0	0	0	0	DIH	PE			
								0	30	0	0	0	DIH	ROW			
								1,615	58	0	0	0	SU	ROW			
								0	0	1,840	0	0	CM	CST			
								0	0	1,892	0	0	DDR	CST			
								0	0	54	0	0	DIH	CST			
								0	0	8,123	0	50	SA	CST			
							3,131	**2,120**	**88**	**11,909**	**0**	**50**	**Total**		**0**	**17,298**	
4324022	SR 500/US 441	CR 437/Orange Ave.	N of Junction/Wesley Rd.	2.79	Resurfacing	Overview page 7		1,014	0	0	0	0	DDR	CST			FDOT
								456	0	0	0	0	DIH	CST			
								3,133	0	0	0	0	SA	CST			
							619	**4,603**	**0**	**0**	**0**	**0**	**Total**		**0**	**5,222**	
4344241	SR 500/US 441	S of Taft Vineland Rd.	S of SR 528/Beachline Expy.	0.74	Safety/Access Management	Overview page 7		1,100	0	0	0	0	HSP	CST			FDOT
							313	**1,100**	**0**	**0**	**0**	**0**	**Total**		**0**	**1,413**	
4344251	SR 436	N of SR 50	S of Old Cheney Hwy.	0.45	Safety/Access Management	Overview page 7		31	0	0	0	0	DDR	CST			FDOT
								1,131	0	0	0	0	HSP	CST			
							413	**1,162**	**0**	**0**	**0**	**0**	**Total**		**0**	**1,575**	
4344261	SR 482/Sand Lake Rd.	E of Golden Sky Ln.	E of Lake Gloria Blvd.	1.33	Skid Hazard Overlay	Overview page 7		10	0	0	0	0	DDR	CST			FDOT
								2,209	0	0	0	0	HSP	CST			
							415	**2,219**	**0**	**0**	**0**	**0**	**Total**		**0**	**2,634**	
4354352	SR 500/US 441	Lee Rd.	Beggs Rd.	2.74	Landscaping	Overview page 9		77	0	0	0	0	DIH	CST			FDOT
								499	0	0	0	0	DS	CST			
							0	**576**	**0**	**0**	**0**	**0**	**Total**		**0**	**576**	
4371751	SR 535	Orange/Osceola Co. Line	I-4	2.31	Project Development & Environment Study	Tech. Rep. 3 page 18		0	0	0	1,400	0	DDR	PD&E			FDOT
								0	0	0	14	0	DIH	PD&E			
							114	**0**	**0**	**0**	**1,414**	**0**	**Total**		**TBD**	**TBD**	
4373301	SR 527/Orange Ave.	Southbound Bifurcation	Grant Street	2.28	Resurfacing	Overview page 7		817	0	0	0	0	DDR	PE			FDOT
								20	0	0	0	0	DIH	PE			
								0	0	303	0	0	DDR	CST			
								0	0	3,148	0	0	DS	CST			
							10	**837**	**0**	**3,451**	**0**	**0**	**Total**		**0**	**4,298**	
4373311	SR 500/US 441	N of Jones Ave.	S of Wadsworth Rd.	3.05	Resurfacing	Overview page 7		662	0	0	0	0	DDR	PE			FDOT
								20	0	0	0	0	DIH	PE			
								0	0	303	0	0	DDR	CST			
								0	0	3,250	0	0	DS	CST			
							10	**682**	**0**	**3,553**	**0**	**0**	**Total**		**0**	**4,245**	

MetroPlan Orlando
Transportation Improvement Program
State Highway Projects
Osceola County

FDOT Financial Management Number	Project Name or Designation	Project Description: From	Project Description: To	Project Description: Length (Miles)	Project Description: Work Description	2040 LRTP Reference	Historic Cost Prior to 2016/17 ($000's)	Project Status and Cost ($000's): 2016/17	2017/18	2018/19	2019/20	2020/21	Funding Sources	Project Phases	Estimated Future Cost After 2020/21 ($000's)	Total Project Cost ($000's)	Responsible Agency
2396821	SR 500/US 192	Aeronautical Blvd.	Budinger/Columbia Ave.	3.97	Widen to 6 Lanes	Tech. Rep. 3 page 7	**54,248**	156 **156**	0 **0**	0 **0**	0 **0**	0 **0**	DDR **Total**	CST	**0**	**54,404**	FDOT
2396831	SR 500/US 192	Eastern Ave.	CR 532/Nova Rd.	3.18	Widen to 6 Lanes	Tech. Rep. 3 page 7	**25,114**	124 **124**	0 **0**	0 **0**	0 **0**	0 **0**	DDR **Total**	CST	**0**	**25,238**	FDOT
2397141	SR 600/US 17/92	W of Poinciana Blvd.	CR 535/Ham Brown Rd.	2.22	Widen to 4 Lanes	Tech. Rep. 3 page 28	**7,343**	0 0 0 0 **0**	1,085 325 14,665 148 **16,223**	0 0 0 0 **0**	0 0 78 0 **78**	0 0 0 0 **0**	DDR LF DDR DIH **Total**	RRU RRU CST CST	**0**	**23,644**	FDOT
4184032	John Young Pkwy.	Portage St.	SR 530/US 192	1.37	Widen to 6 Lanes	Tech. Rep. 3 page 28	**21,591**	52 **52**	0 **0**	0 **0**	0 **0**	0 **0**	DDR **Total**	CST	**0**	**21,643**	FDOT
4184033	John Young Pkwy.	Pleasant Hill Rd.	Portage St.	2.38	Widen to 6 Lanes	Tech. Rep. 3 page 18	**6,517**	2,170 150 **2,320**	1,070 120 **1,190**	4,236 111 **4,347**	18,859 0 **18,859**	3,000 0 **3,000**	DDR DIH **Total**	ROW ROW	**39,500**	**75,733**	FDOT
4283284	Hoagland Blvd.①	US 17/92	N of Shingle Creek	0.83	Widen to 4 Lanes/Realign	Tech. Rep. 3 page 18	**0**	0 0 0 0 **0**	203 3,951 270 3,119 **7,543**	0 0 0 0 **0**	0 0 0 0 **0**	0 0 0 0 **0**	CIGP LFP TRIP TRWR **Total**	CST CST CST CST	**0**	**7,543**	FDOT / Osceola Co.
4283285	Hoagland Blvd.①	N of Shingle Creek	5th St.	2.15	Widen to 4 Lanes/Realign	Tech. Rep. 3 page 18	**0**	0 0 **0**	5,738 5,738 **11,476**	0 0 **0**	0 0 **0**	0 0 **0**	CIGP LF **Total**	CST CST	**0**	**11,476**	FDOT / Osceola Co.
4332041	Carroll St.	E of John Young Pkwy.	Michigan Ave.	3.50	Widen to 4 & 6 Lanes	Tech. Rep. 3 page 25	**3,156**	0 0 **0**	6,728 5 **6,733**	0 0 **0**	0 0 **0**	0 0 **0**	LFP SA **Total**	ROW ROW	**21,824**	**31,713**	Osceola Co.
4336931	Poinciana Pkwy./ Southport Connector	Florida's Turnpike	Pleasant Hill Rd.		Project Development & Environment Study	Tech. Rep. 3 page 40	**3,621**	15 **15**	15 **15**	0 **0**	0 **0**	0 **0**	SU **Total**	PD&E	**0**	**3,651**	Osceola Co.
4344061	SR 15/US 441	E of Bridge over Turnpike	N of Tyson Creek Bridge	16.95	Resurfacing	Overview page 7	**861**	0 0 0 360 **360**	2,378 564 7,754 0 **10,696**	0 0 0 0 **0**	0 0 0 0 **0**	0 0 0 0 **0**	DDR DIH DS DDR **Total**	CST CST CST ENV	**0**	**11,917**	Osceola Co.
4363641	US 192	Bradley Dr.	Sapling Ln.	25.18	Signing/Pavement Markings	Overview page 7	**132**	0 0 **0**	8 1,127 **1,135**	0 0 **0**	0 0 **0**	0 0 **0**	DDR HSP **Total**	CST CST	**0**	**1,267**	FDOT
4371741	SR 535	US 192	Orange/Osceola Co. Line	1.15	Project Development & Environment Study	Tech. Rep. 3 page 18	**114**	0 0 **0**	0 0 **0**	0 0 **0**	550 5 **555**	0 0 **0**	DDR DIH **Total**	PD&E PD&E	**TBD**	**TBD**	FDOT

① The Hoagland Blvd. projects are also shown in the Locally Funded Highway Projects section of the TIP on page V-9.

TABLE 8: FEDERAL & STATE FUNDED COST FEASIBLE PROJECTS				
Roadway	**From**	**To**	**Improvement**	**Funded by**
SR 46	Mellonville Ave.	SR 415	Widen to 4 Lanes	2020
SR 434/Forest City Rd.	Edgewater Dr.	Orange/Seminole Co. Line	Widen to 6 Lanes	2020
SR 423/John Young Pkwy.	SR 50	Shader Rd.	Widen to 6 Lanes	2020
SR 434	at CR 427		Improve Intersection	2020
SR 434	Range Line Rd.	US 17/92	Multimodal/CSS Improvements	2020
Hoagland Blvd. Phase 2	US 17/92	5th St.	Widen to 4 Lanes/Realign	2020
SR 414/Maitland Blvd.	I-4	Maitland Ave.	Widen to 6 Lanes	2020
SR 434	Smith St.	Franklin St.	Widen to 4 Lanes - Phase 1	2020
SR 426/CR 419	Pine Ave.	Avenue B	Widen to 4 Lanes - Phase 2	2025
CR 419	Avenue B	W of Lockwood Blvd.	Widen to 4 Lanes - Phase 3	2025
SR 50	E. Old Cheney Hwy.	SR 520	Widen to 6 Lanes	2025
SR 527/Orange Ave.	SR 482/Sand Lake Rd.	SR 15/Hoffner Ave.	Multimodal/CSS Improvements	2025
SR 434/Alafaya Tr.	SR 50	McCulloch Rd.	Multimodal/CSS Improvements	2025
SR 15/600/US 17/92 & Lee Rd Ext	Norfolk Ave SR15/600/US 17/92	Monroe St./Denning Dr	Construct medians/improve Intersection/ Extend Road	2025
SR 46	SR 415	CR 426	Safety Improvements - Phase 1	2025
SR 46	SR 415	CR 426	Widen to 4 Lanes - Phase 2	2025
John Young Pkwy.	Pleasant Hill Rd.	Portage St.	Widen to 6 Lanes	2025
SR 535	Orange/Osceola Co. Line	I-4	Widen to 6 Lanes (2 miles) and 8 Lanes (1.5 miles)	2025
SR 438/Silver Star Rd	SR 429	Bluford Ave	Widen to 4 Lanes	2025
SR 527/Orange Ave	Pineloch Ave	Anderson St	Multimodal /CSS Improvements	2025
SR 436	US 17/92	Wilshire Dr.	Widen to 8 Lanes/CSS Improvements	2025
SR 436	Newburyport Ave	CR 427/Ronald Reagan Blvd.	Intersection Improvements	2025
SR 434	SR 417	Mitchell Hammock Rd	Widen to 4 Lanes	2025
US 17/92	at Pleasant Hill Rd		Inters Improv/Potent. Flyover/Crossover Diverted Left turn lanes	2025
US 17/92	SR 417	SR 46/1st St	Multimodal/CSS Improvements	2025
SR 436	Orlando International Airport	Orange/Seminole Co. Line	Multimodal/Context Sensitive Improvements to incl BRT	2025

TABLE 8: FEDERAL & STATE FUNDED COST FEASIBLE PROJECTS (Continued)				
SR 50	SR 435/Kirkman Rd	N. Tampa Ave	Multimodal/CSS Improvements	2025
SR 434	SR 436	Montgomery Rd	Widen to 6 Lanes	2025
SR 500/US 441	US 192	Osceola Pkwy	Multimodal/CSS Improvements	2025

TABLE 9: ORANGE COUNTY PROJECTS

Roadway	From	To	Improvement	Funded by
Apopka-Vineland Road (SR 535)	SR 536	I-4 WB Ramp	Widen to 8 Lanes	2020
SR 15 (Narcoossee Road)	SR 528 (BeachLine Expressway)	Lee Vista Boulevard	Widen to 6 Lanes	2020
Apopka-Vineland Road (SR 535)	Osceola County Line	SR 536	Widen to 6 Lanes	2020
Central Florida Parkway	International Drive	SR 423 (John Young Parkway)	Widen to 6 Lanes	2020
SR 423 (John Young Parkway) **	SR 50 (Colonial Drive)	Shader Road	Widen to 6 Lanes	2020
International Drive	Hawaiian Court	SR 482	Widen to 6 Lanes	2025
Apopka-Vineland Road	CR 535	Fenton Avenue	Widen to 6 Lanes	2025
Landstar Boulevard	Osceola County Line	SR 417	Widen to 6 Lanes	2025
Destination Parkway	Universal Boulevard	John Young Parkway	Widen to 6 Lanes	2025
Conway Road	Hoffner Road	Michigan Street	Widen to 6 Lanes	2025
Apopka-Vineland Road	Darlene Road	Kilgore Road	Widen to 6 Lanes	2025
US 441 (Orange Blossom Trail)	SR 50 (Colonial Drive)	John Young Parkway	Widen to 6 Lanes	2025

** Refer to Prioritized Project List (PPL)

TABLE 9: ORANGE COUNTY PROJECTS (Continued)				
Jeff Fuqua Boulevard	.13 miles South of Boggy Creek Road	Heintzelman Boulevard	Widen to 4 Lanes	2025
Conway Road	Judge Road	Hoffner Road	Widen to 6 Lanes	2030
New Independence Pkwy/Wellness Way	Lake County Line	SR 429	New/Widen 4 Lanes	2030
Alafaya Trail	Huckleberry Finn Drive	Lake Underhill Road	Widen to 6 Lanes	2030
Apopka-Vineland Road	Kilgore Road	SR 482	Widen to 6 Lanes	2030
Hiawassee Road	SR 50	Silver Star Road	Widen to 6 Lanes	2030
Apopka-Vineland Road	Fenton Avenue	Darlene Road	Widen to 6 Lanes	2030
Lake Nona Boulevard	Tavistock Lakes Boulevard	SR 417 (Greenway)	Widen to 6 Lanes	2030
Universal Boulevard	SR 482	Pointe Plaza Avenue	Widen to 6 Lanes	2030
Central Florida Parkway	SR 423 (John Young Parkway)	Orange Blossom Trail	Widen to 6 Lanes	2030
International Drive	SR 482	Kirkman Road	Widen to 6 Lanes	2030

Table 10: OSCEOLA COUNTY PROJECTS (Continued)				
Oren Brown Ext	US 192	Poinciana Blvd	Widen to 4 Lanes	2040
Osceola Pkwy	Interstate 4	SR 417	Widen to 8 Lanes	2040
Osceola Pkwy	John Young Pkwy	US 441 (Orange Blossom Tr)	Widen to 6 Lanes	2040
Osceola Pkwy	Buenaventura Blvd	Boggy Creek Rd	Widen to 6 Lanes	2040
Partin Settlement Rd	Neptune Rd	US 192	Widen to 4 Lanes	2040
Partin Settlement Rd	US 192	Lakeshore Blvd	Widen to 4 Lanes	2040
Pine Tree Dr	Canoe Creek Rd	Hickory Tree Rd	Widen to 4 Lanes	2040
Pleasant Hill Rd	Poinciana Blvd	Reaves Rd	Widen to 6 Lanes	2040
Pleasant Hill Rd	Reaves Rd	US 17-92	Widen to 6 Lanes	2040
Princess Way	Seven Dwarfs Ln	Old Vineland Rd	Widen to 4 Lanes	2040
Quail Roost Rd	Rambler Ave	Canoe Creek Rd (CR 523)	Widen to 4 Lanes	2040
Rhododendron Ave	Polk County Line	Koa St	Widen to 4 Lanes	2040
Rummell Rd	Narcoossee Rd	Mississippi Ave	Widen to 4 Lanes	2040
Rummell Rd	Mississippi Ave	Nova Road	Widen to 4 Lanes	2040
Seven Dwarfs Ln	US 192	Princess Way	Widen to 4 Lanes	2040
Sherberth Rd	US 192	Orange County Line	Widen to 4 Lanes	2040
Simpson Rd	Fortune Rd	US 192	Widen to 4 Lanes	2040
Southport Rd	Pleasant Hill Rd	Hunt Rd	Widen to 4 Lanes	2040
Stewart Ave	Broadway	Mabbette St	Widen to 4 Lanes	2040
Tenque Ave	Orange County Line	Nova Road	Widen to 4 Lanes	2040
Thacker Ave	Donegan Ave	Flora Blvd	Widen to 6 Lanes	2040
Toho Parkway	US 192	Southport Connector	Widen to 4 Lanes	2040
Vineland Rd (SR 535)	US 192	Orange County Line	Widen to 6 Lanes	2040
SR 60	Polk Co. Line	US 441	Widen to 4 Lanes	2040
SR 60	US 441	SR 91 (Florida's Turnpike)	Widen to 6 Lanes	2040
US 17-92	Polk County Line	CR 532	Widen to 4 Lanes	2040
US 17-92	CR 532 (Osceola-Polk Line Rd)	Old Tampa Hwy	Widen to 4 Lanes	2040
US 17-92	Old Tampa Hwy	Poinciana Blvd	Widen to 4 Lanes	2040
US 17-92	Ham Brown Rd	Pleasant Hill Rd	Widen to 6 Lanes	2040
US 17/92 **	Pleasant Hill Rd	Portage St	Widen to 6 Lanes	2040
US 192	Nova Rd (CR 532)	Pine Grove Rd	Widen to 6 Lanes	2040
US 441	W Columbia Ave	Carroll St	CSS Improvements	2040
US 441	US 192	W Columbia Ave	CSS Improvements	2040
US 441	Carroll St	Osceola Pkwy	CSS Improvements	2040
US 441	Osceola Pkwy	Orange Co. Line	CSS Improvements	2040
Fortune Road Ext. *	Neptune Road	US 192/US441	New 2 Lane Road	-
TNR Access Road *	US 441	End of Property	New 2 Lane Road	-
* Refer to FY14/15 - FY18/19 Transportation Improvement Program (TIP) ** Refer to Prioritized Project List (PPL)				

APPENDIX B – EXISTING CONDITIONS SUMMARY REPORT

FINAL

CORRIDOR PLANNING STUDY

SR 535

Existing Conditions Summary

US 192 to Vineland Avenue | September 2016

FM 437174-1 & 437175-1

Prepared for:
Florida Department of Transportation
719 South Woodland Boulevard
DeLand, FL 32720
www.dot.state.fl.us

FDOT

DRAFT EXISTING CONDITIONS SUMMARY

SR 535 Corridor Planning Study

From US 192 to Vineland Avenue
FM 437174-1 & 437175-1

Orange and Osceola Counties, Florida

Prepared For:
Florida Department of Transportation, District Five
719 South Woodland Boulevard
DeLand, FL 32720

September 2016

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Introduction

The Florida Department of Transportation (FDOT) District Five is conducting a Corridor Planning Study to evaluate the future needs of SR 535 between US 192 to Vineland Avenue in southwest Orange County/northwest Osceola County. The purpose of Corridor Planning Study is to identify and evaluate multi-modal alternatives that can be eliminated during the planning study, as well as those alternatives that will be carried forward to the Project Development and Environment (PD&E) Study process. As part of the Corridor Planning Study, an Existing Conditions Summary has been prepared. The scope of this Existing Conditions Summary includes:

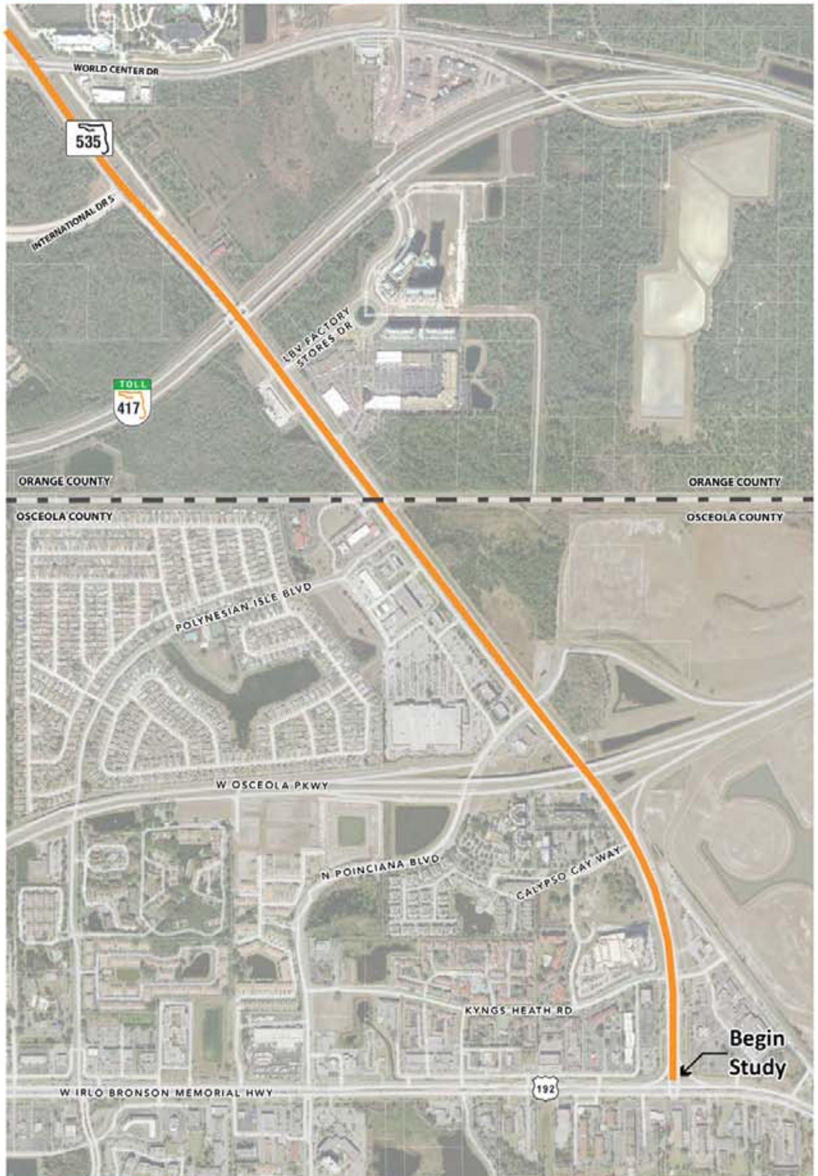
- Review of previous studies on and around the SR 535 study corridor;
- Stakeholder outreach;
- Review of existing land use and roadway characteristics;
- Collection of existing-year (2016) traffic data on roadway segment and intersections;
- Existing operational evaluations; and
- 2010-2014 historical safety assessment.

The Corridor Planning Study will be a starting point for the SR 535 PD&E Study, which is scheduled in MetroPlan Orlando's Transportation Improvement Program (TIP) for fiscal year 2019/20. The long term planning alternative from MetroPlan Orlando's Long Range Transportation Plan (LRTP) Cost Feasible Report identified SR 535 to be widened from four to six lanes from US 192 to SR 536 and widened from six lanes to eight lanes from SR 536 to Vineland Avenue. Applicable pages from the TIP and LRTP are located in **Appendix A**.

Project Location

SR 535 from US 192 to Vineland Avenue is classified as an urban minor arterial oriented southeast to northwest in unincorporated Orange and Osceola Counties. There are two distinct clusters of developed parcels at either end of the study corridor separated by large areas of vacant land or conservation open spaces. The southern cluster from US 192 to the Orange County/Osceola County Line is characterized by strip suburban retail centers and hotels on the western side of the study corridor. The majority of land between the Orange County/Osceola County Line and SR 536/World Center Drive is vacant or marked as conservation or open space. Only a few commercial parcels like the Lake Buena Vista Factory Stores and a RaceTrac gas station are developed within this segment. The northern cluster from SR 536/World Center Drive to Vineland Avenue is characterized by hotels, resorts, multi-family vacation rental apartment complexes, and retail development. The SR 535 study corridor is displayed in **Figure 1**.

Due to the relatively high number of hotels and resorts present along the corridor, tourist activity is prevalent and will play a significant role in the recommendations from this study. The Study Team has had a chance to interact with tourists about the walking/driving conditions of SR 535 during initial field review activities. Overall the tourists commented that alternative modes of transportation would be a positive improvement along the corridor.



Aerial Image Fly Date: March 2016

Figure No. 1

Study Corridor

- Study Corridor
- County Line

Public Outreach Activities

A Corridor Planning Study represents an ideal opportunity to engage local and regional groups in the identification of issues, establishment of planning goals, and project visioning leading to the identification of potential improvement alternatives. Three key groups will be met with during the course of the study to solicit guidance and input: 1. Project Visioning Team, 2. Local Stakeholders, and 3. Members of the Public.

PROJECT VISIONING TEAM

A Project Visioning Team (PVT) comprised of regional agency and municipal representatives was established to help guide the planning process throughout the study. The PVT is acting as the initial sounding board for the Study Team (FDOT and consultant staff) as it shares findings and develops alternative strategies for the corridor. The PVT is scheduled to meet at key milestones throughout the study process. The PVT is comprised of members from the following partner organizations:

- East Central Florida Regional Planning Council (added to group after kick-off meeting);
- LYNX;
- MetroPlan Orlando;
- Orange County Department of Health (added to group after kick-off meeting);
- Orange County Planning and Traffic Engineering;
- Osceola County Department of Health (added to group after kick-off meeting);
- Osceola County Planning and Traffic Engineering; and
- W192 Development Authority (added to group after kick-off meeting).

A kick-off meeting was held with the PVT group on April 21, 2016 to discuss the corridor planning study process, the major work tasks for the study, initial traffic operations and safety issues, and stakeholder outreach. The presentation and meeting notes from the PVT kick-off meeting can be found in **Appendix B**.

The second PVT meeting will be held once the results of the existing and future conditions analyses are complete and potential alternatives for improvement have been identified. Two additional meetings will be held to discuss development of the alternatives and the selection of the preferred alternative.

PVT Field Review

PVT members attended a field review on May 25, 2016 to observe corridor characteristics and discuss potential issues. The group drove to and walked/observed roadway user behaviors at the following five key locations:

- SR 535 between US 192 and Kyngs Heath Road;
- SR 535/Poinciana Boulevard signalized intersection;
- SR 535/International Drive signalized intersection;

- SR 535/SR 536/World Center Drive signalized intersection; and
- SR 535 between Meadow Creek Drive and Vineland Avenue.

Figure 2 displays pictures of the PVT group during the field review and **Figure 3** shows the locations of the walking areas.

Figure 2: PVT Field Review Pictures

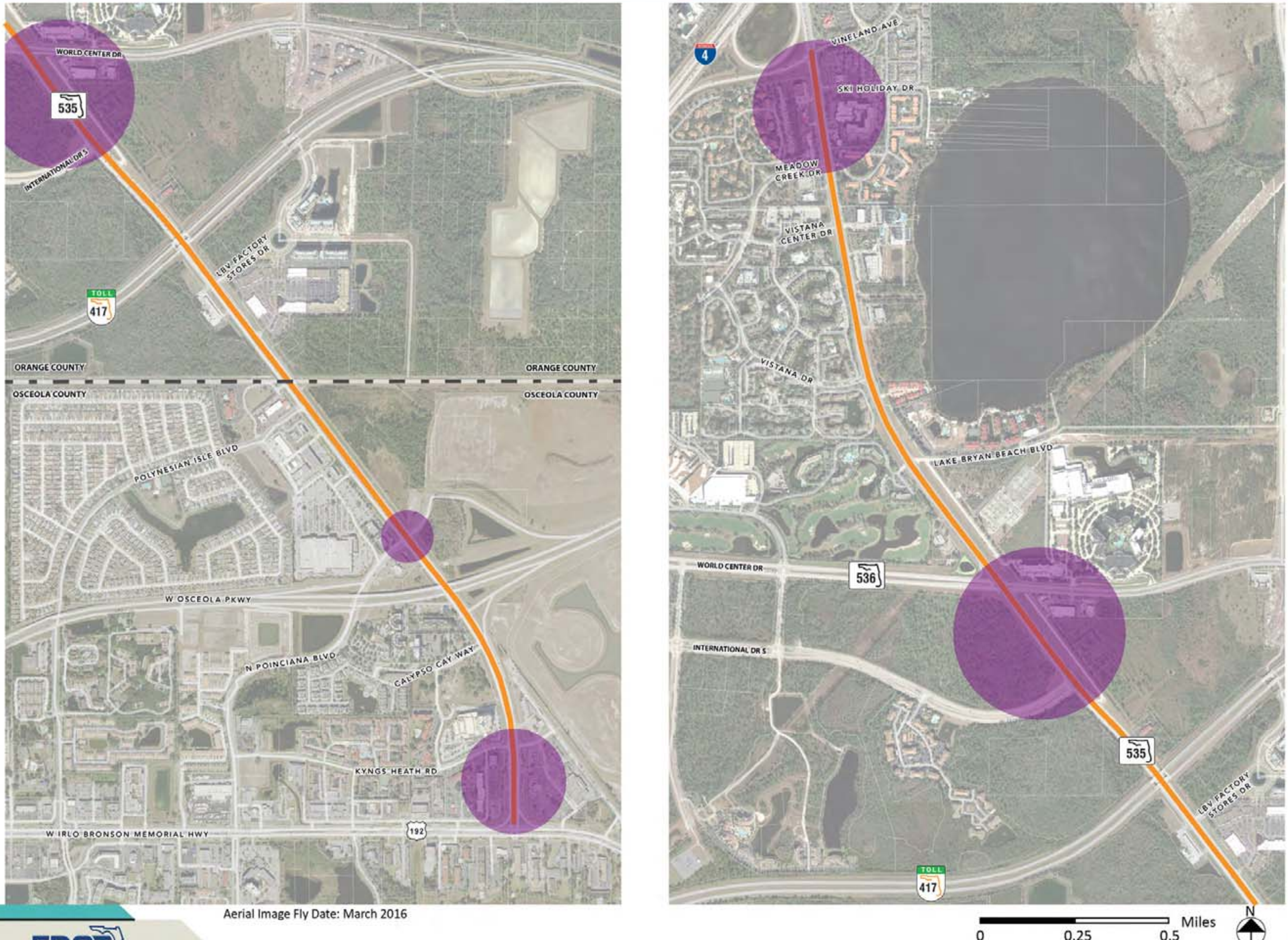
Stakeholder Meetings

Stakeholder meetings were conducted with three key area stakeholders to identify current land use, economic development, and transportation issues and opportunities that could guide and inform the Corridor Planning Study. The Study Team met with a representative from the East Central Florida Regional Planning Council and W192 Development Authority on June 29, 2016. The Study Team also coordinated a meeting with a number of hotels/resorts along the SR 535 corridor through the Central Florida Hotel & Lodging Association on July 18, 2016.

The meetings were completed in an informal setting and while there were several key questions asked during each meeting, conversations were mostly free-flowing. A couple key points from the meetings included an increased desire for pedestrian/bicycle connectivity and increased transit service along the SR 535 study corridor. Detailed notes from the stakeholder meetings are provided in **Appendix B**.

Figure No. 3

PVT Field Review Walking Areas



Aerial Image Fly Date: March 2016

Previous/Ongoing Studies and Future Improvements Review

During the existing conditions data collection and PVT Kick-Off Meeting, the Study Team obtained information regarding one previously completed study, one ongoing study, and four future improvement projects along the SR 535 corridor. The studies include:

- SR 535 Six Lane Widening Feasibility Assessment from US 192 to SR 536/World Center Drive – Previous Study
- Osceola County Red-Light Camera Study – Ongoing Study
- SR 535/International Drive Intersection Improvements:
    - Signal Construction – Short Term Improvement
    - Connection of International Drive segments – Long Term Improvement
- SR 535/Vineland Avenue Intersection Improvements:
    - Second Westbound Right Turn Lane Addition by Orange County – Short Term Improvement; and
    - I-4 Beyond the Ultimate Intersection Upgrades – Long Term Improvement

Figure 4 displays the locations of the previous/ongoing studies and future improvement projects along the corridor. **Appendix C** contains the supporting documents from the studies/future improvement projects.

SIX LANE WIDENING FEASIBILITY ASSESSMENT – NOVEMBER 2008

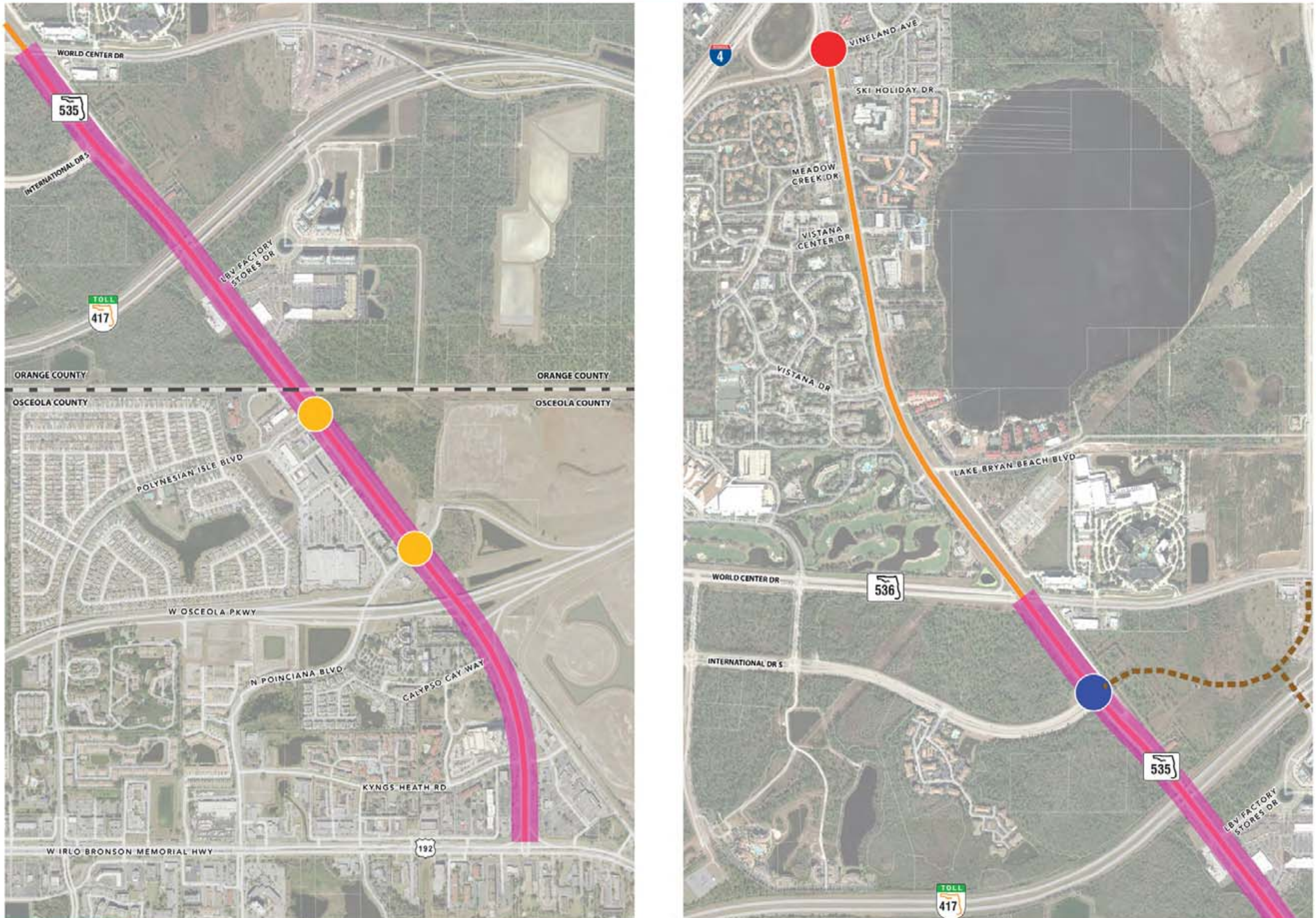
The FDOT District 5 completed a feasibility assessment for a four to six lane roadway widening along SR 535 from US 192 to SR 536/World Center Drive. Below is a summary of the recommendations from the study:

- Widen SR 535 from four to six lanes from US 192 to SR 536/World Center Drive.
- SR 535/US 192 Intersection:
    - Add a second westbound right turn lane.
    - Add a third southbound left turn lane.
- SR 535/Kyngs Heath Road Intersection:
    - Convert the existing northbound right turn lane into the third northbound through lane and add a new northbound right turn lane with a receiving lane along Kyngs Heath Road.
    - Change the existing westbound shared through/right turn lane into a left turn only lane. Change the existing westbound right turn lane into a westbound through lane and add a new exclusive westbound right turn lane.
    - Add a second southbound left turn lane.
- SR 535/Calypso Cay Way:
    - Convert the existing southbound right turn lane into the third southbound through lane and add a new southbound right turn lane.

Figure No. 4

Previous / Ongoing Studies and Future Improvement Projects

- SR 535 Six Lane Widening Feasibility Assessment
- Osceola County Red-Light Camera Study
- SR 535/International Drive Signal Construction
- SR 535/International Drive Intersection Connection
- SR 535/Vineland Avenue Intersection Improvements
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016

- SR 535/Poinciana Boulevard (assuming Poinciana Boulevard will be open east of the intersection in the future year):
    - o Convert the eastbound dual right turn lanes into eastbound through lanes and add an exclusive eastbound right turn lane.
    - o Shift the two westbound through lanes south into the striped out area. Use the remaining pavement to stripe an exclusive westbound right turn lane. Add a second exclusive westbound right turn lane.
    - o Add a second southbound left turn lane.
    - o Add an exclusive southbound right turn lane.
- SR 535/LBV Factory Stores Drive (proposed improvements did not include lane additions due to RaceTrac being constructed on west leg):
    - o Add an exclusive westbound right turn lane.
    - o Add a second southbound left turn lane.
- SR 535/International Drive (assuming the International Drive connection to the east is constructed):
    - o Add a second northbound left turn lane.
    - o Construct dual northbound right turn lanes.
    - o Construct dual southbound left turn lanes.
    - o Reconstruct the eastbound approach to include dual left turn lanes, three through lanes, and an exclusive right turn lane.
- SR 535/SR 536:
    - o Convert the existing westbound right turn lane into the third westbound through lane and add a new westbound right turn lane.
    - o Add a second southbound left-turn lane (this improvement has already been constructed).
    - o Convert the existing inside eastbound right turn lane into a third eastbound through lane. Construct a second eastbound right turn lane.
    - o Add a second eastbound left turn lane.

The recommendations from this study will be analyzed as part of the future build conditions assessment for the corridor.

OSCEOLA COUNTY RED-LIGHT CAMERA STUDY – ONGOING

Osceola County has installed red-light cameras along SR 535 at the following intersections:

- Poinciana Boulevard on the northbound approach; and
- Polynesian Isle Boulevard on the northbound and southbound approaches.

The goal of the study is to assess crash characteristics along these approaches before the cameras were installed versus when the cameras were operational to identify if there was a reduction in red-light running crash types. This study is currently ongoing and no results have been made available per the date of this report. The Study Team will coordinate with Osceola County to obtain the study results when the study is completed.

SR 535/INTERNATIONAL DRIVE INTERSECTION IMPROVEMENTS

Signal Construction – Short Term Improvement

Orange County in coordination with FDOT District 5 will be constructing a traffic signal at the SR 535/International Drive intersection. The production date for the final design plan set is July 2016 with a construction letting date of October 4, 2016. It is anticipated this signal will be operational within the next 1-2 years. The signal will be included in the future no-build conditions assessment.

International Drive Connection – Long Term Improvement

As part of the International Drive Activity Center, Orange County is planning on connecting the two segments of International Drive. This connection would add an east leg at the SR 535/International Drive intersection and extend east to the intersection of World Center Drive/International Drive, where it would become the south leg. A roadway connection is also planned from new International Drive connection south to a roadway extending from the LBV Factory Stores. There is no timetable nor is funding currently identified for this improvement. This new roadway is not on MetroPlan Orlando's 2040 LRTP Cost Feasible Report.

SR 535/VINELAND AVENUE INTERSECTION IMPROVEMENTS

Second Westbound Right Turn Lane Addition – Short Term Improvement

Orange County in coordination with FDOT District 5 will be constructing a second westbound right turn lane at the SR 535/Vineland Avenue intersection along with an auxiliary turn lane to I-4 eastbound. This project is ranked #4 in the Management and Operations Projects Section of the MetroPlan Orlando Prioritized Project List for fiscal year 2019/20 through 2039/40.

I-4 Beyond the Ultimate Intersection Upgrades – Long Term Improvement

As part of the I-4 Beyond the Ultimate project, the SR 535/Vineland Avenue intersection is proposed to be improved during the reconstruction of the I-4/SR 535 interchange. The following summarizes the improvements:

- The loop ramp from southbound SR 535 to eastbound I-4 will be removed. This will allow the I-4 eastbound off ramp to SR 535 to be shifted north to better align with Vineland Avenue.
    - The eastbound off ramp will feature triple left turn lanes to go northbound onto SR 535.
    - The eastbound right turn lane to go southbound on SR 535 is being removed from this approach. A new loop ramp will take drivers over the SR 535/Vineland Avenue intersection if they wish to travel southbound on SR 535.

- The southbound through lanes on SR 535 will be grade separated from the SR 535/Vineland Avenue intersection.
- The westbound dual left turn lanes on Vineland Avenue will be grade separated from the SR 535/Vineland Avenue intersection.
- The northbound right turn lane will be converted to a shared through/right turn lane that will feed into the auxiliary turn lane onto I-4 eastbound.

Figure 5 displays the SR 535/Vineland Avenue proposed improvements as part of the I-4 Beyond the Ultimate project.

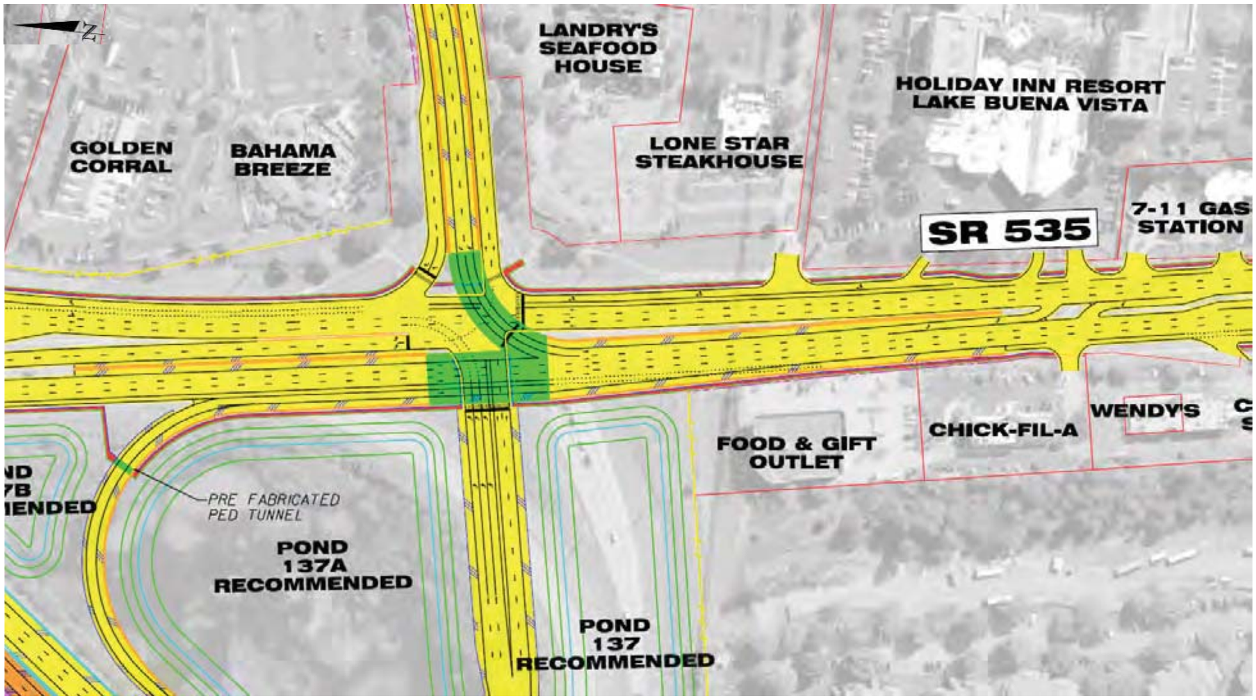


Figure 5: SR 535/Vineland Avenue Proposed Improvements

Existing Conditions

The purpose of the existing conditions analysis is to gain an understanding of how the corridor performs today to inform possible future improvement efforts. Topics addressed include land use, environment characteristics, roadway characteristics, traffic operations, and a historical safety assessment.

LAND USE AND COMMUNITY CHARACTERISTICS

Existing Land Use and Generalized Zoning

Figure 6 illustrates existing land use along the study corridor at the individual parcel level. There are two distinct clusters of developed parcels at either end of the study corridor separated by large areas of vacant land or conservation open spaces. The southern cluster from US 192 to the Orange County/Osceola County Line is characterized by strip suburban retail centers and hotels on the western side of the study corridor. Except for one suburban strip retail center at the northeast corner of the SR 535/US 192 intersection, most of the eastern side fronting the study corridor is currently vacant. Hotels and resorts are present along a majority of the corridor and tourist activity along the corridor is prevalent. **Figure 7** displays the location of the major hotels/resorts along the SR 535 study corridor.

The majority of land between the Orange County/Osceola County Line and SR 536/World Center Drive is vacant or marked as conservation or open space. Only a few commercial parcels like the Lake Buena Vista Factory Stores and a RaceTrac gas station are developed within this segment. The northern cluster from SR 536/World Center Drive to Vineland Avenue is characterized by hotels, resorts, multi-family vacation rental apartment complexes, and retail development.

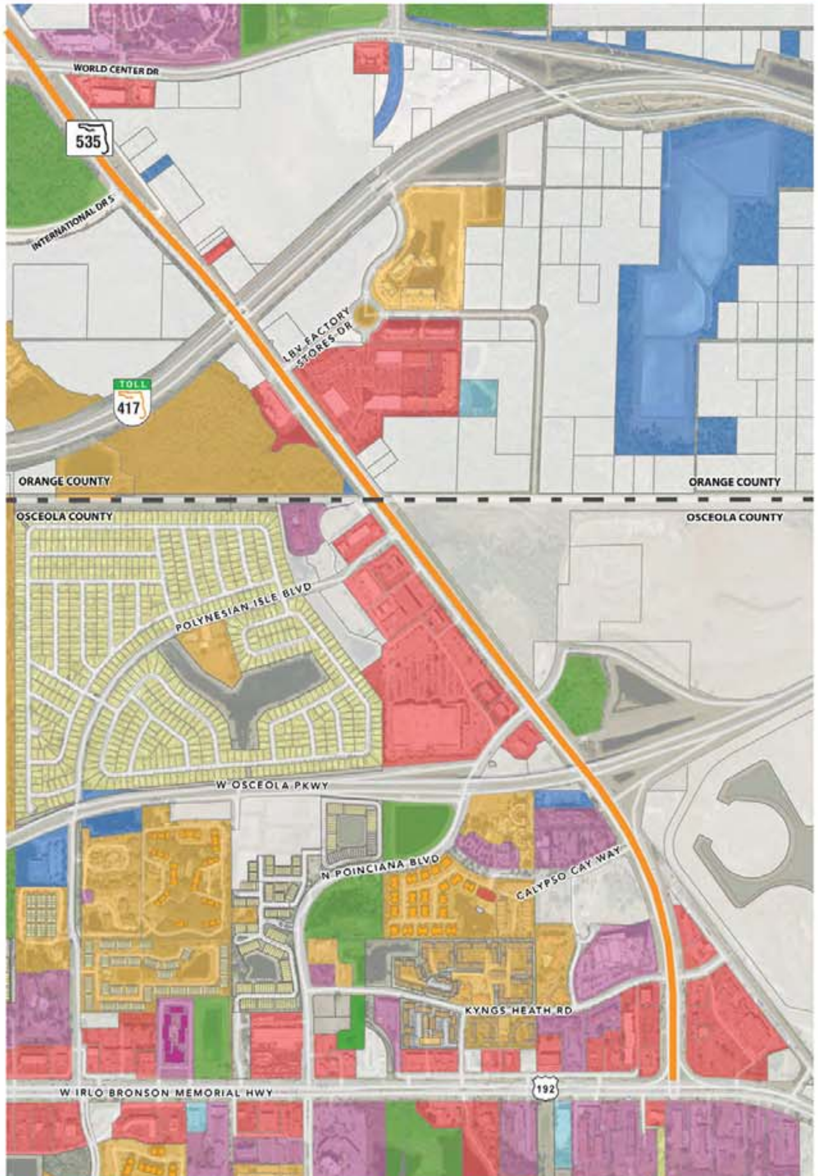
Figure 8 displays the nine residential communities that exist along or near the SR 535 study corridor. Five of these communities are clustered west of SR 535 between US 192 and the Orange County Line. Three other apartment style communities are located on the north end of the SR 535 study corridor. **Figure 8** also displays the community features (places of worship and parks) present along and near the SR 535 study corridor.

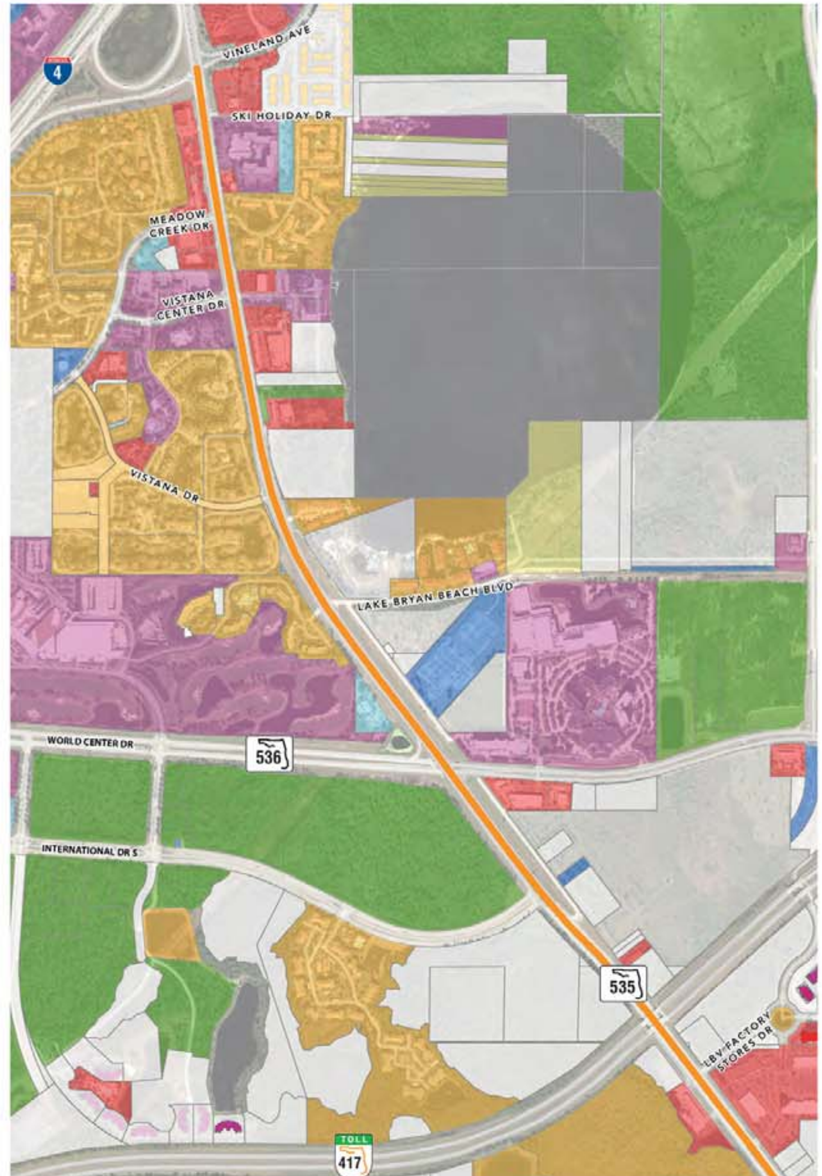
Figure 9 shows the generalized zoning for Orange County and Osceola County along the study corridor. The majority of the land immediately adjacent to the study corridor is zoned as Planned Development. A few parcels at the northern end between Vistana Center Drive and Ski Holiday Drive are zoned as Retail Commercial District or Multi-Family Residential.

There are planned developments along the corridor that are either approved or under construction. These are discussed in the *Generalized Future Land Use* and *Approved Developments of Regional Impact (DRIs)* sections.

Figure No. 6

Existing Land Use





- Single-Family Residential
- Multi-Family Residential
- Retail
- Commercial
- Government / Public
- Institutional
- Open Space
- Vacant
- Study Corridor
- County Line

Aerial Image Fly Date: March 2016
Data Source: Orange County and Osceola County

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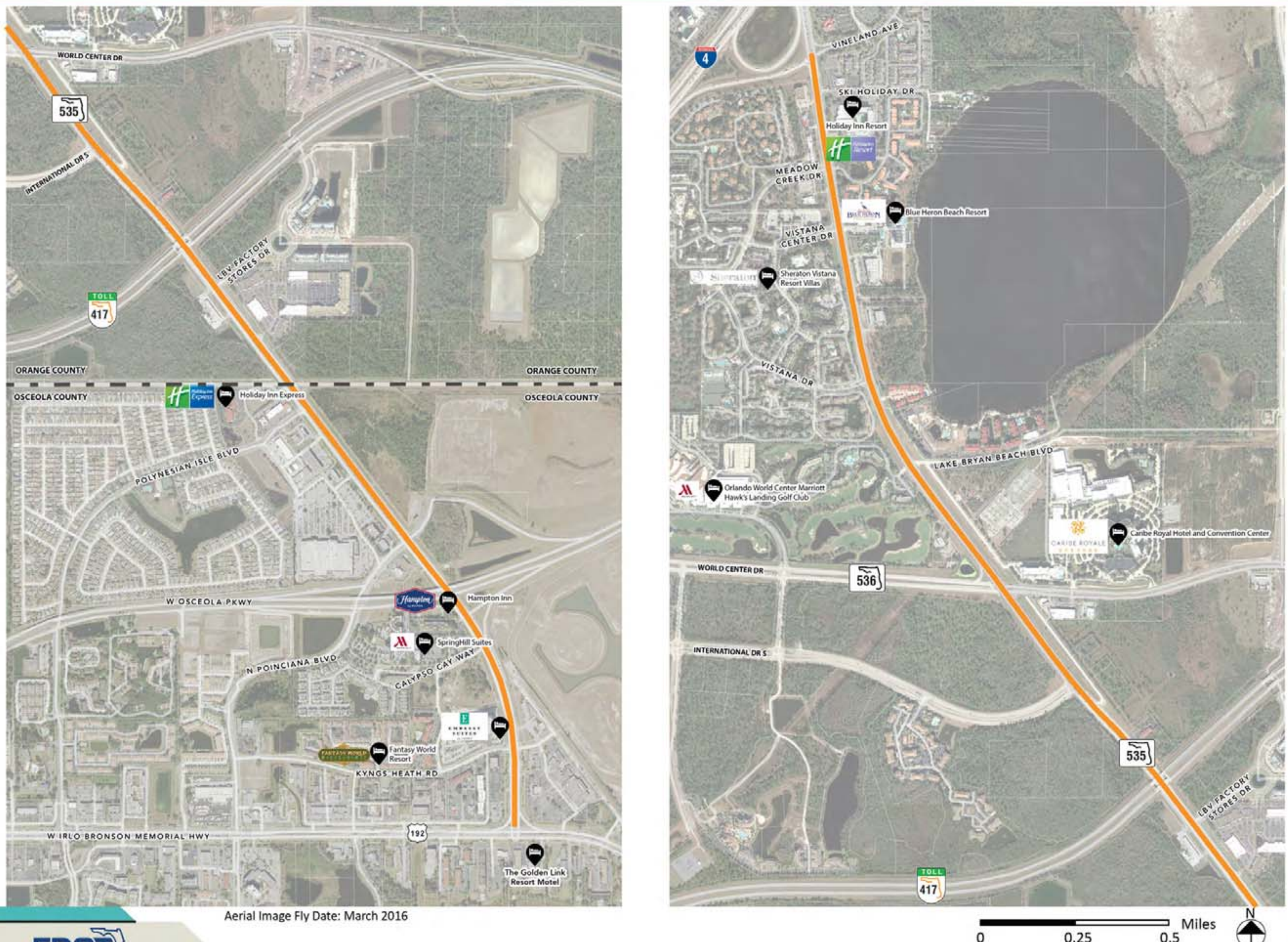
CORRIDOR SR 535 PLANNING STUDY

Figure No. 7

Hotels and Resorts



Aerial Image Fly Date: March 2016

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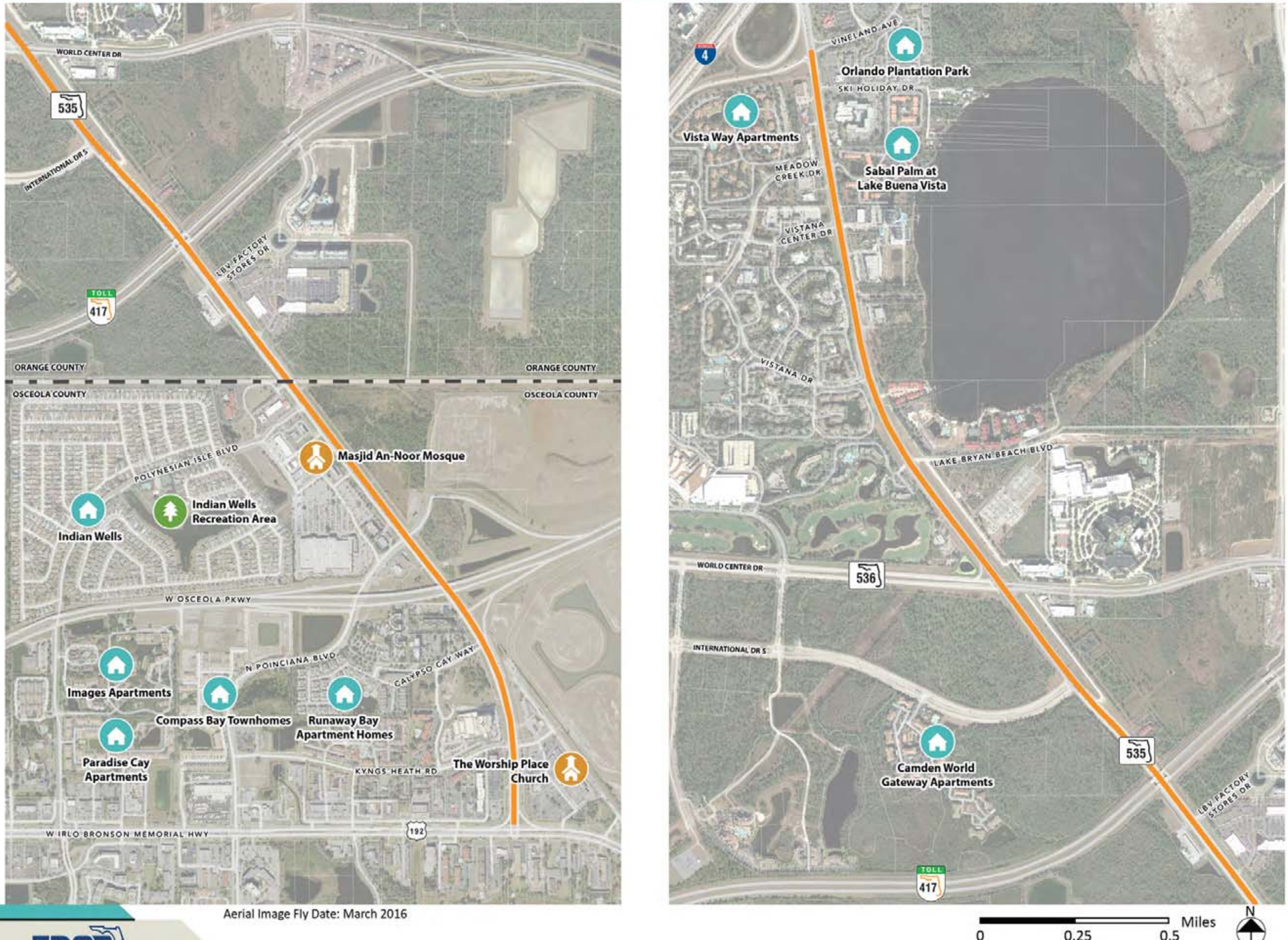
CORRIDOR SR 535 PLANNING STUDY

Figure No. 8

Communities/ Neighborhoods and Community Features



Communities/Neighborhoods

Places of Worship

Parks

Study Corridor

County Line

Aerial Image Fly Date: March 2016

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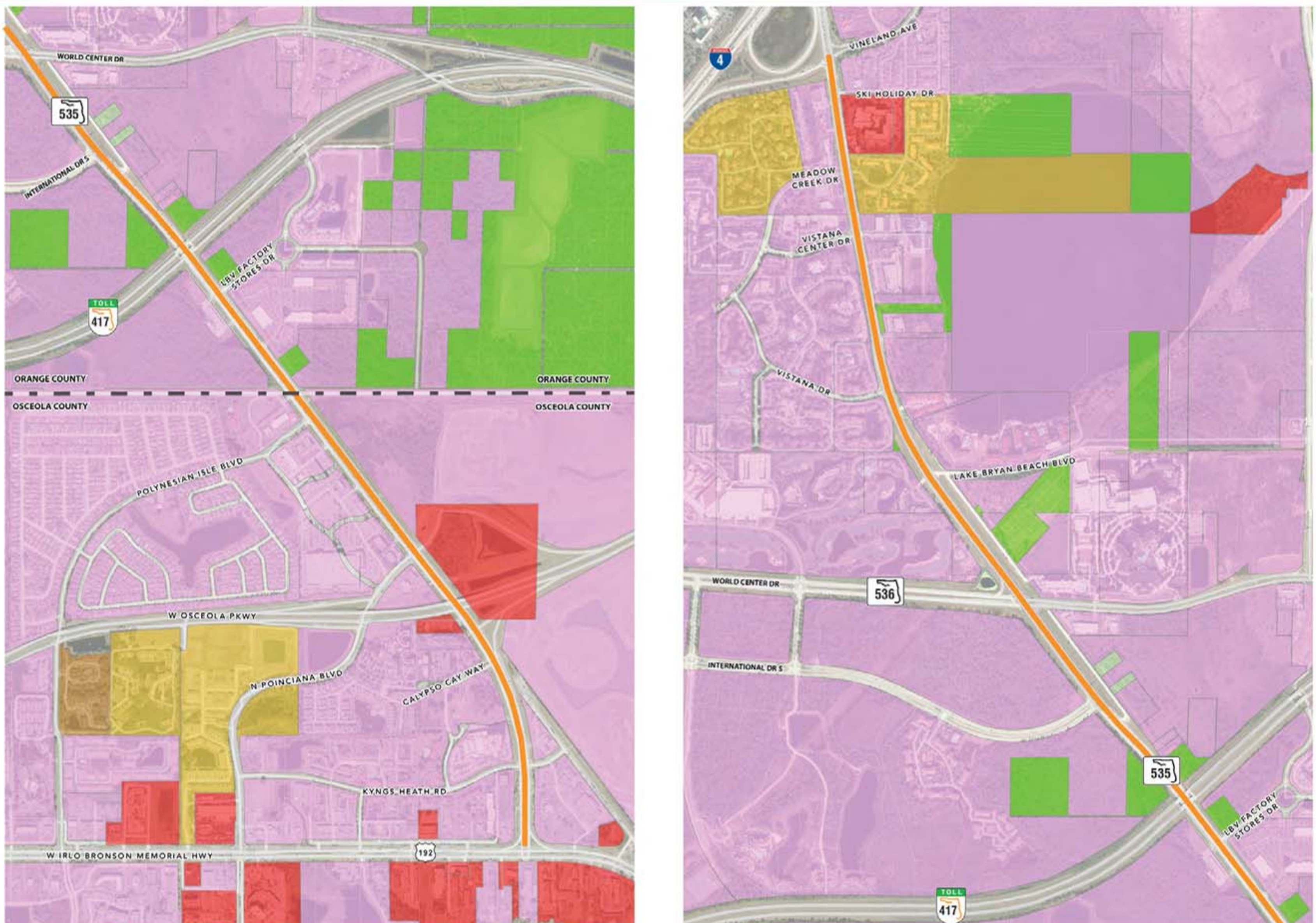
Figure No. 9

Zoning



Orange County

- Planned Development
- Farmland Rural District
- Multi-Family Residential
- Retail Commercial District

Osceola County

- Planned Development
- Commercial
- Multi-Family Residential
- Commercial - Tourist

- Study Corridor
- County Line

Aerial Image Fly Date: March 2016
Data Source: Orange County and Osceola County

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Generalized Future Land Use

The generalized future land use for Orange County and Osceola County is illustrated in **Figure 10**. The future land use along the corridor does not vary from current zoning. A majority of land uses along the corridor in Osceola County is coded as Tourist Commercial land use. The majority of land fronting the study corridor in Orange County is planned as an Activity Center. While the counties use different naming conventions for their future land use, the descriptions for those land uses are similar.

Approved Developments of Regional Impact (DRIs)

Figure 11 represents a map of the approved DRIs within the vicinity of the study corridor. The following is the list of DRIs along the corridor and their current status:

- Little England (west of SR 535, between Osceola Parkway and Orange County/Osceola County Line) – This DRI is mostly constructed.
- Legacy Park (Osceola Trace) (east of SR 535, between US 192 and Orange County/Osceola County Line) – land in northwest corner of this DRI (southeast corner of SR 535 and Osceola Parkway) is currently under construction. Final completion of this DRI is planned for 2017.
- World Gateway (west of SR 535, between Orange County/Osceola County Line and SR 536/World Center Drive) – This DRI has had a few multi-family developments constructed but for the most part is undeveloped land.
- Wind Song (west of SR 535, between SR 536/World Center Drive and the southern end of the Sheraton Vistana Resort property) – This DRI is fully constructed.
- Sierra Land (east of SR 535, between SR 536/World Center Drive and Lake Bryan Beach Boulevard) – This DRI is fully constructed.
- Holiday Inn (east of SR 535, between Meadow Creek Drive and Ski Holiday Drive) – This DRI is fully constructed.
- Little Lake Bryan (east of SR 535, between Ski Holiday Drive and Vineland Avenue) – This DRI is fully constructed.

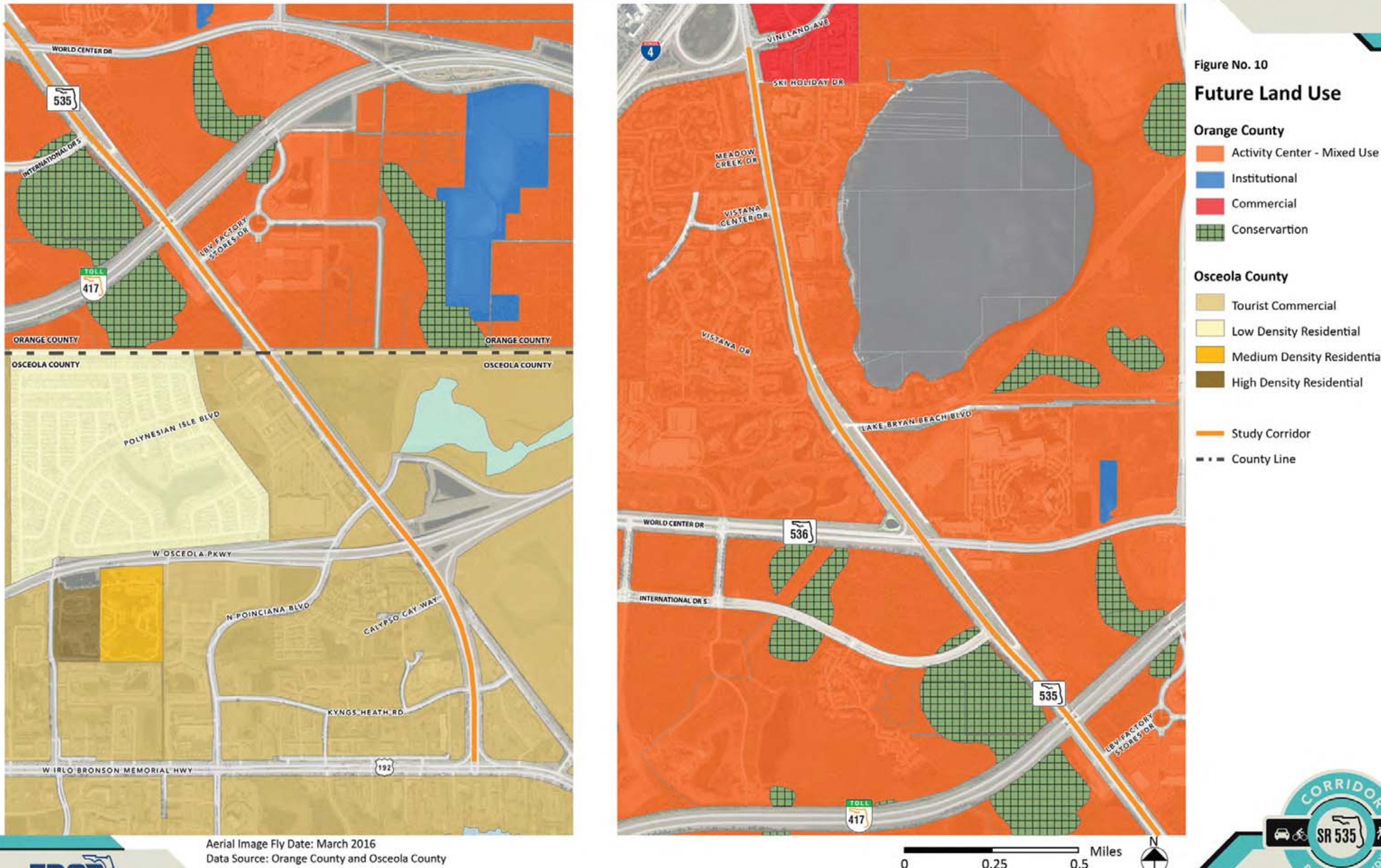
Environmental Aspects

Figure 12 displays the wetlands and conservation areas along the SR 535 study corridor. Overall there are not many wetlands/conservation areas immediately adjacent to the SR 535 study corridor. A large wetland/conservation area is located in Orange County around SR 417 on the west side of SR 535. The southern end of a wetland area is located near the SR 535/Poinciana Boulevard intersection just north of Osceola Parkway but is outside of the roadway right-of-way.

Figure 13 shows habitats for threatened and endangered animal species near the SR 535 study corridor. Bird habitats for Scrub Jay and Caracara, as well as lizard habitat for Sand Skink exist within the vicinity of the study corridor. There are two documented locations of Black Bear occurrences in the northern half of SR 535 study area.

Figure No. 10

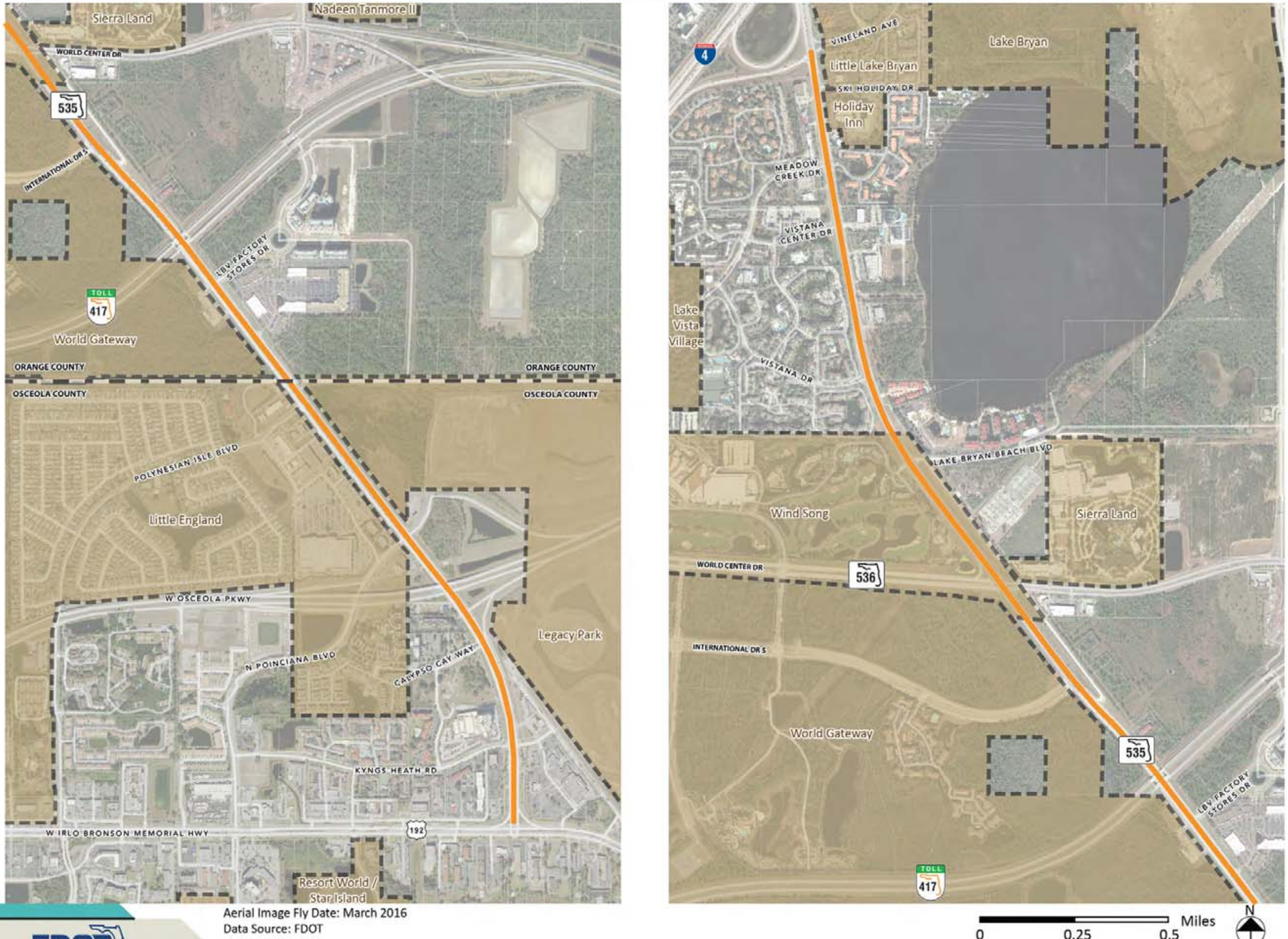
Future Land Use



Aerial Image Fly Date: March 2016
Data Source: Orange County and Osceola County

Figure No. 11

Developments of Regional Impact

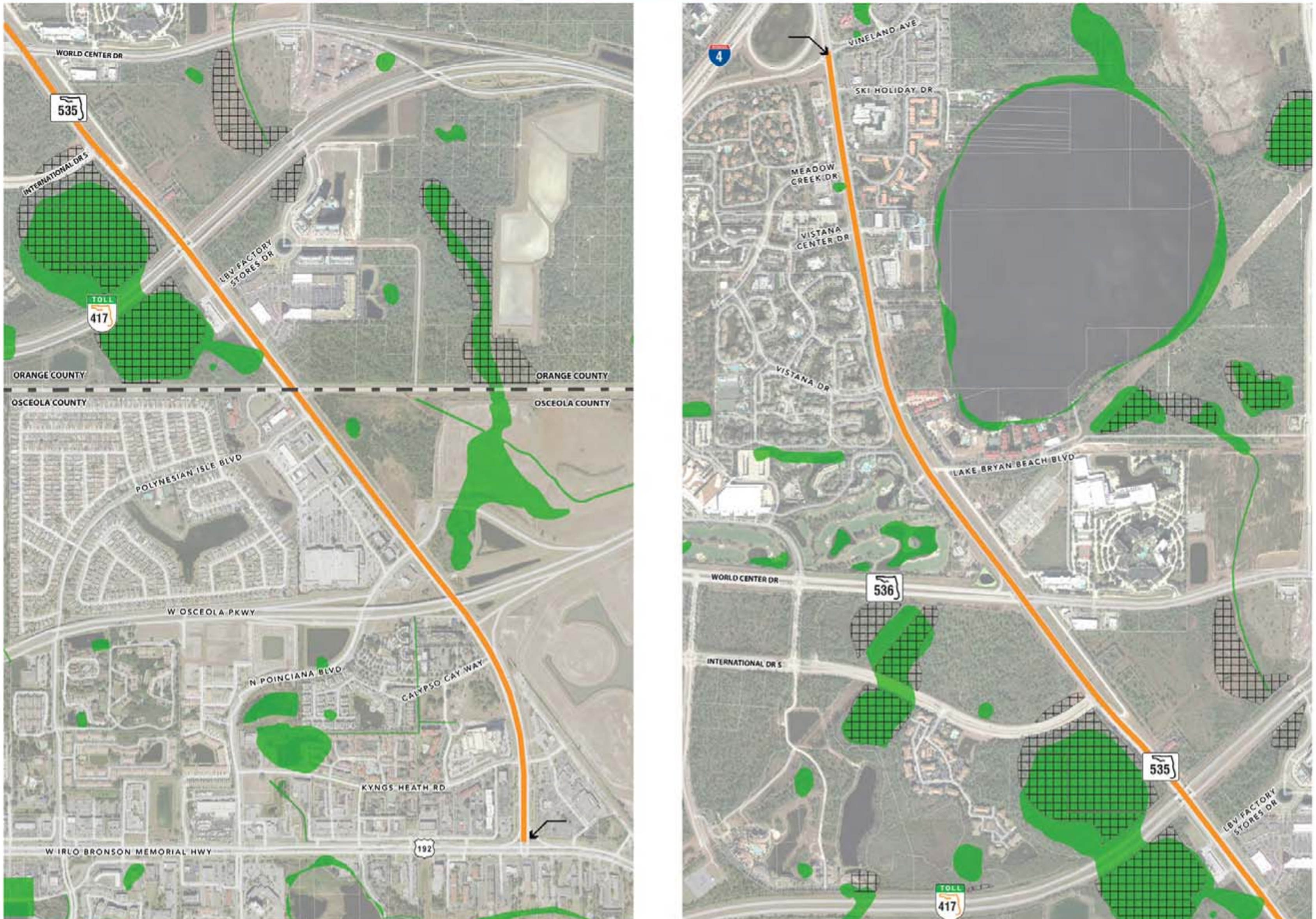


Aerial Image Fly Date: March 2016
Data Source: FDOT

Figure No. 12

Wetlands and Conservation Areas

- Wetlands
- Conservation Areas
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016
Data Source: Orange County (Conservation Areas) and U.S. Fish and Wildlife Service (Wetlands)

0 0.25 0.5 Miles

N

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Figure No. 13

Threatened & Endangered Species' Habitat

Aerial Image Fly Date: March 2016
Data Source: Florida Geographic Data Library

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CORRIDOR SR 535 PLANNING STUDY

EXISTING ROADWAY CHARACTERISTICS

The following section summarizes the existing roadway characteristics for the study corridor in addition to the existing general cross sections/right-of-way widths, pedestrian and bicycle facilities, transit facilities/ridership, and utilities.

Roadway Characteristics

The general roadway characteristics obtained from the 2015 Florida Transportation Information (FTI) DVD for the SR 535 study corridor are summarized below:

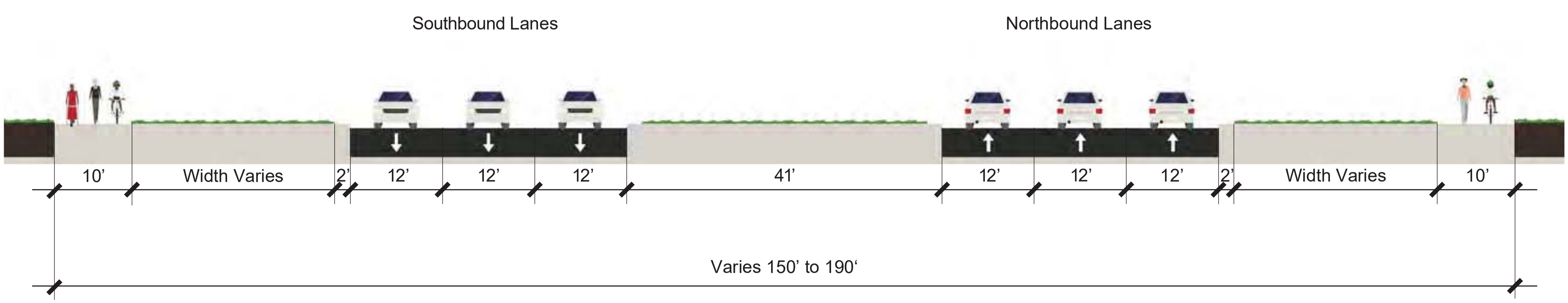
- Roadway ID 92040000 (Osceola County) – milepost 0.000 (US 192) to 1.147 (Orange County Line)
- Roadway ID 75035001 (Orange County) – milepost 0.000 (Osceola County Line) to 2.193 (Vineland Avenue)
- Functional Classification – Urban Minor Arterial
- SIS Designation – Non-SIS
- Speed Limits –
    - 45 miles per hour (MPH) from US 192 to just north of Kyngs Heath Road
    - 50 MPH from just north of Kyngs Heath Road to Lake Bryan Beach Boulevard
    - 45 MPH from Lake Bryan Beach Boulevard to Vineland Avenue
- Access Classification – 3

General Cross Section/Right-of-Way Widths

Figure 14 through **Figure 17** displays the typical existing cross sections for various segments along SR 535. Aerial and street view imagery from Google Earth taken in 2016, along with FDOT straight line diagrams (provided in **Appendix D**), was utilized to generate general cross sections along the SR 535 study corridor.

Figure No. 14

SR 535 from US 192 to Kyngs Heath Road



SR 535 from Kyngs Heath Road to Calypso Cay Way

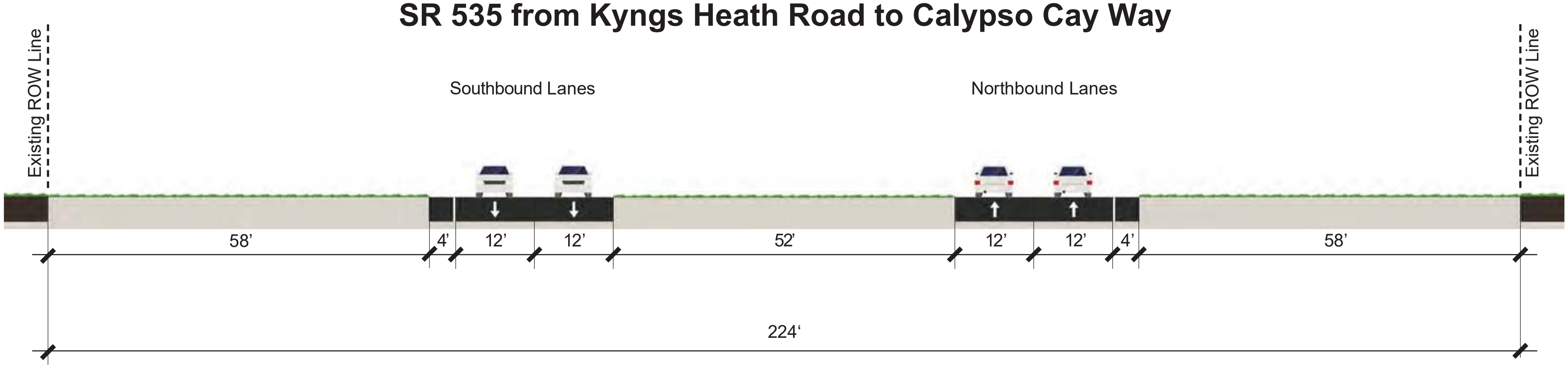
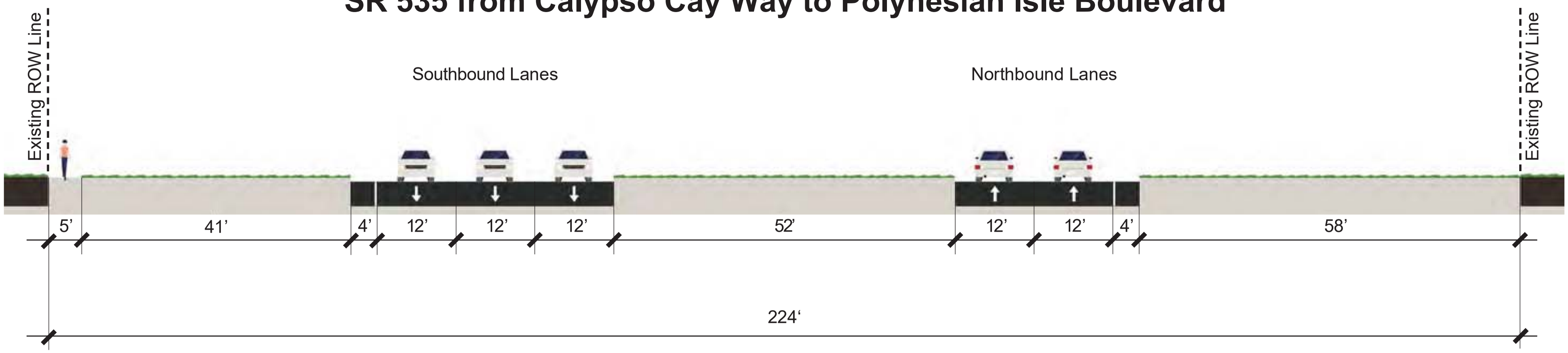


Figure No. 15

SR 535 from Calypso Cay Way to Polynesian Isle Boulevard



SR 535 from Polynesian Isle Boulevard to International Drive

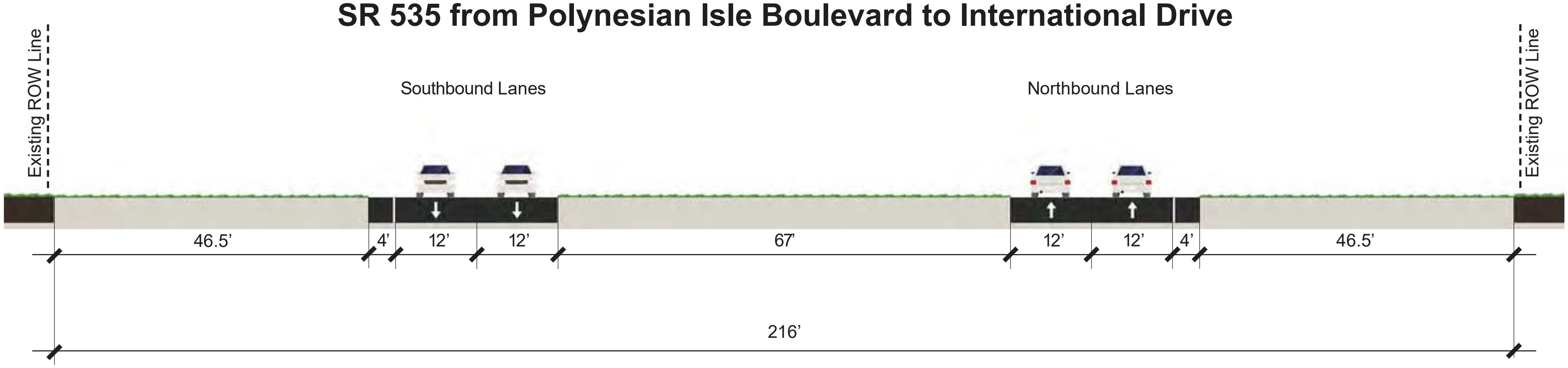
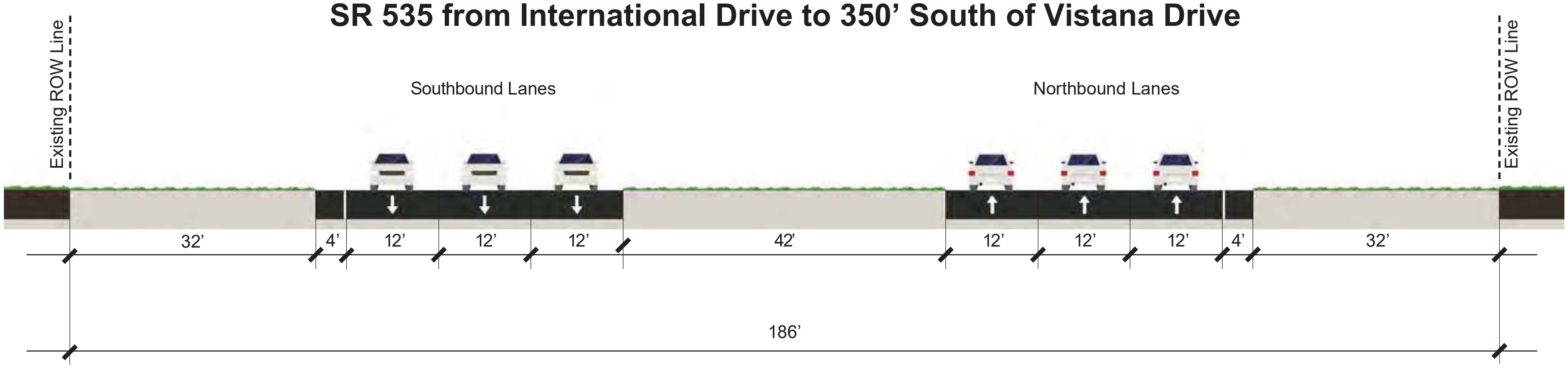


Figure No. 16

SR 535 from International Drive to 350’ South of Vistana Drive



SR 535 from 350’ South of Vistana Drive to 600’ North of Vistana Drive

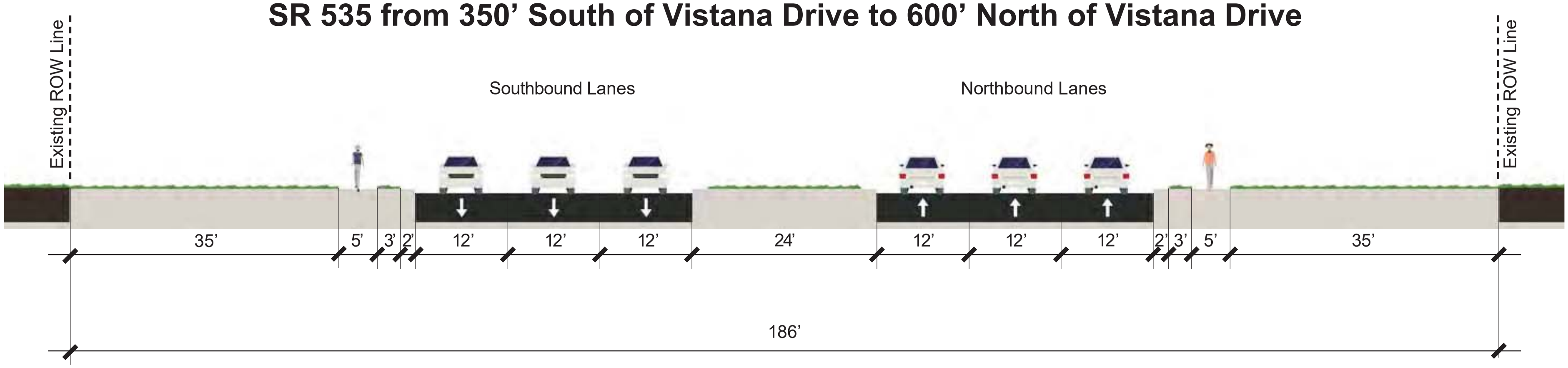
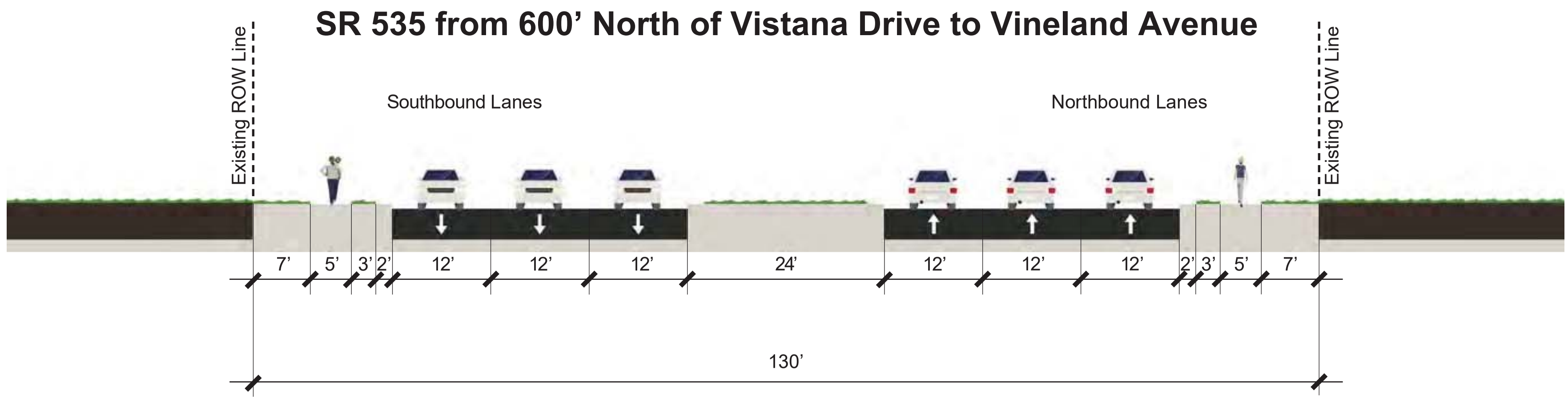


Figure No. 17



SR 535 from 600' North of Vistana Drive to Vineland Avenue
Existing ROW Line
Southbound Lanes
Northbound Lanes
Existing ROW Line
7'
5'
3'
2'
12'
12'
12'
24'
12'
12'
12'
2'
3'
5'
7'
130'

The Study Team performed a field review on April 19, 2016 to verify the cross sectional elements. Below is a summary of general cross section elements:

- Mainly four lane roadway divided by a grass median from US 192 to International Drive (1.75 miles) –
  - Six lane roadway section (three lanes southbound and three lanes northbound) present between US 192 and Kyngs Heath Road (0.15 miles).
  - Five lane roadway section (three lanes southbound and two lanes northbound) present between Calypso Cay Way and Polynesian Isle Boulevard (0.65 miles).
  - No curb and gutter is present along the roadside or in the median from Kyngs Heath Road to International Drive (1.60 miles).
- Six lane roadway divided by a grass median from International Drive to Vineland Avenue (1.50 miles) –
  - No curb and gutter is present along either the roadside or in the median from International Drive to just south of Vistana Drive (0.75 miles).
  - Curb and gutter is present roadside and in the median from just south of Vistana Drive to Vineland Avenue (0.75 miles).
- Lane widths consistently 12 feet wide.
- Grass median –
  - Varying 40 to 70 foot wide between US 192 to just south of Vistana Drive (2.50 miles).
  - 24 foot wide from just south of Vistana Drive to Vineland Avenue (0.75 miles).

The existing right-of-way (ROW) along the corridor was obtained from the FDOT District 5 ROW Department. SR 535 ROW varies between 224 feet in the southern end to 130 feet towards the northern end of the corridor. The typical existing cross sections display the various ROW widths along the corridor, where information could be obtained.

Pedestrian and Bicycle Facilities

Figure 18 shows existing bicycle and pedestrian facilities along the study corridor. Sidewalks are present fronting developed land along the corridor. Sidewalk gaps exist on the west side and virtually no sidewalks are present on the east side of study corridor between US 192 and SR 536/World Center Drive. Sidewalks are present on both sides of the corridor from where the curb and gutter section begins just north of SR 536/World Center Drive to Vineland Avenue.

An existing 10’ wide shared-use path is present along US 192. This path is also present along both sides of SR 535 between US 192 and Kyngs Heath Road. Existing sidewalks closer to the ROW line are also present within this section. Deep drainage swales are present between the shared-use path and the sidewalks.

Figure No. 18

Pedestrian and Bicycle Facilities

- Sidewalk
- Shared Use Path
- Study Corridor
- County Line

Aerial Image Fly Date: March 2016

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CORRIDOR SR 535 PLANNING STUDY

Standard four foot paved shoulders are present along SR 535 in the section without curb and gutter from Kyngs Heath Road to just south of Vistana Drive. These paved shoulders are not marked as formal bicycle facilities. No paved shoulders/formal bicycle facilities are provided within the curb and gutter section from just south of Vistana Drive to Vineland Avenue.

Transit Facilities/Ridership

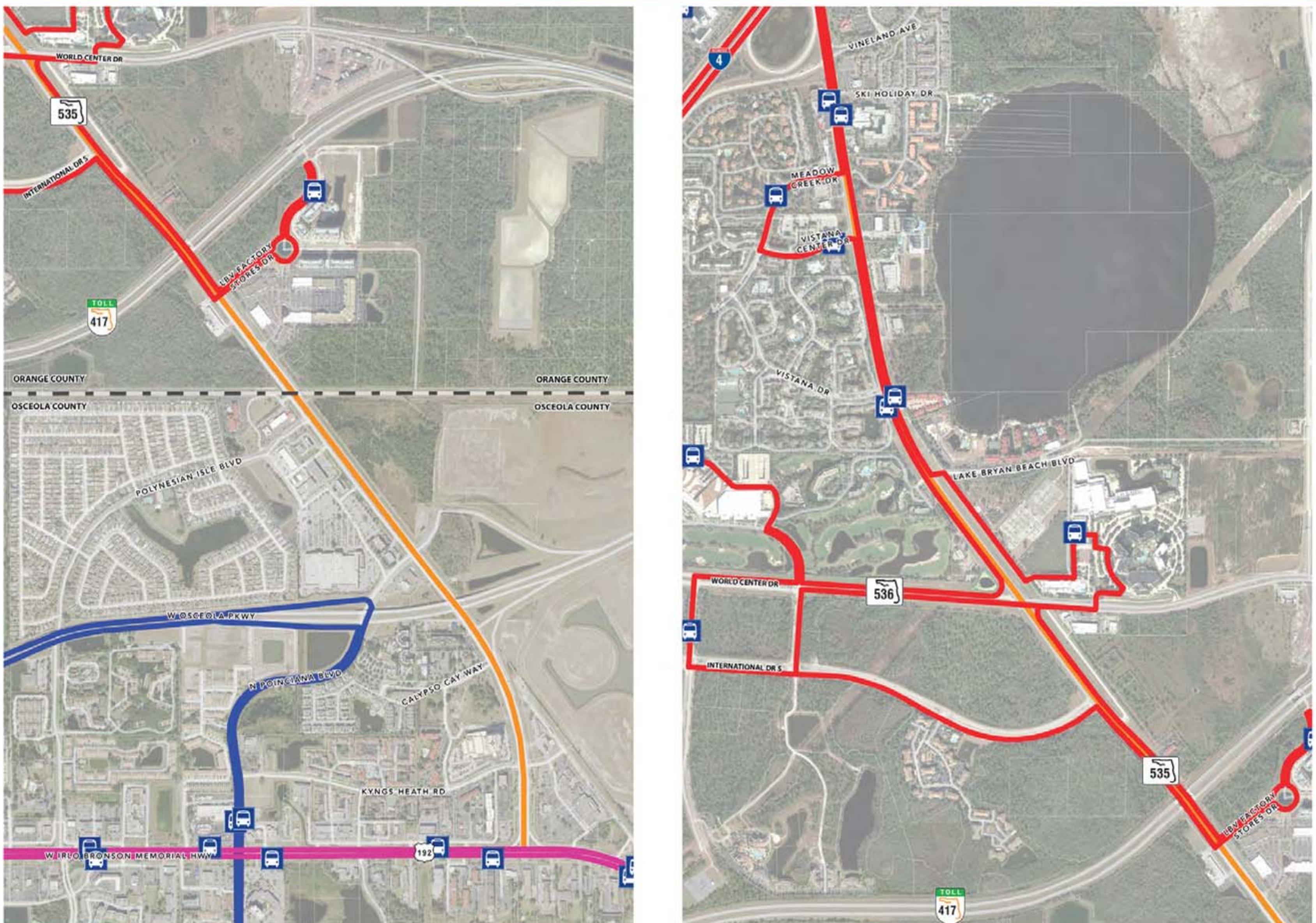
Figure 19 shows existing LYNX transit routes/facilities along and around the study corridor. LYNX route 304 connects LYNX Central Station in Downtown Orlando to the Disney Springs West Side Transfer Station, but only serves SR 535 north of Lake Buena Vista Factory Stores Drive. Route 304 only operates 2 southbound buses and 1 northbound bus in a day. With such low operating headways, route 304 has an average of 40 riders per day between the 10 transit stops on/near the SR 535 corridor. There is no transit route currently operating along SR 535 south of Lake Buena Vista Factory Stores Drive.

LYNX bus routes 55 and 56 operate along US 192. Route 55 connects Kissimmee Intermodal Station and Four Corners Walmart with an average of 1,975 riders per day, while route 56 connects Kissimmee Intermodal Station and Disney's Magic Kingdom with an average of 2,215 riders per day. Both these routes operate at 30 minute headways and rank among the top 10 routes in the LYNX system for Saturday ridership. A Bus Rapid Transit (BRT) route is currently under study along US 192 that will connect US 27 in the west to Kissimmee in the east.

LYNX bus route 306 connects the Poinciana Walmart Center and Disney Springs West Side Transfer Station with an average of 75 riders per day. This route runs west of study corridor on Poinciana Boulevard and Osceola Parkway. There is only one northbound bus at 6:15 AM and one southbound bus at 5:05 PM throughout the day.

Figure No. 19

Transit Facilities



Aerial Image Fly Date: March 2016
Data Source: LYNX

Existing Utilities

A Sunshine One Call ticket was requested for SR 535 within the project limits in Orange and Osceola Counties. The Sunshine One Call verified the following utilities along the study corridor:

- Communications/Electric;
- Gas Pipeline;
- Fiber CATV and Phone Lines;
- Wastewater and Reclaimed Water;
- Fiber Optic;
- Traffic Signals and Fiber;
- Water;
- Telephone;
- Sewer;
- Oil; and
- Telecom Cable and Fiber.

Appendix E contains the Sunshine One Call specifying the companies operating the various utilities along the corridor for both Orange and Osceola Counties.

EXISTING TRAFFIC VOLUMES

Data Collection

As part of this study, weekday classification and intersection turning movement counts were collected. The count location, types, and dates taken are as follow:

- 48-Hour Classification Counts – Tuesday April 12 and Wednesday 13, 2016
    - US 192 east of SR 535;
    - US 192 west of SR 535;
    - SR 535 between US 192 and Kyngs Heath Road;
    - SR 535 between Kyngs Heath Road and Osceola Parkway eastbound on-ramp;
    - SR 535 between Poinciana Boulevard and Polynesian Isle Boulevard;
    - SR 535 between LBV Factory Stores Drive and International Drive;
    - SR 535 between Meadow Creek Drive and Vineland Avenue; and
    - SR 535 north of Vineland Avenue.
- FDOT Count Station #750630
    - SR 535 between SR536/World Center Drive and Vistana Center Drive
- 4-Hour Intersection Turning Movement Counts – 7:00 to 9:00 AM and 4:00 to 6:00 PM, Tuesday April 12, 2016
    - SR 535 and US 192;
    - SR 535 and Kyngs Heath Road;
    - SR 535 and Calypso Cay Way;

- SR 535 and Osceola Parkway Eastbound On-Ramp;
- SR 535 and Poinciana Boulevard;
- SR 535 and Polynesian Isle Boulevard;
- SR 535 and LBV Factory Stores Drive;
- SR 535 and International Drive;
- SR 535 and SR 536/World Center Drive;
- SR 535 and Vistana Drive;
- SR 535 and Vistana Center Drive;
- SR 535 and Meadow Creek Drive; and
- SR 535 and Vineland Avenue.

All of the intersections where intersection turning movement counts were taken will be projected for the future year analysis. The classification counts, intersection counts, and FDOT count station locations are illustrated in **Figure 20**. The raw classification and intersection count data is provided in **Appendix F**.

Existing Traffic Factors and Segment Volumes

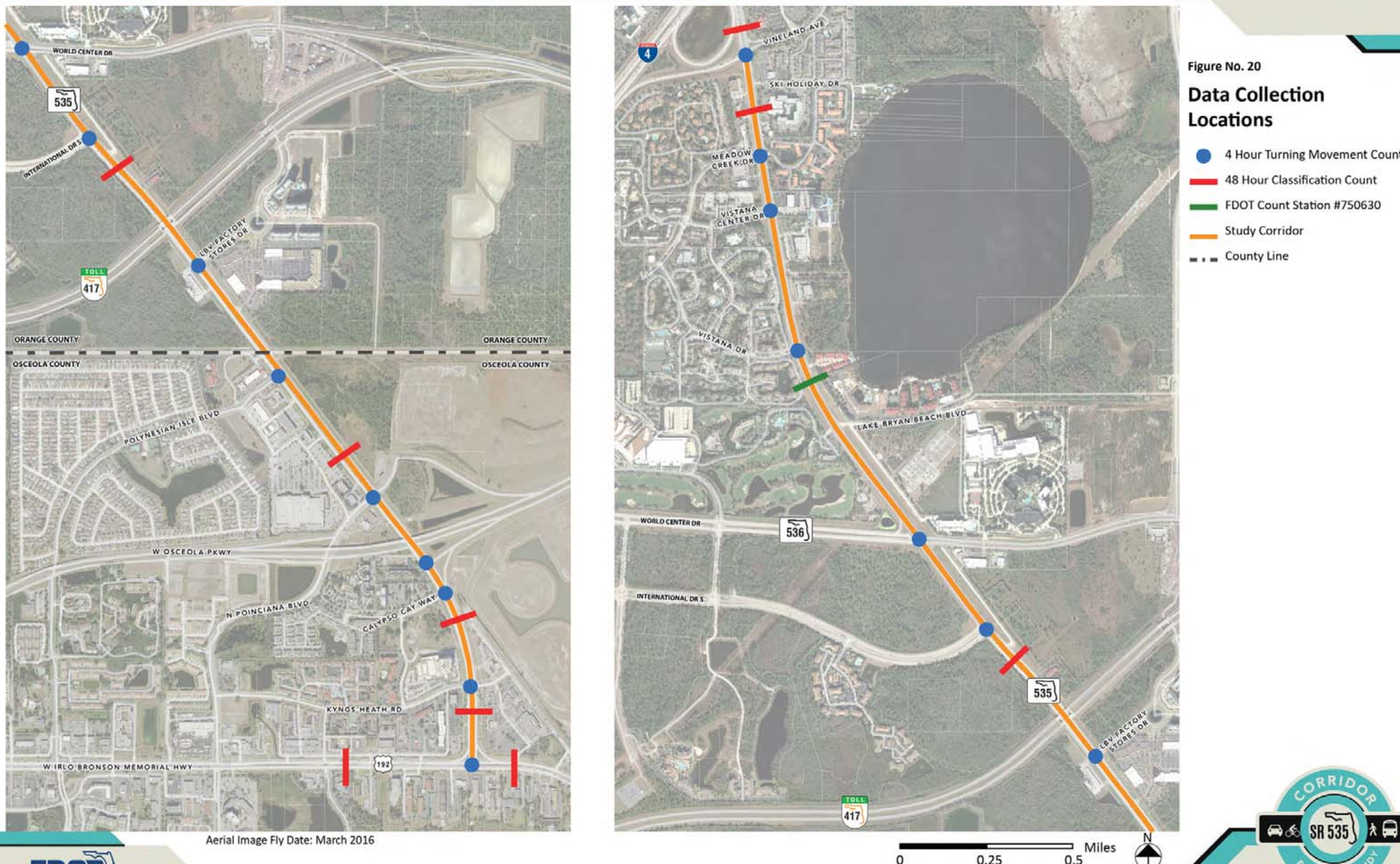
The classification counts and turning movement counts were adjusted using a seasonal adjustment factor (included in **Appendix G**), obtained from 2015 FTI per FDOT procedures, to estimate 2016 Annual Average Daily Traffic (AADT) along the segments and turning movement volumes at the intersections. The collected classification counts did not require axle adjustments. These seasonally adjusted AADT's and turning movement volumes were used for the existing conditions analysis. The existing 2016 segment AADT's along the study corridor are presented in **Table 1** and in **Figure 21**.

Table 1: Existing Segment Volumes

Roadway	Count Type	Count Dates	ADT	Axle Adj. Factor	Seasonal Adj. Factor	AADT
US 192 to Kyngs Heath Road	48-Hour Classification	4/12/16 - 4/13/16	28,570	1.00	0.99	28,300
Kyngs Heath Road to Poinciana Boulevard	48-Hour Classification	4/12/16 - 4/13/16	27,170	1.00	0.99	26,900
Poinciana Boulevard to Polynesian Isle Boulevard	48-Hour Classification	4/12/16 - 4/13/16	47,271	1.00	0.99	46,800
Polynesian Isle Boulevard to World Center Drive	48-Hour Classification	4/12/16 - 4/13/16	44,733	1.00	0.99	44,300
World Center Drive to Meadow Creek Drive	FDOT Count Station #750630	2015	-	-	-	47,000
Meadow Creek Drive to Vineland Avenue	48-Hour Classification	4/12/16 - 4/13/16	50,178	1.00	0.99	49,700
North of Vineland Avenue	48-Hour Classification	4/12/16 - 4/13/16	57,934	1.00	0.99	57,400

Figure No. 20

Data Collection Locations



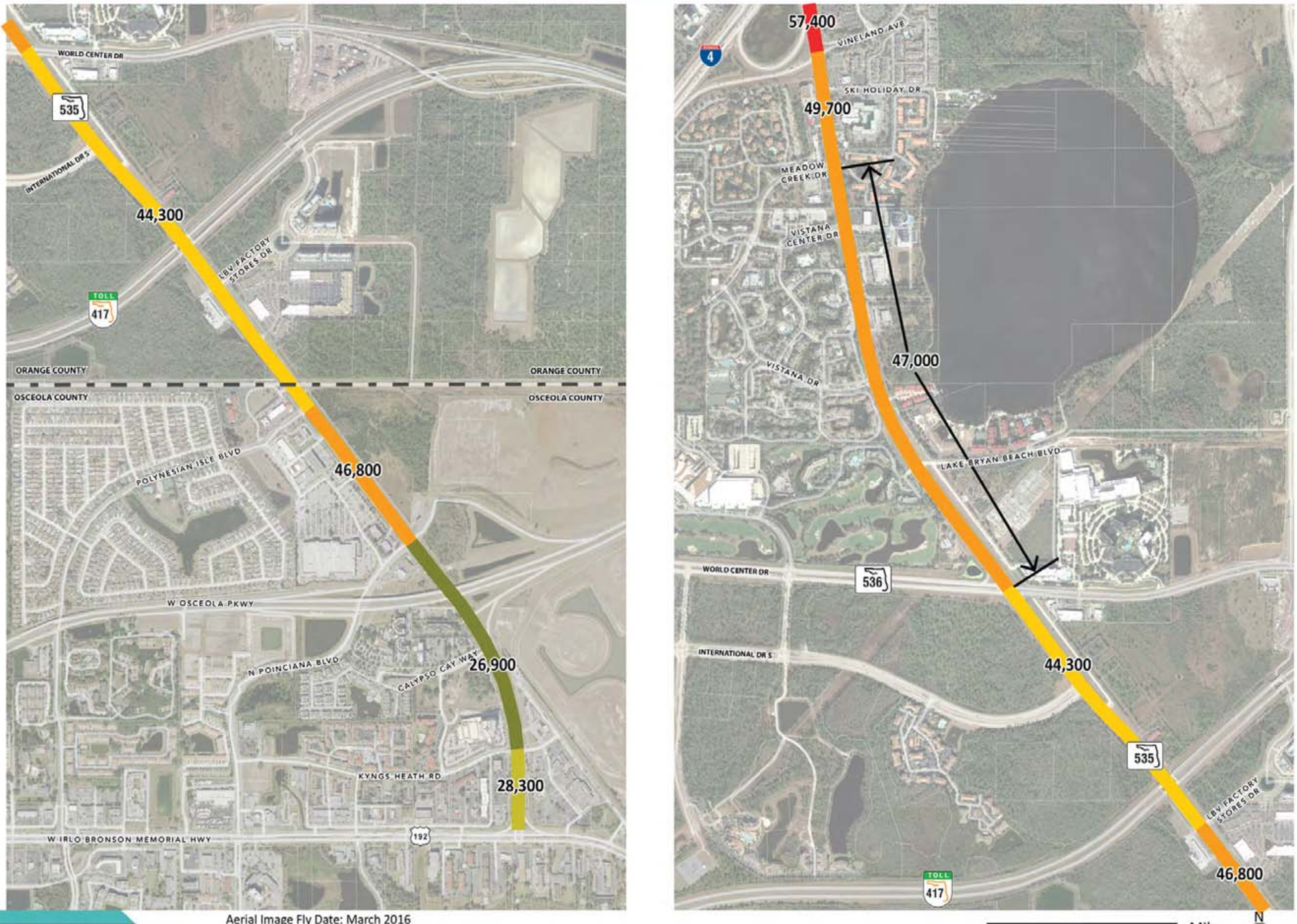
Aerial Image Fly Date: March 2016

Figure No. 21

Average Annual Daily Traffic

(Based on Counts taked on 4/12/2016 - 4/13/2016 and FDOT Station #750630)

- <27,000
- 27,001 - 30,000
- 30,001 - 45,000
- 45,001 - 50,000
- >50,000
- County Line



Aerial Image Fly Date: March 2016

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EXISTING TRAFFIC OPERATIONS

In order to identify problem segments and intersections along the SR 535 study corridor, an existing traffic operations analysis was completed using Highway Capacity Manual (HCM) methodologies. This section describes the AM and PM peak hour field reviews and HCM segment/intersection analysis results which will help in identifying future improvements.

AM and PM Peak Hour Field Reviews

To verify existing traffic operations along the SR 535 study corridor during the AM and PM peak hours, the Study Team performed a field review on Thursday July 21, 2016. The following bullets summarize the observations from these field reviews.

AM – 7:00 TO 8:15

- Eastbound left turn queue at Poinciana Boulevard extends approximately 850 feet to the Osceola Parkway interchange ramp intersections (**Figure 22**).
    - Drivers were observed getting into the left turn lane for Osceola Parkway or the left turn lane at the median opening for Walmart thinking this was the inside left turn lane for Poinciana Boulevard. Then they would stop in the turn lane and wait for someone to let them back onto Poinciana Boulevard eastbound so they could enter the left turn lanes at the intersection.
    - Drivers were observed blocking the outside through lane while waiting to merge into one of the two left turn lanes.

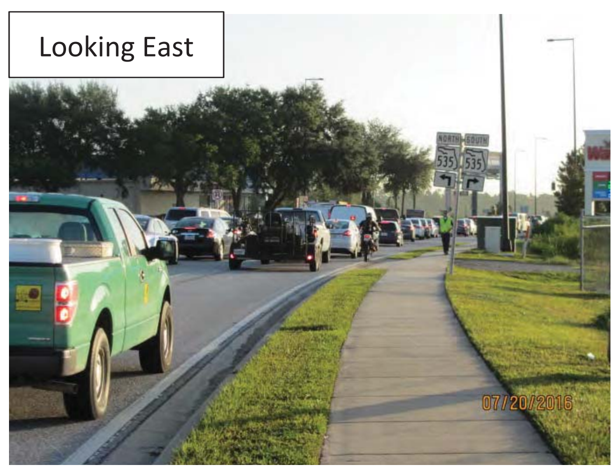


Figure 22: Traffic Queuing Eastbound at Poinciana Boulevard

- Northbound queueing along SR 535 was observed from approximately 900 feet south of Poinciana Boulevard to the LBV Factory Stores Drive signal, a distance of approximately 0.90 miles (**Figure 23**).
- It appeared that there was a lack of coordination in the northbound direction between the LBV Factory Stores Drive and Polynesian Isle Boulevard signals (**Figure 23**).

- Northbound through vehicles were observed departing the Polynesian Isle Boulevard intersection and arriving at the back of the LBV Factory Stores Drive queue. It was observed several times that the signal was still showing a red indication for the northbound through movements.

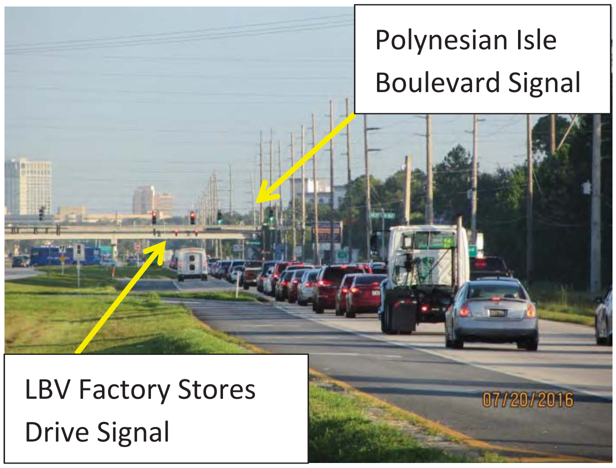


Figure 23: Traffic Queuing Northbound at Poinciana Boulevard, Polynesian Isle Boulevard, and LBV Factory Stores Drive

PM – 4:15 TO 6:30

- Southbound queuing was observed along SR 535 extending from LBV Factory Stores Drive through SR 536/World Center Drive to Meadow Creek Drive, a distance of approximately 1.65 miles (**Figure 24**).
  - It took the field review team approximately 15 minutes to drive southbound from Meadow Creek Drive to SR 536/World Center Drive due to this queuing.

Looking South from SR 536/World Center Drive

Looking North at SR 536/World Center Drive

Looking South at Meadow Creek Drive

Figure 24: Traffic Queuing Southbound at LBV Factory Stores Drive, SR 536/World Center Drive, and Meadow Creek Drive

- Due to southbound queue spillback through the SR 536/World Center Drive intersection, the westbound left and eastbound right turn movements were not fully served. This led to vehicles blocking the intersection (**Figure 25**).
  - Westbound left turn queue extended approximately 700 feet and spilled out of the left turn queue storage.
  - Eastbound queueing extended approximately 0.30 miles, thus the eastbound left turn lane was not being fully utilized because left turning vehicles had to wait behind eastbound through vehicles.
  - Both the eastbound right and westbound left turners utilized all three southbound lanes when making the turn, even though the inside left turn lane is a merge lane approximately 700 feet to 1,000 feet downstream.
  - There may be opportunities to provide coordination between the LBV Factory Stores Drive and World Center Drive intersections for the southbound direction. Coordination will be important should the intersection of SR 535/International Drive become signalized in the future.

Looking West at SR 536/World Center Drive

Looking East from SR 536/World Center Drive

Looking East at SR 536/World Center Drive

Figure 25: Traffic Queuing Westbound and Eastbound at SR 536/World Center Drive

- Pedestrians were observed running across SR 536/World Center Drive between the Caribe Royale Hotel and land uses on the south side of the roadway (**Figure 26**).
- Other pedestrians were observed utilizing the SR 535/SR 536/World Center Drive intersection even though no pedestrian facilities are present (**Figure 26**).

Looking East from SR 536/World Center Drive

Eastbound Leg of SR 536/World Center Drive Intersection

Figure 26: Pedestrians Crossing SR 536/World Center Drive

- Northbound queuing along SR 535 extended from LBV Factory Stores Drive to Polynesian Isle Boulevard, a distance of approximately 0.30 miles. Northbound queuing also extended from Vineland Avenue to approximately 0.50 miles south of the Meadow Creek Drive intersection, a total distance of approximately 0.75 miles. (**Figure 27**)

Looking South from LBV Factory Stores Drive

Looking North from Meadow Creek Drive

Northbound Queuing at Meadow Creek Drive

Figure 27: Traffic Queueing Northbound at LBV Factory Stores Drive, Meadow Creek Drive, and Vineland Avenue

- Eastbound queuing along Meadow Creek Drive extended approximately 600 feet, with a majority of these vehicles turning left to go north onto SR 535 (**Figure 28**).
    - Due to northbound queuing from Vineland Avenue backing through Meadow Creek Drive, only two to five vehicles on average were able to make it through the signal. Most of the vehicles turning left had to wait in the middle of the intersection before they were able to find an open lane on SR 535.

Looking West from Meadow Creek Drive

Eastbound Left Turn Movement at Meadow Creek Drive

Figure 28: Traffic Queueing Eastbound at Meadow Creek Drive

Existing Segment Operations

The FDOT maintains a policy and procedure addressing the operating level of service standards for the State Highway System. The term "level of service" (LOS) is defined as the system of six designated ranges from "A" (best) to "F" (worst) used to evaluate roadway facility performance. The LOS standard for a specific facility is defined by the area type it is located within. Roadways classified as within an urbanized area have a LOS standard of D whereas roadways classified outside an urbanized area have a LOS standard of C. Due to SR 535 being classified as an urban minor arterial, the LOS standard is D within the study limits.

For the purpose of the segment analysis, SR 535 was divided into eight (8) individual segments between the nine (9) signalized intersections included in the study area. The eight segments are displayed on **Figure 29** and summarized below:

- Segment 1 – SR 535 from US 192 to Kyngs Heath Road
- Segment 2 – SR 535 from Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp
- Segment 3 – SR 535 from Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard
- Segment 4 – SR 535 from Poinciana Boulevard to Polynesian Isle Boulevard
- Segment 5 – SR 535 from Polynesian Isle Boulevard to LBV Factory Stores Drive
- Segment 6 – SR 535 from LBV Factory Stores Drive to SR 536/World Center Drive
- Segment 7 – SR 535 from SR 536/World Center Drive to Meadow Creek Drive
- Segment 8 – SR 535 from Meadow Creek Drive to Vineland Avenue

Two analyses were performed to identify segment deficiencies along the SR 535 corridor:

1. LOS evaluation based on the FDOT Generalized LOS Tables; and
2. LOS evaluation based on Highway Capacity Manual (2010) Methodologies.

Aerial Image Fly Date: March 2016

Figure No. 29

Segments for Operational Analysis

Segment for Operational Analysis

County Line

Segment 1 –
SR 535 from US 192 to Kyngs Heath Road

Segment 2 –
SR 535 from Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp

Segment 3 –
SR 535 from Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard

Segment 4 –
SR 535 from Poinciana Boulevard to Polynesian Isle Boulevard

Segment 5 –
SR 535 from Polynesian Isle Boulevard to LBV Factory Stores Drive

Segment 6 –
SR 535 from LBV Factory Stores Drive to SR 536/World Center Drive

Segment 7 –
SR 535 from SR 536/World Center Drive to Meadow Creek Drive

Segment 8 –
SR 535 from Meadow Creek Drive to Vineland Avenue

FDOT GENERALIZED LOS EVALUATION

An evaluation of the existing LOS along SR 535 was performed by comparing segment AADT's (as presented in *Existing Traffic Factors and Segment Volumes*) versus the LOS volume threshold from the FDOT Generalized LOS Tables found in the 2013 FDOT Quality/LOS Handbook. Every segment of SR 535 is characterized as an urban state signalized arterial with a 40 MPH or higher posted speed limit, thus Class 1 volume thresholds from Table 1 – Generalized Annual Average Daily Volumes for Urbanized Areas were used. The volume thresholds were increased by 5 percent due to the presence of exclusive right turn lanes at the signalized intersections. The volume threshold for the segment between Poinciana Boulevard and Polynesian Isle Boulevard was obtained from the FDOT District 5 LOS_ALL_Spreadsheet because no volume threshold for a five lane facility is present in the Generalized LOS Tables. **Appendix H** contains Table 1 from the Generalized LOS Tables.

As displayed in **Table 2**, SR 535 between Polynesian Isle Boulevard and SR 536/World Center Drive does not meet the LOS standard based on the FDOT generalized LOS evaluation.

Table 2: FDOT Generalized LOS Analysis

Segment	AADT	Area Type	Segment Type	Speed Limit	FDOT LOS Standard	Adjusted LOS Volume Standard	Existing Volumes Below LOS Standard?
US 192 to Kyngs Heath Road	28,300	Urban	Signalized Arterial	50	D	41,790	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	26,900	Urban	Signalized Arterial	50	D	41,790	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	26,900	Urban	Signalized Arterial	50	D	41,790	N
Poinciana Boulevard to Polynesian Isle Boulevard	46,800	Urban	Signalized Arterial	50	D	52,340	N
Polynesian Isle Boulevard to LBV Factory Stores Drive	**44,300**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**44,300**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47,000	Urban	Signalized Arterial	50	D	62,900	N
Meadow Creek Drive to Vineland Avenue	49,700	Urban	Signalized Arterial	45	D	62,900	N

*Source: *2013 FDOT Quality/LOS Handbook Tables*

The FDOT generalized LOS analysis methodology is a sketch-planning level tool developed to provide a quick review of capacity and LOS for the roadway being studied. HCM methodologies are the most widely used for analyzing existing facilities and future improvements to corridors. A more detailed analysis is needed beyond what the generalized LOS tables can provide thus the reason for a HCM level segment and intersection analysis.

HIGHWAY CAPACITY MANUAL (HCM) 2010 LOS EVALUATION

A HCM 2010 Urban Street Segment analysis was performed for the eight SR 535 study segments. This methodology is applicable for segments less than two miles in length between signalized intersections. The HCM 2010 section 17.1 was referenced to evaluate the segment LOS based on the average travel speed (ATS) as a percentage of the base free flow speed (%BFFS). The LOS thresholds for urban street segments are summarized in **Table 3**.

Table 3: LOS for Urban Street Segments (HCM 2010)

LOS	Travel Speed as a Percentage of Free Flow Speed (%)
A	>85
B	>67 – 85
C	>50 – 67
D	>40 – 50
E	>30 – 40
F	≤30

The segment analysis was performed for the AM and PM peak hours in the northbound and southbound directions for each SR 535 segment. **Table 4** and **Table 5** display the results from the HCM analysis and the existing conditions LOS for each segment. **Appendix H** contains the HCM inputs and the various outputs/calculations for the segment analysis.

As noted in the *AM and PM Peak Hour Field Reviews* section, significant queuing was observed along SR 535 in both the southbound and northbound directions during the peak hours. In most cases, the queuing extended through adjacent signalized intersections. Due to this level of congestion, the signalized intersections are not processing the full traffic demand volumes of the corridor. With latent demand not being accounted for in the operational analysis, some segments are being reported as having acceptable LOS where the Study Team observed significant queuing and delays. Thus in cases where a segment was experiencing significant queuing extending through adjacent signalized intersections, a default LOS of F was reported.

Table 4: HCM LOS Evaluation Results – AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.0	63%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	32.5	65%	C	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**8.2**	**16%**	**F**	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**N/A**	**N/A**	**N/A**	**F***	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**20.7**	**41%**	**F**	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**50.4**	**18.9**	**38%**	**E**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	34.3	72%	B	N
Meadow Creek Drive to Vineland Avenue	43.7	29.6	68%	B	N
Southbound Direction					
Vineland Avenue to Meadow Creek Drive	43.8	23.8	54%	C	N
Meadow Creek Drive to SR 536/World Center Drive	47.7	21.8	46%	D	N
SR 536/World Center Drive to LBV Factory Stores Drive	50.4	31.8	63%	C	N
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	36.7	73%	B	N
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	26.2	52%	C	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	25.2	50%	D	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	26.6	53%	C	N
Kyngs Heath Road to US 192	**46.2**	**7.3**	**16%**	**F**	**Y**

* During field observations, traffic queuing extended entire segment causing stop and go driving conditions. HCM 2010 methodologies do not support a LOS calculation under this type of driving condition leading to a default segment LOS of F.

As displayed in **Table 4**, SR 535 in the northbound direction between Osceola Parkway and SR 536/World Center Drive experiences LOS E or lower in the AM peak hour. This was confirmed during the field review, where queued traffic was observed extending from LBV Factory Stores Drive through the Polynesian Isle Boulevard signalized intersection to Poinciana Boulevard.

Table 5: HCM LOS Evaluation Results – PM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	30.1	65%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	26.7	53%	C	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**14.3**	**28%**	**F**	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	50.5	27.7	55%	C	N
Polynesian Isle Boulevard to LBV Factory Stores Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
LBV Factory Stores Drive to SR 536/World Center Drive	**50.4**	**18.4**	**37%**	**E**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	30.6	64%	C	N
Meadow Creek Drive to Vineland Avenue	**43.7**	**11.6**	**27%**	**F**	**Y**
Southbound Direction					
Vineland Avenue to Meadow Creek Drive	43.8	19.4	44%	D	N
Meadow Creek Drive to SR 536/World Center Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
SR 536/World Center Drive to LBV Factory Stores Drive	**N/A**	**N/A**	**N/A**	**F***	**Y**
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	35.4	71%	B	N
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	30.9	61%	C	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	23.9	48%	D	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	22.2	44%	D	N
Kyngs Heath Road to US 192	**46.2**	**7.1**	**15%**	**F**	**Y**

* During field observations, traffic queuing extended entire segment causing stop and go driving conditions. HCM 2010 methodologies do not support a LOS calculation under this type of driving condition leading to a default segment LOS of F.

During the PM peak hour, multiple northbound segments of SR 535 experienced LOS E or F conditions, as displayed in **Table 5**. Primary queuing/congestion was observed between Osceola Parkway and Poinciana Boulevard, Polynesian Isle Boulevard to SR 536/World Center Drive, and Meadow Creek Drive to Vineland Avenue.

During the PM peak hour in the southbound direction, queuing was observed extending from the LBV Factory Stores intersection through SR 536/World Center Drive intersection to the Meadow Creek Drive intersection (a distance of 1.65 miles).

SR 535 from Kyngs Heath Road to US 192 in the southbound direction experiences slow average travel speeds and a LOS of F in both the AM and PM peak hours due to the short segment length and the southbound delay experienced at the SR 535/US 192 intersection.

Existing Peak Hour Intersection Operations

Thirteen (13) intersections along the study corridor were analyzed. Nine of the intersections are signalized, while the other four are full or directional median openings with stop control on the minor street approach. The existing intersection lane configurations and traffic control can be seen in **Figure 30**. Intersection geometry was determined through the use of aerial and street view imagery from Google Earth taken in 2016. The Study Team performed a field review on April 19, 2016 to verify the intersection lane configurations.

The raw intersection turning movement counts were adjusted in a series of steps to prepare for the intersection operational analysis:

1. The individual peak hour for each intersection was determined in order to provide a conservative operational analysis with the highest possible traffic volumes.
2. The raw counts were adjusted for seasonal variability using a seasonal factor obtained from the FTI, as explained in the *Existing Traffic Volumes* section.
3. The entering/exiting traffic volumes between adjacent intersections were adjusted for reasonableness.

Note that some larger volume differences between adjacent intersections were observed because individual peak hours were utilized. The raw, factored, and adjusted turning movement volumes can be found in **Appendix H**.

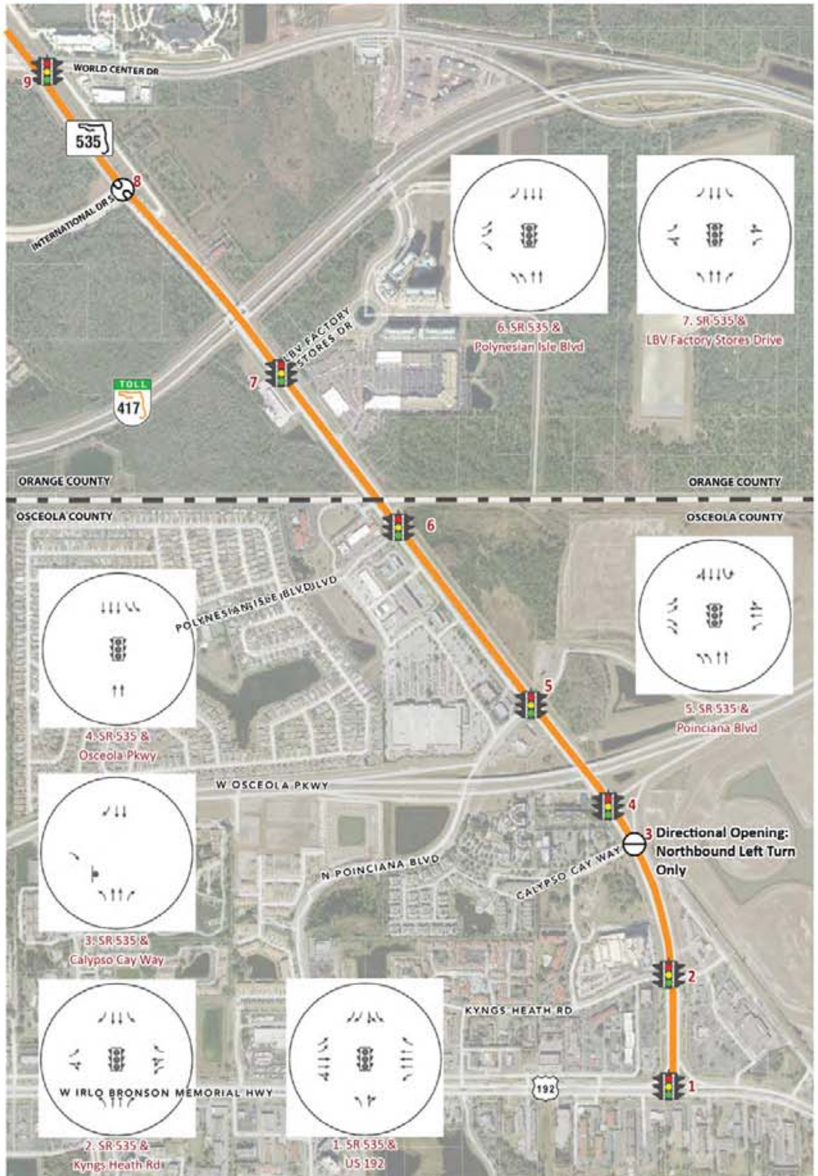
The existing intersection operating conditions (2016) were evaluated for the weekday AM and PM peak hour traffic volume conditions. Current signal timing plans were obtained from Orange and Osceola Counties for use in the analysis. The signal timing plans are provided in **Appendix H**. The intersection LOS was analyzed using *HCM* methodologies as implemented by Synchro Version 9.1. **Figure 31** summarizes the existing AM and PM peak hour intersection operations and turning movement volumes. For the signalized intersections, overall intersection LOS and delay are presented. For the unsignalized intersections, the LOS and delay are presented for the critical movement at the intersection. Detailed HCM output reports are located in **Appendix H**.

In the AM peak hour, Poinciana Boulevard (signalized) operates at LOS E, International Drive (unsignalized) operates at LOS F, and Vistana Centre Drive (unsignalized) operates at LOS E. Poinciana Boulevard experiences an eastbound left turn volume of just over 900 in the AM peak hour with a 0.95 volume to capacity ratio, thus contributing to delays at this intersection. In the PM peak hour, International Drive (unsignalized) operates at LOS F, SR 536/World Center Drive (signalized) operates at LOS E, and Vistana Centre Drive (unsignalized) operates at LOS E.

Figure No. 30

Intersection Lane Configurations & Traffic Control

- Traffic Signal
- Full Median Opening
- Directional Median Opening
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016

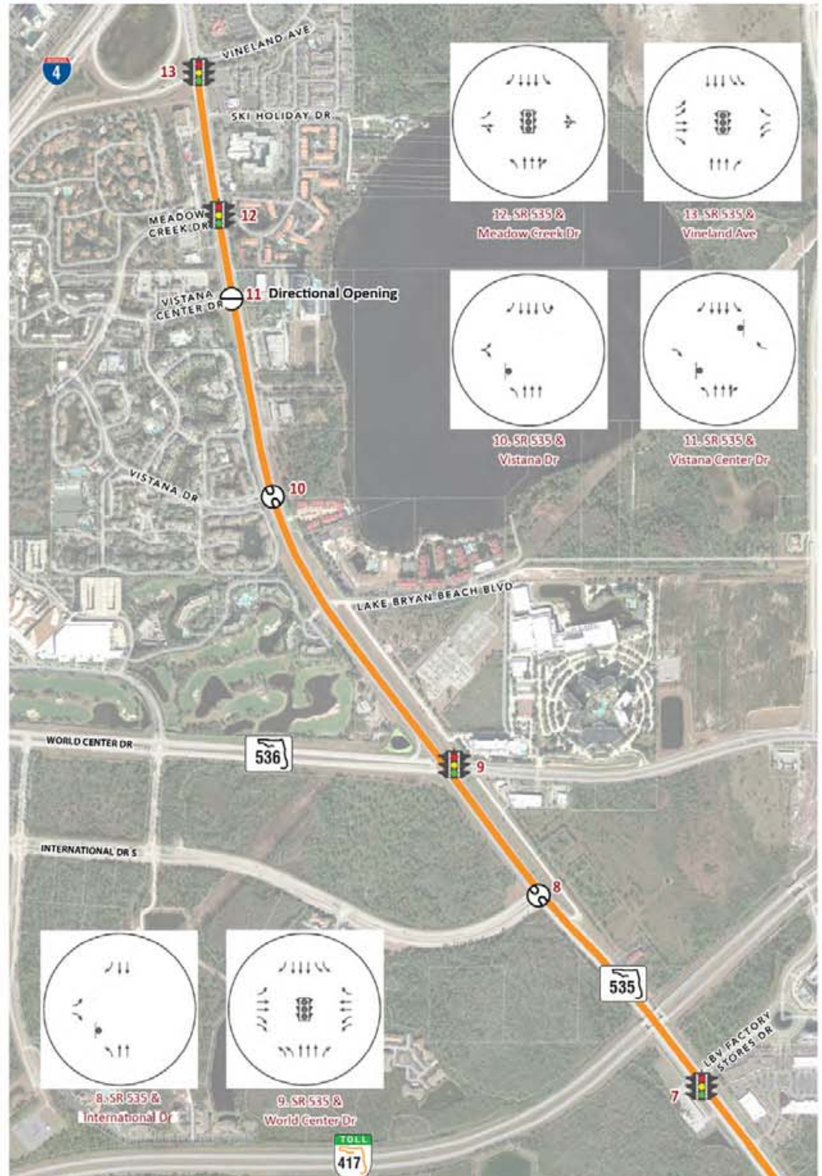
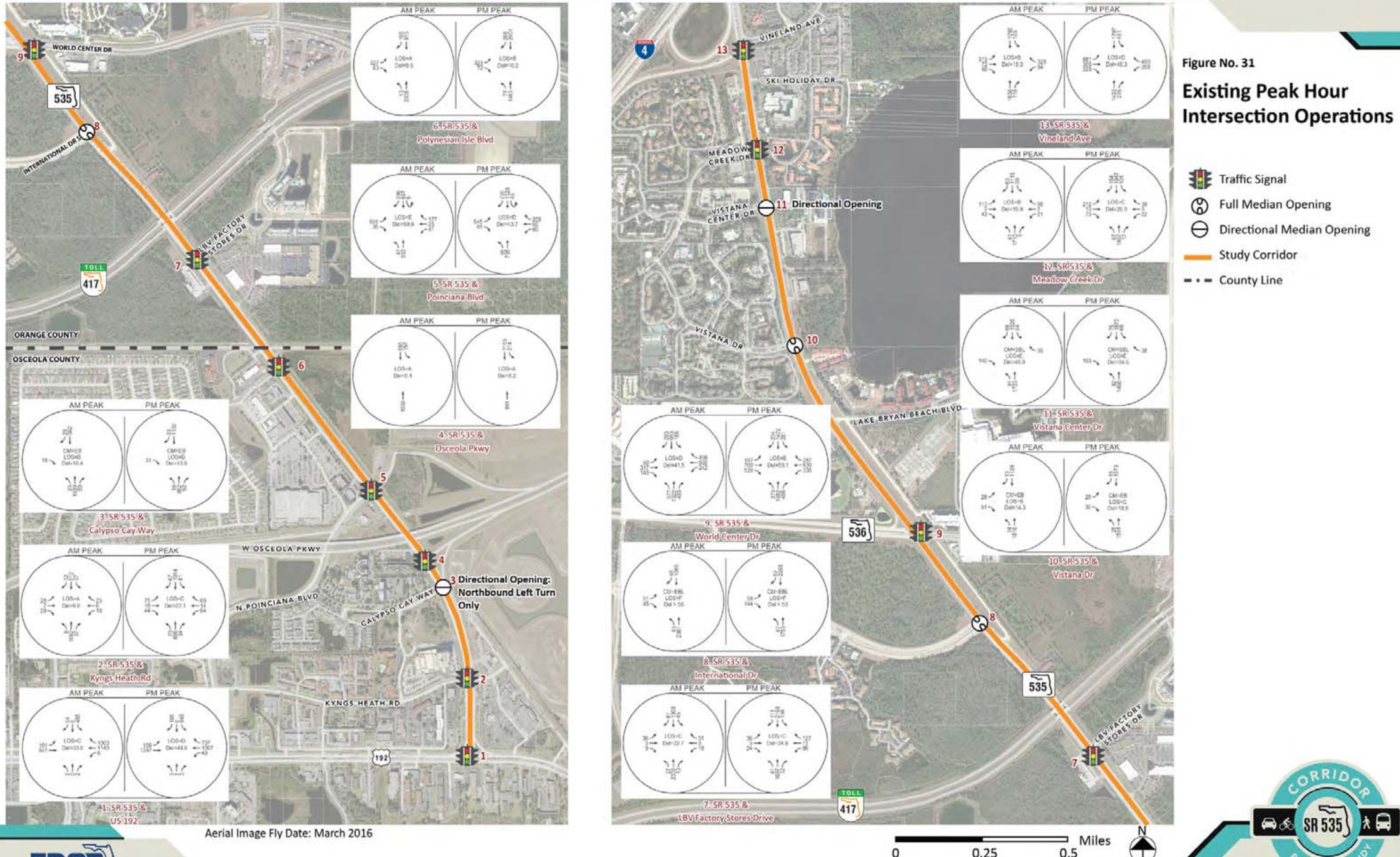


Figure No. 31

Existing Peak Hour Intersection Operations



Aerial Image Fly Date: March 2016

FDOT

CORRIDOR SR 535 PLANNING STUDY

Safety Assessment

Crash records were obtained for SR 535 within the study limits for the most recent five year period on record (2010 through 2014) from FDOT's Crash Analysis Reporting System (CARS). CARS data for 2015 was not certified by FDOT at the time of this analysis; therefore, data through 2014 was analyzed. This section summarizes the corridor wide crash statistics then reviews crash data for the high crash intersections along the study corridor. A detailed pedestrian/bicycle safety review is also discussed in this section.

Corridor Wide Crash Statistics

Figure 32 displays a summary of crash frequency by year along with their respective severity from 2010 to 2014. There were a total of 1,142 reported crashes during this period, 521 of which (46 percent) resulted in at least one injury and seven (7) of which resulted in at least one fatality. As displayed in **Figure 32**, the crashes per year along the corridor have been relatively consistent ranging from 228 in 2010 to 267 in 2014.

Figure 32: Crashes per Year (Corridor Wide)

Figure 33 displays the crashes along the corridor by type and severity for the five year study period. The highest crash type observed was rear end, comprising 61 percent of the total crashes. Angle (11 percent) and sideswipe (8 percent) were the second and third highest crash types. There were 13 pedestrian and 5 bicycle crashes over the five years resulting in five (5) of the seven (7) fatal crashes. Rear end and left turn crashes accounted for the other two (2) fatal crashes.

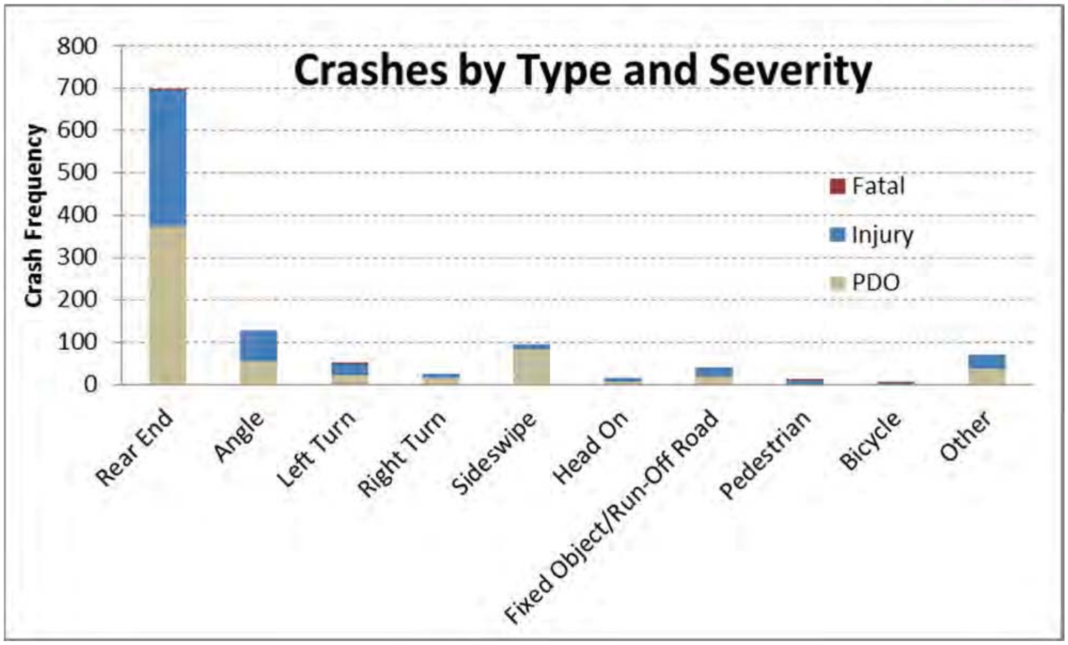


Figure 33: Crashes by Type and Severity (Corridor Wide)

Other crash statistics to note include the following:

- Crashes occurring in non-daylight conditions accounted for 42 percent of the crashes.
- Crashes occurring in wet roadway surfaces conditions accounted for 26 percent of the crashes.
- A spike in crashes was observed during the summer months of June through August, which combined accounted for 31 percent of the total crashes.
- Thirty-five (35) percent of the crashes were observed between 3 PM and 8 PM.
- Forty (40) percent of the drivers at fault were aged between 16 and 29.

The number of crashes by location is shown in **Figure 34**. SR 536/World Center Drive is the location with the highest number of crashes, accounting for 212 of the 1,142 crashes (19 percent) over the five years. Polynesian Isle Boulevard (133 crashes), Vineland Avenue (122 crashes), and LBV Factory Stores Drive (101 crashes) were the next highest crash frequency locations. **Figure 35** displays the crash locations along the SR 535 study corridor from US 192 to SR 536/World Center Drive while **Figure 36** displays the crash locations from SR 536/World Center Drive to Vineland Avenue.

The raw crash data obtained from CARS can be found in **Appendix I**. A more detailed summary of the 2010 to 2014 corridor wide crash data set in tabular and graphical format is also provided in **Appendix I**.

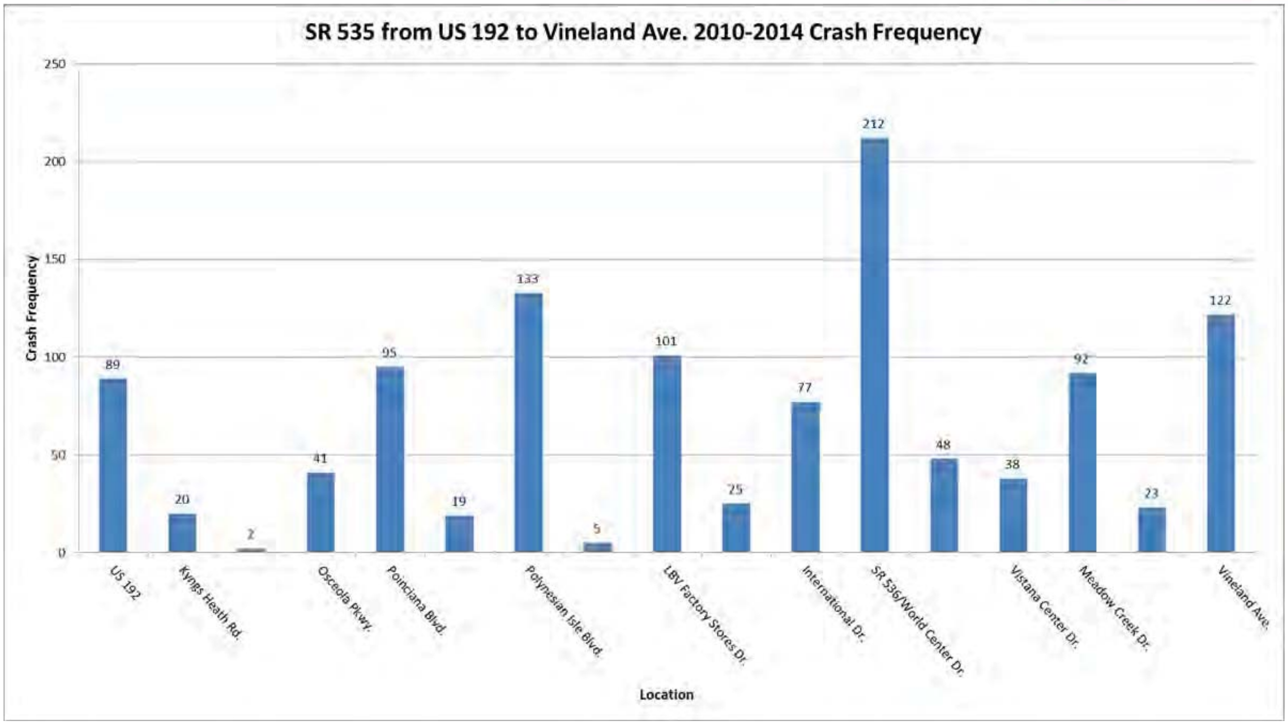
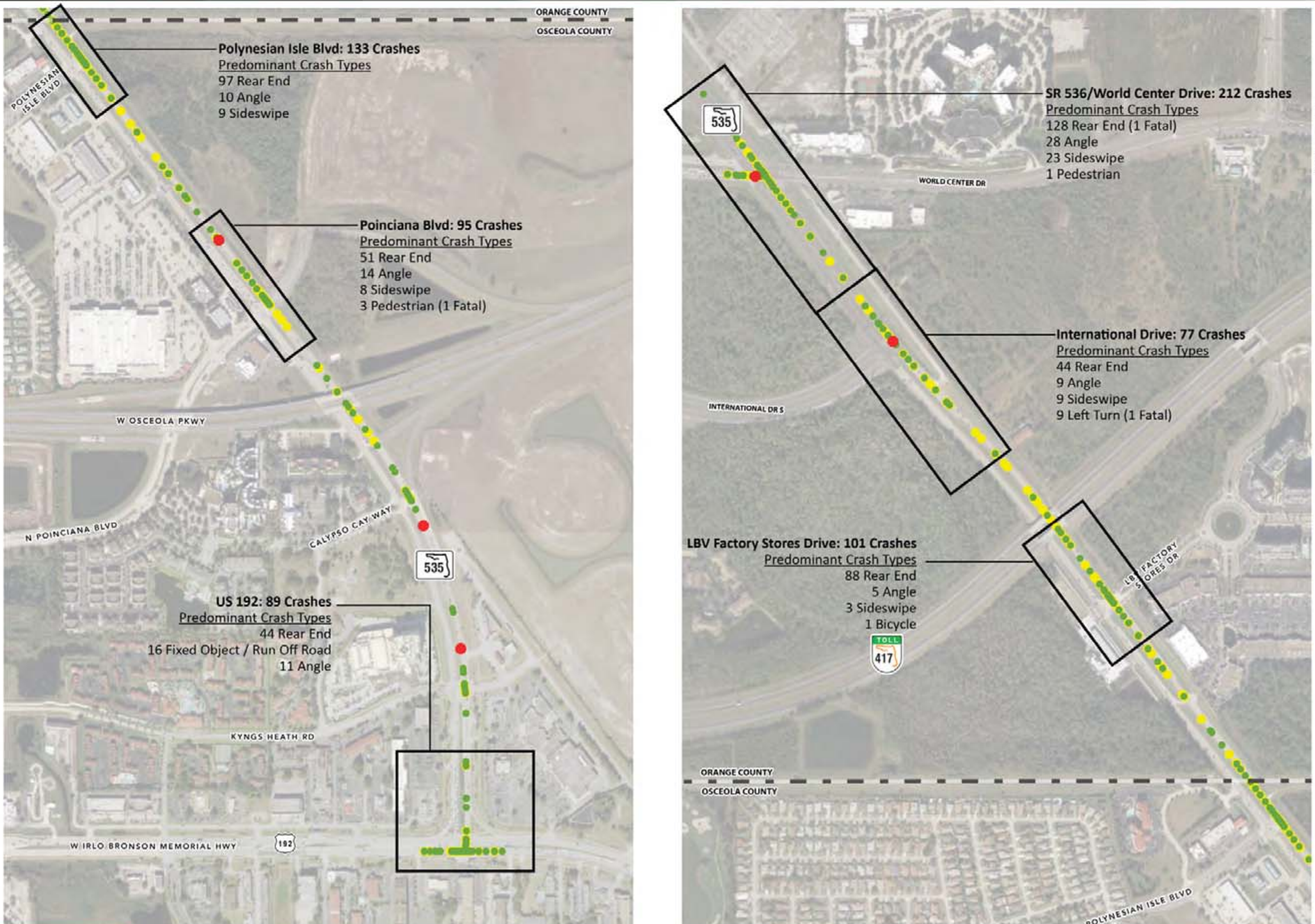


Figure 34: Crashes by Location (Corridor Wide)

Figure No. 35

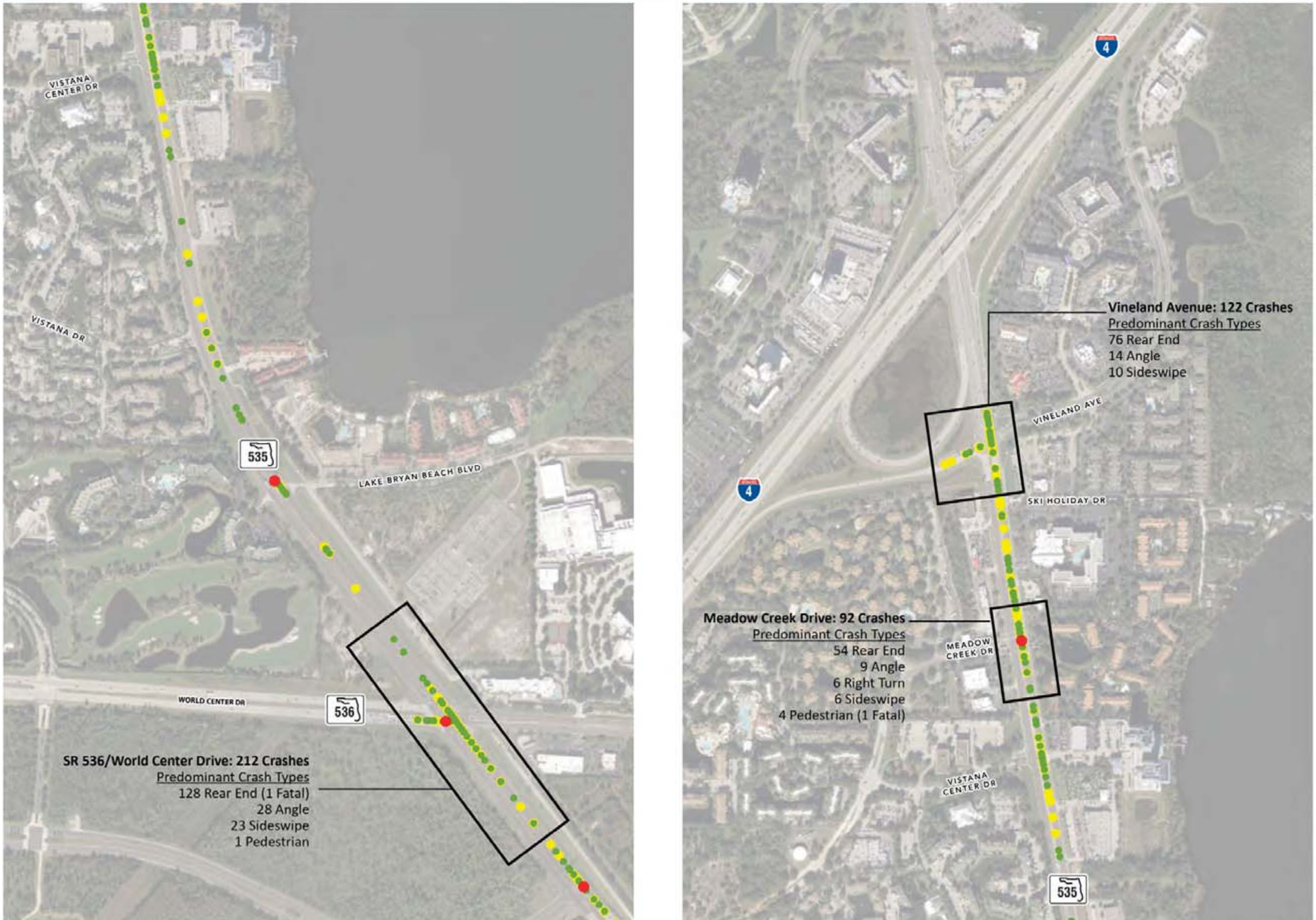
2010 - 2014 Crash Frequency: US 192 to SR 536 / World Center Drive



Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

Figure No. 36

2010 - 2014 Crash Frequency: SR 536 / World Center Drive to Vineland Avenue



Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

High Crash Intersections

Crashes at the nine signalized intersections accounted for 909 of the 1,142 crashes (80 percent) along the SR 535 corridor. An additional 77 crashes (7 percent) occurred at the unsignalized intersection of SR 535 and International Drive. This section will review crash statistics at the intersections of US 192, Poinciana Boulevard, Polynesian Isle Boulevard, LBV Factory Stores Drive, International Drive, SR 536/World Center Drive, Meadow Creek Drive, and Vineland Avenue. All of these intersections experienced 75 or more crashes during the five year study period.

SR 535/US 192 (89 CRASHES)

The signalized intersection of SR 535 with US 192 accounted for 89 of the crashes (8 percent) along the study corridor. **Figure 37** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 49 percent of the total crashes. Fixed object/run off the road (18 percent) and angle (12 percent) were the second and third highest crash types. There were no pedestrian or bicycle crashes at this intersection. A more detailed summary of the 2010 to 2014 SR 535/US 192 crash data set in tabular and graphical format is provided in **Appendix I**.

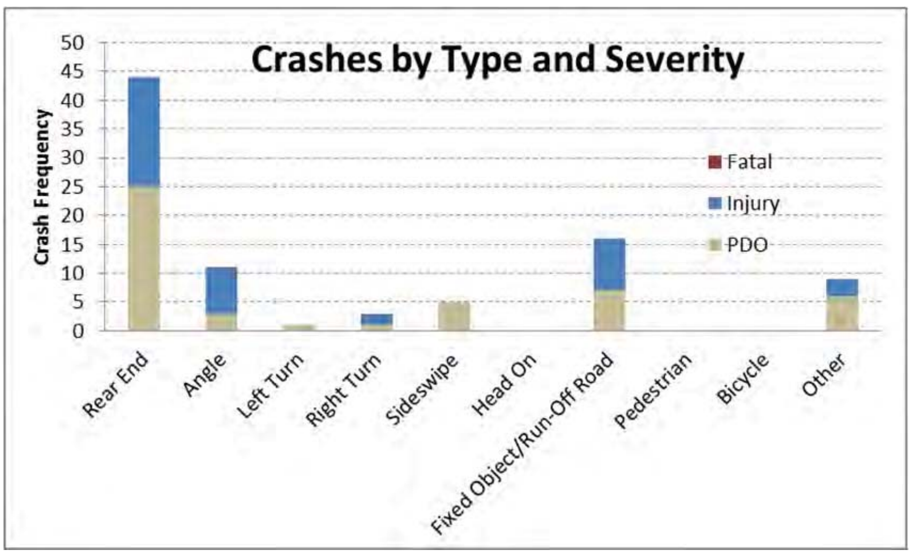


Figure 37: Crashes by Type and Severity (SR 535/US 192)

SR 535/POINCIANA BOULEVARD (95 CRASHES)

The signalized intersection of SR 535 with Poinciana Boulevard accounted for 95 of the crashes (8 percent) along the study corridor. **Figure 38** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 54 percent of the total crashes. Angle (15 percent) and sideswipe (8 percent) were the second and third highest crash types. There were three (3) pedestrian crashes at this intersection, one of which resulted in a fatality. No bicycle crashes occurred at this intersection. A more detailed summary of the 2010 to 2014 SR 535/Poinciana Boulevard crash data set in tabular and graphical format is provided in **Appendix I**.

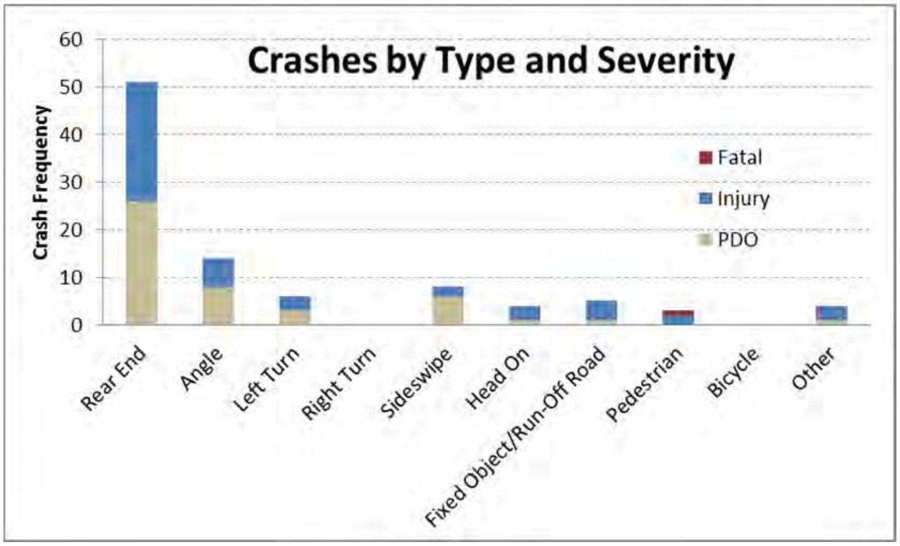


Figure 38: Crashes by Type and Severity (SR 535/Poinciana Boulevard)

SR 535/POLYNESIAN ISLE BOULEVARD (133 CRASHES)

The signalized intersection of SR 535 with Polynesian Isle Boulevard accounted for 133 of the crashes (12 percent) along the study corridor. **Figure 39** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 73 percent of the total crashes. Angle (8 percent) and sideswipe (7 percent) were the second and third highest crash types. There were no pedestrian or bicycle crashes at this intersection. A more detailed summary of the 2010 to 2014 SR 535/Polynesian Isle Boulevard crash data set in tabular and graphical format is provided in **Appendix I**.

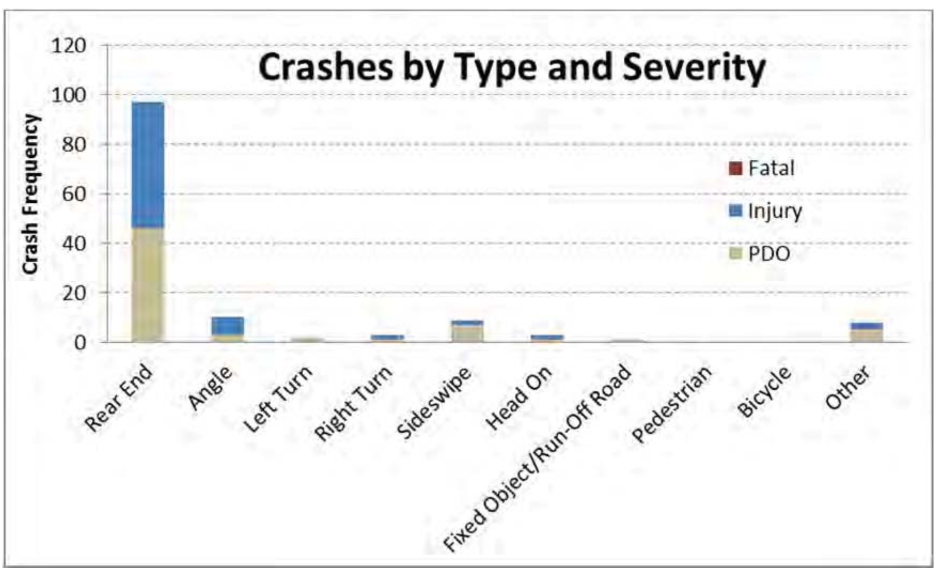


Figure 39: Crashes by Type and Severity (SR 535/Polynesian Isle Boulevard)

SR 535/LBV FACTORY STORES DRIVE (101 CRASHES)

The signalized intersection of SR 535 with LBV Factory Stores Drive accounted for 101 of the crashes (9 percent) along the study corridor. **Figure 40** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 87 percent of the total crashes. Angle (5 percent) and sideswipe (3 percent) were the second and third highest crash types. There was one (1) bicycle crash at this intersection, which resulted in an injury. No pedestrian crashes occurred at this intersection. A more detailed summary of the 2010 to 2014 SR 535/LBV Factory Stores Drive crash data set in tabular and graphical format is provided in **Appendix I**.

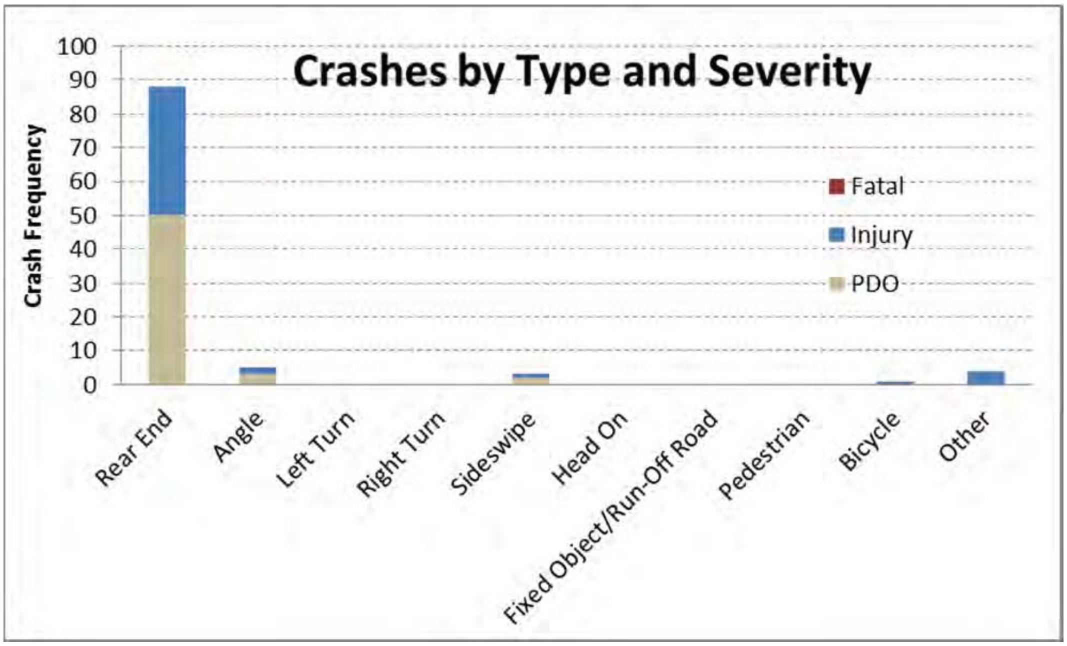


Figure 40: Crashes by Type and Severity (SR 535/LBV Factory Stores Drive)

SR 535/INTERNATIONAL DRIVE (77 CRASHES)

The signalized intersection of SR 535 with International Drive accounted for 77 of the crashes (7 percent) along the study corridor. **Figure 41** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 57 percent of the total crashes. Angle, left turn, and sideswipe accounted for 9 crashes each (35 percent total). One of the left turn crashes resulted in a fatality. There were no pedestrian or bicycle crashes at this intersection. A more detailed summary of the 2010 to 2014 SR 535/International Drive crash data set in tabular and graphical format is provided in **Appendix I**.

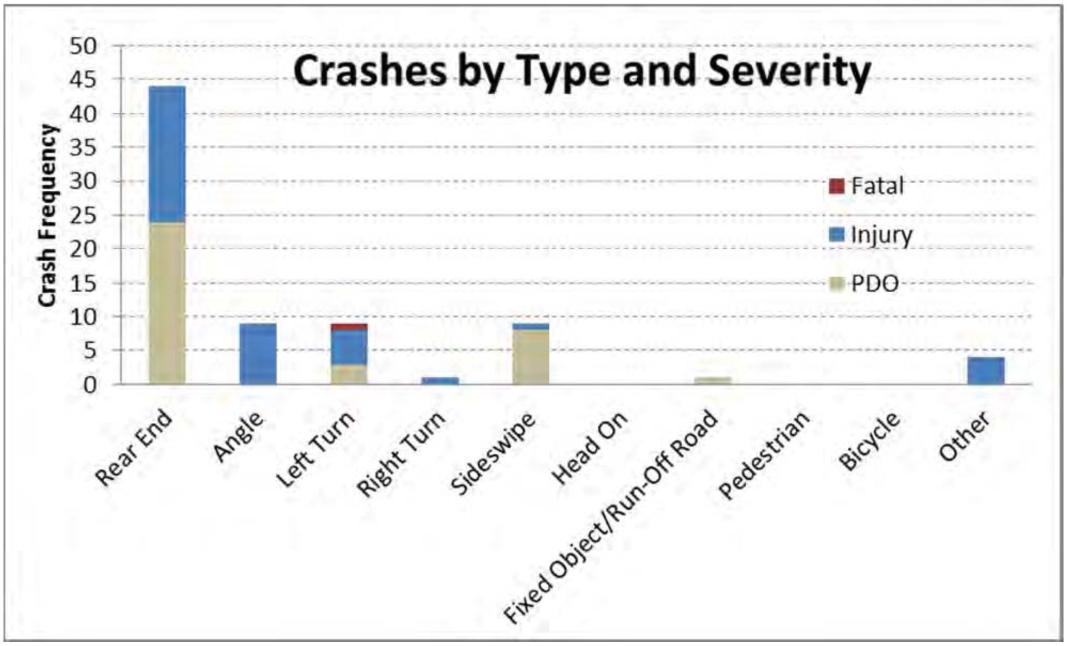


Figure 41: Crashes by Type and Severity (SR 535/International Drive)

SR 535/SR 536/WORLD CENTER DRIVE (212 CRASHES)

The signalized intersection of SR 535 with SR 536/World Center Drive accounted for 212 of the crashes (19 percent) along the study corridor. **Figure 42** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 60 percent of the total crashes. The one fatal crash at the intersection was rear end related. Angle (13 percent) and sideswipe (11 percent) were the second and third highest crash types. There was one (1) pedestrian and no bicycle crashes at this intersection. A more detailed summary of the 2010 to 2014 SR 535/SR 536/World Center Drive crash data set in tabular and graphical format is provided in **Appendix I**.

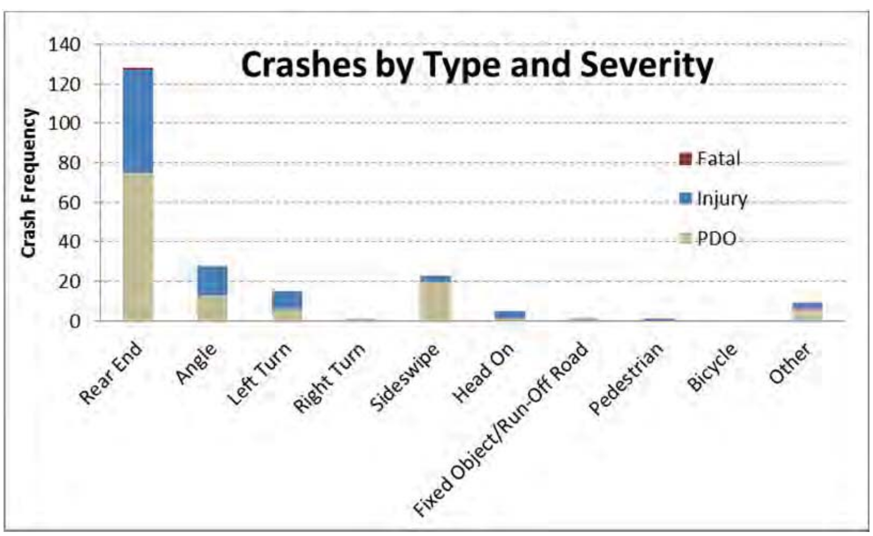


Figure 42: Crashes by Type and Severity (SR 535/SR 536/World Center Drive)

SR 535/MEADOW CREEK DRIVE (92 CRASHES)

The signalized intersection of SR 535 with Meadow Creek Drive accounted for 92 of the crashes (8 percent) along the study corridor. **Figure 43** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 59 percent of the total crashes. Angle (10 percent) and sideswipe/right turn (7 percent each) were the second, third, and fourth highest crash types. There were four (4) pedestrian crashes at this intersection, one (1) of which resulted in a fatality. A more detailed summary of the 2010 to 2014 SR 535/Meadow Creek Drive crash data set in tabular and graphical format is provided in **Appendix I**.

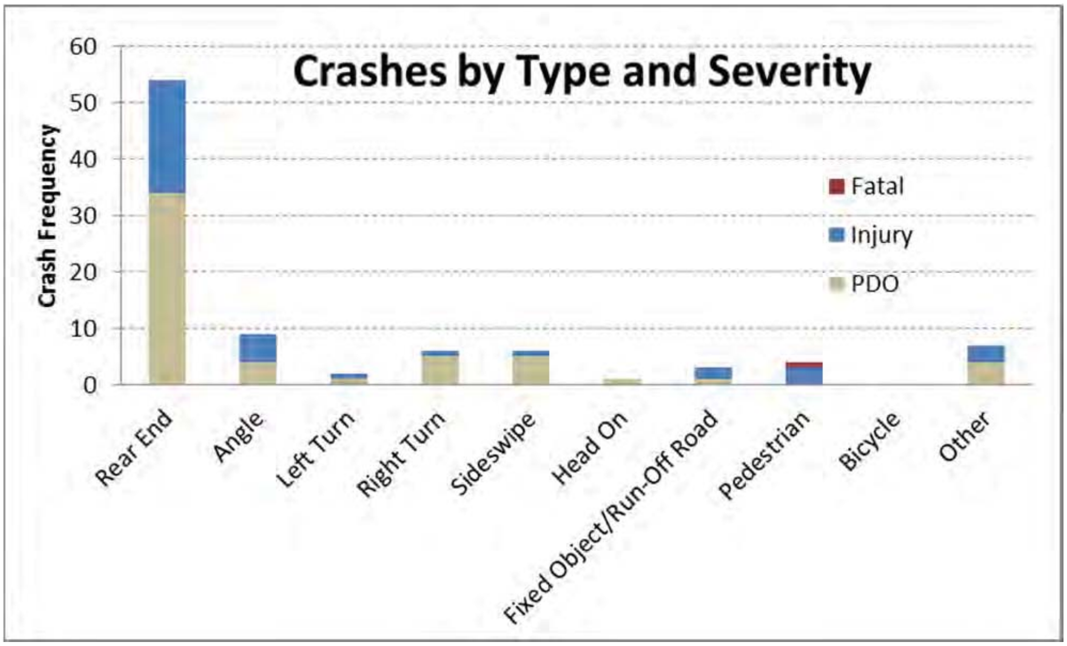


Figure 43: Crashes by Type and Severity (SR 535/Meadow Creek Drive)

SR 535/VINELAND AVENUE (122 CRASHES)

The signalized intersection of SR 535 with Vineland Avenue accounted for 122 of the crashes (11 percent) along the study corridor. **Figure 44** displays the crashes by type and severity at the intersection. The highest crash type observed was rear end, comprising 62 percent of the total crashes. Angle (12 percent) and sideswipe (8 percent) were the second and third highest crash types. There were no pedestrian or bicycle crashes at this intersection. A more detailed summary of the 2010 to 2014 SR 535/Vineland Avenue crash data set in tabular and graphical format is provided in **Appendix I**.

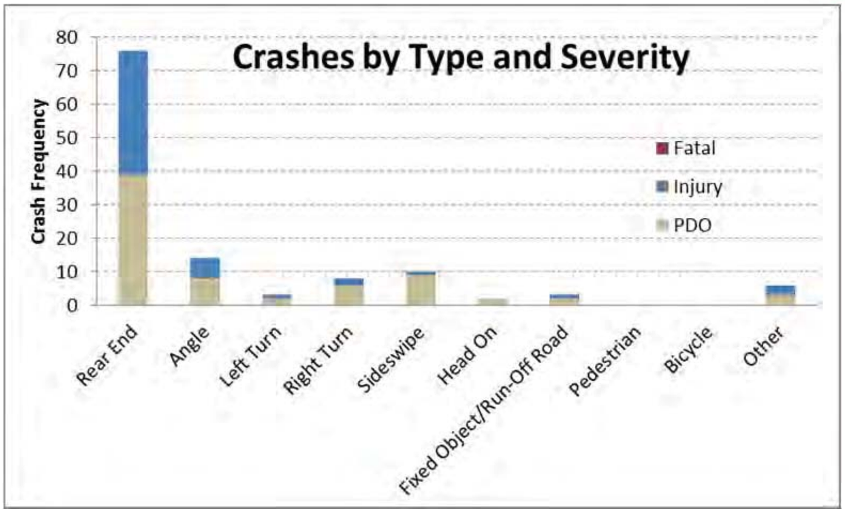


Figure 44: Crashes by Type and Severity (SR 535/Vineland Avenue)

Pedestrian and Bicycle Crash Review

There were 13 pedestrian crashes and five (5) bicycle crashes during the analysis period. General pedestrian and bicycle statistics are summarized below:

- Of the 13 pedestrian crashes, four (4) were fatal and nine (9) were injury.
- Of the five (5) bicycle crashes, one (1) was fatal and four (4) were injury.
- Thirteen (13) of the 18 pedestrian/bicycle related crashes (72 percent) occurred in non-daylight conditions.
- Six (6) of the 18 pedestrian/bicycle related crashes (33 percent) occurred on a Friday.
- Alcohol and/or drugs was involved in three (3) of the 18 crashes (17 percent).

A more detailed summary of the 2010 to 2014 SR 535 pedestrian/bicycle crash data set in tabular and graphical format is provided in **Appendix I**.

Pedestrian and bicycle crashes by location are displayed in **Figure 45**. Crashes by location are summarized below:

- Five (5) pedestrian and one (1) bicycle crash occurred between US 192 and just north of Poinciana Boulevard. Three (3) of the five (5) pedestrian crashes resulted in a fatality.
- Four (4) pedestrian crashes occurred within marked crosswalks at Meadow Creek Drive, one of which resulted in a fatality.
- Six (6) of the 18 pedestrian/bicycle crashes occurred when pedestrians/bicyclists were walking on the paved shoulder in areas where no sidewalks are present. Two of those crashes resulted in a fatality.
- Four (4) of the 18 pedestrian/bicycle crashes occurred when a pedestrians/bicyclist attempted to cross SR 535 between signalized intersections, two (2) of which resulted in a fatality.

A more detailed summary of the 2010 to 2014 SR 535 pedestrian/bicycle crash data set in tabular and graphical format is provided in **Appendix I**.

Figure No. 45

Pedestrian and Bicycle Crashes

Fatal Bicycle Crash
Injury Bicycle Crash
Property Damage Only Bicycle Crash
Fatal Pedestrian Crash
Injury Pedestrian Crash
Study Corridor
County Line

Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

Identified Issues and Opportunities

Throughout stakeholder interviews and the existing roadway, operational, and safety conditions analysis, the following opportunities for improvement were identified along the SR 535 study corridor:

- There is a desire and need for enhanced/continuous pedestrian and bicycle facilities along the corridor.
  - Sidewalks/bicycle facilities are missing from Kyngs Heath Road to just north of SR 536/World Center Drive. Nine (9) of the 18 pedestrian/bicycle crashes occurred along this section with three (3) resulting in a fatality.
  - Of the nine (9) pedestrian/bicycle crashes, five (5) occurred with the pedestrian/bicyclist walking on the shoulder. Three (3) of the nine (9) crashes occurred when pedestrians attempted to cross SR 535 near intersections without marked crosswalks.
- Operational issues existed in both the AM and PM peak hours, with queuing extending ¼ to over 1.5 miles in certain areas.
  - During the AM peak hour, SR 535 from south of Poinciana Boulevard to LBV Factory Stores Drive experienced 1 mile queues in the northbound direction.
  - Eastbound queuing during the AM peak hour at the Poinciana Boulevard intersection extended approximately 850 feet west of SR 535.
  - Southbound queuing in the PM peak hour extended from LBV Factory Stores Drive through SR 536/World Center Drive to Meadow Creek Drive, a distance of approximately 1.65 miles.
    - Due to southbound queue spillback, the westbound left and eastbound right turn movements were not fully served leading to vehicles blocking the SR 536/World Center Drive intersection.
  - Northbound queuing in the PM peak hour extended from LBV Factory Stores Drive to Polynesian Isle Boulevard, a distance of approximately 0.30 miles. Northbound queuing also extended from Vineland Avenue to approximately 0.50 miles south of the Meadow Creek Drive intersection, a total distance of approximately 0.75 miles.
    - Due to southbound queue spillback, eastbound queuing along Meadow Creek Drive extended approximately 600 feet, with a majority of these vehicles turning left to go north onto SR 535.
- Safety is a concern with a total of 1,142 reported crashes from 2010 to 2014, of which 521 (46 percent) resulted in at least one injury and seven (7) of which resulted in at least one fatality.
  - Crashes at the nine signalized intersections accounted for 909 of the 1,142 crashes (80 percent) along the SR 535 corridor. An additional 77 crashes (7 percent) occurred at the unsignalized intersection of SR 535 and International Drive.
  - SR 536/World Center Drive is the location with the highest number of crashes, accounting for 212 of the 1,142 crashes (19 percent). Polynesian Isle Boulevard (133

crashes), Vineland Avenue (123 crashes), and LBV Factory Stores Drive (101 crashes) were the next highest crash frequency locations.
    - The highest crash type observed was rear end, comprising 61 percent of the total crashes. Angle (11 percent) and sideswipe (8 percent) were the second and third highest crash types.
    - There were 13 pedestrian and 5 bicycle crashes over the five years resulting in five (5) of the seven (7) fatal crashes.
- With no transit routes/stops provided south of SR 536/World Center Drive, local commuter trips between the south and north sides of the SR 535 corridor must be made by vehicle.
    - From stakeholder interviews, there is a desire to extend the current transit service south to US 192 and possibly connect with a future bus rapid transit system that would operate between Kissimmee and Disney World.
    - For the transit service between SR 536/World Center Drive and Vineland Avenue, additional stops and increased headways would be beneficial to tourists staying in resorts/hotels in the northern portion of the corridor.
    - With virtually no opportunity to widen SR 535 from six to eight lanes north of SR 536/World Center Drive, increasing transit would provide a non-automobile alternative for locals/tourists to traverse from the north to the south sides of the corridor.

The above summary will help define the guiding principles and purpose and need for possible corridor improvements. **Figure 46** summarizes the issues/opportunities identified for pedestrian/bicycle facilities and transit service for the SR 535 study corridor. **Figure 47** summarizes the issues/opportunities identified for operational performance and vehicular/pedestrian/bicycle safety.

Figure No. 46

SR 535 Multimodal Issues & Opportunites

- Enhance Pedestrian & Bicycle Facilities
- Pedestrian Safety Emphasis Intersection
- Add Transit Service
- Enhace Transit Service
- County Line

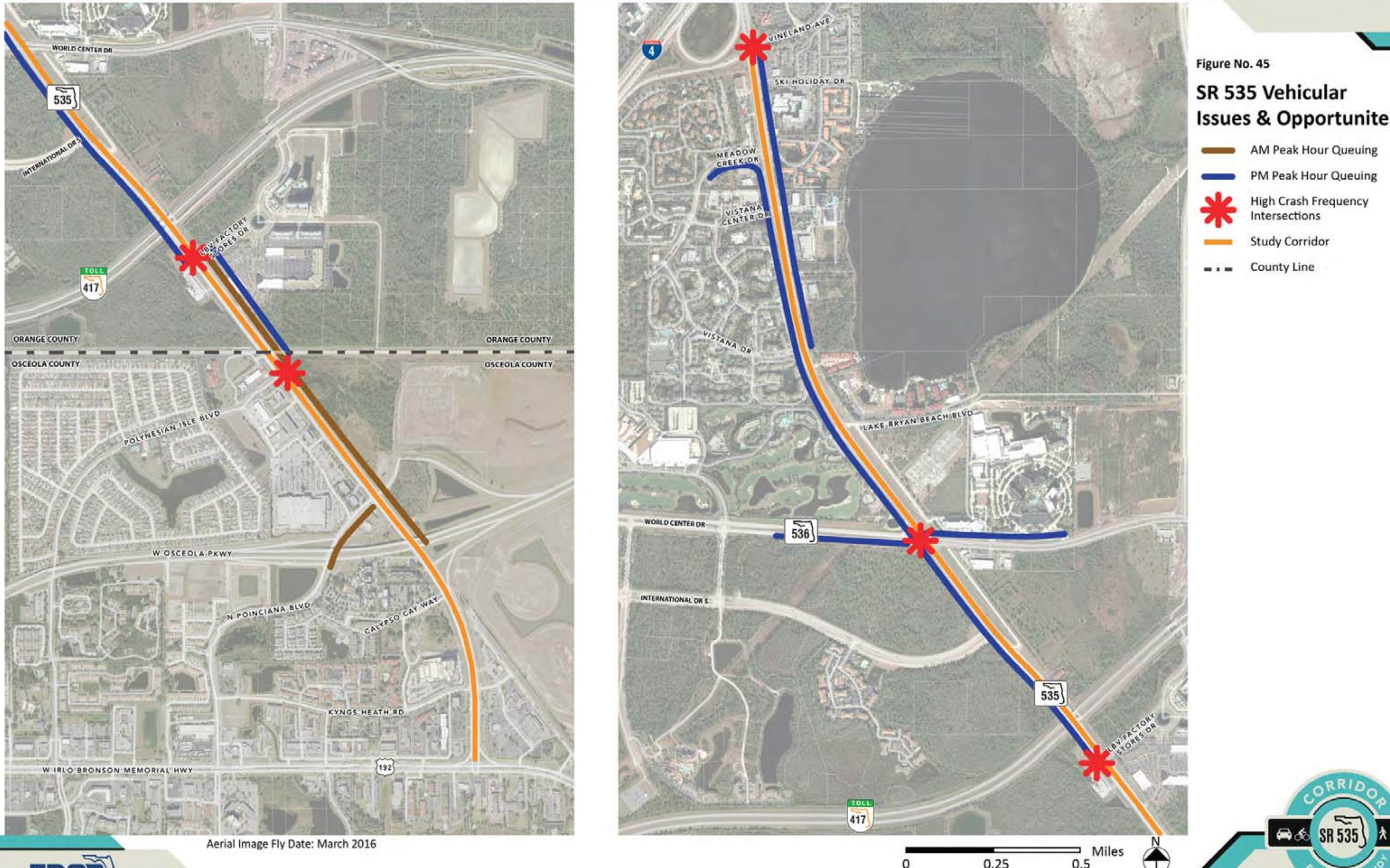
Aerial Image Fly Date: March 2016

FDOT

CORRIDOR SR 535 PLANNING STUDY

Figure No. 45

SR 535 Vehicular Issues & Opportunites



Aerial Image Fly Date: March 2016

APPENDIX C – FUTURE CONDITIONS SUMMARY REPORT

CORRIDOR
SR 535
PLANNING STUDY

Future Conditions Summary

US 192 to Vineland Avenue | May 2017



Prepared for:
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FDOT

FINAL DRAFT FUTURE CONDITIONS SUMMARY

SR 535 Corridor Planning Study

From US 192 to Vineland Avenue
FM 437174-1 & 437175-1

Orange and Osceola Counties, Florida

Prepared For:
Florida Department of Transportation, District Five
719 South Woodland Boulevard
DeLand, FL 32720

May 2017

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Introduction

The Florida Department of Transportation (FDOT) District Five is conducting a Corridor Planning Study to evaluate the future needs of SR 535 between US 192 to Vineland Avenue in southwest Orange County/northwest Osceola County. The purpose of the SR 535 Corridor Planning Study is to develop and evaluate alternatives to accommodate future projected traffic demand and improve bicycle, pedestrian and transit connectivity. As part of the Corridor Planning Study, a Future Conditions Summary has been prepared. The scope of this Future Conditions Summary includes:

- Review relevant traffic projections from other studies, local and regional growth trends, and LRTP future year model projections;
- Identify and review future land use changes;
- Review planned and programmed improvements to roadway, pedestrian, bicycle and transit facilities;
- Utilizing readily-available model outputs and/or a trends analysis with assumed growth rates, conduct a sensitivity analysis to identify a reasonable growth rate projection within the study area during the design year (anticipated to be 2040);
- Perform a no-build operational analysis with future traffic volumes to identify deficiencies at key intersections and roadway segments; and
- Utilizing the results of the initial operational analysis, identify potential intersection and segment improvements that could be considered to facilitate vehicular, pedestrian, bicycle, and transit operations along the corridor.

The remainder of this document reviews the future traffic projections and no-build operational analysis for the SR 535 study corridor.

Project Location

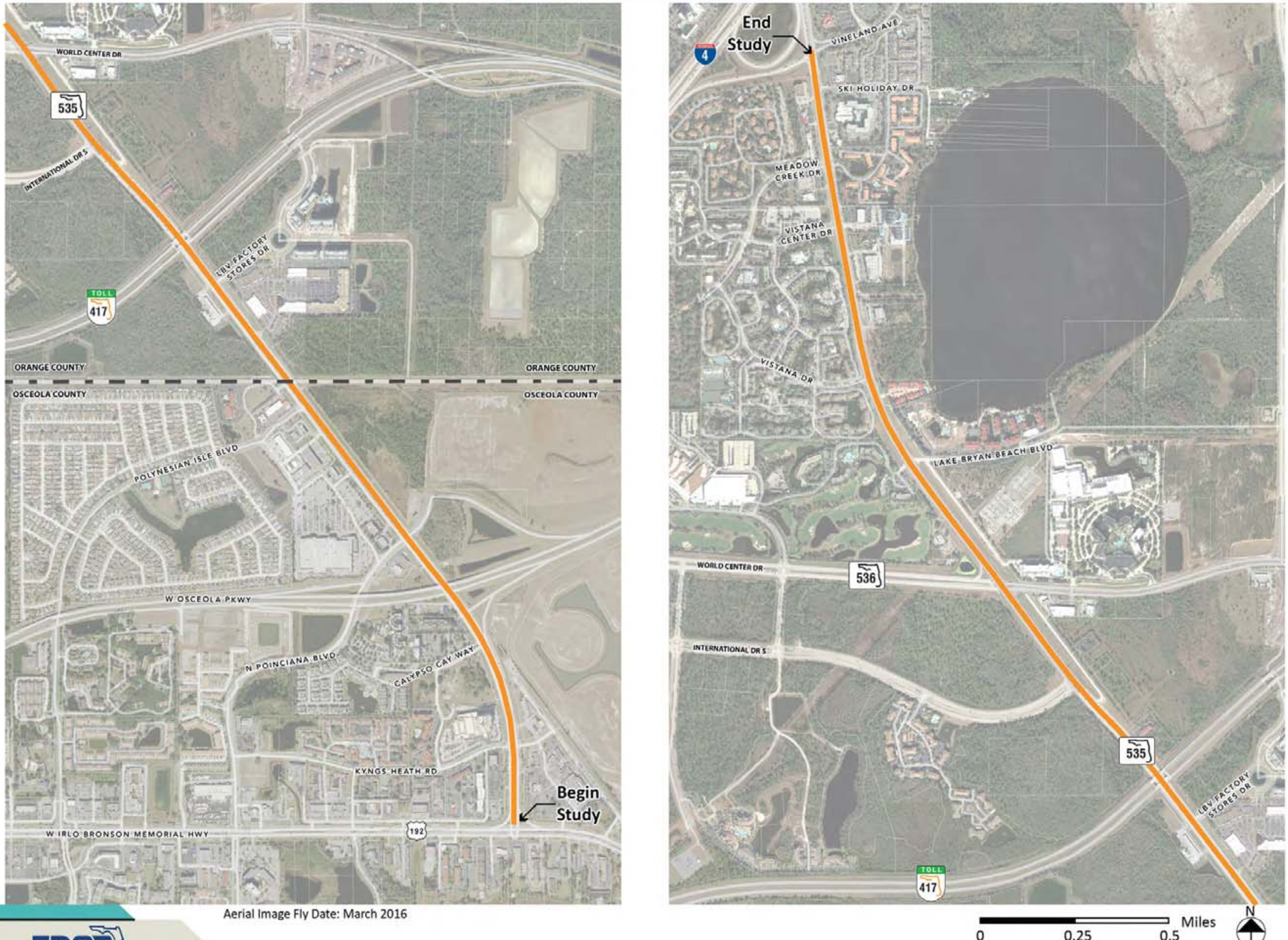
SR 535 from US 192 to Vineland Avenue is classified as an urban minor arterial oriented southeast to northwest in unincorporated Orange and Osceola Counties. There are two distinct clusters of developed parcels at either end of the study corridor separated by large areas of vacant land or conservation open spaces. The southern cluster from US 192 to the Orange County/Osceola County Line is characterized by strip suburban retail centers and hotels on the western side of the study corridor. The majority of land between the Orange County/Osceola County Line and SR 536/World Center Drive is vacant or marked as conservation or open space. Only a few commercial parcels like the Lake Buena Vista Factory Stores and a RaceTrac gas station are developed within this segment. The northern cluster from SR 536/World Center Drive to Vineland Avenue is characterized by hotels, resorts, multi-family vacation rental apartment complexes, and retail development. The SR 535 study corridor is displayed in **Figure 1**.

Figure No. 1

Study Corridor

Study Corridor

County Line



Aerial Image Fly Date: March 2016

Traffic Forecasting

Traffic volumes were developed for a future Design Year (2040) to be used in the future conditions operational analysis. This section presents the future-year traffic volumes and the process by which they were developed.

METHODOLOGY

An annual growth rate was selected based upon a comparison of model growth rates, historical volume trends, and projected area-wide population growth trends. Future intersection turning movements were forecast by applying the selected growth rate to existing (2016) segment and intersection turning movement volumes. One growth rate was selected and applied along the SR 535 corridor within the project limits.

HISTORIC GROWTH RATES

Historical Annual Average Daily Traffic (AADT) data was obtained from the 2015 Florida Transportation Information (FTI) DVD and reviewed. Historic growth rates were evaluated using FDOT standard spreadsheets for linear trend analysis. Evaluations were conducted for six FDOT count stations along or within the immediate vicinity of the study corridor. The locations of the FDOT count stations reviewed are shown in **Figure 2**. The AADT from 2000 to 2015 and the resulting historic linear growth rate is summarized for each count station in **Table 1.** The historical AADT reports are provided in **Appendix A**. The historic trend analyses are included in **Appendix B**.

The historical growth rates along SR 535 range between 0.77 to 1.43 percent. Traffic volumes along US 192 have yet to reach historical highs observed in the mid-2000s, resulting in a negative growth trend of approximately negative 0.41 to negative 1.55 percent. SR 536 to the west of SR 535 has a historical growth rate of 3.35 percent. Generally, growth rates with an R^2 value greater than or equal to 75 percent should be considered when determining growth factors based on historical trends. None of the sites summarized in **Table 1** have a historical growth rate with an R^2 value greater than 75 percent.

Table 1: Summary of Historic Growth Rates

Year	SR 535, 0.289 MI. N OF US 192	SR 535, 0.3 MI. N OF POINCIANA BLVD.	SR 535, 0.835 MI. NW OF SR 536	US 192, 0.468 MI. W OF SR 535	US 192, 0.433 MI. SE OF SR 535	SR 536, 0.315 MI. W OF SR 535
	FDOT Site	FDOT Site	FDOT Site	FDOT Site	FDOT Site	FDOT Site
	920318	920312	750630	920320	920313	750595
2015	31,000	51,000	47,000	36,500	52,500	40,500
2014	29,000	47,500	49,000	35,000	52,000	40,500
2013	31,000	46,500	48,000	35,000	52,000	40,000
2012	29,500	45,500	50,500	36,000	50,000	34,500
2011	26,500	47,000	46,500	34,500	50,000	31,000
2010	27,500	44,000	39,000	38,500	54,000	39,500
2009	27,000	42,000	45,000	37,000	50,500	34,000
2008	28,500	47,000	43,000	44,500	58,000	32,500
2007	28,000	45,500	39,500	42,000	54,000	39,000
2006	30,500	44,000	51,000	43,500	57,500	30,500
2005	27,500	39,500	43,500	45,000	54,500	34,500
2004	27,500	38,500	41,500	43,500	53,500	31,500
2003	27,000	36,000	40,000	40,000	52,500	23,500
2002	27,000	42,000	40,000	40,500	54,000	26,500
2001	29,000	39,500	43,500	*	53,500	28,000
2000	25,000	46,500	44,500	*	55,500	29,000
Annual Linear Growth Rate	0.77%	1.43%	1.03%	-1.55%	-0.41%	3.35%
R^2	33.29%	45.41%	26.77%	55.82%	21.06%	63.44%

Figure No. 2

FDOT Count Stations

- FDOT Count Station
- Study Corridor
- County Line

Aerial Image Fly Date: March 2016

POPULATION PROJECTIONS

The University of Florida's Bureau of Business and Economic Research (BEBR) projections were obtained for Orange County and Osceola County. The BEBR projections show an estimate for 2015 and projections for 2020 to 2045. The low, medium, and high projections for 2040 (the Design Year) in each county are summarized in **Table 2**. Osceola County population growth rates range between 1.54 percent and 4.84 percent. Population growth rates for Orange County range from approximately 0.89 percent to 3.22 percent. BEBR population study data is provided in **Appendix C**.

Table 2: BEBR Population Growth Rates

County and Estimation	2015 Estimate	2040 Projection	Annual Growth Rate, Growth/Year (%)
Osceola County			
Low	308,327	434,900	5,063 (1.54%)
Medium		566,300	10,319 (3.35%)
High		681,200	14,915 (4.84%)
Orange County			
Low	1,252,396	1,530,900	11,140 (0.89%)
Medium		1,908,000	26,224 (2.09%)
High		2,262,100	40,388 (3.22%)

BEBR Volume 49, Bulletin 174, January 2016

It is important to note that the BEBR data accounts for countywide data and does not necessarily reflect expected population growth on specific roadways or sub-areas of the County. It is useful in reviewing reasonableness of growth rates obtained from other sources such as travel demand models or historical AADT data. For example, the county is expected to grow and therefore, negative annual growth rates are unreasonable for use in this study.

MODEL GROWTH RATES

The most current version of the adopted Central Florida Regional Planning Model (CFRPM) v6.1 with a base year 2010 and forecast year 2040 was utilized to estimate volume growth rates. A sub-area validation was not completed as part of this study. As documented in the Existing Conditions Summary, future land uses and approved developments of regional impact (DRIs) adjacent to the study corridor were reviewed. The socioeconomic data within the model were reviewed and compared to the land uses summarized in the Existing Conditions Summary. The socioeconomic data from the model was comparable to anticipated future land uses thus no adjustments were made to the base model.

Model growth rates were calculated for four different future scenarios by comparing the base year 2010 AADT to the projected 2040 AADT. The four horizon year model scenarios utilized the same surrounding roadway network; however, different lane configurations were coded along SR 535. The four model scenarios are described as follows:

1. **No-Build Scenario** – SR 535 remains a 4-lane facility south of SR 536 and remains a 6-lane facility north of SR 536;
2. **Six-Lane Scenario** – SR 535 is widened to a 6-lane facility south of SR 536 and remains a 6-lane facility north of SR 536;
3. **Six-Lane/Eight-Lane Scenario** – SR 535 is widened to a 6-lane facility south of SR 536 and is widened to an 8-lane facility north of SR 536; and
4. **Eight-Lane Scenario** – SR 535 is widened to an 8-lane facility along the entire length of the study limits.

The four future model scenarios were developed and evaluated to gain an understanding of the potential range of growth and latent demand present along the study corridor. Model growth rates were calculated for SR 535 from US 192 to Meadow Creek Drive (the segment north of Meadow Creek Drive is being analyzed as part of the I-4 Beyond the Ultimate (BtU) Systems Access Modification Report (SAMR)). The linear annual model growth rates for each of the four model scenarios are summarized in **Table 3**. Model plots of each model scenario are provided in **Appendix D**. These model plots show peak season weekday average daily traffic (PSWADT) volumes. The 2010 and 2040 values in the tables provided in **Appendix D** summarize model AADT volumes converted from the PSWADT volumes (shown in the model plots) using a model output conversion factor (MOCF).

Table 3: Model Growth Rate Summary

Roadway Segment	Model Scenario			
	No-Build	6-Lane	6-Lane & 8-Lane	8-Lane
	Linear Annual Growth Rate			
US 192 to Kyngs Heath Road	0.04%	1.45%	1.11%	1.66%
Kyngs Heath Road to EB Osceola Parkway	-0.24%	1.45%	1.08%	1.74%
EB Osceola Parkway to WB Osceola Parkway	-0.12%	1.61%	1.17%	1.88%
WB Osceola Parkway to Polynesian Isle Boulevard	-0.15%	1.58%	1.38%	2.51%
Polynesian Isle Boulevard to LBV Factory Stores Drive	0.15%	2.43%	1.66%	2.52%
LBV Factory Stores Drive to SR 536	0.92%	2.92%	2.74%	4.14%
SR 536 to Meadow Creek Drive	0.53%	1.18%	2.11%	1.95%

With no improvements to SR 535 (No-Build scenario), an average of 0.16 percent annual growth is anticipated along the corridor. The existing four- and six-lane segments of SR 535 are currently volume constrained and are anticipated to remain volume constrained in the future if no widening takes place. The six-lane and six-lane/eight-lane model scenarios yielded average linear growth rates of 1.80 and 1.61 percent. In the six-lane/eight-lane scenario, the overall corridor volumes are constrained by the six-lane segment south of SR 536 even though the segment north of SR 536 was widened to eight-lanes. The results of the eight-lane model scenario show an average model growth rate of approximately 2.34 percent, the highest of the four model scenarios.

Growth Rate Summary

The historical growth rates along SR 535 range between 0.77 and 1.43 percent but the correlation of the historic growth rate is lower than the R^2 threshold of 75 percent. Traffic volumes along some of the surrounding roadway network have yet to rebound from the Recession and reach the historical highs observed in the mid-2000s, resulting in a growth trend of approximately -0.41 to -1.55 percent. BEBR medium growth rates were approximately two to three percent for Orange and Osceola Counties. Average overall corridor model growth rates ranged between 0.16 percent and 2.34 percent depending on the future model scenario.

Selection of Applied Growth Rate

The study team completed a preliminary sensitivity analysis using applied linear growth rates of one, two, three, four, and five percent. Segment and intersection operational analyses were completed to gain an understanding of the potential operational implications of each growth rate. The sensitivity analysis showed approximately 54 percent of the segments and 68 percent of the intersections operating at level-of-service (LOS) of E or worse with an applied growth rate of two percent.

The study team, along with members of FDOT, Orange County, and Osceola County, concluded that an applied annual linear growth rate of two percent is reasonable for the study corridor based on a review of the historical, population, and model growth rates. A summary of the sensitivity analysis and the various growth rates reviewed is included in **Appendix E**.

Future No-Build Operational Analysis

The following sections summarize the future No-Build AM and PM peak hour segment and intersection operations for the Design Year (2040). A LOS evaluation based on the FDOT Generalized LOS Tables (segments only) and Highway Capacity Manual (HCM) 2010 methodologies (segment and intersection operations) was conducted as part of the future no-build operational analysis. The selected two percent annual linear growth rate was applied to the existing year (2016) volumes to estimate future year 2040 AADTs and turning movement volumes.

No-Build Operational Network Changes

The following summarizes the SR 535 segment changes for the 2040 No-Build analysis:

- A signal at the intersection of SR 535 and International Drive is currently under construction. The segmentation in this area was adjusted to analyze two segments:
    - LBV Factory Stores to International Drive; and
    - International Drive to SR 536/World Center Drive.
- SR 535 from Meadow Creek Drive to I-4, including the Vineland Avenue intersection, is being evaluated as part of the I-4 BtU SAMR. SR 535 from Meadow Creek Drive to I-4 was not

included in the 2040 No-Build segment analysis. The SR 535/Vineland Avenue intersection, also included in the I-4 BtU analysis, was not included in the future design year analysis.

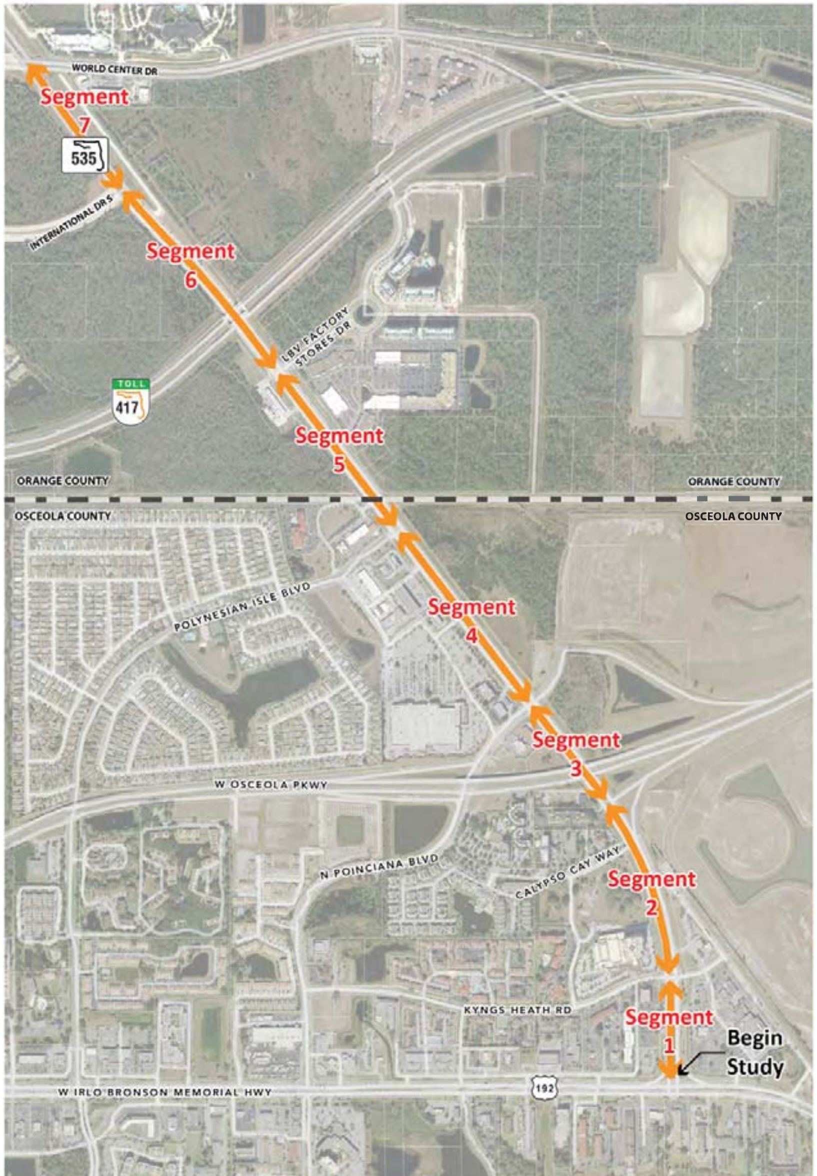
A total of eight segments were evaluated as part of the 2040 No-Build segment operational analysis. The segmentation used for the 2040 No-Build analysis is shown in **Figure 3**.

The following summarizes the intersection improvements included in the 2040 No-Build analysis:

- Turn lane additions at the intersection of SR 535 and Polynesian Isle Boulevard as part of the Sunrise City Traffic Impact Analysis (TIA):
  - Westbound left-turn lane;
  - Westbound through lane;
  - Westbound shared through/right lane;
  - Dual southbound left-turn lanes;
  - Convert the eastbound right turn lane to be a shared through/right; and
  - Convert the outside northbound lane to be shared through/right.
- As noted above, the intersection of SR 535 and International Drive is currently being signalized. The following turn lane additions are also being constructed with the signal:
  - Third southbound through lane;
  - Southbound U-turn lane; and
  - Second eastbound left-turn lane.
- Eastbound left-turn lane addition at SR 535 and Meadow Creek Drive as part of the I-4 BtU SAMR study.

Figure No. 3

Segments for the 2040 No-Build Operational Analysis



Aerial Image Fly Date: March 2016

Segment for Operational Analysis

County Line

Segment 1 –
SR 535 from US 192 to Kyngs Heath Road

Segment 2 –
SR 535 from Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp

Segment 3 –
SR 535 from Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard

Segment 4 –
SR 535 from Poinciana Boulevard to Polynesian Isle Boulevard

Segment 5 –
SR 535 from Polynesian Isle Boulevard to LBV Factory Stores Drive

Segment 6 –
SR 535 from LBV Factory Stores Drive to International Drive

Segment 7 –
SR 535 from International Drive to SR 536 (World Center Drive)

Segment 8 –
SR 535 from SR 536 (World Center Drive) to Meadow Creek Drive

FDOT GENERALIZED LOS EVALUATION

A Generalized LOS Evaluation was completed by comparing the future 2040 segment volumes to the LOS volume threshold from the FDOT Generalized LOS Tables included in the 2013 FDOT Quality/LOS Handbook. The selected two percent annual linear growth rate was applied to the existing year (2016) AADTs to estimate the future 2040 AADTs (shown in **Figure 4**). The FDOT LOS standard and volume thresholds are consistent from the Existing Conditions Report. **Appendix F** includes Table 1 from the Generalized LOS Tables.

Table 4 summarizes the 2040 AADT for each study segment and the results of the Generalized LOS Evaluation. As summarized in **Table 4**, SR 535 from US 192 to Kyngs Heath Road and from Poinciana Boulevard to Meadow Creek Drive are not anticipated to meet the LOS standard based on the FDOT generalized LOS evaluation.

Table 4: 2040 No-Build FDOT Generalized LOS Evaluation

Segment	2016 AADT	2040 AADT	Area Type	Segment Type	Speed Limit	FDOT LOS Standard	Adjusted LOS Volume Standard**	2040 Volumes Exceeds Volume Standards?
US 192 to Kyngs Heath Road	28,300	**42,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	26,900	40,000	Urban	Signalized Arterial	50	D	41,790	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	26,900	40,000	Urban	Signalized Arterial	50	D	41,790	N
Poinciana Boulevard to Polynesian Isle Boulevard	46,800	**69,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**52,340**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
LBV Factory Stores Drive to International Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
International Drive to SR 536/World Center Drive	44,300*	**66,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**41,790**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47,000	**70,000**	**Urban**	**Signalized Arterial**	**50**	**D**	**62,900**	**Y**

***Note:** Segment was below LOS standard under 2016 volumes
****Source:** *2013 FDOT Quality/LOS Handbook Tables*

Figure No. 4

2040 Annual Average Daily Traffic

Aerial Image Fly Date: March 2016

- ≤40,000
- 40,001 - 60,000
- 60,001 - 66,000
- 66,001 - 70,000
- County Line

FDOT

CORRIDOR SR 535 PLANNING STUDY

The FDOT generalized LOS analysis methodology is a sketch-planning level tool developed to provide a quick review of capacity and LOS for the roadway being studied. HCM methodologies are most widely used for analyzing existing and future facilities, along with future improvements to corridors beyond what the generalized LOS tables can provide.

HCM 2010 LOS Evaluation

A HCM 2010 Urban Street Segment analysis was performed for the eight SR 535 study segments previously defined in **Figure 3**. This methodology is applicable for segments less than two miles in length between signalized intersections. The HCM 2010 section 17.1 was referenced to evaluate the segment LOS based on the average travel speed (ATS) as a percentage of the base free flow speed (%BFFS). The LOS thresholds for urban street segments are summarized in **Table 5**.

Table 5: LOS for Urban Street Segments (HCM 2010)

LOS	Travel Speed as a Percentage of Free Flow Speed (%)
A	>85
B	>67 – 85
C	>50 – 67
D	>40 – 50
E	>30 – 40
F	≤30

The segment analysis was performed for the 2040 AM and PM peak hours in the northbound and southbound directions for each SR 535 segment. **Table 6** and **Table 7** display the 2040 No-Build peak hour results from the HCM analysis and the LOS for each segment. The bolded rows in the tables represent segments that are anticipated to operate below the FDOT LOS D standard. **Appendix G** contains the HCM inputs and the various outputs/calculations for the segment analysis. The following summarizes the anticipated deficiencies (by direction) identified as part of the 2040 AM peak hour HCM segment operations (shown in bold in **Table 6**):

- Northbound –
    - SR 535 between the Osceola Parkway Eastbound On-Ramp and SR 536/World Center Drive is anticipated to operate at LOS F.
- Southbound –
    - SR 535 between Meadow Creek Drive and SR 536/World Center Drive is anticipated to operate at LOS F.
    - SR 535 between Kyngs Heath Road and US 192 is anticipated to operate at LOS F.

Table 6: No-Build HCM LOS Evaluation Results – 2040 AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.4	64%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	35.1	70%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**5.2**	**10%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**5.6**	**11%**	**F***	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**3.6**	**7%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**5.0**	**10%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**4.4**	**9%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	32.7	69%	B	N
Southbound Direction					
Meadow Creek Drive to SR 536/World Center Drive	**47.7**	**15.6**	**33%**	**F**	**Y**
SR 536/World Center Drive to International Drive	50.6	23.3	46%	D	N
International Drive to LBV Factory Stores Drive	50.6	26.4	52%	C	N
LBV Factory Store Drive to Polynesian Isle Boulevard	50.2	22.2	44%	D	N
Polynesian Isle Boulevard to Poinciana Boulevard	50.4	25.0	50%	D	N
Poinciana Boulevard to Osceola Parkway Ramps	50.2	32.9	65%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	28.7	57%	C	N
Kyngs Heath Road to US 192	**46.2**	**6.8**	**15%**	**F***	**Y**

***Note:** Segment was below LOS standard under 2016 volumes

The following briefly summarizes the anticipated deficiencies (by direction) identified as part of the 2040 PM peak hour segment operations (shown in **Table 7**):

- Northbound –
  - SR 535 between the Osceola Parkway Ramps and SR 536/World Center Drive is anticipated to operate at LOS F.
- Southbound –
  - SR 535 from Meadow Creek Drive to Poinciana Boulevard and from Osceola Parkway Ramps to US 192 is anticipated to operate at LOS E or F.

Table 7: No-Build HCM LOS Evaluation Results – 2040 PM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.3	63%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	34.7	69%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**30.0**	**59%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**11.7**	**23%**	**F**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**6.8**	**13%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**10.5**	**21%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**8.7**	**17%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	31.8	67%	C	N
Southbound Direction					
Meadow Creek Drive to SR 536/World Center Drive	**47.7**	**9.9**	**21%**	**F***	**Y**
SR 536/World Center Drive to International Drive	**50.6**	**4.2**	**8%**	**F***	**Y**
International Drive to LBV Factory Stores Drive	**50.6**	**4.4**	**9%**	**F***	**Y**
LBV Factory Store Drive to Polynesian Isle Boulevard	**50.2**	**12.1**	**24%**	**F**	**Y**
Polynesian Isle Boulevard to Poinciana Boulevard	**50.4**	**13.9**	**28%**	**F**	**Y**
Poinciana Boulevard to Osceola Parkway Ramps	50.2	32.9	65%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	21.3	42%	D	Y
Kyngs Heath Road to US 192	**46.2**	**5.7**	**12%**	**F***	**Y**

***Note:** Segment was failing under 2016 volumes

2040 No-Build Peak Hour Intersection Operations

Twelve (12) intersections were evaluated as part of the 2040 No-Build peak hour intersection operational analysis. Of the 12 study intersections, nine were evaluated as a signalized intersection and three were evaluated as an unsignalized intersection with stop-control along the minor street. The future 2040 No-Build intersection lane configurations are summarized in **Figure 5**. The planned lane turn additions and changes in traffic control discussed in the Network Changes section are displayed in red on the figure.

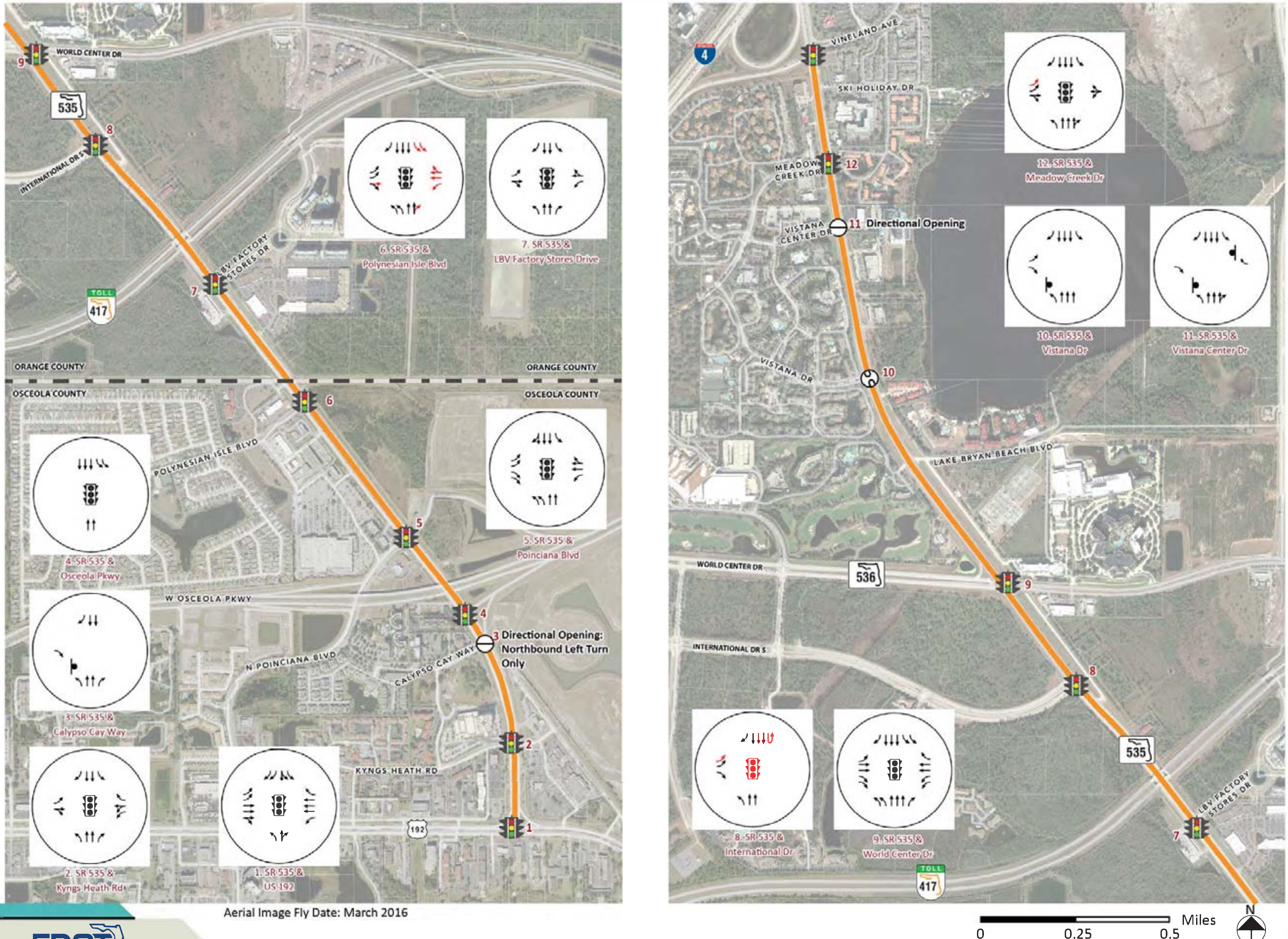
The selected two percent annual linear growth rate was applied to the existing turning movement volumes. For land uses/parcels where full build out has occurred adjacent to an intersection leg, the selected growth rate was not applied to the associated turning movements. The no-build network was used for the analysis. Signal timing improvements (signal splits and coordination offset updates) were made to the existing timings. No changes to the overall cycle lengths were made.

The approved TIA for the Sunrise City development on the east leg of the SR 535/Polynesian Isle Boulevard intersection was reviewed for future intersection turning movement volumes. These approach/departure volumes for the development were included as part of the AM and PM peak hour analysis for the Polynesian Isle Boulevard intersection. The anticipated turn lanes at the intersection were included in the operational analysis as previously discussed in the Network Changes section.

The intersection LOS was analyzed using HCM methodologies as implemented by Synchro Version 9.1. **Figure 6** summarizes the peak hour intersection operations and turning movement volumes for the 2040 No-Build scenario. For the signalized intersections, overall intersection LOS and delay are presented. For the unsignalized intersections, the LOS and delay are presented for the critical movement at the intersection. Detailed HCM output reports are located in **Appendix H**.

Figure No. 5

2040 No-Build Intersection Lane Configurations & Traffic Control



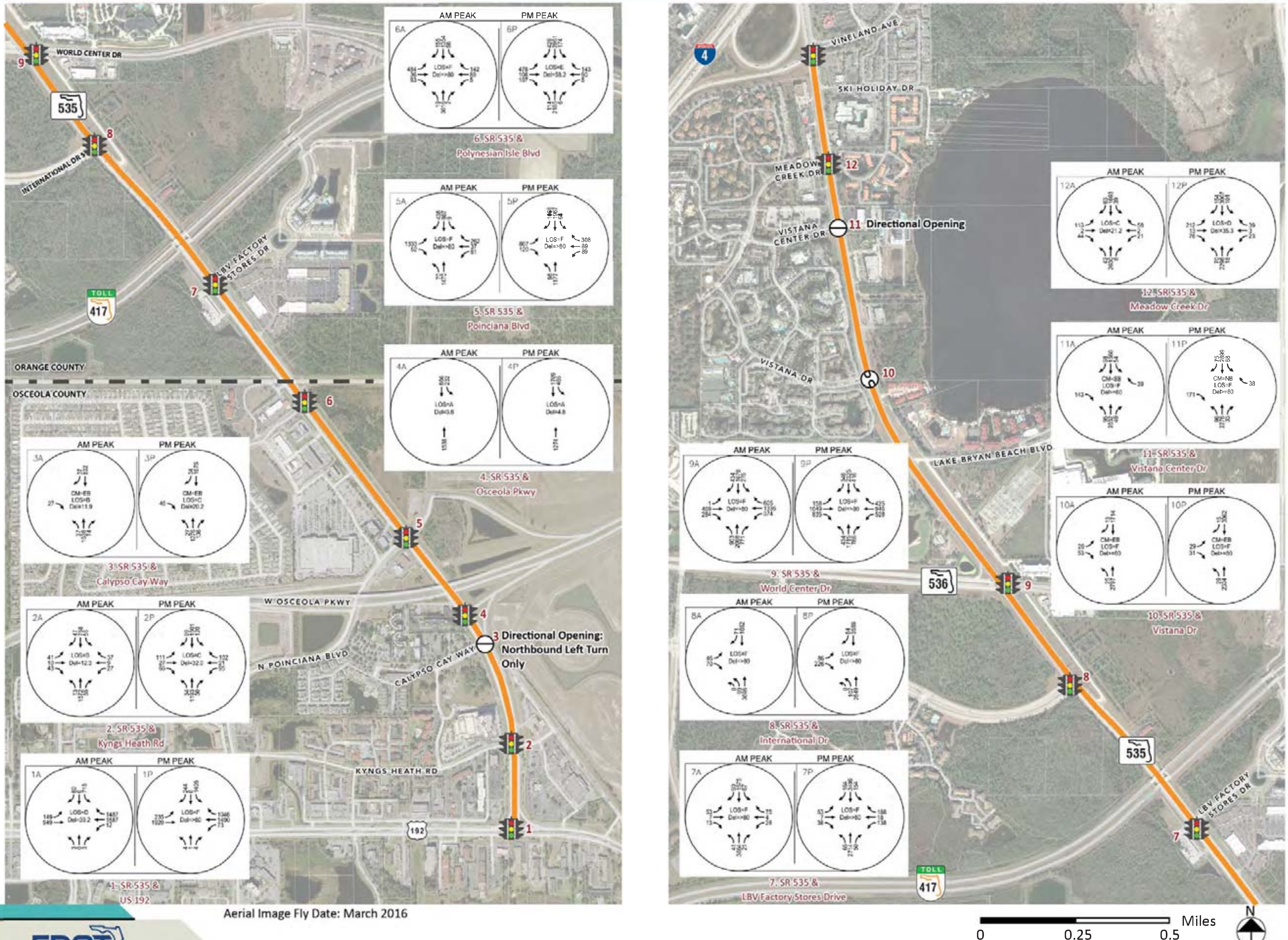
Aerial Image Fly Date: March 2016

- Traffic Signal
- Full Median Opening
- Directional Median Opening
- Study Corridor
- County Line
- Lane Addition
- Change in Traffic Control

Figure No. 6

2040 No-Build Peak Hour Intersection Operations

- Traffic Signal
- Full Median Opening
- Directional Median Opening
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016

Overall Intersection LOS Deficiencies

During the 2040 AM peak hour, five signalized and two unsignalized intersections are anticipated to operate at a LOS below the LOS D threshold:

- Poinciana Boulevard;
- Polynesian Isle;
- LBV Factory Stores;
- International Drive;
- World Center Drive;
- Vistana Drive (unsignalized); and
- Vistana Centre Drive (unsignalized).

The same capacity constraints anticipated during the 2040 AM peak hour are anticipated to be present during the 2040 PM peak hour. The intersections below are anticipated to operate at a LOS below the LOS D threshold:

- US 192;
- Poinciana Boulevard;
- LBV Factory Stores;
- International Drive;
- World Center Drive;
- Vistana Drive (unsignalized); and
- Vistana Centre Drive (unsignalized).

Intersection Movement Deficiencies

The following summarizes movement deficiencies (v/c ratio greater than 1.0) at the study signalized intersections during the 2040 peak hours:

AM Peak Hour

- Kyngs Heath Road
  - Southbound left-turn (v/c ratio of 1.02)
- Poinciana Boulevard
  - Eastbound left-turn (v/c ratio of 1.29)
  - Westbound right-turn (v/c ratio of 2.43)
  - Northbound through (v/c ratio of 1.21)
- Polynesian Isle Boulevard
  - Eastbound left-turn (v/c ratio of 1.05)
  - Northbound through/right (v/c ratio of 1.37)
- LBV Factory Stores
  - Northbound through (v/c ratio of 1.63)
  - Southbound left-turn (v/c ratio of 1.26)

- International Drive
  - Northbound through (v/c ratio of 1.51)
- World Center Drive
  - Northbound left-turn (v/c ratio of 1.19)
  - Northbound through (v/c ratio of 1.28)
  - Southbound left-turn (v/c ratio of 1.19)
  - Southbound through (v/c ratio of 1.09)

PM Peak Hour

- US 192
  - Eastbound through/right-turn (v/c ratio of 1.04)
  - Southbound left-turn (v/c ratio of 1.09)
- Kyngs Heath Road
  - Southbound left-turn (v/c ratio of 1.30)
- Poinciana Boulevard
  - Eastbound left-turn (v/c ratio of 1.26)
  - Westbound right-turn (v/c ratio of 2.54)
  - Northbound left-turn (v/c ratio of 1.04)
  - Southbound through (v/c ratio of 1.13)
  - Southbound right-turn (v/c ratio of 1.33)
- Polynesian Isle Boulevard
  - Eastbound left-turn (v/c ratio of 1.10)
  - Westbound right-turn (v/c ratio of 1.00)
  - Northbound through/right-turn (v/c ratio of 1.11)
  - Southbound left-turn (v/c ratio of 1.05)
  - Southbound through (v/c ratio of 1.06)
- LBV Factory Stores
  - Northbound left-turn (v/c ratio of 1.39)
  - Northbound through (v/c ratio of 1.27)
  - Southbound left-turn (v/c ratio of 1.52)
  - Southbound through (v/c ratio of 1.55)
- International Drive
  - Eastbound right-turn (v/c ratio of 1.67)
  - Northbound through (v/c ratio of 1.18)
  - Southbound through (v/c ratio of 1.40)
- World Center Drive
  - Eastbound left-turn (v/c ratio of 1.04)
  - Westbound left-turn (v/c ratio of 1.25)
  - Northbound left-turn (v/c ratio of 1.08)
  - Southbound left-turn (v/c ratio of 1.37)
  - Southbound through (v/c ratio of 1.36)

Summary

The future conditions summary evaluated the design year (2040) No-Build operations of the study segments and intersections based upon a two percent annual linear growth rate. The No-Build operational analysis identified capacity constraints and deficiencies along the study segments from a daily perspective (FDOT General LOS Tables) and during the AM and PM peak hours. Nearly half of the study segments are anticipated to exceed the adopted LOS D threshold during the AM peak hour, while over half of the study segments are anticipated to exceed during the PM peak hour. Seven intersections each in the AM and PM peak hours are anticipated to exceed the LOS E threshold. The forthcoming Alternatives and Corridor Strategies Summary Report will evaluate improvements to mitigate deficiencies (operational and multi-modal) identified in the Existing Conditions Summary and the Future Conditions Summary.

APPENDIX D – EXISTING OPERATIONAL ANALYSIS SUPPORTING DOCUMENTATION

PAGES FROM 2013 FDOT QUALITY/LOS HANDBOOK

TABLE 1

Generalized **Annual Average Daily** Volumes for Florida's **Urbanized Areas**

12/18/12

INTERRUPTED FLOW FACILITIES

STATE SIGNALIZED ARTERIALS

Class I (40 mph or higher posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	16,800	17,700	**
4	Divided	*	37,900	39,800	**
6	Divided	*	58,400	59,900	**
8	Divided	*	78,800	80,100	**

Class II (35 mph or slower posted speed limit)

Lanes	Median	B	C	D	E
2	Undivided	*	7,300	14,800	15,600
4	Divided	*	14,500	32,400	33,800
6	Divided	*	23,300	50,000	50,900
8	Divided	*	32,000	67,300	68,100

Non-State Signalized Roadway Adjustments

(Alter corresponding state volumes by the indicated percent.)

Non-State Signalized Roadways - 10%

Median & Turn Lane Adjustments

Lanes	Median	Exclusive Left Lanes	Exclusive Right Lanes	Adjustment Factors
2	Divided	Yes	No	+5%
2	Undivided	No	No	-20%
Multi	Undivided	Yes	No	-5%
Multi	Undivided	No	No	-25%
–	–	–	Yes	+ 5%

One-Way Facility Adjustment

Multiply the corresponding two-directional volumes in this table by 0.6

BICYCLE MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Paved Shoulder/Bicycle Lane Coverage	B	C	D	E
0-49%	*	2,900	7,600	19,700
50-84%	2,100	6,700	19,700	>19,700
85-100%	9,300	19,700	>19,700	**

PEDESTRIAN MODE[2]

(Multiply motorized vehicle volumes shown below by number of directional roadway lanes to determine two-way maximum service volumes.)

Sidewalk Coverage	B	C	D	E
0-49%	*	*	2,800	9,500
50-84%	*	1,600	8,700	15,800
85-100%	3,800	10,700	17,400	>19,700

BUS MODE (Scheduled Fixed Route)[3]

(Buses in peak hour in peak direction)

Sidewalk Coverage	B	C	D	E
0-84%	> 5	≥ 4	≥ 3	≥ 2
85-100%	> 4	≥ 3	≥ 2	≥ 1

UNINTERRUPTED FLOW FACILITIES

FREEWAYS

Core Urbanized

Lanes	B	C	D	E
4	47,400	64,000	77,900	84,600
6	69,900	95,200	116,600	130,600
8	92,500	126,400	154,300	176,600
10	115,100	159,700	194,500	222,700
12	162,400	216,700	256,600	268,900

Urbanized

Lanes	B	C	D	E
4	45,800	61,500	74,400	79,900
6	68,100	93,000	111,800	123,300
8	91,500	123,500	148,700	166,800
10	114,800	156,000	187,100	210,300

Freeway Adjustments

Auxiliary Lanes Present in Both Directions	Ramp Metering
+ 20,000	+ 5%

UNINTERRUPTED FLOW HIGHWAYS

Lanes	Median	B	C	D	E
2	Undivided	8,600	17,000	24,200	33,300
4	Divided	36,700	51,800	65,600	72,600
6	Divided	55,000	77,700	98,300	108,800

Uninterrupted Flow Highway Adjustments

Lanes	Median	Exclusive left lanes	Adjustment factors
2	Divided	Yes	+5%
Multi	Undivided	Yes	-5%
Multi	Undivided	No	-25%

1 Values shown are presented as two-way annual average daily volumes for levels of service and are for the automobile/truck modes unless specifically stated. This table does not constitute a standard and should be used only for general planning applications. The computer models from which this table is derived should be used for more specific planning applications. The table and deriving computer models should not be used for corridor or intersection design, where more refined techniques exist. Calculations are based on planning applications of the Highway Capacity Manual and the Transit Capacity and Quality of Service Manual.

2 Level of service for the bicycle and pedestrian modes in this table is based on number of motorized vehicles, not number of bicyclists or pedestrians using the facility.

3 Buses per hour shown are only for the peak hour in the single direction of the higher traffic flow.

* Cannot be achieved using table input value defaults.

** Not applicable for that level of service letter grade. For the automobile mode, volumes greater than level of service D become F because intersection capacities have been reached. For the bicycle mode, the level of service letter grade (including F) is not achievable because there is no maximum vehicle volume threshold using table input value defaults.

Source:
Florida Department of Transportation
Systems Planning Office
www.dot.state.fl.us/planning/systems/sm/los/default.shtm

TABLE 1
(continued)

Generalized **Annual Average Daily** Volumes for Florida's **Urbanized Areas**

12/18/12

INPUT VALUE ASSUMPTIONS	Uninterrupted Flow Facilities				Interrupted Flow Facilities					
					State Arterials				Class I	
	Freeways	Core Freeways	Highways		Class I		Class II		Bicycle	Pedestrian
ROADWAY CHARACTERISTICS										
Area type (u,lu)	lu	lu	u	u	u	u	u	u	u	u
Number of through lanes (both dir.)	4-10	4-12	2	4-6	2	4-8	2	4-8	4	4
Posted speed (mph)	70	65	50	50	45	50	30	30	45	45
Free flow speed (mph)	75	70	55	55	50	55	35	35	50	50
Auxiliary Lanes (n,y)	n	n								
Median (n, nr, r)			n	r	n	r	n	r	r	r
Terrain (l,r)	l	l	l	l	l	l	l	l	l	l
% no passing zone			80							
Exclusive left turn lane impact (n, y)			[n]	y	y	y	y	y	y	y
Exclusive right turn lanes (n, y)					n	n	n	n	n	n
Facility length (mi)	4	4	5	5	2	2	1.9	1.8	2	2
Number of basic segments	4	4								
TRAFFIC CHARACTERISTICS										
Planning analysis hour factor (K)	0.090	0.085	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.090
Directional distribution factor (D)	0.547	0.547	0.550	0.550	0.550	0.560	0.565	0.560	0.565	0.565
Peak hour factor (PHF)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Base saturation flow rate (pcphpl)			1,700	2,100	1,950	1,950	1,950	1,950	1,950	1,950
Heavy vehicle percent	4.0	4.0	2.0	2.0	1.0	1.0	1.0	1.0	2.5	2.0
Local adjustment factor	0.91	0.91	0.97	0.98						
% left turns					12	12	12	12	12	12
% right turns					12	12	12	12	12	12
CONTROL CHARACTERISTICS										
Number of signals					4	4	10	10	4	6
Arrival type (1-6)					3	3	4	4	4	4
Signal type (a, c, p)					c	c	c	c	c	c
Cycle length (C)					120	150	120	120	120	120
Effective green ratio (g/C)					0.44	0.45	0.44	0.44	0.44	0.44
MULTIMODAL CHARACTERISTICS										
Paved shoulder/bicycle lane (n, y)									n, 50%, y	n
Outside lane width (n, t, w)									t	t
Pavement condition (d, t, u)									t	
On-street parking (n, y)										
Sidewalk (n, y)										n, 50%, y
Sidewalk/roadway separation(a, t, w)										t
Sidewalk protective barrier (n, y)										n

LEVEL OF SERVICE THRESHOLDS

Level of Service	Freeways	Highways		Arterials		Bicycle	Ped	Bus
	Density	Two-Lane	Multilane	Class I	Class II	Score	Score	Buses/hr.
		%ffs	Density	ats	ats			
B	≤ 17	> 83.3	≤ 17	> 31 mph	> 22 mph	≤ 2.75	≤ 2.75	≤ 6
C	≤ 24	> 75.0	≤ 24	> 23 mph	> 17 mph	≤ 3.50	≤ 3.50	≤ 4
D	≤ 31	> 66.7	≤ 31	> 18 mph	> 13 mph	≤ 4.25	≤ 4.25	< 3
E	≤ 39	> 58.3	≤ 35	> 15 mph	> 10 mph	≤ 5.00	≤ 5.00	< 2

% ffs = Percent free flow speed   ats = Average travel speed

HCM SEGMENT LOS SUPPORTING DOCUMENTATION

SR 535 Existing Segment Operations HCM Inputs

Segment	Link Length (feet)	Speed Limit (mph)	Length with Restrictive Median (feet)	Length with Curb (feet)	Access Points on the Left	Access Points on the Right	Number of Through Lanes	Downstream Intersection - Signalized or Stop Control	Porpotion of Intersections with Left Turn Bay
US 192 to Kyngs Heath Rd.	973	50	973	973	0	1	2	Signalized	100%
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	1645	50	1580	0	1	1	2	Signalized	100%
Osceola Parkway Ramps to Poinciana Blvd.	1098	50	1100	0	0	0	2	Signalized	100%
Poinciana Blvd. to Polynesian Isle Blvd.	1906	50	1885	0	1	0	2	Signalized	100%
Polynesian Isle Blvd. to LBV Factory Stores Dr.	1723	50	1700	0	0	1	2	Signalized	100%
LBV Factory Stores Dr. to SR 536/World Center Dr.	2861	50	2710	0	1	1	3	Signalized	100%
SR 536/World Center Dr. to Meadow Creek Dr.	4330	50	4070	2770	4	6	3	Signalized	100%
Meadow Creek Dr. to Vineland Ave.	1299	45	1210	1299	1	4	3	Signalized	100%

Vineland Ave. to Meadow Creek Dr.	1299	45	1210	1299	1	3	3	Signalized	100%
Meadow Creek Dr. to SR 536/World Center Dr.	4330	50	4070	2770	4	5	3	Signalized	100%
SR 536/World Center Dr. to LBV Factory Stores Dr.	2861	50	2710	0	0	1	2	Signalized	100%
LBV Factory Store Dr. to Polynesian Isle Blvd.	1723	50	1700	0	1	2	2	Signalized	100%
Polynesian Isle Blvd. to Poinciana Blvd.	1906	50	1885	0	0	3	3	Signalized	100%
Poinciana Blvd. to Osceola Parkway Ramps	1098	50	1098	0	0	2	2	Signalized	100%
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	1645	50	1580	0	0	1	2	Signalized	100%
Kyngs Heath Rd. to US 192	973	50	973	973	0	1	2	Signalized	100%

SR 535 Existing AM Peak Hour Segment Operations Summary

Segment	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	0	1	0.447	1108	49.1	-2.7	-0.2	46.2	0.89	41.2	1.03	0.13	21.9	29.0	63%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	0	4.3	0.412	1114	49.1	1.4	-0.3	50.3	0.93	46.9	1.03	0.13	30.2	32.5	65%	C
Osceola Parkway Ramps to Poinciana Blvd.	0	69	0.789	1040	49.1	1.5	0.0	50.6	0.89	44.9	1.03	0.00	22.4	8.2	16%	F
Poinciana Blvd. to Polynesian Isle Blvd.	0	1.2	0.76	2051	49.1	1.5	-0.1	50.5	0.94	47.6	1.05	0.00	34.4	36.5	72%	B
Polynesian Isle Blvd. to LBV Factory Stores Dr.	0	24.3	1.017	2376	49.1	1.5	-0.1	50.5	0.94	47.2	1.07	0.36	32.5	20.7	41%	F
LBV Factory Stores Dr. to SR 536/World Center Dr.	0	55.7	0.783	2392	49.1	1.4	-0.1	50.4	0.97	48.9	1.04	0.08	47.3	18.9	38%	E
SR 536/World Center Dr. to Meadow Creek Dr.	0	15.2	0.5	1863	49.1	-1.1	-0.3	47.7	0.99	47.2	1.03	0.45	70.7	34.3	72%	B
Meadow Creek Dr. to Vineland Ave.	0	1.7	0.643	1961	46.8	-2.5	-0.5	43.7	0.93	40.7	1.04	0.30	28.2	29.6	68%	B
Vineland Ave. to Meadow Creek Dr.	0	9.5	0.33	1220	46.8	-2.5	-0.4	43.8	0.93	40.8	1.02	0.23	27.8	23.8	54%	C
Meadow Creek Dr. to SR 536/World Center Dr.	0	66	0.636	1172	49.1	-1.1	-0.3	47.7	0.99	47.2	1.02	0.23	69.7	21.8	46%	D
SR 536/World Center Dr. to LBV Factory Stores Dr.	0	14.6	0.441	1114	49.1	1.4	-0.1	50.4	0.97	48.9	1.03	0.13	46.8	31.8	63%	C
LBV Factory Store Dr. to Polynesian Isle Blvd.	0	0.6	0.262	1020	49.1	1.5	-0.4	50.2	0.94	47.0	1.02	0.25	31.4	36.7	73%	B
Polynesian Isle Blvd. to Poinciana Blvd.	0	16.1	0.545	969	49.1	1.5	-0.2	50.4	0.94	47.5	1.01	0.14	33.4	26.2	52%	C
Poinciana Blvd. to Osceola Parkway Ramps	0	7.3	0.134	742	49.1	1.5	-0.4	50.2	0.89	44.6	1.02	0.08	22.4	25.2	50%	D
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	0	12.5	0.212	581	49.1	1.4	-0.1	50.4	0.93	47.0	1.01	0.02	29.7	26.6	53%	C
Kyngs Heath Rd. to US 192	0	68.9	0.865	539	49.1	-2.7	-0.2	46.2	0.89	41.2	1.01	0.02	21.5	7.3	16%	F

SR 535 Existing PM Peak Hour Segment Operations Summary

Segment	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	0	0.3	0.358	863	49.1	-2.7	-0.2	46.2	0.89	41.2	1.02	0.08	21.7	30.1	65%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	0	12	0.329	972	49.1	1.4	-0.3	50.3	0.93	46.9	1.02	0.08	30.1	26.7	53%	C
Osceola Parkway Ramps to Poinciana Blvd.	0	30	0.445	861	49.1	1.5	0.0	50.6	0.89	44.9	1.02	0.00	22.3	14.3	28%	F
Poinciana Blvd. to Polynesian Isle Blvd.	0	13	0.54	1540	49.1	1.5	-0.1	50.5	0.94	47.6	1.04	0.00	33.9	27.7	55%	C
Polynesian Isle Blvd. to LBV Factory Stores Dr.	0	18	0.746	1770	49.1	1.5	-0.1	50.5	0.94	47.2	1.05	0.36	31.9	23.5	47%	D
LBV Factory Stores Dr. to SR 536/World Center Dr.	0	59	0.678	1860	49.1	1.4	-0.1	50.4	0.97	48.9	1.03	0.08	46.9	18.4	37%	E
SR 536/World Center Dr. to Meadow Creek Dr.	0	26	0.51	1593	49.1	-1.1	-0.3	47.7	0.99	47.2	1.03	0.45	70.4	30.6	64%	C
Meadow Creek Dr. to Vineland Ave.	0	48	0.68	1769	46.8	-2.5	-0.5	43.7	0.93	40.7	1.03	0.30	28.1	11.6	27%	F
Vineland Ave. to Meadow Creek Dr.	0	17.5	0.65	2202	46.8	-2.5	-0.4	43.8	0.93	40.8	1.04	0.23	28.2	19.4	44%	D
Meadow Creek Dr. to SR 536/World Center Dr.	0	72.6	0.872	1988	49.1	-1.1	-0.3	47.7	0.99	47.2	1.03	0.38	70.8	20.6	43%	D
SR 536/World Center Dr. to LBV Factory Stores Dr.	0	33.5	0.911	2413	49.1	1.4	-0.1	50.4	0.97	48.9	1.07	0.36	48.6	23.8	47%	D
LBV Factory Store Dr. to Polynesian Isle Blvd.	0	0.3	0.565	2289	49.1	1.5	-0.4	50.2	0.94	47.0	1.06	0.72	32.9	35.4	71%	B
Polynesian Isle Blvd. to Poinciana Blvd.	0	8	0.771	2095	49.1	1.5	-0.2	50.4	0.94	47.5	1.03	0.23	34.1	30.9	61%	C
Poinciana Blvd. to Osceola Parkway Ramps	0	7.9	0.247	1469	49.1	1.5	-0.4	50.2	0.89	44.6	1.04	0.72	23.4	23.9	48%	D
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	0	20.4	0.726	1162	49.1	1.4	-0.1	50.4	0.93	47.0	1.03	0.13	30.2	22.2	44%	D
Kyngs Heath Rd. to US 192	0	71.3	0.948	1113	49.1	-2.7	-0.2	46.2	0.89	41.2	1.03	0.13	21.9	7.1	15%	F

HCM 2010 INTERSECTION REPORTS (EXISTING CONDITIONS)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	101	641	2	8	1140	1005	2	0	2	485	0	54
Future Volume (veh/h)	101	641	2	8	1140	1005	2	0	2	485	0	54
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1793	1900	1900	1827	1863	1900	1900	1900	1863	1863	1743
Adj Flow Rate, veh/h	106	675	2	8	1200	0	2	0	2	511	0	57
Adj No. of Lanes	2	3	0	1	3	1	1	1	0	2	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	6	0	4	2	0	0	0	2	0	9
Cap, veh/h	213	3051	9	93	2967	942	11	0	9	591	0	489
Arrive On Green	0.06	0.61	0.61	0.05	0.59	0.00	0.01	0.00	0.01	0.17	0.00	0.17
Sat Flow, veh/h	3442	5038	15	1810	4988	1583	1810	0	1550	3548	0	2937
Grp Volume(v), veh/h	106	437	240	8	1200	0	2	0	2	511	0	57
Grp Sat Flow(s),veh/h/ln	1721	1631	1790	1810	1663	1583	1810	0	1550	1774	0	1468
Q Serve(g_s), s	4.8	9.8	9.8	0.7	20.5	0.0	0.2	0.0	0.2	22.4	0.0	2.6
Cycle Q Clear(g_c), s	4.8	9.8	9.8	0.7	20.5	0.0	0.2	0.0	0.2	22.4	0.0	2.6
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	213	1976	1084	93	2967	942	11	0	9	591	0	489
V/C Ratio(X)	0.50	0.22	0.22	0.09	0.40	0.00	0.18	0.00	0.21	0.87	0.00	0.12
Avail Cap(c_a), veh/h	284	1976	1084	93	2967	942	92	0	78	825	0	683
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	72.6	14.4	14.4	72.3	17.3	0.0	79.1	0.0	79.1	64.9	0.0	56.7
Incr Delay (d2), s/veh	0.7	0.3	0.5	1.8	0.4	0.0	2.9	0.0	4.0	5.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.3	4.4	4.9	0.4	9.6	0.0	0.1	0.0	0.1	11.4	0.0	1.1
LnGrp Delay(d),s/veh	73.3	14.6	14.8	74.2	17.7	0.0	82.0	0.0	83.2	70.3	0.0	56.7
LnGrp LOS	E	B	B	E	B		F		F	E		E
Approach Vol, veh/h		783			1208			4			568	
Approach Delay, s/veh		22.6			18.1			82.6			68.9	
Approach LOS		C			B			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.7	102.0		33.4	15.0	103.7		7.9
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	13.2	74.2		37.2	8.2	79.2		8.1
Max Q Clear Time (g_c+I1), s	6.8	22.5		24.4	2.7	11.8		2.2
Green Ext Time (p_c), s	0.1	18.7		0.9	0.0	19.9		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	30.8
HCM 2010 LOS	C

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	7	29	18	6	25	9	1062	37	37	512	32
Future Volume (veh/h)	28	7	29	18	6	25	9	1062	37	37	512	32
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1855	1900	1792	1841	1696	1900	1863	1845	1810	1845	1845
Adj Flow Rate, veh/h	30	7	31	12	15	27	10	1130	39	39	545	34
Adj No. of Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	11	0	0	6	0	12	0	2	3	5	3	3
Cap, veh/h	85	15	68	58	63	48	20	2530	1119	50	2567	1146
Arrive On Green	0.05	0.05	0.05	0.03	0.03	0.03	0.02	1.00	1.00	0.03	0.73	0.73
Sat Flow, veh/h	1630	294	1303	1707	1841	1404	1810	3539	1565	1723	3505	1565
Grp Volume(v), veh/h	30	0	38	12	15	27	10	1130	39	39	545	34
Grp Sat Flow(s),veh/h/ln	1630	0	1598	1707	1841	1404	1810	1770	1565	1723	1752	1565
Q Serve(g_s), s	2.8	0.0	3.7	1.1	1.3	3.0	0.9	0.0	0.0	3.6	7.9	1.0
Cycle Q Clear(g_c), s	2.8	0.0	3.7	1.1	1.3	3.0	0.9	0.0	0.0	3.6	7.9	1.0
Prop In Lane	1.00		0.82	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	85	0	83	58	63	48	20	2530	1119	50	2567	1146
V/C Ratio(X)	0.35	0.00	0.46	0.21	0.24	0.56	0.49	0.45	0.03	0.78	0.21	0.03
Avail Cap(c_a), veh/h	479	0	469	181	196	149	57	2530	1119	88	2567	1146
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.55	0.55	0.55	1.00	1.00	1.00
Uniform Delay (d), s/veh	73.2	0.0	73.6	75.2	75.3	76.1	77.8	0.0	0.0	77.2	6.8	5.9
Incr Delay (d2), s/veh	1.8	0.0	2.9	1.3	1.4	7.5	7.4	0.3	0.0	17.9	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	0.0	1.7	0.5	0.7	1.3	0.5	0.1	0.0	2.0	3.9	0.4
LnGrp Delay(d),s/veh	75.0	0.0	76.5	76.5	76.7	83.6	85.2	0.3	0.0	95.1	7.0	5.9
LnGrp LOS	E		E	E	E	F	F	A	A	F	A	A
Approach Vol, veh/h		68			54			1179			618	
Approach Delay, s/veh		75.8			80.1			1.0			12.5	
Approach LOS		E			F			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	8.6	124.0		12.4	11.4	121.2		15.0
Change Period (Y+Rc), s	6.8	6.8		7.0	6.8	6.8		6.6
Max Green Setting (Gmax), s	5.0	63.8		17.0	8.2	60.6		47.0
Max Q Clear Time (g_c+I1), s	2.9	9.9		5.0	5.6	2.0		5.7
Green Ext Time (p_c), s	0.0	16.9		0.1	0.0	17.2		0.2

Intersection Summary	
HCM 2010 Ctrl Delay	9.6
HCM 2010 LOS	A

Notes

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	18	0	0	0	25	1039	50	0	562	25
Future Vol, veh/h	0	0	18	0	0	0	25	1039	50	0	562	25
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	6	0	0	0	4	3	4	0	3	4
Mvmt Flow	0	0	19	0	0	0	27	1105	53	0	598	27

Major/Minor	Minor2			Major1			Major2		
Conflicting Flow All	-	-	300	599	0	0	-	-	0
Stage 1	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.02	4.18	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36	2.24	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	684	960	-	-	0	-	0
Stage 1	0	0	-	-	-	-	0	-	0
Stage 2	0	0	-	-	-	-	0	-	0
Platoon blocked, %					-	-		-	
Mov Cap-1 Maneuver	-	0	683	960	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-	-	-	-	-	-	-
Stage 1	-	0	-	-	-	-	-	-	-
Stage 2	-	0	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.4	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	960	-	-	683	-
HCM Lane V/C Ratio	0.028	-	-	0.028	-
HCM Control Delay (s)	8.9	-	-	10.4	-
HCM Lane LOS	A	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1039	0	157	585
Future Volume (veh/h)	0	0	1039	0	157	585
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	0	1845	1845
Adj Flow Rate, veh/h			1094	0	165	616
Adj No. of Lanes			2	0	2	3
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	0	3	3
Cap, veh/h			2655	0	243	4608
Arrive On Green			0.75	0.00	0.14	1.00
Sat Flow, veh/h			3725	0	3408	5202
Grp Volume(v), veh/h			1094	0	165	616
Grp Sat Flow(s),veh/h/ln			1770	0	1704	1679
Q Serve(g_s), s			8.9	0.0	3.7	0.0
Cycle Q Clear(g_c), s			8.9	0.0	3.7	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			2655	0	243	4608
V/C Ratio(X)			0.41	0.00	0.68	0.13
Avail Cap(c_a), veh/h			2655	0	618	4847
HCM Platoon Ratio			1.00	1.00	2.00	2.00
Upstream Filter(I)			1.00	0.00	0.81	0.81
Uniform Delay (d), s/veh			3.6	0.0	33.4	0.0
Incr Delay (d2), s/veh			0.5	0.0	1.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			4.4	0.0	1.7	0.0
LnGrp Delay(d),s/veh			4.1	0.0	34.5	0.0
LnGrp LOS			A		C	A
Approach Vol, veh/h			1094			781
Approach Delay, s/veh			4.1			7.3
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	13.2	66.8				80.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	14.5	51.2				* 77		
Max Q Clear Time (g_c+I1), s	5.7	10.9				2.0		
Green Ext Time (p_c), s	0.2	19.8				16.3		

Intersection Summary	
HCM 2010 Ctrl Delay	5.4
HCM 2010 LOS	A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	901	0	35	41	25	177	47	993	0	6	667	296
Future Volume (veh/h)	901	0	35	41	25	177	47	993	0	6	667	296
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	0	1792	1810	1808	1900	1743	1863	1900	1900	1823	1900
Adj Flow Rate, veh/h	948	0	37	43	26	186	49	1045	0	6	702	312
Adj No. of Lanes	2	0	2	1	2	0	2	2	0	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	6	5	20	20	9	2	2	0	3	3
Cap, veh/h	1003	0	0	751	177	158	151	1324	0	96	1288	565
Arrive On Green	0.29	0.00	0.00	0.44	0.10	0.10	0.02	0.12	0.00	0.11	0.76	0.76
Sat Flow, veh/h	3476	948		1723	1718	1537	3221	3632	0	1810	3387	1485
Grp Volume(v), veh/h	948	71.1		43	26	186	49	1045	0	6	688	326
Grp Sat Flow(s),veh/h/ln	1738	E		1723	1718	1537	1610	1770	0	1810	1659	1554
Q Serve(g_s), s	42.7			2.3	2.2	16.5	2.4	45.9	0.0	0.5	13.6	13.9
Cycle Q Clear(g_c), s	42.7			2.3	2.2	16.5	2.4	45.9	0.0	0.5	13.6	13.9
Prop In Lane	1.00			1.00		1.00	1.00		0.00	1.00		0.96
Lane Grp Cap(c), veh/h	1003			751	177	158	151	1324	0	96	1262	591
V/C Ratio(X)	0.95			0.06	0.15	1.17	0.32	0.79	0.00	0.06	0.54	0.55
Avail Cap(c_a), veh/h	1075			751	177	158	151	1324	0	96	1262	591
HCM Platoon Ratio	1.00			1.00	1.00	1.00	0.33	0.33	0.33	2.00	2.00	2.00
Upstream Filter(I)	1.00			1.00	1.00	1.00	0.90	0.90	0.00	0.98	0.98	0.98
Uniform Delay (d), s/veh	55.7			26.1	65.3	71.8	76.3	64.0	0.0	67.9	13.5	13.5
Incr Delay (d2), s/veh	15.4			0.0	0.1	125.8	5.1	4.4	0.0	1.2	1.7	3.6
Initial Q Delay(d3),s/veh	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	22.7			1.1	1.1	12.5	1.2	23.3	0.0	0.3	6.4	6.4
LnGrp Delay(d),s/veh	71.1			26.1	65.5	197.5	81.4	68.4	0.0	69.1	15.1	17.1
LnGrp LOS	E			C	E	F	F	E		E	B	B
Approach Vol, veh/h					255			1094			1020	
Approach Delay, s/veh					155.2			69.0			16.1	
Approach LOS					F			E			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	
Phs Duration (G+Y+Rc), s	15.0	68.3	52.7	24.0	16.0	67.3	76.7	
Change Period (Y+Rc), s	7.5	7.5	6.5	7.5	7.5	7.5	6.9	
Max Green Setting (Gmax), s	7.5	57.5	49.5	16.5	8.5	56.5	10.1	
Max Q Clear Time (g_c+I1), s	4.4	15.9	44.7	18.5	2.5	47.9	4.3	
Green Ext Time (p_c), s	0.0	19.5	1.5	0.0	0.0	6.7	0.0	

Intersection Summary			
HCM 2010 Ctrl Delay			59.9
HCM 2010 LOS			E

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	327	63	13	2038	915	105
Future Volume (veh/h)	327	63	13	2038	915	105
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1681	1759	1863	1827	1827
Adj Flow Rate, veh/h	344	66	14	2145	963	111
Adj No. of Lanes	2	1	2	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	13	8	2	4	4
Cap, veh/h	393	163	47	2824	3673	1144
Arrive On Green	0.11	0.11	0.03	1.00	0.98	0.98
Sat Flow, veh/h	3442	1429	3250	3632	5152	1553
Grp Volume(v), veh/h	344	66	14	2145	963	111
Grp Sat Flow(s),veh/h/ln	1721	1429	1625	1770	1663	1553
Q Serve(g_s), s	15.7	6.9	0.7	0.0	0.9	0.3
Cycle Q Clear(g_c), s	15.7	6.9	0.7	0.0	0.9	0.3
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	393	163	47	2824	3673	1144
V/C Ratio(X)	0.88	0.40	0.30	0.76	0.26	0.10
Avail Cap(c_a), veh/h	546	227	254	2824	3673	1144
HCM Platoon Ratio	1.00	1.00	2.00	2.00	1.33	1.33
Upstream Filter(I)	1.00	1.00	0.35	0.35	0.93	0.93
Uniform Delay (d), s/veh	69.8	65.8	76.9	0.0	0.4	0.4
Incr Delay (d2), s/veh	8.9	0.6	0.5	0.7	0.2	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.0	5.5	0.3	0.3	0.3	0.2
LnGrp Delay(d),s/veh	78.7	66.4	77.3	0.7	0.6	0.6
LnGrp LOS	E	E	E	A	A	A
Approach Vol, veh/h	410			2159	1074	
Approach Delay, s/veh	76.7			1.2	0.6	
Approach LOS	E			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		135.1		24.9	9.8	125.3		
Change Period (Y+Rc), s		7.5		* 6.6	7.5	7.5		
Max Green Setting (Gmax), s		120.5		* 25	12.5	100.5		
Max Q Clear Time (g_c+I1), s		2.0		17.7	2.7	2.9		
Green Ext Time (p_c), s		89.7		0.5	0.0	77.3		

Intersection Summary			
HCM 2010 Ctrl Delay			9.5
HCM 2010 LOS			A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	5	9	18	3	51	27	2336	13	45	1008	61
Future Volume (veh/h)	36	5	9	18	3	51	27	2336	13	45	1008	61
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1570	1900	1900	1792	1766	1900	1827	1863	1759	1827	1827	1792
Adj Flow Rate, veh/h	39	5	10	19	3	55	29	2512	14	48	1084	66
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	21	0	0	6	0	0	4	2	8	4	4	6
Cap, veh/h	133	64	129	186	9	162	39	2469	1043	61	2461	1079
Arrive On Green	0.11	0.11	0.11	0.11	0.11	0.11	0.03	0.93	0.93	0.04	0.71	0.71
Sat Flow, veh/h	1122	564	1127	1330	78	1424	1740	3539	1495	1740	3471	1523
Grp Volume(v), veh/h	39	0	15	19	0	58	29	2512	14	48	1084	66
Grp Sat Flow(s),veh/h/ln	1122	0	1691	1330	0	1501	1740	1770	1495	1740	1736	1523
Q Serve(g_s), s	5.3	0.0	1.3	2.1	0.0	5.7	2.6	111.6	0.1	4.4	21.1	2.1
Cycle Q Clear(g_c), s	11.0	0.0	1.3	3.3	0.0	5.7	2.6	111.6	0.1	4.4	21.1	2.1
Prop In Lane	1.00		0.67	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	133	0	193	186	0	171	39	2469	1043	61	2461	1079
V/C Ratio(X)	0.29	0.00	0.08	0.10	0.00	0.34	0.74	1.02	0.01	0.78	0.44	0.06
Avail Cap(c_a), veh/h	362	0	538	464	0	485	65	2469	1043	67	2461	1079
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.54	0.54	0.54	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.4	0.0	63.4	64.8	0.0	65.3	77.1	5.8	1.7	76.6	9.9	7.1
Incr Delay (d2), s/veh	1.2	0.0	0.2	0.2	0.0	1.2	13.4	17.9	0.0	41.3	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	0.0	0.6	0.8	0.0	2.4	1.4	55.1	0.0	2.8	10.3	0.9
LnGrp Delay(d),s/veh	71.6	0.0	63.5	65.1	0.0	66.5	90.5	23.7	1.8	117.9	10.4	7.2
LnGrp LOS	E		E	E		E	F	F	A	F	B	A
Approach Vol, veh/h		54			77			2555			1198	
Approach Delay, s/veh		69.3			66.1			24.3			14.6	
Approach LOS		E			E			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.4	119.2		26.4	12.6	121.0		26.4
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 6.2	78.4		* 51	6.0	* 79		* 52
Max Q Clear Time (g_c+I1), s	6.4	113.6		13.0	4.6	23.1		7.7
Green Ext Time (p_c), s	0.0	0.0		0.7	0.0	49.8		0.7

Intersection Summary	
HCM 2010 Ctrl Delay	22.7
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	31	45	63	2361	1069	48
Future Vol, veh/h	31	45	63	2361	1069	48
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	525	-	-	475
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	3	5	3	2	4	6
Mvmt Flow	33	47	66	2485	1125	51

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2500	563	1125	0	-	0
Stage 1	1125	-	-	-	-	-
Stage 2	1375	-	-	-	-	-
Critical Hdwy	6.86	7	4.16	-	-	10
Critical Hdwy Stg 1	5.86	-	-	-	-	-
Critical Hdwy Stg 2	5.86	-	-	-	-	-
Follow-up Hdwy	3.53	3.35	2.23	-	-	-
Pot Cap-1 Maneuver	*109	462	611	-	-	-
Stage 1	*270	-	-	-	-	-
Stage 2	*109	-	-	-	-	-
Platoon blocked, %	1			-	-	-
Mov Cap-1 Maneuver	*97	462	611	-	-	-
Mov Cap-2 Maneuver	*93	-	-	-	-	-
Stage 1	*270	-	-	-	-	-
Stage 2	*98	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	33.9	0.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	611	-	93	462	-	-
HCM Lane V/C Ratio	0.109	-	0.351	0.103	-	-
HCM Control Delay (s)	11.6	-	63.3	13.7	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.4	0.3	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	50	317	183	242	902	409	577	1322	493	186	693	293
Future Volume (veh/h)	50	317	183	242	902	409	577	1322	493	186	693	293
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1712	1845	1845	1810	1810	1881	1881	1845	1845	1845	1759
Adj Flow Rate, veh/h	53	334	193	255	949	0	607	1392	0	196	729	0
Adj No. of Lanes	1	2	2	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	11	3	3	5	5	1	1	3	3	3	8
Cap, veh/h	66	3402	2887	490	3933	1760	741	1778	543	237	1146	340
Arrive On Green	0.04	1.00	1.00	0.14	1.00	0.00	0.21	0.35	0.00	0.07	0.23	0.00
Sat Flow, veh/h	1616	3252	2760	3408	3438	1538	3476	5136	1568	3408	5036	1495
Grp Volume(v), veh/h	53	334	193	255	949	0	607	1392	0	196	729	0
Grp Sat Flow(s),veh/h/ln	1616	1626	1380	1704	1719	1538	1738	1712	1568	1704	1679	1495
Q Serve(g_s), s	5.2	0.0	0.0	11.1	0.0	0.0	26.6	38.9	0.0	9.1	20.9	0.0
Cycle Q Clear(g_c), s	5.2	0.0	0.0	11.1	0.0	0.0	26.6	38.9	0.0	9.1	20.9	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	66	3402	2887	490	3933	1760	741	1778	543	237	1146	340
V/C Ratio(X)	0.80	0.10	0.07	0.52	0.24	0.00	0.82	0.78	0.00	0.83	0.64	0.00
Avail Cap(c_a), veh/h	83	3402	2887	490	3933	1760	741	1778	543	243	1146	340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	76.1	0.0	0.0	63.4	0.0	0.0	60.0	46.9	0.0	73.5	55.8	0.0
Incr Delay (d2), s/veh	35.0	0.1	0.0	3.9	0.1	0.0	7.3	3.5	0.0	20.3	2.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.0	0.0	0.0	5.5	0.1	0.0	13.6	19.0	0.0	4.9	10.0	0.0
LnGrp Delay(d),s/veh	111.1	0.1	0.0	67.3	0.1	0.0	67.3	50.4	0.0	93.8	58.5	0.0
LnGrp LOS	F	A	A	E	A		E	D		F	E	
Approach Vol, veh/h		580			1204			1999			925	
Approach Delay, s/veh		10.2			14.4			55.5			66.0	
Approach LOS		B			B			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.3	195.0	22.7	67.0	31.0	179.4	45.7	44.0
Change Period (Y+Rc), s	* 8.8	* 8	* 12	* 12	* 8	* 8	11.6	* 7.6
Max Green Setting (Gmax), s	* 8.2	* 49	* 11	* 55	* 23	* 35	30.4	* 36
Max Q Clear Time (g_c+I1), s	7.2	2.0	11.1	40.9	13.1	2.0	28.6	22.9
Green Ext Time (p_c), s	0.0	9.0	0.0	9.3	0.6	8.6	1.5	2.0

Intersection Summary	
HCM 2010 Ctrl Delay	41.5
HCM 2010 LOS	D

Notes

Intersection							
Int Delay, s/veh	0.4						

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	26	51	24	1816	0	1126	13
Future Vol, veh/h	26	51	24	1816	0	1126	13
Conflicting Peds, #/hr	0	0	2	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	325	-	350	-	350
Veh in Median Storage, #	1	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	97	97	97	97	92	97	97
Heavy Vehicles, %	0	6	0	3	2	6	0
Mvmt Flow	27	53	25	1872	0	1161	13

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	1961	582	1163	0	-	-	0
Stage 1	1163	-	-	-	-	-	-
Stage 2	798	-	-	-	-	-	-
Critical Hdwy	5.7	7.22	5.3	-	5.64	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-	-
Follow-up Hdwy	3.8	3.96	3.1	-	2.32	-	-
Pot Cap-1 Maneuver	*223	*664	*848	-	-	-	-
Stage 1	*692	-	-	-	-	-	-
Stage 2	*371	-	-	-	-	-	-
Platoon blocked, %	1	1	1	-		-	-
Mov Cap-1 Maneuver	*216	*663	*848	-	-	-	-
Mov Cap-2 Maneuver	*297	-	-	-	-	-	-
Stage 1	*691	-	-	-	-	-	-
Stage 2	*359	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.3	0.1	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	* 848	-	468	-	-	-
HCM Lane V/C Ratio	0.029	-	0.17	-	-	-
HCM Control Delay (s)	9.4	-	14.3	0	-	-
HCM Lane LOS	A	-	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	140	1	0	39	91	1723	48	54	1026	98
Future Vol, veh/h	0	0	140	1	0	39	91	1723	48	54	1026	98
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	9	9	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	375	-	-	325	-	350
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	3	10	3	0	0	6	8
Mvmt Flow	0	0	151	1	0	42	98	1853	52	58	1103	105

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	553	2640	-	961	1104	0	0	1913	0	0
Stage 1	-	-	-	2083	-	-	-	-	-	-	-	-
Stage 2	-	-	-	557	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	6.4	-	7.16	5.5	-	-	5.3	-	-
Critical Hdwy Stg 1	-	-	-	7.3	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	6.7	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	3.8	-	3.93	3.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	0	0	*688	*47	0	219	*842	-	-	142	-	-
Stage 1	0	0	-	*34	0	-	-	-	-	-	-	-
Stage 2	0	0	-	*709	0	-	-	-	-	-	-	-
Platoon blocked, %			1	1			1	-	-		-	-
Mov Cap-1 Maneuver	-	-	*688	*23	-	217	*842	-	-	142	-	-
Mov Cap-2 Maneuver	-	-	-	*23	-	-	-	-	-	-	-	-
Stage 1	-	-	-	*30	-	-	-	-	-	-	-	-
Stage 2	-	-	-	*327	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	11.7	25.5	0.5	2.1
HCM LOS	B	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 842	-	-	688	217	142	-	-
HCM Lane V/C Ratio	0.116	-	-	0.219	0.193	0.409	-	-
HCM Control Delay (s)	9.8	-	-	11.7	25.5	46.9	-	-
HCM Lane LOS	A	-	-	B	D	E	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.8	0.7	1.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	113	2	43	21	2	58	41	1710	6	39	1118	63
Future Volume (vph)	113	2	43	21	2	58	41	1710	6	39	1118	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		8.3	7.5		7.8	6.9	6.9
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00		1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.86			0.90		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.99		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1579	1410			1672		1770	5031		1805	4940	1404
Flt Permitted	0.65	1.00			0.91		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1085	1410			1542		1770	5031		1805	4940	1404
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	115	2	44	21	2	59	42	1745	6	40	1141	64
RTOR Reduction (vph)	0	38	0	0	51	0	0	0	0	0	0	20
Lane Group Flow (vph)	115	8	0	0	31	0	42	1751	0	40	1141	44
Confl. Peds. (#/hr)	3		6	6		3	6		4	4		6
Heavy Vehicles (%)	14%	0%	14%	0%	0%	0%	2%	3%	17%	0%	5%	11%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4								2
Actuated Green, G (s)	20.5	20.5			20.5		8.0	110.5		7.2	109.8	109.8
Effective Green, g (s)	20.5	20.5			20.5		8.0	110.5		7.2	109.8	109.8
Actuated g/C Ratio	0.13	0.13			0.13		0.05	0.69		0.05	0.69	0.69
Clearance Time (s)	6.5	6.5			6.5		8.3	7.5		7.8	6.9	6.9
Vehicle Extension (s)	2.3	2.3			2.3		3.0	1.8		2.3	3.0	3.0
Lane Grp Cap (vph)	139	180			197		88	3474		81	3390	963
v/s Ratio Prot		0.01					c0.02	c0.35		0.02	0.23	
v/s Ratio Perm	c0.11				0.02							0.03
v/c Ratio	0.83	0.04			0.16		0.48	0.50		0.49	0.34	0.05
Uniform Delay, d1	68.0	61.1			62.0		74.0	11.7		74.6	10.2	8.1
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.37	0.56	0.38
Incremental Delay, d2	30.6	0.1			0.2		4.0	0.5		2.6	0.3	0.1
Delay (s)	98.6	61.2			62.3		78.0	12.3		104.8	6.0	3.2
Level of Service	F	E			E		E	B		F	A	A
Approach Delay (s)		87.9			62.3			13.8			9.0	
Approach LOS		F			E			B			A	

Intersection Summary			
HCM 2000 Control Delay	16.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	62.8%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	313	72	95	84	0	328	5	1838	118	165	1092	0
Future Volume (veh/h)	313	72	95	84	0	328	5	1838	118	165	1092	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1810	1900	1727	1827	0	1845	1900	1863	1712	1863	1810	0
Adj Flow Rate, veh/h	326	75	0	88	0	0	5	1915	123	172	1138	0
Adj No. of Lanes	2	2	1	2	0	1	0	3	1	2	3	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %	5	0	10	4	0	3	2	2	11	2	5	0
Cap, veh/h	397	122	50	132	0	0	25	2980	932	456	3879	0
Arrive On Green	0.12	0.03	0.00	0.04	0.00	0.00	1.00	1.00	1.00	0.13	0.79	0.00
Sat Flow, veh/h	3343	3610	1468	3375	88		4	4935	1449	3442	5103	0
Grp Volume(v), veh/h	326	75	0	88	81.5		721	1199	123	172	1138	0
Grp Sat Flow(s),veh/h/ln	1672	1805	1468	1688	F		1853	1543	1449	1721	1647	0
Q Serve(g_s), s	15.2	3.3	0.0	4.1			0.0	0.0	0.0	7.3	10.3	0.0
Cycle Q Clear(g_c), s	15.2	3.3	0.0	4.1			0.0	0.0	0.0	7.3	10.3	0.0
Prop In Lane	1.00		1.00	1.00			0.01		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	397	122	50	132			1142	1863	932	456	3879	0
V/C Ratio(X)	0.82	0.61	0.00	0.67			0.63	0.64	0.13	0.38	0.29	0.00
Avail Cap(c_a), veh/h	761	257	105	373			1142	1863	932	456	3879	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00			2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00			0.84	0.84	0.84	1.00	1.00	0.00
Uniform Delay (d), s/veh	68.9	76.3	0.0	75.8			0.0	0.0	0.0	63.4	4.8	0.0
Incr Delay (d2), s/veh	4.3	4.9	0.0	5.6			2.2	1.5	0.2	2.4	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	1.7	0.0	2.0			0.7	0.4	0.1	3.6	4.7	0.0
LnGrp Delay(d),s/veh	73.2	81.2	0.0	81.5			2.2	1.5	0.2	65.7	5.0	0.0
LnGrp LOS	E	F		F			A	A	A	E	A	
Approach Vol, veh/h		401						2043			1310	
Approach Delay, s/veh		74.7						1.7			13.0	
Approach LOS		E						A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	29.0	104.4	13.6	13.0		133.4	26.6	
Change Period (Y+Rc), s	7.8	* 7.8	* 7.3	7.6		7.8	7.6	
Max Green Setting (Gmax), s	21.2	* 80	* 18	11.4		108.2	36.4	
Max Q Clear Time (g_c+I1), s	9.3	2.0	6.1	5.3		12.3	17.2	
Green Ext Time (p_c), s	0.4	51.8	0.2	0.1		58.5	1.1	

Intersection Summary	
HCM 2010 Ctrl Delay	15.0
HCM 2010 LOS	B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	159	1297	15	49	1007	707	3	1	3	949	0	165
Future Volume (veh/h)	159	1297	15	49	1007	707	3	1	3	949	0	165
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1900	1900	1881	1881	1863
Adj Flow Rate, veh/h	177	1441	17	54	1119	0	3	1	3	1054	0	183
Adj No. of Lanes	2	3	0	1	3	1	1	1	0	2	0	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	0	2	2	0	0	0	1	0	2
Cap, veh/h	214	2527	30	88	2417	752	18	4	12	1112	0	978
Arrive On Green	0.06	0.49	0.49	0.05	0.48	0.00	0.01	0.01	0.01	0.31	0.00	0.31
Sat Flow, veh/h	3510	5181	61	1810	5085	1583	1810	404	1211	3583	0	3151
Grp Volume(v), veh/h	177	943	515	54	1119	0	3	0	4	1054	0	183
Grp Sat Flow(s),veh/h/ln	1755	1695	1851	1810	1695	1583	1810	0	1615	1792	0	1576
Q Serve(g_s), s	9.5	37.5	37.5	5.6	28.1	0.0	0.3	0.0	0.5	54.6	0.0	8.1
Cycle Q Clear(g_c), s	9.5	37.5	37.5	5.6	28.1	0.0	0.3	0.0	0.5	54.6	0.0	8.1
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.75	1.00		1.00
Lane Grp Cap(c), veh/h	214	1654	903	88	2417	752	18	0	16	1112	0	978
V/C Ratio(X)	0.83	0.57	0.57	0.62	0.46	0.00	0.17	0.00	0.25	0.95	0.00	0.19
Avail Cap(c_a), veh/h	299	1654	903	88	2417	752	115	0	103	1324	0	1164
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.92	0.00	0.92
Uniform Delay (d), s/veh	88.2	34.5	34.5	88.7	33.5	0.0	93.3	0.0	93.4	64.0	0.0	48.0
Incr Delay (d2), s/veh	8.9	1.4	2.6	28.3	0.6	0.0	1.7	0.0	3.1	11.3	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.9	17.9	19.8	3.5	13.3	0.0	0.2	0.0	0.2	28.8	0.0	3.5
LnGrp Delay(d),s/veh	97.1	36.0	37.1	117.0	34.2	0.0	95.0	0.0	96.5	75.4	0.0	48.0
LnGrp LOS	F	D	D	F	C		F		F	E		D
Approach Vol, veh/h		1635			1173			7			1237	
Approach Delay, s/veh		43.0			38.0			95.8			71.3	
Approach LOS		D			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.4	97.1		65.8	16.0	99.5		8.8
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	16.2	64.2		70.2	9.2	71.2		12.1
Max Q Clear Time (g_c+I1), s	11.5	30.1		56.6	7.6	39.5		2.5
Green Ext Time (p_c), s	0.1	23.2		2.4	0.0	22.1		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	50.3
HCM 2010 LOS	D

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	75	18	44	64	14	69	23	806	34	81	1014	67
Future Volume (veh/h)	75	18	44	64	14	69	23	806	34	81	1014	67
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1867	1900	1810	1840	1810	1900	1863	1845	1863	1863	1881
Adj Flow Rate, veh/h	77	19	45	76	0	71	24	831	35	84	1045	69
Adj No. of Lanes	1	1	0	2	0	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	6	6	5	0	5	0	2	3	2	2	1
Cap, veh/h	124	34	81	256	0	113	34	2320	1025	101	2454	1106
Arrive On Green	0.07	0.07	0.07	0.07	0.00	0.07	0.04	1.00	1.00	0.06	0.69	0.69
Sat Flow, veh/h	1757	488	1157	3447	0	1519	1810	3539	1564	1774	3539	1596
Grp Volume(v), veh/h	77	0	64	76	0	71	24	831	35	84	1045	69
Grp Sat Flow(s),veh/h/ln	1757	0	1645	1723	0	1519	1810	1770	1564	1774	1770	1596
Q Serve(g_s), s	8.1	0.0	7.1	4.0	0.0	8.6	2.5	0.0	0.0	8.9	24.4	2.6
Cycle Q Clear(g_c), s	8.1	0.0	7.1	4.0	0.0	8.6	2.5	0.0	0.0	8.9	24.4	2.6
Prop In Lane	1.00		0.70	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	124	0	116	256	0	113	34	2320	1025	101	2454	1106
V/C Ratio(X)	0.62	0.00	0.55	0.30	0.00	0.63	0.70	0.36	0.03	0.83	0.43	0.06
Avail Cap(c_a), veh/h	438	0	410	925	0	408	107	2320	1025	123	2454	1106
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Uniform Delay (d), s/veh	85.9	0.0	85.4	83.3	0.0	85.4	90.9	0.0	0.0	88.7	12.7	9.3
Incr Delay (d2), s/veh	3.8	0.0	3.0	0.5	0.0	4.3	12.1	0.3	0.0	29.7	0.5	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.1	0.0	3.4	1.9	0.0	3.8	1.4	0.1	0.0	5.2	12.1	1.2
LnGrp Delay(d),s/veh	89.6	0.0	88.4	83.7	0.0	89.7	103.0	0.3	0.0	118.4	13.2	9.4
LnGrp LOS	F		F	F		F	F	A	A	F	B	A
Approach Vol, veh/h		141			147			890			1198	
Approach Delay, s/veh		89.1			86.6			3.0			20.4	
Approach LOS		F			F			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	10.4	138.5		21.1	17.6	131.3		20.0
Change Period (Y+Rc), s	6.8	6.8		7.0	6.8	6.8		6.6
Max Green Setting (Gmax), s	11.2	53.2		51.0	13.2	51.2		47.4
Max Q Clear Time (g_c+I1), s	4.5	26.4		10.6	10.9	2.0		10.1
Green Ext Time (p_c), s	0.0	14.7		0.4	0.0	19.2		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	22.1
HCM 2010 LOS	C

Notes

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	31	0	0	0	18	862	92	0	1132	23
Future Vol, veh/h	0	0	31	0	0	0	18	862	92	0	1132	23
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	7	0	0	0	0	2	1	0	1	0
Mvmt Flow	0	0	32	0	0	0	19	898	96	0	1179	24

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	-	-	591				1180	0	0	-	-	0
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	-	-
Critical Hdwy	-	-	7.04				4.1	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	-	-	-
Follow-up Hdwy	-	-	3.37				2.2	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	438				599	-	-	0	-	0
Stage 1	0	0	-				-	-	-	0	-	0
Stage 2	0	0	-				-	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	0	438				599	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-				-	-	-	-	-	-
Stage 1	-	0	-				-	-	-	-	-	-
Stage 2	-	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	599	-	-	438	-
HCM Lane V/C Ratio	0.031	-	-	0.074	-
HCM Control Delay (s)	11.2	-	-	13.9	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.1	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	861	1	314	1155
Future Volume (veh/h)	0	0	861	1	314	1155
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1900	1845	1881
Adj Flow Rate, veh/h			879	1	320	1179
Adj No. of Lanes			2	0	2	3
Peak Hour Factor			0.98	0.98	0.98	0.98
Percent Heavy Veh, %			2	2	3	1
Cap, veh/h			2668	3	388	4768
Arrive On Green			1.00	1.00	0.23	1.00
Sat Flow, veh/h			3721	4	3408	5305
Grp Volume(v), veh/h			429	451	320	1179
Grp Sat Flow(s),veh/h/ln			1770	1862	1704	1712
Q Serve(g_s), s			0.0	0.0	8.5	0.0
Cycle Q Clear(g_c), s			0.0	0.0	8.5	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			1302	1370	388	4768
V/C Ratio(X)			0.33	0.33	0.82	0.25
Avail Cap(c_a), veh/h			1302	1370	628	4973
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			1.00	1.00	0.50	0.50
Uniform Delay (d), s/veh			0.0	0.0	35.8	0.0
Incr Delay (d2), s/veh			0.7	0.6	1.0	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln			0.2	0.2	4.0	0.0
LnGrp Delay(d),s/veh			0.7	0.6	36.8	0.0
LnGrp LOS			A	A	D	A
Approach Vol, veh/h			880			1499
Approach Delay, s/veh			0.7			7.9
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	18.3	76.7				95.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	17.5	63.2				* 92		
Max Q Clear Time (g_c+I1), s	10.5	2.0				2.0		
Green Ext Time (p_c), s	0.3	34.1				40.6		

Intersection Summary		
HCM 2010 Ctrl Delay		5.2
HCM 2010 LOS		A

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	545	0	81	60	60	208	66	795	0	46	1329	720
Future Volume (veh/h)	545	0	81	60	60	208	66	795	0	46	1329	720
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	0	1863	1863	1863	1900	1863	1863	1900	1900	1875	1900
Adj Flow Rate, veh/h	580	0	86	64	64	221	70	846	0	49	1414	766
Adj No. of Lanes	2	0	2	1	2	0	2	2	0	1	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	0	2	2	2	2	2	2	2	0	1	1
Cap, veh/h	613	0	0	536	154	138	154	1903	0	81	1835	854
Arrive On Green	0.18	0.00	0.00	0.30	0.09	0.09	0.09	1.00	0.00	0.09	1.00	1.00
Sat Flow, veh/h	3442	580		1774	1770	1583	3442	3632	0	1810	3412	1589
Grp Volume(v), veh/h	580	100.4		64	64	221	70	846	0	49	1414	766
Grp Sat Flow(s),veh/h/ln	1721	F		1774	1770	1583	1721	1770	0	1810	1706	1589
Q Serve(g_s), s	31.7			5.0	6.5	16.5	3.7	0.0	0.0	5.0	0.0	0.0
Cycle Q Clear(g_c), s	31.7			5.0	6.5	16.5	3.7	0.0	0.0	5.0	0.0	0.0
Prop In Lane	1.00			1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	613			536	154	138	154	1903	0	81	1835	854
V/C Ratio(X)	0.95			0.12	0.42	1.61	0.45	0.44	0.00	0.61	0.77	0.90
Avail Cap(c_a), veh/h	625			536	154	138	154	1903	0	81	1835	854
HCM Platoon Ratio	1.00			1.00	1.00	1.00	2.00	2.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00			1.00	1.00	1.00	0.95	0.95	0.00	0.79	0.79	0.79
Uniform Delay (d), s/veh	77.2			48.0	82.2	86.8	84.3	0.0	0.0	84.9	0.0	0.0
Incr Delay (d2), s/veh	23.2			0.1	0.7	304.4	8.9	0.7	0.0	23.9	2.6	11.6
Initial Q Delay(d3),s/veh	0.0			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	17.0			2.4	3.2	18.8	1.9	0.2	0.0	3.0	0.7	2.8
LnGrp Delay(d),s/veh	100.4			48.0	82.9	391.1	93.2	0.7	0.0	108.8	2.6	11.6
LnGrp LOS	F			D	F	F	F	A		F	A	B
Approach Vol, veh/h					349			916			2229	
Approach Delay, s/veh					271.7			7.8			8.0	
Approach LOS					F			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	
Phs Duration (G+Y+Rc), s	16.0	109.7	40.3	24.0	16.0	109.7	64.3	
Change Period (Y+Rc), s	7.5	7.5	6.5	7.5	7.5	7.5	6.9	
Max Green Setting (Gmax), s	8.5	101.5	34.5	16.5	8.5	101.5	11.1	
Max Q Clear Time (g_c+I1), s	5.7	2.0	33.7	18.5	7.0	2.0	7.0	
Green Ext Time (p_c), s	0.0	57.6	0.2	0.0	0.0	57.6	0.0	

Intersection Summary			
HCM 2010 Ctrl Delay			43.7
HCM 2010 LOS			D

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	323	72	77	1463	2001	288
Future Volume (veh/h)	323	72	77	1463	2001	288
Number	7	14	5	2	6	16
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1827	1900	1863	1863	1900
Adj Flow Rate, veh/h	344	77	82	1556	2129	306
Adj No. of Lanes	2	1	2	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	4	0	2	2	0
Cap, veh/h	388	173	117	2882	3771	1198
Arrive On Green	0.11	0.11	0.07	1.00	1.00	1.00
Sat Flow, veh/h	3476	1553	3510	3632	5253	1615
Grp Volume(v), veh/h	344	77	82	1556	2129	306
Grp Sat Flow(s),veh/h/ln	1738	1553	1755	1770	1695	1615
Q Serve(g_s), s	18.5	8.8	4.3	0.0	0.0	0.0
Cycle Q Clear(g_c), s	18.5	8.8	4.3	0.0	0.0	0.0
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	388	173	117	2882	3771	1198
V/C Ratio(X)	0.89	0.44	0.70	0.54	0.56	0.26
Avail Cap(c_a), veh/h	611	273	305	2882	3771	1198
HCM Platoon Ratio	1.00	1.00	2.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	1.00	0.71	0.71	0.45	0.45
Uniform Delay (d), s/veh	83.2	78.9	87.7	0.0	0.0	0.0
Incr Delay (d2), s/veh	6.4	0.7	2.0	0.5	0.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	9.3	7.7	2.1	0.2	0.1	0.1
LnGrp Delay(d),s/veh	89.6	79.6	89.8	0.5	0.3	0.2
LnGrp LOS	F	E	F	A	A	A
Approach Vol, veh/h	421			1638	2435	
Approach Delay, s/veh	87.8			5.0	0.3	
Approach LOS	F			A	A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		162.2		27.8	13.8	148.4		
Change Period (Y+Rc), s		7.5		* 6.6	7.5	7.5		
Max Green Setting (Gmax), s		142.5		* 33	16.5	118.5		
Max Q Clear Time (g_c+I1), s		2.0		20.5	6.3	2.0		
Green Ext Time (p_c), s		121.0		0.6	0.1	102.8		

Intersection Summary			
HCM 2010 Ctrl Delay			10.2
HCM 2010 LOS			B

Notes

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	36	5	24	86	12	127	41	1697	32	104	2198	111
Future Volume (veh/h)	36	5	24	86	12	127	41	1697	32	104	2198	111
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1839	1900	1881	1833	1900	1900	1881	1845	1845	1881	1845
Adj Flow Rate, veh/h	37	5	24	88	12	130	42	1732	33	106	2243	113
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	0	1	0	0	0	1	3	3	1	3
Cap, veh/h	120	42	200	225	20	217	54	2322	1018	123	2462	1079
Arrive On Green	0.15	0.15	0.15	0.15	0.15	0.15	0.06	1.00	1.00	0.07	0.69	0.69
Sat Flow, veh/h	1225	275	1321	1381	133	1437	1810	3574	1567	1757	3574	1567
Grp Volume(v), veh/h	37	0	29	88	0	142	42	1732	33	106	2243	113
Grp Sat Flow(s),veh/h/ln	1225	0	1597	1381	0	1569	1810	1787	1567	1757	1787	1567
Q Serve(g_s), s	5.5	0.0	3.0	11.2	0.0	16.0	4.3	0.0	0.0	11.3	99.6	4.6
Cycle Q Clear(g_c), s	21.6	0.0	3.0	14.2	0.0	16.0	4.3	0.0	0.0	11.3	99.6	4.6
Prop In Lane	1.00		0.83	1.00		0.92	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	120	0	242	225	0	237	54	2322	1018	123	2462	1079
V/C Ratio(X)	0.31	0.00	0.12	0.39	0.00	0.60	0.78	0.75	0.03	0.86	0.91	0.10
Avail Cap(c_a), veh/h	263	0	428	392	0	427	57	2322	1018	168	2462	1079
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.77	0.77	0.77	1.00	1.00	1.00
Uniform Delay (d), s/veh	85.3	0.0	69.7	75.8	0.0	75.2	88.7	0.0	0.0	87.4	24.7	9.9
Incr Delay (d2), s/veh	1.4	0.0	0.2	1.1	0.0	2.4	34.7	1.7	0.0	21.4	6.4	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	1.3	4.3	0.0	7.1	2.7	0.6	0.0	6.2	50.8	2.0
LnGrp Delay(d),s/veh	86.7	0.0	69.9	76.9	0.0	77.6	123.4	1.7	0.0	108.9	31.1	10.1
LnGrp LOS	F		E	E		E	F	A	A	F	C	B
Approach Vol, veh/h		66			230			1807			2462	
Approach Delay, s/veh		79.4			77.4			4.5			33.5	
Approach LOS		E			E			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.1	131.0		36.8	14.7	138.5		36.8
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 18	96.4		* 51	6.0	* 1.1E2		* 52
Max Q Clear Time (g_c+I1), s	13.3	2.0		23.6	6.3	101.6		18.0
Green Ext Time (p_c), s	0.0	84.2		1.4	0.0	6.8		1.5

Intersection Summary			
HCM 2010 Ctrl Delay			24.9
HCM 2010 LOS			C

Notes

Intersection	
Int Delay, s/veh	6.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	58	144	67	1793	2268	57
Future Vol, veh/h	58	144	67	1793	2268	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	525	-	-	475
Veh in Median Storage, #	2	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	97	97	97	97
Heavy Vehicles, %	0	1	4	2	1	5
Mvmt Flow	60	148	69	1848	2338	59

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	3400	1169	2338	0	-	0
Stage 1	2338	-	-	-	-	-
Stage 2	1062	-	-	-	-	-
Critical Hdwy	6.8	6.92	4.18	-	-	-
Critical Hdwy Stg 1	5.8	-	-	-	-	-
Critical Hdwy Stg 2	5.8	-	-	-	-	-
Follow-up Hdwy	3.5	3.31	2.24	-	-	-
Pot Cap-1 Maneuver	*~ 0	188	202	-	-	-
Stage 1	*60	-	-	-	-	-
Stage 2	*316	-	-	-	-	-
Platoon blocked, %	1			-	-	-
Mov Cap-1 Maneuver	*0	188	202	-	-	-
Mov Cap-2 Maneuver	*~ 53	-	-	-	-	-
Stage 1	*60	-	-	-	-	-
Stage 2	*208	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	134.4	1.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	202	-	53	188	-	-
HCM Lane V/C Ratio	0.342	-	1.128	0.79	-	-
HCM Control Delay (s)	31.8	-	289.7	71.9	-	-
HCM Lane LOS	D	-	F	F	-	-
HCM 95th %tile Q(veh)	1.4	-	5.2	5.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	107	709	529	335	639	287	273	1082	496	281	1472	234
Future Volume (veh/h)	107	709	529	335	639	287	273	1082	496	281	1472	234
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1827	1863	1863	1792	1792	1900	1863	1863	1845	1881	1810
Adj Flow Rate, veh/h	110	731	545	345	659	0	281	1115	0	290	1518	0
Adj No. of Lanes	1	2	2	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	4	2	2	6	6	0	2	2	3	1	5
Cap, veh/h	128	1480	1188	543	1727	772	356	1643	512	328	1741	521
Arrive On Green	0.07	0.43	0.43	0.16	0.51	0.00	0.10	0.32	0.00	0.10	0.34	0.00
Sat Flow, veh/h	1757	3471	2787	3442	3406	1524	3510	5085	1583	3408	5136	1538
Grp Volume(v), veh/h	110	731	545	345	659	0	281	1115	0	290	1518	0
Grp Sat Flow(s),veh/h/ln	1757	1736	1393	1721	1703	1524	1755	1695	1583	1704	1712	1538
Q Serve(g_s), s	11.8	29.1	26.7	17.8	22.5	0.0	14.9	36.1	0.0	16.0	52.7	0.0
Cycle Q Clear(g_c), s	11.8	29.1	26.7	17.8	22.5	0.0	14.9	36.1	0.0	16.0	52.7	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	128	1480	1188	543	1727	772	356	1643	512	328	1741	521
V/C Ratio(X)	0.86	0.49	0.46	0.63	0.38	0.00	0.79	0.68	0.00	0.88	0.87	0.00
Avail Cap(c_a), veh/h	224	1480	1188	543	1727	772	356	1643	512	384	1741	521
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	87.1	39.6	39.6	74.9	28.6	0.0	83.4	55.7	0.0	84.8	58.9	0.0
Incr Delay (d2), s/veh	14.8	1.2	1.3	5.6	0.6	0.0	10.4	2.3	0.0	18.9	6.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	6.2	14.2	10.5	8.9	10.7	0.0	7.7	17.3	0.0	8.4	25.9	0.0
LnGrp Delay(d),s/veh	101.9	40.8	40.9	80.4	29.3	0.0	93.7	58.0	0.0	103.7	65.3	0.0
LnGrp LOS	F	D	D	F	C		F	E		F	E	
Approach Vol, veh/h		1386			1004			1396			1808	
Approach Delay, s/veh		45.7			46.9			65.2			71.4	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.7	105.5	29.9	73.0	38.0	90.2	30.9	72.0
Change Period (Y+Rc), s	* 8.8	* 8	* 12	* 12	* 8	* 8	11.6	* 7.6
Max Green Setting (Gmax), s	* 24	* 47	* 21	* 61	* 30	* 42	18.4	* 64
Max Q Clear Time (g_c+I1), s	13.8	24.5	18.0	38.1	19.8	31.1	16.9	54.7
Green Ext Time (p_c), s	0.2	11.8	0.3	7.7	0.3	7.5	1.1	6.2

Intersection Summary	
HCM 2010 Ctrl Delay	59.1
HCM 2010 LOS	E

Notes

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	29	30	28	1501	0	1973	15
Future Vol, veh/h	29	30	28	1501	0	1973	15
Conflicting Peds, #/hr	0	0	2	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	325	-	350	-	350
Veh in Median Storage, #	1	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	96	96	96	96	92	96	96
Heavy Vehicles, %	0	10	18	2	2	3	0
Mvmt Flow	30	31	29	1564	0	2055	16

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	2741	1030	2057	0	-	-	0
Stage 1	2057	-	-	-	-	-	-
Stage 2	684	-	-	-	-	-	-
Critical Hdwy	5.7	7.3	5.66	-	5.64	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-	-
Follow-up Hdwy	3.8	4	3.28	-	2.32	-	-
Pot Cap-1 Maneuver	*142	*441	*538	-	-	-	-
Stage 1	*464	-	-	-	-	-	-
Stage 2	*425	-	-	-	-	-	-
Platoon blocked, %	1	1	1	-		-	-
Mov Cap-1 Maneuver	*134	*440	*538	-	-	-	-
Mov Cap-2 Maneuver	*257	-	-	-	-	-	-
Stage 1	*463	-	-	-	-	-	-
Stage 2	*401	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	0.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	* 538	-	326	-	-	-
HCM Lane V/C Ratio	0.054	-	0.189	-	-	-
HCM Control Delay (s)	12.1	-	18.6	0	-	-
HCM Lane LOS	B	-	C	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	163	0	0	38	92	1468	32	68	1870	75
Future Vol, veh/h	0	0	163	0	0	38	92	1468	32	68	1870	75
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	9	9	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	375	-	-	325	-	350
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	4	0	0	0	10	2	0	0	2	0
Mvmt Flow	0	0	177	0	0	41	100	1596	35	74	2033	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1017	-	-	824	2034	0	0	1639	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.1	5.5	-	-	5.3	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.9	3.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	0	0	*475	0	0	275	*585	-	-	194	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %			1				1	-	-		-	-
Mov Cap-1 Maneuver	-	-	*474	-	-	273	*585	-	-	194	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.1	20.5	0.7	1.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	* 585	-	-	474	273	194	-	-
HCM Lane V/C Ratio	0.171	-	-	0.374	0.151	0.381	-	-
HCM Control Delay (s)	12.4	-	-	17.1	20.5	34.5	-	-
HCM Lane LOS	B	-	-	C	C	D	-	-
HCM 95th %tile Q(veh)	0.6	-	-	1.7	0.5	1.7	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	212	13	73	22	3	39	67	1487	17	101	1947	154
Future Volume (vph)	212	13	73	22	3	39	67	1487	17	101	1947	154
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5			6.5		8.3	7.5		7.8	6.9	6.9
Lane Util. Factor	1.00	1.00			1.00		1.00	0.91		1.00	0.91	1.00
Frpb, ped/bikes	1.00	0.98			0.99		1.00	1.00		1.00	1.00	0.96
Flpb, ped/bikes	1.00	1.00			1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.87			0.92		1.00	1.00		1.00	1.00	0.85
Flt Protected	0.95	1.00			0.98		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1730	1577			1693		1805	5076		1805	5085	1495
Flt Permitted	0.70	1.00			0.88		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1282	1577			1515		1805	5076		1805	5085	1495
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	226	14	78	23	3	41	71	1582	18	107	2071	164
RTOR Reduction (vph)	0	63	0	0	31	0	0	0	0	0	0	33
Lane Group Flow (vph)	226	29	0	0	36	0	71	1600	0	107	2071	131
Confl. Peds. (#/hr)	3		6	6		3	6		4	4		6
Heavy Vehicles (%)	4%	0%	4%	0%	0%	0%	0%	2%	0%	0%	2%	4%
Turn Type	Perm	NA		Perm	NA		Prot	NA		Prot	NA	Perm
Protected Phases		4			4		1	6		5	2	
Permitted Phases	4			4								2
Actuated Green, G (s)	36.9	36.9			36.9		12.4	116.7		14.6	119.0	119.0
Effective Green, g (s)	36.9	36.9			36.9		12.4	116.7		14.6	119.0	119.0
Actuated g/C Ratio	0.19	0.19			0.19		0.07	0.61		0.08	0.63	0.63
Clearance Time (s)	6.5	6.5			6.5		8.3	7.5		7.8	6.9	6.9
Vehicle Extension (s)	2.3	2.3			2.3		3.0	1.8		2.3	3.0	3.0
Lane Grp Cap (vph)	248	306			294		117	3117		138	3184	936
v/s Ratio Prot		0.02					0.04	0.32		c0.06	c0.41	
v/s Ratio Perm	c0.18				0.02							0.09
v/c Ratio	0.91	0.10			0.12		0.61	0.51		0.78	0.65	0.14
Uniform Delay, d1	74.9	62.8			63.2		86.4	20.6		86.1	22.4	14.5
Progression Factor	1.00	1.00			1.00		1.00	1.00		1.16	0.51	0.39
Incremental Delay, d2	34.1	0.1			0.1		8.6	0.6		18.1	0.8	0.2
Delay (s)	109.1	62.9			63.3		95.0	21.3		118.0	12.3	5.9
Level of Service	F	E			E		F	C		F	B	A
Approach Delay (s)		95.7			63.3			24.4			16.7	
Approach LOS		F			E			C			B	

Intersection Summary			
HCM 2000 Control Delay	26.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	21.8
Intersection Capacity Utilization	81.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	681	305	228	208	0	490	0	1493	276	491	1797	0
Future Volume (veh/h)	681	305	228	208	0	490	0	1493	276	491	1797	0
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1845	1881	0	1881	0	1863	1827	1900	1881	0
Adj Flow Rate, veh/h	724	324	0	221	0	0	0	1588	294	522	1912	0
Adj No. of Lanes	2	2	1	2	0	1	0	3	1	2	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	3	1	0	1	0	2	4	0	1	0
Cap, veh/h	793	408	179	263	0	0	0	2335	827	669	3548	0
Arrive On Green	0.23	0.11	0.00	0.08	0.00	0.00	0.00	0.31	0.31	0.19	0.69	0.00
Sat Flow, veh/h	3476	3574	1568	3476	221		0	5253	1545	3510	5305	0
Grp Volume(v), veh/h	724	324	0	221	91.2		0	1588	294	522	1912	0
Grp Sat Flow(s),veh/h/ln	1738	1787	1568	1738	F		0	1695	1545	1755	1712	0
Q Serve(g_s), s	38.6	16.8	0.0	11.9			0.0	51.9	24.7	26.9	34.8	0.0
Cycle Q Clear(g_c), s	38.6	16.8	0.0	11.9			0.0	51.9	24.7	26.9	34.8	0.0
Prop In Lane	1.00		1.00	1.00			0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	793	408	179	263			0	2335	827	669	3548	0
V/C Ratio(X)	0.91	0.79	0.00	0.84			0.00	0.68	0.36	0.78	0.54	0.00
Avail Cap(c_a), veh/h	1196	478	210	598			0	2335	827	669	3548	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00			1.00	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00			0.00	0.81	0.81	1.00	1.00	0.00
Uniform Delay (d), s/veh	71.5	82.0	0.0	86.7			0.0	53.6	33.7	73.1	14.5	0.0
Incr Delay (d2), s/veh	7.6	7.0	0.0	4.5			0.0	1.3	1.0	8.8	0.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	19.4	8.7	0.0	5.9			0.0	24.7	10.8	13.9	16.7	0.0
LnGrp Delay(d),s/veh	79.1	89.0	0.0	91.2			0.0	54.9	34.6	81.9	15.1	0.0
LnGrp LOS	E	F		F				D	C	F	B	
Approach Vol, veh/h		1048						1882			2434	
Approach Delay, s/veh		82.1						51.7			29.4	
Approach LOS		F						D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4		6	7	
Phs Duration (G+Y+Rc), s	44.0	95.0	21.7	29.3		139.0	51.0	
Change Period (Y+Rc), s	7.8	* 7.8	* 7.3	7.6		7.8	7.6	
Max Green Setting (Gmax), s	36.2	* 66	* 33	25.4		109.2	65.4	
Max Q Clear Time (g_c+I1), s	28.9	53.9	13.9	18.8		36.8	40.6	
Green Ext Time (p_c), s	1.2	11.8	0.4	0.8		60.1	2.8	

Intersection Summary	
HCM 2010 Ctrl Delay	49.3
HCM 2010 LOS	D

Notes

APPENDIX E – GROWTH RATE SUMMARY

SR 535 Sensitivity Analysis and Intersection Operational Summary

Table 1: Historical AADT and Growth Rates (2000-2015)

Year	SR 535, 0.289 MI. N OF US 192	SR 535, 0.3 MI. N OF POINCIANA BLVD.	SR 535, 0.835 MI. NW OF SR 536	US 192, 0.468 MI. W OF SR 535	US 192, 0.433 MI. SE OF SR 535	SR 536, 0.315 MI. W OF SR 535
	FDOT Site	FDOT Site	FDOT Site	FDOT Site	FDOT Site	FDOT Site
	92-0318	92-0312	75-0630	92-0320	92-0313	75-0595
2015	31,000	51,000	47,000	36,500	52,500	40,500
2014	29,000	47,500	49,000	35,000	52,000	40,500
2013	31,000	46,500	48,000	35,000	52,000	40,000
2012	29,500	45,500	50,500	36,000	50,000	34,500
2011	26,500	47,000	46,500	34,500	50,000	31,000
2010	27,500	44,000	39,000	38,500	54,000	39,500
2009	27,000	42,000	45,000	37,000	50,500	34,000
2008	28,500	47,000	43,000	44,500	58,000	32,500
2007	28,000	45,500	39,500	42,000	54,000	39,000
2006	30,500	44,000	51,000	43,500	57,500	30,500
2005	27,500	39,500	43,500	45,000	54,500	34,500
2004	27,500	38,500	41,500	43,500	53,500	31,500
2003	27,000	36,000	40,000	40,000	52,500	23,500
2002	27,000	42,000	40,000	40,500	54,000	26,500
2001	29,000	39,500	43,500	*	53,500	28,000
2000	25,000	46,500	44,500	*	55,500	29,000
Annual Linear Growth Rate	0.77%	1.43%	1.03%	-1.55%	-0.41%	3.35%
R^2	33.29%	45.41%	26.77%	55.82%	21.06%	63.44%

***Note:** Data Not Available. Refer to Exhibit 2 for FDOT count station locations.

Table 2: CFRPM 6.1 Model Growth Rate Summary – SR 535 Corridor Study

Roadway Segment	Scenario			
	No-Build	6-Lane	6-Lane & 8-Lane	8-Lane
	Annual Linear Growth Rate			
US 192 to Kyngs Heath Road	0.04%	1.45%	1.11%	1.66%
Kyngs Heath Road to EB Osceola Parkway	-0.24%	1.45%	1.08%	1.74%
EB Osceola Parkway to WB Osceola Parkway	-0.12%	1.61%	1.17%	1.88%
WB Osceola Parkway to Polynesian Isle Boulevard	-0.15%	1.58%	1.38%	2.51%
Polynesian Isle Boulevard to LBV Factory Stores Drive	0.15%	2.43%	1.66%	2.52%
LBV Factory Stores Drive to SR 536	0.92%	2.92%	2.74%	4.14%
SR 536 to Meadow Creek Drive	0.53%	1.18%	2.11%	1.95%
Meadow Creek Drive to Vineland Avenue	0.93%	1.03%	2.08%	1.84%

Table 3: Orange and Osceola County BEBR Population Projections

County and Estimation	2015 Estimate	2040 Projection	Annual Growth Rate, Growth/Year (%)
Orange County			
Low	1,252,396	1,530,900	11,140 (0.89%)
Medium		1,908,000	26,224 (2.09%)
High		2,262,100	40,388 (3.22%)
Osceola County			
Low	308,327	434,900	5,063 (1.64%)
Medium		566,300	10,319 (3.35%)
High		681,200	14,915 (4.84%)

BEBR: Volume 49, Bulletin 174, January 2016

Table 4: 2040 AM Peak Hour Intersection Operational Summary

Intersection Name	Control Type	Applied Annual Linear Growth Rate				
		1%	2%	3%	4%	5%
SR 535 & US 192	Signalized	34.3 (C)	39.2 (D)	48.0 (D)	59.8 (E)	81.5 (F)
SR 535 & Kyngs Heath Rd	Signalized	10.7 (B)	12.3 (B)	13.7 (B)	18.4 (B)	34.3 (C)
SR 535 & Calypso Cay Way	TWSC	11.1 (B)	11.9 (B)	12.8 (B)	13.9 (B)	15.2 (C)
SR 535 & Osceola Parkway	Signalized	6.0 (A)	3.6 (A)	3.3 (A)	3.3 (A)	3.2 (A)
SR 535 & N Poinciana Blvd	Signalized	101.5 (F)	142.8 (F)	213.3 (F)	298.3 (F)	384.0 (F)
SR 535 & Polynesian Isle Blvd	Signalized	60.7 (E)	117.0 (F)	193.0 (F)	263.0 (F)	336.6 (F)
SR 535 & LBV Factory Stores Dr	Signalized	107.1 (F)	198.9 (F)	303.6 (F)	406.7 (F)	>500 (F)
SR 535 & International Dr South	Signalized	23.5 (C)	88.4 (F)	154.2 (F)	223.2 (F)	306.5 (F)
SR 535 & World Center Dr	Signalized	60.6 (E)	109.1 (F)	158.0 (F)	220.1 (F)	281.7 (F)
SR 535 & Vistana Dr	TWSC	44.3 (E)	82.7 (F)	182.6 (F)	388.1 (F)	>500 (F)
SR 535 & Vistana Centre Dr	TWSC	137.5 (F)	390.6 (F)	>500 (F)	>500 (F)	>500 (F)
SR 535 & Meadow Creek Dr	Signalized	19.2 (B)	21.2 (C)	24.6 (C)	31.9 (C)	48.8 (D)

Note: Annual linear growth rates applied to all turning movements with the exception of movements in and out of built out developments.

Table 5: 2040 PM Peak Hour Intersection Operational Summary

Intersection Name	Control Type	Applied Annual Linear Growth Rate				
		1%	2%	3%	4%	5%
SR 535 & US 192	Signalized	61.1 (E)	89.6 (F)	145.3 (F)	218.9 (F)	290.3 (F)
SR 535 & Kyngs Heath Rd	Signalized	42.9 (D)	32.0 (C)	38.1 (D)	51.8 (D)	79.0 (E)
SR 535 & Calypso Cay Way	TWSC	16.5 (C)	20.2 (C)	25.9 (D)	35.0 (E)	50.9 (F)
SR 535 & Osceola Parkway	Signalized	4.9 (A)	4.8 (A)	5.0 (A)	5.4 (A)	4.3 (A)
SR 535 & N Poinciana Blvd	Signalized	84.6 (F)	129.2 (F)	197.6 (F)	270.5 (F)	343.7 (F)
SR 535 & Polynesian Isle Blvd	Signalized	23.3 (C)	58.2 (E)	139.5 (F)	226.4 (F)	296.9 (F)
SR 535 & LBV Factory Stores Dr	Signalized	89.3 (F)	207.3 (F)	339.6 (F)	472.4 (F)	>500 (F)
SR 535 & International Dr South	Signalized	64.7 (E)	124.0 (F)	214.4 (F)	312.3 (F)	410.5 (F)
SR 535 & World Center Dr	Signalized	72.6 (E)	121.5 (F)	182.9 (F)	245.6 (F)	306.6 (F)
SR 535 & Vistana Dr	TWSC	>500 (F)	>500 (F)	>500 (F)	>500 (F)	>500 (F)
SR 535 & Vistana Centre Dr	TWSC	>500 (F)	>500 (F)	>500 (F)	>500 (F)	>500 (F)
SR 535 & Meadow Creek Dr	Signalized	28.9 (C)	35.3 (D)	57.2 (E)	88.6 (F)	132.0 (F)

Note: Annual linear growth rates applied to all turning movements with the exception of movements in and out of built out developments.

Note: This document was developed for discussion purposes only. Please refer to the full text report for additional information and context.

FDOT Count Station Locations

Aerial Image Fly Date: March 2016

- FDOT Data Collection Station Locations
- Study Corridor
- County Line

0 0.25 0.5 Miles

N

Note: This document was developed for discussion purposes only. Please refer to the full text report for additional information and context.

SR 535 Sensitivity Analysis and Segment Operational Summary

Exhibit 3

Table 6: 2040 AM Peak Hour Segment Operational Summary

Direction	Segment #	Segment	Applied Annual Linear Growth Rate 1%	2%	3%	4%	5%
Northbound	1	US 192 to Kyngs Heath Rd	C	C	C	D	F
	2	Kyngs Heath Rd to Osceola Parkway Eastbound On-Ramp	C	B	B	B	B
	3	Osceola Parkway Ramps to Poinciana Blvd	F	F	F	F	F
	4	Poinciana Blvd to Polynesian Isle Blvd	F	F	F	F	F
	5	Polynesian Isle Blvd to LBV Factory Stores Dr	F	F	F	F	F
	6	LBV Factory Stores Dr to International Dr	F	F	F	F	F
	7	International Dr to SR 536/World Center Dr	F	F	F	F	F
	8	SR 536/World Center Dr to Meadow Creek Dr	B	C	C	C	F
Southbound	8	Meadow Creek Dr to SR 536/World Center Dr	E	F	F	F	F
	7	SR 536/World Center Dr. to International Dr	C	C	C	C	D
	6	International Dr to LBV Factory Stores Dr	D	D	E	E	F
	5	LBV Factory Store Dr to Polynesian Isle Blvd	C	C	C	B	B
	4	Polynesian Isle Blvd to Poinciana Blvd	D	D	E	F	F
	3	Poinciana Blvd to Osceola Parkway Ramps	D	D	D	D	D
	2	Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd	D	D	E	E	E
	1	Kyngs Heath Rd to US 192	F	F	F	F	F

Note: Intersection turning movement volumes estimated as part of Exhibit 1 were used to develop segment volumes used in the segment operational analyses.

Table 7: 2040 PM Peak Hour Segment Operational Summary

Direction	Segment #	Segment	Applied Annual Linear Growth Rate 1%	2%	3%	4%	5%
Northbound	1	US 192 to Kyngs Heath Rd	C	C	C	C	C
	2	Kyngs Heath Rd to Osceola Parkway Eastbound On-Ramp	B	B	C	C	B
	3	Osceola Parkway Ramps to Poinciana Blvd	F	F	F	F	F
	4	Poinciana Blvd to Polynesian Isle Blvd	F	F	F	F	F
	5	Polynesian Isle Blvd to LBV Factory Stores Dr	F	F	F	F	F
	6	LBV Factory Stores Dr to International Dr	C	C	F	F	F
	7	International Dr to SR 536/World Center Dr	F	F	F	F	F
	8	SR 536/World Center Dr to Meadow Creek Dr	C	C	C	C	F
Southbound	8	Meadow Creek Dr to SR 536/World Center Dr	F	F	F	F	F
	7	SR 536/World Center Dr. to International Dr	F	F	F	F	F
	6	International Dr to LBV Factory Stores Dr	F	F	F	F	F
	5	LBV Factory Store Dr to Polynesian Isle Blvd	C	F	F	F	F
	4	Polynesian Isle Blvd to Poinciana Blvd	F	F	F	F	F
	3	Poinciana Blvd to Osceola Parkway Ramps	D	D	D	D	D
	2	Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd	E	E	F	F	F
	1	Kyngs Heath Rd to US 192	F	F	F	F	F

Note: Intersection turning movement volumes estimated as part of Exhibit 1 were used to develop segment volumes used in the segment operational analyses.

APPENDIX F – FUTURE NO-BUILD OPERATIONAL ANALYSIS SUPPORTING DOCUMENTATION

HCM SEGMENT LOS SUPPORTING DOCUMENTATION

SR 535 Future No Build Segment Operations HCM Inputs

Segment	Link Length (feet)	Speed Limit (mph)	Length with Restrictive Median (feet)	Length with Curb (feet)	Access Points on the Left	Access Points on the Right	Number of Through Lanes	Downstream Intersection - Signalized or Stop Control	Porpotion of Intersections with Left Turn Bay
US 192 to Kyngs Heath Rd.	973	50	973	973	0	1	2	Signalized	100%
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	1645	50	1580	0	1	1	2	Signalized	100%
Osceola Parkway Ramps to Poinciana Blvd.	1098	50	1100	0	0	0	2	Signalized	100%
Poinciana Blvd. to Polynesian Isle Blvd.	1906	50	1885	0	1	0	2	Signalized	100%
Polynesian Isle Blvd. to LBV Factory Stores Dr.	1723	50	1700	0	0	1	2	Signalized	100%
LBV Factory Stores Dr. to International Dr.	2086	50	2086	0	0	2	2	Signalized	100%
International Dr. to SR 536/World Center Dr.	1386	50	1386	0	0	0	3	Signalized	100%
SR 536/World Center Dr. to Meadow Creek Dr.	4330	50	4070	2770	4	6	3	Signalized	100%
Meadow Creek Dr. to Vineland Ave.	1299	45	1210	1299	1	4	3	Signalized	100%

Vineland Ave. to Meadow Creek Dr.	1299	45	1210	1299	1	3	3	Signalized	100%
Meadow Creek Dr. to SR 536/World Center Dr.	4330	50	4070	2770	4	5	3	Signalized	100%
SR 536/World Center Dr. to International Dr.	1386	50	1386	0	0	0	3	Signalized	100%
International Dr. to LBV Factory Stores Dr.	2086	50	2086	0	0	0	2	Signalized	100%
LBV Factory Store Dr. to Polynesian Isle Blvd.	1723	50	1700	0	1	2	2	Signalized	100%
Polynesian Isle Blvd. to Poinciana Blvd.	1906	50	1885	0	0	3	3	Signalized	100%
Poinciana Blvd. to Osceola Parkway Ramps	1098	50	1098	0	0	2	2	Signalized	100%
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	1645	50	1580	0	0	1	2	Signalized	100%
Kyngs Heath Rd. to US 192	973	50	973	973	0	1	2	Signalized	100%

SR 535 Future No Build AM Peak Hour Segment Operations Summary

Segment	Synchro Int ID	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	2	0	0.1	0.69	1,637	49.1	-2.7	-0.2	46.2	0.89	41.2	1.05	0.36	22.4	29.4	64%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	4	0	1.2	0.63	1,538	49.1	1.4	-0.3	50.3	0.93	46.9	1.04	0.36	30.7	35.1	70%	B
Osceola Parkway Ramps to Poinciana Blvd.	5	0	132.8	1.19	1,538	49.1	1.5	0.0	50.6	0.89	44.9	1.04	0.00	22.6	4.8	10%	F
Poinciana Blvd. to Polynesian Isle Blvd.	6	0	358.5	1.74	3,065	49.1	1.5	-0.1	50.5	0.94	47.6	1.10	0.00	35.5	3.3	7%	F
Polynesian Isle Blvd. to LBV Factory Stores Dr.	7	0	306.4	1.66	3,642	49.1	1.5	-0.1	50.5	0.94	47.2	1.14	0.36	34.2	3.4	7%	F
LBV Factory Stores Dr. to International Dr.	8	0	244.4	1.51	3,793	49.1	1.5	-0.2	50.4	0.95	47.9	1.14	0.72	40.3	5.0	10%	F
International Dr. to SR 536/World Center Dr.	9	0	179.6	1.27	3,741	49.1	1.5	0.0	50.6	0.91	46.3	1.07	0.00	27.4	4.6	9%	F
SR 536/World Center Dr. to Meadow Creek Dr.	12	0	19.1	0.77	2,691	49.1	-1.1	-0.3	47.7	0.99	47.2	1.05	0.45	71.8	32.5	68%	B
Meadow Creek Dr. to SR 536/World Center Dr.	9	0	127.6	1.11	1,767	49.1	-1.1	-0.3	47.7	0.99	47.2	1.03	0.38	70.5	14.9	31%	F
SR 536/World Center Dr. to International Dr.	8	0	14.5	0.65	1,735	49.1	1.5	0.0	50.6	0.91	46.3	1.03	0.00	26.4	23.1	46%	D
International Dr. to LBV Factory Stores Dr.	7	0	19	0.73	1,732	49.1	1.5	0.0	50.6	0.95	48.1	1.04	0.00	36.5	25.6	51%	C
LBV Factory Store Dr. to Polynesian Isle Blvd.	6	0	25.7	0.54	1,616	49.1	1.5	-0.4	50.2	0.94	47.0	1.04	0.72	32.3	20.3	40%	E
Polynesian Isle Blvd. to Poinciana Blvd.	5	0	16.4	0.77	1,452	49.1	1.5	-0.2	50.4	0.94	47.5	1.02	0.23	33.8	25.9	51%	C
Poinciana Blvd. to Osceola Parkway Ramps	4	0	0	0.2	1,100	49.1	1.5	-0.4	50.2	0.89	44.6	1.03	0.25	22.8	32.9	65%	C
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	2	0	9.3	0.33	858	49.1	1.4	-0.1	50.4	0.93	47.0	1.02	0.08	29.9	28.6	57%	C
Kyngs Heath Rd. to US 192	1	0	75.6	0	827	49.1	-2.7	-0.2	46.2	0.89	41.2	1.02	0.08	21.7	6.8	15%	F

SR 535 Future No Build PM Peak Hour Segment Operations Summary

Segment	Synchro Int ID	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	2	0	0.3	0.56	1,637	49.1	-2.7	-0.2	46.2	0.89	41.2	1.05	0.36	22.4	29.2	63%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	4	0	1.6	0.52	1,538	49.1	1.4	-0.3	50.3	0.93	46.9	1.04	0.36	30.7	34.7	69%	B
Osceola Parkway Ramps to Poinciana Blvd.	5	0	57.8	0.87	1,538	49.1	1.5	0.0	50.6	0.89	44.9	1.04	0.00	22.6	9.3	18%	F
Poinciana Blvd. to Polynesian Isle Blvd.	6	0	128.5	1.28	3,065	49.1	1.5	-0.1	50.5	0.94	47.6	1.10	0.00	35.5	7.9	16%	F
Polynesian Isle Blvd. to LBV Factory Stores Dr.	7	0	157.5	1.27	3,642	49.1	1.5	-0.1	50.5	0.94	47.2	1.14	0.36	34.2	6.1	12%	F
LBV Factory Stores Dr. to International Dr.	8	0	95.1	1.18	3,793	49.1	1.5	-0.2	50.4	0.95	47.9	1.14	0.72	40.3	10.5	21%	F
International Dr. to SR 536/World Center Dr.	9	0	81.8	0.99	3,741	49.1	1.5	0.0	50.6	0.91	46.3	1.07	0.00	27.4	8.7	17%	F
SR 536/World Center Dr. to Meadow Creek Dr.	12	0	21.1	0.74	2,691	49.1	-1.1	-0.3	47.7	0.99	47.2	1.05	0.45	71.8	31.8	67%	C
Meadow Creek Dr. to SR 536/World Center Dr.	9	0	226.3	1.36	1,767	49.1	-1.1	-0.3	47.7	0.99	47.2	1.03	0.38	70.5	9.9	21%	F
SR 536/World Center Dr. to International Dr.	8	0	200.6	1.4	1,735	49.1	1.5	0.0	50.6	0.91	46.3	1.03	0.00	26.4	4.2	8%	F
International Dr. to LBV Factory Stores Dr.	7	0	285.1	1.55	1,732	49.1	1.5	0.0	50.6	0.95	48.1	1.04	0.00	36.5	4.4	9%	F
LBV Factory Store Dr. to Polynesian Isle Blvd.	6	0	96.1	1.12	1,616	49.1	1.5	-0.4	50.2	0.94	47.0	1.04	0.72	32.3	9.2	18%	F
Polynesian Isle Blvd. to Poinciana Blvd.	5	0	242.4	1.42	1,452	49.1	1.5	-0.2	50.4	0.94	47.5	1.02	0.23	33.8	4.7	9%	F
Poinciana Blvd. to Osceola Parkway Ramps	4	0	0	0.37	1,100	49.1	1.5	-0.4	50.2	0.89	44.6	1.03	0.25	22.8	32.9	65%	C
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	2	0	23	0.68	858	49.1	1.4	-0.1	50.4	0.93	47.0	1.02	0.08	29.9	21.2	42%	D
Kyngs Heath Rd. to US 192	1	0	94.8	0	827	49.1	-2.7	-0.2	46.2	0.89	41.2	1.02	0.08	21.7	5.7	12%	F

HCM 2010 INTERSECTION REPORTS (2040 NO-BUILD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	949	3	12	1687	1487	3	0	3	718	0	80
Future Volume (veh/h)	149	949	3	12	1687	1487	3	0	3	718	0	80
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1793	1900	1900	1827	1863	1900	1900	1900	1863	1863	1743
Adj Flow Rate, veh/h	157	999	3	13	1776	0	3	0	3	756	0	84
Adj No. of Lanes	2	3	0	1	3	1	1	1	0	2	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	6	0	4	2	0	0	0	2	0	9
Cap, veh/h	215	2734	8	93	2651	842	16	0	14	804	0	667
Arrive On Green	0.06	0.54	0.54	0.05	0.53	0.00	0.01	0.00	0.01	0.23	0.00	0.23
Sat Flow, veh/h	3442	5038	15	1810	4988	1583	1810	0	1550	3548	0	2944
Grp Volume(v), veh/h	157	647	355	13	1776	0	3	0	3	756	0	84
Grp Sat Flow(s),veh/h/ln	1721	1631	1790	1810	1663	1583	1810	0	1550	1774	0	1472
Q Serve(g_s), s	7.2	18.1	18.1	1.1	41.5	0.0	0.3	0.0	0.3	33.5	0.0	3.6
Cycle Q Clear(g_c), s	7.2	18.1	18.1	1.1	41.5	0.0	0.3	0.0	0.3	33.5	0.0	3.6
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	1771	971	93	2651	842	16	0	14	804	0	667
V/C Ratio(X)	0.73	0.37	0.37	0.14	0.67	0.00	0.19	0.00	0.22	0.94	0.00	0.13
Avail Cap(c_a), veh/h	215	1771	971	93	2651	842	68	0	58	825	0	684
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.96	0.00	0.96
Uniform Delay (d), s/veh	73.7	20.9	20.9	72.5	27.3	0.0	78.7	0.0	78.8	60.8	0.0	49.2
Incr Delay (d2), s/veh	11.9	0.6	1.1	3.1	1.4	0.0	5.6	0.0	7.9	17.7	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.8	13.1	14.3	1.1	26.4	0.0	0.3	0.0	0.3	25.4	0.0	2.7
LnGrp Delay(d),s/veh	85.6	21.5	21.9	75.7	28.6	0.0	84.3	0.0	86.7	78.5	0.0	49.3
LnGrp LOS	F	C	C	E	C		F		F	E		D
Approach Vol, veh/h		1159			1789			6			840	
Approach Delay, s/veh		30.3			29.0			85.5			75.6	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.8	91.8		43.1	15.0	93.6		8.3
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	10.0	79.5		37.2	8.2	81.3		6.0
Max Q Clear Time (g_c+I1), s	9.2	43.5		35.5	3.1	20.1		2.3
Green Ext Time (p_c), s	0.0	26.6		0.7	0.0	38.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	39.8
HCM 2010 LOS	D

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	10	43	27	9	37	13	1572	55	55	758	47
Future Volume (veh/h)	41	10	43	27	9	37	13	1572	55	55	758	47
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1855	1900	1792	1845	1696	1900	1863	1845	1810	1845	1845
Adj Flow Rate, veh/h	44	11	46	20	23	39	14	1672	59	59	806	50
Adj No. of Lanes	1	1	0	1	1	1	1	2	1	1	2	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	11	0	0	6	0	12	0	2	3	5	3	3
Cap, veh/h	106	20	85	75	81	62	26	2436	1077	56	2476	1105
Arrive On Green	0.07	0.07	0.07	0.04	0.04	0.04	0.03	1.00	1.00	0.03	0.71	0.71
Sat Flow, veh/h	1630	310	1295	1707	1845	1412	1810	3539	1565	1723	3505	1565
Grp Volume(v), veh/h	44	0	57	20	23	39	14	1672	59	59	806	50
Grp Sat Flow(s),veh/h/ln	1630	0	1605	1707	1845	1412	1810	1770	1565	1723	1752	1565
Q Serve(g_s), s	4.1	0.0	5.5	1.8	1.9	4.3	1.2	0.0	0.0	5.2	14.0	1.6
Cycle Q Clear(g_c), s	4.1	0.0	5.5	1.8	1.9	4.3	1.2	0.0	0.0	5.2	14.0	1.6
Prop In Lane	1.00		0.81	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	106	0	105	75	81	62	26	2436	1077	56	2476	1105
V/C Ratio(X)	0.41	0.00	0.54	0.27	0.28	0.63	0.53	0.69	0.05	1.05	0.33	0.05
Avail Cap(c_a), veh/h	479	0	472	181	196	150	61	2436	1077	56	2476	1105
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	71.8	0.0	72.5	74.0	74.1	75.2	77.2	0.0	0.0	77.4	9.0	7.1
Incr Delay (d2), s/veh	2.6	0.0	4.3	1.9	1.9	10.0	1.5	0.1	0.0	136.0	0.4	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.5	0.0	4.6	1.6	1.8	3.4	1.0	0.1	0.0	8.3	11.1	1.2
LnGrp Delay(d),s/veh	74.4	0.0	76.8	75.9	75.9	85.2	78.7	0.1	0.0	214.9	9.3	7.2
LnGrp LOS	E		E	E	E	F	E	A	A	F	A	A
Approach Vol, veh/h		101			82			1745			915	
Approach Delay, s/veh		75.7			80.3			0.8			22.4	
Approach LOS		E			F			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	9.1	119.8		14.0	12.0	116.9		17.0
Change Period (Y+Rc), s	6.8	6.8		7.0	6.8	6.8		6.6
Max Green Setting (Gmax), s	5.4	63.4		17.0	5.2	63.6		47.0
Max Q Clear Time (g_c+I1), s	13.2	16.0		6.3	7.2	2.0		7.5
Green Ext Time (p_c), s	0.0	30.4		0.1	0.0	35.4		0.5

Intersection Summary	
HCM 2010 Ctrl Delay	12.7
HCM 2010 LOS	B

Notes
User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	27	0	0	0	37	1538	74	0	832	37
Future Vol, veh/h	0	0	27	0	0	0	37	1538	74	0	832	37
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	0	0	6	0	0	0	4	3	4	0	3	4
Mvmt Flow	0	0	29	0	0	0	39	1636	79	0	885	39

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	-	-	444				886	0	0	-	-	0
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	-	-
Critical Hdwy	-	-	7.02				4.18	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	-	-	-
Follow-up Hdwy	-	-	3.36				2.24	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	551				747	-	-	0	-	0
Stage 1	0	0	-				-	-	-	0	-	0
Stage 2	0	0	-				-	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	0	550				747	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-				-	-	-	-	-	-
Stage 1	-	0	-				-	-	-	-	-	-
Stage 2	-	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	747	-	-	550	-
HCM Lane V/C Ratio	0.053	-	-	0.052	-
HCM Control Delay (s)	10.1	-	-	11.9	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

HCM 2010 Signalized Intersection Summary
4: SR 535 & Osceola Parkway

11/7/2017

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1538	0	232	866
Future Volume (veh/h)	0	0	1538	0	232	866
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	0	1845	1845
Adj Flow Rate, veh/h			1619	0	244	912
Adj No. of Lanes			2	0	2	3
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	0	3	3
Cap, veh/h			2570	0	324	4608
Arrive On Green			1.00	0.00	0.19	1.00
Sat Flow, veh/h			3725	0	3408	5202
Grp Volume(v), veh/h			1619	0	244	912
Grp Sat Flow(s),veh/h/ln			1770	0	1704	1679
Q Serve(g_s), s			0.0	0.0	5.4	0.0
Cycle Q Clear(g_c), s			0.0	0.0	5.4	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			2570	0	324	4608
V/C Ratio(X)			0.63	0.00	0.75	0.20
Avail Cap(c_a), veh/h			2570	0	447	4847
HCM Platoon Ratio			2.00	1.00	2.00	2.00
Upstream Filter(I)			1.00	0.00	0.31	0.31
Uniform Delay (d), s/veh			0.0	0.0	31.5	0.0
Incr Delay (d2), s/veh			1.2	0.0	1.5	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln			0.8	0.0	4.0	0.0
LnGrp Delay(d),s/veh			1.2	0.0	33.0	0.0
LnGrp LOS			A		C	A
Approach Vol, veh/h			1619			1156
Approach Delay, s/veh			1.2			7.0
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	15.1	64.9				80.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	10.5	55.2				* 77		
Max Q Clear Time (g_c+I1), s	7.4	2.0				2.0		
Green Ext Time (p_c), s	0.2	31.5				32.9		

Intersection Summary		
HCM 2010 Ctrl Delay		3.6
HCM 2010 LOS		A

Notes
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1333	0	52	61	37	262	70	1470	0	9	987	438
Future Volume (veh/h)	1333	0	52	61	37	262	70	1470	0	9	987	438
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1792	1900	1810	1808	1900	1743	1863	1900	1900	1823	1900
Adj Flow Rate, veh/h	1403	0	55	64	39	276	74	1547	0	9	1039	461
Adj No. of Lanes	2	2	0	2	2	0	2	2	1	1	3	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	5	20	20	9	2	0	0	3	3
Cap, veh/h	641	597	535	99	341	305	103	1299	593	113	1341	595
Arrive On Green	0.18	0.00	0.35	0.03	0.20	0.20	0.04	0.49	0.00	0.13	0.80	0.80
Sat Flow, veh/h	3476	1703	1524	3343	1717	1537	3221	3539	1615	1810	3373	1497
Grp Volume(v), veh/h	1403	0	55	64	39	276	74	1547	0	9	1022	478
Grp Sat Flow(s),veh/h/ln	1738	1703	1524	1672	1717	1537	1610	1770	1615	1810	1659	1552
Q Serve(g_s), s	29.5	0.0	3.9	3.0	3.0	28.1	3.6	58.7	0.0	0.7	26.3	26.3
Cycle Q Clear(g_c), s	29.5	0.0	3.9	3.0	3.0	28.1	3.6	58.7	0.0	0.7	26.3	26.3
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.96
Lane Grp Cap(c), veh/h	641	597	535	99	341	305	103	1299	593	113	1319	617
V/C Ratio(X)	2.19	0.00	0.10	0.64	0.11	0.90	0.72	1.19	0.00	0.08	0.77	0.77
Avail Cap(c_a), veh/h	641	692	619	146	451	403	103	1299	593	113	1319	617
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.71	0.71	0.00	0.84	0.84	0.84
Uniform Delay (d), s/veh	65.3	0.0	35.0	76.8	52.6	62.6	75.9	41.0	0.0	65.9	12.6	12.6
Incr Delay (d2), s/veh	540.3	0.0	0.1	6.8	0.1	19.4	26.4	91.8	0.0	1.2	3.8	7.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	112.0	0.0	3.0	2.7	2.6	19.6	3.6	81.3	0.0	0.7	17.6	17.5
LnGrp Delay(d),s/veh	605.6	0.0	35.1	83.6	52.7	82.0	102.3	132.8	0.0	67.1	16.4	20.4
LnGrp LOS	F		D	F	D	F	F	F		E	B	C
Approach Vol, veh/h		1458			379			1621			1509	
Approach Delay, s/veh		584.0			79.2			131.4			17.9	
Approach LOS		F			E			F			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	71.2	36.0	40.2	17.5	66.3	11.7	64.5
Change Period (Y+Rc), s	7.5	7.6	6.5	* 8.4	7.5	* 7.6	6.9	* 8.4
Max Green Setting (Gmax), s	5.1	53.4	29.5	* 42	10.0	* 49	7.0	* 65
Max Q Clear Time (g_c+I1), s	5.6	28.3	31.5	30.1	2.7	60.7	5.0	5.9
Green Ext Time (p_c), s	0.0	21.3	0.0	1.7	0.0	0.0	0.0	2.5

Intersection Summary	
HCM 2010 Ctrl Delay	225.8
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	484	36	93	5	89	142	19	3016	2	58	1354	155
Future Volume (veh/h)	484	36	93	5	89	142	19	3016	2	58	1354	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1737	1900	1900	1900	1900	1759	1863	1900	1900	1827	1827
Adj Flow Rate, veh/h	509	38	98	5	94	149	20	3175	2	61	1425	163
Adj No. of Lanes	2	1	0	1	2	0	2	2	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	0	0	0	8	2	0	0	4	4
Cap, veh/h	567	117	301	11	196	175	60	1824	833	57	2623	817
Arrive On Green	0.16	0.27	0.27	0.01	0.11	0.11	0.02	0.69	0.69	0.03	0.53	0.53
Sat Flow, veh/h	3442	430	1110	1810	1805	1611	3250	3539	1615	1810	4988	1553
Grp Volume(v), veh/h	509	0	136	5	94	149	20	3175	2	61	1425	163
Grp Sat Flow(s),veh/h/ln	1721	0	1540	1810	1805	1611	1625	1770	1615	1810	1663	1553
Q Serve(g_s), s	23.2	0.0	11.3	0.4	7.8	14.5	1.0	82.5	0.1	5.0	30.3	8.9
Cycle Q Clear(g_c), s	23.2	0.0	11.3	0.4	7.8	14.5	1.0	82.5	0.1	5.0	30.3	8.9
Prop In Lane	1.00		0.72	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	567	0	418	11	196	175	60	1824	833	57	2623	817
V/C Ratio(X)	0.90	0.00	0.33	0.44	0.48	0.85	0.33	1.74	0.00	1.08	0.54	0.20
Avail Cap(c_a), veh/h	706	0	472	57	231	206	102	1824	833	57	2623	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.66	0.66	0.66
Uniform Delay (d), s/veh	65.5	0.0	46.6	79.2	67.1	70.1	77.1	25.2	12.2	77.5	25.2	20.1
Incr Delay (d2), s/veh	12.3	0.0	0.4	25.0	1.8	24.6	0.3	333.3	0.0	120.2	0.5	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0	0.0
%ile BackOfQ(95%),veh/ln	17.7	0.0	8.5	0.5	7.2	12.2	0.8	211.7	0.1	7.9	19.0	6.5
LnGrp Delay(d),s/veh	77.8	0.0	47.0	104.3	68.9	94.7	77.4	358.5	12.2	199.9	25.7	20.5
LnGrp LOS	E		D	F	E	F	E	F	B	F	C	C
Approach Vol, veh/h		645			248			3197			1649	
Approach Delay, s/veh		71.3			85.1			356.5			31.6	
Approach LOS		E			F			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.1	90.2	6.7	51.0	10.4	91.8	32.8	24.9
Change Period (Y+Rc), s	7.1	* 7.7	* 5.7	* 7.6	7.5	* 7.7	6.4	* 7.6
Max Green Setting (Gmax), s	5.0	* 73	* 5	* 49	5.0	* 73	32.8	* 21
Max Q Clear Time (g_c+I1), s	7.0	84.5	2.4	13.3	3.0	32.3	25.2	16.5
Green Ext Time (p_c), s	0.0	0.0	0.0	2.5	0.0	39.7	1.2	0.8

Intersection Summary	
HCM 2010 Ctrl Delay	219.4
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	7	13	28	4	75	41	3664	21	67	1575	90
Future Volume (veh/h)	53	7	13	28	4	75	41	3664	21	67	1575	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1570	1900	1900	1792	1765	1900	1827	1863	1759	1827	1827	1792
Adj Flow Rate, veh/h	57	8	14	30	4	81	44	3940	23	72	1694	97
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	21	0	0	6	0	0	4	2	8	4	4	6
Cap, veh/h	147	89	156	221	10	207	54	2372	1002	57	2326	1020
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.04	0.89	0.89	0.03	0.67	0.67
Sat Flow, veh/h	1097	619	1082	1324	71	1432	1740	3539	1495	1740	3471	1522
Grp Volume(v), veh/h	57	0	22	30	0	85	44	3940	23	72	1694	97
Grp Sat Flow(s),veh/h/ln	1097	0	1701	1324	0	1502	1740	1770	1495	1740	1736	1522
Q Serve(g_s), s	8.0	0.0	1.8	3.2	0.0	8.2	4.0	107.2	0.3	5.2	50.3	3.6
Cycle Q Clear(g_c), s	16.2	0.0	1.8	5.0	0.0	8.2	4.0	107.2	0.3	5.2	50.3	3.6
Prop In Lane	1.00		0.64	1.00		0.95	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	147	0	245	221	0	217	54	2372	1002	57	2326	1020
V/C Ratio(X)	0.39	0.00	0.09	0.14	0.00	0.39	0.81	1.66	0.02	1.27	0.73	0.10
Avail Cap(c_a), veh/h	332	0	532	451	0	477	54	2372	1002	57	2326	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.4	0.0	59.4	61.5	0.0	62.1	76.2	8.7	2.9	77.4	17.0	9.3
Incr Delay (d2), s/veh	1.7	0.0	0.2	0.3	0.0	1.2	8.1	297.7	0.0	209.9	2.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.5	0.0	1.5	2.1	0.0	6.3	2.7	250.9	0.2	10.4	32.8	2.8
LnGrp Delay(d),s/veh	71.1	0.0	59.5	61.8	0.0	63.3	84.3	306.4	2.9	287.3	19.0	9.5
LnGrp LOS	E		E	E		E	F	F	A	F	B	A
Approach Vol, veh/h		79			115			4007			1863	
Approach Delay, s/veh		67.9			62.9			302.3			28.9	
Approach LOS		E			E			F			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	114.8		31.2	14.0	114.8		31.2
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 5.2	80.3		* 50	5.0	* 80		* 51
Max Q Clear Time (g_c+I1), s	17.2	109.2		18.2	6.0	52.3		10.2
Green Ext Time (p_c), s	0.0	0.0		1.0	0.0	28.0		1.0

Intersection Summary		
HCM 2010 Ctrl Delay		210.7
HCM 2010 LOS		F

Notes
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	46	70	99	3696	0	1662	71
Future Volume (veh/h)	46	70	99	3696	0	1662	71
Number	7	14	5	2		6	16
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1810	1845	1863		1827	1792
Adj Flow Rate, veh/h	48	74	104	3891		1749	75
Adj No. of Lanes	2	1	1	2		3	1
Peak Hour Factor	0.95	0.95	0.95	0.95		0.95	0.95
Percent Heavy Veh, %	3	5	3	2		4	6
Cap, veh/h	231	104	220	2570		2673	817
Arrive On Green	0.07	0.07	0.06	0.73		0.54	0.54
Sat Flow, veh/h	3408	1538	1757	3632		5152	1524
Grp Volume(v), veh/h	48	74	104	3891		1749	75
Grp Sat Flow(s),veh/h/ln	1704	1538	1757	1770		1663	1524
Q Serve(g_s), s	1.1	3.8	1.1	58.1		20.0	1.9
Cycle Q Clear(g_c), s	1.1	3.8	1.1	58.1		20.0	1.9
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	231	104	220	2570		2673	817
V/C Ratio(X)	0.21	0.71	0.47	1.51		0.65	0.09
Avail Cap(c_a), veh/h	298	135	281	2570		2673	817
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	35.3	36.5	21.7	11.0		13.3	9.1
Incr Delay (d2), s/veh	0.4	11.5	1.6	233.5		1.3	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	0.9	6.3	3.2	199.4		14.4	4.4
LnGrp Delay(d),s/veh	35.7	48.0	23.3	244.4		14.5	9.3
LnGrp LOS	D	D	C	F		B	A
Approach Vol, veh/h	122			3995		1824	
Approach Delay, s/veh	43.1			238.7		14.3	
Approach LOS	D			F		B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		65.6		14.4	15.2	50.4		
Change Period (Y+Rc), s		7.5		9.0	10.7	7.5		
Max Green Setting (Gmax), s		41.4		7.0	7.3	38.5		
Max Q Clear Time (g_c+I1), s		60.1		5.8	3.1	22.0		
Green Ext Time (p_c), s		0.0		0.0	0.1	16.4		

Intersection Summary	
HCM 2010 Ctrl Delay	165.8
HCM 2010 LOS	F

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	469	284	374	1335	605	903	2068	771	275	1076	434
Future Volume (veh/h)	1	469	284	374	1335	605	903	2068	771	275	1076	434
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1696	1712	1845	1845	1810	1810	1881	1881	1845	1845	1845	1759
Adj Flow Rate, veh/h	1	494	299	394	1405	0	951	2177	0	289	1133	0
Adj No. of Lanes	1	2	2	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	12	11	3	3	5	5	1	1	3	3	3	8
Cap, veh/h	2	3663	3108	469	4323	1934	791	1714	523	243	1020	303
Arrive On Green	0.00	1.00	1.00	0.14	1.00	0.00	0.23	0.33	0.00	0.07	0.20	0.00
Sat Flow, veh/h	1616	3252	2760	3408	3438	1538	3476	5136	1568	3408	5036	1495
Grp Volume(v), veh/h	1	494	299	394	1405	0	951	2177	0	289	1133	0
Grp Sat Flow(s),veh/h/ln	1616	1626	1380	1704	1719	1538	1738	1712	1568	1704	1679	1495
Q Serve(g_s), s	0.1	0.0	0.0	18.0	0.0	0.0	36.4	53.4	0.0	11.4	32.4	0.0
Cycle Q Clear(g_c), s	0.1	0.0	0.0	18.0	0.0	0.0	36.4	53.4	0.0	11.4	32.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	2	3663	3108	469	4323	1934	791	1714	523	243	1020	303
V/C Ratio(X)	0.46	0.13	0.10	0.84	0.33	0.00	1.20	1.27	0.00	1.19	1.11	0.00
Avail Cap(c_a), veh/h	50	3663	3108	469	4323	1934	791	1714	523	243	1020	303
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	79.8	0.0	0.0	67.3	0.0	0.0	61.8	53.3	0.0	74.3	63.8	0.0
Incr Delay (d2), s/veh	104.1	0.1	0.1	16.5	0.2	0.0	103.2	126.3	0.0	118.9	63.8	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	0.2	0.1	0.0	14.6	0.2	0.0	51.8	81.5	0.0	16.9	37.9	0.0
LnGrp Delay(d),s/veh	183.9	0.1	0.1	83.8	0.2	0.0	165.0	179.6	0.0	193.2	127.6	0.0
LnGrp LOS	F	A	A	F	A		F	F		F	F	
Approach Vol, veh/h		794			1799			3128			1422	
Approach Delay, s/veh		0.3			18.5			175.1			140.9	
Approach LOS		A			B			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.0	213.5	23.0	65.0	30.0	192.5	48.0	40.0				
Change Period (Y+Rc), s	* 8.8	* 8	* 12	* 12	* 8	* 8	11.6	* 7.6				
Max Green Setting (Gmax), s	* 5	* 54	* 11	* 53	* 22	* 38	32.4	* 32				
Max Q Clear Time (g_c+I1), s	2.1	2.0	13.4	55.4	20.0	2.0	38.4	34.4				
Green Ext Time (p_c), s	0.0	23.6	0.0	0.0	0.3	20.0	0.0	0.0				
Intersection Summary												
HCM 2010 Ctrl Delay			109.5									
HCM 2010 LOS			F									

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	26	53	25	2797	0	1714	13
Future Vol, veh/h	26	53	25	2797	0	1714	13
Conflicting Peds, #/hr	0	0	2	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	325	-	350	-	350
Veh in Median Storage, #	1	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	97	97	97	97	92	97	97
Heavy Vehicles, %	0	6	0	3	2	6	0
Mvmt Flow	27	55	26	2884	0	1767	13

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	2974	886	1769	0	-	-	0
Stage 1	1769	-	-	-	-	-	-
Stage 2	1205	-	-	-	-	-	-
Critical Hdwy	5.7	7.22	5.3	-	5.64	-	-
Critical Hdwy Stg 1	6.6	-	-	-	-	-	-
Critical Hdwy Stg 2	6	-	-	-	-	-	-
Follow-up Hdwy	3.8	3.96	3.1	-	2.32	-	-
Pot Cap-1 Maneuver	28	241	167	-	-	-	-
Stage 1	82	-	-	-	-	-	-
Stage 2	225	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	~ 24	241	167	-	-	-	-
Mov Cap-2 Maneuver	61	-	-	-	-	-	-
Stage 1	82	-	-	-	-	-	-
Stage 2	190	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	80	0.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	167	-	122	-	-	-
HCM Lane V/C Ratio	0.154	-	0.668	-	-	-
HCM Control Delay (s)	30.5	-	80	0	-	-
HCM Lane LOS	D	-	F	A	-	-
HCM 95th %tile Q(veh)	0.5	-	3.5	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	7.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	143	0	0	39	95	2652	49	54	1560	98
Future Vol, veh/h	0	0	143	0	0	39	95	2652	49	54	1560	98
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	9	9	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	375	-	-	325	-	350
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	1	0	0	3	10	3	0	0	6	8
Mvmt Flow	0	0	154	0	0	42	102	2852	53	58	1677	105

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	840	-	-	1461	1678	0	0	2913	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.12	-	-	7.16	5.5	-	-	5.3	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.91	-	-	3.93	3.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	0	0	267	0	0	100	167	-	-	~ 44	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	267	-	-	99	167	-	-	~ 44	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	35.3	65.8	1.9	12.3
HCM LOS	E	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	167	-	-	267	99	~ 44	-	-
HCM Lane V/C Ratio	0.612	-	-	0.576	0.424	1.32	-	-
HCM Control Delay (s)	55.7	-	-	35.3	65.8	$ 390.6	-	-
HCM Lane LOS	F	-	-	E	F	F	-	-
HCM 95th %tile Q(veh)	3.3	-	-	3.3	1.8	5.6	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	113	2	44	21	2	58	42	2630	6	39	1693	63
Future Volume (veh/h)	113	2	44	21	2	58	42	2630	6	39	1693	63
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1667	1675	1900	1900	1900	1900	1863	1844	1900	1900	1810	1712
Adj Flow Rate, veh/h	115	2	45	21	2	59	43	2684	6	40	1728	64
Adj No. of Lanes	2	1	0	0	1	0	1	3	0	1	3	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	14	0	0	0	0	0	2	3	3	0	5	11
Cap, veh/h	156	3	67	25	2	70	55	3496	8	52	3317	973
Arrive On Green	0.05	0.05	0.05	0.06	0.06	0.06	0.03	0.67	0.67	0.03	0.67	0.67
Sat Flow, veh/h	3079	59	1325	417	40	1172	1774	5187	12	1810	4940	1448
Grp Volume(v), veh/h	115	0	47	82	0	0	43	1736	954	40	1728	64
Grp Sat Flow(s),veh/h/ln	1540	0	1384	1630	0	0	1774	1678	1842	1810	1647	1448
Q Serve(g_s), s	5.5	0.0	5.0	7.5	0.0	0.0	3.6	52.4	52.5	3.3	26.5	2.3
Cycle Q Clear(g_c), s	5.5	0.0	5.0	7.5	0.0	0.0	3.6	52.4	52.5	3.3	26.5	2.3
Prop In Lane	1.00		0.96	0.26		0.72	1.00		0.01	1.00		1.00
Lane Grp Cap(c), veh/h	156	0	70	98	0	0	55	2262	1241	52	3317	973
V/C Ratio(X)	0.74	0.00	0.67	0.84	0.00	0.00	0.78	0.77	0.77	0.77	0.52	0.07
Avail Cap(c_a), veh/h	185	0	83	98	0	0	106	2262	1241	97	3317	973
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	70.2	0.0	70.0	69.8	0.0	0.0	72.1	16.5	16.5	72.4	12.5	8.5
Incr Delay (d2), s/veh	12.0	0.0	15.1	44.4	0.0	0.0	20.2	2.6	4.6	20.9	0.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.7	0.0	4.0	8.1	0.0	0.0	3.7	33.1	36.8	3.5	17.9	1.7
LnGrp Delay(d),s/veh	82.2	0.0	85.1	114.2	0.0	0.0	92.4	19.1	21.1	93.3	13.0	8.6
LnGrp LOS	F		F	F			F	B	C	F	B	A
Approach Vol, veh/h		162			82			2733			1832	
Approach Delay, s/veh		83.0			114.2			20.9			14.6	
Approach LOS		F			F			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.7	107.7		16.0	11.3	108.1		14.6
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0
Max Green Setting (Gmax), s	9.0	95.0		9.0	8.0	96.0		9.0
Max Q Clear Time (g_c+I1), s	5.6	28.5		9.5	5.3	54.5		7.5
Green Ext Time (p_c), s	0.0	63.2		0.0	0.0	40.2		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	22.2
HCM 2010 LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1920	22	73	1490	1046	4	1	4	1405	0	244
Future Volume (veh/h)	235	1920	22	73	1490	1046	4	1	4	1405	0	244
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1900	1900	1881	1881	1863
Adj Flow Rate, veh/h	261	2133	24	81	1656	0	4	1	4	1561	0	271
Adj No. of Lanes	2	3	0	1	3	1	1	1	0	2	0	2
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	0	2	2	0	2	2	0	0	0	1	0	2
Cap, veh/h	262	2047	23	88	1874	584	22	4	15	1437	0	1265
Arrive On Green	0.07	0.39	0.39	0.05	0.37	0.00	0.01	0.01	0.01	0.40	0.00	0.40
Sat Flow, veh/h	3510	5184	58	1810	5085	1583	1810	320	1279	3583	0	3155
Grp Volume(v), veh/h	261	1394	763	81	1656	0	4	0	5	1561	0	271
Grp Sat Flow(s),veh/h/ln	1755	1695	1852	1810	1695	1583	1810	0	1599	1792	0	1577
Q Serve(g_s), s	14.1	75.0	75.0	8.5	57.9	0.0	0.4	0.0	0.6	76.2	0.0	10.7
Cycle Q Clear(g_c), s	14.1	75.0	75.0	8.5	57.9	0.0	0.4	0.0	0.6	76.2	0.0	10.7
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	262	1339	731	88	1874	584	22	0	19	1437	0	1265
V/C Ratio(X)	0.99	1.04	1.04	0.92	0.88	0.00	0.19	0.00	0.26	1.09	0.00	0.21
Avail Cap(c_a), veh/h	262	1339	731	88	1874	584	57	0	51	1437	0	1265
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.00	1.00	0.70	0.00	0.70
Uniform Delay (d), s/veh	87.9	57.5	57.5	90.1	56.2	0.0	93.0	0.0	93.0	56.9	0.0	37.3
Incr Delay (d2), s/veh	54.0	36.1	45.0	77.0	6.5	0.0	4.0	0.0	7.1	47.8	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	13.7	75.3	85.5	10.2	37.0	0.0	0.4	0.0	0.5	85.1	0.0	7.6
LnGrp Delay(d),s/veh	141.9	93.6	102.4	167.1	62.6	0.0	97.0	0.0	100.1	104.7	0.0	37.3
LnGrp LOS	F	F	F	F	E		F		F	F		D
Approach Vol, veh/h		2418			1737			9			1832	
Approach Delay, s/veh		101.6			67.5			98.7			94.8	
Approach LOS		F			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	21.0	76.8		83.0	16.0	81.8		9.2
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	14.2	66.3		76.2	9.2	71.3		6.0
Max Q Clear Time (g_c+I1), s	16.1	59.9		78.2	10.5	77.0		2.6
Green Ext Time (p_c), s	0.0	6.2		0.0	0.0	0.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	89.6
HCM 2010 LOS	F

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	27	65	95	21	102	34	1193	50	120	1501	99
Future Volume (veh/h)	111	27	65	95	21	102	34	1193	50	120	1501	99
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1867	1900	1810	1842	1810	1900	1863	1845	1863	1863	1881
Adj Flow Rate, veh/h	114	28	67	114	0	105	35	1230	52	124	1547	102
Adj No. of Lanes	1	1	0	2	0	1	1	2	1	1	2	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	6	6	5	0	5	0	2	3	2	2	1
Cap, veh/h	161	44	106	331	0	146	45	2179	963	95	2281	1028
Arrive On Green	0.09	0.09	0.09	0.10	0.00	0.10	0.05	1.00	1.00	0.05	0.64	0.64
Sat Flow, veh/h	1757	486	1162	3447	0	1524	1810	3539	1564	1774	3539	1595
Grp Volume(v), veh/h	114	0	95	114	0	105	35	1230	52	124	1547	102
Grp Sat Flow(s),veh/h/ln	1757	0	1648	1723	0	1524	1810	1770	1564	1774	1770	1595
Q Serve(g_s), s	12.0	0.0	10.6	5.9	0.0	12.7	3.6	0.0	0.0	10.2	52.4	4.6
Cycle Q Clear(g_c), s	12.0	0.0	10.6	5.9	0.0	12.7	3.6	0.0	0.0	10.2	52.4	4.6
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	161	0	151	331	0	146	45	2179	963	95	2281	1028
V/C Ratio(X)	0.71	0.00	0.63	0.34	0.00	0.72	0.77	0.56	0.05	1.30	0.68	0.10
Avail Cap(c_a), veh/h	435	0	408	925	0	409	48	2179	963	95	2281	1028
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.24	0.24	0.24	1.00	1.00	1.00
Uniform Delay (d), s/veh	83.9	0.0	83.2	80.3	0.0	83.4	89.7	0.0	0.0	89.9	21.3	12.8
Incr Delay (d2), s/veh	5.7	0.0	4.3	0.6	0.0	6.5	16.3	0.3	0.0	193.2	1.6	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.1	0.0	8.7	5.1	0.0	9.5	3.1	0.1	0.0	18.2	34.5	3.8
LnGrp Delay(d),s/veh	89.5	0.0	87.5	80.9	0.0	89.9	106.0	0.3	0.0	283.1	23.0	13.0
LnGrp LOS	F		F	F		F	F	A	A	F	C	B
Approach Vol, veh/h		209			219			1317			1773	
Approach Delay, s/veh		88.6			85.2			3.1			40.6	
Approach LOS		F			F			A			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	11.5	129.3		25.2	17.0	123.8		24.0
Change Period (Y+Rc), s	6.8	6.8		7.0	6.8	6.8		6.6
Max Green Setting (Gmax), s	5.0	59.8		51.0	10.2	54.6		47.0
Max Q Clear Time (g_c+I1), s	15.6	54.4		14.7	12.2	2.0		14.0
Green Ext Time (p_c), s	0.0	5.0		0.8	0.0	36.5		0.9

Intersection Summary	
HCM 2010 Ctrl Delay	32.2
HCM 2010 LOS	C

Notes
User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	46	0	0	0	27	1276	136	0	1675	34
Future Vol, veh/h	0	0	46	0	0	0	27	1276	136	0	1675	34
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	96	96	96	96	96	96	96	96	96
Heavy Vehicles, %	0	0	7	0	0	0	0	2	1	0	1	0
Mvmt Flow	0	0	48	0	0	0	28	1329	142	0	1745	35

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	-	-	873				1746	0	0	-	-	0
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	-	-
Critical Hdwy	-	-	7.04				4.1	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	-	-	-
Follow-up Hdwy	-	-	3.37				2.2	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	284				364	-	-	0	-	0
Stage 1	0	0	-				-	-	-	0	-	0
Stage 2	0	0	-				-	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	0	284				364	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-				-	-	-	-	-	-
Stage 1	-	0	-				-	-	-	-	-	-
Stage 2	-	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.2	0.3	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	364	-	-	284	-
HCM Lane V/C Ratio	0.077	-	-	0.169	-
HCM Control Delay (s)	15.7	-	-	20.2	-
HCM Lane LOS	C	-	-	C	-
HCM 95th %tile Q(veh)	0.2	-	-	0.6	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1274	1	465	1709
Future Volume (veh/h)	0	0	1274	1	465	1709
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1900	1845	1881
Adj Flow Rate, veh/h			1300	1	474	1744
Adj No. of Lanes			2	0	2	3
Peak Hour Factor			0.98	0.98	0.98	0.98
Percent Heavy Veh, %			2	2	3	1
Cap, veh/h			2487	2	559	4768
Arrive On Green			1.00	1.00	0.33	1.00
Sat Flow, veh/h			3722	3	3408	5305
Grp Volume(v), veh/h			634	667	474	1744
Grp Sat Flow(s),veh/h/ln			1770	1862	1704	1712
Q Serve(g_s), s			0.0	0.0	12.3	0.0
Cycle Q Clear(g_c), s			0.0	0.0	12.3	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			1213	1276	559	4768
V/C Ratio(X)			0.52	0.52	0.85	0.37
Avail Cap(c_a), veh/h			1213	1276	915	4973
HCM Platoon Ratio			2.00	2.00	2.00	2.00
Upstream Filter(I)			1.00	1.00	0.09	0.09
Uniform Delay (d), s/veh			0.0	0.0	30.8	0.0
Incr Delay (d2), s/veh			1.6	1.5	0.4	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln			1.0	1.0	6.9	0.0
LnGrp Delay(d),s/veh			1.6	1.5	31.2	0.0
LnGrp LOS			A	A	C	A
Approach Vol, veh/h			1301			2218
Approach Delay, s/veh			1.6			6.7
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	23.1	71.9				95.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	25.5	55.2				* 92		
Max Q Clear Time (g_c+I1), s	14.3	2.0				2.0		
Green Ext Time (p_c), s	1.3	37.5				51.9		

Intersection Summary		
HCM 2010 Ctrl Delay		4.8
HCM 2010 LOS		A

Notes
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	807	0	120	89	89	308	98	1177	0	68	1967	1066
Future Volume (veh/h)	807	0	120	89	89	308	98	1177	0	68	1967	1066
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1875	1900
Adj Flow Rate, veh/h	859	0	128	95	95	328	104	1252	0	72	2093	1134
Adj No. of Lanes	2	2	0	2	2	0	2	2	1	1	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	2	0	0	2	2	2	2	2	0	0	1	1
Cap, veh/h	571	606	542	130	384	343	100	1440	657	95	1475	679
Arrive On Green	0.17	0.00	0.34	0.04	0.22	0.22	0.03	0.41	0.00	0.05	0.43	0.43
Sat Flow, veh/h	3442	1770	1583	3442	1770	1583	3442	3539	1615	1810	3426	1576
Grp Volume(v), veh/h	859	0	128	95	95	328	104	1252	0	72	2083	1144
Grp Sat Flow(s),veh/h/ln	1721	1770	1583	1721	1770	1583	1721	1770	1615	1810	1706	1590
Q Serve(g_s), s	31.5	0.0	11.0	5.2	8.4	38.9	5.5	61.7	0.0	7.5	81.8	81.8
Cycle Q Clear(g_c), s	31.5	0.0	11.0	5.2	8.4	38.9	5.5	61.7	0.0	7.5	81.8	81.8
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		0.99
Lane Grp Cap(c), veh/h	571	606	542	130	384	343	100	1440	657	95	1469	685
V/C Ratio(X)	1.51	0.00	0.24	0.73	0.25	0.96	1.04	0.87	0.00	0.76	1.42	1.67
Avail Cap(c_a), veh/h	571	606	542	181	391	350	100	1440	657	95	1469	685
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.81	0.81	0.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	79.3	0.0	44.7	90.4	61.6	73.5	92.3	51.7	0.0	88.8	54.1	54.1
Incr Delay (d2), s/veh	236.5	0.0	0.2	8.8	0.3	36.2	93.2	6.1	0.0	5.0	188.3	302.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	60.7	0.0	8.4	4.8	7.5	27.9	7.0	39.5	0.0	4.8	132.4	160.1
LnGrp Delay(d),s/veh	315.7	0.0	44.9	99.3	61.9	109.7	186.2	57.8	0.0	93.8	242.4	356.8
LnGrp LOS	F		D	F	E	F	F	E		F	F	F
Approach Vol, veh/h		987			518			1356			3299	
Approach Delay, s/veh		280.6			99.0			67.6			278.8	
Approach LOS		F			F			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.0	89.4	38.0	49.6	17.5	84.9	14.1	73.5
Change Period (Y+Rc), s	7.5	7.6	6.5	* 8.4	7.5	* 7.6	6.9	* 8.4
Max Green Setting (Gmax), s	5.5	81.0	31.5	* 42	10.0	* 77	10.0	* 64
Max Q Clear Time (g_c+I1), s	17.5	83.8	33.5	40.9	9.5	63.7	7.2	13.0
Green Ext Time (p_c), s	0.0	0.0	0.0	0.3	0.0	12.8	0.1	3.8

Intersection Summary	
HCM 2010 Ctrl Delay	217.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	478	108	107	5	90	143	114	2165	6	174	2961	426
Future Volume (veh/h)	478	108	107	5	90	143	114	2165	6	174	2961	426
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1863	1900	1900	1900	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	509	115	114	5	96	152	121	2303	6	185	3150	453
Adj No. of Lanes	2	1	0	1	2	0	2	2	1	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	549	224	222	11	191	170	102	1793	818	142	2817	895
Arrive On Green	0.16	0.26	0.26	0.01	0.11	0.11	0.06	1.00	1.00	0.08	0.55	0.55
Sat Flow, veh/h	3476	859	852	1810	1805	1610	3510	3539	1615	1810	5085	1615
Grp Volume(v), veh/h	509	0	229	5	96	152	121	2303	6	185	3150	453
Grp Sat Flow(s),veh/h/ln	1738	0	1711	1810	1805	1610	1755	1770	1615	1810	1695	1615
Q Serve(g_s), s	27.5	0.0	21.7	0.5	9.5	17.7	5.5	0.0	0.0	14.9	105.2	33.0
Cycle Q Clear(g_c), s	27.5	0.0	21.7	0.5	9.5	17.7	5.5	0.0	0.0	14.9	105.2	33.0
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	549	0	447	11	191	170	102	1793	818	142	2817	895
V/C Ratio(X)	0.93	0.00	0.51	0.45	0.50	0.89	1.19	1.28	0.01	1.30	1.12	0.51
Avail Cap(c_a), veh/h	587	0	447	56	210	187	102	1793	818	142	2817	895
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09	0.09	0.09	0.09
Uniform Delay (d), s/veh	78.9	0.0	59.9	94.1	80.3	83.9	89.5	0.0	0.0	87.5	42.4	26.3
Incr Delay (d2), s/veh	20.4	0.0	1.0	26.3	2.1	35.9	94.8	128.5	0.0	141.4	53.8	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.1	0.0	15.7	0.6	8.5	14.7	7.2	56.2	0.0	23.3	109.4	16.6
LnGrp Delay(d),s/veh	99.4	0.0	60.9	120.4	82.3	119.8	184.3	128.5	0.0	228.9	96.1	26.5
LnGrp LOS	F		E	F	F	F	F	F	A	F	F	C
Approach Vol, veh/h		738			253			2430			3788	
Approach Delay, s/veh		87.4			105.6			130.9			94.3	
Approach LOS		F			F			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	22.0	103.9	6.9	57.2	13.0	112.9	36.4	27.7
Change Period (Y+Rc), s	7.1	* 7.7	* 5.7	* 7.6	7.5	* 7.7	6.4	* 7.6
Max Green Setting (Gmax), s	14.9	* 92	* 5.9	* 49	5.5	* 1E2	32.1	* 22
Max Q Clear Time (g_c+I1), s	16.9	2.0	2.5	23.7	7.5	107.2	29.5	19.7
Green Ext Time (p_c), s	0.0	89.6	0.0	2.9	0.0	0.0	0.5	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	106.3
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	7	38	138	18	188	65	2714	50	154	3499	164
Future Volume (veh/h)	53	7	38	138	18	188	65	2714	50	154	3499	164
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1838	1900	1881	1833	1900	1900	1881	1845	1845	1881	1845
Adj Flow Rate, veh/h	54	7	39	141	18	192	66	2769	51	157	3570	167
Adj No. of Lanes	1	1	0	1	1	0	1	2	1	1	2	1
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Percent Heavy Veh, %	3	0	0	1	0	0	0	1	3	3	1	3
Cap, veh/h	127	49	271	279	27	288	48	2185	958	104	2298	1007
Arrive On Green	0.20	0.20	0.20	0.20	0.20	0.20	0.03	0.61	0.61	0.06	0.64	0.64
Sat Flow, veh/h	1153	242	1350	1362	135	1437	1810	3574	1567	1757	3574	1567
Grp Volume(v), veh/h	54	0	46	141	0	210	66	2769	51	157	3570	167
Grp Sat Flow(s),veh/h/ln	1153	0	1592	1362	0	1572	1810	1787	1567	1757	1787	1567
Q Serve(g_s), s	8.6	0.0	4.5	18.1	0.0	23.4	5.0	116.2	2.5	11.2	122.2	8.1
Cycle Q Clear(g_c), s	32.0	0.0	4.5	22.6	0.0	23.4	5.0	116.2	2.5	11.2	122.2	8.1
Prop In Lane	1.00		0.85	1.00		0.91	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	127	0	320	279	0	315	48	2185	958	104	2298	1007
V/C Ratio(X)	0.42	0.00	0.14	0.51	0.00	0.67	1.39	1.27	0.05	1.52	1.55	0.17
Avail Cap(c_a), veh/h	199	0	419	370	0	420	48	2185	958	104	2298	1007
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	0.09	0.09	0.09	1.00	1.00	1.00
Uniform Delay (d), s/veh	84.8	0.0	62.5	71.8	0.0	70.1	92.5	36.9	14.8	89.4	33.9	13.6
Incr Delay (d2), s/veh	2.2	0.0	0.2	1.4	0.0	2.4	185.2	120.5	0.0	275.3	251.2	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	5.1	0.0	3.6	11.2	0.0	15.7	8.9	161.2	1.6	24.0	252.3	6.4
LnGrp Delay(d),s/veh	87.1	0.0	62.7	73.2	0.0	72.5	277.7	157.5	14.8	364.7	285.1	13.9
LnGrp LOS	F		E	E		E	F	F	B	F	F	B
Approach Vol, veh/h		100			351			2886			3894	
Approach Delay, s/veh		75.9			72.8			157.7			276.7	
Approach LOS		E			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	20.0	123.8		46.2	14.0	129.8		46.2
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 11	104.3		* 50	5.0	* 1.1E2		* 51
Max Q Clear Time (g_c+I1), s	13.2	118.2		34.0	7.0	124.2		25.4
Green Ext Time (p_c), s	0.0	0.0		2.0	0.0	0.0		2.3

Intersection Summary	
HCM 2010 Ctrl Delay	216.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	86	226	107	2849	0	3588	84
Future Volume (veh/h)	86	226	107	2849	0	3588	84
Number	7	14	5	2		6	16
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1827	1863		1881	1810
Adj Flow Rate, veh/h	89	233	110	2937		3699	87
Adj No. of Lanes	2	1	1	2		3	1
Peak Hour Factor	0.97	0.97	0.97	0.97		0.97	0.97
Percent Heavy Veh, %	0	1	4	2		1	5
Cap, veh/h	307	140	189	2500		2647	793
Arrive On Green	0.09	0.09	0.06	0.71		0.52	0.52
Sat Flow, veh/h	3510	1599	1740	3632		5305	1538
Grp Volume(v), veh/h	89	233	110	2937		3699	87
Grp Sat Flow(s),veh/h/ln	1755	1599	1740	1770		1712	1538
Q Serve(g_s), s	1.9	7.0	1.3	56.5		41.2	2.3
Cycle Q Clear(g_c), s	1.9	7.0	1.3	56.5		41.2	2.3
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	307	140	189	2500		2647	793
V/C Ratio(X)	0.29	1.67	0.58	1.18		1.40	0.11
Avail Cap(c_a), veh/h	307	140	199	2500		2647	793
HCM Platoon Ratio	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	34.2	36.5	22.3	11.8		19.4	10.0
Incr Delay (d2), s/veh	0.5	328.7	3.9	83.3		181.2	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	1.7	33.6	3.4	100.2		114.8	5.2
LnGrp Delay(d),s/veh	34.7	365.2	26.2	95.1		200.6	10.2
LnGrp LOS	C	F	C	F		F	B
Approach Vol, veh/h	322			3047		3786	
Approach Delay, s/veh	273.9			92.6		196.2	
Approach LOS	F			F		F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		64.0		16.0	15.3	48.7		
Change Period (Y+Rc), s		7.5		9.0	10.7	7.5		
Max Green Setting (Gmax), s		41.4		7.0	5.0	40.8		
Max Q Clear Time (g_c+I1), s		58.5		9.0	3.3	43.2		
Green Ext Time (p_c), s		0.0		0.0	0.0	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	155.6
HCM 2010 LOS	F

Notes
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	158	1049	835	528	946	425	434	1715	786	416	2325	346
Future Volume (veh/h)	158	1049	835	528	946	425	434	1715	786	416	2325	346
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1827	1863	1863	1792	1792	1900	1863	1863	1845	1881	1810
Adj Flow Rate, veh/h	163	1081	861	544	975	0	447	1768	0	429	2397	0
Adj No. of Lanes	1	2	2	2	2	1	2	3	1	2	3	1
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Percent Heavy Veh, %	3	4	2	2	6	6	0	2	2	3	1	5
Cap, veh/h	156	3457	2775	435	3504	1568	414	1777	553	312	1768	529
Arrive On Green	0.09	1.00	1.00	0.13	1.00	0.00	0.12	0.35	0.00	0.09	0.34	0.00
Sat Flow, veh/h	1757	3471	2787	3442	3406	1524	3510	5085	1583	3408	5136	1538
Grp Volume(v), veh/h	163	1081	861	544	975	0	447	1768	0	429	2397	0
Grp Sat Flow(s),veh/h/ln	1757	1736	1393	1721	1703	1524	1755	1695	1583	1704	1712	1538
Q Serve(g_s), s	16.9	0.4	46.9	24.0	0.0	0.0	22.4	65.9	0.0	17.4	65.4	0.0
Cycle Q Clear(g_c), s	16.9	0.4	46.9	24.0	0.0	0.0	22.4	65.9	0.0	17.4	65.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	156	3457	2775	435	3504	1568	414	1777	553	312	1768	529
V/C Ratio(X)	1.04	0.31	0.31	1.25	0.28	0.00	1.08	0.99	0.00	1.37	1.36	0.00
Avail Cap(c_a), veh/h	156	3457	2775	435	3504	1568	414	1777	553	312	1768	529
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	86.6	0.0	42.0	83.0	0.0	0.0	83.8	61.6	0.0	86.3	62.3	0.0
Incr Delay (d2), s/veh	83.9	0.2	0.3	130.9	0.2	0.0	67.4	20.2	0.0	187.5	164.0	0.0
Initial Q Delay(d3),s/veh	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.3	0.2	25.2	34.8	0.2	0.0	26.5	43.7	0.0	29.4	104.0	0.0
LnGrp Delay(d),s/veh	170.6	0.2	42.3	213.9	0.2	0.0	151.2	81.8	0.0	273.8	226.3	0.0
LnGrp LOS	F	A	D	F	A		F	F		F	F	
Approach Vol, veh/h		2105			1519			2215			2826	
Approach Delay, s/veh		30.6			76.7			95.8			233.5	
Approach LOS		C			E			F			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.7	207.8	29.0	78.0	32.0	201.5	34.0	73.0
Change Period (Y+Rc), s	* 8.8	* 8	* 12	* 12	* 8	* 8	11.6	* 7.6
Max Green Setting (Gmax), s	* 17	* 53	* 17	* 66	* 24	* 47	18.4	* 65
Max Q Clear Time (g_c+I1), s	18.9	2.0	19.4	67.9	26.0	48.9	24.4	67.4
Green Ext Time (p_c), s	0.0	31.4	0.0	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	121.5
HCM 2010 LOS	F

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Vol, veh/h	29	31	29	2334	0	3062	15
Future Vol, veh/h	29	31	29	2334	0	3062	15
Conflicting Peds, #/hr	0	0	2	0	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	-	None
Storage Length	0	-	325	-	350	-	350
Veh in Median Storage, #	1	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	96	96	96	96	92	96	96
Heavy Vehicles, %	0	10	18	2	2	3	0
Mvmt Flow	30	32	30	2431	0	3190	16

Major/Minor	Minor2		Major1		Major2		
Conflicting Flow All	4225	1597	3192	0	-	-	0
Stage 1	3192	-	-	-	-	-	-
Stage 2	1033	-	-	-	-	-	-
Critical Hdwy	6.4	7.3	5.66	-	5.64	-	-
Critical Hdwy Stg 1	7.3	-	-	-	-	-	-
Critical Hdwy Stg 2	6.7	-	-	-	-	-	-
Follow-up Hdwy	3.8	4	3.28	-	2.32	-	-
Pot Cap-1 Maneuver	~ 2	75	~ 22	-	-	-	-
Stage 1	~ 5	-	-	-	-	-	-
Stage 2	228	-	-	-	-	-	-
Platoon blocked, %				-		-	-
Mov Cap-1 Maneuver	-	75	~ 22	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-
Stage 1	~ 5	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s		7.1	0
HCM LOS	-		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBU	SBT	SBR
Capacity (veh/h)	~ 22	-	-	-	-	-
HCM Lane V/C Ratio	1.373	-	-	-	-	-
HCM Control Delay (s)	$ 581.5	-	-	0	-	-
HCM Lane LOS	F	-	-	A	-	-
HCM 95th %tile Q(veh)	3.9	-	-	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	50.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	171	0	0	38	96	2276	33	68	2899	75
Future Vol, veh/h	0	0	171	0	0	38	96	2276	33	68	2899	75
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	9	9	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	0	-	-	0	375	-	-	325	-	350
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	0	4	0	0	0	10	2	0	0	2	0
Mvmt Flow	0	0	186	0	0	41	104	2474	36	74	3151	82

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	-	-	1577	-	-	1264	3152	0	0	2519	0	0
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	-	-	7.18	-	-	7.1	5.5	-	-	5.3	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	-	-	3.94	-	-	3.9	3.2	-	-	3.1	-	-
Pot Cap-1 Maneuver	0	0	~ 83	0	0	140	~ 27	-	-	~ 70	-	-
Stage 1	0	0	-	0	0	-	-	-	-	-	-	-
Stage 2	0	0	-	0	0	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	-	~ 83	-	-	139	~ 27	-	-	~ 70	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 675.8	41.5	63.4	5
HCM LOS	F	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	~ 27	-	-	83	139	~ 70	-	-
HCM Lane V/C Ratio	3.865	-	-	2.239	0.297	1.056	-	-
HCM Control Delay (s)	$ 1587.5	-	-	$ 675.8	41.5	225.8	-	-
HCM Lane LOS	F	-	-	F	E	F	-	-
HCM 95th %tile Q(veh)	12.7	-	-	17	1.2	5.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	212	13	76	23	3	39	70	2298	18	101	3007	154
Future Volume (veh/h)	212	13	76	23	3	39	70	2298	18	101	3007	154
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		0.95	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1827	1837	1900	1900	1900	1900	1900	1863	1900	1900	1863	1827
Adj Flow Rate, veh/h	226	14	81	24	3	41	74	2445	19	107	3199	164
Adj No. of Lanes	2	1	0	0	1	0	1	3	0	1	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	4	0	0	0	0	0	0	2	2	0	2	4
Cap, veh/h	248	17	98	19	2	33	84	3307	26	129	3356	1020
Arrive On Green	0.07	0.07	0.07	0.03	0.03	0.03	0.05	0.64	0.64	0.07	0.66	0.66
Sat Flow, veh/h	3375	230	1332	576	72	984	1810	5206	40	1810	5085	1546
Grp Volume(v), veh/h	226	0	95	68	0	0	74	1591	873	107	3199	164
Grp Sat Flow(s),veh/h/ln	1688	0	1563	1632	0	0	1810	1695	1856	1810	1695	1546
Q Serve(g_s), s	10.0	0.0	9.0	5.0	0.0	0.0	6.1	48.4	48.6	8.8	86.5	6.1
Cycle Q Clear(g_c), s	10.0	0.0	9.0	5.0	0.0	0.0	6.1	48.4	48.6	8.8	86.5	6.1
Prop In Lane	1.00		0.85	0.35		0.60	1.00		0.02	1.00		1.00
Lane Grp Cap(c), veh/h	248	0	115	54	0	0	84	2154	1179	129	3356	1020
V/C Ratio(X)	0.91	0.00	0.83	1.25	0.00	0.00	0.88	0.74	0.74	0.83	0.95	0.16
Avail Cap(c_a), veh/h	248	0	115	54	0	0	84	2154	1179	193	3356	1020
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	69.0	0.0	68.6	72.5	0.0	0.0	71.1	18.8	18.8	68.7	23.4	9.7
Incr Delay (d2), s/veh	34.9	0.0	37.5	204.0	0.0	0.0	59.1	2.3	4.2	16.6	7.9	0.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	9.8	0.0	8.8	9.6	0.0	0.0	7.9	31.1	34.5	8.6	53.1	4.8
LnGrp Delay(d),s/veh	103.9	0.0	106.0	276.5	0.0	0.0	130.1	21.1	23.0	85.3	31.3	10.0
LnGrp LOS	F		F	F			F	C	C	F	C	B
Approach Vol, veh/h		321			68			2538			3470	
Approach Delay, s/veh		104.5			276.5			25.0			32.0	
Approach LOS		F			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	14.0	106.0		12.0	17.7	102.3		18.0
Change Period (Y+Rc), s	7.0	7.0		7.0	7.0	7.0		7.0
Max Green Setting (Gmax), s	7.0	99.0		5.0	16.0	90.0		11.0
Max Q Clear Time (g_c+I1), s	8.1	88.5		7.0	10.8	50.6		12.0
Green Ext Time (p_c), s	0.0	10.5		0.0	0.1	39.3		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	35.4
HCM 2010 LOS	D

APPENDIX G – FUTURE BUILD OPERATIONAL ANALYSIS SUPPORTING DOCUMENTATION

HCM SEGMENT LOS SUPPORTING DOCUMENTATION

SR 535 Future Build Segment Operations HCM Inputs

Segment	Link Length (feet)	Speed Limit (mph)	Length with Restrictive Median (feet)	Length with Curb (feet)	Access Points on the Left	Access Points on the Right	Number of Through Lanes	Downstream Intersection - Signalized or Stop Control	Porpotion of Intersections with Left Turn Bay
US 192 to Kyngs Heath Rd.	973	50	973	973	0	1	3	Signalized	100%
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	1645	50	1580	0	1	1	3	Signalized	100%
Osceola Parkway Ramps to Poinciana Blvd.	1098	50	1100	0	0	0	3	Signalized	100%
Poinciana Blvd. to Polynesian Isle Blvd.	1906	50	1885	0	1	0	3	Signalized	100%
Polynesian Isle Blvd. to LBV Factory Stores Dr.	1723	50	1700	0	0	1	3	Signalized	100%
LBV Factory Stores Dr. to International Dr.	2086	50	2086	0	0	2	3	Signalized	100%
International Dr. to SR 536/World Center Dr.	1386	50	1386	0	0	0	3	Signalized	100%
SR 536/World Center Dr. to Median Opening	1340	50	1236	0	1	1	3	Signalized	100%
Median Opening to Vistana Dr.	753	50	753	0	0	1	3	Signalized	100%
Vistana Dr. to Vistana Centre Dr.	1770	45	1770	1770	0	3	3	Signalized	100%
Vistana Centre Dr. to Meadow Creek Dr	705	45	705	705	0	1	3	Signalized	100%

Meadow Creek Dr. to Vistana Centre Dr.	705	45	705	705	0	1	3	Signalized	100%
Vistana Centre Dr. to Vistana Dr.	1770	45	1770	1770	0	0	3	Signalized	100%
Vistana Dr. to SR 536/World Center Dr.	2093	50	1989	0	0	1	3	Signalized	100%
SR 536/World Center Dr. to International Dr.	1386	50	1386	0	0	0	3	Signalized	100%
International Dr. to LBV Factory Stores Dr.	2086	50	2086	0	0	0	3	Signalized	100%
LBV Factory Store Dr. to Polynesian Isle Blvd.	1723	50	1700	0	1	2	3	Signalized	100%
Polynesian Isle Blvd. to Poinciana Blvd.	1906	50	1885	0	0	3	3	Signalized	100%
Poinciana Blvd. to Osceola Parkway Ramps	1098	50	1098	0	0	2	3	Signalized	100%
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	1645	50	1580	0	0	1	3	Signalized	100%
Kyngs Heath Rd. to US 192	973	50	973	973	0	1	3	Signalized	100%

SR 535 Future Build AM Peak Hour Segment Operations Summary

Segment	Synchro Int ID	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	2	0	2.8	0.47	1,637	49.1	-2.7	-0.1	46.3	0.89	41.2	1.03	0.08	21.8	26.9	58%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	4	0	0.4	0.44	1,538	49.1	1.4	-0.2	50.4	0.93	46.9	1.02	0.08	30.1	36.8	73%	B
Osceola Parkway Ramps to Poinciana Blvd.	5	0	47.9	0.98	1,538	49.1	1.5	0.0	50.6	0.89	44.9	1.03	0.00	22.4	10.7	21%	F
Poinciana Blvd. to Polynesian Isle Blvd.	6	0	0.3	0.76	3,137	49.1	1.5	-0.1	50.5	0.94	47.7	1.06	0.00	34.4	37.5	74%	B
Polynesian Isle Blvd. to LBV Factory Stores Dr.	7	0	25.9	0.98	3,642	49.1	1.5	-0.1	50.5	0.94	47.2	1.07	0.08	32.2	20.2	40%	E
LBV Factory Stores Dr. to International Dr.	8	0	7.3	0.89	3,793	49.1	1.5	-0.1	50.5	0.95	48.0	1.07	0.15	37.6	31.7	63%	C
International Dr. to SR 536/World Center Dr.	NA	0	54.6	0.98	3,741	49.1	1.5	0.0	50.6	0.91	46.3	1.07	0.00	27.4	11.5	23%	F
SR 536/World Center Dr. to Median Opening	30	0	3	0.69	2,822	49.1	1.4	-0.2	50.3	0.91	45.9	1.05	0.08	26.4	31.0	62%	C
Median Opening to Vistana Dr.	64	0	0.4	0.58	2,823	49.1	1.5	-0.2	50.4	0.83	41.7	1.06	0.08	18.0	27.8	55%	C
Vistana Dr. to Vistana Centre Dr.	53	0	13.1	0.82	2,701	46.8	-2.7	-0.2	43.8	0.96	41.9	1.05	0.23	36.2	24.5	56%	C
Vistana Centre Dr. to Meadow Creek Dr	60	0	6.8	0.75	2,751	46.8	-2.7	-0.2	43.9	0.86	37.6	1.06	0.08	18.5	19.0	43%	D
Meadow Creek Dr. to Vistana Centre Dr.	50	0	11.1	0.53	1,658	46.8	-2.7	-0.2	43.9	0.86	37.6	1.03	0.08	18.2	16.4	37%	E
Vistana Centre Dr. to Vistana Dr.	130	0	3.4	0.45	1,727	46.8	-2.7	0.0	44.1	0.95	42.1	1.03	0.00	35.1	31.3	71%	B
Vistana Dr. to SR 536/World Center Dr.	13	0	0.1	0.3	1,785	49.1	1.4	-0.1	50.5	0.95	48.0	1.03	0.08	36.3	39.2	78%	B
SR 536/World Center Dr. to International Dr.	NA	0	0.0	0.00	1,735	49.1	1.5	0.0	50.6	0.91	46.3	1.03	0.00	26.4	35.8	71%	B
International Dr. to LBV Factory Stores Dr.	7	0	0.3	0.43	1,732	49.1	1.5	0.0	50.6	0.95	48.1	1.03	0.00	36.0	39.2	77%	B
LBV Factory Store Dr. to Polynesian Isle Blvd.	6	0	4.1	0.35	1,616	49.1	1.5	-0.2	50.3	0.94	47.1	1.03	0.15	31.3	33.2	66%	C
Polynesian Isle Blvd. to Poinciana Blvd.	5	0	34.6	0.49	1,452	49.1	1.5	-0.2	50.4	0.94	47.5	1.02	0.23	33.8	19.0	38%	E
Poinciana Blvd. to Osceola Parkway Ramps	4	0	0	0.2	1,225	49.1	1.5	-0.3	50.3	0.89	44.7	1.02	0.15	22.5	33.3	66%	C
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	2	0	8.6	0.23	858	49.1	1.4	-0.1	50.5	0.93	47.0	1.01	0.03	29.7	29.3	58%	C
Kyngs Heath Rd. to US 192	1	0	64.4	0.00	827	49.1	-2.7	-0.1	46.3	0.89	41.2	1.01	0.03	21.5	7.7	17%	F

SR 535 Future Build PM Peak Hour Segment Operations Summary

Segment	Synchro Int ID	Delay From Other Sources (seconds)	Control Delay for Approach	V/C for Through Movement	Midsegment Demand Flow rate (veh/hour)	Speed Constant (mph)	Adjustment for Cross Section (mph)	Adjustment for Access Points (mph)	Base Free Flow Speed (mph)	Adjustment for Signal Spacing	Free Flow Speed (mph)	Adjustment for Vehicle Proximity	Delay Due to Turning Vehicles (sec/veh)	Segment Running Time (sec)	Travel Speed (mph)	Percent of BFFS	LOS
US 192 to Kyngs Heath Rd.	2	0	0.3	0.4	1,283	49.1	-2.7	-0.1	46.3	0.89	41.2	1.02	0.08	21.7	30.1	65%	C
Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	4	0	2.1	0.38	1,276	49.1	1.4	-0.2	50.4	0.93	46.9	1.02	0.08	30.0	35.0	69%	B
Osceola Parkway Ramps to Poinciana Blvd.	5	0	9.1	0.56	1,274	49.1	1.5	0.0	50.6	0.89	44.9	1.02	0.00	22.3	23.8	47%	D
Poinciana Blvd. to Polynesian Isle Blvd.	6	0	33	0.78	2,291	49.1	1.5	-0.1	50.5	0.94	47.7	1.04	0.00	33.9	19.4	38%	E
Polynesian Isle Blvd. to LBV Factory Stores Dr.	7	0	18.3	0.77	2,786	49.1	1.5	-0.1	50.5	0.94	47.2	1.05	0.08	31.7	23.5	47%	D
LBV Factory Stores Dr. to International Dr.	8	0	7.8	0.72	2,956	49.1	1.5	-0.1	50.5	0.95	48.0	1.05	0.15	37.0	31.8	63%	C
International Dr. to SR 536/World Center Dr.	NA	0	30.0	0.73	3,741	49.1	1.5	0.0	50.6	0.91	46.3	1.07	0.00	27.4	16.5	33%	E
SR 536/World Center Dr. to Median Opening	30	0	2.3	0.58	2,363	49.1	1.4	-0.2	50.3	0.91	45.9	1.04	0.08	26.2	32.0	64%	C
Median Opening to Vistana Dr.	64	0	0.3	0.49	2,363	49.1	1.5	-0.2	50.4	0.83	41.7	1.05	0.08	17.9	28.2	56%	C
Vistana Dr. to Vistana Centre Dr.	53	0	8.6	0.71	2,309	46.8	-2.7	-0.2	43.8	0.96	41.9	1.04	0.23	35.9	27.1	62%	C
Vistana Centre Dr. to Meadow Creek Dr.	60	0	1.9	0.69	2,541	46.8	-2.7	-0.2	43.9	0.86	37.6	1.06	0.08	18.5	23.6	54%	C
Meadow Creek Dr. to Vistana Centre Dr.	50	0	30.1	0.95	2,974	46.8	-2.7	-0.2	43.9	0.86	37.6	1.07	0.08	18.6	9.9	22%	F
Vistana Centre Dr. to Vistana Dr.	130	0	6.5	0.82	3,077	46.8	-2.7	0.0	44.1	0.95	42.1	1.06	0.00	36.1	28.3	64%	C
Vistana Dr. to SR 536/World Center Dr.	13	0	0.4	0.53	3,087	49.1	1.4	-0.1	50.5	0.95	48.0	1.05	0.08	37.1	38.1	75%	B
SR 536/World Center Dr. to International Dr.	NA	0	0.0	0.00	1,735	49.1	1.5	0.0	50.6	0.91	46.3	1.03	0.00	26.4	35.8	71%	B
International Dr. to LBV Factory Stores Dr.	7	0	28.1	0.99	1,732	49.1	1.5	0.0	50.6	0.95	48.1	1.03	0.00	36.0	22.2	44%	D
LBV Factory Store Dr. to Polynesian Isle Blvd.	6	0	46.8	0.98	1,616	49.1	1.5	-0.2	50.3	0.94	47.1	1.03	0.15	31.3	15.0	30%	F
Polynesian Isle Blvd. to Poinciana Blvd.	5	0	36	0.77	1,452	49.1	1.5	-0.2	50.4	0.94	47.5	1.02	0.23	33.8	18.6	37%	E
Poinciana Blvd. to Osceola Parkway Ramps	4	0	0	0.38	1,225	49.1	1.5	-0.3	50.3	0.89	44.7	1.02	0.15	22.5	33.3	66%	C
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	2	0	18.2	0.48	858	49.1	1.4	-0.1	50.5	0.93	47.0	1.01	0.03	29.7	23.4	46%	D
Kyngs Heath Rd. to US 192	1	0	66.1	0.00	827	49.1	-2.7	-0.1	46.3	0.89	41.2	1.01	0.03	21.5	7.6	16%	F

HCM 2010 INTERSECTION REPORTS (2040 BUILD)

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	149	949	3	12	1687	1487	3	0	3	718	0	80
Future Volume (veh/h)	149	949	3	12	1687	1487	3	0	3	718	0	80
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.96	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1793	1900	1900	1827	1863	1900	1900	1900	1863	1863	1743
Adj Flow Rate, veh/h	157	999	3	13	1776	1565	3	0	3	756	0	84
Adj No. of Lanes	2	3	0	1	3	2	1	1	0	3	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	6	6	0	4	2	0	0	0	2	0	9
Cap, veh/h	215	3137	9	41	2906	1619	16	0	14	934	0	516
Arrive On Green	0.06	0.62	0.62	0.02	0.58	0.58	0.01	0.00	0.01	0.18	0.00	0.18
Sat Flow, veh/h	3442	5038	15	1810	4988	2736	1810	0	1550	5322	0	2938
Grp Volume(v), veh/h	157	647	355	13	1776	1565	3	0	3	756	0	84
Grp Sat Flow(s),veh/h/ln	1721	1631	1790	1810	1663	1368	1810	0	1550	1774	0	1469
Q Serve(g_s), s	7.2	14.9	14.9	1.1	36.9	87.3	0.3	0.0	0.3	21.8	0.0	3.9
Cycle Q Clear(g_c), s	7.2	14.9	14.9	1.1	36.9	87.3	0.3	0.0	0.3	21.8	0.0	3.9
Prop In Lane	1.00		0.01	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	215	2032	1114	41	2906	1619	16	0	14	934	0	516
V/C Ratio(X)	0.73	0.32	0.32	0.32	0.61	0.97	0.19	0.00	0.22	0.81	0.00	0.16
Avail Cap(c_a), veh/h	271	2032	1114	93	2906	1619	68	0	58	1470	0	812
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.99	0.00	0.99
Uniform Delay (d), s/veh	73.7	14.2	14.2	77.0	21.6	31.2	78.7	0.0	78.8	63.4	0.0	56.0
Incr Delay (d2), s/veh	7.3	0.4	0.8	4.4	1.0	15.7	5.6	0.0	7.9	1.9	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	6.6	11.2	12.2	1.1	24.0	47.0	0.3	0.0	0.3	16.2	0.0	2.9
LnGrp Delay(d),s/veh	81.0	14.6	15.0	81.4	22.6	46.9	84.3	0.0	86.7	65.3	0.0	56.1
LnGrp LOS	F	B	B	F	C	D	F		F	E		E
Approach Vol, veh/h		1159			3354			6			840	
Approach Delay, s/veh		23.7			34.2			85.5			64.4	
Approach LOS		C			C			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	16.8	100.0		34.9	10.4	106.4		8.3
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	12.6	69.9		44.2	8.2	74.3		6.0
Max Q Clear Time (g_c+I1), s	9.2	89.3		23.8	3.1	16.9		2.3
Green Ext Time (p_c), s	0.1	0.0		3.1	0.0	51.2		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	36.7
HCM 2010 LOS	D

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	10	43	27	9	37	13	1572	55	55	758	47
Future Volume (veh/h)	41	10	43	27	9	37	13	1572	55	55	758	47
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1712	1855	1900	1792	1900	1696	1900	1863	1845	1810	1845	1845
Adj Flow Rate, veh/h	43	11	45	28	9	39	14	1655	58	58	798	49
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	11	0	0	6	0	12	0	2	3	5	3	3
Cap, veh/h	64	25	103	103	142	106	26	3497	1077	97	3535	1098
Arrive On Green	0.04	0.08	0.08	0.03	0.07	0.07	0.02	0.91	0.91	0.03	0.70	0.70
Sat Flow, veh/h	1630	316	1293	3312	1900	1425	1810	5085	1566	3343	5036	1565
Grp Volume(v), veh/h	43	0	56	28	9	39	14	1655	58	58	798	49
Grp Sat Flow(s),veh/h/ln	1630	0	1610	1656	1900	1425	1810	1695	1566	1672	1679	1565
Q Serve(g_s), s	4.2	0.0	5.3	1.3	0.7	4.2	1.2	7.8	0.5	2.7	9.0	1.5
Cycle Q Clear(g_c), s	4.2	0.0	5.3	1.3	0.7	4.2	1.2	7.8	0.5	2.7	9.0	1.5
Prop In Lane	1.00		0.80	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	64	0	129	103	142	106	26	3497	1077	97	3535	1098
V/C Ratio(X)	0.68	0.00	0.44	0.27	0.06	0.37	0.53	0.47	0.05	0.60	0.23	0.04
Avail Cap(c_a), veh/h	479	0	473	352	202	151	61	3497	1077	130	3535	1098
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.33	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.63	0.63	0.63	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.9	0.0	70.2	75.7	68.9	70.5	77.9	2.5	2.2	76.8	8.4	7.3
Incr Delay (d2), s/veh	11.8	0.0	2.3	1.4	0.2	2.1	10.2	0.3	0.1	5.9	0.1	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	3.8	0.0	4.4	1.1	0.7	3.1	1.2	6.1	0.4	2.4	7.5	1.2
LnGrp Delay(d),s/veh	87.7	0.0	72.5	77.1	69.0	72.6	88.2	2.8	2.2	82.6	8.6	7.4
LnGrp LOS	F		E	E	E	E	F	A	A	F	A	A
Approach Vol, veh/h		99			76			1727			905	
Approach Delay, s/veh		79.1			73.8			3.4			13.3	
Approach LOS		E			E			A			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.1	119.1	12.8	18.9	11.4	116.8	12.0	19.8
Change Period (Y+Rc), s	6.8	6.8	* 6.6	7.0	6.8	6.8	7.0	* 7
Max Green Setting (Gmax), s	5.4	63.4	* 47	17.0	6.2	62.6	17.0	* 47
Max Q Clear Time (g_c+I1), s	13.2	11.0	6.2	6.2	4.7	9.8	3.3	7.3
Green Ext Time (p_c), s	0.0	30.5	0.1	0.3	0.0	30.6	0.0	0.5

Intersection Summary	
HCM 2010 Ctrl Delay	11.2
HCM 2010 LOS	B

Notes
User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	27	0	0	0	37	1538	74	0	832	37
Future Vol, veh/h	0	0	27	0	0	0	37	1538	74	0	832	37
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	6	0	0	0	4	3	4	0	3	4
Mvmt Flow	0	0	28	0	0	0	39	1619	78	0	876	39

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	-	-	439				877	0	0	-	-	0
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	-	-
Critical Hdwy	-	-	7.22				5.38	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	-	-	-
Follow-up Hdwy	-	-	3.96				3.14	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	475				442	-	-	0	-	0
Stage 1	0	0	-				-	-	-	0	-	0
Stage 2	0	0	-				-	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	0	475				442	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-				-	-	-	-	-	-
Stage 1	-	0	-				-	-	-	-	-	-
Stage 2	-	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.1	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	442	-	-	475	-
HCM Lane V/C Ratio	0.088	-	-	0.06	-
HCM Control Delay (s)	13.9	-	-	13.1	-
HCM Lane LOS	B	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1538	0	232	866
Future Volume (veh/h)	0	0	1538	0	232	866
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	0	1845	1845
Adj Flow Rate, veh/h			1619	0	244	912
Adj No. of Lanes			3	0	2	3
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	0	3	3
Cap, veh/h			3693	0	324	4608
Arrive On Green			1.00	0.00	0.19	1.00
Sat Flow, veh/h			5421	0	3408	5202
Grp Volume(v), veh/h			1619	0	244	912
Grp Sat Flow(s),veh/h/ln			1695	0	1704	1679
Q Serve(g_s), s			0.0	0.0	5.4	0.0
Cycle Q Clear(g_c), s			0.0	0.0	5.4	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			3693	0	324	4608
V/C Ratio(X)			0.44	0.00	0.75	0.20
Avail Cap(c_a), veh/h			3693	0	447	4847
HCM Platoon Ratio			2.00	1.00	2.00	2.00
Upstream Filter(I)			1.00	0.00	0.82	0.82
Uniform Delay (d), s/veh			0.0	0.0	31.5	0.0
Incr Delay (d2), s/veh			0.4	0.0	3.9	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln			0.2	0.0	4.8	0.0
LnGrp Delay(d),s/veh			0.4	0.0	35.4	0.0
LnGrp LOS			A		D	A
Approach Vol, veh/h			1619			1156
Approach Delay, s/veh			0.4			7.5
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	15.1	64.9				80.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	10.5	55.2				* 77		
Max Q Clear Time (g_c+I1), s	7.4	2.0				2.0		
Green Ext Time (p_c), s	0.2	30.3				35.5		

Intersection Summary	
HCM 2010 Ctrl Delay	3.3
HCM 2010 LOS	A

Notes
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1333	89	52	186	107	334	70	1470	180	27	987	438
Future Volume (veh/h)	1333	89	52	186	107	334	70	1470	180	27	987	438
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1836	1900	1810	1583	1845	1743	1863	1863	1863	1845	1776
Adj Flow Rate, veh/h	1403	94	55	196	113	352	74	1547	189	28	1039	461
Adj No. of Lanes	3	2	0	2	2	1	2	3	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	2	2	5	20	3	9	2	2	2	3	7
Cap, veh/h	1437	604	330	236	197	353	155	1573	487	283	2118	1062
Arrive On Green	0.28	0.28	0.28	0.07	0.07	0.07	0.10	0.62	0.62	0.16	0.42	0.42
Sat Flow, veh/h	5052	2179	1191	3343	3008	1568	3221	5085	1576	1774	5036	1504
Grp Volume(v), veh/h	1403	74	75	196	113	352	74	1547	189	28	1039	461
Grp Sat Flow(s),veh/h/ln	1684	1744	1626	1672	1504	1568	1610	1695	1576	1774	1679	1504
Q Serve(g_s), s	44.0	5.1	5.6	9.3	5.8	10.5	3.5	47.4	9.6	2.2	24.1	20.9
Cycle Q Clear(g_c), s	44.0	5.1	5.6	9.3	5.8	10.5	3.5	47.4	9.6	2.2	24.1	20.9
Prop In Lane	1.00		0.73	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	1437	483	450	236	197	353	155	1573	487	283	2118	1062
V/C Ratio(X)	0.98	0.15	0.17	0.83	0.57	1.00	0.48	0.98	0.39	0.10	0.49	0.43
Avail Cap(c_a), veh/h	1437	483	450	242	197	353	155	1573	487	283	2118	1062
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.89	0.89	0.89	0.88	0.88	0.88
Uniform Delay (d), s/veh	56.7	43.7	43.8	73.4	72.6	62.0	70.4	30.1	22.9	57.4	33.8	10.0
Incr Delay (d2), s/veh	18.3	0.1	0.2	20.7	3.9	47.3	9.1	17.8	2.1	0.6	0.7	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	30.8	4.5	4.6	8.6	4.6	27.5	3.1	32.0	7.7	2.0	16.5	13.6
LnGrp Delay(d),s/veh	75.1	43.8	44.0	94.1	76.5	109.2	79.5	47.9	25.0	58.1	34.6	11.2
LnGrp LOS	E	D	D	F	E	F	E	D	C	E	C	B
Approach Vol, veh/h		1552			661			1810			1528	
Approach Delay, s/veh		72.1			99.2			46.8			27.9	
Approach LOS		E			F			D			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	15.2	74.8	52.0	18.0	33.0	57.0	18.2	51.8
Change Period (Y+Rc), s	7.5	7.5	6.5	7.5	7.5	7.5	6.9	7.5
Max Green Setting (Gmax), s	7.7	67.3	45.5	10.5	25.5	49.5	11.6	44.0
Max Q Clear Time (g_c+I1), s	5.5	26.1	46.0	12.5	4.2	49.4	11.3	7.6
Green Ext Time (p_c), s	0.0	30.9	0.0	0.0	0.0	0.1	0.0	2.9

Intersection Summary	
HCM 2010 Ctrl Delay	54.9
HCM 2010 LOS	D

Notes
User approved changes to right turn type.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	484	36	93	5	89	142	19	3016	2	58	1354	155
Future Volume (veh/h)	484	36	93	5	89	142	19	3016	2	58	1354	155
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1737	1900	1900	1900	1900	1759	1863	1900	1900	1827	1827
Adj Flow Rate, veh/h	509	38	98	5	94	149	20	3175	2	61	1425	163
Adj No. of Lanes	2	1	0	1	2	1	2	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	0	0	0	0	0	8	2	0	0	4	4
Cap, veh/h	546	113	291	11	350	203	60	4176	1326	102	4056	1509
Arrive On Green	0.16	0.26	0.26	0.01	0.10	0.10	0.04	1.00	1.00	0.03	0.81	0.81
Sat Flow, veh/h	3442	430	1110	1810	3610	1610	3250	5085	1615	3510	4988	1553
Grp Volume(v), veh/h	509	0	136	5	94	149	20	3175	2	61	1425	163
Grp Sat Flow(s),veh/h/ln	1721	0	1540	1810	1805	1610	1625	1695	1615	1755	1663	1553
Q Serve(g_s), s	23.4	0.0	11.4	0.4	3.9	14.3	1.0	0.0	0.0	2.7	12.0	0.5
Cycle Q Clear(g_c), s	23.4	0.0	11.4	0.4	3.9	14.3	1.0	0.0	0.0	2.7	12.0	0.5
Prop In Lane	1.00		0.72	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	546	0	404	11	350	203	60	4176	1326	102	4056	1509
V/C Ratio(X)	0.93	0.00	0.34	0.44	0.27	0.73	0.33	0.76	0.00	0.60	0.35	0.11
Avail Cap(c_a), veh/h	546	0	404	62	350	203	132	4176	1326	121	4056	1509
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.21	0.21	0.21	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.5	0.0	47.7	79.2	67.0	67.3	76.1	0.0	0.0	76.7	3.9	0.1
Incr Delay (d2), s/veh	23.1	0.0	0.5	25.0	0.4	12.8	0.7	0.3	0.0	5.6	0.2	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	18.7	0.0	8.6	0.5	3.5	11.5	0.8	0.2	0.0	2.6	9.3	0.5
LnGrp Delay(d),s/veh	89.6	0.0	48.2	104.3	67.4	80.2	76.8	0.3	0.0	82.4	4.1	0.2
LnGrp LOS	F		D	F	E	F	E	A	A	F	A	A
Approach Vol, veh/h		645			248			3197			1649	
Approach Delay, s/veh		80.9			75.8			0.8			6.7	
Approach LOS		F			E			A			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.2	140.1	5.5	48.6	10.4	138.9	32.0	22.1
Change Period (Y+Rc), s	4.5	7.5	4.5	* 6.6	7.5	7.5	* 6.6	* 6.6
Max Green Setting (Gmax), s	5.5	90.5	5.5	* 35	6.5	86.5	* 25	* 16
Max Q Clear Time (g_c+I1), s	14.7	2.0	2.4	13.4	3.0	14.0	25.4	16.3
Green Ext Time (p_c), s	0.0	84.9	0.0	1.8	0.0	70.1	0.0	0.0

Intersection Summary		
HCM 2010 Ctrl Delay		14.7
HCM 2010 LOS		B

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	7	13	28	4	75	41	3664	21	67	1575	90
Future Volume (veh/h)	53	7	13	28	4	75	41	3664	21	67	1575	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	0.99		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1570	1900	1900	1792	1900	1759	1827	1863	1759	1827	1827	1792
Adj Flow Rate, veh/h	56	7	14	29	4	79	43	3857	22	71	1658	95
Adj No. of Lanes	1	1	0	1	1	1	1	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	21	0	0	6	0	8	4	2	8	4	4	6
Cap, veh/h	113	36	72	114	121	141	55	3956	1163	105	3872	1182
Arrive On Green	0.06	0.06	0.06	0.06	0.06	0.06	0.03	0.78	0.78	0.06	1.00	1.00
Sat Flow, veh/h	1090	561	1122	1316	1900	1474	1740	5085	1495	3375	4988	1523
Grp Volume(v), veh/h	56	0	21	29	4	79	43	3857	22	71	1658	95
Grp Sat Flow(s),veh/h/ln	1090	0	1683	1316	1900	1474	1740	1695	1495	1688	1663	1523
Q Serve(g_s), s	8.1	0.0	1.9	3.4	0.3	8.2	3.9	111.6	0.5	3.3	0.0	0.0
Cycle Q Clear(g_c), s	8.4	0.0	1.9	5.3	0.3	8.2	3.9	111.6	0.5	3.3	0.0	0.0
Prop In Lane	1.00		0.67	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	113	0	108	114	121	141	55	3956	1163	105	3872	1182
V/C Ratio(X)	0.50	0.00	0.20	0.26	0.03	0.56	0.78	0.98	0.02	0.67	0.43	0.08
Avail Cap(c_a), veh/h	113	0	108	119	129	147	98	3956	1163	105	3872	1182
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.88	0.88	0.88
Uniform Delay (d), s/veh	74.2	0.0	71.0	73.5	70.3	69.2	76.9	16.3	4.0	74.2	0.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	0.9	1.2	0.1	4.4	20.8	9.6	0.0	13.8	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.6	0.0	1.6	2.3	0.3	6.3	4.0	67.1	0.4	3.1	0.2	0.1
LnGrp Delay(d),s/veh	77.6	0.0	71.9	74.7	70.4	73.6	97.8	25.9	4.0	88.0	0.3	0.1
LnGrp LOS	E		E	E	E	E	F	C	A	F	A	A
Approach Vol, veh/h		77			112			3922			1824	
Approach Delay, s/veh		76.0			73.7			26.6			3.7	
Approach LOS		E			E			C			A	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	13.8	132.2		18.3	14.1	131.9		18.3
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 5	120.4		* 10	9.0	* 1.2E2		* 11
Max Q Clear Time (g_c+I1), s	5.3	113.6		10.4	5.9	2.0		10.2
Green Ext Time (p_c), s	0.0	6.8		0.0	0.0	113.3		0.0

Intersection Summary		
HCM 2010 Ctrl Delay		21.1
HCM 2010 LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR	
Lane Configurations								
Traffic Volume (veh/h)	46	70	99	3696	0	1662	71	
Future Volume (veh/h)	46	70	99	3696	0	1662	71	
Number	7	14	5	2		6	16	
Initial Q (Qb), veh	0	0	0	0		0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00	
Adj Sat Flow, veh/h/ln	1845	1810	1845	1863		1827	1792	
Adj Flow Rate, veh/h	48	74	104	3891		1749	75	
Adj No. of Lanes	2	2	2	3		3	1	
Peak Hour Factor	0.95	0.95	0.95	0.95		0.95	0.95	
Percent Heavy Veh, %	3	5	3	2		4	6	
Cap, veh/h	134	107	226	4360		3789	1157	
Arrive On Green	0.04	0.04	0.03	0.86		0.25	0.25	
Sat Flow, veh/h	3408	2707	3408	5253		5152	1524	
Grp Volume(v), veh/h	48	74	104	3891		1749	75	
Grp Sat Flow(s),veh/h/ln	1704	1354	1704	1695		1663	1524	
Q Serve(g_s), s	2.2	4.3	0.6	74.3		47.5	6.0	
Cycle Q Clear(g_c), s	2.2	4.3	0.6	74.3		47.5	6.0	
Prop In Lane	1.00	1.00	1.00				1.00	
Lane Grp Cap(c), veh/h	134	107	226	4360		3789	1157	
V/C Ratio(X)	0.36	0.69	0.46	0.89		0.46	0.06	
Avail Cap(c_a), veh/h	149	118	230	4360		3789	1157	
HCM Platoon Ratio	1.00	1.00	1.00	1.00		0.33	0.33	
Upstream Filter(I)	1.00	1.00	0.11	0.11		0.82	0.82	
Uniform Delay (d), s/veh	74.9	75.9	58.3	6.9		32.2	16.7	
Incr Delay (d2), s/veh	1.6	14.2	0.2	0.4		0.3	0.1	
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0	
%ile BackOfQ(95%),veh/ln	1.9	6.2	2.8	37.2		29.0	9.4	
LnGrp Delay(d),s/veh	76.5	90.1	58.5	7.3		32.6	16.7	
LnGrp LOS	E	F	E	A		C	B	
Approach Vol, veh/h	122			3995		1824		
Approach Delay, s/veh	84.7			8.6		31.9		
Approach LOS	F			A		C		
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		144.7		15.3	15.7	129.0		
Change Period (Y+Rc), s		7.5		9.0	10.7	7.5		
Max Green Setting (Gmax), s		121.4		7.0	5.1	120.7		
Max Q Clear Time (g_c+I1), s		76.3		6.3	2.6	49.5		
Green Ext Time (p_c), s		44.9		0.0	0.1	70.7		
Intersection Summary								
HCM 2010 Ctrl Delay			17.3					
HCM 2010 LOS			B					

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	469	0	374	1335	0	0	2068	771	0	1076	434
Future Volume (vph)	1	469	0	374	1335	0	0	2068	771	0	1076	434
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	5.0	6.0		4.5	5.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95			0.91	1.00		0.91	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1799	3562		3523	3632			5219	1625		5250	1528
Flt Permitted	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	1799	3562		3523	3632			5219	1625		5250	1528
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1	494	0	394	1405	0	0	2177	812	0	1133	457
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	209	0	0	118
Lane Group Flow (vph)	1	494	0	394	1405	0	0	2177	603	0	1133	339
Heavy Vehicles (%)	3%	4%	2%	2%	2%	2%	2%	2%	2%	2%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	8
Turn Type	Prot	NA		Prot	NA			NA	Perm		NA	Perm
Protected Phases	3	8		7	4			1 2			1 2	
Permitted Phases									1 2			1 2
Actuated Green, G (s)	13.0	55.7		20.8	64.0			68.0	68.0		68.0	68.0
Effective Green, g (s)	13.0	55.7		20.8	64.0			68.0	68.0		68.0	68.0
Actuated g/C Ratio	0.08	0.35		0.13	0.40			0.42	0.42		0.42	0.42
Clearance Time (s)	5.0	6.0		4.5	5.0							
Lane Grp Cap (vph)	146	1240		457	1452			2218	690		2231	649
v/s Ratio Prot	0.00	0.14		c0.11	c0.39			c0.42			0.22	
v/s Ratio Perm									0.37			0.22
v/c Ratio	0.01	0.40		0.86	0.97			0.98	0.87		0.51	0.52
Uniform Delay, d1	67.6	39.5		68.2	47.0			45.4	42.1		33.7	34.0
Progression Factor	1.10	0.47		1.11	0.42			0.81	0.95		0.86	0.82
Incremental Delay, d2	0.1	0.9		16.4	15.2			13.5	12.3		0.8	2.9
Delay (s)	74.4	19.4		92.2	35.1			50.4	52.3		29.7	30.8
Level of Service	E	B		F	D			D	D		C	C
Approach Delay (s)		19.5			47.6			51.0			30.0	
Approach LOS		B			D			D			C	

Intersection Summary			
HCM 2000 Control Delay	43.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	90.7%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	470	284	0	1769	903	0
Future Volume (vph)	470	284	0	1769	903	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	5.0	5.0		4.0	5.0	
Lane Util. Factor	0.91	0.88		0.91	0.97	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	5119	2860		5219	3594	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	5119	2860		5219	3594	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	495	299	0	1862	951	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	495	299	0	1862	951	0
Heavy Vehicles (%)	4%	2%	3%	2%	0%	2%
Turn Type	NA	custom		NA	Prot	
Protected Phases	3 4			1 8 7	2	
Permitted Phases		4				
Actuated Green, G (s)	82.0	64.0		99.0	52.0	
Effective Green, g (s)	82.0	64.0		88.5	52.0	
Actuated g/C Ratio	0.51	0.40		0.55	0.32	
Clearance Time (s)		5.0			5.0	
Lane Grp Cap (vph)	2623	1144		2886	1168	
v/s Ratio Prot	0.10			c0.36	c0.26	
v/s Ratio Perm		0.10				
v/c Ratio	0.19	0.26		0.65	0.81	
Uniform Delay, d1	21.0	32.2		24.8	49.6	
Progression Factor	1.00	1.00		0.29	1.12	
Incremental Delay, d2	0.2	0.6		0.5	5.2	
Delay (s)	21.2	32.7		7.7	60.9	
Level of Service	C	C		A	E	
Approach Delay (s)	25.5			7.7	60.9	
Approach LOS	C			A	E	

Intersection Summary			
HCM 2000 Control Delay	25.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1240	1709	605	275	0
Future Volume (vph)	0	1240	1709	605	275	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.0	5.0	4.0	5.0	
Lane Util. Factor		0.91	0.86	1.00	0.97	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		5119	6328	1564	3489	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		5119	6328	1564	3489	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1305	1799	637	289	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1305	1799	637	289	0
Heavy Vehicles (%)	2%	4%	6%	6%	3%	2%
Turn Type		NA	NA	Free	Prot	
Protected Phases		1 8 7	4 3		2	
Permitted Phases				Free		
Actuated Green, G (s)		99.0	82.0	160.0	52.0	
Effective Green, g (s)		88.5	82.0	160.0	52.0	
Actuated g/C Ratio		0.55	0.51	1.00	0.32	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)		2831	3243	1564	1133	
v/s Ratio Prot		0.25	c0.28		0.08	
v/s Ratio Perm				c0.41		
v/c Ratio		0.46	0.55	0.41	0.26	
Uniform Delay, d1		21.4	26.6	0.0	39.7	
Progression Factor		1.15	1.00	1.00	1.49	
Incremental Delay, d2		0.4	0.7	0.8	0.5	
Delay (s)		25.0	27.3	0.8	59.8	
Level of Service		C	C	A	E	
Approach Delay (s)		25.0	20.3		59.8	
Approach LOS		C	C		E	

Intersection Summary			
HCM 2000 Control Delay	24.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	40.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	605	2069	0	275	1510
Future Volume (vph)	0	605	2069	0	275	1510
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		5.0	5.0		5.0	4.0
Lane Util. Factor		1.00	0.91		0.97	0.91
Frt		0.86	1.00		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1591	5271		3489	5271
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1591	5271		3489	5271
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	637	2178	0	289	1589
RTOR Reduction (vph)	0	1	0	0	0	0
Lane Group Flow (vph)	0	636	2178	0	289	1589
Heavy Vehicles (%)	2%	6%	1%	2%	3%	1%
Turn Type		Over	NA		Prot	NA
Protected Phases		1	2		1	Free
Permitted Phases						
Actuated Green, G (s)		74.0	76.0		74.0	160.0
Effective Green, g (s)		74.0	76.0		74.0	160.0
Actuated g/C Ratio		0.46	0.48		0.46	1.00
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		735	2503		1613	5271
v/s Ratio Prot		c0.40	c0.41		0.08	0.30
v/s Ratio Perm						
v/c Ratio		0.87	0.87		0.18	0.30
Uniform Delay, d1		38.5	37.6		25.2	0.0
Progression Factor		1.00	0.07		0.93	1.00
Incremental Delay, d2		12.2	1.4		0.2	0.1
Delay (s)		50.7	4.2		23.6	0.1
Level of Service		D	A		C	A
Approach Delay (s)	50.7		4.2			3.7
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	10.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	83.8%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	284	903	2839	1450	0
Future Volume (vph)	0	284	903	2839	1450	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		5.0	5.0	4.0	5.0	
Lane Util. Factor		0.88	0.97	0.91	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		2860	3594	5219	5198	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		2860	3594	5219	5198	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	299	951	2988	1526	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	299	951	2988	1526	0
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0
Turn Type		Over	Prot	NA	NA	
Protected Phases		1	1	Free	2	
Permitted Phases						
Actuated Green, G (s)		72.0	72.0	160.0	78.0	
Effective Green, g (s)		72.0	72.0	160.0	78.0	
Actuated g/C Ratio		0.45	0.45	1.00	0.49	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		1287	1617	5219	2534	
v/s Ratio Prot		0.10	0.26	0.57	0.29	
v/s Ratio Perm						
v/c Ratio		0.23	0.59	0.57	0.60	
Uniform Delay, d1		27.0	32.9	0.0	29.7	
Progression Factor		0.00	0.85	1.00	0.37	
Incremental Delay, d2		0.4	0.7	0.2	0.9	
Delay (s)		0.4	28.7	0.2	11.9	
Level of Service		A	C	A	B	
Approach Delay (s)	0.4			7.1	11.9	
Approach LOS	A			A	B	

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	160.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	26	0	0	2822	0	0
Future Volume (vph)	26	0	0	2822	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5		
Lane Util. Factor	1.00			0.91		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	1770			5085		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	27	0	0	2971	0	0
RTOR Reduction (vph)	2	0	0	0	0	0
Lane Group Flow (vph)	25	0	0	2971	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)	3.2			67.8		
Effective Green, g (s)	3.2			67.8		
Actuated g/C Ratio	0.04			0.85		
Clearance Time (s)	4.5			4.5		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	70			4309		
v/s Ratio Prot	c0.01			c0.58		
v/s Ratio Perm						
v/c Ratio	0.36			0.69		
Uniform Delay, d1	37.4			2.2		
Progression Factor	0.89			1.00		
Incremental Delay, d2	2.9			0.8		
Delay (s)	36.2			3.0		
Level of Service	D			A		
Approach Delay (s)	36.2			3.0	0.0	
Approach LOS	D			A	A	

Intersection Summary			
HCM 2000 Control Delay	3.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.67		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2796	0	0
Future Volume (vph)	0	0	0	2796	0	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)				4.5		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5219		
Flt Permitted				1.00		
Satd. Flow (perm)				5219		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2943	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2943	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.5		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5219		
v/s Ratio Prot				c0.56		
v/s Ratio Perm						
v/c Ratio				0.56		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.4		
Delay (s)				0.4		
Level of Service				A		
Approach Delay (s)	0.0			0.4	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	64.3%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	1767
Future Volume (vph)	0	0	0	0	0	1767
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)						4.5
Lane Util. Factor						0.91
Frt						1.00
Flt Protected						1.00
Satd. Flow (prot)						5219
Flt Permitted						1.00
Satd. Flow (perm)						5219
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	0	1860
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	1860
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)						53.0
Effective Green, g (s)						53.0
Actuated g/C Ratio						0.66
Clearance Time (s)						4.5
Lane Grp Cap (vph)						3457
v/s Ratio Prot						c0.36
v/s Ratio Perm						
v/c Ratio						0.54
Uniform Delay, d1						7.1
Progression Factor						0.63
Incremental Delay, d2						0.6
Delay (s)						5.0
Level of Service						A
Approach Delay (s)	0.0		0.0			5.0
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	5.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	143	0	95	0	0	0	0	0	1560	98
Future Volume (vph)	0	0	143	0	95	0	0	0	0	0	1560	98
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			1622		1773						5219	1658
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			1622		1773						5219	1658
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	151	0	100	0	0	0	0	0	1642	103
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	24
Lane Group Flow (vph)	0	0	151	0	100	0	0	0	0	0	1642	79
Heavy Vehicles (%)	2%	2%	4%	2%	10%	2%	2%	2%	2%	2%	2%	0%
Turn Type			Prot		NA						NA	Perm
Protected Phases			5	3	8						6	
Permitted Phases												6
Actuated Green, G (s)			13.1		8.8						53.6	53.6
Effective Green, g (s)			13.1		8.8						53.6	53.6
Actuated g/C Ratio			0.15		0.10						0.60	0.60
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			237		174						3125	992
v/s Ratio Prot			c0.09		c0.06						c0.31	
v/s Ratio Perm												0.05
v/c Ratio			0.64		0.57						0.53	0.08
Uniform Delay, d1			36.0		38.6						10.5	7.6
Progression Factor			1.00		1.00						1.00	1.00
Incremental Delay, d2			5.5		4.5						0.6	0.2
Delay (s)			41.5		43.1						11.1	7.7
Level of Service			D		D						B	A
Approach Delay (s)		41.5			43.1			0.0			10.9	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	89.5	Sum of lost time (s)	14.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	32	35	0	0	0	0	0	0	1751	12
Future Volume (vph)	0	0	32	35	0	0	0	0	0	0	1751	12
Ideal Flow (vphpl)	1900	1900	1900	1950	1900	1950	1900	1950	1950	1950	1950	1900
Total Lost time (s)			4.5		4.5						4.0	4.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		0.95						1.00	1.00
Satd. Flow (prot)			1611		1805						5219	1583
Flt Permitted			1.00		0.95						1.00	1.00
Satd. Flow (perm)			1611		1805						5219	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	34	37	0	0	0	0	0	0	1843	13
RTOR Reduction (vph)	0	0	33	0	33	0	0	0	0	0	0	4
Lane Group Flow (vph)	0	0	1	0	4	0	0	0	0	0	1843	9
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type			Prot	Prot	NA						NA	Perm
Protected Phases			1	4	8						2	
Permitted Phases												2
Actuated Green, G (s)			3.2		9.2						55.1	55.1
Effective Green, g (s)			3.2		9.2						55.1	55.1
Actuated g/C Ratio			0.04		0.11						0.69	0.69
Clearance Time (s)			4.5		4.5						4.0	4.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			64		207						3594	1090
v/s Ratio Prot			c0.00		c0.00						c0.35	
v/s Ratio Perm												0.01
v/c Ratio			0.02		0.02						0.51	0.01
Uniform Delay, d1			36.9		31.4						6.0	3.9
Progression Factor			1.00		3.01						1.00	1.00
Incremental Delay, d2			0.1		0.0						0.5	0.0
Delay (s)			37.0		94.5						6.5	3.9
Level of Service			D		F						A	A
Approach Delay (s)		37.0			94.5			0.0			6.5	
Approach LOS		D			F			A			A	

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	52.1%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	115	54	0	0	0	39	0	2652	49	0	0	0
Future Volume (vph)	115	54	0	0	0	39	0	2652	49	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				5.0		5.0	5.0			
Lane Util. Factor	0.95	0.95				1.00		0.91	1.00			
Frt	1.00	1.00				0.86		1.00	0.85			
Flt Protected	0.95	0.98				1.00		1.00	1.00			
Satd. Flow (prot)	1681	1759				1644		5085	1615			
Flt Permitted	0.95	0.98				1.00		1.00	1.00			
Satd. Flow (perm)	1681	1759				1644		5085	1615			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	121	57	0	0	0	41	0	2792	52	0	0	0
RTOR Reduction (vph)	82	82	0	0	0	0	0	0	17	0	0	0
Lane Group Flow (vph)	5	9	0	0	0	41	0	2792	35	0	0	0
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%	2%	2%	0%	2%	2%	2%
Turn Type	Split	NA				Prot		NA	Perm			
Protected Phases	8	8				5		6				
Permitted Phases									6			
Actuated Green, G (s)	5.1	5.1				9.6		58.8	58.8			
Effective Green, g (s)	5.1	5.1				9.6		58.8	58.8			
Actuated g/C Ratio	0.06	0.06				0.11		0.67	0.67			
Clearance Time (s)	4.5	4.5				5.0		5.0	5.0			
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)	97	101				179		3397	1079			
v/s Ratio Prot	0.00	c0.01				c0.02		c0.55				
v/s Ratio Perm									0.02			
v/c Ratio	0.05	0.09				0.23		0.82	0.03			
Uniform Delay, d1	39.2	39.3				35.8		10.7	5.0			
Progression Factor	1.00	1.00				1.00		1.00	1.00			
Incremental Delay, d2	0.2	0.4				3.0		2.4	0.1			
Delay (s)	39.4	39.6				38.8		13.1	5.0			
Level of Service	D	D				D		B	A			
Approach Delay (s)		39.5			38.8			13.0			0.0	
Approach LOS		D			D			B			A	

Intersection Summary			
HCM 2000 Control Delay	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	88.0	Sum of lost time (s)	14.5
Intersection Capacity Utilization	92.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	159	0	42	0	0	0	0	0	1714	65
Future Volume (vph)	0	0	159	0	42	0	0	0	0	0	1714	65
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			0.88		1.00						0.91	1.00
Frt			0.85		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			2805		1912						5219	1594
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			2805		1912						5219	1594
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	167	0	44	0	0	0	0	0	1804	68
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	16
Lane Group Flow (vph)	0	0	167	0	44	0	0	0	0	0	1804	52
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	4%
Turn Type			Prot		NA						NA	Perm
Protected Phases			4		4						2	
Permitted Phases												2
Actuated Green, G (s)			11.7		11.7						58.8	58.8
Effective Green, g (s)			11.7		11.7						58.8	58.8
Actuated g/C Ratio			0.15		0.15						0.73	0.73
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			410		279						3835	1171
v/s Ratio Prot			c0.06		0.02						c0.35	
v/s Ratio Perm												0.03
v/c Ratio			0.41		0.16						0.47	0.04
Uniform Delay, d1			31.0		29.8						4.3	2.9
Progression Factor			1.00		1.00						0.55	0.15
Incremental Delay, d2			0.7		0.3						0.4	0.1
Delay (s)			31.7		30.1						2.7	0.5
Level of Service			C		C						A	A
Approach Delay (s)		31.7			30.1			0.0			2.6	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	79	0	0	0	55	0	2710	79	0	0	0
Future Volume (vph)	0	79	0	0	0	55	0	2710	79	0	0	0
Ideal Flow (vphpl)	1950	1900	1950	1900	1900	1900	1950	1950	1900	1900	1950	1950
Total Lost time (s)		4.5				4.5		4.5	4.5			
Lane Util. Factor		1.00				1.00		0.91	1.00			
Frt		1.00				0.86		1.00	0.85			
Flt Protected		1.00				1.00		1.00	1.00			
Satd. Flow (prot)		1863				1611		5219	1583			
Flt Permitted		1.00				1.00		1.00	1.00			
Satd. Flow (perm)		1863				1611		5219	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	83	0	0	0	58	0	2853	83	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	56	0	0	25	0	0	0
Lane Group Flow (vph)	0	83	0	0	0	2	0	2853	58	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		4				3		2				
Permitted Phases									2			
Actuated Green, G (s)		7.8				3.0		55.7	55.7			
Effective Green, g (s)		7.8				3.0		55.7	55.7			
Actuated g/C Ratio		0.10				0.04		0.70	0.70			
Clearance Time (s)		4.5				4.5		4.5	4.5			
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)		181				60		3633	1102			
v/s Ratio Prot		c0.04				c0.00		c0.55				
v/s Ratio Perm									0.04			
v/c Ratio		0.46				0.04		0.79	0.05			
Uniform Delay, d1		34.1				37.1		8.1	3.8			
Progression Factor		1.00				1.00		0.35	0.11			
Incremental Delay, d2		1.8				0.2		1.2	0.1			
Delay (s)		35.9				37.4		4.1	0.5			
Level of Service		D				D		A	A			
Approach Delay (s)		35.9			37.4			4.0			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	5.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	94.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	39	0	0	0	81	0	2743	8	0	0	0
Future Volume (vph)	0	39	0	0	0	81	0	2743	8	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5				4.5		5.0	5.0			
Lane Util. Factor		1.00				1.00		0.91	1.00			
Frt		1.00				0.86		1.00	0.85			
Flt Protected		1.00				1.00		1.00	1.00			
Satd. Flow (prot)		1863				1644		5085	1615			
Flt Permitted		1.00				1.00		1.00	1.00			
Satd. Flow (perm)		1863				1644		5085	1615			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	41	0	0	0	85	0	2887	8	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	2	0	0	0
Lane Group Flow (vph)	0	41	0	0	0	85	0	2887	6	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%	2%	2%
Turn Type		NA				Prot		NA	Perm			
Protected Phases		8				8		6				
Permitted Phases									6			
Actuated Green, G (s)		9.9				9.9		60.6	60.6			
Effective Green, g (s)		9.9				9.9		60.6	60.6			
Actuated g/C Ratio		0.12				0.12		0.76	0.76			
Clearance Time (s)		4.5				4.5		5.0	5.0			
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)		230				203		3851	1223			
v/s Ratio Prot		0.02				c0.05		c0.57				
v/s Ratio Perm									0.00			
v/c Ratio		0.18				0.42		0.75	0.00			
Uniform Delay, d1		31.4				32.4		5.4	2.4			
Progression Factor		0.88				1.00		1.00	1.00			
Incremental Delay, d2		0.4				1.4		1.4	0.0			
Delay (s)		28.0				33.8		6.8	2.4			
Level of Service		C				C		A	A			
Approach Delay (s)		28.0			33.8			6.8			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	65.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2823	0	0
Future Volume (vph)	0	0	0	2823	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5085		
Flt Permitted				1.00		
Satd. Flow (perm)				5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2972	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2972	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.5		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5085		
v/s Ratio Prot				c0.58		
v/s Ratio Perm						
v/c Ratio				0.58		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.4		
Delay (s)				0.4		
Level of Service				A		
Approach Delay (s)	0.0			0.4	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	66.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	1703
Future Volume (vph)	0	0	0	0	0	1703
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)						4.0
Lane Util. Factor						0.91
Frt						1.00
Flt Protected						1.00
Satd. Flow (prot)						5219
Flt Permitted						1.00
Satd. Flow (perm)						5219
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	0	1793
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	1793
Turn Type	Prot					NA
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)						80.0
Effective Green, g (s)						80.0
Actuated g/C Ratio						1.00
Clearance Time (s)						4.0
Vehicle Extension (s)						3.0
Lane Grp Cap (vph)						5219
v/s Ratio Prot						c0.34
v/s Ratio Perm						
v/c Ratio						0.34
Uniform Delay, d1						0.0
Progression Factor						1.00
Incremental Delay, d2						0.2
Delay (s)						0.2
Level of Service						A
Approach Delay (s)	0.0		0.0			0.2
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	0.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	57.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	79	0	25	0	0	0	0	0	1714	13
Future Volume (vph)	0	0	79	0	25	0	0	0	0	0	1714	13
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			1588		1653						5168	1625
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			1588		1653						5168	1625
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	83	0	26	0	0	0	0	0	1804	14
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	83	0	26	0	0	0	0	0	1804	11
Heavy Vehicles (%)	2%	2%	2%	2%	18%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	0	0
Turn Type			Prot		NA						NA	Perm
Protected Phases			4		4						2	
Permitted Phases												2
Actuated Green, G (s)			8.4		8.4						62.1	62.1
Effective Green, g (s)			8.4		8.4						62.1	62.1
Actuated g/C Ratio			0.11		0.11						0.78	0.78
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			166		173						4011	1261
v/s Ratio Prot			c0.05		0.02						c0.35	
v/s Ratio Perm												0.01
v/c Ratio			0.50		0.15						0.45	0.01
Uniform Delay, d1			33.8		32.6						3.1	2.0
Progression Factor			1.00		0.00						1.00	1.00
Incremental Delay, d2			2.4		0.4						0.4	0.0
Delay (s)			36.2		0.4						3.4	2.0
Level of Service			D		A						A	A
Approach Delay (s)		36.2			0.4			0.0			3.4	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	57.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2822	0	0
Future Volume (vph)	0	0	0	2822	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5085		
Flt Permitted				1.00		
Satd. Flow (perm)				5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2971	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2971	0	0
Turn Type	Prot			NA		
Protected Phases	8			6		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.0		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5085		
v/s Ratio Prot				c0.58		
v/s Ratio Perm						
v/c Ratio				0.58		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.5		
Delay (s)				0.5		
Level of Service				A		
Approach Delay (s)	0.0			0.5	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	235	1920	22	73	1490	1046	4	1	4	1405	0	244
Future Volume (veh/h)	235	1920	22	73	1490	1046	4	1	4	1405	0	244
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.98	1.00		0.95	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1863	1900	1900	1863	1863	1900	1900	1900	1881	1881	1863
Adj Flow Rate, veh/h	247	2021	23	77	1568	1101	4	1	4	1479	0	257
Adj No. of Lanes	2	3	0	1	3	2	1	1	0	3	0	2
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	2	2	0	2	2	0	0	0	1	0	2
Cap, veh/h	286	2544	29	88	2328	1280	22	4	15	1640	0	961
Arrive On Green	0.08	0.49	0.49	0.05	0.46	0.46	0.01	0.01	0.01	0.31	0.00	0.31
Sat Flow, veh/h	3510	5184	59	1810	5085	2723	1810	320	1279	5375	0	3151
Grp Volume(v), veh/h	247	1322	722	77	1568	1101	4	0	5	1479	0	257
Grp Sat Flow(s),veh/h/ln	1755	1695	1852	1810	1695	1361	1810	0	1599	1792	0	1576
Q Serve(g_s), s	13.2	61.8	61.9	8.0	45.9	68.4	0.4	0.0	0.6	50.1	0.0	11.7
Cycle Q Clear(g_c), s	13.2	61.8	61.9	8.0	45.9	68.4	0.4	0.0	0.6	50.1	0.0	11.7
Prop In Lane	1.00		0.03	1.00		1.00	1.00		0.80	1.00		1.00
Lane Grp Cap(c), veh/h	286	1664	909	88	2328	1280	22	0	19	1640	0	961
V/C Ratio(X)	0.86	0.79	0.79	0.88	0.67	0.86	0.19	0.00	0.26	0.90	0.00	0.27
Avail Cap(c_a), veh/h	347	1664	909	88	2328	1280	57	0	51	1816	0	1065
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	0.89	0.00	0.89
Uniform Delay (d), s/veh	86.2	40.4	40.4	89.8	40.4	44.8	93.0	0.0	93.0	63.3	0.0	49.9
Incr Delay (d2), s/veh	17.1	4.0	7.1	58.3	1.6	7.7	4.0	0.0	7.1	5.6	0.0	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	11.5	38.7	43.0	9.3	29.5	36.3	0.4	0.0	0.5	33.5	0.0	8.6
LnGrp Delay(d),s/veh	103.3	44.4	47.5	148.2	42.0	52.6	97.0	0.0	100.1	68.9	0.0	50.1
LnGrp LOS	F	D	D	F	D	D	F		F	E		D
Approach Vol, veh/h		2291			2746			9			1736	
Approach Delay, s/veh		51.7			49.2			98.7			66.1	
Approach LOS		D			D			F			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	22.3	93.8		64.8	16.0	100.1		9.2
Change Period (Y+Rc), s	6.8	6.8		6.8	6.8	6.8		6.9
Max Green Setting (Gmax), s	18.8	73.7		64.2	9.2	83.3		6.0
Max Q Clear Time (g_c+I1), s	15.2	70.4		52.1	10.0	63.9		2.6
Green Ext Time (p_c), s	0.3	3.3		5.8	0.0	19.0		0.0

Intersection Summary	
HCM 2010 Ctrl Delay	54.4
HCM 2010 LOS	D

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	111	27	65	95	21	102	34	1193	50	120	1501	99
Future Volume (veh/h)	111	27	65	95	21	102	34	1193	50	120	1501	99
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1867	1900	1810	1900	1810	1900	1863	1845	1863	1863	1881
Adj Flow Rate, veh/h	117	28	68	100	22	107	36	1256	53	126	1580	104
Adj No. of Lanes	1	1	0	2	1	1	1	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	6	6	5	0	5	0	2	3	2	2	1
Cap, veh/h	137	70	170	140	211	169	46	3159	972	161	3266	1025
Arrive On Green	0.08	0.14	0.14	0.04	0.11	0.11	0.05	1.00	1.00	0.05	0.64	0.64
Sat Flow, veh/h	1757	482	1170	3343	1900	1526	1810	5085	1566	3442	5085	1595
Grp Volume(v), veh/h	117	0	96	100	22	107	36	1256	53	126	1580	104
Grp Sat Flow(s),veh/h/ln	1757	0	1652	1672	1900	1526	1810	1695	1566	1721	1695	1595
Q Serve(g_s), s	12.5	0.0	10.0	5.6	2.0	12.7	3.7	0.0	0.0	6.9	30.6	4.7
Cycle Q Clear(g_c), s	12.5	0.0	10.0	5.6	2.0	12.7	3.7	0.0	0.0	6.9	30.6	4.7
Prop In Lane	1.00		0.71	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	137	0	240	140	211	169	46	3159	972	161	3266	1025
V/C Ratio(X)	0.85	0.00	0.40	0.71	0.10	0.63	0.78	0.40	0.05	0.78	0.48	0.10
Avail Cap(c_a), veh/h	435	0	409	897	510	410	48	3159	972	174	3266	1025
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.81	0.81	0.81	1.00	1.00	1.00
Uniform Delay (d), s/veh	86.5	0.0	73.7	89.9	76.0	80.8	89.6	0.0	0.0	89.6	17.6	13.0
Incr Delay (d2), s/veh	13.7	0.0	1.1	6.6	0.2	3.9	45.8	0.3	0.1	19.1	0.5	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	10.8	0.0	8.2	4.9	1.9	9.4	4.4	0.2	0.0	6.7	20.7	3.8
LnGrp Delay(d),s/veh	100.3	0.0	74.8	96.5	76.2	84.6	135.4	0.3	0.1	108.7	18.2	13.2
LnGrp LOS	F		E	F	E	F	F	A	A	F	B	B
Approach Vol, veh/h		213			229			1345			1810	
Approach Delay, s/veh		88.8			89.0			3.9			24.2	
Approach LOS		F			F			A			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.7	128.8	21.4	28.1	15.7	124.8	15.0	34.5
Change Period (Y+Rc), s	6.8	6.8	* 6.6	7.0	6.8	6.8	7.0	* 7
Max Green Setting (Gmax), s	5.0	59.8	* 47	51.0	9.6	55.2	51.0	* 47
Max Q Clear Time (g_c+I1), s	5.7	32.6	14.5	14.7	8.9	2.0	7.6	12.0
Green Ext Time (p_c), s	0.0	22.1	0.3	1.1	0.0	36.9	0.3	1.1

Intersection Summary		
HCM 2010 Ctrl Delay		24.6
HCM 2010 LOS		C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	46	0	0	0	27	1276	136	0	1675	34
Future Vol, veh/h	0	0	46	0	0	0	27	1276	136	0	1675	34
Conflicting Peds, #/hr	0	0	0	0	0	0	1	0	0	0	0	1
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Yield	-	-	Free
Storage Length	-	-	0	-	-	-	300	-	435	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	0	0	7	0	0	0	0	2	1	0	1	0
Mvmt Flow	0	0	48	0	0	0	28	1343	143	0	1763	36

Major/Minor	Minor2						Major1			Major2		
Conflicting Flow All	-	-	883				1764	0	0	-	-	0
Stage 1	-	-	-				-	-	-	-	-	-
Stage 2	-	-	-				-	-	-	-	-	-
Critical Hdwy	-	-	7.24				5.3	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-				-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-				-	-	-	-	-	-
Follow-up Hdwy	-	-	3.97				3.1	-	-	-	-	-
Pot Cap-1 Maneuver	0	0	240				168	-	-	0	-	0
Stage 1	0	0	-				-	-	-	0	-	0
Stage 2	0	0	-				-	-	-	0	-	0
Platoon blocked, %								-	-		-	
Mov Cap-1 Maneuver	-	0	240				168	-	-	-	-	-
Mov Cap-2 Maneuver	-	0	-				-	-	-	-	-	-
Stage 1	-	0	-				-	-	-	-	-	-
Stage 2	-	0	-				-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	23.8	0.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	SBT
Capacity (veh/h)	168	-	-	240	-
HCM Lane V/C Ratio	0.169	-	-	0.202	-
HCM Control Delay (s)	30.7	-	-	23.8	-
HCM Lane LOS	D	-	-	C	-
HCM 95th %tile Q(veh)	0.6	-	-	0.7	-

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	0	1274	1	465	1709
Future Volume (veh/h)	0	0	1274	1	465	1709
Number			2	12	1	6
Initial Q (Qb), veh			0	0	0	0
Ped-Bike Adj(A_pbT)				1.00	1.00	
Parking Bus, Adj			1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln			1863	1900	1845	1881
Adj Flow Rate, veh/h			1341	1	489	1799
Adj No. of Lanes			3	0	2	3
Peak Hour Factor			0.95	0.95	0.95	0.95
Percent Heavy Veh, %			2	2	3	1
Cap, veh/h			3566	3	580	4768
Arrive On Green			0.90	0.90	0.34	1.00
Sat Flow, veh/h			5416	4	3408	5305
Grp Volume(v), veh/h			866	476	489	1799
Grp Sat Flow(s),veh/h/ln			1695	1862	1704	1712
Q Serve(g_s), s			3.5	3.5	12.6	0.0
Cycle Q Clear(g_c), s			3.5	3.5	12.6	0.0
Prop In Lane				0.00	1.00	
Lane Grp Cap(c), veh/h			2303	1265	580	4768
V/C Ratio(X)			0.38	0.38	0.84	0.38
Avail Cap(c_a), veh/h			2303	1265	1130	4973
HCM Platoon Ratio			1.33	1.33	2.00	2.00
Upstream Filter(I)			1.00	1.00	0.21	0.21
Uniform Delay (d), s/veh			1.6	1.6	30.2	0.0
Incr Delay (d2), s/veh			0.5	0.9	0.7	0.0
Initial Q Delay(d3),s/veh			0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln			3.0	3.5	7.8	0.0
LnGrp Delay(d),s/veh			2.1	2.5	30.9	0.0
LnGrp LOS			A	A	C	A
Approach Vol, veh/h			1342			2288
Approach Delay, s/veh			2.2			6.6
Approach LOS			A			A

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		
Phs Duration (G+Y+Rc), s	23.7	71.3				95.0		
Change Period (Y+Rc), s	7.5	6.8				* 6.8		
Max Green Setting (Gmax), s	31.5	49.2				* 92		
Max Q Clear Time (g_c+I1), s	14.6	5.5				2.0		
Green Ext Time (p_c), s	1.5	33.6				54.7		

Intersection Summary		
HCM 2010 Ctrl Delay		5.0
HCM 2010 LOS		A

Notes
User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	807	70	120	180	89	308	98	1177	125	140	1967	1066
Future Volume (veh/h)	807	70	120	180	89	308	98	1177	125	140	1967	1066
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1863	1863	1863	1863	1863	1881	1863
Adj Flow Rate, veh/h	849	74	126	189	94	324	103	1239	132	147	2071	1122
Adj No. of Lanes	3	2	0	2	2	1	2	3	1	1	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	1	2
Cap, veh/h	966	386	345	227	330	352	121	2198	682	229	2701	1136
Arrive On Green	0.19	0.22	0.22	0.07	0.09	0.09	0.07	0.86	0.86	0.13	0.53	0.53
Sat Flow, veh/h	5003	1770	1583	3442	3539	1583	3442	5085	1578	1774	5136	1579
Grp Volume(v), veh/h	849	74	126	189	94	324	103	1239	132	147	2071	1122
Grp Sat Flow(s),veh/h/ln	1668	1770	1583	1721	1770	1583	1721	1695	1578	1774	1712	1579
Q Serve(g_s), s	31.3	6.5	12.8	10.3	4.7	17.7	5.6	12.2	2.6	15.0	60.9	99.9
Cycle Q Clear(g_c), s	31.3	6.5	12.8	10.3	4.7	17.7	5.6	12.2	2.6	15.0	60.9	99.9
Prop In Lane	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	966	386	345	227	330	352	121	2198	682	229	2701	1136
V/C Ratio(X)	0.88	0.19	0.36	0.83	0.29	0.92	0.85	0.56	0.19	0.64	0.77	0.99
Avail Cap(c_a), veh/h	1522	552	494	304	330	352	121	2198	682	229	2701	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	0.92	0.92	0.92	0.09	0.09	0.09
Uniform Delay (d), s/veh	74.5	60.6	63.1	87.7	80.3	72.3	87.8	8.1	7.5	78.6	35.8	25.9
Incr Delay (d2), s/veh	3.9	0.2	0.6	13.5	0.5	28.9	45.7	1.0	0.6	1.3	0.2	5.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.1	5.8	9.6	9.1	4.2	26.7	6.2	9.5	2.2	8.8	31.5	62.1
LnGrp Delay(d),s/veh	78.4	60.8	63.7	101.2	80.7	101.2	133.5	9.1	8.1	79.9	36.0	31.6
LnGrp LOS	E	E	E	F	F	F	F	A	A	E	D	C
Approach Vol, veh/h		1049			607			1474			3340	
Approach Delay, s/veh		75.4			98.0			17.7			36.4	
Approach LOS		E			F			B			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.2	107.4	43.2	25.2	32.0	89.6	19.4	48.9
Change Period (Y+Rc), s	7.5	7.5	6.5	7.5	7.5	7.5	6.9	* 7.5
Max Green Setting (Gmax), s	6.7	78.8	57.8	17.7	24.5	61.0	16.8	* 59
Max Q Clear Time (g_c+I1), s	17.6	101.9	33.3	19.7	17.0	14.2	12.3	14.8
Green Ext Time (p_c), s	0.0	0.0	3.3	0.0	0.2	43.8	0.2	3.0

Intersection Summary		
HCM 2010 Ctrl Delay		44.3
HCM 2010 LOS		D

Notes
* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	478	108	107	5	90	143	114	2165	6	174	2961	426
Future Volume (veh/h)	478	108	107	5	90	143	114	2165	6	174	2961	426
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1863	1900	1900	1900	1900	1900	1863	1900	1900	1863	1900
Adj Flow Rate, veh/h	503	114	113	5	95	151	120	2279	6	183	3117	448
Adj No. of Lanes	2	1	0	1	2	1	2	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	0	0	0	0	0	0	2	0	0	2	0
Cap, veh/h	520	124	123	78	137	209	139	2909	924	323	3176	1250
Arrive On Green	0.15	0.14	0.14	0.04	0.04	0.04	0.04	0.57	0.57	0.09	0.62	0.62
Sat Flow, veh/h	3476	859	852	1810	3610	1602	3510	5085	1615	3510	5085	1615
Grp Volume(v), veh/h	503	0	227	5	95	151	120	2279	6	183	3117	448
Grp Sat Flow(s),veh/h/ln	1738	0	1711	1810	1805	1602	1755	1695	1615	1755	1695	1615
Q Serve(g_s), s	27.3	0.0	24.9	0.5	4.9	3.6	6.5	66.0	0.3	9.5	113.0	16.5
Cycle Q Clear(g_c), s	27.3	0.0	24.9	0.5	4.9	3.6	6.5	66.0	0.3	9.5	113.0	16.5
Prop In Lane	1.00		0.50	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	520	0	247	78	137	209	139	2909	924	323	3176	1250
V/C Ratio(X)	0.97	0.00	0.92	0.06	0.69	0.72	0.87	0.78	0.01	0.57	0.98	0.36
Avail Cap(c_a), veh/h	520	0	295	78	188	232	139	2909	924	323	3176	1250
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	0.67	0.67	0.67	1.00	1.00	1.00
Uniform Delay (d), s/veh	80.4	0.0	80.2	87.2	90.3	42.8	90.8	31.5	17.5	82.6	34.6	6.7
Incr Delay (d2), s/veh	31.4	0.0	29.2	0.3	6.3	9.3	29.7	1.5	0.0	2.3	12.2	0.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	21.8	0.0	19.9	0.5	4.7	9.8	6.3	38.7	0.2	8.3	68.4	12.1
LnGrp Delay(d),s/veh	111.7	0.0	109.4	87.6	96.6	52.1	120.4	33.0	17.5	85.0	46.8	7.5
LnGrp LOS	F		F	F	F	D	F	C	B	F	D	A
Approach Vol, veh/h		730			251			2405			3748	
Approach Delay, s/veh		111.0			69.6			37.3			43.9	
Approach LOS		F			E			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	25.0	116.2	14.8	34.0	15.0	126.2	35.0	13.8
Change Period (Y+Rc), s	7.5	7.5	* 6.6	* 6.6	7.5	7.5	* 6.6	* 6.6
Max Green Setting (Gmax), s	15.3	108.7	* 5	* 33	7.5	116.5	* 28	* 9.9
Max Q Clear Time (g_c+I1), s	11.5	68.0	2.5	26.9	8.5	115.0	29.3	6.9
Green Ext Time (p_c), s	3.8	25.3	0.3	0.6	0.0	1.5	0.0	0.3

Intersection Summary	
HCM 2010 Ctrl Delay	49.5
HCM 2010 LOS	D

Notes

* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	53	7	38	138	18	188	65	2714	50	154	3499	164
Future Volume (veh/h)	53	7	38	138	18	188	65	2714	50	154	3499	164
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99	0.99		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1837	1900	1881	1900	1827	1900	1881	1845	1845	1881	1845
Adj Flow Rate, veh/h	56	7	40	145	19	198	68	2857	53	162	3683	173
Adj No. of Lanes	1	1	0	1	1	1	1	3	1	2	3	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	3	0	0	1	0	4	0	1	3	3	1	3
Cap, veh/h	191	34	193	196	271	300	84	3701	1130	176	3722	1136
Arrive On Green	0.14	0.14	0.14	0.14	0.14	0.14	0.05	0.72	0.72	0.05	0.72	0.72
Sat Flow, veh/h	1143	237	1352	1359	1900	1543	1810	5136	1567	3408	5136	1567
Grp Volume(v), veh/h	56	0	47	145	19	198	68	2857	53	162	3683	173
Grp Sat Flow(s),veh/h/ln	1143	0	1589	1359	1900	1543	1810	1712	1567	1704	1712	1567
Q Serve(g_s), s	8.5	0.0	5.0	20.0	1.6	22.5	7.1	66.5	1.9	9.0	132.6	6.5
Cycle Q Clear(g_c), s	10.1	0.0	5.0	25.0	1.6	22.5	7.1	66.5	1.9	9.0	132.6	6.5
Prop In Lane	1.00		0.85	1.00		1.00	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	191	0	227	196	271	300	84	3701	1130	176	3722	1136
V/C Ratio(X)	0.29	0.00	0.21	0.74	0.07	0.66	0.81	0.77	0.05	0.92	0.99	0.15
Avail Cap(c_a), veh/h	191	0	227	201	277	305	86	3701	1130	176	3722	1136
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.09	0.09	0.09
Uniform Delay (d), s/veh	74.9	0.0	71.9	83.0	70.5	70.7	89.8	16.7	7.7	89.7	25.4	8.1
Incr Delay (d2), s/veh	0.8	0.0	0.4	13.2	0.1	5.0	41.4	1.6	0.1	7.8	2.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(95%),veh/ln	4.9	0.0	4.0	13.0	1.6	15.2	8.0	41.0	1.5	5.5	66.9	3.6
LnGrp Delay(d),s/veh	75.7	0.0	72.4	96.1	70.6	75.8	131.2	18.3	7.7	97.5	28.1	8.1
LnGrp LOS	E		E	F	E	E	F	B	A	F	C	A
Approach Vol, veh/h		103			362			2978			4018	
Approach Delay, s/veh		74.2			83.7			20.7			30.0	
Approach LOS		E			F			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2		4	5	6		8
Phs Duration (G+Y+Rc), s	18.6	144.8		35.2	17.8	145.5		35.2
Change Period (Y+Rc), s	* 8.8	7.6		* 8.1	9.0	* 7.6		* 8.1
Max Green Setting (Gmax), s	* 9.8	128.8		* 27	9.0	* 1.3E2		* 28
Max Q Clear Time (g_c+I1), s	11.0	68.5		12.1	9.1	134.6		27.0
Green Ext Time (p_c), s	0.0	59.9		1.5	0.0	0.0		0.1

Intersection Summary	
HCM 2010 Ctrl Delay	29.5
HCM 2010 LOS	C

Notes
User approved pedestrian interval to be less than phase max green.

Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	86	226	107	2849	0	3588	84
Future Volume (veh/h)	86	226	107	2849	0	3588	84
Number	7	14	5	2		6	16
Initial Q (Qb), veh	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Adj Sat Flow, veh/h/ln	1900	1881	1827	1863		1881	1810
Adj Flow Rate, veh/h	91	238	113	2999		3777	88
Adj No. of Lanes	2	2	2	3		3	1
Peak Hour Factor	0.95	0.95	0.95	0.95		0.95	0.95
Percent Heavy Veh, %	0	1	4	2		1	5
Cap, veh/h	314	252	165	4189		3806	1140
Arrive On Green	0.09	0.09	0.03	0.82		0.24	0.24
Sat Flow, veh/h	3510	2814	3375	5253		5305	1538
Grp Volume(v), veh/h	91	238	113	2999		3777	88
Grp Sat Flow(s),veh/h/ln	1755	1407	1688	1695		1712	1538
Q Serve(g_s), s	4.6	16.0	2.0	48.2		139.4	8.4
Cycle Q Clear(g_c), s	4.6	16.0	2.0	48.2		139.4	8.4
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	314	252	165	4189		3806	1140
V/C Ratio(X)	0.29	0.95	0.69	0.72		0.99	0.08
Avail Cap(c_a), veh/h	314	252	259	4189		3806	1140
HCM Platoon Ratio	1.00	1.00	1.00	1.00		0.33	0.33
Upstream Filter(I)	1.00	1.00	0.53	0.53		0.18	0.18
Uniform Delay (d), s/veh	80.9	86.0	61.9	7.2		71.2	21.7
Incr Delay (d2), s/veh	0.5	41.8	2.7	0.6		4.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(95%),veh/ln	4.1	19.4	5.1	28.1		73.7	10.1
LnGrp Delay(d),s/veh	81.4	127.8	64.6	7.8		75.9	21.8
LnGrp LOS	F	F	E	A		E	C
Approach Vol, veh/h	329			3112		3865	
Approach Delay, s/veh	115.0			9.8		74.7	
Approach LOS	F			A		E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		164.0		26.0	15.7	148.3		
Change Period (Y+Rc), s		7.5		9.0	10.7	7.5		
Max Green Setting (Gmax), s		116.5		17.0	10.3	135.5		
Max Q Clear Time (g_c+I1), s		50.2		18.0	4.0	141.4		
Green Ext Time (p_c), s		51.9		0.0	0.1	0.0		

Intersection Summary	
HCM 2010 Ctrl Delay	48.9
HCM 2010 LOS	D

Notes

User approved ignoring U-Turning movement.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	158	1049	0	528	946	0	0	1715	786	0	2325	346
Future Volume (vph)	158	1049	0	528	946	0	0	1715	786	0	2325	346
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5	6.0		4.5	5.0			4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	0.95		0.97	0.95			0.91	1.00		0.91	1.00
Frt	1.00	1.00		1.00	1.00			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1799	3562		3523	3632			5219	1625		5250	1528
Flt Permitted	0.07	1.00		0.07	1.00			1.00	1.00		1.00	1.00
Satd. Flow (perm)	128	3562		259	3632			5219	1625		5250	1528
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	166	1104	0	556	996	0	0	1805	827	0	2447	364
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	182	0	0	70
Lane Group Flow (vph)	166	1104	0	556	996	0	0	1805	645	0	2447	294
Heavy Vehicles (%)	3%	4%	2%	2%	2%	2%	2%	2%	2%	2%	1%	5%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	3	8
Turn Type	pm+pt	NA		pm+pt	NA			NA	Perm		NA	Perm
Protected Phases	3	8		7	4			1 2			1 2	
Permitted Phases	8			4					1 2			1 2
Actuated Green, G (s)	87.2	59.0		82.8	57.3			90.0	90.0		90.0	90.0
Effective Green, g (s)	87.2	59.0		82.8	57.3			90.0	90.0		90.0	90.0
Actuated g/C Ratio	0.46	0.31		0.44	0.30			0.47	0.47		0.47	0.47
Clearance Time (s)	4.5	6.0		4.5	5.0							
Lane Grp Cap (vph)	306	1106		550	1095			2472	769		2486	723
v/s Ratio Prot	c0.08	c0.31		c0.14	0.27			0.35			c0.47	
v/s Ratio Perm	0.17			0.30					0.40			0.19
v/c Ratio	0.54	1.00		1.01	0.91			0.73	0.84		0.98	0.41
Uniform Delay, d1	47.0	65.4		64.9	63.9			40.2	43.7		49.3	32.6
Progression Factor	0.83	0.46		0.94	0.46			0.36	0.31		1.00	1.00
Incremental Delay, d2	5.9	24.7		38.5	11.3			1.7	9.4		13.4	1.5
Delay (s)	45.0	54.8		99.5	40.4			16.1	22.9		62.7	34.0
Level of Service	D	D		F	D			B	C		E	C
Approach Delay (s)		53.5			61.6			18.2			59.0	
Approach LOS		D			E			B			E	

Intersection Summary			
HCM 2000 Control Delay	45.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	98.8%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1207	835	0	1292	434	0
Future Volume (vph)	1207	835	0	1292	434	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5	4.5		4.0	5.0	
Lane Util. Factor	0.91	0.88		0.91	0.97	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	1.00	1.00		1.00	0.95	
Satd. Flow (prot)	5119	2860		5219	3594	
Flt Permitted	1.00	1.00		1.00	0.95	
Satd. Flow (perm)	5119	2860		5219	3594	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	1271	879	0	1360	457	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1271	879	0	1360	457	0
Heavy Vehicles (%)	4%	2%	3%	2%	0%	2%
Turn Type	NA	Perm		NA	Prot	
Protected Phases	3 4			1 8 7	2	
Permitted Phases		3 4				
Actuated Green, G (s)	90.0	90.0		121.0	60.0	
Effective Green, g (s)	90.0	90.0		110.5	60.0	
Actuated g/C Ratio	0.47	0.47		0.58	0.32	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)	2424	1354		3035	1134	
v/s Ratio Prot	0.25			c0.26	c0.13	
v/s Ratio Perm		c0.31				
v/c Ratio	0.52	0.65		0.45	0.40	
Uniform Delay, d1	35.0	38.0		22.5	51.0	
Progression Factor	1.00	1.00		0.24	1.41	
Incremental Delay, d2	0.8	2.4		0.3	1.0	
Delay (s)	35.8	40.4		5.7	73.1	
Level of Service	D	D		A	E	
Approach Delay (s)	37.7			5.7	73.1	
Approach LOS	D			A	E	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	0	1835	1474	425	416	0
Future Volume (vph)	0	1835	1474	425	416	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.0	4.5	4.0	5.0	
Lane Util. Factor		0.91	0.86	1.00	0.97	
Frt		1.00	1.00	0.85	1.00	
Flt Protected		1.00	1.00	1.00	0.95	
Satd. Flow (prot)		5119	6328	1564	3489	
Flt Permitted		1.00	1.00	1.00	0.95	
Satd. Flow (perm)		5119	6328	1564	3489	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	1932	1552	447	438	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1932	1552	447	438	0
Heavy Vehicles (%)	2%	4%	6%	6%	3%	2%
Turn Type		NA	NA	Free	Prot	
Protected Phases		1 8 7	3 4		2	
Permitted Phases				Free		
Actuated Green, G (s)		121.0	90.0	190.0	60.0	
Effective Green, g (s)		110.5	90.0	190.0	60.0	
Actuated g/C Ratio		0.58	0.47	1.00	0.32	
Clearance Time (s)					5.0	
Lane Grp Cap (vph)		2977	2997	1564	1101	
v/s Ratio Prot		c0.38	c0.25		c0.13	
v/s Ratio Perm				0.29		
v/c Ratio		0.65	0.52	0.29	0.40	
Uniform Delay, d1		26.7	34.9	0.0	50.9	
Progression Factor		0.62	1.00	1.00	1.98	
Incremental Delay, d2		0.4	0.6	0.5	1.0	
Delay (s)		17.0	35.5	0.5	101.6	
Level of Service		B	D	A	F	
Approach Delay (s)		17.0	27.7		101.6	
Approach LOS		B	C		F	

Intersection Summary			
HCM 2000 Control Delay	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	19.5
Intersection Capacity Utilization	53.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	425	1873	0	416	2671
Future Volume (vph)	0	425	1873	0	416	2671
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		5.0	5.0		5.0	4.0
Lane Util. Factor		1.00	0.91		0.97	0.91
Frt		0.86	1.00		1.00	1.00
Flt Protected		1.00	1.00		0.95	1.00
Satd. Flow (prot)		1591	5271		3489	5271
Flt Permitted		1.00	1.00		0.95	1.00
Satd. Flow (perm)		1591	5271		3489	5271
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	447	1972	0	438	2812
RTOR Reduction (vph)	0	3	0	0	0	0
Lane Group Flow (vph)	0	444	1972	0	438	2812
Heavy Vehicles (%)	2%	6%	1%	2%	3%	1%
Turn Type		Over	NA		Prot	NA
Protected Phases		1	2		1	Free
Permitted Phases						
Actuated Green, G (s)		81.0	99.0		81.0	190.0
Effective Green, g (s)		81.0	99.0		81.0	190.0
Actuated g/C Ratio		0.43	0.52		0.43	1.00
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		678	2746		1487	5271
v/s Ratio Prot		c0.28	c0.37		0.13	0.53
v/s Ratio Perm						
v/c Ratio		0.65	0.72		0.29	0.53
Uniform Delay, d1		43.4	34.8		35.8	0.0
Progression Factor		1.00	0.37		1.00	1.00
Incremental Delay, d2		4.7	1.1		0.5	0.4
Delay (s)		48.1	13.9		36.3	0.4
Level of Service		D	B		D	A
Approach Delay (s)	48.1		13.9			5.2
Approach LOS	D		B			A

Intersection Summary			
HCM 2000 Control Delay	11.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	835	434	2501	2853	0
Future Volume (vph)	0	835	434	2501	2853	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		5.0	5.0	4.0	5.0	
Lane Util. Factor		0.88	0.97	0.91	0.91	
Frt		0.85	1.00	1.00	1.00	
Flt Protected		1.00	0.95	1.00	1.00	
Satd. Flow (prot)		2860	3594	5219	5198	
Flt Permitted		1.00	0.95	1.00	1.00	
Satd. Flow (perm)		2860	3594	5219	5198	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	879	457	2633	3003	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	879	457	2633	3003	0
Heavy Vehicles (%)	2%	2%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	3	0
Turn Type		Over	Prot	NA	NA	
Protected Phases		1	1	Free	2	
Permitted Phases						
Actuated Green, G (s)		70.0	70.0	190.0	110.0	
Effective Green, g (s)		70.0	70.0	190.0	110.0	
Actuated g/C Ratio		0.37	0.37	1.00	0.58	
Clearance Time (s)		5.0	5.0		5.0	
Lane Grp Cap (vph)		1053	1324	5219	3009	
v/s Ratio Prot		c0.31	0.13	0.50	c0.58	
v/s Ratio Perm						
v/c Ratio		0.83	0.35	0.50	1.00	
Uniform Delay, d1		54.7	43.4	0.0	39.9	
Progression Factor		0.31	1.35	1.00	0.35	
Incremental Delay, d2		6.1	0.5	0.2	8.0	
Delay (s)		23.2	59.0	0.2	22.1	
Level of Service		C	E	A	C	
Approach Delay (s)	23.2			8.9	22.1	
Approach LOS	C			A	C	

Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	190.0	Sum of lost time (s)	10.0
Intersection Capacity Utilization	90.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	0	0	2363	0	0
Future Volume (vph)	29	0	0	2363	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5			4.5		
Lane Util. Factor	1.00			0.91		
Frt	1.00			1.00		
Flt Protected	0.95			1.00		
Satd. Flow (prot)	1770			5085		
Flt Permitted	0.95			1.00		
Satd. Flow (perm)	1770			5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	31	0	0	2487	0	0
RTOR Reduction (vph)	6	0	0	0	0	0
Lane Group Flow (vph)	25	0	0	2487	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)	3.2			67.8		
Effective Green, g (s)	3.2			67.8		
Actuated g/C Ratio	0.04			0.85		
Clearance Time (s)	4.5			4.5		
Vehicle Extension (s)	3.0			3.0		
Lane Grp Cap (vph)	70			4309		
v/s Ratio Prot	c0.01			c0.49		
v/s Ratio Perm						
v/c Ratio	0.36			0.58		
Uniform Delay, d1	37.4			1.8		
Progression Factor	0.63			1.00		
Incremental Delay, d2	1.9			0.5		
Delay (s)	25.5			2.3		
Level of Service	C			A		
Approach Delay (s)	25.5			2.3	0.0	
Approach LOS	C			A	A	

Intersection Summary			
HCM 2000 Control Delay	2.6	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2405	0	0
Future Volume (vph)	0	0	0	2405	0	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)				4.5		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5219		
Flt Permitted				1.00		
Satd. Flow (perm)				5219		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2532	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2532	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.5		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5219		
v/s Ratio Prot				c0.49		
v/s Ratio Perm						
v/c Ratio				0.49		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.3		
Delay (s)				0.3		
Level of Service				A		
Approach Delay (s)	0.0			0.3	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	3093
Future Volume (vph)	0	0	0	0	0	3093
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)						4.5
Lane Util. Factor						0.91
Frt						1.00
Flt Protected						1.00
Satd. Flow (prot)						5219
Flt Permitted						1.00
Satd. Flow (perm)						5219
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	0	3256
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	3256
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)						53.0
Effective Green, g (s)						53.0
Actuated g/C Ratio						0.66
Clearance Time (s)						4.5
Lane Grp Cap (vph)						3457
v/s Ratio Prot						c0.62
v/s Ratio Perm						
v/c Ratio						0.94
Uniform Delay, d1						12.1
Progression Factor						0.30
Incremental Delay, d2						4.4
Delay (s)						8.0
Level of Service						A
Approach Delay (s)	0.0		0.0			8.0
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	8.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.9%	ICU Level of Service	C
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	171	0	96	0	0	0	0	0	2899	75
Future Volume (vph)	0	0	171	0	96	0	0	0	0	0	2899	75
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			1622		1773						5219	1658
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			1622		1773						5219	1658
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	180	0	101	0	0	0	0	0	3052	79
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	23
Lane Group Flow (vph)	0	0	180	0	101	0	0	0	0	0	3052	56
Heavy Vehicles (%)	2%	2%	4%	2%	10%	2%	2%	2%	2%	2%	2%	0%
Turn Type			Prot		NA						NA	Perm
Protected Phases			5	3	8						6	
Permitted Phases												6
Actuated Green, G (s)			9.5		7.4						49.1	49.1
Effective Green, g (s)			9.5		7.4						49.1	49.1
Actuated g/C Ratio			0.12		0.09						0.61	0.61
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			192		164						3203	1017
v/s Ratio Prot			c0.11		c0.06						c0.58	
v/s Ratio Perm												0.03
v/c Ratio			0.94		0.62						0.95	0.05
Uniform Delay, d1			35.0		34.9						14.4	6.2
Progression Factor			1.00		0.00						1.80	1.81
Incremental Delay, d2			46.8		6.7						4.2	0.0
Delay (s)			81.8		6.7						30.1	11.2
Level of Service			F		A						C	B
Approach Delay (s)		81.8			6.7			0.0			29.6	
Approach LOS		F			A			A			C	

Intersection Summary			
HCM 2000 Control Delay	31.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	117.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	86	38	0	0	0	0	0	0	3164	12
Future Volume (vph)	0	0	86	38	0	0	0	0	0	0	3164	12
Ideal Flow (vphpl)	1900	1900	1900	1950	1900	1950	1900	1950	1950	1950	1950	1900
Total Lost time (s)			4.5		4.5						4.0	4.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		0.95						1.00	1.00
Satd. Flow (prot)			1611		1805						5219	1583
Flt Permitted			1.00		0.95						1.00	1.00
Satd. Flow (perm)			1611		1805						5219	1583
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	91	40	0	0	0	0	0	0	3331	13
RTOR Reduction (vph)	0	0	86	0	38	0	0	0	0	0	0	3
Lane Group Flow (vph)	0	0	5	0	2	0	0	0	0	0	3331	10
Heavy Vehicles (%)	2%	2%	2%	0%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type			Prot	Prot	NA						NA	Perm
Protected Phases			1	4	8						2	
Permitted Phases												2
Actuated Green, G (s)			4.4		3.8						59.3	59.3
Effective Green, g (s)			4.4		3.8						59.3	59.3
Actuated g/C Ratio			0.06		0.05						0.74	0.74
Clearance Time (s)			4.5		4.5						4.0	4.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			88		85						3868	1173
v/s Ratio Prot			c0.00		c0.00						c0.64	
v/s Ratio Perm												0.01
v/c Ratio			0.06		0.02						0.86	0.01
Uniform Delay, d1			35.8		36.3						7.4	2.7
Progression Factor			1.00		1.00						1.00	1.00
Incremental Delay, d2			0.3		0.1						2.8	0.0
Delay (s)			36.1		36.4						10.2	2.7
Level of Service			D		D						B	A
Approach Delay (s)		36.1			36.4			0.0			10.1	
Approach LOS		D			D			A			B	

Intersection Summary			
HCM 2000 Control Delay	11.1	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	225	68	0	0	0	38	0	2276	33	0	0	0
Future Volume (vph)	225	68	0	0	0	38	0	2276	33	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5				4.5		5.0	5.0			
Lane Util. Factor	0.95	0.95				1.00		0.91	1.00			
Frt	1.00	1.00				0.86		1.00	0.85			
Flt Protected	0.95	0.97				1.00		1.00	1.00			
Satd. Flow (prot)	1681	1739				1644		5085	1615			
Flt Permitted	0.95	0.97				1.00		1.00	1.00			
Satd. Flow (perm)	1681	1739				1644		5085	1615			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	237	72	0	0	0	40	0	2396	35	0	0	0
RTOR Reduction (vph)	79	79	0	0	0	0	0	0	12	0	0	0
Lane Group Flow (vph)	73	78	0	0	0	40	0	2396	23	0	0	0
Heavy Vehicles (%)	2%	0%	2%	2%	2%	0%	2%	2%	0%	2%	2%	2%
Turn Type	Split	NA				Prot		NA	Perm			
Protected Phases	8	8				5		6				
Permitted Phases									6			
Actuated Green, G (s)	8.7	8.7				4.3		53.0	53.0			
Effective Green, g (s)	8.7	8.7				4.3		53.0	53.0			
Actuated g/C Ratio	0.11	0.11				0.05		0.66	0.66			
Clearance Time (s)	4.5	4.5				4.5		5.0	5.0			
Vehicle Extension (s)	3.0	3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)	182	189				88		3368	1069			
v/s Ratio Prot	0.04	c0.04				c0.02		c0.47				
v/s Ratio Perm									0.01			
v/c Ratio	0.40	0.41				0.45		0.71	0.02			
Uniform Delay, d1	33.2	33.3				36.7		8.6	4.6			
Progression Factor	1.94	1.90				1.00		0.86	0.90			
Incremental Delay, d2	1.4	1.4				3.7		1.1	0.0			
Delay (s)	65.8	64.6				40.4		8.6	4.2			
Level of Service	E	E				D		A	A			
Approach Delay (s)		65.1			40.4			8.5			0.0	
Approach LOS		E			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	14.0
Intersection Capacity Utilization	110.7%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	301	0	70	0	0	0	0	0	3030	157
Future Volume (vph)	0	0	301	0	70	0	0	0	0	0	3030	157
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			0.88		1.00						0.91	1.00
Frt			0.85		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			2805		1912						5219	1594
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			2805		1912						5219	1594
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	317	0	74	0	0	0	0	0	3189	165
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	18
Lane Group Flow (vph)	0	0	317	0	74	0	0	0	0	0	3189	147
Heavy Vehicles (%)	2%	2%	4%	2%	2%	2%	2%	2%	2%	2%	2%	4%
Turn Type			Prot		NA						NA	Perm
Protected Phases			4		4						2	
Permitted Phases												2
Actuated Green, G (s)			14.8		14.8						55.7	55.7
Effective Green, g (s)			14.8		14.8						55.7	55.7
Actuated g/C Ratio			0.19		0.19						0.70	0.70
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			518		353						3633	1109
v/s Ratio Prot			c0.11		0.04						c0.61	
v/s Ratio Perm												0.09
v/c Ratio			0.61		0.21						0.88	0.13
Uniform Delay, d1			30.0		27.6						9.5	4.1
Progression Factor			1.00		0.87						0.34	0.17
Incremental Delay, d2			2.1		0.3						1.9	0.1
Delay (s)			32.1		24.2						5.2	0.8
Level of Service			C		C						A	A
Approach Delay (s)		32.1			24.2			0.0			5.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	7.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	124.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↱		↑↑↑	↱			
Traffic Volume (vph)	0	77	0	0	0	74	0	2460	77	0	0	0
Future Volume (vph)	0	77	0	0	0	74	0	2460	77	0	0	0
Ideal Flow (vphpl)	1950	1900	1950	1900	1900	1900	1950	1950	1900	1900	1950	1950
Total Lost time (s)		4.5				4.5		4.5	4.5			
Lane Util. Factor		1.00				1.00		0.91	1.00			
Frt		1.00				0.86		1.00	0.85			
Flt Protected		1.00				1.00		1.00	1.00			
Satd. Flow (prot)		1863				1611		5219	1583			
Flt Permitted		1.00				1.00		1.00	1.00			
Satd. Flow (perm)		1863				1611		5219	1583			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	81	0	0	0	78	0	2589	81	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	74	0	0	26	0	0	0
Lane Group Flow (vph)	0	81	0	0	0	4	0	2589	55	0	0	0
Turn Type		NA				Prot		NA	Perm			
Protected Phases		4				3		2				
Permitted Phases									2			
Actuated Green, G (s)		7.7				4.0		54.8	54.8			
Effective Green, g (s)		7.7				4.0		54.8	54.8			
Actuated g/C Ratio		0.10				0.05		0.68	0.68			
Clearance Time (s)		4.5				4.5		4.5	4.5			
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)		179				80		3575	1084			
v/s Ratio Prot		c0.04				c0.00		c0.50				
v/s Ratio Perm									0.04			
v/c Ratio		0.45				0.05		0.72	0.05			
Uniform Delay, d1		34.2				36.2		7.9	4.1			
Progression Factor		1.00				1.00		0.20	0.08			
Incremental Delay, d2		1.8				0.3		1.0	0.1			
Delay (s)		36.0				36.4		2.5	0.4			
Level of Service		D				D		A	A			
Approach Delay (s)		36.0			36.4			2.5			0.0	
Approach LOS		D			D			A			A	

Intersection Summary			
HCM 2000 Control Delay	4.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	13.5
Intersection Capacity Utilization	117.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑				↱		↑↑↑	↱			
Traffic Volume (vph)	0	101	0	0	0	65	0	2510	31	0	0	0
Future Volume (vph)	0	101	0	0	0	65	0	2510	31	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.5				4.5		5.0	5.0			
Lane Util. Factor		1.00				1.00		0.91	1.00			
Frt		1.00				0.86		1.00	0.85			
Flt Protected		1.00				1.00		1.00	1.00			
Satd. Flow (prot)		1863				1644		5085	1615			
Flt Permitted		1.00				1.00		1.00	1.00			
Satd. Flow (perm)		1863				1644		5085	1615			
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	106	0	0	0	68	0	2642	33	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	8	0	0	0
Lane Group Flow (vph)	0	106	0	0	0	68	0	2642	25	0	0	0
Heavy Vehicles (%)	2%	2%	2%	2%	2%	0%	2%	2%	0%	2%	2%	2%
Turn Type		NA				Prot		NA	Perm			
Protected Phases		8				8		6				
Permitted Phases									6			
Actuated Green, G (s)		10.1				10.1		60.4	60.4			
Effective Green, g (s)		10.1				10.1		60.4	60.4			
Actuated g/C Ratio		0.13				0.13		0.75	0.75			
Clearance Time (s)		4.5				4.5		5.0	5.0			
Vehicle Extension (s)		3.0				3.0		3.0	3.0			
Lane Grp Cap (vph)		235				207		3839	1219			
v/s Ratio Prot		c0.06				0.04		c0.52				
v/s Ratio Perm									0.02			
v/c Ratio		0.45				0.33		0.69	0.02			
Uniform Delay, d1		32.4				31.9		5.0	2.4			
Progression Factor		0.92				1.00		0.23	0.01			
Incremental Delay, d2		1.4				0.9		0.8	0.0			
Delay (s)		31.3				32.8		1.9	0.0			
Level of Service		C				C		A	A			
Approach Delay (s)		31.3			32.8			1.9			0.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM 2000 Control Delay	3.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	119.9%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2363	0	0
Future Volume (vph)	0	0	0	2363	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.5		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5085		
Flt Permitted				1.00		
Satd. Flow (perm)				5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2487	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2487	0	0
Turn Type	Prot			NA		
Protected Phases	4			2		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.5		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5085		
v/s Ratio Prot				c0.49		
v/s Ratio Perm						
v/c Ratio				0.49		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.3		
Delay (s)				0.3		
Level of Service				A		
Approach Delay (s)	0.0			0.3	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	0	0	0	0	0	3070
Future Volume (vph)	0	0	0	0	0	3070
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)						4.0
Lane Util. Factor						0.91
Frt						1.00
Flt Protected						1.00
Satd. Flow (prot)						5219
Flt Permitted						1.00
Satd. Flow (perm)						5219
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	0	0	3232
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	0	0	3232
Turn Type	Prot					NA
Protected Phases	4					2
Permitted Phases						
Actuated Green, G (s)						80.0
Effective Green, g (s)						80.0
Actuated g/C Ratio						1.00
Clearance Time (s)						4.0
Vehicle Extension (s)						3.0
Lane Grp Cap (vph)						5219
v/s Ratio Prot						c0.62
v/s Ratio Perm						
v/c Ratio						0.62
Uniform Delay, d1						0.0
Progression Factor						1.00
Incremental Delay, d2						0.2
Delay (s)						0.2
Level of Service						A
Approach Delay (s)	0.0		0.0			0.2
Approach LOS	A		A			A

Intersection Summary			
HCM 2000 Control Delay	0.2	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	60	0	29	0	0	0	0	0	3062	15
Future Volume (vph)	0	0	60	0	29	0	0	0	0	0	3062	15
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5		4.5						5.0	5.0
Lane Util. Factor			1.00		1.00						0.91	1.00
Frt			0.86		1.00						1.00	0.85
Flt Protected			1.00		1.00						1.00	1.00
Satd. Flow (prot)			1588		1653						5168	1625
Flt Permitted			1.00		1.00						1.00	1.00
Satd. Flow (perm)			1588		1653						5168	1625
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	63	0	31	0	0	0	0	0	3223	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	4
Lane Group Flow (vph)	0	0	63	0	31	0	0	0	0	0	3223	12
Heavy Vehicles (%)	2%	2%	2%	2%	18%	2%	2%	2%	2%	2%	3%	2%
Bus Blockages (#/hr)	0	0	10	0	0	0	0	0	0	0	0	0
Turn Type			Prot		NA						NA	Perm
Protected Phases			4		4						2	
Permitted Phases												2
Actuated Green, G (s)			9.3		9.3						61.2	61.2
Effective Green, g (s)			9.3		9.3						61.2	61.2
Actuated g/C Ratio			0.12		0.12						0.77	0.77
Clearance Time (s)			4.5		4.5						5.0	5.0
Vehicle Extension (s)			3.0		3.0						3.0	3.0
Lane Grp Cap (vph)			184		192						3953	1243
v/s Ratio Prot			c0.04		0.02						c0.62	
v/s Ratio Perm												0.01
v/c Ratio			0.34		0.16						0.82	0.01
Uniform Delay, d1			32.5		31.8						5.9	2.2
Progression Factor			1.00		0.00						0.84	1.00
Incremental Delay, d2			1.1		0.4						1.6	0.0
Delay (s)			33.7		0.4						6.5	2.2
Level of Service			C		A						A	A
Approach Delay (s)		33.7			0.4			0.0			6.5	
Approach LOS		C			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.5
Intersection Capacity Utilization	69.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	0	0	0	2363	0	0
Future Volume (vph)	0	0	0	2363	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)				4.0		
Lane Util. Factor				0.91		
Frt				1.00		
Flt Protected				1.00		
Satd. Flow (prot)				5085		
Flt Permitted				1.00		
Satd. Flow (perm)				5085		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	2487	0	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	2487	0	0
Turn Type	Prot			NA		
Protected Phases	8			6		
Permitted Phases						
Actuated Green, G (s)				80.0		
Effective Green, g (s)				80.0		
Actuated g/C Ratio				1.00		
Clearance Time (s)				4.0		
Vehicle Extension (s)				3.0		
Lane Grp Cap (vph)				5085		
v/s Ratio Prot				c0.49		
v/s Ratio Perm						
v/c Ratio				0.49		
Uniform Delay, d1				0.0		
Progression Factor				1.00		
Incremental Delay, d2				0.3		
Delay (s)				0.3		
Level of Service				A		
Approach Delay (s)	0.0			0.3	0.0	
Approach LOS	A			A	A	

Intersection Summary			
HCM 2000 Control Delay	0.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

APPENDIX H – COMMENTS AND COORDINATION SUMMARY DOCUMENT

SR 535 Corridor Planning Study

Comments and Coordination Summary

US 192 to I-4 | November 2017

FM 437174-1 & 437175-1

Prepared for:
Florida Department of Transportation
719 South Woodland Boulevard
DeLand, FL 32720
www.dot.state.fl.us

Prepared by:
Kittelson & Associates, Inc.
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FDOT

LIST OF APPENDICES

APPENDIX A – PVT KICK OFF MEETING MATERIALS

PVT Kick-Off Meeting

SUBJECT: SR 535 Corridor Study, Orange and Osceola Counties

MEETING DATE: Thursday, April 21, 2016

MEETING TIME: 1:00 PM – 2:30 PM

VENUE: MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801

1) **Overview of Corridor Planning Process**

2) **Project Background/Overview**
   a) Project limits
   b) Scope discussion
   c) Schedule

3) **General Discussion/Concerns about Study Area**
   a) Traffic methodology – sensitivity analysis utilizing low, medium, and high growth rates
   b) Status of DRI's near study corridor
   c) Land use mix discussion
   d) Possible safety issue at Osceola Parkway interchange ramps
   e) Intensity of land uses in area
   f) 8-lane section would be difficult to implement and multi-modal, transit, and TSM&O options should be considered
   g) East/west utility corridor has been identified as a potential trail system providing connections to/from Shingle Creek
   h) Plans to connect disjointed sections of I-Drive
   i) Concerns about existing "cut through" traffic along Polynesian Isle Boulevard (Indian Wells subdivision)
   j) Properties/land uses around SR 417/I-Drive may not be accurate in the model
   k) Intersection improvement is planned for SR 535 and Vineland Road

4) **Public Involvement**
   a) Project Visioning Team (PVT)
   b) Potential stakeholders discussion
   c) Project branding

5) **Next Steps**
   a) Field trip – early May
   b) Preparation for stakeholder meetings – mid May
   c) Existing conditions analysis – May through June

SR 535 Corridor Planning Study

US 192 to I-4

FDOT

LYNX®

ORANGE COUNTY GOVERNMENT FLORIDA

OSCEOLA COUNTY FLORIDA

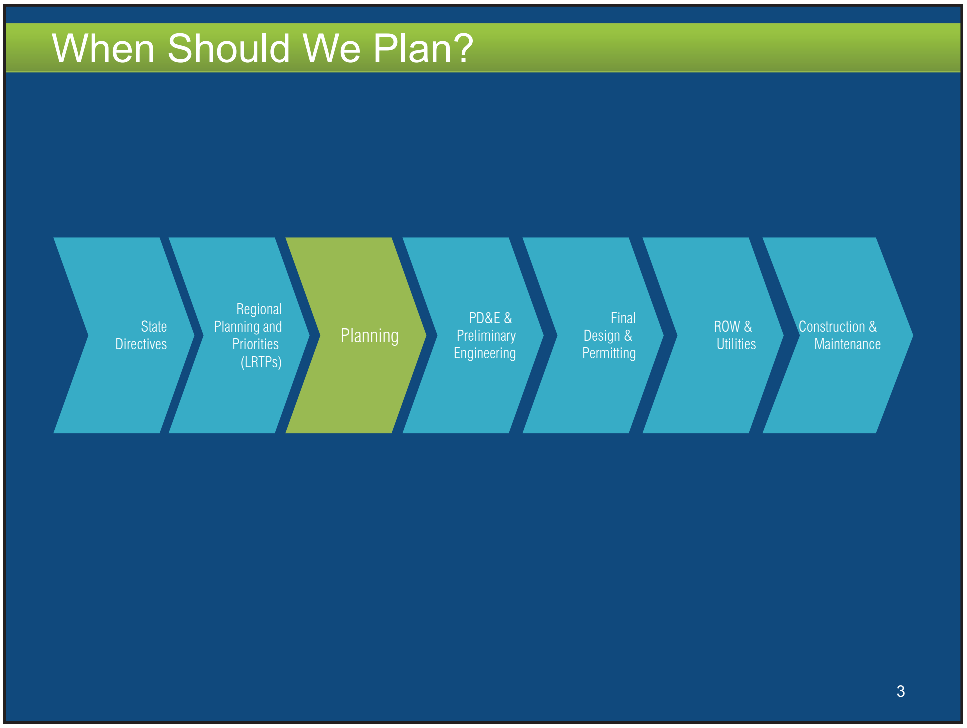
metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

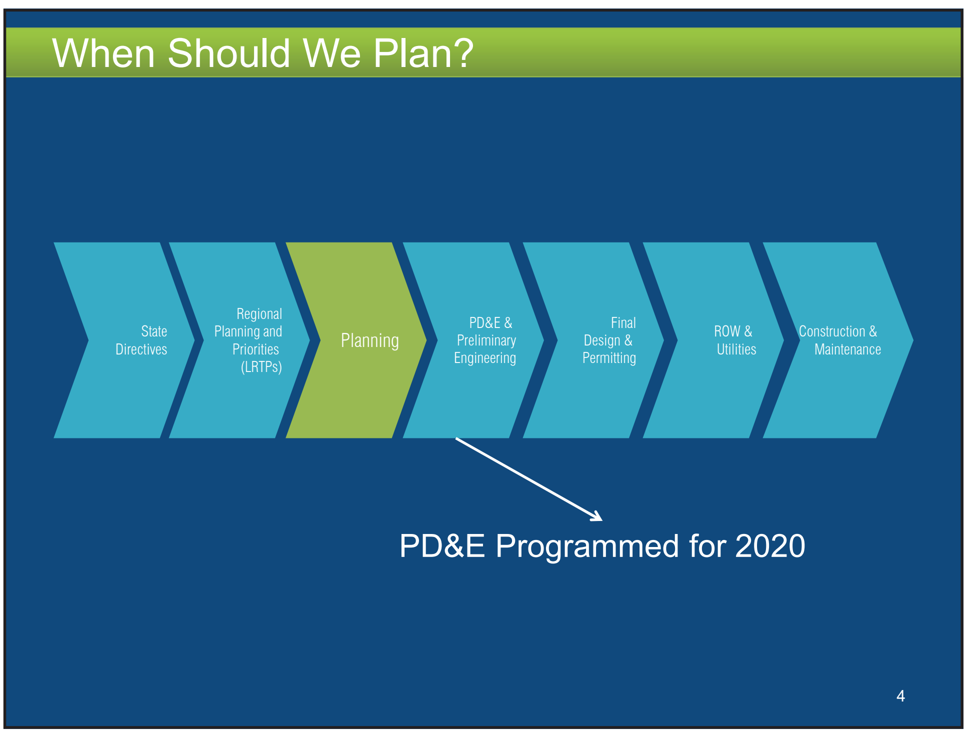
1

Agenda

- Overview of Corridor Planning Process
- Project Background/Overview
- General Discussion
- Public Involvement
- Next Steps

2


When Should We Plan?
State Directives
Regional Planning and Priorities (LRTPs)
Planning
PD&E & Preliminary Engineering
Final Design & Permitting
ROW & Utilities
Construction & Maintenance
3


When Should We Plan?
State Directives
Regional Planning and Priorities (LRTPs)
Planning
PD&E & Preliminary Engineering
Final Design & Permitting
ROW & Utilities
Construction & Maintenance
PD&E Programmed for 2020
4

Strategies from Planning

Multimodal Corridor Planning

Land Use Strategies

- Land Use Policies/ Regulations
- Detailed Land Use Plans
- Land Use Programs
- Other Land Use Strategies

Transportation Strategies (all modes)

- Capital Improvements
- Transportation Operations
- Maintenance Project
- More Detailed/Area-Specific Transportation Plans and Programs
- Other Transportation Strategies

Other Strategies

- Utility/Infrastructure Improvements
- Organizational Changes
- Do nothing (No-Build)
- Other Strategies

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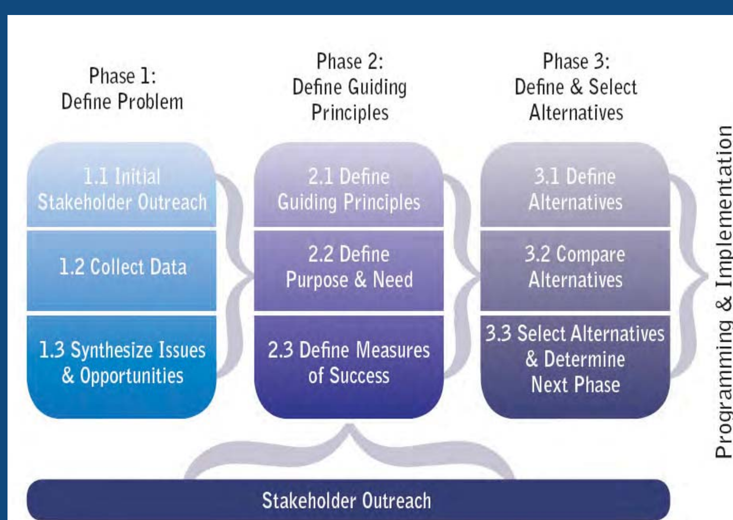
Planning Process



We are starting with a blank slate and we want your input in shaping the future of this corridor!!

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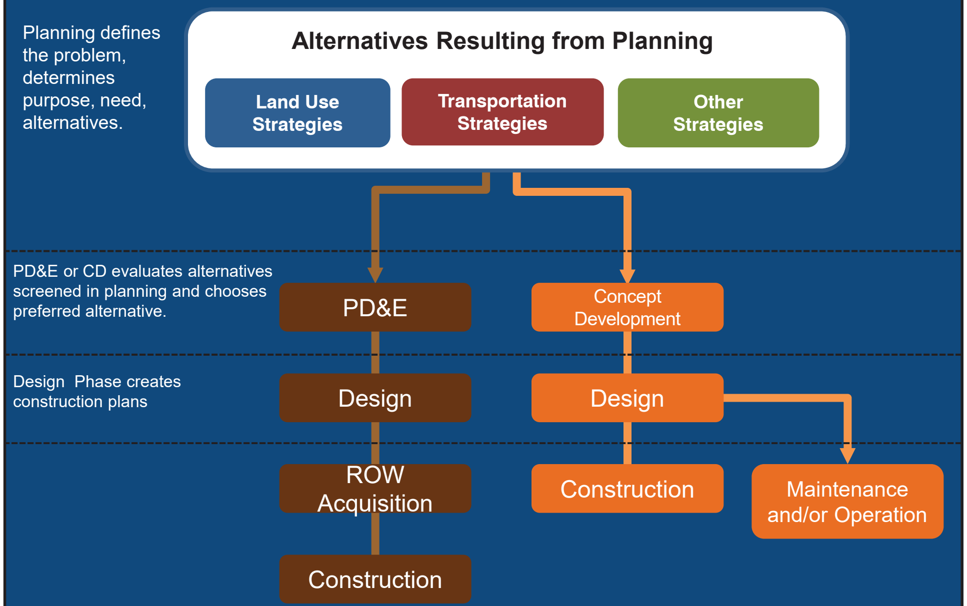
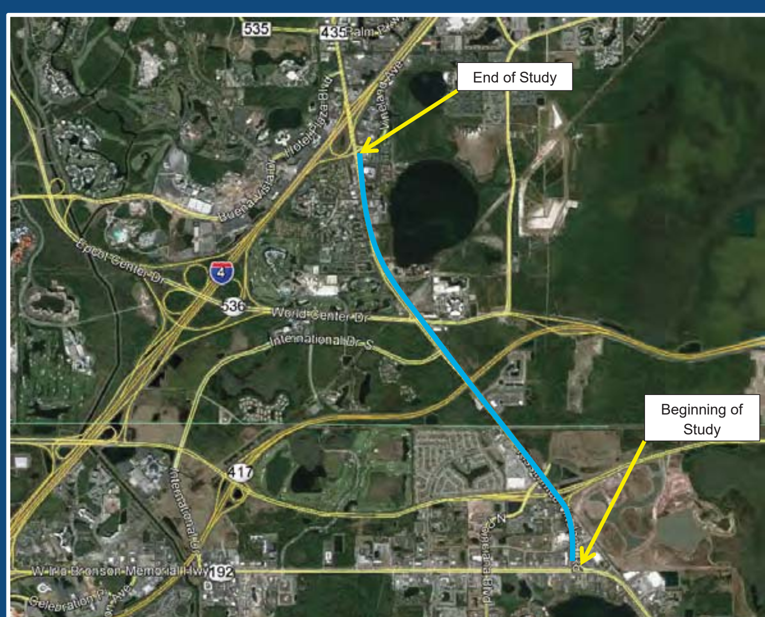
Next Phases After Planning for Transportation Strategies



7

Project Background/Overview



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Project Background/Overview

- Major Work Tasks/Time Frames
  - Existing Conditions Analysis: April through July 2016
    - Stakeholder Interviews: Targeting Mid-May
  - Future Conditions Analysis/Purpose and Need Development: July through December 2016
    - PVT and Public Coordination: Targeting September and October
    - Planning Screen through ETDM will be performed once P&N established
  - Alternatives Development: January through July 2017
    - PVT and Public Coordination: Targeting March, May, and June
  - MetroPlan Orlando Presentations towards end of Project

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General Discussion

- Traffic Methodology
  - Sensitivity analysis type approach utilizing low, medium, and high growth rates
- Land Use Topics
  - Status of DRI's near study corridor
  - Land use mix/intensity of land uses discussion
  - Properties/land uses around SR 417/I-Drive may not be accurate in the model
- Pedestrian/Bicycle Topics
  - East/west utility corridor has been identified as a potential trail system providing connections to/from Shingle Creek

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General Discussion

- Traffic Operations and Safety Topics
  - Possible safety issue at Osceola Parkway interchange ramps
  - 8-lane section would be difficult to implement and multi-modal, transit, and TSM&O options should be considered
  - Plans to connect disjointed sections of I-Drive
  - Concerns about existing “cut through” traffic along Polynesian Isle Boulevard (Indian Wells subdivision)
  - Intersection improvement is planned for SR 535 and Vineland Road
  - Tying into I-4/SR 535 interchange improvements (we are assuming these are committed)

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Public Involvement

- Project Visioning Team (PVT) Representatives
  - LYNX
  - MetroPlan Orlando
  - Orange County
  - Osceola County
- Potential Stakeholders
  - Owners of major shopping centers along corridor
  - Central Florida Hotel & Lodging Association
  - Home Owner’s Associations/major apartment complexes
  - Lake Buena Vista Factory Stores
  - W192 Development Authority
  - Appropriate members of Environmental Technical Advisory Teams for Orange and Osceola Counties
- Project Branding Discussion – see handouts

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Next Steps

- PVT Field Trip: Targeting early May before Stakeholder Interviews
- Stakeholder Interviews: Targeting Mid-May
- Existing Conditions Analysis: April through July

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Questions/Contact Info

Questions?

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Project Visioning Team (PVT) Kick-Off Meeting

SUBJECT:	FM 437174-1 and 437175-1: SR 535 Corridor Study
	Orange and Osceola Counties
MEETING DATE:	Thursday, April 21, 2016
MEETING TIME:	1:00 PM – 2:30 PM
VENUE:	MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801

Introduction and Attendees

To kick off the SR 535 Corridor Planning Study, a meeting was held with initial representatives of the Project Visioning Team (PVT), which included members of the Florida Department of Transportation District 5 (FDOT), Orange County, Osceola County, LYNX, MetroPlan Orlando, and the consultant team Kittelson & Associates, Inc. (KAI). The following people attended the PVT kick-off meeting:

- Jesse Blouin – FDOT
- Judy Pizzo – FDOT
- Deborah Tyrone – FDOT
- Brian Sanders – Orange County
- Tamaya Huff – Osceola County
- Joedel Zaballero – Osceola County
- Carleen Flynn – LYNX
- Keith Caskey – MetroPlan Orlando
- Karl Passetti – KAI
- Aditya Inamdar – KAI
- Travis Hills – KAI

A sign in sheet for the meeting is attached.

Meeting Discussion

Jesse Blouin and Travis Hills led a presentation for the attendees but general discussion took place during the presentation. The following sections summarize the discussion points from the meeting.

Overview of Corridor Planning Process and Project Background/Overview

Jesse and Travis gave a general overview about the corridor planning process and how the SR 535 Corridor Planning Study fits within the overall schedule of project development.

Jesse noted the SR 535 corridor is programmed for PD&E in 2020. Travis then gave an overview on the background of the project and the limits of the study.

General Discussion/Concerns about Study Area

The group discussed the following topics in regards to the SR 535 study corridor:

- 8 lane widening option north of SR 535 would not be considered as part of this study.
- Pedestrian/Bicycle –
    - Needs to be a consideration for pedestrian/bicycle volume projections into the future, let's not design to the minimum now but for where we expect pedestrian/bicycle levels to be in the future.
    - Pedestrian and bicycling counts as part of peak hour counts may not be representative of pedestrian and bicycle trips. Ped/bike trips tend to have different peaking characteristics.
    - Consider ways to study existing locations where people are crossing at midblock locations or have short ped/bike trips without crossing a signalized intersection, since these will not be captured in peak hour counts at signalized intersections.
    - To help project future volumes, need to look at attractors and generators along the corridor and where will non-motorists be traveling from/to.
    - Consider different types of bicycle facilities like cycle tracks/shared use paths with physical separation for better utilization by bicyclists due to high speed roadway characteristics.
    - An important consideration is how to attract tourists from northern section of the corridor to the southern section/community redevelopment area (CRA).
    - Another consideration could be to create a shared use path along the corridor to connect with the shared use path along US 192.
    - Future trail along power utility easement along county line. Explore opportunities for trail connectivity.
    - Review Strava data to understand ped/bike travel patterns.
- Environmental constraints (wetlands, habitats etc.) may be present in the middle portion of the corridor; this will be reviewed during the study.
- Disney has transit that travels along corridor.
- Coordinate with Orange County improvements at SR 535/Vineland Avenue intersection (WB right turn ramp on I-4).
- SR 535/SR 536 intersection has heavy tourist vehicular traffic that are confused with which lane they need to be in. May need better intersection approach signage.
- Red light cameras along corridor have been installed for approximately 1 year. Osceola County is performing study analyzing how effective the cameras have been but the SR 535 study team will need to look at safety pre-cameras to post cameras.

Joedel Zaballero to provide dates of installation and the results of the analysis once it is finished.

- The study area is within Orange County's International Drive Activity Center. Needs coordination with its recommendations, including alignment to connect I-Drive from SR 535 to World Center Drive.
- Confirm status of the DRIs in the area and their impact on future traffic forecasting.
- Frontage roads at World Center Dr. and International Dr. may be within FDOT ROW.
- Explore network alternatives to create parallel connections to SR 535 especially at congested intersections.
- Look into designing any potential storm water ponds as community features.

Public Involvement

The group discussed the following topics in regards to public involvement:

- One of the highest producing Walmarts in the region is located near the northwest corner of SR 535 and Poinciana Boulevard so they need to be added to the stakeholder list.
- May be able to reach out to the chamber of commerce for respective counties to get information on potential stakeholders.
- May want to consider adding Orange and Osceola County Department of Health to PVT list.
- May want to consider adding East Central Florida Regional Planning Council to stakeholder list.
- May want to consider adding School Board and police/fire/rescue representative to stakeholder list.
- May want to consider adding DRI land owners' representatives to stakeholders' list.

Branding

The group discussed the three logos/branding options and decided the second logo, which was circular and included blue/grey/black coloring, would be the preferred option. The group wanted the circles on the right and left sides of the logo to be removed and to have the pedestrian and bus icons added to the logo.

Next Steps

The group generated the following action item list to be completed by various team members after the meeting.

Action Item	Due Date	Status	Person Responsible	Notes
Update PVT and stakeholder lists, send to group	4/27/16	Ongoing	Travis H./ Jesse B.	
Update branding and send to group	4/27/16	Ongoing	Travis H.	
PVT group to review stakeholder lists and provide additional stakeholders or stakeholder information, if available	5/4/16	Ongoing	PVT Group	
Orange County to send I-Drive Activity Center Documents	04/22/16	Received	Brian Sanders	

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

SR 535 Corridor Planning Study -
PVT Kick Off Meeting April 21, 2016

Name	Agency/Firm	Email
Travis Hills	KAI	thills@kittelson.com
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BRIAN SANDERS	ORANGE CO	BRIAN.SANDERS@OCFL.NET
CARLEEN FLYNN	LYNX	cflynn@golynx.com
Keith Caskey	MetroPlan Orlando	kcaskey@metroplanorlando.com
Karl Passetti	Kittelson (KAI)	kpassetti@kittelson.com
Jesse Blouin	In-house FDOT Consultant	jesse.blouin@dot.state.fl.us
Judy Pizzo	FDOT	judy.pizzo@dot.state.fl.us
Deborah Tyrone	FDOT	deborah.tyrone@dot.state.fl.us
Aditya Inamdar	Kittelson & Associates (KAI)	ainamdar@kittelson.com

SR 535 Corridor Planning Study Project Visioning Team Members

The following people/organizations have been identified to participate in the Project Visioning Team for the SR 535 Corridor Planning Study:

- Heather Garcia, FDOT D5 - heather.garcia@dot.state.fl.us
- Jesse Blouin, FDOT D5 - jesse.blouin@dot.state.fl.us
- Deborah Tyrone, FDOT D5 - deborah.tyrone@dot.state.fl.us
- Renzo Nastasi, Orange County - renzo.nastasi@ocfl.net
- Brian Sanders, Orange County - brian.sanders@ocfl.net
- Joedel Zaballero, Osceola County - jzab@osceola.org
- Tamaya Huff, Osceola County - tamaya.huff@osceola.org
- Carleen Flynn, LYNX - cflynn@golynx.com
- Keith Caskey, MetroPlan Orlando - kcaskey@metroplanorlando.com
- David Overfield, Orange County Department of Health
- Representative from Osceola County Department of Health
- Karl Passetti, Kittelson & Associates, Inc. - kpassetti@kittelson.com
- Aditya Inamdar, Kittelson & Associates, Inc. - ainamdar@kittelson.com
- Travis Hills, Kittelson & Associates, Inc. - thills@kittelson.com

SR 535 Corridor Planning Study Potential Stakeholders

The following organizations are planned to be contacted for possible stakeholder interviews:

- Appropriate members of the FDOT Environmental Technical Advisory Teams (ETAT) for Orange and Osceola Counties.
- Shopping centers along the corridor:
  - Poinciana Place – northeast corner of SR 535 and US 192);
  - International Promenade – northwest corner of SR 535 and US 192);
  - Calypso Cay – along SR 535 between Poinciana Boulevard and Polynesian Isle Boulevard
  - Marriott Village – northeast corner of SR 535 and Vineland Avenue
- Central Florida Hotel & Lodging Association for hotel/motels along corridor:
  - Golden Link Motel – south leg of SR 535 and US 192 intersection
  - Embassy Suites – northwest corner of SR 535 and Kyngs Heath Road
  - Hampton Inn/SpringHill Suites – northwest corner of SR 535 and Calypso Cay Way
  - Fantasy World Resort – Kyngs Heath Road west of SR 535
  - Holiday Inn Express – just north of Polynesian Isle Boulevard
  - Caribe Royal Hotel and Convention Center – SR 536 east of SR 535
  - Orlando World Center Marriott/Hawk's Landing Golf Club – SR 536 west of SR 535
  - Blue Heron Beach Resort – off Blue Heron Beach Drive east of SR 535
  - Sheraton Vistana Resort Villas – off Meadow Creek Drive west of SR 535
  - Holiday Inn Resort – just north of Meadow Creek Drive on east side of SR 535
- Home owners associations (HOA) and apartment complexes:
  - Indian Wells Home Owners Association – Polynesian Isle Boulevard west of SR 535
  - Sabal Palm at Lake Buena Vista Apartments – Meadow Creek Drive east of SR 535
  - Vista Way Apartments – off Meadow Creek Drive west of SR 535
- Lake Buena Vista Factory Stores and Resort – off LBV Factory Stores Drive
- W192 Development Authority
- Walmart just north of Poinciana Boulevard
- East Central Florida Regional Planning Council
- Orange and Osceola County School Boards
- Local police/fire/rescue departments
- DRI land owner representatives

OPTION B

CORRIDOR

SR 535

PLANNING STUDY

CORRIDOR

SR 535

PLANNING STUDY

APPENDIX B – PVT MEETING #1 MATERIALS

PVT Meeting #1

SUBJECT:	SR 535 Corridor Study, Orange and Osceola Counties
MEETING DATE:	Thursday, November 3rd, 2016
MEETING TIME:	10:00 AM – 12:00 PM
VENUE:	MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801, Live Oak Conference Room

1) **Overview of Corridor Planning Process**

2) **Project Background/Overview**
   a) Project Location
   b) Major Work Tasks
   c) Public Outreach Activities

3) **Existing Conditions**
   a) Previous/Ongoing Studies
   b) Land Use Characteristics
   c) Roadway Characteristics/Observations
   d) Segment and Intersection Level-of-Service Analysis
   e) Safety Analysis

4) **Issues/Opportunities and Guiding Principles**
   a) Issues and Opportunities Review
   b) Guiding Principles
   c) General Discussion

5) **Next Steps**
   a) Existing Conditions Public Meeting – Early December
   b) Future Conditions Analysis
   c) Define Purpose and Need

PVT Meeting #1

November 3, 2016

1

Agenda

- Overview of Corridor Planning Process
- Project Background/Overview
- Existing Conditions Analysis
- Issues/Opportunities Discussion
- Guiding Principles
- Next Steps

2

Corridor Planning Process

3

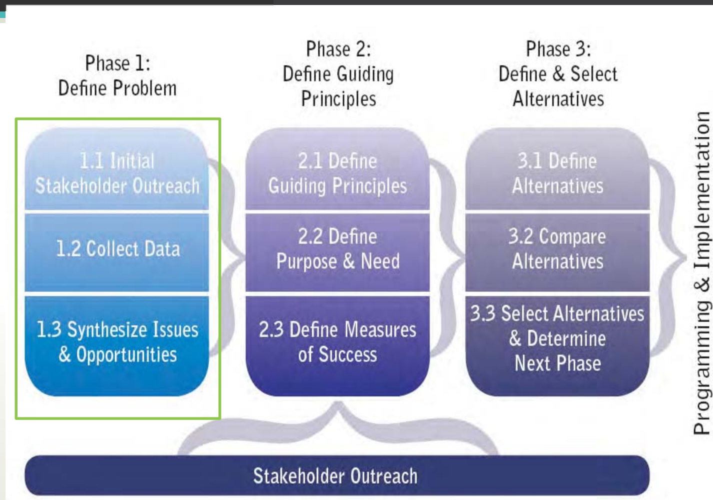
When Should We Plan?

State Directives → Regional Planning and Priorities (LRTPs) → Planning → PD&E & Preliminary Engineering → Final Design & Permitting → ROW & Utilities → Construction & Maintenance

PD&E Programmed for 2020

4

Planning Process



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Project Background/Overview

6

Project Location

Major Work Tasks/Time Frames

- Existing Conditions Analysis: Complete
  - PVT (October) and Public Meeting (December)
- Future Conditions Analysis/Purpose and Need Development: Complete December 2016
  - Planning Screen through ETDM will be performed once P&N established
- Alternatives Development: January through July 2017
  - PVT (March and May) and Public Meeting (June)
- MetroPlan Orlando Presentations towards end of Project

8

Public Outreach Activities Completed

- PVT Kick-Off Meeting – April
- PVT Field Review – May
- Stakeholder Meeting with East Central Florida Regional Planning Council and W192 Development Authority – June
- Stakeholder Meeting with Central Florida Hotel & Lodging Association – July

9

Existing Conditions

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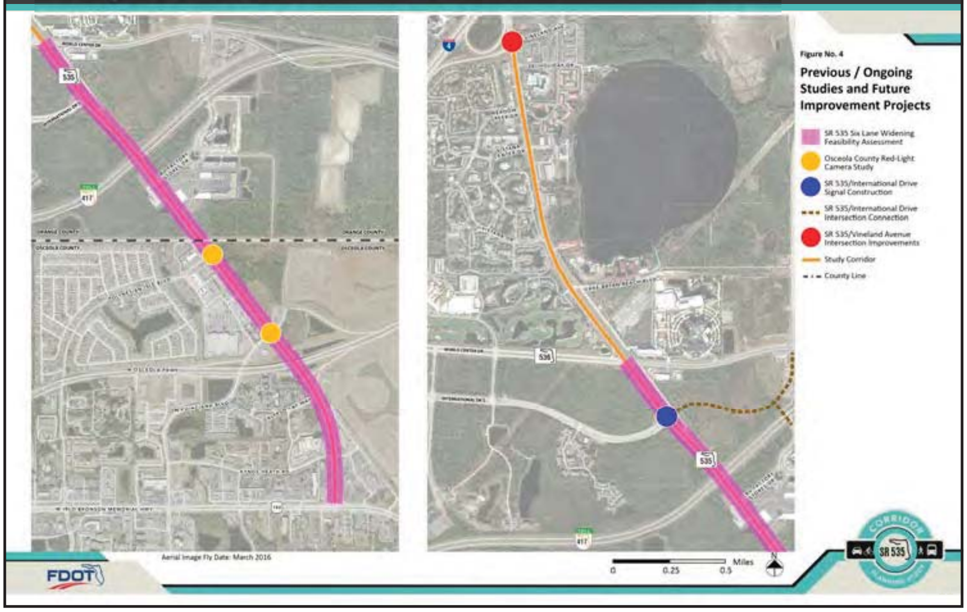
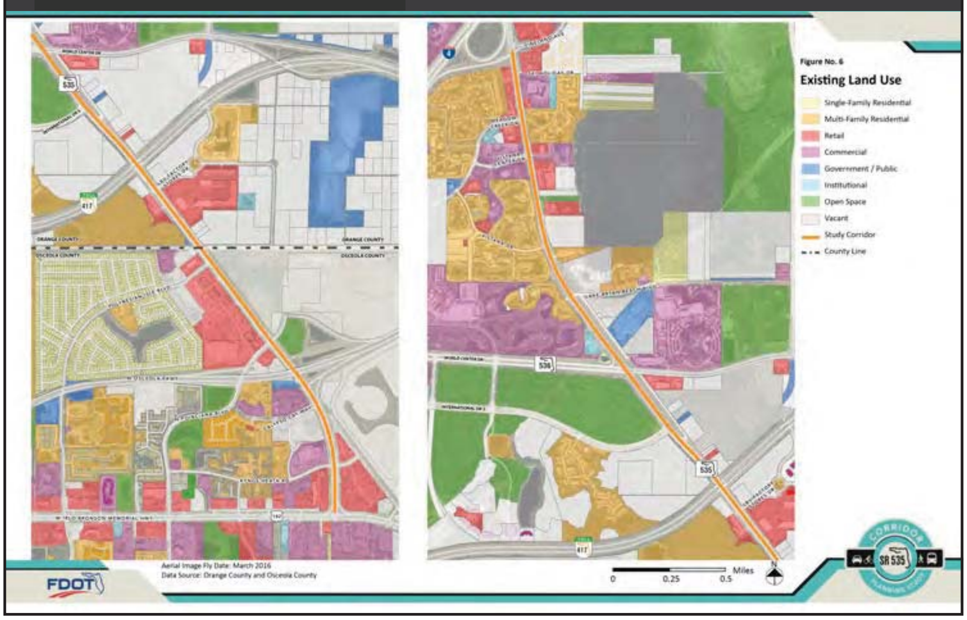
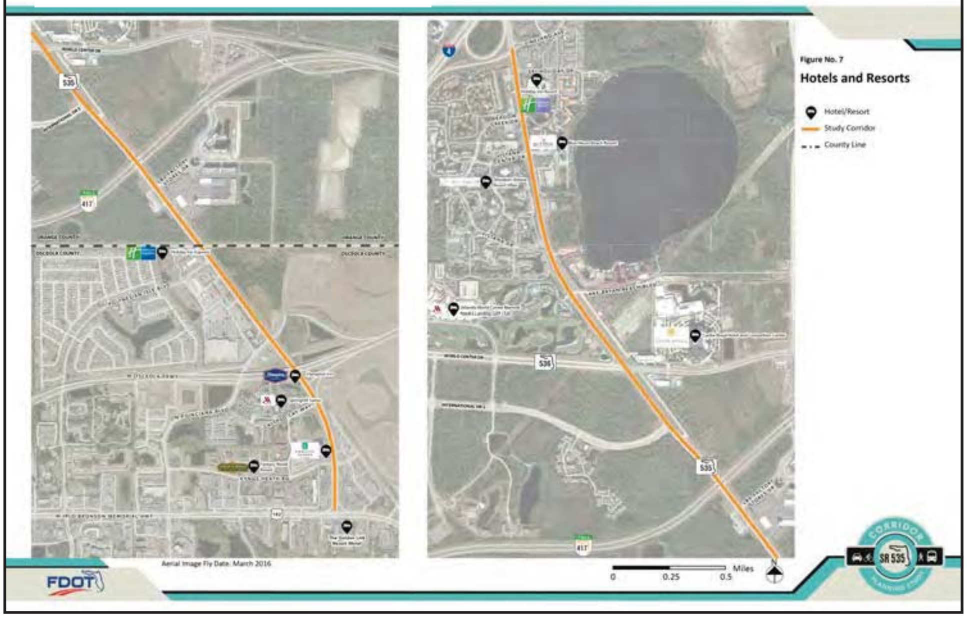
Previous/Ongoing Studies and Future Improvements



Existing Land Use

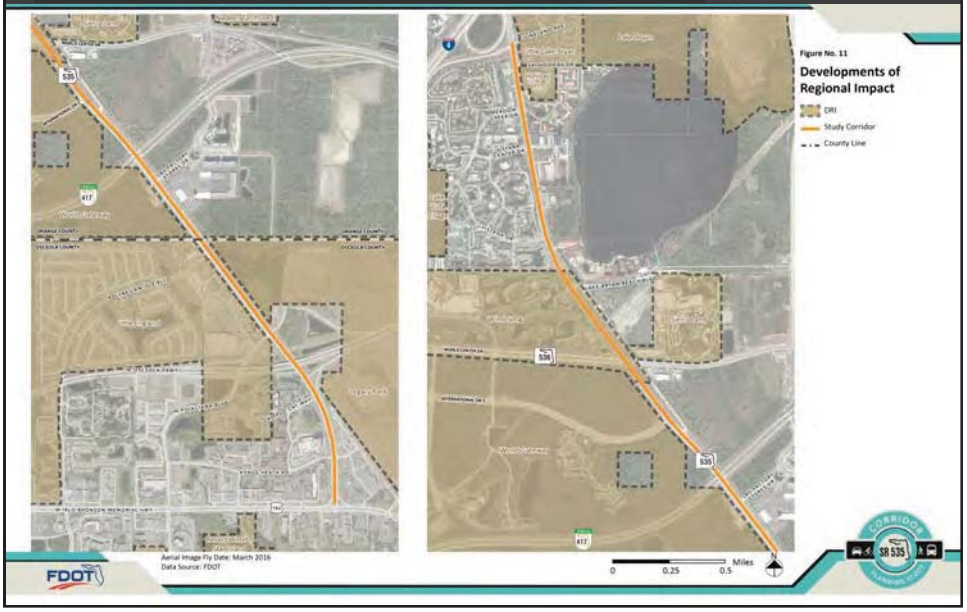


Hotels and Resorts

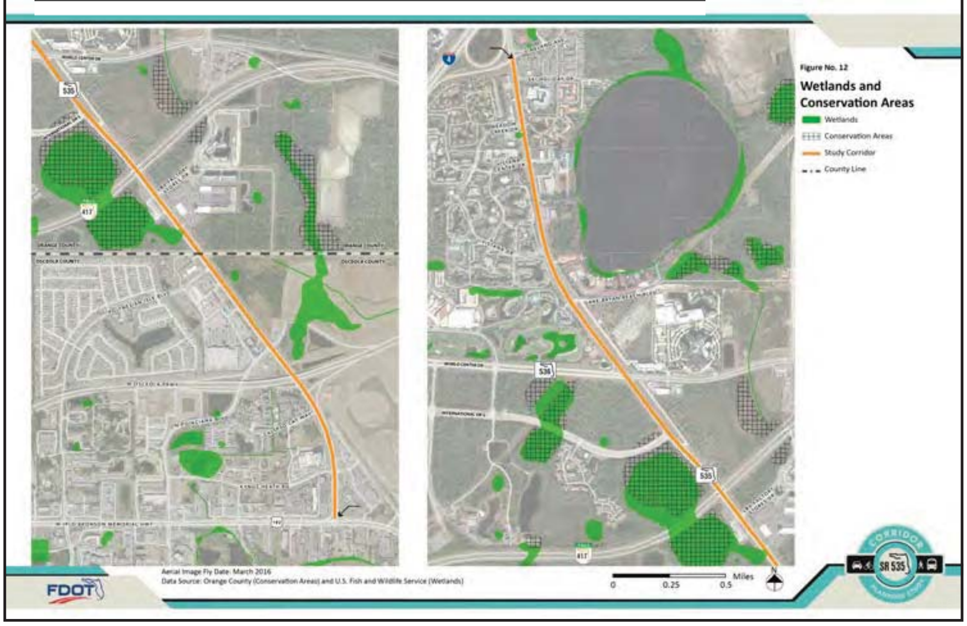


Community/Neighborhoods and Community Features

Developments of Regional Impact



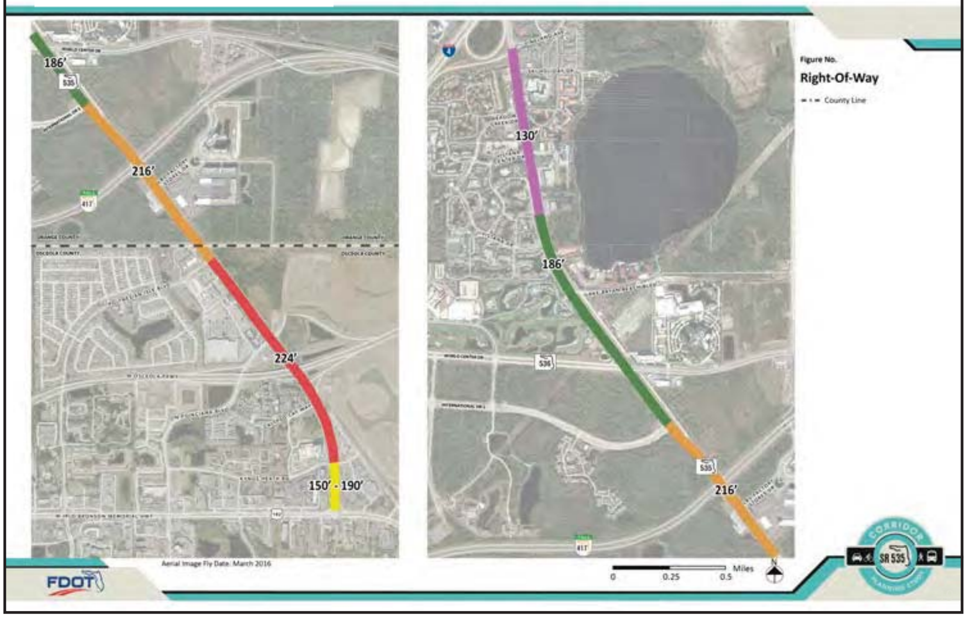
Wetlands and Conservation Areas



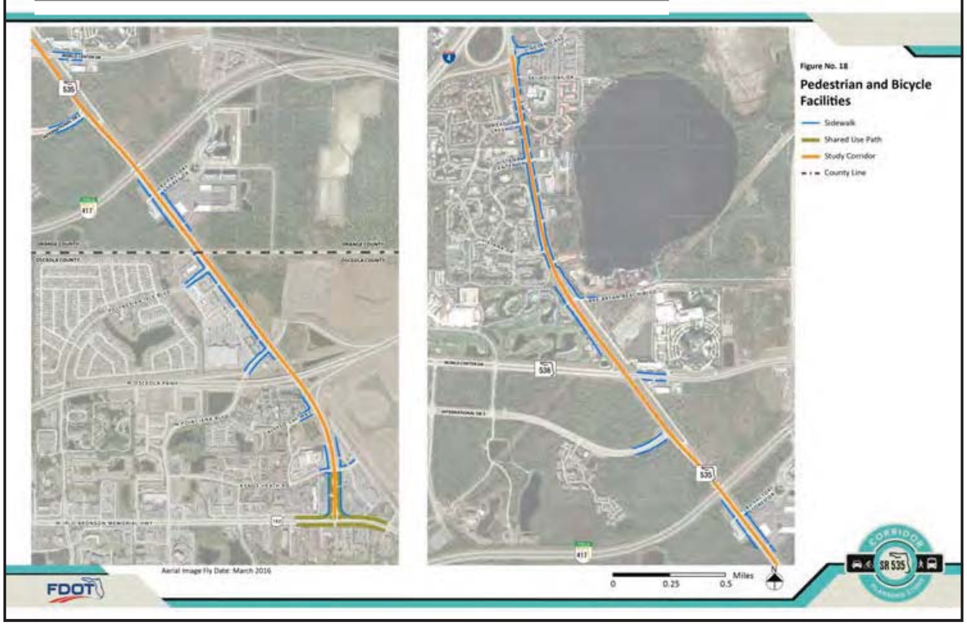
Threatened & Endangered Species

Developments of Regional Impact

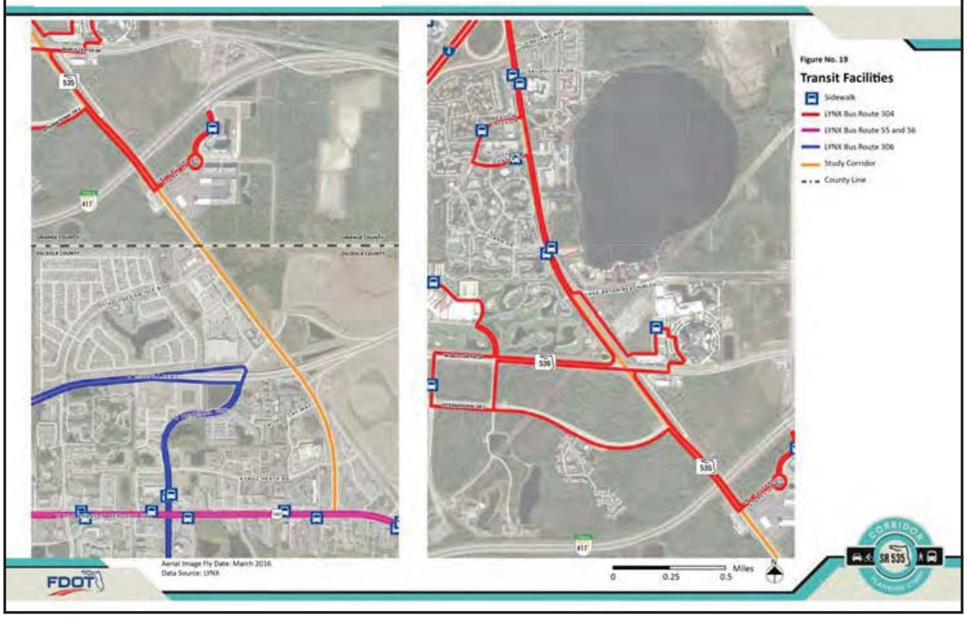
Right-Of-Way



Pedestrian and Bicycle Facilities

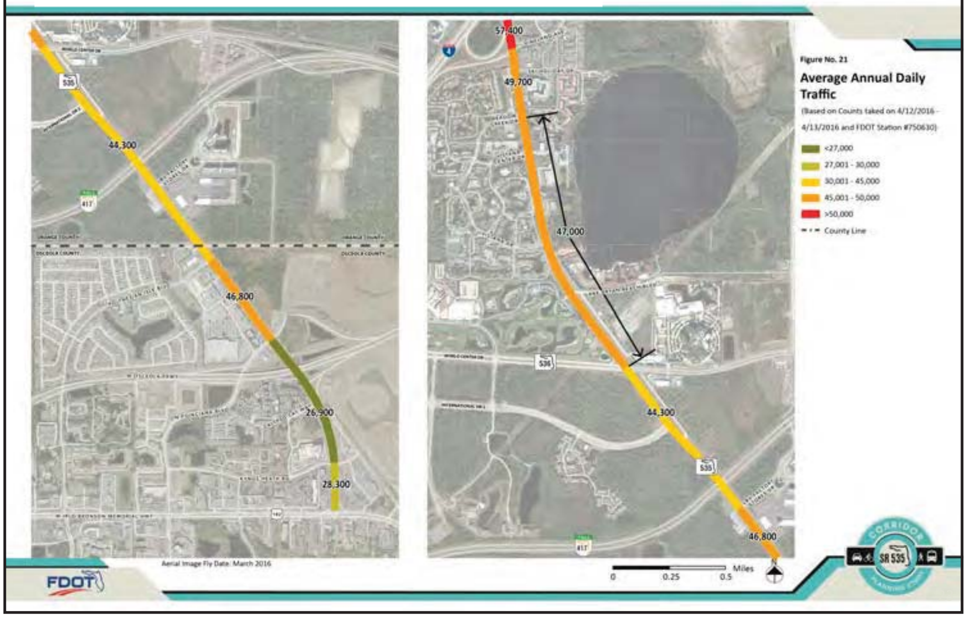


Transit Facilities



Segment Analysis

Average Annual Daily Traffic



HCM Segment LOS Evaluation

- AM Northbound: Osceola Parkway to SR 536 – LOS F
- AM Southbound: Segments LOS D or better
- PM Northbound: Osceola Parkway to Poinciana, Polynesian Isle to SR 536, and Meadow Creek to Vineland – LOS F
- PM Southbound: Meadow Creek to LBV Factory Stores – LOS F

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HCM Intersection LOS Evaluation

- 13 intersections, 9 signalized and 4 unsignalized
- AM Peak Hour
  - Poinciana Boulevard LOS E
  - International Drive LOS F
  - Vistana Center Drive LOS E
- PM Peak Hour
  - International Drive LOS F
  - SR 536 LOS E
  - Vistana Center Drive LOS E

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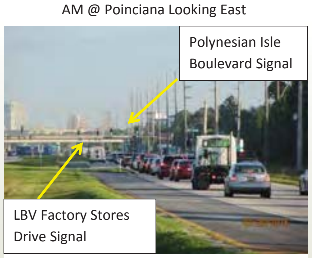
AM and PM Peak Hour Field Observations


AM @ Poinciana Looking East


PM @ SR 536 Looking South


PM @ LBV Factory Stores Looking South



AM @ Poinciana Looking North


PM @ Meadow Creek Looking South


PM @ Meadow Creek Looking North

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AM and PM Peak Hour Field Observations

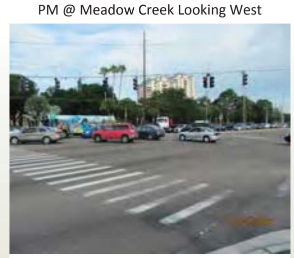

Looking East from SR 536


PM @ SR 536 Westbound LT


PM @ Meadow Creek Looking West


Eastbound Leg of SR 536 Intersection


PM @ SR 536 Looking East


PM @ Meadow Creek – Eastbound LT

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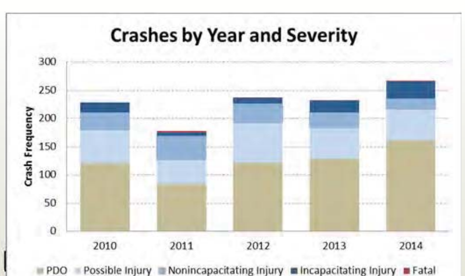
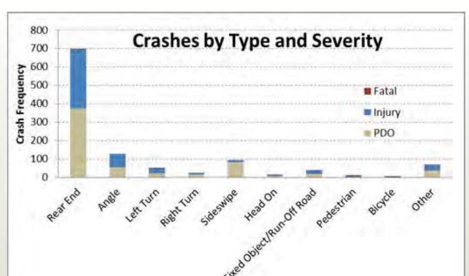
Crash History (2010-2014)

- 1,142 crashes from 2010 to 2014
  - 7 fatal and 521 (46%) injury
- Non-daylight conditions accounted for 42% of crashes
- 35% of crashes observed between 3PM and 8PM





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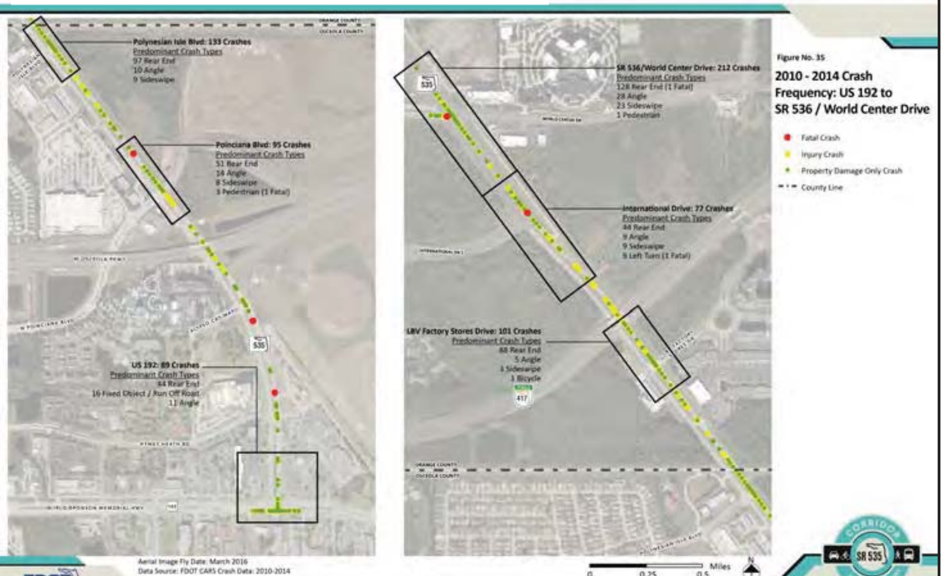
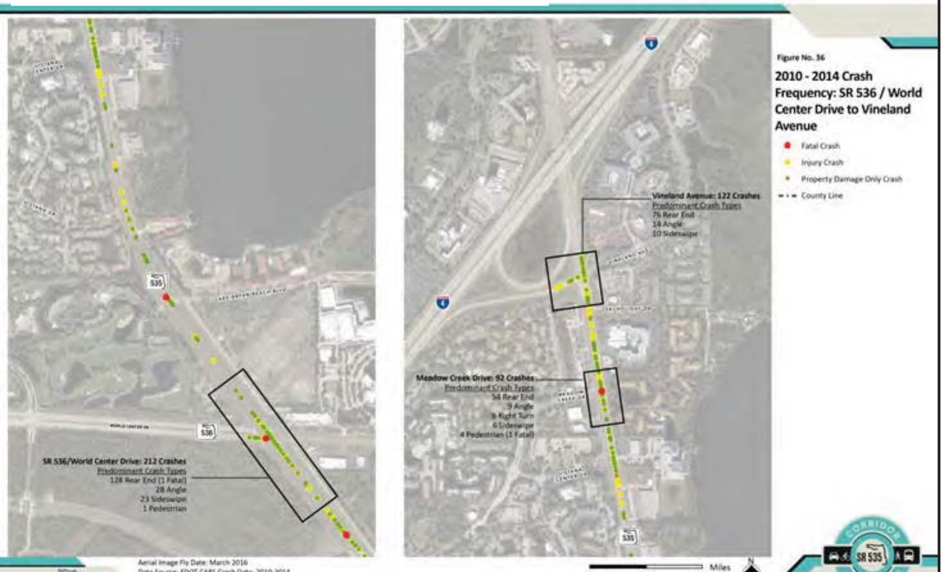
Crash History (2010-2014)



Crash History (2010-2014)



Pedestrian and Bicycle Crash History (2010-2014)

Issues/Opportunities and Guiding Principles

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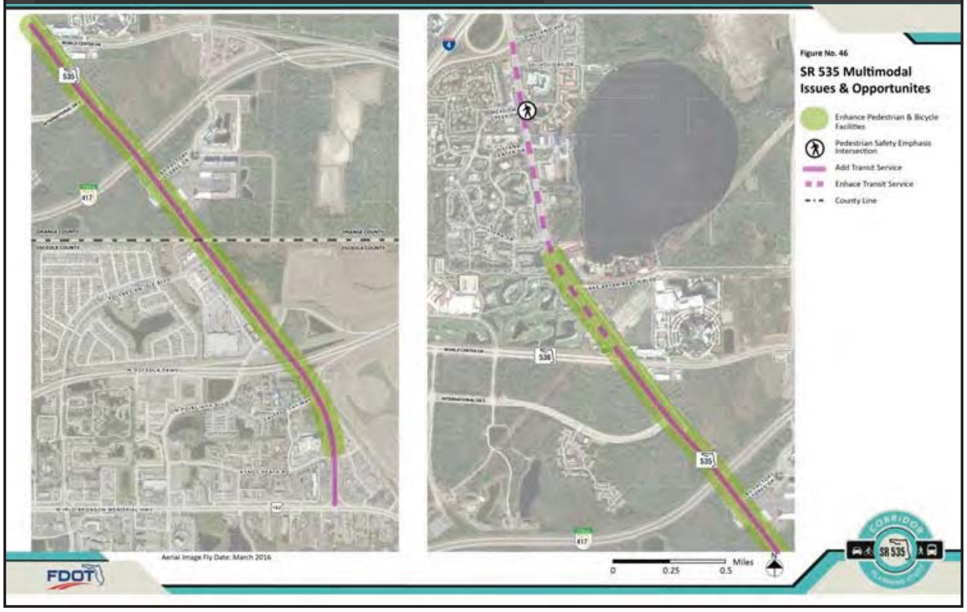
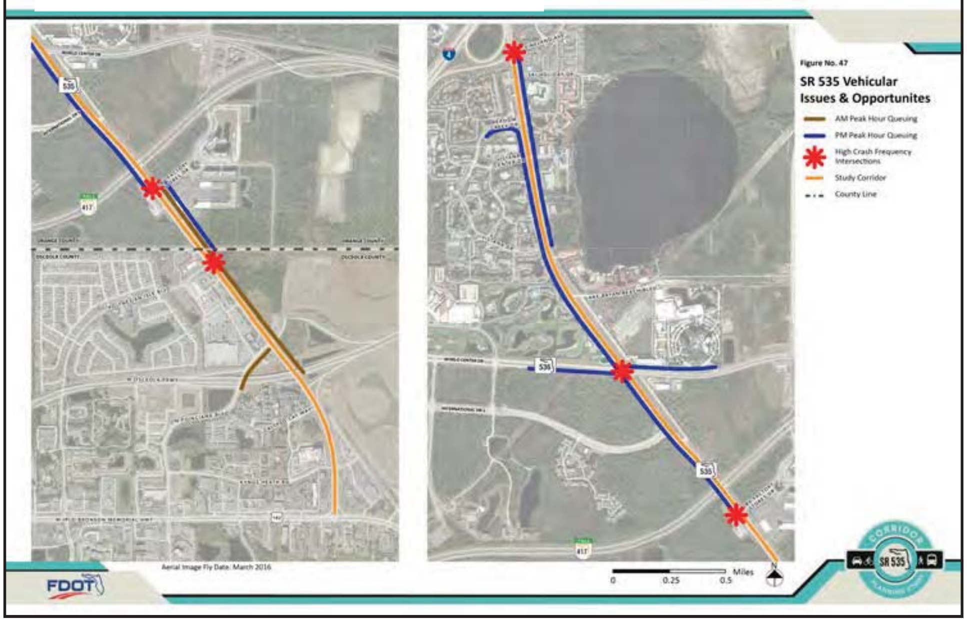
Issues and Opportunities



Issues and Opportunities



Guiding Principles

- Enhance multimodal connectivity
- Improve safety along corridor for all modes
- Decrease peak hour congestion
- Tourism/economic considerations
- Consistency with ongoing projects/planning efforts

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Issues and Opportunities – Open Discussion

- Pedestrian/Bicycle Enhancements
- Transit Enhancements
- Safety Improvements
- Operational Improvements

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Next Steps – Future Conditions Analysis

- Sensitivity analysis with low/medium/high growth rates to project future volumes
- Assess future no-build operations with projected low/medium/high volumes
- Define Purpose and Need based on existing and future conditions issues
- Develop cross sections addressing ped/bike and vehicle issues

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Next Steps

- Existing Conditions Public Meeting – December 13th
- Targeting March 2017 for PVT Meeting #2
  - Discuss Future No-Build Analysis and Preliminary Alternatives Development

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Schedule

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Questions/Contact Info

Questions?

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heather.garcia@dot.state.fl.us

FDOT CONSULTANT PROJECT MANAGER:
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DeLand, FL 32720
jesse.blouin@dot.state.fl.us

CONSULTANT PROJECT MANAGER:
Travis Hills, P.E.
225 E. Robinson St., Suite 450
Orlando, FL 32801
Phone: 407.540.0555
thills@kittelson.com

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Project Visioning Team (PVT) Meeting #2

SUBJECT: FM 437174-1 and 437175-1: SR 535 Corridor Study

Orange and Osceola Counties

MEETING DATE: Thursday, November 3, 2016

MEETING TIME: 10:00 AM – 12:00 PM

VENUE: MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801, Live Oak Conference Room

Introduction and Attendees

A meeting was held with the Project Visioning Team (PVT) in early November to review the existing conditions, issues/opportunities, and guiding principles for the SR 535 corridor. The PVT consists of members from the Florida Department of Transportation District 5 (FDOT), Orange County, Osceola County, LYNX, MetroPlan Orlando, and the consultant team Kittelson & Associates, Inc. (KAI). Below are the attendees of PVT Meeting #2:

- Lorena Cucek – FDOT
- Deborah Tyrone – FDOT
- Jesse Blouin – FDOT
- Brian Sanders – Orange County
- Joedel Zaballero – Osceola County (by phone)
- Josh DeVries – Osceola County
- Myles O'Keefe – LYNX
- Keith Caskey – MetroPlan Orlando
- Karl Passetti – KAI
- Aditya Inamdar – KAI (by phone)
- Travis Hills – KAI

A sign in sheet for the meeting is attached.

Meeting Discussion

Jesse Blouin and Travis Hills led a presentation focused on the existing conditions for the attendees. General discussion took place during the presentation. The following sections summarize the discussion points from the meeting.

Overview of Corridor Planning Process and Project Background/Overview

Jesse and Travis gave a general overview about the corridor planning process and how the SR 535 Corridor Planning Study fits within the overall schedule of project development.

Jesse noted the SR 535 corridor is programmed for PD&E in 2020. Travis then gave an overview of the major work tasks and public involvement completed since the group last met. Travis gave an overview of the stakeholder coordination, which included meetings with the East Central Florida Regional Planning Council, the W192 Development Authority, and the Central Florida Hotel & Lodging Association.

Existing Conditions

Travis reviewed the following topics for the existing conditions analysis:

- Previous/Ongoing Studies
- Land Use Characteristics
- Roadway Characteristics/Observations
- Segment and Intersection LOS Analysis
- Safety Analysis

Issues/Opportunities and Guiding Principles

The group discussed the following topics in regards to guiding principles and issues/opportunities:

- The Guiding Principles as identified by the PVT are as follows –
    - Enhance multimodal connectivity
    - Improve safety along corridor for all modes
    - Decrease peak hour congestion
    - Tourism/economic considerations
    - Planning for future landscaping/aesthetic improvements
    - Consistency with ongoing projects/planning efforts
- Pedestrian and Bicycle Issues/Opportunities
    - Complete the sidewalk system at a minimum, but it would be ideal to incorporate shared use path.
    - Add a bike lane/buffered bike lane in areas where a shared use path may not be feasible.
    - Connect the major activity nodes along the corridor.
    - Try to incorporate pedestrian scale lighting. This could be a partnership opportunity between FDOT and the Counties.
    - Widen sidewalks in areas where we already have sidewalk, if there are no ROW constraints.
    - Meadow Creek intersection – enhance the crosswalk with different colors or stamped concrete/asphalt to make it stand out.
        - Leading ped interval and turning vehicle signage.
        - Review the FDOT Traffic Operations Report which included pedestrian safety enhancements at this intersection.
    - Possibly look into mid-block crossing opportunities and how it is facilitated with proposed signal system.

- Transit Improvements
  - Incorporate ADA compliant bus landing pads that connect to pedestrian facilities.
  - LYNX to review planning documents to see if this corridor was identified for improvements.
  - Are there any other destinations that the hotels are taking their patrons?
    - Possibly look at a limited stop bus tying together hotels and Disney if that is the only place they take their patrons.
  - Transit may be a secondary alternative once corridor is built out with pedestrian/bicycle facilities.
  - Review current transit stop locations in relation to crossing opportunities.
  - Coordinate with Osceola County on project development phase for US 192 BRT.
- Safety Improvements
  - Review reducing width of travel lanes so crossing distance for pedestrians is reduced at signalized intersections.
- Operational Improvements
  - Look at TSM&O opportunities, signal retiming, adaptive signal control, or other advanced ITS measures as a short term improvement.
  - Do we have the width necessary under 417 to widen to 6 lanes?
  - Review feasibility of grade separation options at SR 535 and SR 536.
- For public outreach regarding the first public meeting, flyers could be inserted into the utility bills for the residents near the corridor.
- Joint use ponds could be utilized at specific locations along the corridor, possibly in coordination with the W192 Development Authority.
- Corridor lighting and landscaping are important to members of PVT, should be reviewed as part of a separate project.

Next Steps

The group generated the following action item list to be completed by various team members after the meeting.

Action Item	Due Date	Status	Person Responsible	Notes
Send most current I-4/Vineland Avenue BtU Concept to PVT	1/30/17	Ongoing	Jesse B.	
Send sub-division plan PS15-00029 for property just north of Osceola Parkway and east of SR 535	1/30/17	Ongoing	Josh DeVries	
Request shuttle ridership from hotels/resorts along corridor	1/30/17	Ongoing	Travis H.	

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

BY:

DATE:

SR 535 PVT #1

Sign In Sheet

PAGE No.

Name	Organization	Email
Travis Hills	KAI	thills@kittelson.com
Keith Caskey	MetroPlan Orlando	kcaskey@metroplanorlando.com
Josh DeVries	Osceola County	joshua.devries@osceola.org
Deborah Tyrone	FDOT	deborah.tyrone@dot.state.fl.us
BRIAN SANDERS	ORANGE COUNTY	BRIAN.SANDERS@OCFL.NET
Myles O'Keefe	LYNX	mokeefe@golynx.com
Lorena Cucek	FDOT	Lorena.Cucek@dot.State.FL.us
Jesse Blouin	FDOT	jesse.blouin@ " "

APPENDIX C – PVT MEETING #2 MATERIALS

PVT Meeting #2

SUBJECT: SR 535 Corridor Study, Orange and Osceola Counties

MEETING DATE: Wednesday, September 20, 2017

MEETING TIME: 9:00 AM – 11:00 PM

VENUE: MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801, Live Oak Conference Room

1) **Project Background/Overview**
   a) Project Location
   b) Tie-In with I-4 BtU

2) **Issues/Opportunities Identified**
   a) Issues and Opportunities Review
   b) Existing Conditions Drainage Information

3) **Future No-Build Segment Analysis**

4) **Future Build Alternatives**
   a) Short Term Improvements
   b) Typical Section Alternatives
   c) Traditional At-Grade Intersection Improvements
   d) Innovative Intersection and Grade Separated Intersection Alternatives

5) **Next Steps**
   a) Refinements of future alternatives
   b) Future Alternatives Public Meeting – Early November

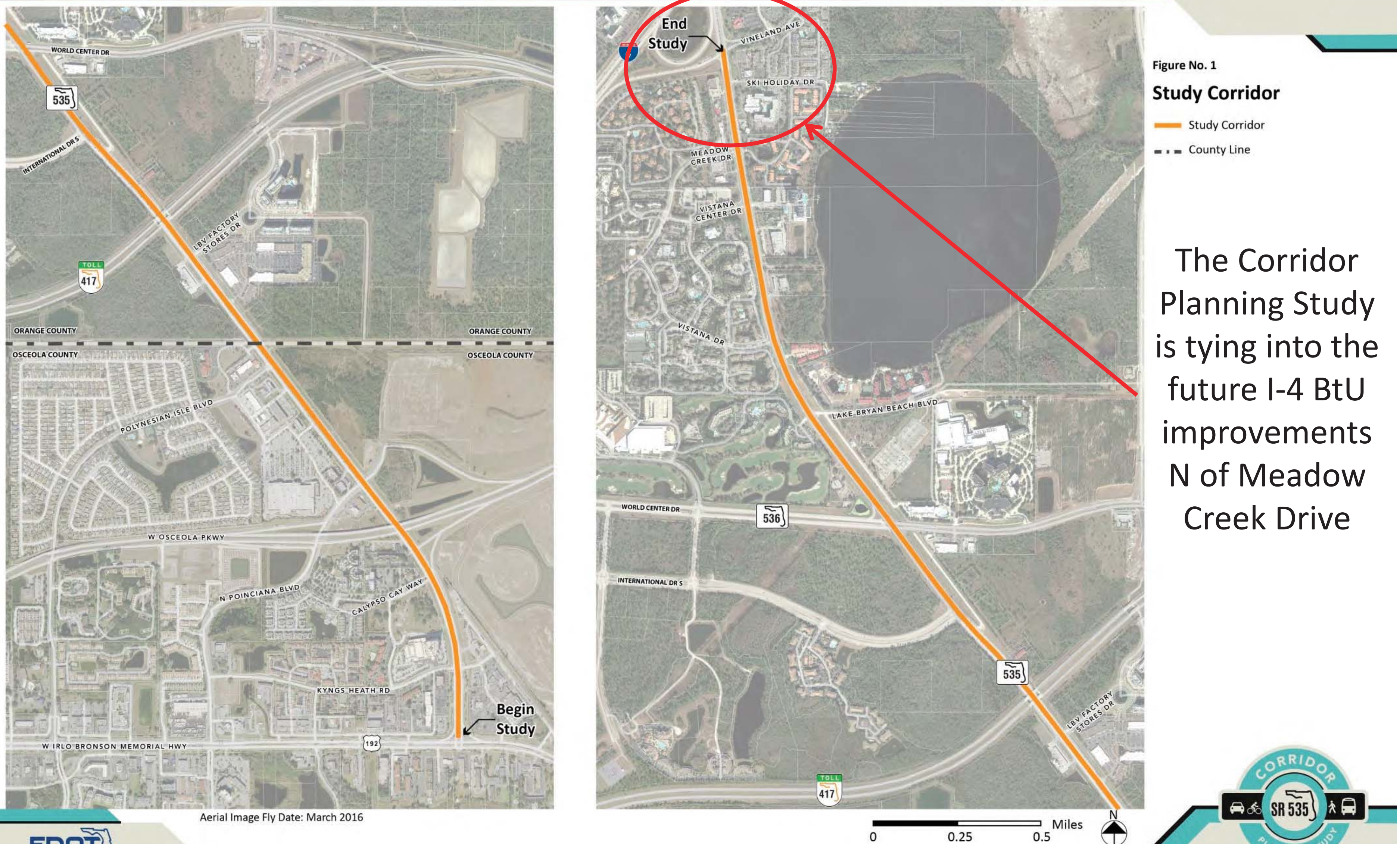
SR 535 PVT Meeting #2

September 20, 2017

Agenda

- Project Background/Overview
- Issues/Opportunities Identified
- Future No-Build Analysis
- Future Build Alternatives
- Next Steps and Schedule

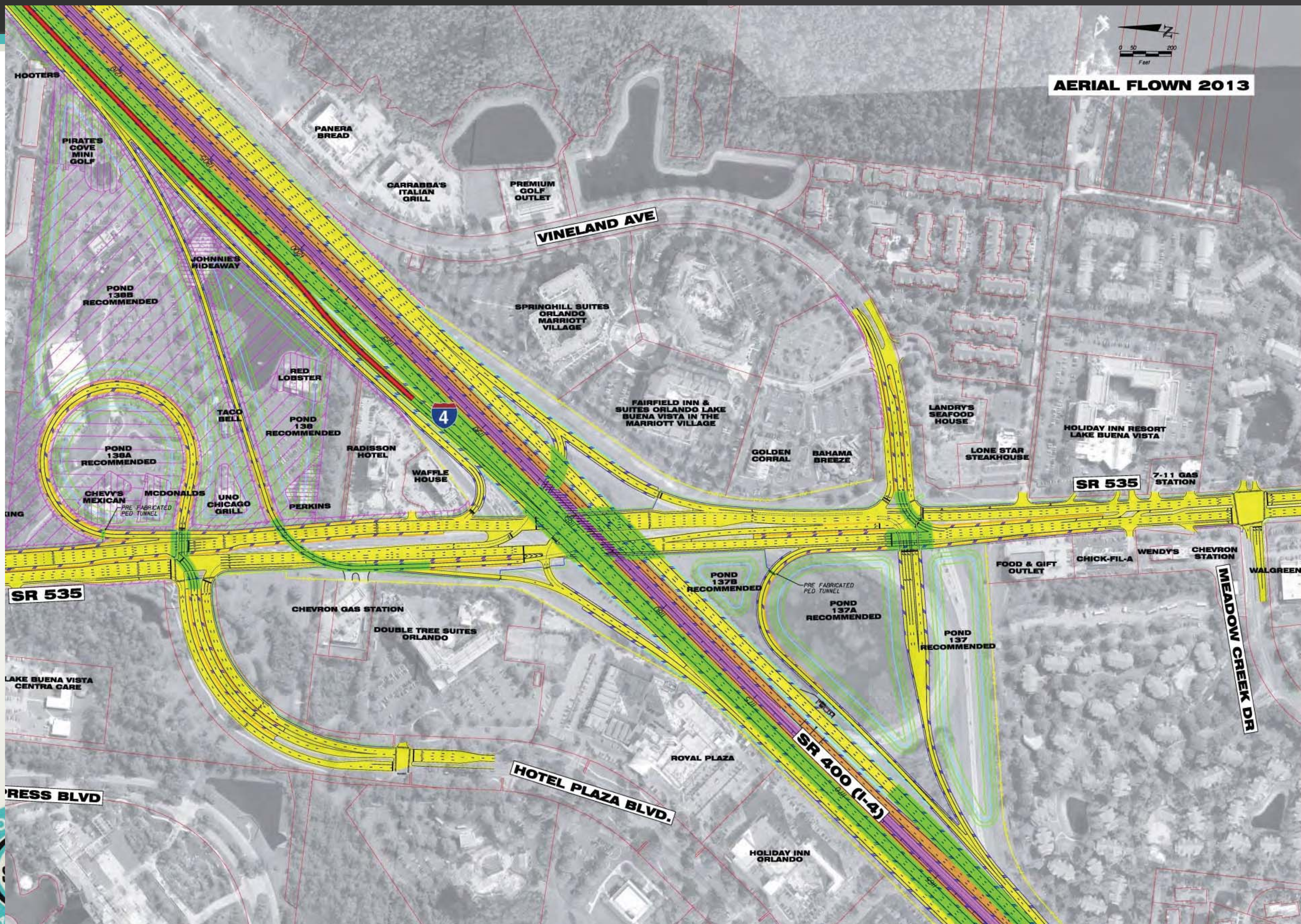
Project Location



Aerial Image Fly Date: March 2016

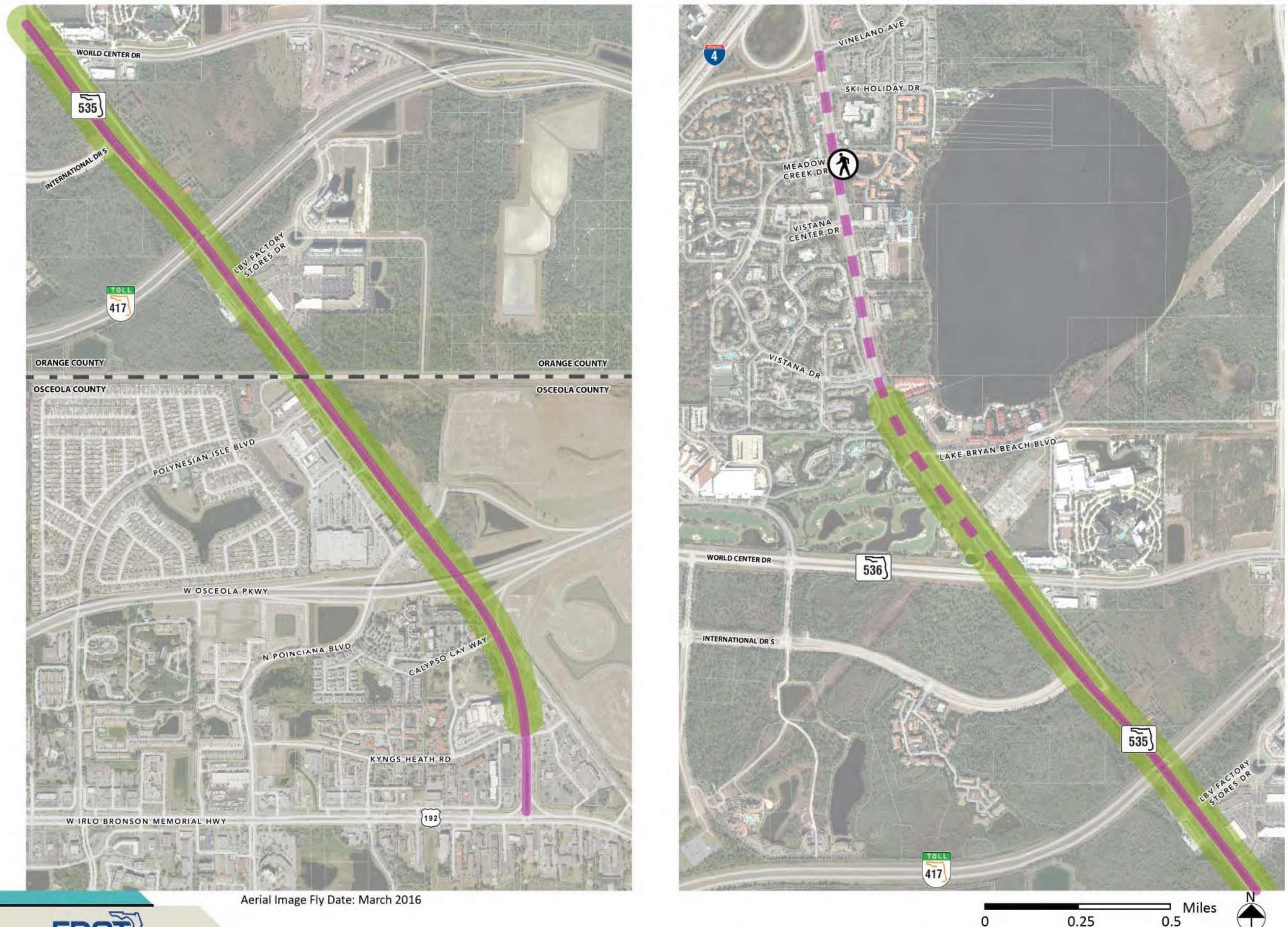
The Corridor Planning Study is tying into the future I-4 BtU improvements N of Meadow Creek Drive

I-4/SR 535 BtU Concept



Issues/Opportunities Identified

Issues and Opportunities



Aerial Image Fly Date: March 2016

Figure No. 46

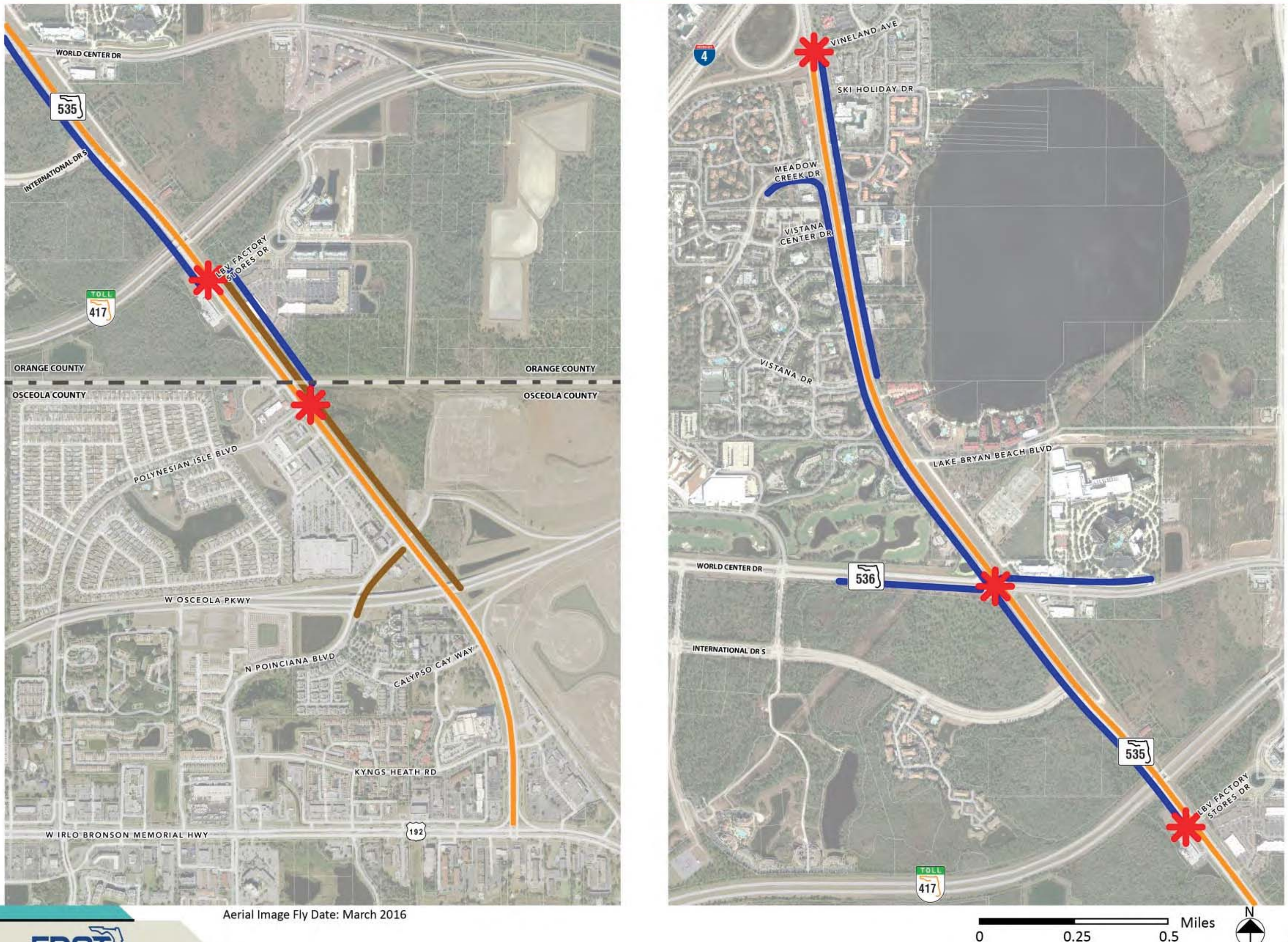
SR 535 Multimodal Issues & Opportunites

- Enhance Pedestrian & Bicycle Facilities
- Pedestrian Safety Emphasis Intersection
- Add Transit Service
- Enhace Transit Service
- County Line

FDOT

CORRIDOR SR 535 PLANNING STUDY

Issues and Opportunities



Aerial Image Fly Date: March 2016

Figure No. 47

SR 535 Vehicular Issues & Opportunites

- AM Peak Hour Queuing
- PM Peak Hour Queuing
- High Crash Frequency Intersections
- Study Corridor
- County Line

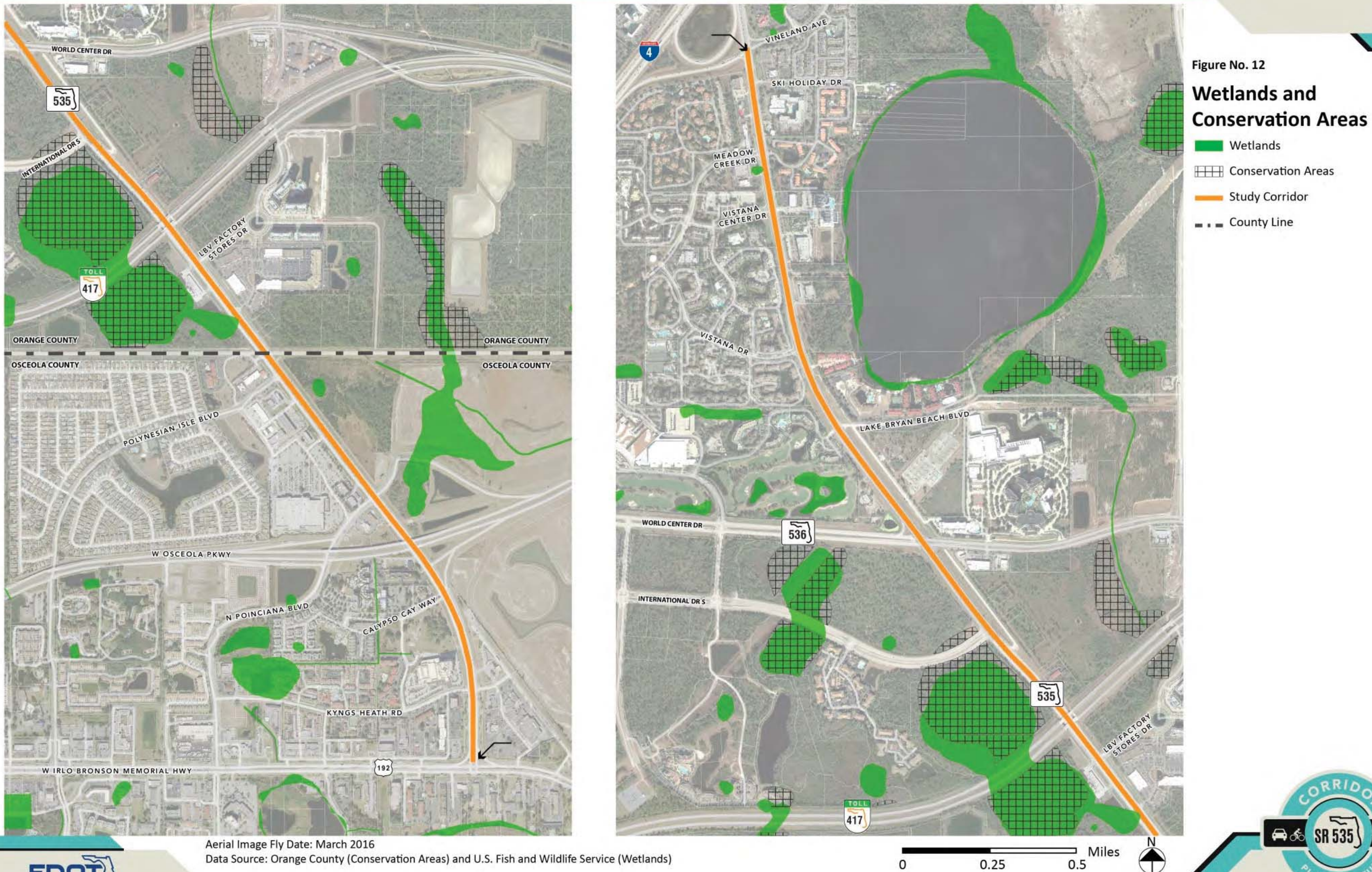
FDOT

CORRIDOR SR 535 PLANNING STUDY

Existing Drainage Conditions

- Kyngs Heath Road to Poinciana Boulevard and International Drive to Vistana Drive
  - Roadside swales and median ditch bottom inlets (DBIs) with underground pipe
- Poinciana Boulevard to International Drive
  - Roadside swales
  - Medians are open drainage with some east/west culverts that drain under roadway to the roadside
- Vistana Drive to Vineland Avenue
  - Curb and gutter with existing pipes roadside and in median

Wetlands and Conservation Areas

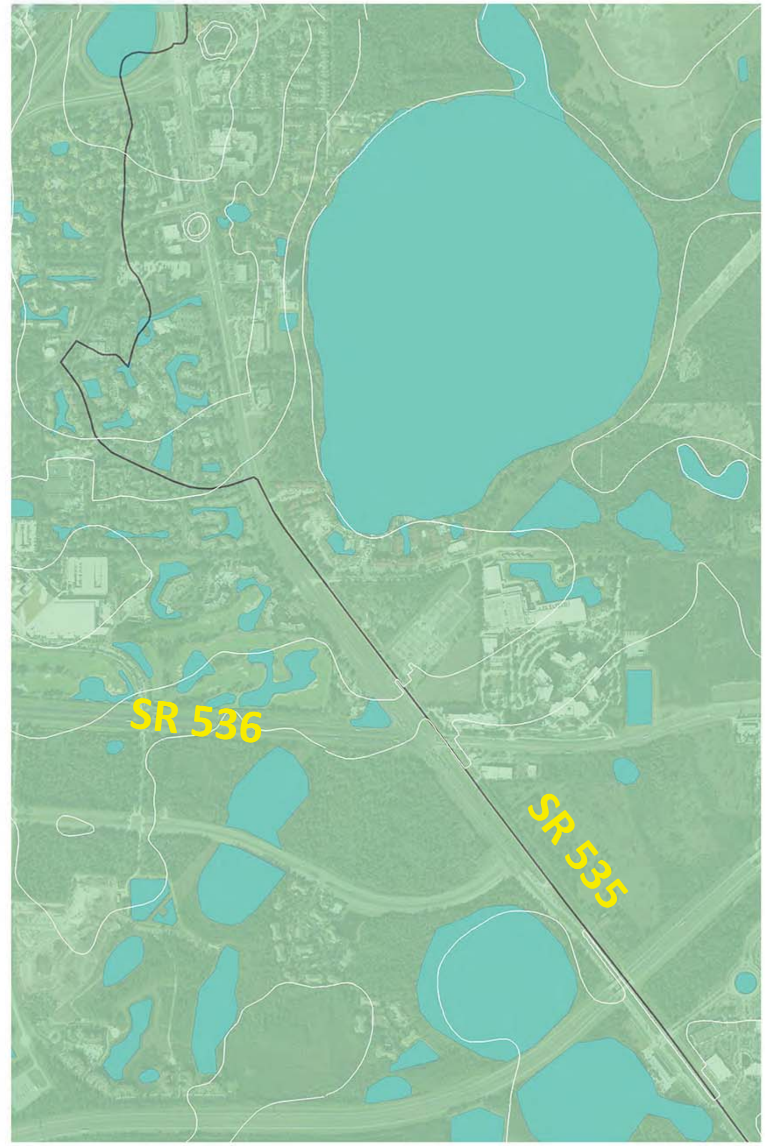


Aerial Image Fly Date: March 2016
Data Source: Orange County (Conservation Areas) and U.S. Fish and Wildlife Service (Wetlands)

FDOT

CORRIDOR SR 535 PLANNING STUDY

Drainage Basins and Contours



Future No-Build Analysis

HCM LOS Segment Analysis

Table 6: No-Build HCM LOS Evaluation Results – 2040 AM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.4	64%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	35.1	70%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**5.2**	**10%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**5.6**	**11%**	**F***	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**3.6**	**7%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**5.0**	**10%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**4.4**	**9%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	32.7	69%	B	N

SR 535 CORRIDOR PLANNING STUDY

HCM LOS Segment Analysis

Table 7: No-Build HCM LOS Evaluation Results – 2040 PM Peak Hour

Segment	BFFS (MPH)	Average Travel Speed (MPH)	% of BFFS	LOS	Segment LOS Below LOS Standard?
Northbound Direction					
US 192 to Kyngs Heath Road	46.2	29.3	63%	C	N
Kyngs Heath Road to Osceola Parkway Eastbound On-Ramp	50.3	34.7	69%	B	N
Osceola Parkway Eastbound On-Ramp to Poinciana Boulevard	**50.6**	**30.0**	**59%**	**F***	**Y**
Poinciana Boulevard to Polynesian Isle Boulevard	**50.5**	**11.7**	**23%**	**F**	**Y**
Polynesian Isle Boulevard to LBV Factory Stores Drive	**50.5**	**6.8**	**13%**	**F***	**Y**
LBV Factory Stores Drive to International Drive	**50.4**	**10.5**	**21%**	**F**	**Y**
International Drive to SR 536/World Center Drive	**50.6**	**8.7**	**17%**	**F**	**Y**
SR 536/World Center Drive to Meadow Creek Drive	47.7	31.8	67%	C	N
Southbound Direction					
Meadow Creek Drive to SR 536/World Center Drive	**47.7**	**9.9**	**21%**	**F***	**Y**
SR 536/World Center Drive to International Drive	**50.6**	**4.2**	**8%**	**F***	**Y**
International Drive to LBV Factory Stores Drive	**50.6**	**4.4**	**9%**	**F***	**Y**
LBV Factory Store Drive to Polynesian Isle Boulevard	**50.2**	**12.1**	**24%**	**F**	**Y**
Polynesian Isle Boulevard to Poinciana Boulevard	**50.4**	**13.9**	**28%**	**F**	**Y**
Poinciana Boulevard to Osceola Parkway Ramps	50.2	32.9	65%	C	N
Osceola Parkway Eastbound On-Ramp to Kyngs Heath Road	50.4	21.3	42%	D	Y
Kyngs Heath Road to US 192	**46.2**	**5.7**	**12%**	**F***	**Y**

***Note:** Segment was failing under 2016 volumes

CORRIDOR
SR 535
PLANNING STUDY

Future Build Alternatives

Future Build Alternatives

- Short Term Improvements (TSM&O)
- Typical Section Alternatives
- Traditional At-Grade Intersection Improvements
- Innovative Intersection and Grade Separated Intersection Alternatives

Short Term Improvements (TSM&O)

- Turn lane and innovative intersection treatments
- Adaptive signal control
- Transit enhancements and increased bus service
- LED corridor lighting
- PEDSAFE

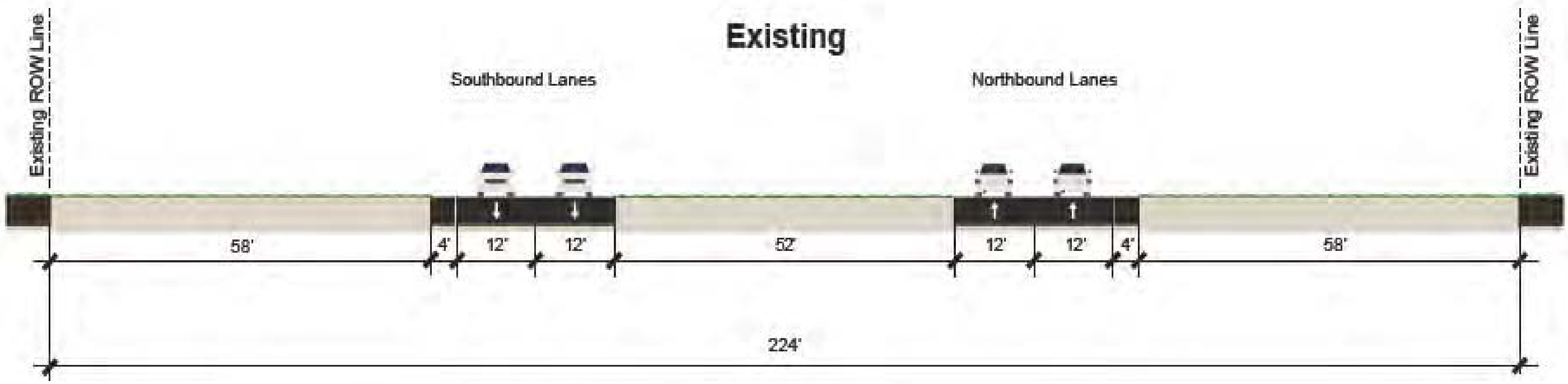
Typical Section Alternatives

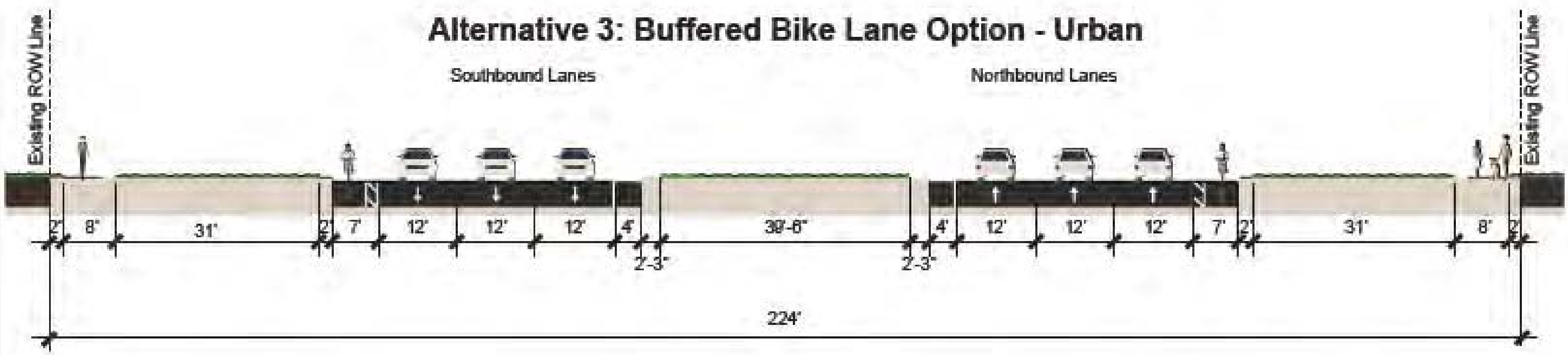
Context Classification Review

- Context Class C3C – Suburban Commercial
- Speed range for C3 Suburban is 35 to 55 MPH
- Min. travel lane width is 11’ for 45 MPH and 12’ for 50 MPH
- Min. median width is 22’ for 45 MPH, 30’ for 50 MPH, and 40’ for 50 MPH with flush shoulders

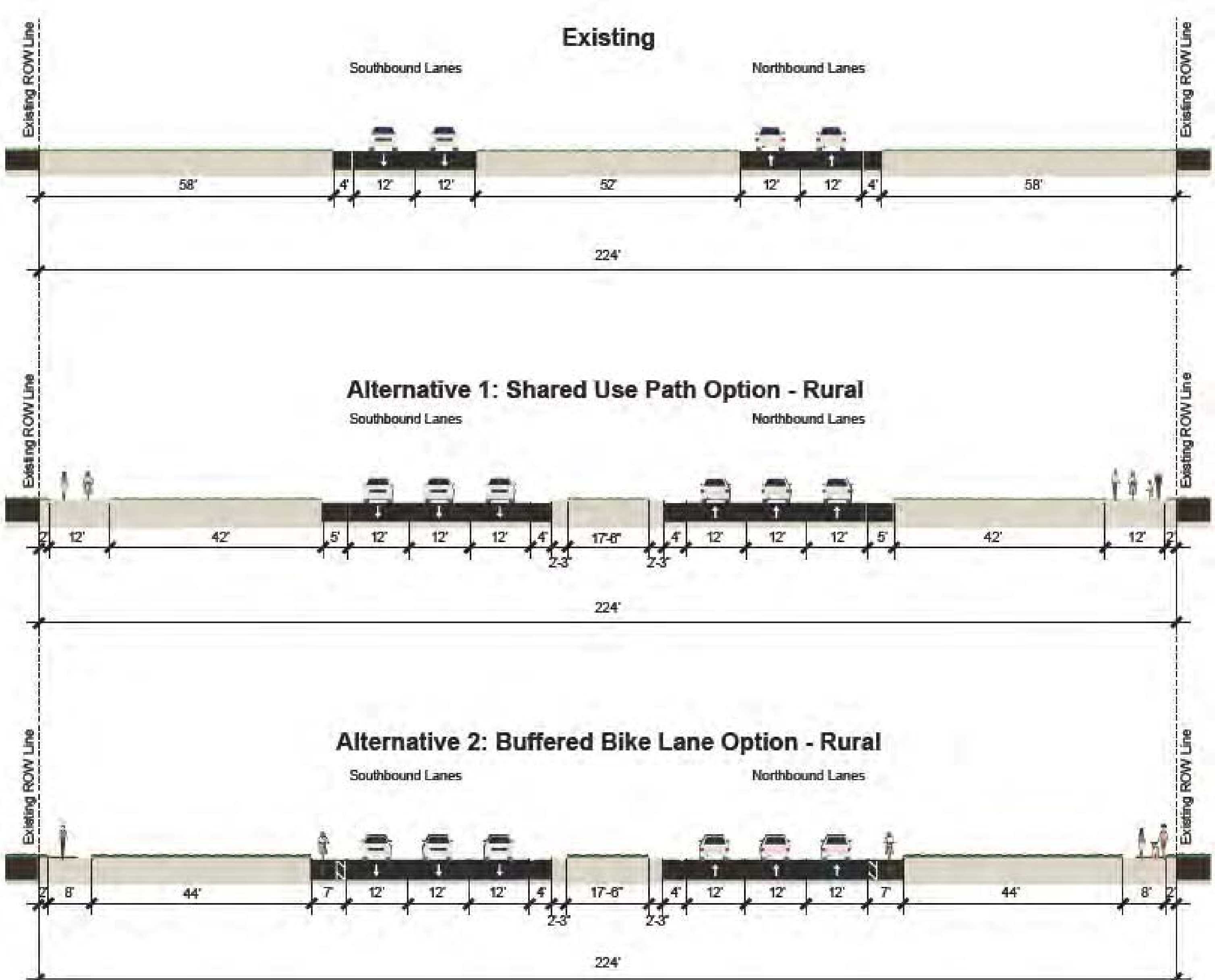
50 MPH Alternatives – Widen to Outside

50 MPH Alternatives – Widen to Outside

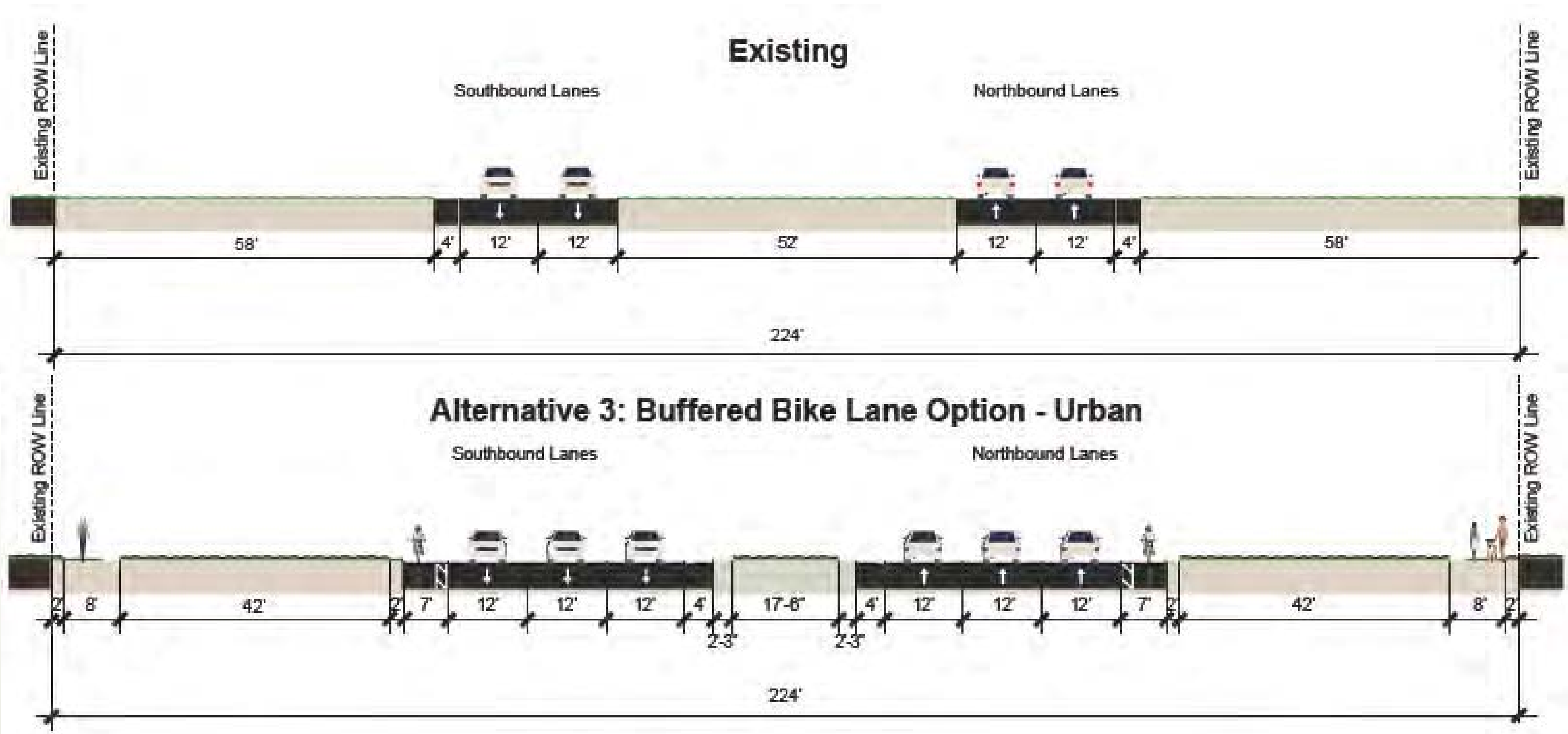




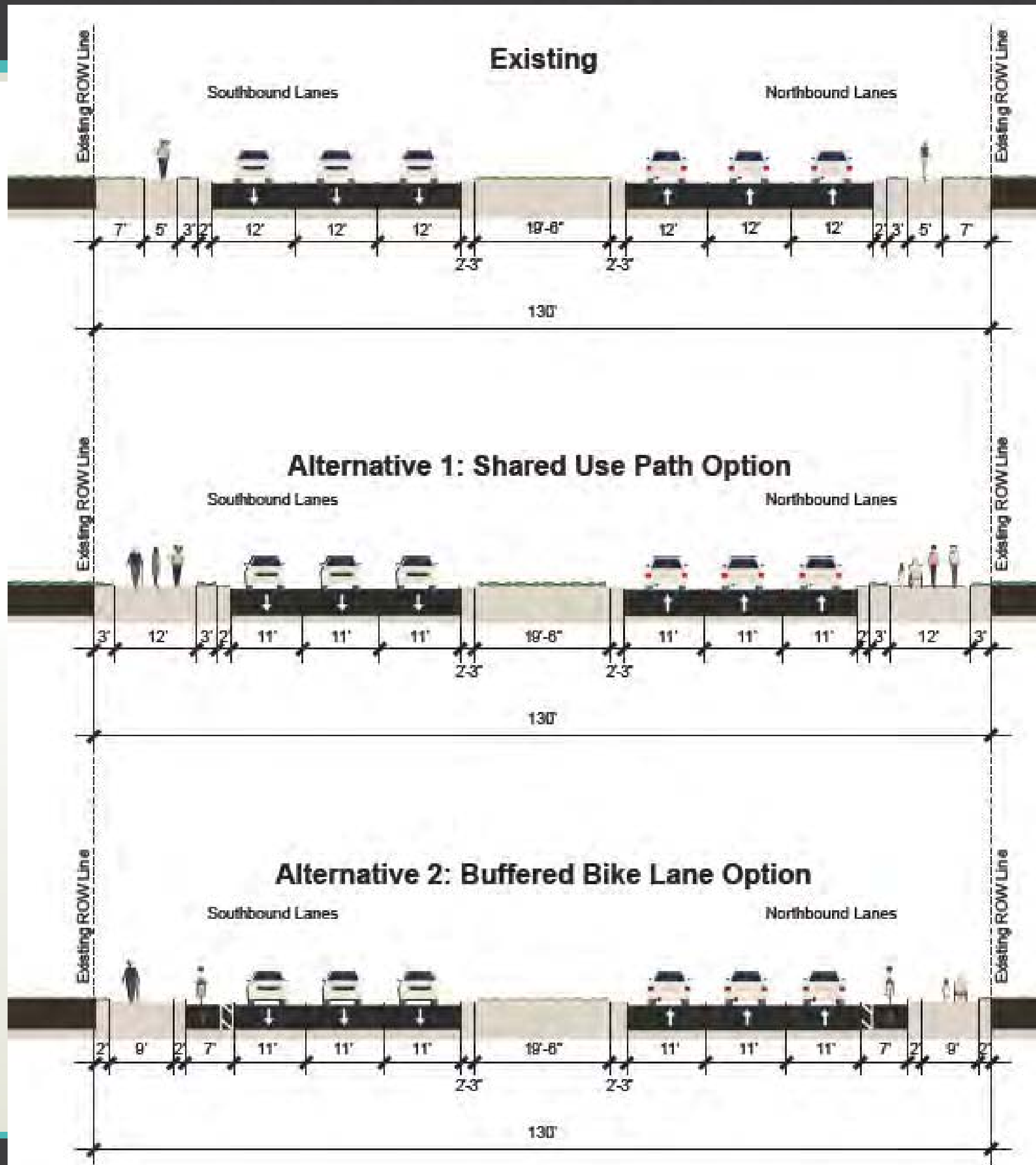
50 MPH Alternatives – Widen to Inside



50 MPH Alternatives – Widen to Inside

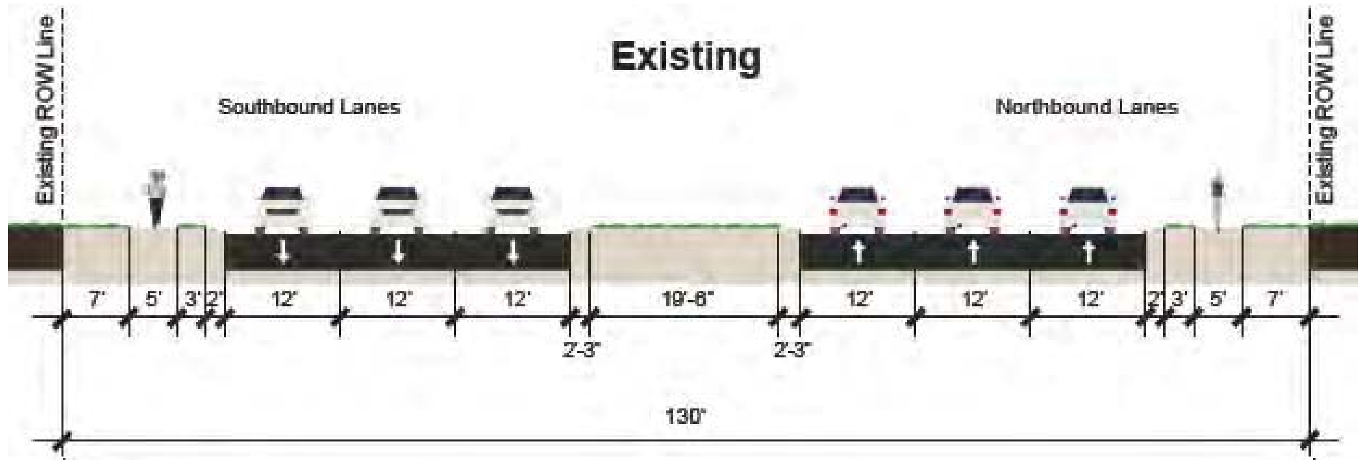


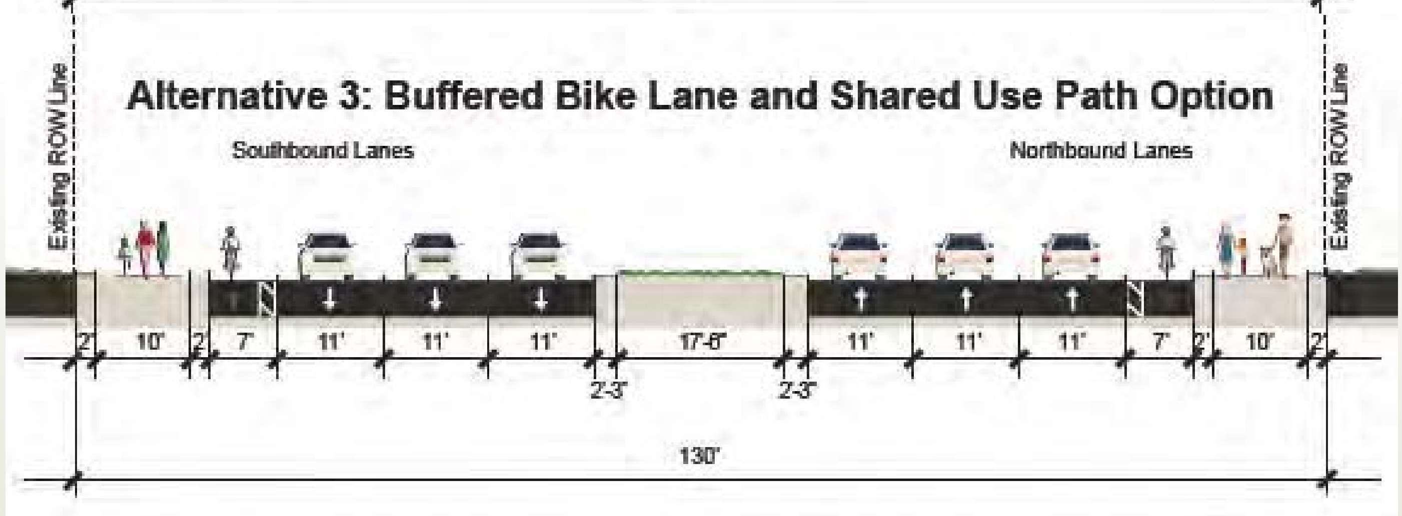
45 MPH Alternatives – Vistana Drive to I-4



CORRIDOR SR 535 PLANNING STUDY

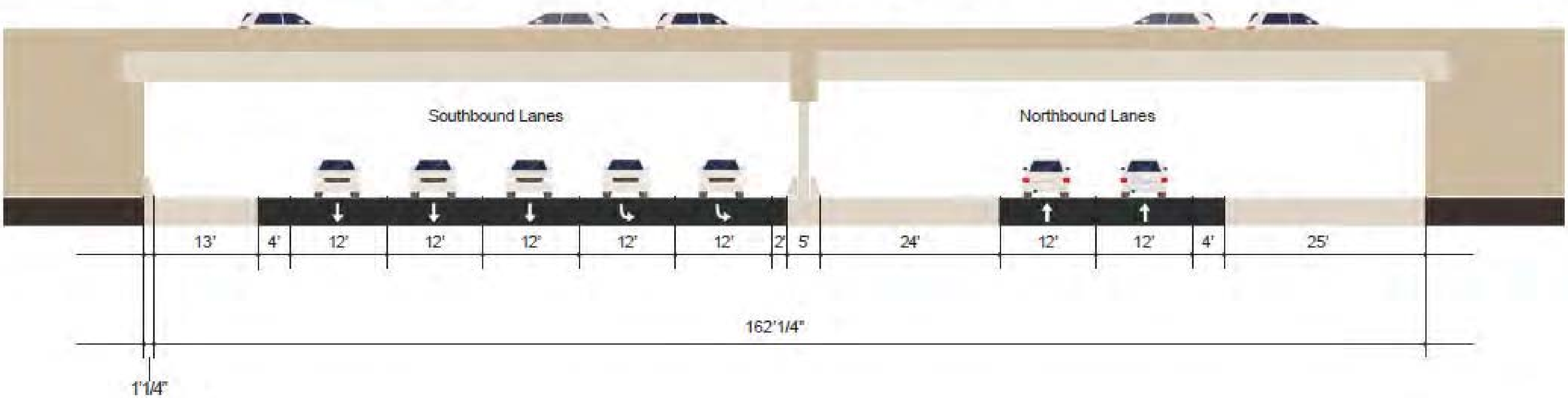
45 MPH Alternatives – Vistana Drive to I-4



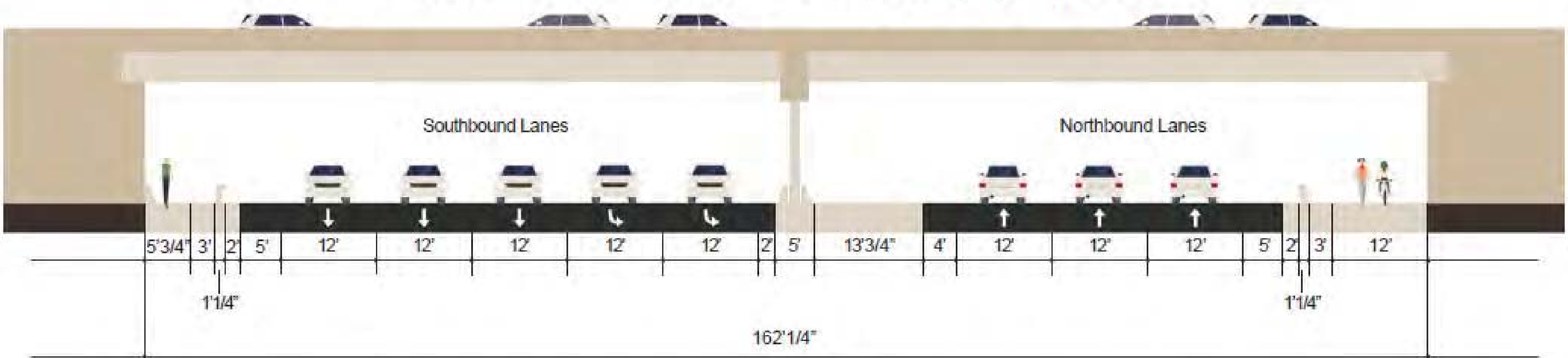


Typical Section Under Osceola Parkway Bridge

SR 535 Under Osceola Parkway Bridge (Existing)

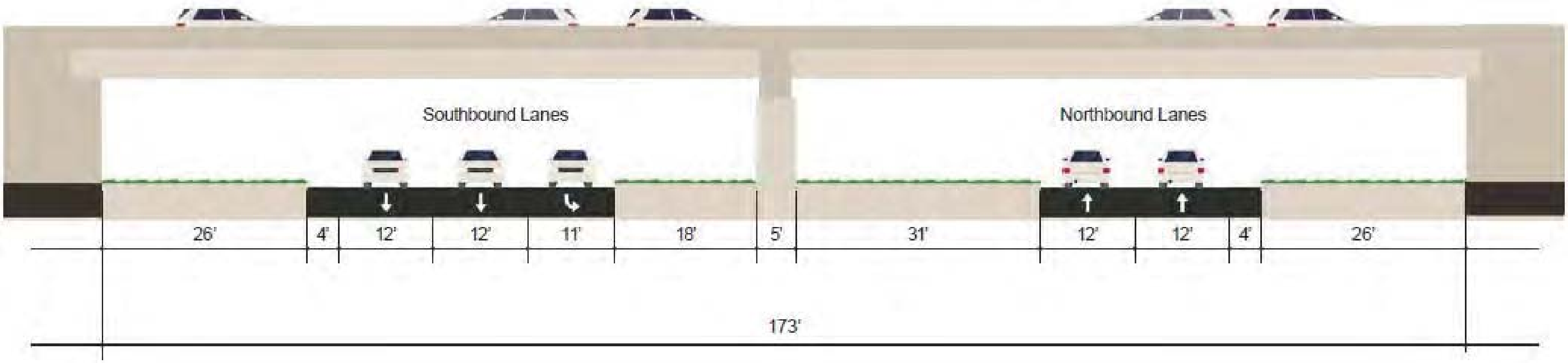


SR 535 Under Osceola Parkway Bridge (Proposed)

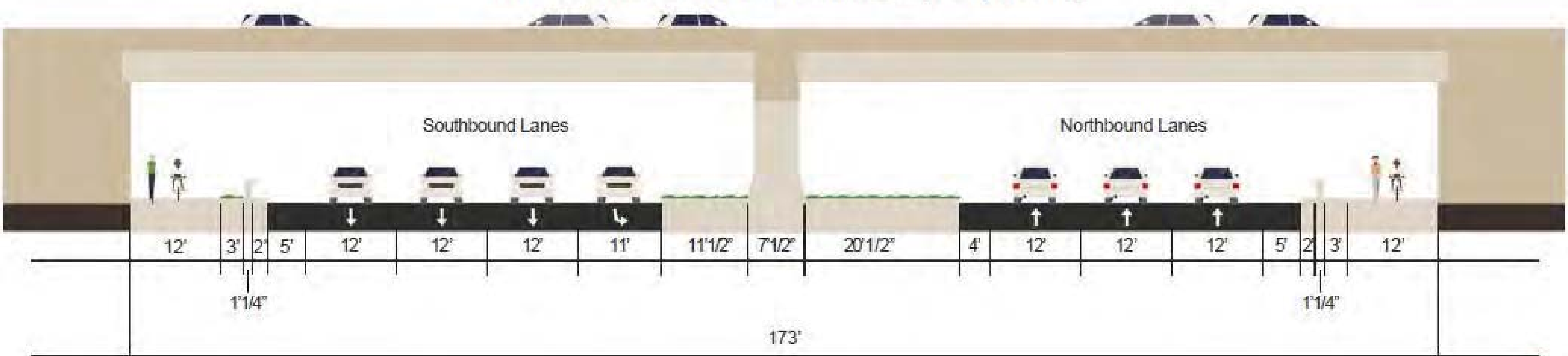


Typical Section Under SR 417 Bridge

SR 535 Under SR 417 Bridge (Existing)



SR 535 Under SR 417 Bridge (Proposed)



Typical Section Measures of Effectiveness

MOE	50 MPH Alternatives – Widen to Outside			50 MPH Alternatives – Widen to Inside		
	Alt. 1 (Rural)	Alt. 2 (Rural)	Alt. 3 (Urban)	Alt. 1 (Rural)	Alt. 2 (Rural)	Alt. 3 (Urban)
Improve Pedestrian Mobility/Safety	Moderate	Moderate	High	High	High	High
Improve Bicycle Mobility/Safety	High					
Improve Vehicular Mobility	High					
Improve Vehicular Safety	Low	Low	Moderate	Low	Low	Moderate
Support Efforts to Increase Transit	Same/Negligible Difference					
ROW Impacts	None Anticipated					
Drainage Impacts	Moderate	Moderate	High	Moderate	Moderate	High
Utility Impacts	Low					
Cost Comparison	Moderate	Moderate	High	Low	Low	Moderate

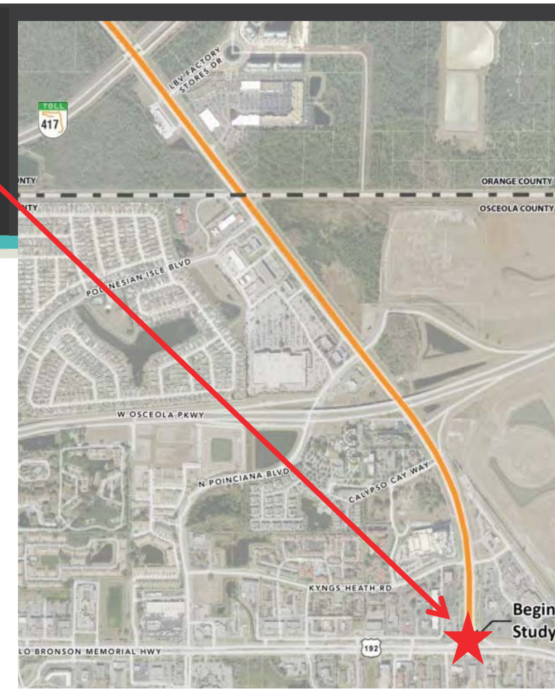
Typical Section Measures of Effectiveness

MOE	45 MPH Alternatives		
	Alt. 1	Alt. 2	Alt. 3
Improve Pedestrian Mobility/Safety	High	High	High
Improve Bicycle Mobility/Safety	Moderate	High	High
Improve Vehicular Mobility	Low		
Improve Vehicular Safety	Low	Moderate	Moderate
Support Efforts to Increase Transit	Same/Negligible Difference		
ROW Impacts	Low		
Drainage Impacts	Moderate	Moderate	High
Utility Impacts	Moderate	Moderate	Moderate
Cost Comparison	Moderate	Moderate	High

At-Grade Intersection Alternatives

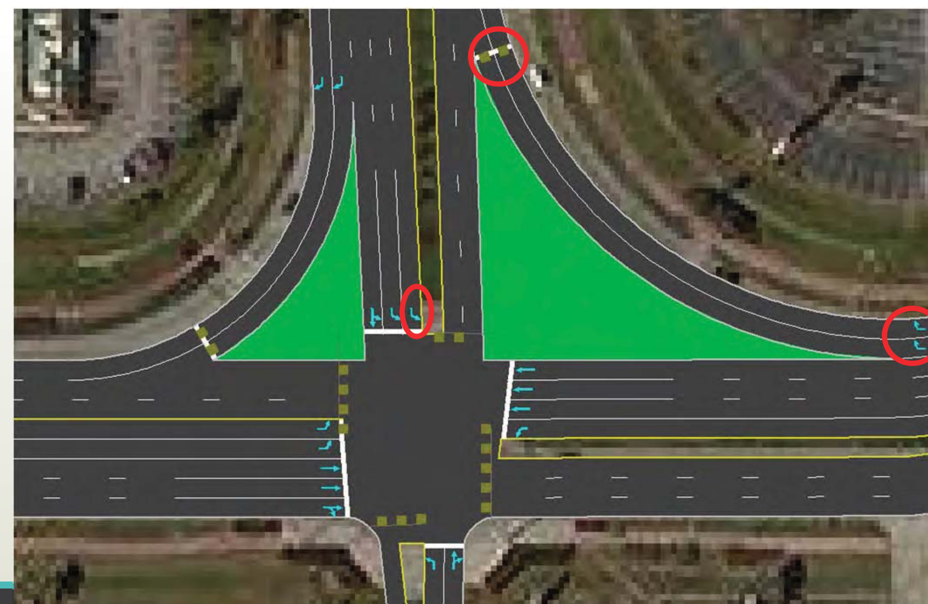
US 192 Intersection Improvements – Alternative 1

- Future No-Build – LOS F in PM peak, 3 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

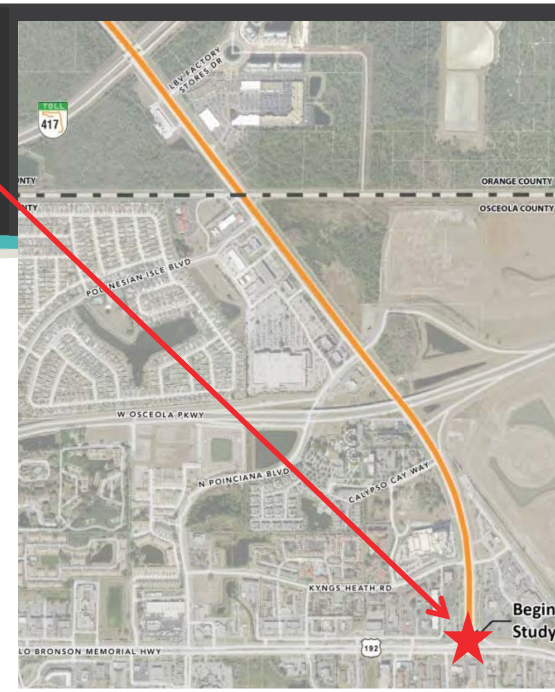


No-Build Lane Config.

Build Lane Config.



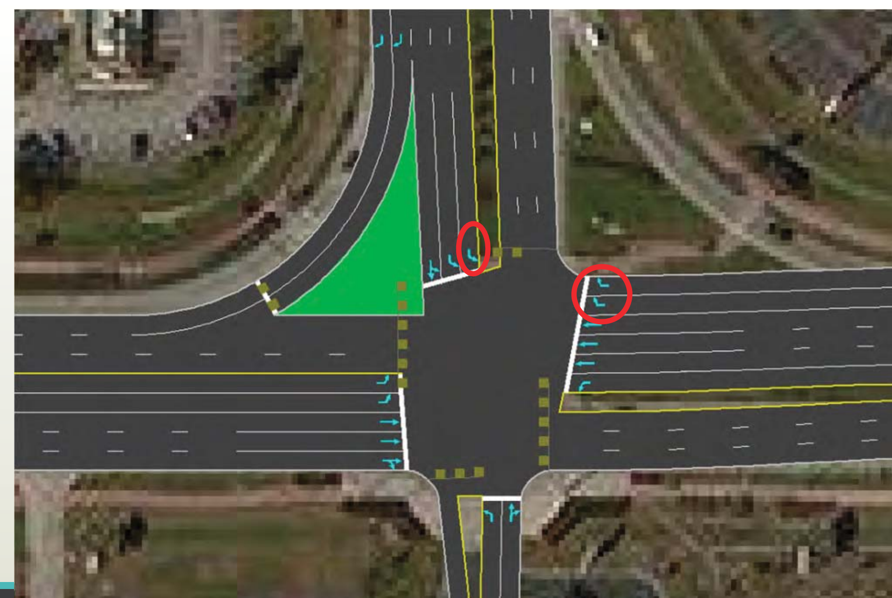
US 192 Intersection Improvements – Alternative 2



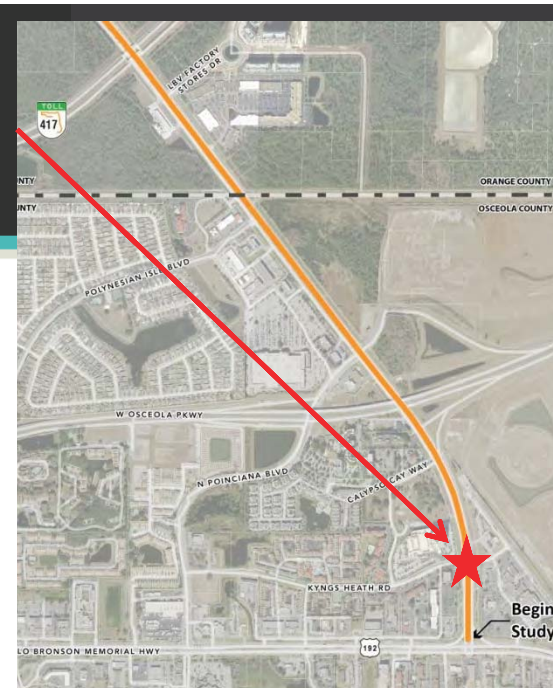
- Future No-Build – LOS F in PM peak, 3 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

No-Build Lane Config.

Build Lane Config.

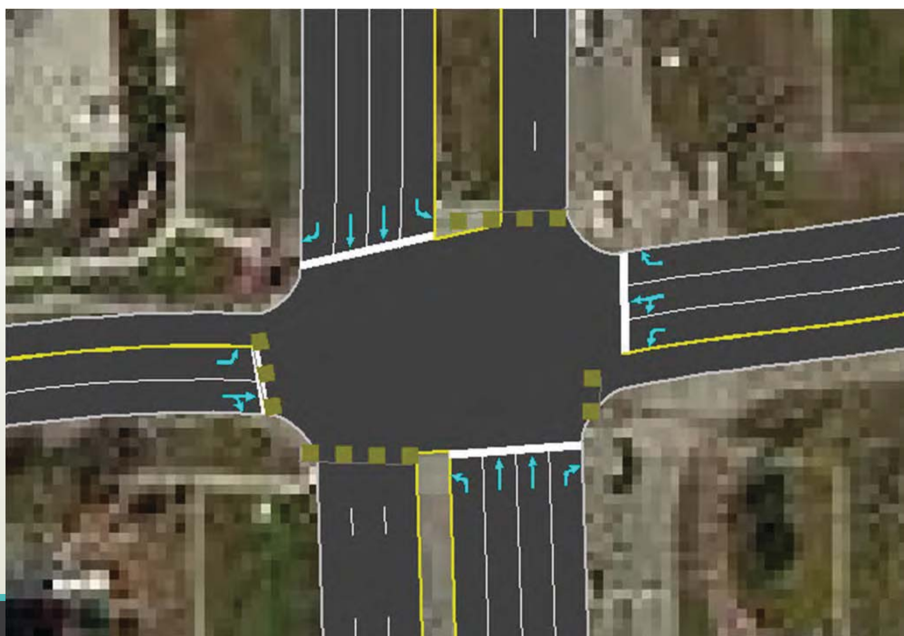


Kyngs Heath Road Intersection Improvements

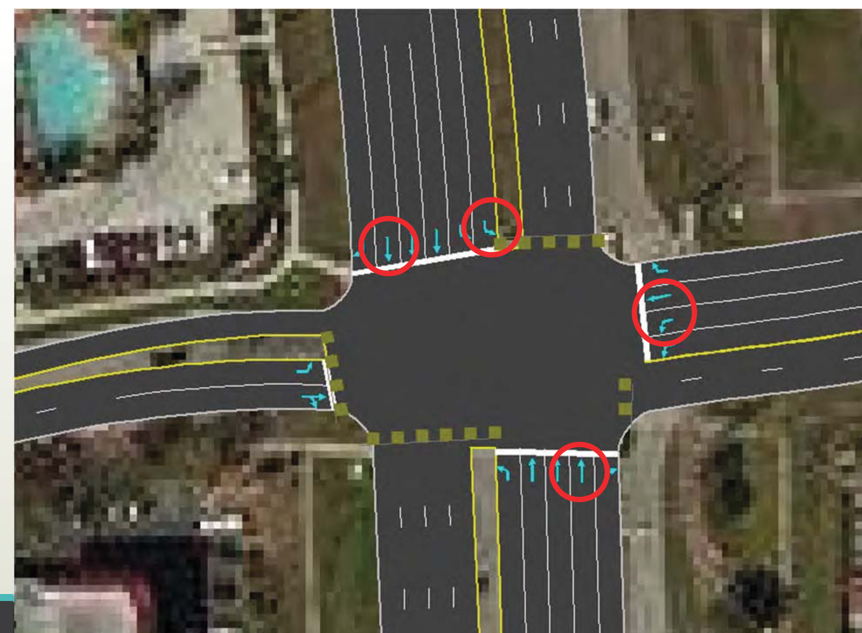


- Future No-Build – no LOS deficiencies, 1 over-capacity movement
- Future Build – no LOS deficiencies, 0 over-capacity movements

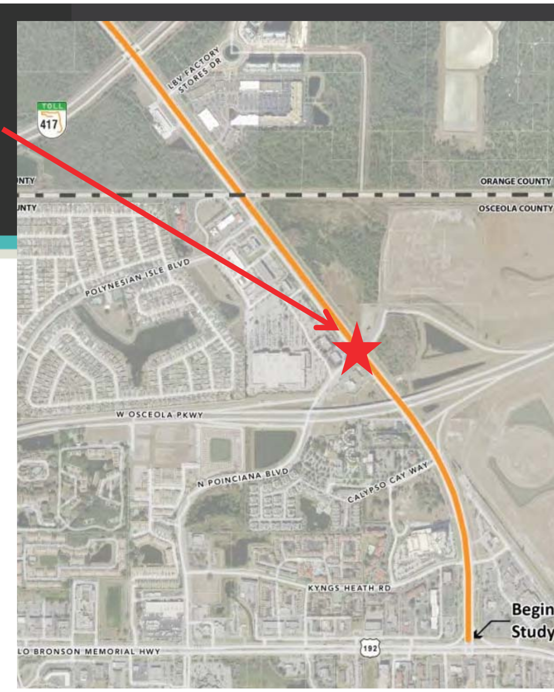
No-Build Lane Config.



Build Lane Config.

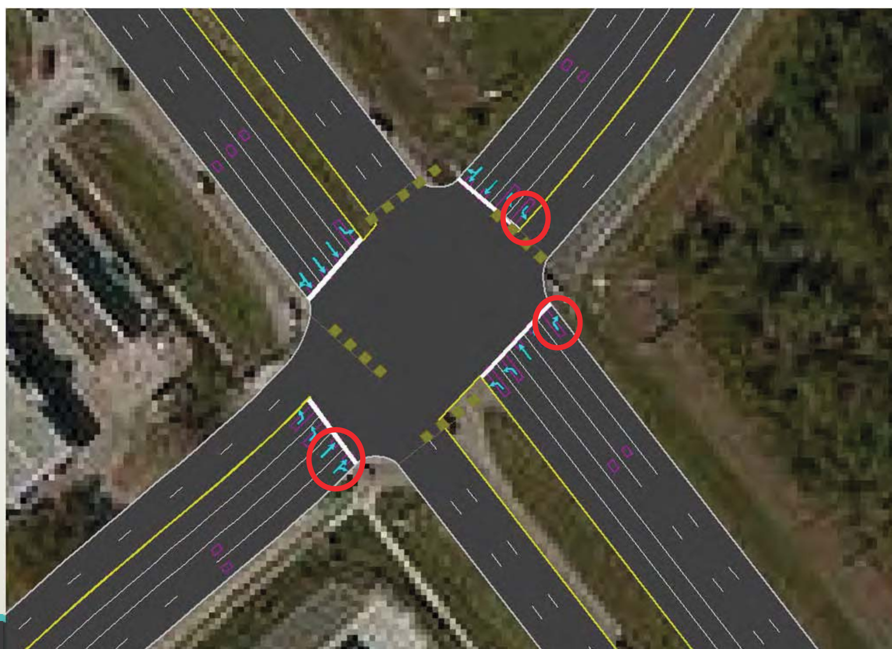


Poinciana Boulevard Intersection Improvements

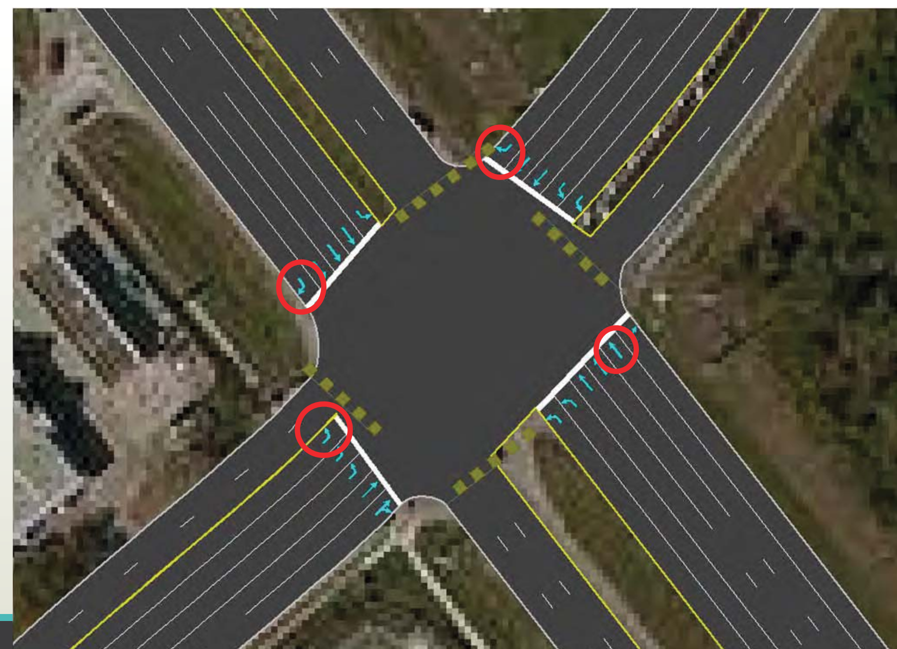


- Future No-Build – LOS F in AM and PM peak, 5 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

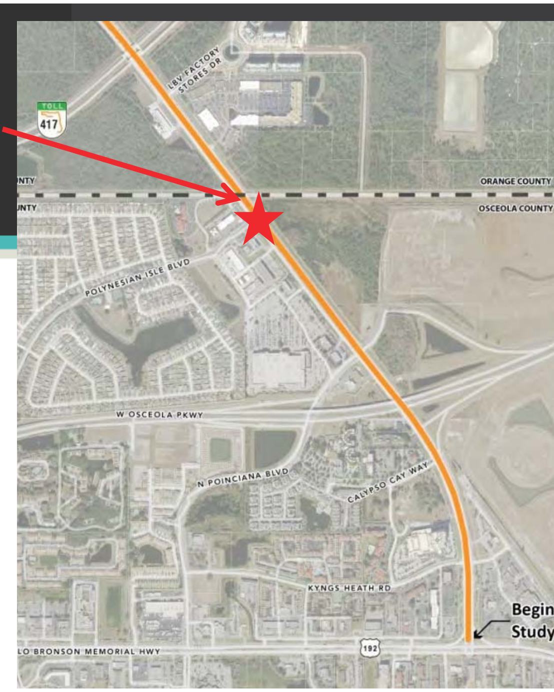
No-Build Lane Config.



Build Lane Config.

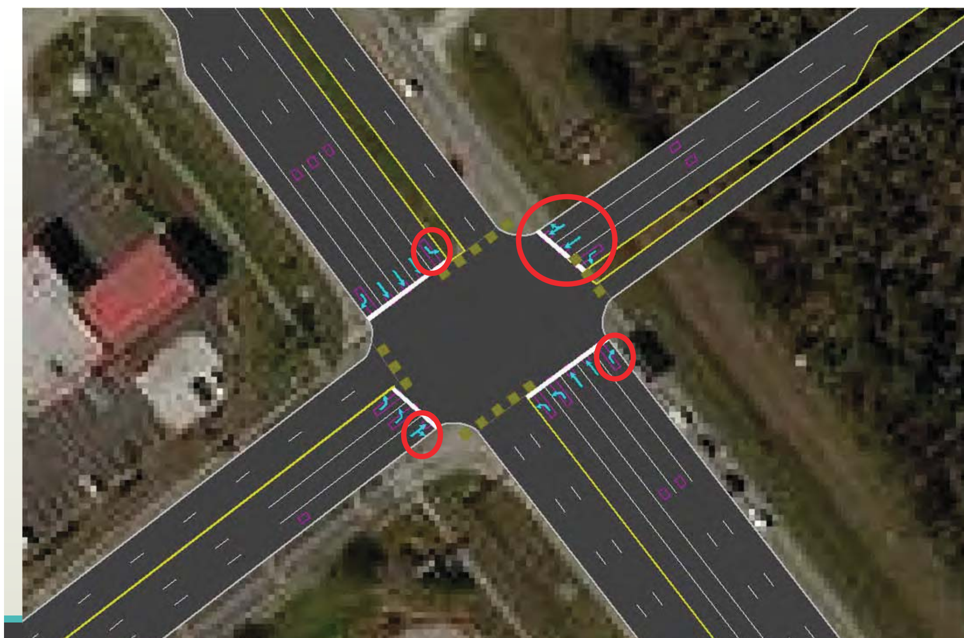


Polynesian Isle Boulevard Intersection Improvements

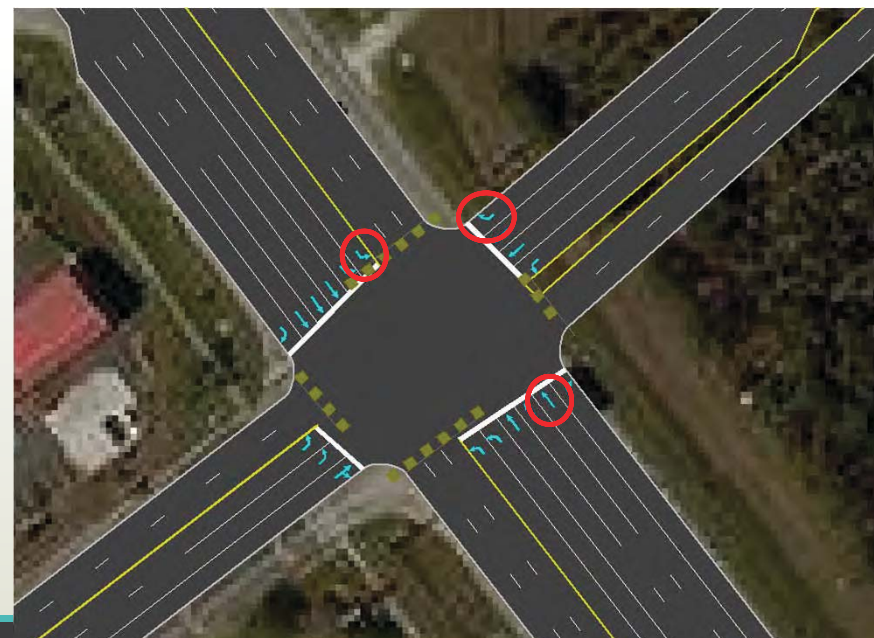


- Future No-Build – LOS F in AM and PM peak, 4 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

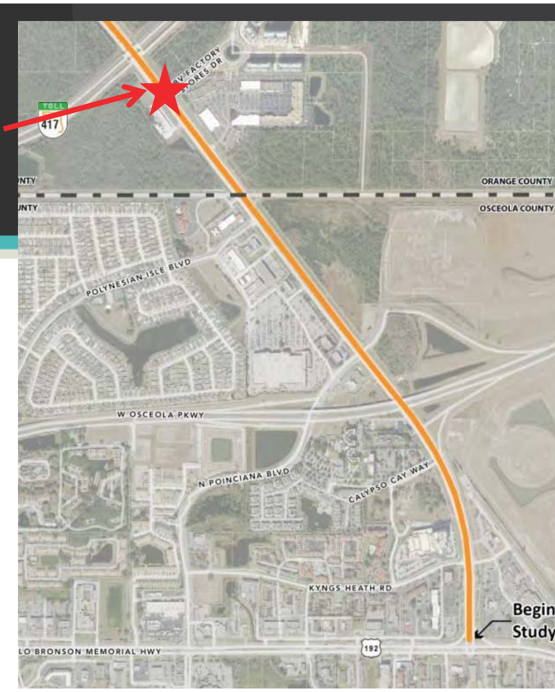
No-Build Lane Config.



Build Lane Config.

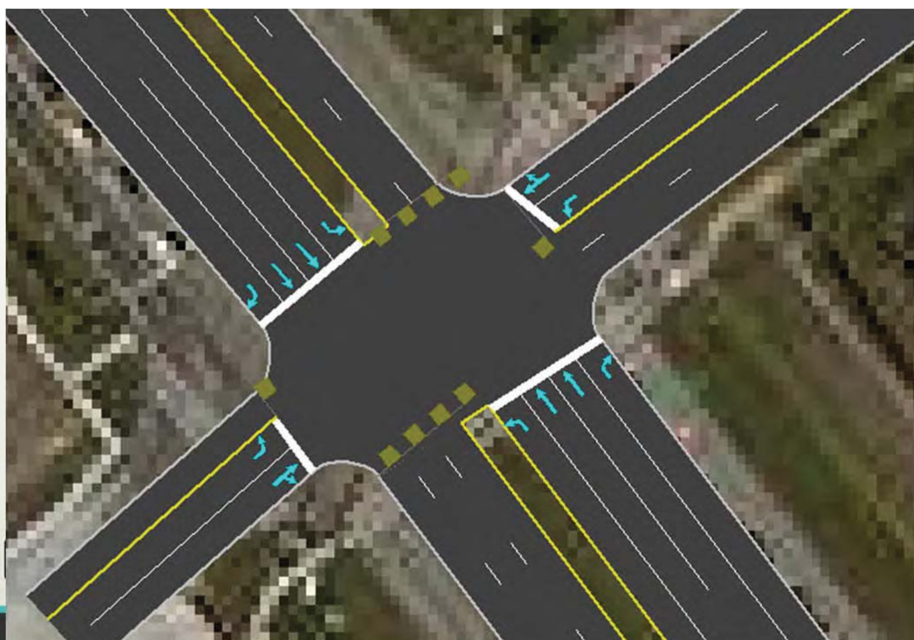


LBV Factory Stores Drive Intersection Improvements

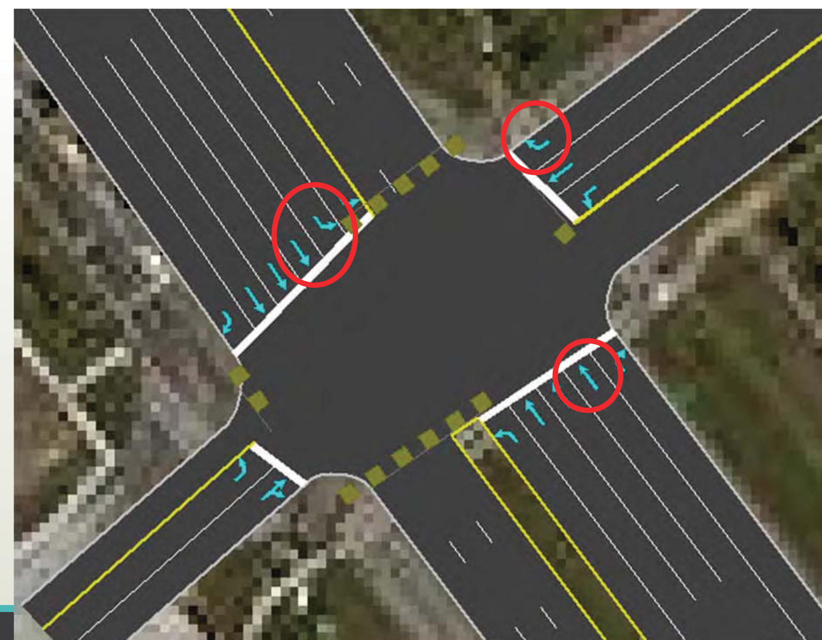


- Future No-Build – LOS F in AM and PM peak, 4 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

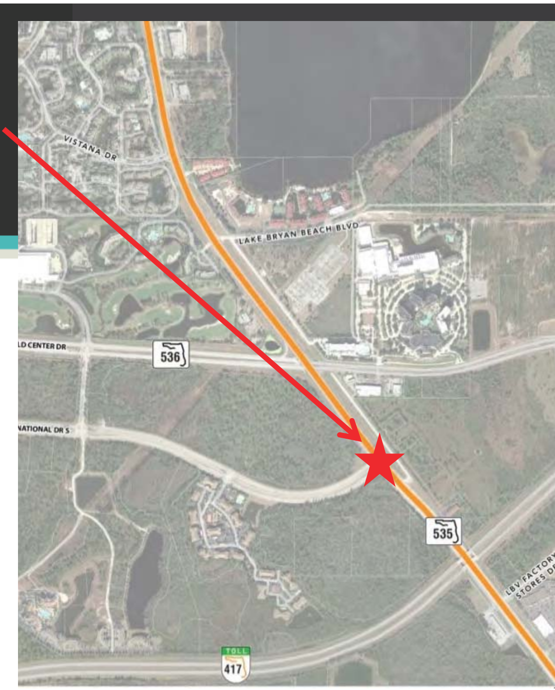
No-Build Lane Config.



Build Lane Config.

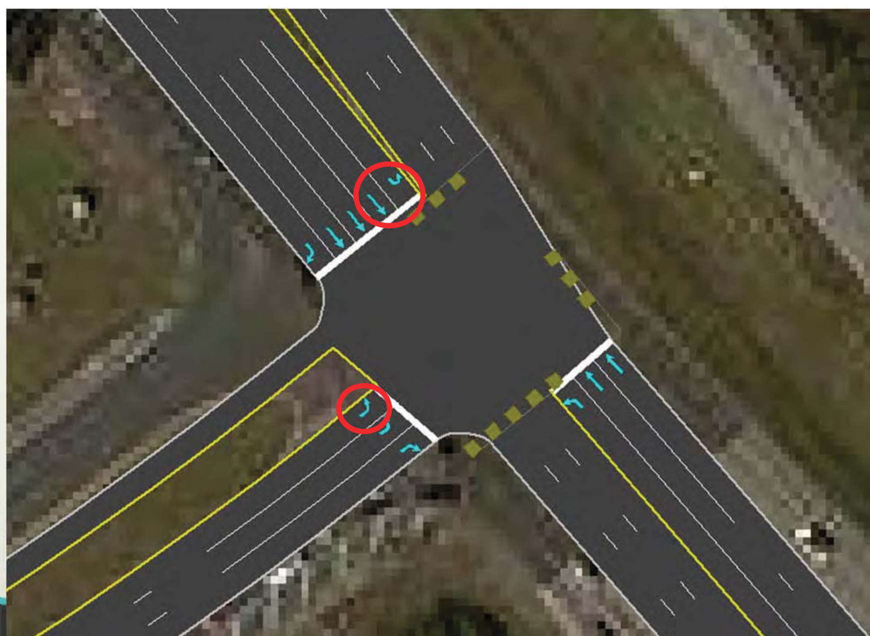


International Drive Intersection Improvements

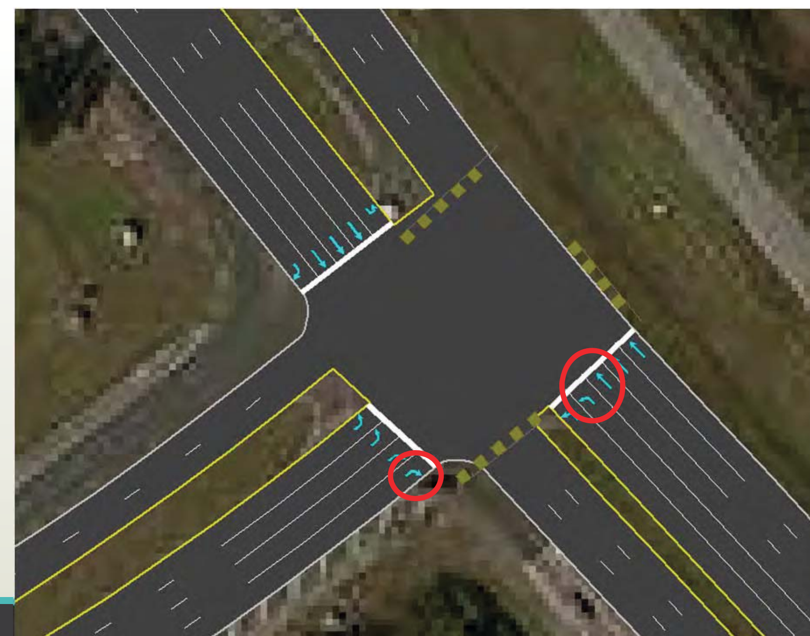


- Future No-Build – LOS F in AM and PM peak, 3 over-capacity movements
- Future Build – no LOS deficiencies, 0 over-capacity movements

No-Build Lane Config.



Build Lane Config.

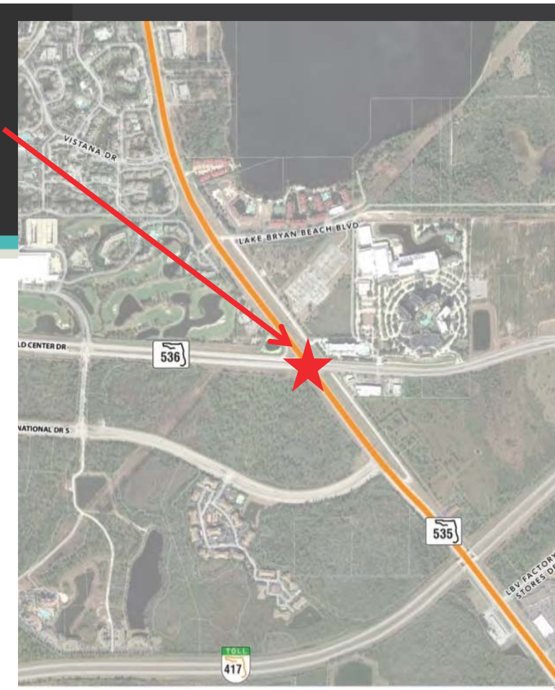


Segment LOS Results from Kyngs Heath Road to International Drive

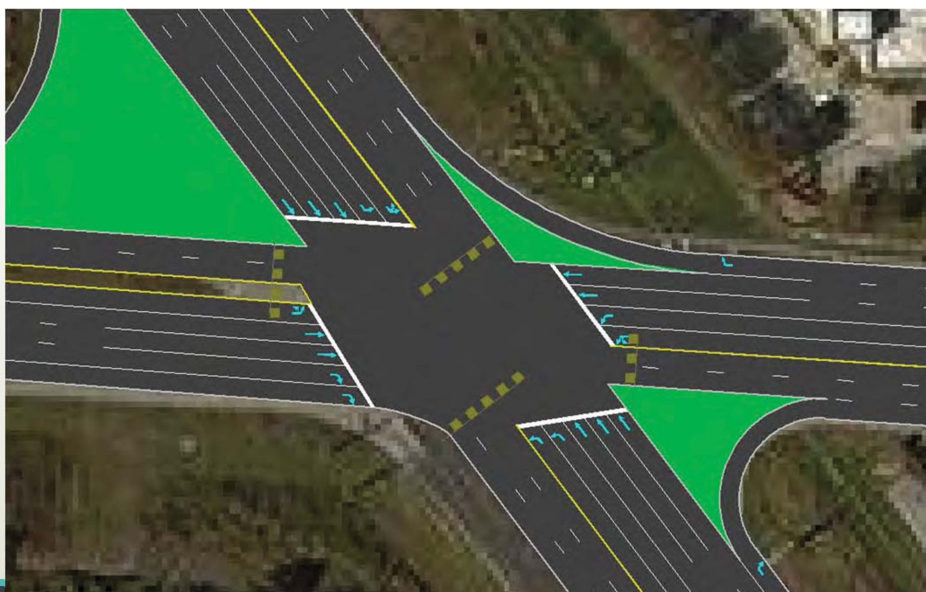
Direction	Segment	No-Build AM	No-Build PM	Build AM	Build PM
Northbound	Kyngs Heath Rd. to Osceola Parkway Eastbound On-Ramp	B	B	B	B
	Osceola Parkway Ramps to Poinciana Blvd.	F	F	F	D
	Poinciana Blvd. to Polynesian Isle Blvd.	F	F	B	E
	Polynesian Isle Blvd. to LBV Factory Stores Dr.	F	F	E	D
	LBV Factory Stores Dr. to International Dr.	F	F	C	C
Southbound	International Dr. to LBV Factory Stores Dr.	C	F	B	D
	LBV Factory Store Dr. to Polynesian Isle Blvd.	E	F	C	F
	Polynesian Isle Blvd. to Poinciana Blvd.	C	F	E	E
	Poinciana Blvd. to Osceola Parkway Ramps	C	C	C	C
	Osceola Parkway Eastbound On-Ramp to Kyngs Heath Rd.	C	D	C	D

SR 536/World Center Drive Intersection Improvements

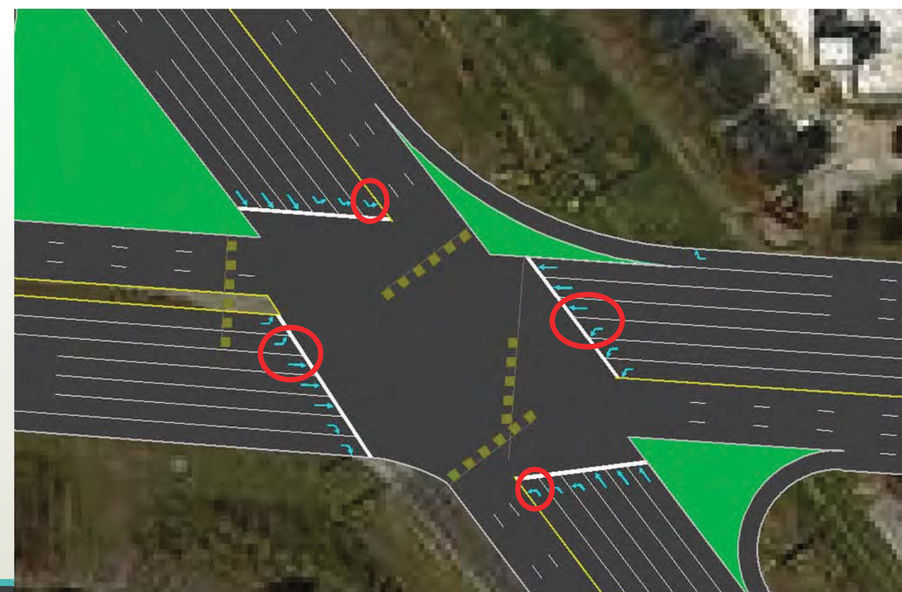
- Future No-Build – LOS F in AM and PM peak, 6 over-capacity movements
- Future Build – LOS E in PM peak, 4 over-capacity movements



No-Build Lane Config.



Build Lane Config.



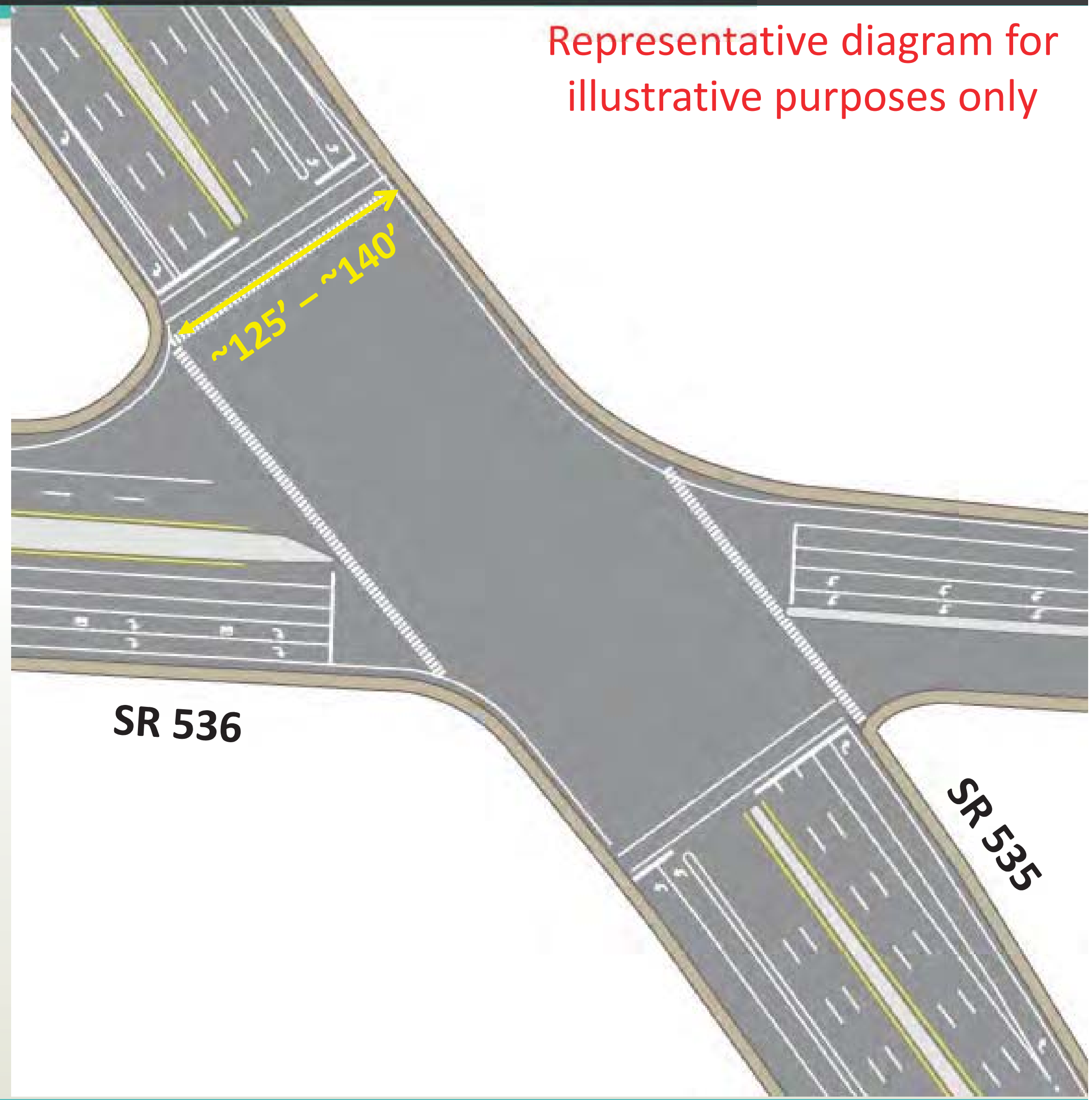
SR 535 at SR 536/World Center Drive – Displaced Left Turn

- Performed high level screening which identified the Displaced Left Turn as a possible at-grade alternative to increase intersection capacity
- Left turns and through movements operate concurrently
- https://www.youtube.com/watch?v=3wIv0a9fuB0

Representative diagram for illustrative purposes only

SR 535 at SR 536/World Center Drive – Displaced Left Turn

- Future No-Build – LOS F in AM and PM peak, 6 over-capacity movements
- Future DLT – LOS E in AM and PM peak, 1 over-capacity movement
- Existing ped crossings across SR 535 ~140’



SR 535 at SR 536/World Center Drive – Grade Separated Alternatives

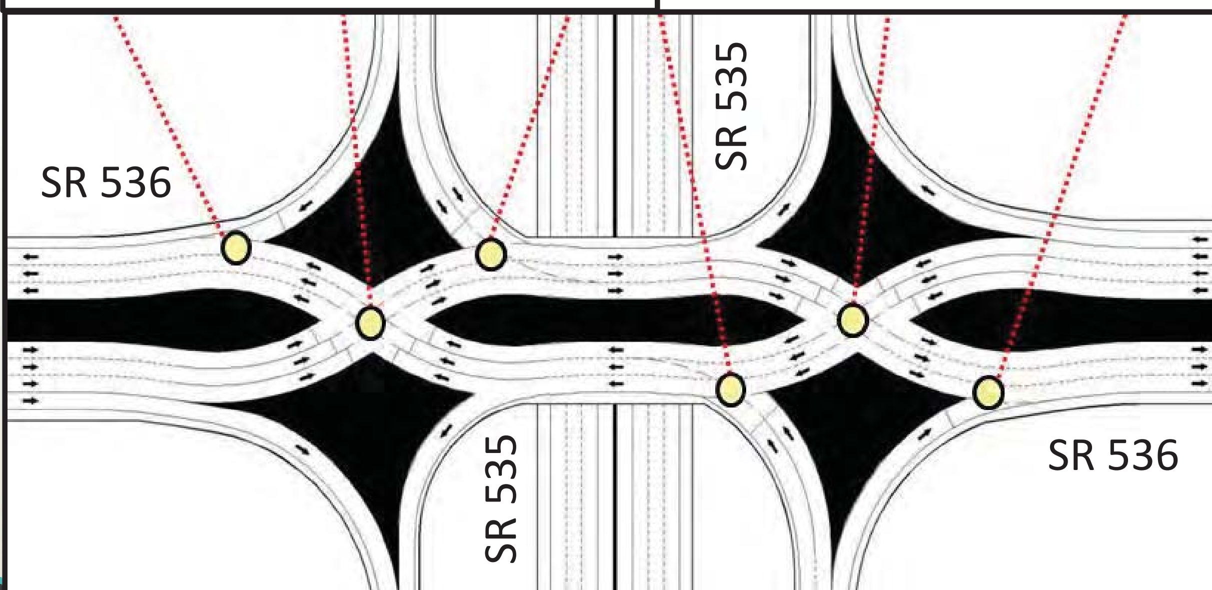
- Performed FHWA CAP-X screening which identified possible alternatives based on interchange capacity
  - Diverging Diamond Interchange (DDI)
  - Single Point Urban Interchange (SPUI)

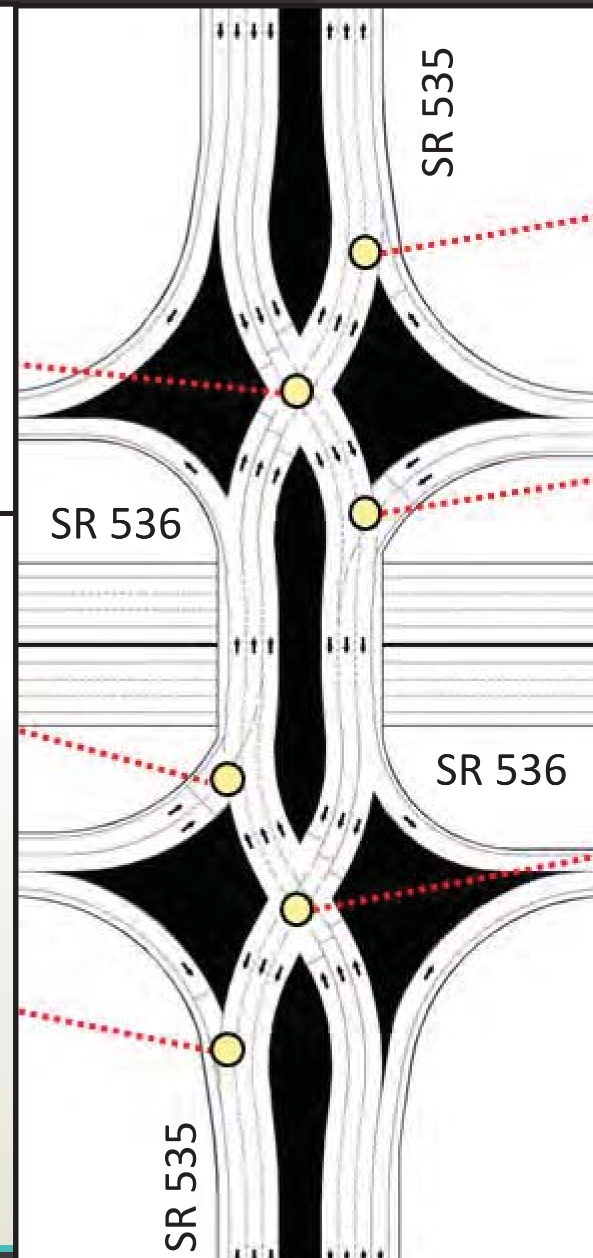
SR 535 at SR 536/World Center Drive – DDI

Representative concepts for illustrative purposes only

- East/West DDI – max V/C of 0.94 in AM and PM peak hour

- North/South DDI – max V/C of 0.95 in PM peak hour



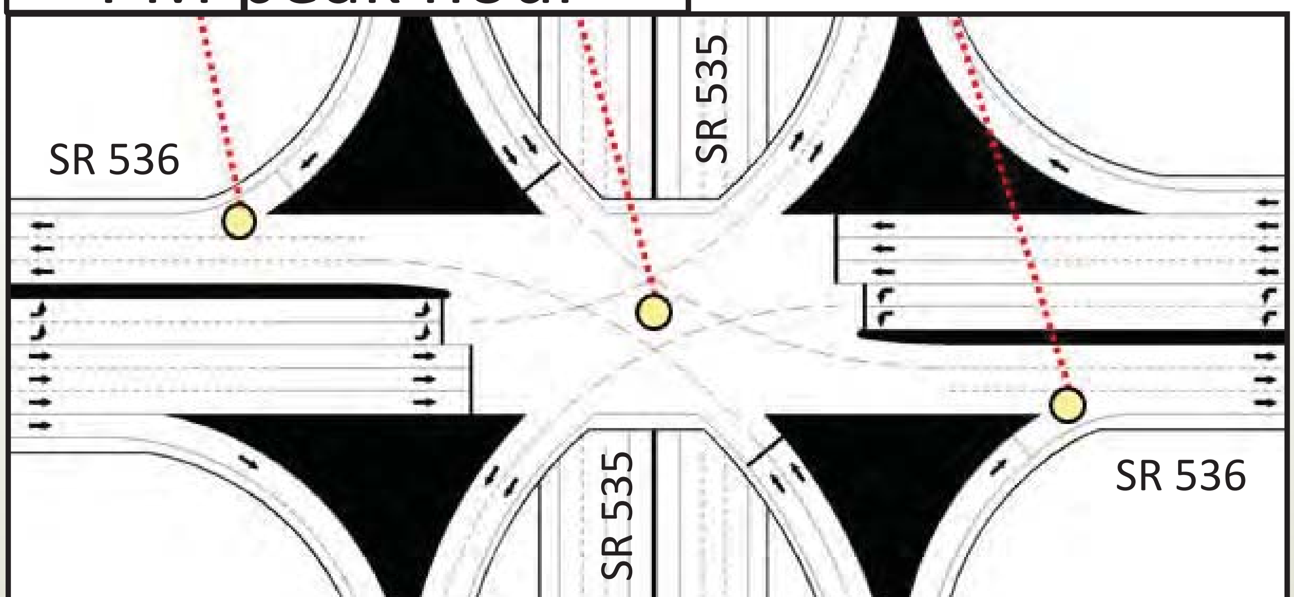


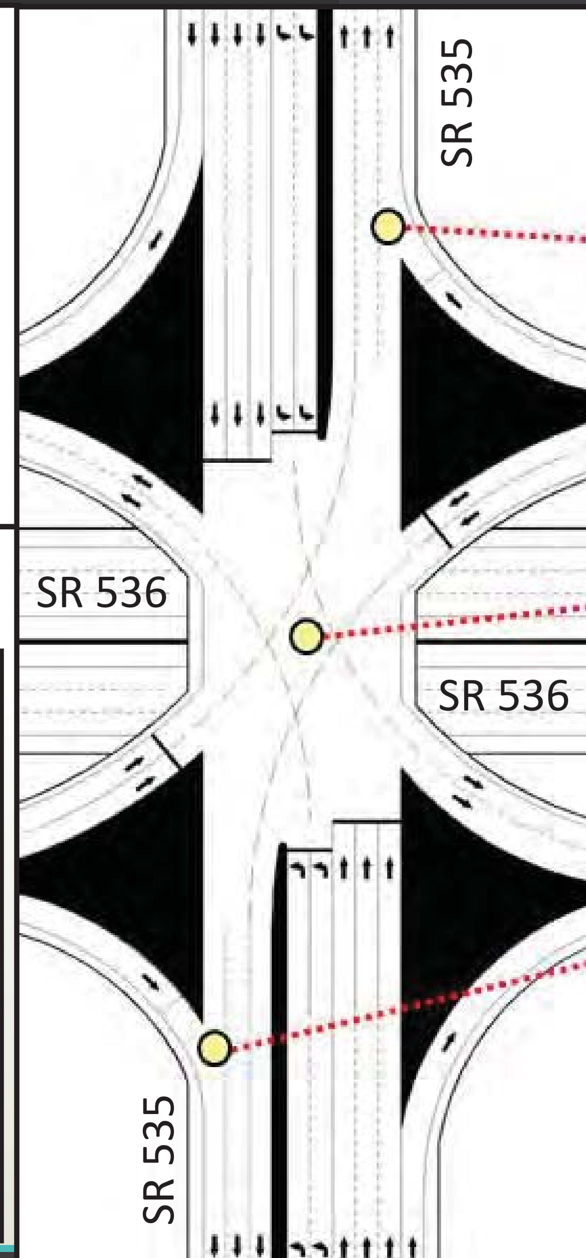
SR 535 at SR 536/World Center Drive – SPUI

Representative concepts for illustrative purposes only

- East/West SPUI – max V/C of 0.94 in AM and PM peak hour

- North/South SPUI – max V/C of 0.82 in AM and PM peak hour





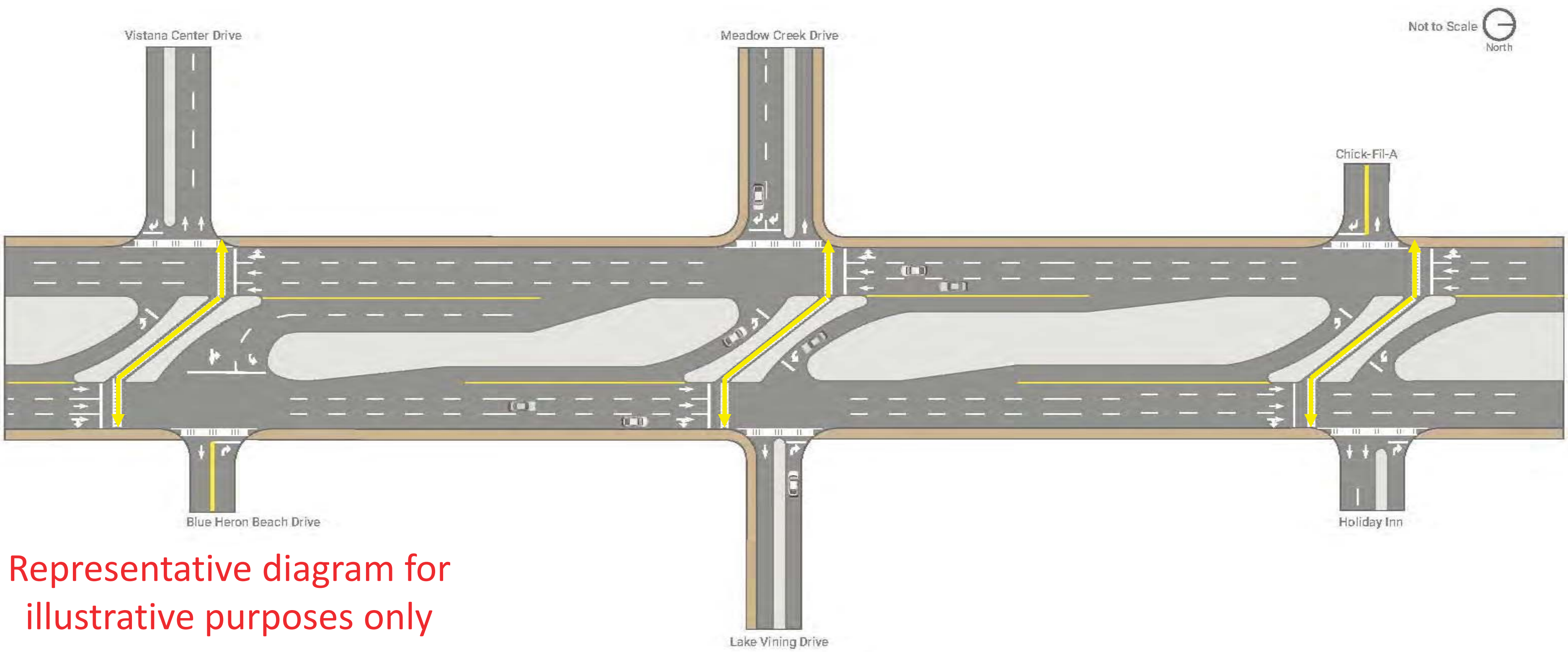
SR 535 at SR 536/World Center Drive – Grade Separated Alts. Potential Impacts

SR 536 at Grade		
Metric	**DDI**	**SPUI**
ROW	Moderate	Moderate
Driveway Impacts	Moderate	Low
Utility Impacts	Moderate	Moderate
Cost	High	High

SR 535 at Grade		
Metric	**DDI**	**SPUI**
ROW	Moderate	Moderate
Driveway Impacts	High	High
Utility Impacts	Moderate	Moderate
Cost	High	High

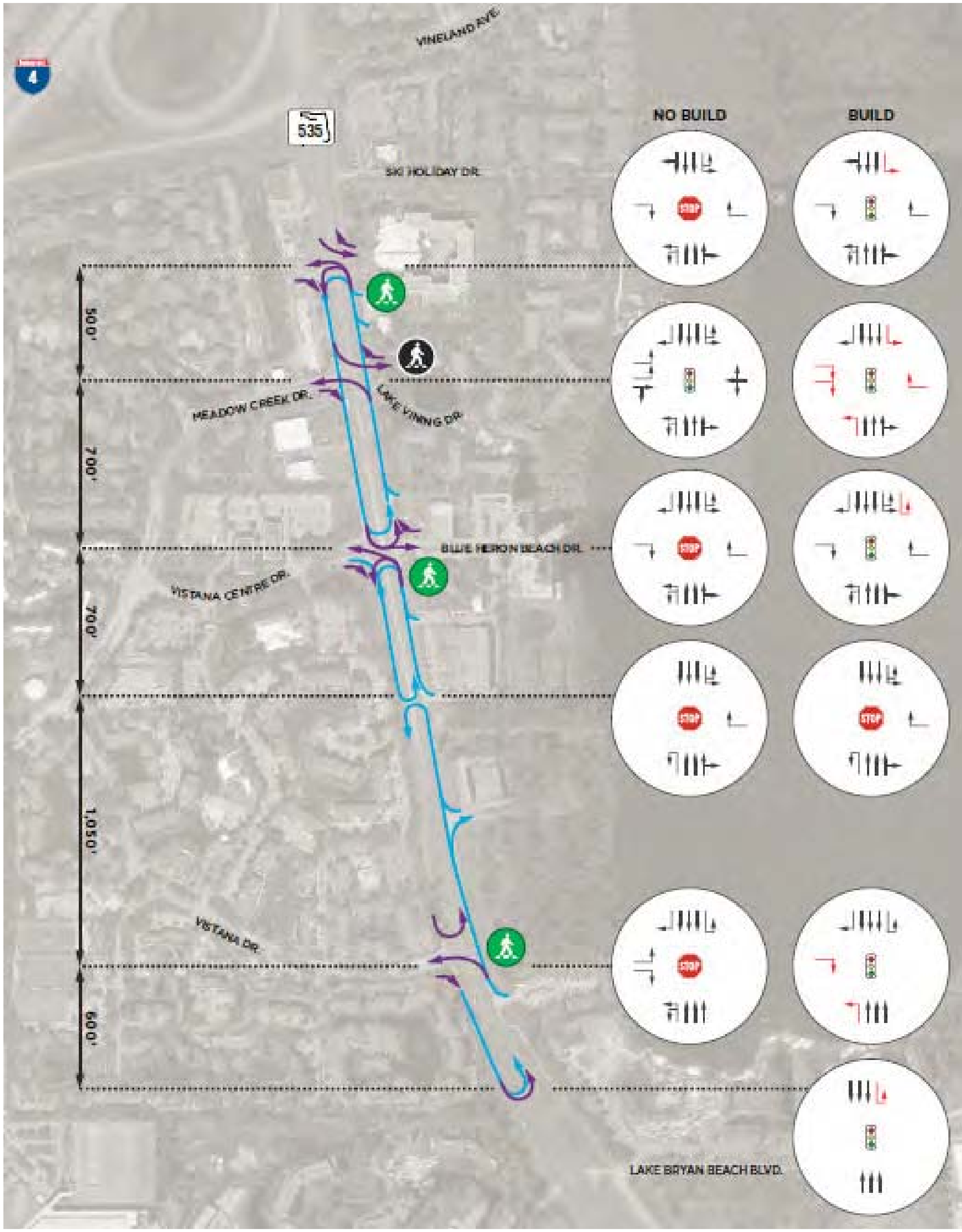
SR 536/World Center Drive to Meadow Creek Drive – Restricted Crossing U-Turns (RCUT)

- No through or left turns allowed from minor street intersection
- https://www.youtube.com/watch?v=BLwl01NCp9I



Representative diagram for illustrative purposes only

Potential RCUT Locations



LEGEND

- Existing Pedestrian Movement
- Proposed Pedestrian Movement
- Intersection Turning Movement
- U-Turn Movement Path

Intersection LOS Results from SR 536 to Meadow Creek Drive

Condition	Intersection	Control Type	AM	PM
No-Build	SR 535 & World Center Dr.	Signalized	F	F
	SR 535 & Vistana Dr.	Unsignalized	F	F
	SR 535 & Vistana Centre Dr.	Unsignalized	F	F
	SR 535 & Meadow Creek Dr.	Signalized	C	D
Build	SR 535 & World Center Dr.	Signalized	E	E
	SR 535 & Vistana Dr.	Signalized	A	A
	SR 535 & Vistana Centre Dr.	Signalized	B	C
	SR 535 & Meadow Creek Dr.	Signalized	B	B

Segment LOS Results from SR 536 to Meadow Creek Drive

Direction	Segment	No-Build		Build	
		AM	PM	AM	PM
Northbound	SR 536/World Center Dr. to Vistana Dr.	B	C	C	C
	Vistana Dr. to Vistana Centre Dr.	B	C	C	C
	Vistana Centre Dr. to Meadow Creek Dr	B	C	C	C
Southbound	Meadow Creek Dr. to Vistana Centre Dr.	F	F	E	F
	Vistana Centre Dr. to Vistana Dr.	F	F	B	C
	Vistana Dr. to SR 536/World Center Dr.	F	F	B	B

Next Steps and Schedule

Schedule

- Refinements of future alternatives
- Public Meeting to review future alternatives (Early November)

CORRIDOR
SR 535
PLANNING STUDY

Open Discussion

Project Visioning Team (PVT) Meeting #2

SUBJECT: FM 437174-1 and 437175-1: SR 535 Corridor Study

Orange and Osceola Counties

MEETING DATE: Wednesday, September 20, 2017

MEETING TIME: 9:00 AM – 11:00 AM

VENUE: MetroPlan Orlando - 250 S Orange Ave #200, Orlando, FL 32801, Live Oak Conference Room

Introduction and Attendees

The second Project Visioning Team (PVT) meeting was held September 20th to review the future build alternatives for the SR 535 corridor. The PVT consists of members from the Florida Department of Transportation District 5 (FDOT), Orange County, Osceola County, LYNX, MetroPlan Orlando, and the consultant team Kittelson & Associates, Inc. (KAI). Below are the attendees of PVT Meeting #2:

- Heather Garcia – FDOT
- Jesse Blouin – FDOT
- Brian Sanders – Orange County
- Joedel Zaballero – Osceola County
- Josh DeVries – Osceola County
- Mary Moskowitz – Osceola County
- Doug Robinson – LYNX
- Nick Lepp – MetroPlan Orlando
- Keith Caskey – MetroPlan Orlando
- Karl Passetti – KAI
- Daniel Torre – KAI
- Travis Hills – KAI

A sign in sheet for the meeting is attached.

Meeting Discussion

Jesse Blouin and Travis Hills led a presentation focused on the future build improvements for the attendees. General discussion took place during the presentation. The following sections summarize the discussion points from the meeting.

Future Build Alternatives

The group discussed the following topics in regards to future build alternatives:

- Short Term Improvements –
  - There was support from the group for the short term improvements discussed.
- Typical Section Alternatives –
  - There seems to be interest in having both a shared use path and on street bike lanes if there is enough space.
  - Comments stated regarding widening to the inside –
    - Limits beautification opportunities along the corridor; and
    - If median running buses are an option for the future, widening to the inside may limit this type of transit improvement.
  - A suggestion was made to remove the bike lane in Alternative 3 and replace it with a landscape buffer in order to shorten the distance pedestrians need to cross to get across the roadway. A clarification was made by FDOT that on-street bike lanes are in the design standards for the type of context SR 535 is classified as.
- Traditional At-Grade Intersection Improvements
  - There is the possibility of a future US 192 study. Its limits are not defined yet, but could include SR 535 and would include intersection improvements.
  - Consider shortening pedestrian crossing lengths for US 192 Alternative 2.
  - As part of the Poinciana Boulevard intersection improvements, the Walmart driveway on Poinciana Boulevard would possibly need to get removed which will allow for more storage space for the EBL approach and the proposed triple left turn lane configuration.
- Innovative Intersection and Grade Separated Intersection Alternatives
  - Discussion regarding the frontage road in front of the property parcels northeast of the SR 535/SR 536 intersection took place. A suggestion was made to leave the frontage road to allow access. Only concern would be if there is grade separation in the intersection, as it may limit access to the driveway.
  - Look into if the barrier at the outside of the pedestrian sidewalk under the Osceola Parkway bridge is necessary.
  - Discussion on benefit/cost between the DLT alternative and the grade separated alternatives. While there was interest in the DLT, the group would like to see the full impacts of a DLT vs a grade separated option before ruling any alternatives out.

Next Steps

The group generated the following action item list to be completed by various team members after the meeting.

Action Item	Due Date	Status	Person Responsible	Notes
Follow-up with Orange and Osceola Counties, LYNX, and MetroPlan to assist in marketing the public meting	10/30/17	Ongoing	Jesse B.	
Obtain bike/bus lanes study along SR 535	10/30/17	Complete	Jesse B.	
Confirm short term improvements with traffic operations	10/30/17	Complete	Jesse B.	
Follow-up with Central Florida Hotel and Lodging Association	10/30/17	Ongoing	Jesse B.	
Document in the final report why roundabouts were not considered	11/30/17	Ongoing	Travis H.	
Coordination meeting with Orange County Public Works	10/30/17	Ongoing	Jesse B.	
Obtain list of intersection locations considered for PEDSAFE improvements	10/30/17	Complete	Travis H.	
Revise dimensions on multi-use trail to show a range between 8′ and 12′	10/30/17	Ongoing	Travis H.	
Coordinate on ETDM timeframe	10/30/17	Ongoing	Jesse B.	
Discuss possibility of short-term improvements	10/30/17	Ongoing	Jesse B.	
Add to the final report the impacts to storm water ponds	10/30/17	Ongoing	Travis H.	

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

APPENDIX D – STAKEHOLDER MEETING NOTES

EAST CENTRAL FLORIDA REGIONAL PLANNING COUNCIL AND W192 DEVELOPMENT AUTHORITY STAKEHOLDER MEETING

SR 535 Stakeholder Meeting Notes

East Central Florida Regional Planning Council and W192 Development Authority Stakeholder Meeting Notes

Date: June 29, 2016

Attendees:

David Buchheit (W192 Development Authority)

PJ Smith (East Central Florida Regional Planning Council)

Travis Hills (Kittelson and Associates, Inc.)

Aditya Inamdar (Kittelson and Associates, Inc.)

Meeting Summary:

Travis Hills gave a brief presentation explaining the project, planning process, and next steps. The following points summarize the discussion after the presentation:

Transit:

- Important to connect US 192 Bus Rapid Transit (BRT) to northern part of study corridor through new transit routes or by extending the current transit route.
    - US 192 BRT will operate at 7.5 minute headways.
- International tourists are used to riding transit and will use it if the option exists.
- Two LYNX Routes (55 and 56) currently operate along US 192. Both begin at the Downtown Kissimmee intermodal station. LYNX route 55 travels to the Four Corners Walmart and route 56 travels to Disney's Magic Kingdom. Currently these routes operate at 30-45 minute headways.
    - These routes have specially designed bus stops along US 192. Similar bus stops are located along SR 535 between US 192 and Kyngs Heath Road; however there is no bus service for these stops.
- Better bus stop shelters will induce transit ridership demand.
- Explore connecting transit options with Disney's transit.

Pedestrian/Bicycle:

- Pedestrian and bicycle improvements along the corridor are important to consider as part of the planning process.
- GIS analysis (heat/hotspots maps) of hotels and residents as well as pedestrian generators can help identify origin destinations for pedestrians and bicyclists.
- Good idea to incorporate sidewalks/bicycle lanes/shared use path along SR 535.

Land Use and Streetscape:

- Develop character areas/districts to identify different land use contexts along the corridor.
- W192 Development Authority will be creating design guidelines to attract redevelopment along the US 192 corridor.
- W192 Development Authority is focusing on better landscaping along the US 192 corridor.
    - Would like landscaping to extend north along SR 535.
- Coordinate with Orange County Planning Department. They are rewriting their land development code and are preparing I-Drive corridor planning study.
- Potentially consider creating a two county agency (Orange and Osceola) similar to W192 Development Authority that will be in charge of implementing SR 535 suggestions.

Street Network:

- New street connections are planned or are getting built along SR 535 corridor. This will help in relieving some congestion along SR 535, especially reducing local trips connecting neighborhoods and retail destinations along the corridor.

CENTRAL FLORIDA HOTEL & LODGING ASSOCIATION STAKEHOLDER MEETING

SR 535 Stakeholder Meeting Notes

Central Florida Hotel & Lodging Association Stakeholder Meeting Notes

Date: July 18, 2016

Attendees:

Jay Leonard (Wyndham LBV)

Ralph Scatena (Orlando World Center Marriott)

Dennis Hale (Embassy Suites, LBV South)

Warren Bingham (Embassy Suites, LBV South)

Oscar Montoya (Sheraton Vistana Resort)

Aziz Ndiaye (Sheraton Vistana Resort)

Ross M. Burke (Blue Heron Beach Resort)

Keith E. Wolling (B Resort + Spa)

Dan Kline (Magical Memories)

Brian Wong (Celebration Suites)

Vance Hawkins (Clarion Suites Maingate)

James Shandor (Radisson Orlando Resort)

Jesse Blouin (FDOT)

Aditya Inamdar (Kittelson & Associates, Inc.)

Ryan Casburn (Kittelson & Associates, Inc.)

Travis Hills (Kittelson & Associates, Inc.)

General Discussion from Meeting:

After brief introduction of attendees, Jesse Blouin introduced the project. Travis Hills and Mr. Blouin gave a presentation giving background of the project and explaining the FDOT corridor planning process. The following are general discussion topics from the meeting:

- It was noted this is a 20-30 year horizon corridor planning study.
- Some of the major issues and themes that have emerged from prior meetings, walking audits, and stakeholder engagement are:
    - Improving pedestrian and bicycle facilities along the corridor;
    - Exploring potential extension of transit routes;
    - Addressing needs of the traveling tourist;
    - Maintaining FDOT roadway level of service standards;
    - Studying safety issues; and
    - Reducing traffic congestion.

- Stakeholder outreach with hotels and resorts along the corridor is important to understand the needs of tourists.
- Attendees had questions related to I-4 improvements and how they relate to this project. It was clarified that I-4 is a separate project and beyond the purview of this corridor study. The northern study limits end at the Vineland Avenue intersection. However, Mr. Blouin agreed to share the latest I-4 plans with the rest of the group.
    - I-4 intersection design with Vineland Avenue is being considered as a committed project in the future condition and the SR 535 Corridor Planning Study will not make recommendations regarding its design.
- There was a question relating Palm Plaza Parkway intersection north of I-4. It was clarified that the corridor study limits do not extend to that intersection.
- A question was asked as to why this corridor was selected and why it rose to the top in MetroPlan Orlando's priority list. Mr. Blouin explained that existing and future traffic congestion was the main reason it rose to the top of the list. Also lack of pedestrian and bicycle facilities and need for transit were important considerations.

<u>Traffic Congestion:</u>

- Potential 6-8 lane widening is not being considered north of SR 536/World Center Drive. The existing four lane section from US 192 to SR 536/World Center Drive may be considered for 4-6 lane widening.
- Other ways of mitigating congestion will be considered.
    - New street connections like International Drive to reduce local trips. Orange County is looking into this new connection.
    - New signal at International Drive and SR 535 intersection is now in final design and will be operational within the next few years.
- People stop in the channelized right turn lanes. There are many international and out of state tourists who are not aware of Florida's traffic laws related to allowing right turns on red.
    - Normally signs that tell you what the law is (for example Right on Red allowed) may be helpful, they can help along this corridor due to high number of tourists.
- Merchant / fruit stand seem to slow traffic around the SR 417 overpass.
- Eastbound left turn lane at Poinciana Boulevard has large queue in the AM peak hour.
    - Believed to be a lot of Disney employee traffic coming from the Poinciana area.
    - Is there a possibility to get Lynx, or a Disney run employee transit service for these Poinciana residents?

<u>Pedestrian and Bicycle:</u>

- Additional marked crosswalks along the corridor would be well received.
- Jaywalking in front of Caribe Royale to CVS east of SR 535/SR536/World Center Drive intersection – Would adding marked crosswalks at World Center Drive help with this?
    - Providing a safer crossing option would help.

    - Resort Owners want to help their patrons and would help promote using safer walking options like a marked crosswalk.
    - Landscape barriers in median could help guide pedestrians to marked crosswalks.
- Frontage Road near SR 535/SR536/World Center Drive intersection is essentially a truck stop.
    - Could the study team look into utilizing this frontage road as a pedestrian/bicycle facility?
    - If you limit the ability for trucks to park there, where will they go? A little exploration into where these trucks are coming from, going to, and why they choose to stop there may expose an unmet need that could be addressed.

Transit:

- Adding transit along the corridor will help tourists as well as connect resorts near I-4 to US 192 area.
- Currently no designated transit along SR 535 south of SR 536/World Center Drive.
- Many hotels/resorts provide shuttles to nearby areas and theme parks. There are some hotels/resorts that have high ridership on shuttles
- Future transit along the corridor can tie into hotel/resort shuttles and potential future US 192 bus rapid transit.
- Design bus stops with pull out areas so that stopped buses don't block travel lane and impact traffic.

Currently Planned Improvements:

- International Drive signal at SR 535 (short term) and International Drive connection between SR 535 and SR 536/World Center Drive.
- Adding a second westbound right turn lane at the Vineland Avenue intersection. The second right turn lane will become a new lane along SR 535 northbound that enters directly onto I-4 eastbound.
- Poinciana Boulevard is planning on having a connection east of SR 535, possibly connecting to Lake Buena Vista Factory Stores area.

LBV FACTORY STORES AND SUNRISE CITY DEVELOPMENT STAKEHOLDER MEETING

Stakeholder Meeting

SUBJECT:	FM 437174-1 and 437175-1: SR 535 Corridor Study Orange and Osceola Counties
MEETING DATE:	Wednesday, February 1, 2017
MEETING TIME:	2:00 PM – 3:30 PM
VENUE:	Kittelson & Associates, Inc. – 225 East Robinson Street, Suite 450, Orlando, FL 32801

Introduction and Attendees

A meeting was held with stakeholders along SR 535 to discuss issues, opportunities, and development potential along the corridor. The stakeholders in this meeting consisted of members from Lake Buena Vista Vista Factory Stores/Resorts and Intram Investments. The stakeholders met with members from the Florida Department of Transportation District 5 (FDOT), and the consultant team Kittelson & Associates, Inc. (KAI). Below are the attendees of the Stakeholder Meeting:

- Heather Garcia – FDOT
- Jesse Blouin – FDOT
- Ofer Fridfertig – Lake Buena Vista Factory Stores/LBV Resorts
- Randy Steinbeck – Lake Buena Vista Resort Village & Spa
- Kelly Froelich – Intram Investments (Sunrise)
- Paige Teague – Intram Investments (Sunrise)
- Travis Hills – KAI
- Michael Eagle – KAI

A sign in sheet for the meeting is attached.

Meeting Discussion

Jesse Blouin led a discussion focused on the existing conditions and an explanation of where the study is currently in the FDOT process. General discussion took place during the meeting. The following sections summarize the discussion points from the meeting.

Issues and Opportunities

Each stakeholder identified observed issues along the SR 535 corridor. A brief list is summarized as follows:

- Pedestrian and Bicycle Safety

  - Mr. Fridfertig mentioned an employee walks to work and has to cross the SR 535 and SR 536 intersection daily.
  - A suggestion was made in support of evaluating elevated pedestrian bridges at the SR 535 and SR 536 intersection.
- Lack of Fixed Route Transit Services
  - There is no fixed route transit service with regular headways along the corridor.
  - Lynx drops off and picks up employees at 8 AM and 5 PM daily at the LBV stores.
  - Many employees along the corridor could benefit from a more consistent fixed transit route.
- Parked Trucks
  - Trucks fail to obey signage and park on the service road to the east of SR 535 and to the south of SR 536.

Potential Development along the Study Corridor

Each stakeholder discussed their future development plans along with some other plans in the vicinity:

- Lake Buena Vista Factory Stores/resort
  - The Factory Stores were built in 1996 and expanded in 2000 and 2002.
  - They are approved for an expansion of 11 acres to the south of the existing parcel.
  - A roadway connection is planned to connect the LBV development with the development on the southeast corner of SR 535 and SR 536 – no timeframe has been established and is dependent upon development of the parcel.
- Sunrise City
  - The first phase of the development will include a Publix and will be finished by late summer 2017.
  - The development will also include apartments and mixed use land uses.
  - An internal roadway is planned to connect the development with the future Lake Buena Vista developments.
  - A connection to Storey Lake Boulevard to the south at Osceola Parkway is also planned in the future.
- International Drive Extension
  - An extension of International Drive is intended to fill in the existing gap in the roadway at SR 536/International Drive.
  - The timeline of this extension is unknown and would need to be completed prior to development of the land.

- Kadmar Plaza Planned Development
    - 28 KSF mixed use development is planned for a 5 acre parcel at the northwest corner of SR 535 and SR 417.

Next Steps

The group generated the following action item list to be completed by various team members after the meeting.

Action Item	Due Date	Status	Person Responsible	Notes
Add Ofer, Randy, Kelly, and Paige to the PVT.	N/A	Complete		
Review future land uses along SR 535 within the CFRPM 6.1	2/28/17	Ongoing	Travis H.	

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

CALCULATION/DESIGN RECORD

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING / PLANNING
Alaska • Arizona • California • Florida
Idaho • Maryland • Massachusetts
Oregon • Virginia • Washington DC

DATE 2/1/17 PROJECT# 13066.23

PROJECT NAME

SUBJECT SR 535 Corridor Planning Discussion

BY SHEET# OF

Sign-In Sheet

Travis Hills - Kittelson

Michael Eagle - Kittelson

OFER FRIDFERTIG - Lake Buena Vista Factory stores/ LBV Resort

Heather Garcia - FDOT

Jesse Blouin - Consultant to FDOT

Randy Steenbeck - Lake Buena Vista Resort Village & Spa

Kelly Froelich - Intram Investments (Sunrise)

Paige Teague - Intram Investments (Sunrise)

MR. ZACHARY E. STOUMBOS, ESQ. STAKEHOLDER MEETING

Stakeholder Meeting

SUBJECT: FM 437174-1 and 437175-1: SR 535 Corridor Study

Orange and Osceola Counties

MEETING DATE: Thursday, August 24, 2017

MEETING TIME: 10:30 AM – 11:30 AM

VENUE: Kittelson & Associates, Inc. – 225 East Robinson Street, Suite 450, Orlando, FL 32801

Introduction and Attendees

A meeting was held with Mr. Zachary E. Stoumbos, Esq. to discuss issues, opportunities, potential improvements, and development potential along the corridor. Mr. Stoumbos' property is located at 14445 SR 535, Orlando, FL 32821. This parcel is at the northeast corner of the SR 535/SR 536 intersection between the Buena Vista Suites and the electrical power substation. Mr. Stoumbos met with members from the Florida Department of Transportation District 5 (FDOT), and the consultant team Kittelson & Associates, Inc. (KAI). Below are the attendees of the Stakeholder Meeting:

- Jesse Blouin – FDOT
- Zachary E. Stoumbos, Esq. – Property Owner
- Travis Hills – KAI
- Michael Eagle – KAI

Meeting Discussion

Jesse Blouin led a discussion focused on the existing conditions and an explanation of where the study is currently in the FDOT process. General discussion took place during the meeting. The following bullets summarize the discussion points from the meeting.

- Property entitled for 280 room hotel, which is planning on being built out within the next 3 years.
- Possibly reviewing if a right in/right out driveway along the east side of SR 535 north of the 536 intersection would work with access management spacing standards.
- As property develops, would look to rebuild the frontage road to accommodate ped/bike facilities to/from the site.

- Internal coordination with FDOT Traffic Operations would be needed to discuss the possible driveway.

Follow Up

Based on discussions from the meeting, Mr. Blouin followed up internally with FDOT staff and sent the following: “As more details emerge as you develop the property, the FDOT will evaluate the potential options at that time. As of now it seems like there may be some value in keeping the frontage road and having the 3 or so properties share an access point to the frontage road. The process for evaluating and determining access is fairly standard and involves evaluating spacing between other driveway openings, median openings, land use/zoning, etc.”.

This summary is Travis Hills’ interpretation of the meeting. Questions should be directed to him at 407-540-0555.

APPENDIX E – EXISTING CONDITIONS PUBLIC MEETING MATERIALS

MEETING NOTICES

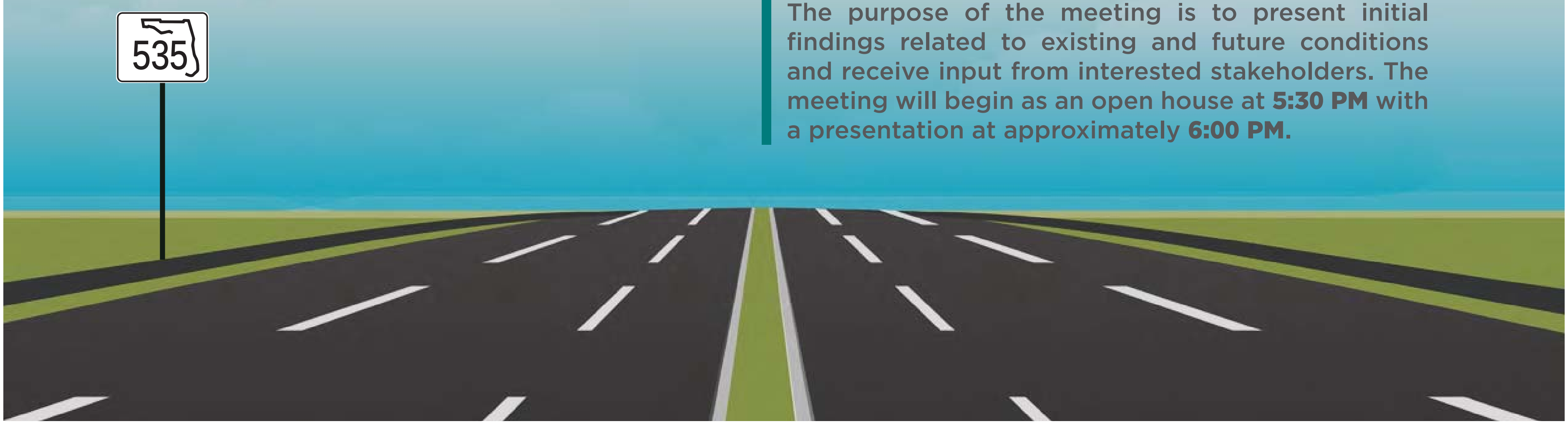
UPDATED MEETING LOCATION ADDRESS

PUBLIC MEETING ANNOUNCEMENT

Tuesday, December 13, 2016
5:30 p.m. to 7:30 pm

Embassy Suites Orlando Lake Buena Vista South
Magnolia Rooms A & B
4955 Kyngs Heath Road
Kissimmee, Florida 34746

On behalf of the Florida Department of Transportation (FDOT) District 5, you are invited to attend the first **Public Meeting for the SR 535 Corridor Planning Study**. The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of State Road 535 between US 192 in Osceola County to I-4 in Orange County. This Public Meeting is the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting is to present initial findings related to existing and future conditions and receive input from interested stakeholders. The meeting will begin as an open house at **5:30 PM** with a presentation at approximately **6:00 PM**.



FDOT

Florida Department of Transportation
District 5
719 S. Woodland Boulevard
DeLand, FL 32720

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UPDATED MEETING LOCATION ADDRESS

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or email Jennifer.Smith2@dot.state.fl.us. Persons with disabilities who require special accommodations under the Americans with Disabilities Act or persons who require translation services, free of charge, should contact: Mr. Travis Hills at (407) 540-0555 or by e-mail to thills@kittelson.com, at least seven (7) days prior to the meeting. If you are hearing or speech impaired, please contact us by using the Florida Relay Service, 1-800-955-8771 (TDD), or 1-800-955-8770 (Voice).

If you have any questions about the project or the meeting, please contact Heather Garcia, FDOT Planning & Corridor Development Manager, at (386) 943-5077 or heather.garcia@dot.state.fl.us.

Please visit our project website at www.cflroads.com

*********ECRWSS*********
Local
Postal Customer

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

JIM BOXOLD
SECRETARY

November 14, 2016

Subject: State Road (SR) 535 Corridor Planning Study
Orange & Osceola Counties
Financial Project Number: 437174-1 & 437175-1

Dear Elected Leader,

On behalf of the Florida Department of Transportation (FDOT) District 5, I invite you to attend the first Public Meeting for the State Road (SR) 535 Corridor Planning Study.

The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County.

This Public Meeting is the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting is to present initial findings related to existing and future conditions and receive input from interested stakeholders.

The Public Meeting is being held on **Tuesday, December 13th, 2016** from **5:30 p.m.** to **7:30 p.m.** at the **Embassy Suites Orlando Lake Buena Vista South, Magnolia Rooms A & B** located at **4955 Kyngs Heath Road, Kissimmee, Florida 34746**. The meeting will be an open house with a presentation given at approximately **6:00 p.m**.

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or email Jennifer.Smith2@dot.state.fl.us.

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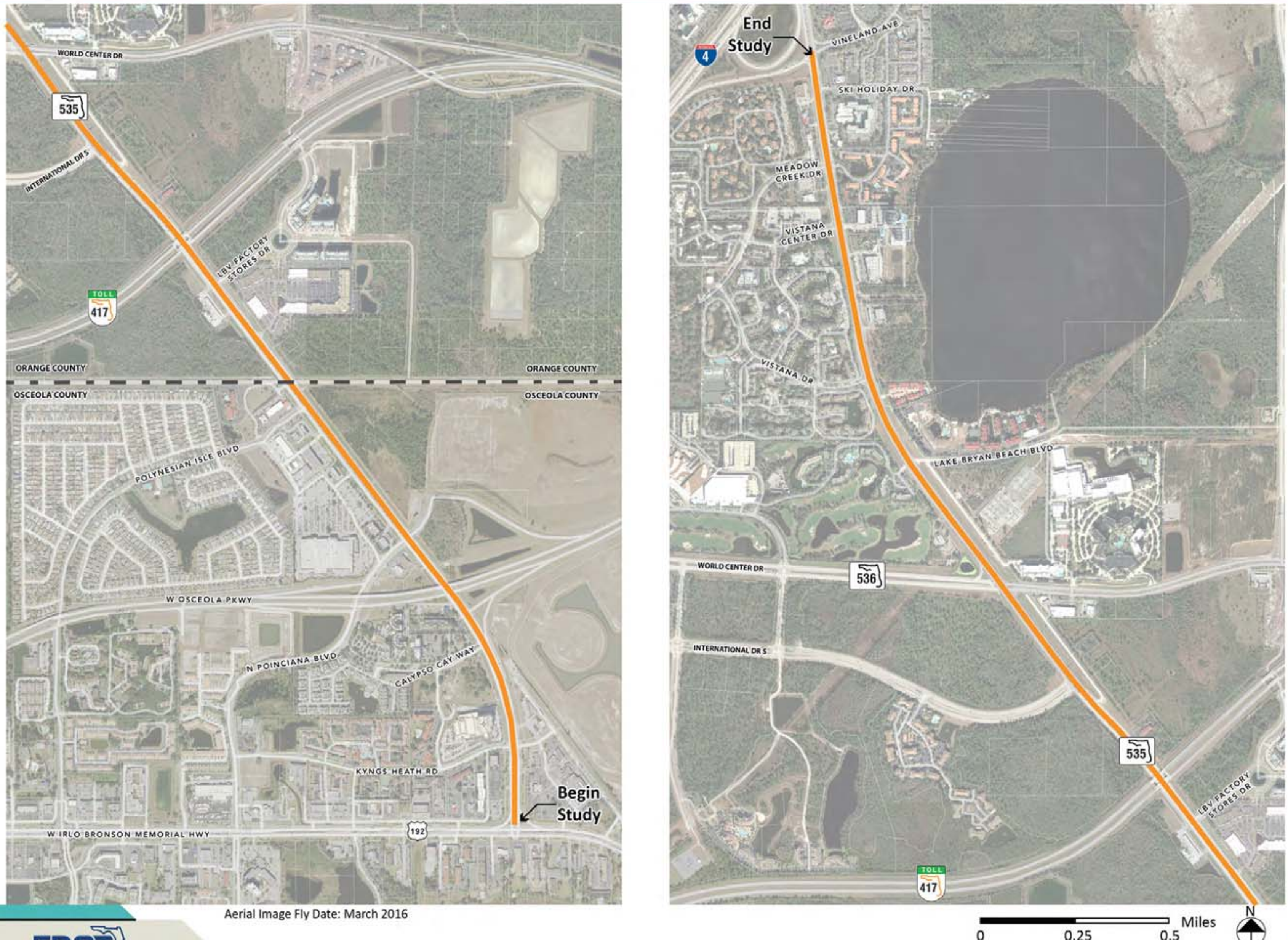
If you have any questions about the project or the meeting, please contact Heather Garcia, FDOT Planning & Corridor Development Manager, at (386) 943-5077 or heather.garcia@dot.state.fl.us.

Sincerely,

Noranne Downs, P.E.
FDOT District Five Secretary

Figure No. 1

Study Corridor



Aerial Image Fly Date: March 2016

Florida Department of Transportation

RICK SCOTT
GOVERNOR

719 S. Woodland Boulevard
DeLand, Florida 32720-6834

JIM BOXOLD
SECRETARY

November 14, 2016

Subject: State Road (SR) 535 Corridor Planning Study
Orange & Osceola Counties
Financial Project Number: 437174-1 & 437175-1

Dear Government Partner,

On behalf of the Florida Department of Transportation (FDOT) District 5, I invite you to attend the first Public Meeting for the State Road (SR) 535 Corridor Planning Study.

The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County.

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If you have any questions about the project or the meeting, please contact me at (386) 943-5077 or heather.garcia@dot.state.fl.us.

Sincerely,

Heather S. Garcia

Heather S. Garcia
FDOT District Five, Planning & Corridor Development Manager

Figure No. 1

Study Corridor

Aerial Image Fly Date: March 2016

FDOT

CORRIDOR SR 535 PLANNING STUDY

Notice of Meeting/Workshop Hearing

OTHER AGENCIES AND ORGANIZATIONS

Kittelson & Associates, Inc.

The Florida Department of Transportation announces a public meeting to which all persons are invited.

DATE AND TIME: Tuesday, December 13, 2016, 5:30 p.m. – 7:30 p.m.; Open House, 5:30 p.m. – 6:00 p.m.; Presentation, 6:00 p.m.

PLACE: Embassy Suites Orlando Lake Buena Vista South, Magnolia Rooms A & B, 4955 Kyngs Heath Road, Kissimmee, Florida 34746

GENERAL SUBJECT MATTER TO BE CONSIDERED: Financial Management No. 437174-1 & 437175-1.

Project Description: State Road (SR) 535 Corridor Planning Study from US 192 to I-4, Orange and Osceola Counties.

The Florida Department of Transportation (FDOT) is conducting a public meeting for the State Road (SR) 535 Corridor Planning Study. The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County. This Public Meeting is the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting is to present initial findings related to existing and future conditions and receive input from interested stakeholders. Persons desiring to submit written statements in place of or in addition to oral statements may do so at the meeting or by sending them to Heather Garcia, FDOT Planning Manager, 719 South Woodland Boulevard, DeLand, FL 32720 or by email to Heather.Garcia@dot.state.fl.us.

A copy of the agenda may be obtained by contacting: Ms. Garcia at the email address listed above.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 7 days before the workshop/meeting by contacting: Mr. Travis Hills, (407)540-0555, thills@kittelson.com. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact Ms. Garcia at the email address listed above.

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting: Jennifer Smith, FDOT District Five Title VI Coordinator, (386)943-5367, Jennifer.Smith2@dot.state.fl.us.

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Preview

Orlando Sentinel
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Order ID: 4633452

* Agency Commission not included

GROSS PRICE * : **$271.25**

PACKAGE NAME: Orlando Sentinel

PUBLIC NOTICE

State Road (SR) 535
Corridor Planning Study
From US 192 to I-4

Orange and Osceola Counties – The Florida Department of Transportation (FDOT) is conducting a public meeting for the State Road (SR) 535 Corridor Planning Study. The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County. This Public Meeting is the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting is to present initial findings related to existing and future conditions and receive input from interested stakeholders.

The Public Meeting is being held on Tuesday, December 13th, 2016 from 5:30 PM to 7:30 PM at the Embassy Suites Orlando Lake Buena Vista South, Magnolia Rooms A & B located at 4955 Kyngs Heath Road, Kissimmee, Florida 34746. The meeting will begin as an open house at 5:30 PM with a presentation at approximately 6:00 PM.

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OS4633452 12/4/2016

MEETING BOARDS/PRESENTATION

Title VI Compliance

The Florida Department of Transportation complies with various nondiscrimination laws and regulations, including Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act (ADA).

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting either:

District 5 Office
Florida Department of Transportation

Jennifer Smith
District 5 Title VI Coordinator
719 South Woodland Boulevard
DeLand, FL 32720
(386) 943-5367
Jennifer.Smith2@dot.state.fl.us

Central Office
Florida Department of Transportation

Jacqueline Paramore
State Title VI Coordinator
605 Suwannee Street, MS 65
Tallahassee, FL 32399-0450
(850) 414-4753
Jacqueline.Paramore@dot.state.fl.us

SR 535 CORRIDOR PLANNING STUDY

AN FDOT PROJECT | FROM US 192 TO INTERSTATE 4

Why You Are Here:

- To participate in the Corridor Planning Study process
- To review the existing conditions issues and opportunities along SR 535
- To provide your thoughts, concerns, and comments regarding the project

Stay Informed by:

By visiting our website
www.cflroads.com

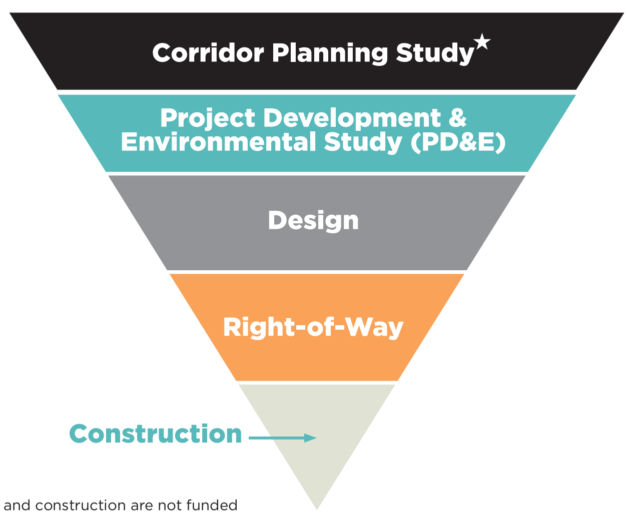
By contacting Ms. Heather Garcia
Florida Department of Transportation
District 5

719 S. Woodland Boulevard
Deland, Fl. 32720
(386) 943-5077
heather.garcia@dot.state.fl.us

How Can You Get Involved?

- Participate in open discussion with the project team
- Ask questions about specific aspects of the project
- Fill out a comment form with your input
- Request a small group / neighborhood meeting

Where We Are:



ROW and construction are not funded

	2016											2017						
TASK	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
Begin Study	★																	
Existing Conditions Analysis		▬	▬	▬	▬	▬	▬											
Project Visioning Team Kick-Off Meeting			★															
Future Conditions Analysis/Purpose & Need								▬	▬	▬	▬							
Project Visioning Team Meeting #1										★								
Existing Conditions Public Meeting											★							
Alternatives Development												▬	▬	▬	▬	▬	▬	▬
Project Visioning Team Meeting #2														★				
Project Visioning Team Meeting #3																★		
Alternatives Development Public Meeting																		★
Project Wrap Up																		▬

FDOT

H-133E-14

SR 535 CORRIDOR PLANNING STUDY

SR 535 CORRIDOR PLANNING STUDY

AN FDOT PROJECT | FROM US 192 TO INTERSTATE 4

PUBLIC MEETING

TUESDAY, DECEMBER 13, 2016

TONIGHT'S AGENDA

5:30 PM to 6:00 PM
OPEN HOUSE

6:00 PM to 6:30 PM
PRESENTATION

6:30 PM to 7:30 PM
OPEN HOUSE

CONTACT US

FDOT PROJECT MANAGER:

Heather Garcia
FDOT District 5

719 S. Woodland Blvd.
Deland, FL 32720
heather.garcia@dot.state.fl.us
386.943.5077

STUDY TEAM PROJECT MANAGER:

Travis Hills, PE
Kittelson & Associates, Inc.

225 E Robinson St.
Suite 450
Orlando, FL 32801
thills@kittelson.com
407.540.0555

See Large Map on Reverse Side

Welcome!

Welcome to the State Road (SR) 535 Corridor Planning Study Existing Conditions Public Meeting! The study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County.

This Public Meeting is the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting is to present initial findings related to existing and future conditions and receive input from interested stakeholders.

Next Steps

The next steps in the Corridor Planning Study process will be to develop a variety of potential roadway concepts that meet the future needs of the corridor. These options will be presented at the Second Public Meeting anticipated to take place in the summer of 2017.

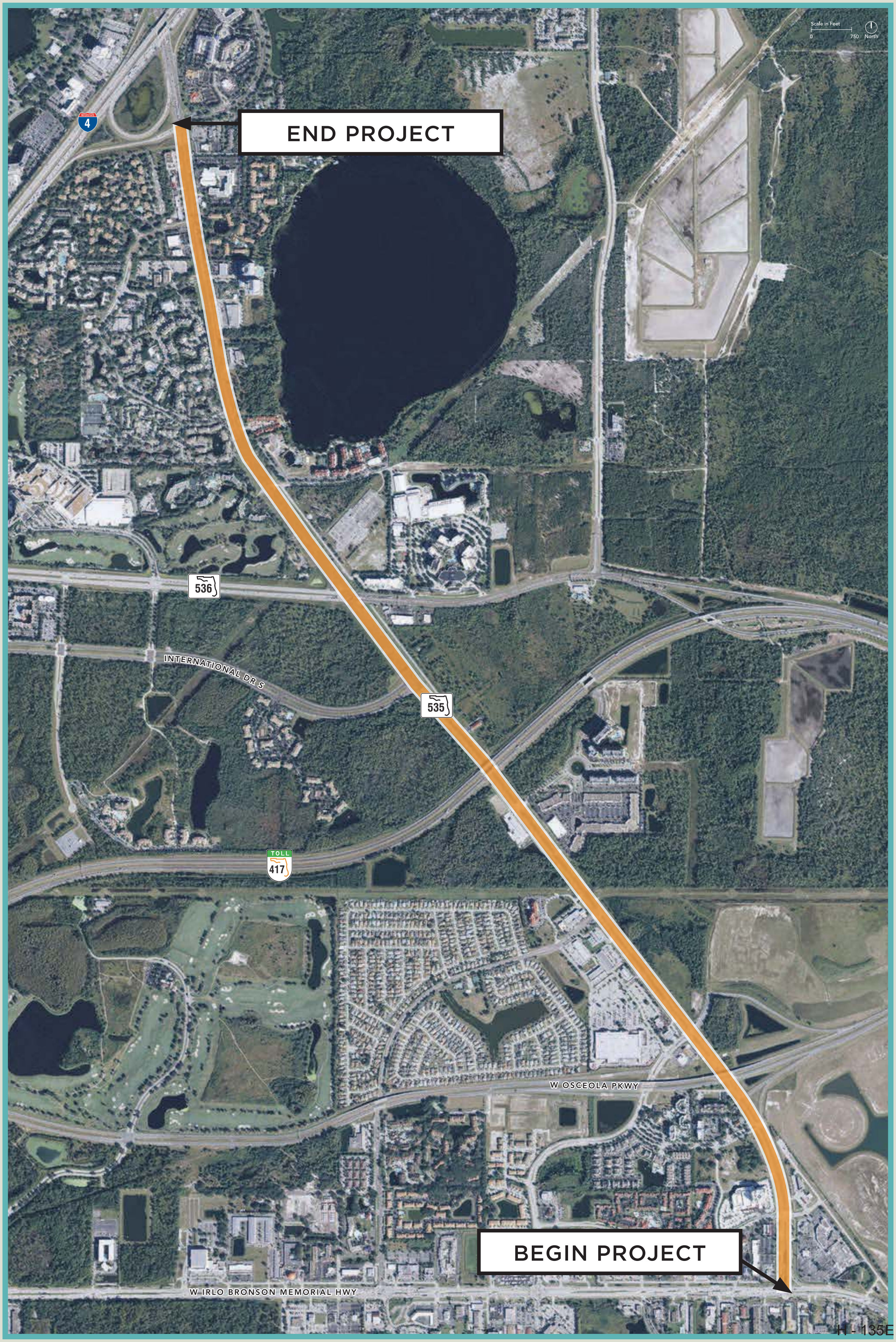
	2016											2017						
TASK	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
Begin Study	★																	
Existing Conditions Analysis		■	■	■	■	■	■											
Project Visioning Team Kick-Off Meeting			★															
Future Conditions Analysis/Purpose & Need								■	■	■	■							
Project Visioning Team Meeting #1										★								
Existing Conditions Public Meeting											★							
Alternatives Development												■	■	■	■	■	■	■
Project Visioning Team Meeting #2														★				
Project Visioning Team Meeting #3																★		
Alternatives Development Public Meeting																		★
Project Wrap Up																		■

Your Input is Valuable!

Anyone wishing to submit written statements may do so at this meeting, or by sending them to Ms. Heather Garcia or Mr. Travis Hills as indicated to the left. The public comment period will remain open until close of business December 30, 2016.

FDOT

For more information, please visit www.cflroads.com



END PROJECT
BEGIN PROJECT
4
536
535
417
TOLL
INTERNATIONAL DR S
W OSCEOLA PKWY
W IRLO BRONSON MEMORIAL HWY
Scale in Feet
0
750
North

Aerial Image Fly Date: March 2016

Study Corridor

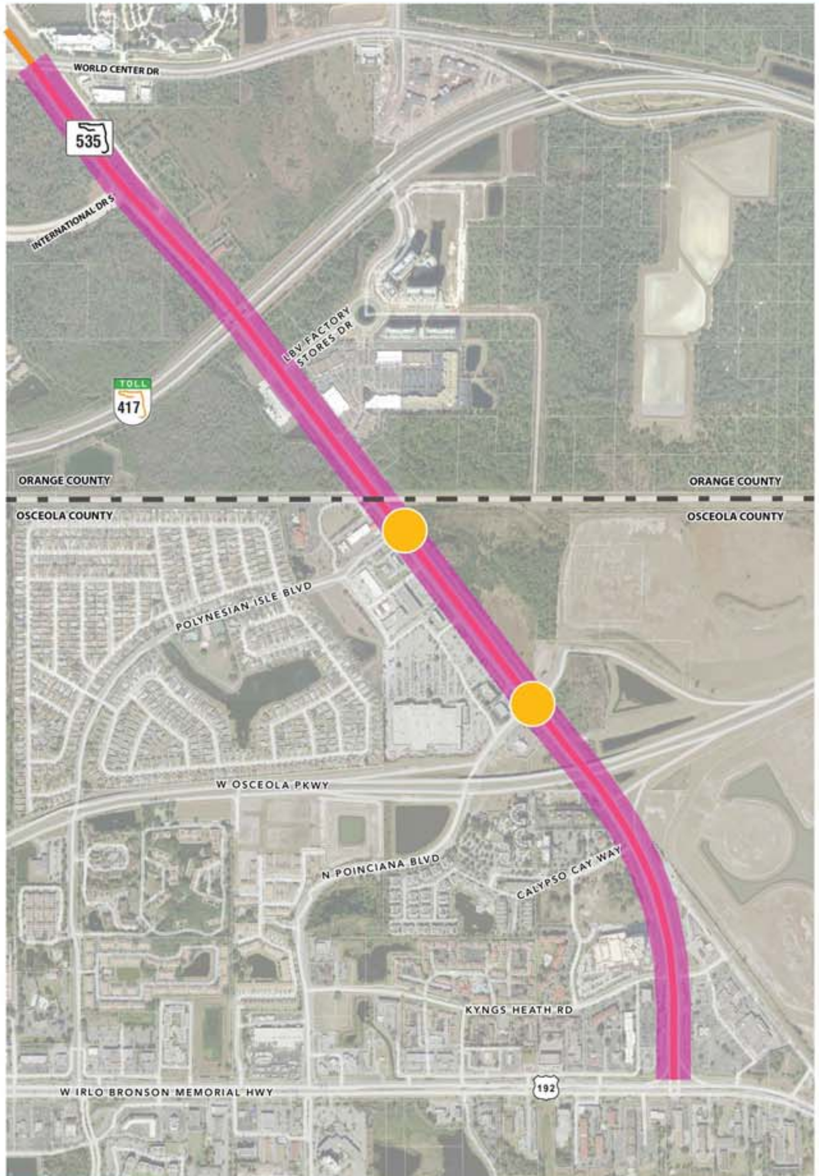
- Study Corridor
- County Line

FDOT

CORRIDOR SR 535 PLANNING STUDY

H - 136E - 17

Previous / Ongoing Studies and Future Improvement Projects



Aerial Image Fly Date: March 2016

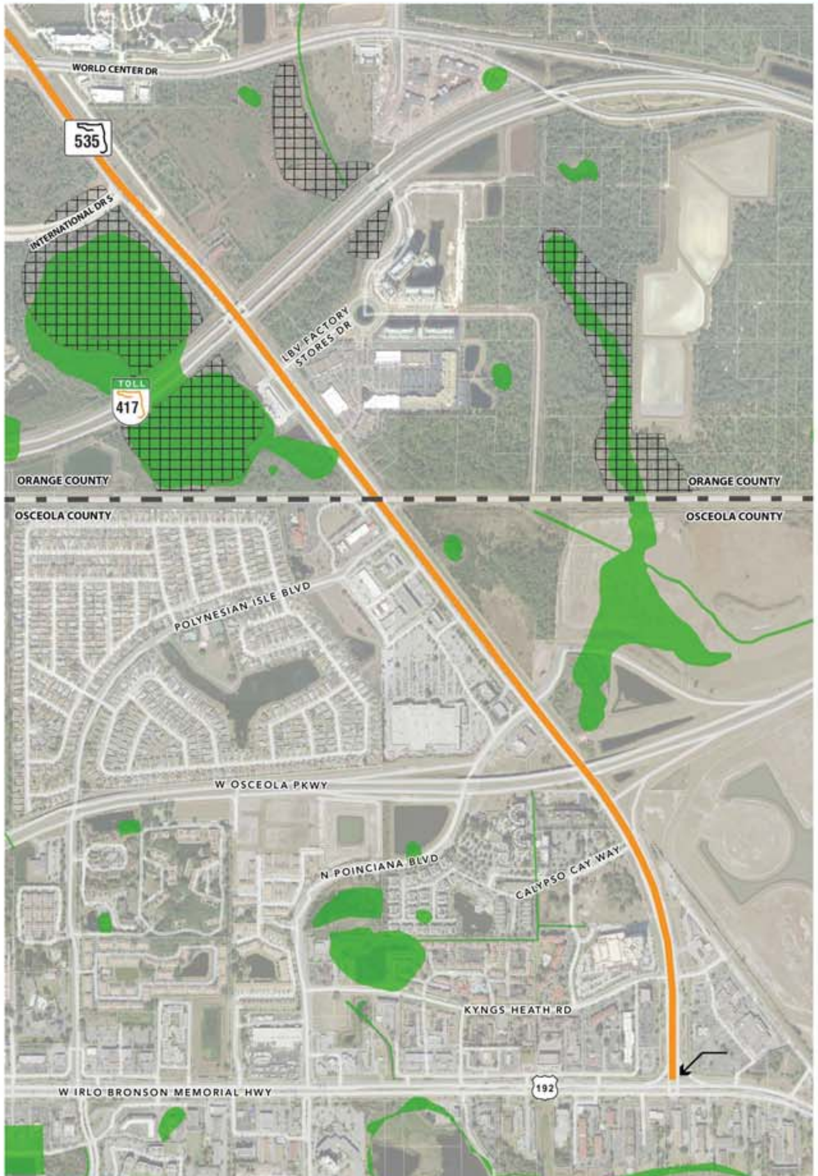
- SR 535 Six Lane Widening Feasibility Assessment
- Osceola County Red-Light Camera Study
- SR 535/International Drive Signal Construction
- SR 535/International Drive Intersection Connection
- SR 535/Vineland Avenue Intersection Improvements
- Study Corridor
- County Line

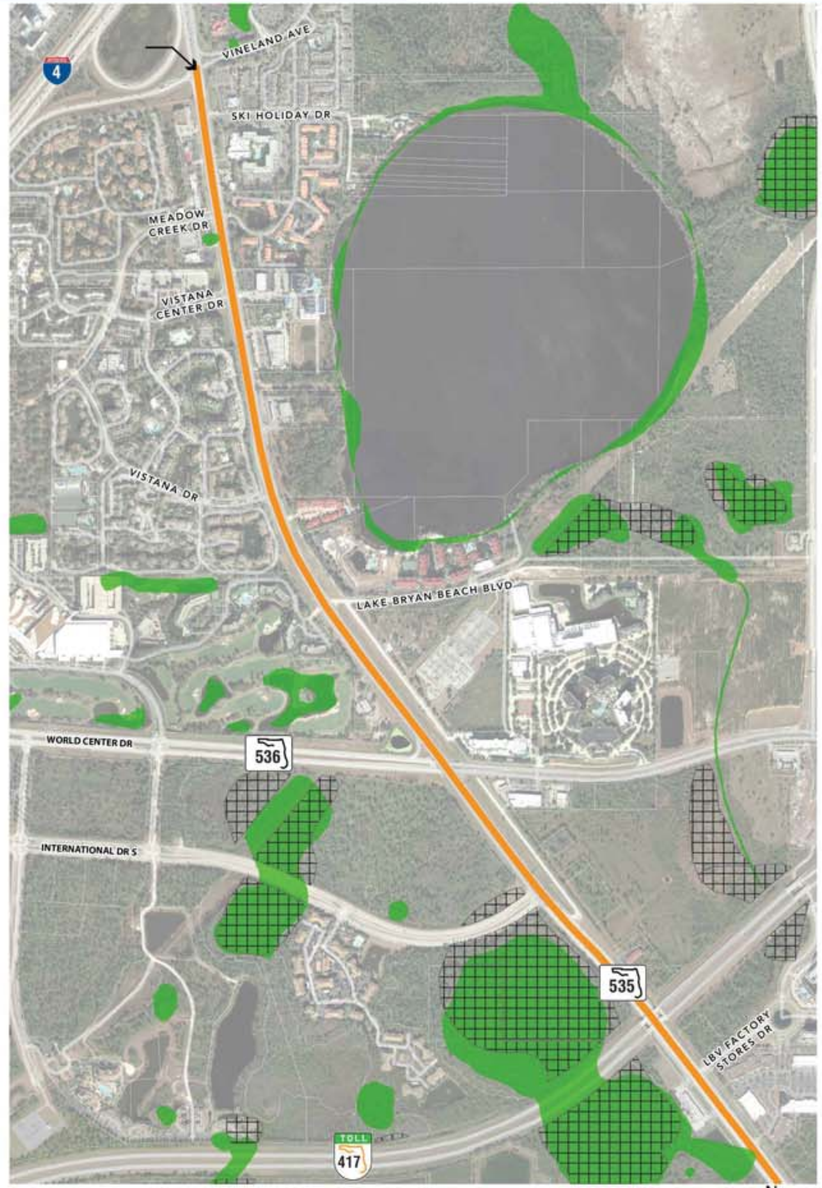
FDOT

CORRIDOR SR 535 PLANNING STUDY

Wetlands and Conservation Areas

- Wetlands
- Conservation Areas
- Study Corridor
- County Line





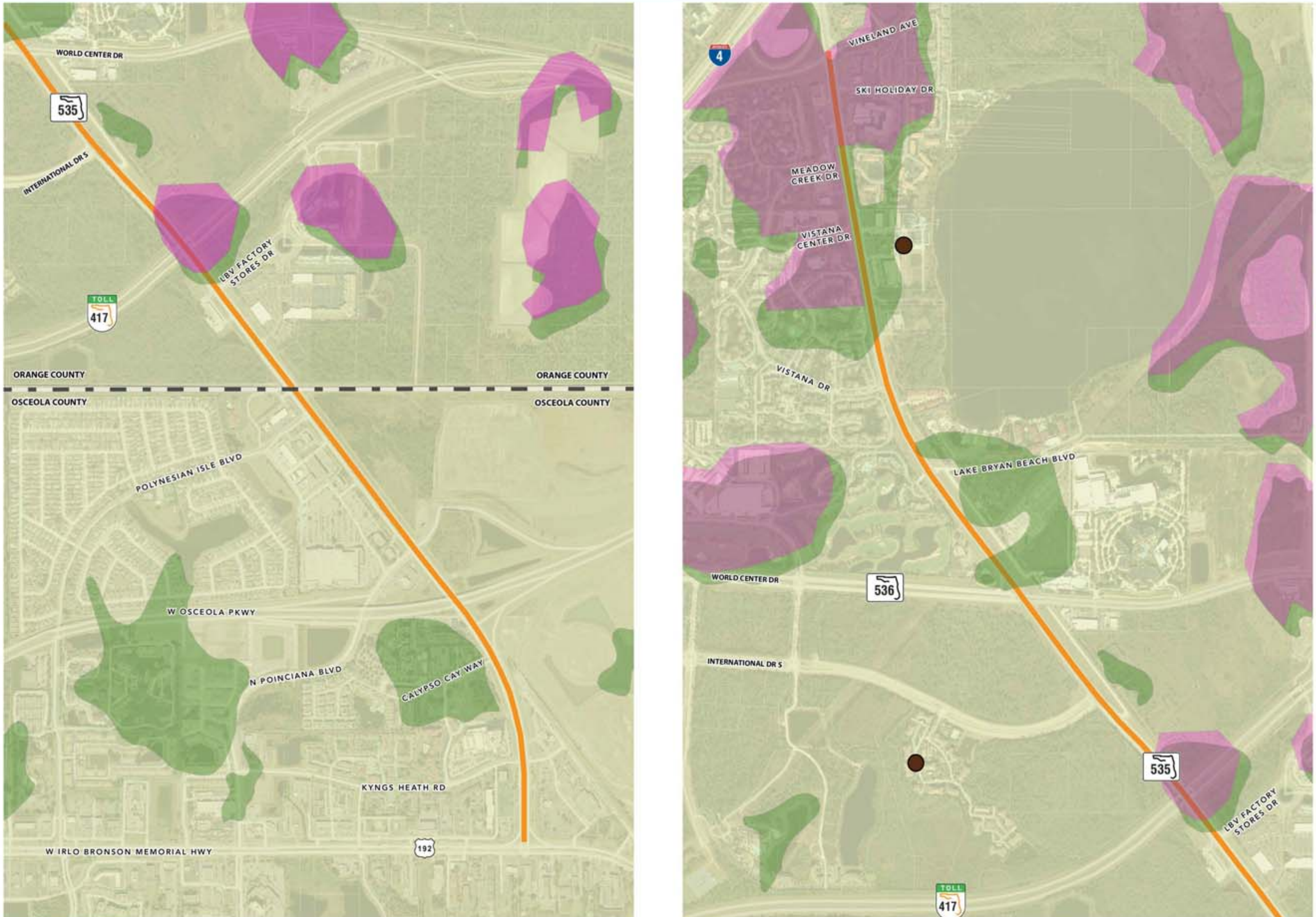
Aerial Image Fly Date: March 2016
Data Source: Orange County (Conservation Areas) and U.S. Fish and Wildlife Service (Wetlands)

FDOT

CORRIDOR SR 535 PLANNING STUDY

Threatened & Endangered Species' Habitat

- Black Bear Occurrences
- Scrub Jay Habitat
- Sand Skink Habitat
- Caracara Habitat
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016
Data Source: Florida Geographic Data Library

0 0.25 0.5 Miles

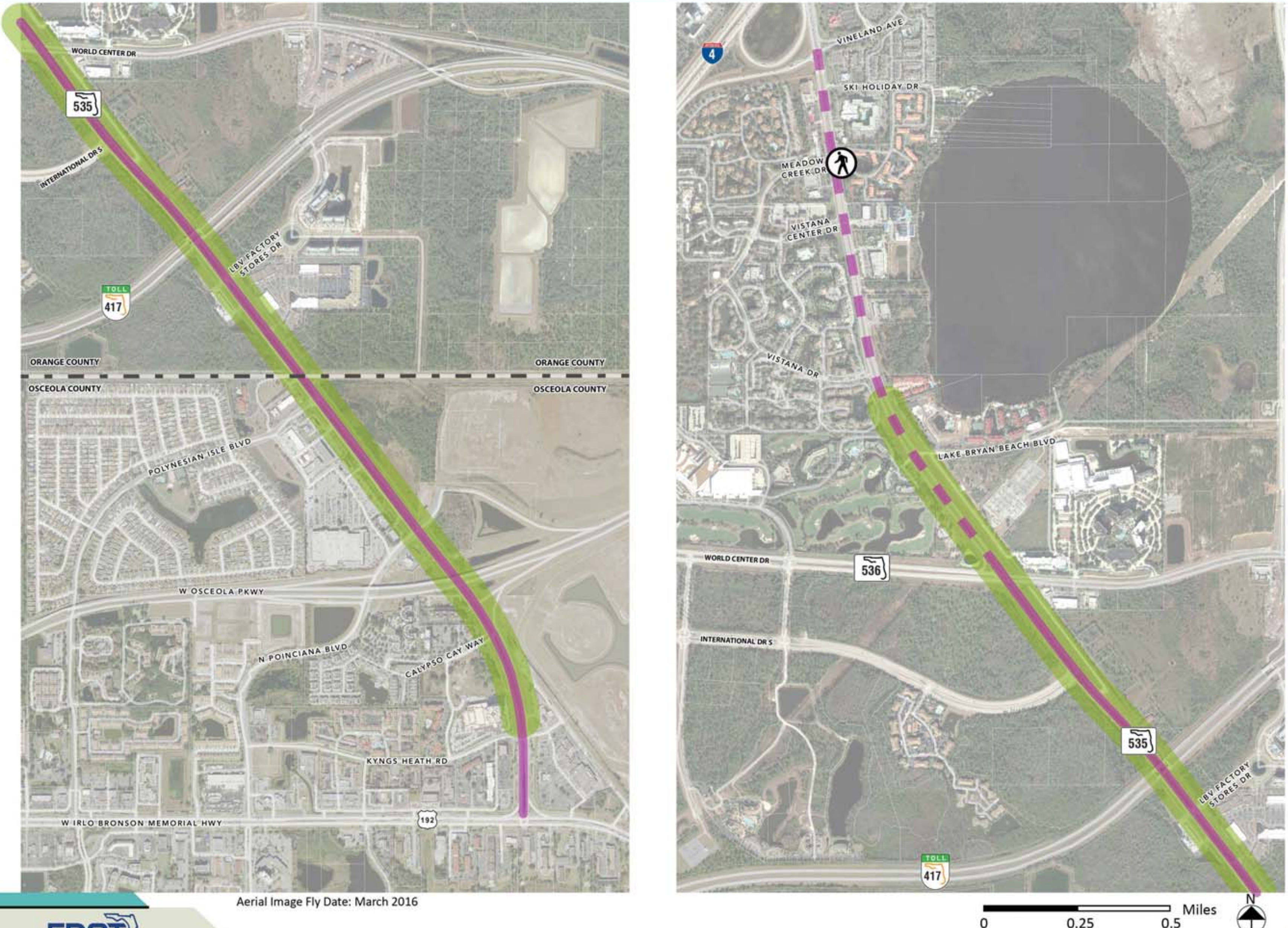
N

FDOT

CORRIDOR SR 535 PLANNING STUDY

SR 535 Multimodal Issues & Opportunites

- Enhance Pedestrian & Bicycle Facilities
- Pedestrian Safety Emphasis Intersection
- Add Transit Service
- Enhace Transit Service
- County Line



Aerial Image Fly Date: March 2016

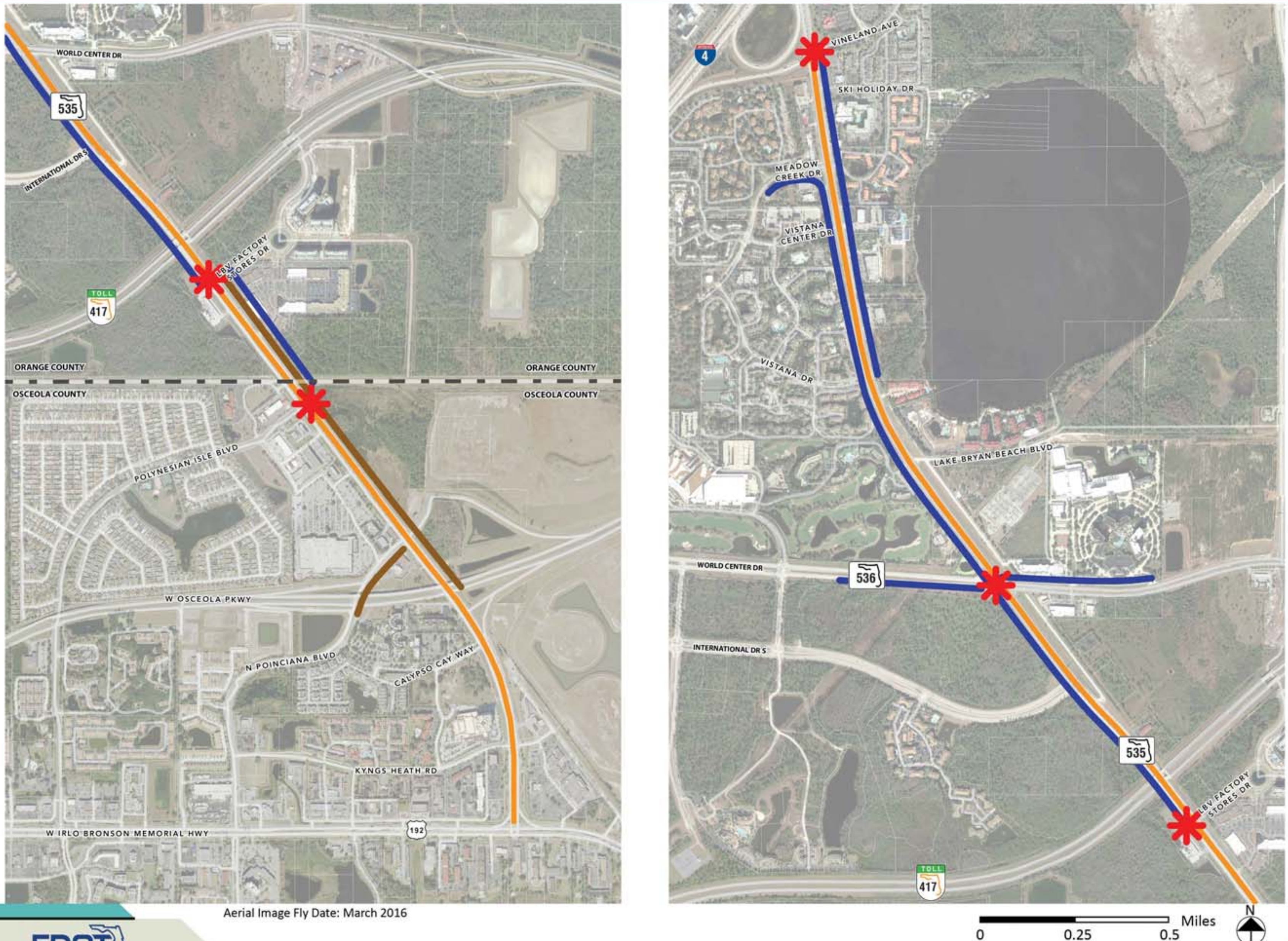
FDOT

CORRIDOR SR 535 PLANNING STUDY

H - 140E - 21

SR 535 Vehicular Issues & Opportunites

- AM Peak Hour Queuing
- PM Peak Hour Queuing
- High Crash Frequency Intersections
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016

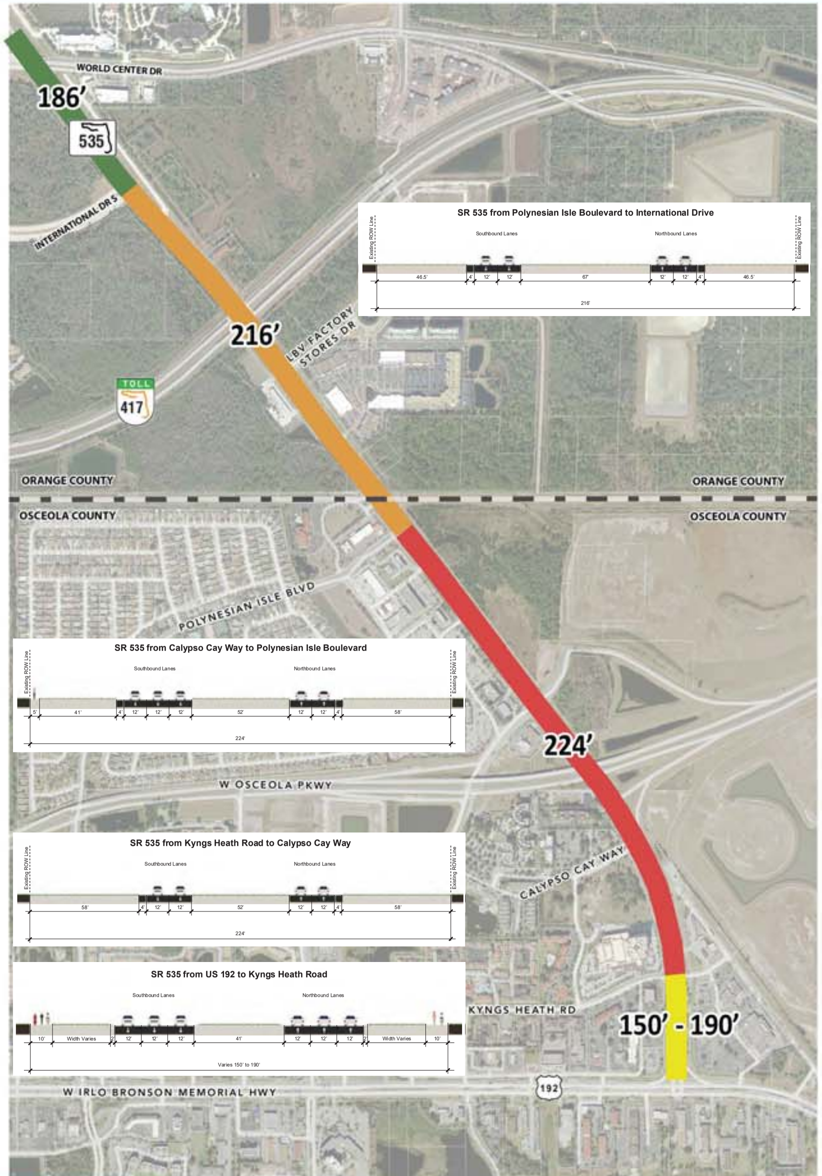
FDOT

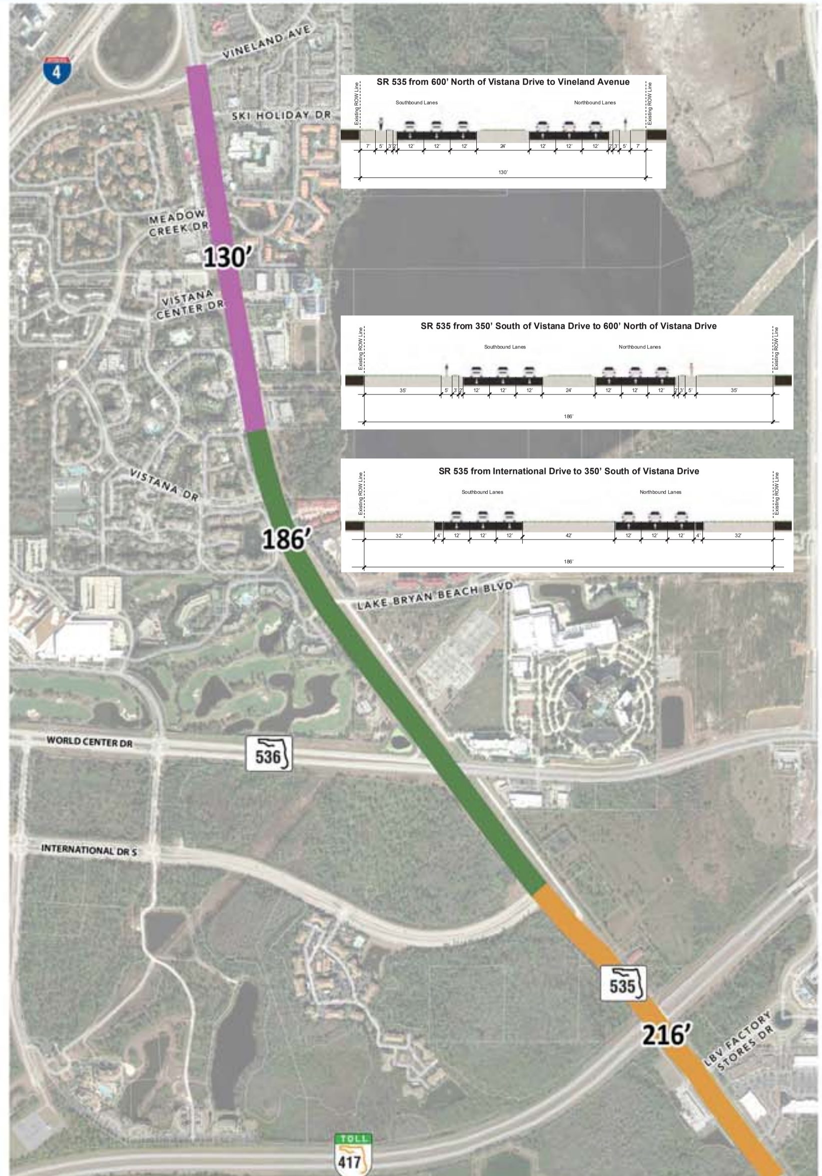
CORRIDOR SR 535 PLANNING STUDY

H - 141E - 22

Right-Of-Way

■ ■ ■ County Line





Aerial Image Fly Date: March 2016

0 0.25 0.5 Miles

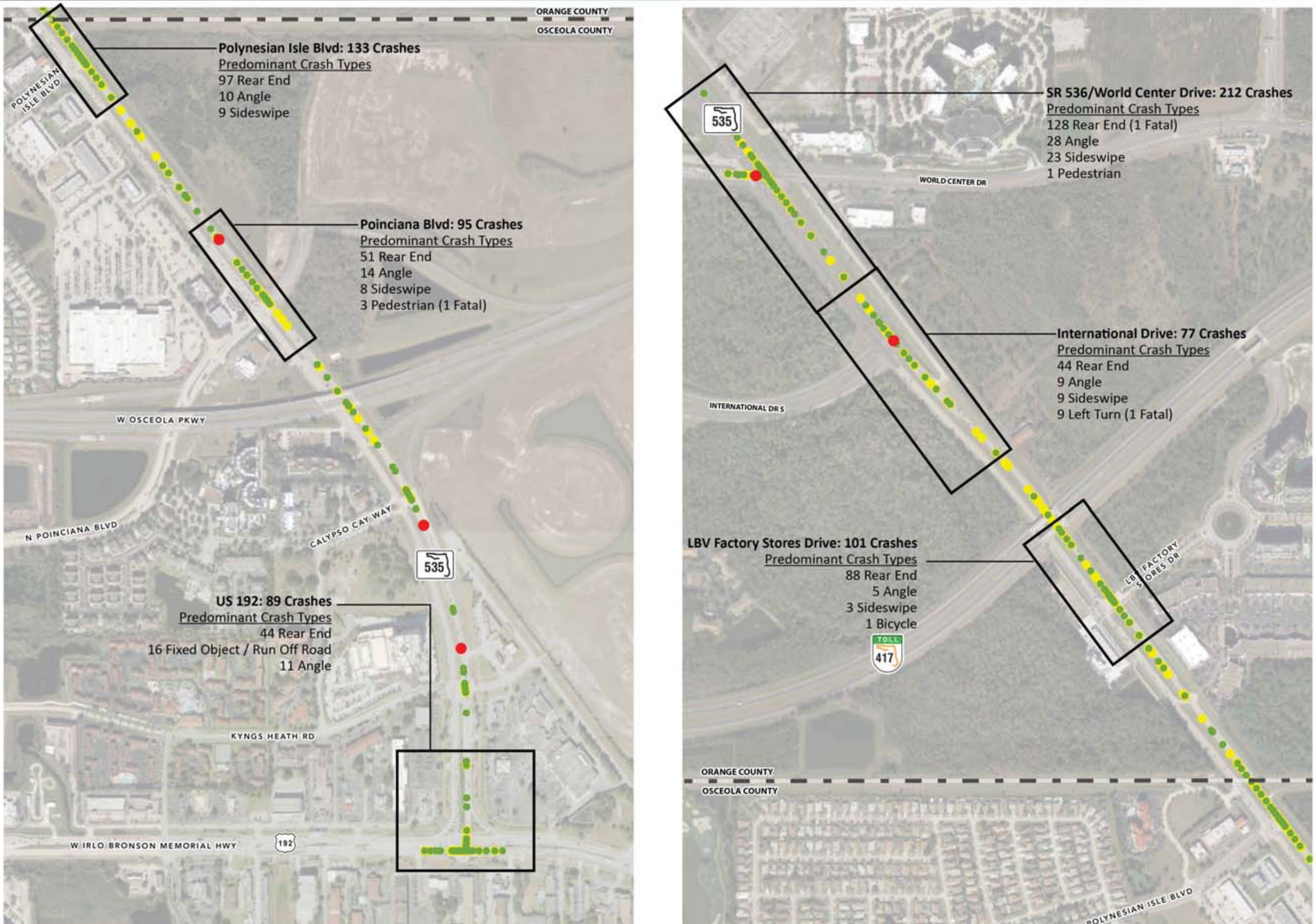
N

FDOT

CORRIDOR SR 535 PLANNING STUDY

2010 - 2014 Crash Frequency: US 192 to SR 536 / World Center Drive

- Fatal Crash
- Injury Crash
- Property Damage Only Crash
- County Line



Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

0 0.25 0.5 Miles

N

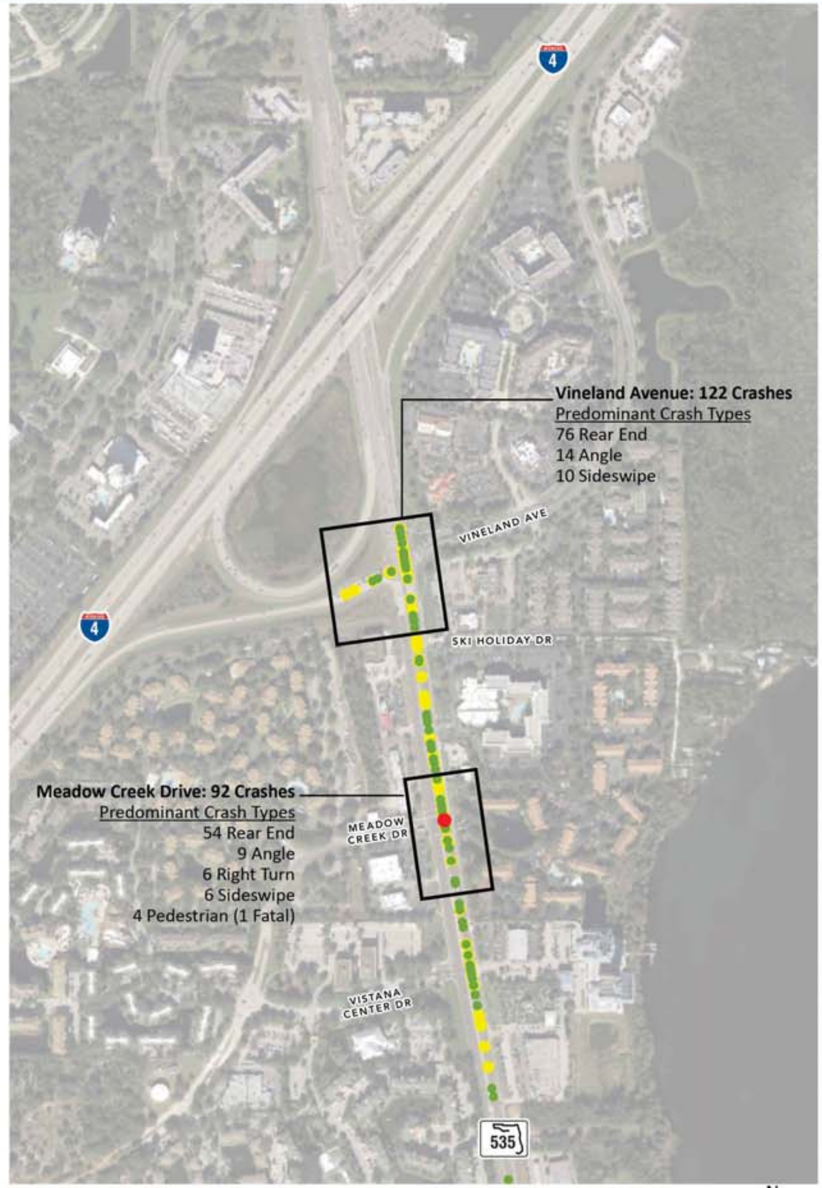
FDOT

CORRIDOR SR 535 PLANNING STUDY

H - 143E - 24

2010 - 2014 Crash Frequency: SR 536 / World Center Drive to Vineland Avenue

- Fatal Crash
- Injury Crash
- Property Damage Only Crash
- County Line



Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

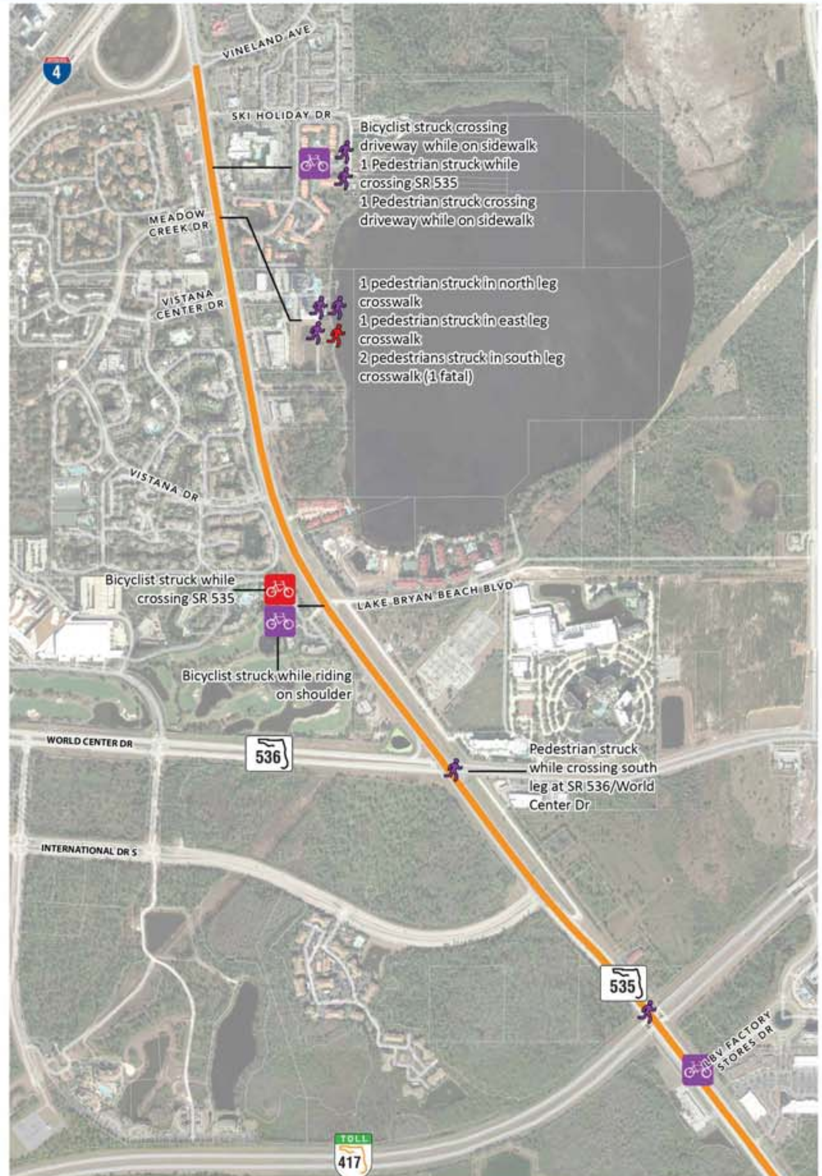
0 0.25 0.5 Miles N

FDOT

CORRIDOR SR 535 PLANNING STUDY

Pedestrian and Bicycle Crashes

- Fatal Bicycle Crash
- Injury Bicycle Crash
- Property Damage Only Bicycle Crash
- Fatal Pedestrian Crash
- Injury Pedestrian Crash
- Study Corridor
- County Line



Aerial Image Fly Date: March 2016
Data Source: FDOT CARS Crash Data: 2010-2014

0 0.25 0.5 Miles

N

FDOT

CORRIDOR SR 535 PLANNING STUDY

H - 145E - 26

Existing Conditions Public Meeting

December 13, 2016

1

Title VI

The Florida Department of Transportation complies with various non-discrimination laws and regulations, including Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act (ADA).

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with *Title VI* may do so by contacting either:

District 5 Office
Florida Department of Transportation

Jennifer Smith
District 5 Title VI Coordinator
719 South Woodland Boulevard
DeLand, FL 32720
(386) 943-5367
Jennifer.Smith2@dot.state.fl.us

Central Office
Florida Department of Transportation

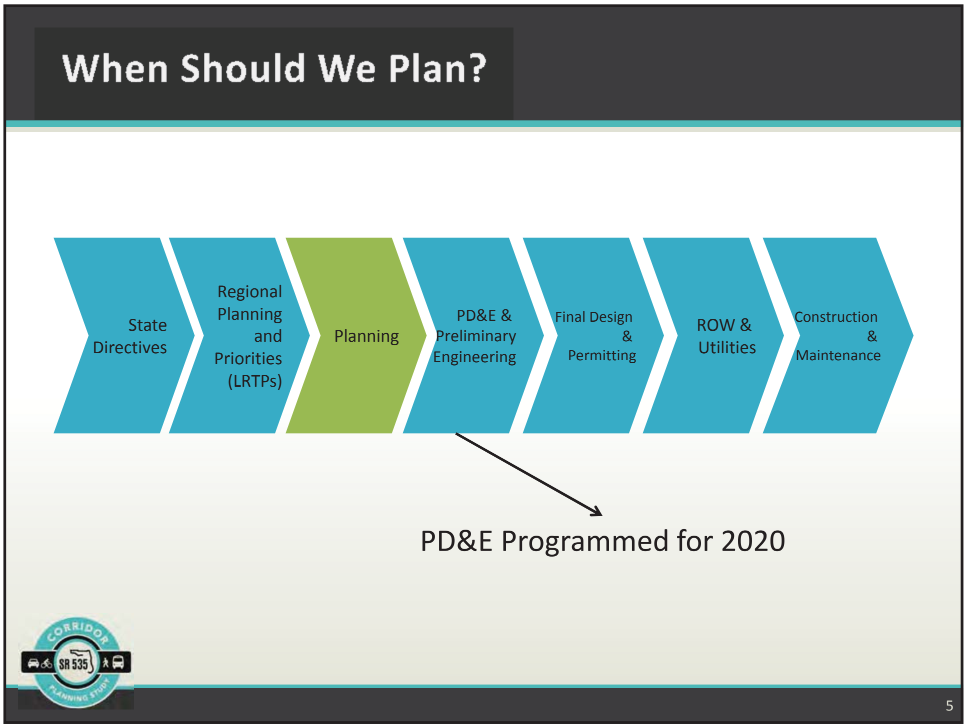
Jacqueline Paramore
State Title VI Coordinator
605 Suwannee Street, MS 65
Tallahassee, FL 32399-0450
(850) 414-4753
Jacqueline.Paramore@dot.state.fl.us

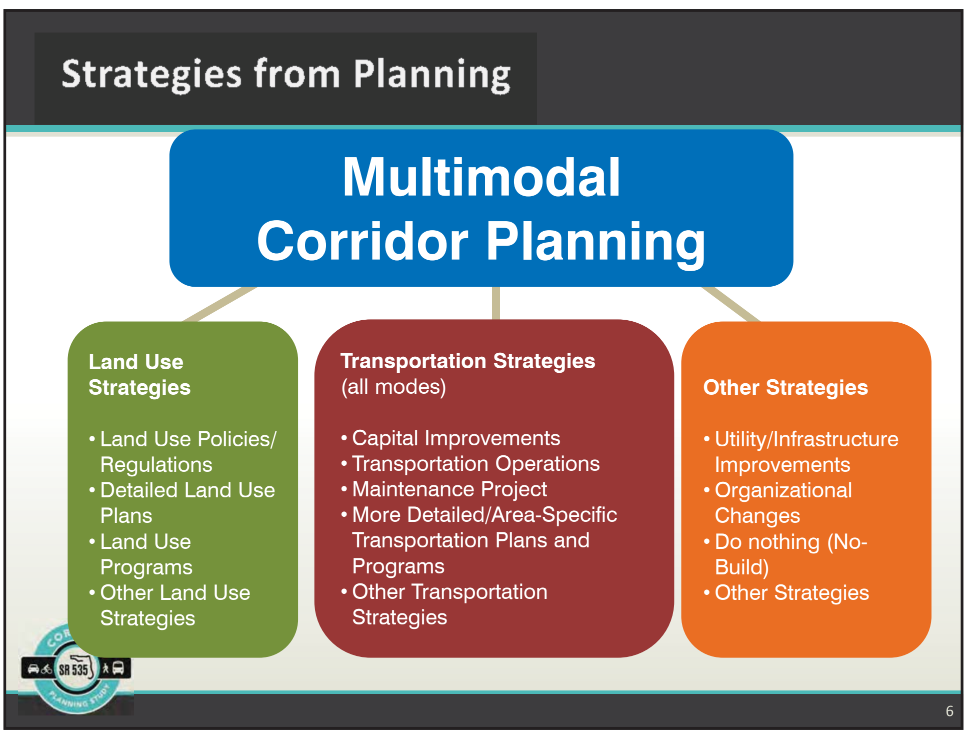
2

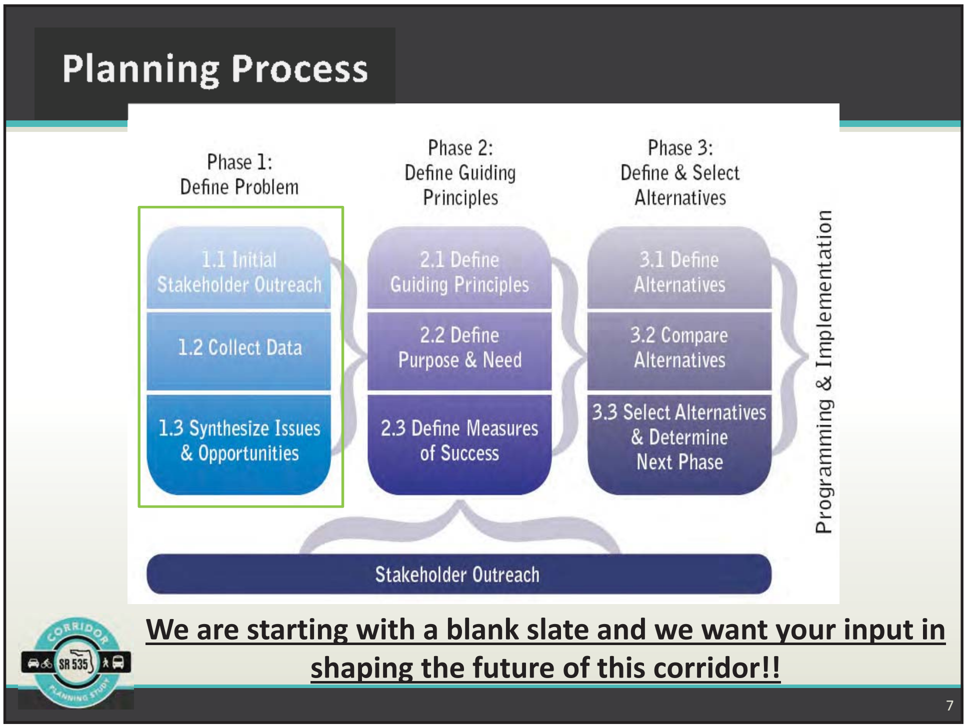
Agenda

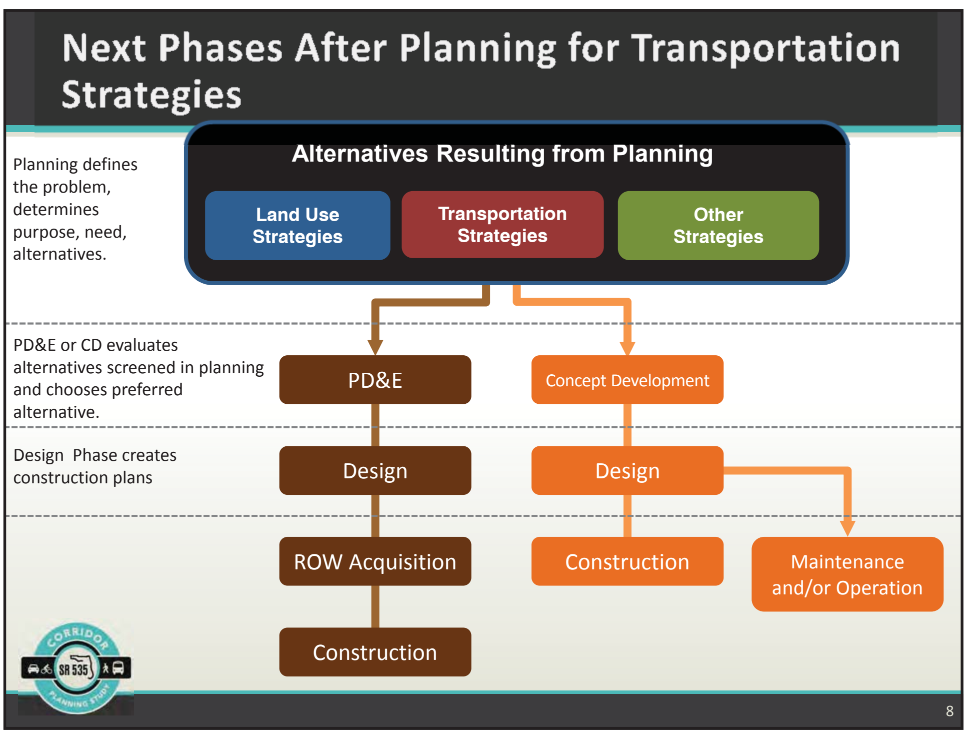
- Overview of Corridor Planning Process
- Project Background/Overview
- Existing Conditions Analysis
- Issues/Opportunities
- Purpose and Need
- Schedule/Next Steps

Corridor Planning Process


When Should We Plan?
State Directives
Regional Planning and Priorities (LRTPs)
Planning
PD&E & Preliminary Engineering
Final Design & Permitting
ROW & Utilities
Construction & Maintenance
PD&E Programmed for 2020
CORRIDOR
SR 535
PLANNING STUDY
5


Strategies from Planning
Multimodal Corridor Planning
Land Use Strategies
• Land Use Policies/ Regulations
• Detailed Land Use Plans
• Land Use Programs
• Other Land Use Strategies
Transportation Strategies (all modes)
• Capital Improvements
• Transportation Operations
• Maintenance Project
• More Detailed/Area-Specific Transportation Plans and Programs
• Other Transportation Strategies
Other Strategies
• Utility/Infrastructure Improvements
• Organizational Changes
• Do nothing (No-Build)
• Other Strategies
SR 535
6


Planning Process
Phase 1:
Define Problem
Phase 2:
Define Guiding
Principles
Phase 3:
Define & Select
Alternatives
1.1 Initial
Stakeholder Outreach
1.2 Collect Data
1.3 Synthesize Issues
& Opportunities
2.1 Define
Guiding Principles
2.2 Define
Purpose & Need
2.3 Define Measures
of Success
3.1 Define
Alternatives
3.2 Compare
Alternatives
3.3 Select Alternatives
& Determine
Next Phase
Programming & Implementation
Stakeholder Outreach
We are starting with a blank slate and we want your input in
shaping the future of this corridor!!
CORRIDOR
SR 535
PLANNING STUDY
7


Next Phases After Planning for Transportation
Strategies
Planning defines
the problem,
determines
purpose, need,
alternatives.
Alternatives Resulting from Planning
Land Use
Strategies
Transportation
Strategies
Other
Strategies
PD&E or CD evaluates
alternatives screened in planning
and chooses preferred
alternative.
PD&E
Concept Development
Design Phase creates
construction plans
Design
Design
ROW Acquisition
Construction
Maintenance
and/or Operation
Construction
CORRIDOR
SR 535
PLANNING STUDY
8

Project Background/Overview

9

Project Location

Major Work Tasks/Time Frames

- Existing Conditions Analysis: Complete
  - Project Visioning Team (October) and Public (December) Meetings
- Future Conditions Analysis/Purpose and Need Development: December 2016/January 2017
- Alternatives Development: January through July 2017
  - Project Visioning Team (March and May) and Public (June) Meetings
- MetroPlan Orlando Presentations towards end of Project

11

Public Outreach Activities Completed

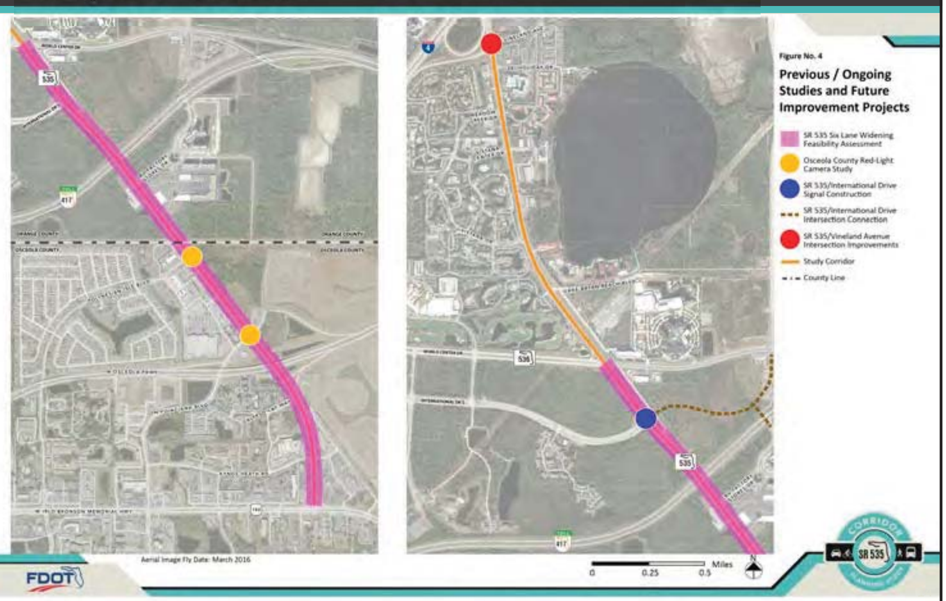
- Project Visioning Team (PVT) Kick-Off Meeting – April
- PVT Field Review – May
- Stakeholder Meeting with East Central Florida Regional Planning Council and W192 Development Authority – June
- Stakeholder Meeting with Central Florida Hotel & Lodging Association – July

12

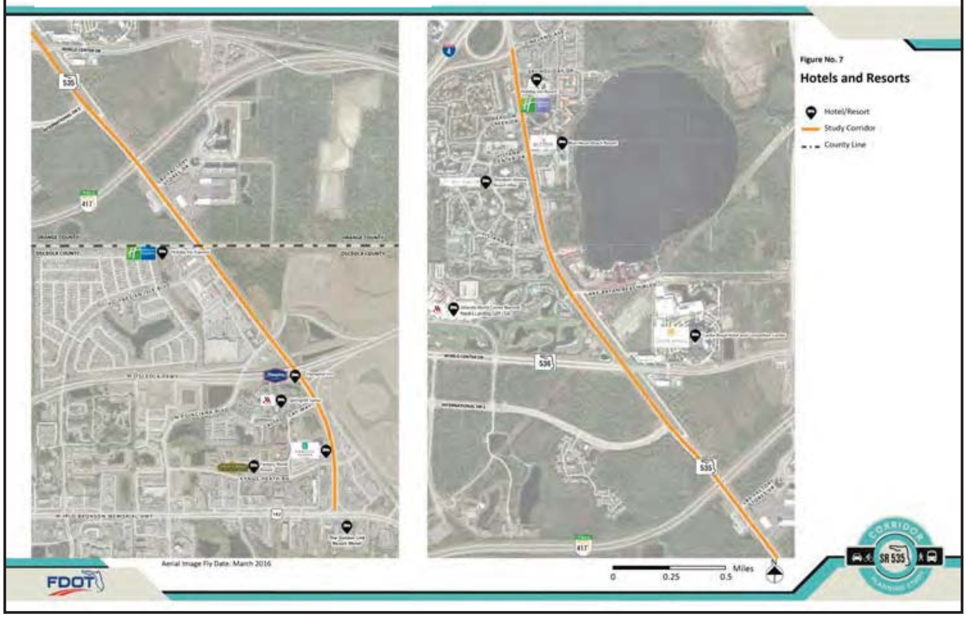
Existing Conditions

13

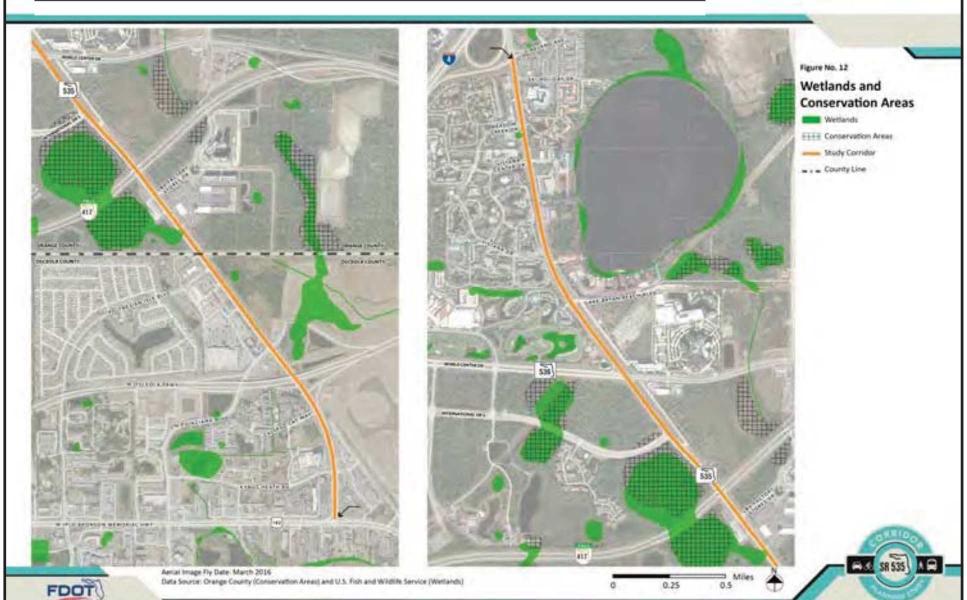
Previous/Ongoing Studies and Future Improvements



Hotels and Resorts

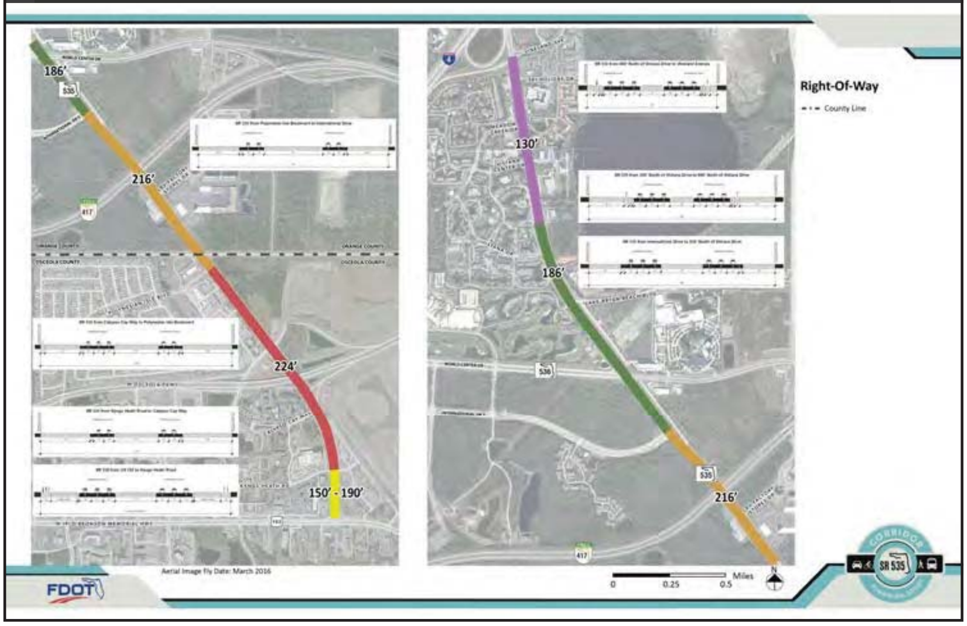


Wetlands and Conservation Areas



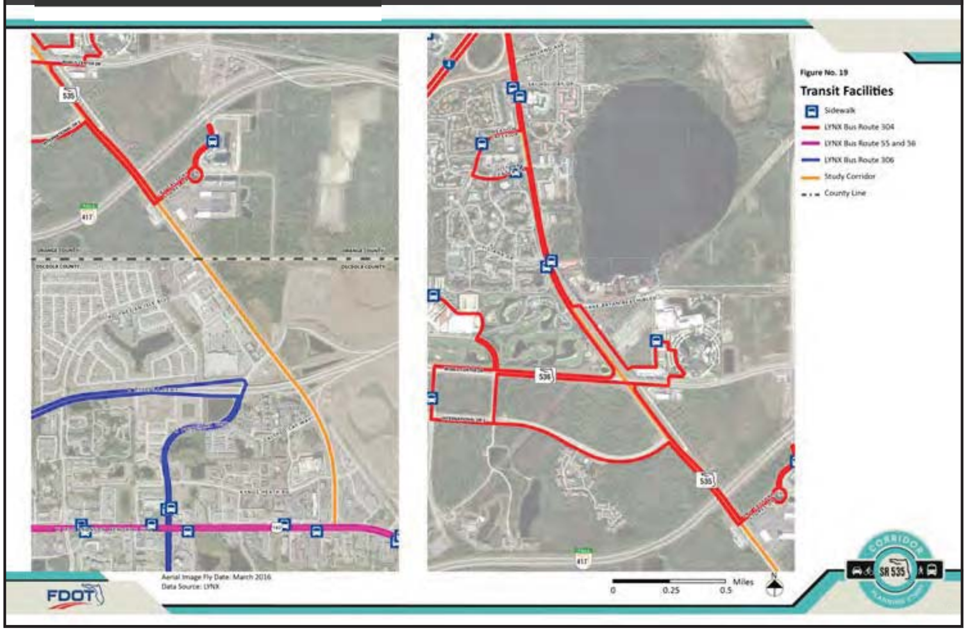
Threatened & Endangered Species

Right-Of-Way and Typical Roadway Sections

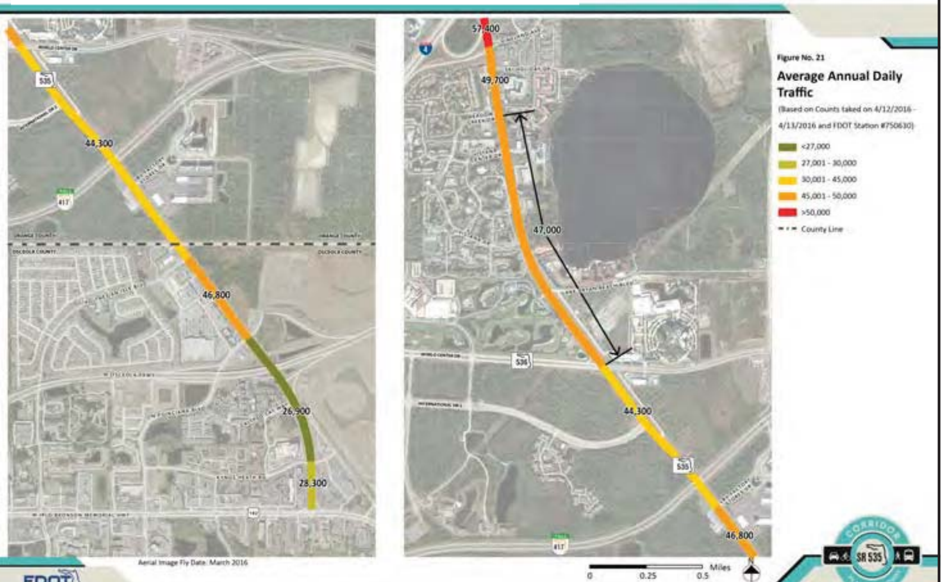


Pedestrian and Bicycle Facilities

Transit Facilities



Average Annual Daily Traffic

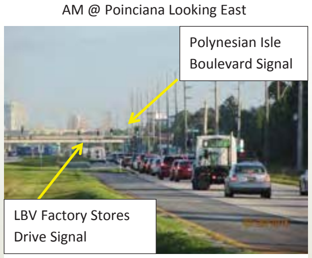


AM and PM Peak Hour Field Observations


AM @ Poinciana Looking East


PM @ SR 536 Looking South


PM @ LBV Factory Stores Looking South



AM @ Poinciana Looking North


PM @ Meadow Creek Looking South


PM @ Meadow Creek Looking North

22

AM and PM Peak Hour Field Observations

Looking East from SR 536

PM @ SR 536 Westbound LT

PM @ Meadow Creek Looking West

Eastbound Leg of SR 536 Intersection

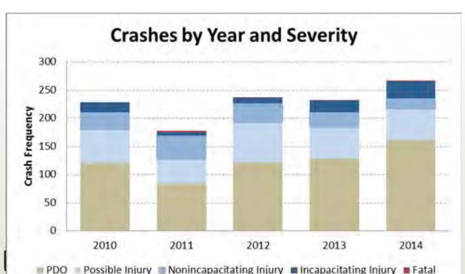
PM @ SR 536 Looking East

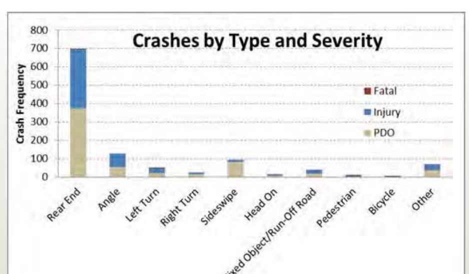
PM @ Meadow Creek – Eastbound LT

23

Crash History (2010-2014)

- 1,142 crashes from 2010 to 2014
  - 7 fatal and 521 (46%) injury
- Non-daylight conditions accounted for 42% of crashes
- 35% of crashes observed between 3PM and 8PM





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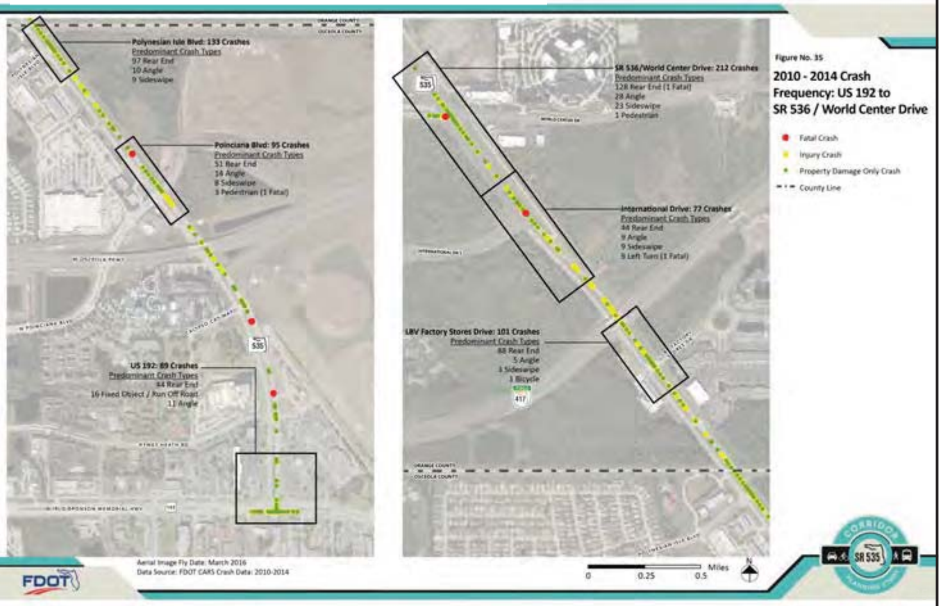
Crash History (2010-2014)



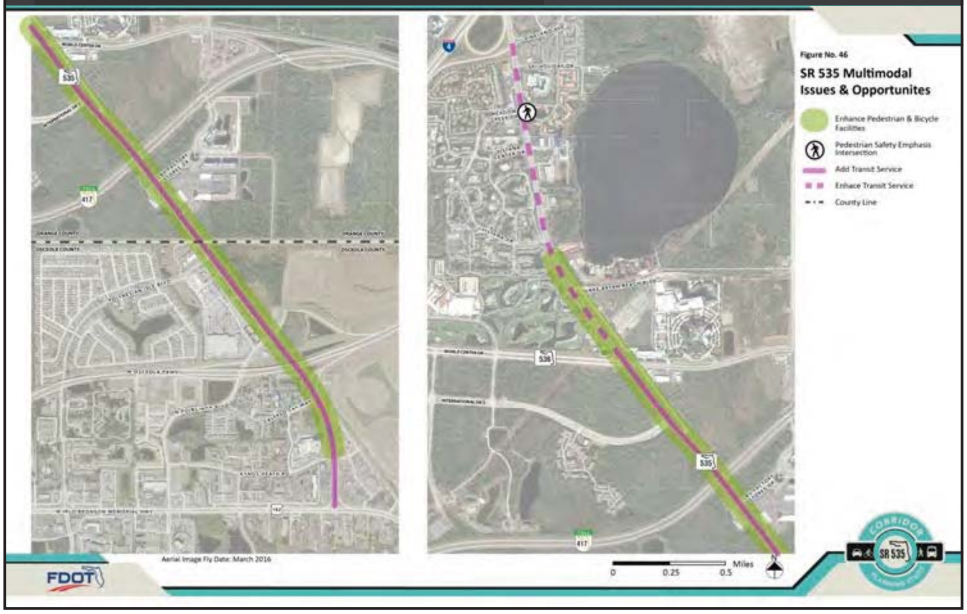
Crash History (2010-2014)

Pedestrian and Bicycle Crash History (2010-2014)

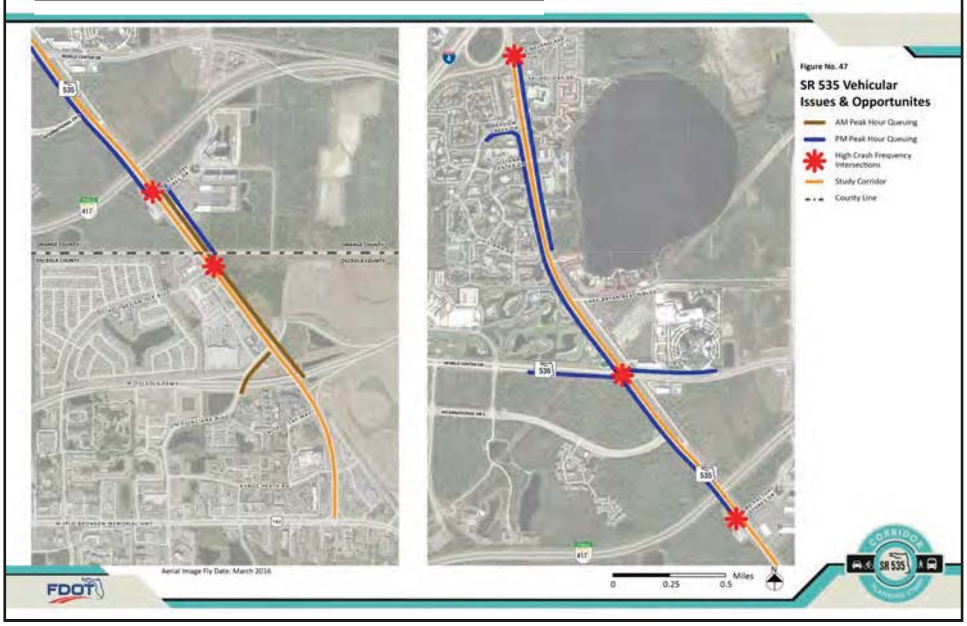
Issues/Opportunities and Purpose and Need

28

Issues and Opportunities



Issues and Opportunities



Purpose and Need

- Enhance multimodal connectivity
- Improve safety along corridor for all modes
- Decrease peak hour congestion
- Tourism/economic considerations
- Consistency with ongoing projects/planning efforts

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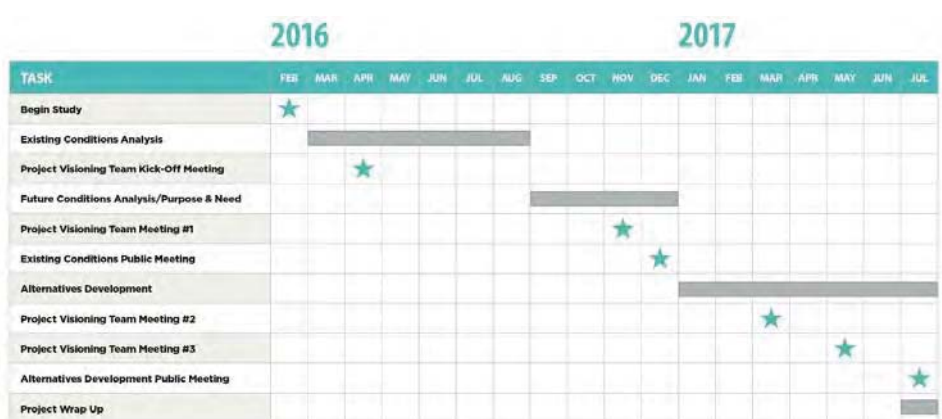
Schedule/Next Steps



32

Questions/Contact Info

Questions?

FDOT PROJECT MANAGER:
Heather Garcia
719 S. Woodland Blvd.
DeLand, FL 32720
386-943-5077
heather.garcia@dot.state.fl.us

FDOT CONSULTANT PROJECT MANAGER:
Jesse Blouin, AICP
719 S. Woodland Blvd.
DeLand, FL 32720
386-943-5417
jesse.blouin@dot.state.fl.us

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MEETING SUMMARY

Existing Conditions Public Meeting

SUBJECT:	FM 437174-1 and 437175-1: SR 535 Corridor Study Orange and Osceola Counties
MEETING DATE:	Tuesday December 13, 2016
MEETING TIME:	5:30 PM – 7:30 PM
VENUE:	Embassy Suites Orlando Lake Buena Vista South, Magnolia Rooms A & B, 4955 Kyngs Heath Road, Kissimmee, FL 34746

Introduction and Attendees

The SR 535 Corridor Planning Study, which is the first phase in the transportation development process, is evaluating a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of SR 535 between US 192 in Osceola County to I-4 in Orange County. This Public Meeting was the first of two meetings being held throughout the 18 month planning study. The purpose of the meeting was to present initial findings related to existing and future conditions and receive input from interested stakeholders. No Elected Officials attended the Public Meeting. The sign-in sheets for the general public are attached.

Meeting Summary

The Public Meeting was an open house type format, with 30 minutes reserved at the beginning for the public to review the concept boards/handouts and ask questions of the study team staff. Once the initial question and answer time finished, Jesse Blouin, the FDOT consultant project manager, and Travis Hills, the consultant project manager, gave a presentation outlining the following topics about the project:

- Overview of the Corridor Planning Study Process
- Project Background/Overview
- Existing Conditions Analysis Results

- Issues/Opportunities along Corridor
- Purpose and Need
- Schedule and Next Steps

After the presentation was completed, the public was encouraged to review the concept boards and ask any additional questions of study team staff. The Public Meeting adjourned at 7:30 PM. The presentation given at the Public Meeting is attached.

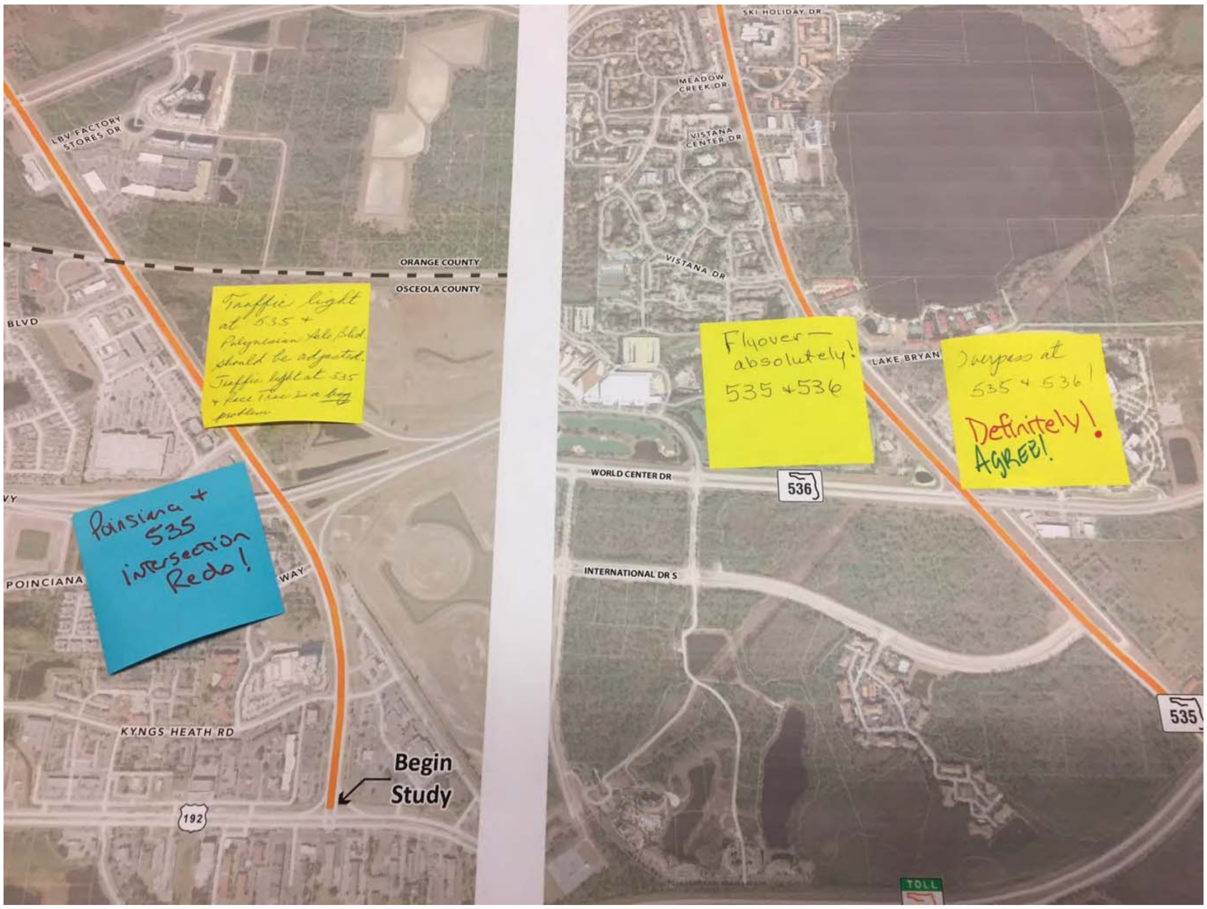
Summary of Public Comment

The public that attended the meeting were encouraged to provide comments on the project. Three comment forms were received by the study team from the public. Below is a summary of the comments received from the public:

- Consider a flyover at SR 535 and World Drive.
- Truck parking on old SR 535 is problematic and enforcement is needed.
- The median opening just south of the RaceTrac Gas Station causes operational issues with people going to the outlet mall.
- A signal should be installed at International Drive and SR 535. Signs should also be installed stating that vehicles should not block intersection.
- Alternate routes need to be considered to relief SR 535.
- Please consider the new Publix going in on SR 535 near Story Lake.
- Sidewalks and bike lanes are needed throughout the corridor.
- Lighting is needed throughout the corridor.
- Consider additional through and turn lanes at SR 535/SR 536.
- Restrict trucks and heavy vehicles along Polynesian Isle Boulevard through Indian Wells. Consider an entrance at the back of the subdivision.
- Close Polynesian Isle Boulevard to through traffic.
- More enforcement to remove on-street vendors under the SR 417 overpass.
- Important to get traffic moving along SR 535.
- Signal timings need to be improved at Polynesian Isle Boulevard and the RaceTrac/LBV Factory Stores.

- Review a 4 to 6 lane widening from US 192 to SR 536.

The picture below displays Post-It note comments on the roll plot aerial on display during the meeting.



An article was also written in the Osceola News-Gazette summarizing the meeting. The article is attached to this summary.

Next Steps

The following are next steps for the project:

- Prepare future conditions no-build analysis – December 2016/January 2017
- Alternatives analysis – Spring 2017
- Alternatives Analysis Public Meeting – Summer 2017

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

SR 535 Corridor Planning Study – General Public Sign-In Sheet

Existing Conditions Public Meeting

December 13, 2016

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
Judy Bay	JABWSRN@aol.com		X		
Rory Rosencrans			X		
Jesse Blivin	FDOT				
Heather Garcia	FDOT				
Gerald Jeanne Cornell	GFCornell@yahoo.com	—	X		
Evelyn Gould					
Gabe Suarez	JG3295@AOL.com				✓
Michele Molesky	MSM1965@AOL.COM		X		
Kevin Molesky	KPM1963@AOL.COM		X		
Jack Suarez	JG3295@AOL.COM		X		
PHIL KELLER	PHILWILMA@AOL.COM		X		
Wilma Keller	"		X		
Kim O'Connor	Kim.O.Connor@msn.com		X		
Travis Hills					
Adithya Junmdar					
Kendall Passetti					
SALLY MYERS	sally.myers@osceola.org				✓
Dustin Johns	dustin.johns@me.com		X		

SR 535 Corridor Planning Study – General Public Sign-In Sheet

Existing Conditions Public Meeting

December 13, 2016

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
Donnie Dieterle	ddieterle13@gmail.com		✓		
ROBERT WHITE	chensrealty@gmail.com	✓	✓		
Yu-mei White	chensrealty@gmail.com	✓	✓		
Nick Lepp	MetroPlan				
Mary Moskowitz	Mary.moskowitz@osceola.org	✓			
Joann Dorries	dorriesjo@aol.com	✓	✓		
Ken Jackson	kjackson@osceolanewsgazette.com	✓			
Laura Kinsler	lkinsler@growthspotter.com				
Elvyn Gonzalez	elvyn.gonzalez@ocfl.net	–			

SR 535 Corridor Planning Study – General Public Sign-In Sheet

Existing Conditions Public Meeting

December 13, 2016

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
Gene & Marilyn Terrico	mgt1727@embarqmail.com		X		

SR 535 Corridor Planning Study – General Public Sign-In Sheet

Existing Conditions Public Meeting

December 13, 2016

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
BRIAN SANDERS	BRIAN_SANDERS@OCFL.NET	✓			

Osceola News-Gazette
Around OSCEOLA

Friday, January 20th, 2017

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Residents weigh in on State Road 535 improvements

Posted on Friday, December 16, 2016 at 9:57 am

0Share

By Ken Jackson
Staff Writer

The Florida Department of Transportation has been studying how to improve a large stretch of State Road 535, known locally as Vineland Road, since February.

On Tuesday, FDOT planners and project managers held a meeting to get local stakeholder input at the Embassy

H - 171E - 52

Suites — and they got it from residents who live and work near the road's portion in Osceola County, about three miles north of U.S. Highway 192 before it reaches State Road 417.

The goal is to improve the busy road all the way north to the Interstate 4 interchange, which now gets swamped daily with a mix of local and tourist traffic.

The meeting was part of a full Corridor Planning Study that began early this year. The Study is looking at all phases of how the road is traveled — by car, by bus, by bike and by foot.

Plenty of options are in play. Adding lanes to the roadway, adding or enhancing sidewalks and bike lanes and looking at the coordination of traffic lights are all possibilities.

Travis Hills, an FDOT consultant and the study team project manager, said there are many issues to solve.

"We're starting with a blank slate. We want input in shaping this corridor," he said.

The Central Florida Hotel Lodging Association and West 192 Redevelopment Authority are involved with the planning process. The West 192 Authority holds the key to linking 535 to a proposed Bus Rapid Transit system along 192.

In the first nine months of the process, the planning group studied widening the entire study stretch into Orange County to six lanes. Osceola County has looked at placing red light cameras at intersections with Poinciana Boulevard and Polynesian Isle Boulevard.

Bicycle and pedestrian facilities have also been a priority.

According to the FDOT's stats, S.R. 535 carries 26,000 cars a day from U.S. 192, increasing to 46,000 after crossing Poinciana Boulevard. That immediate area had 1,142 confirmed crashes from 2010-14, including collisions with pedestrians in crosswalks, and 35 percent of them occurred between 3 and 8 p.m.

Hills showed pictures he took of the area at peak drive times to show the problems drivers on the southern end of S.R. 535 experience, but he didn't need to tell nearby residents of Indian Wells, a subdivision just west of the road off Polynesian Isle.

Residents who attended the meeting left their comments, and fixing or completely redoing the Poinciana and Polynesian Isle intersections was a priority to them, Hills noted.

"The traffic light at the RaceTrac is proving to be a problem," he said. "We've heard about the congestion northbound, as well as on Poinciana Boulevard waiting to make the left turn (on to 535). I experienced that the P.M. is worse than the A.M."

Hills said priorities for the project are to enhance multimodal connectivity in the corridor, improve safety for all users and decrease peak-hour congestion.

The project's next public meeting will be in July.

NFL Football News

Pro Football

The low-cost contributors on each of the NFL's final 4 teams

Browns nearing contract with linebacker Jamie Collins

Former Jets star Gastineau says he has several health issues

Packers' Davante Adams may be game-time decision on Sunday

Bills agree to hire Rick Dennison as offensive coordinator

H - 172E - 53

APPENDIX F – ALTERNATIVES PUBLIC MEETING MATERIALS

MEETING NOTICES

FDOT

PUBLIC MEETING ANNOUNCEMENT

Thursday, November 2nd, 2017

5:30 p.m. to 7:30 p.m.

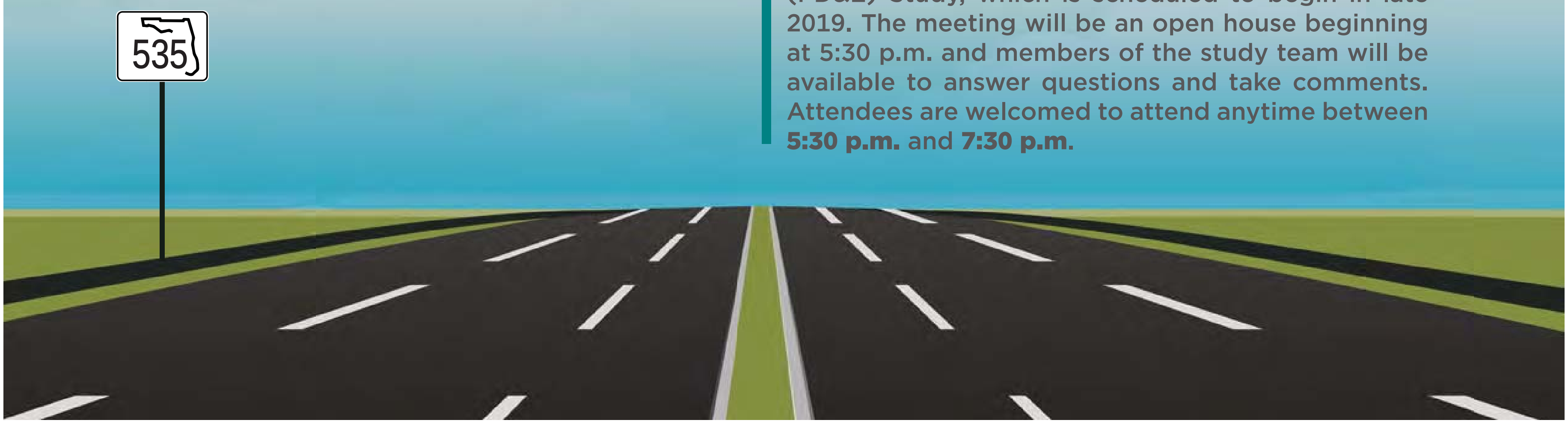
Embassy Suites Orlando Lake Buena Vista South

Event Center (Free Parking Will Be Provided For Attendees)

4955 Kyngs Heath Road

Kissimmee, Florida 34746

On behalf of the Florida Department of Transportation (FDOT) District 5, you are invited to attend the second and final **Public Meeting** being held for the **State Road (S.R.) 535 Corridor Planning Study**. The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (vehicle, bicycle, pedestrian, and transit) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S. 192 in Osceola County to Interstate 4 (I-4) in Orange County. The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019. The meeting will be an open house beginning at 5:30 p.m. and members of the study team will be available to answer questions and take comments. Attendees are welcomed to attend anytime between **5:30 p.m.** and **7:30 p.m.**



FDOT

Florida Department of Transportation
District 5
719 S. Woodland Boulevard
DeLand, FL 32720

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Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or email Jennifer.Smith2@dot.state.fl.us. Persons with disabilities who require special accommodations under the Americans with Disabilities Act or persons who require translation services, free of charge, should contact: Mr. Travis Hills at (407) 540-0555 or by e-mail to thills@kittelson.com, at least seven (7) days prior to the meeting. If you are hearing or speech impaired, please contact us by using the Florida Relay Service, 1-800-955-8771 (TDD), or 1-800-955-8770 (Voice).

If you have any questions about the project or the meeting, please contact Heather Garcia, FDOT Planning & Corridor Development Manager, at (386) 943-5077 or heather.garcia@dot.state.fl.us.

Please visit our project website at www.cflroads.com
FM #437174-1 and #437175-1 (search website by FM number)

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Florida Department of Transportation

RICK SCOTT
GO ERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

RACHE D. CONE
INTERI SECRETAR

October 6, 2017

Subject: State Road (S.R.) 535 Corridor Planning Study
Orange and Osceola Counties
Financial Project Number: 437174-1 and 437175-1

Dear Elected Leader,

On behalf of the Florida Department of Transportation (FDOT) District 5, I invite you to attend the second and final Public Meeting for the State Road (S.R.) 535 Corridor Planning Study.

The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S .192 in Osceola County to Interstate 4 (I-4) in Orange County.

The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019.

The Public Meeting is being held on **T s a , No e e ,** from **. .** to **. .** at the **E ass S ites O lan o a e ena ista So t , E ents Cente** located at **K n s Heat Roa , Kissi ee, lo i a** . The meeting will be an open house beginning at **. .** and members of the study team will be available to answer questions and take comments. Attendees are welcomed to attend anytime between **. .** and **. .** Free parking will be provided for meeting attendees.

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or email Jennifer.Smith2@dot.state.fl.us.

Persons with disabilities who require special accommodations under the Americans with Disabilities Act or persons who require translation services, free of charge, should contact: Mr. Travis Hills at (407) 540-0555 or by e-mail to thills@kittelson.com, at least seven (7) days prior to the meeting. If you are hearing or speech impaired, please contact us by using the Florida Relay Service, 1-800-955-8771 (TDD), or 1-800-955-8770 (Voice).

If you have any questions about the project or the meeting, please contact Heather Garcia, FDOT Planning & Corridor Development Manager, at (386) 943-5077 or heather.garcia@dot.state.fl.us.

Sincerely,

Steve Martin, P.E.
FDOT District Five Secretary

Florida Department of Transportation

RICK SCOTT
GO ERNOR

605 Suwannee Street
Tallahassee, FL 32399-0450

RACHE D. CONE
INTERI SECRETAR

October 9, 2017

Subject: State Road (S.R.) 535 Corridor Planning Study
Orange and Osceola Counties
Financial Project Number: 437174-1 and 437175-1

Dear Government Partner,

On behalf of the Florida Department of Transportation (FDOT) District 5, I invite you to attend the second and final Public Meeting for the State Road (S.R.) 535 Corridor Planning Study.

The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S. 192 in Osceola County to Interstate 4 (I-4) in Orange County.

The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019.

The Public Meeting is being held on **T s a , No e e ,** from . . to . . at the **E ass S ites O lan o a e ena ista So t , E ents Cente** located at **K n s Heat Roa , Kissi ee, lo i a** . The meeting will be an open house beginning at . . and members of the study team will be available to answer questions and take comments. Attendees are welcomed to attend anytime between . . and . . Free parking will be provided for meeting attendees.

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or email Jennifer.Smith2@dot.state.fl.us.

Persons with disabilities who require special accommodations under the Americans with Disabilities Act or persons who require translation services, free of charge, should contact: Mr. Travis Hills at (407) 540-0555 or by e-mail to thills@kittelson.com, at least seven (7) days prior to the meeting. If you are hearing or speech impaired, please contact us by using the Florida Relay Service, 1-800-955-8771 (TDD), or 1-800-955-8770 (Voice).

If you have any questions about the project or the meeting, please contact me at 386-943-5077 or heather.garcia@dot.state.fl.us.

Sincerely,

Heather S. Garcia

Heather S. Garcia
FDOT District Five, Planning & Corridor Development Manager

Notice of Meeting/Workshop Hearing

OTHER AGENCIES AND ORGANIZATIONS
KITTE SON & ASSOCIATES, INC

The Florida Department of Transportation (FDOT) announces a public meeting to which all persons are invited.

DATE AND TIME: Thursday, November 2, 2017, 5:30 p.m. – 7:30 p.m., Open House from 5:30 p.m. – 7:30 p.m.

PLACE: Embassy Suites Orlando Lake Buena Vista South, Events Center (Free Parking To Be Provided), 4955 Kyngs Heath Road, Kissimmee, Florida 34746

GENERAL SUBJECT MATTER TO BE CONSIDERED:

Financial Management No.: 437174-1 & 437175-1

Project Description: State Road (S.R.) 535 Corridor Planning Study from U.S. 192 to I-4, Orange and Osceola Counties

The Florida Department of Transportation (FDOT) is conducting the second and final public meeting for the State Road (S.R.) 535 Corridor Planning Study. The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S. 192 in Osceola County to Interstate 4 (I-4) in Orange County. The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019. Persons desiring to submit written statements in place of or in addition to oral statements may do so at the meeting or by sending them to: Heather Garcia, FDOT Planning Manager, 719 South Woodland Boulevard, DeLand, FL 32720 or by e-mail to Heather.Garcia@dot.state.fl.us.

A copy of the agenda may be obtained by contacting: Ms. Garcia at the phone number or e-mail address listed above.

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 7 days before the workshop/meeting by contacting: Mr. Travis Hills at (407)540-0555 or by e-mail to thills@kittelson.com. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800)955-8771 (TDD) or 1(800)955-8770 (Voice).

If any person decides to appeal any decision made by the Board with respect to any matter considered at this meeting or hearing, he/she will need to ensure that a verbatim record of the proceeding is made, which record includes the testimony and evidence from which the appeal is to be issued.

For more information, you may contact: Ms. Garcia at the phone number or e-mail address listed above. Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at (386)943-5367 or email: Jennifer.Smith2@dot.state.fl.us.

Order ID: 5255951

* Agency Commission not included

GROSS PRICE * : **$286.25**

PACKAGE NAME: Orlando Sentinel

Product(s): Orlando Sentinel, Affidavit, Floridapublicnotices.com, Classifieds.OS.com_Legals

AdSize(s): 1 Column

Run Date(s): Monday, October 23, 2017

Color Spec. B/W

Preview

PUBLIC NOTICE

State Road (S.R.) 535
Corridor Planning Study
From U.S. 192 to Interstate 4 (I-4)

Orange and Osceola Counties – The Florida Department of Transportation (FDOT) is conducting the second and final public meeting for the State Road (S.R.) 535 Corridor Planning Study. The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S. 192 in Osceola County to I-4 in Orange County. The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019.

The Public Meeting is being held on Thursday, November 2nd, 2017 from 5:30 p.m. to 7:30 p.m. at the Embassy Suites Orlando Lake Buena Vista South, Events Center located at 4955 Kyngs Heath Road, Kissimmee, Florida 34746. The meeting will be an open house beginning at 5:30 p.m. and members of the study team will be available to answer questions and take comments. Attendees are welcomed to attend anytime between 5:30 p.m. and 7:30 p.m. Free parking will be provided

Order ID: 5255951

* Agency Commission not included

GROSS PRICE * : **$286.25**

PACKAGE NAME: Orlando Sentinel

for meeting attendees.

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If you have any questions about the project or the meeting, please contact Heather Garcia, FDOT Planning & Corridor Development Manager, at 386-943-5077 or heather.garcia@dot.state.fl.us.

OS5255951 10/23/2017

MEETING BOARDS

Title VI

The Florida Department of Transportation complies with various nondiscrimination laws and regulations, including Title VI of the Civil Rights Act of 1964 and the Americans with Disabilities Act (ADA).

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting either:

District 5 Office
Florida Department of Transportation

Jennifer Smith
District 5 Title VI Coordinator
719 South Woodland Boulevard
DeLand, FL 32720
(386) 943-5367
Jennifer.Smith2@dot.state.fl.us

Central Office
Florida Department of Transportation

Jacqueline Paramore
State Title VI Coordinator
605 Suwannee Street, MS 65
Tallahassee, FL 32399-0450
(850) 414-4753
Jacqueline.Paramore@dot.state.fl.us

S.R. 535 CORRIDOR PLANNING STUDY FM #437174-1 and #437175-1

FROM U.S. 192 TO INTERSTATE 4

Why You Are Here:

- To participate in the Corridor Planning Study process
- To review the future build alternatives along S.R. 535
- To provide your thoughts, concerns, and comments regarding the project

Stay Informed by:

By visiting our website
www.cflroads.com

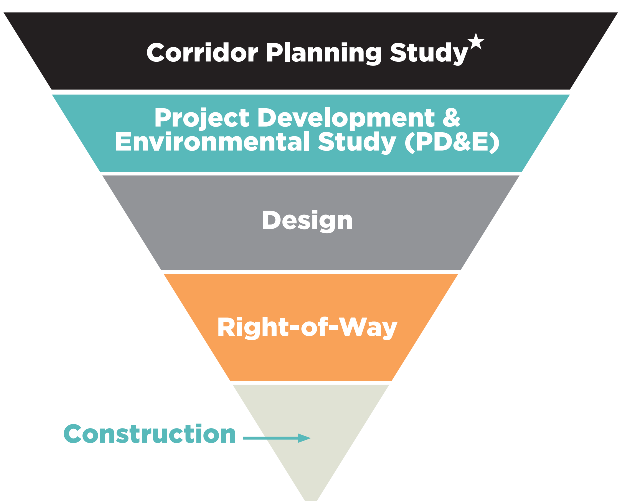
By contacting Ms. Heather Garcia
Florida Department of Transportation

719 S. Woodland Boulevard
DeLand, Fl. 32720
(386) 943-5077
heather.garcia@dot.state.fl.us

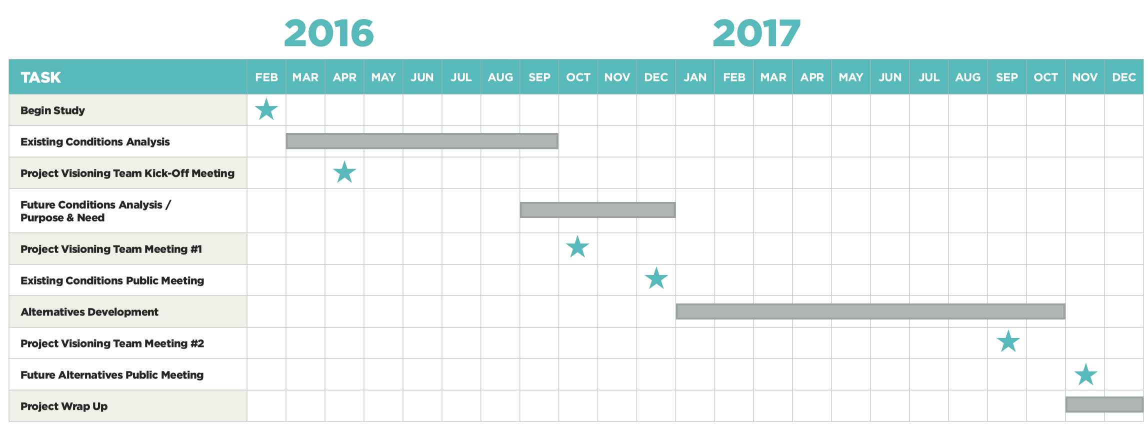
How Can You Get Involved?

- Participate in open discussion with the project team
- Ask questions about specific aspects of the project
- Fill out a comment form with your input
- Visit the project website at www.cflroads.com and search by FM number: FM #437174-1 and #437175-1

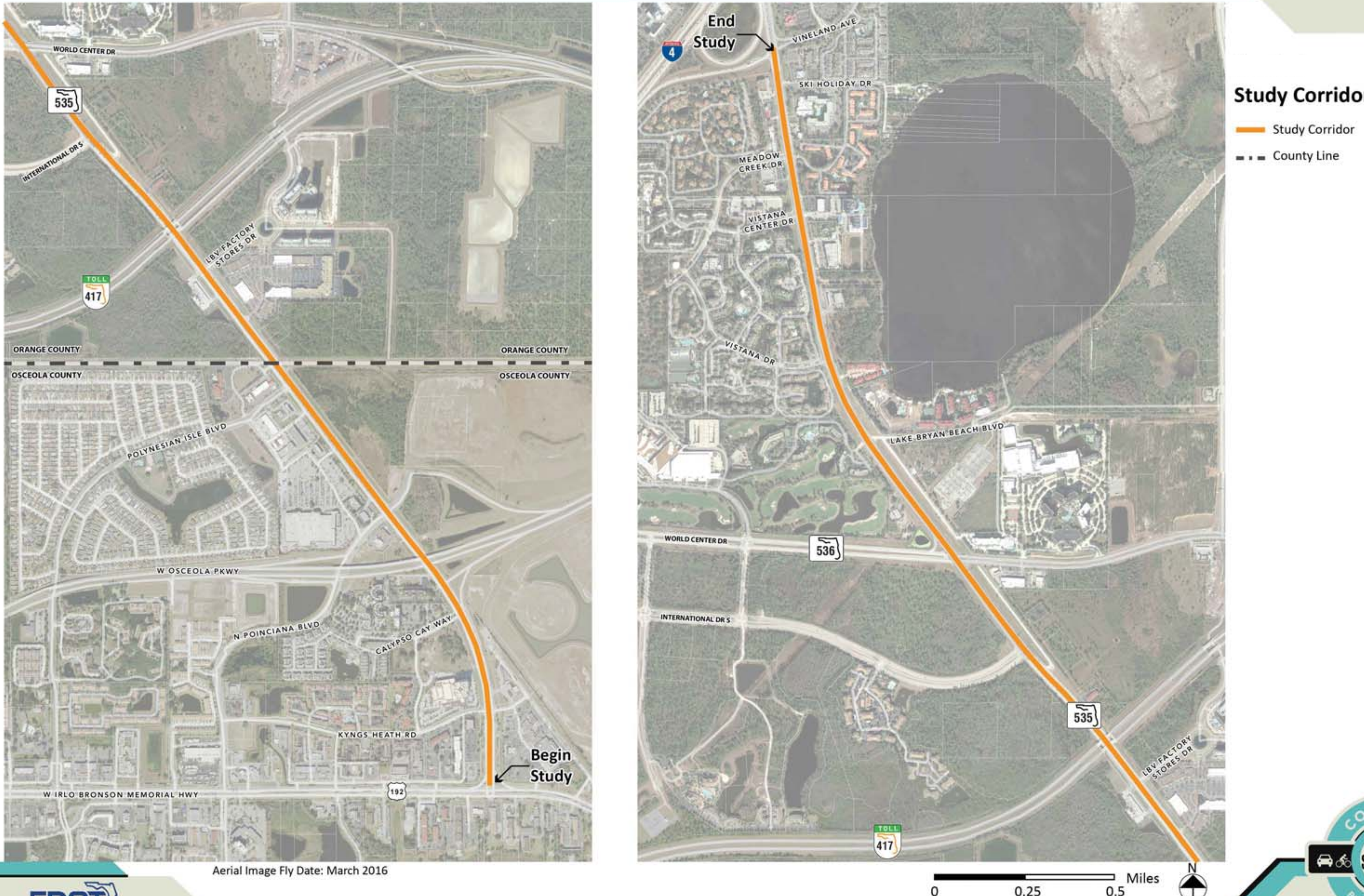
Where We Are:



Design, Right-of-Way, and Construction are not funded

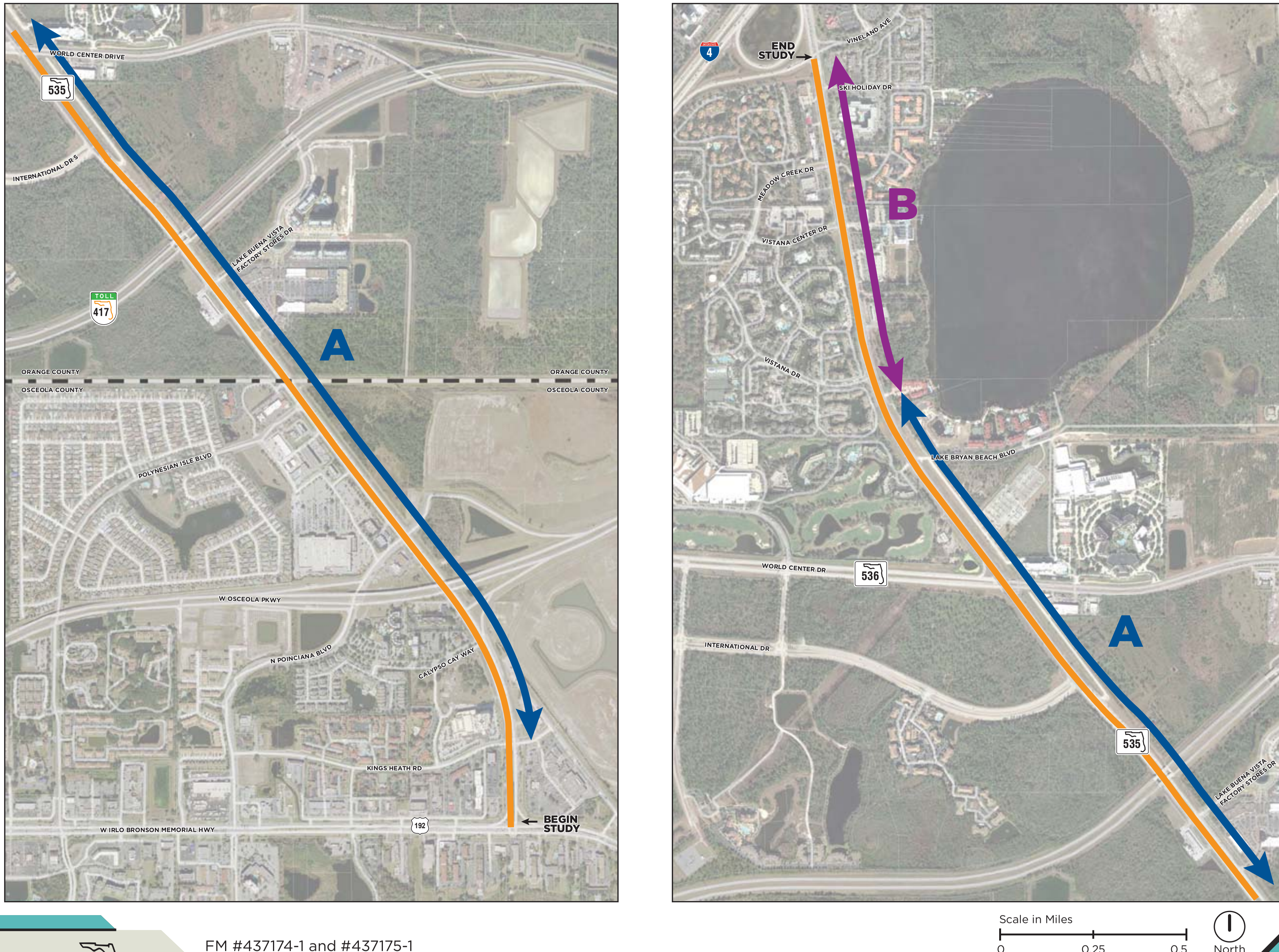


FDOT



Aerial Image Fly Date: March 2016

Figure No. 1
TYPICAL SECTION KEY MAP



Study Corridor
County Line
Typical Section Location A
Typical Section Location B

FM #437174-1 and #437175-1

FDOT

CORRIDOR SR 535 PLANNING STUDY

H-186F-14

Figure No. 2

S.R. 535 from Kyngs Heath Road to Vistana Drive

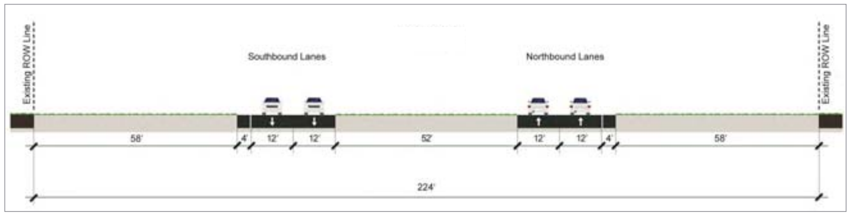
Widen Travel Lanes to Outside

See **Location "A"** on **Figure 1** - Typical Section Key Map

Existing

- Four 12' travel lanes; two in each direction
- 4' paved outside shoulders
- 52' median

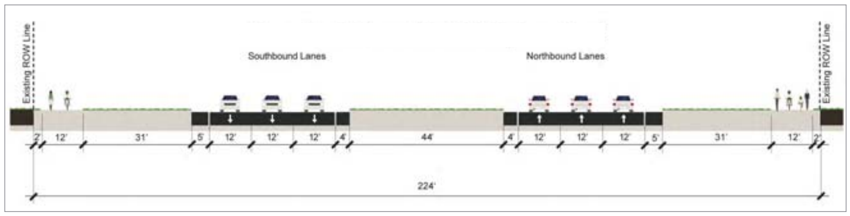
Existing



Alternative 1

- Add one 12' travel lane in each direction to the outside of existing lanes
- Widen outside shoulders to 5'
- Add 4' inside shoulders
- Provide 12' shared-use path near the Right-of-Way line

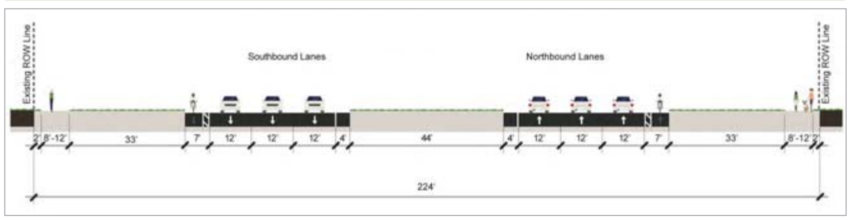
Alternative 1: Shared Use Path Option - Rural



Alternative 2

- Add one 12' travel lane in each direction to the outside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

Alternative 2: Buffered Bike Lane Option - Rural



Alternative 3

- Add one 12' travel lane in each direction to the outside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to both inside and outside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

Alternative 3: Buffered Bike Lane Option - Urban

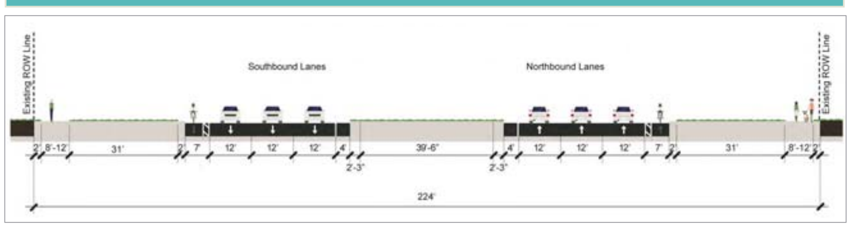


Figure No. 3

S.R. 535 from Kyngs Heath Road to Vistana Drive

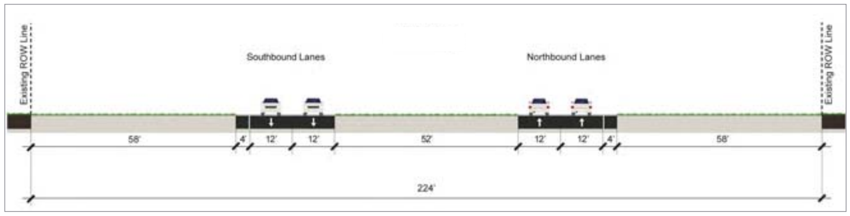
Widen Travel Lanes to Inside

See **Location "A"** on **Figure 1** - Typical Section Key Map

Existing

- Four 12' travel lanes; two in each direction
- 4' paved outside shoulders
- 52' median

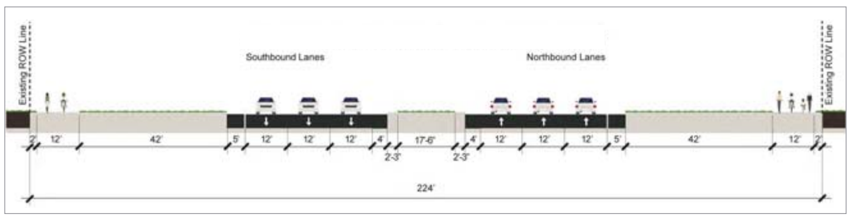
Existing



Alternative 1

- Add one 12' travel lane in each direction to the inside of existing lanes
- Widen outside shoulders to 5'
- Add 4' inside shoulders
- Add curb and gutter to inside shoulders
- Provide 12' shared-use path near the Right-of-Way line

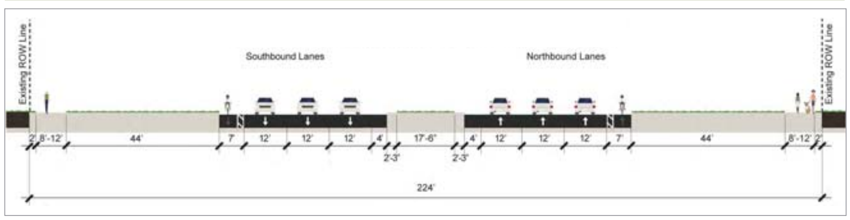
Alternative 1: Shared Use Path Option - Rural



Alternative 2

- Add one 12' travel lane in each direction to the inside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to inside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

Alternative 2: Buffered Bike Lane Option - Rural



Alternative 3

- Add one 12' travel lane in each direction to the inside of existing lanes
- Provide 7' buffered bicycle lanes outside of travel lanes
- Add 4' inside shoulders
- Add curb and gutter to both inside and outside shoulders
- Provide 8'-12' shared-use path near the Right-of-Way line

Alternative 3: Buffered Bike Lane Option - Urban

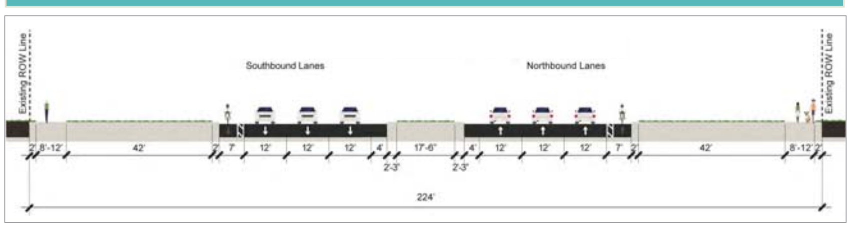


Figure No. 4

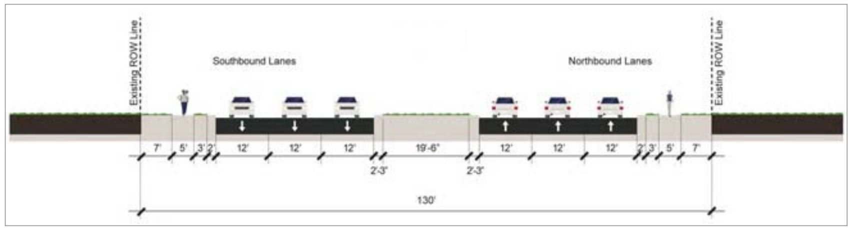
S.R. 535 from Vistana Drive to Interstate 4

See **Location "B"** on **Figure 1** - Typical Section Key Map

Existing

- Six 12' travel lanes; three in each direction
- Curb and gutter on both inside and outside shoulders
- 5' sidewalk approximately 5' from roadway

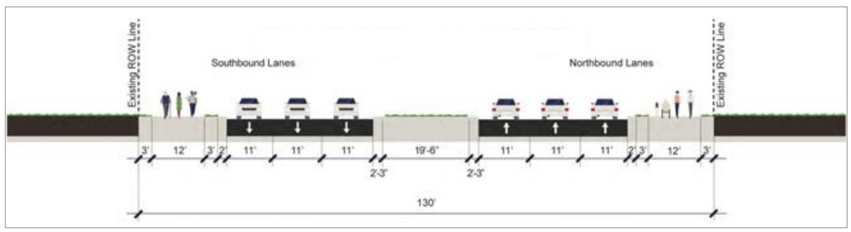
Existing



Alternative 1

- Narrow lane widths to 11'
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 12' shared-use path

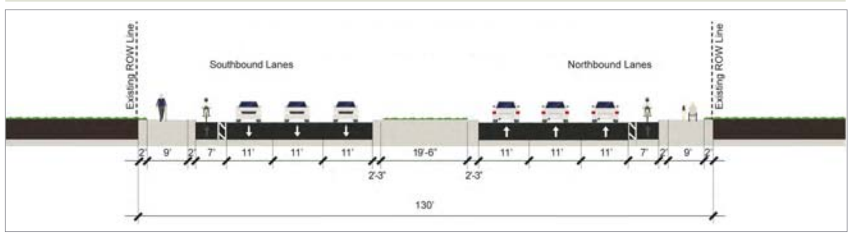
Alternative 1: Shared Use Path Option



Alternative 2

- Narrow lane widths to 11'
- Provide 7' buffered bicycle lanes outside of travel lanes
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 9' shared-use path

Alternative 2: Buffered Bike Lane Option



Alternative 3

- Narrow lane widths to 11'
- Narrow median to 22' from 24' and rebuild inside shoulder curb and gutter
- Provide 7' buffered bicycle lanes outside of travel lanes
- Rebuild curb and gutter on outside shoulder
- Widen sidewalk to be a 10' shared-use path

Alternative 3: Buffered Bike Lane and Shared Use Path Option

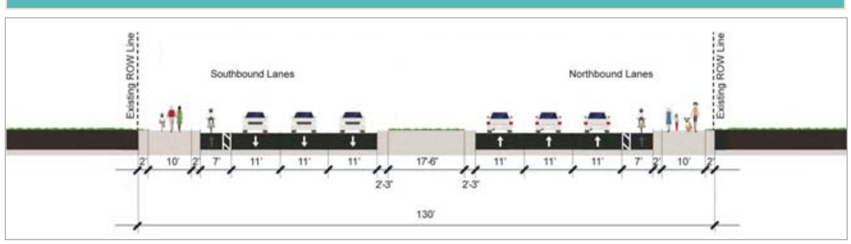


Figure No. 5

Intersection Improvements

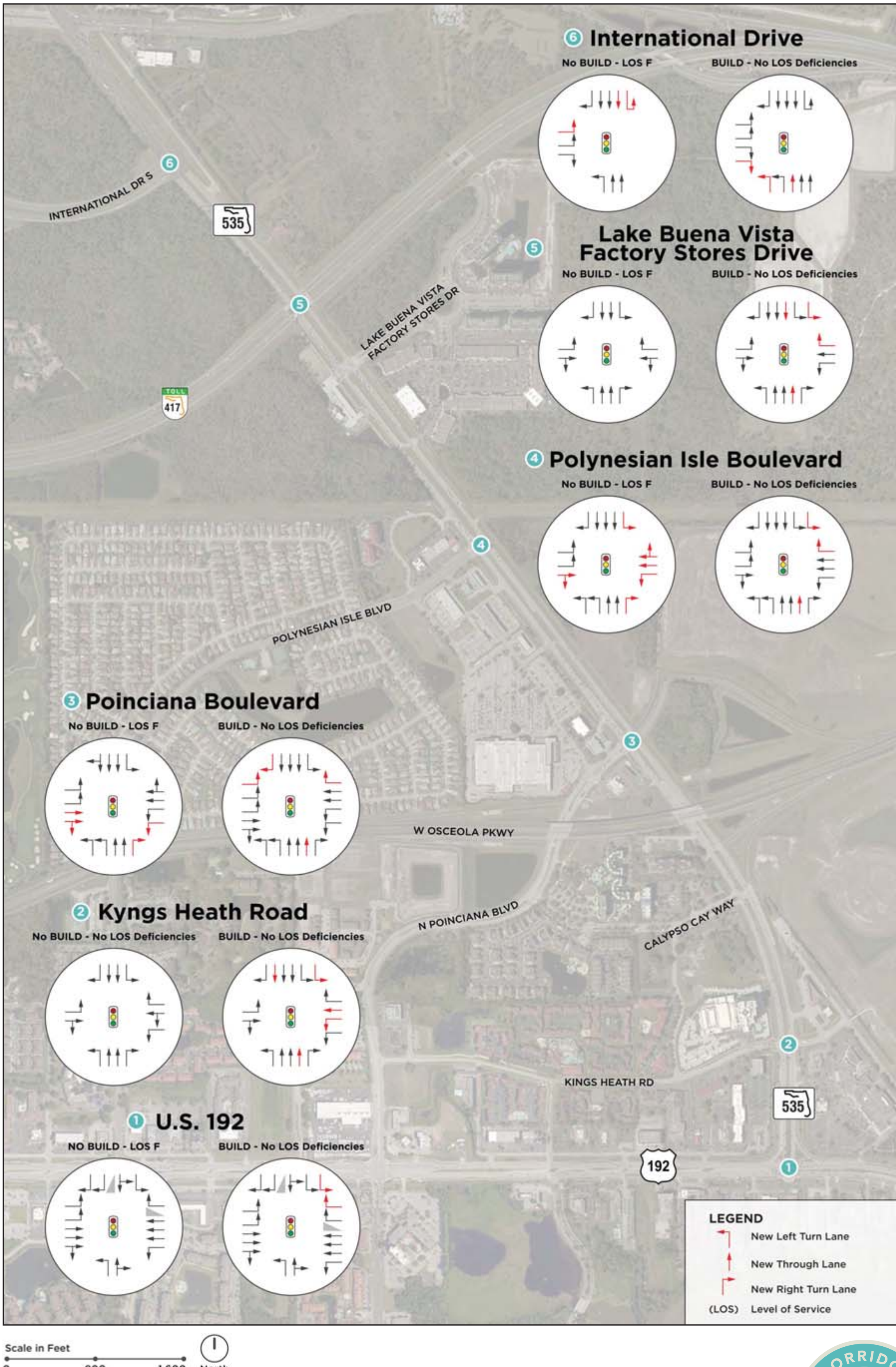


Figure No. 6
Restricted Crossing U-Turn (RCUT) Information

AN INNOVATIVE, PROVEN SOLUTION FOR IMPROVING SAFETY AND MOBILITY AT SIGNALIZED AND UNSIGNALIZED INTERSECTIONS

What is a Restricted Crossing U-turn (RCUT)?

- The Restricted Crossing U-Turn (RCUT) is an innovative intersection design that improves safety and operations by changing how minor road traffic crosses or turns left at a major road.
- At an RCUT, drivers stopped at the minor road waiting to cross or turn left no longer must navigate a complex intersection of two directions or traffic often traveling at a high speed.
- Instead, all minor road traffic makes a right turn followed by a U-turn at a designated location—either signalized or unsignalized—to continue in the desired direction.
- The RCUT is suitable for a wide variety of locations and circumstances, such as a corridor treatment along signalized routes to minimize travel times while maximizing capacity and managing speed.
- RCUTs work well when consistently used at intersections along a corridor, but they also can be used effectively at individual intersections.

Improving Safety and Operations

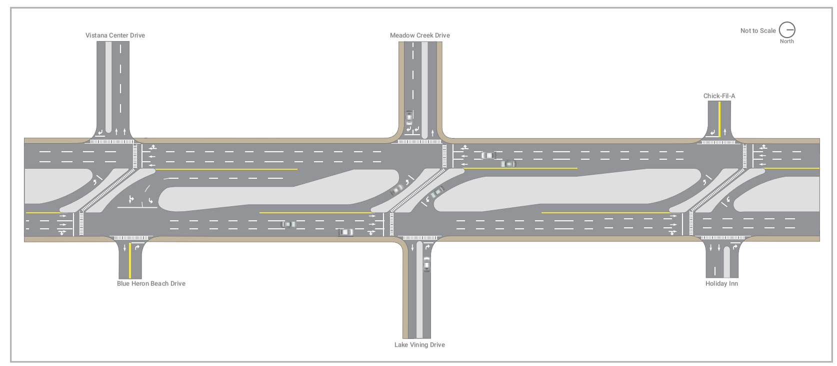
- Comparing a conventional four-leg intersection to an equivalent RCUT design, and accounting for the U-turn locations on both sides of the main intersection, the total number of conflict points is reduced from 32 to 18—a nearly 50 percent reduction.
- The RCUT design improves overall roadway operations, even when considering the additional distance traffic entering from the minor road must travel.
- While RCUTs can cause a slight increase in travel time during periods of low traffic volumes, they have been shown to decrease delay during periods of higher volumes, reducing the time it takes to clear an intersection and resume normal travel speeds.

Meeting the Needs of the Community

- Access to local businesses and commercial areas can be maintained because the U-Turns accommodate all movements.
- When signalized, the RCUT provides great flexibility in traffic signal timing to accommodate unbalanced traffic flow that may result from commuter patterns or retail developments.
- This includes pedestrian crossings that are accessible to all users, and when signalized, phases that accommodate both pedestrians and bicycles.
- The channelization used in the RCUT design can serve as effective refuge islands for pedestrian crossings and/or as bicycle queuing areas.

RCUT Intersection in Troy, Michigan

RCUT Example from Vistana Center Drive to North of Meadow Creek Drive



Representative diagram for illustrative purposes only

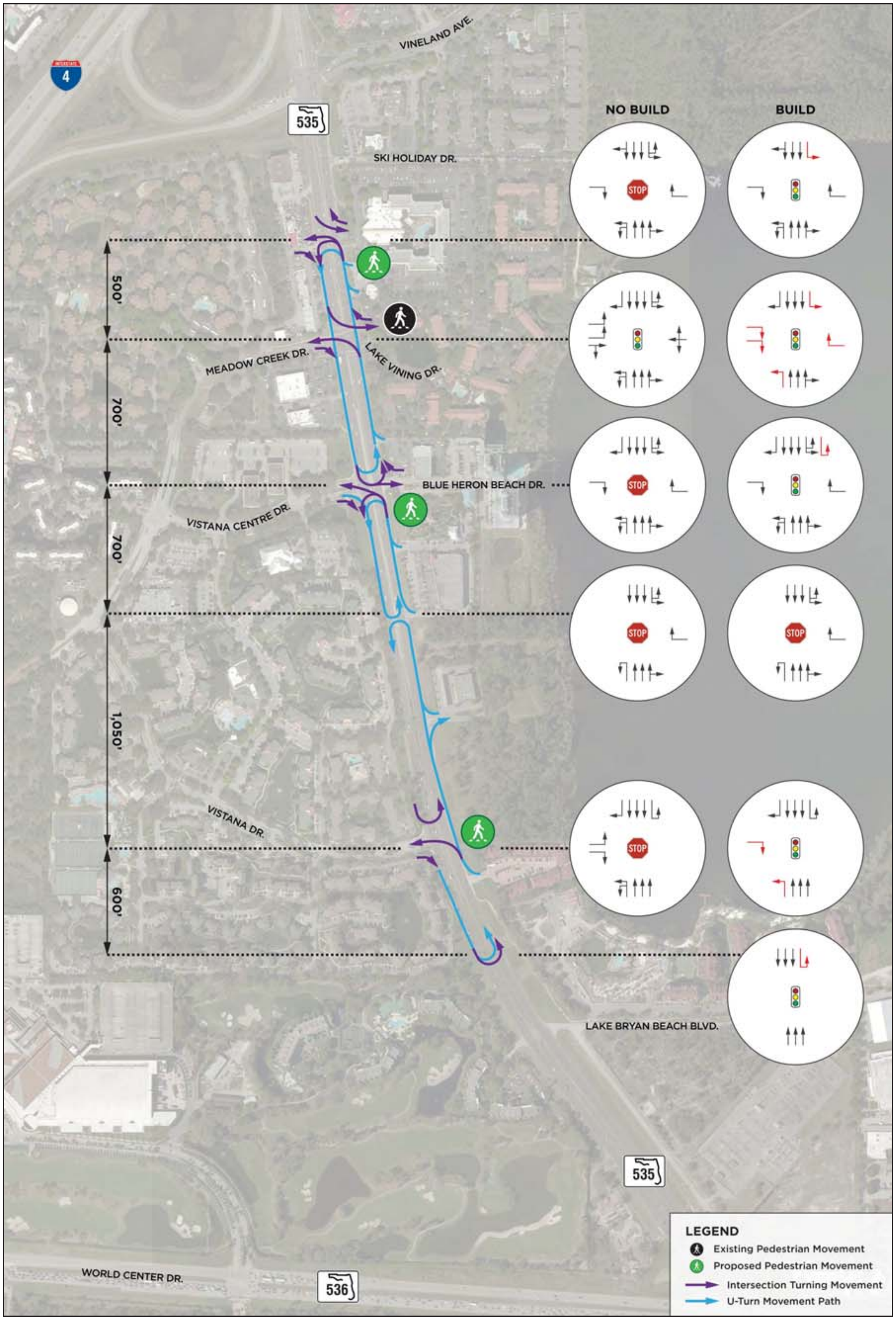
Source*:

U.S. Department of Transportation
Federal Highway Administration

* Information presented on this board originates from the FHWA RCUT Intersection Brochure but has been modified by Kittelson & Associates, Inc. for the purposes of this meeting.

Figure No. 7

Potential RCUT Intersection Lane Configurations



Scale in Feet
0 500 1,000
North

Figure No. 8

Displaced Left Turn (DLT) Information

AN INNOVATIVE, PROVEN SOLUTION FOR IMPROVING SAFETY AND MOBILITY AT SIGNALIZED INTERSECTIONS

What is a Displaced Left Turn Intersection?

- The Displaced Left Turn (DLT) Intersection implements unopposed left turns at intersections by moving traffic over to the other side of the road in advance.
- Traffic crosses opposing through lanes at a separate signalized intersection before the main intersection, entering a parallel left turn lane separated from opposing lanes.
- At the main intersection, left turning and through traffic move simultaneously, increasing efficiency and safety by reducing conflict.
- The DLT is best-suited to intersections with moderate to high overall traffic volumes, and especially to those with very high or unbalanced left turn volumes.
- It can be a competitive alternative to a full, grade-separated interchange.

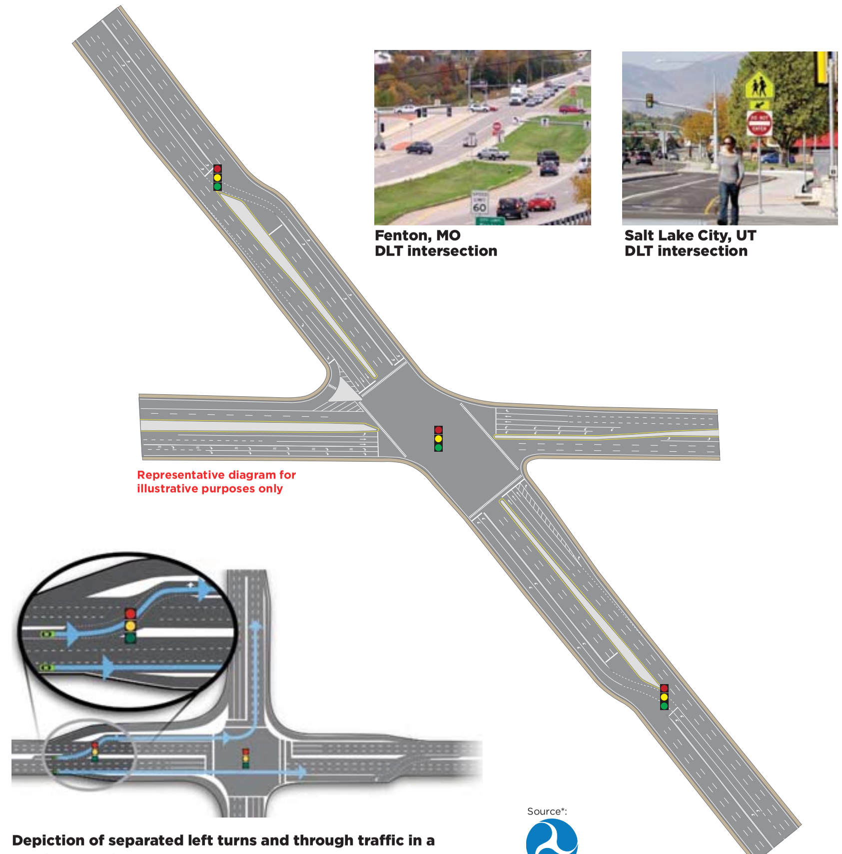
Safety and Operational Benefits

- The DLT design reduces the total number and overall severity of vehicle-to-vehicle conflict points. Conflict points decrease from 32 to 28 when a conventional intersection is converted to a full DLT.
- A study by FHWA using traffic models to compare performance between DLT intersections and equivalent conventional signalized intersections showed the following:
    - » A partial DLT with crossovers on only select intersection approaches increased throughput by about 20 percent and significantly reduced delay by up to 30-40 percent.
- DLT intersections have been constructed in several states, including Colorado, Louisiana, Maryland, Missouri, New York, Ohio, Texas, and Utah.

A Cost-Effective Way to Meet Community Needs

The DLT design is flexible and can be tailored to meet the needs of a particular intersection and all of its users.

- Provisions for walking and biking must be considered throughout the project development process, with the needs of pedestrians and bicycles shaping the overall design of the DLT accordingly.
- This includes pedestrian crossings that are accessible to all users, and traffic signal phases that accommodate both pedestrians and bicycles.



Fenton, MO
DLT intersection

Salt Lake City, UT
DLT intersection

Representative diagram for illustrative purposes only

Depiction of separated left turns and through traffic in a DLT intersection

Source*:

U.S. Department of Transportation
Federal Highway Administration

* Information presented on this board originates from the FHWA DLT Intersection Brochure but has been modified by Kittelson & Associates, Inc. for the purposes of this meeting.

MEETING SUMMARY

Alternatives Public Meeting

SUBJECT: FM 437174-1 and 437175-1: SR 535 Corridor Study

Orange and Osceola Counties

MEETING DATE: Thursday November 2, 2017

MEETING TIME: 5:30 PM – 7:30 PM

VENUE: Embassy Suites Orlando Lake Buena Vista South, Events Center, 4955 Kyngs Heath Road, Kissimmee, FL 34746

Introduction and Attendees

The study, which is the first phase in the transportation development process, has evaluated a range of multi-modal (roadway and pedestrian) improvements to address roadway capacity, traffic operations, safety, pedestrian connectivity and other factors on the segment of S.R. 535 between U.S .192 in Osceola County to Interstate 4 (I-4) in Orange County. The purpose of the meeting is to present the recommendations of the study to be carried forward to the next phase of the transportation planning process – a Project Development and Environment (PD&E) Study, which is scheduled to begin in late 2019. No Elected Officials attended the Public Meeting. The sign-in sheets for the general public are attached.

Meeting Summary

The Alternatives Public Meeting was an open house type format, lasting for two hours from 5:30 PM to 7:30 PM. The open house was set up in four stations:

1. Roadway Improvement Alternatives –
   a. Typical section alternative boards; and
   b. At-grade intersection improvement board.
2. RCUT Information –
   c. Board with FHWA RCUT information; and
   d. Video explaining the RCUT concept and providing case study examples.

3. DLT Information –
    e. Board with FHWA DLT information; and
    f. Video explaining the DLT concept and providing case study examples.
4. Comments and Feedback – Station where the public could fill out comment forms.

The public was encouraged to review the various boards at the stations and ask any additional questions of the Study Team.

Summary of Public Comment

The public that attended the meeting were encouraged to provide comments on the project. Three comment forms were received by the study team from the public. Below is a summary of the comments received from the public:

- Making a left turn from World Center Drive to SR 535 between 5 PM and 7 PM gets backed up. The signal only allows 3 to 4 cars to turn left before the light turns red.
- The Displaced Left Turn (DLT) concept may cause too much confusion. This area sees many visitors that are unfamiliar with the area and it may create a greater hazard for head on collisions.
- Why are the lanes in the northern end of the corridor being narrowed and why are large multi-use paths being planned?
- Signal timing for SR 535 is the worst between World Center Drive and Poinciana Boulevard.
- Items of immediate concern from one public participant –
    - The “logjam” at the SR 535/Poinciana Boulevard intersection during peak times, where access to the two left-turn lanes narrows to only one, causing drivers from adjacent lanes to “cut-in”.
    - The “logjam” at the SR 535/SR 536 intersection during peak times, where access to the two left-turn lanes narrows to only one, creating lengthy wait times at the intersection.
    - The lack of a way for pedestrians to safety cross SR 536 from the hotels to the CVS/7-11 Plaza.

Next Steps

The following are next steps for the project:

- Prepare Final Report documentation;
- Prepare Executive Summary; and
- Prepare Comments and Coordination Summary.

This summary is Travis Hills' interpretation of the meeting. Questions should be directed to him at 407-540-0555.

Attachments

- General Public Sign-In Sheets
- Public Meeting Mailer
- Public Meeting Mailer Coverage Area
- Elected and Appointed Officials Lists
- Elected and Appointed Officials Letters
- FAR Ad
- Orlando Sentinel Ad
- Public Meeting Title VI Compliance Board
- Public Meeting "Why Are We Here" Board
- Public Meeting Alternatives Boards

SR 535 Corridor Planning Study (FM #437174-1 and #437175-1) – ~~Elected Officials~~ General Public Sign-In Sheet

Alternatives Public Meeting

November 2, 2017

Name	E-mail Address	Organization	Position
Nick Lepp	NLEPP@METROPLAN	METROPLAN	
Gerald Connell	GFConnell@yahoo.com	Indian Wells	Board
Josh DeVries	joshua.devries@osceola.org	Osceola	Planner III
Manuel Parra	mannymp772@hotmail.com	Indian Wells	
Larry Cohen	LCGAp1@Aol.com	LBU Villages SPA LBU Factory Stores	
~~[illegible]~~	~~[illegible]~~		
Heather Garcia		FDOT	

SR 535 Corridor Planning Study (FM #437174-1 and #437175-1) – General Public Sign-In Sheet

Alternatives Public Meeting

November 2, 2017

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
Mr & Mrs. J Suarez	JC3295@AOL.COM	✓	✓		
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EVELYN GOOD	EVELYNGOOD7@GMAIL.COM	✓			
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Isabel Toledano	itoledano@zolezzi.com	✓			
Kelly Froelich	kfroelich@wtam.com	✓			
SEAN FERGUSON	SEAN@SEANSELLSFLORIDA.COM	✓	✓		
SUPA NAVA	[illegible]		✓		

SR 535 Corridor Planning Study (FM #437174-1 and #437175-1) – General Public Sign-In Sheet

Alternatives Public Meeting

November 2, 2017

Name	E-mail Address	How Did You Find Out About This Meeting?			
		Email	Mailer	Web Site	Other
Travis Hills	thills@kittelson.com				
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Zack Stawmous	zstawmouse@msn.com	X			
Ellen Rosette	EllenSal@cfl.rr.com		X		
Dustin Johns	dustin.johns@me.com		X		
Mark Suarez	mark.suarez@hdrinc.com	X			
Rebecca Hanson	rebecca@orflawfirm.com			X	
J. Blouin	jesse.blouin@dot.state.fl.us				X