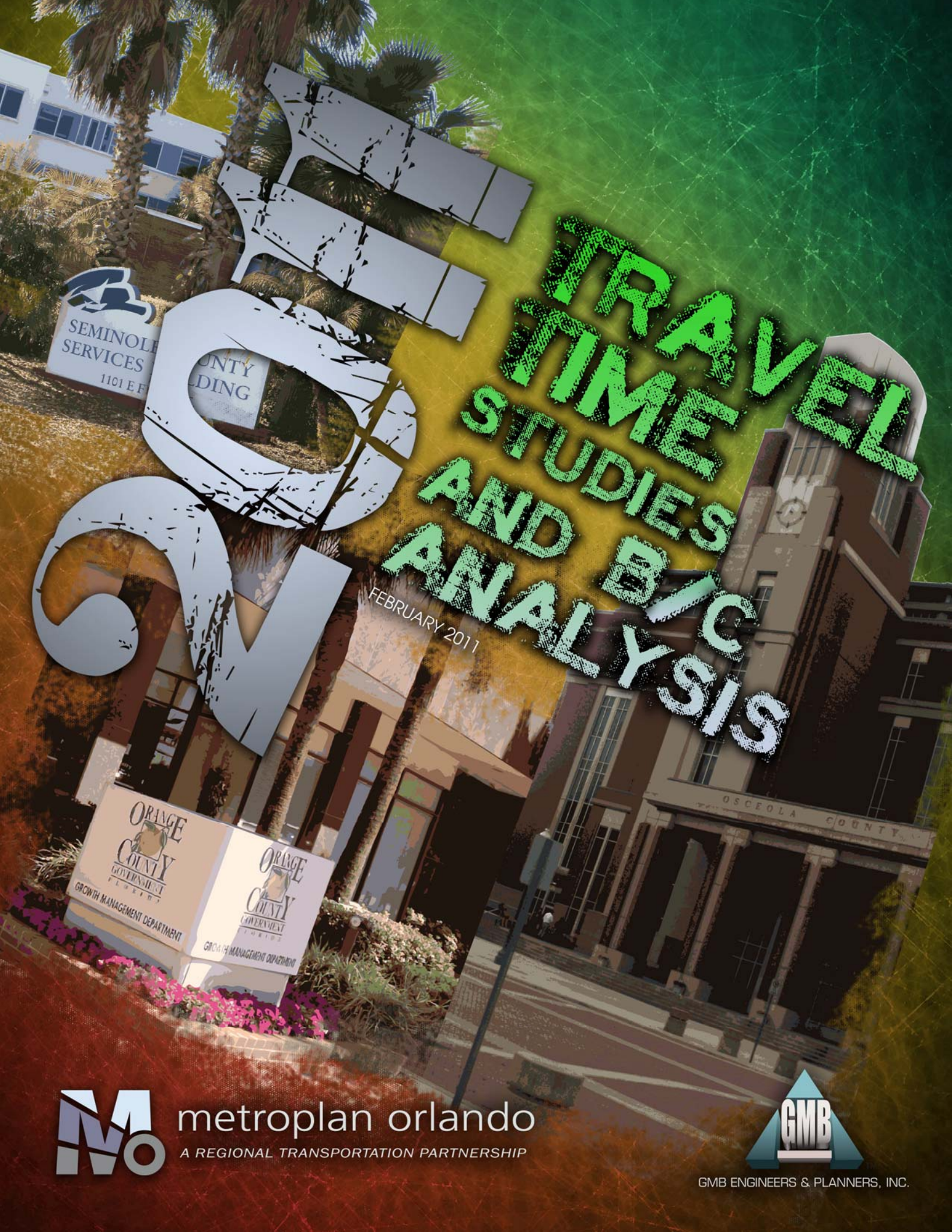

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GMB ENGINEERS & PLANNERS, INC.

MetroPlan Orlando
&
GMB Engineers & Planners, Inc.

MetroPlan Orlando Travel Time Study & Benefit-Cost Analysis

Travel Time Studies and Benefit-Cost Analysis for Signal Retiming Projects covering Orange, Seminole, and Osceola Counties in the Central Florida Region

Final Report

February 2012

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1 Introduction

1.1 Overview

MetroPlan Orlando has requested GMB Engineers & Planners, Inc. (GMB) to assess the benefits of the recently completed signal retiming projects on seventeen (17) selected roadways spread throughout the tri-county (Orange, Seminole, and Osceola) area in the Central Florida region. Out of the 17 study roadways, five (5) fall within Seminole County, eight (8) fall with Orange County, three (3) fall within the City of Orlando, and the remaining one (1) fall within Osceola County.

To determine whether the benefits from the completed signal retiming projects would outweigh the implementation costs, a Benefit-Cost (B-C) analysis was performed for each of the study roadways using the input parameters collected during the Travel Time and Delay (TTD) studies conducted before (before scenario) and after (after scenario) the implementation of retiming plans. The signal retiming on SR 414 from Bear Lake Road to Magnolia Homes Road and SR 434 from SR 414 to San Sebastian Prado within Seminole County and SR 423 from 33rd Street to I-4 WB ramps within Orange County, were implemented before GMB started the before scenario TTD study.

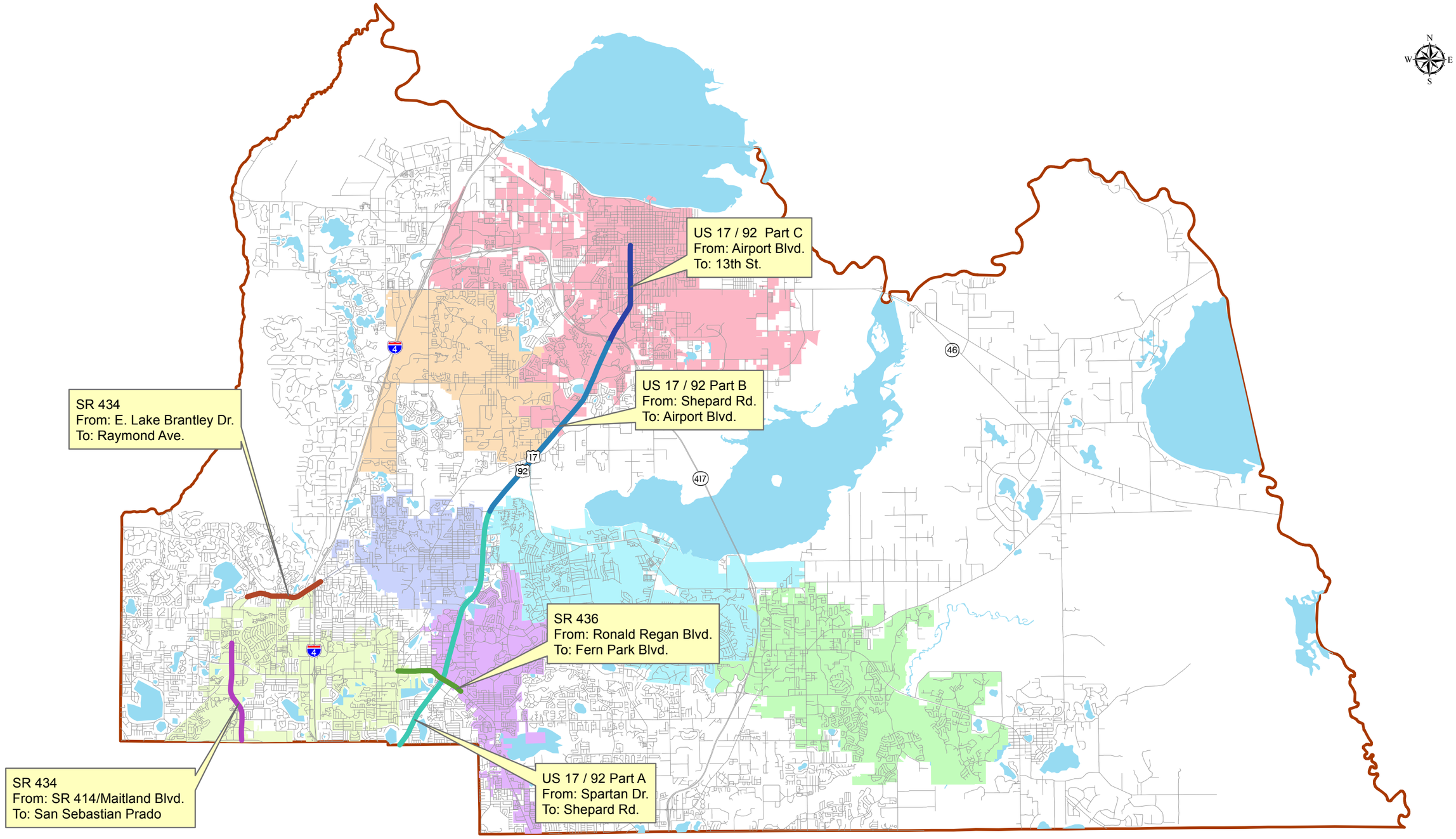
To determine the benefits for SR 434 from SR 414 to San Sebastian Prado segment, GMB considered TTD results from Year 2010 Seminole County Travel Time and Delay Study project as before scenario results. The TTD studies were conducted only for the fourteen (14) study roadways in the before scenario. As there are no TTD results available for the SR 414 from Bear Lake Road to Magnolia Homes Road and SR 423 from 33rd Street to I-4 WB ramps roadway segments, GMB couldn't perform the B-C analysis for those segments. However, including the SR 434 from SR 414 to San Sebastian Prado segment, GMB conducted TTD studies for fifteen (15) study roadways in the after scenario. The study roadways for each of these four (4) jurisdictions are depicted in Figures 1 through 4 in the following pages. A list of the fifteen (15) study roadways with information on segment limits, length, and maintaining jurisdiction is provided in Table 1.

This report, in particular, presents the results of the TTD studies and the B-C analysis for these recently completed signal-retiming projects in the study area.

1.2 Background

Signal re-timing projects generally demonstrate positive results with measurable benefits such as reduced delay, fuel savings, improved air quality, and others. Signal re-timing is one of the

most cost-effective strategies to improve traffic flow, enhance safety, and lessen driver frustration. As part of the periodical signal retiming projects to improve the traffic flow on selected study roadways in Central Florida (Study Area), Florida Department of Transportation (FDOT) has recently completed signal re-timing on those roadways for the year 2011. GMB's role is to conduct TTD studies for both the before scenario and after scenario and to assess the benefits achieved through these signal-retiming projects.



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Year 2011 MetroPlan Orlando Travel Time Study & BC Analysis

Figure - 1
Seminole County
Roadway Limits

SR 50
From: SR 436
To: Dean Rd.

SR 436
From: Oleander Dr.
To: Old Cheney Hwy.

SR 482 Part B
From: Presidents Dr.
To: Sunport Dr.

SR 482 Part C
From: Sunport Dr.
To: Jetport Dr.

SR 482 Part A
From: Mandarin Dr.
To: Presidents Dr.

SR 535
From: Lake Buena Vista (LBV) Factory Stores Dr.
To: I-4 West Ramps

US 441 Part A
From: Oak Ridge Rd.
To: Taft Vineland Rd.

US 192
From: CR 545 / Avalon Rd.
To: E. Orange Lake Blvd.

SR 536
From: World Center Dr.
To: International Dr.

US 441 Part B
From: Taft Vineland Rd.
To: Hunters Creek Blvd.

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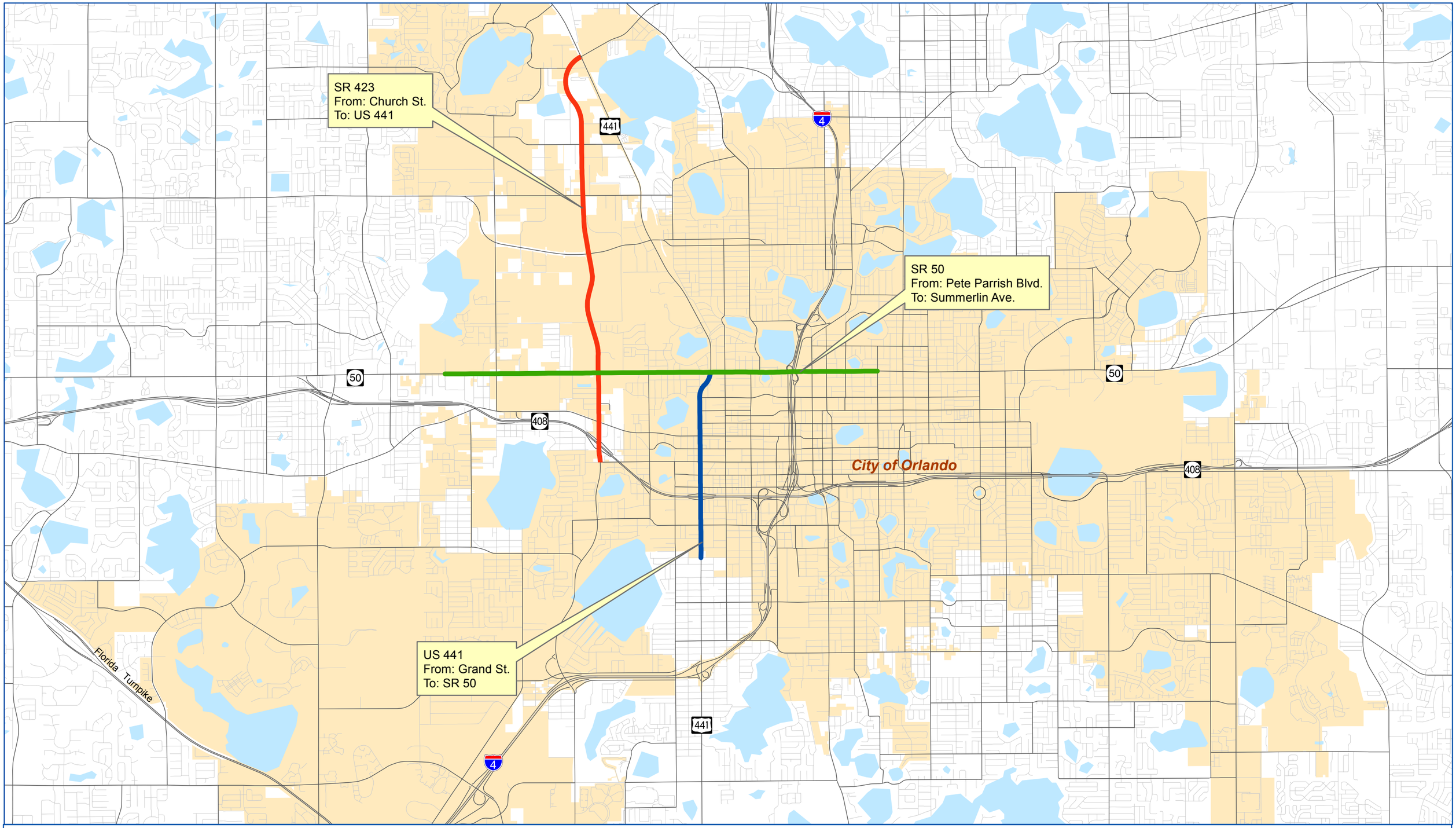
Figure - 2
Orange County
Roadway Limits



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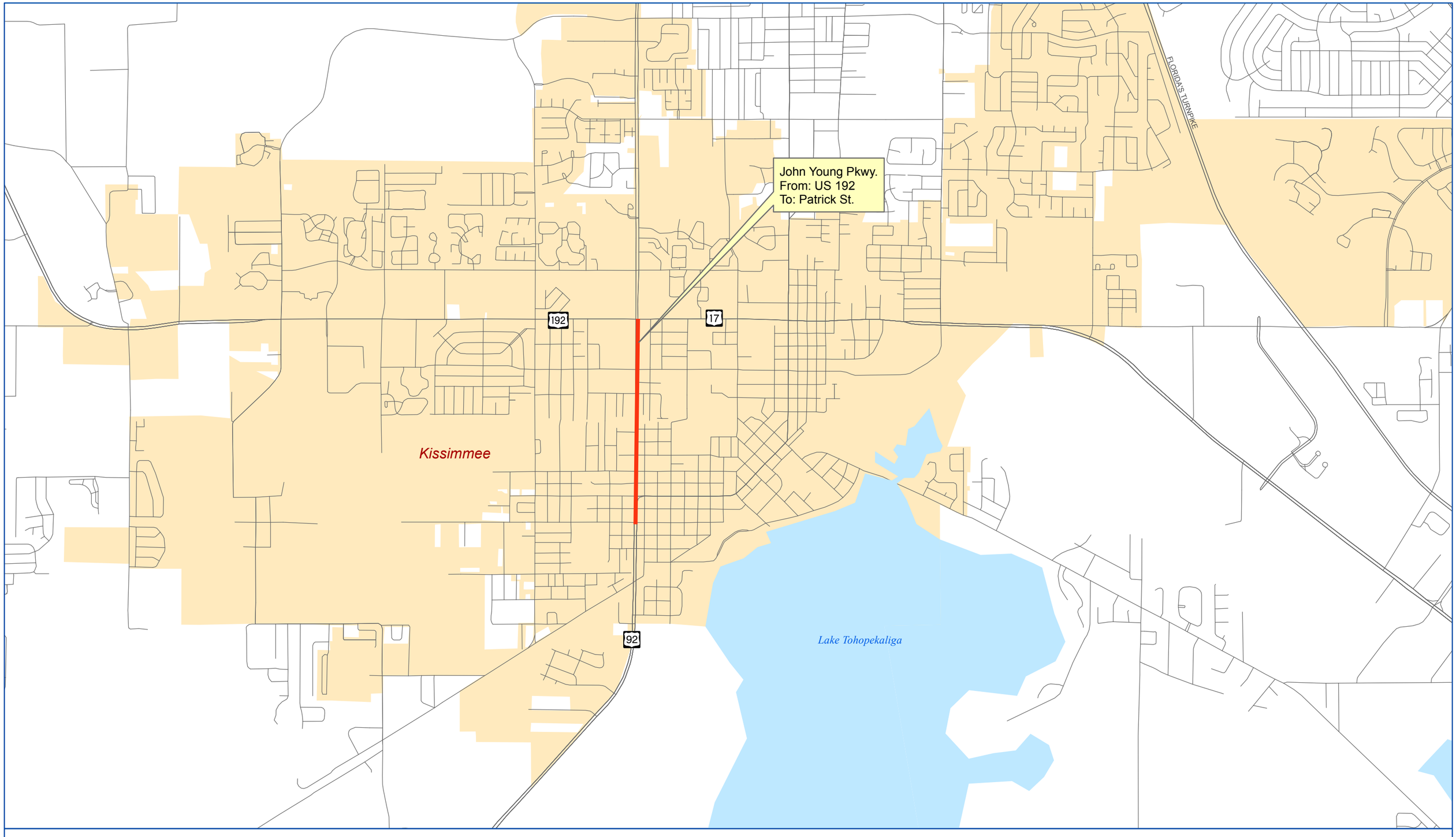
Year 2011 MetroPlan Orlando Travel Time Study & BC Analysis

Figure - 3
City of Orlando
Roadway Limits



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Year 2011 MetroPlan Orlando Travel Time Study & BC Analysis

Figure - 4
Osceola County
Roadway Limits

N W E S

Table 1: List of Study Roadways

Roadway Name	Segment Limits	Length (Miles)	Jurisdiction
US 17/92 Part A	Spartan Dr. to Shepard Rd.	5.30	Seminole
US 17/92 Part B	Shepard Rd. to Airport Blvd.	4.62	Seminole
US 17/92 Part C	Airport Blvd. to 13th St.	2.42	Seminole
SR 436	CR 427/Ronald Reagan Blvd. to Fern Park Blvd.	1.54	Seminole
SR 434	E. Lake Brantley Dr. to Raymond Ave.	1.76	Seminole
SR 434	SR 414 to San Sebastian Prado	2.31	Seminole
SR 50	SR 436 to Dean Rd.	4.23	Orange
SR 436	Oleander Dr. to Old Cheney Hwy.	0.55	Orange
US 192	CR 545/Avalon Rd. to E. Orange Lake Blvd.	2.15	Orange
SR 535	*LBV Factory Stores Dr. to I-4 WB Ramps	2.22	Orange
SR 536	World Center Dr. to International Dr./SR 417	1.08	Orange
US 441 Part A	Oak Ridge Rd. to Taft Vineland Rd.	3.41	Orange
US 441 Part B	Taft Vineland Rd. to Hunters Creek Blvd.	4.34	Orange
SR 482 Part A	Mandarin Dr. to Presidents Dr.	1.14	Orange
SR 482 Part B	Presidents Dr. to Sunport Dr.	3.22	Orange
SR 482 Part C	Sunport Dr. to Jet Port Dr.	1.50	Orange
SR 423	Church St. to US 441	4.13	Orlando/Orange
SR 50	Pete Parrish Blvd. to Summerlin Ave.	4.26	Orlando
US 441	Grand St. to SR 50	1.85	Orlando
John Young Pkwy.	US 192 to Patrick St.	1.00	Osceola
		Total - 53.03 Miles	

Note: * LBV – Lake Buena Vista

2 Travel Time & Delay Studies

2.1 Overview

For the TTD studies, a unique, safe, and innovative technology was used, which utilizes the integration of GPS and Geographical Information Systems (GIS) based technologies for data collection and reduction purposes. The GPS approach has proven to be cost-effective, safer, and more accurate than other methods. The before and the after travel time data on the study roadways were collected using the GeoStats In-Vehicle GeoLogger GPS equipment and floating car technique. GIS and GPS based software tool (TRAVTIME) was used to reduce the field collected travel time data. The output from the before and after TTD studies: 1) travel time data and 2) fuel consumption were utilized in calculating the B-C ratios for the study roadways.

2.2 Background

According to the Manual on Uniform Traffic Studies (MUTS), TTD studies are conducted to evaluate the quality of traffic movement along a route, by time of day and direction and determine the locations, types, and extents of traffic delays experienced at predefined locations or points by using a moving test vehicle. The data collected in the field are used to compute various Measures of Effectiveness (MOEs) for determining the quality of traffic movement. Some of the important MOEs calculated from the field data collection include average travel time, average travel speed, average delay time, and fuel consumption.

Travel time is a direct measure of the performance of the roadway network. High travel times are an indication of congestion, delay, loss of time by drivers, increased fuel use and increased pollution emissions. The travel time data collected can be an important component of the Congestion Management Process (CMP), which alerts the decision makers of progress toward meeting congestion and mobility goals, when collected on a regular basis.

2.3 Methodology

2.3.1 Study Prerequisites

For conducting a Travel Time and Delay Study, the following study prerequisites are generally fulfilled.

Study Area: The study roadways defined for this project are illustrated in Figures 1 through 4 and Table 1.

Control Points: For the purposes of this study, all the signalized intersections were considered as the control points for each study roadway. The information on signalized intersections was collected from the respective counties and FDOT Roadway Characteristics Inventory (RCI) Database.

Number of Study Runs: A procedure to determine the number of study runs in each direction is specified in Chapter 14 of the MUTS. However, for the purposes of this study, the MetroPlan Orlando project staff specified that a minimum of four (4) study runs should be completed for each study route in each direction.

Data Collection Schedule: A data collection schedule is developed, taking into account scheduled roadway construction and school vacation periods, which would affect the results.

2.3.2 Study Procedure

GMB committed four (4) vehicles equipped with GeoStats In-Vehicle GeoLogger to this project. This ensured that the data collection could be completed within the project schedule and allowed time for any roadway segments that may be affected by severe weather or other factors. The before travel time data for the study roadways were collected between third week of January 2011 and first week of March 2011. The after field travel time data were collected anywhere between second week of March 2011 and first week of June 2011, depending on the completion of the signal retiming project for an individual study roadway. For the roadway segment of SR 482 from Mandarin Drive to Sunport Drive (SR 482 Parts A & B), the after condition travel time data was collected on the completion of signal retiming during November 2011.

The field data were collected from Tuesday through Thursday during the morning and afternoon peak periods. For each peak period and direction of travel, a minimum of four (4) vehicle runs will be completed for all study roadways. Based on previous experience of collecting Travel Time and Delay data for MetroPlan Orlando and Seminole County, GMB realized that the congestion

might not extend on the study roadways through the entire two hours between 7:00 and 9:00 a.m. for the morning and between 4:00 and 6:00 p.m. for the afternoon.

To correct this situation and to capture the actual peak travel of each road segment, GMB, as an innovative solution to obtain accurate data used the most current traffic count data from Orange, Seminole and Osceola Counties and from FDOT to determine the actual peak hour (between 7 to 9 a.m. and 4 to 6 p.m.) of travel. The data were collected with run start and end times within the actual peak hour. Within the time-period selected, GMB technicians utilized the entire peak hour for collecting the data.

By following this procedure the technicians collected a minimum of four (4) vehicle runs and in the majority of the cases collected additional runs (more than four).

In performing the data collection, a control point was established at least 1000 feet upstream of the first signal or at the first available median opening of each direction/route. All the signals within the roadway segments were considered as control points. The roadway segments were divided based on the control points identified in the signal-retiming project.

The technicians took field notes describing any factors or conditions that may affect the traffic operations. As a rule, data collection runs were not performed when external factors such as inclement weather, traffic incidents, special events, or roadway construction affected the typical traffic flow of the study roadway. The weekly schedules provided to the field technicians helped them to pursue the backup routes in case of accidents, special events or other factors that may affect the validity of the data.

The data collected for each roadway segment for each period and direction included street name, beginning and ending cross street, jurisdiction, facility type, area type, number of through lanes, left turn and right turn lanes, length, average travel time, stop delay, traffic control device, average travel speed, and speed limit. The procedures described above that were used in collecting the data for the “before” conditions prior to the signal timing plans are implemented were followed in the case of “after” conditions after the signal timing plans are implemented also.

2.3.3 Data Analysis

The GPS data collected were used to determine directly the following four (4) crucial parameters for each of the study roadways during the identified peak hour before and after a retiming plan has been implemented. The four (4) travel parameters are defined as follows:

Average Travel Time: The average time needed to travel between two control points.

Average Travel Speed: The average speed of travel between two control points, including all delays. It is calculated by dividing the total length of the section under consideration by the Average Travel Time.

Average vehicle Delay Time: The average delay time experienced between two points due to any kind of obstruction to the free flow speed that would otherwise occur during ideal traffic conditions (in the absence of traffic control, in the absence of geometric delay, in the absence of any incidents, and when there are no other vehicles on the road).

Fuel Consumption: The amount of fuel consumed during the travel between two control points.

Out of these four (4) parameters, Average Total Travel Time and Fuel Consumption were the main input parameters for assessing the effectiveness of the completed signal retiming process.

2.3.4 Level of Service Calculation

Level of Service (LOS) is one of the vital measures used to evaluate intersection or roadway performance. LOS was calculated before and after a retiming plan is implemented. Using the Average Travel Speed and roadway class (predetermined using the posted speed limit) as inputs, the roadway, or intersection LOS was determined using the HCM (2000) Exhibit 15-2 Urban Street LOS by Roadway Class and Average Travel Speed. The HCM (2000) Exhibit 15-2 is shown as Table 2.

Tables showing the TTD study results for each study roadway are provided in **Appendix A** of this report. In addition, GIS (Geographical Information System) maps graphically illustrating the LOS conditions and listing the travel time and delay summaries are also provided in **Appendix A** of this report.

Table 2: HCM Exhibit 15-2 - Urban Street LOS by Roadway Class

	Arterial Classification			
	I	II	III	IV
Range of Free-flow Speed	45 – 55 MPH	35 – 45 MPH	30 – 35 MPH	25 – 35 MPH
Typical Free Flow Speed	50 MPH	40 MPH	33 MPH	30 MPH
Level of Service	Speed (MPH)			
A	>42	>35	>30	>25
B	>34	>28	>24	>19
C	>27	>22	>18	>13
D	>21	>17	>14	>9
E	>16	>13	>10	>7
F	<=16	<=13	<=10	<=7

3 Benefit Cost Analysis

To determine whether the completed signal retiming process benefits would outweigh the implementation costs, a B-C analysis will be performed using the input parameters collected during the travel time and delay studies conducted before and after the implementation of retiming plans. Some of the direct benefits of signal retiming include fuel savings, reduced delays & stops, improved traffic flow, reduced toxic emissions & improved air quality, reduced response time for emergency vehicles, etc. In addition, numerous indirect benefits could be attributed to signal retiming such as postponing long-term capacity improvements, reduced driver frustration, attracting tourists with better air quality, etc.

The benefits of the improved signal plans are projected over three years using two peak hours of travel time, one during the morning peak hour and the other during the evening peak hour. The following paragraphs describe the overall procedure of B-C analysis utilized for the signal retiming evaluation process.

3.1 Benefits

As the first step, the cost savings associated with various parameters that were improved because of the retiming process were identified. Benefits are defined in terms of annualized cost savings and were calculated based on reduction in travel times and fuel savings derived from the before and after travel time data. As the first step, the benefit input parameter (travel time [seconds/vehicle] and fuel consumption [gallons/vehicle]) was multiplied with the corresponding peak hour directional traffic volume for each peak hour and direction to obtain the total travel time (vehicle-hours) or fuel consumption (gallons) for one hour. These calculations were performed for the before and after scenarios and the differences were obtained for the AM and PM peak hours. Then these differences (total travel time and fuel consumption) were multiplied with the corresponding dollar value to obtain the time and fuel savings in dollars. The daily savings in dollars are obtained by adding the benefits for AM and PM peak hours. The yearly savings are obtained by applying the daily savings for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffic volumes.

The above-mentioned calculations are explained in the following paragraphs for an example roadway: SR 50 between SR 436 and Dean Road.

3.1.1 Travel Time Cost Savings

The cost associated with the lost travel time is valued at $16.30 per hour for the year 2010 based on the latest Urban Mobility Report published by Texas Transportation Institute. The Urban Mobility Report page containing the delay value is provided in **Appendix B** of this memorandum.

Based on the calculations using the field travel time data and traffic volume data from the latest (year 2010) Orange County traffic counts, a total annual cost savings (two peak hours combined) of $1,755,508.37 was obtained from reduction in travel time for the SR 50 study corridor.

3.1.2 Fuel Cost Savings

The savings on fuel costs were also included as part of the benefits in the B-C analysis. The fuel costs were determined as $3.44 based on the Florida Department of Revenue & Orlando Gas Prices. Based on the calculations using the field fuel consumption data and traffic volume data from the latest (year 2010) Orange County traffic counts, a total annual cost savings (two peak hours combined) of $26,612.18 was obtained from reduction in fuel consumption for the SR 50 study corridor.

Combining the cost savings from travel time and fuel consumption, a total annual cost savings of $1,782,120.55 was obtained for the SR 50 study corridor.

3.2 Costs

The second step is to obtain the project implementation cost of the signal retiming process. These project costs were provided by the FDOT and are provided in **Appendix C** of this report for the study projects. The annualized implementation costs were calculated assuming three (3) years of service life for the improvement and a 7% rate of return on investment as currently recommended by the Federal Highway Administration (FHWA).

The annualized total signal-retiming cost was determined as $14,549.31 from a one-time implementation cost of $38,182.00 for the SR 50 study corridor.

Tables 3 and 4 summarize the Measures of Effectiveness (MOEs) including travel time, delay, average speed, and fuel consumption for the through movement for the before and after scenarios, respectively during the AM and PM peak periods. Table 4 shows the benefits, costs, and B-C ratio for the example study corridor.

Table 3: Summary of Before Study MOEs: SR 50 between SR 436 and Dean Road

Traffic Volume	MOE's per Vehicle				MOEs for all Vehicles	
	Travel Time (sec/vehicle)	Delay (sec/vehicle)	Average Speed (mph)	Fuel Consumption (gallons/vehicle)	Total Travel Time (Vehicle-hour)	Total Fuel Consumption (gallons)
Northbound/Eastbound - AM Peak Hour						
1308	573.8	132.0	30.3	0.167	208.48	218.44
Northbound/Eastbound - PM Peak Hour						
1995	629.0	147.0	27.6	0.170	348.57	339.15
Southbound/Westbound - AM Peak Hour						
1908	702.0	258.6	23.0	0.156	372.06	297.65
Southbound/Westbound - PM Peak Hour						
1336	717.6	239.4	22.5	0.1590	266.31	212.42

Table 4: Summary of After Study MOEs: SR 50 between SR 436 and Dean Road

Traffic Volume	MOE's Per Vehicle				MOEs for all Vehicles	
	Travel Time (sec/vehicle)	Delay (sec/vehicle)	Average Speed (mph)	Fuel Consumption (gallons/vehicle)	Total Travel Time (Vehicle-hour)	Total Fuel Consumption (gallons)
Northbound/Eastbound - AM Peak Hour						
1308	454.8	93.0	38.2	0.166	150.64	217.13
Northbound/Eastbound - PM Peak Hour						
1995	447.0	54.0	38.9	0.165	223.11	329.18
Southbound/Westbound - AM Peak Hour						
1908	498.6	87.6	32.3	0.154	249.63	293.83
Southbound/Westbound - PM Peak Hour						
1336	429.0	45.0	37.6	0.151	148.96	201.74

Table 5: Summary of MOEs & Benefit Cost Analysis: SR 50 between SR 436 and Dean Road

MOE	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	580.54	429.50	614.88	406.92
Total Fuel Consumption (gallons)	516.08	510.96	551.57	530.91
BENEFITS	**AM PEAK HOUR**		**PM PEAK HOUR**	
User Benefit Per Day	$2,479.56		$3,460.85	
Annual User Benefit	**$743,867.05**		**$1,038,253.51**	
Total Annual User Benefit	**$1,782,120.55**			
Total Signal Retiming Annual Cost	$14,549.31			
User Benefit / Cost Ratio	**122.49**			

Notes:
1. Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
2. Fuel consumption is valued to the rate of $3.44 per gallon.
3. Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffic volumes.
4. The service life of the improvement was kept as three (3) years.
5. Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

3.3 Benefit-Cost Ratio

As shown in Table 5, **a B-C ratio of 122.49 (greater than 1.0)** was derived from the analysis for SR 50 study corridor. The strong ratio indicates that the funds spent by FDOT/MetroPlan Orlando to increase the operational capacity of the study corridor on SR 50 between SR 436 and Dean Road in Orange County receive approximately One hundred and twenty two times in benefits derived through reduced costs associated with reduced travel time and fuel consumption. Therefore, the positive results of this B-C analysis justify the implementation of the recently completed signal timing improvements on this study corridor.

Similar to the MOE calculations and summaries shown in Tables 3 through 5, summary tables for each study roadway are provided in **Appendix A** of this report.

4 Conclusions

This chapter presents the conclusions derived from the TTD study results and a summary of B-C ratio analysis results. GMB has conducted before and after travel time and delay studies on fifteen (15) study roadways in the tri-county area (Orange, Seminole, and Osceola) of the Central Florida region to evaluate the benefits of the recently completed signal retiming projects on these roadways.

4.1 Travel Time and Delay Study

As part of the current study, various roadway characteristics and MOEs based on the travel time studies were summarized and provided in both tabular, and GIS map format for the study roadway segments. A total length of approximately 53.0 centerline miles of roadway segments was evaluated in this study. The adopted LOS for all the study roadways is LOS "E" with the exception of John Young Parkway in Osceola County with LOS "D". A summary showing the roadway miles that operate below the adopted LOS in the before scenario (before the signal retiming) and in the after scenario (after the signal retiming) is provided in Table 6.

Table 6: Summary of Roadway Miles operating below the Adopted LOS

Direction-Peak Hour	Before Scenario %(Miles)	After Scenario %(Miles)
NB/EB –AM	7.60% (4.12)	3.98% (2.16)
NB/EB – PM	11.36% (6.16)	5.13% (2.78)
SB/WB – AM	6.53% (3.54)	2.45% (1.33)
SB/WB – PM	15.06% (8.17)	6.25% (3.39)
Total	**40.54% (21.99)**	17.80% (9.66)

As shown in Table 6, while approximately 41% of the total roadway centerline miles were found to operate below the adopted LOS before the implementation of the improved signal timings, only 18% of the total roadway centerline miles were found to operate below the adopted LOS after the signal retiming projects were completed.

4.2 Benefit-Cost Ratio Analysis

As part of the current study, B-C ratios were calculated for the 15 study roadways falling within the Central Florida region. Tables 7 through 10 illustrate the B-C ratios by jurisdiction. Table 7 lists ratios for Seminole County, Table 8 lists ratios for Orange County, Table 9 lists ratios for the City of Orlando, and Table 10 lists the ratios for Osceola County.

Table 7: Benefit-Cost Ratio Summary for Seminole County Roadways

Roadway	Limits	Annual Benefit	Annual Cost	B/C Ratio
US 17/92 Part A	Spartan Dr. to Shepard Rd.	$1,237,385.07	$23,108.88	53.55
US 17/92 Part B	Shepard Rd. to Airport Blvd.	$990,495.80	$19,807.83	50.01
US 17/92 Part C	Airport Blvd. to 13th St.	$593,180.92	$11,554.63	51.34
SR 436	CR 427/ Ronald Reagan Blvd. to Fern Park Blvd.	$1,011,244.30	$11,412.50	88.61
SR 434	E. Lake Brantley Dr. to Raymond Ave.	$581,632.02	$15,985.12	36.39
SR 434	SR 414 to San Sebastian Prado	$521,235.02	$8,440.29	61.76

Table 8: Benefit-Cost Ratio Summary for Orange County Roadways

Street	Limits	Annual Benefit	Annual Cost	B/C Ratio
SR 50	SR 436 to Dean Rd.	$1,782,120.55	$14,549.31	122.49
SR 436	Oleander Dr. to Old Cheney Hwy.	$430,446.95	$5,455.90	78.90
US 192	CR 545/Avalon Rd. to E. Orange Lake Blvd.	$495,498.92	$11,564.92	42.85
SR 535	LBV Factory Stores Dr. To I-4 WB Ramps	$670,433.07	$8,585.48	78.09
SR 536	World Center Dr. to International Dr.	$271,319.57	$5,151.44	52.67
US 441 A	Oak Ridge Rd. to Taft Vineland Rd.	$1,496,385.27	$19,191.29	77.97
US 441 B	Taft Vineland Rd. to Hunters Creek Blvd.	$373,375.03	$17,446.83	21.40
SR 482 A	Mandarin Dr. to Presidents Dr.	$475,062.24	$4,845.07	98.05
SR 482 B	Presidents Dr. to Sunport Dr.	$864,105.00	$12,919.94	66.88
SR 482 C	Sunport Dr. to Jetport Drive	$774,821.76	$9,689.76	79.96

Table 9: Benefit-Cost Ratio Summary for City of Orlando Roadways

Street	Limits	Annual Benefit	Annual Cost	B/C Ratio
SR 423	Church St. to US 441	$1,203,066.96	$18,614.37	64.63
SR 50	Pete Parrish Rd. to Summerlin Ave.	$1,159,649.71	$32,084.55	36.14
US 441	Grand St. to SR 50	$438,483.71	$18,862.06	23.25

Table 10: Benefit-Cost Ratio Summary for Osceola County Roadways

Street	Limits	Annual Benefit	Annual Cost	B/C Ratio
John Young Pkwy.	US 192 to Patrick St.	$764,643.66	$8,973.77	85.21

As shown in Table 7, the B-C ratios range between 36 and 88 for the signal retiming projects on Seminole County roadways. From Table 8, the B-C ratios range between 21 and 122 for the signal retiming projects on Orange County roadways. As shown in Table 9, the B-C ratios range between 23 and 64 for the signal retiming projects on the City of Orlando roadways. As shown in Table 10, the B-C ratio is 85 for the one (1) signal retiming project on Osceola County roadways.

In conclusion, all the fifteen (15) study signal-retiming projects have B-C ratios of greater than one (1). This means that the cost benefits derived from reduced travel time and fuel consumption exceeded the costs incurred from implementing improved signal timing plans on the study roadways. Therefore, these traffic operational improvements are well justified.

In addition, a summary of the annual travel time and fuel savings are shown in Table 11 for the study roadways. As shown in Table 11, 974,511.27 vehicle-hours of travel time are estimated to be saved with the improved signal timings on the study roadways. Similarly, the new improved signal timings could save 72,689.50 gallons of fuel.

Table 11: Annual Travel Time and Fuel Savings Summary

Roadway Name	Limits	Annual Time Savings (vehicle hours)	Annual Fuel Savings (gallons)
US 17/92 Part A	Spartan Dr. to Shepard Rd.	75421.95	2327.70
US 17/92 Part B	Shepard Rd. to Airport Blvd.	60188.88	2737.50
US 17/92 Part C	Airport Blvd. to 13th St	35568.40	3900.00
SR 436	CR 427/Ronald Reagan Blvd. to Fern Park Blvd.	61040.45	4734.00
SR 434	E. Lake Brantley Dr. to Raymond Ave.	35278.25	1917.60
SR 434	SR 414 to San Sebastian Prado	31065.65	4321.20
SR 50	SR 436 to Dean Rd.	107699.90	7736.10
SR 436	Oleander Dr. to Old Cheney Hwy.	26062.10	1638.00
US 192	CR 545/Avalon Rd. to E. Orange Lake Blvd.	29986.35	1953.90
SR 535	LBV Factory Stores Dr. to I-4 WB Ramps	40562.25	2694.30
SR 536	World Center Dr. to International Dr./SR 417	16395.35	1184.70
US 441 Part A	Oak Ridge Rd. to Taft Vineland Rd.	90400.65	6643.80
US 441 Part B	Taft Vineland Rd. to Hunters Creek Blvd.	22453.25	2147.40
SR 482 Part A	Mandarin Dr. to Presidents Dr.	28740.10	1918.20
SR 482 Part B	Presidents Dr. to Sunport Dr.	51887.00	5333.40
SR 482 Part C	Sunport Dr. to Jet Port Dr.	46928.35	2874.90
SR 423	Church St. to US 441	73144.65	3142.20
SR 50	Pete Parrish Blvd. to Summerlin Ave.	69609.13	7273.50
US 441	Grand St. to SR 50	26363.80	2544.70
John Young Pkwy	US 192 to Patrick St.	45714.80	5666.40
	Total Savings	**974,511.27**	**72,689.50**

4.3 Pilot Study

MetroPlan had expressed strong desire to explore the feasibility of Alternative Technologies to estimate travel time data for the Benefit Cost Evaluation of Signal Retiming Projects. As such, the objective of this pilot study is to find a feasible technology that meets the study needs, is easy to use, safe and inexpensive. A detail report of this pilot study is provided in Appendix D.

4.4 Presentations made to various Committees

The results of this Year 2011 MetroPlan Orlando Travel Time Study and Benefit Cost Analysis were presented by GMB and MetroPlan Orlando to the following committees.

- Citizens Advisory Committee on November 30, 2011.
- Transportation Technical Committee on December 02, 2011.
- Municipal Advisory Committee on December 08, 2011.
- MetroPlan Orlando Board on February 08, 2012.

The PowerPoint presentation is provided in Appendix E.

5 Appendices

Appendix A: Before & After Travel Time & Delay Study Results, GIS Maps, MOE Summaries, and Benefit-Cost Ratio Calculation Sheets

Appendix B: Page from 2010 Urban Mobility Report

Appendix C: Signal Retiming Project Costs

Appendix D: Pilot Study

Appendix E: Power Point Presentation

Appendix A

Before & After Travel Time & Delay Study Results, GIS Maps, MOE Summaries, and Benefit-Cost Ratio Calculation Sheets

US 17/92 Part A

Spartan Dr. to Shepard Rd.

TABLE 1.1

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part A - Spartan Dr. to Shepard Rd. - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Orange County Line to Spartan Dr.	Seminole	Arterial	OBD	1	3	1	45	1,426	5	Signal	20.4	0.0	I	47.6	A	1.06	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,429	5	Signal	36.6	0.0	I	45.2	A	1.01	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	5	Signal	46.2	16.8	I	24.2	D	0.54	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	5	Signal	28.8	3.0	I	32.5	C	0.72	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	5	Signal	21.0	0.0	I	42.9	A	0.95	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	5	Signal	85.8	60.6	I	8.0	F	0.18	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	5	Signal	22.2	0.0	I	37.3	B	0.83	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	5	Signal	53.4	9.0	I	35.7	B	0.79	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	5	Signal	33.0	3.6	I	34.9	B	0.78	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	5	Signal	22.8	0.0	I	41.1	B	0.91	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	5	Signal	34.2	9.6	I	29.5	C	0.65	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	5	Signal	43.8	3.0	I	40.3	B	0.89	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	5	Signal	69.6	13.8	I	32.1	C	0.71	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	5	Signal	109.2	13.2	I	38.9	B	0.86	
TOTAL							45	29,832			627.0	132.6	I	32.4	C	0.72	0.190 gal/veh
PM PEAK HOUR																	
Orange County Line to Spartan Dr.	Seminole	Arterial	OBD	1	3	1	45	1,426	4	Signal	19.8	0.0	I	49.1	A	1.09	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,429	4	Signal	36.0	0.0	I	46.0	A	1.02	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	4	Signal	35.4	10.8	I	31.5	C	0.70	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	4	Signal	42.6	13.2	I	22.0	D	0.49	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	4	Signal	52.8	24.0	I	17.0	E	0.38	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	4	Signal	73.2	46.8	I	9.3	F	0.21	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	4	Signal	21.0	0.0	I	39.4	B	0.88	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	4	Signal	49.8	2.4	I	38.3	B	0.85	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	4	Signal	26.4	0.0	I	43.6	A	0.97	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	4	Signal	21.0	0.0	I	44.6	A	0.99	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	4	Signal	51.0	27.6	I	19.8	E	0.44	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	4	Signal	39.6	0.0	I	44.5	A	0.99	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	4	Signal	61.8	4.2	I	36.1	B	0.80	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	4	Signal	135.0	28.2	I	31.5	C	0.70	
TOTAL							45	29,832			665.4	157.2	I	30.6	C	0.68	0.194 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.1

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part A - Spartan Dr. to Shepard Rd. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	45	634	5	Signal	20.4	5.4	I	21.2	D	0.47	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	5	Signal	155.4	48.6	I	27.3	C	0.61	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,274	5	Signal	50.4	0.0	I	44.3	A	0.98	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,587	5	Signal	47.4	2.4	I	37.2	B	0.83	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	5	Signal	33.0	0.0	I	30.5	C	0.68	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	5	Signal	22.8	0.0	I	41.1	B	0.91	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	5	Signal	31.8	1.8	I	36.2	B	0.81	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	5	Signal	46.8	0.0	I	40.8	B	0.91	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	5	Signal	113.4	85.8	I	7.3	F	0.16	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	5	Signal	16.8	0.0	I	40.7	B	0.90	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	5	Signal	26.4	3.6	I	34.1	B	0.76	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	5	Signal	23.4	0.0	I	40.0	B	0.89	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	5	Signal	27.0	0.0	I	41.3	B	0.92	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,429	5	Signal	34.8	0.0	I	47.6	A	1.06	
TOTAL							45	29,041			649.8	147.6	I	30.5	C	0.68	0.200 gal/veh
PM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	45	634	5	Signal	10.2	0.0	I	42.4	A	0.94	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	5	Signal	133.8	25.8	I	31.7	C	0.71	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,274	5	Signal	57.6	4.2	I	38.8	B	0.86	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,587	5	Signal	55.8	13.8	I	31.6	C	0.70	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	5	Signal	22.8	0.0	I	44.2	A	0.98	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	5	Signal	21.0	0.0	I	44.6	A	0.99	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	5	Signal	88.2	54.6	I	13.1	F	0.29	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	5	Signal	57.6	7.8	I	33.1	C	0.74	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	5	Signal	64.2	36.0	I	12.9	F	0.29	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	5	Signal	18.0	0.0	I	38.0	B	0.84	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	5	Signal	22.2	0.0	I	40.5	B	0.90	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	5	Signal	33.6	5.4	I	27.9	C	0.62	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	5	Signal	27.0	0.0	I	41.3	B	0.92	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,429	5	Signal	40.8	5.4	I	40.6	B	0.90	
TOTAL							45	29,041			652.8	153.0	I	30.3	C	0.67	0.201 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.1

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part A - Spartan Dr. to Shepard Rd. - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Orange County Line to Spartan Dr.	Seminole	Arterial	OBD	1	3	1	45	1,426	7	Signal	21.0	0.6	I	46.3	A	1.03	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,429	7	Signal	35.4	0.0	I	46.8	A	1.04	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	7	Signal	28.2	4.2	I	39.6	B	0.88	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	7	Signal	25.2	3.6	I	37.1	B	0.83	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	7	Signal	27.0	4.8	I	33.3	C	0.74	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	7	Signal	41.4	18.6	I	16.5	E	0.37	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	7	Signal	18.6	0.0	I	44.5	A	0.99	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	7	Signal	40.8	0.0	I	46.8	A	1.04	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	7	Signal	24.6	0.0	I	46.8	A	1.04	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	7	Signal	76.2	47.4	I	12.3	F	0.27	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	7	Signal	24.6	0.0	I	41.0	B	0.91	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	7	Signal	36.6	0.0	I	48.2	A	1.07	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	7	Signal	55.2	4.8	I	40.4	B	0.90	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	7	Signal	85.8	0.0	I	49.5	A	1.10	
TOTAL							45	29,832			540.6	84.0	I	37.6	B	0.84	0.191 gal/veh
PM PEAK HOUR																	
Orange County Line to Spartan Dr.	Seminole	Arterial	OBD	1	3	1	45	1,426	7	Signal	28.2	4.2	I	34.5	B	0.77	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,429	7	Signal	39.0	0.0	I	42.5	A	0.94	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	7	Signal	30.6	4.8	I	36.5	B	0.81	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	7	Signal	21.6	0.0	I	43.3	A	0.96	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	7	Signal	28.8	5.4	I	31.2	C	0.69	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	7	Signal	64.8	36.6	I	10.6	F	0.23	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	7	Signal	19.8	0.0	I	41.8	B	0.93	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	7	Signal	48.0	0.0	I	39.7	B	0.88	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	7	Signal	31.2	3.6	I	36.9	B	0.82	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	7	Signal	30.0	6.0	I	31.2	C	0.69	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	7	Signal	40.8	15.0	I	24.7	D	0.55	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	7	Signal	36.6	0.0	I	48.2	A	1.07	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	7	Signal	58.8	3.6	I	38.0	B	0.84	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	7	Signal	88.2	0.0	I	48.2	A	1.07	
TOTAL							45	29,832			566.4	79.2	I	35.9	B	0.80	0.193 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.1

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part A - Spartan Dr. to Shepard Rd. - Southbound Direction Summary - After Condition

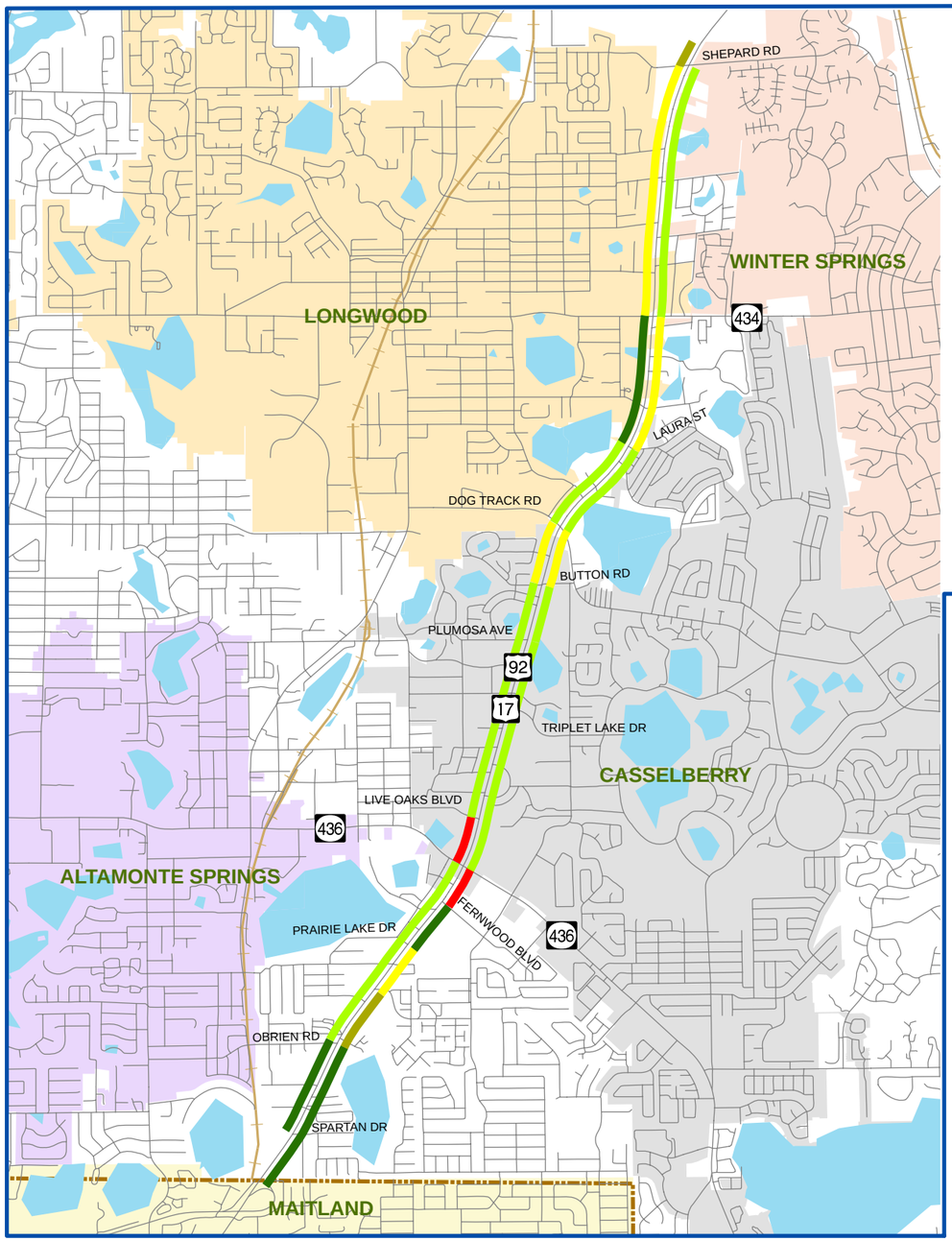
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	45	634	8	Signal	8.4	0.0	I	51.4	A	1.14	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	8	Signal	108.6	12.0	I	39.1	B	0.87	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,274	8	Signal	46.8	0.0	I	47.7	A	1.06	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,587	8	Signal	36.6	0.0	I	48.2	A	1.07	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	8	Signal	22.8	0.0	I	44.2	A	0.98	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	8	Signal	21.0	0.0	I	44.6	A	0.99	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	8	Signal	27.0	0.0	I	42.7	A	0.95	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	8	Signal	45.6	0.0	I	41.8	B	0.93	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	8	Signal	40.2	10.8	I	20.6	E	0.46	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	8	Signal	16.2	0.0	I	42.2	A	0.94	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	8	Signal	31.8	6.6	I	28.3	C	0.63	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	8	Signal	28.8	1.2	I	32.5	C	0.72	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	8	Signal	25.8	0.0	I	43.3	A	0.96	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,429	8	Signal	32.4	0.0	I	51.1	A	1.14	
TOTAL							45	29,041			492.0	30.6	I	40.2	B	0.89	0.199 gal/veh
PM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	45	634	7	Signal	12.6	1.8	I	34.3	B	0.76	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	7	Signal	120.0	18.6	I	35.4	B	0.79	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,274	7	Signal	49.2	0.0	I	45.4	A	1.01	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,587	7	Signal	38.4	0.0	I	45.9	A	1.02	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	7	Signal	22.2	0.0	I	45.4	A	1.01	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	7	Signal	19.8	0.0	I	47.3	A	1.05	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	7	Signal	43.2	9.0	I	26.7	D	0.59	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	7	Signal	48.6	0.0	I	39.3	B	0.87	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	7	Signal	27.6	4.8	I	30.0	C	0.67	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	7	Signal	15.0	0.0	I	45.6	A	1.01	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	7	Signal	24.0	3.6	I	37.5	B	0.83	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	7	Signal	19.8	0.0	I	47.3	A	1.05	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	7	Signal	30.6	7.2	I	36.5	B	0.81	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,429	7	Signal	31.8	0.0	I	52.1	A	1.16	
TOTAL							45	29,041			502.8	45.0	I	39.4	B	0.88	0.198 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



US 17&92 Part A - AM Peak

Before Condition

Date of Collection: 1/20/2010
Distance: 5.30 miles
From: Spartan Dr.
To: Shepard Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 32.4 MPH
NB Travel Time: 10.45 MIN
NB Delay Time: 2.21 MIN

SB Avg Speed: 30.5 MPH
SB Travel Time: 10.83 MIN
SB Delay Time: 2.46 MIN

US 17&92 Part A - AM Peak

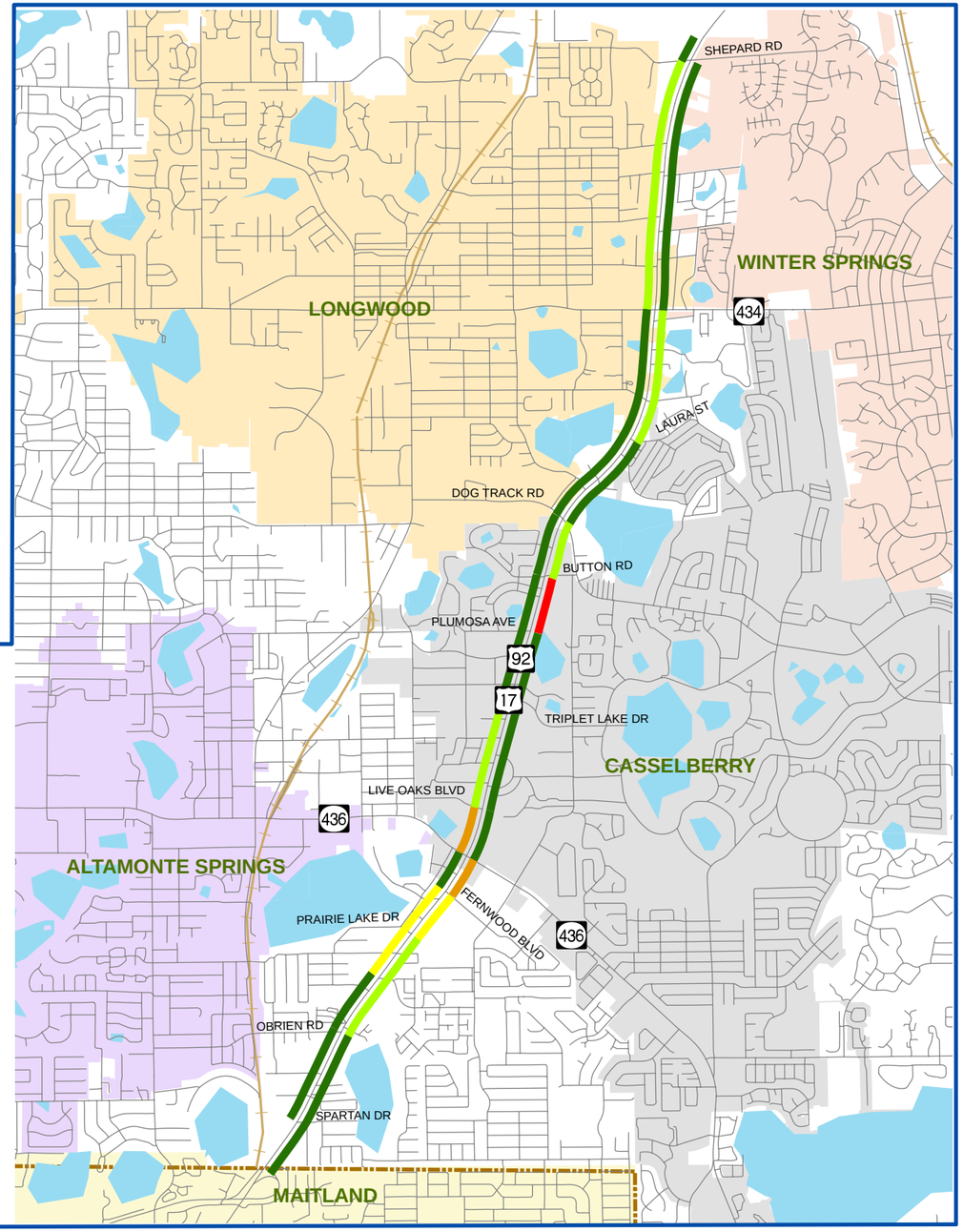
After Condition

Date of Collection: 5/26/2010
Distance: 5.30 miles
From: Spartan Dr.
To: Shepard Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 37.6 MPH
NB Travel Time: 9.01 MIN
NB Delay Time: 1.40 MIN

SB Avg Speed: 40.2 MPH
SB Travel Time: 8.20 MIN
SB Delay Time: 0.51 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

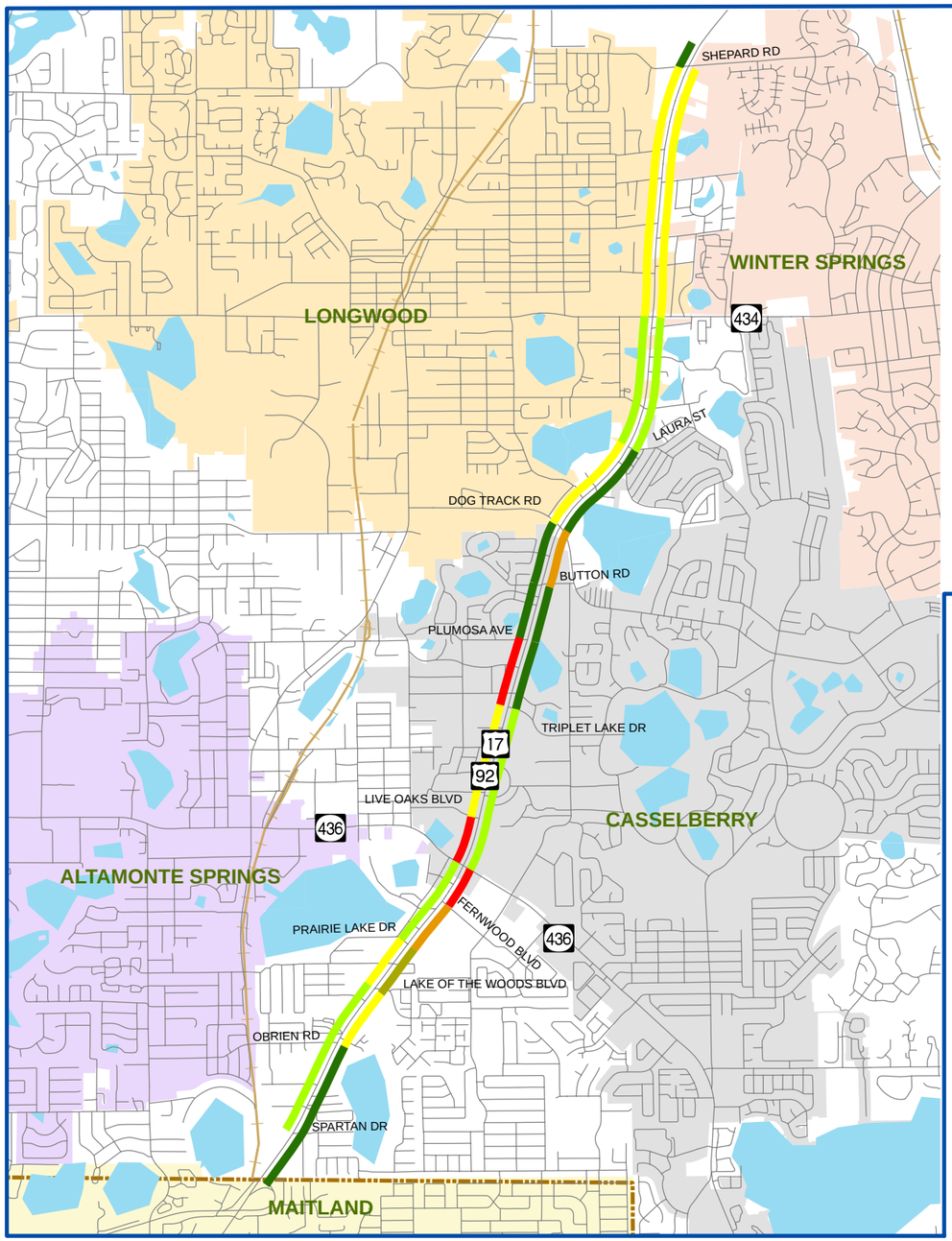
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 1 2 Miles



US 17&92 Part A - PM Peak

Before Condition

Date of Collection: 1/20/2011
Distance: 5.30 miles
From: Spartan Dr.
To: Shepard Rd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 30.6 MPH
NB Travel Time: 11.09 MIN
NB Delay Time: 2.62 MIN

SB Avg Speed: 30.3 MPH
SB Travel Time: 10.88 MIN
SB Delay Time: 2.55 MIN

US 17&92 Part A - PM Peak

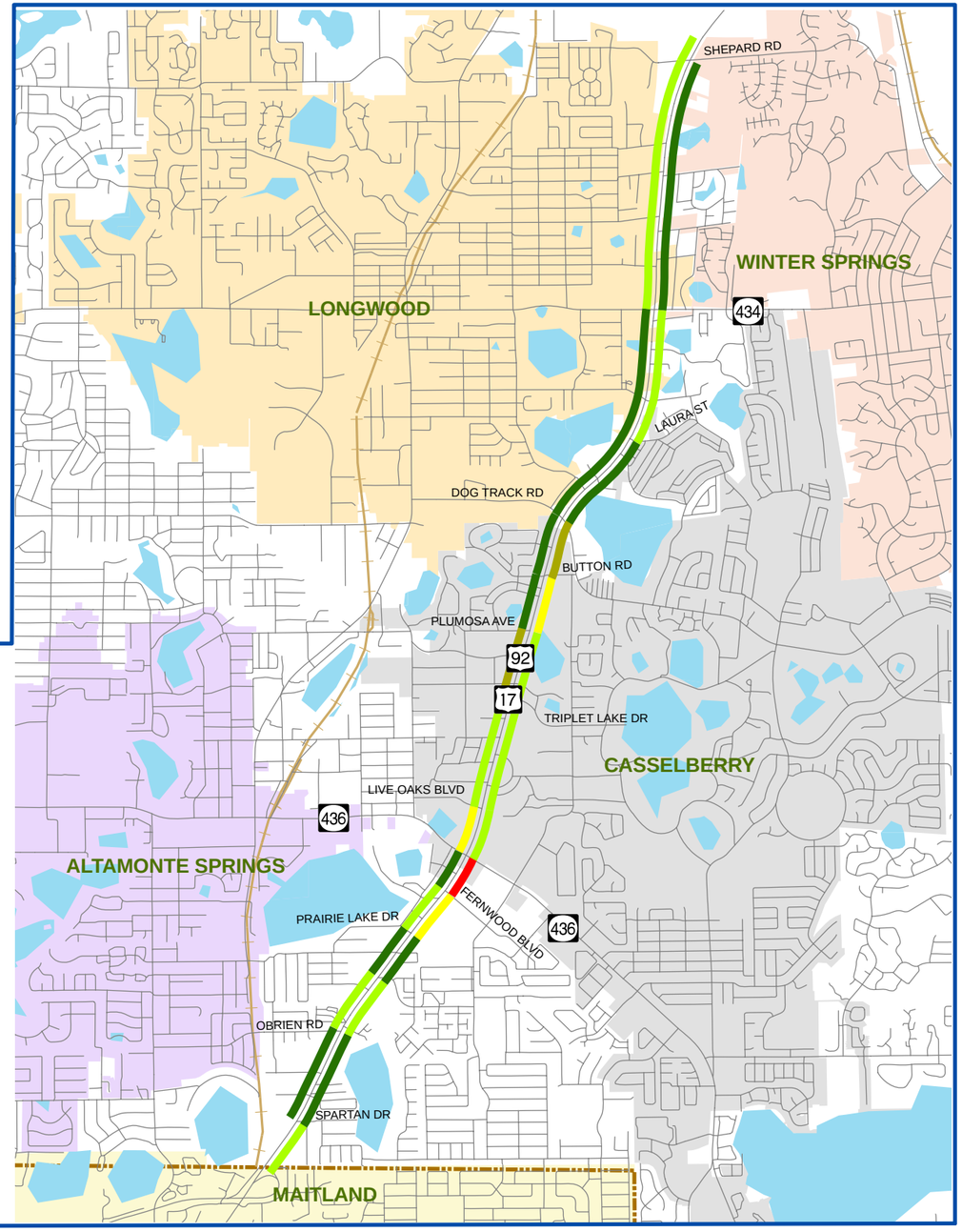
After Condition

Date of Collection: 5/26/2011
Distance: 5.30 miles
From: Spartan Dr.
To: Shepard Rd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 35.9 MPH
NB Travel Time: 9.44 MIN
NB Delay Time: 1.32 MIN

SB Avg Speed: 39.4 MPH
SB Travel Time: 8.38 MIN
SB Delay Time: 0.75 MIN



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Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 1 2 Miles

US 17-92 Part A : Spartan Drive to Shepard Road

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**627.0**	**132.6**	**32.4**	0.1900	333.53	363.85
Northbound/Eastbound - PM Peak Hour						
1762	**665.4**	**157.2**	**30.6**	0.1940	325.68	341.83
Southbound/Westbound - AM Peak Hour						
1573	**649.8**	**147.6**	**30.5**	0.2000	283.93	314.60
Southbound/Westbound - PM Peak Hour						
2113	**652.8**	**153.0**	**30.3**	0.2010	383.16	424.71

*Traffic Volumes are obtained from the latest Seminole County Counts

US 17-92 Part A : Spartan Drive to Shepard Road

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**540.6**	**84.0**	**37.6**	0.1910	287.57	365.77
Northbound/Eastbound - PM Peak Hour						
1762	**566.4**	**79.2**	**35.9**	0.1930	277.22	340.07
Southbound/Westbound - AM Peak Hour						
1573	**492.0**	**30.6**	**40.2**	0.1990	214.98	313.03
Southbound/Westbound - PM Peak Hour						
2113	**502.8**	**45.0**	**39.4**	0.1980	295.12	418.37

*Traffic Volumes are obtained from the latest Seminole County Counts

US 17-92 Part A : Spartan Drive to Shepard Road

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	617.46	502.55	708.83	572.34
Total Fuel Consumption (gallons)	678.45	678.79	766.54	758.44

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,871.85	$2,252.76
Annual User Benefit	**$561,556.14**	**$675,828.93**
Total Annual User Benefit =	**$1,237,385.07**	
Total Signal Retiming Annual Cost	$23,108.88	
User Benefit / Cost Ratio	**53.55**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 17/92 Part B

Shepard Rd. to Airport Blvd.

TABLE 1.2

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part B - Shepard Rd. to Airport Blvd. - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	264	5	Signal	30.0	23.4	I	6.0	F	0.13	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	1	2	0	45/50	3,062	5	Signal	44.4	0.0	I	47.0	A	0.94	
Gen. Hutchinson Pkwy to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	5	Signal	76.2	6.0	I	37.8	B	0.76	
SR 419/CR 427 to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,214	5	Signal	24.0	0.0	I	34.5	B	0.69	
CR 427 to Weldon Blvd.	Seminole	Arterial	OBD	2	2	1	50	1,003	5	Signal	17.4	0.0	I	39.3	B	0.79	
Weldon Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	0	50	3,326	5	Signal	76.2	18.6	I	29.8	C	0.60	
County Home Rd. to Bargain Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,531	5	Signal	27.6	0.0	I	37.8	B	0.76	
Bargain Blvd. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	634	5	Signal	10.8	0.0	I	40.0	B	0.80	
Bush Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50	1,848	5	Signal	48.0	10.8	I	26.2	D	0.52	
Collins Dr./Lake Minnie Dr. to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	50/45	2,270	5	Signal	61.8	19.8	I	25.0	D	0.50	
Lake Mary Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,267	5	Signal	21.0	0.0	I	41.1	B	0.91	
Plaza/Walmart Entrance to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	1,056	5	Signal	27.0	8.4	I	26.7	D	0.59	
Americana Blvd. to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,693	5	Signal	52.2	6.0	I	35.2	B	0.78	
TOTAL							50	24,394			516.6	93.0	I	32.2	C	0.64	0.159 gal/veh
PM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	264	6	Signal	15.0	8.4	I	12.0	F	0.27	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	1	2	0	45/50	3,062	6	Signal	44.4	0.0	I	47.0	A	0.94	
Gen. Hutchinson Pkwy to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	6	Signal	105.6	28.8	I	27.3	C	0.55	
SR 419/CR 427 to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,214	6	Signal	22.2	0.0	I	37.3	B	0.75	
CR 427 to Weldon Blvd.	Seminole	Arterial	OBD	2	2	1	50	1,003	6	Signal	16.8	0.0	I	40.7	B	0.81	
Weldon Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	0	50	3,326	6	Signal	62.4	10.2	I	36.3	B	0.73	
County Home Rd. to Bargain Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,531	6	Signal	23.4	0.0	I	44.6	A	0.89	
Bargain Blvd. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	634	6	Signal	19.2	5.4	I	22.5	D	0.45	
Bush Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50	1,848	6	Signal	34.8	1.2	I	36.2	B	0.72	
Collins Dr./Lake Minnie Dr. to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	50/45	2,270	6	Signal	90.0	39.0	I	17.2	E	0.34	
Lake Mary Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,267	6	Signal	30.0	0.6	I	28.8	C	0.64	
Plaza/Walmart Entrance to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	1,056	6	Signal	19.8	0.0	I	36.4	B	0.81	
Americana Blvd. to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,693	6	Signal	58.8	3.6	I	31.2	C	0.69	
TOTAL							50	24,394			542.4	97.2	I	30.7	C	0.61	0.161 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.2

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part B - Shepard Rd. to Airport Blvd. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	845	5	Signal	73.2	51.0	I	7.9	F	0.17	
Airport Blvd. to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	2,693	5	Signal	42.6	0.0	I	43.1	A	0.96	
Americana Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,056	5	Signal	16.2	0.0	I	44.4	A	0.99	
Plaza/Walmart Entrance to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	45	1,267	5	Signal	24.0	0.0	I	36.0	B	0.80	
Lake Mary Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50\45	2,270	5	Signal	35.4	0.0	I	43.7	A	0.87	
Collins Dr./Lake Minnie Dr. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,848	5	Signal	31.8	0.6	I	39.6	B	0.79	
Bush Blvd. to Bargain Blvd.	Seminole	Arterial	OBD	2	2	0	50	634	5	Signal	10.2	0.0	I	42.4	A	0.85	
Bargain Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	1	50	1,531	5	Signal	23.4	0.0	I	44.6	A	0.89	
County Home Rd. to Weldon Blvd.	Seminole	Arterial	OBD	1	2	0	50	3,326	5	Signal	56.4	5.4	I	40.2	B	0.80	
Weldon Blvd. to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,003	5	Signal	31.2	12.6	I	21.9	D	0.44	
CR 427 to SR 419/CR 427	Seminole	Arterial	OBD	2	2	0	50	1,214	5	Signal	20.4	0.0	I	40.6	B	0.81	
SR 419/CR 427 to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	0	2	1	50	4,224	5	Signal	66.6	4.2	I	43.2	A	0.86	
Gen. Hutchinson Pkwy to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	50\45	3,062	5	Signal	53.4	4.8	I	39.1	B	0.78	
TOTAL							50	24,974			484.8	78.6	I	35.1	B	0.70	0.161 gal/veh
PM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	845	5	Signal	61.2	44.4	I	9.4	F	0.21	
Airport Blvd. to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	2,693	5	Signal	59.4	6.0	I	30.9	C	0.69	
Americana Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,056	5	Signal	31.2	9.0	I	23.1	D	0.51	
Plaza/Walmart Entrance to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	45	1,267	5	Signal	45.6	19.2	I	18.9	E	0.42	
Lake Mary Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50\45	2,270	5	Signal	41.4	2.4	I	37.4	B	0.75	
Collins Dr./Lake Minnie Dr. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,848	5	Signal	29.4	0.0	I	42.9	A	0.86	
Bush Blvd. to Bargain Blvd.	Seminole	Arterial	OBD	2	2	0	50	634	5	Signal	10.2	0.0	I	42.4	A	0.85	
Bargain Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	1	50	1,531	5	Signal	22.2	0.0	I	47.0	A	0.94	
County Home Rd. to Weldon Blvd.	Seminole	Arterial	OBD	1	2	0	50	3,326	5	Signal	68.4	13.8	I	33.2	C	0.66	
Weldon Blvd. to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,003	5	Signal	31.2	12.0	I	21.9	D	0.44	
CR 427 to SR 419/CR 427	Seminole	Arterial	OBD	2	2	0	50	1,214	5	Signal	22.8	0.0	I	36.3	B	0.73	
SR 419/CR 427 to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	0	2	1	50	4,224	5	Signal	73.2	8.4	I	39.3	B	0.79	
Gen. Hutchinson Pkwy to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	50\45	3,062	5	Signal	72.0	18.6	I	29.0	C	0.58	
TOTAL							50	24,974			568.2	133.8	I	30.0	C	0.60	0.163 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.2

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part B - Shepard Rd. to Airport Blvd. - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	264	7	Signal	3.6	0.0	I	50.0	A	1.11	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	1	2	0	45/50	3,062	7	Signal	38.4	0.0	I	54.4	A	1.09	
Gen. Hutchinson Pkwy to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	7	Signal	90.0	21.6	I	32.0	C	0.64	
SR 419/CR 427 to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,214	7	Signal	24.6	1.2	I	33.7	C	0.67	
CR 427 to Weldon Blvd.	Seminole	Arterial	OBD	2	2	1	50	1,003	7	Signal	15.6	0.0	I	43.8	A	0.88	
Weldon Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	0	50	3,326	7	Signal	45.6	0.0	I	49.7	A	0.99	
County Home Rd. to Bargain Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,531	7	Signal	21.6	0.0	I	48.3	A	0.97	
Bargain Blvd. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	634	7	Signal	12.6	0.6	I	34.3	B	0.69	
Bush Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50	1,848	7	Signal	25.2	0.0	I	50.0	A	1.00	
Collins Dr./Lake Minnie Dr. to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	50/45	2,270	7	Signal	37.8	1.2	I	41.0	B	0.82	
Lake Mary Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,267	7	Signal	21.6	0.0	I	40.0	B	0.89	
Plaza/Walmart Entrance to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	1,056	7	Signal	16.2	0.0	I	44.4	A	0.99	
Americana Blvd. to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,693	7	Signal	70.8	18.0	I	25.9	D	0.58	
TOTAL							50	24,394			423.6	42.6	I	39.3	B	0.79	0.158 gal/veh
PM PEAK HOUR																	
Median Opening to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	264	5	Signal	3.5	0.0	I	51.4	A	1.14	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	1	2	0	45/50	3,062	5	Signal	37.2	0.0	I	56.1	A	1.12	
Gen. Hutchinson Pkwy to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	5	Signal	98.4	36.0	I	29.3	C	0.59	
SR 419/CR 427 to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,214	5	Signal	20.4	0.0	I	40.6	B	0.81	
CR 427 to Weldon Blvd.	Seminole	Arterial	OBD	2	2	1	50	1,003	5	Signal	14.4	0.0	I	47.5	A	0.95	
Weldon Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	0	50	3,326	5	Signal	49.2	6.6	I	46.1	A	0.92	
County Home Rd. to Bargain Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,531	5	Signal	21.0	0.0	I	49.7	A	0.99	
Bargain Blvd. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	634	5	Signal	9.0	0.0	I	48.0	A	0.96	
Bush Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50	1,848	5	Signal	31.8	4.8	I	39.6	B	0.79	
Collins Dr./Lake Minnie Dr. to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	50/45	2,270	5	Signal	32.4	0.0	I	47.8	A	0.96	
Lake Mary Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,267	5	Signal	37.8	12.6	I	22.9	D	0.51	
Plaza/Walmart Entrance to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	1,056	5	Signal	16.8	0.0	I	42.9	A	0.95	
Americana Blvd. to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,693	5	Signal	39.6	0.0	I	46.4	A	1.03	
TOTAL							50	24,394			411.5	60.0	I	40.4	B	0.81	0.159 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.2

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part B - Shepard Rd. to Airport Blvd. - Southbound Direction Summary - After Condition

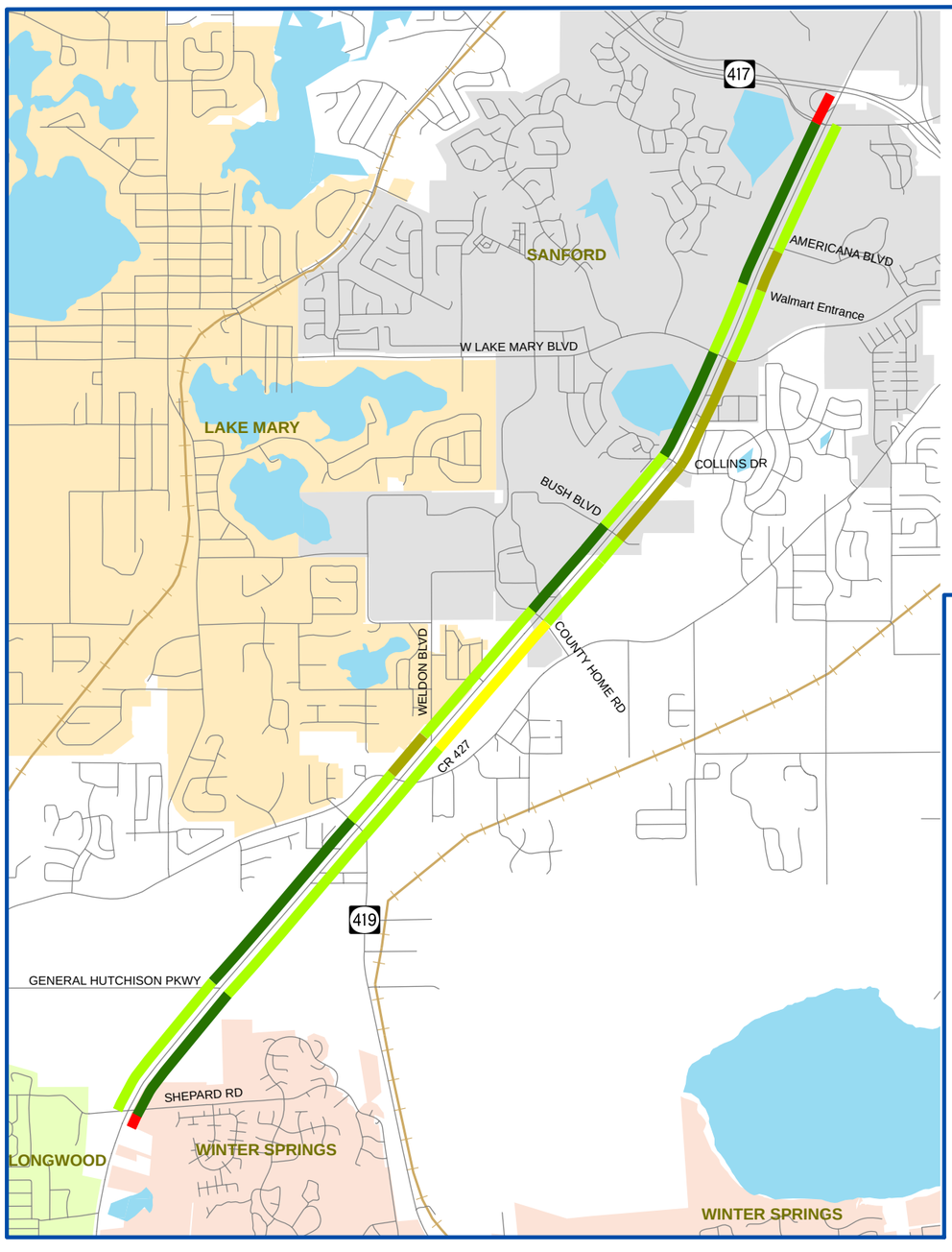
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	845	7	Signal	25.8	11.4	I	22.3	D	0.50	
Airport Blvd. to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	2,693	7	Signal	39.6	0.0	I	46.4	A	1.03	
Americana Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,056	7	Signal	18.6	0.0	I	38.7	B	0.86	
Plaza/Walmart Entrance to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	45	1,267	7	Signal	25.8	0.0	I	33.5	C	0.74	
Lake Mary Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50\45	2,270	7	Signal	34.8	0.0	I	44.5	A	0.89	
Collins Dr./Lake Minnie Dr. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,848	7	Signal	28.8	0.0	I	43.7	A	0.87	
Bush Blvd. to Bargain Blvd.	Seminole	Arterial	OBD	2	2	0	50	634	7	Signal	9.6	0.0	I	45.0	A	0.90	
Bargain Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	1	50	1,531	7	Signal	21.6	0.0	I	48.3	A	0.97	
County Home Rd. to Weldon Blvd.	Seminole	Arterial	OBD	1	2	0	50	3,326	7	Signal	47.4	0.0	I	47.8	A	0.96	
Weldon Blvd. to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,003	7	Signal	16.8	0.0	I	40.7	B	0.81	
CR 427 to SR 419/CR 427	Seminole	Arterial	OBD	2	2	0	50	1,214	7	Signal	17.4	0.0	I	47.6	A	0.95	
SR 419/CR 427 to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	0	2	1	50	4,224	7	Signal	54.6	0.0	I	52.7	A	1.05	
Gen. Hutchinson Pkwy to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	50\45	3,062	7	Signal	41.4	0.0	I	50.4	A	1.01	
TOTAL							50	24,974			382.2	11.4	I	44.6	A	0.89	0.160 gal/veh
PM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	845	5	Signal	40.2	16.8	I	14.3	F	0.32	
Airport Blvd. to Americana Blvd.	Seminole	Arterial	OBD	1	2	1	45	2,693	5	Signal	54.0	16.2	I	34.0	C	0.76	
Americana Blvd. to Plaza/Walmart Entrance	Seminole	Arterial	OBD	1	2	1	45	1,056	5	Signal	25.8	5.4	I	27.9	C	0.62	
Plaza/Walmart Entrance to Lake Mary Blvd.	Seminole	Arterial	OBD	2	2	1	45	1,267	5	Signal	37.2	10.2	I	23.2	D	0.52	
Lake Mary Blvd. to Collins Dr./Lake Minnie Dr.	Seminole	Arterial	OBD	1	2	1	50\45	2,270	5	Signal	32.4	0.0	I	47.8	A	0.96	
Collins Dr./Lake Minnie Dr. to Bush Blvd.	Seminole	Arterial	OBD	1	2	1	50	1,848	5	Signal	31.2	1.8	I	40.4	B	0.81	
Bush Blvd. to Bargain Blvd.	Seminole	Arterial	OBD	2	2	0	50	634	5	Signal	10.2	0.0	I	42.4	A	0.85	
Bargain Blvd. to County Home Rd.	Seminole	Arterial	OBD	1	2	1	50	1,531	5	Signal	21.0	0.0	I	49.7	A	0.99	
County Home Rd. to Weldon Blvd.	Seminole	Arterial	OBD	1	2	0	50	3,326	5	Signal	52.2	3.6	I	43.4	A	0.87	
Weldon Blvd. to CR 427	Seminole	Arterial	OBD	1	2	1	50	1,003	5	Signal	40.8	18.6	I	16.8	E	0.34	
CR 427 to SR 419/CR 427	Seminole	Arterial	OBD	2	2	0	50	1,214	5	Signal	37.8	16.2	I	21.9	D	0.44	
SR 419/CR 427 to Gen. Hutchinson Pkwy	Seminole	Arterial	OBD	0	2	1	50	4,224	5	Signal	64.8	3.6	I	44.4	A	0.89	
Gen. Hutchinson Pkwy to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	3	0	50\45	3,062	5	Signal	48.6	5.4	I	43.0	A	0.86	
TOTAL							50	24,974			496.2	97.8	I	34.3	B	0.69	0.162 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



US 17&92 Part B - AM Peak

Before Condition

Date of Collection: 1/20/2011
Distance: 4.62 miles
From: Shepard Rd.
To: Airport Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 32.2 MPH
NB Travel Time: 8.61 MIN
NB Delay Time: 1.55 MIN

SB Avg Speed: 35.1 MPH
SB Travel Time: 8.08 MIN
SB Delay Time: 1.31 MIN

US 17&92 Part B - AM Peak

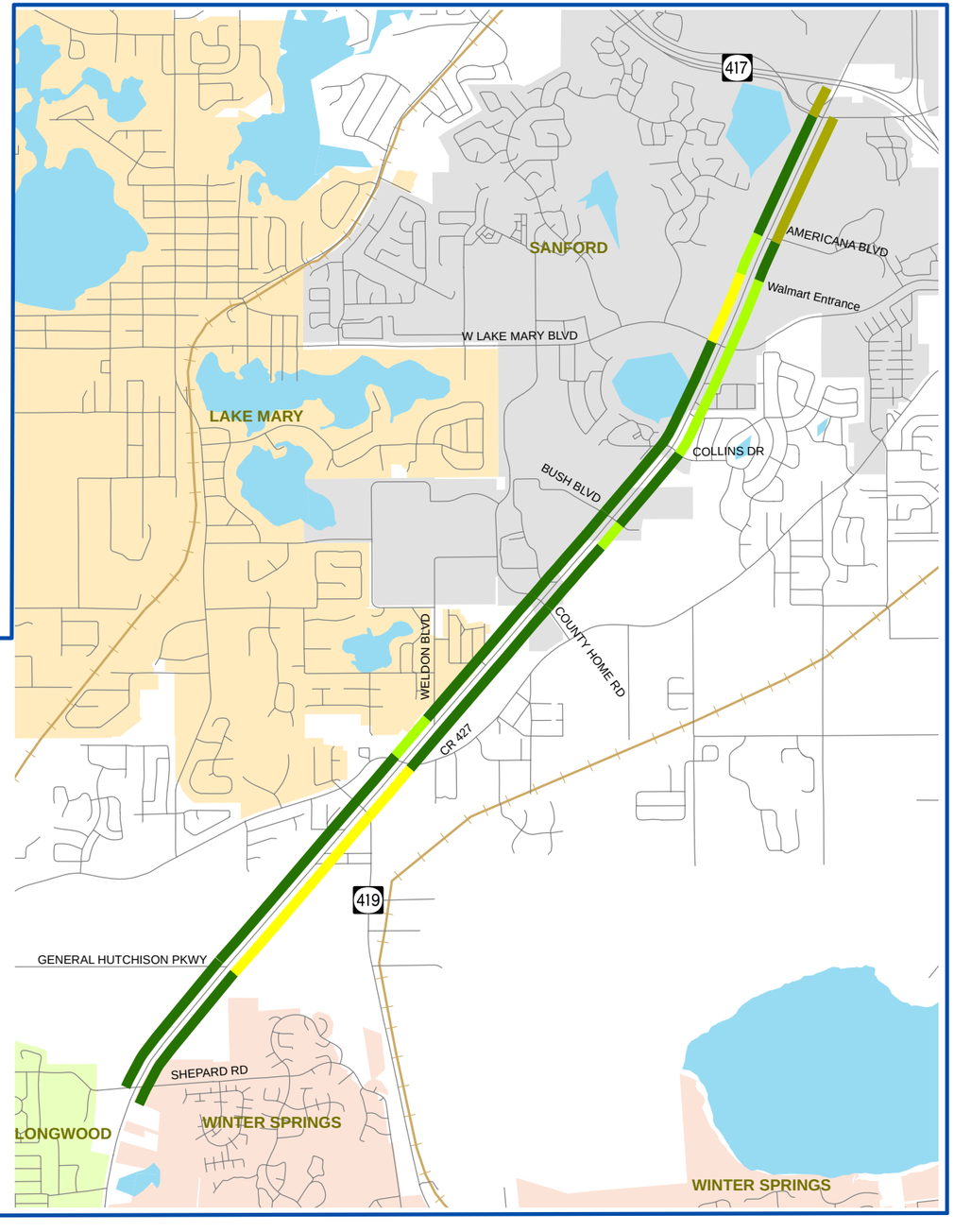
After Condition

Date of Collection: 3/30/2011
Distance: 4.62 miles
From: Shepard Rd.
To: Airport Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 39.3 MPH
NB Travel Time: 7.06 MIN
NB Delay Time: 0.71 MIN

SB Avg Speed: 44.6 MPH
SB Travel Time: 6.37 MIN
SB Delay Time: 0.19 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

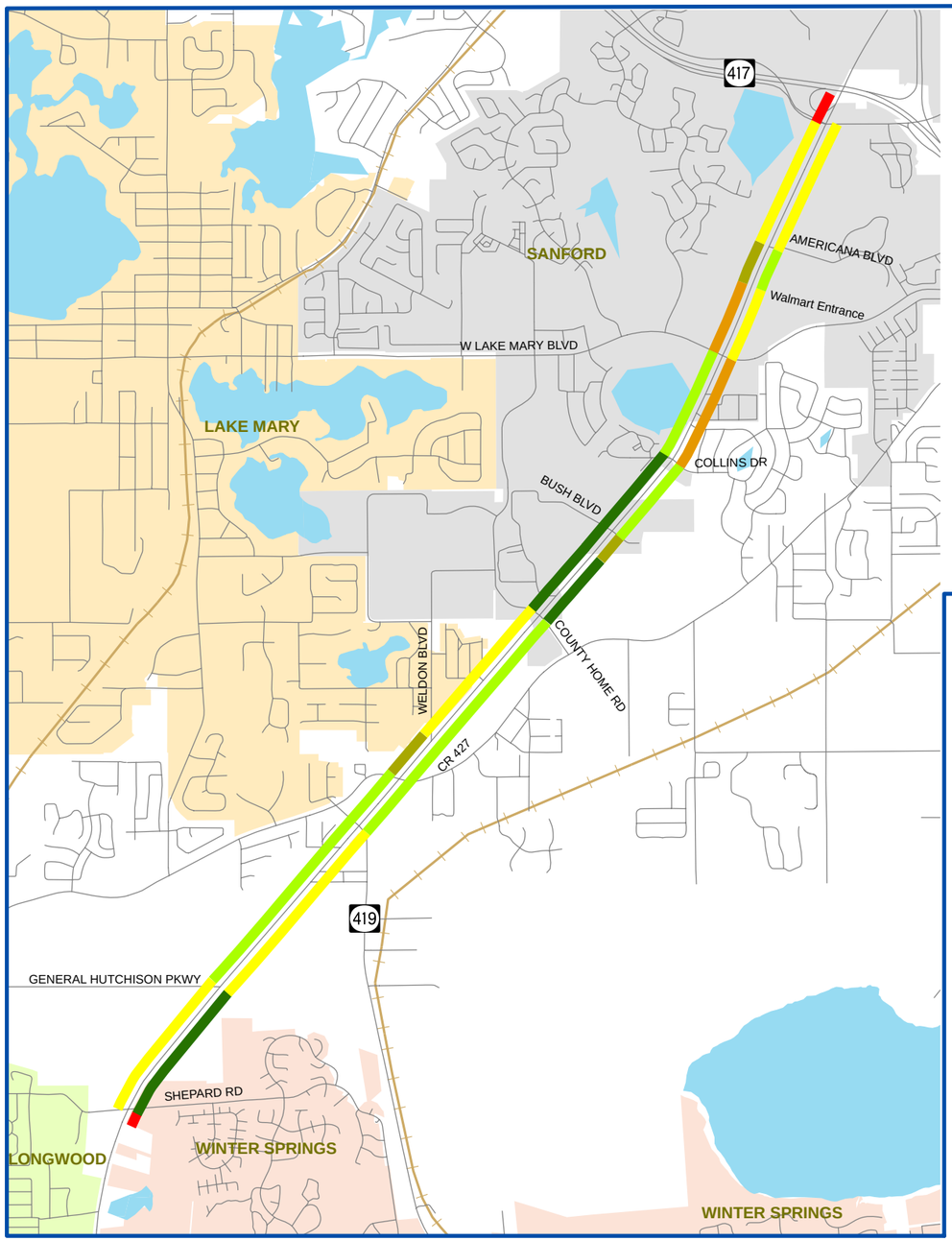
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles



US 17&92 Part B - PM Peak

Before Condition

Date of Collection: 1/20/2011
Distance: 4.62 miles
From: Shepard Rd.
To: Airport Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 30.7 MPH
NB Travel Time: 9.04 MIN
NB Delay Time: 1.62 MIN

SB Avg Speed: 30.0 MPH
SB Travel Time: 9.47 MIN
SB Delay Time: 2.23 MIN

US 17&92 Part B - PM Peak

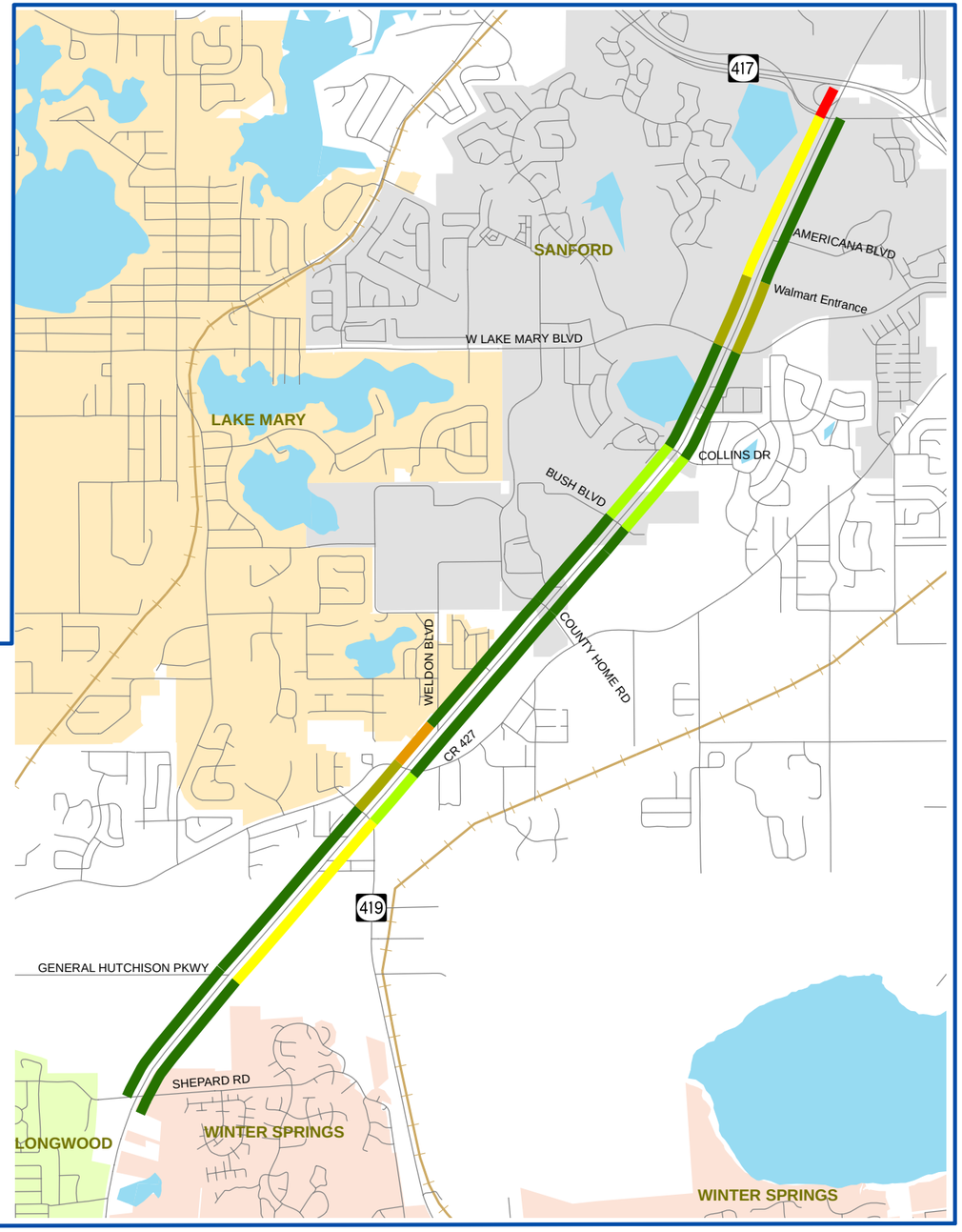
After Condition

Date of Collection: 3/30/2011
Distance: 4.62 miles
From: Shepard Rd.
To: Airport Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 40.4 MPH
NB Travel Time: 6.86 MIN
NB Delay Time: 1.00 MIN

SB Avg Speed: 34.3 MPH
SB Travel Time: 8.27 MIN
SB Delay Time: 1.63 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A	D	Roads
B	E	City Boundary
C	F	Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 1 2 Miles

US 17-92 Part B : Shepard Road to Airport Boulevard

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**516.6**	**93.0**	**32.2**	0.1590	274.80	304.49
Northbound/Eastbound - PM Peak Hour						
1762	**542.4**	**97.2**	**30.7**	0.1610	265.47	283.68
Southbound/Westbound - AM Peak Hour						
1573	**484.8**	**78.6**	**35.1**	0.1610	211.83	253.25
Southbound/Westbound - PM Peak Hour						
2113	**568.2**	**133.8**	**30.0**	0.1630	333.50	344.42

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

US 17-92 Part B : Shepard Road to Airport Boulevard

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**423.6**	**42.6**	**39.3**	0.1580	225.33	302.57
Northbound/Eastbound - PM Peak Hour						
1762	**411.5**	**60.0**	**40.5**	0.1590	201.41	280.16
Southbound/Westbound - AM Peak Hour						
1573	**382.2**	**11.4**	**44.6**	0.1600	167.00	251.68
Southbound/Westbound - PM Peak Hour						
2113	**496.2**	**97.8**	**34.3**	0.1620	291.24	342.31

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

US 17-92 Part B : Shepard Road to Airport Boulevard

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	486.63	392.33	598.98	492.65
Total Fuel Consumption (gallons)	557.74	554.25	628.10	622.46

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,549.11	$1,752.54
Annual User Benefit	**$464,733.14**	**$525,762.66**
Total Annual User Benefit =	**$990,495.80**	
Total Signal Retiming Annual Cost	$19,807.83	
User Benefit / Cost Ratio	**50.01**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 17/92 Part C

Airport Blvd. to 13th St.

TABLE 1.3

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 Part C - Airport Blvd. to 13th St. - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	686	8	Signal	62.4	32.4	I	7.5	F	0.17	
Airport Blvd. to SR 417	Seminole	Arterial	OBD	0	2	0	45	2,957	8	Signal	48.6	1.8	I	41.5	B	0.92	
SR 417 to 27th St.	Seminole	Arterial	OBD	1	2	0	45	845	8	Signal	30.0	12.6	I	19.2	E	0.43	
27th St. to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,478	8	Signal	35.4	6.0	I	28.5	C	0.63	
Park Dr. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	1,690	8	Signal	45.0	10.8	I	25.6	D	0.57	
25th St/SR 46 to 20th St.	Seminole	Arterial	OBD	1	2	0	45	2,640	8	Signal	47.4	0.0	I	38.0	B	0.84	
20th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	1,690	8	Signal	40.8	1.2	I	28.2	C	0.81	
15th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	792	8	Signal	16.2	0.6	I	33.3	C	0.95	
TOTAL							45	12,778			325.8	65.4	I	26.7	D	0.59	0.083 gal/veh
PM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	686	6	Signal	99.6	69.0	I	4.7	F	0.10	
Airport Blvd. to SR 417	Seminole	Arterial	OBD	0	2	0	45	2,957	6	Signal	49.8	0.6	I	40.5	B	0.90	
SR 417 to 27th St.	Seminole	Arterial	OBD	1	2	0	45	845	6	Signal	31.2	12.6	I	18.5	E	0.41	
27th St. to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,478	6	Signal	33.0	5.4	I	30.5	C	0.68	
Park Dr. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	1,690	6	Signal	75.6	40.8	I	15.2	F	0.34	
25th St/SR 46 to 20th St.	Seminole	Arterial	OBD	1	2	0	45	2,640	6	Signal	47.4	3.0	I	38.0	B	0.84	
20th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	1,690	6	Signal	31.8	0.0	I	36.2	B	1.04	
15th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	792	6	Signal	11.4	0.0	I	47.4	A	1.35	
TOTAL							45	12,778			379.8	131.4	I	22.9	D	0.51	0.085 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.3
Year 2011 METROPLAN Orlando Travel Time Study
US 17/92 Part C - Airport Blvd. to 13th St. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
11th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	634	8	Signal	15.0	0.0	I	28.8	C	0.82	
13th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	792	8	Signal	19.2	2.4	I	28.1	C	0.80	
15th St. to 20th St.	Seminole	Arterial	OBD	1	2	0	45	1,690	8	Signal	46.2	3.6	I	24.9	D	0.55	
20th St. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	2,640	8	Signal	81.6	27.6	I	22.1	D	0.49	
25th St/SR 46 to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,690	8	Signal	29.4	0.0	I	39.2	B	0.87	
Park Dr. to 27th St.	Seminole	Arterial	OBD	1	2	0	45	1,478	8	Signal	31.8	5.4	I	31.7	C	0.70	
27th St. to SR 417	Seminole	Arterial	OBD	1	2	0	45	845	8	Signal	13.8	0.0	I	41.7	B	0.93	
SR 417 to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,957	8	Signal	85.2	31.8	I	23.7	D	0.53	
TOTAL							45	12,725			322.2	70.8	I	26.9	D	0.60	0.084 gal/veh
PM PEAK HOUR																	
11th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	634	7	Signal	24.0	8.4	I	18.0	E	0.51	
13th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	792	7	Signal	18.6	4.2	I	29.0	C	0.83	
15th St. to 20th St.	Seminole	Arterial	OBD	1	2	0	45	1,690	7	Signal	36.6	2.4	I	31.5	C	0.70	
20th St. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	2,640	7	Signal	81.0	33.6	I	22.2	D	0.49	
25th St/SR 46 to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,690	7	Signal	28.8	0.0	I	40.0	B	0.89	
Park Dr. to 27th St.	Seminole	Arterial	OBD	1	2	0	45	1,478	7	Signal	33.6	5.4	I	30.0	C	0.67	
27th St. to SR 417	Seminole	Arterial	OBD	1	2	0	45	845	7	Signal	17.4	0.6	I	33.1	C	0.74	
SR 417 to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,957	7	Signal	102.0	49.8	I	19.8	E	0.44	
TOTAL							45	12,725			342.0	104.4	I	25.4	D	0.56	0.086 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.3
Year 2011 METROPLAN Orlando Travel Time Study
US 17/92 Part C - Airport Blvd. to 13th St. - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	686	10	Signal	42.0	7.2	I	11.1	F	0.25	
Airport Blvd. to SR 417	Seminole	Arterial	OBD	0	2	0	45	2,957	10	Signal	55.2	6.6	I	36.5	B	0.81	
SR 417 to 27th St.	Seminole	Arterial	OBD	1	2	0	45	845	10	Signal	22.2	5.4	I	25.9	D	0.58	
27th St. to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,478	10	Signal	23.4	0.0	I	43.1	A	0.96	
Park Dr. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	1,690	10	Signal	47.4	13.2	I	24.3	D	0.54	
25th St/SR 46 to 20th St.	Seminole	Arterial	OBD	1	2	0	45	2,640	10	Signal	45.0	0.6	I	40.0	B	0.89	
20th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	1,690	10	Signal	39.0	0.0	I	29.5	C	0.84	
15th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	792	10	Signal	12.6	0.0	I	42.9	A	1.22	
TOTAL							45	12,778			286.8	33.0	I	30.4	C	0.68	0.082 gal/veh
PM PEAK HOUR																	
Median Opening to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	686	7	Signal	61.2	27.0	I	7.6	F	0.17	
Airport Blvd. to SR 417	Seminole	Arterial	OBD	0	2	0	45	2,957	7	Signal	46.8	0.0	I	43.1	A	0.96	
SR 417 to 27th St.	Seminole	Arterial	OBD	1	2	0	45	845	7	Signal	18.6	3.6	I	31.0	C	0.69	
27th St. to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,478	7	Signal	33.0	3.0	I	30.5	C	0.68	
Park Dr. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	1,690	7	Signal	51.0	11.4	I	22.6	D	0.50	
25th St/SR 46 to 20th St.	Seminole	Arterial	OBD	1	2	0	45	2,640	7	Signal	46.8	0.0	I	38.5	B	0.85	
20th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	1,690	7	Signal	28.2	0.0	I	40.8	B	1.17	
15th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	792	7	Signal	11.4	0.0	I	47.4	A	1.35	
TOTAL							45	12,778			297.0	45.0	I	29.3	C	0.65	0.082 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 1.3
Year 2011 METROPLAN Orlando Travel Time Study
US 17/92 Part C - Airport Blvd. to 13th St. - Southbound Direction Summary - After Condition

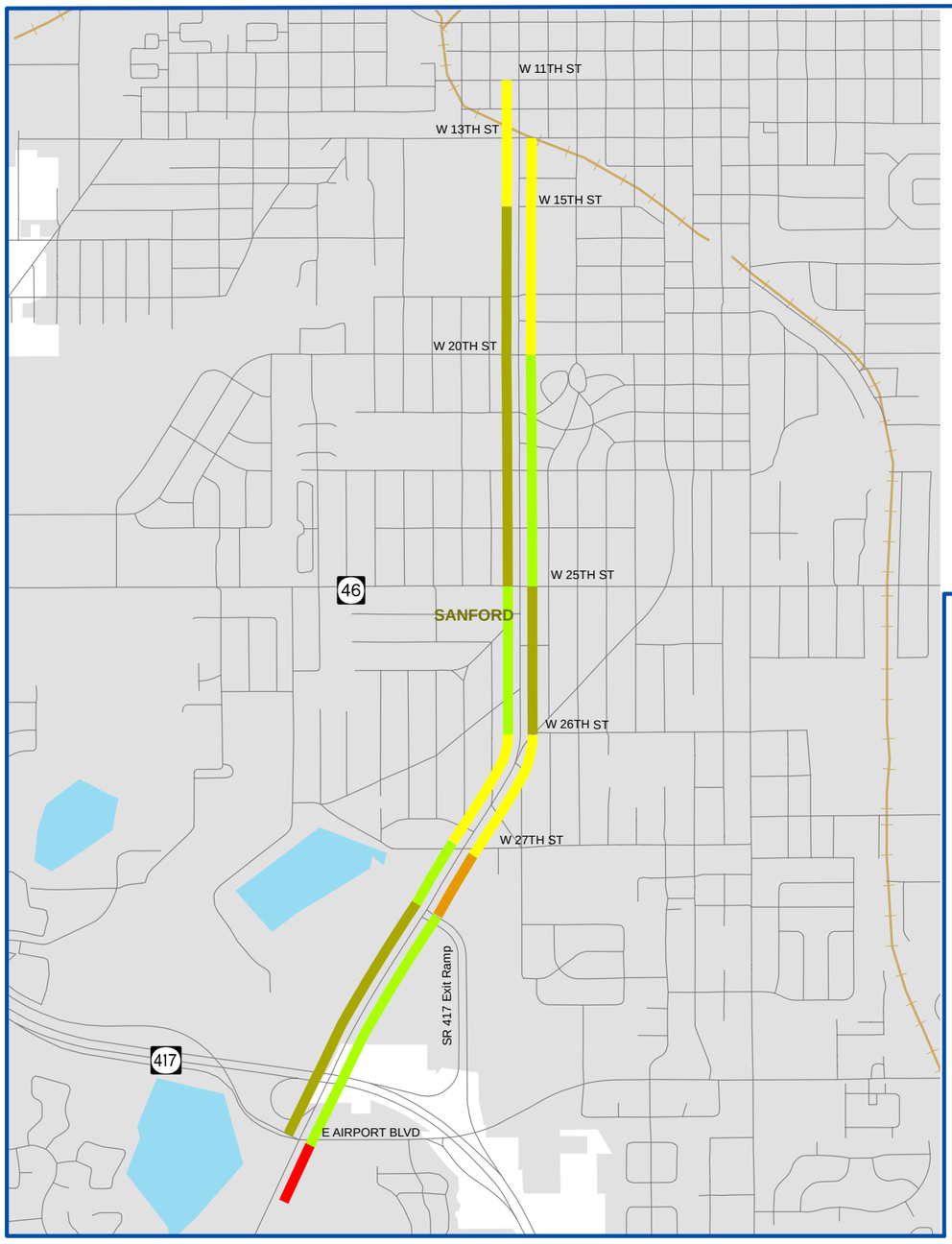
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
11th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	634	8	Signal	21.0	3.0	I	20.6	E	0.59	
13th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	792	8	Signal	14.4	0.0	I	37.5	B	1.07	
15th St. to 20th St.	Seminole	Arterial	OBD	1	2	0	45	1,690	8	Signal	38.4	2.4	I	30.0	C	0.67	
20th St. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	2,640	8	Signal	50.4	8.4	I	35.7	B	0.79	
25th St/SR 46 to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,690	8	Signal	25.8	0.0	I	44.6	A	0.99	
Park Dr. to 27th St.	Seminole	Arterial	OBD	1	2	0	45	1,478	8	Signal	37.2	10.2	I	27.1	C	0.60	
27th St. to SR 417	Seminole	Arterial	OBD	1	2	0	45	845	8	Signal	18.6	1.8	I	31.0	C	0.69	
SR 417 to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,957	8	Signal	54.6	9.6	I	36.9	B	0.82	
TOTAL							45	12,725			260.4	35.4	I	33.3	C	0.74	0.083 gal/veh
PM PEAK HOUR																	
11th St. to 13th St.	Seminole	Arterial	OBD	1	2	0	35	634	9	Signal	16.8	1.2	I	25.7	D	0.73	
13th St. to 15th St.	Seminole	Arterial	OBD	1	2	0	35	792	9	Signal	13.2	0.0	I	40.9	B	1.17	
15th St. to 20th St.	Seminole	Arterial	OBD	1	2	0	45	1,690	9	Signal	33.6	2.4	I	34.3	B	0.76	
20th St. to 25th St/SR 46	Seminole	Arterial	OBD	1	2	0	45	2,640	9	Signal	60.0	13.2	I	30.0	C	0.67	
25th St/SR 46 to Park Dr.	Seminole	Arterial	OBD	0	2	0	45	1,690	9	Signal	28.2	0.0	I	40.8	B	0.91	
Park Dr. to 27th St.	Seminole	Arterial	OBD	1	2	0	45	1,478	9	Signal	30.6	2.4	I	32.9	C	0.73	
27th St. to SR 417	Seminole	Arterial	OBD	1	2	0	45	845	9	Signal	19.2	0.0	I	30.0	C	0.67	
SR 417 to Airport Blvd.	Seminole	Arterial	OBD	2	2	1	45	2,957	9	Signal	88.8	31.8	I	22.7	D	0.50	
TOTAL							45	12,725			290.4	51.0	I	29.9	C	0.66	0.084 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



US 17&92 Part C - AM Peak

Before Condition

Date of Collection: 1/20/2011
Distance: 2.42 miles
From: Airport Blvd.
To: 13th St.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 26.7 MPH
NB Travel Time: 5.43 MIN
NB Delay Time: 1.09 MIN

SB Avg Speed: 26.9 MPH
SB Travel Time: 5.37 MIN
SB Delay Time: 1.18 MIN

US 17&92 Part C - AM Peak

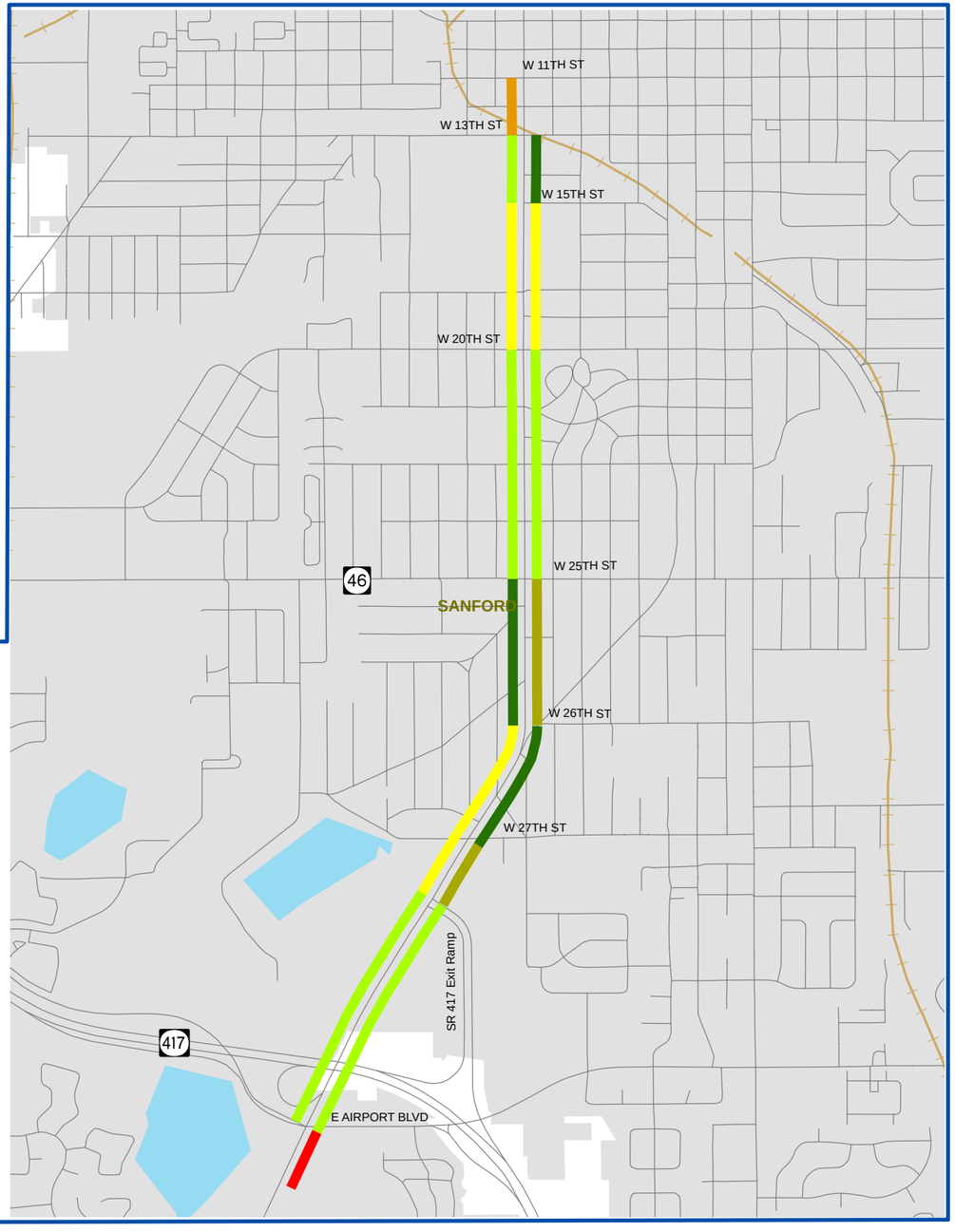
After Condition

Date of Collection: 3/8/2011
Distance: 2.42 miles
From: Airport Blvd.
To: 13th St.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 30.4 MPH
NB Travel Time: 4.78 MIN
NB Delay Time: 0.55 MIN

SB Avg Speed: 33.3 MPH
SB Travel Time: 4.34 MIN
SB Delay Time: 0.59 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

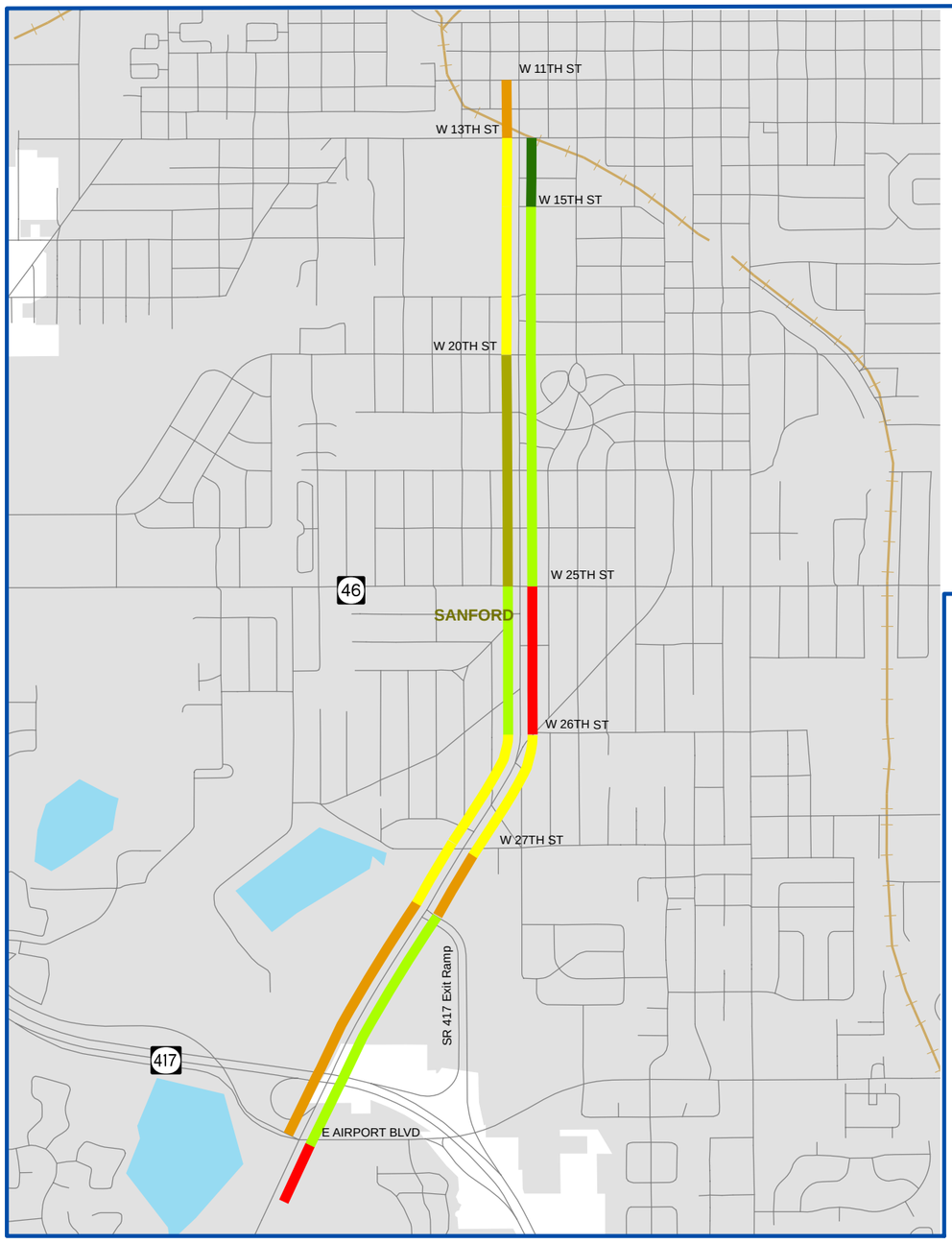
A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.3 0.6 Miles



US 17&92 Part C - PM Peak

Before Condition

Date of Collection: 1/20/2011
Distance: 2.42 miles
From: Airport Blvd.
To: 13th St.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 22.9 MPH
NB Travel Time: 6.33 MIN
NB Delay Time: 2.19 MIN

SB Avg Speed: 25.4 MPH
SB Travel Time: 5.70 MIN
SB Delay Time: 1.74 MIN

US 17&92 Part C - PM Peak

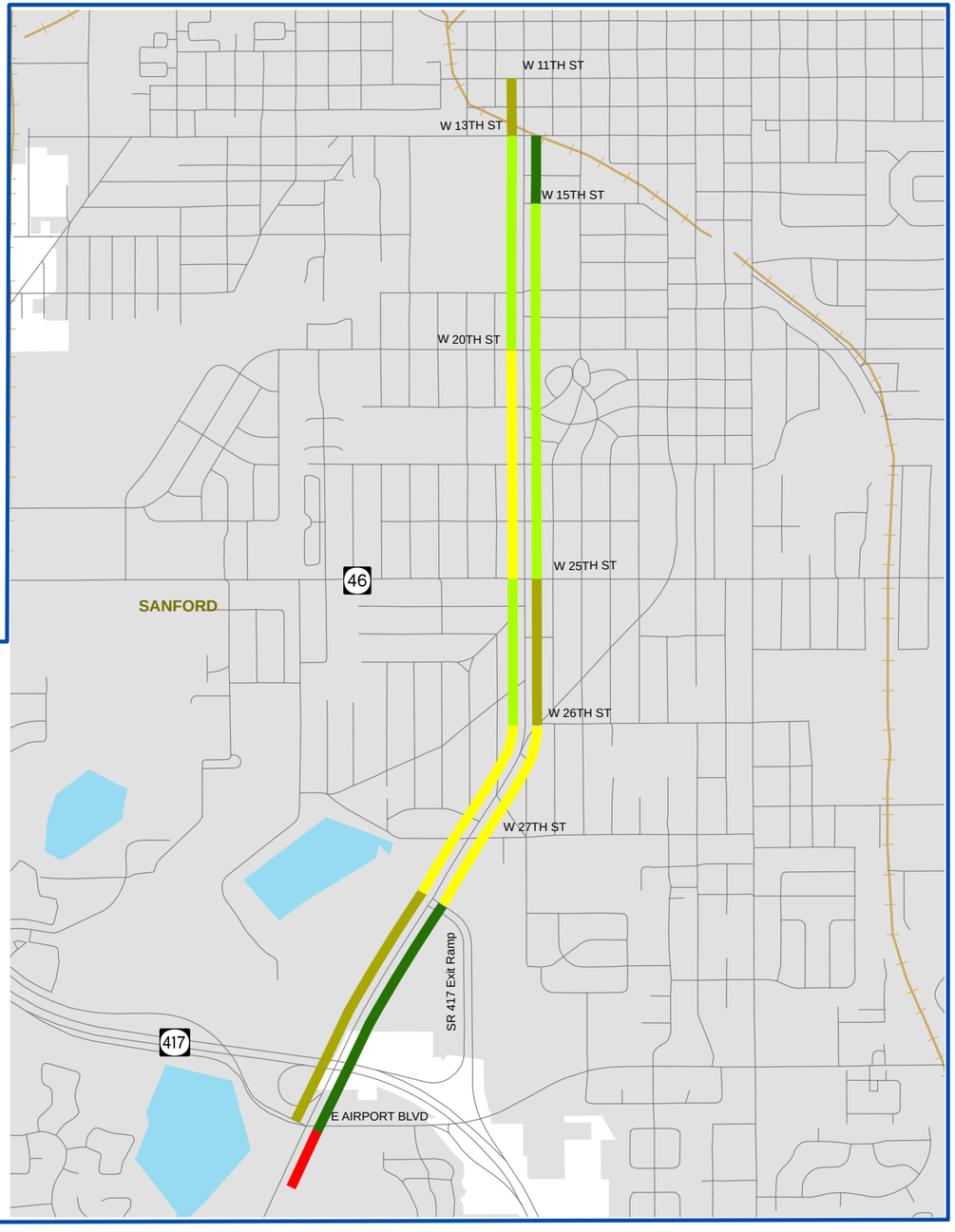
After Condition

Date of Collection: 3/8/2011
Distance: 2.42 miles
From: Airport Blvd.
To: 13th St.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 29.3 MPH
NB Travel Time: 4.95 MIN
NB Delay Time: 0.75 MIN

SB Avg Speed: 29.9 MPH
SB Travel Time: 4.84 MIN
SB Delay Time: 0.85 MIN



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A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

US 17/92 Part C : Airport Boulevard to 13th Street

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**325.8**	**65.4**	**26.7**	0.083	173.31	158.95
Northbound/Eastbound - PM Peak Hour						
1762	**379.8**	**131.4**	**22.9**	0.0850	185.89	149.77
Southbound/Westbound - AM Peak Hour						
1573	**322.2**	**70.8**	**26.9**	0.0840	140.78	132.13
Southbound/Westbound - PM Peak Hour						
2113	**342.0**	**104.4**	**25.4**	0.0860	200.74	181.72

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

US 17/92 Part C : Airport Boulevard to 13th Street

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1915	**286.8**	**33.0**	**30.4**	0.0820	152.56	157.03
Northbound/Eastbound - PM Peak Hour						
1762	**297.0**	**45.0**	**29.3**	0.0820	145.37	144.48
Southbound/Westbound - AM Peak Hour						
1573	**260.4**	**35.4**	**33.3**	0.0830	113.78	130.56
Southbound/Westbound - PM Peak Hour						
2113	**290.4**	**51.0**	**29.9**	0.0840	170.45	177.49

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

US 17/92 Part C : Airport Boulevard to 13th Street

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	314.09	266.34	386.63	315.81
Total Fuel Consumption (gallons)	291.08	287.59	331.49	321.98

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$790.31	$1,186.96
Annual User Benefit	**$237,092.23**	**$356,088.69**
Total Annual User Benefit =	**$593,180.92**	
Total Signal Retiming Annual Cost	$11,554.63	
User Benefit / Cost Ratio	**51.34**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 436

CR 427/Ronald Reagan Blvd. to Fern Park Blvd.

TABLE 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Ronald Regan Blvd. to Fern Park Blvd. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Newbury Port Dr to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	581	9	Signal	60.6	38.4	II	6.5	F	0.16	
Ronald Regan Blvd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	1,531	9	Signal	27.0	0.0	II	38.7	A	0.97	
Plaza Entrance to Anchor Rd.	Seminole	Arterial	OBD	1	3	0	40	2,376	9	Signal	47.4	6.0	II	34.2	B	0.85	
Anchor Rd. to US 17/92	Seminole	Arterial	OBD	2	3	1	40	1,584	9	Signal	124.2	84.0	II	8.7	F	0.22	
US 17/92 to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	898	9	Signal	17.4	0.0	II	35.2	A	0.88	
Plaza Entrance to Oxford Rd.	Seminole	Arterial	OBD	1	3	0	40	475	9	Signal	37.2	26.4	II	8.7	F	0.22	
Oxford Rd. to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	1	40/45	1,162	9	Signal	47.4	26.4	II	16.7	E	0.37	
TOTAL							40	8,606			361.2	181.2	II	16.2	E	0.41	0.058 gal/veh
PM PEAK HOUR																	
Newbury Port Dr to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	581	8	Signal	25.8	13.2	II	15.3	E	0.38	
Ronald Regan Blvd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	1,531	8	Signal	40.2	12.0	II	26.0	C	0.65	
Plaza Entrance to Anchor Rd.	Seminole	Arterial	OBD	1	3	0	40	2,376	8	Signal	51.6	5.4	II	31.4	B	0.78	
Anchor Rd. to US 17/92	Seminole	Arterial	OBD	2	3	1	40	1,584	8	Signal	198.6	142.8	II	5.4	F	0.14	
US 17/92 to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	898	8	Signal	27.6	1.2	II	22.2	C	0.55	
Plaza Entrance to Oxford Rd.	Seminole	Arterial	OBD	1	3	0	40	475	8	Signal	21.0	9.0	II	15.4	E	0.39	
Oxford Rd. to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	1	40/45	1,162	8	Signal	21.0	0.0	II	37.7	A	0.84	
TOTAL							40	8,606			385.8	183.6	II	15.2	E	0.38	0.060 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Ronald Regan Blvd. to Fern Park Blvd. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Lamplite Way to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	0	45	950	8	Signal	27.6	1.8	II	23.5	C	0.52	
Fern Park Blvd. to Oxford Rd.	Seminole	Arterial	OBD	1	3	1	45/40	1,162	8	Signal	43.2	15.6	II	18.3	D	0.46	
Oxford Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	4	0	40	475	8	Signal	15.0	4.2	II	21.6	D	0.54	
Plaza Entrance to US 17/92	Seminole	Arterial	OBD	2	3	1	40	898	8	Signal	37.2	15.6	II	16.5	E	0.41	
US 17/92 to Anchor Rd.	Seminole	Arterial	OBD	0	3	0	40	1,584	8	Signal	27.6	0.0	II	39.1	A	0.98	
Anchor Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	2,376	8	Signal	42.6	1.2	II	38.0	A	0.95	
Plaza Entrance to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	1,531	8	Signal	65.4	33.0	II	16.0	E	0.40	
TOTAL							40	8,976			258.6	71.4	II	23.7	C	0.59	0.061 gal/veh
PM PEAK HOUR																	
Lamplite Way to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	0	45	950	7	Signal	78.0	20.4	II	8.3	F	0.18	
Fern Park Blvd. to Oxford Rd.	Seminole	Arterial	OBD	1	3	1	45/40	1,162	7	Signal	48.6	16.8	II	16.3	E	0.41	
Oxford Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	4	0	40	475	7	Signal	11.4	0.0	II	28.4	B	0.71	
Plaza Entrance to US 17/92	Seminole	Arterial	OBD	2	3	1	40	898	7	Signal	34.8	16.8	II	17.6	D	0.44	
US 17/92 to Anchor Rd.	Seminole	Arterial	OBD	0	3	0	40	1,584	7	Signal	27.6	0.0	II	39.1	A	0.98	
Anchor Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	2,376	7	Signal	55.2	9.6	II	29.3	B	0.73	
Plaza Entrance to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	1,531	7	Signal	52.2	20.4	II	20.0	D	0.50	
TOTAL							40	8,976			307.8	84.0	II	19.9	D	0.50	0.061 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Ronald Regan Blvd. to Fern Park Blvd. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Newbury Port Dr to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	581	8	Signal	24.0	10.8	II	16.5	E	0.41	
Ronald Regan Blvd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	1,531	8	Signal	25.2	0.0	II	41.4	A	1.04	
Plaza Entrance to Anchor Rd.	Seminole	Arterial	OBD	1	3	0	40	2,376	8	Signal	44.4	2.4	II	36.5	A	0.91	
Anchor Rd. to US 17/92	Seminole	Arterial	OBD	2	3	1	40	1,584	8	Signal	106.8	67.2	II	10.1	F	0.25	
US 17/92 to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	898	8	Signal	18.0	0.0	II	34.0	B	0.85	
Plaza Entrance to Oxford Rd.	Seminole	Arterial	OBD	1	3	0	40	475	8	Signal	19.8	10.2	II	16.4	E	0.41	
Oxford Rd. to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	1	40/45	1,162	8	Signal	15.6	0.0	II	50.8	A	1.13	
TOTAL							40	8,606			253.8	90.6	II	23.1	C	0.58	0.057 gal/veh
PM PEAK HOUR																	
Newbury Port Dr to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	581	7	Signal	16.8	2.4	II	23.6	C	0.59	
Ronald Regan Blvd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	1,531	7	Signal	31.8	2.4	II	32.8	B	0.82	
Plaza Entrance to Anchor Rd.	Seminole	Arterial	OBD	1	3	0	40	2,376	7	Signal	43.2	2.4	II	37.5	A	0.94	
Anchor Rd. to US 17/92	Seminole	Arterial	OBD	2	3	1	40	1,584	7	Signal	71.4	35.4	II	15.1	E	0.38	
US 17/92 to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	898	7	Signal	50.4	22.8	II	12.1	F	0.30	
Plaza Entrance to Oxford Rd.	Seminole	Arterial	OBD	1	3	0	40	475	7	Signal	51.6	35.4	II	6.3	F	0.16	
Oxford Rd. to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	1	40/45	1,162	7	Signal	20.4	0.6	II	38.8	A	0.86	
TOTAL							40	8,606			285.6	101.4	II	20.5	D	0.51	0.059 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Ronald Regan Blvd. to Fern Park Blvd. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Lamplite Way to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	0	45	950	9	Signal	34.8	7.8	II	18.6	D	0.41	
Fern Park Blvd. to Oxford Rd.	Seminole	Arterial	OBD	1	3	1	45/40	1,162	9	Signal	34.2	11.4	II	23.2	C	0.58	
Oxford Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	4	0	40	475	9	Signal	9.0	0.0	II	36.0	A	0.90	
Plaza Entrance to US 17/92	Seminole	Arterial	OBD	2	3	1	40	898	9	Signal	28.8	8.4	II	21.2	D	0.53	
US 17/92 to Anchor Rd.	Seminole	Arterial	OBD	0	3	0	40	1,584	9	Signal	25.2	0.0	II	42.9	A	1.07	
Anchor Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	2,376	9	Signal	36.0	0.0	II	45.0	A	1.12	
Plaza Entrance to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	1,531	9	Signal	25.2	1.2	II	41.4	A	1.04	
TOTAL							40	8,976			193.2	28.8	II	31.7	B	0.79	0.058 gal/veh
PM PEAK HOUR																	
Lamplite Way to Fern Park Blvd.	Seminole	Arterial	OBD	1	3	0	45	950	6	Signal	41.4	22.2	II	15.7	E	0.35	
Fern Park Blvd. to Oxford Rd.	Seminole	Arterial	OBD	1	3	1	45/40	1,162	6	Signal	57.6	19.8	II	13.7	E	0.34	
Oxford Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	4	0	40	475	6	Signal	12.6	0.0	II	25.7	C	0.64	
Plaza Entrance to US 17/92	Seminole	Arterial	OBD	2	3	1	40	898	6	Signal	69.0	28.8	II	8.9	F	0.22	
US 17/92 to Anchor Rd.	Seminole	Arterial	OBD	0	3	0	40	1,584	6	Signal	27.6	0.0	II	39.1	A	0.98	
Anchor Rd. to Plaza Entrance	Seminole	Arterial	OBD	1	3	0	40	2,376	6	Signal	40.8	0.0	II	39.7	A	0.99	
Plaza Entrance to Ronald Regan Blvd.	Seminole	Arterial	OBD	1	3	0	40	1,531	6	Signal	32.4	2.4	II	32.2	B	0.81	
TOTAL							40	8,976			281.4	73.2	II	21.7	D	0.54	0.060 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 436 - AM Peak

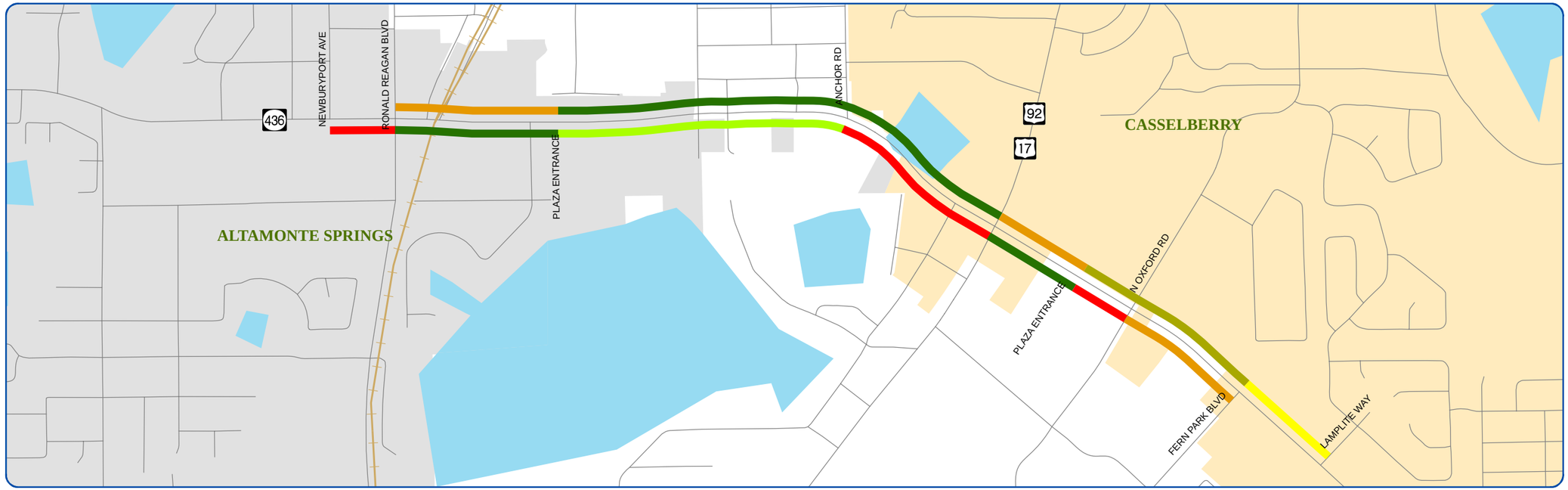
Before Condition

Date of Collection: 1/19/2011
Distance: 1.54 miles
From: Ronald Regan Blvd.
To: Fern Park Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 16.2 MPH
EB Travel Time: 6.02 MIN
EB Delay Time: 3.02 MIN

WB Avg Speed: 23.7 MPH
WB Travel Time: 4.31 MIN
WB Delay Time: 1.19 MIN



SR 436 - AM Peak

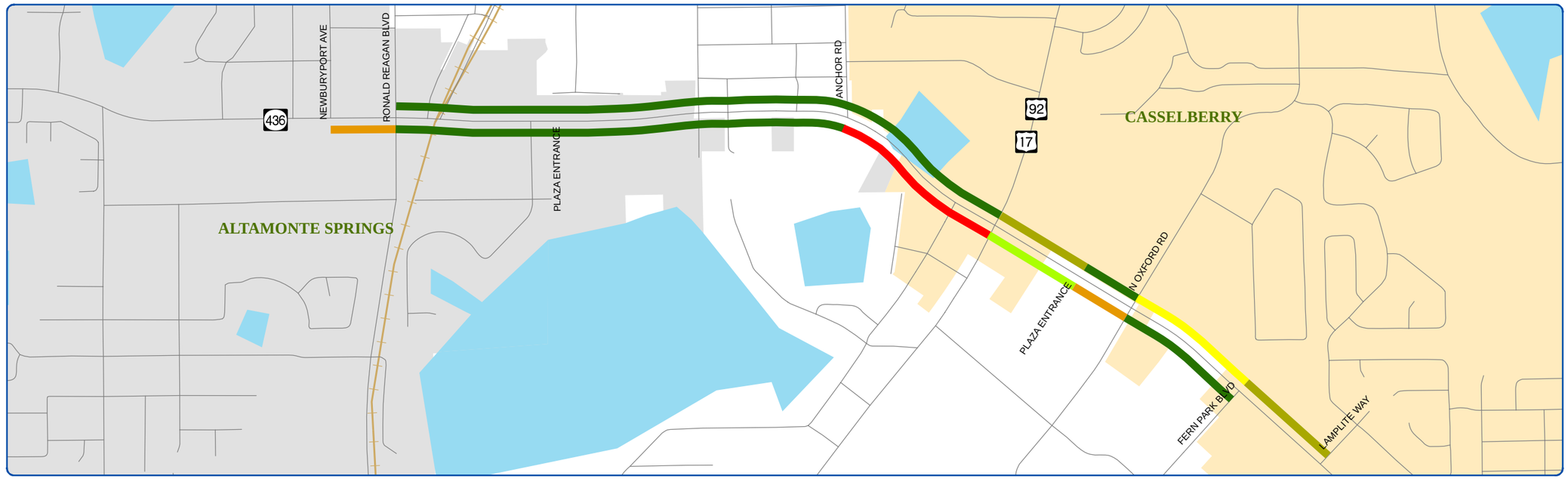
After Condition

Date of Collection: 3/8/2011
Distance: 1.54 miles
From: Ronald Regan Blvd.
To: Fern Park Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 23.1 MPH
EB Travel Time: 4.23 MIN
EB Delay Time: 1.51 MIN

WB Avg Speed: 31.7 MPH
WB Travel Time: 3.22 MIN
WB Delay Time: 0.48 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 436 - PM Peak

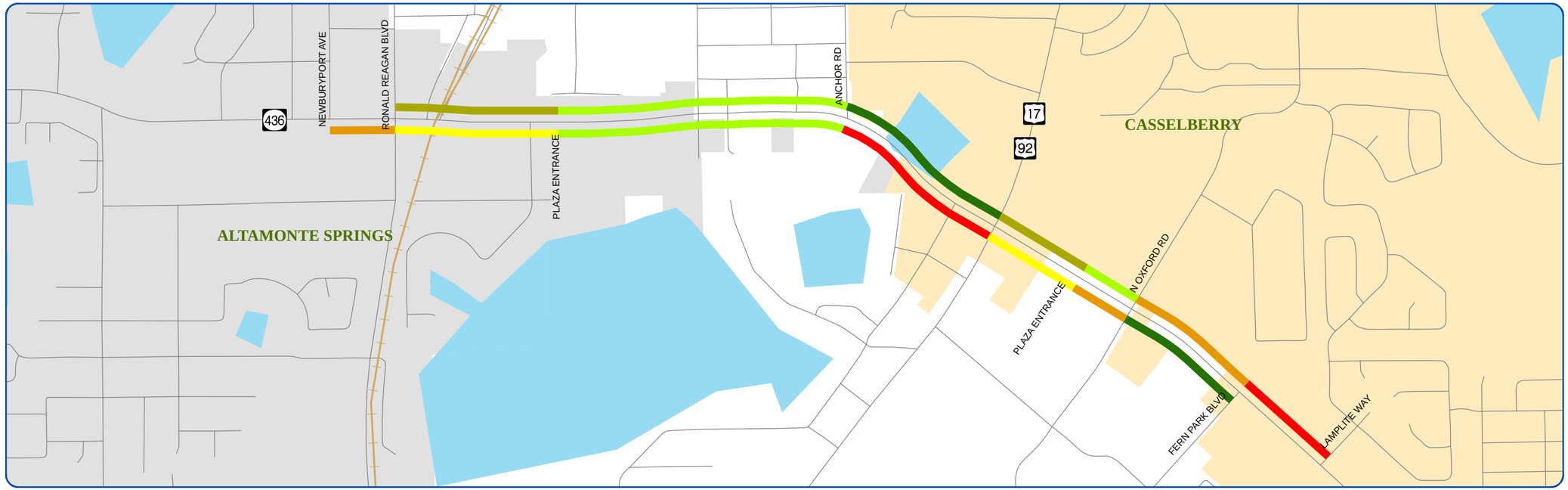
Before Condition

Date of Collection: 1/19/2011
Distance: 1.54 miles
From: Ronald Regan Blvd.
To: Fern Park Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 15.2 MPH
EB Travel Time: 6.43 MIN
EB Delay Time: 3.06 MIN

WB Avg Speed: 19.9 MPH
WB Travel Time: 5.13 MIN
WB Delay Time: 1.40 MIN



SR 436 - PM Peak

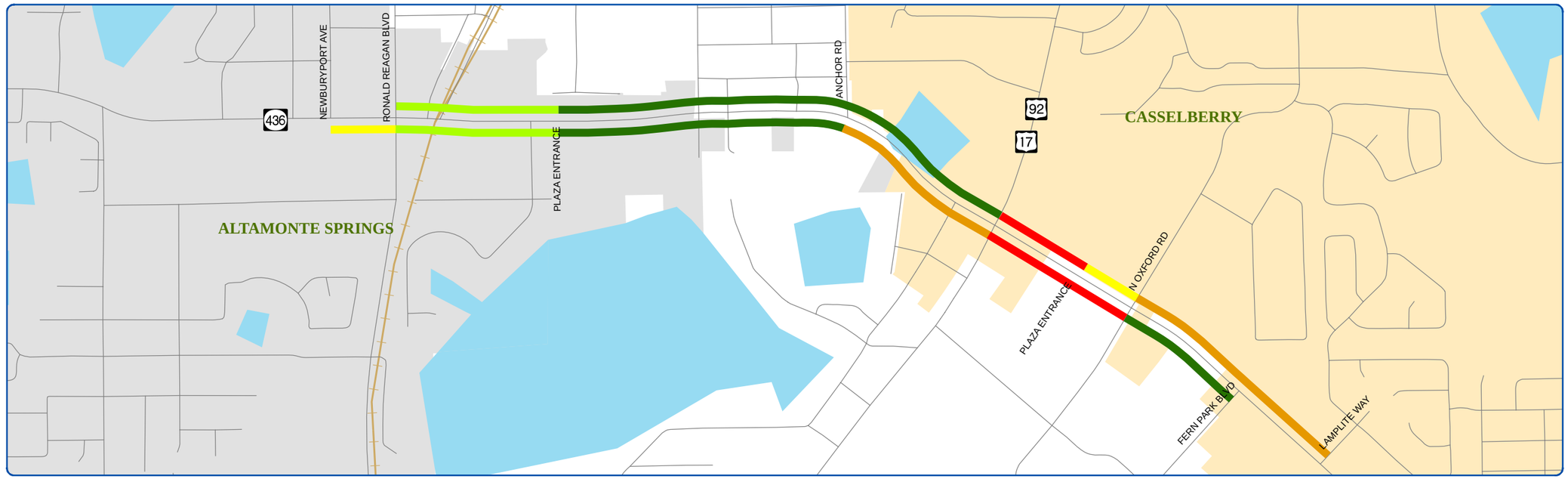
After Condition

Date of Collection: 3/8/2011
Distance: 1.54 miles
From: Ronald Regan Blvd.
To: Fern Park Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 20.5 MPH
EB Travel Time: 4.76 MIN
EB Delay Time: 1.69 MIN

WB Avg Speed: 21.7 MPH
WB Travel Time: 4.69 MIN
WB Delay Time: 1.22 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A	D	Roads
B	E	City Boundary
C	F	Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 436 : Ronald Regan Boulevard to Fern Park Boulevard

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2101	**361.2**	**181.2**	**16.2**	0.0580	210.80	121.86
Northbound/Eastbound - PM Peak Hour						
2521	**385.8**	**183.6**	**15.2**	0.0600	270.17	151.26
Southbound/Westbound - AM Peak Hour						
2923	**258.6**	**71.4**	**23.7**	0.0610	209.97	178.30
Southbound/Westbound - PM Peak Hour						
2389	**307.8**	**84.0**	**19.9**	0.0610	204.26	145.73

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 436 : Ronald Regan Boulevard to Fern Park Boulevard

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2101	**253.8**	**90.6**	**23.1**	0.0570	148.12	119.76
Northbound/Eastbound - PM Peak Hour						
2521	**285.6**	**101.4**	**20.5**	0.0590	200.00	148.74
Southbound/Westbound - AM Peak Hour						
2923	**193.2**	**28.8**	**31.7**	0.0580	156.87	169.53
Southbound/Westbound - PM Peak Hour						
2389	**281.4**	**73.2**	**21.7**	0.0600	186.74	143.34

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 436 : Ronald Regan Boulevard to Fern Park Boulevard

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	420.77	304.99	474.43	386.74
Total Fuel Consumption (gallons)	300.16	289.29	296.99	292.08

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,924.62	$1,446.19
Annual User Benefit	**$577,386.93**	**$433,857.37**
Total Annual User Benefit =	**$1,011,244.30**	
Total Signal Retiming Annual Cost	$11,412.50	
User Benefit / Cost Ratio	**88.61**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 434

E. Lake Brantley Dr. to Raymond Ave.

TABLE 4

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - E. Lake Brantley Dr. to Raymond Ave. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Lake Rena Dr. to E. Lake Brantley Dr.	Seminole	Arterial	OBD	1	2	0	45	950	8	Signal	16.2	0.0	II	40.0	A	0.89	
E. Lake Brantley Dr. to Wekiva Springs Ln.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	8	Signal	37.8	1.8	II	40.0	A	0.89	
Wekiva Springs Ln. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	1	3	1	45	1,214	8	Signal	39.6	13.2	II	20.9	D	0.46	
Wekiva Springs Rd./Montgomery Rd. to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	581	8	Signal	10.8	0.0	II	36.7	A	0.81	
Gum St./Springs Blvd. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	1	45	2,006	8	Signal	39.6	4.2	II	34.5	B	0.77	
Sanlando Office Park to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	0	35	1,109	8	Signal	34.2	9.6	II	22.1	C	0.63	
Markham Woods Rd./Douglas Ave. to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	1	35	950	8	Signal	45.6	24.6	II	14.2	E	0.41	
I-4 WB Ramps to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	8	Signal	8.4	0.0	II	30.0	B	0.86	
I-4 EB Ramps to Raymond Ave.	Seminole	Arterial	OBD	1	2	0	35	686	8	Signal	13.2	0.0	II	35.5	A	1.01	
TOTAL							45	10,085			245.4	53.4	II	28.0	B	0.62	0.068 gal/veh
PM PEAK HOUR																	
Lake Rena Dr. to E. Lake Brantley Dr.	Seminole	Arterial	OBD	1	2	0	45	950	6	Signal	40.2	14.4	II	16.1	E	0.36	
E. Lake Brantley Dr. to Wekiva Springs Ln.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	6	Signal	57.0	19.2	II	26.5	C	0.59	
Wekiva Springs Ln. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	1	3	1	45	1,214	6	Signal	24.0	0.0	II	34.5	B	0.77	
Wekiva Springs Rd./Montgomery Rd. to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	581	6	Signal	10.2	0.0	II	38.8	A	0.86	
Gum St./Springs Blvd. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	1	45	2,006	6	Signal	38.4	5.4	II	35.6	A	0.79	
Sanlando Office Park to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	0	35	1,109	6	Signal	86.4	60.0	II	8.7	F	0.25	
Markham Woods Rd./Douglas Ave. to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	1	35	950	6	Signal	27.6	1.2	II	23.5	C	0.67	
I-4 WB Ramps to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	6	Signal	8.4	0.0	II	30.0	B	0.86	
I-4 EB Ramps to Raymond Ave.	Seminole	Arterial	OBD	1	2	0	35	686	6	Signal	24.0	10.2	II	19.5	D	0.56	
TOTAL							45	10,085			316.2	110.4	II	21.7	D	0.48	0.067 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 4

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - E. Lake Brantley Dr. to Raymond Ave. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Ichabod Tr. to Raymond Ave.	Seminole	Arterial	Residential	1	2	0	35	1,003	8	Signal	31.8	5.4	II	21.5	D	0.61	
Raymond Ave. to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	1	35	686	8	Signal	18.6	5.4	II	25.2	C	0.72	
I-4 EB Ramps to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	8	Signal	27.6	19.8	II	9.1	F	0.26	
I-4 WB Ramps to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	1	35	950	8	Signal	57.6	31.2	II	11.2	F	0.32	
Markham Woods Rd./Douglas Ave. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	0	45	1,109	8	Signal	30.0	3.6	II	25.2	C	0.56	
Sanlando Office Park to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	2,006	8	Signal	39.6	1.8	II	34.5	B	0.77	
Gum St./Springs Blvd. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	2	3	1	45	581	8	Signal	54.0	36.0	II	7.3	F	0.16	
Wekiva Springs Rd./Montgomery Rd. to Wekiva Springs Ln.	Seminole	Arterial	OBD	1	2	0	45	1,214	8	Signal	25.2	2.4	II	32.9	B	0.73	
Wekiva Springs Ln. to E. Lake Brantley Dr.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	8	Signal	37.2	2.4	II	40.6	A	0.90	
TOTAL							45	10,138			321.6	108.0	II	21.5	D	0.48	0.070 gal/veh
PM PEAK HOUR																	
Ichabod Tr. to Raymond Ave.	Seminole	Arterial	Residential	1	2	0	35	1,003	6	Signal	85.2	49.2	II	8.0	F	0.23	
Raymond Ave. to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	1	35	686	6	Signal	75.0	50.4	II	6.2	F	0.18	
I-4 EB Ramps to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	6	Signal	10.2	0.0	II	24.7	C	0.71	
I-4 WB Ramps to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	1	35	950	6	Signal	82.2	52.2	II	7.9	F	0.23	
Markham Woods Rd./Douglas Ave. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	0	45	1,109	6	Signal	20.4	0.0	II	37.1	A	0.82	
Sanlando Office Park to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	2,006	6	Signal	51.6	14.4	II	26.5	C	0.59	
Gum St./Springs Blvd. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	2	3	1	45	581	6	Signal	38.4	22.2	II	10.3	F	0.23	
Wekiva Springs Rd./Montgomery Rd. to Wekiva Springs Ln.	Seminole	Arterial	OBD	1	2	0	45	1,214	6	Signal	22.8	0.0	II	36.3	A	0.81	
Wekiva Springs Ln. to E. Lake Brantley Dr.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	6	Signal	75.6	30.0	II	20.0	D	0.44	
TOTAL							45	10,138			461.4	218.4	II	15.0	E	0.33	0.072 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 4

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - E. Lake Brantley Dr. to Raymond Ave. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Lake Rena Dr. to E. Lake Brantley Dr.	Seminole	Arterial	OBD	1	2	0	45	950	7	Signal	24.0	6.0	II	27.0	C	0.60	
E. Lake Brantley Dr. to Wekiva Springs Ln.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	7	Signal	28.8	0.0	II	52.5	A	1.17	
Wekiva Springs Ln. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	1	3	1	45	1,214	7	Signal	36.6	15.0	II	22.6	C	0.50	
Wekiva Springs Rd./Montgomery Rd. to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	581	7	Signal	9.0	0.0	II	44.0	A	0.98	
Gum St./Springs Blvd. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	1	45	2,006	7	Signal	39.0	1.2	II	35.1	A	0.78	
Sanlando Office Park to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	0	35	1,109	7	Signal	67.2	28.2	II	11.2	F	0.32	
Markham Woods Rd./Douglas Ave. to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	1	35	950	7	Signal	39.0	14.4	II	16.6	E	0.47	
I-4 WB Ramps to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	7	Signal	12.0	1.2	II	21.0	D	0.60	
I-4 EB Ramps to Raymond Ave.	Seminole	Arterial	OBD	1	2	0	35	686	7	Signal	42.6	22.8	II	11.0	F	0.31	
TOTAL							45	10,085			298.2	88.8	II	23.1	C	0.51	0.067 gal/veh
PM PEAK HOUR																	
Lake Rena Dr. to E. Lake Brantley Dr.	Seminole	Arterial	OBD	1	2	0	45	950	6	Signal	17.4	0.0	II	37.2	A	0.83	
E. Lake Brantley Dr. to Wekiva Springs Ln.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	6	Signal	40.8	5.4	II	37.1	A	0.82	
Wekiva Springs Ln. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	1	3	1	45	1,214	6	Signal	31.2	7.2	II	26.5	C	0.59	
Wekiva Springs Rd./Montgomery Rd. to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	581	6	Signal	10.2	0.0	II	38.8	A	0.86	
Gum St./Springs Blvd. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	1	45	2,006	6	Signal	33.0	0.0	II	41.5	A	0.92	
Sanlando Office Park to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	0	35	1,109	6	Signal	24.6	0.0	II	30.7	B	0.88	
Markham Woods Rd./Douglas Ave. to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	1	35	950	6	Signal	28.2	1.2	II	23.0	C	0.66	
I-4 WB Ramps to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	6	Signal	9.0	0.0	II	28.0	C	0.80	
I-4 EB Ramps to Raymond Ave.	Seminole	Arterial	OBD	1	2	0	35	686	6	Signal	49.2	31.2	II	9.5	F	0.27	
TOTAL							45	10,085			243.6	45.0	II	28.2	B	0.63	0.067 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 4

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - E. Lake Brantley Dr. to Raymond Ave. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Ichabod Tr. to Raymond Ave.	Seminole	Arterial	Residential	1	2	0	35	1,003	9	Signal	49.8	13.2	II	13.7	E	0.39	
Raymond Ave. to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	1	35	686	9	Signal	40.8	19.8	II	11.5	F	0.33	
I-4 EB Ramps to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	9	Signal	9.0	0.0	II	28.0	C	0.80	
I-4 WB Ramps to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	1	35	950	9	Signal	15.6	0.0	II	41.5	A	1.19	
Markham Woods Rd./Douglas Ave. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	0	45	1,109	9	Signal	15.6	0.0	II	48.5	A	1.08	
Sanlando Office Park to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	2,006	9	Signal	39.6	4.2	II	34.5	B	0.77	
Gum St./Springs Blvd. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	2	3	1	45	581	9	Signal	10.2	0.0	II	38.8	A	0.86	
Wekiva Springs Rd./Montgomery Rd. to Wekiva Springs Ln.	Seminole	Arterial	OBD	1	2	0	45	1,214	9	Signal	18.6	0.0	II	44.5	A	0.99	
Wekiva Springs Ln. to E. Lake Brantley Dr.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	9	Signal	39.6	6.0	II	38.2	A	0.85	
TOTAL							45	10,138			238.8	43.2	II	28.9	B	0.64	0.070 gal/veh
PM PEAK HOUR																	
Ichabod Tr. to Raymond Ave.	Seminole	Arterial	Residential	1	2	0	35	1,003	8	Signal	60.0	24.6	II	11.4	F	0.33	
Raymond Ave. to I-4 EB Ramps	Seminole	Arterial	OBD	2	2	1	35	686	8	Signal	64.2	43.8	II	7.3	F	0.21	
I-4 EB Ramps to I-4 WB Ramps	Seminole	Arterial	OBD	2	2	0	35	370	8	Signal	10.8	1.8	II	23.3	C	0.67	
I-4 WB Ramps to Markham Woods Rd./Douglas Ave.	Seminole	Arterial	OBD	2	3	1	35	950	8	Signal	27.6	6.6	II	23.5	C	0.67	
Markham Woods Rd./Douglas Ave. to Sanlando Office Park	Seminole	Arterial	OBD	1	3	0	45	1,109	8	Signal	17.4	0.0	II	43.4	A	0.97	
Sanlando Office Park to Gum St./Springs Blvd.	Seminole	Arterial	OBD	1	3	0	45	2,006	8	Signal	48.6	6.6	II	28.1	B	0.63	
Gum St./Springs Blvd. to Wekiva Springs Rd./Montgomery Rd.	Seminole	Arterial	OBD	2	3	1	45	581	8	Signal	15.6	2.4	II	25.4	C	0.56	
Wekiva Springs Rd./Montgomery Rd. to Wekiva Springs Ln.	Seminole	Arterial	OBD	1	2	0	45	1,214	8	Signal	21.6	0.0	II	38.3	A	0.85	
Wekiva Springs Ln. to E. Lake Brantley Dr.	Seminole	Arterial	OBD/Residential	1	2	0	45	2,218	8	Signal	45.6	8.4	II	33.2	B	0.74	
TOTAL							45	10,138			311.4	94.2	II	22.2	C	0.49	0.069 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 434 - AM Peak

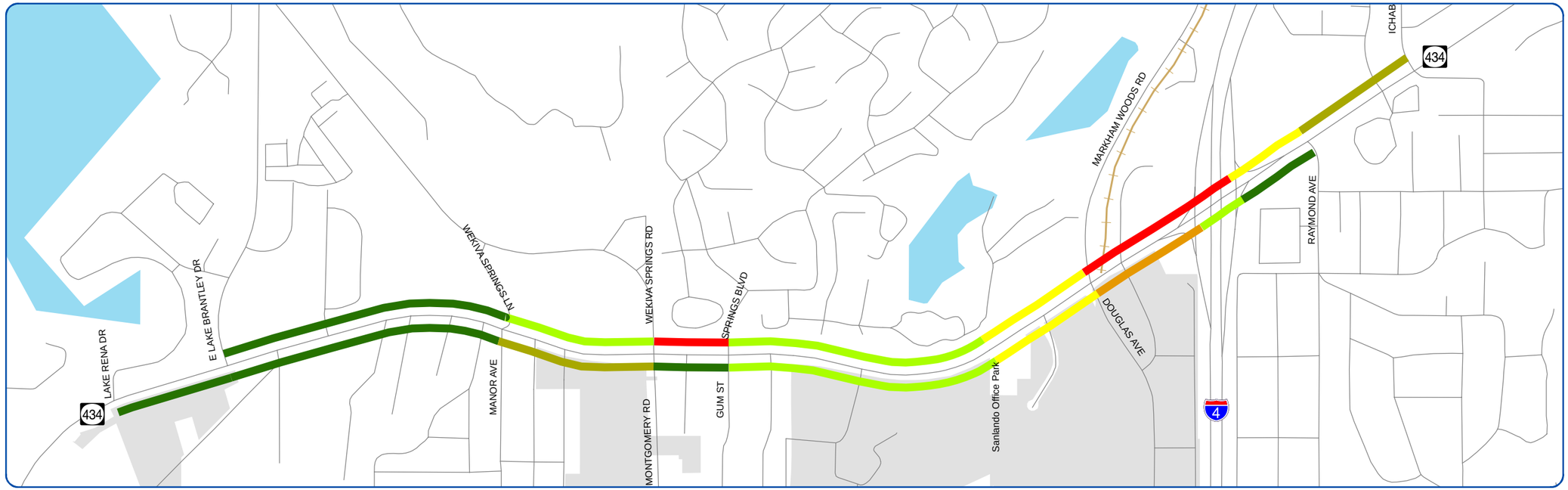
Before Condition

Date of Collection: 1/19/2011
Distance: 1.76 miles
From: E. Lake Brantley Dr.
To: Raymond Ave.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 28.0 MPH
EB Travel Time: 4.09 MIN
EB Delay Time: 0.89 MIN

WB Avg Speed: 21.5 MPH
WB Travel Time: 5.36 MIN
WB Delay Time: 1.80 MIN



SR 434 - AM Peak

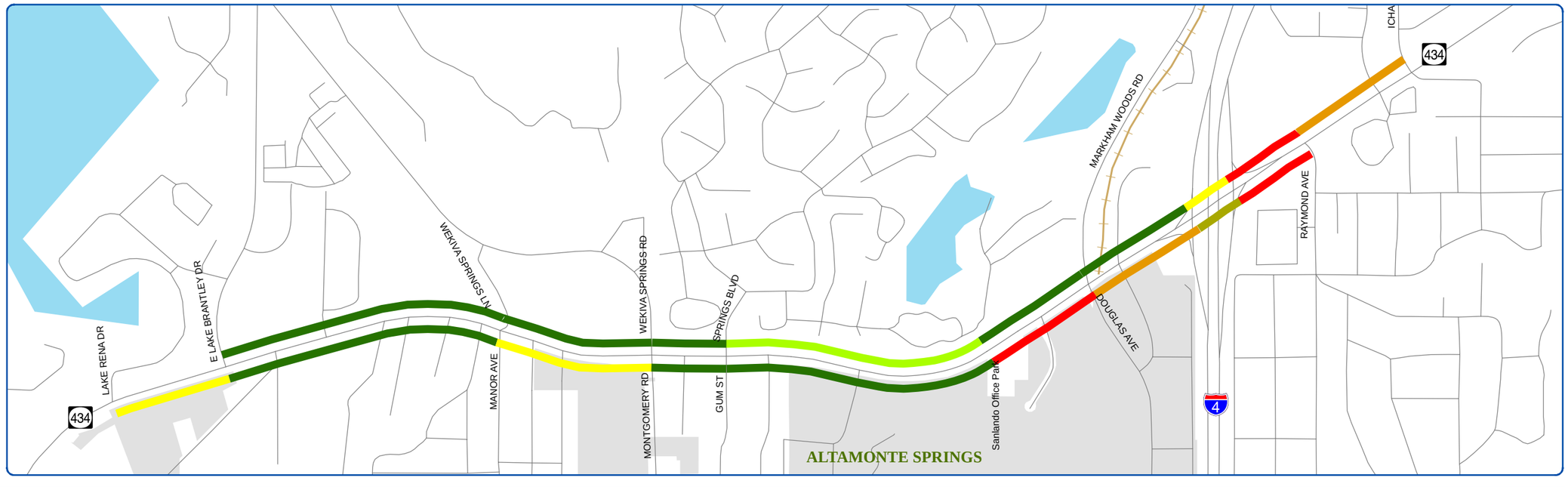
After Condition

Date of Collection: 4/12/2011
Distance: 1.76 miles
From: E. Lake Brantley Dr.
To: Raymond Ave.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 23.1 MPH
EB Travel Time: 4.97 MIN
EB Delay Time: 1.48 MIN

WB Avg Speed: 28.9 MPH
WB Travel Time: 3.98 MIN
WB Delay Time: 0.72 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 434 - PM Peak

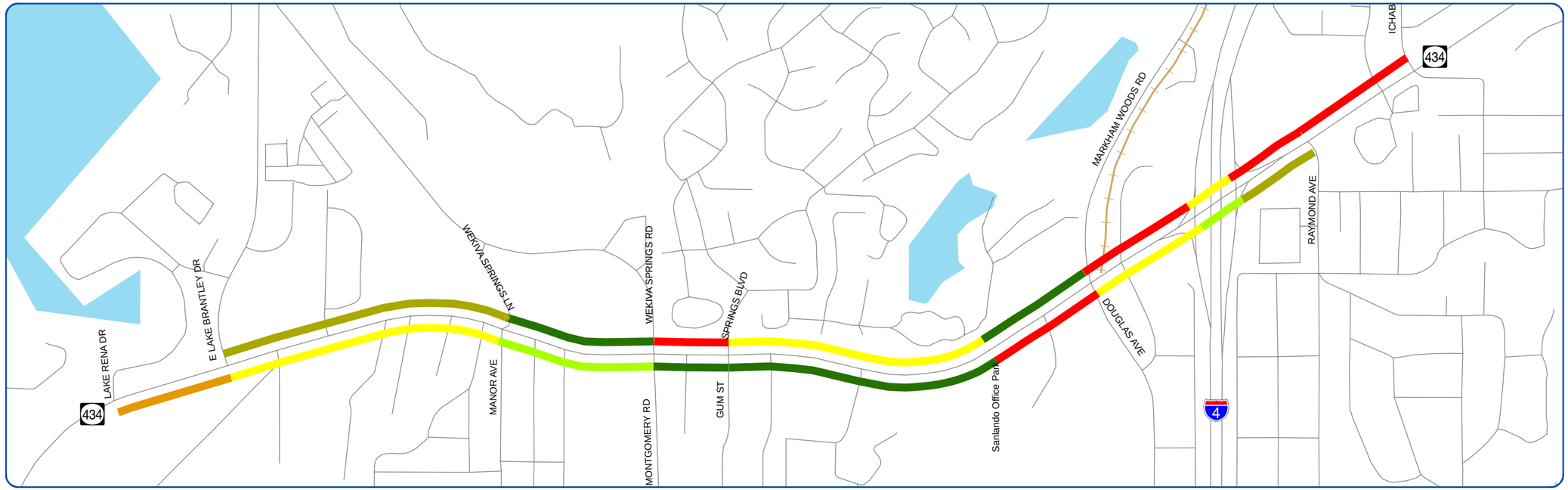
Before Condition

Date of Collection: 1/19/2011
Distance: 1.76 miles
From: E. Lake Brantley Dr.
To: Raymond Ave.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 21.7 MPH
EB Travel Time: 5.27 MIN
EB Delay Time: 1.84 MIN

WB Avg Speed: 15.0 MPH
WB Travel Time: 7.69 MIN
WB Delay Time: 3.64 MIN



SR 434 - PM Peak

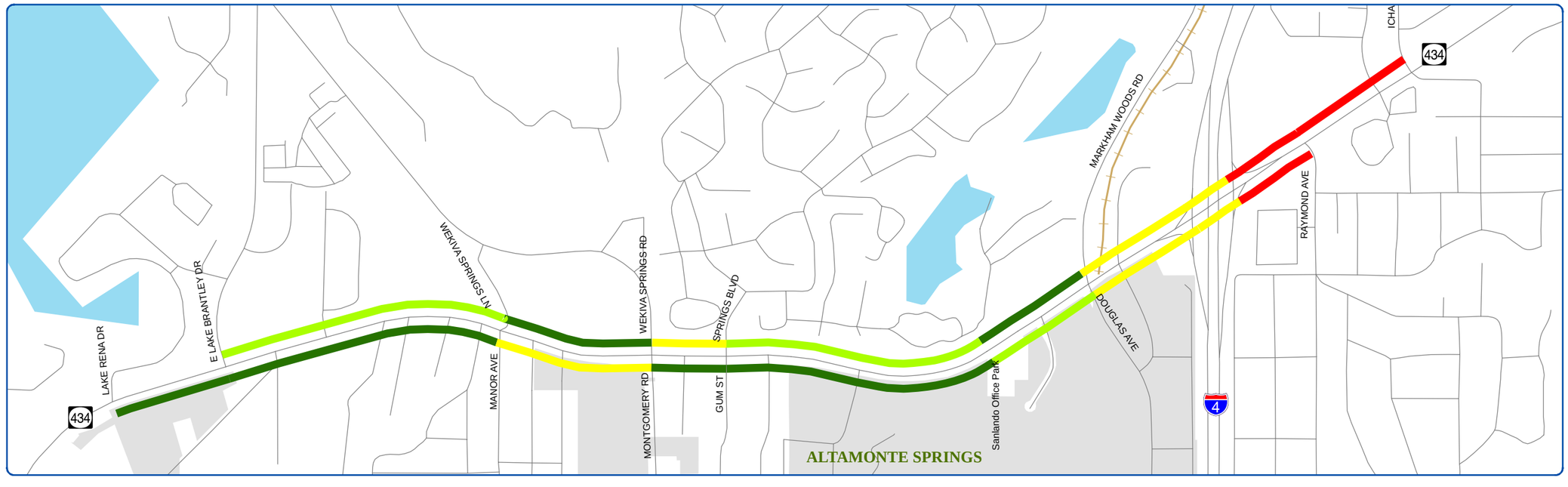
After Condition

Date of Collection: 4/12/2011
Distance: 1.76 miles
From: E. Lake Brantley Dr.
To: Raymond Ave.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 28.2 MPH
EB Travel Time: 4.06 MIN
EB Delay Time: 0.75 MIN

WB Avg Speed: 22.2 MPH
WB Travel Time: 5.19 MIN
WB Delay Time: 1.57 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 434 : E. Lake Brantley Drive to Raymond Avenue

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1805	**245.4**	**53.4**	**28.0**	0.0680	123.04	122.74
Northbound/Eastbound - PM Peak Hour						
1729	**316.2**	**110.4**	**21.7**	0.0670	151.86	115.84
Southbound/Westbound - AM Peak Hour						
1592	**321.6**	**108.0**	**21.5**	0.0700	142.22	111.44
Southbound/Westbound - PM Peak Hour						
1742	**461.4**	**218.4**	**15.0**	0.0720	223.27	125.42

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 434 : E. Lake Brantley Drive to Raymond Avenue

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1805	**298.2**	**88.8**	**23.1**	0.0700	149.51	126.35
Northbound/Eastbound - PM Peak Hour						
1729	**243.6**	**45.0**	**28.2**	0.0670	117.00	115.84
Southbound/Westbound - AM Peak Hour						
1592	**238.8**	**43.2**	**28.9**	0.0670	105.60	106.66
Southbound/Westbound - PM Peak Hour						
1742	**311.4**	**94.2**	**22.2**	0.0690	150.68	120.20

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 434 : E. Lake Brantley Drive to Raymond Avenue

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	265.26	255.12	375.13	267.68
Total Fuel Consumption (gallons)	234.18	233.01	241.27	236.04

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$169.34	$1,769.44
Annual User Benefit	**$50,800.95**	**$530,831.07**
Total Annual User Benefit =	**$581,632.02**	
Total Signal Retiming Annual Cost	$15,985.12	
User Benefit / Cost Ratio	**36.39**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 434

SR 414 to San Sebastian Prado

TABLE 5

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - SR 414/Maitland Blvd. to San Sebastian Prado - Northbound Direction Summary - Before Condition

(From Year 2010 Seminole County Travel Time and Delay Study)

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Calumet Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,003	8	Signal	52.8	27.0	II	13.0	F	0.29	
Maitland Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	1	3	1	45	1,426	8	Signal	23.4	0.0	II	41.5	A	0.92	
Gateway Dr. to Trailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,429	8	Signal	47.4	6.6	II	34.9	B	0.78	
Trailwood Dr./Lotus landing Blvd. to W. Town Pkwy.	Seminole	Arterial	Residential Area	2	3	1	45	2,798	8	Signal	54.0	10.2	II	35.3	A	0.79	
W. Town Pkwy. to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	8	Signal	27.6	4.2	II	33.9	B	0.75	
Orange Ave. to SR 436	Seminole	Arterial	Residential Area	2	3	1	45	1,267	8	Signal	72.6	45.6	II	11.9	F	0.26	
SR 436 to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	2,376	8	Signal	36.6	0.0	II	44.3	A	0.98	
TOTAL							45	12,672			314.4	93.6	II	27.5	C	0.61	0.083 gal/veh
PM PEAK HOUR																	
Calumet Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,003	8	Signal	54.6	24.0	II	12.5	F	0.28	
Maitland Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	1	3	1	45	1,426	8	Signal	50.4	18.6	II	19.3	D	0.43	
Gateway Dr. to Trailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,429	8	Signal	61.2	10.2	II	27.1	C	0.60	
Trailwood Dr./Lotus landing Blvd. to W. Town Pkwy.	Seminole	Arterial	Residential Area	2	3	1	45	2,798	8	Signal	66.6	18.6	II	28.6	B	0.64	
W. Town Pkwy. to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	8	Signal	45.0	19.2	II	20.8	D	0.46	
Orange Ave. to SR 436	Seminole	Arterial	Residential Area	2	3	1	45	1,267	8	Signal	61.8	27.6	II	14.0	E	0.31	
SR 436 to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	2,376	8	Signal	57.0	7.8	II	28.4	B	0.63	
TOTAL							45	12,672			396.6	126.0	II	21.8	D	0.48	0.086 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 5

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - SR 414/Maitland Blvd. to San Sebastian Prado - Southbound Direction Summary - Before Condition

(From Year 2010 Seminole County Travel Time and Delay Study)

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Grate Pond Dr. to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	528	8	Signal	12.0	3.0	II	30.0	B	0.67	
San Sebastian Prado to SR 436	Seminole	Arterial	OBD	2	3	1	45	2,376	8	Signal	54.6	8.4	II	29.7	B	0.66	
SR 436 to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,267	8	Signal	22.2	0.0	II	38.9	A	0.86	
Orange Ave. to W. Town Pkwy.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	8	Signal	22.2	0.0	II	42.2	A	0.94	
W. Town Pkwy. to Trailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,798	8	Signal	61.8	4.2	II	30.9	B	0.69	
Trailwood Dr./Lotus landing Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	2	3	1	45	2,429	8	Signal	65.4	16.2	II	25.3	C	0.56	
Gateway Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,426	8	Signal	39.0	9.0	II	24.9	C	0.55	
TOTAL							45	12,197			277.2	40.8	II	30.0	B	0.67	0.083 gal/veh
PM PEAK HOUR																	
Grate Pond Dr. to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	528	9	Signal	11.4	2.4	II	31.6	B	0.70	
San Sebastian Prado to SR 436	Seminole	Arterial	OBD	2	3	1	45	2,376	9	Signal	117.6	66.0	II	13.8	E	0.31	
SR 436 to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,267	9	Signal	24.6	0.0	II	35.1	A	0.78	
Orange Ave. to W. Town Pkwy.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	9	Signal	30.6	9.6	II	30.6	B	0.68	
W. Town Pkwy. to Trailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,798	9	Signal	40.8	0.0	II	46.8	A	1.04	
Trailwood Dr./Lotus landing Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	2	3	1	45	2,429	9	Signal	70.2	21.6	II	23.6	C	0.52	
Gateway Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,426	9	Signal	48.6	18.6	II	20.0	D	0.44	
TOTAL							45	12,197			343.8	118.2	II	24.2	C	0.54	0.082 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 5

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - SR 414/Maitland Blvd. to San Sebastian Prado - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Calumet Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,003	10	Signal	37.2	11.4	II	18.4	D	0.41	
Maitland Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	1	3	1	45	1,426	10	Signal	22.8	0.0	II	42.6	A	0.95	
Gateway Dr. to Tailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,429	10	Signal	33.0	0.0	II	50.2	A	1.12	
Tailwood Dr./Lotus landing Blvd. to W. Town Pkwy.	Seminole	Arterial	Residential Area	2	3	1	45	2,798	10	Signal	50.4	7.2	II	37.9	A	0.84	
W. Town Pkwy. to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	10	Signal	19.8	0.0	II	47.3	A	1.05	
Orange Ave. to SR 436	Seminole	Arterial	Residential Area	2	3	1	45	1,267	10	Signal	60.6	36.0	II	14.3	E	0.32	
SR 436 to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	2,376	10	Signal	37.8	2.4	II	42.9	A	0.95	
TOTAL							45	12,672			261.6	57.0	II	33.0	B	0.73	0.081 gal/veh
PM PEAK HOUR																	
Calumet Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,003	8	Signal	27.0	3.6	II	25.3	C	0.56	
Maitland Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	1	3	1	45	1,426	8	Signal	33.6	4.8	II	28.9	B	0.64	
Gateway Dr. to Tailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,429	8	Signal	35.4	0.0	II	46.8	A	1.04	
Tailwood Dr./Lotus landing Blvd. to W. Town Pkwy.	Seminole	Arterial	Residential Area	2	3	1	45	2,798	8	Signal	49.2	1.8	II	38.8	A	0.86	
W. Town Pkwy. to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	8	Signal	48.6	10.2	II	19.3	D	0.43	
Orange Ave. to SR 436	Seminole	Arterial	Residential Area	2	3	1	45	1,267	8	Signal	75.6	38.4	II	11.4	F	0.25	
SR 436 to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	2,376	8	Signal	42.6	0.6	II	38.0	A	0.85	
TOTAL							45	12,672			312.0	59.4	II	27.7	C	0.62	0.084 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 5

Year 2011 METROPLAN Orlando Travel Time Study

SR 434 - SR 414/Maitland Blvd. to San Sebastian Prado - Southbound Direction Summary - After Condition

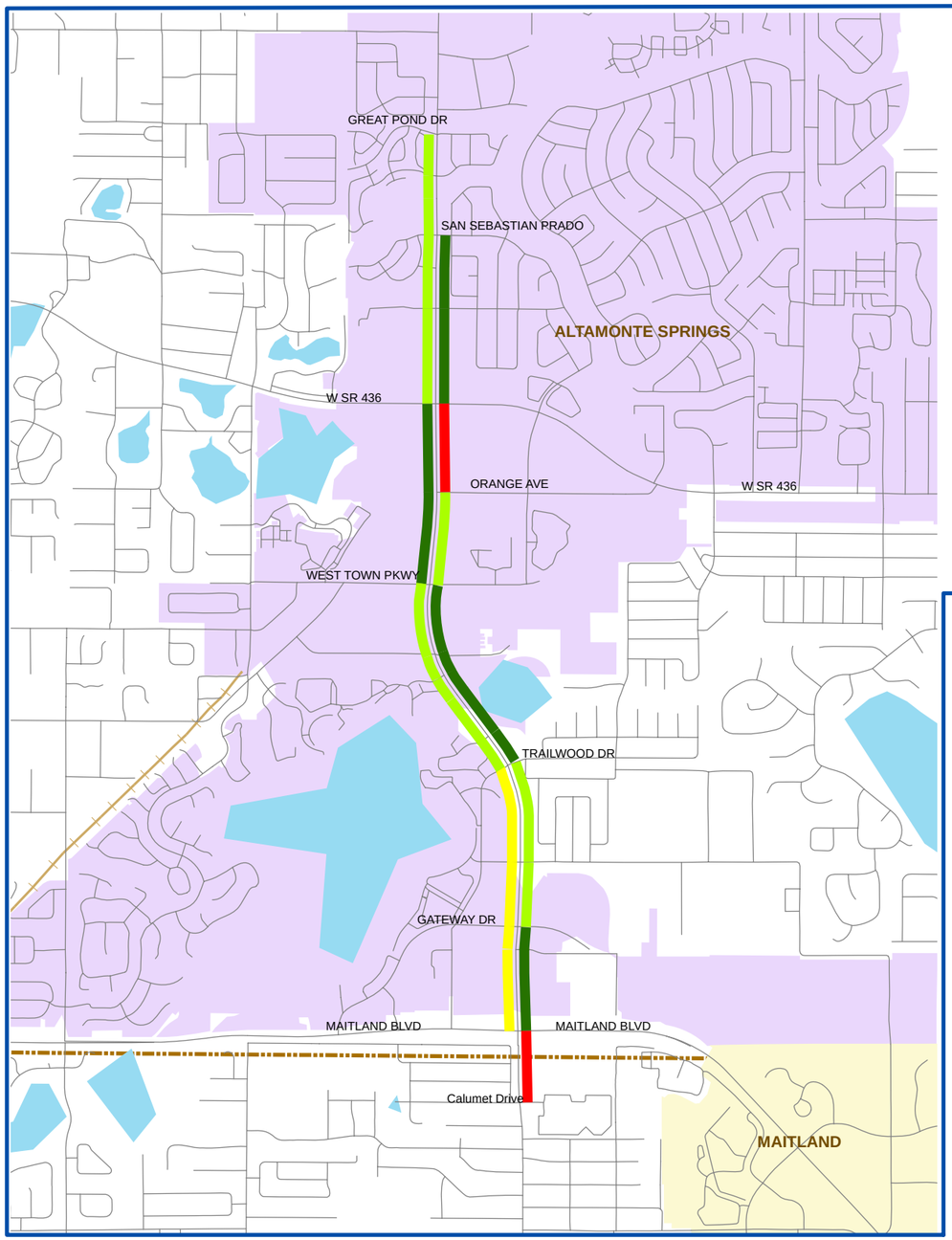
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Grate Pond Dr. to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	528	10	Signal	8.4	0.0	II	42.9	A	0.95	
San Sebastian Prado to SR 436	Seminole	Arterial	OBD	2	3	1	45	2,376	10	Signal	83.4	30.6	II	19.4	D	0.43	
SR 436 to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,267	10	Signal	22.8	0.0	II	37.9	A	0.84	
Orange Ave. to W. Town Pkwy.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	10	Signal	23.4	0.6	II	40.0	A	0.89	
W. Town Pkwy. to Tailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,798	10	Signal	43.8	0.6	II	43.6	A	0.97	
Tailwood Dr./Lotus landing Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	2	3	1	45	2,429	10	Signal	35.4	1.2	II	46.8	A	1.04	
Gateway Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,426	10	Signal	25.2	3.6	II	38.6	A	0.86	
TOTAL							45	12,197			242.4	36.6	II	34.3	B	0.76	0.080 gal/veh
PM PEAK HOUR																	
Grate Pond Dr. to San Sebastian Prado	Seminole	Arterial	OBD	1	2	0	45	528	8	Signal	7.8	0.0	II	46.2	A	1.03	
San Sebastian Prado to SR 436	Seminole	Arterial	OBD	2	3	1	45	2,376	8	Signal	114.0	57.0	II	14.2	E	0.32	
SR 436 to Orange Ave.	Seminole	Arterial	Residential Area	1	3	1	45	1,267	8	Signal	22.8	0.0	II	37.9	A	0.84	
Orange Ave. to W. Town Pkwy.	Seminole	Arterial	Residential Area	1	3	1	45	1,373	8	Signal	19.2	0.0	II	48.7	A	1.08	
W. Town Pkwy. to Tailwood Dr./Lotus landing Blvd.	Seminole	Arterial	Residential Area	1	3	1	45	2,798	8	Signal	48.6	2.4	II	39.3	A	0.87	
Tailwood Dr./Lotus landing Blvd. to Gateway Dr.	Seminole	Arterial	Residential Area	2	3	1	45	2,429	8	Signal	38.4	0.0	II	43.1	A	0.96	
Gateway Dr. to Maitland Blvd.	Seminole	Arterial	Residential Area	2	3	1	45	1,426	8	Signal	31.8	8.4	II	30.6	B	0.68	
TOTAL							45	12,197			282.6	67.8	II	29.4	B	0.65	0.080 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



SR 434 - AM Peak

Before Condition

Date of Collection: 1/12/2010
Distance: 2.31 miles
From: SR 414/Maitland Blvd.
To: San Sebastian Prado.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 27.5 MPH
NB Travel Time: 5.24 MIN
NB Delay Time: 1.56 MIN

SB Avg Speed: 30.0 MPH
SB Travel Time: 4.62 MIN
SB Delay Time: 0.68 MIN

SR 434 - AM Peak

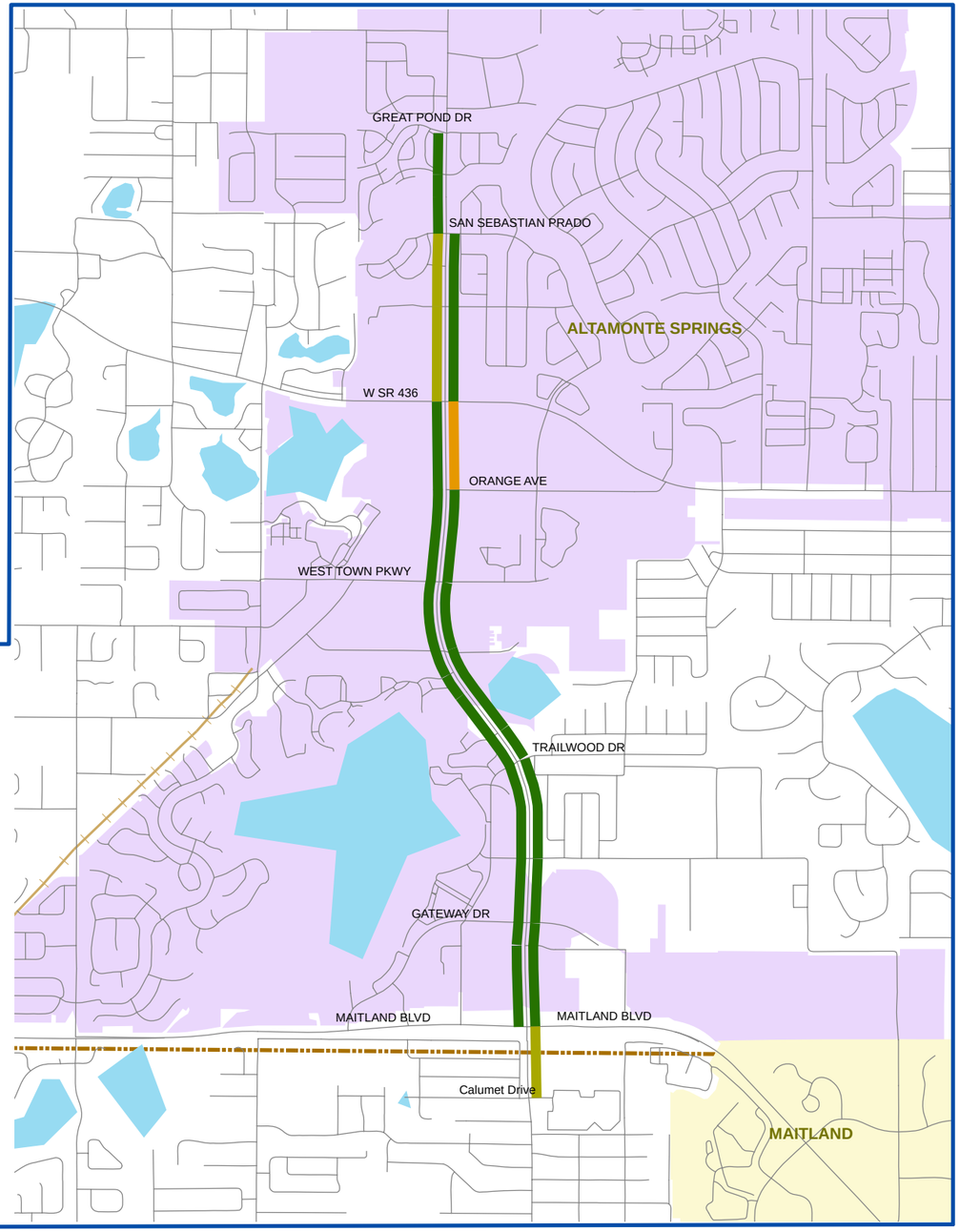
After Condition

Date of Collection: 2/9/2011
Distance: 2.31 miles
From: SR 414/Maitland Blvd.
To: San Sebastian Prado

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 33.0 MPH
NB Travel Time: 4.36 MIN
NB Delay Time: 0.95 MIN

SB Avg Speed: 34.3 MPH
SB Travel Time: 4.04 MIN
SB Delay Time: 0.61 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

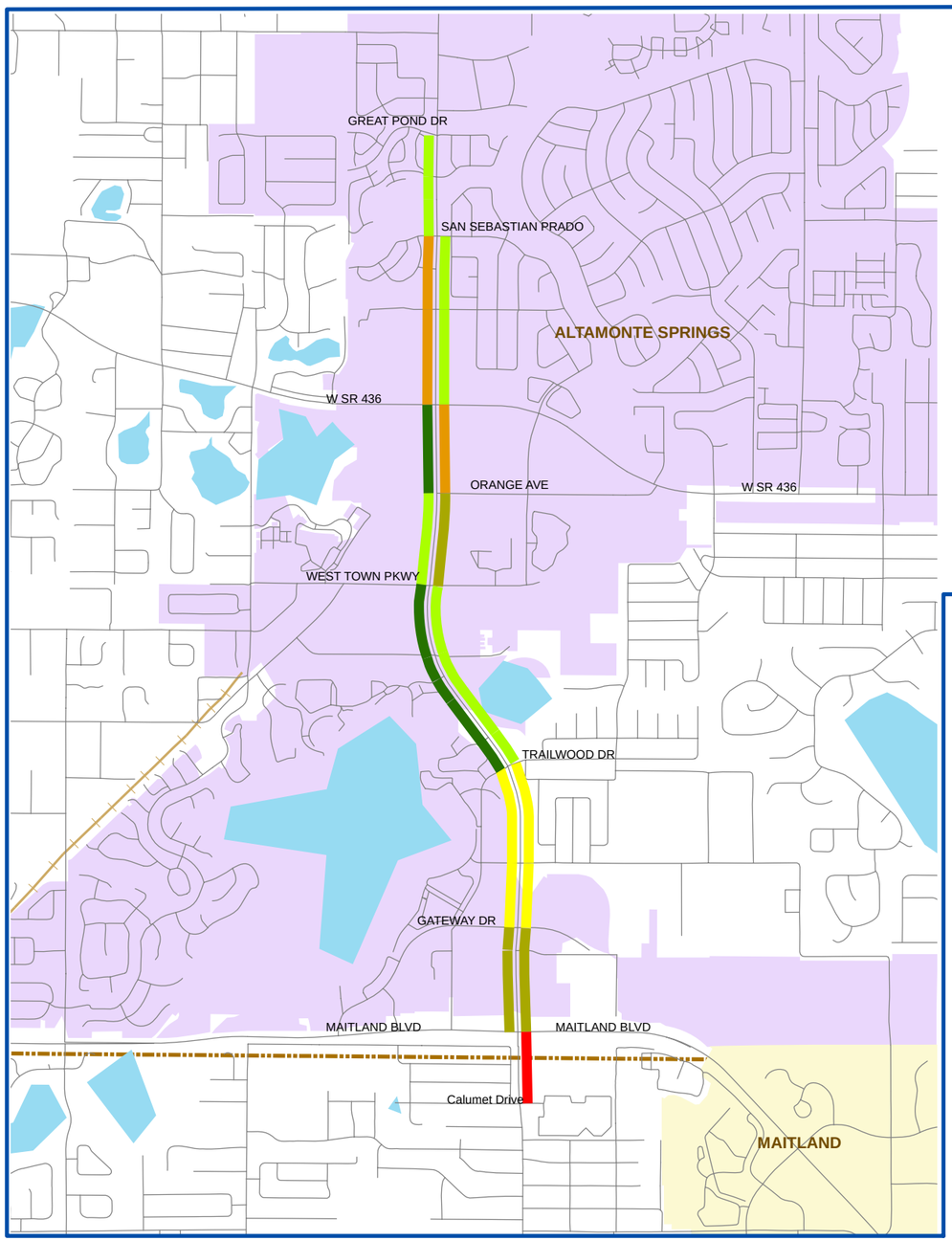
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

Miles
0 0.25 0.5



SR 434 - PM Peak

Before Condition

Date of Collection: 1/12/2010
Distance: 2.31 miles
From: SR 414/Maitland Blvd.
To: San Sebastian Prado.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 21.8 MPH
NB Travel Time: 6.61 MIN
NB Delay Time: 2.10 MIN

SB Avg Speed: 24.2 MPH
SB Travel Time: 5.73 MIN
SB Delay Time: 1.97 MIN

SR 434 - PM Peak

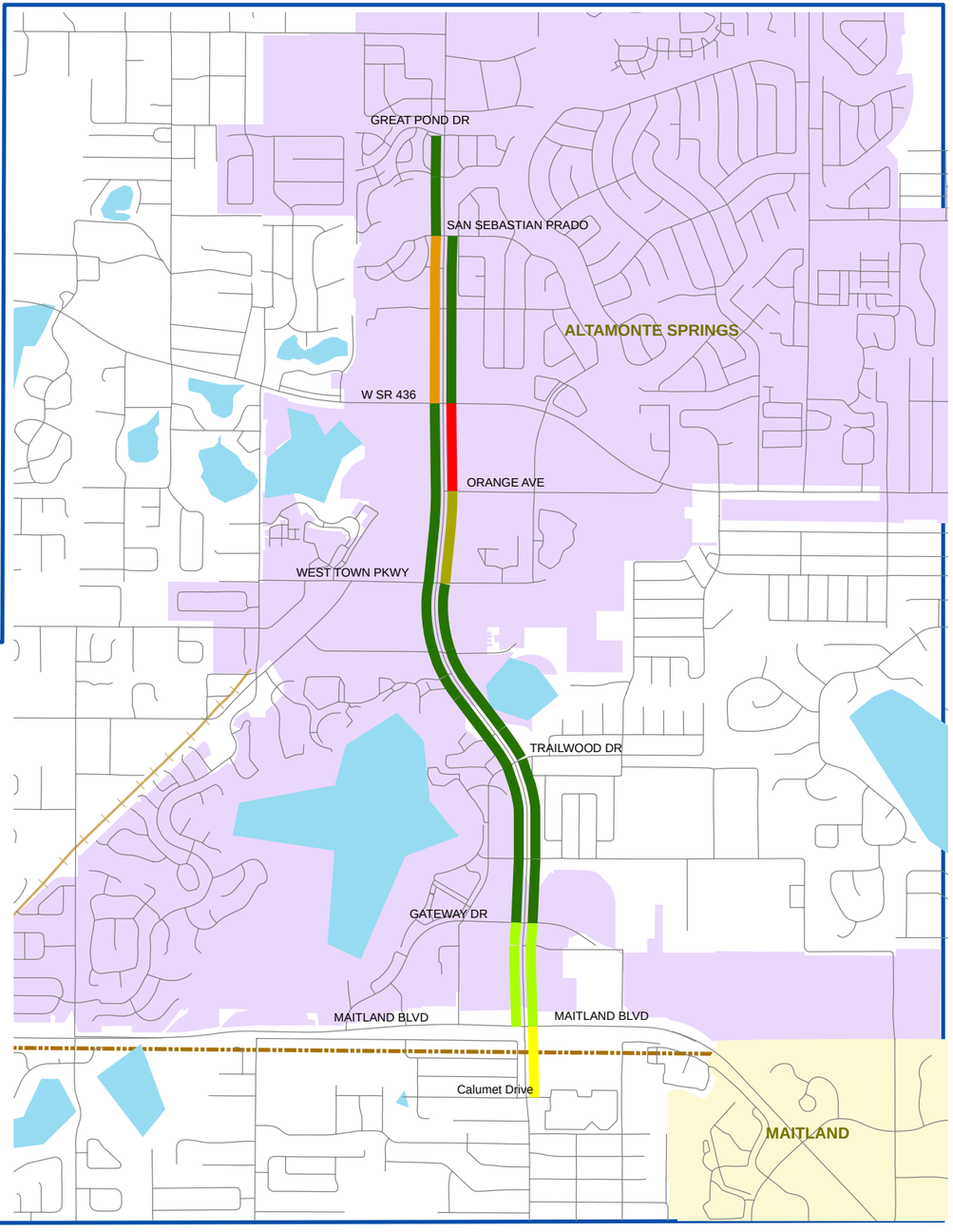
After Condition

Date of Collection: 2/9/2011
Distance: 2.31 miles
From: SR 414/Maitland Blvd.
To: San Sebastian Prado

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 27.7 MPH
NB Travel Time: 5.20 MIN
NB Delay Time: 0.99 MIN

SB Avg Speed: 29.4 MPH
SB Travel Time: 4.71 MIN
SB Delay Time: 1.13 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 434 : SR 414 to San Sebastian Prado

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
861	**314.4**	**93.6**	**27.5**	0.0830	75.19	71.46
Northbound/Eastbound - PM Peak Hour						
2047	**396.6**	**126.0**	**21.8**	0.0860	225.51	176.04
Southbound/Westbound - AM Peak Hour						
1906	**277.2**	**40.8**	**30.0**	0.0830	146.76	158.20
Southbound/Westbound - PM Peak Hour						
1435	**343.8**	**118.2**	**24.2**	0.0820	137.04	117.67

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 434 : SR 414 to San Sebastian Prado

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
861	**261.6**	**57.0**	**33.0**	0.0810	62.57	69.74
Northbound/Eastbound - PM Peak Hour						
2047	**312.0**	**59.4**	**27.7**	0.0840	177.41	171.95
Southbound/Westbound - AM Peak Hour						
1906	**242.4**	**36.6**	**34.3**	0.0800	128.34	152.48
Southbound/Westbound - PM Peak Hour						
1435	**282.6**	**67.8**	**29.4**	0.0800	112.65	114.80

*Traffic Volumes are obtained from the latest 2010 Seminole County Traffic Counts.

SR 434 : SR 414 to San Sebastian Prado

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	221.96	190.90	362.55	290.05
Total Fuel Consumption (gallons)	229.66	222.22	293.71	286.75

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$531.75	$1,205.70
Annual User Benefit	**$159,525.62**	**$361,709.40**
Total Annual User Benefit =	**$521,235.02**	
Total Signal Retiming Annual Cost	$8,440.29	
User Benefit / Cost Ratio	**61.76**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 50

SR 436 to Dean Rd.

TABLE 6

Year 2011 METROPLAN Orlando Travel Time Study

SR 50 - SR 436 to Dean Rd. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to SR 436	Orange	Arterial	OBD	0	3	0	45	3,485	4	Overpass	54.0	0.0	II	44.0	A	0.98	
SR 436 to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	6,336	4	Signal	97.4	0.0	II	44.4	A	0.99	
N. Forsyth Rd. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	4	Signal	60.0	15.0	II	30.0	B	0.67	
N. Goldenrod Rd. to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	1	45	2,587	4	Signal	42.6	0.0	II	41.4	A	0.92	
N. Chickasaw Tr. to SR 417 SB Ramps	Orange	Arterial	OBD	1	3	0	45	3,168	4	Signal	85.2	30.0	II	25.4	C	0.56	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	OBD	1	3	0	45	1,003	4	Signal	15.0	0.0	II	45.6	A	1.01	
SR 417 NB Ramps to Constantine Ave.	Orange	Arterial	OBD	1	2	1	45	1,056	4	Signal	15.6	0.0	II	46.2	A	1.03	
Constantine Ave. to N. Econlockhatchee Tr.	Orange	Arterial	OBD	1	2	1	45	2,587	4	Signal	72.6	19.2	II	24.3	C	0.54	
N. Econlockhatchee Tr. to N. Dean Rd.	Orange	Arterial	Residential Area	1	2	1	45	2,640	4	Signal	131.4	67.8	II	13.7	E	0.30	
TOTAL							45	25,502			573.8	132.0	II	30.3	B	0.67	0.167 gal/veh
PM PEAK HOUR																	
Median Opening to SR 436	Orange	Arterial	OBD	0	3	0	45	3,485	5	Overpass	57.0	0.0	II	41.7	A	0.93	
SR 436 to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	6,336	5	Signal	98.0	0.0	II	44.1	A	0.98	
N. Forsyth Rd. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	5	Signal	55.8	9.6	II	32.3	B	0.72	
N. Goldenrod Rd. to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	1	45	2,587	5	Signal	103.8	45.0	II	17.0	E	0.38	
N. Chickasaw Tr. to SR 417 SB Ramps	Orange	Arterial	OBD	1	3	0	45	3,168	5	Signal	99.6	31.8	II	21.7	D	0.48	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	OBD	1	3	0	45	1,003	5	Signal	16.8	0.0	II	40.7	A	0.90	
SR 417 NB Ramps to Constantine Ave.	Orange	Arterial	OBD	1	2	1	45	1,056	5	Signal	16.8	0.0	II	42.9	A	0.95	
Constantine Ave. to N. Econlockhatchee Tr.	Orange	Arterial	OBD	1	2	1	45	2,587	5	Signal	68.4	12.0	II	25.8	C	0.57	
N. Econlockhatchee Tr. to N. Dean Rd.	Orange	Arterial	Residential Area	1	2	1	45	2,640	5	Signal	112.8	48.6	II	16.0	E	0.35	
TOTAL							45	25,502			629.0	147.0	II	27.6	C	0.61	0.170 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.
2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.
3. The laneage information between SR 417 and Dean Rd is subjected to change due to the ongoing construction.
4. OBD - Outlying Bussiness District

TABLE 6

Year 2011 METROPLAN Orlando Travel Time Study

SR 50 - SR 436 to Dean Rd. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to N. Dean Rd.	Orange	Arterial	Residential Area	1	2	1	45	1,637	5	Signal	73.8	36.0	II	15.1	E	0.34	
N. Dean Rd. to N. Econlockhatchee Tr.	Orange	Arterial	Residential Area	1	2	0	45	2,640	5	Signal	109.8	57.6	II	16.4	E	0.36	
N. Econlockhatchee Tr. to Constantine Ave.	Orange	Arterial	OBD	1	2	0	45	2,587	5	Signal	117.6	59.4	II	15.0	E	0.33	
Constantine Ave. to SR 417 NB Ramps	Orange	Arterial	OBD	0	3	1	45	1,056	5	Signal	24.6	1.2	II	29.3	B	0.65	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	OBD	0	3	1	45	1,003	5	Signal	20.4	2.4	II	33.5	B	0.75	
SR 417 SB Ramps to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	0	45	3,168	5	Signal	53.4	4.8	II	40.4	A	0.90	
N. Chickasaw Tr. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,587	5	Signal	115.8	62.4	II	15.2	E	0.34	
N. Goldenrod Rd. to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	2,640	5	Signal	90.0	34.8	II	20.0	D	0.44	
N. Forsyth Rd. to SR 436	Orange	Arterial	OBD	0	3	0	45	6,336	5	Overpass	96.6	0.0	II	44.7	A	0.99	
TOTAL							45	23,654			702.0	258.6	II	23.0	C	0.51	0.156 gal/veh
PM PEAK HOUR																	
Median Opening to N. Dean Rd.	Orange	Arterial	Residential Area	1	2	1	45	1,637	4	Signal	122.4	76.8	II	9.1	F	0.20	
N. Dean Rd. to N. Econlockhatchee Tr.	Orange	Arterial	Residential Area	1	2	0	45	2,640	4	Signal	193.8	106.2	II	9.3	F	0.21	
N. Econlockhatchee Tr. to Constantine Ave.	Orange	Arterial	OBD	1	2	0	45	2,587	4	Signal	80.4	23.4	II	21.9	D	0.49	
Constantine Ave. to SR 417 NB Ramps	Orange	Arterial	OBD	0	3	1	45	1,056	4	Signal	19.2	0.0	II	37.5	A	0.83	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	OBD	0	3	1	45	1,003	4	Signal	16.2	0.0	II	42.2	A	0.94	
SR 417 SB Ramps to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	0	45	3,168	4	Signal	57.6	7.8	II	37.5	A	0.83	
N. Chickasaw Tr. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,587	4	Signal	66.0	13.2	II	26.7	C	0.59	
N. Goldenrod Rd. to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	2,640	4	Signal	64.8	12.0	II	27.8	C	0.62	
N. Forsyth Rd. to SR 436	Orange	Arterial	OBD	0	3	0	45	6,336	4	Overpass	97.2	0.0	II	44.4	A	0.99	
TOTAL							45	23,654			717.6	239.4	II	22.5	C	0.50	0.159 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.
2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.
3. The laneage information between SR 417 and Dean Rd is subjected to change due to the ongoing construction.
4. OBD - Outlying Bussiness District

TABLE 6

Year 2011 METROPLAN Orlando Travel Time Study

SR 50 - SR 436 to Dean Rd. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to SR 436	Orange	Arterial	OBD	0	3	0	45	3,485	6	Overpass	40.8	0.0	II	58.2	A	1.29	
SR 436 to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	6,336	6	Signal	79.2	0.0	II	54.5	A	1.21	
N. Forsyth Rd. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	6	Signal	57.6	18.0	II	31.2	B	0.69	
N. Goldenrod Rd. to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	1	45	2,587	6	Signal	84.0	37.8	II	21.0	D	0.47	
N. Chickasaw Tr. to SR 417 SB Ramps	Orange	Arterial	OBD	1	3	0	45	3,168	6	Signal	65.4	17.4	II	33.0	B	0.73	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	OBD	1	3	0	45	1,003	6	Signal	12.6	0.0	II	54.3	A	1.21	
SR 417 NB Ramps to Constantine Ave.	Orange	Arterial	OBD	1	3	1	45	1,056	6	Signal	15.0	0.0	II	48.0	A	1.07	
Constantine Ave. to N. Econlockhatchee Tr.	Orange	Arterial	OBD	2	3	1	45	2,587	6	Signal	33.0	0.0	II	53.5	A	1.19	
N. Econlockhatchee Tr. to N. Dean Rd.	Orange	Arterial	Residential Area	2	3	1	45	2,640	6	Signal	67.2	19.8	II	26.8	C	0.60	
TOTAL							45	25,502			454.8	93.0	II	38.2	A	0.85	0.166 gal/veh
PM PEAK HOUR																	
Median Opening to SR 436	Orange	Arterial	OBD	0	3	0	45	3,485	7	Overpass	47.4	0.0	II	50.1	A	1.11	
SR 436 to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	6,336	7	Signal	84.6	0.0	II	51.1	A	1.13	
N. Forsyth Rd. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	7	Signal	91.8	44.4	II	19.6	D	0.44	
N. Goldenrod Rd. to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	1	45	2,587	7	Signal	59.4	7.2	II	29.7	B	0.66	
N. Chickasaw Tr. to SR 417 SB Ramps	Orange	Arterial	OBD	1	3	0	45	3,168	7	Signal	52.2	0.0	II	41.4	A	0.92	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	OBD	1	3	0	45	1,003	7	Signal	16.2	0.0	II	42.2	A	0.94	
SR 417 NB Ramps to Constantine Ave.	Orange	Arterial	OBD	1	3	1	45	1,056	7	Signal	15.6	0.0	II	46.2	A	1.03	
Constantine Ave. to N. Econlockhatchee Tr.	Orange	Arterial	OBD	2	3	1	45	2,587	7	Signal	36.0	0.0	II	49.0	A	1.09	
N. Econlockhatchee Tr. to N. Dean Rd.	Orange	Arterial	Residential Area	2	3	1	45	2,640	7	Signal	43.8	2.4	II	41.1	A	0.91	
TOTAL							45	25,502			447.0	54.0	II	38.9	A	0.86	0.165 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Bussiness District

TABLE 6

Year 2011 METROPLAN Orlando Travel Time Study

SR 50 - SR 436 to Dean Rd. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to N. Dean Rd.	Orange	Arterial	Residential Area	1	3	1	45	1,637	6	Signal	74.4	16.2	II	15.0	E	0.33	
N. Dean Rd. to N. Econlockhatchee Tr.	Orange	Arterial	Residential Area	2	3	1	45	2,640	6	Signal	36.6	0.0	II	49.2	A	1.09	
N. Econlockhatchee Tr. to Constantine Ave.	Orange	Arterial	OBD	1	3	0	45	2,587	6	Signal	35.4	0.0	II	49.8	A	1.11	
Constantine Ave. to SR 417 NB Ramps	Orange	Arterial	OBD	0	3	1	45	1,056	6	Signal	15.0	0.0	II	48.0	A	1.07	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	OBD	0	3	1	45	1,003	6	Signal	16.8	0.0	II	40.7	A	0.90	
SR 417 SB Ramps to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	0	45	3,168	6	Signal	59.4	3.6	II	36.4	A	0.81	
N. Chickasaw Tr. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,587	6	Signal	51.6	1.2	II	34.2	B	0.76	
N. Goldenrod Rd. to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	2,640	6	Signal	132.6	66.6	II	13.6	E	0.30	
N. Forsyth Rd. to SR 436	Orange	Arterial	OBD	0	3	0	45	6,336	6	Overpass	76.8	0.0	II	56.2	A	1.25	
TOTAL							45	23,654			498.6	87.6	II	32.3	B	0.72	0.154 gal/veh
PM PEAK HOUR																	
Median Opening to N. Dean Rd.	Orange	Arterial	Residential Area	1	3	1	45	1,637	6	Signal	58.8	15.0	II	19.0	D	0.42	
N. Dean Rd. to N. Econlockhatchee Tr.	Orange	Arterial	Residential Area	2	3	1	45	2,640	6	Signal	36.0	0.0	II	50.0	A	1.11	
N. Econlockhatchee Tr. to Constantine Ave.	Orange	Arterial	OBD	1	3	0	45	2,587	6	Signal	33.6	0.0	II	52.5	A	1.17	
Constantine Ave. to SR 417 NB Ramps	Orange	Arterial	OBD	0	3	1	45	1,056	6	Signal	14.4	0.0	II	50.0	A	1.11	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	OBD	0	3	1	45	1,003	6	Signal	13.8	0.0	II	49.6	A	1.10	
SR 417 SB Ramps to N. Chickasaw Tr.	Orange	Arterial	OBD	1	3	0	45	3,168	6	Signal	72.0	12.6	II	30.0	B	0.67	
N. Chickasaw Tr. to N. Goldenrod Rd.	Orange	Arterial	OBD	2	3	1	45	2,587	6	Signal	45.0	0.0	II	39.2	A	0.87	
N. Goldenrod Rd. to N. Forsyth Rd.	Orange	Arterial	OBD	1	3	1	45	2,640	6	Signal	73.2	17.4	II	24.6	C	0.55	
N. Forsyth Rd. to SR 436	Orange	Arterial	OBD	0	3	0	45	6,336	6	Overpass	82.2	0.0	II	52.6	A	1.17	
TOTAL							45	23,654			429.0	45.0	II	37.6	A	0.84	0.151 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Bussiness District

SR 50 - AM Peak

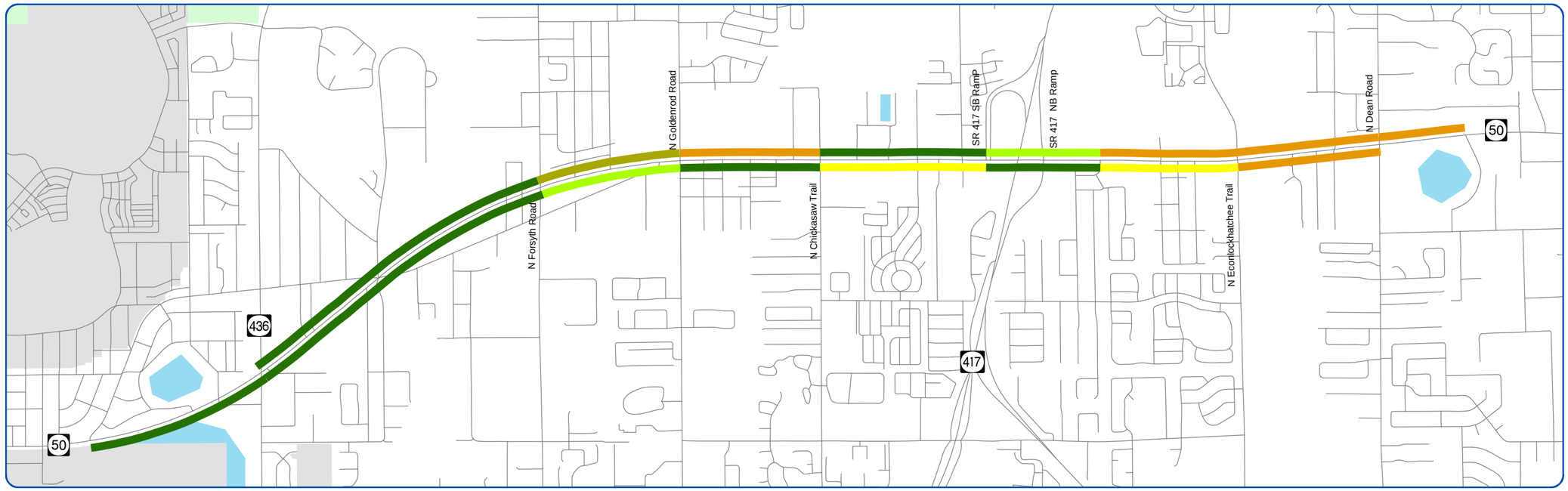
Before Condition

Date of Collection: 3/2/2011
Distance: 4.23 miles
From: SR 436
To: Dean Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 30.3 MPH
EB Travel Time: 9.56 MIN
EB Delay Time: 2.20 MIN

WB Avg Speed: 23.0 MPH
WB Travel Time: 11.70 MIN
WB Delay Time: 4.31 MIN



SR 50 - AM Peak

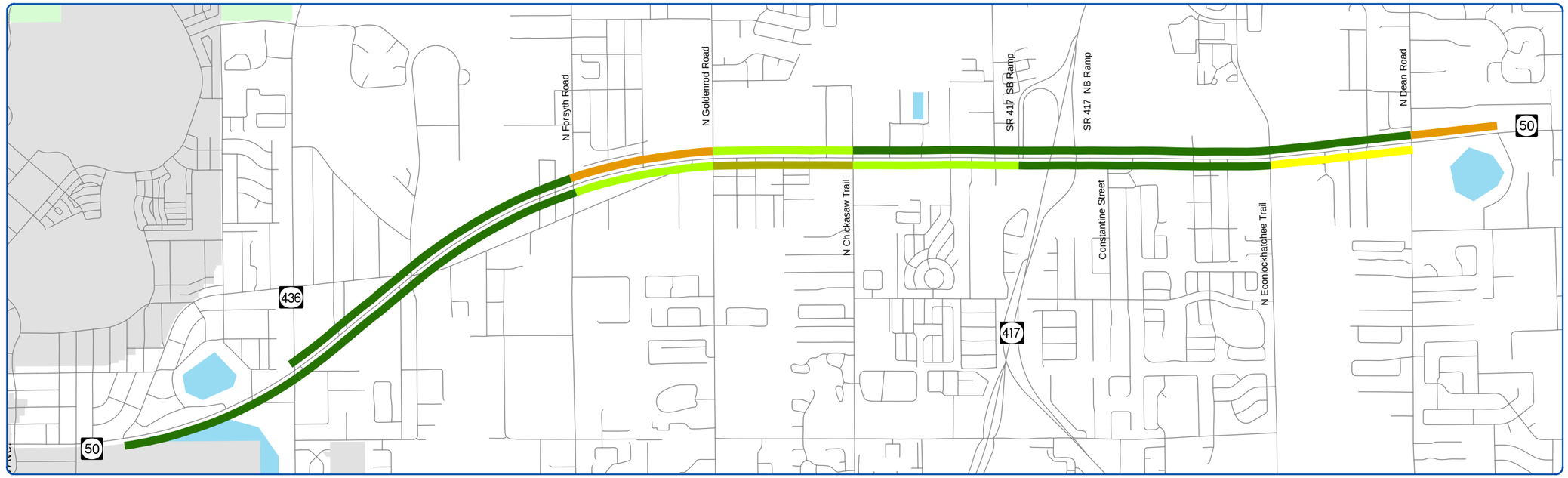
After Condition

Date of Collection: 5/18/2011
Distance: 4.63 miles
From: SR 436
To: Dean Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 41.9 MPH
EB Travel Time: 6.91 MIN
EB Delay Time: 1.55 MIN

WB Avg Speed: 34.2 MPH
WB Travel Time: 7.85 MIN
WB Delay Time: 1.46 MIN



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Level of Services:

A	D	Roads	
B	E	City Boundary	
C	F	Water	

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

SR 50 - PM Peak

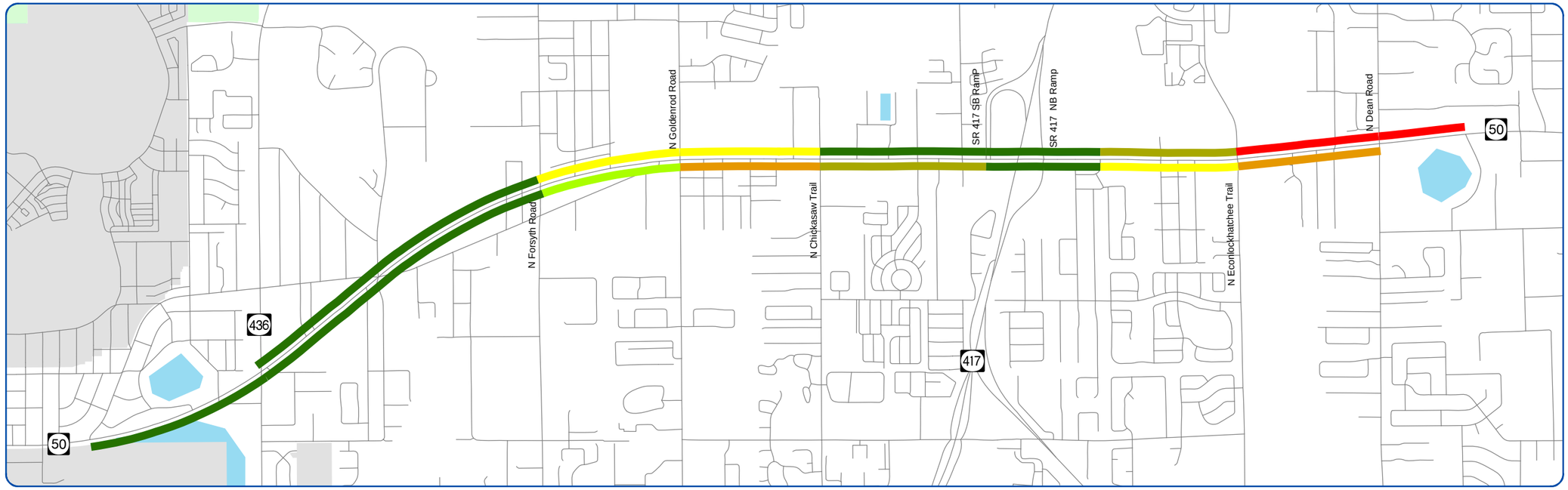
Before Condition

Date of Collection: 3/2/2011
Distance: 4.23 miles
From: SR 436
To: Dean Rd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 27.6 MPH
EB Travel Time: 10.48 MIN
EB Delay Time: 2.45 MIN

WB Avg Speed: 22.5 MPH
WB Travel Time: 11.96 MIN
WB Delay Time: 3.99 MIN



SR 50 - PM Peak

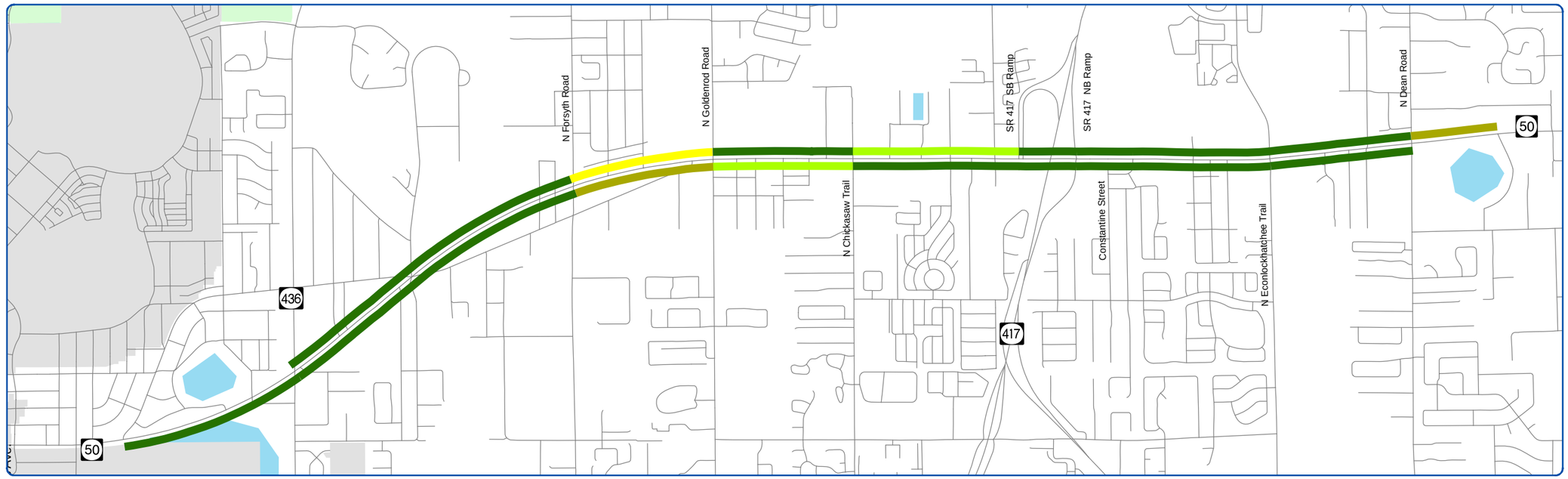
After Condition

Date of Collection: 5/18/2011
Distance: 4.23 miles
From: SR 436
To: Dean Rd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 43.2 MPH
EB Travel Time: 6.71 MIN
EB Delay Time: 0.90 MIN

WB Avg Speed: 40.2 MPH
WB Travel Time: 6.69 MIN
WB Delay Time: 0.75 MIN



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Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

SR 50 : SR 436 to Dean Road

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	Travel Time (sec/veh)	Delay (sec/veh)	Average Speed (mph)	Fuel Consumption (gallons/veh)	Total Travel Time (Veh-hour)	Total Fuel Consumption (in gallons)
Northbound/Eastbound - AM Peak Hour						
1308	573.8	132.0	30.3	0.167	208.48	218.44
Northbound/Eastbound - PM Peak Hour						
1995	629.0	147.0	27.6	0.1700	348.57	339.15
Southbound/Westbound - AM Peak Hour						
1908	702.0	258.6	23.0	0.1560	372.06	297.65
Southbound/Westbound - PM Peak Hour						
1336	717.6	239.4	22.5	0.1590	266.31	212.42

*Traffic Volumes are obtained from the latest Orange County Counts, 2010.

SR 50 : SR 436 to Dean Road

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1308	**454.8**	**93.0**	**38.2**	0.1660	165.24	217.13
Northbound/Eastbound - PM Peak Hour						
1995	**447.0**	**54.0**	**38.9**	0.1650	247.71	329.18
Southbound/Westbound - AM Peak Hour						
1908	**498.6**	**87.6**	**32.3**	0.1540	264.26	293.83
Southbound/Westbound - PM Peak Hour						
1336	**429.0**	**45.0**	**37.6**	0.1510	159.21	201.74

*Traffic Volumes are obtained from the latest Orange County Counts, 2010.

SR 50 : SR 436 to Dean Road

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	580.54	429.50	614.88	406.92
Total Fuel Consumption (gallons)	516.08	510.96	551.57	530.91

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$2,479.56	$3,460.85
Annual User Benefit	**$743,867.05**	**$1,038,253.51**
Total Annual User Benefit =	**$1,782,120.55**	
Total Signal Retiming Annual Cost	$14,549.31	
User Benefit / Cost Ratio	**122.49**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 436

Oleander Dr. to Old Cheney Hwy.

TABLE 7

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Oleander Dr. to Old Cheney Hwy.- Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,162	10	Signal	50.4	14.4	II	15.7	E	0.35	
Oleander Dr. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,267	10	Signal	37.8	10.2	II	22.9	C	0.51	
SR 50 to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	0	45	1,584	10	Signal	25.2	0.0	II	42.9	A	0.95	
TOTAL							45	4,013			113.4	24.6	II	24.1	C	0.54	0.026 gal/veh
PM PEAK HOUR																	
Median Opening to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,162	12	Signal	64.2	28.2	II	12.3	F	0.27	
Oleander Dr. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,267	12	Signal	52.8	18.0	II	16.4	E	0.36	
SR 50 to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	0	45	1,584	12	Signal	40.8	4.8	II	26.5	C	0.59	
TOTAL							45	4,013			157.8	51.0	II	17.3	D	0.39	0.027 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 7

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Oleander Dr. to Old Cheney Hwy. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	1	45	2,587	8	Signal	77.4	19.2	II	22.8	C	0.51	
Old Cheney Hwy. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,637	8	Signal	70.8	36.0	II	15.8	E	0.35	
SR 50 to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,267	8	Signal	40.2	14.4	II	21.5	D	0.48	
TOTAL							45	5,491			188.4	69.6	II	19.9	D	0.44	0.036 gal/veh
PM PEAK HOUR																	
Median Opening to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	1	45	2,587	10	Signal	97.2	30.0	II	18.1	D	0.40	
Old Cheney Hwy. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,637	10	Signal	72.6	32.4	II	15.4	E	0.34	
SR 50 to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,267	10	Signal	34.8	6.6	II	24.8	C	0.55	
TOTAL							45	5,491			204.6	69.0	II	18.3	D	0.41	0.037 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 7
Year 2011 METROPLAN Orlando Travel Time Study
SR 436 - Oleander Dr. to Old Cheney Hwy.- Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,162	14	Signal	64.8	30.0	II	12.2	F	0.27	
Oleander Dr. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,267	14	Signal	22.8	3.0	II	37.9	A	0.84	
SR 50 to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	0	45	1,584	14	Signal	29.4	4.2	II	36.7	A	0.82	
TOTAL							45	4,013			117.0	37.2	II	23.4	C	0.52	0.026 gal/veh
PM PEAK HOUR																	
Median Opening to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,162	13	Signal	51.0	7.8	II	15.5	E	0.35	
Oleander Dr. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,267	13	Signal	23.4	1.8	II	36.9	A	0.82	
SR 50 to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	0	45	1,584	13	Signal	25.2	1.8	II	42.9	A	0.95	
TOTAL							45	4,013			99.6	11.4	II	27.5	C	0.61	0.026 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 7

Year 2011 METROPLAN Orlando Travel Time Study

SR 436 - Oleander Dr. to Old Cheney Hwy. - Southbound Direction Summary - After Condition

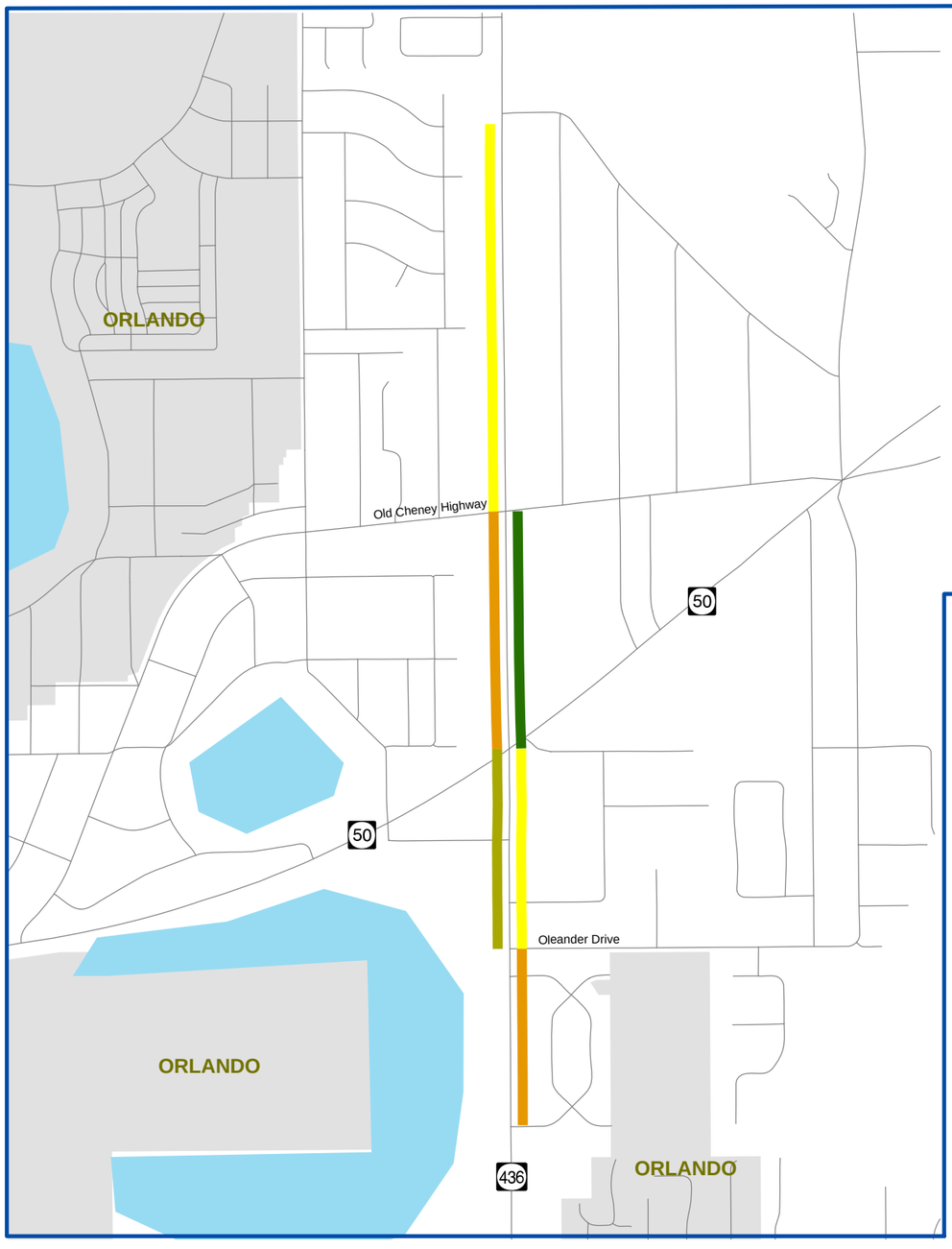
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	1	45	2,587	13	Signal	46.2	0.0	II	38.2	A	0.85	
Old Cheney Hwy. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,637	13	Signal	36.0	7.8	II	31.0	B	0.69	
SR 50 to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,267	13	Signal	19.8	2.4	II	43.6	A	0.97	
TOTAL							45	5,491			102.0	10.2	II	36.7	A	0.82	0.035 gal/veh
PM PEAK HOUR																	
Median Opening to Old Cheney Hwy.	Orange	Arterial	OBD	1	3	1	45	2,587	13	Signal	81.6	27.0	II	21.6	D	0.48	
Old Cheney Hwy. to SR 50	Orange	Arterial	OBD	2	3	1	45	1,637	13	Signal	59.4	22.8	II	18.8	D	0.42	
SR 50 to Oleander Dr.	Orange	Arterial	OBD	1	3	0	45	1,267	13	Signal	21.0	0.0	II	41.1	A	0.91	
TOTAL							45	5,491			162.0	49.8	II	23.1	C	0.51	0.036 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



SR 436 @ SR 50 - AM Peak

Before Condition

Date of Collection: 2/9/2011
Distance: 0.55 miles
From: Oleander Dr.
To: Old Cheney Hwy.

Start Time: 7:30 AM
End Time: 9:00 AM

NB Avg Speed: 24.1 MPH
NB Travel Time: 1.89 MIN
NB Delay Time: 0.41 MIN

SB Avg Speed: 19.9 MPH
SB Travel Time: 3.14 MIN
SB Delay Time: 1.16 MIN

SR 436 @ SR 50 - AM Peak

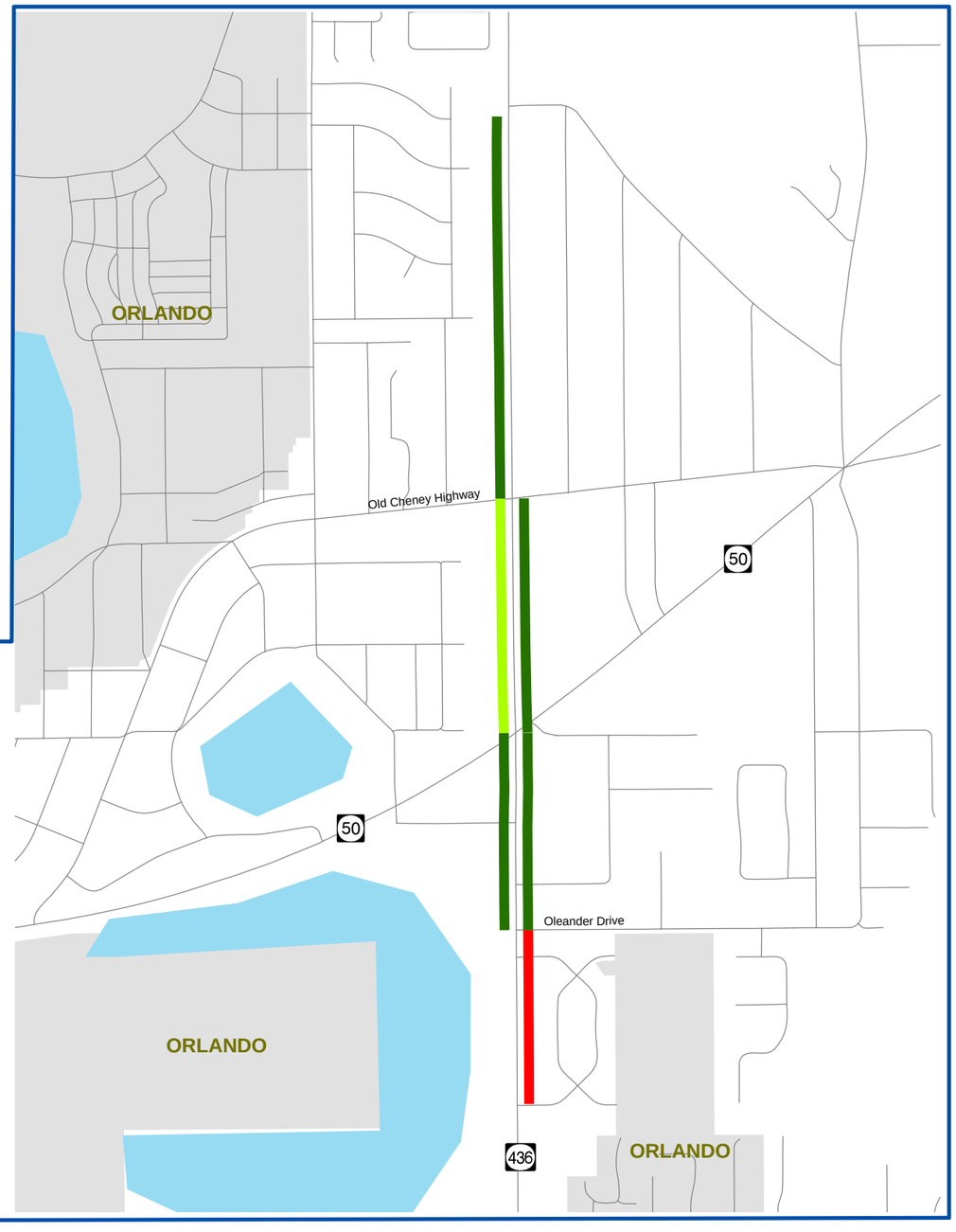
After Condition

Date of Collection: 5/17/2011
Distance: 0.55 miles
From: Oleander Dr.
To: Old Cheney Hwy.

Start Time: 7:30 AM
End Time: 9:00 AM

NB Avg Speed: 23.4 MPH
NB Travel Time: 1.95 MIN
NB Delay Time: 0.62 MIN

SB Avg Speed: 36.7 MPH
SB Travel Time: 1.70 MIN
SB Delay Time: 0.17 MIN



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Level of Services:

A
B
C
D
E
F

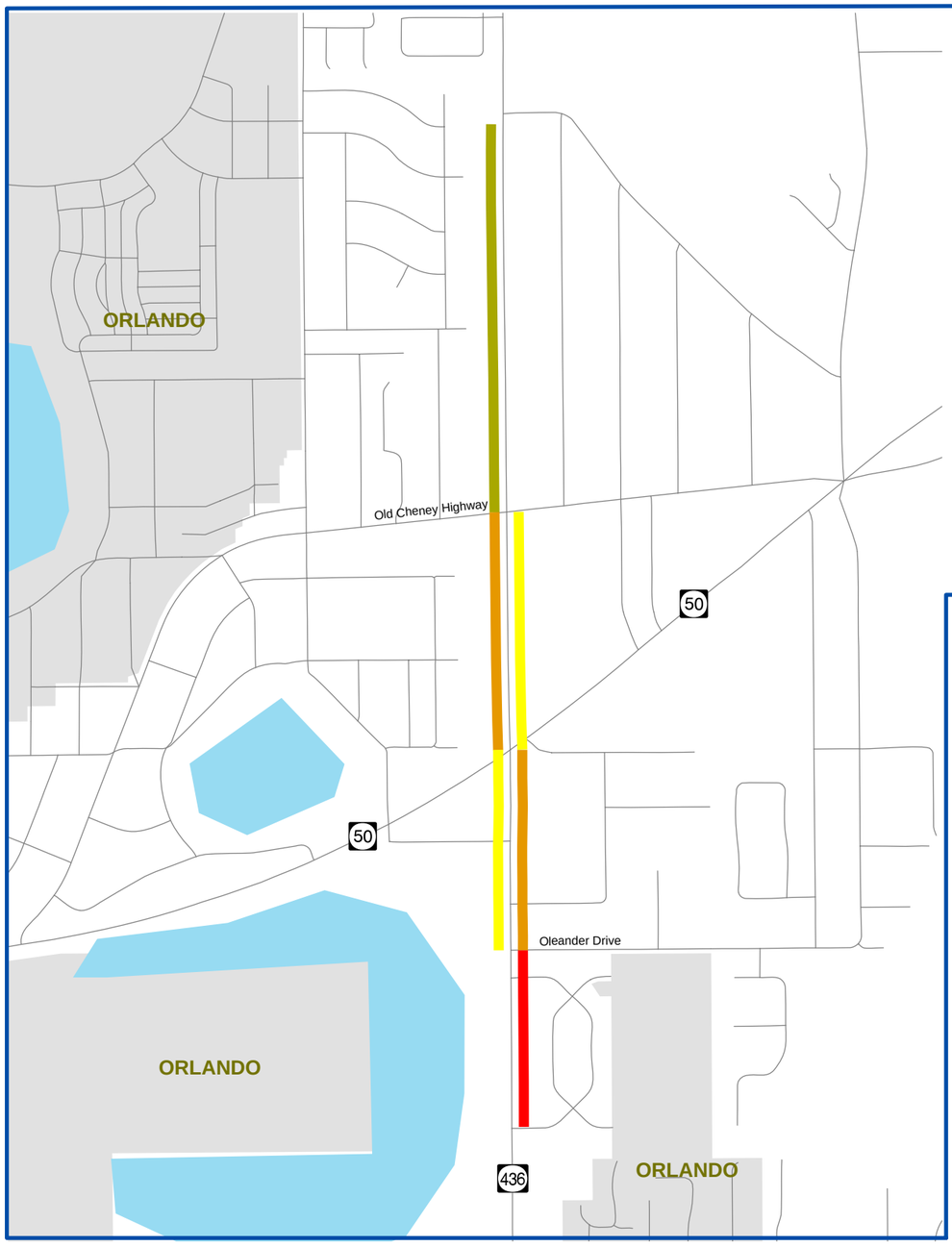
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles



SR 436 @ SR 50 - PM Peak

Before Condition

Date of Collection: 2/9/2011
Distance: 0.55 miles
From: Oleander Dr.
To: Old Cheney Hwy.

Start Time: 4:15 PM
End Time: 6:00 PM

NB Avg Speed: 17.3 MPH
NB Travel Time: 2.63 MIN
NB Delay Time: 0.85 MIN

SB Avg Speed: 18.3 MPH
SB Travel Time: 3.41 MIN
SB Delay Time: 1.15 MIN

SR 436 @ SR 50 - PM Peak

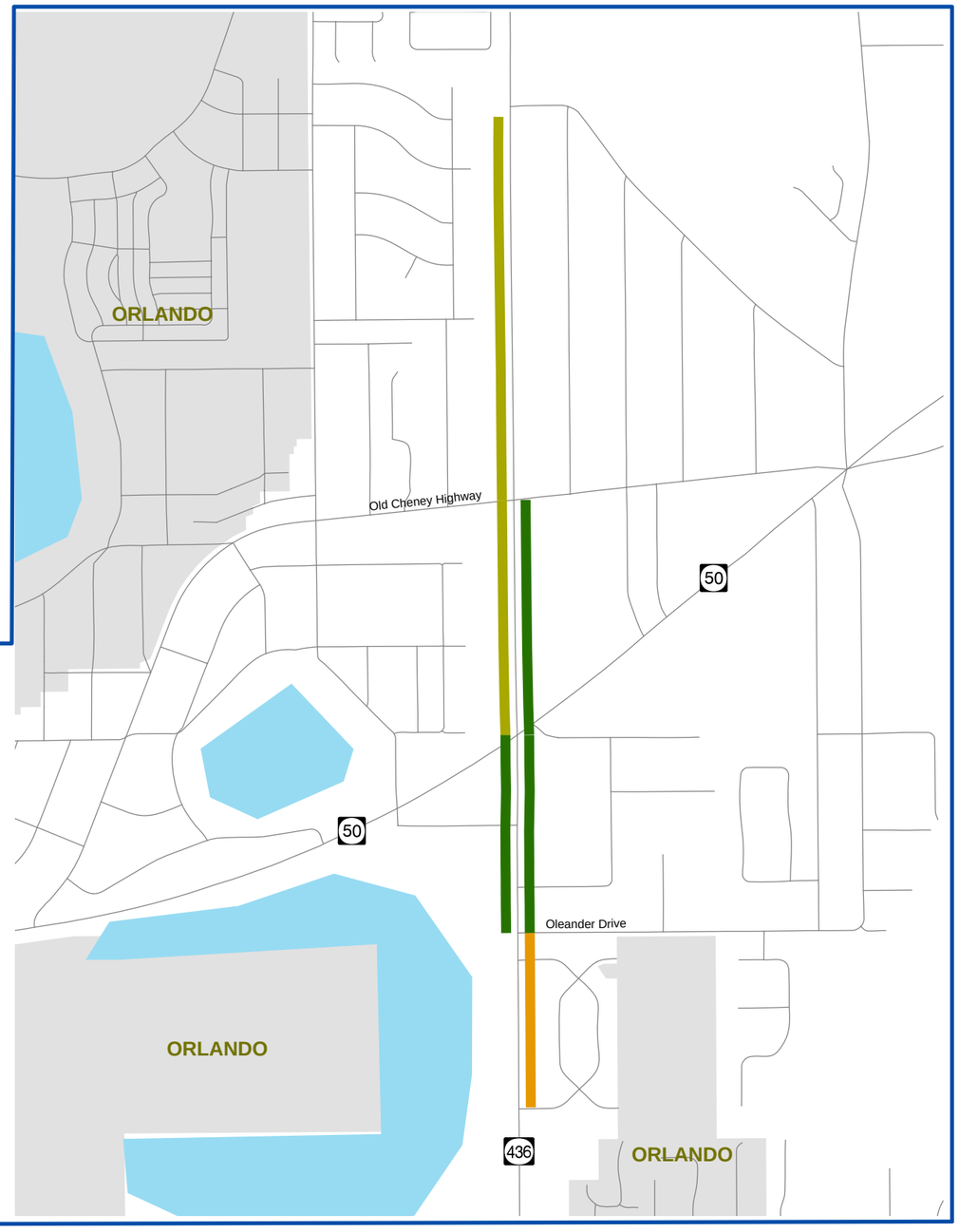
After Condition

Date of Collection: 5/17/2011
Distance: 0.55 miles
From: Oleander Dr.
To: Old Cheney Hwy.

Start Time: 4:15 PM
End Time: 6:00 PM

NB Avg Speed: 27.5 MPH
NB Travel Time: 1.66 MIN
NB Delay Time: 0.19 MIN

SB Avg Speed: 23.1 MPH
SB Travel Time: 2.70 MIN
SB Delay Time: 0.83 MIN



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Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 436 : Oleander Drive to Old Cheney Highway

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1775	**113.4**	**24.6**	**24.1**	0.0260	55.91	46.15
Northbound/Eastbound - PM Peak Hour						
1903	**157.8**	**51.0**	**17.3**	0.0270	83.41	51.38
Southbound/Westbound - AM Peak Hour						
1298	**188.4**	**69.6**	**19.9**	0.0360	67.93	46.73
Southbound/Westbound - PM Peak Hour						
2259	**204.6**	**69.0**	**18.3**	0.0370	128.39	83.58

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 436 : Oleander Drive to Old Cheney Highway

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1775	**117.0**	**37.2**	**23.4**	0.0260	57.69	46.15
Northbound/Eastbound - PM Peak Hour						
1903	**99.6**	**11.4**	**27.5**	0.0260	52.65	49.48
Southbound/Westbound - AM Peak Hour						
1298	**102.0**	**10.2**	**36.7**	0.0350	36.78	45.43
Southbound/Westbound - PM Peak Hour						
2259	**162.0**	**49.8**	**23.1**	0.0360	101.66	81.32

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 436 : Oleander Drive to Old Cheney Highway

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	123.84	94.46	211.80	154.30
Total Fuel Consumption (gallons)	92.88	91.58	134.96	130.80

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$483.31	$951.51
Annual User Benefit	**$144,993.07**	**$285,453.88**
Total Annual User Benefit =	**$430,446.95**	
Total Signal Retiming Annual Cost	$5,455.90	
User Benefit / Cost Ratio	**78.90**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 192

CR 545/Avalon Rd. to E. Orange Lake Blvd.

TABLE 11

Year 2011 METROPLAN Orlando Travel Time Study

US 192 - Avalon Rd. to E. Orange Lake Blvd. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Avalon Rd.	Orange	Arterial	Rural Area	1	2	1	55	2,482	9	Signal	52.2	10.2	II	32.4	B	0.59	
Avalon Rd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	4,752	9	Signal	78.6	6.6	II	41.2	A	0.75	
Vista Del Lago Blvd. to W. Orange Lake Blvd.	Orange	Arterial	Rural Area	1	3	0	55	2,957	9	Signal	48.0	3.6	II	42.0	A	0.76	
W. Orange Lake Blvd. to SR 429 SB Ramps	Orange	Arterial	OBD	0	3	1	55\50	2,112	9	Signal	29.4	0.0	II	49.0	A	0.98	
SR 429 SB Ramps to SR 429 NB Ramps	Orange	Arterial	OBD	2	3	0	50	686	9	Signal	10.2	0.0	II	45.9	A	0.92	
SR 429 NB Ramps to E. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	50	739	9	Signal	28.8	10.2	II	17.5	D	0.35	
TOTAL							50	13,728			247.2	30.6	II	37.9	A	0.76	0.092 gal/veh
PM PEAK HOUR																	
Median Opening to Avalon Rd.	Orange	Arterial	Rural Area	1	2	1	55	2,482	8	Signal	53.4	11.4	II	31.7	B	0.58	
Avalon Rd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	4,752	8	Signal	70.2	0.0	II	46.2	A	0.84	
Vista Del Lago Blvd. to W. Orange Lake Blvd.	Orange	Arterial	Rural Area	1	3	0	55	2,957	8	Signal	51.6	7.2	II	39.1	A	0.71	
W. Orange Lake Blvd. to SR 429 SB Ramps	Orange	Arterial	OBD	0	3	1	55\50	2,112	8	Signal	32.4	3.0	II	44.4	A	0.89	
SR 429 SB Ramps to SR 429 NB Ramps	Orange	Arterial	OBD	2	3	0	50	686	8	Signal	12.0	0.6	II	39.0	A	0.78	
SR 429 NB Ramps to E. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	50	739	8	Signal	24.6	9.6	II	20.5	D	0.41	
TOTAL							50	13,728			244.2	31.8	II	38.3	A	0.77	0.092 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 11

Year 2011 METROPLAN Orlando Travel Time Study

US 192 - Avalon Rd. to E. Orange Lake Blvd. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to E. Orange Lake Blvd.	Orange	Arterial	OBD	2	3	1	50	528	9	Signal	31.2	16.8	II	11.5	F	0.23	
E. Orange Lake Blvd. to SR 429 NB Ramps	Orange	Arterial	OBD	0	3	1	50	739	9	Signal	15.0	0.6	II	33.6	B	0.67	
SR 429 NB Ramps to SR 429 SB Ramps	Orange	Arterial	OBD	2	3	0	50	686	9	Signal	12.0	1.2	II	39.0	A	0.78	
SR 429 SB Ramps to W. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	55	2,112	9	Signal	36.6	4.8	II	39.3	A	0.72	
W. Orange Lake Blvd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	2,957	9	Signal	48.0	2.4	II	42.0	A	0.76	
Vista Del Lago Blvd. to Avalon Rd.	Orange	Arterial	Rural Area	2	2	1	55	4,752	9	Signal	88.8	12.0	II	36.5	A	0.66	
TOTAL							50	11,774			231.6	37.8	II	34.7	B	0.69	0.077 gal/veh
PM PEAK HOUR																	
Median Opening to E. Orange Lake Blvd.	Orange	Arterial	OBD	2	3	1	50	528	8	Signal	45.6	31.8	II	7.9	F	0.16	
E. Orange Lake Blvd. to SR 429 NB Ramps	Orange	Arterial	OBD	0	3	1	50	739	8	Signal	12.6	0.0	II	40.0	A	0.80	
SR 429 NB Ramps to SR 429 SB Ramps	Orange	Arterial	OBD	2	3	0	50	686	8	Signal	15.6	3.6	II	30.0	B	0.60	
SR 429 SB Ramps to W. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	55	2,112	8	Signal	45.0	9.6	II	32.0	B	0.58	
W. Orange Lake Blvd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	2,957	8	Signal	70.8	16.2	II	28.5	B	0.52	
Vista Del Lago Blvd. to Avalon Rd.	Orange	Arterial	Rural Area	2	2	1	55	4,752	8	Signal	95.4	18.0	II	34.0	B	0.62	
TOTAL							50	11,774			285.0	79.2	II	28.2	B	0.56	0.078 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 11

Year 2011 METROPLAN Orlando Travel Time Study

US 192 - Avalon Rd. to E. Orange Lake Blvd. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Avalon Rd.	Orange	Arterial	Rural Area	1	2	1	55	2,482	10	Signal	47.4	8.4	II	35.7	A	0.65	
Avalon Rd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	4,752	10	Signal	65.4	3.0	II	49.5	A	0.90	
Vista Del Lago Blvd. to W. Orange Lake Blvd.	Orange	Arterial	Rural Area	1	3	0	55	2,957	10	Signal	46.2	1.2	II	43.6	A	0.79	
W. Orange Lake Blvd. to SR 429 SB Ramps	Orange	Arterial	OBD	0	3	1	55\50	2,112	10	Signal	34.2	0.6	II	42.1	A	0.84	
SR 429 SB Ramps to SR 429 NB Ramps	Orange	Arterial	OBD	2	3	0	50	686	10	Signal	10.2	0.0	II	45.9	A	0.92	
SR 429 NB Ramps to E. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	50	739	10	Signal	12.0	0.0	II	42.0	A	0.84	
TOTAL							50	13,728			215.4	13.2	II	43.5	A	0.87	0.092 gal/veh
PM PEAK HOUR																	
Median Opening to Avalon Rd.	Orange	Arterial	Rural Area	1	2	1	55	2,482	9	Signal	40.8	7.8	II	41.5	A	0.75	
Avalon Rd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	4,752	9	Signal	60.0	0.0	II	54.0	A	0.98	
Vista Del Lago Blvd. to W. Orange Lake Blvd.	Orange	Arterial	Rural Area	1	3	0	55	2,957	9	Signal	45.0	5.4	II	44.8	A	0.81	
W. Orange Lake Blvd. to SR 429 SB Ramps	Orange	Arterial	OBD	0	3	1	55\50	2,112	9	Signal	42.6	10.2	II	33.8	B	0.68	
SR 429 SB Ramps to SR 429 NB Ramps	Orange	Arterial	OBD	2	3	0	50	686	9	Signal	12.0	0.0	II	39.0	A	0.78	
SR 429 NB Ramps to E. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	50	739	9	Signal	15.0	1.8	II	33.6	B	0.67	
TOTAL							50	13,728			215.4	25.2	II	43.5	A	0.87	0.091 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 11

Year 2011 METROPLAN Orlando Travel Time Study

US 192 - Avalon Rd. to E. Orange Lake Blvd. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to E. Orange Lake Blvd.	Orange	Arterial	OBD	2	3	1	50	528	10	Signal	18.0	10.2	II	20.0	D	0.40	
E. Orange Lake Blvd. to SR 429 NB Ramps	Orange	Arterial	OBD	0	3	1	50	739	10	Signal	9.0	0.0	II	56.0	A	1.12	
SR 429 NB Ramps to SR 429 SB Ramps	Orange	Arterial	OBD	2	3	0	50	686	10	Signal	7.8	0.0	II	60.0	A	1.20	
SR 429 SB Ramps to W. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	55	2,112	10	Signal	36.6	8.4	II	39.3	A	0.72	
W. Orange Lake Blvd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	2,957	10	Signal	55.2	9.6	II	36.5	A	0.66	
Vista Del Lago Blvd. to Avalon Rd.	Orange	Arterial	Rural Area	2	2	1	55	4,752	10	Signal	75.0	12.0	II	43.2	A	0.79	
TOTAL							50	11,774			201.6	40.2	II	39.8	A	0.80	0.076 gal/veh
PM PEAK HOUR																	
Median Opening to E. Orange Lake Blvd.	Orange	Arterial	OBD	2	3	1	50	528	9	Signal	10.8	1.8	II	33.3	B	0.67	
E. Orange Lake Blvd. to SR 429 NB Ramps	Orange	Arterial	OBD	0	3	1	50	739	9	Signal	10.2	0.0	II	49.4	A	0.99	
SR 429 NB Ramps to SR 429 SB Ramps	Orange	Arterial	OBD	2	3	0	50	686	9	Signal	9.0	0.0	II	52.0	A	1.04	
SR 429 SB Ramps to W. Orange Lake Blvd.	Orange	Arterial	OBD	1	3	1	55	2,112	9	Signal	27.0	0.0	II	53.3	A	0.97	
W. Orange Lake Blvd. to Vista Del Lago Blvd.	Orange	Arterial	Rural Area	1	2	1	55	2,957	9	Signal	45.0	0.0	II	44.8	A	0.81	
Vista Del Lago Blvd. to Avalon Rd.	Orange	Arterial	Rural Area	2	2	1	55	4,752	9	Signal	74.4	3.0	II	43.5	A	0.79	
TOTAL							50	11,774			176.4	4.8	II	45.5	A	0.91	0.076 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

US 192 - AM Peak

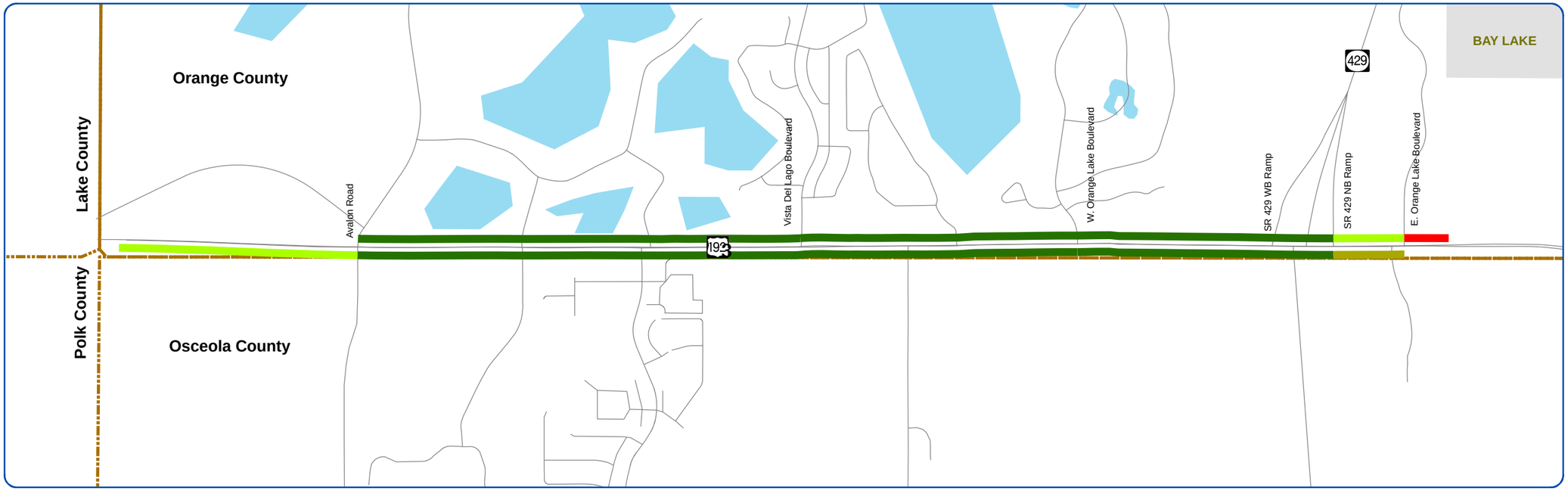
Before Condition

Date of Collection: 2/2/2011
Distance: 2.15 miles
From: Avalon Rd.
To: E. Orange Lake Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 37.9 MPH
EB Travel Time: 4.12 MIN
EB Delay Time: 0.51 MIN

WB Avg Speed: 34.7 MPH
WB Travel Time: 3.86 MIN
WB Delay Time: 0.63 MIN



US 192 - AM Peak

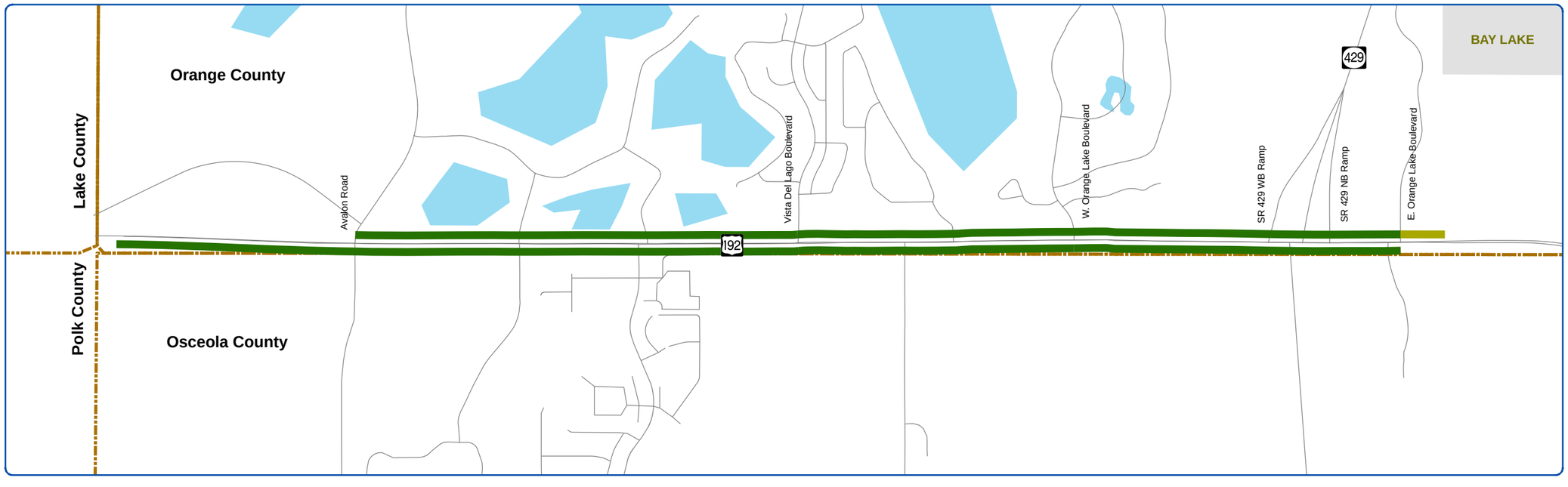
After Condition

Date of Collection: 5/10/2011
Distance: 2.15 miles
From: Avalon Rd.
To: E. Orange Lake Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 43.5 MPH
EB Travel Time: 3.59 MIN
EB Delay Time: 0.22 MIN

WB Avg Speed: 39.8 MPH
WB Travel Time: 3.36 MIN
WB Delay Time: 0.67 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

US 192 - PM Peak

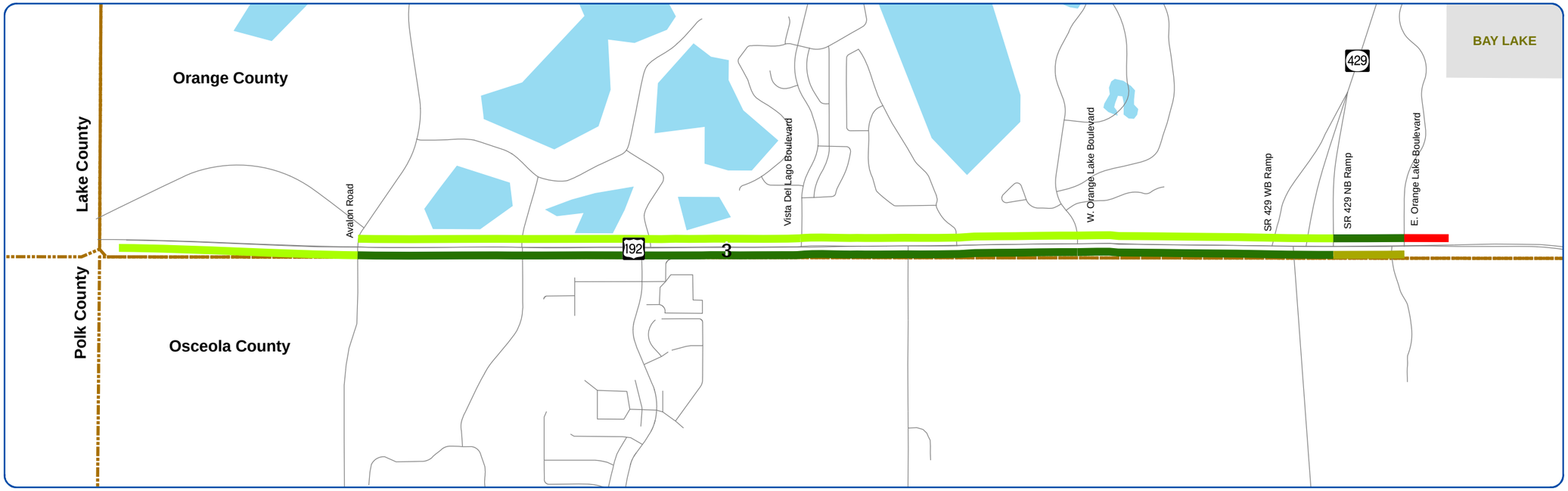
Before Condition

Date of Collection: 2/2/2011
Distance: 2.15 miles
From: Avalon Rd.
To: E. Orange Lake Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 38.3 MPH
EB Travel Time: 4.07 MIN
EB Delay Time: 0.53 MIN

WB Avg Speed: 28.2 MPH
WB Travel Time: 4.75 MIN
WB Delay Time: 1.32 MIN



US 192 - PM Peak

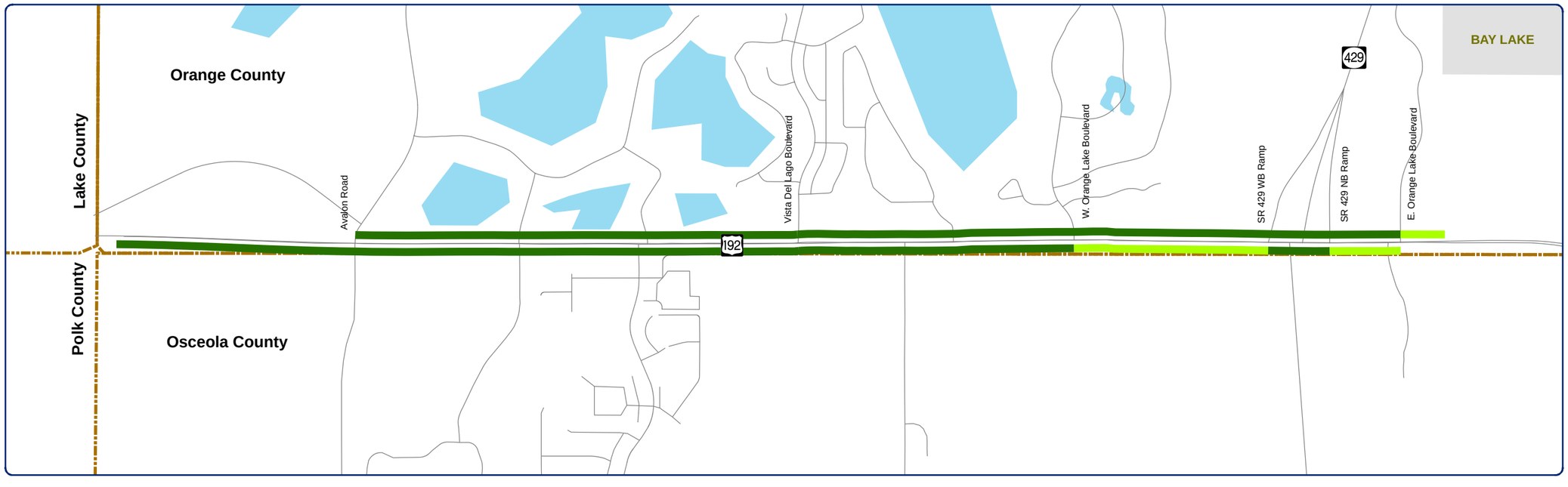
After Condition

Date of Collection: 5/10/2011
Distance: 2.15 miles
From: Avalon Rd.
To: E. Orange Lake Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 43.5 MPH
EB Travel Time: 3.59 MIN
EB Delay Time: 0.42 MIN

WB Avg Speed: 45.5 MPH
WB Travel Time: 2.94 MIN
WB Delay Time: 0.08 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

US 192 : Avalon Road to E. Orange Lake Boulevard

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1887	**247.2**	**30.6**	**37.86**	0.092	129.57	173.60
Northbound/Eastbound - PM Peak Hour						
1338	**244.2**	**31.8**	**38.3**	0.0920	90.76	123.10
Southbound/Westbound - AM Peak Hour						
811	**231.6**	**37.8**	**34.7**	0.0770	52.17	62.45
Southbound/Westbound - PM Peak Hour						
2182	**285.0**	**79.2**	**28.2**	0.0780	172.74	170.20

*Traffic Volumes are obtained from the latest FDOT Counts

US 192 : Avalon Road to E. Orange Lake Boulevard

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1887	**215.4**	**13.2**	**43.5**	0.0920	112.91	173.60
Northbound/Eastbound - PM Peak Hour						
1338	**215.4**	**25.2**	**43.5**	0.0910	80.06	121.76
Southbound/Westbound - AM Peak Hour						
811	**201.6**	**40.2**	**39.8**	0.0760	45.42	61.64
Southbound/Westbound - PM Peak Hour						
2182	**176.4**	**4.8**	**45.5**	0.0760	106.92	165.83

*Traffic Volumes are obtained from the latest FDOT Counts

US 192 : Avalon Road to E. Orange Lake Boulevard

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	181.75	158.32	263.50	186.98
Total Fuel Consumption (gallons)	236.05	235.24	293.29	287.59

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$384.65	$1,267.02
Annual User Benefit	**$115,394.17**	**$380,104.75**
Total Annual User Benefit =	**$495,498.92**	
Total Signal Retiming Annual Cost	$11,564.92	
User Benefit / Cost Ratio	**42.85**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 535

LBV Factory Stores Dr. to I-4 WB Ramps

TABLE 12
Year 2011 METROPLAN Orlando Travel Time Study
SR 535 - Lake Buena Vista Factory Stores Dr. to I-4 WB Ramps - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to LBV Factory Stores Dr.	Orange	Arterial	OBD	0	2	1	55	739	8	Signal	21.6	3.6	I	23.3	D	0.42	
LBV Factory Stores Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	55	3,379	8	Signal	111.6	49.2	I	20.6	E	0.38	
World Center Dr. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	0	45	5,280	8	Signal	97.8	13.2	II	36.8	A	0.82	
Meadow Creek Dr. to Vineland Ave.	Orange	Arterial	OBD	0	3	1	40	1,267	8	Signal	28.2	5.4	II	30.6	B	0.77	
Vineland Ave. to I-4 WB Ramps	Orange	Arterial	OBD	1	3	0	40	1,531	8	Signal	32.4	10.8	II	32.2	B	0.81	
TOTAL							45	12,197			291.6	82.2	II	28.5	B	0.63	0.082 gal/veh
PM PEAK HOUR																	
Median Opening to LBV Factory Stores Dr.	Orange	Arterial	OBD	0	2	1	55	739	7	Signal	31.2	12.0	I	16.2	E	0.29	
LBV Factory Stores Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	55	3,379	7	Signal	106.8	46.8	I	21.6	D	0.39	
World Center Dr. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	0	45	5,280	7	Signal	88.8	1.8	II	40.5	A	0.90	
Meadow Creek Dr. to Vineland Ave.	Orange	Arterial	OBD	0	3	1	40	1,267	7	Signal	46.2	10.2	II	18.7	D	0.47	
Vineland Ave. to I-4 WB Ramps	Orange	Arterial	OBD	1	3	0	40	1,531	7	Signal	37.8	4.2	II	27.6	C	0.69	
TOTAL							45	12,197			310.8	75.0	II	26.8	C	0.59	0.082 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 12

Year 2011 METROPLAN Orlando Travel Time Study

SR 535 - Lake Buena Vista Factory Stores Dr. to I-4 WB Ramps - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to I-4 WB Ramps	Orange	Arterial	OBD	0	5	1	40	686	7	Signal	64.2	42.6	II	7.3	F	0.18	
I-4 WB Ramps to Vineland Ave.	Orange	Arterial	OBD	2	3	0	40	1,531	7	Signal	25.2	0.0	II	41.4	A	1.04	
Vineland Ave. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	1	45	1,267	7	Signal	19.8	0.0	II	43.6	A	0.97	
Meadow Creek Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	45/55	5,280	7	Signal	124.2	37.8	I	29.0	C	0.64	
World Center Dr. to LBV Factory Stores Dr.	Orange	Arterial	OBD	1	2	0	55	3,379	7	Signal	51.6	0.0	I	44.6	A	0.81	
TOTAL							45	12,144			285.0	80.4	II	29.1	B	0.65	0.079 gal/veh
PM PEAK HOUR																	
Median Opening to I-4 WB Ramps	Orange	Arterial	OBD	0	5	1	40	686	6	Signal	60.0	40.2	II	7.8	F	0.19	
I-4 WB Ramps to Vineland Ave.	Orange	Arterial	OBD	2	3	0	40	1,531	6	Signal	45.0	4.8	II	23.2	C	0.58	
Vineland Ave. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	1	45	1,267	6	Signal	25.8	0.0	II	33.5	B	0.74	
Meadow Creek Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	45/55	5,280	6	Signal	142.8	51.0	I	25.2	D	0.56	
World Center Dr. to LBV Factory Stores Dr.	Orange	Arterial	OBD	1	2	0	55	3,379	6	Signal	60.0	0.0	I	38.4	B	0.70	
TOTAL							45	12,144			333.6	96.0	II	24.8	C	0.55	0.082 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 12

Year 2011 METROPLAN Orlando Travel Time Study

SR 535 - Lake Buena Vista Factory Stores Dr. to I-4 WB Ramps - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to LBV Factory Stores Dr.	Orange	Arterial	OBD	0	2	1	55	739	10	Signal	16.8	0.6	I	30.0	C	0.55	
LBV Factory Stores Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	55	3,379	10	Signal	88.8	33.6	I	25.9	D	0.47	
World Center Dr. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	0	45	5,280	10	Signal	77.4	5.4	II	46.5	A	1.03	
Meadow Creek Dr. to Vineland Ave.	Orange	Arterial	OBD	0	3	1	40	1,267	10	Signal	20.4	0.0	II	42.4	A	1.06	
Vineland Ave. to I-4 WB Ramps	Orange	Arterial	OBD	1	3	0	40	1,531	10	Signal	43.2	12.0	II	24.2	C	0.60	
TOTAL							45	12,197			246.6	51.6	II	33.7	B	0.75	0.081 gal/veh
PM PEAK HOUR																	
Median Opening to LBV Factory Stores Dr.	Orange	Arterial	OBD	0	2	1	55	739	10	Signal	14.4	0.0	I	35.0	B	0.64	
LBV Factory Stores Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	55	3,379	10	Signal	66.0	21.0	I	34.9	B	0.63	
World Center Dr. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	0	45	5,280	10	Signal	70.8	0.0	II	50.8	A	1.13	
Meadow Creek Dr. to Vineland Ave.	Orange	Arterial	OBD	0	3	1	40	1,267	10	Signal	22.2	0.0	II	38.9	A	0.97	
Vineland Ave. to I-4 WB Ramps	Orange	Arterial	OBD	1	3	0	40	1,531	10	Signal	23.4	0.0	II	44.6	A	1.12	
TOTAL							45	12,197			196.8	21.0	II	42.3	A	0.94	0.079 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 12

Year 2011 METROPLAN Orlando Travel Time Study

SR 535 - Lake Buena Vista Factory Stores Dr. to I-4 WB Ramps - Southbound Direction Summary - After Condition

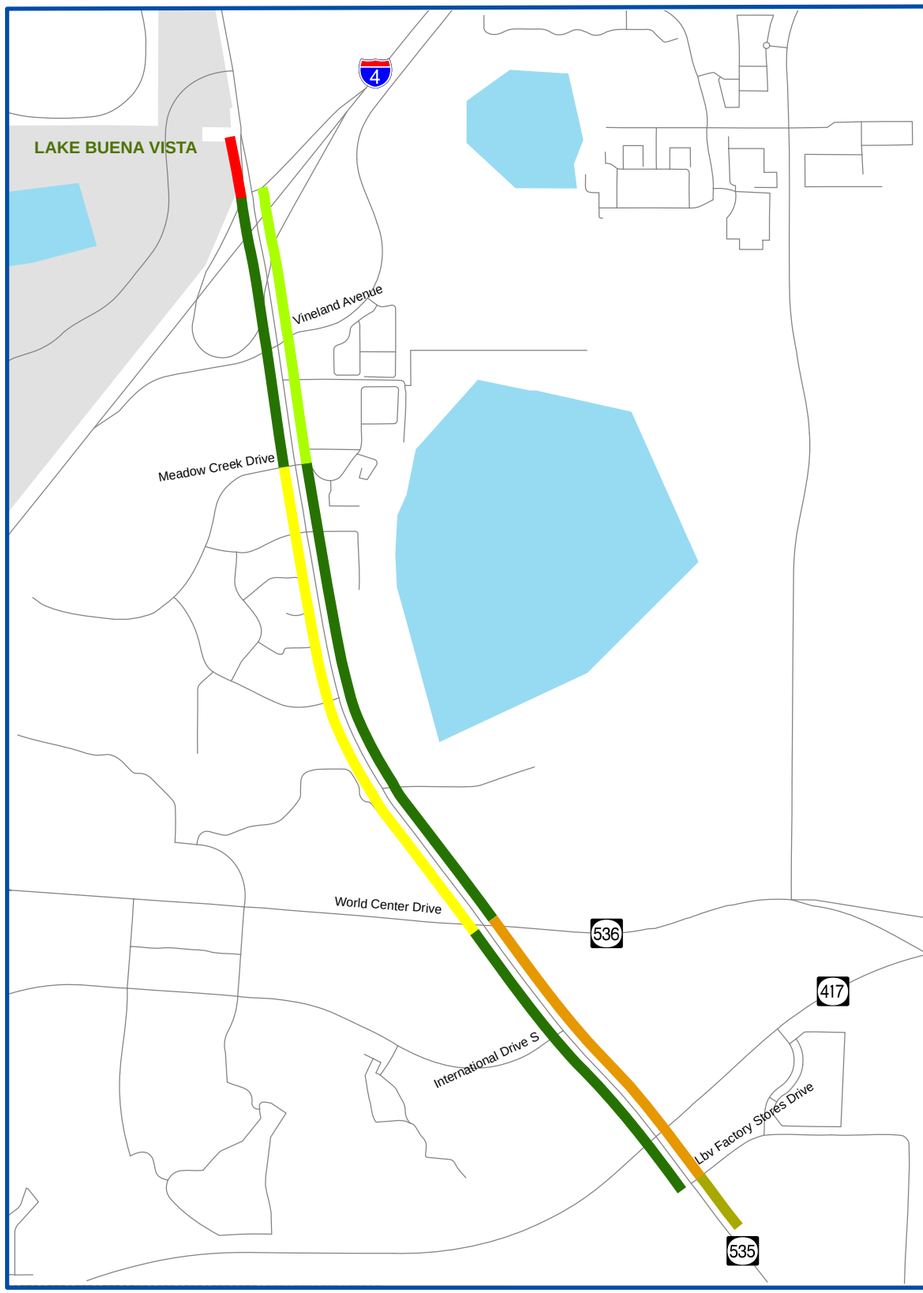
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to I-4 WB Ramps	Orange	Arterial	OBD	0	5	1	40	686	10	Signal	31.8	13.8	II	14.7	E	0.37	
I-4 WB Ramps to Vineland Ave.	Orange	Arterial	OBD	2	3	0	40	1,531	10	Signal	27.0	1.8	II	38.7	A	0.97	
Vineland Ave. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	1	45	1,267	10	Signal	18.6	0.0	II	46.5	A	1.03	
Meadow Creek Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	45/55	5,280	10	Signal	94.8	16.2	I	38.0	B	0.84	
World Center Dr. to LBV Factory Stores Dr.	Orange	Arterial	OBD	1	2	0	55	3,379	10	Signal	51.6	1.2	I	44.6	A	0.81	
TOTAL							45	12,144			223.8	33.0	II	37.0	A	0.82	0.080 gal/veh
PM PEAK HOUR																	
Median Opening to I-4 WB Ramps	Orange	Arterial	OBD	0	5	1	40	686	10	Signal	31.2	13.8	II	15.0	E	0.37	
I-4 WB Ramps to Vineland Ave.	Orange	Arterial	OBD	2	3	0	40	1,531	10	Signal	24.0	0.0	II	43.5	A	1.09	
Vineland Ave. to Meadow Creek Dr.	Orange	Arterial	OBD	1	3	1	45	1,267	10	Signal	18.6	0.0	II	46.5	A	1.03	
Meadow Creek Dr. to World Center Dr.	Orange	Arterial	OBD	2	3	1	45/55	5,280	10	Signal	97.8	13.2	I	36.8	B	0.82	
World Center Dr. to LBV Factory Stores Dr.	Orange	Arterial	OBD	1	2	0	55	3,379	10	Signal	70.8	0.6	I	32.5	C	0.59	
TOTAL							45	12,144			242.4	27.6	II	34.2	B	0.76	0.080 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



SR 535 - AM Peak

Before Condition

Date of Collection: 1/26/2011
Distance: 2.22 miles
From: LBV Factory Stores Dr.
To: I-4 WB Ramps.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 28.5 MPH
NB Travel Time: 4.86 MIN
NB Delay Time: 1.37 MIN

SB Avg Speed: 29.1 MPH
SB Travel Time: 4.75 MIN
SB Delay Time: 1.34 MIN

SR 535 - AM Peak

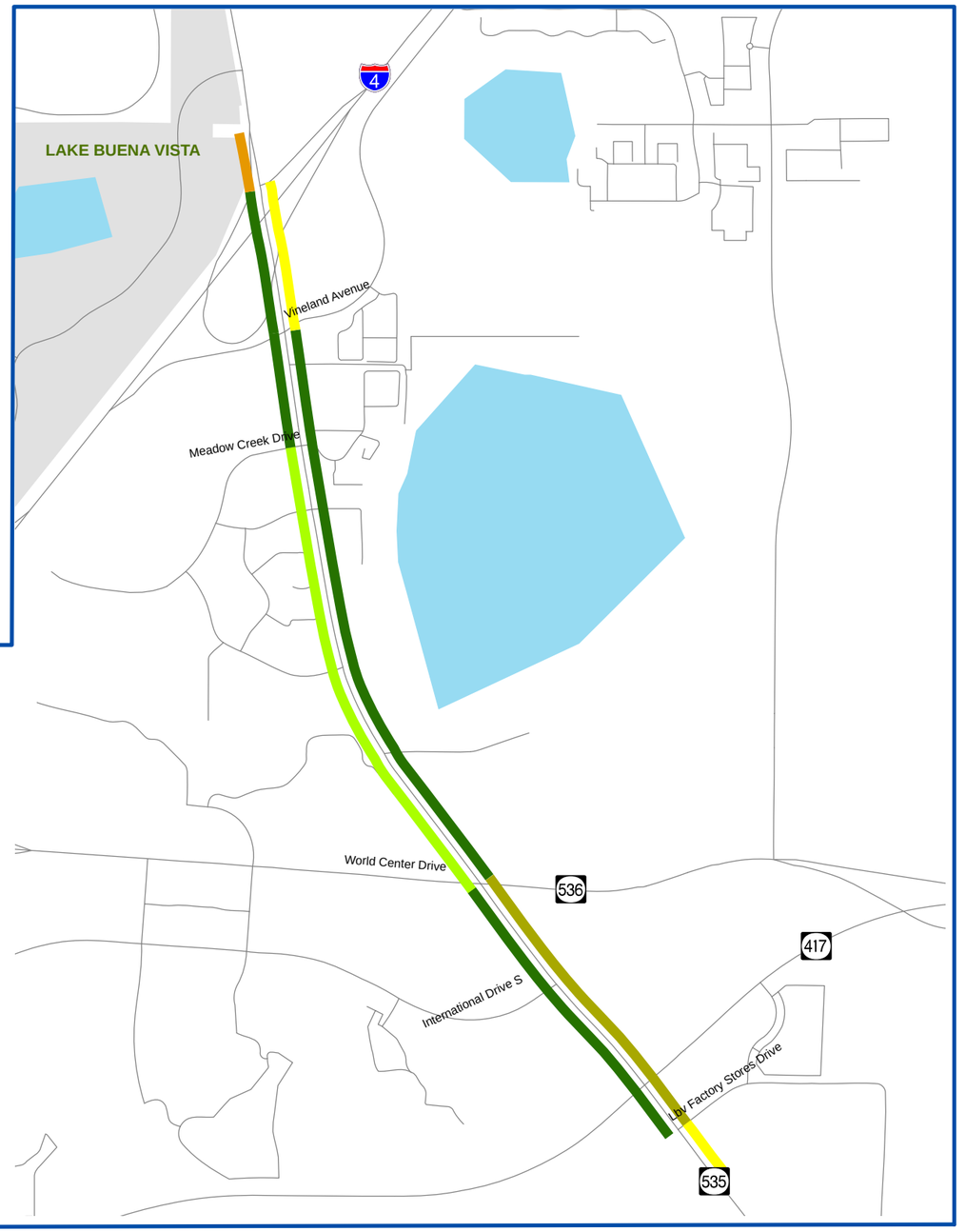
After Condition

Date of Collection: 5/3/2011
Distance: 2.22 miles
From: LBV Factory Stores Dr.
To: I-4 WB Ramps.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 33.7 MPH
NB Travel Time: 4.11 MIN
NB Delay Time: 0.86 MIN

SB Avg Speed: 37.0 MPH
SB Travel Time: 3.73 MIN
SB Delay Time: 0.55 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

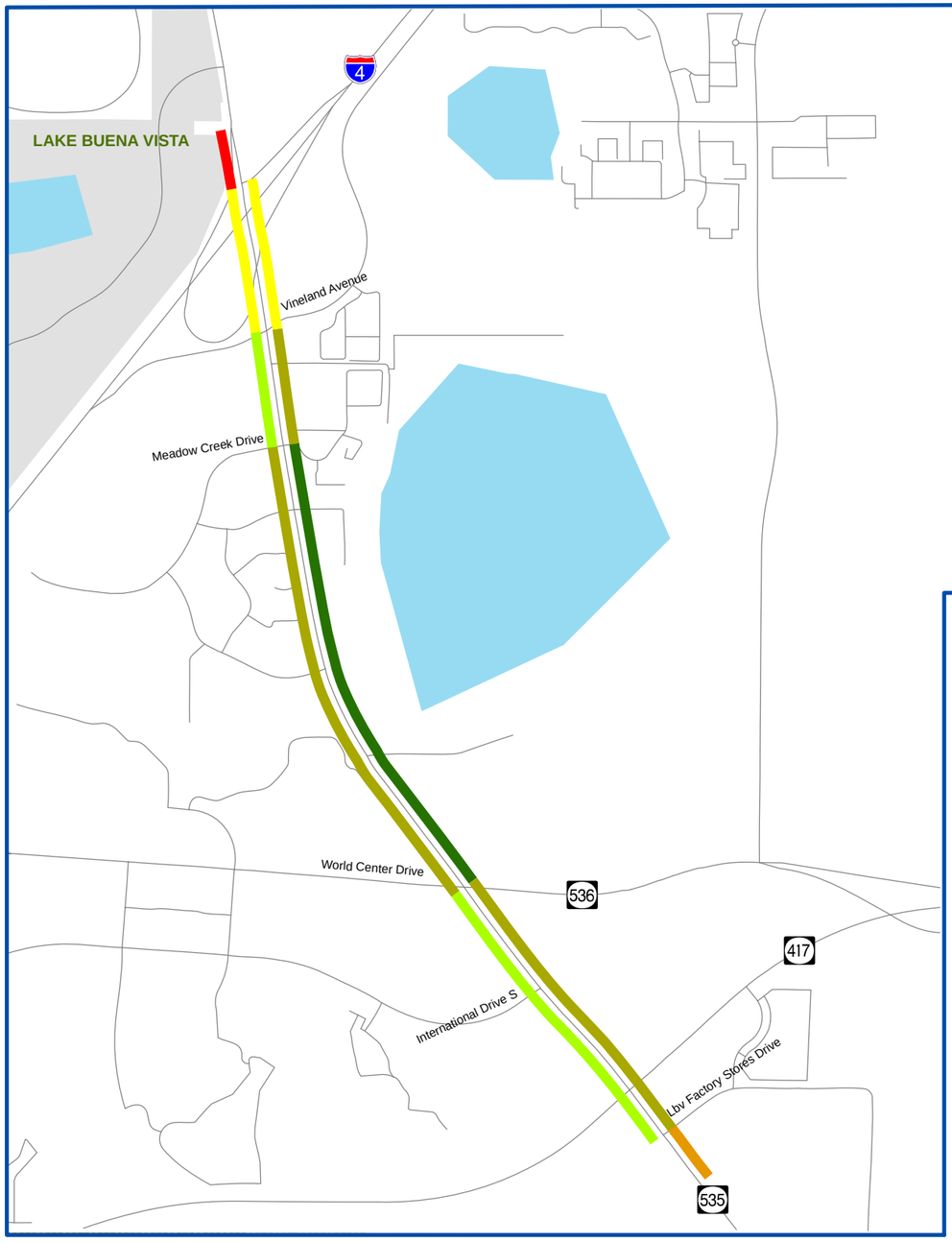
A
B
C
D
E
F
Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.3 0.6 Miles



SR 535 - PM Peak

Before Condition

Date of Collection: 1/26/2011
Distance: 2.22 miles
From: LBV Factory Stores Dr.
To: I-4 WB Ramps.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 26.8 MPH
NB Travel Time: 5.18 MIN
NB Delay Time: 1.25 MIN

SB Avg Speed: 24.8 MPH
SB Travel Time: 5.56 MIN
SB Delay Time: 1.60 MIN

SR 535 - PM Peak

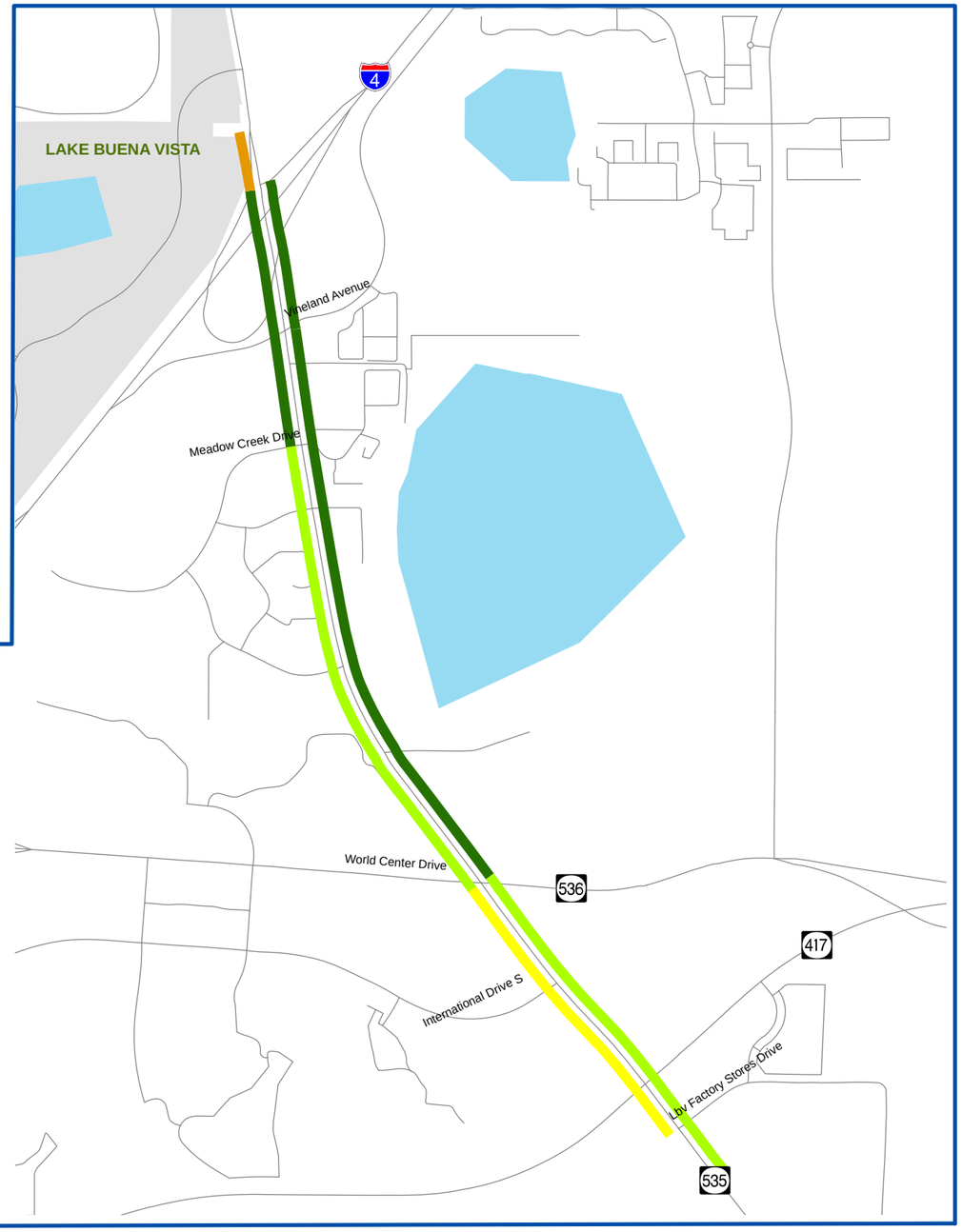
After Condition

Date of Collection: 5/3/2011
Distance: 2.22 miles
From: LBV Factory Stores Dr.
To: I-4 WB Ramps.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 42.3 MPH
NB Travel Time: 3.28 MIN
NB Delay Time: 0.35 MIN

SB Avg Speed: 34.2 MPH
SB Travel Time: 4.04 MIN
SB Delay Time: 0.46 MIN



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A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

SR 535 : Lake Buena Vista Factory Stores Drive to I-4 WB Ramps

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1575	**291.6**	**82.2**	**28.5**	0.082	127.58	129.15
Northbound/Eastbound - PM Peak Hour						
1556	**310.8**	**75.0**	**26.8**	0.0820	134.33	127.59
Southbound/Westbound - AM Peak Hour						
1064	**285.0**	**80.4**	**29.1**	0.0790	84.23	84.06
Southbound/Westbound - PM Peak Hour						
1901	**333.6**	**96.0**	**24.8**	0.0820	176.16	155.88

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 535 : Lake Buena Vista Factory Stores Drive to I-4 WB Ramps

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1575	**246.6**	**51.6**	**33.7**	0.0810	107.89	127.58
Northbound/Eastbound - PM Peak Hour						
1556	**196.8**	**21.0**	**42.3**	0.0790	85.06	122.92
Southbound/Westbound - AM Peak Hour						
1064	**223.8**	**33.0**	**37.0**	0.0800	66.15	85.12
Southbound/Westbound - PM Peak Hour						
1901	**242.4**	**27.6**	**34.2**	0.0800	128.00	152.08

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 535 : Lake Buena Vista Factory Stores Drive to I-4 WB Ramps

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	211.81	174.03	310.49	213.06
Total Fuel Consumption (gallons)	213.21	212.70	283.47	275.00

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$617.50	$1,617.28
Annual User Benefit	**$185,249.55**	**$485,183.52**
Total Annual User Benefit =	**$670,433.07**	
Total Signal Retiming Annual Cost	$8,585.48	
User Benefit / Cost Ratio	**78.09**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 536

World Center Dr. to International Dr./SR 417

TABLE 13

Year 2011 METROPLAN Orlando Travel Time Study

SR 536 - World Center Dr. to International Dr. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Continental Gateway to World Center Dr.	Orange	Arterial	OBD	1	3	1	55	1,109	13	Signal	30.6	4.2	I	24.7	D	0.45	
World Center Dr. to SR 535	Orange	Arterial	OBD	1	2	2	55	2,534	13	Signal	60.6	13.2	I	28.5	C	0.52	
SR 535 to International Dr.	Orange	Arterial	OBD	2	2	0	45	3,168	13	Signal	79.2	24.0	I	27.3	C	0.61	
TOTAL							50	6,811			170.4	41.4	I	27.3	C	0.55	0.046 gal/veh
PM PEAK HOUR																	
Continental Gateway to World Center Dr.	Orange	Arterial	OBD	1	3	1	55	1,109	11	Signal	42.0	16.8	I	18.0	E	0.33	
World Center Dr. to SR 535	Orange	Arterial	OBD	1	2	2	55	2,534	11	Signal	110.4	58.2	I	15.7	F	0.28	
SR 535 to International Dr.	Orange	Arterial	OBD	2	2	0	45	3,168	11	Signal	78.0	18.0	I	27.7	C	0.62	
TOTAL							50	6,811			230.4	93.0	I	20.2	E	0.40	0.046 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 13

Year 2011 METROPLAN Orlando Travel Time Study

SR 536 - World Center Dr. to International Dr. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to International Dr.	Orange	Arterial	OBD	1	2	1	45	475	9	Signal	14.4	0.6	I	22.5	D	0.50	
International Dr. to SR 535	Orange	Arterial	OBD	2	2	1	45	3,168	9	Signal	114.6	48.0	I	18.8	E	0.42	
SR 535 to World Center Dr.	Orange	Arterial	OBD	1	3	1	45/55	2,534	9	Signal	51.0	5.4	I	33.9	C	0.75	
TOTAL							45	6,177			180.0	54.0	I	23.4	D	0.52	0.041 gal/veh
PM PEAK HOUR																	
Median Opening to International Dr.	Orange	Arterial	OBD	1	2	1	45	475	9	Signal	14.4	0.0	I	22.5	D	0.50	
International Dr. to SR 535	Orange	Arterial	OBD	2	2	1	45	3,168	9	Signal	159.6	95.4	I	13.5	F	0.30	
SR 535 to World Center Dr.	Orange	Arterial	OBD	1	3	1	45/55	2,534	9	Signal	51.0	10.8	I	33.9	C	0.75	
TOTAL							45	6,177			225.0	106.2	I	18.7	E	0.42	0.040 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 13

Year 2011 METROPLAN Orlando Travel Time Study

SR 536 - World Center Dr. to International Dr. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Continental Gateway to World Center Dr.	Orange	Arterial	OBD	1	3	1	55	1,109	11	Signal	48.6	18.6	I	15.6	F	0.28	
World Center Dr. to SR 535	Orange	Arterial	OBD	1	2	2	55	2,534	11	Signal	45.0	0.6	I	38.4	B	0.70	
SR 535 to International Dr.	Orange	Arterial	OBD	2	2	0	45	3,168	11	Signal	66.6	12.0	I	32.4	C	0.72	
TOTAL							50	6,811			160.2	31.2	I	29.0	C	0.58	0.045 gal/veh
PM PEAK HOUR																	
Continental Gateway to World Center Dr.	Orange	Arterial	OBD	1	3	1	55	1,109	10	Signal	73.8	43.2	I	10.2	F	0.19	
World Center Dr. to SR 535	Orange	Arterial	OBD	1	2	2	55	2,534	10	Signal	55.8	5.4	I	31.0	C	0.56	
SR 535 to International Dr.	Orange	Arterial	OBD	2	2	0	45	3,168	10	Signal	89.4	32.4	I	24.2	D	0.54	
TOTAL							50	6,811			219.0	81.0	I	21.2	D	0.42	0.046 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 13

Year 2011 METROPLAN Orlando Travel Time Study

SR 536 - World Center Dr. to International Dr. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to International Dr.	Orange	Arterial	OBD	1	2	1	45	475	13	Signal	12.0	0.6	I	27.0	D	0.60	
International Dr. to SR 535	Orange	Arterial	OBD	2	2	1	45	3,168	13	Signal	91.2	31.8	I	23.7	D	0.53	
SR 535 to World Center Dr.	Orange	Arterial	OBD	1	3	1	45/55	2,534	13	Signal	34.2	0.0	I	50.5	A	1.12	
TOTAL							45	6,177			137.4	32.4	I	30.7	C	0.68	0.040 gal/veh
PM PEAK HOUR																	
Median Opening to International Dr.	Orange	Arterial	OBD	1	2	1	45	475	13	Signal	9.6	0.0	I	33.7	C	0.75	
International Dr. to SR 535	Orange	Arterial	OBD	2	2	1	45	3,168	13	Signal	72.6	6.6	I	29.8	C	0.66	
SR 535 to World Center Dr.	Orange	Arterial	OBD	1	3	1	45/55	2,534	13	Signal	34.8	0.0	I	49.6	A	1.10	
TOTAL							45	6,177			117.0	6.6	I	36.0	B	0.80	0.038 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 536 - AM Peak

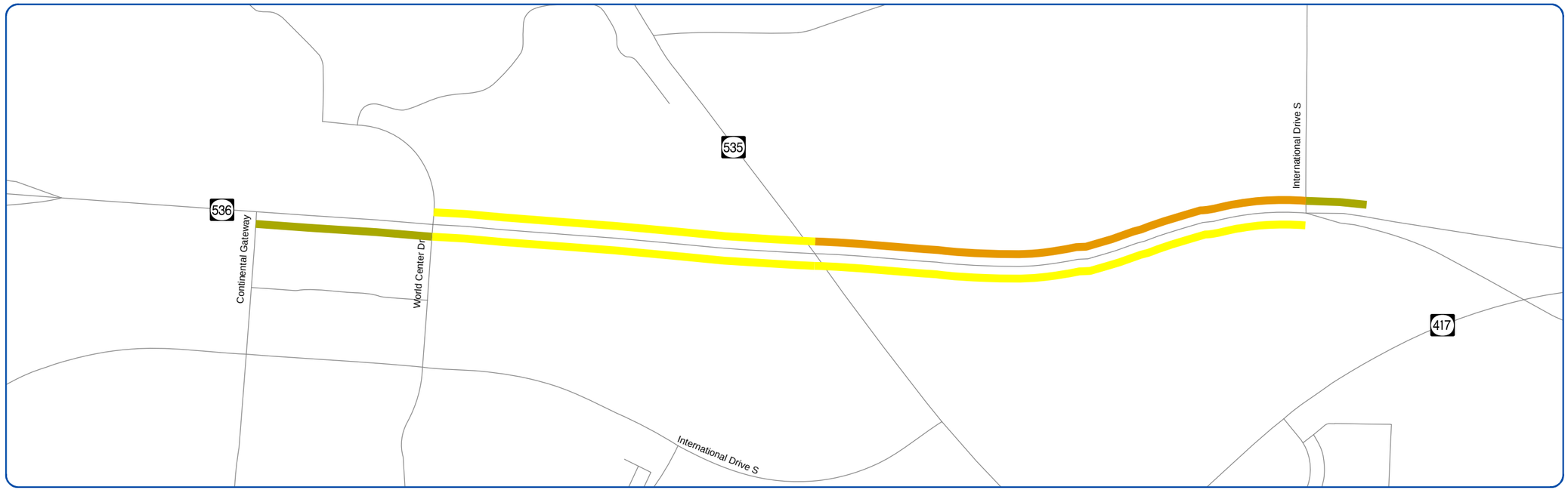
Before Condition

Date of Collection: 1/26/2011
Distance: 1.08 miles
From: World Center Dr.
To: International Dr.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 27.3 MPH
EB Travel Time: 2.84 MIN
EB Delay Time: 0.69 MIN

WB Avg Speed: 23.4 MPH
WB Travel Time: 3.00 MIN
WB Delay Time: 0.90 MIN



SR 536 - AM Peak

After Condition

Date of Collection: 5/5/2011
Distance: 1.08 miles
From: World Center Dr.
To: International Dr.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 29.0 MPH
EB Travel Time: 2.67 MIN
EB Delay Time: 0.52 MIN

WB Avg Speed: 30.7 MPH
WB Travel Time: 2.29 MIN
WB Delay Time: 0.54 MIN

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Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.2 0.4 Miles

SR 536 - PM Peak

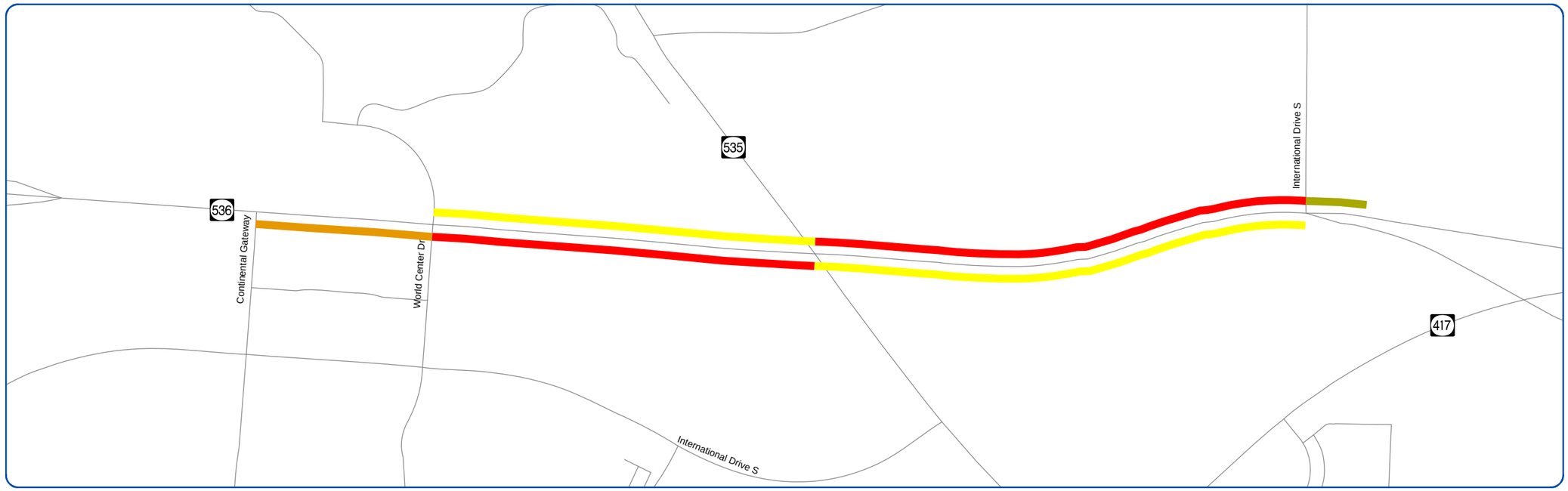
Before Condition

Date of Collection: 1/26/2011
Distance: 1.08 miles
From: World Center Dr.
To: International Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 20.2 MPH
EB Travel Time: 3.84 MIN
EB Delay Time: 1.55 MIN

WB Avg Speed: 18.7 MPH
WB Travel Time: 3.75 MIN
WB Delay Time: 1.77 MIN



SR 536 - PM Peak

After Condition

Date of Collection: 5/5/2011
Distance: 1.08 miles
From: World Center Dr.
To: International Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 21.2 MPH
EB Travel Time: 3.65 MIN
EB Delay Time: 1.35 MIN

WB Avg Speed: 36.0 MPH
WB Travel Time: 1.95 MIN
WB Delay Time: 0.11 MIN

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A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

Miles
0
0.25
0.5

SR 536 : World Center Drive to International Drive

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	Travel Time (sec/veh)	Delay (sec/veh)	Average Speed (mph)	Fuel Consumption (gallons/veh)	Total Travel Time (Veh-hour)	Total Fuel Consumption (in gallons)
Northbound/Eastbound - AM Peak Hour						
516	**170.4**	**41.4**	**27.25**	0.046	24.42	23.74
Northbound/Eastbound - PM Peak Hour						
1950	**230.4**	**93.0**	**20.2**	0.0460	124.80	89.70
Southbound/Westbound - AM Peak Hour						
1415	**180.0**	**54.0**	**23.4**	0.0410	70.75	58.02
Southbound/Westbound - PM Peak Hour						
1009	**225.0**	**106.2**	**18.7**	0.0400	63.06	40.36

*Traffic Volumes are obtained from the latest FDOT Counts

SR 536 : World Center Drive to International Drive

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
516	**160.2**	**31.2**	**29.0**	0.0450	22.96	23.22
Northbound/Eastbound - PM Peak Hour						
1950	**219.0**	**81.0**	**21.2**	0.0460	118.63	89.70
Southbound/Westbound - AM Peak Hour						
1415	**137.4**	**32.4**	**30.7**	0.0400	54.01	56.60
Southbound/Westbound - PM Peak Hour						
1009	**117.0**	**6.6**	**36.0**	0.0380	32.79	38.34

*Traffic Volumes are obtained from the latest FDOT Counts

SR 536 : World Center Drive to International Drive

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	95.17	76.97	187.86	151.42
Total Fuel Consumption (gallons)	81.75	79.82	130.06	128.04

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$303.40	$601.00
Annual User Benefit	**$91,020.95**	**$180,298.63**
Total Annual User Benefit =	**$271,319.57**	
Total Signal Retiming Annual Cost	$5,151.44	
User Benefit / Cost Ratio	**52.67**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 441 Part A

Oak Ridge Rd. to Taft Vineland Rd.

TABLE 14-1

Year 2011 METROPLAN Orlando Travel Time Study

US 441 Part A - Oak Ridge Rd. to Taft Vineland Rd. - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	845	4	Signal	93.0	54.6	II	6.2	F	0.14	
W. Taft Vineland Rd. to Consulate Dr.	Orange	Arterial	Residential Area	2	3	0	45	2,429	4	Signal	44.4	0.0	II	37.3	A	0.83	
Consulate Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	1	45	2,851	4	Signal	163.2	99.0	II	11.9	F	0.26	
W. Landstreet Rd. to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,742	4	Signal	34.8	0.0	II	34.1	B	0.76	
La Quinta Dr. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,003	4	Signal	16.2	0.0	II	42.2	A	0.94	
Sun Life Path to August Ln.	Orange	Arterial	OBD	1	3	1	45	1,584	4	Signal	36.0	7.2	II	30.0	B	0.67	
August Ln. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	1,003	4	Signal	52.8	28.8	II	13.0	F	0.29	
W. Sand Lake Rd. to Skyview Dr.	Orange	Arterial	OBD	1	3	0	45	2,059	4	Signal	39.0	0.0	II	36.0	A	0.80	
Skyview Dr. to Orlando Central Pkwy	Orange	Arterial	OBD	1	3	0	45	2,693	4	Signal	53.4	0.0	II	34.4	B	0.76	
Orlando Central Pkwy to W. Lancaster Rd.	Orange	Arterial	OBD	1	3	1	45	792	4	Signal	13.2	0.0	II	40.9	A	0.91	
W. Lancaster Rd. to W. Oak Ridge Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	4	Signal	46.2	0.0	II	39.0	A	0.87	
TOTAL							45	19,642			592.2	189.6	II	22.6	C	0.50	0.133 gal/veh
PM PEAK HOUR																	
Median Opening to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	845	4	Signal	115.2	85.8	II	5.0	F	0.11	
W. Taft Vineland Rd. to Consulate Dr.	Orange	Arterial	Residential Area	2	3	0	45	2,429	4	Signal	54.0	0.0	II	30.7	B	0.68	
Consulate Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	1	45	2,851	4	Signal	67.8	15.6	II	28.7	B	0.64	
W. Landstreet Rd. to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,742	4	Signal	38.4	0.0	II	30.9	B	0.69	
La Quinta Dr. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,003	4	Signal	21.6	0.0	II	31.7	B	0.70	
Sun Life Path to August Ln.	Orange	Arterial	OBD	1	3	1	45	1,584	4	Signal	56.4	25.2	II	19.1	D	0.43	
August Ln. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	1,003	4	Signal	67.2	38.4	II	10.2	F	0.23	
W. Sand Lake Rd. to Skyview Dr.	Orange	Arterial	OBD	1	3	0	45	2,059	4	Signal	39.0	0.0	II	36.0	A	0.80	
Skyview Dr. to Orlando Central Pkwy	Orange	Arterial	OBD	1	3	0	45	2,693	4	Signal	58.8	1.2	II	31.2	B	0.69	
Orlando Central Pkwy to W. Lancaster Rd.	Orange	Arterial	OBD	1	3	1	45	792	4	Signal	42.0	23.4	II	12.9	F	0.29	
W. Lancaster Rd. to W. Oak Ridge Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	4	Signal	126.6	56.4	II	14.2	E	0.32	
TOTAL							45	19,642			687.0	246.0	II	19.5	D	0.43	0.136 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 14-1

Year 2010 METROPLAN Orlando Travel Time Study

US 441 Part A - Oak Ridge Rd. to Taft Vineland Rd. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Oak Ridge Rd.	Orange	Arterial	OBD	1	3	1	45	1,320	4	Signal	70.8	30.0	II	12.7	F	0.28	
W. Oak Ridge Rd. to W. Lancaster Rd.	Orange	Arterial	OBD	2	3	0	45	2,640	4	Signal	46.2	0.0	II	39.0	A	0.87	
W. Lancaster Rd. to Orlando Central Pkwy	Orange	Arterial	OBD	1	4	0	45	792	4	Signal	12.6	0.0	II	42.9	A	0.95	
Orlando Central Pkwy to Skyview Dr.	Orange	Arterial	OBD	1	3	1	45	2,693	4	Signal	59.4	2.4	II	30.9	B	0.69	
Skyview Dr. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	2,059	4	Signal	88.8	51.0	II	15.8	E	0.35	
W. Sand Lake Rd. to August Ln.	Orange	Arterial	OBD	1	3	0	45	1,003	4	Signal	25.2	1.8	II	27.1	C	0.60	
August Ln. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,584	4	Signal	31.2	1.2	II	34.6	B	0.77	
Sun Life Path to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,003	4	Signal	16.8	0.0	II	40.7	A	0.90	
La Quinta Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	0	45	1,742	4	Signal	30.0	0.0	II	39.6	A	0.88	
W. Landstreet Rd. to Consulate Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,851	4	Signal	56.4	3.6	II	34.5	B	0.77	
Consulate Dr. to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	2,429	4	Signal	58.2	13.8	II	28.5	B	0.63	
TOTAL							45	20,117			495.6	103.8	II	27.7	C	0.61	0.133 gal/veh
PM PEAK HOUR																	
Median Opening to W. Oak Ridge Rd.	Orange	Arterial	OBD	1	3	1	45	1,320	5	Signal	91.8	48.0	II	9.8	F	0.22	
W. Oak Ridge Rd. to W. Lancaster Rd.	Orange	Arterial	OBD	2	3	0	45	2,640	5	Signal	69.0	16.2	II	26.1	C	0.58	
W. Lancaster Rd. to Orlando Central Pkwy	Orange	Arterial	OBD	1	4	0	45	792	5	Signal	30.0	13.8	II	18.0	D	0.40	
Orlando Central Pkwy to Skyview Dr.	Orange	Arterial	OBD	1	3	1	45	2,693	5	Signal	57.6	9.6	II	31.9	B	0.71	
Skyview Dr. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	2,059	5	Signal	117.6	67.2	II	11.9	F	0.27	
W. Sand Lake Rd. to August Ln.	Orange	Arterial	OBD	1	3	0	45	1,003	5	Signal	49.2	20.4	II	13.9	E	0.31	
August Ln. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,584	5	Signal	36.0	1.8	II	30.0	B	0.67	
Sun Life Path to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,003	5	Signal	18.6	0.0	II	36.8	A	0.82	
La Quinta Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	0	45	1,742	5	Signal	109.2	63.0	II	10.9	F	0.24	
W. Landstreet Rd. to Consulate Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,851	5	Signal	87.6	28.2	II	22.2	C	0.49	
Consulate Dr. to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	2,429	5	Signal	112.2	52.8	II	14.8	E	0.33	
TOTAL							45	20,117			778.8	321.0	II	17.6	D	0.39	0.139 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 14-1

Year 2011 METROPLAN Orlando Travel Time Study

US 441 Part A - Oak Ridge Rd. to Taft Vineland Rd. - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	845	8	Signal	60.6	36.6	II	9.5	F	0.21	
W. Taft Vineland Rd. to Consulate Dr.	Orange	Arterial	Residential Area	2	3	0	45	2,429	8	Signal	38.4	0.0	II	43.1	A	0.96	
Consulate Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	1	45	2,851	8	Signal	74.4	18.6	II	26.1	C	0.58	
W. Landstreet Rd. to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,742	8	Signal	36.6	5.4	II	32.5	B	0.72	
La Quinta Dr. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,003	8	Signal	16.8	0.0	II	40.7	A	0.90	
Sun Life Path to August Ln.	Orange	Arterial	OBD	1	3	1	45	1,584	8	Signal	23.4	0.0	II	46.2	A	1.03	
August Ln. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	1,003	8	Signal	34.8	13.8	II	19.7	D	0.44	
W. Sand Lake Rd. to Skyview Dr.	Orange	Arterial	OBD	1	3	0	45	2,059	8	Signal	39.0	6.6	II	36.0	A	0.80	
Skyview Dr. to Orlando Central Pkwy	Orange	Arterial	OBD	1	3	0	45	2,693	8	Signal	37.8	0.0	II	48.6	A	1.08	
Orlando Central Pkwy to W. Lancaster Rd.	Orange	Arterial	OBD	1	3	1	45	792	8	Signal	14.4	0.0	II	37.5	A	0.83	
W. Lancaster Rd. to W. Oak Ridge Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	8	Signal	55.8	6.6	II	32.3	B	0.72	
TOTAL							45	19,642			432.0	87.6	II	31.0	B	0.69	0.129 gal/veh
PM PEAK HOUR																	
Median Opening to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	845	6	Signal	91.8	69.0	II	6.3	F	0.14	
W. Taft Vineland Rd. to Consulate Dr.	Orange	Arterial	Residential Area	2	3	0	45	2,429	6	Signal	42.0	0.0	II	39.4	A	0.88	
Consulate Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	1	45	2,851	6	Signal	67.8	13.2	II	28.7	B	0.64	
W. Landstreet Rd. to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,742	6	Signal	33.0	0.0	II	36.0	A	0.80	
La Quinta Dr. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,003	6	Signal	18.6	0.0	II	36.8	A	0.82	
Sun Life Path to August Ln.	Orange	Arterial	OBD	1	3	1	45	1,584	6	Signal	38.4	0.6	II	28.1	B	0.62	
August Ln. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	1,003	6	Signal	91.2	61.2	II	7.5	F	0.17	
W. Sand Lake Rd. to Skyview Dr.	Orange	Arterial	OBD	1	3	0	45	2,059	6	Signal	35.4	0.0	II	39.7	A	0.88	
Skyview Dr. to Orlando Central Pkwy	Orange	Arterial	OBD	1	3	0	45	2,693	6	Signal	40.8	0.0	II	45.0	A	1.00	
Orlando Central Pkwy to W. Lancaster Rd.	Orange	Arterial	OBD	1	3	1	45	792	6	Signal	19.2	1.8	II	28.1	B	0.62	
W. Lancaster Rd. to W. Oak Ridge Rd.	Orange	Arterial	OBD	2	3	1	45	2,640	6	Signal	81.6	18.6	II	22.1	C	0.49	
TOTAL							45	19,642			559.8	164.4	II	23.9	C	0.53	0.132 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 14-1

Year 2010 METROPLAN Orlando Travel Time Study

US 441 Part A - Oak Ridge Rd. to Taft Vineland Rd. - Southbound Direction Summary - After Condition

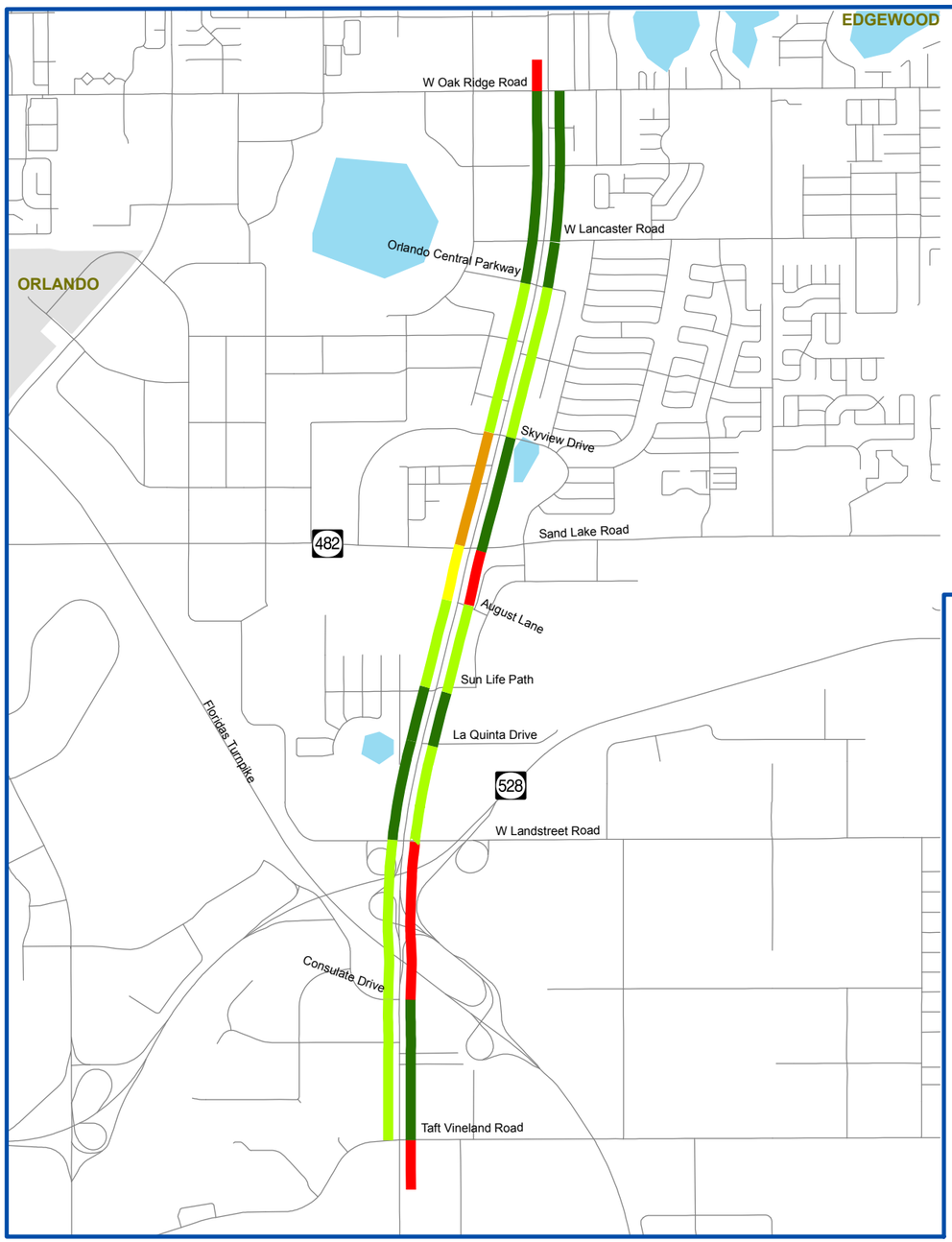
Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Oak Ridge Rd.	Orange	Arterial	OBD	1	3	1	45	1,320	7	Signal	65.4	33.0	II	13.8	E	0.31	
W. Oak Ridge Rd. to W. Lancaster Rd.	Orange	Arterial	OBD	2	3	0	45	2,640	7	Signal	55.8	7.2	II	32.3	B	0.72	
W. Lancaster Rd. to Orlando Central Pkwy	Orange	Arterial	OBD	1	4	0	45	792	7	Signal	13.2	0.0	II	40.9	A	0.91	
Orlando Central Pkwy to Skyview Dr.	Orange	Arterial	OBD	1	3	1	45	2,693	7	Signal	52.2	4.8	II	35.2	A	0.78	
Skyview Dr. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	2,059	7	Signal	36.6	0.0	II	38.4	A	0.85	
W. Sand Lake Rd. to August Ln.	Orange	Arterial	OBD	1	3	0	45	1,003	7	Signal	13.8	0.0	II	49.6	A	1.10	
August Ln. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,584	7	Signal	25.2	0.6	II	42.9	A	0.95	
Sun Life Path to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,003	7	Signal	14.4	0.0	II	47.5	A	1.06	
La Quinta Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	0	45	1,742	7	Signal	27.6	0.0	II	43.0	A	0.96	
W. Landstreet Rd. to Consulate Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,851	7	Signal	45.6	1.2	II	42.6	A	0.95	
Consulate Dr. to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	2,429	7	Signal	37.2	0.0	II	44.5	A	0.99	
TOTAL							45	20,117			387.0	46.8	II	35.4	A	0.79	0.131 gal/veh
PM PEAK HOUR																	
Median Opening to W. Oak Ridge Rd.	Orange	Arterial	OBD	1	3	1	45	1,320	6	Signal	87.0	57.0	II	10.3	F	0.23	
W. Oak Ridge Rd. to W. Lancaster Rd.	Orange	Arterial	OBD	2	3	0	45	2,640	6	Signal	47.4	0.0	II	38.0	A	0.84	
W. Lancaster Rd. to Orlando Central Pkwy	Orange	Arterial	OBD	1	4	0	45	792	6	Signal	15.0	0.0	II	36.0	A	0.80	
Orlando Central Pkwy to Skyview Dr.	Orange	Arterial	OBD	1	3	1	45	2,693	6	Signal	80.4	25.8	II	22.8	C	0.51	
Skyview Dr. to W. Sand Lake Rd.	Orange	Arterial	OBD	2	3	1	45	2,059	6	Signal	58.8	12.0	II	23.9	C	0.53	
W. Sand Lake Rd. to August Ln.	Orange	Arterial	OBD	1	3	0	45	1,003	6	Signal	18.6	0.0	II	36.8	A	0.82	
August Ln. to Sun Life Path	Orange	Arterial	OBD	1	3	0	45	1,584	6	Signal	42.6	4.8	II	25.4	C	0.56	
Sun Life Path to La Quinta Dr.	Orange	Arterial	OBD	1	3	0	45	1,003	6	Signal	30.0	5.4	II	22.8	C	0.51	
La Quinta Dr. to W. Landstreet Rd.	Orange	Arterial	OBD	1	3	0	45	1,742	6	Signal	100.8	46.2	II	11.8	F	0.26	
W. Landstreet Rd. to Consulate Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,851	6	Signal	64.8	8.4	II	30.0	B	0.67	
Consulate Dr. to W. Taft Vineland Rd.	Orange	Arterial	Residential Area	1	3	0	45	2,429	6	Signal	121.8	67.2	II	13.6	E	0.30	
TOTAL							45	20,117			667.2	226.8	II	20.6	D	0.46	0.139 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District



US 441 Part A - AM Peak

Before Condition

Date of Collection: 2/1/2011
Distance: 3.41 miles
From: Oak Ridge Rd.
To: Taft Vineland Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 22.6 MPH
NB Travel Time: 9.87 MIN
NB Delay Time: 3.16 MIN

SB Avg Speed: 27.7 MPH
SB Travel Time: 8.26 MIN
SB Delay Time: 1.73 MIN

US 441 Part A - AM Peak

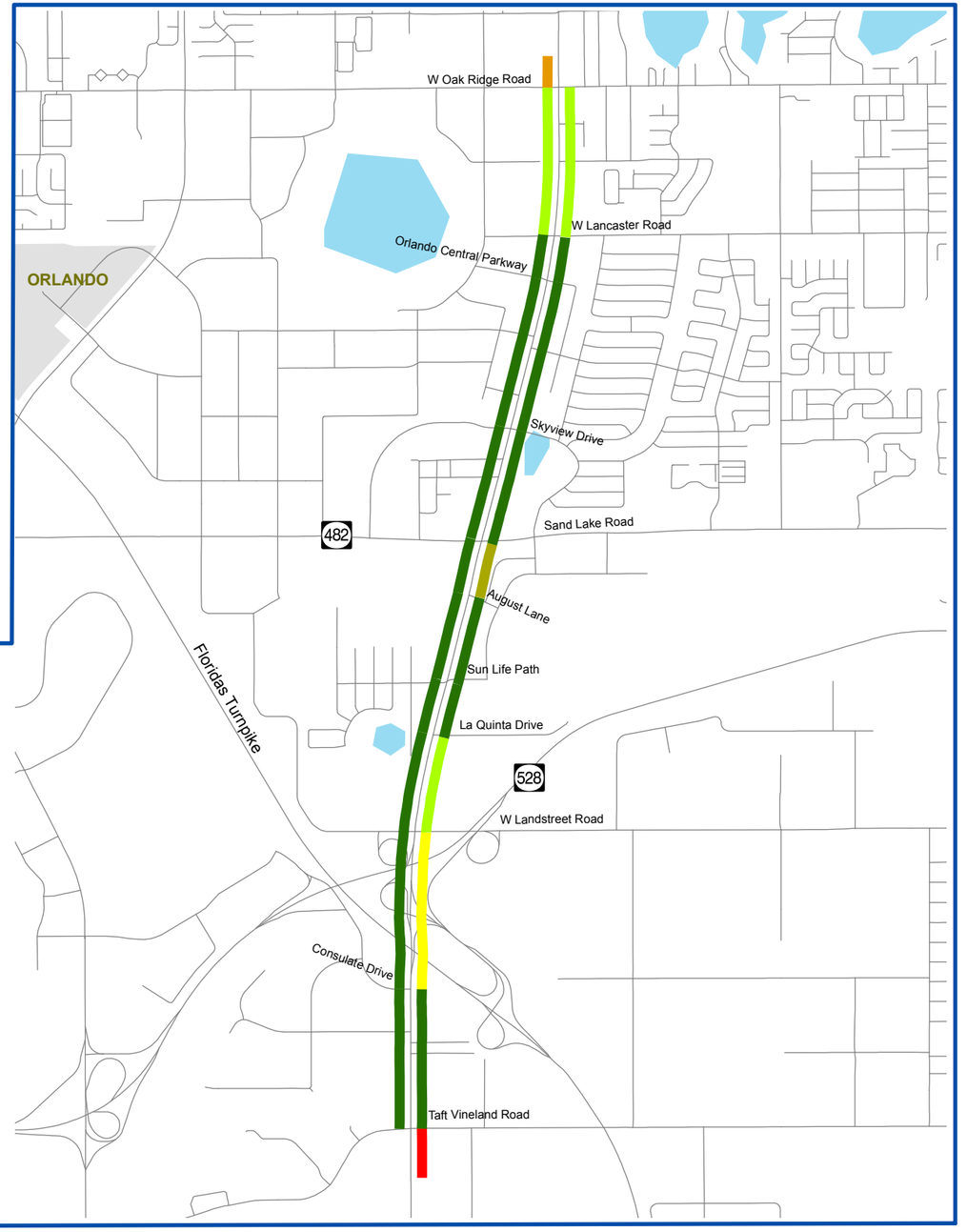
After Condition

Date of Collection: 6/7/2011
Distance: 3.41 miles
From: Oak Ridge Rd.
To: Taft Vineland Rd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 31.0 MPH
NB Travel Time: 7.20 MIN
NB Delay Time: 1.46 MIN

SB Avg Speed: 35.4 MPH
SB Travel Time: 6.45 MIN
SB Delay Time: 0.78 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

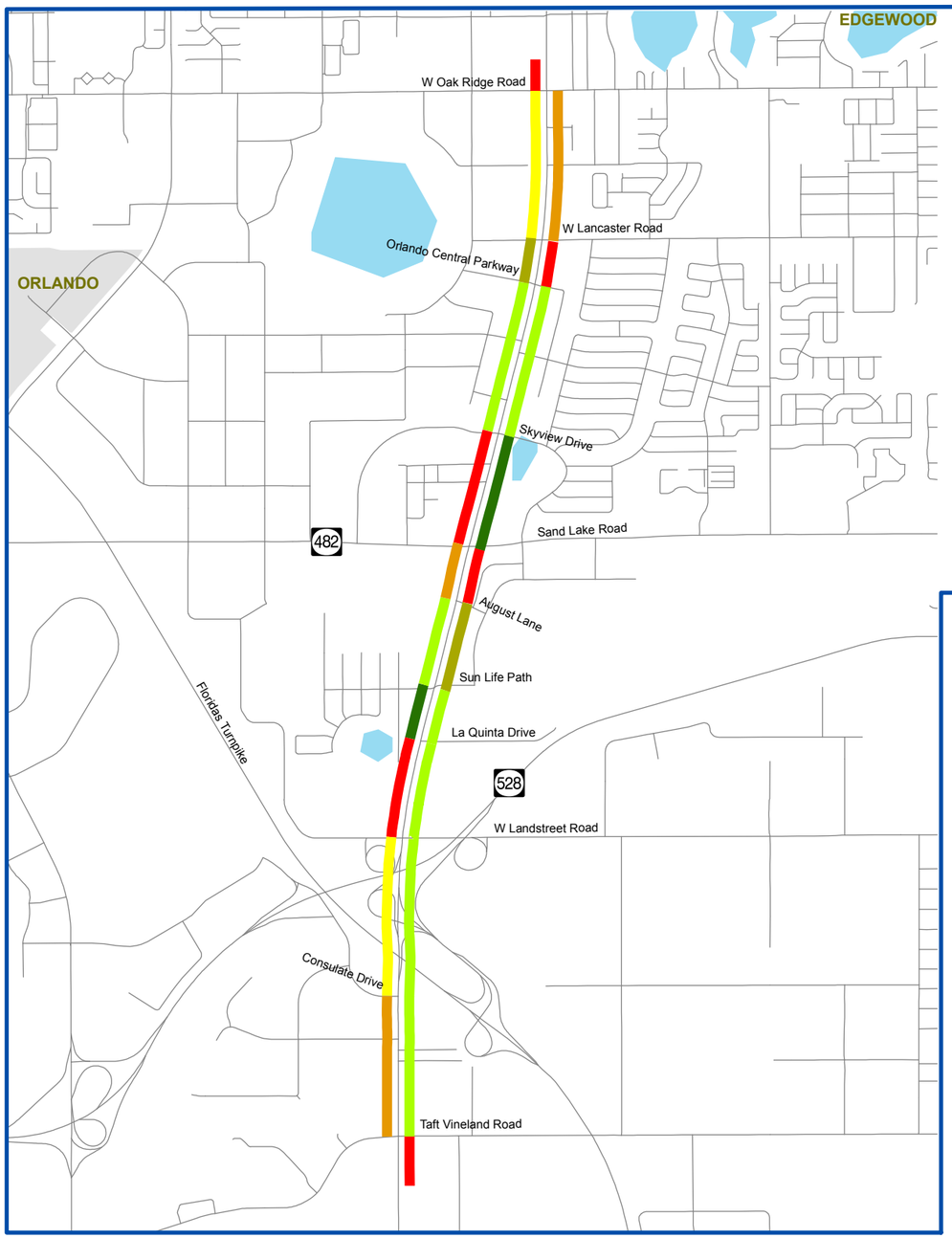
A
B
C
D
E
F
Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles



US 441 Part A - PM Peak

Before Condition

Date of Collection: 2/1/2011
Distance: 3.41 miles
From: Oak Ridge Rd.
To: Taft Vineland Rd.

Start Time: 4:00PM
End Time: 6:00 PM

NB Avg Speed: 19.5 MPH
NB Travel Time: 11.45 MIN
NB Delay Time: 4.10 MIN

SB Avg Speed: 17.6 MPH
SB Travel Time: 12.98 MIN
SB Delay Time: 5.35 MIN

US 441 Part A - PM Peak

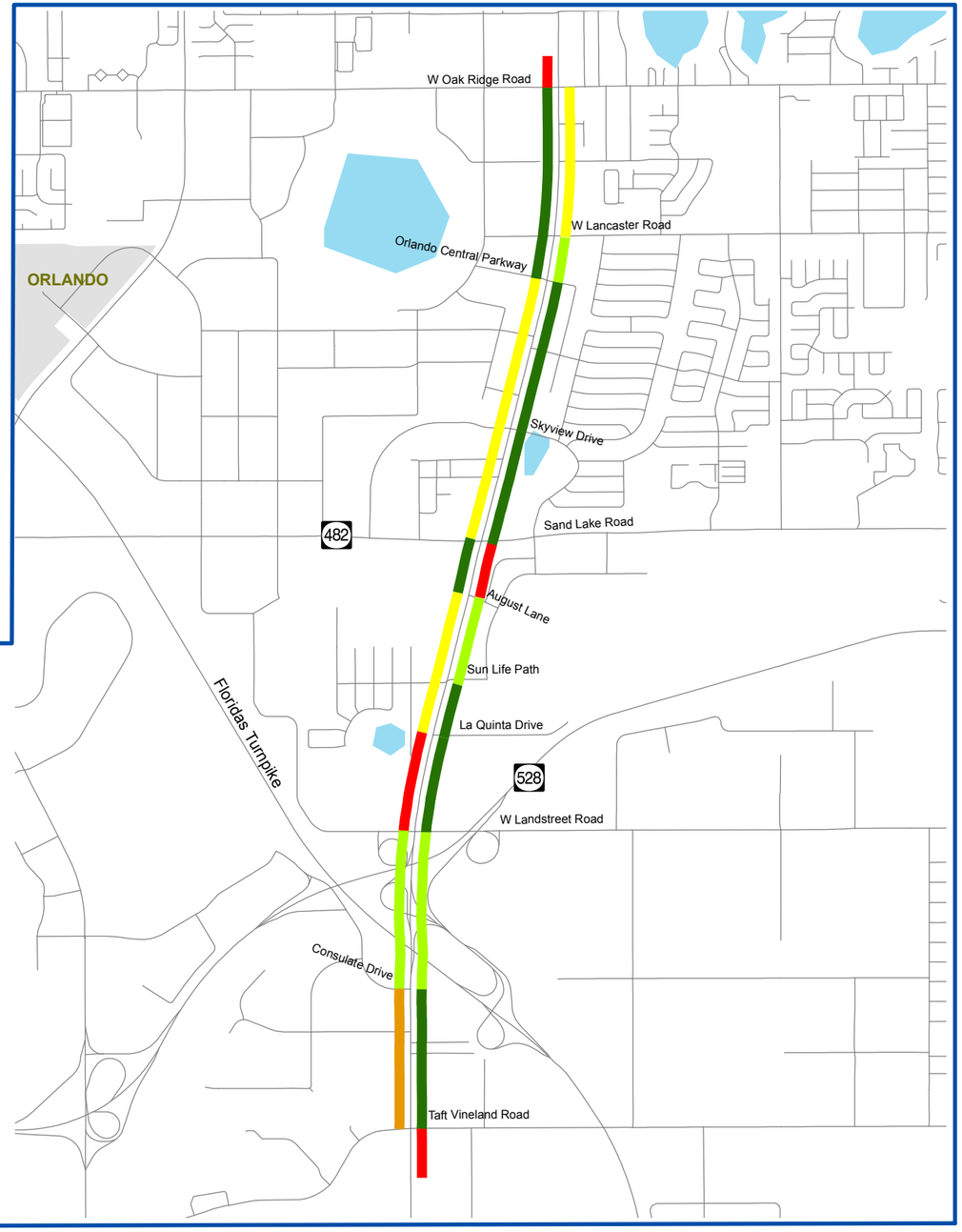
After Condition

Date of Collection: 6/7/2011
Distance: 3.41 miles
From: Oak Ridge Rd.
To: Taft Vineland Rd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 23.9 MPH
NB Travel Time: 9.33 MIN
NB Delay Time: 2.74 MIN

SB Avg Speed: 20.6 MPH
SB Travel Time: 11.12 MIN
SB Delay Time: 3.78 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 1 2 Miles

US 441 Part A : Oak Ridge Road to Taft Vineland Road

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2442	**592.2**	**189.6**	**22.61**	0.133	401.71	324.79
Northbound/Eastbound - PM Peak Hour						
2477	**687.0**	**246.0**	**19.5**	0.1360	472.69	336.87
Southbound/Westbound - AM Peak Hour						
1235	**495.6**	**103.8**	**27.7**	0.1330	170.02	164.26
Southbound/Westbound - PM Peak Hour						
2190	**778.8**	**321.0**	**17.6**	0.1390	473.77	304.41

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

US 441 Part A : Oak Ridge Road to Taft Vineland Road

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2442	**432.0**	**87.6**	**31.0**	0.1290	293.04	315.02
Northbound/Eastbound - PM Peak Hour						
2477	**559.8**	**164.4**	**23.9**	0.1320	385.17	326.96
Southbound/Westbound - AM Peak Hour						
1235	**387.0**	**46.8**	**35.4**	0.1310	132.76	161.79
Southbound/Westbound - PM Peak Hour						
2190	**667.2**	**226.8**	**20.6**	0.1390	405.88	304.41

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

US 441 Part A : Oak Ridge Road to Taft Vineland Road

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	571.73	425.80	946.46	791.05
Total Fuel Consumption (gallons)	489.04	476.80	641.28	631.37

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$2,420.67	$2,567.28
Annual User Benefit	**$726,202.05**	**$770,183.22**
Total Annual User Benefit =	**$1,496,385.27**	
Total Signal Retiming Annual Cost	$19,191.29	
User Benefit / Cost Ratio	**77.97**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 441 Part B

Taft Vineland Rd. to Hunters Creek Blvd.

TABLE 14-2

Year 2011 METROPLAN Orlando Travel Time Study

US 441 Part B - Taft Vineland Rd. to Hunters Creek Blvd. - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Cypress Crossings Dr. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,637	5	Signal	57.0	18.0	I	19.6	E	0.39	
Hunters Creek Blvd. to Town Center Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,059	5	Signal	43.2	6.6	I	32.5	C	0.65	
Town Center Blvd. to SR 417 NB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,320	5	Signal	20.4	0.0	I	44.1	A	0.88	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,426	5	Signal	27.6	5.4	I	35.2	B	0.70	
SR 417 SB Ramps to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,214	5	Signal	34.8	12.6	I	23.8	D	0.48	
Deerfield Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	5	Signal	61.2	16.2	I	34.1	B	0.68	
W. Wetherbee Rd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,267	5	Signal	24.0	0.6	I	36.0	B	0.72	
Pepper Mill Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	0	50	2,482	5	Signal	37.8	0.0	I	44.8	A	0.90	
Whisper Lake Blvd. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,954	5	Signal	30.0	0.0	I	44.4	A	0.89	
Water Bridge Blvd. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,584	5	Signal	27.0	0.0	I	40.0	B	0.80	
TOTAL							50	18,005			363.0	59.4	I	33.8	C	0.68	0.127 gal/veh
PM PEAK HOUR																	
Cypress Crossings Dr. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,637	5	Signal	63.0	18.0	I	17.7	E	0.35	
Hunters Creek Blvd. to Town Center Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,059	5	Signal	60.6	16.2	I	23.2	D	0.46	
Town Center Blvd. to SR 417 NB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,320	5	Signal	30.0	1.2	I	30.0	C	0.60	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,426	5	Signal	31.2	2.4	I	31.2	C	0.62	
SR 417 SB Ramps to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,214	5	Signal	19.8	0.0	I	41.8	B	0.84	
Deerfield Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	5	Signal	52.8	0.0	I	39.5	B	0.79	
W. Wetherbee Rd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,267	5	Signal	21.6	0.0	I	40.0	B	0.80	
Pepper Mill Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	0	50	2,482	5	Signal	60.0	10.8	I	28.2	C	0.56	
Whisper Lake Blvd. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,954	5	Signal	41.4	3.0	I	32.2	C	0.64	
Water Bridge Blvd. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,584	5	Signal	72.0	35.4	I	15.0	F	0.30	
TOTAL							50	18,005			452.4	87.0	I	27.1	C	0.54	0.131 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 14-2

Year 2011 METROPLAN Orlando Travel Time Study

US 441 Part B - Taft Vineland Rd. to Hunters Creek Blvd. - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Barley Club Dr. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,637	6	Signal	42.6	10.2	I	26.2	D	0.52	
Central Florida Pkwy. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,584	6	Signal	25.8	0.0	I	41.9	B	0.84	
Water Bridge Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,954	6	Signal	65.4	29.4	I	20.4	E	0.41	
Whisper Lake Blvd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,482	6	Signal	42.6	4.8	I	39.7	B	0.79	
Pepper Mill Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	2	3	1	50	1,267	6	Signal	21.6	1.2	I	40.0	B	0.80	
W. Wetherbeee Rd. to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	6	Signal	79.2	26.4	I	26.4	D	0.53	
Deerfield Blvd. to SR 417 SB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,214	6	Signal	19.2	0.0	I	43.1	A	0.86	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,426	6	Signal	19.8	0.0	I	49.1	A	0.98	
SR 417 NB Ramps to Town Center Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,320	6	Signal	76.8	47.4	I	11.7	F	0.23	
Town Center Blvd. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	2,059	6	Signal	29.4	0.0	I	47.8	A	0.96	
TOTAL							50	18,005			422.4	119.4	I	29.1	C	0.58	0.118 gal/veh
PM PEAK HOUR																	
Barley Club Dr. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,637	5	Signal	69.0	30.6	I	16.2	E	0.32	
Central Florida Pkwy. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,584	5	Signal	44.4	9.6	I	24.3	D	0.49	
Water Bridge Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,954	5	Signal	67.2	19.2	I	19.8	E	0.40	
Whisper Lake Blvd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,482	5	Signal	44.4	0.0	I	38.1	B	0.76	
Pepper Mill Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	2	3	1	50	1,267	5	Signal	21.0	0.0	I	41.1	B	0.82	
W. Wetherbeee Rd. to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	5	Signal	82.2	24.6	I	25.4	D	0.51	
Deerfield Blvd. to SR 417 SB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,214	5	Signal	19.8	0.0	I	41.8	B	0.84	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,426	5	Signal	21.6	0.0	I	45.0	A	0.90	
SR 417 NB Ramps to Town Center Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,320	5	Signal	40.8	10.2	I	22.1	D	0.44	
Town Center Blvd. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	2,059	5	Signal	28.8	0.0	I	48.7	A	0.97	
TOTAL							50	18,005			439.2	94.2	I	28.0	C	0.56	0.120 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 14-2

Year 2011 METROPLAN Orlando Travel Time Study

US 441 Part B - Taft Vineland Rd. to Hunters Creek Blvd. - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Cypress Crossings Dr. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,637	7	Signal	43.2	4.2	I	25.8	D	0.52	
Hunters Creek Blvd. to Town Center Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,059	7	Signal	36.0	1.8	I	39.0	B	0.78	
Town Center Blvd. to SR 417 NB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,320	7	Signal	27.6	1.8	I	32.6	C	0.65	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,426	7	Signal	23.4	0.0	I	41.5	B	0.83	
SR 417 SB Ramps to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,214	7	Signal	18.0	0.0	I	46.0	A	0.92	
Deerfield Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	7	Signal	49.2	1.2	I	42.4	A	0.85	
W. Wetherbee Rd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,267	7	Signal	21.0	0.0	I	41.1	B	0.82	
Pepper Mill Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	0	50	2,482	7	Signal	44.4	6.6	I	38.1	B	0.76	
Whisper Lake Blvd. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,954	7	Signal	32.4	0.0	I	41.1	B	0.82	
Water Bridge Blvd. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,584	7	Signal	25.8	0.0	I	41.9	B	0.84	
TOTAL							50	18,005			321.0	15.6	I	38.2	B	0.76	0.128 gal/veh
PM PEAK HOUR																	
Cypress Crossings Dr. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,637	5	Signal	55.2	16.8	I	20.2	E	0.40	
Hunters Creek Blvd. to Town Center Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,059	5	Signal	67.8	22.8	I	20.7	E	0.41	
Town Center Blvd. to SR 417 NB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,320	5	Signal	21.0	0.0	I	42.9	A	0.86	
SR 417 NB Ramps to SR 417 SB Ramps	Orange	Arterial	Residential Area	2	3	0	50	1,426	5	Signal	29.4	8.4	I	33.1	C	0.66	
SR 417 SB Ramps to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,214	5	Signal	36.0	16.2	I	23.0	D	0.46	
Deerfield Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	5	Signal	47.4	3.6	I	44.0	A	0.88	
W. Wetherbee Rd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,267	5	Signal	21.0	0.6	I	41.1	B	0.82	
Pepper Mill Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	0	50	2,482	5	Signal	46.8	3.6	I	36.2	B	0.72	
Whisper Lake Blvd. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	0	50	1,954	5	Signal	34.2	0.0	I	38.9	B	0.78	
Water Bridge Blvd. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,584	5	Signal	45.0	17.4	I	24.0	D	0.48	
TOTAL							50	18,005			403.8	89.4	I	30.4	C	0.61	0.128 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 14-2

Year 2011 METROPLAN Orlando Travel Time Study

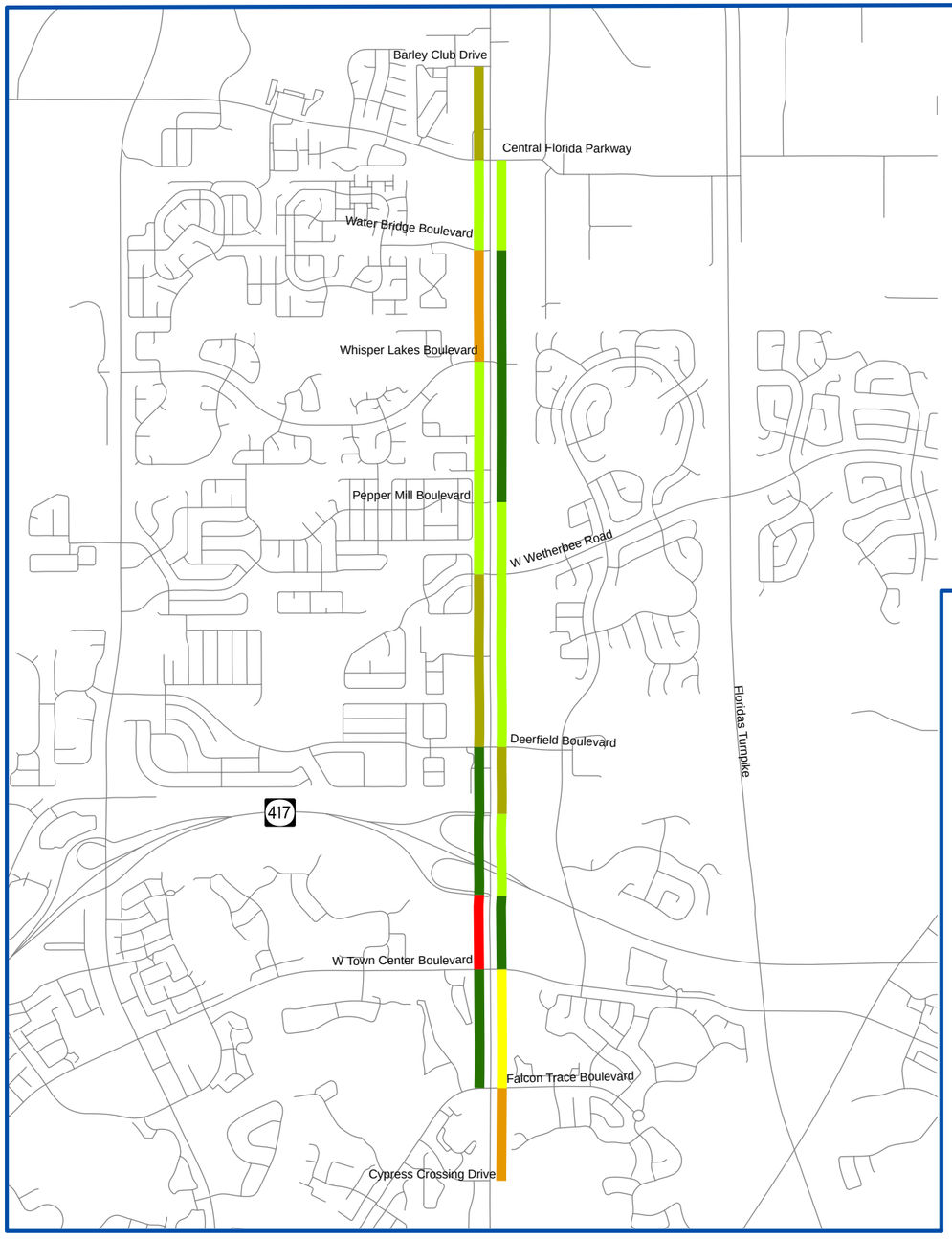
US 441 Part B - Taft Vineland Rd. to Hunters Creek Blvd. - Southbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Barley Club Dr. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,637	7	Signal	49.8	18.6	I	22.4	D	0.45	
Central Florida Pkwy. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,584	7	Signal	27.0	4.2	I	40.0	B	0.80	
Water Bridge Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,954	7	Signal	42.0	9.6	I	31.7	C	0.63	
Whisper Lake Blvd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,482	7	Signal	36.6	0.0	I	46.2	A	0.92	
Pepper Mill Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	2	3	1	50	1,267	7	Signal	24.0	7.2	I	36.0	B	0.72	
W. Wetherbeee Rd. to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	7	Signal	48.0	6.0	I	43.5	A	0.87	
Deerfield Blvd. to SR 417 SB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,214	7	Signal	17.4	0.0	I	47.6	A	0.95	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,426	7	Signal	19.2	0.0	I	50.6	A	1.01	
SR 417 NB Ramps to Town Center Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,320	7	Signal	44.4	15.6	I	20.3	E	0.41	
Town Center Blvd. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	2,059	7	Signal	28.2	0.0	I	49.8	A	1.00	
TOTAL							50	18,005			336.6	61.2	I	36.5	B	0.73	0.118 gal/veh
PM PEAK HOUR																	
Barley Club Dr. to Central Florida Pkwy.	Orange	Arterial	Residential Area	2	3	1	50	1,637	5	Signal	74.4	36.6	I	15.0	F	0.30	
Central Florida Pkwy. to Water Bridge Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,584	5	Signal	31.8	0.0	I	34.0	C	0.68	
Water Bridge Blvd. to Whisper Lake Blvd.	Orange	Arterial	Residential Area	1	3	1	50	1,954	5	Signal	73.2	31.8	I	18.2	E	0.36	
Whisper Lake Blvd. to Pepper Mill Blvd.	Orange	Arterial	Residential Area	1	3	1	50	2,482	5	Signal	60.6	9.0	I	27.9	C	0.56	
Pepper Mill Blvd. to W. Wetherbee Rd.	Orange	Arterial	Residential Area	2	3	1	50	1,267	5	Signal	21.6	0.0	I	40.0	B	0.80	
W. Wetherbeee Rd. to Deerfield Blvd.	Orange	Arterial	Residential Area	1	3	1	50	3,062	5	Signal	46.2	0.0	I	45.2	A	0.90	
Deerfield Blvd. to SR 417 SB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,214	5	Signal	18.0	0.0	I	46.0	A	0.92	
SR 417 SB Ramps to SR 417 NB Ramps	Orange	Arterial	Residential Area	1	3	1	50	1,426	5	Signal	31.2	9.6	I	31.2	C	0.62	
SR 417 NB Ramps to Town Center Blvd.	Orange	Arterial	Residential Area	2	3	1	50	1,320	5	Signal	78.0	47.4	I	11.5	F	0.23	
Town Center Blvd. to Hunters Creek Blvd.	Orange	Arterial	Residential Area	2	3	1	50	2,059	5	Signal	31.2	0.0	I	45.0	A	0.90	
TOTAL							50	18,005			466.2	134.4	I	26.3	D	0.53	0.119 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.



US 441 Part B - AM Peak

Before Condition

Date of Collection: 2/1/2011
Distance: 4.34 miles
From: Taft Vineland Rd.
To: Hunters Creek Blvd.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 33.8 MPH
NB Travel Time: 6.05 MIN
NB Delay Time: 0.99 MIN

SB Avg Speed: 29.1 MPH
SB Travel Time: 7.04 MIN
SB Delay Time: 1.99 MIN

US 441 Part B - AM Peak

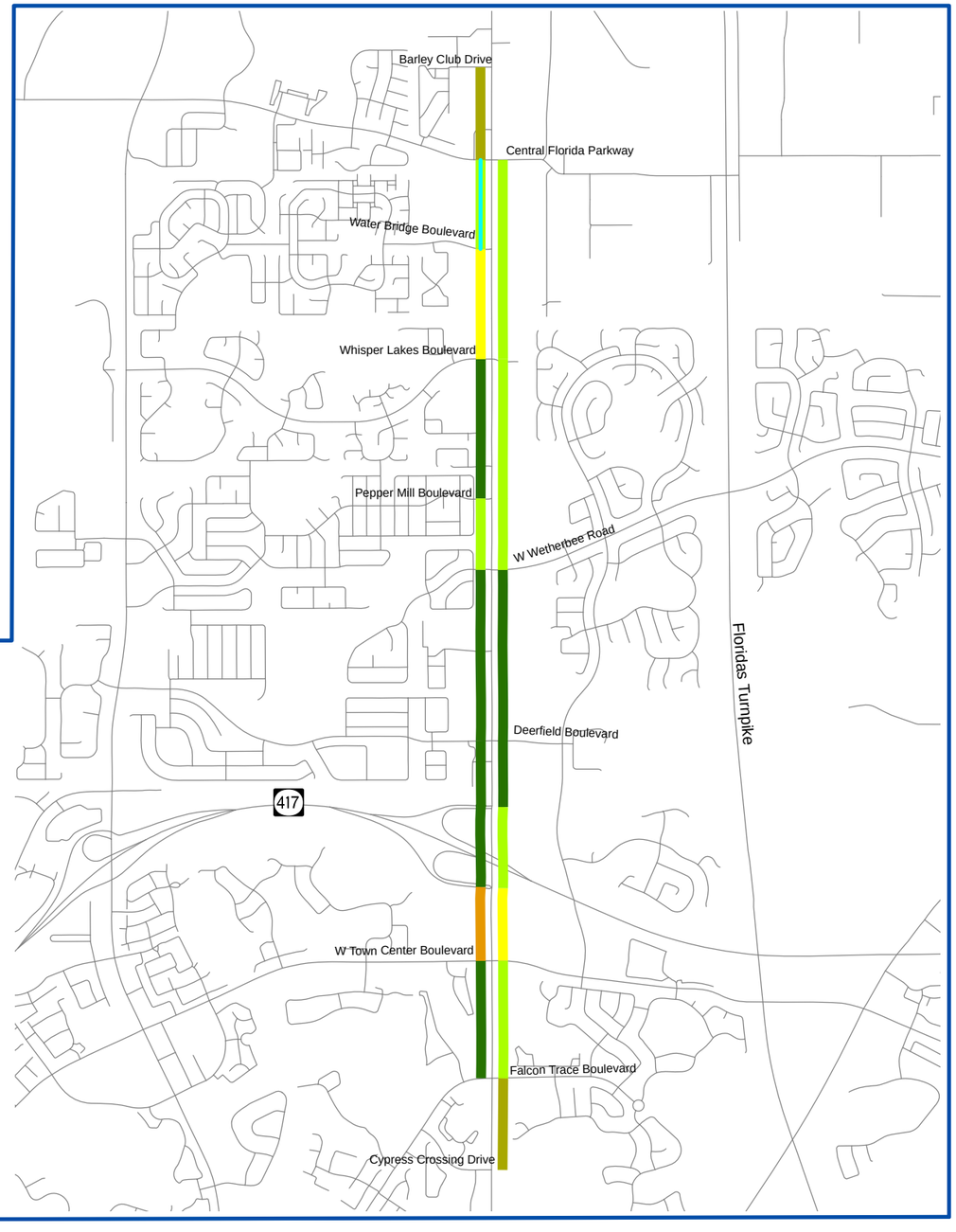
After Condition

Date of Collection: 5/4/2011
Distance: 4.34 miles
From: Taft Vineland Rd.
To: Hunters Creek Blvd.

Start Time: 7:00 PM
End Time: 9:00 PM

NB Avg Speed: 38.2 MPH
NB Travel Time: 5.35 MIN
NB Delay Time: 0.26 MIN

SB Avg Speed: 36.5 MPH
SB Travel Time: 5.61 MIN
SB Delay Time: 1.02 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

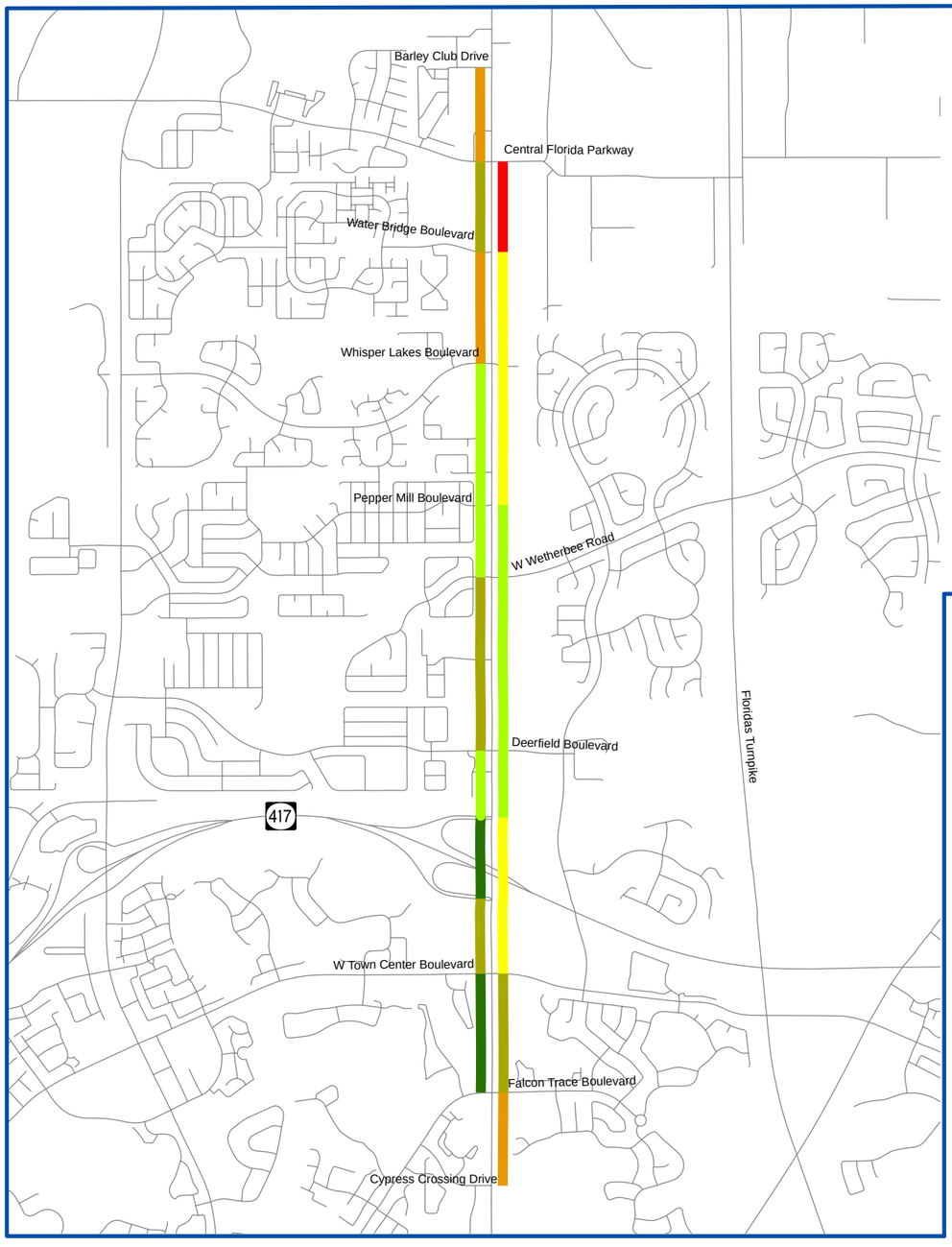
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles



US 441 Part B - PM Peak

Before Condition

Date of Collection: 2/1/2011
Distance: 4.34 miles
From: Taft Vineland Rd.
To: Hunters Creek Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 27.1 MPH
NB Travel Time: 7.54 MIN
NB Delay Time: 1.45 MIN

SB Avg Speed: 28.0 MPH
SB Travel Time: 7.32 MIN
SB Delay Time: 1.57 MIN

US 441 Part B - PM Peak

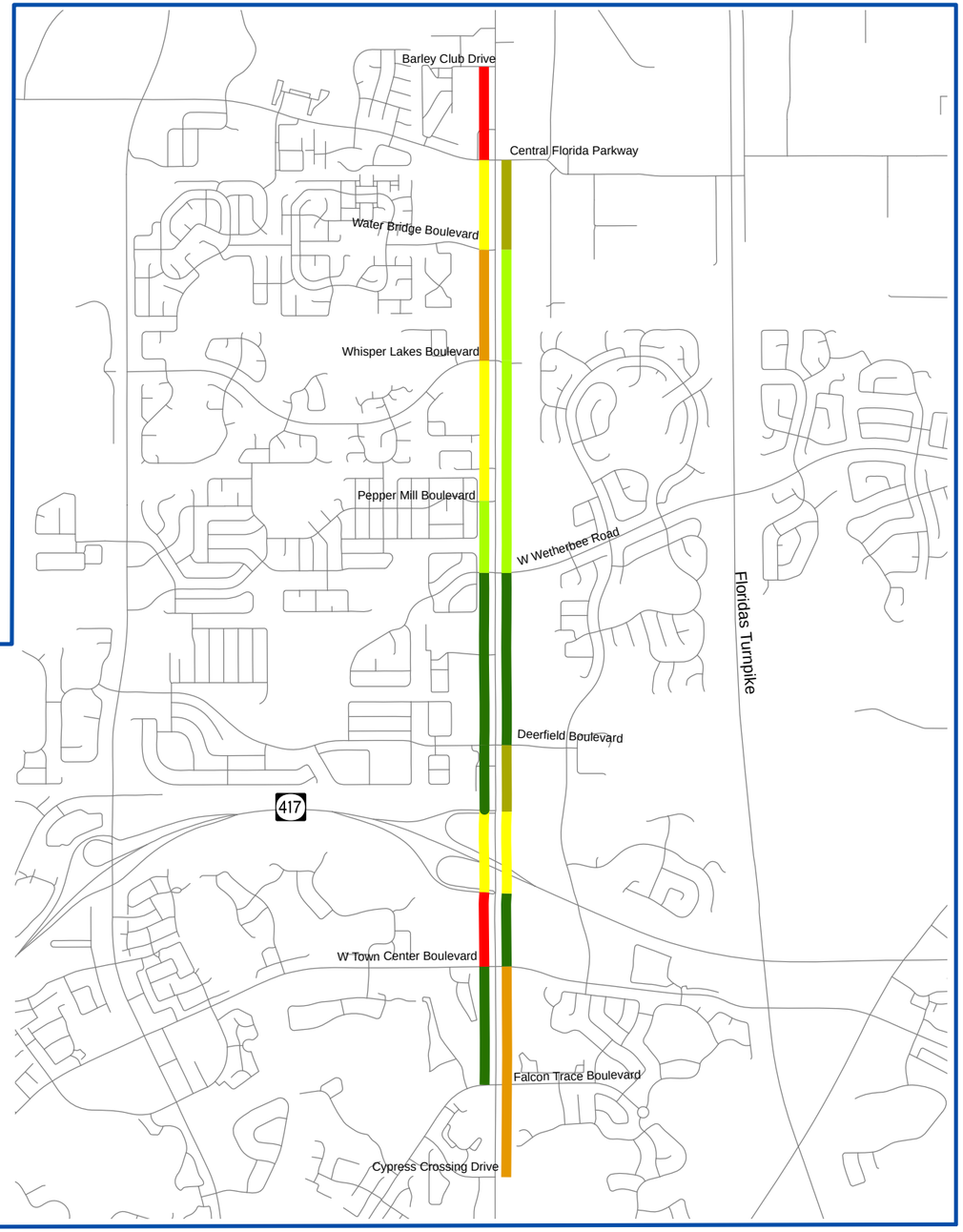
After Condition

Date of Collection: 5/4/2011
Distance: 4.34 miles
From: Taft Vineland Rd
To: Hunters Creek Blvd.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 30.4 MPH
NB Travel Time: 6.73 MIN
NB Delay Time: 1.49 MIN

SB Avg Speed: 26.3 MPH
SB Travel Time: 7.77 MIN
SB Delay Time: 2.24 MIN



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Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W
E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

US 441 Part B : Taft Vineland Road to Hunters Creek Boulevard

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2442	**363.0**	**59.4**	**33.82**	0.127	246.24	310.13
Northbound/Eastbound - PM Peak Hour						
2470	**452.4**	**87.0**	**27.1**	0.1310	310.40	323.57
Southbound/Westbound - AM Peak Hour						
1235	**422.4**	**119.4**	**29.1**	0.1180	144.91	145.73
Southbound/Westbound - PM Peak Hour						
2190	**439.2**	**94.2**	**28.0**	0.1200	267.18	262.80

*Traffic Volumes are obtained from the latest FDOT Counts

US 441 Part B : Taft Vineland Road to Hunters Creek Boulevard

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
2442	**321.0**	**15.6**	**38.2**	0.1280	217.75	312.58
Northbound/Eastbound - PM Peak Hour						
2470	**403.8**	**89.4**	**30.4**	0.1280	277.05	316.16
Southbound/Westbound - AM Peak Hour						
1235	**336.6**	**61.2**	**36.5**	0.1180	115.47	145.73
Southbound/Westbound - PM Peak Hour						
2190	**466.2**	**134.4**	**26.3**	0.1190	283.61	260.61

*Traffic Volumes are obtained from the latest FDOT Counts

US 441 Part B : Taft Vineland Road to Hunters Creek Boulevard

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	391.14	333.22	577.58	560.66
Total Fuel Consumption (gallons)	455.86	458.31	586.37	576.77

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$935.76	$308.82
Annual User Benefit	**$280,729.03**	**$92,646.00**
Total Annual User Benefit =	**$373,375.03**	
Total Signal Retiming Annual Cost	$17,446.83	
User Benefit / Cost Ratio	**21.40**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 482 Part A

Mandarin Dr. to Presidents Dr.

TABLE 15 -1

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part A - Mandarin Dr. to Preseidents Dr. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Mandarin Dr.	Orange	Arterial	OBD	1	2	0	55	792	7	Signal	20.4	1.8	I	26.5	D	0.48	
Mandarin Dr. to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	2,165	7	Signal	35.4	0.0	I	41.7	B	0.76	
Kingspointe Pkwy. to SR 423	Orange	Arterial	OBD	2	3	1	55/45	3,696	7	Signal	150.6	79.8	I	16.7	E	0.30	
TOTAL							55	6,653			206.4	81.6	I	22.0	D	0.40	0.044 gal/veh
PM PEAK HOUR																	
Median Opening to Mandarin Dr.	Orange	Arterial	OBD	1	2	0	55	792	8	Signal	14.4	0.0	I	37.5	B	0.68	
Mandarin Dr. to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	2,165	8	Signal	55.8	13.2	I	26.5	D	0.48	
Kingspointe Pkwy. to SR 423	Orange	Arterial	OBD	2	3	1	55/45	3,696	8	Signal	123.0	55.2	I	20.5	E	0.37	
TOTAL							55	6,653			193.2	68.4	I	23.5	D	0.43	0.044 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 15 - 1

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part A - Mandarin Dr. to Presidents Dr. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to SR 423	Orange	Arterial	OBD	2	3	1	45	2,112	7	Signal	139.8	95.4	I	10.3	F	0.23	
SR 423 to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	3,696	7	Signal	64.2	6.0	I	39.3	B	0.71	
Kingspointe Pkwy. to Mandarin Dr.	Orange	Arterial	OBD	0	2	0	55	2,165	7	Signal	37.8	0.6	I	39.0	B	0.71	
TOTAL							55	7,973			241.8	102.0	I	22.5	D	0.41	0.052 gal/veh
PM PEAK HOUR																	
Median Opening to SR 423	Orange	Arterial	OBD	2	3	1	45	2,112	7	Signal	100.2	57.6	I	14.4	F	0.32	
SR 423 to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	3,696	7	Signal	71.4	7.8	I	35.3	B	0.64	
Kingspointe Pkwy. to Mandarin Dr.	Orange	Arterial	OBD	0	2	0	55	2,165	7	Signal	34.8	0.0	I	42.4	A	0.77	
TOTAL							55	7,973			206.4	65.4	I	26.3	D	0.48	0.052 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 15 -1

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part A - Mandarin Dr. to Presidents Dr. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Mandarin Dr.	Orange	Arterial	OBD	1	2	0	55	792	11	Signal	19.2	1.8	I	28.1	C	0.51	
Mandarin Dr. to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	2,165	11	Signal	34.2	1.2	I	43.2	A	0.78	
Kingspointe Pkwy. to SR 423	Orange	Arterial	OBD	2	3	1	55/45	3,696	11	Signal	84.6	27.6	I	29.8	C	0.54	
TOTAL							55	6,653			138.0	30.6	I	32.9	C	0.60	0.043 gal/veh
PM PEAK HOUR																	
Median Opening to Mandarin Dr.	Orange	Arterial	OBD	1	2	0	55	792	8	Signal	19.2	0.0	I	28.1	C	0.51	
Mandarin Dr. to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	2,165	8	Signal	40.8	3.6	I	36.2	B	0.66	
Kingspointe Pkwy. to SR 423	Orange	Arterial	OBD	2	3	1	55/45	3,696	8	Signal	105.0	46.8	I	24.0	D	0.44	
TOTAL							55	6,653			165.0	50.4	I	27.5	C	0.50	0.043 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.
2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.
3. OBD - Outlying Business District

TABLE 15 - 1

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part A - Mandarin Dr. to Presidents Dr. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to SR 423	Orange	Arterial	OBD	2	3	1	45	2,112	11	Signal	72.6	35.4	I	19.8	E	0.44	
SR 423 to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	3,696	11	Signal	49.8	0.0	I	50.6	A	0.92	
Kingspointe Pkwy. to Mandarin Dr.	Orange	Arterial	OBD	0	2	0	55	2,165	11	Signal	29.4	0.0	I	50.2	A	0.91	
TOTAL							55	7,973			151.8	35.4	I	35.8	B	0.65	0.051 gal/veh
PM PEAK HOUR																	
Median Opening to SR 423	Orange	Arterial	OBD	2	3	1	45	2,112	7	Signal	84.6	45.0	I	17.0	E	0.38	
SR 423 to Kingspointe Pkwy.	Orange	Arterial	OBD	1	2	1	55	3,696	7	Signal	55.2	0.0	I	45.7	A	0.83	
Kingspointe Pkwy. to Mandarin Dr.	Orange	Arterial	OBD	0	2	0	55	2,165	7	Signal	31.2	0.0	I	47.3	A	0.86	
TOTAL							55	7,973			171.0	45.0	I	31.8	C	0.58	0.051 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 482 Part A - AM Peak

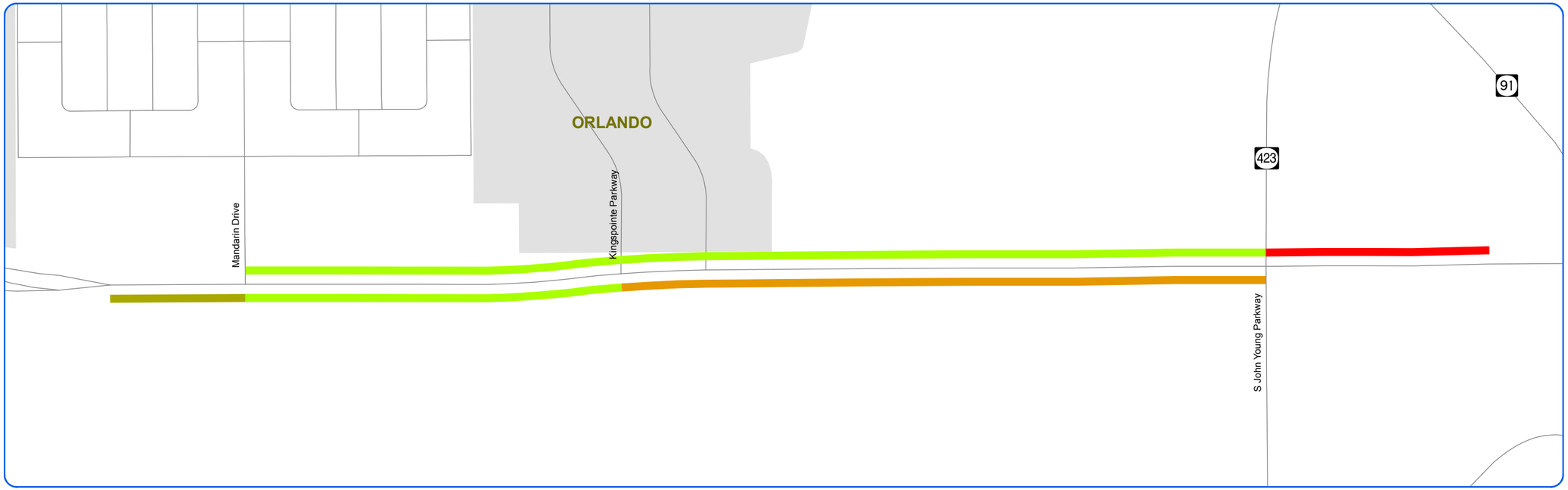
Before Condition

Date of Collection: 1/1/2011
Distance: 1.26 miles
From: Mandarin Dr.
To: Presidents Dr.

Start Time: 7:00 AM
End Time: 8:30 AM

EB Avg Speed: 22.0 MPH
EB Travel Time: 3.44 MIN
EB Delay Time: 1.36 MIN

WB Avg Speed: 22.5 MPH
WB Travel Time: 4.03 MIN
WB Delay Time: 1.70 MIN



SR 482 Part A - AM Peak

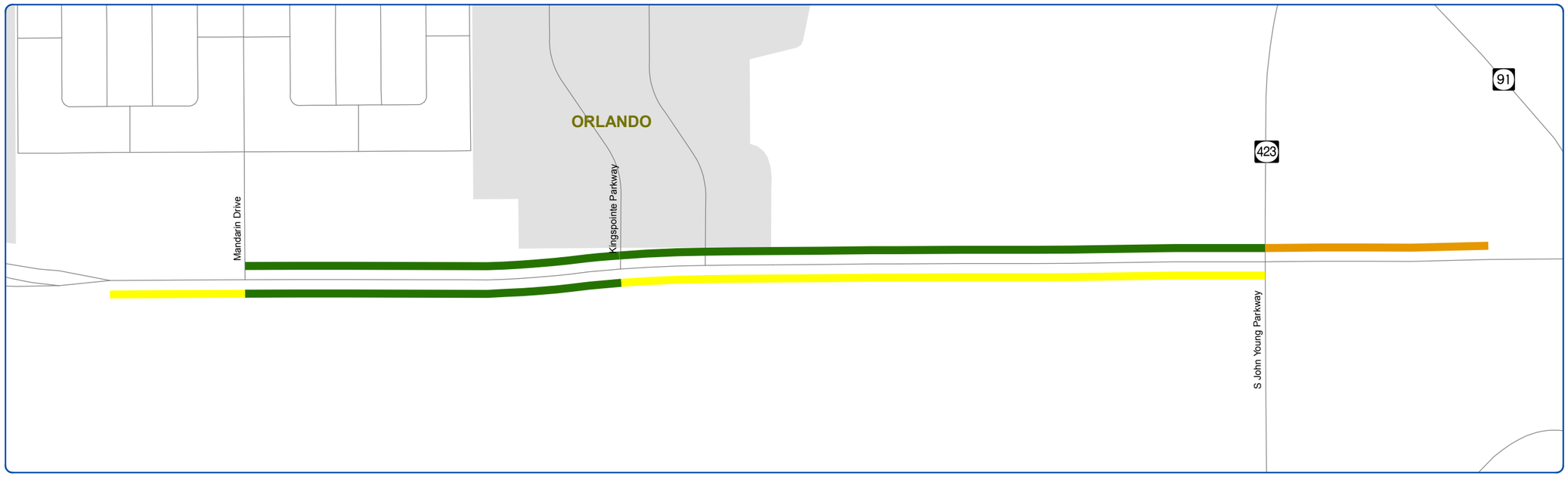
After Condition

Date of Collection: 11/2/2011
Distance: 1.26 miles
From: Mandarin Dr.
To: Presidents Dr.

Start Time: 7:00 AM
End Time: 8:30 AM

EB Avg Speed: 32.9 MPH
EB Travel Time: 2.30 MIN
EB Delay Time: 0.51 MIN

WB Avg Speed: 35.8 MPH
WB Travel Time: 2.53 MIN
WB Delay Time: 0.59 MIN



metroplan orlando
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Level of Services:

A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 482 Part A - PM Peak

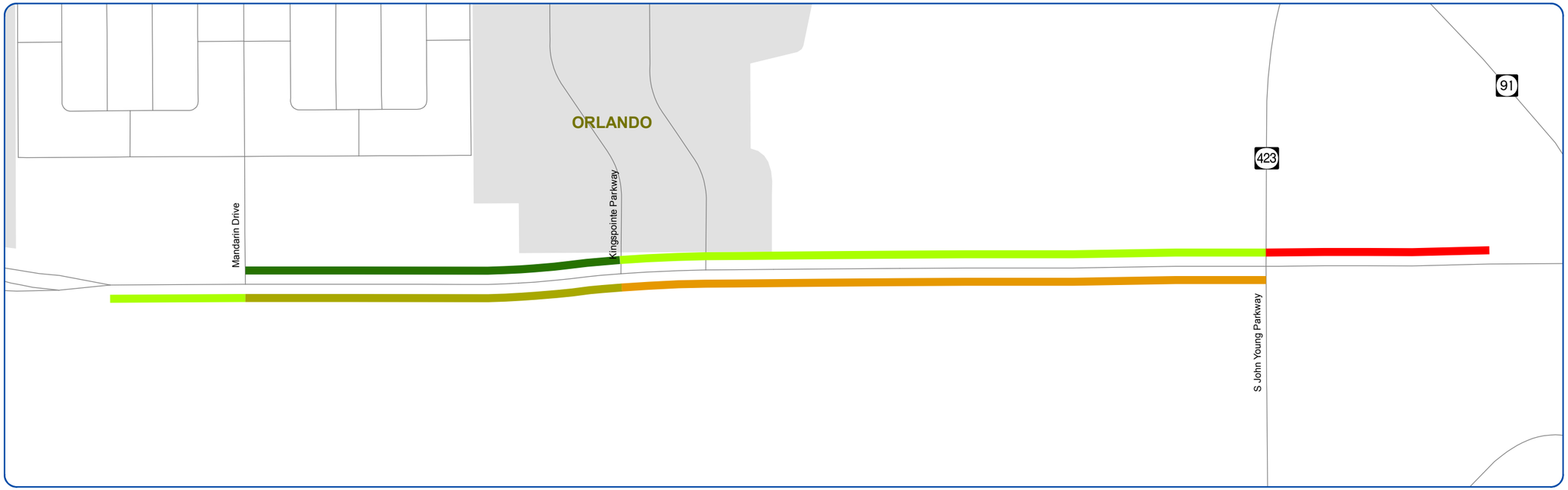
Before Condition

Date of Collection: 1/1/2011
Distance: 1.26 miles
From: Mandarin Dr.
To: Presidents Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 23.5 MPH
EB Travel Time: 3.22 MIN
EB Delay Time: 1.14 MIN

WB Avg Speed: 26.3 MPH
WB Travel Time: 3.44 MIN
WB Delay Time: 1.09 MIN



SR 482 Part A - PM Peak

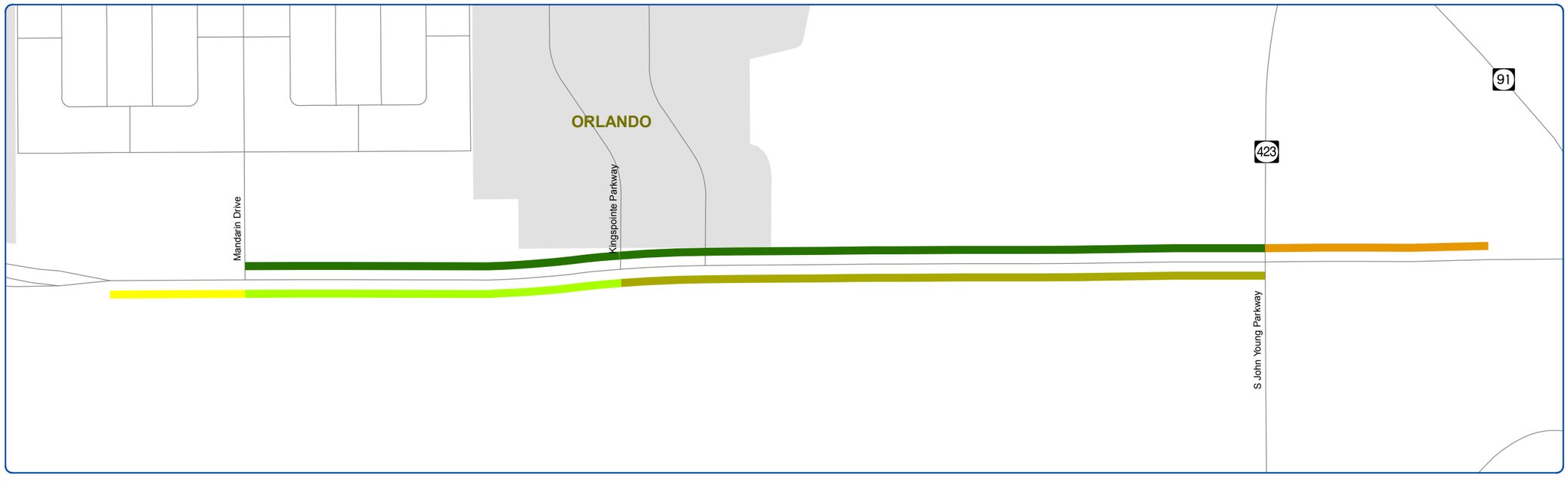
After Condition

Date of Collection: 11/2/2011
Distance: 1.26 miles
From: Mandarin Dr.
To: Presidents Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 27.5 MPH
EB Travel Time: 2.75 MIN
EB Delay Time: 0.84 MIN

WB Avg Speed: 31.8 MPH
WB Travel Time: 2.85 MIN
WB Delay Time: 0.75 MIN



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Level of Services:

A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 482 Part A : Mandarin Drive to SR 423

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**206.4**	**81.6**	**22.0**	0.0440	97.58	74.89
Northbound/Eastbound - PM Peak Hour						
1545	**193.2**	**68.4**	**23.5**	0.0440	82.92	67.98
Southbound/Westbound - AM Peak Hour						
1346	**241.8**	**102.0**	**22.5**	0.0520	90.41	69.99
Southbound/Westbound - PM Peak Hour						
1801	**206.4**	**65.4**	**26.3**	0.0520	103.26	93.65

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part A : Mandarin Drive to SR 423

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**138.0**	**30.6**	**32.9**	0.0430	65.24	73.19
Northbound/Eastbound - PM Peak Hour						
1545	**165.0**	**50.4**	**27.5**	0.0430	70.81	66.44
Southbound/Westbound - AM Peak Hour						
1346	**151.8**	**35.4**	**35.8**	0.0510	56.76	68.65
Southbound/Westbound - PM Peak Hour						
1801	**171.0**	**45.0**	**31.8**	0.0510	85.55	91.85

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part A : Mandarin Drive to SR 423

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	187.99	122.00	186.17	156.36
Total Fuel Consumption (gallons)	144.88	141.83	161.63	158.29

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,086.09	$497.45
Annual User Benefit	**$325,826.86**	**$149,235.38**
Total Annual User Benefit =	**$475,062.24**	
Total Signal Retiming Annual Cost	$4,845.07	
User Benefit / Cost Ratio	**98.05**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 482 Part B

Presidents Dr. to Sunport Dr.

TABLE 15 - 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part B - Presidents Dr. to Sunport Dr. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Presidents Dr.	Orange	Arterial	OBD	1	2	1	45	1,426	7	Signal	44.4	18.0	II	21.9	D	0.49	
Presidents Dr. to Chancellor Dr.	Orange	Arterial	OBD	1	2	1	45	1,373	7	Signal	25.2	0.0	II	37.1	A	0.83	
Chancellor Dr. to Lillwill Ave.	Orange	Arterial	OBD	1	2	1	45	2,482	7	Signal	41.4	0.0	II	40.9	A	0.91	
Lillwill Ave. to US 441	Orange	Arterial	OBD	2	2	1	45	1,109	7	Signal	58.8	30.0	II	12.9	F	0.29	
US 441 to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	950	7	Signal	16.8	0.0	II	38.6	A	0.86	
Summer Day Ln. to Golden Sky Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	7	Signal	21.0	0.0	II	42.9	A	0.95	
Golden Sky Ln. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,848	7	Signal	26.4	0.0	I	47.7	A	0.87	
Voltaire Dr. to Winegard Rd.	Orange	Arterial	Residential Area	1	3	0	55	1,214	7	Signal	16.2	0.0	I	51.1	A	0.93	
TOTAL							45	11,722			250.2	48.0	II	31.9	B	0.71	0.077 gal/veh
PM PEAK HOUR																	
Median Opening to Presidents Dr.	Orange	Arterial	OBD	1	2	1	45	1,426	7	Signal	46.8	14.4	II	20.8	D	0.46	
Presidents Dr. to Chancellor Dr.	Orange	Arterial	OBD	1	2	1	45	1,373	7	Signal	39.0	9.0	II	24.0	C	0.53	
Chancellor Dr. to Lillwill Ave.	Orange	Arterial	OBD	1	2	1	45	2,482	7	Signal	143.4	62.4	II	11.8	F	0.26	
Lillwill Ave. to US 441	Orange	Arterial	OBD	2	2	1	45	1,109	7	Signal	160.2	119.4	II	4.7	F	0.10	
US 441 to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	950	7	Signal	18.6	0.0	II	34.8	B	0.77	
Summer Day Ln. to Golden Sky Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	7	Signal	20.4	0.0	II	44.1	A	0.98	
Golden Sky Ln. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,848	7	Signal	39.6	3.6	I	31.8	C	0.58	
Voltaire Dr. to Winegard Rd.	Orange	Arterial	Residential Area	1	3	0	55	1,214	7	Signal	19.2	0.0	I	43.1	A	0.78	
TOTAL							45	11,722			487.2	208.8	II	16.4	E	0.36	0.082 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel and subjected to change due to ongoing construction

3. OBD - Outlying Business District

TABLE 15 - 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part B - Presidents Dr. to Sunport Dr. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Winegard Rd.	Orange	Arterial	Residential Area	1	3	1	55	1,373	6	Signal	35.4	6.0	I	26.4	D	0.48	
Winegard Rd. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,267	6	Signal	38.4	7.8	I	22.5	D	0.41	
Voltaire Dr. to Golden Sky Ln.	Orange	Arterial	Residential Area	2	3	0	55\45	1,848	6	Signal	27.0	0.0	I	46.7	A	0.85	
Golden Sky Ln. to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	6	Signal	21.6	0.0	II	41.7	A	0.93	
Summer Day Ln. to US 441	Orange	Arterial	OBD	2	2	1	45	950	6	Signal	100.8	72.0	II	6.4	F	0.14	
US 441 to Lillwill Ave.	Orange	Arterial	OBD	1	2	0	45	1,109	6	Signal	22.2	0.0	II	34.1	B	0.76	
Lillwill Ave. to Chancellor Dr.	Orange	Arterial	OBD	1	2	3	45	2,482	6	Signal	52.2	1.2	II	32.4	B	0.72	
Chancellor Dr. to Presidents Dr.	Orange	Arterial	OBD	1	2	0	45	1,373	6	Signal	37.2	2.4	II	25.2	C	0.56	
TOTAL							45	11,722			334.8	89.4	II	23.9	C	0.53	0.078 gal/veh
PM PEAK HOUR																	
Median Opening to Winegard Rd.	Orange	Arterial	Residential Area	1	3	1	55	1,373	6	Signal	36.6	6.6	I	25.6	D	0.46	
Winegard Rd. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,267	6	Signal	37.8	11.4	I	22.9	D	0.42	
Voltaire Dr. to Golden Sky Ln.	Orange	Arterial	Residential Area	2	3	0	55\45	1,848	6	Signal	46.2	8.4	I	27.3	C	0.50	
Golden Sky Ln. to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	6	Signal	30.0	0.6	II	30.0	B	0.67	
Summer Day Ln. to US 441	Orange	Arterial	OBD	2	2	1	45	950	6	Signal	40.8	12.0	II	15.9	E	0.35	
US 441 to Lillwill Ave.	Orange	Arterial	OBD	1	2	0	45	1,109	6	Signal	23.4	0.0	II	32.3	B	0.72	
Lillwill Ave. to Chancellor Dr.	Orange	Arterial	OBD	1	2	3	45	2,482	6	Signal	60.0	4.2	II	28.2	B	0.63	
Chancellor Dr. to Presidents Dr.	Orange	Arterial	OBD	1	2	0	45	1,373	6	Signal	58.2	27.6	II	16.1	E	0.36	
TOTAL							45	11,722			333.0	70.8	II	24.0	C	0.53	0.080 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel and subjected to change due to ongoing construction

3. OBD - Outlying Business District

TABLE 15 - 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part B - Presidents Dr. to Sunport Dr. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Presidents Dr.	Orange	Arterial	OBD	1	3	1	45	1,426	11	Signal	34.8	9.6	II	27.9	C	0.62	
Presidents Dr. to Chancellor Dr.	Orange	Arterial	OBD	1	3	1	45	1,373	11	Signal	22.8	0.0	II	41.1	A	0.91	
Chancellor Dr. to Lillwill Ave.	Orange	Arterial	OBD	1	3	1	45	2,482	11	Signal	36.0	0.0	II	47.0	A	1.04	
Lillwill Ave. to US 441	Orange	Arterial	OBD	2	3	1	45	1,109	11	Signal	41.4	15.0	II	18.3	D	0.41	
US 441 to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	950	11	Signal	19.2	1.8	II	33.7	B	0.75	
Summer Day Ln. to Golden Sky Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	11	Signal	22.2	1.8	II	40.5	A	0.90	
Golden Sky Ln. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,848	11	Signal	27.6	0.0	I	45.7	A	0.83	
Voltaire Dr. to Winegard Rd.	Orange	Arterial	Residential Area	1	3	0	55	1,214	11	Signal	16.8	0.0	I	49.3	A	0.90	
TOTAL							45	11,722			220.8	28.2	II	36.2	A	0.80	0.076 gal/veh
PM PEAK HOUR																	
Median Opening to Presidents Dr.	Orange	Arterial	OBD	1	3	1	45	1,426	11	Signal	39.0	9.0	II	24.9	C	0.55	
Presidents Dr. to Chancellor Dr.	Orange	Arterial	OBD	1	3	1	45	1,373	11	Signal	25.8	0.0	II	36.3	A	0.81	
Chancellor Dr. to Lillwill Ave.	Orange	Arterial	OBD	1	3	1	45	2,482	11	Signal	60.0	7.2	II	28.2	B	0.63	
Lillwill Ave. to US 441	Orange	Arterial	OBD	2	3	1	45	1,109	11	Signal	33.0	4.8	II	22.9	C	0.51	
US 441 to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	950	11	Signal	25.2	7.2	II	25.7	C	0.57	
Summer Day Ln. to Golden Sky Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	11	Signal	22.2	0.0	II	40.5	A	0.90	
Golden Sky Ln. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,848	11	Signal	36.0	3.0	I	35.0	B	0.64	
Voltaire Dr. to Winegard Rd.	Orange	Arterial	Residential Area	1	3	0	55	1,214	11	Signal	18.6	0.0	I	44.5	A	0.81	
TOTAL							45	11,722			259.8	31.2	II	30.8	B	0.68	0.078 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel

3. OBD - Outlying Business District

TABLE 15 - 2

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part B - Presidents Dr. to Sunport Dr. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Winegard Rd.	Orange	Arterial	Residential Area	1	3	1	55	1,373	10	Signal	27.6	3.6	I	33.9	C	0.62	
Winegard Rd. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,267	10	Signal	28.8	7.8	I	30.0	C	0.55	
Voltaire Dr. to Golden Sky Ln.	Orange	Arterial	Residential Area	2	3	0	55\45	1,848	10	Signal	31.2	1.2	I	40.4	B	0.73	
Golden Sky Ln. to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	10	Signal	33.0	7.2	II	27.3	C	0.61	
Summer Day Ln. to US 441	Orange	Arterial	OBD	2	3	1	45	950	10	Signal	85.2	60.6	II	7.6	F	0.17	
US 441 to Lillwill Ave.	Orange	Arterial	OBD	1	3	0	45	1,109	10	Signal	19.2	0.0	II	39.4	A	0.87	
Lillwill Ave. to Chancellor Dr.	Orange	Arterial	OBD	1	3	1	45	2,482	10	Signal	38.4	0.0	II	44.1	A	0.98	
Chancellor Dr. to Presidents Dr.	Orange	Arterial	OBD	1	3	1	45	1,373	10	Signal	18.6	0.0	II	50.3	A	1.12	
TOTAL							45	11,722			282.0	80.4	II	28.3	B	0.63	0.076 gal/veh
PM PEAK HOUR																	
Median Opening to Winegard Rd.	Orange	Arterial	Residential Area	1	3	1	55	1,373	10	Signal	36.0	8.4	I	26.0	D	0.47	
Winegard Rd. to Voltaire Dr.	Orange	Arterial	Residential Area	1	3	1	55	1,267	10	Signal	26.4	5.4	I	32.7	C	0.60	
Voltaire Dr. to Golden Sky Ln.	Orange	Arterial	Residential Area	2	3	0	55\45	1,848	10	Signal	33.0	2.4	I	38.2	B	0.69	
Golden Sky Ln. to Summer Day Ln.	Orange	Arterial	OBD	1	3	0	45	1,320	10	Signal	28.8	4.2	II	31.2	B	0.69	
Summer Day Ln. to US 441	Orange	Arterial	OBD	2	3	1	45	950	10	Signal	40.2	17.4	II	16.1	E	0.36	
US 441 to Lillwill Ave.	Orange	Arterial	OBD	1	3	0	45	1,109	10	Signal	19.2	0.0	II	39.4	A	0.87	
Lillwill Ave. to Chancellor Dr.	Orange	Arterial	OBD	1	3	1	45	2,482	10	Signal	40.8	0.0	II	41.5	A	0.92	
Chancellor Dr. to Presidents Dr.	Orange	Arterial	OBD	1	3	1	45	1,373	10	Signal	25.2	0.6	II	37.1	A	0.83	
TOTAL							45	11,722			249.6	38.4	II	32.0	B	0.71	0.076 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel

3. OBD - Outlying Business District

SR 482 Part B - AM Peak

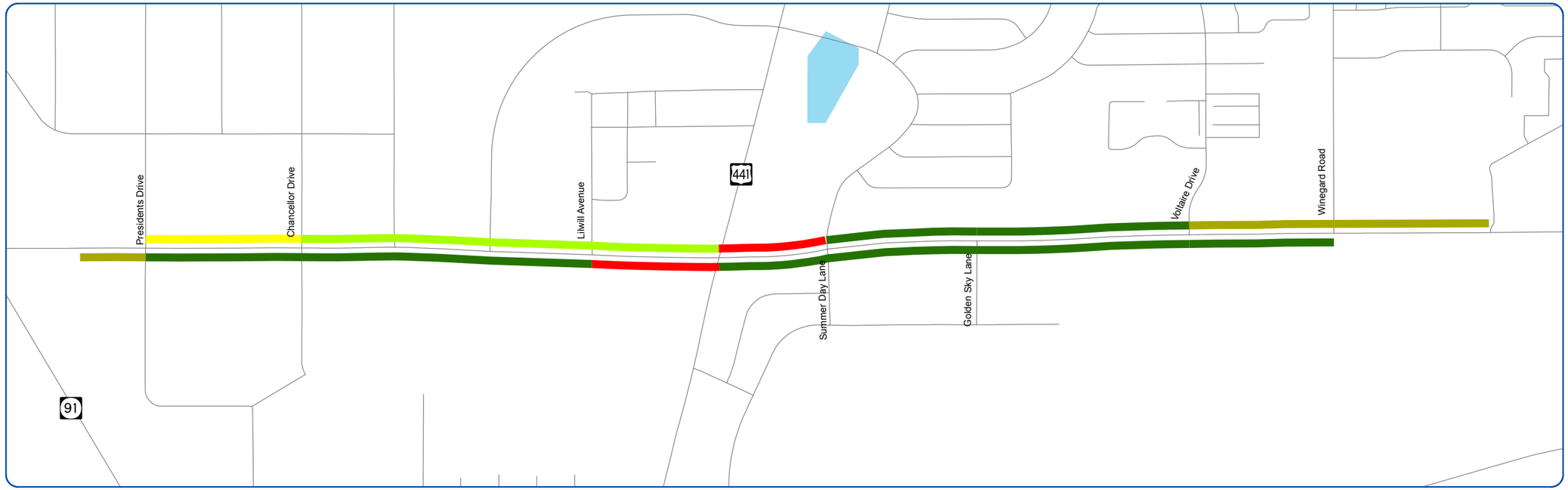
Before Condition

Date of Collection: 1/1/2011
Distance: 2.22 miles
From: Presidents Dr.
To: Sunport Dr.

Start Time: 7:00 AM
End Time: 8:30 AM

EB Avg Speed: 31.9 MPH
EB Travel Time: 4.17 MIN
EB Delay Time: 0.80 MIN

WB Avg Speed: 23.9 MPH
WB Travel Time: 5.58 MIN
WB Delay Time: 1.49 MIN



SR 482 Part B - AM Peak

After Condition

Date of Collection: 11/1/2011
Distance: 2.22 miles
From: Presidents Dr.
To: Sunport Dr.

Start Time: 7:00 AM
End Time: 8:30 AM

EB Avg Speed: 36.2 MPH
EB Travel Time: 3.68 MIN
EB Delay Time: 0.47 MIN

WB Avg Speed: 28.3 MPH
WB Travel Time: 4.70 MIN
WB Delay Time: 1.34 MIN

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A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 482 Part B - PM Peak

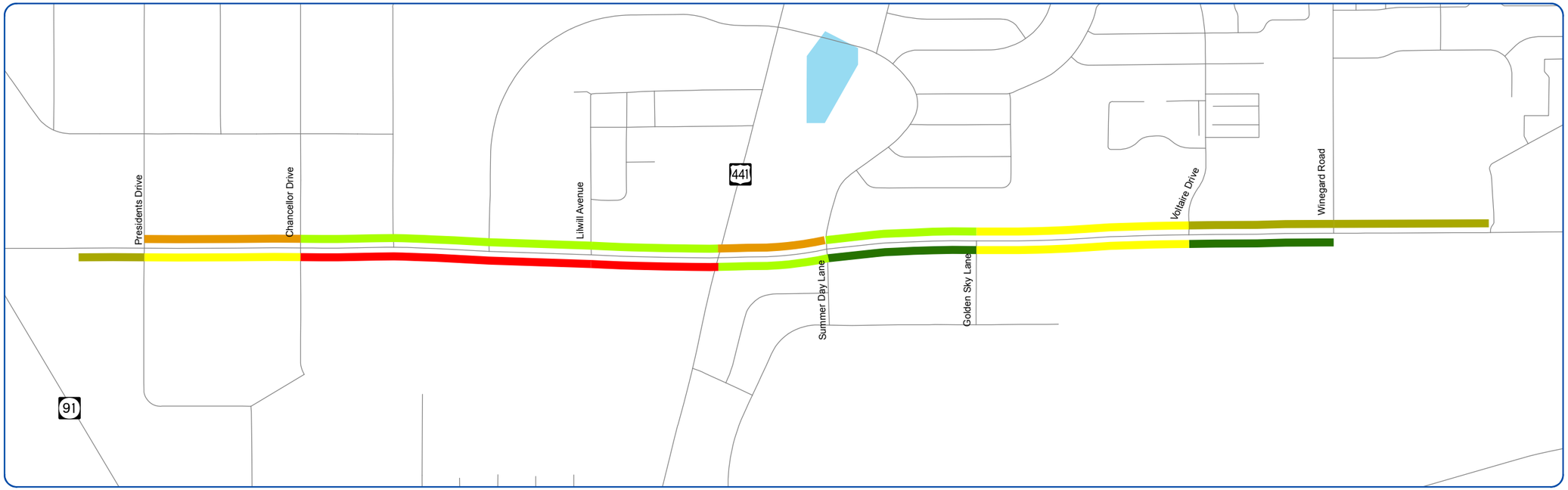
Before Condition

Date of Collection: 1/1/2011
Distance: 2.22 miles
From: Presidents Dr.
To: Sunport Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 16.4 MPH
EB Travel Time: 8.12 MIN
EB Delay Time: 3.48 MIN

WB Avg Speed: 24.0 MPH
WB Travel Time: 5.55 MIN
WB Delay Time: 1.18 MIN



SR 482 Part B - PM Peak

After Condition

Date of Collection: 11/1/2011
Distance: 2.22 miles
From: Presidents Dr.
To: Sunport Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 30.8 MPH
EB Travel Time: 4.33 MIN
EB Delay Time: 0.52 MIN

WB Avg Speed: 32.0 MPH
WB Travel Time: 4.16 MIN
WB Delay Time: 0.64 MIN

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A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A
B
C
D
E
F
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 482 Part B : Presidents Drive to Winegard Road

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**250.2**	**48.0**	**31.9**	0.0770	118.29	131.05
Northbound/Eastbound - PM Peak Hour						
1545	**487.2**	**208.8**	**16.4**	0.0820	209.09	126.69
Southbound/Westbound - AM Peak Hour						
1346	**334.8**	**89.4**	**23.9**	0.0780	125.18	104.99
Southbound/Westbound - PM Peak Hour						
1801	**333.0**	**70.8**	**24.0**	0.0800	166.59	144.08

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part B : Presidents Drive to Winegard Road

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**220.8**	**28.2**	**36.2**	0.0760	104.39	129.35
Northbound/Eastbound - PM Peak Hour						
1545	**259.8**	**31.2**	**30.8**	0.0780	111.50	120.51
Southbound/Westbound - AM Peak Hour						
1346	**282.0**	**80.4**	**28.3**	0.0760	105.44	102.30
Southbound/Westbound - PM Peak Hour						
1801	**249.6**	**38.4**	**32.0**	0.0760	124.87	136.88

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part B : Presidents Drive to Winegard Road

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	243.47	209.83	375.68	236.37
Total Fuel Consumption (gallons)	236.04	231.65	270.77	257.39

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$563.46	$2,316.89
Annual User Benefit	**$169,039.10**	**$695,065.90**
Total Annual User Benefit =	**$864,105.00**	
Total Signal Retiming Annual Cost	$12,919.94	
User Benefit / Cost Ratio	**66.88**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 482 Part C

Sunport Dr. to Jetport Dr.

TABLE 15 - 3

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part C - Sunport Dr. to Jetport Dr. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Sunport Dr.	Orange	Arterial	Residential Area	1	3	0	45	898	8	Signal	51.0	24.0	II	12.0	F	0.27	
Sunport Dr. to Orange Ave.	Orange	Arterial	Residential Area	2	2	1	45	2,957	8	Signal	119.4	63.0	II	16.9	E	0.38	
Orange Ave. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,426	8	Signal	27.6	0.0	II	35.2	A	0.78	
Gondola Dr. to Lindos Dr.	Orange	Arterial	OBD	1	2	0	35	1,478	8	Signal	31.2	3.6	II	32.3	B	0.92	
Lindos Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	0	2	1	35	1,003	8	Signal	30.6	10.2	II	22.4	C	0.64	
SR 528 WB Ramps to Jetport Dr.	Orange	Arterial	OBD	2	1	1	35	686	8	Signal	13.8	0.6	II	33.9	B	0.97	
TOTAL							45	8,448			273.6	101.4	II	21.1	D	0.47	0.055 gal/veh
PM PEAK HOUR																	
Median Opening to Sunport Dr.	Orange	Arterial	Residential Area	1	3	0	45	898	8	Signal	24.0	0.0	II	25.5	C	0.57	
Sunport Dr. to Orange Ave.	Orange	Arterial	Residential Area	2	2	1	45	2,957	8	Signal	186.0	115.8	II	10.8	F	0.24	
Orange Ave. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,426	8	Signal	43.2	4.8	II	22.5	C	0.50	
Gondola Dr. to Lindos Dr.	Orange	Arterial	OBD	1	2	0	35	1,478	8	Signal	39.0	4.2	II	25.8	C	0.74	
Lindos Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	0	2	1	35	1,003	8	Signal	19.8	0.0	II	34.5	B	0.99	
SR 528 WB Ramps to Jetport Dr.	Orange	Arterial	OBD	2	1	1	35	686	8	Signal	20.4	7.2	II	22.9	C	0.66	
TOTAL							45	8,448			332.4	132.0	II	17.3	D	0.39	0.058 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 15 - 3

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part C - Sunport Dr. to Jetport Dr. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Jetport Dr.	Orange	Arterial	OBD	1	2	1	35	634	8	Signal	58.2	39.6	II	7.4	F	0.21	
Jetport Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	1	2	0	35	686	8	Signal	16.2	0.6	II	28.9	B	0.83	
SR 528 WB Ramps to Lindos Dr.	Orange	Arterial	OBD	1	3	0	35	1,003	8	Signal	23.4	2.4	II	29.2	B	0.84	
Lindos Dr. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,478	8	Signal	45.6	10.8	II	22.1	C	0.49	
Gondola Dr. to Orange Ave.	Orange	Arterial	OBD	1	2	1	45	1,426	8	Signal	75.6	39.0	II	12.9	F	0.29	
Orange Ave. to Sunport Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,957	8	Signal	45.0	0.0	II	44.8	A	1.00	
TOTAL							45	8,184			264.0	92.4	II	21.1	D	0.47	0.056 gal/veh
PM PEAK HOUR																	
Median Opening to Jetport Dr.	Orange	Arterial	OBD	1	2	1	35	634	7	Signal	88.2	69.0	II	4.9	F	0.14	
Jetport Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	1	2	0	35	686	7	Signal	18.0	3.0	II	26.0	C	0.74	
SR 528 WB Ramps to Lindos Dr.	Orange	Arterial	OBD	1	3	0	35	1,003	7	Signal	18.0	0.0	II	38.0	A	1.09	
Lindos Dr. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,478	7	Signal	27.6	2.4	II	36.5	A	0.81	
Gondola Dr. to Orange Ave.	Orange	Arterial	OBD	1	2	1	45	1,426	7	Signal	109.8	66.0	II	8.9	F	0.20	
Orange Ave. to Sunport Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,957	7	Signal	46.2	0.0	II	43.6	A	0.97	
TOTAL							45	8,184			307.8	140.4	II	18.1	D	0.40	0.056 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 15 - 3

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part C - Sunport Dr. to Jetport Dr. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Sunport Dr.	Orange	Arterial	Residential Area	1	3	0	45	898	11	Signal	22.8	0.0	II	26.8	C	0.60	
Sunport Dr. to Orange Ave.	Orange	Arterial	Residential Area	2	2	1	45	2,957	11	Signal	70.8	24.0	II	28.5	B	0.63	
Orange Ave. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,426	11	Signal	33.0	1.8	II	29.5	B	0.65	
Gondola Dr. to Lindos Dr.	Orange	Arterial	OBD	1	2	0	35	1,478	11	Signal	23.4	0.0	II	43.1	A	1.23	
Lindos Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	0	2	1	35	1,003	11	Signal	18.0	1.2	II	38.0	A	1.09	
SR 528 WB Ramps to Jetport Dr.	Orange	Arterial	OBD	2	1	1	35	686	11	Signal	10.2	0.6	II	45.9	A	1.31	
TOTAL							45	8,448			178.2	27.6	II	32.3	B	0.72	0.055 gal/veh
PM PEAK HOUR																	
Median Opening to Sunport Dr.	Orange	Arterial	Residential Area	1	3	0	45	898	12	Signal	28.8	6.6	II	21.2	D	0.47	
Sunport Dr. to Orange Ave.	Orange	Arterial	Residential Area	2	2	1	45	2,957	12	Signal	94.2	42.6	II	21.4	D	0.48	
Orange Ave. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,426	12	Signal	30.0	0.6	II	32.4	B	0.72	
Gondola Dr. to Lindos Dr.	Orange	Arterial	OBD	1	2	0	35	1,478	12	Signal	24.6	0.0	II	41.0	A	1.17	
Lindos Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	0	2	1	35	1,003	12	Signal	24.6	7.2	II	27.8	C	0.79	
SR 528 WB Ramps to Jetport Dr.	Orange	Arterial	OBD	2	1	1	35	686	12	Signal	19.8	9.0	II	23.6	C	0.68	
TOTAL							45	8,448			222.0	66.0	II	25.9	C	0.58	0.055 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 15 - 3

Year 2011 METROPLAN Orlando Travel Time Study

SR 482 Part C - Sunport Dr. to Jetport Dr. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Jetport Dr.	Orange	Arterial	OBD	1	2	1	35	634	11	Signal	48.6	31.2	II	8.9	F	0.25	
Jetport Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	1	2	0	35	686	11	Signal	13.2	0.0	II	35.5	A	1.01	
SR 528 WB Ramps to Lindos Dr.	Orange	Arterial	OBD	1	3	0	35	1,003	11	Signal	16.2	0.0	II	42.2	A	1.21	
Lindos Dr. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,478	11	Signal	26.4	1.2	II	38.2	A	0.85	
Gondola Dr. to Orange Ave.	Orange	Arterial	OBD	1	2	1	45	1,426	11	Signal	69.0	32.4	II	14.1	E	0.31	
Orange Ave. to Sunport Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,957	11	Signal	40.8	1.2	II	49.4	A	1.10	
TOTAL							45	8,184			214.2	66.0	II	26.0	C	0.58	0.055 gal/veh
PM PEAK HOUR																	
Median Opening to Jetport Dr.	Orange	Arterial	OBD	1	2	1	35	634	11	Signal	82.2	60.6	II	5.3	F	0.15	
Jetport Dr. to SR 528 WB Ramps	Orange	Arterial	OBD	1	2	0	35	686	11	Signal	13.2	0.0	II	35.5	A	1.01	
SR 528 WB Ramps to Lindos Dr.	Orange	Arterial	OBD	1	3	0	35	1,003	11	Signal	15.6	0.0	II	43.8	A	1.25	
Lindos Dr. to Gondola Dr.	Orange	Arterial	OBD	1	2	0	45	1,478	11	Signal	22.8	0.0	II	44.2	A	0.98	
Gondola Dr. to Orange Ave.	Orange	Arterial	OBD	1	2	1	45	1,426	11	Signal	46.2	20.4	II	21.0	D	0.47	
Orange Ave. to Sunport Dr.	Orange	Arterial	Residential Area	1	3	1	45	2,957	11	Signal	37.2	0.0	II	54.2	A	1.20	
TOTAL							45	8,184			217.2	81.0	II	25.7	C	0.57	0.054 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 482 Part C - AM Peak

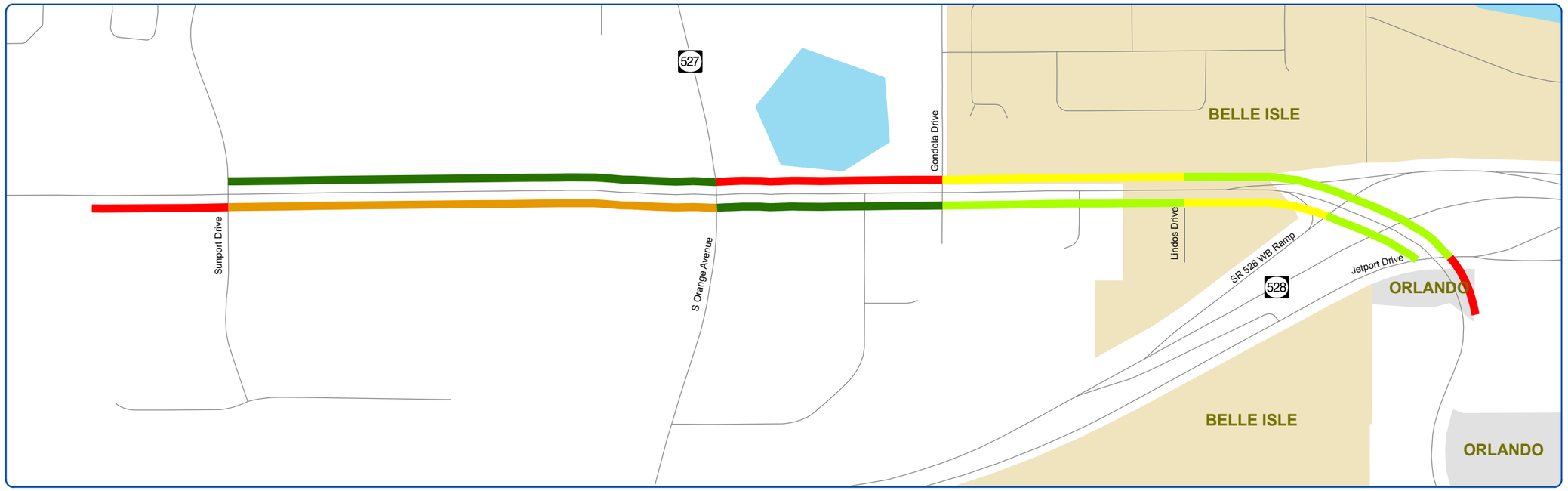
Before Condition

Date of Collection: 2/8/2011
Distance: 1.50 miles
From: Sunport Dr.
To: Jetport Dr.

Start Time: 7:15 AM
End Time: 9:00 AM

EB Avg Speed: 21.1 MPH
EB Travel Time: 4.56 MIN
EB Delay Time: 1.69 MIN

WB Avg Speed: 21.1 MPH
WB Travel Time: 4.40 MIN
WB Delay Time: 1.54 MIN



SR 482 Part C - AM Peak

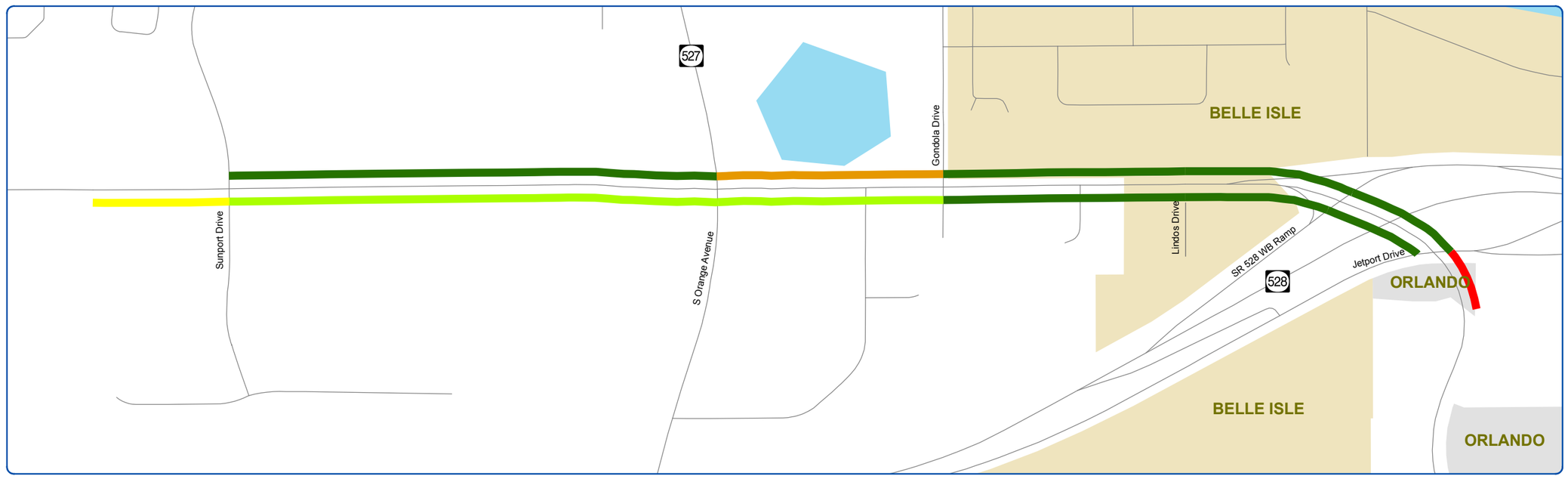
After Condition

Date of Collection: 6/7/2011
Distance: 1.50 miles
From: Sunport Dr.
To: Jetport Dr.

Start Time: 7:15 AM
End Time: 9:00 AM

EB Avg Speed: 32.3 MPH
EB Travel Time: 2.97 MIN
EB Delay Time: 0.46 MIN

WB Avg Speed: 26.0 MPH
WB Travel Time: 3.57 MIN
WB Delay Time: 1.10 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

A	D	Roads	
B	E	City Boundary	
C	F	Water	

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.2 0.4 Miles

SR 482 Part C - PM Peak

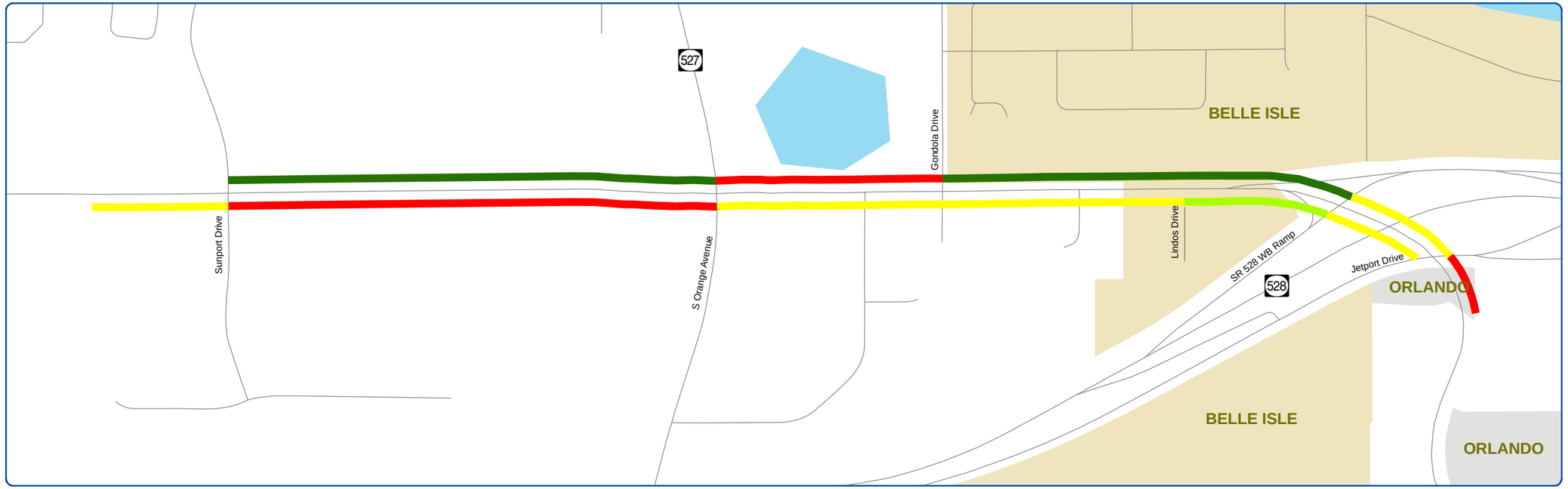
Before Condition

Date of Collection: 2/8/2011
Distance: 1.50 miles
From: Sunport Dr.
To: Jetport Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 17.3 MPH
EB Travel Time: 5.54 MIN
EB Delay Time: 2.20 MIN

WB Avg Speed: 18.1 MPH
WB Travel Time: 5.13 MIN
WB Delay Time: 2.34 MIN



SR 482 Part C - PM Peak

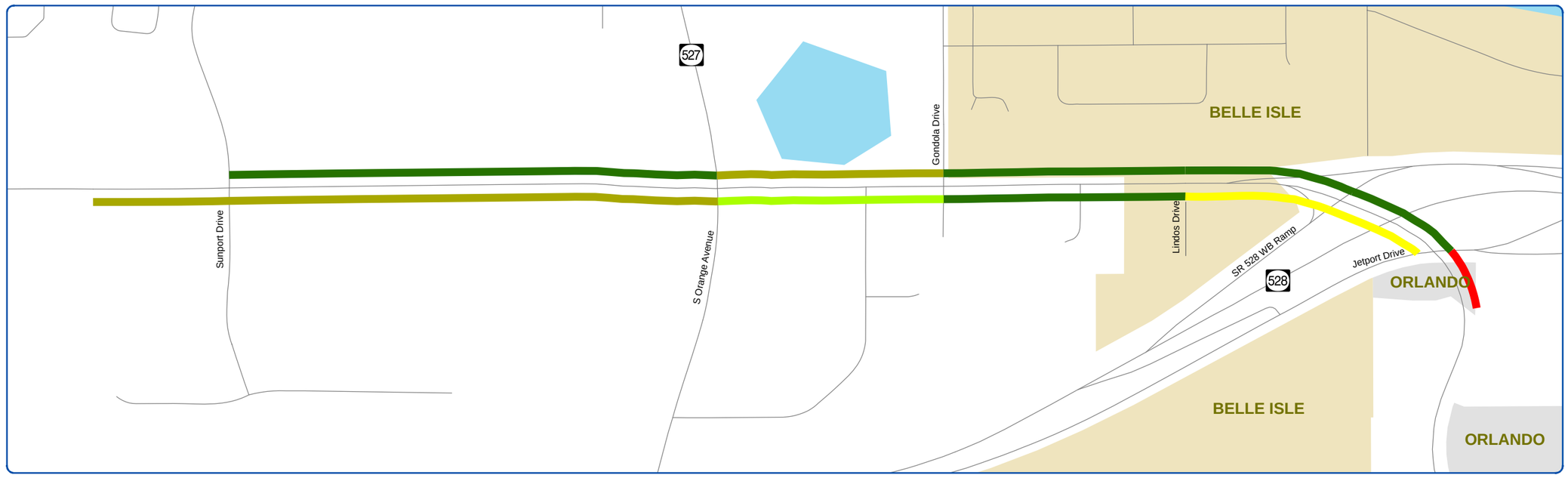
After Condition

Date of Collection: 6/7/2011
Distance: 1.50 miles
From: Sunport Dr.
To: Jetport Dr.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 25.9 MPH
EB Travel Time: 3.70 MIN
EB Delay Time: 1.10 MIN

WB Avg Speed: 25.7 MPH
WB Travel Time: 3.62 MIN
WB Delay Time: 1.35 MIN



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Level of Services:

A	D	Roads	
B	E	City Boundary	
C	F	Water	

N W E S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles

SR 482 Part C : Sunport Drive to Jetport Drive

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**273.6**	**101.4**	**21.1**	0.0550	129.35	93.61
Northbound/Eastbound - PM Peak Hour						
1545	**332.4**	**132.0**	**17.3**	0.0580	142.66	89.61
Southbound/Westbound - AM Peak Hour						
1346	**264.0**	**92.4**	**21.1**	0.0560	98.71	75.38
Southbound/Westbound - PM Peak Hour						
1801	**307.8**	**140.4**	**18.1**	0.0560	153.99	100.86

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part C : Sunport Drive to Jetport Drive

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1702	**178.2**	**27.6**	**32.3**	0.0550	84.25	93.61
Northbound/Eastbound - PM Peak Hour						
1545	**222.0**	**66.0**	**25.9**	0.0550	95.28	84.98
Southbound/Westbound - AM Peak Hour						
1346	**214.2**	**66.0**	**26.0**	0.0550	80.09	74.03
Southbound/Westbound - PM Peak Hour						
1801	**217.2**	**81.0**	**25.7**	0.0540	108.66	97.25

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

SR 482 Part C : Sunport Drive to Jetport Drive

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	228.06	164.34	296.64	203.94
Total Fuel Consumption (gallons)	168.99	167.64	190.47	182.23

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,043.31	$1,539.43
Annual User Benefit	**$312,992.91**	**$461,828.85**
Total Annual User Benefit =	**$774,821.76**	
Total Signal Retiming Annual Cost	$9,689.76	
User Benefit / Cost Ratio	**79.96**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 423

Church St. to US 441

TABLE 8

Year 2011 METROPLAN Orlando Travel Time Study

SR 423 -Church St. to US 441- Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
C R Smith St to Church St.	City of Orlando	Arterial	Residential Area	1	3	1	35	2,006	4	Signal	48.0	0.0	II	28.5	B	0.81	
Church St. to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	0	3	1	45	634	4	Signal	36.6	20.4	II	11.8	F	0.26	
SR 408 EB Ramps to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	4	Signal	16.8	6.0	II	17.1	D	0.38	
SR 408 WB Ramps to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	4	Signal	75.0	45.0	II	8.6	F	0.19	
Old Winter Garden Rd. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	4	Signal	59.4	33.0	II	10.9	F	0.24	
W. Harwood Ave. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	1,584	4	Signal	178.2	123.0	II	6.1	F	0.13	
W. Colonial Dr. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	1	2	0	45/55	2,693	4	Signal	43.8	0.0	I	41.9	B	0.76	
W D Judge Dr. to W. Princeston St.	City of Orlando	Arterial	Residential Area	2	3	1	55	3,590	4	Signal	52.2	1.2	I	46.9	A	0.85	
W. Princeston St. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45/55	2,006	4	Signal	47.4	10.2	I	28.9	C	0.52	
Lynx Ln. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	4	Signal	18.0	0.0	II	40.0	A	0.89	
Silver Star Rd. to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	4	Signal	42.6	0.0	II	42.3	A	0.94	
Shader Rd. to US 441	City of Orlando	Arterial	Residential Area	2	2	1	45	5,016	4	Signal	124.2	42.0	II	27.5	C	0.61	
TOTAL							45	23,549			742.2	280.8	II	21.6	D	0.48	0.158 gal/veh
PM PEAK HOUR																	
C R Smith St to Church St.	City of Orlando	Arterial	Residential Area	1	3	1	35	2,006	4	Signal	61.2	10.8	II	22.4	C	0.64	
Church St. to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	0	3	1	45	634	4	Signal	23.4	8.4	II	18.5	D	0.41	
SR 408 EB Ramps to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	4	Signal	9.6	0.0	II	30.0	B	0.67	
SR 408 WB Ramps to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	4	Signal	75.0	50.4	II	8.6	F	0.19	
Old Winter Garden Rd. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	4	Signal	22.8	0.0	II	28.4	B	0.63	
W. Harwood Ave. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	1,584	4	Signal	103.2	63.6	II	10.5	F	0.23	
W. Colonial Dr. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	1	2	0	45/55	2,693	4	Signal	48.0	0.0	I	38.2	B	0.70	
W D Judge Dr. to W. Princeston St.	City of Orlando	Arterial	Residential Area	2	3	1	55	3,590	4	Signal	56.4	0.0	I	43.4	A	0.79	
W. Princeston St. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45/55	2,006	4	Signal	33.0	0.0	I	41.5	B	0.75	
Lynx Ln. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	4	Signal	31.2	1.8	II	23.1	C	0.51	
Silver Star Rd. to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	4	Signal	60.0	7.8	II	30.0	B	0.67	
Shader Rd. to US 441	City of Orlando	Arterial	Residential Area	2	2	1	45	5,016	4	Signal	145.8	53.4	II	23.5	C	0.52	
TOTAL							45	23,549			669.6	196.2	II	24.0	C	0.53	0.156 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 8

Year 2011 METROPLAN Orlando Travel Time Study

SR 423 -Church St. to US 441- Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to US 441	City of Orlando	Arterial	Residential Area	1	2	1	45	1,478	4	Signal	105.6	59.4	II	9.5	F	0.21	
US 441 to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	5,016	4	Signal	96.0	13.8	II	35.6	A	0.79	
Shader Rd. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	4	Signal	94.8	39.6	II	19.0	D	0.42	
Silver Star Rd. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	4	Signal	17.4	0.0	II	41.4	A	0.92	
Lynx Ln. to W. Princeston St.	City of Orlando	Arterial	Residential Area	1	3	1	55	2,006	4	Signal	45.0	7.2	I	30.4	C	0.55	
W. Princeston St. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	0	2	1	55	3,590	4	Signal	49.8	0.0	I	49.2	A	0.89	
W D Judge Dr. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	2,693	4	Signal	100.2	51.0	II	18.3	D	0.41	
W. Colonial Dr. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	1,584	4	Signal	34.8	3.0	II	31.0	B	0.69	
W. Harwood Ave. to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	1	45	950	4	Signal	21.0	2.4	II	30.9	B	0.69	
Old Winter Garden Rd. to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	0	4	1	45	950	4	Signal	33.0	10.2	II	19.6	D	0.44	
SR 408 WB Ramps to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	4	Signal	9.0	0.0	II	32.0	B	0.71	
SR 408 EB Ramps to Church St.	City of Orlando	Arterial	Residential Area	1	3	0	45/35	634	4	Signal	10.8	0.0	II	40.0	A	0.89	
TOTAL							45	23,021			617.4	186.6	II	25.4	C	0.56	0.151 gal/veh
PM PEAK HOUR																	
Median Opening to US 441	City of Orlando	Arterial	Residential Area	1	2	1	45	1,478	4	Signal	124.8	69.0	II	8.1	F	0.18	
US 441 to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	5,016	4	Signal	101.4	20.4	II	33.7	B	0.75	
Shader Rd. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	4	Signal	100.2	47.4	II	18.0	D	0.40	
Silver Star Rd. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	4	Signal	49.8	22.8	II	14.5	E	0.32	
Lynx Ln. to W. Princeston St.	City of Orlando	Arterial	Residential Area	1	3	1	55	2,006	4	Signal	37.2	4.2	I	36.8	B	0.67	
W. Princeston St. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	0	2	1	55	3,590	4	Signal	45.6	0.0	I	53.7	A	0.98	
W D Judge Dr. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	2,693	4	Signal	46.2	1.8	II	39.7	A	0.88	
W. Colonial Dr. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	1,584	4	Signal	46.8	11.4	II	23.1	C	0.51	
W. Harwood Ave. to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	1	45	950	4	Signal	34.2	9.6	II	18.9	D	0.42	
Old Winter Garden Rd. to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	0	4	1	45	950	4	Signal	31.2	4.2	II	20.8	D	0.46	
SR 408 WB Ramps to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	4	Signal	10.2	0.0	II	28.2	B	0.63	
SR 408 EB Ramps to Church St.	City of Orlando	Arterial	Residential Area	1	3	0	45/35	634	4	Signal	10.2	0.0	II	42.4	A	0.94	
TOTAL							45	23,021			637.8	190.8	II	24.6	C	0.55	0.152 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 8

Year 2011 METROPLAN Orlando Travel Time Study

SR 423 -Church St. to US 441- Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
C R Smith St to Church St.	City of Orlando	Arterial	Residential Area	1	3	1	35	2,006	5	Signal	43.2	6.0	II	31.7	B	0.90	
Church St. to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	0	3	1	45	634	5	Signal	11.4	0.6	II	37.9	A	0.84	
SR 408 EB Ramps to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	5	Signal	7.8	0.0	II	36.9	A	0.82	
SR 408 WB Ramps to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	5	Signal	28.2	6.6	II	23.0	C	0.51	
Old Winter Garden Rd. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	5	Signal	52.2	22.8	II	12.4	F	0.28	
W. Harwood Ave. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	1,584	5	Signal	69.6	28.2	II	15.5	E	0.34	
W. Colonial Dr. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	1	2	0	45/55	2,693	5	Signal	44.4	0.0	I	41.4	B	0.75	
W D Judge Dr. to W. Princeston St.	City of Orlando	Arterial	Residential Area	2	3	1	55	3,590	5	Signal	118.8	61.8	I	20.6	E	0.37	
W. Princeston St. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45/55	2,006	5	Signal	60.0	18.6	I	22.8	D	0.41	
Lynx Ln. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	5	Signal	18.0	0.0	II	40.0	A	0.89	
Silver Star Rd. to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	5	Signal	49.2	11.4	II	36.6	A	0.81	
Shader Rd. to US 441	City of Orlando	Arterial	Residential Area	2	2	1	45	5,016	5	Signal	85.8	15.0	II	39.9	A	0.89	
TOTAL							45	23,549			588.6	171.0	II	27.3	C	0.61	0.158 gal/veh
PM PEAK HOUR																	
C R Smith St to Church St.	City of Orlando	Arterial	Residential Area	1	3	1	35	2,006	5	Signal	36.6	0.0	II	37.4	A	1.07	
Church St. to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	0	3	1	45	634	5	Signal	8.4	0.0	II	51.4	A	1.14	
SR 408 EB Ramps to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	5	Signal	15.0	3.0	II	19.2	D	0.43	
SR 408 WB Ramps to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	5	Signal	62.4	27.0	II	10.4	F	0.23	
Old Winter Garden Rd. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	950	5	Signal	18.0	0.0	II	36.0	A	0.80	
W. Harwood Ave. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	1,584	5	Signal	109.8	65.4	II	9.8	F	0.22	
W. Colonial Dr. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	1	2	0	45/55	2,693	5	Signal	42.0	0.0	I	43.7	A	0.79	
W D Judge Dr. to W. Princeston St.	City of Orlando	Arterial	Residential Area	2	3	1	55	3,590	5	Signal	51.6	0.0	I	47.4	A	0.86	
W. Princeston St. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45/55	2,006	5	Signal	48.0	4.2	I	28.5	C	0.52	
Lynx Ln. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	5	Signal	19.2	0.0	II	37.5	A	0.83	
Silver Star Rd. to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	5	Signal	53.4	9.6	II	33.7	B	0.75	
Shader Rd. to US 441	City of Orlando	Arterial	Residential Area	2	2	1	45	5,016	5	Signal	96.0	26.4	II	35.6	A	0.79	
TOTAL							45	23,549			560.4	135.6	II	28.7	B	0.64	0.153 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 8

Year 2011 METROPLAN Orlando Travel Time Study

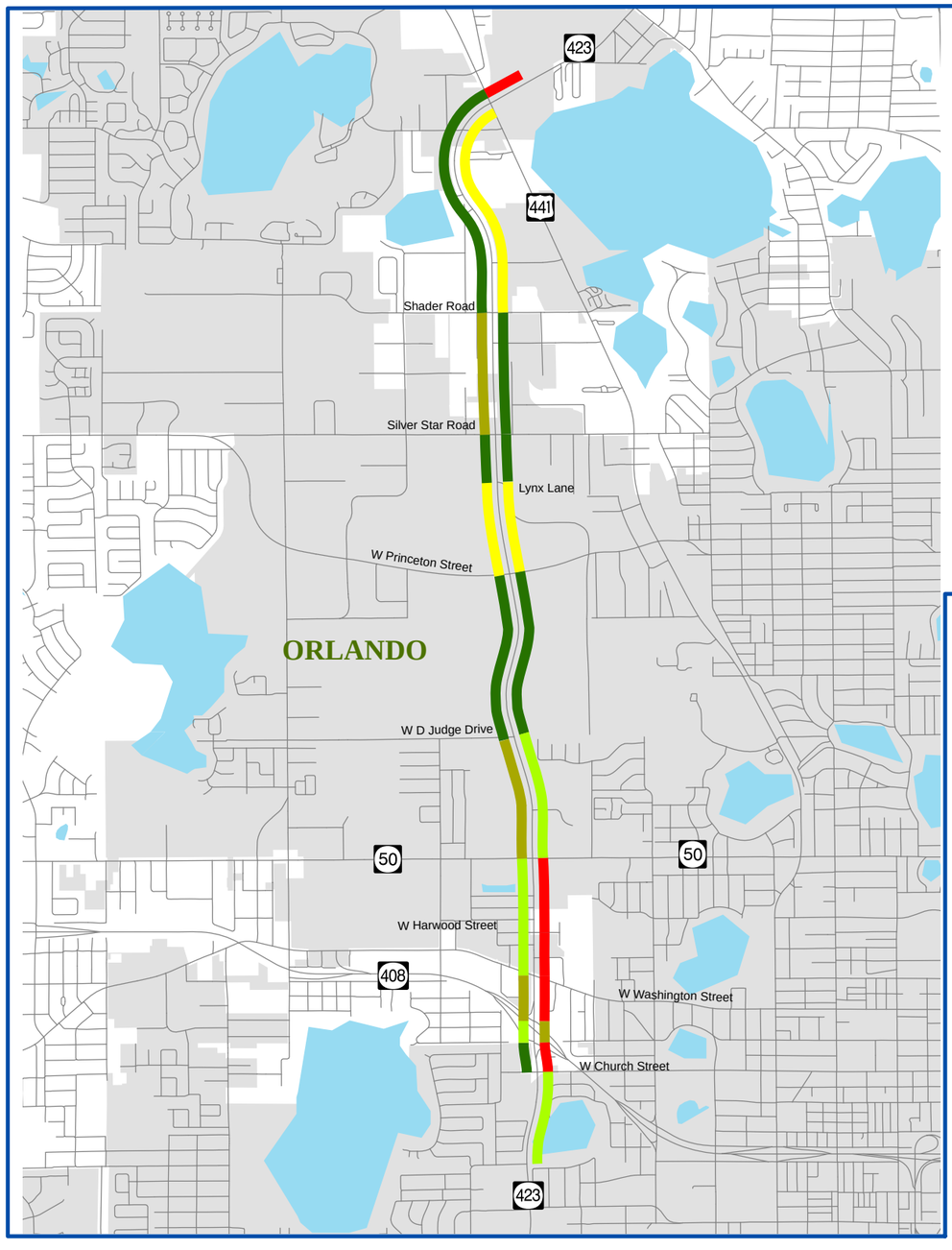
SR 423 -Church St. to US 441- Southbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to US 441	City of Orlando	Arterial	Residential Area	1	2	1	45	1,478	5	Signal	82.8	36.6	II	12.2	F	0.27	
US 441 to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	5,016	5	Signal	74.4	0.0	II	46.0	A	1.02	
Shader Rd. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	5	Signal	43.2	0.0	II	41.7	A	0.93	
Silver Star Rd. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	5	Signal	15.6	0.0	II	46.2	A	1.03	
Lynx Ln. to W. Princeston St.	City of Orlando	Arterial	Residential Area	1	3	1	55	2,006	5	Signal	36.0	0.0	I	38.0	B	0.69	
W. Princeston St. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	0	2	1	55	3,590	5	Signal	51.0	0.0	I	48.0	A	0.87	
W D Judge Dr. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	2,693	5	Signal	47.4	1.2	II	38.7	A	0.86	
W. Colonial Dr. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	1,584	5	Signal	28.2	0.0	II	38.3	A	0.85	
W. Harwood Ave. to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	1	45	950	5	Signal	44.4	18.0	II	14.6	E	0.32	
Old Winter Garden Rd. to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	0	4	1	45	950	5	Signal	39.0	19.8	II	16.6	E	0.37	
SR 408 WB Ramps to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	5	Signal	9.6	0.0	II	30.0	B	0.67	
SR 408 EB Ramps to Church St.	City of Orlando	Arterial	Residential Area	1	3	0	45/35	634	5	Signal	16.8	5.4	II	25.7	C	0.57	
TOTAL							45	23,021			488.4	81.0	II	32.1	B	0.71	0.150 gal/veh
PM PEAK HOUR																	
Median Opening to US 441	City of Orlando	Arterial	Residential Area	1	2	1	45	1,478	5	Signal	79.2	31.8	II	12.7	F	0.28	
US 441 to Shader Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	5,016	5	Signal	70.2	0.0	II	48.7	A	1.08	
Shader Rd. to Silver Star Rd.	City of Orlando	Arterial	Residential Area	1	2	1	45	2,640	5	Signal	39.6	0.0	II	45.5	A	1.01	
Silver Star Rd. to Lynx Ln.	City of Orlando	Arterial	Residential Area	1	2	1	45	1,056	5	Signal	15.6	0.0	II	46.2	A	1.03	
Lynx Ln. to W. Princeston St.	City of Orlando	Arterial	Residential Area	1	3	1	55	2,006	5	Signal	105.0	57.6	I	13.0	F	0.24	
W. Princeston St. to W D Judge Dr.	City of Orlando	Arterial	Residential Area	0	2	1	55	3,590	5	Signal	46.2	0.0	I	53.0	A	0.96	
W D Judge Dr. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	2	3	1	45	2,693	5	Signal	81.6	31.8	II	22.5	C	0.50	
W. Colonial Dr. to W. Harwood Ave.	City of Orlando	Arterial	Residential Area	1	3	0	45	1,584	5	Signal	28.2	0.0	II	38.3	A	0.85	
W. Harwood Ave. to Old Winter Garden Rd.	City of Orlando	Arterial	Residential Area	1	3	1	45	950	5	Signal	38.4	16.2	II	16.9	E	0.37	
Old Winter Garden Rd. to SR 408 WB Ramps	City of Orlando	Arterial	Residential Area	0	4	1	45	950	5	Signal	42.6	21.6	II	15.2	E	0.34	
SR 408 WB Ramps to SR 408 EB Ramps	City of Orlando	Arterial	Residential Area	1	3	0	45	422	5	Signal	8.4	0.0	II	34.3	B	0.76	
SR 408 EB Ramps to Church St.	City of Orlando	Arterial	Residential Area	1	3	0	45/35	634	5	Signal	12.6	4.2	II	34.3	B	0.76	
TOTAL							45	23,021			567.6	163.2	II	27.7	C	0.61	0.151 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.



SR 423 - AM Peak

Before Condition

Date of Collection: 1/26/2011
Distance: 4.13 miles
From: Church St.
To: US 441.

Start Time: 7:15 AM
End Time: 9:00 AM

NB Avg Speed: 21.60 MPH
NB Travel Time: 12.37 MIN
NB Delay Time: 4.68 MIN

SB Avg Speed: 25.40 MPH
SB Travel Time: 10.29 MIN
SB Delay Time: 3.11 MIN

SR 423 - AM Peak

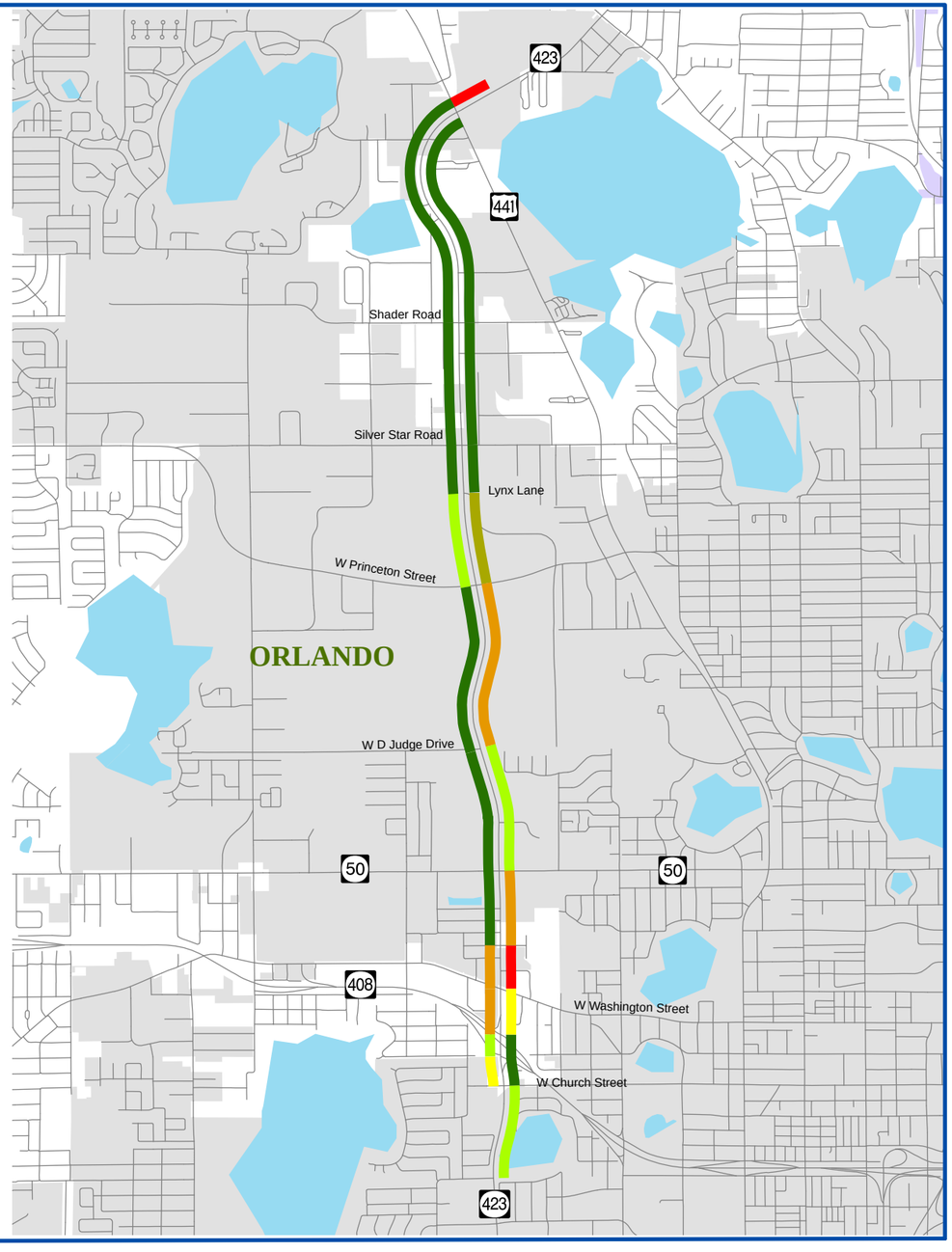
After Condition

Date of Collection: 6/1/2011
Distance: 4.13 miles
From: Church St.
To: US 441.

Start Time: 7:15 AM
End Time: 9:00 AM

NB Avg Speed: 27.30 MPH
NB Travel Time: 9.81 MIN
NB Delay Time: 2.85 MIN

SB Avg Speed: 32.10 MPH
SB Travel Time: 8.14 MIN
SB Delay Time: 1.35 MIN



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Level of Services:

A
B
C
D
E
F

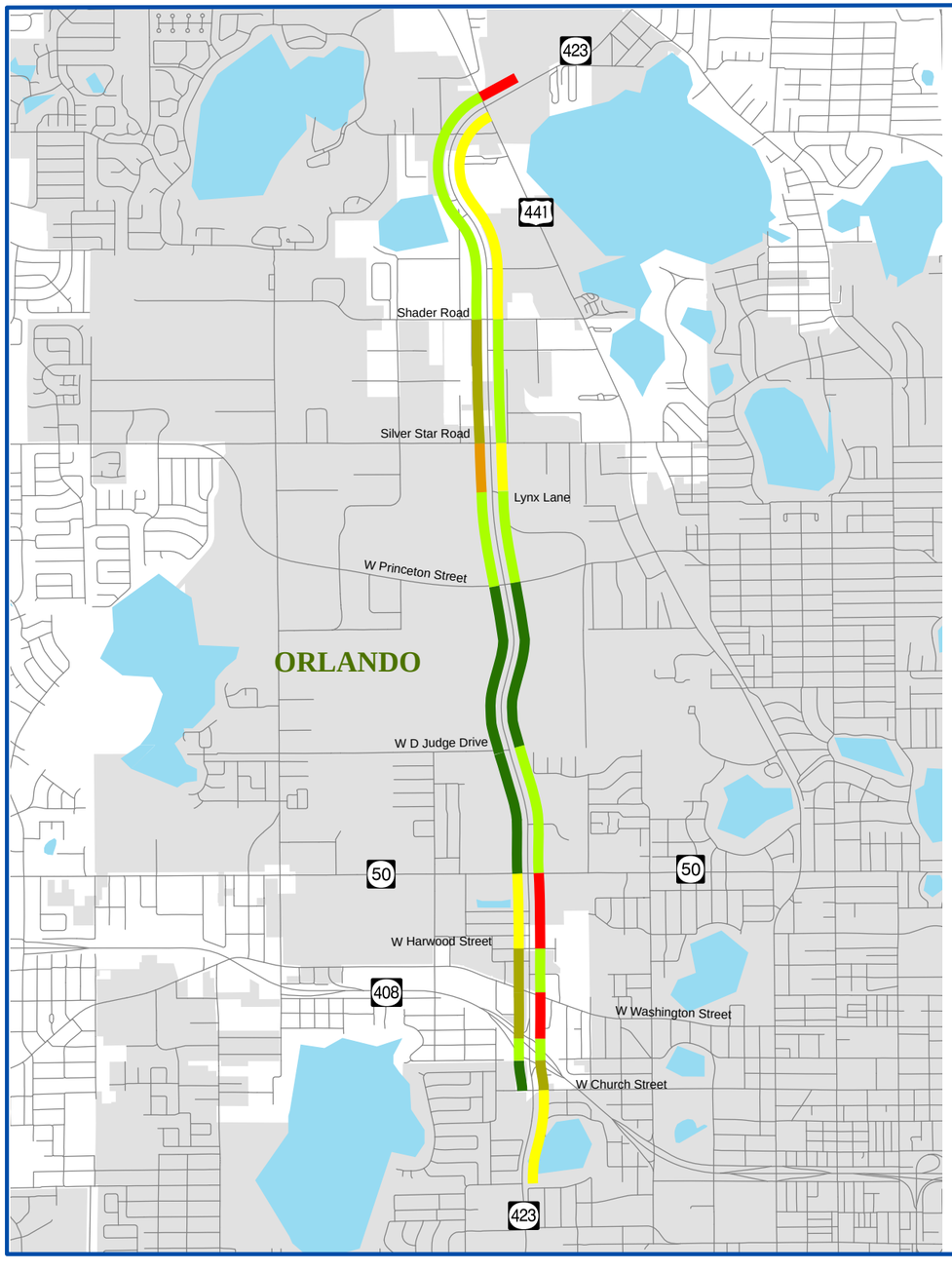
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

Miles
0 0.5 1



SR 423 - PM Peak

Before Condition

Date of Collection: 1/26/2011
Distance: 4.13 miles
From: Church St.
To: US 441.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 24.00 MPH
NB Travel Time: 11.16 MIN
NB Delay Time: 3.27 MIN

SB Avg Speed: 24.60 MPH
SB Travel Time: 10.63 MIN
SB Delay Time: 3.18 MIN

SR 423 - PM Peak

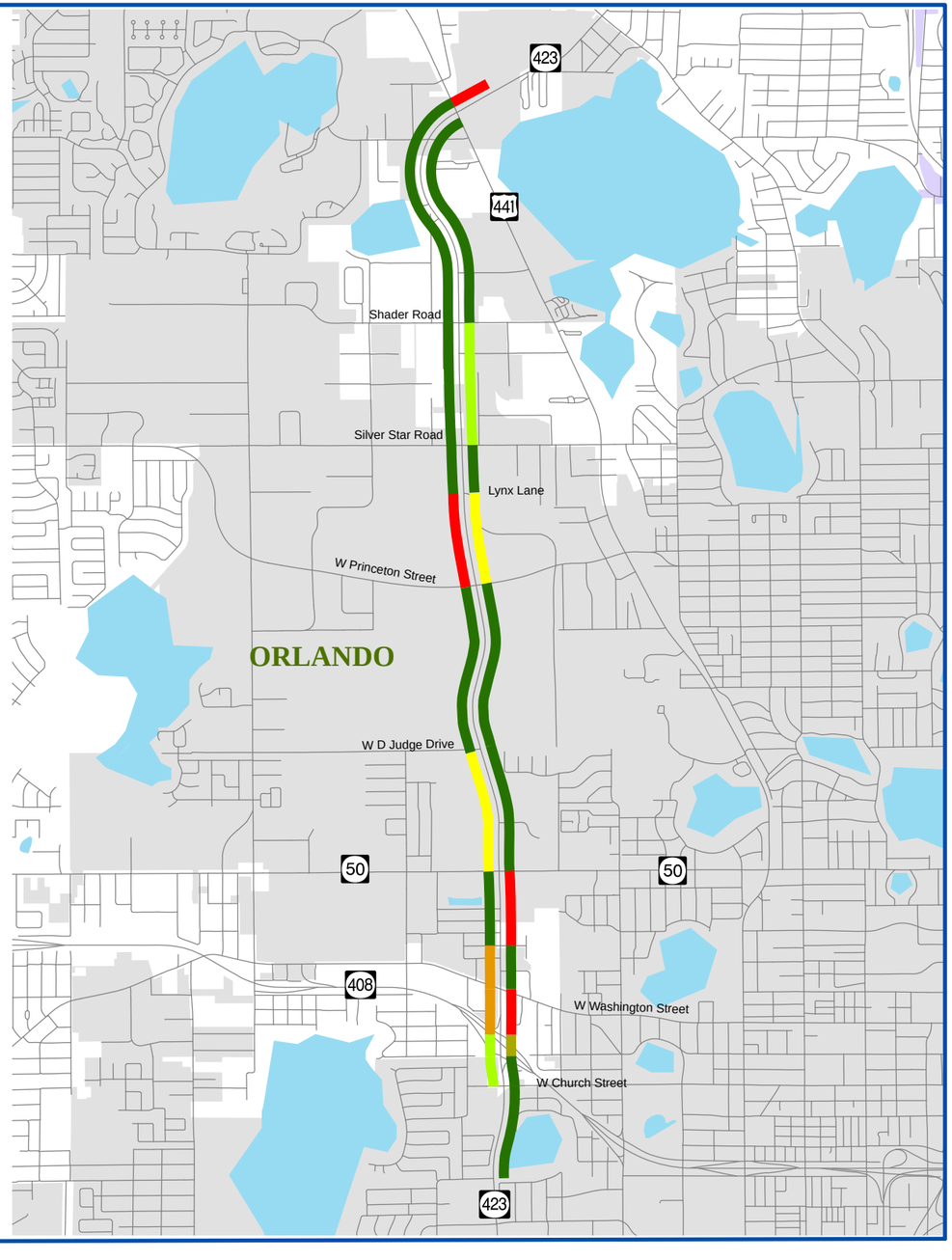
After Condition

Date of Collection: 6/1/2011
Distance: 4.13 miles
From: Church St.
To: US 441.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 28.70 MPH
NB Travel Time: 9.34 MIN
NB Delay Time: 2.26 MIN

SB Avg Speed: 27.70 MPH
SB Travel Time: 9.46 MIN
SB Delay Time: 2.72 MIN



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Level of Services:

A	D	Roads	
B	E	City Boundary	
C	F	Water	

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

Miles
0 0.5 1

SR 423 : Church Street to US 441

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1916	**742.2**	**280.8**	**21.6**	0.1580	395.02	302.73
Northbound/Eastbound - PM Peak Hour						
2293	**669.6**	**196.2**	**24.0**	0.1560	426.50	357.71
Southbound/Westbound - AM Peak Hour						
1372	**617.4**	**186.6**	**25.4**	0.1510	235.30	207.17
Southbound/Westbound - PM Peak Hour						
2223	**637.8**	**190.8**	**24.6**	0.1520	393.84	337.90

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information

SR 423 : Church Street to US 441

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1916	**588.6**	**171.0**	**27.3**	0.1580	313.27	302.73
Northbound/Eastbound - PM Peak Hour						
2293	**560.4**	**135.6**	**28.7**	0.1530	356.94	350.83
Southbound/Westbound - AM Peak Hour						
1372	**488.4**	**81.0**	**32.1**	0.1500	186.13	205.80
Southbound/Westbound - PM Peak Hour						
2223	**567.6**	**163.2**	**27.7**	0.1510	350.49	335.67

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information

SR 423 : Church Street to US 441

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	630.31	499.40	820.34	707.44
Total Fuel Consumption (gallons)	509.90	508.53	695.60	686.50

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$2,138.60	$1,871.63
Annual User Benefit	**$641,578.84**	**$561,488.12**
Total Annual User Benefit =	**$1,203,066.96**	
Total Signal Retiming Annual Cost	$18,614.37	
User Benefit / Cost Ratio	**64.63**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

SR 50

Pete Parrish Blvd. to Summerlin Ave.

TABLE 9

Year 2010 METROPLAN Orlando Travel Time Study

SR 50 - Pete Parrish Blvd. to Summerlin Ave. - Eastbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	0	45	686	5	Signal	19.8	9.0	II	23.6	C	0.53	
Pete Parrish Blvd. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	5	Signal	58.2	21.6	II	22.9	C	0.51	
Fairvilla Rd. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	686	5	Signal	27.0	13.2	II	17.3	D	0.39	
Mercy Dr. to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	5	Signal	55.8	3.6	II	40.0	A	0.89	
Ferguson Dr. to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	1,954	5	Signal	75.6	42.0	II	17.6	D	0.39	
SR 423 to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	950	5	Signal	15.6	0.0	II	41.5	A	0.92	
O.C. Sheriff to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	1	45	1,584	5	Signal	24.6	0.0	II	43.9	A	0.98	
N. Tampa Ave. to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	5	Signal	46.2	0.0	II	39.0	A	0.97	
Springdale Rd. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	581	5	Signal	65.4	48.0	II	6.1	F	0.15	
US 441 to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	739	5	Signal	16.8	0.0	II	30.0	B	0.75	
Westmoreland Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,320	5	Signal	41.4	10.8	II	21.7	D	0.54	
Parramore Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	1	2	0	40	475	5	Signal	12.0	0.6	II	27.0	C	0.67	
Edgewater Dr. to Hughey Ave.	City of Orlando	Arterial	OBD	0	3	1	40	1,426	5	Signal	60.0	27.0	II	16.2	E	0.40	
Hughey Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	422	5	Signal	9.0	0.0	II	32.0	B	0.80	
N Garland Ave. to Orange Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	5	Signal	43.2	23.4	II	13.3	E	0.33	
Orange Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	5	Signal	23.4	6.0	II	21.5	D	0.54	
Magnolia Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,003	5	Signal	29.4	10.8	II	23.3	C	0.58	
Highland Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	5	Signal	43.2	10.2	II	25.8	C	0.65	
TOTAL							40	22,915			666.6	226.2	II	23.4	C	0.59	0.156 gal/veh
PM PEAK HOUR																	
Median Opening to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	42.6	25.2	II	11.0	F	0.24	
Pete Parrish Blvd. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	6	Signal	34.2	0.0	II	38.9	A	0.87	
Fairvilla Rd. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	10.8	0.0	II	43.3	A	0.96	
Mercy Dr. to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	6	Signal	52.8	0.0	II	42.3	A	0.94	
Ferguson Dr. to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	1,954	6	Signal	49.8	6.6	II	26.7	C	0.59	
SR 423 to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	950	6	Signal	17.4	0.0	II	37.2	A	0.83	
O.C. Sheriff to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	1	45	1,584	6	Signal	29.4	0.0	II	36.7	A	0.82	
N. Tampa Ave. to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	6	Signal	58.2	4.2	II	30.9	B	0.77	
Springdale Rd. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	581	6	Signal	37.2	17.4	II	10.6	F	0.27	
US 441 to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	18.0	0.0	II	28.0	C	0.70	
Westmoreland Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,320	6	Signal	49.2	14.4	II	18.3	D	0.46	
Parramore Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	1	2	0	40	475	6	Signal	10.8	0.0	II	30.0	B	0.75	
Edgewater Dr. to Hughey Ave.	City of Orlando	Arterial	OBD	0	3	1	40	1,426	6	Signal	67.2	32.4	II	14.5	E	0.36	
Hughey Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	422	6	Signal	12.6	0.0	II	22.9	C	0.57	
N Garland Ave. to Orange Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	6	Signal	77.4	51.0	II	7.4	F	0.19	
Orange Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	24.0	2.4	II	21.0	D	0.52	
Magnolia Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,003	6	Signal	31.2	7.8	II	21.9	D	0.55	
Highland Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	6	Signal	138.6	77.4	II	8.1	F	0.20	
TOTAL							40	22,915			761.4	238.8	II	20.5	D	0.51	0.165 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 9

Year 2010 METROPLAN Orlando Travel Time Study

SR 50 - Pete Parrish Blvd. to Summerlin Ave. - Westbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Hyer Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	634	5	Signal	16.8	1.2	II	25.7	C	0.64	
N. Summerlin Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	5	Signal	30.0	0.6	II	37.2	A	0.93	
Highland Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,003	5	Signal	66.6	35.4	II	10.3	F	0.26	
Magnolia Ave. to Orange Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	5	Signal	15.0	0.0	II	33.6	B	0.84	
Orange Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	5	Signal	15.6	0.0	II	36.9	A	0.92	
N Garland Ave. to Hughey Ave.	City of Orlando	Arterial	OBD	1	2	1	40	422	5	Signal	13.2	4.2	II	21.8	D	0.55	
Hughey Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	0	2	1	40	1,426	5	Signal	59.4	25.2	II	16.4	E	0.41	
Edgewater Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	1	2	0	40	475	5	Signal	15.0	1.2	II	21.6	D	0.54	
Parramore Ave. to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	1,320	5	Signal	32.4	5.4	II	27.8	C	0.69	
Westmoreland Dr. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	739	5	Signal	66.6	44.4	II	7.6	F	0.19	
US 441 to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	581	5	Signal	12.0	0.0	II	33.0	B	0.82	
Springdale Rd. to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	5	Signal	60.0	11.4	II	30.0	B	0.75	
N. Tampa Ave. to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	1,584	5	Signal	25.2	0.0	II	42.9	A	0.95	
O.C. Sheriff to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	950	5	Signal	62.4	40.2	II	10.4	F	0.23	
SR 423 to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	5	Signal	33.0	0.0	II	40.4	A	0.90	
Ferguson Dr. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	5	Signal	51.6	0.0	II	43.3	A	0.96	
Mercy Dr. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	686	5	Signal	13.8	0.6	II	33.9	B	0.75	
Fairvilla Rd. to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	1	45	1,954	5	Signal	73.8	34.2	II	18.0	D	0.40	
TOTAL							40	22,862			662.4	204.0	II	23.5	C	0.59	0.159 gal/veh
PM PEAK HOUR																	
Hyer Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	634	7	Signal	27.0	7.2	II	16.0	E	0.40	
N. Summerlin Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	7	Signal	102.0	50.4	II	10.9	F	0.27	
Highland Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,003	7	Signal	114.0	75.6	II	6.0	F	0.15	
Magnolia Ave. to Orange Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	7	Signal	21.6	1.2	II	23.3	C	0.58	
Orange Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	7	Signal	20.4	0.0	II	28.2	B	0.71	
N Garland Ave. to Hughey Ave.	City of Orlando	Arterial	OBD	1	2	1	40	422	7	Signal	19.8	10.8	II	14.5	E	0.36	
Hughey Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	0	2	1	40	1,426	7	Signal	40.2	7.2	II	24.2	C	0.60	
Edgewater Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	1	2	0	40	475	7	Signal	19.2	3.6	II	16.9	E	0.42	
Parramore Ave. to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	1,320	7	Signal	42.0	8.4	II	21.4	D	0.54	
Westmoreland Dr. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	739	7	Signal	97.8	70.2	II	5.2	F	0.13	
US 441 to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	581	7	Signal	11.4	0.0	II	34.7	B	0.87	
Springdale Rd. to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	7	Signal	63.0	15.0	II	28.6	B	0.71	
N. Tampa Ave. to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	1,584	7	Signal	45.0	13.2	II	24.0	C	0.53	
O.C. Sheriff to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	950	7	Signal	51.0	24.6	II	12.7	F	0.28	
SR 423 to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	7	Signal	33.6	0.0	II	39.6	A	0.88	
Ferguson Dr. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	7	Signal	51.0	0.0	II	43.8	A	0.97	
Mercy Dr. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	686	7	Signal	10.2	0.0	II	45.9	A	1.02	
Fairvilla Rd. to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	1	45	1,954	7	Signal	30.6	0.0	II	43.5	A	0.97	
TOTAL							40	22,862			799.8	287.4	II	19.5	D	0.49	0.164 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 9

Year 2010 METROPLAN Orlando Travel Time Study

SR 50 - Pete Parrish Blvd. to Summerlin Ave. - Eastbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	0	45	686	5	Signal	7.2	0.0	II	65.0	A	1.44	
Pete Parrish Blvd. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	5	Signal	31.2	4.2	II	42.7	A	0.95	
Fairvilla Rd. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	686	5	Signal	9.6	0.0	II	48.7	A	1.08	
Mercy Dr. to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	5	Signal	49.2	0.0	II	45.4	A	1.01	
Ferguson Dr. to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	1,954	5	Signal	39.0	4.8	II	34.2	B	0.76	
SR 423 to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	950	5	Signal	15.6	0.0	II	41.5	A	0.92	
O.C. Sheriff to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	1	45	1,584	5	Signal	36.0	7.8	II	30.0	B	0.67	
N. Tampa Ave. to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	5	Signal	53.4	3.0	II	33.7	B	0.84	
Springdale Rd. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	581	5	Signal	22.8	6.0	II	17.4	D	0.43	
US 441 to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	739	5	Signal	15.6	0.0	II	32.3	B	0.81	
Westmoreland Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,320	5	Signal	31.2	0.0	II	28.8	B	0.72	
Parramore Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	1	2	0	40	475	5	Signal	10.8	0.0	II	30.0	B	0.75	
Edgewater Dr. to Hughey Ave.	City of Orlando	Arterial	OBD	0	3	1	40	1,426	5	Signal	67.2	34.2	II	14.5	E	0.36	
Hughey Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	422	5	Signal	10.2	0.0	II	28.2	B	0.71	
N Garland Ave. to Orange Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	5	Signal	51.0	28.2	II	11.3	F	0.28	
Orange Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	5	Signal	16.2	0.0	II	31.1	B	0.78	
Magnolia Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,003	5	Signal	22.2	2.4	II	30.8	B	0.77	
Highland Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	5	Signal	42.6	6.6	II	26.2	C	0.65	
TOTAL							40	22,915			531.0	97.2	II	29.4	B	0.74	0.155 gal/veh
PM PEAK HOUR																	
Median Opening to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	11.4	2.4	II	41.1	A	0.91	
Pete Parrish Blvd. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	6	Signal	42.0	9.6	II	31.7	B	0.70	
Fairvilla Rd. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	28.2	13.2	II	16.6	E	0.37	
Mercy Dr. to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	6	Signal	56.4	0.6	II	39.6	A	0.88	
Ferguson Dr. to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	1,954	6	Signal	52.2	9.6	II	25.5	C	0.57	
SR 423 to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	950	6	Signal	16.8	0.0	II	38.6	A	0.86	
O.C. Sheriff to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	1	45	1,584	6	Signal	34.2	0.6	II	31.6	B	0.70	
N. Tampa Ave. to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	6	Signal	45.6	0.0	II	39.5	A	0.99	
Springdale Rd. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	581	6	Signal	11.4	0.0	II	34.7	B	0.87	
US 441 to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	13.8	0.0	II	36.5	A	0.91	
Westmoreland Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,320	6	Signal	27.0	0.0	II	33.3	B	0.83	
Parramore Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	1	2	0	40	475	6	Signal	9.6	0.0	II	33.7	B	0.84	
Edgewater Dr. to Hughey Ave.	City of Orlando	Arterial	OBD	0	3	1	40	1,426	6	Signal	26.4	0.0	II	36.8	A	0.92	
Hughey Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	422	6	Signal	7.2	0.0	II	40.0	A	1.00	
N Garland Ave. to Orange Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	6	Signal	39.6	20.4	II	14.5	E	0.36	
Orange Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	42.0	24.0	II	12.0	F	0.30	
Magnolia Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,003	6	Signal	18.0	0.0	II	38.0	A	0.95	
Highland Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	6	Signal	30.0	2.4	II	37.2	A	0.93	
TOTAL							40	22,915			511.8	82.8	II	30.5	B	0.76	0.156 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

TABLE 9

Year 2010 METROPLAN Orlando Travel Time Study

SR 50 - Pete Parrish Blvd. to Summerlin Ave. - Westbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Hyer Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	634	6	Signal	12.0	0.0	II	36.0	A	0.90	
N. Summerlin Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	6	Signal	24.6	0.0	II	45.4	A	1.13	
Highland Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,003	6	Signal	22.2	0.0	II	30.8	B	0.77	
Magnolia Ave. to Orange Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	26.4	7.2	II	19.1	D	0.48	
Orange Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	6	Signal	45.6	21.0	II	12.6	F	0.32	
N Garland Ave. to Hughey Ave.	City of Orlando	Arterial	OBD	1	2	1	40	422	6	Signal	34.8	19.8	II	8.3	F	0.21	
Hughey Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	0	2	1	40	1,426	6	Signal	27.0	0.0	II	36.0	A	0.90	
Edgewater Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	1	2	0	40	475	6	Signal	8.4	0.0	II	38.6	A	0.96	
Parramore Ave. to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	1,320	6	Signal	32.4	4.2	II	27.8	C	0.69	
Westmoreland Dr. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	739	6	Signal	61.2	36.6	II	8.2	F	0.21	
US 441 to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	581	6	Signal	11.4	0.0	II	34.7	B	0.87	
Springdale Rd. to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	6	Signal	47.4	1.2	II	38.0	A	0.95	
N. Tampa Ave. to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	1,584	6	Signal	23.4	0.0	II	46.2	A	1.03	
O.C. Sheriff to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	950	6	Signal	21.6	2.4	II	30.0	B	0.67	
SR 423 to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	6	Signal	30.6	0.0	II	43.5	A	0.97	
Ferguson Dr. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	6	Signal	46.2	0.0	II	48.3	A	1.07	
Mercy Dr. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	9.0	0.0	II	52.0	A	1.16	
Fairvilla Rd. to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	1	45	1,954	6	Signal	28.2	0.0	II	47.2	A	1.05	
TOTAL							40	22,862			512.4	92.4	II	30.4	B	0.76	0.156 gal/veh
PM PEAK HOUR																	
Hyer Ave. to N. Summerlin Ave.	City of Orlando	Arterial	OBD	1	2	0	40	634	6	Signal	33.6	3.6	II	12.9	F	0.32	
N. Summerlin Ave. to Highland Ave.	City of Orlando	Arterial	OBD	1	2	0	40	1,637	6	Signal	30.6	0.0	II	36.5	A	0.91	
Highland Ave. to Magnolia Ave.	City of Orlando	Arterial	OBD	0	2	0	40	1,003	6	Signal	29.4	4.8	II	23.3	C	0.58	
Magnolia Ave. to Orange Ave.	City of Orlando	Arterial	OBD	1	2	0	40	739	6	Signal	15.0	0.0	II	33.6	B	0.84	
Orange Ave. to N Garland Ave.	City of Orlando	Arterial	OBD	0	2	1	40	845	6	Signal	30.0	11.4	II	19.2	D	0.48	
N Garland Ave. to Hughey Ave.	City of Orlando	Arterial	OBD	1	2	1	40	422	6	Signal	24.0	13.2	II	12.0	F	0.30	
Hughey Ave. to Edgewater Dr.	City of Orlando	Arterial	OBD	0	2	1	40	1,426	6	Signal	26.4	0.0	II	36.8	A	0.92	
Edgewater Dr. to Parramore Ave.	City of Orlando	Arterial	OBD	1	2	0	40	475	6	Signal	19.8	6.0	II	16.4	E	0.41	
Parramore Ave. to Westmoreland Dr.	City of Orlando	Arterial	OBD	1	2	0	40	1,320	6	Signal	30.6	1.8	II	29.4	B	0.74	
Westmoreland Dr. to US 441	City of Orlando	Arterial	OBD	1	2	1	40	739	6	Signal	50.4	30.6	II	10.0	F	0.25	
US 441 to Springdale Rd.	City of Orlando	Arterial	OBD	1	2	0	40	581	6	Signal	11.4	0.0	II	34.7	B	0.87	
Springdale Rd. to N. Tampa Ave.	City of Orlando	Arterial	OBD	1	2	0	40	2,640	6	Signal	49.8	9.0	II	36.1	A	0.90	
N. Tampa Ave. to O.C. Sheriff	City of Orlando	Arterial	OBD	1	3	0	45	1,584	6	Signal	32.4	7.2	II	33.3	B	0.74	
O.C. Sheriff to SR 423	City of Orlando	Arterial	OBD	2	3	1	45	950	6	Signal	20.4	0.0	II	31.8	B	0.71	
SR 423 to Ferguson Dr.	City of Orlando	Arterial	OBD	1	3	0	45	1,954	6	Signal	30.6	0.0	II	43.5	A	0.97	
Ferguson Dr. to Mercy Dr.	City of Orlando	Arterial	OBD	1	3	0	45	3,274	6	Signal	45.6	0.0	II	48.9	A	1.09	
Mercy Dr. to Fairvilla Rd.	City of Orlando	Arterial	OBD	1	3	0	45	686	6	Signal	11.4	0.0	II	41.1	A	0.91	
Fairvilla Rd. to Pete Parrish Blvd.	City of Orlando	Arterial	OBD	1	3	1	45	1,954	6	Signal	29.4	0.0	II	45.3	A	1.01	
TOTAL							40	22,862			520.8	87.6	II	29.9	B	0.75	0.154 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

SR 50 - AM Peak

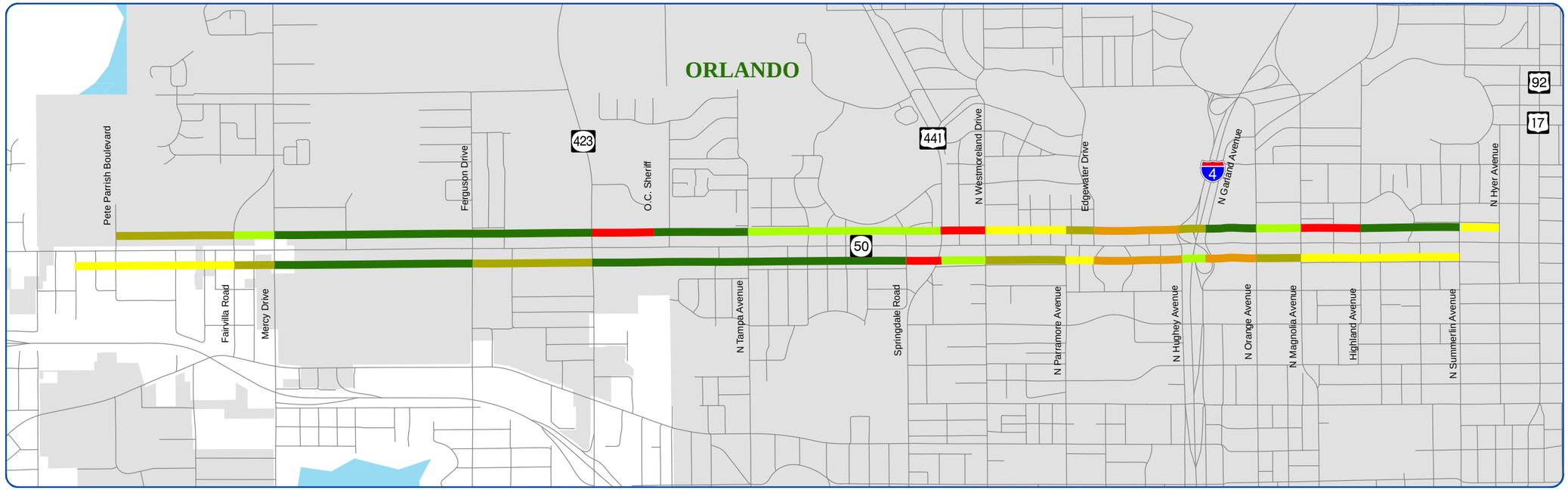
Before Condition

Date of Collection: 2/1/2011
Distance: 4.26 miles
From: Pete Parrish Blvd.
To: Summerlin Ave.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 23.4 MPH
EB Travel Time: 11.11 MIN
EB Delay Time: 3.77 MIN

WB Avg Speed: 23.5 MPH
WB Travel Time: 11.04 MIN
WB Delay Time: 3.40 MIN



SR 50 - AM Peak

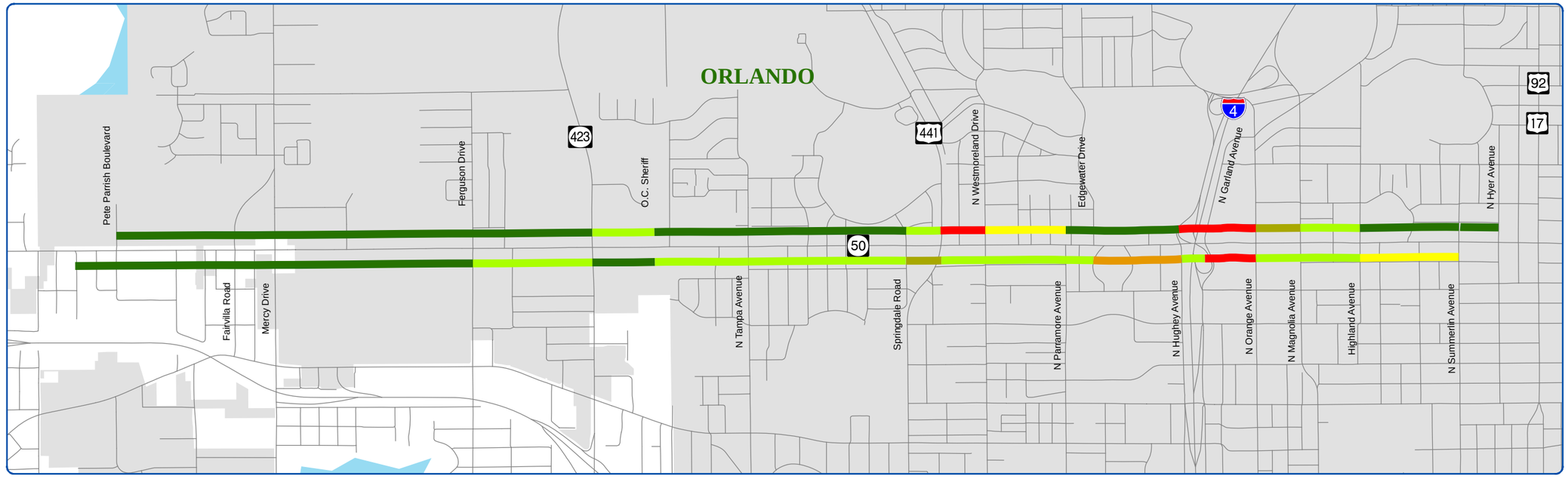
After Condition

Date of Collection: 5/24/2011
Distance: 4.26 miles
From: Pete Parrish Blvd.
To: Summerlin Ave.

Start Time: 7:00 AM
End Time: 9:00 AM

EB Avg Speed: 29.4 MPH
EB Travel Time: 8.85 MIN
EB Delay Time: 1.62 MIN

WB Avg Speed: 30.4 MPH
WB Travel Time: 8.54 MIN
WB Delay Time: 1.54 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

Miles
0 0.5 1

SR 50 - PM Peak

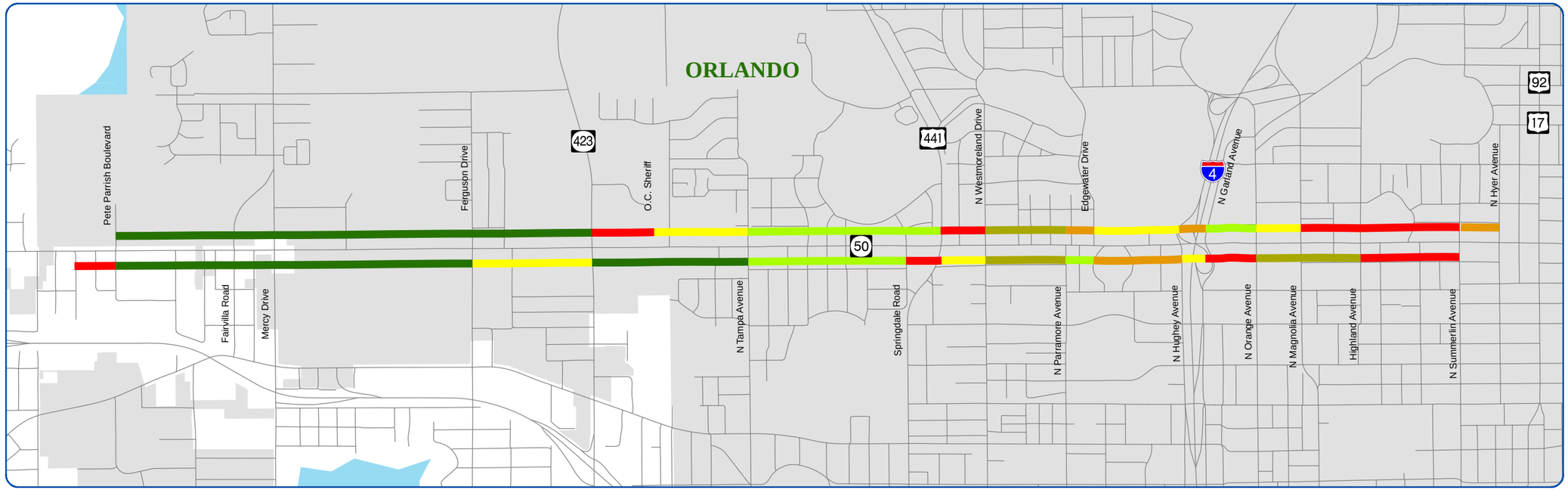
Before Condition

Date of Collection: 2/1/2011
Distance: 4.26 miles
From: Pete Parrish Blvd.
To: Summerlin Ave.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 20.5 MPH
EB Travel Time: 12.69 MIN
EB Delay Time: 3.98 MIN

WB Avg Speed: 19.5 MPH
WB Travel Time: 13.33 MIN
WB Delay Time: 4.79 MIN



SR 50 - PM Peak

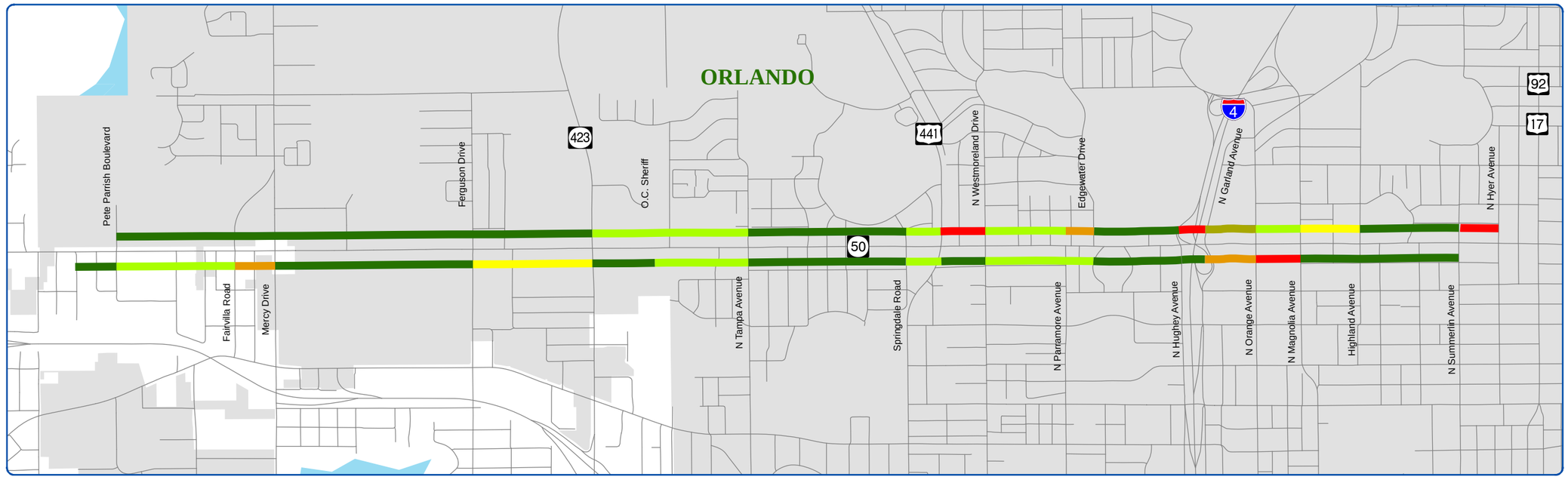
After Condition

Date of Collection: 5/24/2011
Distance: 4.26 miles
From: Pete Parrish Blvd.
To: Summerlin Ave.

Start Time: 4:00 PM
End Time: 6:00 PM

EB Avg Speed: 30.5 MPH
EB Travel Time: 8.53 MIN
EB Delay Time: 1.38 MIN

WB Avg Speed: 29.9 MPH
WB Travel Time: 8.68 MIN
WB Delay Time: 1.46 MIN



metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

SR 50 : Pete Parrish Boulevard to Summerlin Avenue

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1076	**666.6**	**226.2**	**23.4**	0.156	199.24	167.86
Northbound/Eastbound - PM Peak Hour						
940	**761.4**	**238.8**	**20.5**	0.1650	198.81	155.10
Southbound/Westbound - AM Peak Hour						
670	**662.4**	**204.0**	**23.5**	0.1590	123.22	106.48
Southbound/Westbound - PM Peak Hour						
1270	**799.8**	**287.4**	**19.5**	0.1640	282.15	208.28

*Traffic Volumes are obtained from the latest Orange County Counts, 2010.

SR 50 : Pete Parrish Boulevard to Summerlin Avenue

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1076	**531.0**	**97.2**	**29.4**	0.1550	158.71	166.78
Northbound/Eastbound - PM Peak Hour						
940	**511.8**	**82.8**	**30.5**	0.1560	133.64	146.64
Southbound/Westbound - AM Peak Hour						
670	**512.4**	**92.4**	**30.4**	0.1560	95.32	104.47
Southbound/Westbound - PM Peak Hour						
1270	**520.8**	**87.6**	**29.9**	0.1540	183.73	195.58

*Traffic Volumes are obtained from the latest Orange County Counts, 2010.

SR 50 : Pete Parrish Boulevard to Summerlin Avenue

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	322.46	254.03	480.96	317.36
Total Fuel Consumption (gallons)	274.33	271.25	363.38	342.22

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,126.06	$2,739.44
Annual User Benefit	**$337,816.74**	**$821,832.97**
Total Annual User Benefit =	**$1,159,649.71**	
Total Signal Retiming Annual Cost	$32,084.55	
User Benefit / Cost Ratio	**36.14**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

US 441

Grand St. to SR 50

TABLE 10

Year 2011 METROPLAN Orlando Travel Time Study

US 441 - Grand St. to SR 50 - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Indiana St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	22.2	4.2	II	9.7	F	0.28	
Grand St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,690	7	Signal	57.6	21.0	II	20.0	D	0.57	
W. Gore St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	7	Signal	42.0	10.2	II	21.4	D	0.61	
Carter St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	7.2	1.2	II	30.0	B	0.86	
Long St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	317	7	Signal	9.0	0.6	II	24.0	C	0.69	
W. Anderson St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	634	7	Signal	13.8	0.0	II	31.3	B	0.89	
W. South St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	7	Signal	15.0	0.0	II	31.2	B	0.89	
W. Church St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	7	Signal	13.8	0.0	II	33.9	B	0.97	
W. Central St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	7	Signal	49.2	30.6	II	9.5	F	0.27	
W. Washingston St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	634	7	Signal	16.8	2.4	II	25.7	C	0.73	
W. Robinson St. to W. Amelia St.	City of Orlando	Arterial	Residential Area	0	2	0	35	1,320	7	Signal	27.6	1.2	II	32.6	B	0.93	
W. Amelia St. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,426	7	Signal	82.8	47.4	II	11.7	F	0.34	
TOTAL							35	10,032			357.0	118.8	II	19.2	D	0.55	0.069 gal/veh
PM PEAK HOUR																	
Indiana St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	28.8	10.8	II	7.5	F	0.21	
Grand St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,690	6	Signal	76.8	34.2	II	15.0	E	0.43	
W. Gore St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	6	Signal	60.6	24.0	II	14.9	E	0.42	
Carter St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	9.0	1.2	II	24.0	C	0.69	
Long St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	317	6	Signal	11.4	2.4	II	18.9	D	0.54	
W. Anderson St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	634	6	Signal	16.8	1.8	II	25.7	C	0.73	
W. South St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	6	Signal	43.8	22.8	II	10.7	F	0.31	
W. Church St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	6	Signal	15.6	0.0	II	30.0	B	0.86	
W. Central St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	6	Signal	14.4	0.0	II	32.5	B	0.93	
W. Washingston St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	634	6	Signal	12.6	0.0	II	34.3	B	0.98	
W. Robinson St. to W. Amelia St.	City of Orlando	Arterial	Residential Area	0	2	0	35	1,320	6	Signal	32.4	1.2	II	27.8	C	0.79	
W. Amelia St. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,426	6	Signal	100.8	56.4	II	9.6	F	0.28	
TOTAL							35	10,032			423.0	154.8	II	16.2	E	0.46	0.072 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 10

Year 2011 METROPLAN Orlando Travel Time Study

US 441 - Grand St. to SR 50 - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	0	2	1	35/40	2,640	6	Signal	134.4	75.0	II	13.4	E	0.38	
W. Colonial Dr. to W. Amelia St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,478	6	Signal	33.0	2.4	II	30.5	B	0.87	
W. Amelia St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,320	6	Signal	26.4	0.0	II	34.1	B	0.97	
W. Robinson St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	634	6	Signal	18.6	4.2	II	23.2	C	0.66	
W. Washingston St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	6	Signal	13.2	0.0	II	35.5	A	1.01	
W. Central St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	6	Signal	13.2	0.0	II	35.5	A	1.01	
W. Church St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	686	6	Signal	13.2	0.0	II	35.5	A	1.01	
W. South St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	634	6	Signal	14.4	0.0	II	30.0	B	0.86	
W. Anderson St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	27.0	16.8	II	8.0	F	0.23	
Long St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	8.4	1.2	II	25.7	C	0.73	
Carter St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	6	Signal	54.0	22.2	II	16.7	E	0.48	
W. Gore St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	1	35	1,690	6	Signal	33.6	0.0	II	34.3	B	0.98	
TOTAL							35	12,408			389.4	121.8	II	21.7	D	0.62	0.082 gal/veh
PM PEAK HOUR																	
Median Opening to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	0	2	1	35/40	2,640	6	Signal	139.2	72.0	II	12.9	F	0.37	
W. Colonial Dr. to W. Amelia St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,478	6	Signal	36.0	5.4	II	28.0	C	0.80	
W. Amelia St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,320	6	Signal	28.2	0.0	II	31.9	B	0.91	
W. Robinson St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	634	6	Signal	42.6	18.6	II	10.1	F	0.29	
W. Washingston St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	6	Signal	15.0	0.0	II	31.2	B	0.89	
W. Central St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	6	Signal	14.4	0.0	II	32.5	B	0.93	
W. Church St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	686	6	Signal	17.4	1.2	II	26.9	C	0.77	
W. South St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	634	6	Signal	27.0	7.8	II	16.0	E	0.46	
W. Anderson St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	33.6	21.6	II	6.4	F	0.18	
Long St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	6	Signal	7.8	0.0	II	27.7	C	0.79	
Carter St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	6	Signal	70.2	37.8	II	12.8	F	0.37	
W. Gore St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	1	35	1,690	6	Signal	30.6	0.0	II	37.6	A	1.08	
TOTAL							35	12,408			462.0	164.4	II	18.3	D	0.52	0.085 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 10

Year 2011 METROPLAN Orlando Travel Time Study

US 441 - Grand St. to SR 50 - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Indiana St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	8	Signal	9.6	3.0	II	22.5	C	0.64	
Grand St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,690	8	Signal	49.8	16.8	II	23.1	C	0.66	
W. Gore St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	8	Signal	25.8	0.0	II	34.9	B	1.00	
Carter St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	8	Signal	5.4	0.0	II	40.0	A	1.14	
Long St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	317	8	Signal	5.4	0.0	II	40.0	A	1.14	
W. Anderson St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	634	8	Signal	12.0	0.0	II	36.0	A	1.03	
W. South St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	8	Signal	15.0	0.0	II	31.2	B	0.89	
W. Church St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	8	Signal	13.2	0.0	II	35.5	A	1.01	
W. Central St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	8	Signal	13.2	0.0	II	35.5	A	1.01	
W. Washingston St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	634	8	Signal	11.4	0.0	II	37.9	A	1.08	
W. Robinson St. to W. Amelia St.	City of Orlando	Arterial	Residential Area	0	2	0	35	1,320	8	Signal	31.2	6.0	II	28.8	B	0.82	
W. Amelia St. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,426	8	Signal	69.0	34.8	II	14.1	E	0.40	
TOTAL							35	10,032			261.0	60.6	II	26.2	C	0.75	0.067 gal/veh
PM PEAK HOUR																	
Indiana St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	3.6	0.0	II	60.0	A	1.71	
Grand St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,690	7	Signal	43.2	8.4	II	26.7	C	0.76	
W. Gore St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	7	Signal	41.4	13.8	II	21.7	D	0.62	
Carter St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	6.6	0.0	II	32.7	B	0.94	
Long St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	317	7	Signal	6.6	0.0	II	32.7	B	0.94	
W. Anderson St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	634	7	Signal	18.6	3.0	II	23.2	C	0.66	
W. South St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	7	Signal	19.8	4.2	II	23.6	C	0.68	
W. Church St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	7	Signal	12.6	0.0	II	37.1	A	1.06	
W. Central St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	686	7	Signal	21.6	8.4	II	21.7	D	0.62	
W. Washingston St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	634	7	Signal	10.2	0.0	II	42.4	A	1.21	
W. Robinson St. to W. Amelia St.	City of Orlando	Arterial	Residential Area	0	2	0	35	1,320	7	Signal	51.0	16.8	II	17.6	D	0.50	
W. Amelia St. to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,426	7	Signal	149.4	108.6	II	6.5	F	0.19	
TOTAL							35	10,032			384.6	163.2	II	17.8	D	0.51	0.069 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 10

Year 2011 METROPLAN Orlando Travel Time Study

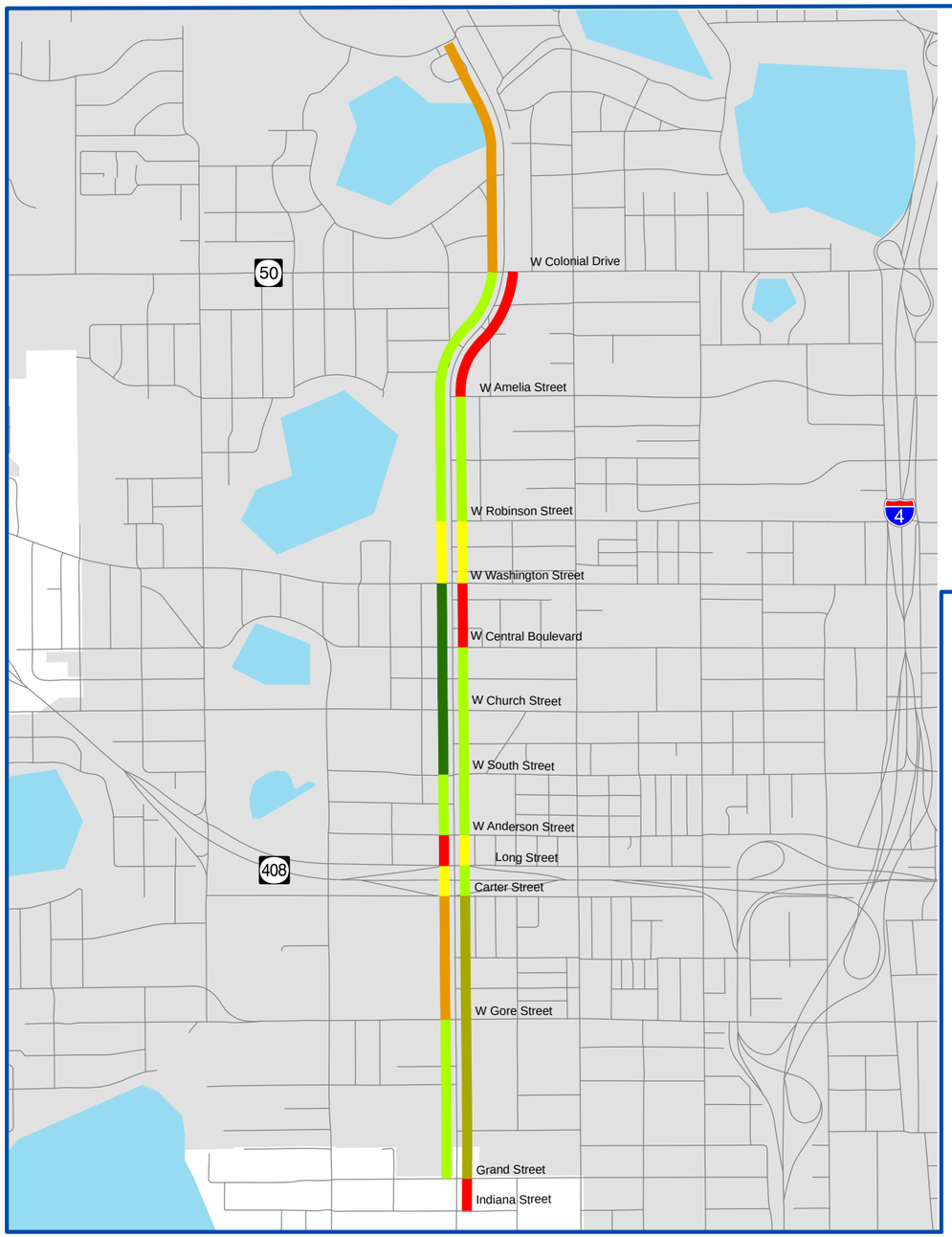
US 441 - Grand St. to SR 50 - Southbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	0	2	1	35/40	2,640	9	Signal	73.8	19.2	II	24.4	C	0.70	
W. Colonial Dr. to W. Amelia St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,478	9	Signal	27.0	0.0	II	37.3	A	1.07	
W. Amelia St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,320	9	Signal	24.6	0.0	II	36.6	A	1.05	
W. Robinson St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	634	9	Signal	13.8	0.0	II	31.3	B	0.89	
W. Washingston St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	9	Signal	12.6	0.0	II	37.1	A	1.06	
W. Central St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	9	Signal	12.6	0.0	II	37.1	A	1.06	
W. Church St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	686	9	Signal	22.2	3.6	II	21.1	D	0.60	
W. South St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	634	9	Signal	14.4	0.0	II	30.0	B	0.86	
W. Anderson St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	9	Signal	6.6	0.0	II	32.7	B	0.94	
Long St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	9	Signal	6.6	0.0	II	32.7	B	0.94	
Carter St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	9	Signal	29.4	0.6	II	30.6	B	0.87	
W. Gore St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	1	35	1,690	9	Signal	28.2	1.8	II	40.8	A	1.17	
TOTAL							35	12,408			271.8	25.2	II	31.1	B	0.89	0.080 gal/veh
PM PEAK HOUR																	
Median Opening to W. Colonial Dr.	City of Orlando	Arterial	Residential Area	0	2	1	35/40	2,640	7	Signal	77.4	30.0	II	23.3	C	0.66	
W. Colonial Dr. to W. Amelia St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,478	7	Signal	33.6	3.6	II	30.0	B	0.86	
W. Amelia St. to W. Robinson St.	City of Orlando	Arterial	Residential Area	1	2	0	35	1,320	7	Signal	32.4	3.0	II	27.8	C	0.79	
W. Robinson St. to W. Washingston St.	City of Orlando	Arterial	Residential Area	1	2	1	35	634	7	Signal	37.2	15.6	II	11.6	F	0.33	
W. Washingston St. to W. Central St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	7	Signal	14.4	0.0	II	32.5	B	0.93	
W. Central St. to W. Church St.	City of Orlando	Arterial	Residential Area	1	2	0	35	686	7	Signal	14.4	0.0	II	32.5	B	0.93	
W. Church St. to W. South St.	City of Orlando	Arterial	Residential Area	1	3	0	35	686	7	Signal	16.8	1.2	II	27.9	C	0.80	
W. South St. to W. Anderson St.	City of Orlando	Arterial	Residential Area	2	3	1	35	634	7	Signal	28.2	6.0	II	15.3	E	0.44	
W. Anderson St. to Long St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	10.8	0.6	II	20.0	D	0.57	
Long St. to Carter St.	City of Orlando	Arterial	Residential Area	1	3	0	35	317	7	Signal	6.6	0.0	II	32.7	B	0.94	
Carter St. to W. Gore St.	City of Orlando	Arterial	Residential Area	1	3	0	35	1,320	7	Signal	36.0	10.2	II	25.0	C	0.71	
W. Gore St. to Grand St.	City of Orlando	Arterial	Residential Area	1	3	1	35	1,690	7	Signal	29.4	1.8	II	39.2	A	1.12	
TOTAL							35	12,408			337.2	72.0	II	25.1	C	0.72	0.083 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.



US 441 - AM Peak

Before Condition

Date of Collection: 2/2/2011
Distance: 1.85 miles
From: Grand St.
To: SR 50.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 19.2 MPH
NB Travel Time: 5.95 MIN
NB Delay Time: 1.98 MIN

SB Avg Speed: 21.7 MPH
SB Travel Time: 6.49 MIN
SB Delay Time: 2.03 MIN

US 441 - AM Peak

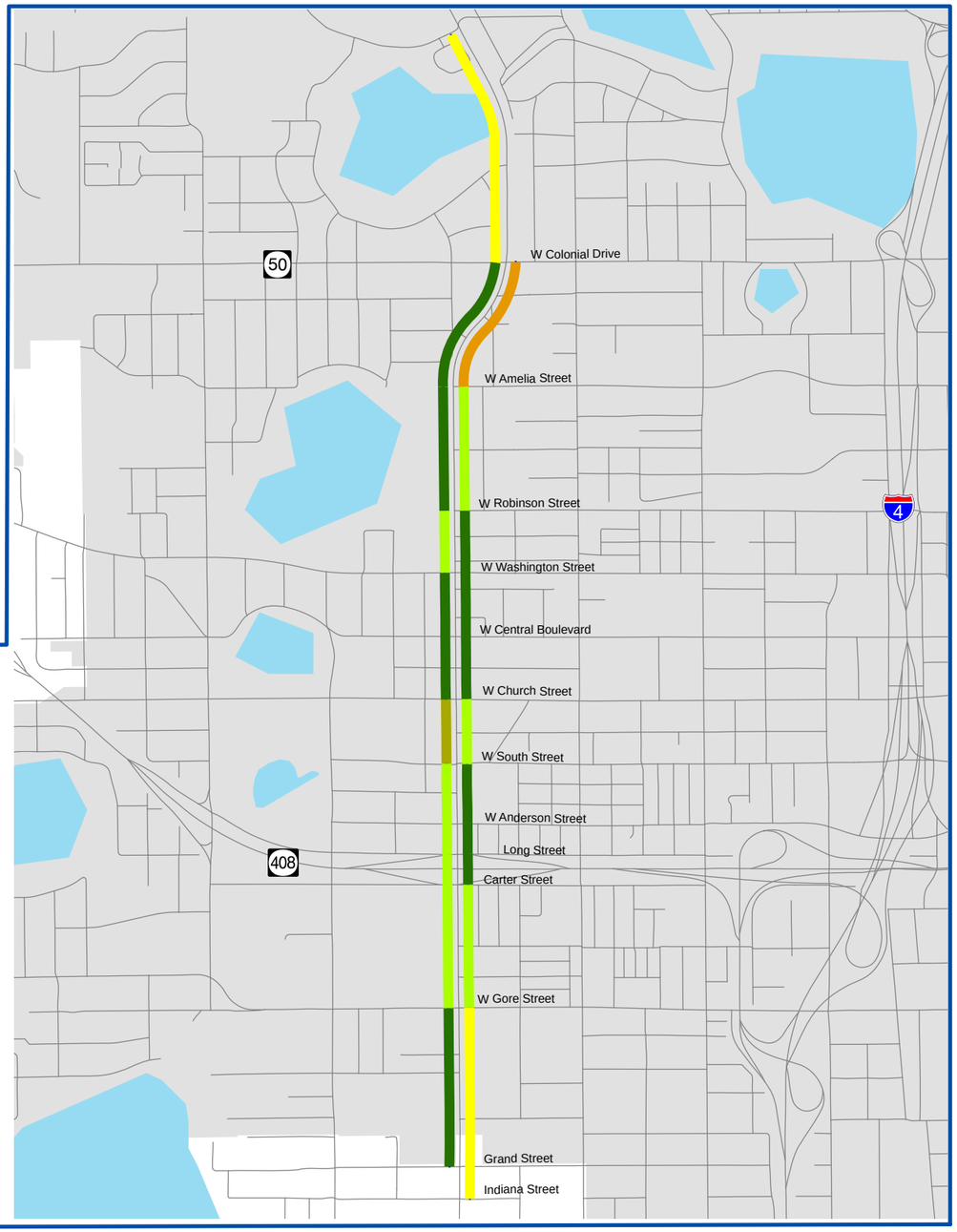
After Condition

Date of Collection: 5/25/2011
Distance: 1.85 miles
From: Grand St.
To: SR 50.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 26.2 MPH
NB Travel Time: 4.35 MIN
NB Delay Time: 1.01 MIN

SB Avg Speed: 31.1 MPH
SB Travel Time: 4.53 MIN
SB Delay Time: 0.42 MIN



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Level of Services:

A
B
C
D
E
F

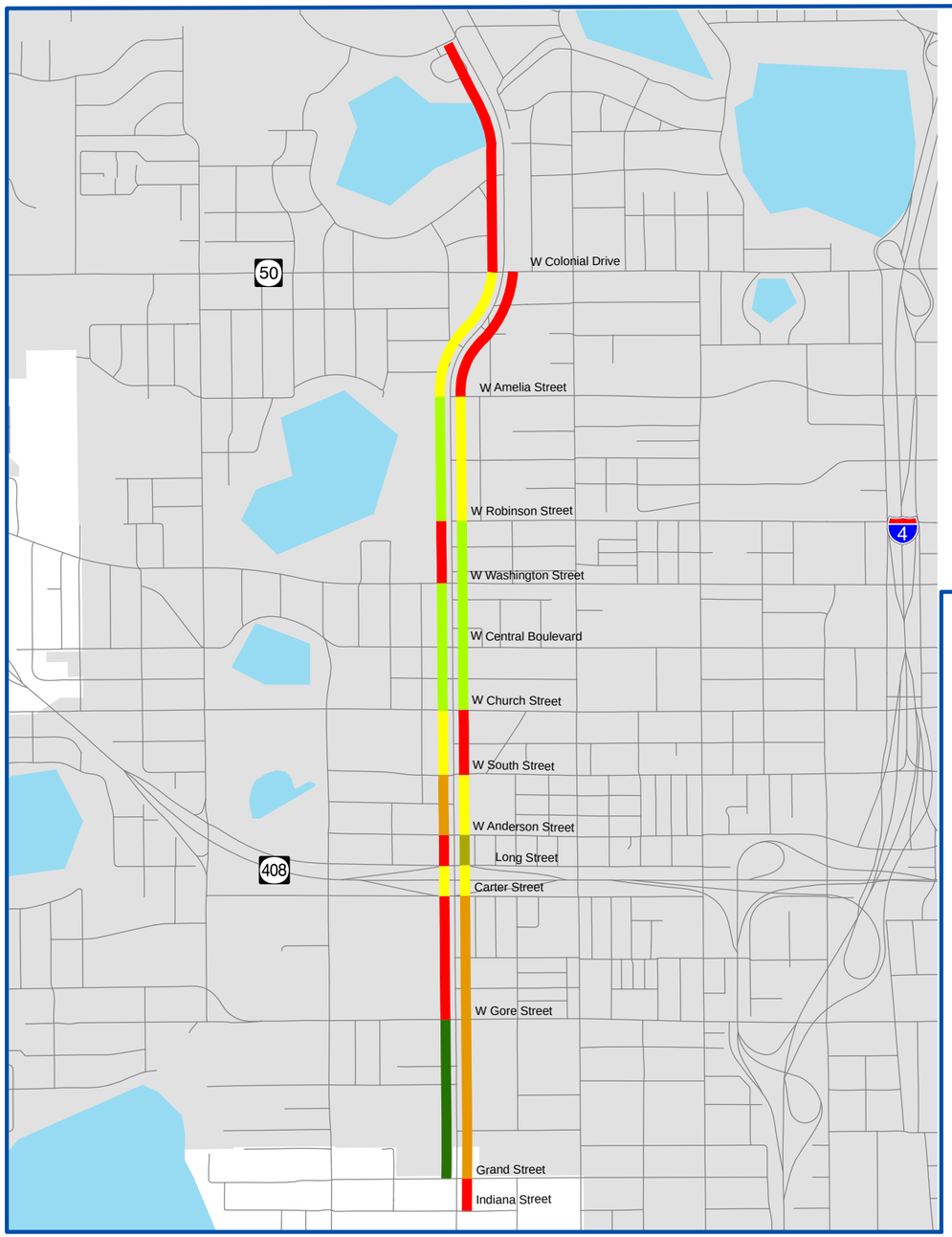
Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.3 0.6 Miles



US 441 - PM Peak

Before Condition

Date of Collection: 2/2/2011
Distance: 1.85 miles
From: Grand St.
To: SR 50.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 16.2 MPH
NB Travel Time: 7.05 MIN
NB Delay Time: 2.58 MIN

SB Avg Speed: 18.3 MPH
SB Travel Time: 7.70 MIN
SB Delay Time: 2.74 MIN

US 441 - PM Peak

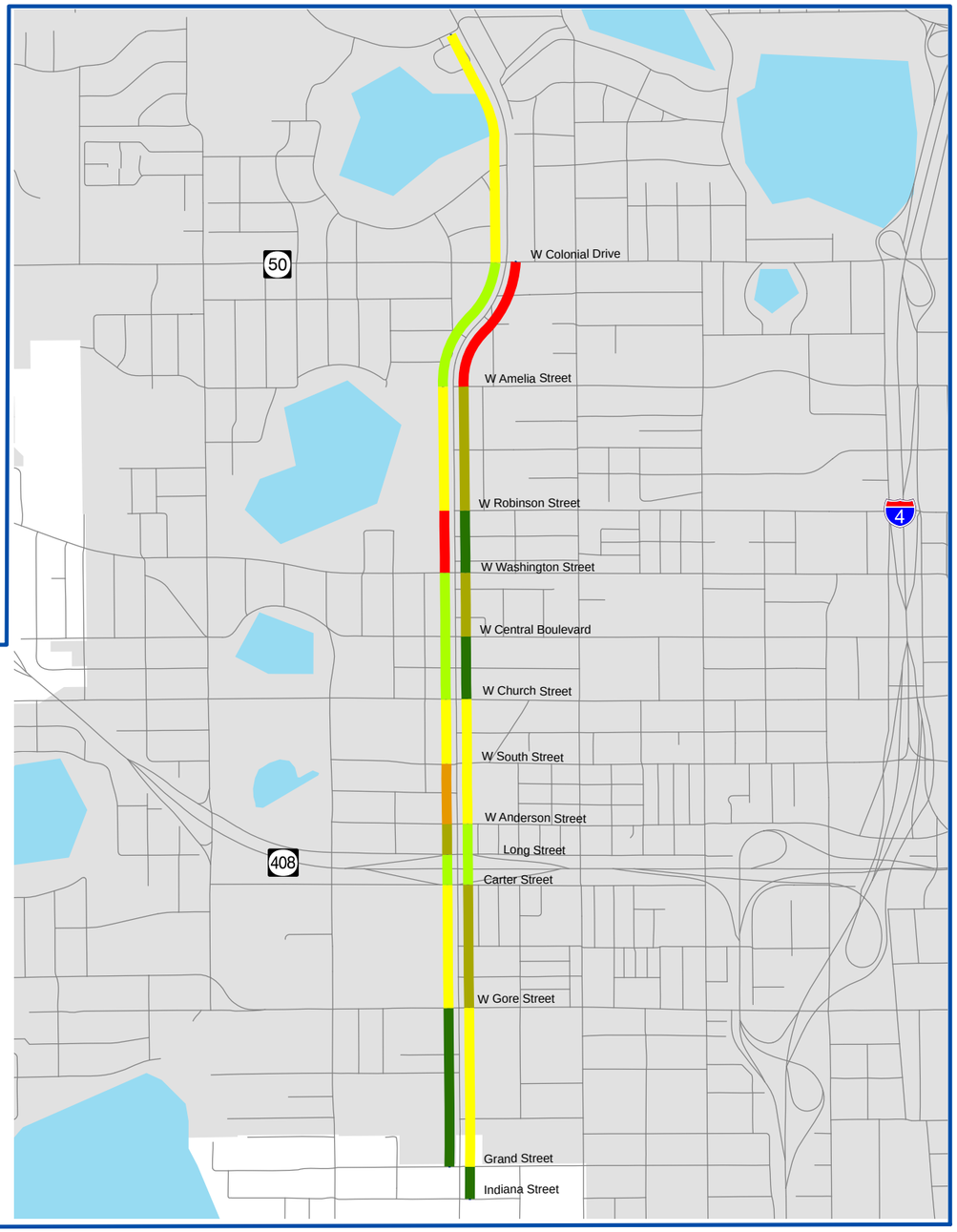
After Condition

Date of Collection: 5/25/2011
Distance: 1.85 miles
From: Grand St.
To: SR 50.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 17.8 MPH
NB Travel Time: 6.41 MIN
NB Delay Time: 2.72 MIN

SB Avg Speed: 25.1 MPH
SB Travel Time: 5.62 MIN
SB Delay Time: 1.20 MIN



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Level of Services:

- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.5 1 Miles

US 441 : Grand Street to SR 50

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	Travel Time (sec/veh)	Delay (sec/veh)	Average Speed (mph)	Fuel Consumption (gallons/veh)	Total Travel Time (Veh-hour)	Total Fuel Consumption (in gallons)
Northbound/Eastbound - AM Peak Hour						
931	**357.0**	**118.8**	**19.2**	0.069	92.29	64.22
Northbound/Eastbound - PM Peak Hour						
1220	**423.0**	**154.8**	**16.2**	0.0720	143.39	87.86
Southbound/Westbound - AM Peak Hour						
631	**389.4**	**121.8**	**21.7**	0.0820	68.25	51.74
Southbound/Westbound - PM Peak Hour						
849	**462.0**	**164.4**	**18.3**	0.0850	108.96	72.17

*Traffic Volumes are obtained from 2010 Orange County Traffic Counts.

US 441 : Grand Street to SR 50

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
931	**261.0**	**60.6**	**26.2**	0.0670	67.47	62.35
Northbound/Eastbound - PM Peak Hour						
1220	**384.6**	**163.2**	**17.8**	0.0690	130.37	84.20
Southbound/Westbound - AM Peak Hour						
631	**271.8**	**25.2**	**31.1**	0.0800	47.64	50.48
Southbound/Westbound - PM Peak Hour						
849	**337.2**	**72.0**	**25.1**	0.0830	79.52	70.47

*Traffic Volumes are obtained from 2010 Orange County Traffic Counts.

US 441 : Grand Street to SR 50

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	160.54	115.11	252.34	209.90
Total Fuel Consumption (gallons)	115.96	112.83	160.03	154.67

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$751.26	$710.35
Annual User Benefit	**$225,378.15**	**$213,105.55**
Total Annual User Benefit =	**$438,483.71**	
Total Signal Retiming Annual Cost	$18,862.06	
User Benefit / Cost Ratio	**23.25**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

John Young Pkwy.

US 192 to Patrick St.

TABLE 17

Year 2011 METROPLAN Orlando Travel Time Study

John Young Parkway - Patrick St. to US 192 - Northbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	370	10	Signal	18.6	7.2	II	13.5	E	0.34	
Patrick St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	686	10	Signal	54.0	25.8	II	8.7	F	0.22	
W. Emmett St. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	634	10	Signal	24.0	6.6	II	18.0	D	0.45	
W. Mabbette St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	43.8	12.6	II	20.5	D	0.51	
M. L. King Junior Blvd. to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	52.8	22.8	II	17.0	D	0.43	
W. Oak St. to US 192	Osceola	Arterial	Residential Area	2	3	0	40	1,320	10	Signal	24.6	0.0	II	36.6	A	0.91	
TOTAL							40	5,650			217.8	75.0	II	17.7	D	0.44	0.040 gal/veh
PM PEAK HOUR																	
Median Opening to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	370	7	Signal	6.6	0.0	II	38.2	A	0.95	
Patrick St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	686	7	Signal	51.6	31.8	II	9.1	F	0.23	
W. Emmett St. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	634	7	Signal	22.2	4.2	II	19.5	D	0.49	
W. Mabbette St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	7	Signal	51.6	17.4	II	17.4	D	0.44	
M. L. King Junior Blvd. to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	7	Signal	71.4	39.0	II	12.6	F	0.32	
W. Oak St. to US 192	Osceola	Arterial	Residential Area	2	3	0	40	1,320	7	Signal	40.8	12.0	II	22.1	C	0.55	
TOTAL							40	5,650			244.2	104.4	II	15.8	E	0.39	0.040 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 17

Year 2011 METROPLAN Orlando Travel Time Study

John Young Parkway - Patrick St. to US 192 - Southbound Direction Summary - Before Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to US 192	Osceola	Arterial	Residential Area	2	2	1	45	1,267	10	Signal	70.8	28.8	II	12.2	F	0.27	
US 192 to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	28.2	0.6	II	31.9	B	0.80	
W. Oak St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	38.4	7.8	II	23.4	C	0.59	
M. L. King Junior Blvd. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	28.2	1.2	II	31.9	B	0.80	
W. Mabbette St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	634	10	Signal	18.6	4.8	II	23.2	C	0.58	
W. Emmett St. to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	686	10	Signal	16.2	3.0	II	28.9	B	0.72	
TOTAL							40	6,547			200.4	46.2	II	22.3	C	0.56	0.044 gal/veh
PM PEAK HOUR																	
Median Opening to US 192	Osceola	Arterial	Residential Area	2	2	1	45	1,267	7	Signal	99.0	57.6	II	8.7	F	0.19	
US 192 to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	7	Signal	54.6	21.6	II	16.5	E	0.41	
W. Oak St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	7	Signal	126.6	82.2	II	7.1	F	0.18	
M. L. King Junior Blvd. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	7	Signal	163.2	108.6	II	5.5	F	0.14	
W. Mabbette St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	634	7	Signal	72.6	51.0	II	6.0	F	0.15	
W. Emmett St. to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	686	7	Signal	32.4	10.8	II	14.4	E	0.36	
TOTAL							40	6,547			548.4	331.8	II	8.1	F	0.20	0.054 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 17

Year 2011 METROPLAN Orlando Travel Time Study

John Young Parkway - Patrick St. to US 192 - Northbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	370	13	Signal	19.8	10.2	II	12.7	F	0.32	
Patrick St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	686	13	Signal	48.6	31.2	II	9.6	F	0.24	
W. Emmett St. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	634	13	Signal	12.0	0.0	II	36.0	A	0.90	
W. Mabbette St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	13	Signal	40.8	13.8	II	22.1	C	0.55	
M. L. King Junior Blvd. to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	13	Signal	37.8	5.4	II	23.8	C	0.60	
W. Oak St. to US 192	Osceola	Arterial	Residential Area	2	3	0	40	1,320	13	Signal	24.6	0.0	II	36.6	A	0.91	
TOTAL							40	5,650			183.6	60.6	II	21.0	D	0.52	0.039 gal/veh
PM PEAK HOUR																	
Median Opening to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	370	10	Signal	8.4	2.4	II	30.0	B	0.75	
Patrick St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	686	10	Signal	55.2	37.8	II	8.5	F	0.21	
W. Emmett St. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	634	10	Signal	11.4	0.0	II	37.9	A	0.95	
W. Mabbette St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	29.4	6.6	II	30.6	B	0.77	
M. L. King Junior Blvd. to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	54.0	20.4	II	16.7	E	0.42	
W. Oak St. to US 192	Osceola	Arterial	Residential Area	2	3	0	40	1,320	10	Signal	46.2	22.8	II	19.5	D	0.49	
TOTAL							40	5,650			204.6	90.0	II	18.8	D	0.47	0.038 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

TABLE 17

Year 2011 METROPLAN Orlando Travel Time Study

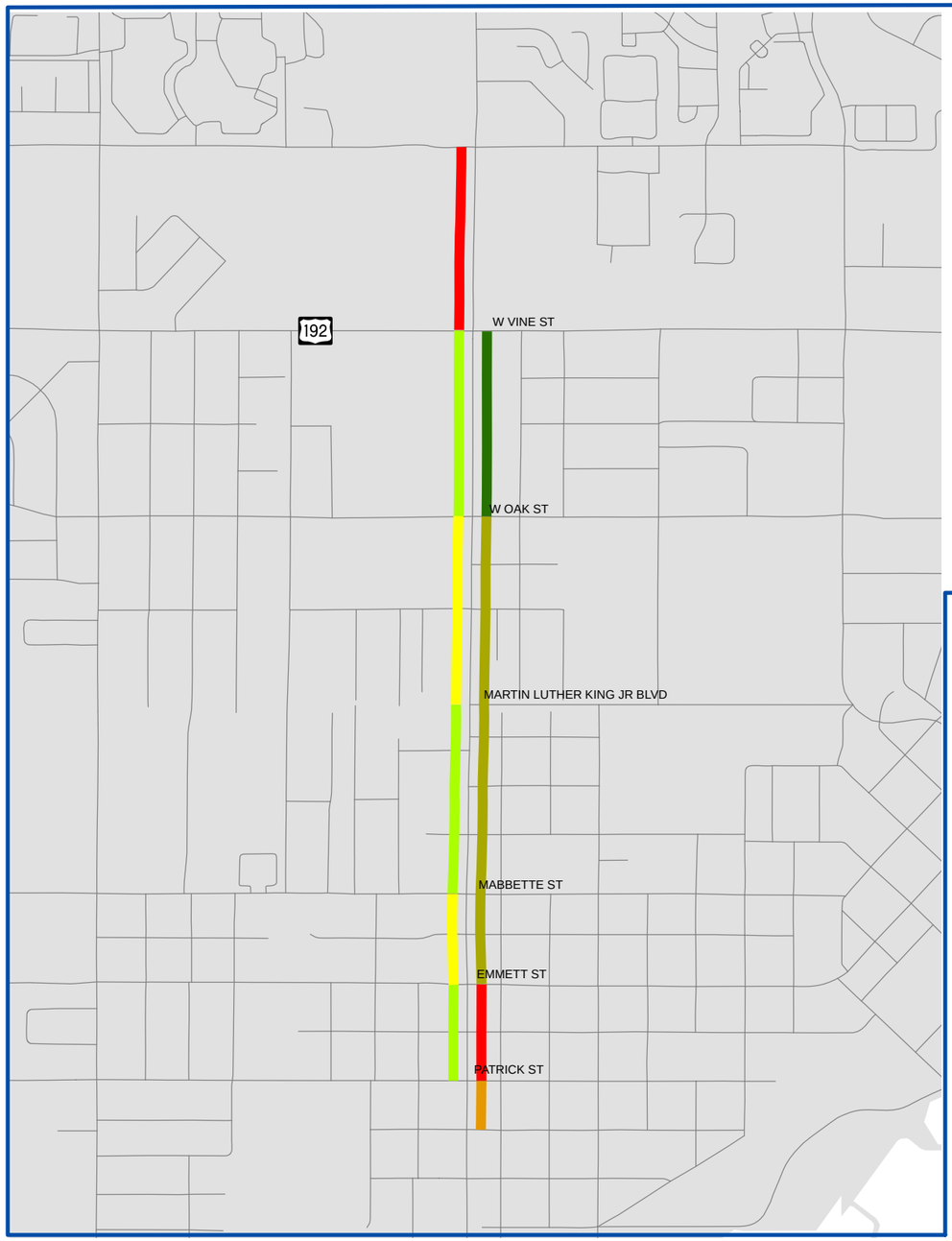
John Young Parkway - Patrick St. to US 192 - Southbound Direction Summary - After Condition

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Median Opening to US 192	Osceola	Arterial	Residential Area	2	2	1	45	1,267	12	Signal	66.0	25.8	II	13.1	E	0.29	
US 192 to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	12	Signal	22.2	0.0	II	40.5	A	1.01	
W. Oak St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	12	Signal	32.4	4.8	II	27.8	C	0.69	
M. L. King Junior Blvd. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	12	Signal	22.8	0.0	II	39.5	A	0.99	
W. Mabbette St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	634	12	Signal	10.2	0.0	II	42.4	A	1.06	
W. Emmett St. to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	686	12	Signal	9.0	0.0	II	52.0	A	1.30	
TOTAL							40	6,547			162.6	30.6	II	27.5	C	0.69	0.042 gal/veh
PM PEAK HOUR																	
Median Opening to US 192	Osceola	Arterial	Residential Area	2	2	1	45	1,267	10	Signal	80.4	42.0	II	10.7	F	0.24	
US 192 to W. Oak St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	26.4	1.2	II	34.1	B	0.85	
W. Oak St. to M. L. King Junior Blvd.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	43.8	12.6	II	20.5	D	0.51	
M. L. King Junior Blvd. to W. Mabbette St.	Osceola	Arterial	Residential Area	1	2	0	40	1,320	10	Signal	35.4	4.8	II	25.4	C	0.64	
W. Mabbette St. to W. Emmett St.	Osceola	Arterial	Residential Area	1	2	0	40	634	10	Signal	30.6	13.2	II	14.1	E	0.35	
W. Emmett St. to Patrick St.	Osceola	Arterial	Residential Area	1	2	0	40	686	10	Signal	18.0	4.2	II	26.0	C	0.65	
TOTAL							40	6,547			234.6	78.0	II	19.0	D	0.48	0.044 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.



John Young Parkway - AM Peak Before Condition

Date of Collection: 2/2/2011
Distance: 1.00 mile
From: Patrick St.
To: US 192

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 17.7 MPH
NB Travel Time: 3.63 MIN
NB Delay Time: 1.25 MIN

SB Avg Speed: 22.3 MPH
SB Travel Time: 3.34 MIN
SB Delay Time: 0.77 MIN

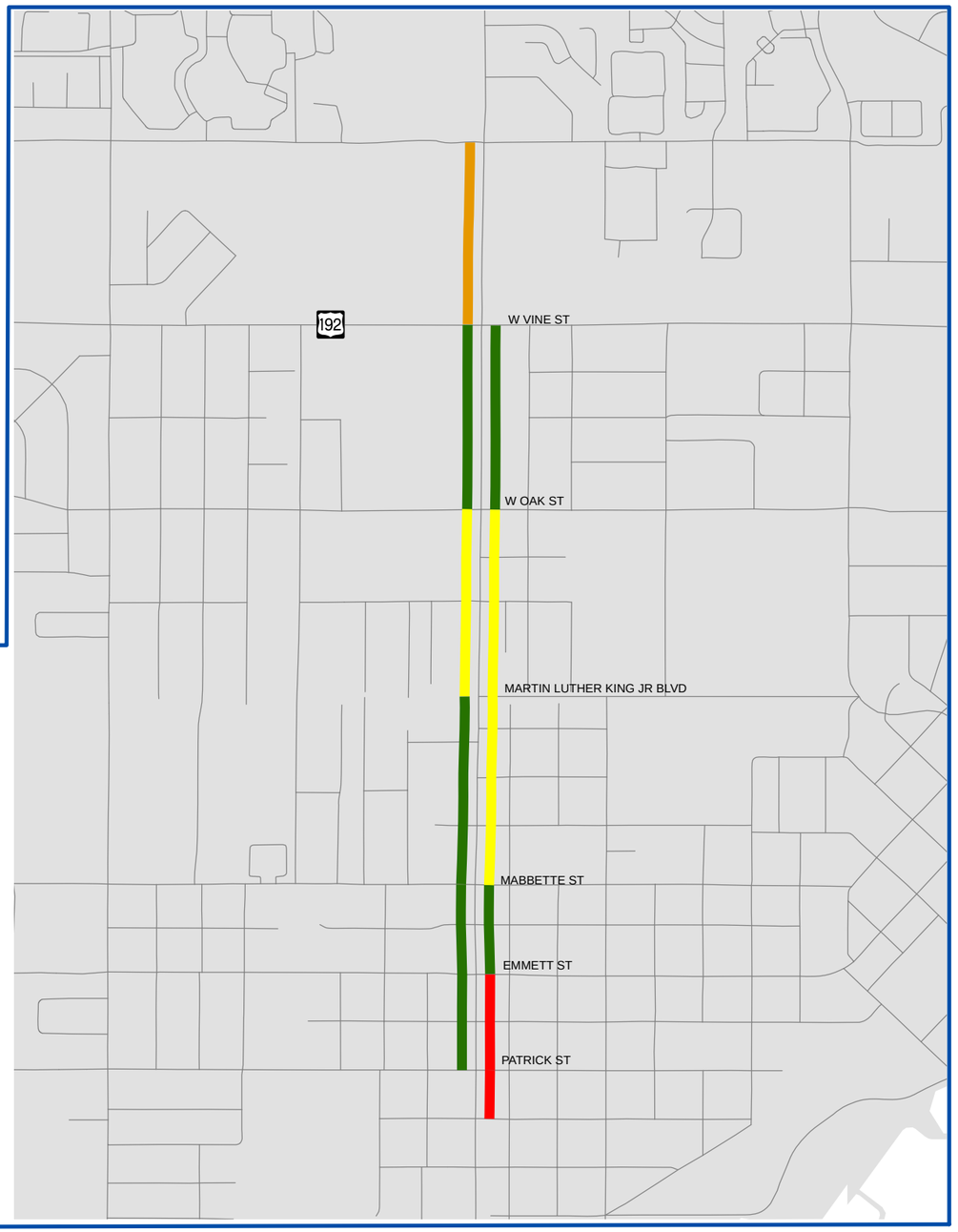
John Young Parkway - AM Peak After Condition

Date of Collection: 5/24/2011
Distance: 1.00 mile
From: Patrick St.
To: US 192.

Start Time: 7:00 AM
End Time: 9:00 AM

NB Avg Speed: 21.0 MPH
NB Travel Time: 3.06 MIN
NB Delay Time: 1.01 MIN

SB Avg Speed: 27.5 MPH
SB Travel Time: 2.71 MIN
SB Delay Time: 0.51 MIN



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Level of Services:

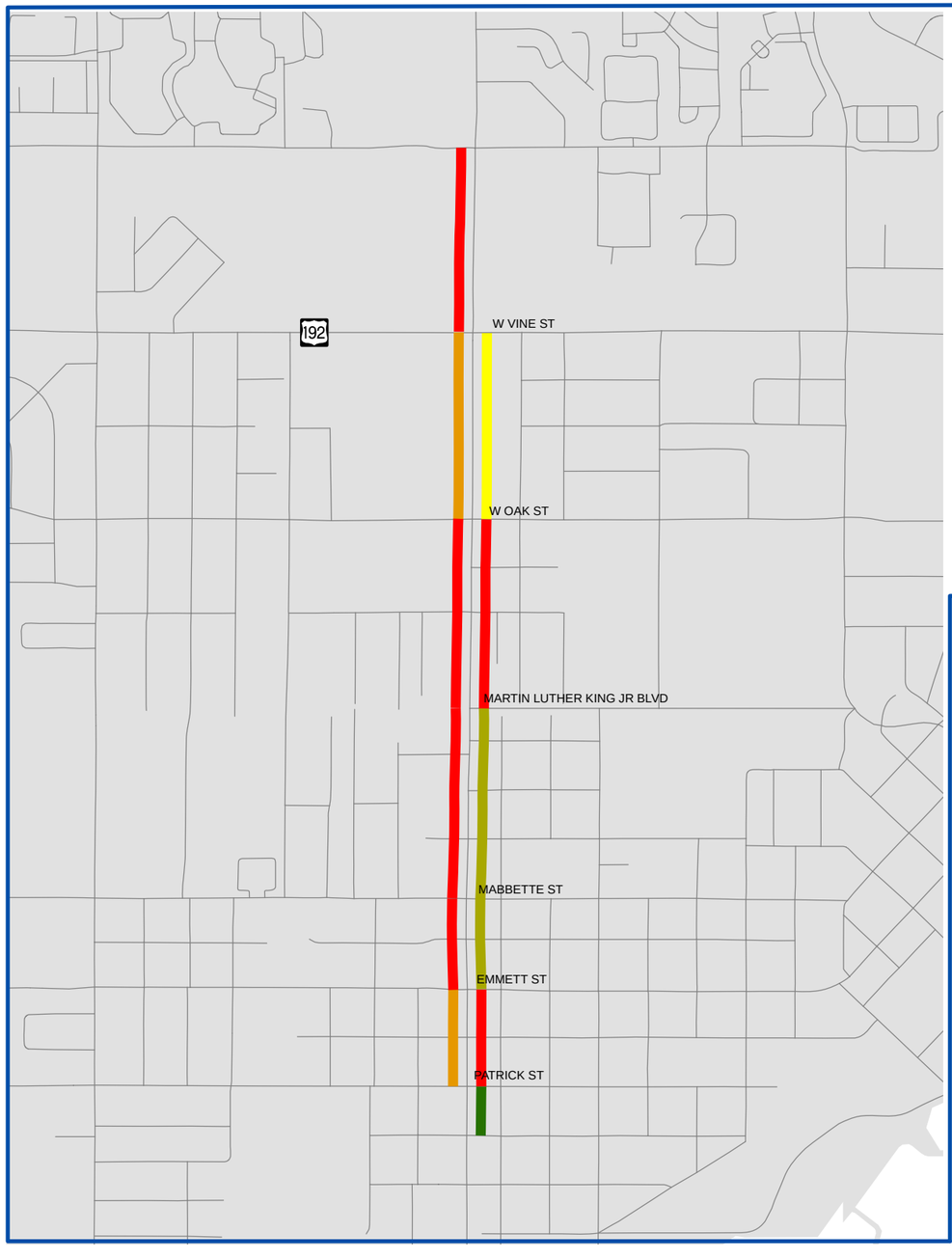
- A
- B
- C
- D
- E
- F
- Roads
- City Boundary
- Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.25 0.5 Miles



John Young Parkway - PM Peak Before Condition

Date of Collection: 2/2/2011
Distance: 1.00 mile
From: Patrick St.
To: US 192

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 15.8 MPH
NB Travel Time: 4.07 MIN
NB Delay Time: 1.74 MIN

SB Avg Speed: 8.10 MPH
SB Travel Time: 9.14 MIN
SB Delay Time: 5.53 MIN

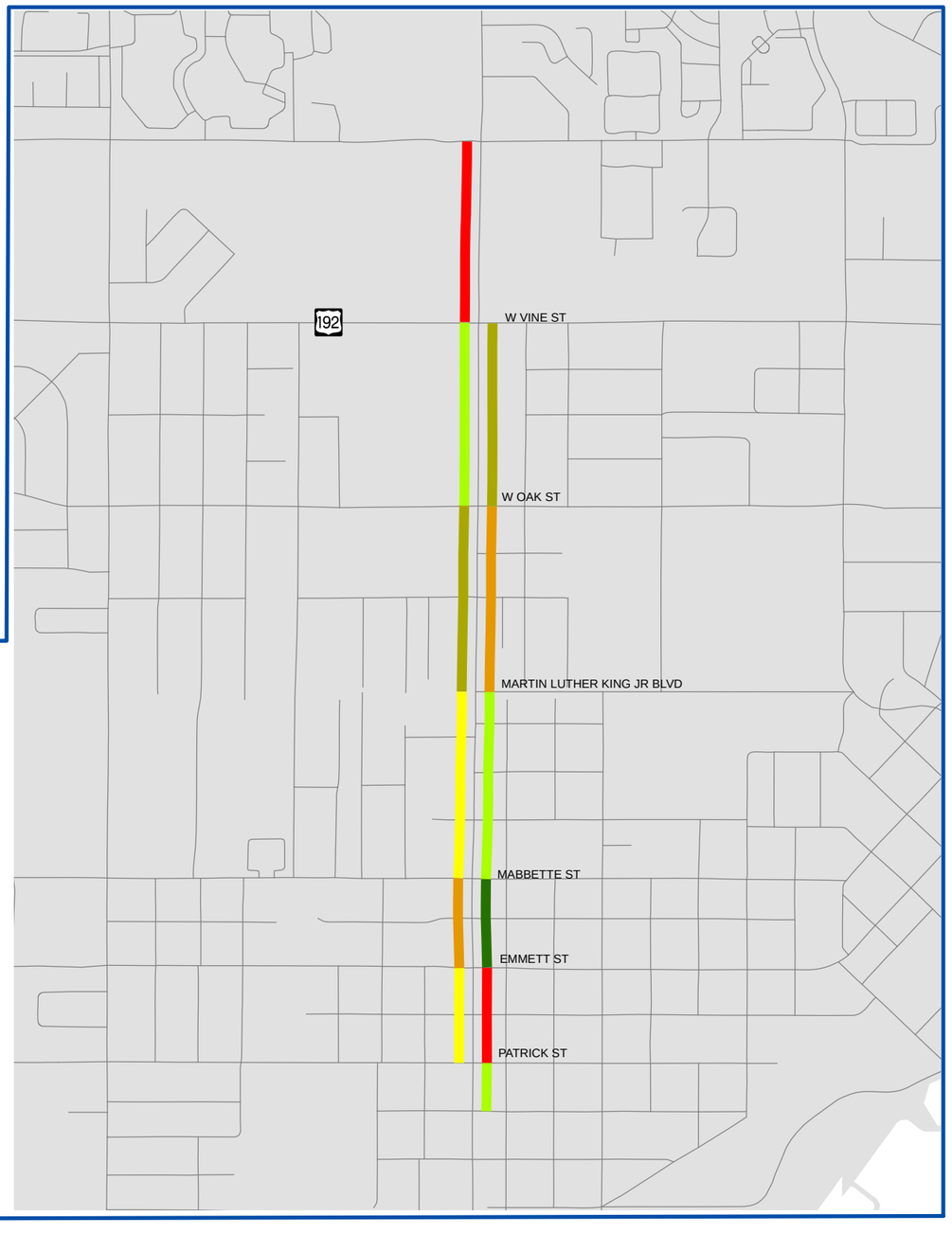
John Young Parkway - PM Peak After Condition

Date of Collection: 5/24/2011
Distance: 1.00 mile
From: Patrick St.
To: US 192.

Start Time: 4:00 PM
End Time: 6:00 PM

NB Avg Speed: 18.8 MPH
NB Travel Time: 3.41 MIN
NB Delay Time: 1.50 MIN

SB Avg Speed: 19.0 MPH
SB Travel Time: 3.91 MIN
SB Delay Time: 1.30 MIN



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Level of Services:

A
B
C
D
E
F

Roads
City Boundary
Water

N
W E
S

2011 METROPLAN ORLANDO

Travel Time Study

0 0.3 0.6 Miles

John Young Parkway : Patrick Street to US 192

Summary of Before Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1348	**217.8**	**75.0**	**17.7**	0.0400	81.55	53.92
Northbound/Eastbound - PM Peak Hour						
1106	**244.2**	**104.4**	**15.8**	0.0400	75.02	44.24
Southbound/Westbound - AM Peak Hour						
894	**200.4**	**46.2**	**22.3**	0.0440	49.77	39.34
Southbound/Westbound - PM Peak Hour						
1354	**548.4**	**331.8**	**8.1**	0.0540	206.26	73.12

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

John Young Parkway : Patrick Street to US 192

Summary of After Study Travel Time and Delay Study Results

	MOE's PER VEHICLE				MOE's FOR ALL THE VEHICLES PASSING THROUGH THE ROADWAY SEGMENT	
Traffic Volume	**Travel Time (sec/veh)**	**Delay (sec/veh)**	**Average Speed (mph)**	**Fuel Consumption (gallons/veh)**	**Total Travel Time (Veh-hour)**	**Total Fuel Consumption (in gallons)**
Northbound/Eastbound - AM Peak Hour						
1348	**183.6**	**60.6**	**21.0**	0.0390	68.75	52.57
Northbound/Eastbound - PM Peak Hour						
1106	**204.6**	**90.0**	**18.8**	0.0380	62.86	42.03
Southbound/Westbound - AM Peak Hour						
894	**162.6**	**30.6**	**27.5**	0.0420	40.38	37.55
Southbound/Westbound - PM Peak Hour						
1354	**234.6**	**78.0**	**19.0**	0.0440	88.24	59.58

*Traffic Volumes are obtained from the latest 2009 Florida Traffic Information.

John Young Parkway : Patrick Street to US 192

Summary of Measures of Effectiveness & Benefit Cost Analysis

MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	131.32	109.13	281.28	151.09
Total Fuel Consumption (gallons)	93.26	90.12	117.36	101.60

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$372.53	$2,176.28
Annual User Benefit	**$111,760.12**	**$652,883.53**
Total Annual User Benefit =	**$764,643.66**	
Total Signal Retiming Annual Cost	$8,973.77	
User Benefit / Cost Ratio	**85.21**	

Notes:

* Value of Delay Time is $16.30 per hour (Mobility Data for Orlando for the year 2010)
* Fuel consumption is valued to the rate of $3.44 per gallon.(Florida Department of Revenue & Orlando Gas Prices)
* Benefits apply for 300 days per year. This accounts for reduced benefits anticipated from lower weekend traffics
* The service life of the improvement was kept as three (3) years.
* Interest rate of 7% used by FDOT was used in arriving at the annual cost of improvements.

Appendix B

Page from 2010 Urban Mobility Report and Fuel price provided by MetroPlan Orlando

The Mobility Data for Orlando FL

Inventory Measures	2010	2009	2008	2007	2006	2005
Urban Area Information						
Population (1000s)	1,453	1,429	1,415	1,405	1,375	1,360
Rank	33	33	33	33	33	33
Peak Travelers (1000s)	825	809	798	787	765	751
Commuters (1000s)	767	751	741	731	710	697
Freeway						
Daily Vehicle-Miles of Travel (1000s)	13,265	13,199	13,265	13,540	12,980	12,470
Lane-Miles	919	910	910	870	860	850
Arterial Streets						
Daily Vehicle-Miles of Travel (1000s)	16,554	16,472	16,555	17,000	16,595	16,770
Lane-Miles	2,283	2,260	2,260	2,240	2,140	2,100
Public Transportation						
Annual Psgr-Miles of Travel (millions)	159.3	160.4	166.8	159.3	162.9	160.2
Annual Unlinked Psgr Trips (millions)	26.0	26.2	27.2	26.1	25.3	24.8
Cost Components						
Value of Time ($/hour)	16.30	16.01	16.10	15.47	15.06	14.58
Commercial Cost ($/hour)	88.12	89.75	81.52	82.56	80.43	78.05
Gasoline ($/gallon)	2.74	2.33	3.47	2.98	2.66	2.34
Diesel ($/gallon)	2.96	2.59	4.15	3.36	2.85	2.53
System Performance	**2010**	**2009**	**2008**	**2007**	**2006**	**2005**
Congested Travel (% of peak VMT)	79	81	72	74	72	70
Congested System (% of lane-miles)	74	76	68	69	68	66
Congested Time (number of "Rush Hours")	4.00	4.00	4.00	5.25	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	11,883	12,680	12,116	14,598	14,395	13,811
Rank	24	25	24	24	24	24
Fuel per Peak Auto Commuter (gallons)	12	13	13	16	16	15
Rank	23	22	22	23	25	25
Annual Delay						
Total Delay (1000s of person-hours)	38,260	39,185	35,025	40,009	39,905	39,242
Rank	26	25	27	27	27	27
Delay per Peak Auto Commuter (pers-hrs)	38	41	37	43	44	44
Rank	15	15	19	19	19	20
Travel Time Index	1.18	1.20	1.19	1.22	1.22	1.22
Rank	26	20	23	23	23	23
Commuter Stress Index	1.23	1.25	1.24	1.29	--	--
Rank	35	25	33	36	--	--
Truck Congestion Cost ($ millions)	207	213	175	198	--	--
Truck Commodity Value ($ millions)	63,106	62,252	61,409	60,578	--	--
Congestion Cost						
Total Cost ($ millions)	811	822	733	809	778	729
Rank	26	24	26	25	25	26
Cost per Peak Auto Commuter ($)	791	829	760	846	1,106	1,047
Rank	18	16	20	20	20	23

Note: Zeroes in the table reflect values less than 0.5.

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MetroPlan Orlando
Gallons of Gasoline Consumed by Month
2009 - 2011

	Jan-09	Feb-09	Mar-09	Apr-09	May-09	Jun-09	Jul-09	Aug-09	Sep-09	Oct-09	Nov-09	Dec-09	Total
Orange Co.	48,325,792	48,261,639	42,831,856	50,832,968	44,519,429	47,635,116	44,595,859	53,680,654	47,576,831	49,199,729	45,100,887	43,164,564	565,725,323
Osceola Co.	12,956,532	13,002,648	12,468,854	14,169,935	13,492,996	13,243,887	12,965,724	14,622,837	13,596,239	12,708,485	12,653,826	12,183,862	158,065,827
Seminole Co.	15,932,188	16,627,942	14,378,765	17,557,319	15,635,220	16,451,382	14,966,425	17,161,151	16,223,669	16,167,236	15,686,461	14,498,153	191,285,911
Total	**77,214,512**	**77,892,230**	**69,679,476**	**82,560,222**	**73,647,645**	**77,330,385**	**72,528,008**	**85,464,642**	**77,396,738**	**78,075,450**	**73,441,175**	**69,846,579**	**915,077,061**
Average price per gallon	**$1.73**	**$1.95**	**$2.02**	**$2.06**	**$2.40**	**$2.65**	**$2.42**	**$2.47**	**$2.36**	**$2.75**	**$2.67**	**$2.74**	

	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Total
Orange Co.	44,043,631	45,089,804	44,356,717	49,070,888	52,792,395	50,559,690	45,091,466	48,030,850	48,320,134	45,258,470	46,930,589	44,327,998	563,872,632
Osceola Co.	13,214,412	12,889,179	12,810,248	14,115,186	14,215,929	13,994,560	13,367,530	13,937,407	13,307,675	11,807,705	12,762,360	12,298,957	158,721,148
Seminole Co.	14,813,934	15,151,065	15,371,025	16,904,088	18,448,512	17,015,457	15,302,054	16,336,284	16,443,705	15,415,926	16,237,637	15,505,340	192,945,027
Total	**72,071,977**	**73,130,049**	**72,537,989**	**80,090,162**	**85,456,835**	**81,569,706**	**73,761,050**	**78,304,541**	**78,071,514**	**72,482,101**	**75,930,587**	**72,132,296**	**915,538,807**
% Change from Previous Year	**-6.66%**	**-6.11%**	**+4.10%**	**-2.99%**	**+16.03%**	**+5.48%**	**+1.70%**	**-8.38%**	**+0.87%**	**-7.16%**	**+3.39%**	**+3.27%**	**+0.05%**
Average price per gallon	**$2.65**	**$2.72**	**$2.77**	**$2.80**	**$2.68**	**$2.62**	**$2.63**	**$2.53**	**$2.60**	**$2.73**	**$2.78**	**$3.04**	

	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11	Nov-11	Dec-11	Total
Orange Co.	45,547,288	46,886,899	43,462,421	48,684,386	47,085,908	46,461,867							
Osceola Co.	13,056,630	12,810,468	12,532,699	14,300,763	13,714,686	12,969,747							
Seminole Co.	15,434,796	15,729,605	15,714,993	16,872,299	16,401,995	15,696,230							
Total	**74,038,714**	**75,426,972**	**71,710,113**	**79,857,448**	**77,202,589**	**75,127,844**							
% Change from Previous Year	**+2.73%**	**+3.14%**	**-1.14%**	**-0.29%**	**-9.66%**	**-7.90%**							
Average price per gallon	**$3.05**	**$3.07**	**$3.56**	**$3.76**	**$3.78**	**$3.40**							**$3.44**

Source: Florida Department of Revenue & OrlandoGasPrices.com

Appendix C

Signal Retiming Project Costs

Signal Retiming Project Costs

Roadway Name	Segment Limits	Project Cost
US 17/92 Part A	Spartan Dr. to Shepard Rd.	$142,950
US 17/92 Part B	Shepard Rd. to Airport Blvd.	Inc w/above
US 17/92 Part C	Airport Blvd. to 13th St.	Inc w/above
SR 436	CR 427 to Fern Park Blvd.	$29,950
SR 434	E. Lake Brantley Dr. to Raymond Ave.	$41,950
SR 434	SR 414 to San Sebastian Prado	$22,150
SR 50	SR 436 to Dean Rd.	$52,500
SR 436	Oleander Dr. to Old Cheney Hwy.	Inc w/above
US 192	CR 545/Avalon Rd. to E. Orange Lake Blvd.	$30,350
SR 535	LBV Factory Stores Dr. to I-4 WB Ramps	$36,050
SR 536	World Center Dr. to International Dr./SR 417	Inc w/above
US 441 Part A	Oak Ridge Rd. to Taft Vineland Rd.	$96,150
US 441 Part B	Taft Vineland Rd. to Hunters Creek Blvd.	Inc w/above
SR 482 Part A	Mandarin Dr. to Presidents Dr.	$72,050
SR 482 Part B	Presidents Dr. to Sunport Dr.	Inc w/above
SR 482 Part C	Sunport Dr. to Jet Port Dr.	Inc w/above
SR 423	Church St. to US 441	$48,850
SR 50	Pete Parrish Blvd. to Summerlin Ave.	$84,200
US 441	Grand St. to SR 50	$49,500
John Young Pkwy.	US 192 to Patrick St.	$23,550

Note:

1. The above project costs were provided by FDOT
2. The Project costs (Cell highlighted in the same color under “Project Cost” Column) for each project is prorated based on the number of signals on the study segment.

Appendix D

Pilot Study

METROPLAN ORLANDO TRAVEL TIME FOR SIGNAL RETIMING PROJECTS

9/20/2011

Travel Time Pilot Study

PREPARED BY: GMB ENGINEERS & PLANNERS, INC.

PREPARED FOR: METROPLAN ORLANDO

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1 Introduction

1.1 Study Background

At present, MetroPlan Orlando uses Global Positioning System {GPS} & Geographic Information System {GIS} based technology (GPS Technology) to conduct travel time studies for evaluating the Signal Retiming Studies. With the advancement of probe detection technologies in travel time estimation, MetroPlan had expressed strong desire to explore the feasibility of Alternative Technologies to estimate travel time data for the Benefit Cost Evaluation of Signal Retiming Projects.

As such, MetroPlan Orlando had assigned this task of exploring other feasible technologies to GMB Engineer's and Planners, Inc (GMB). The objective of this pilot study is to find a feasible technology that meets the study needs, is easy to use, safe and inexpensive.

Upon preliminary research of the available technologies which could satisfy the intended study goals, GMB had initially picked the below two technologies for further evaluation.

- Travel Time Estimation using **Cell Phones as Travel Probes** and
- Travel Time Estimation using **Bluetooth Technology**

Since the above two Alternative Technologies were not tested in the MetroPlan Area, there were some questions on the reliability and accuracy of these two technologies. As the next step, GMB proposed to conduct a separate Pilot Study to evaluate these two Alternative Technologies and compare their field results to the GPS Technology. It should be noted that the GPS Technology is widely used in different parts of the country and has been accepted as a viable method for collecting travel time data.

The MetroPlan Orlando Management and Operations Committee and GMB mutually agreed to conduct the Pilot Study on US 17-92 from Spartan Drive to SR 419 (Study Segment) within Seminole County. A brief Technical Memorandum, explaining the pros and cons of these above two technologies and how well they meet the MetroPlan Orlando Study needs, is provided in **Appendix A** of this report.

Then GMB contacted potential vendors who could provide field data for the Study Segment. However, after several failed attempts to obtain cell phone data from the only vendor who could provide data for this selected roadway segment, it was decided (between GMB & MetroPlan Orlando) to test only the Bluetooth Technology and compare its results with the GPS Technology.

1.2 Background - Travel Time & Delay Studies

According to the Manual on Uniform Traffic Studies (MUTS), Travel Time and Delay (TTD) studies are conducted to evaluate the quality of traffic movement along a route, by time of day and direction and determine the locations and extents of traffic delays experienced at predefined locations or points by using a moving test vehicle. The data collected in the field are used to compute various Measures of Effectiveness (MOEs) for determining the quality of traffic movement. Some of the important MOEs calculated from the field data collection include average travel time, average travel speed, average delay time, and fuel consumption.

Travel time is a direct measure of the performance of the roadway network. High travel times are an indication of congestion, delay, loss of time by drivers, increased fuel use and increased pollution emissions. The travel time data collected can be an important component of the Congestion Management Process (CMP), which alerts the decision makers of progress toward meeting congestion and mobility goals, when collected on a regular basis.

2 Field Validation

2.1 GPS Technology

The travel time data on the Study Segment was collected using the GeoStats In-Vehicle GeoLogger GPS equipment and floating car technique on May 26, 2011 between 7:00 – 9:00 AM and 4:00 – 6:00 PM. GIS and GPS based software tool (TRAVTIME) was used to summarize the field collected travel time data. All the signalized intersections were considered as control points for this study. As per GMB's technician field notes, no such external factors like inclement weather, traffic incidents, special events, or roadway construction affected the typical traffic flow of the study roadway while collecting the travel time data on May 26, 2011.

The TRAVTIME software directly reports the following five (5) crucial parameters. Only the Average Travel Time and Fuel Consumption are generally used in the Benefit Cost Evaluation of Signal Retiming Studies.

Average Travel Time: The average time needed to travel between two control points.

Average Travel Speed: The average speed of travel between two control points, including all delays. It is calculated by dividing the total length of the section under consideration by the Average Travel Time.

Average vehicle Delay Time: This is calculated by identifying delay regions around checkpoints and determining the time elapsed between the first point in the region with a speed lower than the defined stopped speed (typically 2 MPH) and the first point following it with a speed greater than the stopped speed.

Fuel Consumption: The amount of fuel consumed during the travel between two control points.

Level of Service (LOS): LOS is one of the vital measures used to evaluate intersection or roadway performance. Using the Average Travel Speed and roadway class (predetermined using the posted speed limit) as inputs, the roadway, or intersection LOS was determined using the Highway Capacity Manual (2000) Exhibit 15-2 Urban Street LOS by Roadway Class and Average Travel Speed.

The HCM (2000) Exhibit 15-2 is shown in the below Table 1. Table 2 shows a summary of the study results for the Study Segment using GPS Technology. Detailed tables showing the travel time study results for the Study Segment are provided in **Appendix B** of this report.

Table 1: HCM Exhibit 15-2 - Urban Street LOS by Roadway Class

	Arterial Classification			
	I	II	III	IV
Range of Free-flow Speed	45 – 55 MPH	35 – 45 MPH	30 – 35 MPH	25 – 35 MPH
Typical Free Flow Speed	50 MPH	40 MPH	33 MPH	30 MPH
Level of Service	Speed (MPH)			
A	>42	>35	>30	>25
B	>34	>28	>24	>19
C	>27	>22	>18	>13
D	>21	>17	>14	>9
E	>16	>13	>10	>7
F	<=16	<=13	<=10	<=7

*Note - HCM 2010 Methodology was not available during the field data collection.

Table 2: Travel Time Summary for US 17-92 between Spartan Drive and SR 419 - GPS Technology

Peak/Direction	Average Travel Time (Seconds)	Average Travel Speed (MPH)	Average Stop Time (Seconds)	Fuel Consumption (Gallons)	Segment LOS
NB AM	651.0	37.4	106.2	0.229	B
SB AM	600.0	40.6	43.8	0.230	B
NB PM	679.2	35.9	105.0	0.231	B
SB PM	640.8	38.0	76.2	0.230	B

2.2 Bluetooth Technology

Transportation Engineers have recently started to use Bluetooth, a fast-growing technology in wireless communications, in the fields of traffic monitoring and management. Recently, Seminole County in Florida had installed devices along the major roads that use Bluetooth Technology to determine the real time travel time. These devices, nicknamed "BlueTOAD" were developed by TrafficCast International (TCI). For the purposes of this Pilot Study, GMB had obtained the travel time data from Seminole County for the Study Segment for May 26, 2011 between 7-9 AM and 4-6 PM.

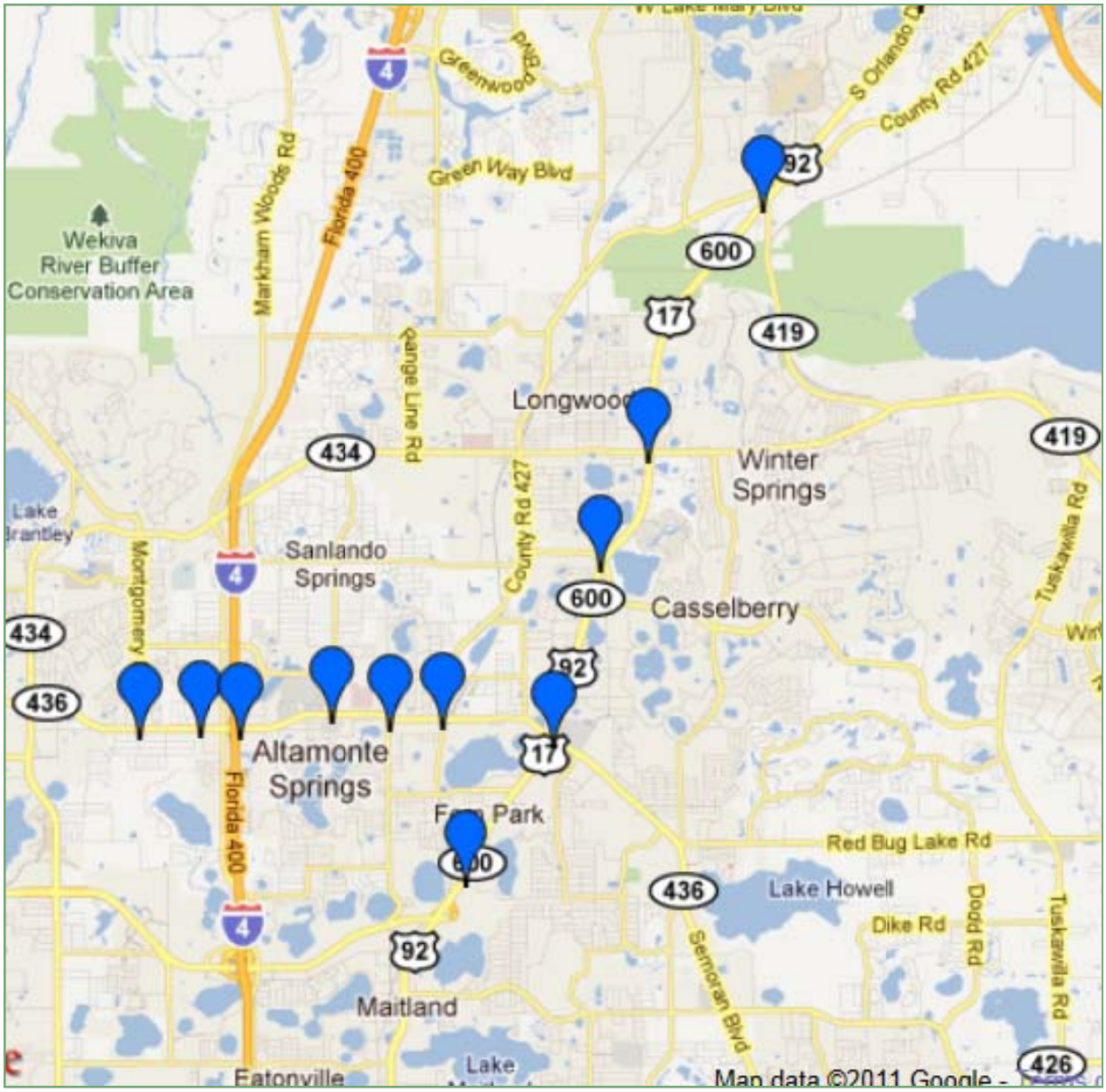
BlueTOAD detects anonymous Media Access Control (MAC) addresses, wireless identifications used to connect Bluetooth technologies on mobile devices in vehicles such as phones, headsets and music players. The system calculates travel time through analysis of subsequent detections (source: www.trafficcast.com). A MAC address is a unique identifier assigned to network interfaces for communications on the physical network segment (source: wikipedia.org).

Seminole County installed five (5) BlueTOAD devices along the US 17-92 corridor from Spartan Drive to SR 419 corridor as shown in Figure 1. TrafficCast's BlueTOAD devices collected MAC addresses from Bluetooth-enabled devices such as phones, headsets, personal navigation devices, and computers along the Study Segment. Data collected by the device is anonymous due to the nature of the MAC address (no personal information is associated with the MAC address).

TrafficCast removes abnormal data points using an algorithm to eliminate outliers. Outliers include illogical data pairs and any other matched pair that is outside the normally expected travel time. This processing also filters out high speed outliers resulting from the rare finding of identical MAC addresses due to manufacturer duplication, and multiple simultaneous MAC addresses from within a single vehicle, such as a bus.

The BlueTOAD travel time results obtained from Seminole County are provided in **Appendix C** of this report. It should be noted that the study results provided by the BlueTOAD devices consist of only the average travel time and speed. Other results such as the stop delay time and LOS that are readily provided in the GPS Technology reports are not readily provided in the Bluetooth Technology reports. Nevertheless, LOS can be calculated from the average speed and average delay time can be estimated comparing the actual travel time and the free flow travel time.

Figure 1: Blue TOAD devices Map on US 17-92 between Spartan Drive and SR 419



Source: https://bluetoad.trafficcast.com/

- BlueTOAD device location

3 Comparison of the Results

The following Table 3 summarizes the travel time and average speed results obtained using the two technologies.

Table 3: US 17-92 from Spartan Drive to SR 419 - Comparison of Study Results

Direction	GPS Technology			BlueTOAD			Travel Time Difference		Average Speed Difference	
	# of Runs	Travel Time (Sec)	Average Speed (MPH)	# of Runs	Travel Time (Sec)	Average Speed (MPH)	Value (Sec)	%	Value (MPH)	%
AM Peak Hour										
Northbound	9	651.0	37.4	24	667.6	37.6	16.6	2.5%	0.2	0.5%
Southbound	9	600.0	40.6	24	638.0	39.1	38.0	6.3%	1.5	3.7%
PM Peak Hour										
Northbound	9	679.2	35.9	16	686.8	36.8	7.6	1.1%	0.9	2.5%
Southbound	9	640.8	38.0	16	649.6	38.5	8.8	1.4%	0.5	1.3%

The comparison shown in Table 3 reveals a comparable set of study results for the selected Study Segment. The following list summarizes the comparison based on Table 3.

- The observed absolute deviation for the travel times range between 1.1% and 6.3% for the overall corridor.
- The observed absolute deviation for the average speeds range between 0.5% and 3.7% for the overall corridor.

4 Conclusions

The following conclusions and observations were deduced based on the study results comparison for the GPS and Bluetooth Technologies.

The main conclusion is:

- The comparison revealed a comparable set of results for the two technologies. The insignificant difference between the study results indicate that the Bluetooth Technology had produced enough number of pairs and thereby resulted in a true travel time representation for the Study Segment. Therefore, Bluetooth technology could be accepted as an alternative method of collecting travel time for the evaluation of Signal Retiming Studies. Nonetheless, more segments should be tested to confirm this conclusion.

The other conclusions are:

- Using the GPS Technology, a maximum of 9 runs could be recorded for the Study Segment in a single peak time period. This number is much higher for the Bluetooth Technology, which increases the reliability of the travel time results.
- The readily available results such as the fuel consumption, stop delay time and LOS with the GPS Technology, could be indirectly calculated with the Bluetooth Technology, with the exception of fuel consumption. However, for the purposes of Benefit Cost Evaluation of Signal Retiming Studies, fuel consumption has insignificant influence on the analysis and the other results (stop delay time and LOS) are not used in the evaluation.

5 Appendices

Appendix A: Preliminary Research Findings of Two alternative technologies used in Travel Time estimation on Highways.

Appendix B: Travel Time Results using GPS Technology

Appendix C: Travel Time Results using Bluetooth Technology

Appendix A

Preliminary Research Findings of Two Alternative Technologies used in Travel Time estimation on Highways

Preliminary Research Findings of Two Alternative Technologies used in Travel Time Estimation on Highways

1. Purpose

MetroPlan Orlando has shown interest in Alternative Technologies to estimate travel time data for use in Benefit Cost Evaluation of Signal Retiming Projects. As such, the Project Team has requested GMB to investigate further and present them with the research findings of these Alternative Technologies. The preliminary research findings will help the Project Team determine the feasibility of these Alternative Technologies for conducting Travel Time & Delay Studies for Signal Retiming Projects in MetroPlan Orlando area for the year 2012 study period. Of particular interest to the Project Team of MetroPlan Orlando are:

- Travel Time Estimation using **Cell Phones as Travel Probes** and
- Travel Time Estimation using **Bluetooth Technology**

The following paragraphs present a brief description, cons and pros of each of the above two technologies. Please note that the vendors for these two technologies claim that there are no Privacy Issues involved with the data collection.

2. Travel Time Estimation using Cell Phones as Travel Probes

Various vendors across the Country have the capability to provide travel speeds and travel time estimations in real time on roadways. These vendors obtain positional information of cell phones (through triangulation from the cell towers as shown in Figure 1) from the cell service providers on an anonymous basis.

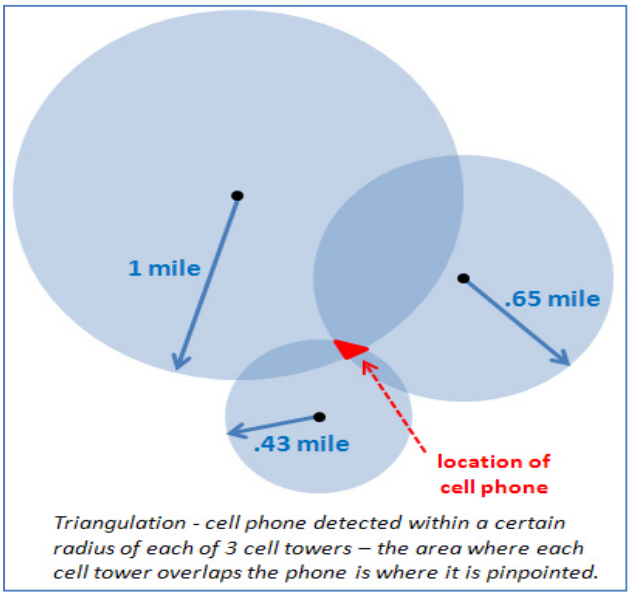


Figure 1: Technique used in Cell Phone Probes for Estimation of Travel Times

Below are the pros and cons of this technology based on preliminary understanding of this technology from various online sources and conversation with the vendors.

2.1 Pros

- The information is readily available.
- There will not be any data collection involved.
- Saves time and money and is safer than GPS probe vehicle technology since no driving is involved.
- The sample data set is larger and can be continuously collected for the entire peak hour period, as opposed to the limited data set collected during discontinuous time stamps using GPS probe vehicles.
- There will not be any operational costs, maintenance costs and software upgrades involved.

2.2 Cons

- A technical report completed by Florida International University Team on "Travel Time Estimation using Cell Phones for Highways & Roadway" for FDOT in January of 2007, has concluded that cell phone probe technology is not accurate and reliable in congested conditions. The report also noted that accuracy of the data rapidly decreases as congestion increases. With the unique requirements of the Benefit Cost Evaluation Studies involving Signal Retiming Projects, such as the need for accurate travel time data during peak hour periods on short segments, it seems unlikely that this technology will be able to meet our Study requirements.
- Only the Travel Time and Average Speed are provided. Other parameters that can be collected using GPS probe vehicles, such as the Control Delay at intersections, Fuel Consumption and Emissions data are not readily available.
- Even though the Cell Phone Data Vendors have their own Data Filtering and Aggregation techniques to provide reliable travel time data, it is virtually impossible for the End User to determine firsthand if any data abnormalities have occurred during a particular time period.

3. Travel Time Estimation using Bluetooth Technology

This much newer technology employs the use of Bluetooth sensors to record device IDs and time stamps of Bluetooth enabled devices used by commuters. Travel times and space mean speed are calculated by vendor developed software by searching for common IDs recorded by pairs of stations and comparing the time and location. A snapshot of the technique used in this technology is shown in Figure 2.

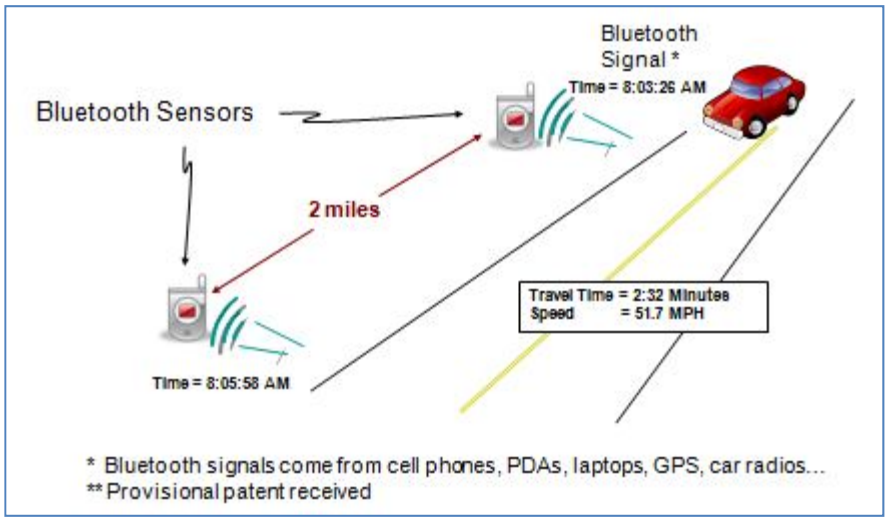


Figure 2: Technique used in Bluetooth Technology for Estimation of Travel Times (source: Traffaxinc.com)

Below are the pros and cons of this technology based on preliminary understanding of this technology from various online sources and conversation with the vendors.

3.1 Pros

- There will not be any field data collection involved.
- Saves time and money and is safer than GPS probe vehicle technology since no driving is involved.
- The sample data set is larger and can be continuously collected for the entire peak hour period, as opposed to the limited data set collected during discontinuous time stamps using GPS probe vehicles.
- The data is as accurate (positional accuracy) as the data collected using the GPS probe vehicle technology as claimed by the vendors. The accuracy of the data is not dependent on congestion or length of the study roadway segment.

3.2 Cons

- Only the Travel Time and Average Speed are provided. Other parameters that can be collected using GPS probe vehicles, such as the Control Delay at intersections, Fuel Consumption and Emissions data are not readily available.
- Even though the Cell Phone Data Vendors have their own Data Filtering and Aggregation techniques to provide reliable travel time data, it is virtually impossible for the End User to determine firsthand if any data abnormalities have occurred during a particular time period.

4. Conclusions

Based on the findings from preliminary research of these two Alternative Technologies for estimating travel times on highways, the following can be concluded.

- These two technologies will save money, time and are safer compared to the GPS probe vehicle technology.
- The data set will be larger and continuous (compared to the GPS technology data set).
- The issue of accuracy and reliability of the data collected using Cell Phone based technology for studies such as the travel time studies for signal retiming projects is yet to be addressed, because of the unique requirements (congested time periods and shorter study segments)
- Bluetooth technologies boast of providing accurate and larger data sets.
- None of these two technologies can provide parameters such as the Control Delay at intersections, Fuel Consumption and Emissions data which are used in Benefit Cost Ratio calculations. Nonetheless, it is important to note that the benefits from fuel and emissions savings are generally insignificant compared to the travel time savings.

Appendix B

Travel Time Results using GPS Technology

PILOT STUDY

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 - Spartan Dr. to SR 419 - Northbound Direction Summary

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,482	9	Signal	34.8	0.0	I	48.6	A	1.08	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	9	Signal	30.6	6.6	I	36.5	B	0.81	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	27.6	5.4	I	33.9	C	0.75	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	9	Signal	25.2	3.6	I	35.7	B	0.79	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	9	Signal	45.6	21.6	I	15.0	F	0.33	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	9	Signal	21.0	1.2	I	39.4	B	0.88	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	9	Signal	40.2	0.0	I	47.5	A	1.05	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	9	Signal	30.0	6.0	I	38.4	B	0.85	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	9	Signal	74.4	45.6	I	12.6	F	0.28	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	9	Signal	34.2	8.4	I	29.5	C	0.65	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	9	Signal	36.6	0.0	I	48.2	A	1.07	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	9	Signal	58.2	6.6	I	38.3	B	0.85	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	9	Signal	90.0	0.0	I	47.2	A	1.05	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy.	Seminole	Arterial	OBD	1	2	0	45/50	3,062	9	Signal	40.8	0.0	I	51.2	A	1.02	
Gen. Hutchinson Pkwy. to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	9	Signal	61.8	1.2	I	46.6	A	0.93	
TOTAL							45	35,746			651.0	106.2	I	37.4	B	0.83	0.229 gal/veh
PM PEAK HOUR																	
Spartan Dr. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	0	45	2,482	9	Signal	42.0	1.8	I	40.3	B	0.90	
O'Brien Rd. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,637	9	Signal	30.6	3.6	I	36.5	B	0.81	
Lake of the Woods Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	22.8	0.0	I	41.1	B	0.91	
Prairie Lake Dr. to Fernwood Blvd.	Seminole	Arterial	OBD	0	3	3	45	1,320	9	Signal	35.4	8.4	I	25.4	D	0.56	
Fernwood Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,003	9	Signal	75.6	47.4	I	9.0	F	0.20	
SR 436 to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,214	9	Signal	19.8	0.0	I	41.8	B	0.93	
Live Oaks Blvd. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	2,798	9	Signal	47.4	0.0	I	40.3	B	0.89	
Triplet Lake Dr. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	1	45	1,690	9	Signal	30.6	2.4	I	37.6	B	0.84	
Plumosa Ave. to Button Rd.	Seminole	Arterial	OBD	1	3	1	45	1,373	9	Signal	38.4	13.8	I	24.4	D	0.54	
Button Rd. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	9	Signal	36.6	12.0	I	27.5	C	0.61	
Seminola Blvd./Dog Track Rd. to Laura St.	Seminole	Arterial	OBD	1	3	0	45	2,587	9	Signal	36.6	0.0	I	48.2	A	1.07	
Laura St. to SR 434	Seminole	Arterial	OBD	2	3	1	45	3,274	9	Signal	64.2	8.4	I	34.8	B	0.77	
SR 434 to Shepard Rd./Raven Ave.	Seminole	Arterial	OBD	1	2	1	45	6,230	9	Signal	90.0	0.0	I	47.2	A	1.05	
Shepard Rd./Raven Ave. to Gen. Hutchinson Pkwy.	Seminole	Arterial	OBD	1	2	0	45/50	3,062	9	Signal	40.2	0.0	I	51.9	A	1.04	
Gen. Hutchinson Pkwy. to SR 419/CR 427	Seminole	Arterial	OBD	1	2	1	50	4,224	9	Signal	69.0	7.2	I	41.7	B	0.83	
TOTAL							45	35,746			679.2	105.0	I	35.9	B	0.80	0.231 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

PILOT STUDY

Year 2011 METROPLAN Orlando Travel Time Study

US 17/92 - Spartan Dr. to SR 419 - Southbound Direction Summary

Roadway Segment	Jurisdiction	Facility Type[1]	Area Type[1]	Left Turn Lanes[2]	Thru Lanes[2]	Right Turn Lanes[2]	Speed Limit (mph)	Distance (ft)	# Runs	Traffic Control Device	Travel Time (sec)	Stop Delay (sec)	Roadway Class	Roadway Segment Average Speed (mph)	Roadway Segment Average Speed LOS	Roadway Summary Avg Speed/ Speed Limit	Roadway Summary Avg. Fuel Consump.
AM PEAK HOUR																	
SR 419/CR 427 to Gen. Hutchinson Pkwy.	Seminole	Arterial	OBD	0	2	1	50	4,224	9	Signal	57.6	0.0	I	50.0	A	1.00	
Gen. Hutchinson Pkwy. to Shepard Rd./Raven Av	Seminole	Arterial	OBD	1	3	0	45/50	3,062	9	Signal	41.4	0.0	I	50.4	A	1.01	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	9	Signal	110.4	12.6	I	38.5	B	0.86	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,326	9	Signal	48.0	0.0	I	47.2	A	1.05	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,534	9	Signal	36.0	0.0	I	48.0	A	1.07	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	9	Signal	22.2	0.0	I	45.4	A	1.01	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	21.0	0.0	I	44.6	A	0.99	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	9	Signal	26.4	0.0	I	43.6	A	0.97	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	9	Signal	46.8	0.6	I	40.8	B	0.91	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	9	Signal	54.6	24.0	I	15.2	F	0.34	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	9	Signal	16.8	0.0	I	40.7	B	0.90	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	9	Signal	30.6	5.4	I	29.4	C	0.65	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	29.4	1.2	I	31.8	C	0.71	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	9	Signal	25.8	0.0	I	43.3	A	0.96	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,482	9	Signal	33.0	0.0	I	51.3	A	1.14	
TOTAL							45	35,746			600.0	43.8	I	40.6	B	0.90	0.230 gal/veh
PM PEAK HOUR																	
SR 419/CR 427 to Gen. Hutchinson Pkwy.	Seminole	Arterial	OBD	0	2	1	50	4,224	9	Signal	72.6	7.8	I	39.7	B	0.79	
Gen. Hutchinson Pkwy. to Shepard Rd./Raven Av	Seminole	Arterial	OBD	1	3	0	45/50	3,062	9	Signal	52.8	3.0	I	39.5	B	0.79	
Shepard Rd./Raven Ave. to SR 434	Seminole	Arterial	OBD	2	3	1	45	6,230	9	Signal	133.8	32.4	I	31.7	C	0.71	
SR 434 to Laura St.	Seminole	Arterial	OBD	1	3	0	45	3,326	9	Signal	50.4	0.0	I	45.0	A	1.00	
Laura St. to Seminola Blvd./Dog Track Rd.	Seminole	Arterial	OBD	2	3	1	45	2,534	9	Signal	38.4	0.0	I	45.0	A	1.00	
Seminola Blvd./Dog Track Rd. to Button Rd.	Seminole	Arterial	OBD	2	3	0	45	1,478	9	Signal	21.6	0.0	I	46.7	A	1.04	
Button Rd. to Plumosa Ave.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	19.8	0.0	I	47.3	A	1.05	
Plumosa Ave. to Triplet Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,690	9	Signal	48.0	13.8	I	24.0	D	0.53	
Triplet Lake Dr. to Live Oaks Blvd.	Seminole	Arterial	OBD	1	3	1	45	2,798	9	Signal	51.0	1.8	I	37.4	B	0.83	
Live Oaks Blvd. to SR 436	Seminole	Arterial	OBD	2	3	1	45	1,214	9	Signal	31.2	8.4	I	26.5	D	0.59	
SR 436 to Fernwood Blvd.	Seminole	Arterial	OBD	2	3	0	45	1,003	9	Signal	17.4	1.2	I	39.3	B	0.87	
Fernwood Blvd. to Prairie Lake Dr.	Seminole	Arterial	OBD	1	3	0	45	1,320	9	Signal	24.0	2.4	I	37.5	B	0.83	
Prairie Lake Dr. to Lake of the Woods Blvd.	Seminole	Arterial	OBD	1	3	0	45	1,373	9	Signal	20.4	0.0	I	45.9	A	1.02	
Lake of the Woods Blvd. to O'Brien Rd.	Seminole	Arterial	OBD	1	3	1	45	1,637	9	Signal	28.2	5.4	I	39.6	B	0.88	
O'Brien Rd. to Spartan Dr.	Seminole	Arterial	OBD	1	3	0	45	2,482	9	Signal	31.2	0.0	I	54.2	A	1.21	
TOTAL							45	35,746			640.8	76.2	I	38.0	B	0.85	0.230 gal/veh

Note:

1. The Facility type and Area type definitions were obtained from the latest Orlando Urban Area Transportation Study (OUATS) Model.

2. The Through lanes and Turn lanes are provided for the approach of the direction of travel.

3. OBD - Outlying Business District

Appendix C

Travel Time Results using Bluetooth Technology

Seminole County

BT Reports

Generate Report

Report Parameters

Pair / Route
Route 1958: (US 17-92 Spartan to SR 419 - north bound)
Start Date
2011-05-26 07:00:00
End Date
2011-05-26 08:59:00
Type
Smoothed Speeds: 5 min sample

Calculated time	Last match time	Travel time (s)	Speed (mph)
2011-05-26 07:00	2011-05-26 06:59:20	526.0	47.22
2011-05-26 07:05	2011-05-26 07:01:47	541.0	45.91
2011-05-26 07:10	2011-05-26 07:09:32	524.0	47.40
2011-05-26 07:15	2011-05-26 07:15:14	560.0	44.36
2011-05-26 07:20	2011-05-26 07:20:15	621.0	40.00
2011-05-26 07:25	2011-05-26 07:24:35	637.0	39.00
2011-05-26 07:30	2011-05-26 07:29:50	625.0	39.74
2011-05-26 07:35	2011-05-26 07:34:58	626.0	39.68
2011-05-26 07:40	2011-05-26 07:39:24	704.0	35.28
2011-05-26 07:45	2011-05-26 07:44:49	724.0	34.31
2011-05-26 07:50	2011-05-26 07:50:21	709.0	35.04
2011-05-26 07:55	2011-05-26 07:54:22	710.0	34.99
2011-05-26 08:00	2011-05-26 07:59:15	704.0	35.28
2011-05-26 08:05	2011-05-26 08:04:59	701.0	35.44
2011-05-26 08:10	2011-05-26 08:08:41	722.0	34.40
2011-05-26 08:15	2011-05-26 08:14:54	712.0	34.89
2011-05-26 08:20	2011-05-26 08:19:59	737.0	33.70
2011-05-26 08:25	2011-05-26 08:21:40	752.0	33.03
2011-05-26 08:30	2011-05-26 08:29:50	723.0	34.36
2011-05-26 08:35	2011-05-26 08:35:20	647.0	38.39
2011-05-26 08:40	2011-05-26 08:38:52	663.0	37.47
2011-05-26 08:45	2011-05-26 08:45:03	759.0	32.73
2011-05-26 08:50	2011-05-26 08:49:50	720.0	34.50
2011-05-26 08:55	2011-05-26 08:52:58	676.0	36.75

Seminole County

BT Reports

Generate Report

Report Parameters

Pair / Route
Route 1958: (US 17-92 Spartan to SR 419 - north bound)
Start Date
2011-05-26 16:00:00
End Date
2011-05-26 17:59:00
Type
Smoothed Speeds: 5 min sample

Calculated time	Last match time	Travel time (s)	Speed (mph)
2011-05-26 16:00	2011-05-26 16:03:08	678.0	36.64
2011-05-26 16:05	2011-05-26 16:09:22	669.0	37.13
2011-05-26 16:20	2011-05-26 16:20:19	Not enough matches	
2011-05-26 16:25	2011-05-26 16:28:55	663.0	37.47
2011-05-26 16:30	2011-05-26 16:31:34	652.0	38.10
2011-05-26 16:35	2011-05-26 16:39:06	662.0	37.52
2011-05-26 16:40	2011-05-26 16:41:33	634.0	39.18
2011-05-26 16:50	2011-05-26 16:53:11	Not enough matches	
2011-05-26 16:55	2011-05-26 16:57:44	752.0	33.03
2011-05-26 17:05	2011-05-26 17:08:58	Not enough matches	
2011-05-26 17:15	2011-05-26 17:17:47	800.0	31.05
2011-05-26 17:20	2011-05-26 17:19:37	690.0	36.00
2011-05-26 17:25	2011-05-26 17:26:43	764.0	32.51
2011-05-26 17:30	2011-05-26 17:33:46	657.0	37.81
2011-05-26 17:45	2011-05-26 17:46:54	620.0	40.06
2011-05-26 17:50	2011-05-26 17:52:21	Not enough matches	

Seminole County

BT Reports

Generate Report

Report Parameters

Pair / Route
Route 1957: (US 17-92 SR419 to Spartan - south bound)
Start Date
2011-05-26 07:00:00
End Date
2011-05-26 08:59:00
Type
Smoothed Speeds: 5 min sample

Calculated time	Last match time	Travel time (s)	Speed (mph)
2011-05-26 07:00	2011-05-26 07:00:07	590.0	42.10
2011-05-26 07:05	2011-05-26 07:04:31	577.0	43.05
2011-05-26 07:10	2011-05-26 07:09:25	571.0	43.50
2011-05-26 07:15	2011-05-26 07:15:05	604.0	41.13
2011-05-26 07:20	2011-05-26 07:20:04	623.0	39.87
2011-05-26 07:25	2011-05-26 07:25:10	678.0	36.64
2011-05-26 07:30	2011-05-26 07:29:39	619.0	40.13
2011-05-26 07:35	2011-05-26 07:34:07	570.0	43.58
2011-05-26 07:40	2011-05-26 07:39:45	656.0	37.87
2011-05-26 07:45	2011-05-26 07:44:28	731.0	33.98
2011-05-26 07:50	2011-05-26 07:50:00	711.0	34.94
2011-05-26 07:55	2011-05-26 07:55:25	648.0	38.33
2011-05-26 08:00	2011-05-26 07:59:46	663.0	37.47
2011-05-26 08:05	2011-05-26 08:03:47	703.0	35.33
2011-05-26 08:10	2011-05-26 08:09:34	672.0	36.96
2011-05-26 08:15	2011-05-26 08:14:53	722.0	34.40
2011-05-26 08:20	2011-05-26 08:19:57	653.0	38.04
2011-05-26 08:25	2011-05-26 08:24:27	635.0	39.12
2011-05-26 08:30	2011-05-26 08:30:06	632.0	39.30
2011-05-26 08:35	2011-05-26 08:34:23	616.0	40.32
2011-05-26 08:40	2011-05-26 08:39:45	613.0	40.52
2011-05-26 08:45	2011-05-26 08:45:12	653.0	38.04
2011-05-26 08:50	2011-05-26 08:50:15	586.0	42.39
2011-05-26 08:55	2011-05-26 08:55:05	586.0	42.39

Seminole County

BT Reports

Generate Report

Report Parameters

Pair / Route
Route 1957: (US 17-92 SR419 to Spartan - south bound)
Start Date
2011-05-26 16:00:00
End Date
2011-05-26 17:59:00
Type
Smoothed Speeds: 5 min sample

Calculated time	Last match time	Travel time (s)	Speed (mph)
2011-05-26 16:00	2011-05-26 16:02:47	779.0	31.89
2011-05-26 16:05	2011-05-26 16:09:05	692.0	35.90
2011-05-26 16:20	2011-05-26 16:20:19	Not enough matches	
2011-05-26 16:25	2011-05-26 16:28:27	632.0	39.30
2011-05-26 16:30	2011-05-26 16:31:52	565.0	43.96
2011-05-26 16:35	2011-05-26 16:38:58	624.0	39.81
2011-05-26 16:40	2011-05-26 16:40:44	610.0	40.72
2011-05-26 16:50	2011-05-26 16:52:36	Not enough matches	
2011-05-26 16:55	2011-05-26 16:57:37	673.0	36.91
2011-05-26 17:05	2011-05-26 17:09:28	Not enough matches	
2011-05-26 17:15	2011-05-26 17:18:29	645.0	38.51
2011-05-26 17:20	2011-05-26 17:19:19	636.0	39.06
2011-05-26 17:25	2011-05-26 17:26:25	619.0	40.13
2011-05-26 17:30	2011-05-26 17:33:31	704.0	35.28
2011-05-26 17:45	2011-05-26 17:46:54	616.0	40.32
2011-05-26 17:50	2011-05-26 17:52:45	Not enough matches	

Appendix E

Power Point Presentation

Year 2011 Travel Time Study and Benefit - Cost Analysis

GMB Engineers and Planners, Inc.

metroplan orlando
A REGIONAL TRANSPORTATION PARTNERSHIP

Study Purpose

- Signal Retiming was performed by FDOT
- GMB Engineers and Planners, Inc.
  - Benefit/cost analysis of the recently completed signal retiming projects.

Why Signal Retiming?

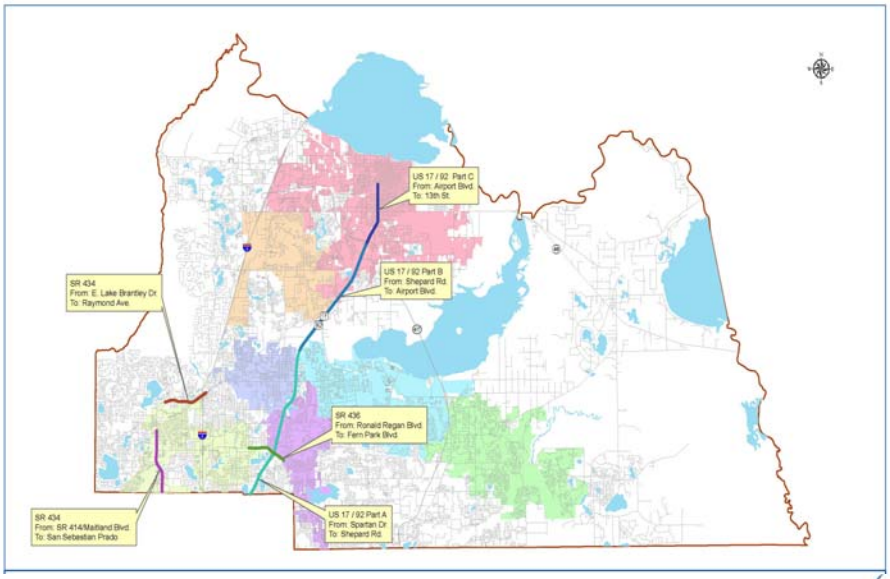
- Improves traffic flow through group of signals
- Account for changes in traffic patterns due to new growth
- Reduce driver frustration
- Reduce emissions and fuel consumption

Year 2011 MetroPlan Orlando Travel Time Study – Roadway Limits

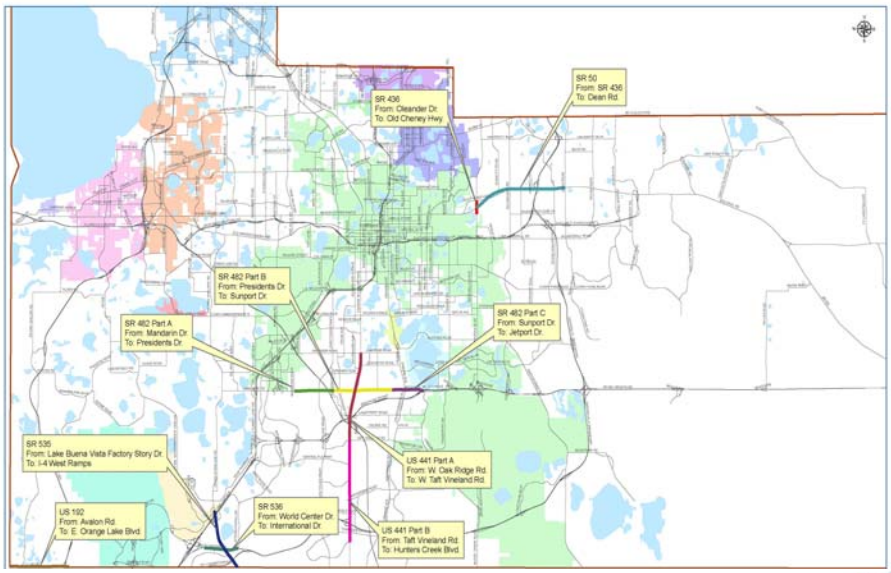
Street	From	To	Distance	Jurisdiction
US 17/92 PART A	SPARTAN DR.	SHEPARD RD.	5.30	SEMINOLE
US 17/92 PART B	SHEPARD RD.	AIRPORT BLVD.	4.62	SEMINOLE
US 17/92 PART C	AIRPORT BLVD.	13TH ST	2.42	SEMINOLE
SR 436	CR 427 (RONALD REAGAN BLVD.)	FERN PARK BLVD.	1.54	SEMINOLE
SR 434	E. LAKE BRANTLEY DR.	RAYMOND AVE.	1.76	SEMINOLE
SR 434	SR 414 (MAITLAND BLVD.)	SAN SEBASTIAN PRADO	2.31	SEMINOLE
SR 50	SR 436	DEAN RD.	4.23	ORANGE
SR 436	OLEANDER DR.	OLD CHENEY HWY.	0.55	ORANGE
US 192 (SR 530)	CR 545 (AVALON RD.)	E. ORANGE LAKE BLVD.	2.15	ORANGE
SR 535	BUENA VISTA PKWY.	I-4 WB RAMPS	2.22	ORANGE
SR 536	WORLD CENTER DR.	INTERNATIONAL DR./SR 417	1.08	ORANGE
US 441 PART A	OAK RIDGE RD.	TAFT VINELAND RD.	3.41	ORANGE
US 441 PART B	TAFT VINELAND RD.	HUNTERS CREEK BLVD.	4.34	ORANGE
SR 482 PART A	MANDARIN DR.	PRESIDENTS DR.	1.14	ORANGE
SR 482 PART B	PRESIDENTS DR.	SUNPORT DR.	3.22	ORANGE
SR 482 PART C	SUNPORT DR.	JET PORT DR.	1.50	ORANGE
SR 423	CHURCH ST.	US 441 (OBT)	4.13	CITY OF ORLANDO
SR 50	PETE PARRISH BLVD.	SUMMERLIN AVE.	4.26	CITY OF ORLANDO
US 441 (SR 500/600)	GRAND ST.	SR 50	1.85	CITY OF ORLANDO
JOHN YOUNG PKWY.	US 192	PATRICK ST.	1.00	OSCEOLA

TOTAL – **53.03** MILES

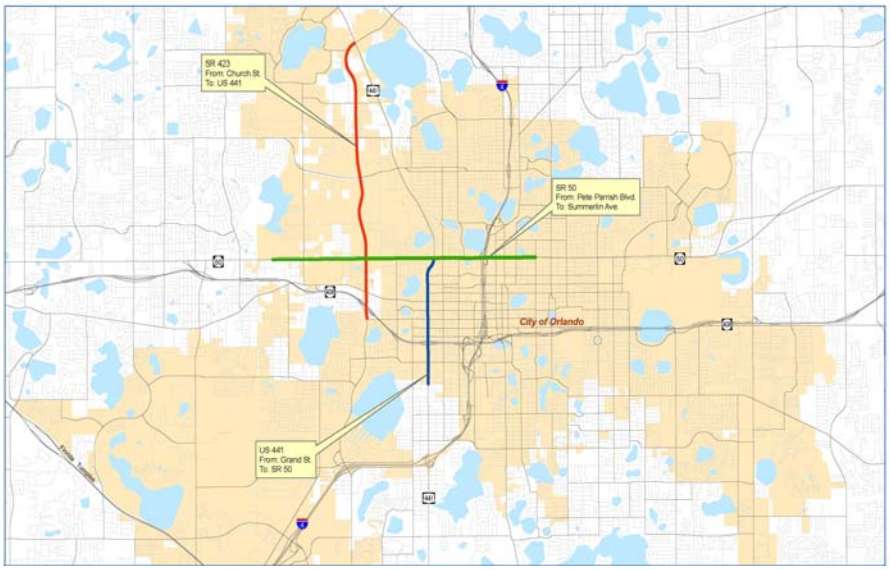
Year 2011 MetroPlan Orlando Travel Time Study – Seminole County



Year 2011 MetroPlan Orlando Travel Time Study – Orange County



Year 2011 MetroPlan Orlando Travel Time Study – City of Orlando



Year 2011 MetroPlan Orlando Travel Time Study – Osceola County

Procedure & Technology

- Before and After Conditions
- Four runs (AM & PM peak) in each direction on a Tuesday, Wednesday, or Thursday.
- Global Positioning System (GPS) and Geographic Information System (GIS).

Benefit – Cost Analysis

- Input Benefit Items
  - *Travel Time Cost Savings: $16.30/hr for Orlando
  - ~Fuel Cost Savings: $3.44/gallon
- Signal Retiming Costs obtained from FDOT

***Source:** Year 2010 Mobility Data for Orlando
~Source: Florida Department of Revenue & U.S. Energy Information Administration

Benefit – Cost Analysis (continued)

- Benefit – Cost Ratio = Total Benefits/ Total Cost
- Benefit – Cost Ratio > 1 justifies retiming project

Sample Benefit / Cost Calculation

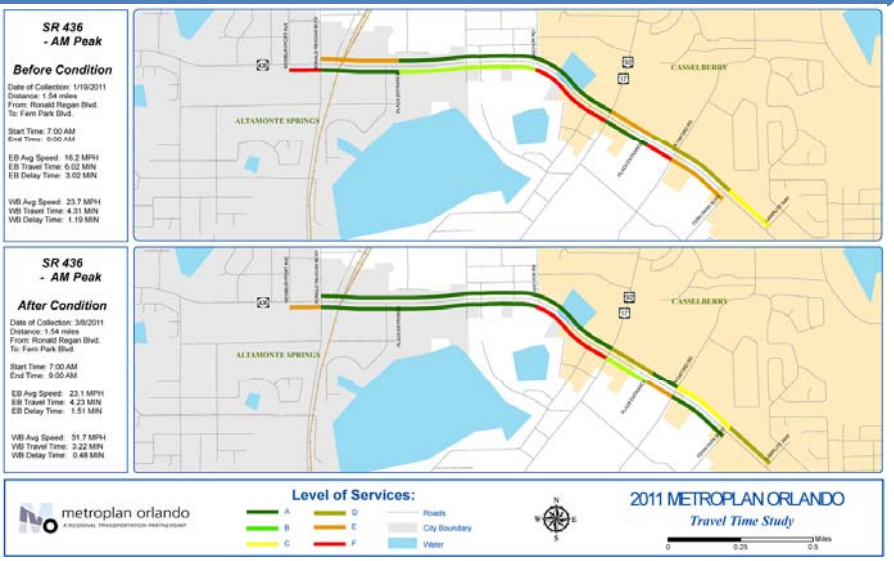
SR 436 - Ronald Regan Boulevard to Fern Park Boulevard

Summary of Measures of Effectiveness & Benefit Cost Analysis

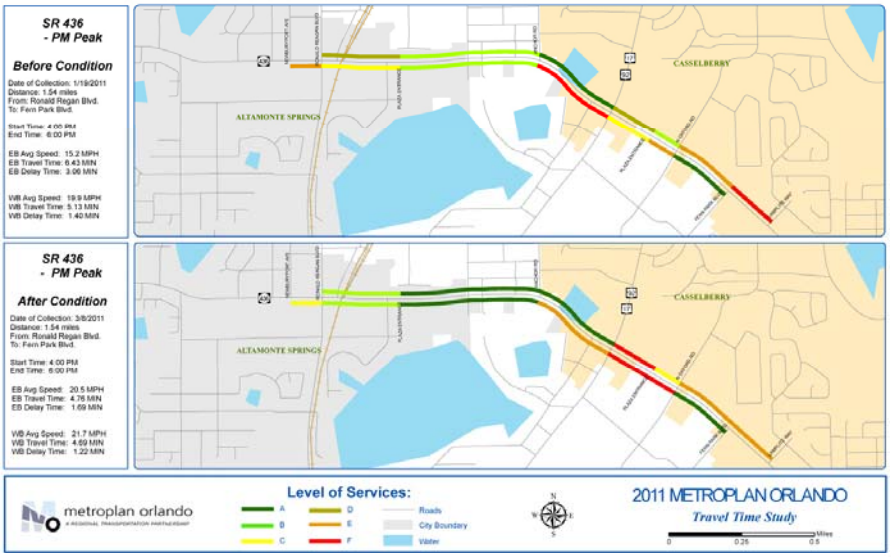
MOE's	AM PEAK HOUR		PM PEAK HOUR	
	Before	After	Before	After
Total Travel Time (vehicle - hrs)	420.77	304.99	474.43	386.74
Total Fuel Consumption (gallons)	300.16	289.29	296.99	292.08

BENEFITS	AM PEAK HOUR	PM PEAK HOUR
User Benefit Per Day	$1,924.62	$1,446.19
Annual User Benefit	**$577,386.93**	**$433,857.37**
Total Annual User Benefit	**$1,011,244.30**	
Total Signal Retiming Annual Cost	$11,412.50	
User Benefit / Cost Ratio	**88.61**	

Year 2011 MetroPlan Orlando Travel Time Study



Year 2011 MetroPlan Orlando Travel Time Study



B/C Ratio Summary – Seminole County

S No.	Street	From	To	Annual User Benefit	Annual Cost	B/C Ratio
1	US 17/92 Part A	SPARTAN DR.	SHEPARD RD.	$1,237,385.07	$23,108.88	53.55
2	US 17/92 PART B	SHEPARD RD.	AIRPORT BLVD.	$990,495.80	$19,807.83	50.01
3	US 17/92 PART C	AIRPORT BLVD.	13TH ST.	$593,180.92	$11,554.63	51.34
4	SR 436	CR 427 (RONALD REAGAN BLVD.)	FERN PARK BLVD.	$1,011,244.30	$11,412.50	88.61
5	SR 434	E. LAKE BRANTLEY DR.	RAYMOND AVE.	$581,632.02	$15,985.12	36.39
6	SR 434	SR 414	SAN SEBASTIAN PRADO	$521,235.02	$8,440.29	61.76

B/C Ratio Summary – Orange County

S No.	Street	From	To	Annual User Benefit	Annual Cost	B/C Ratio
1	SR 50	SR 436	DEAN RD.	$1,782,120.55	$14,549.31	122.49
2	SR 436	OLEANDER DR.	OLD CHENEY HWY.	$430,446.95	$5,455.90	78.90
3	US 192 (SR 530)	CR 545 (AVALON RD.)	E. ORANGE LAKE BLVD.	$495,498.92	$11,564.92	42.85
4	SR 535	BUENA VISTA PKWY.	I-4 WB RAMPS	$670,433.07	$8,585.48	78.09
5	SR 536	WORLD CENTER DR.	INTERNATIONAL DR/SR 417	$271,319.57	$5,151.44	52.67
6	US 441 PART A	OAK RIDGE RD.	TAFT VINELAND RD.	$1,496,385.27	$19,191.29	77.97
7	US 441 PART B	TAFT VINELAND RD.	HUNTERS CREEK BLVD.	$373,375.03	$17,446.83	21.40
8	SR 482 PART A	MANDARIN DR.	PRESIDENTS DR.	$475,062.24	$4,845.07	98.05
9	SR 482 PART B	PRESIDENTS DR.	SUNPORT DR.	$864,105.00	$12,919.94	66.88
10	SR 482 PART C	SUNPORT DR.	JET PORT DR.	$774,821.76	$9,689.76	79.96

B/C Ratio Summary – City of Orlando

S No.	Street	From	To	Annual User Benefit	Annual Cost	B/C Ratio
1	SR 423	CHURCH ST.	US 441 (OBT)	$1,203,066.96	$18,614.37	64.63
2	SR 50	PETE PARRISH BLVD.	SUMMERLIN AVE.	$1,159,649.71	$32,084.55	36.14
3	US 441	GRAND ST.	SR 50	$438,483.71	$18,862.06	23.25

B/C Ratio Summary - Osceola

S No.	Street	From	To	Annual User Benefit	Annual Cost	B/C Ratio
1	JOHN YOUNG PKWY.	US 192	PATRICK ST.	$764,643.66	$8,973.77	85.21

Annual Travel Time and Fuel Savings

- Annual Time Savings (vehicle hours): 974,511.27
- Annual Fuel Savings (gallons): 72,689.50
- Overall Annual User Benefit: $16,134,585.58
- Overall Annual Cost: $278,243.94
- Overall B/C: 58.0

% (Miles) Below Adopted LOS : Before and After

Direction-Peak Hour	BEFORE %(Miles)	AFTER %(Miles)
NB/EB – AM	7.60% (4.12)	3.98% (2.16)
NB/EB – PM	11.36% (6.16)	5.13% (2.78)
SB/WB – AM	6.53% (3.54)	2.45% (1.33)
SB/WB – PM	15.06% (8.17)	6.25% (3.39)
Total	**40.54% (21.99)**	**17.80% (9.66)**

Pilot Study

Objective:
To evaluate the Blue Tooth technology and the GPS technology for collecting travel time data.

Pilot Study Roadway Segment:
US 17/92 from Spartan Dr. to SR 419 (Seminole County)

Length – 6.77 Miles

Time Period: May 26th, 2011

7:00 AM – 9:00 AM and 4:00 PM – 6:00 PM

Comparison of Results

Direction	GPS Technology			BlueTOAD			Travel Time Difference		Average Speed Difference	
	# of Runs	Travel Time (Sec)	Average Speed (MPH)	# of Samples	Travel Time (Sec)	Average Speed (MPH)	Value (Sec)	%	Value (MPH)	%
AM Peak Hour										
Northbound	9	651.0	37.4	24	667.6	37.6	16.6	2.5%	0.2	0.5%
Southbound	9	600.0	40.6	24	638.0	39.1	38.0	6.3%	1.5	3.7%
PM Peak Hour										
Northbound	9	679.2	35.9	16	686.8	36.8	7.6	1.1%	0.9	2.5%
Southbound	9	640.8	38.0	16	649.6	38.5	8.8	1.4%	0.5	1.3%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