ICE FORM – Stage 1

Intersection: US 41 @ SR 44

Location: Citrus County – D7

Florida Department of Transportation
Intersection Control Evaluation (ICE) Form
Stage 1: Screening

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

Project Name	US 41 at SR 44	FDOT Project #		Date	06/26/19
Submitted By	Jack Freeman, Kittelson	Agency/Company	FDOT D7	Email	jfreeman@kittelson.com
FDOT Context Classification	C3C - Suburban Commercial	FDOT District	District 7	County	Citrus
Project Locality (*City/Town/Village*)	City of Inverness	Project Type	Congestion Mitigation Project		
Project Purpose (*What is the catalyst for this project and why is it being undertaken?*)	US 41 at SR 44 is currently a signalized intersection which is proposed for reconfiguration to include a dual southbound left turn lane. The additional lane is intended to accommodate the projected southbound left turn demand and the reported queue spillback experienced due to a crest vertical curve on the approach. The ICE policy is being implemented to identify an applicable intersection control type.				
Project Setting Description (*Describe the area surrounding the intersection*)	The land uses surrounding the intersection comprise mainly commercial and some residential uses; Cooter Pond Park is located on the northeast quadrant of the intersection. There are some retail stores, small businesses, and restaurants in the immediate vicinity.				
Multimodal Context (*Describe the pedestrian, bicycle, and transit activity in the area and the potential for activity based on surrounding land uses and development patterns*)	Approximately 6' concrete sidewalks are provided along all intersection legs except for the west leg where no sidewalk is provided in the intersection's immediate vicinity. 4' paved shoulders are present along both sides of US 41, with marked bicycle lanes marked on the north leg only. No bus stops are located within the vicinity of the study intersection.				

Major Street Information

Route #:	SR 45	Route Name(s)	US 41			Milepost	12.215		
Existing Control Type	Signal		Existing AADT	29,000		Design Year AADT	37,400		
Design Vehicle	Interstate Semitrailer (WB-62)		Control Vehicle	Interstate Semitrailer (WB-62)					
Primary Functional Classification	Urban Principal Arterial					Design Speed (mph)	45		
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]			

Approach #1	Direction	Northbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	138	Left	99
	Multi-Use Path?	No	Left-Through-Right	0	Through	628	Through	576
	Scheduled Bus Service?	No	Through-Right	0	Right	122	Right	120
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		10.0%	
Approach #2	Direction	Southbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	Both sides of the approach	Left-Turn	1				
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	264	Left	359
	Multi-Use Path?	No	Left-Through-Right	0	Through	463	Through	778
	Scheduled Bus Service?	No	Through-Right	0	Right	31	Right	58
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		10.0%	

Minor Street Information											
Route #:	SR 44	Route Name(s)						Milepost (if app.)		17.66	
Existing Control Type		Signal		Existing AADT	15,400			Design Year AADT		18,400	
Design Vehicle		Interstate Semitrailer (WB-62)		Control Vehicle		Interstate Semitrailer (WB-62)					
Primary Functional Classification			Urban Principal Arterial					Design Speed (mph)		45	
Secondary Functional Classification (if app.)								Target Speed (mph) [if app.]			

Approach #1	Direction	Eastbound	Number of Lanes		Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes			
	Sidewalks along:	Neither side of the approach	Left-Turn	1							
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak			Weekday PM Peak			
	On-Street Bike Facilities?	No	Through	1	Left	17		Left	34		
	Multi-Use Path?	No	Left-Through-Right	0	Through	106		Through	104		
	Scheduled Bus Service?	No	Through-Right	0	Right	61		Right	137		
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %			6.8%			
Approach #2	Direction	Westbound	Number of Lanes		Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes			
	Sidewalks along:	Both sides of the approach	Left-Turn	1							
	Crosswalk on Approach?	Yes	Left-Through	0	Weekday AM Peak			Weekday PM Peak			
	On-Street Bike Facilities?	No	Through	2	Left	80		Left	117		
	Multi-Use Path?	No	Left-Through-Right	0	Through	74		Through	122		
	Scheduled Bus Service?	No	Through-Right	0	Right	354		Right	480		
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %			4.5%			
Approach #3	Direction		Number of Lanes		Study Period #1 Traffic Volumes			Study Period #2 Traffic Volumes			
	Sidewalks along:		Left-Turn								
	Crosswalk on Approach?		Left-Through		Weekday AM Peak			Weekday PM Peak			
	On-Street Bike Facilities?		Through		Left			Left			
	Multi-Use Path?		Left-Through-Right		Through			Through			
	Scheduled Bus Service?		Through-Right		Right			Right			
	Bus Stop on Approach?		Right-Turn		Daily Truck %						

Crash History (Existing Intersections Only)
Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:
The most recent 5 years of crash data on record (2013-2017) was collected for the study intersection. Over the 5 year history, 99 total crashes occurred with 34 crashes resulting in an injury and no fatalities. 13 of the injury crashes were rear-end crashes and 11 were angle or left-turn related. Rear-end was the highest crash type with 33 crashes and second was left-turn or angle related with 24 total crashes. 24 percent of crashes occurred on Friday.

Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
	CAP-X Outputs					
	V/C Ratio					
Control Strategy	Weekday AM Peak	Weekday PM Peak	Multimodal Score	SPICE Ranking	Strategy to Be Advanced?	Justification
Two-Way Stop-Controlled	N/A	N/A	N/A	N/A	No	Existing intersection control is a traffic signal
All-Way Stop-Controlled	N/A	N/A	N/A	N/A	No	Existing intersection control is a traffic signal
Signalized Control	0.51	0.58	4.8	5	Yes	Will move forward as the future no-build scenario.
Roundabout	0.57	0.72	5.6	4	Yes	Slightly worse operations than the signal but could reduce crashes from the existing signal.
Median U-Turn	0.57 (Full) 0.50 (Partial)	0.76 (Full) 0.72 (Partial)	6.3	1	No	Operational performance decreases when compared to the signal. Construction costs on the north leg will reduce feasibility.
RCUT (Signalized)	0.37	0.54	6.3	7	Yes	Operational performance provides a significant improvement for the AM peak and a slight improvement for the PM peak.
RCUT (Unsignalized)	N/A	N/A	N/A	N/A	No	Existing intersection control is a traffic signal
Jughandle				2	No	Existing ROW limitations with existing land uses - including Cooter Pond Park.
Displaced Left-Turn	0.37 (Full) 0.37 (Partial)	0.42 (Full) 0.42 (Partial)	4.8	3	No	Existing ROW limitations with existing land uses - including Cooter Pond Park. Only one left turn movement is high enough to consider DLT.
Continuous Green Tee	N/A	N/A	N/A	N/A	No	Existing intersection configuration is 4-leg.
Quadrant Roadway	0.48	0.60	4.4		Yes	Existing roadway network on the NW corner could be utilized to improve the operational performance at the study intersection.
Signalized Control (Alt)	0.48	0.57	4.8	5	Yes	Proposed lane configuration prior ICE Evaluation: Dual SB Left Turn Lanes.

Resolution					
To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer					
Project Determination	Multiple Viable Alternatives Identified: Continue to Stage 2				
Comments					
DTOE Name		Signature		Date	
DDE Name		Signature		Date	

CAP-X – Existing AM Peak

Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	US 41 at SR 44 - D7 ICE Training
Project Number:	XXXXX.XX
Location:	Inverness, FL
Date:	2018 AM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand

	Volume (Veh/hr)				Percent (%)	
	U-Turn	Left	Thru	Right	Heavy Vehicles	Volume Growth
Eastbound	0	17	106	61	6.80%	0.00%
Westbound	0	80	74	354	4.50%	0.00%
Southbound	0	264	463	31	10.00%	0.00%
Northbound	0	138	628	122	10.00%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	**0.80**	**0.95**		**0.85**		

Truck to PCE Factor	**Suggested = 2.00**	2.00
FDOT Context Zone	**C3C-Suburban Commercial**	
Critical Lane Volume Threshold — 2-phase signal	**Suggested = 1800**	**1800**
Critical Lane Volume Threshold — 3-phase signal	**Suggested = 1750**	**1750**
Critical Lane Volume Threshold — 4-phase signal	**Suggested = 1700**	**1700**

Capacity Analysis for Planning of Junctions

Summary Report - Page 2 of 2

TYPE OF INTERSECTION	Overall v/c Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn N-S	0.37	1	4.8	Fair	Fair	Good
Displaced Left Turn	0.37	1	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn N-S	0.37	1	6.3	Good	Good	Fair
Quadrant Roadway N-W	0.48	4	4.4	Fair	Fair	Fair
Partial Median U-Turn N-S	0.50	5	6.3	Good	Good	Fair
Traffic Signal	0.51	6	4.8	Fair	Fair	Good
Median U-Turn N-S	0.57	7	6.3	Good	Good	Fair
2 X 2	0.57	8	5.6	Fair	Good	Good
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CAP-X – Existing PM Peak

Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	US 41 at SR 44 - D7 ICE Training
Project Number:	XXXXX.XX
Location:	Inverness, FL
Date:	2018 PM
Number of Intersection Legs:	4
Major Street Direction	North-South

Traffic Volume Demand

	Volume (Veh/hr)				Percent (%)	
	U-Turn	**Left**	**Thru**	**Right**	Heavy Vehicles	Volume Growth
Eastbound	0	34	104	137	6.80%	0.00%
Westbound	0	117	122	480	4.50%	0.00%
Southbound	0	359	778	58	10.00%	0.00%
Northbound	0	99	576	120	10.00%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	**0.80**	**0.95**		**0.85**		

Truck to PCE Factor		**Suggested = 2.00**	2.00
FDOT Context Zone		**C3C-Suburban Commercial**	
Critical Lane Volume Threshold	2-phase signal	**Suggested = 1800**	**1800**
	3-phase signal	**Suggested = 1750**	**1750**
	4-phase signal	**Suggested = 1700**	**1700**

Capacity Analysis for Planning of Junctions

TYPE OF INTERSECTION	Overall v/c Ratio	V/C Ranking	Multimodal Score	Pedestrian Accommodations	Bicycle Accommodations	Transit Accommodations
Partial Displaced Left Turn N-S	0.42	1	4.8	Fair	Fair	Good
Displaced Left Turn	0.42	1	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn N-S	0.54	3	6.3	Good	Good	Fair
Traffic Signal	0.58	4	4.8	Fair	Fair	Good
Quadrant Roadway N-W	0.60	5	4.4	Fair	Fair	Fair
Partial Median U-Turn N-S	0.72	6	6.3	Good	Good	Fair
2 X 2	0.72	7	5.6	Fair	Good	Good
Median U-Turn N-S	0.76	8	6.3	Good	Good	Fair
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SPICE – Stage 1

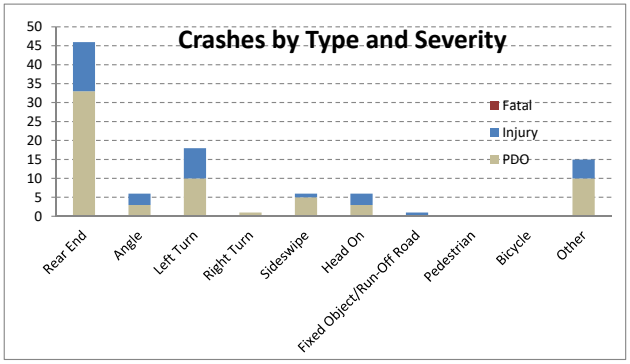
SR 44 at US 41

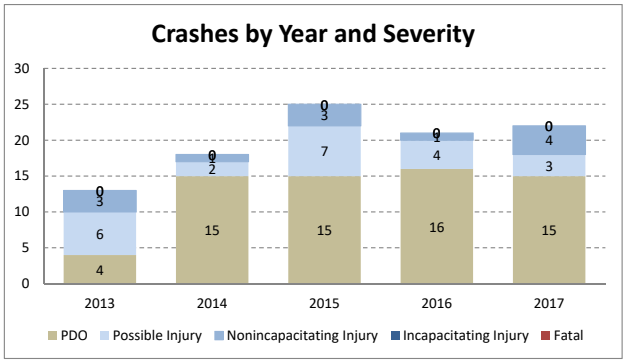
		2013	2014	2015	2016	2017	Severity			Total	Average	Percent
							PDO	Injury	Fatal			
Type of Crash	Rear End	1	8	13	14	10	33	13	0	46	9.20	46.5%
	Angle	2	1	1	1	1	3	3	0	6	1.20	6.1%
	Left Turn	5	5	5	2	1	10	8	0	18	3.60	18.2%
	Right Turn	1	0	0	0	0	1	0	0	1	0.20	1.0%
	Sideswipe	0	1	1	2	2	5	1	0	6	1.20	6.1%
	Head On	0	1	2	0	3	3	3	0	6	1.20	6.1%
	Fixed Object/Run-Off Road	0	1	0	0	0	0	1	0	1	0.20	1.0%
	Pedestrian	0	0	0	0	0	0	0	0	0	0.00	0.0%
	Bicycle	0	0	0	0	0	0	0	0	0	0.00	0.0%
	Other	4	1	3	2	5	10	5	0	15	3.00	15.2%
	Total Crashes	**13**	**18**	**25**	**21**	**22**	**65**	**34**	**0**	**99**	**19.80**	**100.0%**
Crash Severity	PDO	4	15	15	16	15				65	13.00	65.7%
	Possible Injury	6	2	7	4	3				22	4.40	22.2%
	Nonincapacitating Injury	3	1	3	1	4				12	2.40	12.1%
	Incapacitating Injury	0	0	0	0	0				0	0.00	0.0%
	Fatal	0	0	0	0	0				0	0.00	0.0%
Light Conditions	Daylight	6	14	18	17	16	48	23	0	71	14.20	71.7%
	Dusk	0	1	1	1	0	3	0	0	3	0.60	3.0%
	Dawn	0	0	2	2	2	4	2	0	6	1.20	6.1%
	Dark - Lighted	5	3	3	1	3	8	7	0	15	3.00	15.2%
	Dark - Not Lighted	2	0	1	0	1	2	2	0	4	0.80	4.0%
	Dark - Lighting Unknown	0	0	0	0	0	0	0	0	0	0.00	0.0%
	Other/Unknown	0	0	0	0	0	0	0	0	0	0.00	0.0%
Road Surface Condition	Dry	10	13	20	18	19	56	24	0	80	16.00	80.8%
	Wet	3	5	5	3	3	9	10	0	19	3.80	19.2%
	Other	0	0	0	0	0	0	0	0	0	0.00	0.0%
Month	January	1	2	4	1	4	8	4	0	12	2.40	12.1%
	February	1	4	3	0	0	5	3	0	8	1.60	8.1%
	March	1	1	1	1	1	2	3	0	5	1.00	5.1%
	April	2	0	2	1	2	5	2	0	7	1.40	7.1%
	May	1	2	2	3	2	9	1	0	10	2.00	10.1%
	June	1	0	2	4	1	4	4	0	8	1.60	8.1%
	July	3	0	2	1	1	4	3	0	7	1.40	7.1%
	August	0	0	3	2	2	5	2	0	7	1.40	7.1%
	September	1	3	0	4	3	8	3	0	11	2.20	11.1%
	October	1	1	3	1	3	6	3	0	9	1.80	9.1%
	November	1	2	2	0	1	4	2	0	6	1.20	6.1%
	December	0	3	1	3	2	5	4	0	9	1.80	9.1%
Day of Week	Monday	2	3	3	2	4	12	2	0	14	2.80	14.1%
	Tuesday	2	2	2	3	4	7	6	0	13	2.60	13.1%
	Wednesday	1	2	3	2	4	7	5	0	12	2.40	12.1%
	Thursday	3	2	4	5	1	12	3	0	15	3.00	15.2%
	Friday	3	7	7	4	3	18	6	0	24	4.80	24.2%
	Saturday	0	0	3	2	3	5	3	0	8	1.60	8.1%
	Sunday	2	2	3	3	3	4	9	0	13	2.60	13.1%

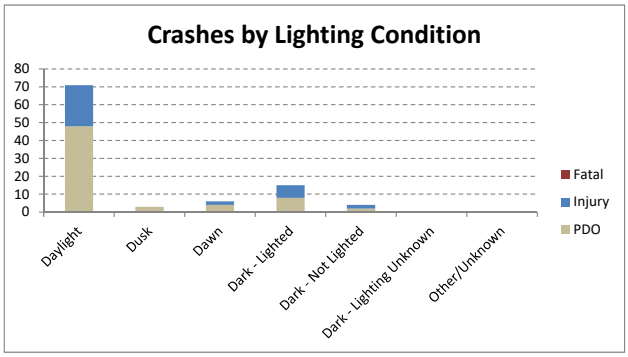
SR 44 at US 41

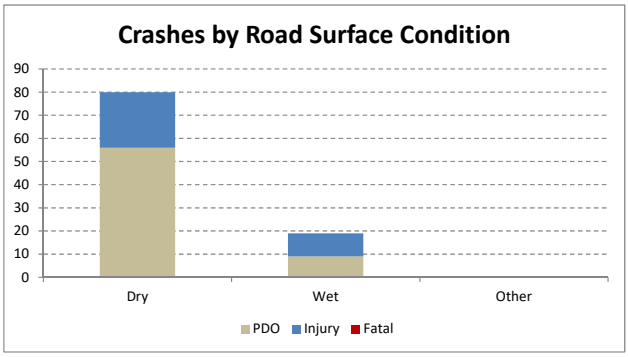
		2013	2014	2015	2016	2017	Severity PDO	Severity Injury	Severity Fatal	Total	Average	Percent
Hour of Day	0:00	1	0	0	0	1	0	2	0	2	0.40	2.0%
	1:00	0	1	0	0	0	1	0	0	1	0.20	1.0%
	2:00	0	1	0	0	0	0	1	0	1	0.20	1.0%
	3:00	0	0	0	0	0	0	0	0	0	0.00	0.0%
	4:00	0	0	0	0	0	0	0	0	0	0.00	0.0%
	5:00	0	0	0	0	0	0	0	0	0	0.00	0.0%
	6:00	0	0	0	1	1	2	0	0	2	0.40	2.0%
	7:00	0	0	4	2	4	6	4	0	10	2.00	10.1%
	8:00	0	0	3	0	0	1	2	0	3	0.60	3.0%
	9:00	1	2	1	2	3	5	4	0	9	1.80	9.1%
	10:00	0	1	2	0	2	4	1	0	5	1.00	5.1%
	11:00	1	2	1	1	1	5	1	0	6	1.20	6.1%
	12:00	1	2	1	3	2	5	4	0	9	1.80	9.1%
	13:00	1	1	0	2	2	5	1	0	6	1.20	6.1%
	14:00	0	1	2	2	1	5	1	0	6	1.20	6.1%
	15:00	1	0	1	2	2	3	3	0	6	1.20	6.1%
	16:00	0	2	4	1	0	5	2	0	7	1.40	7.1%
	17:00	0	2	0	2	0	4	0	0	4	0.80	4.0%
	18:00	1	1	1	2	0	3	2	0	5	1.00	5.1%
	19:00	2	1	2	1	1	4	3	0	7	1.40	7.1%
	20:00	0	1	3	0	1	5	0	0	5	1.00	5.1%
	21:00	2	0	0	0	0	1	1	0	2	0.40	2.0%
	22:00	1	0	0	0	0	0	1	0	1	0.20	1.0%
	23:00	1	0	0	0	1	1	1	0	2	0.40	2.0%
Alcohol & Drugs	None	12	16	25	20	20	62	31	0	93	18.60	93.9%
	Alcohol Involved	1	1	0	1	2	2	3	0	5	1.00	5.1%
	Drugs Involved	0	1	0	0	0	1	0	0	1	0.20	1.0%
	Alcohol and Drugs	0	0	0	0	0	0	0	0	0	0.00	0.0%
	Undetermined	0	0	0	0	0	0	0	0	0	0.00	0.0%
Age of Driver 1 (Typically Driver at Fault)	19 and Under	3	0	3	1	2				9	1.80	9.1%
	20-24	2	2	2	1	0				7	1.40	7.1%
	25-29	1	1	2	1	2				7	1.40	7.1%
	30-34	1	0	1	0	2				4	0.80	4.0%
	35-39	0	1	1	0	1				3	0.60	3.0%
	40-44	0	1	0	0	0				1	0.20	1.0%
	45-49	0	1	1	0	2				4	0.80	4.0%
	50-54	0	2	0	1	1				4	0.80	4.0%
	55-59	0	3	2	0	0				5	1.00	5.1%
	60-64	0	0	3	2	0				5	1.00	5.1%
	65-69	0	0	3	2	1				6	1.20	6.1%
	70-74	0	2	0	1	0				3	0.60	3.0%
	75-79	1	1	0	1	0				3	0.60	3.0%
	80-84	0	2	0	0	0				2	0.40	2.0%
	85 and Over	2	0	0	1	1				4	0.80	4.0%
	Unknown	0	0	0	1	0				1	0.20	1.0%

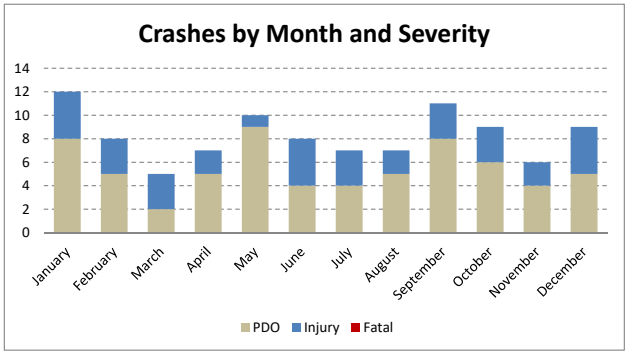
SR 44 at US 41

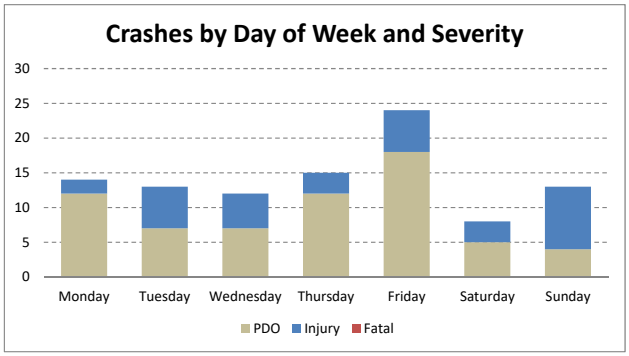

Crashes by Type and Severity
Fatal
Injury
PDO
Rear End
Angle
Left Turn
Right Turn
Sideswipe
Head On
Fixed Object/Run-Off Road
Pedestrian
Bicycle
Other

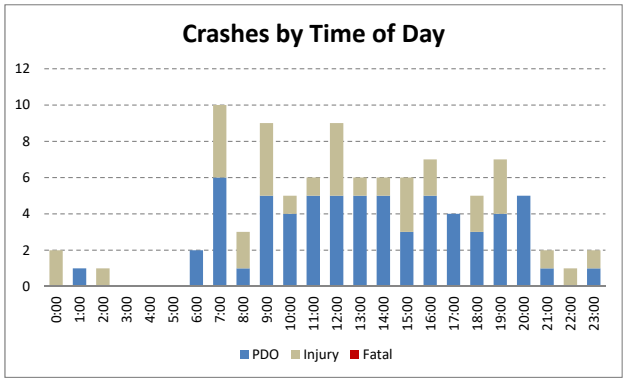

Crashes by Year and Severity
2013
2014
2015
2016
2017
PDO
Possible Injury
Nonincapacitating Injury
Incapacitating Injury
Fatal

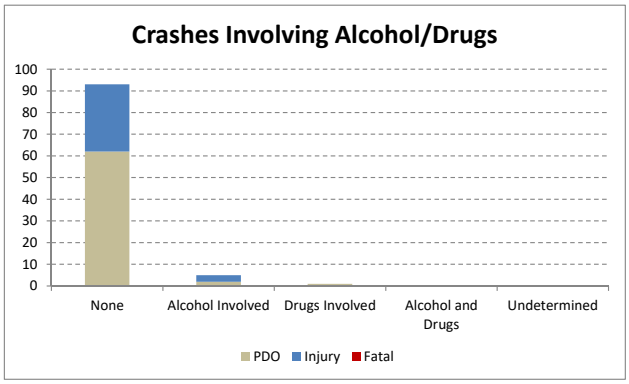

Crashes by Lighting Condition
Daylight
Dusk
Dawn
Dark - Lighted
Dark - Not Lighted
Dark - Lighting Unknown
Other/Unknown
Fatal
Injury
PDO


Crashes by Road Surface Condition
Dry
Wet
Other
PDO
Injury
Fatal


Crashes by Month and Severity
January
February
March
April
May
June
July
August
September
October
November
December
PDO
Injury
Fatal


Crashes by Day of Week and Severity
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday
PDO
Injury
Fatal


Crashes by Time of Day
PDO
Injury
Fatal


Crashes Involving Alcohol/Drugs
None
Alcohol Involved
Drugs Involved
Alcohol and Drugs
Undetermined
PDO
Injury
Fatal

Federal Highway Administration (FHWA)

Safety Performance for Intersection Control Evaluation Tool

Results

Summary of crash prediction results for each alternative

Project Information

Project Name:	FDOT District 7 ICE Training	**Intersection Type**	At-Grade Intersections
Intersection:	US 41 at SR 44	**Opening Year**	2020
Agency:	FDOT	**Design Year**	2040
Project Reference:	XXXXX.XX	**Facility Type**	On Urban and Suburban Arterial
City:	Inverness	**Number of Legs**	4-leg
State:	Florida	**1-Way/2-Way**	2-way Intersecting 2-way
Date:	7/1/2019	**# of Major Street Lanes (both directions)**	5 or fewer
Analyst:	KAI	**Major Street Approach Speed**	Less than 55 mph

Crash Prediction Summary

Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal	Total	12.20	15.72	292.81	5	Yes	Calibrated SPF
	Fatal & Injury	4.25	5.57	102.96			
Traffic Signal (Alt)	Total	12.20	15.72	292.81	5	Yes	Calibrated SPF
	Fatal & Injury	4.25	5.57	102.96			
2-lane Roundabout	Total	20.31	25.28	478.42	4	No	Uncalibrated SPF
	Fatal & Injury	3.88	4.94	92.49			
Displaced Left Turn (DLT)	Total	10.73	13.83	257.68	3	N/A	CMF
	Fatal & Injury	3.74	4.90	90.60			
Median U-Turn (MUT)	Total	10.37	13.36	248.89	1	N/A	CMF
	Fatal & Injury	2.98	3.90	72.07			
Signalized RCUT	Total	26.39	35.47	648.10	7	No	Uncalibrated SPF
	Fatal & Injury	6.55	8.93	162.07			
Jughandle	Total	9.03	11.63	216.68	2	N/A	CMF
	Fatal & Injury	3.15	4.12	76.19			

ICE FORM – Stage 2

Intersection: US 41 @ SR 44

Location: Citrus County – D7

Florida Department of Transportation
Intersection Control Evaluation (ICE) Form
Stage 2: Intial Control Strategy Assessment

To fulfill the requirements of Stage 2 (Intersection Control Strategy) of FDOT's ICE procedures, complete the following form and append all supporting documentation. Completed forms can be submitted to the District Traffic Operations Engineer (DTOE) and District Design Engineer (DDE) for the project's approval.

Project Name	US 41 at SR 44	FDOT Project #		Date	07/01/19
Submitted By	Jack Freeman, Kittelson	Agency/Company	FDOT D7	Email	jfreeman@kittelson.com

List all viable intersection control strategies identified in Stage 1 (Screening):

Signalized Control	Roundabout	RCUT (Signalized)
Quadrant Roadway	Signalized Control (Alt)	

Operational Analyses

Summarize the results of the peak hour analysis performed for each control strategy. Select analysis year based on guidance in the ICE procedures document. Refer to Exhibit 19-8 of the *Highway Capacity Manual, 6th Edition* (HCM6) to determine the appropriate LOS based on intersection delay (*hover over this cell for Exhibit 19-8*).

Design Vehicle	Interstate Semitrailer (WB-62)	Control Vehicle	Interstate Semitrailer (WB-62)

Opening Year: 2020

Control Strategy	Peak Hour		Weekday AM Peak	Peak Hour		Weekday PM Peak
	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?
Signalized Control	C	25.3	Yes	C	29.3	Yes
Roundabout	A	8.3	Yes	B	11.8	Yes
RCUT (Signalized)	C	28.2	Yes	C	26.5	Yes
Quadrant Roadway	D	42.7	Yes	D	40.7	No
Signalized Control (Alt)	C	21.8	Yes	C	26.6	Yes

DesignYear: 2040

Control Strategy	Peak Hour		Weekday AM Peak	Peak Hour		Weekday PM Peak
	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?
Signalized Control	C	30.8	Yes	D	49.2	Yes
Roundabout	B	13.3	Yes	C	21.4	Yes
RCUT (Signalized)	C	27.1	Yes	C	27.0	Yes
Quadrant Roadway	E	58.3	Yes	E	60.0	No
Signalized Control (Alt)	C	26.2	Yes	D	46.6	Yes

Provide any additional discussion necessary regarding the results of the operational analysis:	

Safety Performance							
Enter the most recent five (5) years of crash data from the CAR System.				Most recent year of crash data available		2017	
Crash Type		2013	2014	2015	2016	2017	Total
Combined	Total						
	Fatal/Injury						
	PDO						
Single-Vehicle	Total	0	1	0	0	0	1
	Fatal/Injury	0	1	0	0	0	1
	PDO	0	0	0	0	0	0
Multi-Vehicle	Total	13	17	25	21	22	98
	Fatal/Injury	9	2	10	5	7	33
	PDO	4	15	15	16	15	65
Vehicle-Pedestrian	Fatal/Injury	0	0	0	0	0	0
Vehicle-Bicycle	Fatal/Injury	0	0	0	0	0	0
Total	All	13	18	25	21	22	99

Apply the FDOT SPICE Tool to model anticipated safety performance of each control strategy. For intersection types not accommodated in the tool, manually apply crash modification factors detailed in the ICE procedures document or qualitatively describe anticipated safety impacts.

Control Strategy	Anticipated Impact on Safety Performance	Opening Year		Design Year	
		Predicted Total Crashes	Predicted Fatal+Injury Crashes	Predicted Total Crashes	Predicted Fatal+Injury Crashes
Signalized Control	Existing signal has the second highest injury/fatal and total predicted crashes.	18.52	5.56	23.92	7.29
Roundabout	Roundabout provides the lowest injury/fatal and total predicted crashes.	16.49	2.52	20.50	3.21
RCUT (Signalized)	Provides the highest injury/fatal and total predicted crashes.	30.17	7.46	40.55	10.17
Quadrant Roadway	No safety analysis was performed for the Quadrant Roadway alternative.	N/A	N/A	N/A	N/A
Signalized Control (Alt)	Slightly reduced predicted crashes when compared to the existing signal.	17.59	5.28	22.71	6.93

Costs and Benefit/Cost Ratios						
Remaining cognizant of the current level of detail of each control strategy's conceptual design, provide a cost estimate for each. You may want to include costs for preliminary engineering, required right-of-way acquisitions, construction, and a contingency. Apply the FDOT ICE Tool to determine the delay benefit-cost ratio (B/C), safety B/C, overall B/C, and net-present value for each control stratetgy.						
			FDOT ICE Tool Outputs			
Control Strategy	ROW Costs ($)	Construction Costs ($)	Delay B/C	Safety B/C	Overall B/C	Net Present Value
Signalized Control	$0	$0	N/A	N/A	N/A	N/A
Roundabout	$725,000	$2,470,000	9.81	5.47	15.28	$36,989,540
RCUT (Signalized)	$100,000	$2,360,000	2.77	N/A	N/A	-$6,228,597
Quadrant Roadway	$2,000,000	$1,500,000	N/A	N/A	N/A	-$29,269,169
Signalized Control (Alt)	$0	$790,000	6.44	1.73	8.18	$5,668,841

Multimodal Accomodations						
Note the existing/anticipated level of pedestrian/bicyclist activity at the study intersection during the peak hours of the typical day. See ICE procedures document for activity level thresholds:						
	Weekday AM Peak		Weekday PM Peak		Acitivity Level	
	Major Street	Minor Street	Major Street	Minor Street	Ped.	Bicycles
# of ped. crossings (both approaches, if app.):	N/A	N/A	N/A	N/A	Low	Low
# of cyclists (both approaches, if app.):	N/A	N/A	N/A	N/A		

Summarize the ability of each viable control strategy to accommodate the exisitng/anticipated level of:

Control Strategy	Pedestrians and Bicyclists	Transit Services	Freight Needs
Signalized Control	Pedestrians and Bicyclists are accommodated under existing configuration.	No change from existing.	No change from existing.
Roundabout	Reduces crossing distances. Bicycle lanes are still able to be accommodated.	No change from existing.	No change from existing.
RCUT (Signalized)	Provides shorter crossing distance on west leg. Configuration allows for ped crossings in all directions.	No change from existing.	No change from existing.
Quadrant Roadway	Rerouted traffic through Apopka Ave may have an impact on multimodal users.	No change from existing.	No change from existing.
Signalized Control (Alt)	No change from existing.	No change from existing.	No change from existing.

Environmental, Utility, and Right-of-Way Impacts	
Summarize any issues related to environmental, utility, or right-of-way (including relocation) impacts specific to each control strategy. Be sure to consider the NEPA requirements for each control type.	
Signalized Control	No impacts anticipated.
Roundabout	ROW Impacts on the NW and SW quadrants of the intersection.
RCUT (Signalized)	ROW impacts NW along US 41 to accommodate required U-Turn lanes.
Quadrant Roadway	ROW impacts at the upstream intersection of US 41 and Apopka Ave. at the Walgreens to accommodate required storage length.
Signalized Control (Alt)	No impacts anticipated.

Public Input/Feedback (if appropriate)
Summarize any agency or public input regarding the control strategies:
None performed to date.

Control Strategy Evaluation		
Provide a brief justification as to why each of the following is either viable or not viable. If a single control strategy is recommended, select it as the only strategy to be advanced.		
Control Strategy	Strategy to be Advanced?	Justification
Signalized Control	No	An additional southbound left turn lane has already been identified as a needed improvement at intersection.
Roundabout	Yes	Alternative provides the highest Benefit-Cost ratio as well as the best Net Present Value. It is expected to have the best operational performance and the lowest injury/fatal predicted crashes.
RCUT (Signalized)	No	Alternative has a negative B/C ratio and NPV. ROW impacts on the north leg to accommodate the U-Turn lanes make the alternative less feasible.
Quadrant Roadway	No	Potential ROW impacts to Walgreens and associated costs with alternative yield a negative B/C ratio and NPV.
Signalized Control (Alt)	No	Alternative provides the second-best B/C and NPV from the alternative comparison.

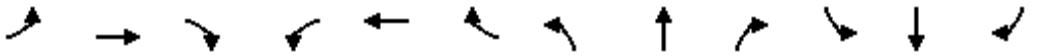
Resolution					
To be filled out by FDOT District Traffic Operations Engineer and District Design Engineer					
Project Determination	Identified Control Strategy Approved				
Comments					
DTOE Name		Signature		Date	
DDE Name		Signature		Date	

Operational Analysis

Signalized Control

Opening Year (2020 AM & PM)

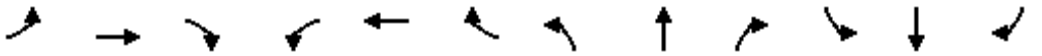
Design Year (2040 AM & PM)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	117	63	88	89	392	153	637	134	332	547	39
Future Volume (vph)	18	117	63	88	89	392	153	637	134	332	547	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.69	1.00	1.00	0.55	1.00	1.00	0.43	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1287	1863	1583	1019	3539	1583	796	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	127	68	96	97	426	166	692	146	361	595	42
RTOR Reduction (vph)	0	0	57	0	0	348	0	0	97	0	0	22
Lane Group Flow (vph)	20	127	11	96	97	78	166	692	49	361	595	20
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	14.9	13.1	13.1	19.1	15.2	15.2	36.0	27.6	27.6	20.2	39.4	39.4
Effective Green, g (s)	14.9	13.1	13.1	19.1	15.2	15.2	36.0	27.6	27.6	20.2	39.4	39.4
Actuated g/C Ratio	0.18	0.16	0.16	0.23	0.18	0.18	0.43	0.33	0.33	0.24	0.48	0.48
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	242	294	250	270	649	290	444	1179	527	431	1684	753
v/s Ratio Prot	0.00	c0.07		c0.02	0.03		0.04	c0.20		c0.20	0.17	
v/s Ratio Perm	0.01		0.01	0.07		0.05	0.12		0.03			0.01
v/c Ratio	0.08	0.43	0.04	0.36	0.15	0.27	0.37	0.59	0.09	0.84	0.35	0.03
Uniform Delay, d1	28.2	31.5	29.5	26.0	28.4	29.0	14.6	22.9	19.0	29.7	13.7	11.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	1.0	0.1	0.8	0.1	0.5	0.5	2.1	0.3	13.3	0.6	0.1
Delay (s)	28.3	32.5	29.6	26.8	28.5	29.5	15.1	25.0	19.3	43.0	14.3	11.6
Level of Service	C	C	C	C	C	C	B	C	B	D	B	B
Approach Delay (s)		31.2			28.9			22.6			24.5	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	25.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	82.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	58.8%	ICU Level of Service	B
Analysis Period (min)	15		

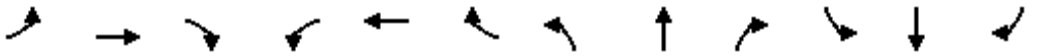
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	109	140	120	125	567	102	691	129	382	802	59
Future Volume (vph)	39	109	140	120	125	567	102	691	129	382	802	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.67	1.00	1.00	0.54	1.00	1.00	0.33	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1240	1863	1583	997	3539	1583	606	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	118	152	130	136	616	111	751	140	415	872	64
RTOR Reduction (vph)	0	0	126	0	0	419	0	0	99	0	0	33
Lane Group Flow (vph)	42	118	26	130	136	197	111	751	41	415	872	31
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	17.7	14.9	14.9	24.5	18.3	18.3	30.5	25.2	25.2	22.2	42.1	42.1
Effective Green, g (s)	17.7	14.9	14.9	24.5	18.3	18.3	30.5	25.2	25.2	22.2	42.1	42.1
Actuated g/C Ratio	0.20	0.17	0.17	0.28	0.21	0.21	0.35	0.29	0.29	0.26	0.49	0.49
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	270	320	272	337	748	334	284	1031	461	454	1722	770
v/s Ratio Prot	0.01	0.06		c0.03	0.04		0.02	c0.21		c0.23	0.25	
v/s Ratio Perm	0.03		0.02	0.08		c0.12	0.11		0.03			0.02
v/c Ratio	0.16	0.37	0.10	0.39	0.18	0.59	0.39	0.73	0.09	0.91	0.51	0.04
Uniform Delay, d1	28.0	31.6	30.1	24.1	28.0	30.7	19.3	27.6	22.3	31.2	15.1	11.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.7	0.2	0.7	0.1	2.8	0.9	4.5	0.4	22.7	1.1	0.1
Delay (s)	28.3	32.4	30.3	24.8	28.1	33.5	20.2	32.1	22.7	54.0	16.2	11.7
Level of Service	C	C	C	C	C	C	C	C	C	D	B	B
Approach Delay (s)		30.8			31.4			29.5			27.6	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	29.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	86.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

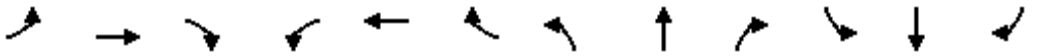
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	136	73	109	101	508	174	826	166	425	686	47
Future Volume (vph)	21	136	73	109	101	508	174	826	166	425	686	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.68	1.00	1.00	0.51	1.00	1.00	0.37	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1271	1863	1583	948	3539	1583	686	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	148	79	118	110	552	189	898	180	462	746	51
RTOR Reduction (vph)	0	0	66	0	0	439	0	0	128	0	0	27
Lane Group Flow (vph)	23	148	13	118	110	113	189	898	52	462	746	24
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	16.1	14.2	14.2	19.9	16.1	16.1	33.6	24.7	24.7	24.3	40.1	40.1
Effective Green, g (s)	16.1	14.2	14.2	19.9	16.1	16.1	33.6	24.7	24.7	24.3	40.1	40.1
Actuated g/C Ratio	0.19	0.17	0.17	0.23	0.19	0.19	0.40	0.29	0.29	0.29	0.47	0.47
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	251	311	264	258	670	299	384	1028	460	506	1669	746
v/s Ratio Prot	0.00	0.08		c0.02	0.03		0.05	c0.25		c0.26	0.21	
v/s Ratio Perm	0.02		0.01	c0.09		0.07	0.14		0.03			0.02
v/c Ratio	0.09	0.48	0.05	0.46	0.16	0.38	0.49	0.87	0.11	0.91	0.45	0.03
Uniform Delay, d1	28.3	32.0	29.7	27.4	28.8	30.1	17.4	28.7	22.1	29.3	15.0	12.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	1.2	0.1	1.3	0.1	0.8	1.0	10.2	0.5	20.9	0.9	0.1
Delay (s)	28.5	33.2	29.8	28.7	28.9	30.9	18.4	38.9	22.6	50.2	15.9	12.1
Level of Service	C	C	C	C	C	C	B	D	C	D	B	B
Approach Delay (s)		31.7			30.3			33.5			28.3	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	30.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	74.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	141	173	148	154	733	117	820	152	460	928	69
Future Volume (vph)	52	141	173	148	154	733	117	820	152	460	928	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	1770	3539	1583
Flt Permitted	0.65	1.00	1.00	0.45	1.00	1.00	0.28	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1204	1863	1583	843	3539	1583	529	3539	1583	1770	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	153	188	161	167	797	127	891	165	500	1009	75
RTOR Reduction (vph)	0	0	151	0	0	413	0	0	121	0	0	38
Lane Group Flow (vph)	57	153	37	161	167	384	127	891	44	500	1009	37
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	27.3	23.4	23.4	38.2	29.8	29.8	40.4	31.7	31.7	34.4	57.4	57.4
Effective Green, g (s)	27.3	23.4	23.4	38.2	29.8	29.8	40.4	31.7	31.7	34.4	57.4	57.4
Actuated g/C Ratio	0.23	0.20	0.20	0.32	0.25	0.25	0.34	0.27	0.27	0.29	0.49	0.49
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	297	370	314	354	895	400	273	952	425	516	1724	771
v/s Ratio Prot	0.01	0.08		c0.04	0.05		0.03	c0.25		c0.28	0.29	
v/s Ratio Perm	0.04		0.02	0.11		c0.24	0.13		0.03			0.02
v/c Ratio	0.19	0.41	0.12	0.45	0.19	0.96	0.47	0.94	0.10	0.97	0.59	0.05
Uniform Delay, d1	35.9	41.2	38.7	30.0	34.5	43.4	27.4	42.1	32.4	41.2	21.7	15.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.3	0.8	0.2	0.9	0.1	34.2	1.3	17.3	0.5	31.4	1.5	0.1
Delay (s)	36.2	42.0	38.9	30.9	34.6	77.6	28.6	59.3	32.9	72.6	23.1	16.0
Level of Service	D	D	D	C	C	E	C	E	C	E	C	B
Approach Delay (s)		39.7			64.5			52.3			38.4	
Approach LOS		D			E			D			D	

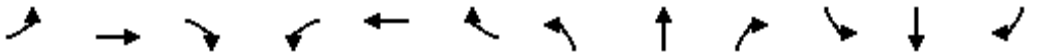
Intersection Summary			
HCM 2000 Control Delay	49.2	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	117.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Signalized Alternative Control

Opening Year (2020 AM & PM)

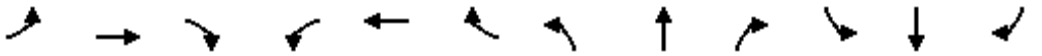
Design Year (2040 AM & PM)



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	18	117	63	88	89	392	153	637	134	332	547	39
Future Volume (vph)	18	117	63	88	89	392	153	637	134	332	547	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.69	1.00	1.00	0.54	1.00	1.00	0.42	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1287	1863	1583	1009	3539	1583	789	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	127	68	96	97	426	166	692	146	361	595	42
RTOR Reduction (vph)	0	0	57	0	0	337	0	0	90	0	0	23
Lane Group Flow (vph)	20	127	11	96	97	89	166	692	56	361	595	19
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	14.6	12.8	12.8	19.8	15.4	15.4	38.4	30.1	30.1	12.7	34.5	34.5
Effective Green, g (s)	14.6	12.8	12.8	19.8	15.4	15.4	38.4	30.1	30.1	12.7	34.5	34.5
Actuated g/C Ratio	0.19	0.16	0.16	0.25	0.20	0.20	0.49	0.39	0.39	0.16	0.44	0.44
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	252	305	259	299	698	312	492	1365	610	558	1565	700
v/s Ratio Prot	0.00	c0.07		c0.02	0.03		0.04	c0.20		c0.11	c0.17	
v/s Ratio Perm	0.01		0.01	0.06		0.06	0.13		0.04			0.01
v/c Ratio	0.08	0.42	0.04	0.32	0.14	0.29	0.34	0.51	0.09	0.65	0.38	0.03
Uniform Delay, d1	26.1	29.2	27.4	23.0	25.8	26.6	11.1	18.3	15.3	30.6	14.6	12.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.9	0.1	0.6	0.1	0.5	0.4	1.3	0.3	2.6	0.7	0.1
Delay (s)	26.2	30.2	27.5	23.6	25.9	27.1	11.5	19.6	15.6	33.1	15.3	12.3
Level of Service	C	C	C	C	C	C	B	B	B	C	B	B
Approach Delay (s)		29.0			26.4			17.7			21.6	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	78.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	57.3%	ICU Level of Service	B
Analysis Period (min)	15		

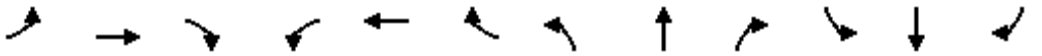
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	39	109	140	120	125	567	102	691	129	382	802	59
Future Volume (vph)	39	109	140	120	125	567	102	691	129	382	802	59
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.67	1.00	1.00	0.61	1.00	1.00	0.31	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1240	1863	1583	1143	3539	1583	578	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	42	118	152	130	136	616	111	751	140	415	872	64
RTOR Reduction (vph)	0	0	118	0	0	302	0	0	93	0	0	35
Lane Group Flow (vph)	42	118	34	130	136	314	111	751	47	415	872	29
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	20.8	18.1	18.1	24.8	20.1	20.1	31.4	27.6	27.6	13.3	37.1	37.1
Effective Green, g (s)	20.8	18.1	18.1	24.8	20.1	20.1	31.4	27.6	27.6	13.3	37.1	37.1
Actuated g/C Ratio	0.25	0.22	0.22	0.30	0.25	0.25	0.38	0.34	0.34	0.16	0.45	0.45
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	333	412	350	383	870	389	277	1195	534	558	1607	718
v/s Ratio Prot	0.00	0.06		c0.02	0.04		0.02	c0.21		c0.12	0.25	
v/s Ratio Perm	0.03		0.02	0.08		c0.20	0.14		0.03			0.02
v/c Ratio	0.13	0.29	0.10	0.34	0.16	0.81	0.40	0.63	0.09	0.74	0.54	0.04
Uniform Delay, d1	23.2	26.4	25.3	21.4	24.2	29.0	16.5	22.7	18.5	32.6	16.2	12.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.2	0.4	0.1	0.5	0.1	11.6	1.0	2.5	0.3	5.3	1.3	0.1
Delay (s)	23.4	26.8	25.4	21.9	24.2	40.5	17.5	25.2	18.8	37.9	17.5	12.5
Level of Service	C	C	C	C	C	D	B	C	B	D	B	B
Approach Delay (s)		25.7			35.3			23.5			23.5	
Approach LOS		C			D			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	81.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.6%	ICU Level of Service	C
Analysis Period (min)	15		

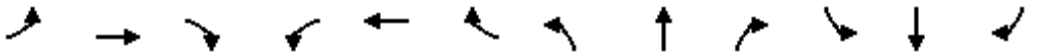
c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	136	73	109	101	508	174	826	166	425	686	47
Future Volume (vph)	21	136	73	109	101	508	174	826	166	425	686	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.68	1.00	1.00	0.50	1.00	1.00	0.32	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1271	1863	1583	939	3539	1583	595	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	148	79	118	110	552	189	898	180	462	746	51
RTOR Reduction (vph)	0	0	64	0	0	312	0	0	116	0	0	30
Lane Group Flow (vph)	23	148	15	118	110	240	189	898	64	462	746	21
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	17.5	15.7	15.7	23.5	18.7	18.7	38.9	29.4	29.4	14.5	34.4	34.4
Effective Green, g (s)	17.5	15.7	15.7	23.5	18.7	18.7	38.9	29.4	29.4	14.5	34.4	34.4
Actuated g/C Ratio	0.21	0.19	0.19	0.29	0.23	0.23	0.47	0.36	0.36	0.18	0.42	0.42
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	280	354	301	316	803	359	416	1262	564	604	1477	660
v/s Ratio Prot	0.00	0.08		c0.02	0.03		0.05	c0.25		c0.13	0.21	
v/s Ratio Perm	0.02		0.01	0.08		c0.15	0.16		0.04			0.01
v/c Ratio	0.08	0.42	0.05	0.37	0.14	0.67	0.45	0.71	0.11	0.76	0.51	0.03
Uniform Delay, d1	25.9	29.3	27.3	22.7	25.4	29.0	13.0	22.8	17.8	32.3	17.7	14.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.8	0.1	0.7	0.1	4.7	0.8	3.4	0.4	5.7	1.2	0.1
Delay (s)	26.0	30.1	27.3	23.4	25.5	33.7	13.8	26.3	18.2	38.1	19.0	14.3
Level of Service	C	C	C	C	C	C	B	C	B	D	B	B
Approach Delay (s)		28.9			31.0			23.3			25.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay	26.2	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	82.4	Sum of lost time (s)	18.0
Intersection Capacity Utilization	69.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	52	141	173	148	154	733	117	820	152	460	928	69
Future Volume (vph)	52	141	173	148	154	733	117	820	152	460	928	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1863	1583	1770	3539	1583	1770	3539	1583	3433	3539	1583
Flt Permitted	0.65	1.00	1.00	0.55	1.00	1.00	0.17	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1204	1863	1583	1017	3539	1583	314	3539	1583	3433	3539	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	57	153	188	161	167	797	127	891	165	500	1009	75
RTOR Reduction (vph)	0	0	127	0	0	243	0	0	115	0	0	46
Lane Group Flow (vph)	57	153	61	161	167	554	127	891	50	500	1009	29
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2			6
Actuated Green, G (s)	41.9	38.0	38.0	50.7	42.4	42.4	42.3	34.9	34.9	18.7	46.2	46.2
Effective Green, g (s)	41.9	38.0	38.0	50.7	42.4	42.4	42.3	34.9	34.9	18.7	46.2	46.2
Actuated g/C Ratio	0.36	0.32	0.32	0.43	0.36	0.36	0.36	0.30	0.30	0.16	0.39	0.39
Clearance Time (s)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	446	600	510	490	1272	569	204	1047	468	544	1386	620
v/s Ratio Prot	0.00	0.08		c0.02	0.05		0.04	c0.25		c0.15	0.29	
v/s Ratio Perm	0.04		0.04	0.12		c0.35	0.18		0.03			0.02
v/c Ratio	0.13	0.26	0.12	0.33	0.13	0.97	0.62	0.85	0.11	0.92	0.73	0.05
Uniform Delay, d1	25.3	29.5	28.2	21.3	25.4	37.2	27.2	39.1	30.2	48.9	30.5	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.1	0.2	0.1	0.4	0.0	30.8	5.8	8.7	0.5	20.6	3.4	0.1
Delay (s)	25.4	29.7	28.3	21.7	25.4	67.9	33.0	47.7	30.6	69.4	33.9	22.4
Level of Service	C	C	C	C	C	E	C	D	C	E	C	C
Approach Delay (s)		28.4			55.0			43.8			44.6	
Approach LOS		C			E			D			D	

Intersection Summary			
HCM 2000 Control Delay	45.6	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	117.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	83.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Roundabout

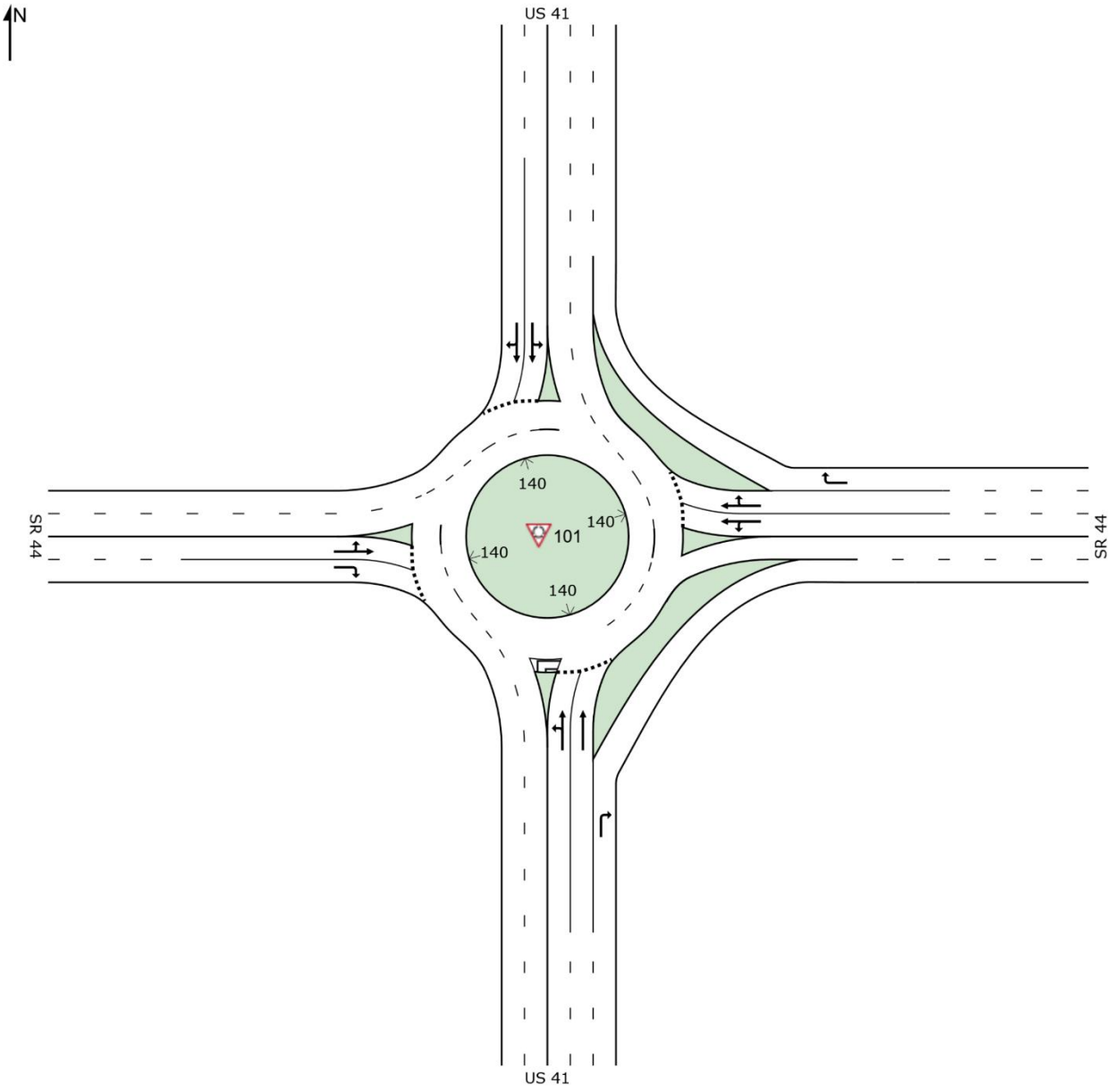
Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)

SITE LAYOUT

Site: 101 [US 41 at SR 44 - 2040 - PM]

US 41 at SR 44
Roundabout



Organisation: KITTELSON AND ASSOCIATES INC | Created: Wednesday, May 2, 2018 5:44:03 PM
Project: H:\18\18956 - FDOT Central Office - Chief Engr Support\TWO 18 - ICE Training\District 7 Intersections_Operational Analysis\US 41 at SR 44\Roundabout\US 41 at SR 44_Roundabout Ops.sip7

MOVEMENT SUMMARY

Site: 101 [US 41 at SR 44 - 2020 - AM]

US 41 at SR 44
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: US 41											
3	L2	166	3.0	0.496	10.7	LOS B	3.3	85.4	0.67	0.76	32.6
8	T1	692	3.0	0.496	10.7	LOS B	3.3	85.4	0.67	0.76	32.9
18	R2	146	3.0	0.090	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
Approach		1004	3.0	0.496	9.1	LOS A	3.3	85.4	0.57	0.65	33.5
East: SR 44											
1	L2	96	3.0	0.218	9.2	LOS A	0.8	20.0	0.64	0.64	32.2
6	T1	97	3.0	0.218	8.5	LOS A	0.8	20.0	0.63	0.63	33.6
16	R2	426	3.0	0.218	1.4	LOS A	0.8	19.9	0.10	0.10	36.9
Approach		618	3.0	0.218	3.7	LOS A	0.8	20.0	0.27	0.27	35.5
North: US 41											
7	L2	350	3.0	0.509	10.3	LOS B	3.6	90.9	0.61	0.63	31.7
4	T1	595	3.0	0.509	9.9	LOS A	3.6	90.9	0.60	0.60	33.3
14	R2	42	3.0	0.509	9.8	LOS A	3.5	88.9	0.59	0.59	32.6
Approach		987	3.0	0.509	10.0	LOS B	3.6	90.9	0.60	0.61	32.7
West: SR 44											
5	L2	20	3.0	0.265	10.1	LOS B	0.9	24.1	0.67	0.67	33.6
2	T1	127	3.0	0.265	10.1	LOS B	0.9	24.1	0.67	0.67	33.2
12	R2	68	3.0	0.140	9.3	LOS A	0.5	12.1	0.66	0.66	32.5
Approach		215	3.0	0.265	9.9	LOS A	0.9	24.1	0.66	0.67	33.0
All Vehicles		2825	3.0	0.509	8.3	LOS A	3.6	90.9	0.52	0.55	33.6

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [US 41 at SR 44 - 2020 - PM]

US 41 at SR 44
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: US 41											
3	L2	111	3.0	0.536	12.2	LOS B	3.8	98.2	0.71	0.85	32.3
8	T1	751	3.0	0.536	12.2	LOS B	3.8	98.2	0.71	0.85	32.3
18	R2	140	3.0	0.086	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
Approach		1002	3.0	0.536	10.5	LOS B	3.8	98.2	0.61	0.73	33.0
East: SR 44											
1	L2	130	3.0	0.314	11.0	LOS B	1.2	32.0	0.67	0.70	31.4
6	T1	136	3.0	0.314	10.3	LOS B	1.2	32.0	0.66	0.69	32.8
16	R2	616	3.0	0.314	1.7	LOS A	1.2	31.7	0.11	0.12	36.7
Approach		883	3.0	0.314	4.4	LOS A	1.2	32.0	0.28	0.29	35.1
North: US 41											
7	L2	415	3.0	0.708	16.4	LOS C	9.6	246.5	0.78	1.03	29.6
4	T1	872	3.0	0.708	15.7	LOS C	9.8	251.7	0.77	1.01	30.7
14	R2	64	3.0	0.708	15.5	LOS C	9.8	251.7	0.77	1.00	30.1
Approach		1351	3.0	0.708	15.9	LOS C	9.8	251.7	0.78	1.01	30.3
West: SR 44											
5	L2	42	3.0	0.404	17.0	LOS C	1.6	40.7	0.80	0.89	30.2
2	T1	118	3.0	0.404	17.0	LOS C	1.6	40.7	0.80	0.89	29.9
12	R2	152	3.0	0.445	20.9	LOS C	1.8	46.1	0.83	0.93	27.8
Approach		313	3.0	0.445	18.9	LOS C	1.8	46.1	0.82	0.91	28.9
All Vehicles		3549	3.0	0.708	11.8	LOS B	9.8	251.7	0.61	0.75	32.0

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [US 41 at SR 44 - 2040 - AM]

US 41 at SR 44
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: US 41											
3	L2	189	3.0	0.713	19.1	LOS C	7.5	191.3	0.84	1.13	29.2
8	T1	898	3.0	0.713	19.1	LOS C	7.5	191.3	0.84	1.13	29.4
18	R2	180	3.0	0.111	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
Approach		1267	3.0	0.713	16.4	LOS C	7.5	191.3	0.72	0.97	30.3
East: SR 44											
1	L2	118	3.0	0.300	12.7	LOS B	1.1	28.6	0.72	0.76	30.5
6	T1	110	3.0	0.300	11.6	LOS B	1.1	28.6	0.70	0.73	32.5
16	R2	552	3.0	0.300	1.3	LOS A	1.1	28.6	0.08	0.09	37.0
Approach		780	3.0	0.300	4.5	LOS A	1.1	28.6	0.27	0.28	35.1
North: US 41											
7	L2	462	3.0	0.684	15.9	LOS C	8.2	209.4	0.77	1.02	29.5
4	T1	746	3.0	0.684	15.1	LOS C	8.4	213.8	0.76	0.99	31.0
14	R2	51	3.0	0.684	14.9	LOS B	8.4	213.8	0.76	0.99	30.4
Approach		1259	3.0	0.684	15.4	LOS C	8.4	213.8	0.76	1.00	30.4
West: SR 44											
5	L2	23	3.0	0.395	15.7	LOS C	1.6	40.5	0.78	0.86	31.1
2	T1	148	3.0	0.395	15.7	LOS C	1.6	40.5	0.78	0.86	30.8
12	R2	79	3.0	0.213	13.3	LOS B	0.7	17.8	0.76	0.76	30.7
Approach		250	3.0	0.395	14.9	LOS B	1.6	40.5	0.77	0.83	30.8
All Vehicles		3557	3.0	0.713	13.3	LOS B	8.4	213.8	0.64	0.82	31.3

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: 101 [US 41 at SR 44 - 2040 - PM]

US 41 at SR 44
Roundabout

Movement Performance - Vehicles												
Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance ft	Prop. Queued	Effective Stop Rate per veh	Average Speed mph
South: US 41											
3	L2	127	3.0	0.718	20.5	LOS C	7.0	180.3	0.84	1.14	29.0
8	T1	891	3.0	0.718	20.5	LOS C	7.0	180.3	0.84	1.14	29.0
18	R2	165	3.0	0.102	0.0	LOS A	0.0	0.0	0.00	0.00	37.8
Approach		1184	3.0	0.718	17.7	LOS C	7.0	180.3	0.73	0.98	29.9
East: SR 44											
1	L2	161	3.0	0.427	15.3	LOS C	1.9	48.7	0.75	0.84	29.6
6	T1	167	3.0	0.427	14.1	LOS B	1.9	49.2	0.73	0.82	31.2
16	R2	797	3.0	0.427	1.8	LOS A	1.9	49.2	0.09	0.11	36.7
Approach		1125	3.0	0.427	5.6	LOS A	1.9	49.2	0.28	0.32	34.5
North: US 41											
7	L2	500	3.0	0.891	32.1	LOS D	20.9	535.4	1.00	1.69	24.7
4	T1	1009	3.0	0.891	30.8	LOS D	22.0	562.2	1.00	1.70	25.6
14	R2	75	3.0	0.891	30.4	LOS D	22.0	562.2	1.00	1.70	25.2
Approach		1584	3.0	0.891	31.2	LOS D	22.0	562.2	1.00	1.70	25.3
West: SR 44											
5	L2	57	3.0	0.656	33.7	LOS D	3.1	80.2	0.90	1.11	24.9
2	T1	153	3.0	0.656	33.7	LOS D	3.1	80.2	0.90	1.11	24.7
12	R2	188	3.0	0.698	42.8	LOS E	3.4	87.0	0.92	1.15	21.8
Approach		398	3.0	0.698	38.0	LOS E	3.4	87.0	0.91	1.13	23.3
All Vehicles		4290	3.0	0.891	21.4	LOS C	22.0	562.2	0.73	1.09	28.2

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Vehicle movement LOS values are based on average delay and v/c ratio (degree of saturation) per movement.
LOS F will result if v/c > 1 irrespective of movement delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all movements (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Restricted Crossing U-Turn (RCUT)

Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	0	198	0	0	0	0	635	128	153	0
Future Volume (vph)	0	0	198	0	0	0	0	635	128	153	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5					4.5	4.5	4.5	
Lane Util. Factor			0.88					0.91	1.00	1.00	
Frt			0.85					1.00	0.85	1.00	
Flt Protected			1.00					1.00	1.00	0.95	
Satd. Flow (prot)			2787					5085	1583	1770	
Flt Permitted			1.00					1.00	1.00	0.95	
Satd. Flow (perm)			2787					5085	1583	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	215	0	0	0	0	690	139	166	0
RTOR Reduction (vph)	0	0	182	0	0	0	0	0	35	0	0
Lane Group Flow (vph)	0	0	33	0	0	0	0	690	104	166	0
Turn Type			Prot					NA	Perm	Prot	
Protected Phases			8					6		8	
Permitted Phases									6		
Actuated Green, G (s)			13.9					67.1	67.1	13.9	
Effective Green, g (s)			13.9					67.1	67.1	13.9	
Actuated g/C Ratio			0.15					0.75	0.75	0.15	
Clearance Time (s)			4.5					4.5	4.5	4.5	
Vehicle Extension (s)			3.0					3.0	3.0	3.0	
Lane Grp Cap (vph)			430					3791	1180	273	
v/s Ratio Prot			0.01					c0.14		c0.09	
v/s Ratio Perm									0.07		
v/c Ratio			0.08					0.18	0.09	0.61	
Uniform Delay, d1			32.6					3.4	3.1	35.5	
Progression Factor			1.00					0.80	0.48	1.07	
Incremental Delay, d2			0.1					0.1	0.1	3.7	
Delay (s)			32.6					2.8	1.6	41.6	
Level of Service			C					A	A	D	
Approach Delay (s)	32.6				0.0			2.6		41.6	
Approach LOS	C				A			A		D	

Intersection Summary			
HCM 2000 Control Delay	13.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.25		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	0	569	0	655	251	0	0	0	332	0
Future Volume (vph)	0	0	569	0	655	251	0	0	0	332	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5		4.5	4.5				4.5	
Lane Util. Factor			0.88		0.91	1.00				0.97	
Frt			0.85		1.00	0.85				1.00	
Flt Protected			1.00		1.00	1.00				0.95	
Satd. Flow (prot)			2787		5085	1583				3433	
Flt Permitted			1.00		1.00	1.00				0.95	
Satd. Flow (perm)			2787		5085	1583				3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	618	0	712	273	0	0	0	361	0
RTOR Reduction (vph)	0	0	163	0	0	91	0	0	0	0	0
Lane Group Flow (vph)	0	0	455	0	712	182	0	0	0	361	0
Turn Type			Prot		NA	Perm				Prot	
Protected Phases			4		2					4	
Permitted Phases						2					
Actuated Green, G (s)			21.0		60.0	60.0				21.0	
Effective Green, g (s)			21.0		60.0	60.0				21.0	
Actuated g/C Ratio			0.23		0.67	0.67				0.23	
Clearance Time (s)			4.5		4.5	4.5				4.5	
Vehicle Extension (s)			3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)			650		3390	1055				801	
v/s Ratio Prot			c0.16		c0.14					0.11	
v/s Ratio Perm						0.11					
v/c Ratio			0.70		0.21	0.17				0.45	
Uniform Delay, d1			31.6		5.8	5.6				29.6	
Progression Factor			1.00		0.80	0.34				1.15	
Incremental Delay, d2			3.3		0.1	0.3				0.4	
Delay (s)			34.9		4.8	2.2				34.3	
Level of Service			C		A	A				C	
Approach Delay (s)	34.9				4.1			0.0		34.3	
Approach LOS	C				A			A		C	

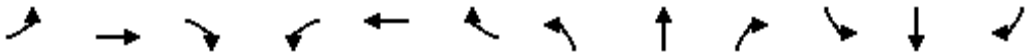
Intersection Summary			
HCM 2000 Control Delay	19.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	177	0	0	0	0	919
Future Volume (vph)	177	0	0	0	0	919
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.97					0.91
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	3433					5085
Flt Permitted	0.85					1.00
Satd. Flow (perm)	3072					5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	192	0	0	0	0	999
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	192	0	0	0	0	999
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)	10.4					70.6
Effective Green, g (s)	10.4					70.6
Actuated g/C Ratio	0.12					0.78
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	396					3988
v/s Ratio Prot	c0.06					c0.20
v/s Ratio Perm						
v/c Ratio	0.48					0.25
Uniform Delay, d1	37.3					2.6
Progression Factor	0.99					1.00
Incremental Delay, d2	0.9					0.2
Delay (s)	37.7					2.8
Level of Service	D					A
Approach Delay (s)	37.7		0.0			2.8
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	8.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.28		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	45.1%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	139	0	0	0	0	0	0	924	44	0	0	0
Future Volume (vph)	139	0	0	0	0	0	0	924	44	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5							4.5				
Lane Util. Factor	1.00							0.91				
Frt	1.00							0.99				
Flt Protected	0.85							1.00				
Satd. Flow (prot)	1583							5050				
Flt Permitted	0.85							1.00				
Satd. Flow (perm)	1583							5050				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	151	0	0	0	0	0	0	1004	48	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	151	0	0	0	0	0	0	1049	0	0	0	0
Turn Type	Prot							NA				
Protected Phases	4							2				
Permitted Phases												
Actuated Green, G (s)	14.0							67.0				
Effective Green, g (s)	14.0							67.0				
Actuated g/C Ratio	0.16							0.74				
Clearance Time (s)	4.5							4.5				
Vehicle Extension (s)	3.0							3.0				
Lane Grp Cap (vph)	246							3759				
v/s Ratio Prot	c0.10							c0.21				
v/s Ratio Perm												
v/c Ratio	0.61							0.28				
Uniform Delay, d1	35.5							3.7				
Progression Factor	1.16							1.00				
Incremental Delay, d2	4.5							0.2				
Delay (s)	45.7							3.9				
Level of Service	D							A				
Approach Delay (s)		45.7			0.0			3.9			0.0	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.1	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.34		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	34.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	0	288	0	0	0	0	922	184	102	0
Future Volume (vph)	0	0	288	0	0	0	0	922	184	102	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5					4.5	4.5	4.5	
Lane Util. Factor			0.88					0.91	1.00	1.00	
Frt			0.85					1.00	0.85	1.00	
Flt Protected			1.00					1.00	1.00	0.95	
Satd. Flow (prot)			2787					5085	1583	1770	
Flt Permitted			1.00					1.00	1.00	0.95	
Satd. Flow (perm)			2787					5085	1583	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	313	0	0	0	0	1002	200	111	0
RTOR Reduction (vph)	0	0	150	0	0	0	0	0	44	0	0
Lane Group Flow (vph)	0	0	163	0	0	0	0	1002	156	111	0
Turn Type			Prot					NA	Perm	Prot	
Protected Phases			8					6		8	
Permitted Phases									6		
Actuated Green, G (s)			11.0					70.0	70.0	11.0	
Effective Green, g (s)			11.0					70.0	70.0	11.0	
Actuated g/C Ratio			0.12					0.78	0.78	0.12	
Clearance Time (s)			4.5					4.5	4.5	4.5	
Vehicle Extension (s)			3.0					3.0	3.0	3.0	
Lane Grp Cap (vph)			340					3955	1231	216	
v/s Ratio Prot			0.06					c0.20		c0.06	
v/s Ratio Perm									0.10		
v/c Ratio			0.48					0.25	0.13	0.51	
Uniform Delay, d1			36.8					2.8	2.5	37.0	
Progression Factor			1.00					0.77	0.37	1.14	
Incremental Delay, d2			1.1					0.1	0.2	2.0	
Delay (s)			37.9					2.3	1.1	44.3	
Level of Service			D					A	A	D	
Approach Delay (s)	37.9				0.0			2.1		44.3	
Approach LOS	D				A			A		D	

Intersection Summary			
HCM 2000 Control Delay	11.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.29		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	0	812	0	709	246	0	0	0	382	0
Future Volume (vph)	0	0	812	0	709	246	0	0	0	382	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5		4.5	4.5				4.5	
Lane Util. Factor			0.88		0.91	1.00				0.97	
Frt			0.85		1.00	0.85				1.00	
Flt Protected			1.00		1.00	1.00				0.95	
Satd. Flow (prot)			2787		5085	1583				3433	
Flt Permitted			1.00		1.00	1.00				0.95	
Satd. Flow (perm)			2787		5085	1583				3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	883	0	771	267	0	0	0	415	0
RTOR Reduction (vph)	0	0	55	0	0	133	0	0	0	0	0
Lane Group Flow (vph)	0	0	828	0	771	134	0	0	0	415	0
Turn Type			Prot		NA	Perm				Prot	
Protected Phases			4		2					4	
Permitted Phases						2					
Actuated Green, G (s)			35.8		45.2	45.2				35.8	
Effective Green, g (s)			35.8		45.2	45.2				35.8	
Actuated g/C Ratio			0.40		0.50	0.50				0.40	
Clearance Time (s)			4.5		4.5	4.5				4.5	
Vehicle Extension (s)			3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)			1108		2553	795				1365	
v/s Ratio Prot			c0.30		c0.15					0.12	
v/s Ratio Perm						0.08					
v/c Ratio			0.75		0.30	0.17				0.30	
Uniform Delay, d1			23.2		13.1	12.2				18.6	
Progression Factor			1.00		0.80	0.39				1.19	
Incremental Delay, d2			2.8		0.3	0.5				0.1	
Delay (s)			26.0		10.8	5.2				22.2	
Level of Service			C		B	A				C	
Approach Delay (s)	26.0				9.3			0.0		22.2	
Approach LOS	C				A			A		C	

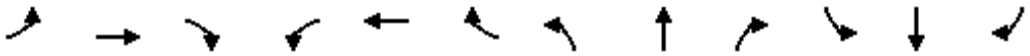
Intersection Summary			
HCM 2000 Control Delay	17.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	245	0	0	0	0	1245
Future Volume (vph)	245	0	0	0	0	1245
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.97					0.91
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	3433					5085
Flt Permitted	0.85					1.00
Satd. Flow (perm)	3072					5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	266	0	0	0	0	1353
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	266	0	0	0	0	1353
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)	12.3					68.7
Effective Green, g (s)	12.3					68.7
Actuated g/C Ratio	0.14					0.76
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	469					3881
v/s Ratio Prot	c0.08					c0.27
v/s Ratio Perm						
v/c Ratio	0.57					0.35
Uniform Delay, d1	36.4					3.4
Progression Factor	0.90					1.00
Incremental Delay, d2	1.5					0.2
Delay (s)	34.1					3.7
Level of Service	C					A
Approach Delay (s)	34.1		0.0			3.7
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	8.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	152	0	0	0	0	0	0	822	61	0	0	0
Future Volume (vph)	152	0	0	0	0	0	0	822	61	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5							4.5				
Lane Util. Factor	1.00							0.91				
Frt	1.00							0.99				
Flt Protected	0.85							1.00				
Satd. Flow (prot)	1583							5033				
Flt Permitted	0.85							1.00				
Satd. Flow (perm)	1583							5033				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	165	0	0	0	0	0	0	893	66	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	165	0	0	0	0	0	0	954	0	0	0	0
Turn Type	Prot							NA				
Protected Phases	4							2				
Permitted Phases												
Actuated Green, G (s)	14.8							66.2				
Effective Green, g (s)	14.8							66.2				
Actuated g/C Ratio	0.16							0.74				
Clearance Time (s)	4.5							4.5				
Vehicle Extension (s)	3.0							3.0				
Lane Grp Cap (vph)	260							3702				
v/s Ratio Prot	c0.10							c0.19				
v/s Ratio Perm												
v/c Ratio	0.63							0.26				
Uniform Delay, d1	35.1							3.9				
Progression Factor	1.11							1.00				
Incremental Delay, d2	4.9							0.2				
Delay (s)	43.9							4.1				
Level of Service	D							A				
Approach Delay (s)		43.9			0.0			4.1			0.0	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.33		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	33.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	0	230	0	0	0	0	795	148	174	0
Future Volume (vph)	0	0	230	0	0	0	0	795	148	174	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5					4.5	4.5	4.5	
Lane Util. Factor			0.88					0.91	1.00	1.00	
Frt			0.85					1.00	0.85	1.00	
Flt Protected			1.00					1.00	1.00	0.95	
Satd. Flow (prot)			2787					5085	1583	1770	
Flt Permitted			1.00					1.00	1.00	0.95	
Satd. Flow (perm)			2787					5085	1583	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	250	0	0	0	0	864	161	189	0
RTOR Reduction (vph)	0	0	158	0	0	0	0	0	43	0	0
Lane Group Flow (vph)	0	0	92	0	0	0	0	864	118	189	0
Turn Type			Prot					NA	Perm	Prot	
Protected Phases			8					6		8	
Permitted Phases									6		
Actuated Green, G (s)			15.1					65.9	65.9	15.1	
Effective Green, g (s)			15.1					65.9	65.9	15.1	
Actuated g/C Ratio			0.17					0.73	0.73	0.17	
Clearance Time (s)			4.5					4.5	4.5	4.5	
Vehicle Extension (s)			3.0					3.0	3.0	3.0	
Lane Grp Cap (vph)			467					3723	1159	296	
v/s Ratio Prot			0.03					c0.17		c0.11	
v/s Ratio Perm									0.07		
v/c Ratio			0.20					0.23	0.10	0.64	
Uniform Delay, d1			32.2					3.9	3.5	34.9	
Progression Factor			1.00					0.80	0.45	1.05	
Incremental Delay, d2			0.2					0.1	0.2	4.3	
Delay (s)			32.4					3.2	1.8	40.9	
Level of Service			C					A	A	D	
Approach Delay (s)	32.4				0.0			3.0		40.9	
Approach LOS	C				A			A		D	

Intersection Summary			
HCM 2000 Control Delay	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.31		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	0	718	0	847	302	0	0	0	425	0
Future Volume (vph)	0	0	718	0	847	302	0	0	0	425	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5		4.5	4.5				4.5	
Lane Util. Factor			0.88		0.91	1.00				0.97	
Frt			0.85		1.00	0.85				1.00	
Flt Protected			1.00		1.00	1.00				0.95	
Satd. Flow (prot)			2787		5085	1583				3433	
Flt Permitted			1.00		1.00	1.00				0.95	
Satd. Flow (perm)			2787		5085	1583				3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	780	0	921	328	0	0	0	462	0
RTOR Reduction (vph)	0	0	59	0	0	146	0	0	0	0	0
Lane Group Flow (vph)	0	0	721	0	921	182	0	0	0	462	0
Turn Type			Prot		NA	Perm				Prot	
Protected Phases			4		2					4	
Permitted Phases						2					
Actuated Green, G (s)			31.3		49.7	49.7				31.3	
Effective Green, g (s)			31.3		49.7	49.7				31.3	
Actuated g/C Ratio			0.35		0.55	0.55				0.35	
Clearance Time (s)			4.5		4.5	4.5				4.5	
Vehicle Extension (s)			3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)			969		2808	874				1193	
v/s Ratio Prot			c0.26		c0.18					0.13	
v/s Ratio Perm						0.12					
v/c Ratio			0.74		0.33	0.21				0.39	
Uniform Delay, d1			25.8		11.0	10.2				22.1	
Progression Factor			1.00		0.77	0.29				1.17	
Incremental Delay, d2			3.1		0.3	0.5				0.2	
Delay (s)			28.9		8.8	3.5				26.2	
Level of Service			C		A	A				C	
Approach Delay (s)	28.9				7.4			0.0		26.2	
Approach LOS	C				A			A		C	

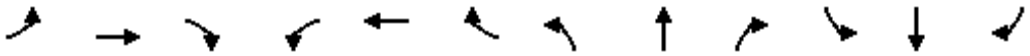
Intersection Summary			
HCM 2000 Control Delay	17.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	210	0	0	0	0	1159
Future Volume (vph)	210	0	0	0	0	1159
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.97					0.91
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	3433					5085
Flt Permitted	0.85					1.00
Satd. Flow (perm)	3072					5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	228	0	0	0	0	1260
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	228	0	0	0	0	1260
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)	11.3					69.7
Effective Green, g (s)	11.3					69.7
Actuated g/C Ratio	0.13					0.77
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	431					3938
v/s Ratio Prot	c0.07					c0.25
v/s Ratio Perm						
v/c Ratio	0.53					0.32
Uniform Delay, d1	36.9					3.0
Progression Factor	0.99					1.00
Incremental Delay, d2	1.1					0.2
Delay (s)	37.4					3.3
Level of Service	D					A
Approach Delay (s)	37.4		0.0			3.3
Approach LOS	D		A			A

Intersection Summary			
HCM 2000 Control Delay	8.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.35		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	161	0	0	0	0	0	0	1166	48	0	0	0
Future Volume (vph)	161	0	0	0	0	0	0	1166	48	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5							4.5				
Lane Util. Factor	1.00							0.91				
Frt	1.00							0.99				
Flt Protected	0.85							1.00				
Satd. Flow (prot)	1583							5055				
Flt Permitted	0.85							1.00				
Satd. Flow (perm)	1583							5055				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	175	0	0	0	0	0	0	1267	52	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	3	0	0	0	0
Lane Group Flow (vph)	175	0	0	0	0	0	0	1316	0	0	0	0
Turn Type	Prot							NA				
Protected Phases	4							2				
Permitted Phases												
Actuated Green, G (s)	15.3							65.7				
Effective Green, g (s)	15.3							65.7				
Actuated g/C Ratio	0.17							0.73				
Clearance Time (s)	4.5							4.5				
Vehicle Extension (s)	3.0							3.0				
Lane Grp Cap (vph)	269							3690				
v/s Ratio Prot	c0.11							c0.26				
v/s Ratio Perm												
v/c Ratio	0.65							0.36				
Uniform Delay, d1	34.9							4.4				
Progression Factor	1.12							1.00				
Incremental Delay, d2	5.5							0.3				
Delay (s)	44.6							4.7				
Level of Service	D							A				
Approach Delay (s)		44.6			0.0			4.7			0.0	
Approach LOS		D			A			A			A	

Intersection Summary			
HCM 2000 Control Delay	9.4	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.41		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	40.0%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBR	EBR2	NBL	NBT	NBR	SBL	SBT	SBR	NWL	NWR
Lane Configurations											
Traffic Volume (vph)	0	0	366	0	0	0	0	1076	223	117	0
Future Volume (vph)	0	0	366	0	0	0	0	1076	223	117	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5					4.5	4.5	4.5	
Lane Util. Factor			0.88					0.91	1.00	1.00	
Frt			0.85					1.00	0.85	1.00	
Flt Protected			1.00					1.00	1.00	0.95	
Satd. Flow (prot)			2787					5085	1583	1770	
Flt Permitted			1.00					1.00	1.00	0.95	
Satd. Flow (perm)			2787					5085	1583	1770	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	398	0	0	0	0	1170	242	127	0
RTOR Reduction (vph)	0	0	93	0	0	0	0	0	65	0	0
Lane Group Flow (vph)	0	0	305	0	0	0	0	1170	177	127	0
Turn Type			Prot					NA	Perm	Prot	
Protected Phases			8					6		8	
Permitted Phases									6		
Actuated Green, G (s)			15.2					65.8	65.8	15.2	
Effective Green, g (s)			15.2					65.8	65.8	15.2	
Actuated g/C Ratio			0.17					0.73	0.73	0.17	
Clearance Time (s)			4.5					4.5	4.5	4.5	
Vehicle Extension (s)			3.0					3.0	3.0	3.0	
Lane Grp Cap (vph)			470					3717	1157	298	
v/s Ratio Prot			c0.11					c0.23		0.07	
v/s Ratio Perm									0.11		
v/c Ratio			0.65					0.31	0.15	0.43	
Uniform Delay, d1			34.9					4.2	3.7	33.5	
Progression Factor			1.00					0.76	0.31	1.15	
Incremental Delay, d2			3.1					0.2	0.3	0.9	
Delay (s)			38.0					3.4	1.4	39.3	
Level of Service			D					A	A	D	
Approach Delay (s)	38.0				0.0			3.1		39.3	
Approach LOS	D				A			A		D	

Intersection Summary			
HCM 2000 Control Delay	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.38		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	WBR2	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SER
Lane Configurations											
Traffic Volume (vph)	0	0	1035	0	841	288	0	0	0	460	0
Future Volume (vph)	0	0	1035	0	841	288	0	0	0	460	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			4.5		4.5	4.5				4.5	
Lane Util. Factor			0.88		0.91	1.00				0.97	
Frt			0.85		1.00	0.85				1.00	
Flt Protected			1.00		1.00	1.00				0.95	
Satd. Flow (prot)			2787		5085	1583				3433	
Flt Permitted			1.00		1.00	1.00				0.95	
Satd. Flow (perm)			2787		5085	1583				3433	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	0	1125	0	914	313	0	0	0	500	0
RTOR Reduction (vph)	0	0	16	0	0	193	0	0	0	0	0
Lane Group Flow (vph)	0	0	1109	0	914	120	0	0	0	500	0
Turn Type			Prot		NA	Perm				Prot	
Protected Phases			4		2					4	
Permitted Phases						2					
Actuated Green, G (s)			46.4		34.6	34.6				46.4	
Effective Green, g (s)			46.4		34.6	34.6				46.4	
Actuated g/C Ratio			0.52		0.38	0.38				0.52	
Clearance Time (s)			4.5		4.5	4.5				4.5	
Vehicle Extension (s)			3.0		3.0	3.0				3.0	
Lane Grp Cap (vph)			1436		1954	608				1769	
v/s Ratio Prot			c0.40		c0.18					0.15	
v/s Ratio Perm						0.08					
v/c Ratio			0.77		0.47	0.20				0.28	
Uniform Delay, d1			17.6		20.8	18.5				12.4	
Progression Factor			1.00		0.76	0.23				1.17	
Incremental Delay, d2			2.6		0.8	0.7				0.1	
Delay (s)			20.2		16.6	5.0				14.5	
Level of Service			C		B	A				B	
Approach Delay (s)	20.2				13.6			0.0		14.5	
Approach LOS	C				B			A		B	

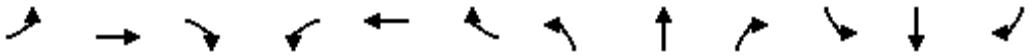
Intersection Summary			
HCM 2000 Control Delay	16.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.64		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	Err%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	302	0	0	0	0	1605
Future Volume (vph)	302	0	0	0	0	1605
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5					4.5
Lane Util. Factor	0.97					0.91
Frt	1.00					1.00
Flt Protected	0.95					1.00
Satd. Flow (prot)	3433					5085
Flt Permitted	0.85					1.00
Satd. Flow (perm)	3072					5085
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	328	0	0	0	0	1745
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	328	0	0	0	0	1745
Turn Type	Prot					NA
Protected Phases	8					6
Permitted Phases						
Actuated Green, G (s)	13.9					67.1
Effective Green, g (s)	13.9					67.1
Actuated g/C Ratio	0.15					0.75
Clearance Time (s)	4.5					4.5
Vehicle Extension (s)	3.0					3.0
Lane Grp Cap (vph)	530					3791
v/s Ratio Prot	c0.10					c0.34
v/s Ratio Perm						
v/c Ratio	0.62					0.46
Uniform Delay, d1	35.6					4.4
Progression Factor	0.91					1.00
Incremental Delay, d2	1.8					0.4
Delay (s)	34.1					4.8
Level of Service	C					A
Approach Delay (s)	34.1		0.0			4.8
Approach LOS	C		A			A

Intersection Summary			
HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.49		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	69.1%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	197	0	0	0	0	0	0	1089	67	0	0	0
Future Volume (vph)	197	0	0	0	0	0	0	1089	67	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.5							4.5				
Lane Util. Factor	1.00							0.91				
Frt	1.00							0.99				
Flt Protected	0.85							1.00				
Satd. Flow (prot)	1583							5041				
Flt Permitted	0.85							1.00				
Satd. Flow (perm)	1583							5041				
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	214	0	0	0	0	0	0	1184	73	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	0	0
Lane Group Flow (vph)	214	0	0	0	0	0	0	1252	0	0	0	0
Turn Type	Prot							NA				
Protected Phases	4							2				
Permitted Phases												
Actuated Green, G (s)	17.6							63.4				
Effective Green, g (s)	17.6							63.4				
Actuated g/C Ratio	0.20							0.70				
Clearance Time (s)	4.5							4.5				
Vehicle Extension (s)	3.0							3.0				
Lane Grp Cap (vph)	309							3551				
v/s Ratio Prot	c0.14							c0.25				
v/s Ratio Perm												
v/c Ratio	0.69							0.35				
Uniform Delay, d1	33.7							5.2				
Progression Factor	1.13							1.00				
Incremental Delay, d2	6.3							0.3				
Delay (s)	44.4							5.5				
Level of Service	D							A				
Approach Delay (s)		44.4			0.0			5.5			0.0	
Approach LOS		D			A			A			A	

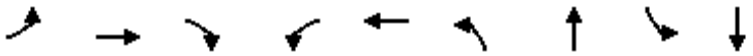
Intersection Summary			
HCM 2000 Control Delay	11.2	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	40.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Quadrant Roadway (QR)

Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)



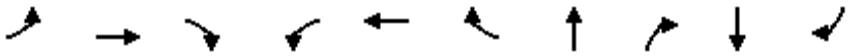
Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	38	689	438	175	1123	208	57	48	37
v/c Ratio	0.35	0.68	0.57	0.67	0.76	0.71	0.09	0.37	0.09
Control Delay	61.8	38.0	6.3	58.2	31.3	57.2	26.3	60.1	23.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.8	38.0	6.3	58.2	31.3	57.2	26.3	60.1	23.9
Queue Length 50th (ft)	27	227	0	123	379	146	25	34	9
Queue Length 95th (ft)	66	311	78	200	466	228	61	77	42
Internal Link Dist (ft)		394			688		1038		216
Turn Bay Length (ft)	180		200	250		105		115	
Base Capacity (vph)	118	1241	839	368	1731	420	634	152	402
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.56	0.52	0.48	0.65	0.50	0.09	0.32	0.09

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	35	634	403	161	1024	9	191	44	8	44	15	19
Future Volume (veh/h)	35	634	403	161	1024	9	191	44	8	44	15	19
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	38	689	438	175	1113	10	208	48	9	48	16	21
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	57	1179	528	209	1507	14	244	520	98	64	175	230
Arrive On Green	0.03	0.33	0.33	0.12	0.42	0.42	0.14	0.34	0.34	0.04	0.24	0.24
Sat Flow, veh/h	1774	3539	1583	1774	3594	32	1774	1526	286	1774	732	961
Grp Volume(v), veh/h	38	689	438	175	548	575	208	0	57	48	0	37
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1857	1774	0	1812	1774	0	1693
Q Serve(g_s), s	2.2	16.9	26.7	10.1	27.3	27.3	12.0	0.0	2.2	2.8	0.0	1.8
Cycle Q Clear(g_c), s	2.2	16.9	26.7	10.1	27.3	27.3	12.0	0.0	2.2	2.8	0.0	1.8
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.16	1.00		0.57
Lane Grp Cap(c), veh/h	57	1179	528	209	742	778	244	0	618	64	0	406
V/C Ratio(X)	0.67	0.58	0.83	0.84	0.74	0.74	0.85	0.00	0.09	0.75	0.00	0.09
Avail Cap(c_a), veh/h	117	1214	543	364	854	896	415	0	618	151	0	406
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	50.1	28.9	32.2	45.2	25.6	25.6	44.1	0.0	23.5	50.0	0.0	30.9
Incr Delay (d2), s/veh	12.9	0.7	10.2	8.6	2.9	2.8	8.3	0.0	0.3	16.2	0.0	0.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.3	8.3	13.2	5.5	13.8	14.5	6.5	0.0	1.2	1.7	0.0	0.9
LnGrp Delay(d),s/veh	63.0	29.6	42.4	53.7	28.5	28.4	52.5	0.0	23.8	66.2	0.0	31.4
LnGrp LOS	E	C	D	D	C	C	D		C	E		C
Approach Vol, veh/h		1165			1298			265			85	
Approach Delay, s/veh		35.5			31.9			46.3			51.1	
Approach LOS		D			C			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.3	40.2	16.8	39.4	18.9	29.6	7.8	48.4
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	8.9	35.7	21.5	35.9	24.5	20.1	6.9	50.5
Max Q Clear Time (g_c+I1), s	4.8	4.2	12.1	28.7	14.0	3.8	4.2	29.3
Green Ext Time (p_c), s	0.0	0.5	0.3	6.0	0.4	0.4	0.0	14.6

Intersection Summary	
HCM 2010 Ctrl Delay	35.3
HCM 2010 LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	20	488	68	96	97	426	859	146	595	42
v/c Ratio	0.04	0.80	0.12	0.35	0.07	0.59	0.55	0.19	0.38	0.06
Control Delay	11.1	34.1	4.6	15.2	14.8	14.0	19.8	4.1	17.6	1.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	34.1	4.6	15.2	14.8	14.0	19.8	4.1	17.6	1.9
Queue Length 50th (ft)	5	218	0	26	13	77	167	0	105	0
Queue Length 95th (ft)	16	326	23	50	31	191	274	37	180	9
Internal Link Dist (ft)		1243			1504		1444		832	
Turn Bay Length (ft)	140			480						325
Base Capacity (vph)	518	901	803	274	1783	884	1572	784	1572	743
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.54	0.08	0.35	0.05	0.48	0.55	0.19	0.38	0.06

Intersection Summary

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	18	449	63	88	89	392	0	790	134	0	547	39
Future Volume (veh/h)	18	449	63	88	89	392	0	790	134	0	547	39
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	20	488	68	96	97	0	0	859	0	0	595	0
Adj No. of Lanes	1	1	1	1	2	1	0	2	1	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	0	2	2
Cap, veh/h	547	591	503	262	1247	558	0	1577	705	0	1577	705
Arrive On Green	0.02	0.32	0.32	0.06	0.35	0.00	0.00	0.45	0.00	0.00	0.45	0.00
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h	20	488	68	96	97	0	0	859	0	0	595	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s	0.6	18.2	2.3	2.7	1.4	0.0	0.0	13.4	0.0	0.0	8.4	0.0
Cycle Q Clear(g_c), s	0.6	18.2	2.3	2.7	1.4	0.0	0.0	13.4	0.0	0.0	8.4	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	547	591	503	262	1247	558	0	1577	705	0	1577	705
V/C Ratio(X)	0.04	0.83	0.14	0.37	0.08	0.00	0.00	0.54	0.00	0.00	0.38	0.00
Avail Cap(c_a), veh/h	624	904	768	313	1788	800	0	1577	705	0	1577	705
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	16.6	23.7	18.3	18.0	16.2	0.0	0.0	15.3	0.0	0.0	13.9	0.0
Incr Delay (d2), s/veh	0.0	3.8	0.1	0.9	0.0	0.0	0.0	1.4	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	10.0	1.0	1.3	0.7	0.0	0.0	6.7	0.0	0.0	4.3	0.0
LnGrp Delay(d),s/veh	16.6	27.5	18.4	18.8	16.2	0.0	0.0	16.6	0.0	0.0	14.6	0.0
LnGrp LOS	B	C	B	B	B			B			B	
Approach Vol, veh/h		576			193			859			595	
Approach Delay, s/veh		26.1			17.5			16.6			14.6	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		38.0	8.8	28.4		38.0	6.2	31.0
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		33.5	6.5	36.5		33.5	5.0	38.0
Max Q Clear Time (g_c+I1), s		15.4	4.7	20.2		10.4	2.6	3.4
Green Ext Time (p_c), s		9.8	0.0	3.7		11.2	0.0	4.5

Intersection Summary	
HCM 2010 Ctrl Delay	18.6
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	13.1
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	5	185	1	7	102	8	4	0	10	332	0	154
Future Vol, veh/h	5	185	1	7	102	8	4	0	10	332	0	154
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	201	1	8	111	9	4	0	11	361	0	167
Number of Lanes	0	2	0	0	2	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	10.4	9.8	8.7	15
HCM LOS	B	A	A	B

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	5%	0%	12%	0%	100%	0%
Vol Thru, %	0%	0%	95%	99%	88%	86%	0%	0%
Vol Right, %	0%	100%	0%	1%	0%	14%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	4	10	98	94	58	59	332	154
LT Vol	4	0	5	0	7	0	332	0
Through Vol	0	0	93	93	51	51	0	0
RT Vol	0	10	0	1	0	8	0	154
Lane Flow Rate	4	11	106	102	63	64	361	167
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.008	0.017	0.184	0.175	0.112	0.111	0.61	0.227
Departure Headway (Hd)	6.778	5.56	6.238	6.204	6.398	6.241	6.083	4.874
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	528	643	575	578	560	575	595	742
Service Time	4.515	3.296	3.971	3.938	4.136	3.978	3.783	2.574
HCM Lane V/C Ratio	0.008	0.017	0.184	0.176	0.113	0.111	0.607	0.225
HCM Control Delay	9.6	8.4	10.4	10.3	9.9	9.8	17.8	9
HCM Lane LOS	A	A	B	B	A	A	C	A
HCM 95th-tile Q	0	0.1	0.7	0.6	0.4	0.4	4.1	0.9

Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	24	791	548	122	1389	230	52	146	177
v/c Ratio	0.20	0.53	0.56	1.42	0.88	0.77	0.12	0.63	0.49
Control Delay	54.8	24.2	4.0	282.1	35.8	61.8	33.6	58.4	36.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	24.2	4.0	282.1	35.8	61.8	33.6	58.4	36.2
Queue Length 50th (ft)	17	214	0	~127	496	162	26	104	89
Queue Length 95th (ft)	45	270	60	#255	#670	#277	64	171	165
Internal Link Dist (ft)		394			717		1038		216
Turn Bay Length (ft)	180		200	250		105		115	
Base Capacity (vph)	204	1914	1107	86	1674	347	421	308	361
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.12	0.41	0.50	1.42	0.83	0.66	0.12	0.47	0.49

Intersection Summary

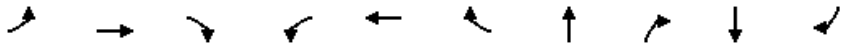
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	22	728	504	112	1262	16	212	40	8	134	73	90
Future Volume (veh/h)	22	728	504	112	1262	16	212	40	8	134	73	90
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	24	791	548	122	1372	17	230	43	9	146	79	98
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	43	1475	660	91	1589	20	266	373	78	179	152	188
Arrive On Green	0.02	0.42	0.42	0.05	0.44	0.44	0.15	0.25	0.25	0.10	0.20	0.20
Sat Flow, veh/h	1774	3539	1583	1774	3580	44	1774	1495	313	1774	757	940
Grp Volume(v), veh/h	24	791	548	122	678	711	230	0	52	146	0	177
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1855	1774	0	1808	1774	0	1697
Q Serve(g_s), s	1.3	16.7	30.6	5.1	34.3	34.3	12.6	0.0	2.2	8.0	0.0	9.2
Cycle Q Clear(g_c), s	1.3	16.7	30.6	5.1	34.3	34.3	12.6	0.0	2.2	8.0	0.0	9.2
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.17	1.00		0.55
Lane Grp Cap(c), veh/h	43	1475	660	91	785	823	266	0	451	179	0	340
V/C Ratio(X)	0.55	0.54	0.83	1.34	0.86	0.86	0.87	0.00	0.12	0.81	0.00	0.52
Avail Cap(c_a), veh/h	216	2015	902	91	883	925	367	0	451	325	0	340
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	47.9	21.7	25.8	47.1	24.9	24.9	41.2	0.0	28.8	43.7	0.0	35.4
Incr Delay (d2), s/veh	10.6	0.3	4.8	209.0	8.1	7.8	14.6	0.0	0.5	8.6	0.0	5.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.8	8.2	14.3	7.8	18.3	19.2	7.2	0.0	1.2	4.4	0.0	4.9
LnGrp Delay(d),s/veh	58.5	22.0	30.6	256.1	33.0	32.7	55.8	0.0	29.3	52.3	0.0	41.0
LnGrp LOS	E	C	C	F	C	C	E		C	D		D
Approach Vol, veh/h		1363			1511			282			323	
Approach Delay, s/veh		26.1			50.9			50.9			46.1	
Approach LOS		C			D			D			D	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.5	29.2	9.6	45.9	19.4	24.4	6.9	48.5
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.2	22.2	5.1	56.5	20.5	19.9	12.1	49.5
Max Q Clear Time (g_c+I1), s	10.0	4.2	7.1	32.6	14.6	11.2	3.3	36.3
Green Ext Time (p_c), s	0.2	0.2	0.0	8.5	0.3	0.6	0.0	7.7

Intersection Summary	
HCM 2010 Ctrl Delay	40.7
HCM 2010 LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	42	534	152	130	136	616	862	140	872	64
v/c Ratio	0.07	0.81	0.24	0.43	0.09	0.78	0.69	0.22	0.70	0.10
Control Delay	7.3	28.4	6.2	12.0	10.7	18.9	20.9	4.4	21.1	1.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	7.3	28.4	6.2	12.0	10.7	18.9	20.9	4.4	21.1	1.8
Queue Length 50th (ft)	7	164	10	22	11	85	146	0	148	0
Queue Length 95th (ft)	19	#308	41	44	32	#316	207	32	#211	10
Internal Link Dist (ft)		1243			1504		1444		803	
Turn Bay Length (ft)	140			480						325
Base Capacity (vph)	571	775	722	302	1666	860	1244	647	1244	627
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.69	0.21	0.43	0.08	0.72	0.69	0.22	0.70	0.10

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	39	491	140	120	125	567	0	793	129	0	802	59
Future Volume (veh/h)	39	491	140	120	125	567	0	793	129	0	802	59
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	42	534	152	130	136	0	0	862	0	0	872	0
Adj No. of Lanes	1	1	1	1	2	1	0	2	1	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	0	2	2
Cap, veh/h	627	629	535	321	1319	590	0	1209	541	0	1209	541
Arrive On Green	0.04	0.34	0.34	0.08	0.37	0.00	0.00	0.34	0.00	0.00	0.34	0.00
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h	42	534	152	130	136	0	0	862	0	0	872	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s	0.8	14.8	3.9	2.6	1.4	0.0	0.0	11.8	0.0	0.0	12.0	0.0
Cycle Q Clear(g_c), s	0.8	14.8	3.9	2.6	1.4	0.0	0.0	11.8	0.0	0.0	12.0	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	627	629	535	321	1319	590	0	1209	541	0	1209	541
V/C Ratio(X)	0.07	0.85	0.28	0.40	0.10	0.00	0.00	0.71	0.00	0.00	0.72	0.00
Avail Cap(c_a), veh/h	711	754	641	343	1432	641	0	1209	541	0	1209	541
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	10.9	17.1	13.5	12.6	11.4	0.0	0.0	15.9	0.0	0.0	16.0	0.0
Incr Delay (d2), s/veh	0.0	7.8	0.3	0.8	0.0	0.0	0.0	3.6	0.0	0.0	3.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	8.9	1.7	1.3	0.7	0.0	0.0	6.4	0.0	0.0	6.4	0.0
LnGrp Delay(d),s/veh	11.0	24.9	13.8	13.4	11.4	0.0	0.0	19.5	0.0	0.0	19.7	0.0
LnGrp LOS	B	C	B	B	B			B			B	
Approach Vol, veh/h		728			266			862			872	
Approach Delay, s/veh		21.8			12.4			19.5			19.7	
Approach LOS		C			B			B			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		23.5	8.8	23.3		23.5	6.9	25.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		19.0	5.0	22.5		19.0	5.0	22.5
Max Q Clear Time (g_c+I1), s		13.8	4.6	16.8		14.0	2.8	3.4
Green Ext Time (p_c), s		2.6	0.0	2.0		2.6	0.0	0.7

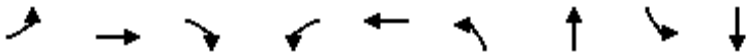
Intersection Summary	
HCM 2010 Ctrl Delay	19.5
HCM 2010 LOS	B

Intersection	
Intersection Delay, s/veh	19.2
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	306	5	7	226	2	15	0	5	388	1	104
Future Vol, veh/h	2	306	5	7	226	2	15	0	5	388	1	104
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	333	5	8	246	2	16	0	5	422	1	113
Number of Lanes	0	2	0	0	2	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	12.7	11.9	10.6	27.2
HCM LOS	B	B	B	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	1%	0%	6%	0%	100%	0%
Vol Thru, %	0%	0%	99%	97%	94%	98%	0%	1%
Vol Right, %	0%	100%	0%	3%	0%	2%	0%	99%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	15	5	155	158	120	115	388	105
LT Vol	15	0	2	0	7	0	388	0
Through Vol	0	0	153	153	113	113	0	1
RT Vol	0	5	0	5	0	2	0	104
Lane Flow Rate	16	5	168	172	130	125	422	114
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.036	0.01	0.317	0.321	0.251	0.239	0.802	0.179
Departure Headway (Hd)	7.865	6.633	6.768	6.739	6.927	6.885	6.848	5.638
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	452	535	529	531	515	519	527	633
Service Time	5.665	4.432	4.544	4.515	4.708	4.665	4.605	3.395
HCM Lane V/C Ratio	0.035	0.009	0.318	0.324	0.252	0.241	0.801	0.18
HCM Control Delay	11	9.5	12.7	12.7	12	11.8	32	9.6
HCM Lane LOS	B	A	B	B	B	B	D	A
HCM 95th-tile Q	0.1	0	1.4	1.4	1	0.9	7.6	0.6



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	102	830	572	199	1455	240	61	48	41
v/c Ratio	0.74	0.64	0.62	0.75	0.94	0.86	0.12	0.41	0.13
Control Delay	84.5	34.7	7.0	65.3	44.6	77.4	31.0	64.5	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	84.5	34.7	7.0	65.3	44.6	77.4	31.0	64.5	24.0
Queue Length 50th (ft)	79	280	20	149	555	182	32	36	11
Queue Length 95th (ft)	#168	365	122	225	#717	#319	68	77	44
Internal Link Dist (ft)		394			717		1038		216
Turn Bay Length (ft)	180		200	250		105		115	
Base Capacity (vph)	143	1291	916	324	1577	293	521	132	315
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.64	0.62	0.61	0.92	0.82	0.12	0.36	0.13

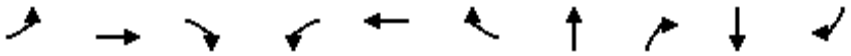
Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	94	764	526	183	1327	12	221	48	8	44	16	22
Future Volume (veh/h)	94	764	526	183	1327	12	221	48	8	44	16	22
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	102	830	572	199	1442	13	240	52	9	48	17	24
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	127	1341	600	231	1572	14	269	461	80	62	127	179
Arrive On Green	0.07	0.38	0.38	0.13	0.44	0.44	0.15	0.30	0.30	0.03	0.18	0.18
Sat Flow, veh/h	1774	3539	1583	1774	3594	32	1774	1548	268	1774	700	988
Grp Volume(v), veh/h	102	830	572	199	710	745	240	0	61	48	0	41
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1857	1774	0	1815	1774	0	1688
Q Serve(g_s), s	6.4	21.6	39.9	12.5	42.7	42.8	15.1	0.0	2.8	3.0	0.0	2.3
Cycle Q Clear(g_c), s	6.4	21.6	39.9	12.5	42.7	42.8	15.1	0.0	2.8	3.0	0.0	2.3
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.15	1.00		0.59
Lane Grp Cap(c), veh/h	127	1341	600	231	774	812	269	0	540	62	0	305
V/C Ratio(X)	0.80	0.62	0.95	0.86	0.92	0.92	0.89	0.00	0.11	0.78	0.00	0.13
Avail Cap(c_a), veh/h	149	1341	600	338	819	859	305	0	540	138	0	305
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	51.9	28.6	34.3	48.4	30.0	30.0	47.2	0.0	28.9	54.3	0.0	39.0
Incr Delay (d2), s/veh	23.5	0.9	25.7	14.2	14.6	14.2	24.4	0.0	0.4	18.5	0.0	0.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	4.0	10.7	21.7	7.0	24.0	25.1	9.2	0.0	1.5	1.8	0.0	1.2
LnGrp Delay(d),s/veh	75.3	29.5	59.9	62.6	44.6	44.1	71.6	0.0	29.4	72.8	0.0	39.9
LnGrp LOS	E	C	E	E	D	D	E		C	E		D
Approach Vol, veh/h		1504			1654			301			89	
Approach Delay, s/veh		44.2			46.5			63.0			57.7	
Approach LOS		D			D			E			E	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.4	38.3	19.2	47.5	21.7	25.0	12.6	54.1
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	8.8	31.2	21.6	40.4	19.5	20.5	9.5	52.5
Max Q Clear Time (g_c+I1), s	5.0	4.8	14.5	41.9	17.1	4.3	8.4	44.8
Green Ext Time (p_c), s	0.0	0.5	0.3	0.0	0.2	0.4	0.0	4.8

Intersection Summary	
HCM 2010 Ctrl Delay	47.2
HCM 2010 LOS	D



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	23	610	79	118	110	552	1087	180	746	51
v/c Ratio	0.04	0.93	0.13	0.45	0.07	0.67	0.84	0.26	0.58	0.08
Control Delay	8.0	44.3	2.5	13.9	10.2	14.3	25.7	3.8	17.7	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.0	44.3	2.5	13.9	10.2	14.3	25.7	3.8	17.7	0.9
Queue Length 50th (ft)	4	210	0	21	10	76	189	0	114	0
Queue Length 95th (ft)	13	#400	15	44	28	#279	#303	34	165	4
Internal Link Dist (ft)		1243			1504		1444		803	
Turn Bay Length (ft)	140			480						325
Base Capacity (vph)	574	670	639	264	1609	831	1291	691	1291	647
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.91	0.12	0.45	0.07	0.66	0.84	0.26	0.58	0.08

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	21	561	73	109	101	508	0	1000	166	0	686	47
Future Volume (veh/h)	21	561	73	109	101	508	0	1000	166	0	686	47
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	23	610	79	118	110	0	0	1087	0	0	746	0
Adj No. of Lanes	1	1	1	1	2	1	0	2	1	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	0	2	2
Cap, veh/h	613	647	550	272	1391	622	0	1248	558	0	1248	558
Arrive On Green	0.03	0.35	0.35	0.07	0.39	0.00	0.00	0.35	0.00	0.00	0.35	0.00
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h	23	610	79	118	110	0	0	1087	0	0	746	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s	0.5	18.8	2.0	2.4	1.2	0.0	0.0	17.0	0.0	0.0	10.3	0.0
Cycle Q Clear(g_c), s	0.5	18.8	2.0	2.4	1.2	0.0	0.0	17.0	0.0	0.0	10.3	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	613	647	550	272	1391	622	0	1248	558	0	1248	558
V/C Ratio(X)	0.04	0.94	0.14	0.43	0.08	0.00	0.00	0.87	0.00	0.00	0.60	0.00
Avail Cap(c_a), veh/h	715	647	550	293	1391	622	0	1248	558	0	1248	558
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	11.8	18.8	13.3	14.0	11.3	0.0	0.0	17.9	0.0	0.0	15.7	0.0
Incr Delay (d2), s/veh	0.0	22.3	0.1	1.1	0.0	0.0	0.0	8.5	0.0	0.0	2.1	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.2	13.7	0.9	1.3	0.6	0.0	0.0	9.6	0.0	0.0	5.3	0.0
LnGrp Delay(d),s/veh	11.8	41.0	13.4	15.1	11.3	0.0	0.0	26.4	0.0	0.0	17.9	0.0
LnGrp LOS	B	D	B	B	B			C			B	
Approach Vol, veh/h		712			228			1087			746	
Approach Delay, s/veh		37.0			13.3			26.4			17.9	
Approach LOS		D			B			C			B	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		25.4	8.8	25.1		25.4	6.1	27.8
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		20.9	5.0	20.6		20.9	5.0	20.6
Max Q Clear Time (g_c+I1), s		19.0	4.4	20.8		12.3	2.5	3.2
Green Ext Time (p_c), s		1.7	0.0	0.0		6.8	0.0	4.9

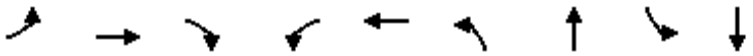
Intersection Summary	
HCM 2010 Ctrl Delay	25.8
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	19.7
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	226	1	8	137	10	5	0	12	425	0	175
Future Vol, veh/h	6	226	1	8	137	10	5	0	12	425	0	175
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	246	1	9	149	11	5	0	13	462	0	190
Number of Lanes	0	2	0	0	2	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	11.6	10.9	9.4	25.4
HCM LOS	B	B	A	D

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	5%	0%	10%	0%	100%	0%
Vol Thru, %	0%	0%	95%	99%	90%	87%	0%	0%
Vol Right, %	0%	100%	0%	1%	0%	13%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	5	12	119	114	77	79	425	175
LT Vol	5	0	6	0	8	0	425	0
Through Vol	0	0	113	113	69	69	0	0
RT Vol	0	12	0	1	0	10	0	175
Lane Flow Rate	5	13	129	124	83	85	462	190
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.011	0.022	0.242	0.231	0.16	0.16	0.819	0.273
Departure Headway (Hd)	7.381	6.155	6.737	6.705	6.91	6.766	6.382	5.171
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	483	579	532	534	518	529	568	694
Service Time	5.149	3.923	4.489	4.457	4.667	4.523	4.118	2.906
HCM Lane V/C Ratio	0.01	0.022	0.242	0.232	0.16	0.161	0.813	0.274
HCM Control Delay	10.2	9.1	11.6	11.5	11	10.8	31.8	9.8
HCM Lane LOS	B	A	B	B	B	B	D	A
HCM 95th-tile Q	0	0.1	0.9	0.9	0.6	0.6	8.2	1.1



Lane Group	EBL	EBT	EBR	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	45	854	647	140	1719	327	74	213	250
v/c Ratio	0.57	0.61	0.64	0.75	1.03	0.96	0.20	0.82	0.83
Control Delay	83.1	30.9	5.1	76.6	61.8	89.2	39.0	74.0	62.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	83.1	30.9	5.1	76.6	61.8	89.2	39.0	74.0	62.6
Queue Length 50th (ft)	35	272	0	106	~763	254	44	160	158
Queue Length 95th (ft)	#90	340	77	#200	#905	#442	89	#275	#298
Internal Link Dist (ft)		394			717		1038		216
Turn Bay Length (ft)	180		200	250		105		115	
Base Capacity (vph)	79	1433	1025	199	1668	339	371	283	303
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.60	0.63	0.70	1.03	0.96	0.20	0.75	0.83

Intersection Summary

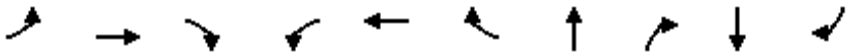
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	41	786	595	129	1561	20	301	57	11	196	103	127
Future Volume (veh/h)	41	786	595	129	1561	20	301	57	11	196	103	127
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1900	1863	1863	1900	1863	1863	1900
Adj Flow Rate, veh/h	45	854	647	140	1697	22	327	62	12	213	112	138
Adj No. of Lanes	1	2	1	1	2	0	1	1	0	1	1	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	58	1445	646	167	1681	22	338	318	62	241	118	145
Arrive On Green	0.03	0.41	0.41	0.09	0.47	0.47	0.19	0.21	0.21	0.14	0.16	0.16
Sat Flow, veh/h	1774	3539	1583	1774	3578	46	1774	1517	294	1774	760	937
Grp Volume(v), veh/h	45	854	647	140	838	881	327	0	74	213	0	250
Grp Sat Flow(s),veh/h/ln	1774	1770	1583	1774	1770	1855	1774	0	1811	1774	0	1697
Q Serve(g_s), s	3.0	22.3	48.4	9.2	55.7	55.7	21.7	0.0	4.0	14.0	0.0	17.3
Cycle Q Clear(g_c), s	3.0	22.3	48.4	9.2	55.7	55.7	21.7	0.0	4.0	14.0	0.0	17.3
Prop In Lane	1.00		1.00	1.00		0.02	1.00		0.16	1.00		0.55
Lane Grp Cap(c), veh/h	58	1445	646	167	831	871	338	0	380	241	0	263
V/C Ratio(X)	0.78	0.59	1.00	0.84	1.01	1.01	0.97	0.00	0.19	0.88	0.00	0.95
Avail Cap(c_a), veh/h	79	1445	646	199	831	871	338	0	380	283	0	263
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	56.9	27.4	35.1	52.8	31.4	31.4	47.6	0.0	38.6	50.3	0.0	49.6
Incr Delay (d2), s/veh	27.6	0.6	35.6	22.8	33.3	33.2	40.0	0.0	1.1	23.7	0.0	43.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	11.0	27.4	5.6	34.7	36.4	14.4	0.0	2.1	8.5	0.0	11.3
LnGrp Delay(d),s/veh	84.5	28.0	70.7	75.6	64.7	64.6	87.6	0.0	39.7	74.0	0.0	93.4
LnGrp LOS	F	C	F	E	F	F	F		D	E		F
Approach Vol, veh/h		1546			1859			401			463	
Approach Delay, s/veh		47.5			65.5			78.8			84.5	
Approach LOS		D			E			E			F	

Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	20.6	29.4	15.7	52.9	27.1	22.9	8.4	60.2
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Max Green Setting (Gmax), s	18.9	22.1	13.3	47.7	22.6	18.4	5.3	55.7
Max Q Clear Time (g_c+I1), s	16.0	6.0	11.2	50.4	23.7	19.3	5.0	57.7
Green Ext Time (p_c), s	0.2	1.7	0.1	0.0	0.0	0.0	0.0	0.0

Intersection Summary	
HCM 2010 Ctrl Delay	62.3
HCM 2010 LOS	E



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	57	653	188	161	167	797	1018	165	1009	75
v/c Ratio	0.09	0.82	0.26	0.61	0.10	0.97	0.85	0.26	0.85	0.13
Control Delay	8.9	31.7	10.2	20.1	13.2	44.4	36.4	5.0	35.9	6.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.9	31.7	10.2	20.1	13.2	44.4	36.4	5.0	35.9	6.2
Queue Length 50th (ft)	13	303	37	39	26	366	287	0	284	0
Queue Length 95th (ft)	29	448	80	#74	44	#637	#406	43	#400	30
Internal Link Dist (ft)		1243			1504		1444		803	
Turn Bay Length (ft)	140			480						325
Base Capacity (vph)	617	884	789	264	1754	858	1192	643	1192	583
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.74	0.24	0.61	0.10	0.93	0.85	0.26	0.85	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	52	601	173	148	154	733	0	937	152	0	928	69
Future Volume (veh/h)	52	601	173	148	154	733	0	937	152	0	928	69
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1863	1863	1863	1863	0	1863	1863	0	1863	1863
Adj Flow Rate, veh/h	57	653	188	161	167	0	0	1018	0	0	1009	0
Adj No. of Lanes	1	1	1	1	2	1	0	2	1	0	2	1
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	2	2	2	2	2	2	0	2	2	0	2	2
Cap, veh/h	660	757	644	277	1546	691	0	1252	560	0	1252	560
Arrive On Green	0.04	0.41	0.41	0.07	0.44	0.00	0.00	0.35	0.00	0.00	0.35	0.00
Sat Flow, veh/h	1774	1863	1583	1774	3539	1583	0	3632	1583	0	3632	1583
Grp Volume(v), veh/h	57	653	188	161	167	0	0	1018	0	0	1009	0
Grp Sat Flow(s),veh/h/ln	1774	1863	1583	1774	1770	1583	0	1770	1583	0	1770	1583
Q Serve(g_s), s	1.5	26.2	6.5	4.2	2.3	0.0	0.0	21.3	0.0	0.0	21.1	0.0
Cycle Q Clear(g_c), s	1.5	26.2	6.5	4.2	2.3	0.0	0.0	21.3	0.0	0.0	21.1	0.0
Prop In Lane	1.00		1.00	1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h	660	757	644	277	1546	691	0	1252	560	0	1252	560
V/C Ratio(X)	0.09	0.86	0.29	0.58	0.11	0.00	0.00	0.81	0.00	0.00	0.81	0.00
Avail Cap(c_a), veh/h	692	928	789	294	1841	823	0	1252	560	0	1252	560
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh	12.7	22.2	16.3	17.6	13.6	0.0	0.0	24.0	0.0	0.0	23.9	0.0
Incr Delay (d2), s/veh	0.1	7.2	0.2	2.6	0.0	0.0	0.0	5.9	0.0	0.0	5.6	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.7	14.9	2.9	2.2	1.1	0.0	0.0	11.3	0.0	0.0	11.2	0.0
LnGrp Delay(d),s/veh	12.8	29.3	16.6	20.2	13.6	0.0	0.0	29.8	0.0	0.0	29.5	0.0
LnGrp LOS	B	C	B	C	B			C			C	
Approach Vol, veh/h		898			328			1018			1009	
Approach Delay, s/veh		25.6			16.9			29.8			29.5	
Approach LOS		C			B			C			C	

Timer	1	2	3	4	5	6	7	8
Assigned Phs		2	3	4		6	7	8
Phs Duration (G+Y+Rc), s		33.4	10.6	37.7		33.4	8.1	40.2
Change Period (Y+Rc), s		4.5	4.5	4.5		4.5	4.5	4.5
Max Green Setting (Gmax), s		28.9	6.9	40.7		28.9	5.1	42.5
Max Q Clear Time (g_c+I1), s		23.3	6.2	28.2		23.1	3.5	4.3
Green Ext Time (p_c), s		4.8	0.0	5.0		5.0	0.0	7.5

Intersection Summary	
HCM 2010 Ctrl Delay	27.2
HCM 2010 LOS	C

Intersection	
Intersection Delay, s/veh	36.7
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	2	373	6	8	283	2	18	0	6	467	0	119
Future Vol, veh/h	2	373	6	8	283	2	18	0	6	467	0	119
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	405	7	9	308	2	20	0	7	508	0	129
Number of Lanes	0	2	0	0	2	0	0	1	1	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	15.6	14.2	11.6	62.6
HCM LOS	C	B	B	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	1%	0%	5%	0%	100%	0%
Vol Thru, %	0%	0%	99%	97%	95%	99%	0%	0%
Vol Right, %	0%	100%	0%	3%	0%	1%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	18	6	189	193	150	144	467	119
LT Vol	18	0	2	0	8	0	467	0
Through Vol	0	0	187	187	142	142	0	0
RT Vol	0	6	0	6	0	2	0	119
Lane Flow Rate	20	7	205	209	162	156	508	129
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.047	0.014	0.419	0.427	0.341	0.326	1.03	0.219
Departure Headway (Hd)	8.867	7.622	7.494	7.467	7.68	7.643	7.307	6.086
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	406	472	484	485	471	473	492	585
Service Time	6.567	5.322	5.194	5.167	5.38	5.343	5.1	3.878
HCM Lane V/C Ratio	0.049	0.015	0.424	0.431	0.344	0.33	1.033	0.221
HCM Control Delay	12	10.4	15.5	15.6	14.3	14	75.8	10.6
HCM Lane LOS	B	B	C	C	B	B	F	B
HCM 95th-tile Q	0.1	0	2	2.1	1.5	1.4	14.7	0.8

Northbound Left Delay AM 2020		
NBT Delay at US 41/SR 44	16.6	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time NB along US 41	38.4	Seconds
NBL Delay at US 41/Apopka Ave	52.5	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time NB along Highland Blvd	36.0	Seconds
(Signal Alt.) NBL Delay at US 41/SR 44	15.1	Seconds
Total Delay	86.6	Seconds

Northbound Left Delay AM 2040		
NBT Delay at US 41/SR 44	26.4	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time NB along US 41	38.4	Seconds
NBL Delay at US 41/Apopka Ave	55.8	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time NB along Highland Blvd	36.0	Seconds
(Signal Alt.) NBL Delay at US 41/SR 44	18.4	Seconds
Total Delay	96.4	Seconds

Northbound Left Delay PM 2020		
NBT Delay at US 41/SR 44	19.5	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time NB along US 41	38.4	Seconds
NBL Delay at US 41/Apopka Ave	71.6	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time NB along Highland Blvd	36.0	Seconds
(Signal Alt.) NBL Delay at US 41/SR 44	20.2	Seconds
Total Delay	103.5	Seconds

Northbound Left Delay PM 2040		
NBT Delay at US 41/SR 44	29.8	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time NB along US 41	38.4	Seconds
NBL Delay at US 41/Apopka Ave	87.6	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time NB along Highland Blvd	36.0	Seconds
(Signal Alt.) NBL Delay at US 41/SR 44	28.6	Seconds
Total Delay	121.4	Seconds

Southbound Left Delay AM 2020		
EBR Delay at US 41/Apopka Ave	42.4	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
SBL Delay at Highland Blvd/Apopka Ave	17.8	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time EB along Highland Blvd	36.0	Seconds
EBT Delay at US 41/SR 44	27.5	Seconds
EBT Delay at US 41/Apopka Ave	29.6	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time SB along US 41	38.4	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	43.0	Seconds

Total Delay 42.9 Seconds

Southbound Left Delay AM 2040		
EBR Delay at US 41/Apopka Ave	59.9	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
SBL Delay at Highland Blvd/Apopka Ave	31.8	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time EB along Highland Blvd	36.0	Seconds
EBT Delay at US 41/SR 44	41.0	Seconds
EBT Delay at US 41/Apopka Ave	29.5	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time SB along US 41	38.4	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	50.2	Seconds

Total Delay 80.8 Seconds

Southbound Left Delay PM 2020		
EBR Delay at US 41/Apopka Ave	30.6	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
SBL Delay at Highland Blvd/Apopka Ave	32	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time EB along Highland Blvd	36.0	Seconds
EBT Delay at US 41/SR 44	24.9	Seconds
EBT Delay at US 41/Apopka Ave	22	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time SB along US 41	38.4	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	54.0	Seconds

Total Delay 39.3 Seconds

Southbound Left Delay PM 2040		
EBR Delay at US 41/Apopka Ave	70.7	Seconds
Distance along Apopka Ave	0.21	Miles
Posted Speed along Apopka Ave	25	MPH
Travel Time SB along Apopka Ave	30.24	Seconds
SBL Delay at Highland Blvd/Apopka Ave	75.8	Seconds
Distance along Highland Blvd	0.25	Miles
Posted Speed along Highland Blvd	25	MPH
Travel Time EB along Highland Blvd	36.0	Seconds
EBT Delay at US 41/SR 44	29.3	Seconds
EBT Delay at US 41/Apopka Ave	28	Seconds
Distance along US 41	0.32	Miles
Posted Speed along US 41	30	MPH
Travel Time SB along US 41	38.4	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	72.6	Seconds

Total Delay 103.0 Seconds

	AM 2020	PM 2020	AM 2040	PM 2040
Signal Delay	25.3	29.3	30.8	49.2
Signal Volume	2,609	3,265	3,272	3,947
Total Delay	66,008	95,665	100,778	194,192
QR Main Int Delay	18.6	19.5	25.8	27.2
QR Main Int Volume	2,609	3,265	3,272	3,947
QR LT Delay	129.6	142.9	177.3	224.5
QR LT Volume	485	484	599	577
QR Total Delay	111,383	132,831	190,620	236,895
Ratio	1.69	1.39	1.89	1.22
New Int Delay	42.7	40.7	58.3	60.0

Concept Development

***Signal Control**: Existing Conditions*

N

0 40 200
Feet

PARCEL LINE

FOR ILLUSTRATIVE PURPOSES ONLY

AERIAL PHOTO ACQUIRED 2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41	CITRUS	18956

US 41 / SR 44
EXISTING AERIAL

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$

***Signal Alternative Control**: Construction Cost Estimates*

N

0 40 200
Feet

PARCEL LINE

FOR ILLUSTRATIVE PURPOSES ONLY

AERIAL PHOTO ACQUIRED 2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41	CITRUS	18956

US 41 / SR 44
Modified Signal

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - Modified Signal Alt.					
New Striping/Signage Grand Total		**$22,360.76**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	160.00	LF	$3.46	$553.60
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	16.00	LF	$5.41	$86.56
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	28.00	EA	$60.28	$1,687.84
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.50	GM	$4,601.66	$2,313.57
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.22	GM	$1,413.00	$308.76
711-15-201	THERMOPLASTIC, STD-OP, YELLOW, SOLID, 6"	0.34	GM	$4,533.47	$1,537.20
711-15-231	THERMOPLASTIC, STD-OP, YELLOW, SKIP, 6"	0.10	GM	$1,500.00	$156.16
	Roadway Component Total				$6,643.69
SIGNING COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
700-1-11	SINGLE POST SIGN, F&I, LESS THAN 12 SF	10.00	AS	$286.59	$2,865.90
700-1-12	SINGLE POST SIGN, F&I, 12-20 SF	2.00	AS	$969.97	$1,939.94
700-2-14	MULTI- POST SIGN, F&I GM, 12-20	1.00	AS	$4,522.44	$4,522.44
	Signing Component Total				$9,328.28
Project Sequences Subtotal					**$15,971.97**
102-1	MAINTENANCE OF TRAFFIC	15%			$2,395.80
101-1	MOBILIZATION	10%			$1,597.20
	PROJECT UNKNOWNS	15%			$2,395.80
New Striping/Signage Grand Total					**$22,360.76**

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - Modified Signal Alt.					
New Pavement Grand Total		**$56,450.69**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
160-4	TYPE B STABILIZATION	1,151.52	SY	$3.57	$4,110.91
285-709	OPTIONAL BASE,BASE GROUP 09	1,151.52	SY	$15.72	$18,101.84
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	126.67	TN	$87.14	$11,037.75
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	42.22	TN	$134.55	$5,681.01
	Roadway Component Total				$38,931.51
Project Sequences Subtotal					**$38,931.51**
102-1	MAINTENANCE OF TRAFFIC	20%			$7,786.30
101-1	MOBILIZATION	10%			$3,893.15
	PROJECT UNKNOWNS	15%			$5,839.73
New Pavement Grand Total					**$56,450.69**
	Statewide Unit Cost				

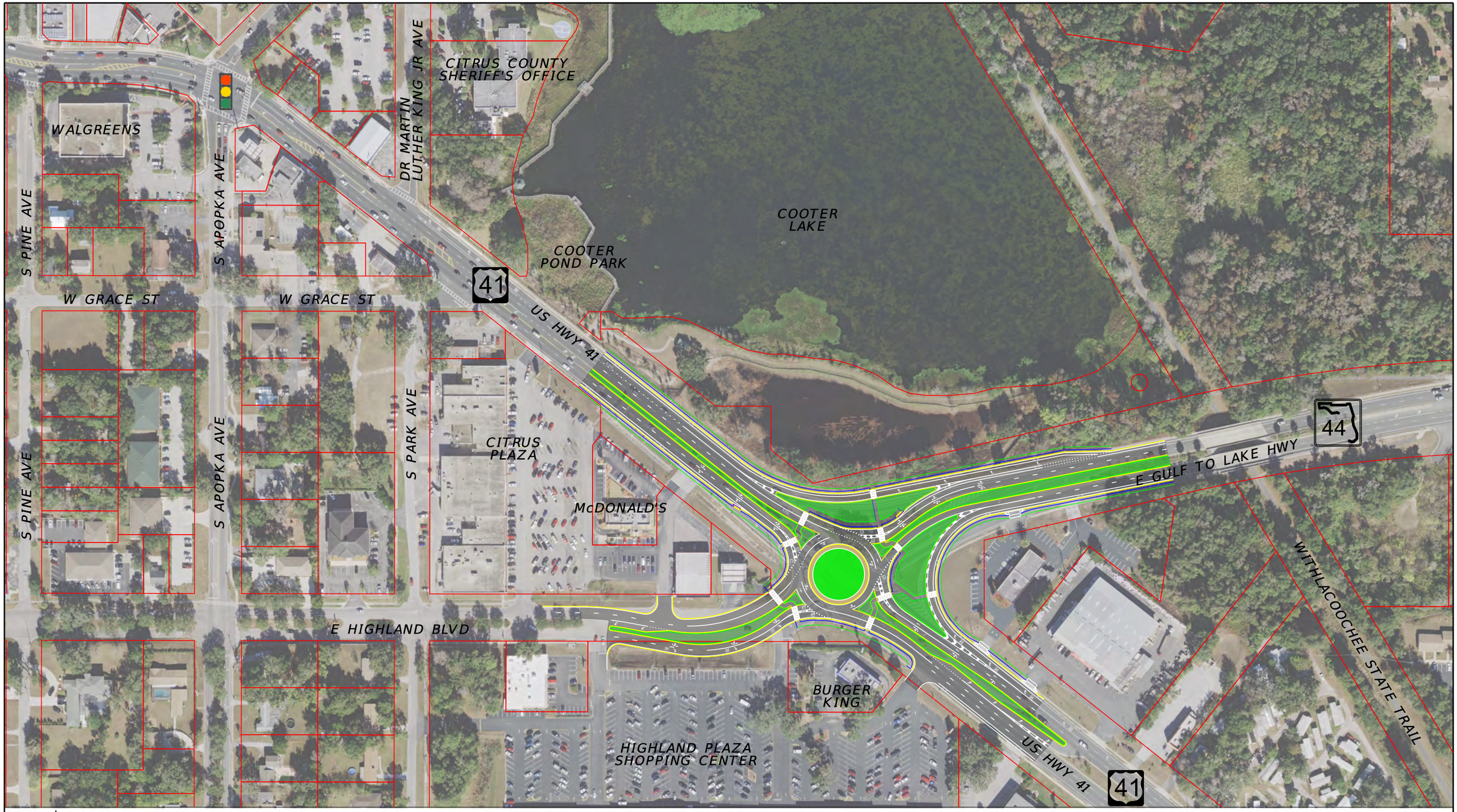
Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - Modified Signal Alt.					
Signal Grand Total		**$568,002.58**			
SIGNALIZATIONS COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
630-2-12	CONDUIT, F&I, DIRECTIONAL BORE	630.00	LF	$30.02	$18,912.60
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00	PI	$14,733.33	$14,733.33
635-2-11	PULL & SPLICE BOX, F&I, 13" X 24"	6.00	EA	$726.80	$4,360.80
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	1.00	AS	$2,362.16	$2,362.16
639-2-1	ELECTRICAL SERVICE WIRE, F&I	100.00	LF	$7.02	$702.00
641-2-11	PREST CNC POLE,F&I,TYP P-II,PEDESTAL	4.00	EA	$1,340.20	$5,360.80
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	0.00	EA	$47,416.67	$0.00
649-21-15	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 70'	4.00	EA	$70,000.00	$280,000.00
650-1-14	TRAFFIC SIGNAL,F&I ALUMINUM, 3 S 1 W	14.00	AS	$900.00	$12,600.00
650-1-16	TRAFFIC SIGNAL,F&I ALUMINUM, 4 S 1 W	0.00	AS	$1,200.00	$0.00
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$655.66	$5,245.28
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	12.00	EA	$302.30	$3,627.60
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	12.00	AS	$1,599.25	$19,191.00
665-1-12	PEDESTRIAN DETECTOR, F&I, ACCESSIBLE	8.00	EA	$1,390.07	$11,120.56
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00	AS	$27,500.00	$27,500.00
	Signalizations Component Total				$405,716.13
Project Sequences Subtotal					**$405,716.13**
102-1	MAINTENANCE OF TRAFFIC	15%			$60,857.42
101-1	MOBILIZATION	10%			$40,571.61
	PROJECT UNKNOWNS	15%			$60,857.42

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - Modified Signal Alt.					
Signal Grand Total		**$568,002.58**			
Signal Adjustments Grand Total					**$568,002.58**
	Statewide Unit Cost				
	2017 Statewide Unit Cost				

US 41 at SR 44 Modified Signal Alternative	
Component	Total Cost
New Striping/Signage Grand Total	$22,360.76
Signal Grand Total	$568,002.58
Sidewalk Grand Total	$0.00
Total Construction Cost	$590,363.35

US 41 at SR 44 Modified Signal Alternative	
Construction	$590,000
Engineering/CEI	$200,000
Roadway ROW	$0
Total	$790,000

***Roundabout**: Concept, ROW, and Construction Cost Estimates*



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41	CITRUS	18956

US 41 / SR 44 ROUNDABOUT

SHEET NO. 3

$USER$ $DATE$ $TIME$ $FILE$

US 41 at SR 44 - Roundabout

Citrus County, Florida

Florida Department of Transportation, District Seven

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION ENGINEERING/PLANNING

Engineer's Opinion of Probable Cost - Feasibility Study Concept

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
		SECTION 1: EARTHWORK				
1	110-1-1	Clearing and Grubbing	AC	0.30	$6,702.41	$2,010.72
		SUBTOTAL EARTHWORK				$ 2,011
		SECTION 2: ROADWAY				
2	327-70-15	Milling Existing Asphalt Pavement (2 3/4" Avg. Depth)	SY	2,636	$1.51	$3,980.36
3	337-7-22	Asph Conc FC, Inc Bit, FC-5, PG 76-22, PMA	TN	417	$129.69	$54,041.82
4	337-7-41	Asph Conc FC, Traffic B, FC-12.5, PG 76-22	TN	1,111	$92.32	$102,585.98
5	285709	Optional Base, Base Group 9	SY	10,000	$26.49	$264,900.00
6	0520-2-8	Concrete Curb, Type RA	LF	0	$17.00	$0.00
7	0520-1-10	Concrete Curb & Gutter, Type F	LF	10,334	$19.86	$205,224.10
8	0350-30-13	Conc Pavement for Roundabout Apron, 12"	SY	419	$69.00	$28,903.33
9	0350-3-1	Plain Cement Concrete Pavement, 6"	SY	156	$60.00	$9,386.67
10	0522-1	Concrete Sidewalk and Driveways, 4"	SY	983	$35.96	$35,355.87
11	0160-4	Type B Stabilization	SY	6,378	$3.58	$22,832.52
		SUBTOTAL ROADWAY				$ 727,211
		SECTION 3: DRAINAGE				
12	0425-1541	Inlets, DT Bot, Type D, >10	EA	2	$3,721.05	$7,442.10
13	0425-2-61	Manholes, P-8, >10'	EA	1	$4,064.52	$4,064.52
14	430175124	Pipe Culvert, Optional Material, Round, 24" SD	LF	200	$101.67	$20,334.00
		SUBTOTAL DRAINAGE				$ 31,841
		SECTION 4: SIGNING AND MARKING				
16	0711-15101	Thermoplastic, STD-OP, White, Solid 6"	GM	2.64	$4,634.66	$12,235.50
17	0711-15102	Thermoplastic, STD-OP, White, Solid 8"	GM	0.10	$6,037.57	$603.76
18	0711-15131	Thermoplastic, STD-OP, White, Skip 6"	GM	0.70	$1,449.97	$1,014.98
19	0711-11123	Thermoplastic, STD, White, Solid 12"	LF	837.00	$3.46	$2,896.02
20	0711-11125	Thermoplastic, STD, White, Solid 24"	LF	1,020.00	$5.41	$5,518.20
21	0711-11160	Thermoplastic, STD, White, Message	EA	31.00	$151.43	$4,694.33
22	0711-11170	Thermoplastic, STD, White, Arrow	EA	61.00	$60.28	$3,677.08
	0654-2-21	Rect Rapid Flashing Beacon, F&I Sol, Single	EA	2.00	$5,750.00	$11,500.00
23		Signing, Complete	LS	1.00	$20,000.00	$20,000.00
		SUBTOTAL TRAFFIC ITEMS				$ 62,140
		SECTION 5: LIGHTING/UTILITIES				
24		Light Pole Comp-Special, Relocate	EA	1	$1,750.00	$1,750.00
25	0715-411	Light Pole Comp, F&I, WS150, 40'	EA	10	$4,384.21	$43,842.10
26	635-211	Pull & Splice Box, F&I, 13" x 24"	EA	10	$726.80	$7,268.00
27		Pull & Splice Box, Relocate	EA	1	$475.55	$475.55
28	0715-711	Load Center, F&I, Secondary Voltage	EA	1	$17,750.00	$17,750.00
29	630-211	Conduit, F&I, Open Trench	LF	1,100	$11.67	$12,837.00
30	0715-112	Lighting Conductors, F&I, Insul, No. 8-6	LF	1,100	$1.44	$1,584.00
		SUBTOTAL TRAFFIC ITEMS				$ 85,507
		SECTION 6: PLANTING - IRRIGATION				
31	570-1-2	Performance Turf, Sod	SY	6,634	$3.01	$19,968.34
32	570-1-1	Performance Turf	SY	0	$2.60	$0.00
33		Palms, Sabal Palmetto Sabal Palmetto, 9-12' Clear Trunk	EA	6	$150.00	$900.00
34	0580-1-1	Landscape Complete - Small Plants	LS	1	$59,000.00	$59,000.00
35		Irrigation Tie-In	LS	1	$9,000.00	$9,000.00
		SUBTOTAL PLANTING - IRRIGATION				$ 88,868
		SECTION 7: MINOR ITEMS				
36		Subtotal Sections 1-5	LS	10%	$ 997,577	$99,760.00
		SUBTOTAL MINOR ITEMS				$ 99,760
		SECTION 8: ROADWAY MOBILIZATION				
37		Subtotal Sections 1-6	LS	7%	$ 1,097,337	$76,820.00
		SUBTOTAL ROADWAY MOBILIZATION				$ 76,820
		SECTION 9: ROADWAY MAINTENANCE OF TRAFFIC (MOT)				
38		Subtotal Sections 1-6	LS	15%	$ 1,097,337	$164,610.00
		SUBTOTAL ROADWAY MOT				$ 164,610

Engineer's Opinion of Probable Cost - Feasibility Study Concept

	PAY ITEM	DESCRIPTION	UNIT	TOTAL QUANTITY	UNIT PRICE	TOTAL COST
		SECTION 10: STORMWATER QUALITY / POLLUTION PREVENTION				
39		Subtotal Sections 1-8	LS	5%	$ 1,338,767	$66,940.00
		SUBTOTAL STORMWATER QUALITY				$ 66,940
					ESTIMATED CONSTRUCTION COSTS	$ 1,405,707
					30% CONTINGENCY	$ 421,720
					TOTAL ESTIMATED CONSTRUCTION COSTS	$ 1,827,427

	ROW Take Area (SF)	Cost/SF	Cost
SW Corner (Highland Plaza Shopping Center)	6923.00	$130.00	$692,300.00
NW Corner (Main Intersection)	325.00	$130.00	$32,500.00
Parcel Takes			
Total	7248	$130.00	$724,800.00

TOTAL PROJECT COST	$2,467,036.90
Roadway ROW	$ 724,800.00
Total	**$3,191,836.90**

RCUT: *Concept, ROW, and Construction Cost Estimates*

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Feet

PARCEL LINE

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AERIAL PHOTO ACQUIRED 2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41	CITRUS	18956

US 41 / SR 44
RCUT

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
New Striping/Signage Grand Total		**$151,542.77**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
350-3-1	PLAIN CEMENT CONC, 6"	304.44	SY	$60.00	$18,266.67
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	862.67	LF	$35.00	$30,193.45
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	212.00	LF	$3.46	$733.52
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	427.00	LF	$5.41	$2,310.07
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	38.00	EA	$60.28	$2,290.64
711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	3.50	GM	$4,455.66	$15,594.81
711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	2.80	GM	$4,431.10	$12,407.08
	Roadway Component Total				$81,796.24
SIGNING COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
700-1-11	SINGLE POST SIGN, F&I, LESS THAN 12 SF	15.00	AS	$286.59	$4,298.85
700-1-12	SINGLE POST SIGN, F&I, 12-20 SF	5.00	AS	$969.97	$4,849.85
700-2-14	MULTI- POST SIGN, F&I GM, 12-20 SF	3.00	AS	$4,522.44	$13,567.32
	Signing Component Total				$22,716.02
Project Sequences Subtotal					**$104,512.26**

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
New Striping/Signage Grand Total		**$151,542.77**			
102-1	MAINTENANCE OF TRAFFIC	20%			$20,902.45
101-1	MOBILIZATION	10%			$10,451.23
	PROJECT UNKNOWNS	15%			$15,676.84
New Striping/Signage Grand Total					**$151,542.77**
	Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
New Pavement Grand Total		**$127,570.07**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
160-4	TYPE B STABILIZATION	1,973.33	SY	$3.58	$7,064.53
285-709	OPTIONAL BASE,BASE GROUP 09	1,973.33	SY	$26.49	$52,273.60
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	217.07	TN	$87.52	$18,997.67
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	72.36	TN	$133.28	$9,643.55
	Roadway Component Total				$87,979.36
Project Sequences Subtotal					**$87,979.36**
102-1	MAINTENANCE OF TRAFFIC	20%			$17,595.87
101-1	MOBILIZATION	10%			$8,797.94
	PROJECT UNKNOWNS	15%			$13,196.90
New Pavement Grand Total					**$127,570.07**
	Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
Signal Grand Total		**$1,468,004.52**			
SIGNALIZATIONS COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
630-2-12	CONDUIT, F&I, DIRECTIONAL BORE	580.00	LF	$30.02	$17,411.60
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	3.00	PI	$14,733.33	$44,199.99
635-2-11	PULL & SPLICE BOX, F&I, 13" X 24"	54.00	EA	$726.80	$39,247.20
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	3.00	AS	$2,362.16	$7,086.48
639-2-1	ELECTRICAL SERVICE WIRE, F&I	300.00	LF	$7.02	$2,106.00
641-2-11	PREST CNC POLE,F&I,TYP P-II,PEDESTAL	8.00	EA	$1,340.20	$10,721.60
649-21-3	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 40'	0.00	EA	$38,500.00	$0.00
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	6.00	EA	$47,416.67	$284,500.02
649-21-12	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 60'-40'	0.00	EA	$52,318.62	$0.00
649-21-21	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 78'	6.00	EA	$70,071.43	$420,428.58
650-1-14	TRAFFIC SIGNAL,F&I ALUMINUM, 3 S 1 W	30.00	AS	$900.00	$27,000.00
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$655.66	$5,245.28
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	32.00	EA	$302.30	$9,673.60
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	32.00	AS	$1,599.25	$51,176.00
665-1-12	PEDESTRIAN DETECTOR, F&I, ACCESSIBLE	8.00	EA	$1,390.07	$11,120.56
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	3.00	AS	$27,500.00	$82,500.00
	Signalizations Component Total				$1,012,416.91

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
Signal Grand Total		**$1,468,004.52**			
Project Sequences Subtotal					**$1,012,416.91**
102-1	MAINTENANCE OF TRAFFIC	20%			$202,483.38
101-1	MOBILIZATION	10%			$101,241.69
	PROJECT UNKNOWNS	15%			$151,862.54
Signal Adjustments Grand Total					**$1,468,004.52**
	Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description: US 41 at SR 44 - RCUT Alt.					
Sidewalk Grand Total		**$17,437.90**			
EARTHWORK COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
110-1-1	CLEARING & GRUBBING	0.06	AC	$6,702.41	$415.44
	Earthwork Component Total				$415.44
SHOULDER COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	300.00	SY	$35.96	$10,788.00
570-1-2	PERFORMANCE TURF, SOD	15.56	SY	$3.01	$46.82
	Shoulder Component Total				$10,834.82
Project Sequences Subtotal					**$11,250.26**
102-1	MAINTENANCE OF TRAFFIC	20%			$2,250.05
101-1	MOBILIZATION	10%			$1,125.03
	PROJECT UNKNOWNS	25%			$2,812.57
Sidewalk Grand Total					**$17,437.90**

Lane Addition	ROW Take Area (SF)	Cost/SF	Cost
NW Corner (Main Intersection)	1400	$100.00	$140,000.00
NE Corner (Main Intersection)		$100.00	$0.00
SW Corner (Main Intersection)		$100.00	$0.00
SE Corner by Home Depot		$100.00	$0.00
Parcel Takes			
Total	1400	$150.00	$140,000.00

US 41 at SR 44 RCUT Alternative	
Component	Total Cost
New Striping/Signage Grand Total	$151,542.77
New Pavement	$127,570.07
Signal Grand Total	$1,468,004.52
Sidewalk Grand Total	$17,437.90
Total Construction Cost	$1,764,555.26

US 41 at SR 44 RCUT Alternative	
Construction	$1,760,000
Engineering/CEI	$600,000
Roadway ROW	$100,000
Total	$2,460,000

QR: *Concept, ROW, and Construction Cost Estimates*

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PARCEL LINE

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AERIAL PHOTO ACQUIRED 2017

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
US 41	CITRUS	18956

US 41 / SR 44 QUADRANT

SHEET NO.

$USER$ $DATE$ $TIME$ $FILE$

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
New Striping/Signage Grand Total		**$85,379.44**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
350-3-1	PLAIN CEMENT CONC, 6"	418.89	SY	$60.00	$25,133.33
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	0.00	LF	$35.00	$0.00
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	102.00	LF	$3.46	$352.92
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	94.00	LF	$5.41	$508.54
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	22.00	EA	$60.28	$1,326.16
711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	1.12	GM	$4,455.66	$4,990.34
711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	0.87	GM	$4,431.10	$3,855.06
	Roadway Component Total				$36,166.35
SIGNING COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
700-1-11	SINGLE POST SIGN, F&I, LESS THAN 12 SF	15.00	AS	$286.59	$4,298.85
700-1-12	SINGLE POST SIGN, F&I, 12-20 SF	5.00	AS	$969.97	$4,849.85
700-2-14	MULTI- POST SIGN, F&I GM, 12-20 SF	3.00	AS	$4,522.44	$13,567.32
	Signing Component Total				$22,716.02
Project Sequences Subtotal					**$58,882.37**

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
New Striping/Signage Grand Total		**$85,379.44**			
102-1	MAINTENANCE OF TRAFFIC	20%			$11,776.47
101-1	MOBILIZATION	10%			$5,888.24
	PROJECT UNKNOWNS	15%			$8,832.36
New Striping/Signage Grand Total					**$85,379.44**
	Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
New Pavement Grand Total		**$81,972.39**			
ROADWAY COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
160-4	TYPE B STABILIZATION	1,268.00	SY	$3.58	$4,539.44
285-709	OPTIONAL BASE,BASE GROUP 09	1,268.00	SY	$26.49	$33,589.32
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	139.48	TN	$87.52	$12,207.29
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	46.49	TN	$133.28	$6,196.63
	Roadway Component Total				$56,532.68
	Bridge Widening Construction	0.00	SF	$160.00	$0.00
Project Sequences Subtotal					**$56,532.68**
102-1	MAINTENANCE OF TRAFFIC	20%			$11,306.54
101-1	MOBILIZATION	10%			$5,653.27
	PROJECT UNKNOWNS	15%			$8,479.90
New Pavement Grand Total					**$81,972.39**
	Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
Signal Grand Total		**$1,018,328.27**			
SIGNALIZATIONS COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
630-2-12	CONDUIT, F&I, DIRECTIONAL BORE	880.00	LF	$30.02	$26,417.60
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	6.00	PI	$14,733.33	$88,399.98
635-2-11	PULL & SPLICE BOX, F&I, 13" X 24"	72.00	EA	$726.80	$52,329.60
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	6.00	AS	$2,362.16	$14,172.96
639-2-1	ELECTRICAL SERVICE WIRE, F&I	100.00	LF	$7.02	$702.00
641-2-11	PREST CNC POLE,F&I,TYP P-II,PEDESTAL	8.00	EA	$1,340.20	$10,721.60
649-21-3	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 40'	1.00	EA	$38,500.00	$38,500.00
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	5.00	EA	$47,416.67	$237,083.35
649-21-12	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, DOUBLE ARM 60'-40'		EA	$52,318.62	$0.00
649-21-21	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 78'	1.00	EA	$70,071.43	$70,071.43
650-1-14	TRAFFIC SIGNAL,F&I ALUMINUM, 3 S 1 W	30.00	AS	$900.00	$27,000.00
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$655.66	$5,245.28
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	20.00	EA	$302.30	$6,046.00
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	20.00	AS	$1,599.25	$31,985.00
665-1-12	PEDESTRIAN DETECTOR, F&I, ACCESSIBLE	8.00	EA	$1,390.07	$11,120.56
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	3.00	AS	$27,500.00	$82,500.00
	Signalizations Component Total				$702,295.36

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
Signal Grand Total		**$1,018,328.27**			
Project Sequences Subtotal					**$702,295.36**
102-1	MAINTENANCE OF TRAFFIC	20%			$140,459.07
101-1	MOBILIZATION	10%			$70,229.54
	PROJECT UNKNOWNS	15%			$105,344.30
Signal Adjustments Grand Total					**$1,018,328.27**
	Statewide Unit Cost				
	2017 Statewide Unit Cost				

Project: FDOT D7 ICE Training					
Description:US 41 at SR 44 - Quadrant Cost Estimate					
Sidewalk Grand Total		**$14,596.31**			
EARTHWORK COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
110-1-1	CLEARING & GRUBBING	0.05	AC	$6,702.41	$335.43
	Earthwork Component Total				$335.43
SHOULDER COMPONENT					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	242.22	SY	$35.96	$8,710.31
570-1-2	PERFORMANCE TURF, SOD	123.33	SY	$3.01	$371.23
	Shoulder Component Total				$9,081.54
Project Sequences Subtotal					**$9,416.97**
102-1	MAINTENANCE OF TRAFFIC	20%			$1,883.39
101-1	MOBILIZATION	10%			$941.70
	PROJECT UNKNOWNS	25%			$2,354.24
Sidewalk Grand Total					**$14,596.31**

Lane Addition	ROW Take Area (SF)	Cost/SF	Cost
NW Corner (Main Intersection)	0.00	$150.00	$0.00
NE Corner (Main Intersection)	0.00	$150.00	$0.00
SW Corner (Main Intersection)	0.00	$150.00	$0.00
Walgreens	1.00	$2,000,000.00	$2,000,000.00
Parcel Takes			
Total	0	$150.00	$2,000,000.00

US 41 at SR 44 - Quadrant Cost Estimate		
Component	Total Cost	
New Striping/Signage Grand Total	$	85,379.44
New Pavement	$	81,972.39
Signal Grand Total	$	1,018,328.27
Sidewalk Grand Total	$	14,596.31
Total Construction Cost	$	1,200,276.40

US 41 at SR 44 - Quadrant Cost Estimate		
Construction	$	1,200,000.00
Engineering/CEI	$	300,000.00
Roadway ROW	$	2,000,000.00
Total	**$**	**3,500,000.00**

SPICE – Stage 2

Federal Highway Administration (FHWA)

Safety Performance for Intersection Control Evaluation Tool

Results

Summary of crash prediction results for each alternative

Project Information

Project Name:	FDOT District 7 ICE Training	**Intersection Type**	At-Grade Intersections
Intersection:	US 41 at SR 44	**Opening Year**	2020
Agency:	FDOT	**Design Year**	2040
Project Reference:	XXXXX.XX	**Facility Type**	On Urban and Suburban Arterial
City:	Inverness	**Number of Legs**	4-leg
State:	Florida	**1-Way/2-Way**	2-way Intersecting 2-way
Date:	7/1/2019	**# of Major Street Lanes (both directions)**	5 or fewer
Analyst:	KAI	**Major Street Approach Speed**	Less than 55 mph

Crash Prediction Summary

Control Strategy	Crash Type	Opening Year	Design Year	Total Project Life Cycle	Rank	AADT Within Prediction Range?	Source of Prediction
Traffic Signal	Total	18.52	23.92	445.06	3	Yes	Calibrated SPF w/ EB
	Fatal & Injury	5.56	7.29	134.69			
Traffic Signal (Alt)	Total	17.59	22.71	422.67	2	Yes	Calibrated SPF w/ EB
	Fatal & Injury	5.28	6.93	127.97			
2-lane Roundabout	Total	16.49	20.50	388.14	1	No	Uncalibrated SPF
	Fatal & Injury	2.52	3.21	60.14			
Signalized RCUT	Total	30.17	40.55	740.81	4	No	Uncalibrated SPF
	Fatal & Injury	7.46	10.17	184.53			

ICE Tool

Outputs

This sheet compiles the data from summary tables in individual alternatives sheets. To populate the output sheet press the "Setup Worksheets" button in the Alternatives_MasterList tab.

Agency:	FDOT
Project Name:	US 41 at SR 44 ICE Analysis
Project Reference:	XXXXX.XX
Intersection:	US 41 at SR 44
City:	Inverness
State:	Florida
Performing Department or Organization:	FDOT
Date:	4/25/2018
Analyst:	KAI
Analysis Type	At-Grade Intersection

Analysis Summary

Cost Categories	Net Present Value of Costs				
	Traffic Signal	Traffic Signal (Alt.)	Roundabout	Signalized Restricted Crossing U-Turn (RCUT)	Quadrant Roadway Intersection
Planning, Construction & Right of Way Costs	$ -	$ 790,000	$ 2,615,000	$ 2,380,000	$ 1,900,000
Post-Opening Costs	$ 98,229	$ 98,229	$ 72,952	$ 238,276	$ 294,686
Auto Passenger Delay	$ 27,475,897	$ 24,060,755	$ 10,420,903	$ 22,786,680	$ 45,708,220
Truck Delay	$ 13,470,641	$ 11,796,047	$ 5,108,726	$ 11,171,554	$ 22,411,030
Safety	$ 27,406,287	$ 26,037,182	$ 13,243,933	$ 38,103,141	--
Total cost	**$68,451,054**	**$62,782,213**	**$31,461,514**	**$74,679,651**	**$70,313,935**

Select Base Case for Benefit-Cost Comparison: (Choose from list)	Traffic Signal

Benefit Categories	Net Present Value of Benefits Relative to Base Case				
	Traffic Signal	Traffic Signal (Alt.)	Roundabout	Signalized Restricted Crossing U-Turn (RCUT)	Quadrant Roadway Intersection
Auto Passenger Delay		$ 3,415,141	$ 17,054,994	$ 4,689,217	$ (18,232,323)
Truck Delay		$ 1,674,595	$ 8,361,915	$ 2,299,088	$ (8,940,388)
Safety		$ 1,369,105	$ 14,162,354	$ (10,696,854)	
Net Present Value of Benefits		**$ 6,458,841**	**$ 39,579,263**	**$ (3,708,549)**	**$ (27,172,711)**
Net Present Value of Costs		**$ 790,000**	**$ 2,589,723**	**$ 2,520,048**	**$ 2,096,457**
Net Present Value of Improvement		**$ 5,668,841**	**$ 36,989,540**	**$ (6,228,597)**	**$ (29,269,169)**
Benefit-Cost (B/C) Ratio		**8.18**	**15.28**	**preferred. Benefits are less than base case and cost is greater than base**	**preferred. Benefits are less than base case and cost is greater than base**
Delay B/C		**6.44**	**9.81**	**2.77**	**preferred. Benefits are less than base case and cost is greater than base**
Safety B/C		**1.73**	**5.47**	**preferred. Benefits are less than base case and cost is greater than base**	