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***ICE FORM – Stage 1***

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Intersection: SR 710 @ Northlake Boulevard

Location: Palm Beach County – D4

**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	FDOT ICE Training - D4	FDOT Project #		Date	06/24/19
Submitted By	Jack Freeman, Kittelson	Agency/Company	FDOT	Email	jfreeman@kittelson.com
FDOT Context Classification	C3R - Suburban Residential	FDOT District	District 4	County	Palm Beach
Project Locality (City/Town/Village)	West Palm Beach	Project Type	Congestion Mitigation Project		
Project Purpose (What is the catalyst for this project and why is it being undertaken?)	The intersection currently experiences significant delays during peak periods. In the hopes of avoiding a costly grade-separated interchange, at-grade alternatives are being evaluated for their ability to better accommodate the high volumes at this intersection relative to the existing signalized control.				
Project Setting Description (Describe the area surrounding the intersection)	The intersection lies in a relatively rural area of West Palm Beach. The NW, SW, and SE quadrants are all occupied by wetlands (undeveloped). The NE quadrant features several residential developments (several hundred homes) accessing Northlake Boulevard at the adjacent signalized intersection (approximately 1.35 miles east).				
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)	Given the relatively rural nature of the intersection, pedestrian and bicycle volumes at the intersection are low. Three of the four quadrants of the intersection are occupied by wetlands that extend for several square miles. Northlake Boulevard features a mix of shared-use paths and sidewalks along both sides of the roadway; these are primarily utilized for recreational purposes. Pedestrians and bicyclists originating from the homes in the NE quadrant do not have direct access to the intersection as the developments feature perimeter walls. Both motorized and non-motorized traffic from the homes can only access the study intersection via the adjacent signal (1.25 miles east). CD 710 features heavy truck traffic originating on				

Major Street Information								
Route #:	710	Route Name(s)	Beeline Highway			Milepost	17.025	
Existing Control Type	Signal		Existing AADT	21,400	Design Year AADT	28,700		
Design Vehicle	Interstate Semitrailer (WB-62)		Control Vehicle	Interstate Semitrailer (WB-62)				
Primary Functional Classification			Rural Principal Arterial		Design Speed (mph)		55	
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	Neither side of the approach	Left-Turn	2				
	Crosswalk on Approach?	Yes	Left-Through		Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	308	Left	1,038
	Multi-Use Path?	No	Left-Through-Right		Through	723	Through	397
	Scheduled Bus Service?	No	Through-Right		Right	5	Right	10
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		13.8%	
Approach #2	Direction	Southbound	Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes	
	Sidewalks along:	One side of the approach	Left-Turn	1				
	Crosswalk on Approach?	No	Left-Through		Weekday AM Peak		Weekday PM Peak	
	On-Street Bike Facilities?	No	Through	2	Left	48	Left	93
	Multi-Use Path?	Yes	Left-Through-Right		Through	311	Through	527
	Scheduled Bus Service?	No	Through-Right		Right	85	Right	337
	Bus Stop on Approach?	No	Right-Turn	1	Daily Truck %		14.8%	

Minor Street Information										
Route #:	CR-809A	Route Name(s)	Northlake Boulevard				Milepost (if app.)			
Existing Control Type	Signal		Existing AADT	32,400	Design Year AADT	38,800				
Design Vehicle	Interstate Semitrailer (WB-62)			Control Vehicle	Interstate Semitrailer (WB-62)					
Primary Functional Classification			Rural Principal Arterial			Design Speed (mph)		55		
Secondary Functional Classification (if app.)						Target Speed (mph) [if app.]				
Approach #1	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		Weekday AM Peak		Weekday PM Peak		
	On-Street Bike Facilities?	Yes		Through	2	Left	1	Left	6	
	Multi-Use Path?	No		Left-Through-Right		Through	363	Through	1,586	
	Scheduled Bus Service?	No		Through-Right		Right	115	Right	67	
	Bus Stop on Approach?	No		Right-Turn	1	Daily Truck %		9.8%		
Approach #2	Direction	Eastbound		Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes		
	Sidewalks along:	One side of the approach		Left-Turn	0					
	Crosswalk on Approach?	No		Left-Through		Weekday AM Peak		Weekday PM Peak		
	On-Street Bike Facilities?	No		Through	3	Left	173	Left	62	
	Multi-Use Path?	No		Left-Through-Right		Through	1,772	Through	690	
	Scheduled Bus Service?	No		Through-Right		Right	1,196	Right	396	
	Bus Stop on Approach?	No		Right-Turn	1	Daily Truck %		4.0%		
Approach #3	Direction			Number of Lanes		Study Period #1 Traffic Volumes		Study Period #2 Traffic Volumes		
	Sidewalks along:			Left-Turn						
	Crosswalk on Approach?			Left-Through		Weekday AM Peak		Weekday PM Peak		
	On-Street Bike Facilities?			Through		Left		Left		
	Multi-Use Path?			Left-Through-Right		Through		Through		
	Scheduled Bus Service?			Through-Right		Right		Right		
	Bus Stop on Approach?			Right-Turn		Daily Truck %				

Crash History (Existing Intersections Only)	
<p>Append the most recent five-years of crash data for the intersection from the CAR System. If the crash data evidences any issues relating to safety performance, discuss briefly here:</p>	
<p>The most recent five years of crash data on record (2013-2017) was collected for the study intersection. Over the five-year history, 229 total crashes were reported with 2 crashes involving a fatality and 52 involving injuries. One fatal crash was rear-end related while the other involved a pedestrian. 60 percent of the injuries resulted from rear-end crashes, which accounted for approximately 51 percent of the total crashes. 39 percent of crashes occurred on a Monday or Tuesday, and 17 percent occurred between 4 and 6 PM.</p>	

Control Strategy Evaluation						
Provide a brief justification as to why each of the following control strategies should be advanced or not. Justification should consider potential environmental impacts.						
Control Strategy	CAP-X Outputs			SPICE Ranking	Strategy to Be Advanced?	Justification
	V/C Ratio		Multimodal Score			
	Weekday AM Peak	Weekday PM Peak				
Two-Way Stop-Controlled	N/A	N/A	N/A	N/A	No	Existing signalized intersection.
All-Way Stop-Controlled	N/A	N/A	N/A	N/A	No	Existing signalized intersection.
Signalized Control	1.20	1.29	4.8	4	Yes	The existing signal will move forward as the future no-build.
Roundabout	N/A	N/A	N/A	N/A	No	Both the major and minor roadways have 2-3 lane approaches.
Median U-Turn	1.09 (E-W Road) 1.31 (N-S Road)	0.94 (E-W Road) 1.51 (N-S Road)	6.3	1	No	A median U-turn would re-route the 1,000+ vehicle NBL movement, which is not desirable.
RCUT (Signalized)	1.48 (E-W Road) 1.42 (N-S Road)	1.22 (E-W Road) 1.79 (N-S Road)	6.3	5	No	An signalized RCUT is not anticipated to have adequate capacity to handle existing traffic volumes.
RCUT (Unsignalized)	N/A	N/A	N/A	N/A	No	Existing signalized intersection.
Jughandle				2	No	An existing jughandle is present in the SE corner but does not provide much operational benefit.
Displaced Left-Turn	0.98 (Both E-W & N-S Road)	0.85 (Both E-W & N-S Road)	4.8	3	No	Multiple left turn movements are less than 75 vehicles in either peak hour so this treatment wouldn't be as effective for the cost.
Continuous Green Tee	N/A	N/A	N/A	N/A	No	The intersection currently has 4 approaches.
Quadrant Roadway	1.09 (SE)	1.06 (SE)	4.4		Yes	Developing a quadrant roadway in the S-E quadrant holds the potential to alleviate the operational issues experienced at the intersection.
Partial Median U-Turn	1.05 (E-W Road) 1.22 (N-S Road)	1.11 (E-W Road) 1.55 (N-S Road)	N/A	1	No	The PMUT is anticipated to operate with a worse V/C than either the QR or the PDLT.
Partial DLT	1.05 (E-W Road) 1.01 (N-S Road)	1.07 (E-W Road) 0.85 (N-S Road)	N/A	3	Yes	A PDLT for the N-S roadway would provide operational benefits for the 1,000+ vehicle NBL movement.

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

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*CAP-X – Existing AM Peak N-S*

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# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 710 at Northlake Blvd - D4 ICE Training
Project Number:	XXXXX.XX
Location:	West Palm Beach, FL
Date:	2017 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	173	1772	1196	4.00%	0.00%
Westbound	0	1	363	115	9.80%	0.00%
Southbound	0	48	311	85	14.80%	0.00%
Northbound	0	308	723	5	13.80%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	<b>0.80</b>	<b>0.95</b>		<b>0.85</b>		
Truck to PCE Factor				<b>Suggested = 2.00</b>	2.00	
FDOT Context Zone		<b>C3R-Suburban Residential</b>				
Critical Lane Volume Threshold		2-phase signal		<b>Suggested = 1800</b>	<b>1800</b>	
		3-phase signal		<b>Suggested = 1750</b>	<b>1750</b>	
		4-phase signal		<b>Suggested = 1700</b>	<b>1700</b>	

# 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
Displaced Left Turn	0.98	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn N-S	1.01	2	4.8	Fair	Fair	Good
Quadrant Roadway S-E	1.09	3	4.4	Fair	Fair	Fair
Traffic Signal	1.20	4	4.8	Fair	Fair	Good
Partial Median U-Turn N-S	1.22	5	6.3	Good	Good	Fair
Median U-Turn N-S	1.31	6	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn N-S	1.42	7	6.3	Good	Good	Fair
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*CAP-X – Existing AM Peak E-W*

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# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 710 at Northlake Blvd - D4 ICE Training
Project Number:	XXXXX.XX
Location:	West Palm Beach, FL
Date:	2017 AM
Number of Intersection Legs:	4
Major Street Direction:	East-West

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	173	1772	1196	4.00%	0.00%
Westbound	0	1	363	115	9.80%	0.00%
Southbound	0	48	311	85	14.80%	0.00%
Northbound	0	308	723	5	13.80%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	<b>0.80</b>	<b>0.95</b>		<b>0.85</b>		
Truck to PCE Factor				<b>Suggested = 2.00</b>	2.00	
FDOT Context Zone			<b>C3R-Suburban Residential</b>			
Critical Lane Volume Threshold		2-phase signal		<b>Suggested = 1800</b>	<b>1800</b>	
		3-phase signal		<b>Suggested = 1750</b>	<b>1750</b>	
		4-phase signal		<b>Suggested = 1700</b>	<b>1700</b>	

# 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
Displaced Left Turn	0.98	1	4.8	Fair	Fair	Good
Partial Displaced Left Turn E-W	1.05	2	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.05	2	6.3	Good	Good	Fair
Quadrant Roadway S-E	1.09	4	4.4	Fair	Fair	Fair
Median U-Turn E-W	1.09	4	6.3	Good	Good	Fair
Traffic Signal	1.20	6	4.8	Fair	Fair	Good
Signalized Restricted Crossing U-Turn E-W	1.48	7	6.3	Good	Good	Fair
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*CAP-X – Existing PM Peak N-S*

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# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 710 at Northlake Blvd - D4 ICE Training
Project Number:	XXXXX.XX
Location:	West Palm Beach, FL
Date:	2017 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	62	690	396	4.00%	0.00%
Westbound	0	6	1586	67	9.80%	0.00%
Southbound	0	93	527	337	14.80%	0.00%
Northbound	0	1038	397	10	13.80%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	<b>0.80</b>	<b>0.95</b>		<b>0.85</b>		
Truck to PCE Factor				<b>Suggested = 2.00</b>	2.00	
FDOT Context Zone		<b>C3R-Suburban Residential</b>				
Critical Lane Volume Threshold		2-phase signal		<b>Suggested = 1800</b>	<b>1800</b>	
		3-phase signal		<b>Suggested = 1750</b>	<b>1750</b>	
		4-phase signal		<b>Suggested = 1700</b>	<b>1700</b>	

# 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	0.85	1	4.8	Fair	Fair	Good
Displaced Left Turn	0.85	1	4.8	Fair	Fair	Good
Quadrant Roadway S-E	1.06	3	4.4	Fair	Fair	Fair
Traffic Signal	1.29	4	4.8	Fair	Fair	Good
Median U-Turn N-S	1.51	5	6.3	Good	Good	Fair
Partial Median U-Turn N-S	1.55	6	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn N-S	1.79	7	6.3	Good	Good	Fair
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*CAP-X – Existing PM Peak E-W*

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# Capacity Analysis for Planning of Junctions

Summary Report - Page 1 of 2

Project Name:	SR 710 at Northlake Blvd - D4 ICE Training
Project Number:	XXXXX.XX
Location:	West Palm Beach, FL
Date:	2017 PM
Number of Intersection Legs:	4
Major Street Direction:	East-West

Traffic Volume Demand						
	Volume (Veh/hr)				Percent (%)	
	U-Turn 	Left 	Thru 	Right 	Heavy Vehicles	Volume Growth
Eastbound	0	62	690	396	4.00%	0.00%
Westbound	0	6	1586	67	9.80%	0.00%
Southbound	0	93	527	337	14.80%	0.00%
Northbound	0	1038	397	10	13.80%	0.00%
Adjustment Factor	0.80	0.95		0.85		
Suggested	<b>0.80</b>	<b>0.95</b>		<b>0.85</b>		
Truck to PCE Factor				<b>Suggested = 2.00</b>	2.00	
FDOT Context Zone		<b>C3R-Suburban Residential</b>				
Critical Lane Volume Threshold		2-phase signal		<b>Suggested = 1800</b>	<b>1800</b>	
		3-phase signal		<b>Suggested = 1750</b>	<b>1750</b>	
		4-phase signal		<b>Suggested = 1700</b>	<b>1700</b>	



# 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
Displaced Left Turn	0.85	1	4.8	Fair	Fair	Good
Median U-Turn E-W	0.94	2	6.3	Good	Good	Fair
Quadrant Roadway S-E	1.06	3	4.4	Fair	Fair	Fair
Partial Displaced Left Turn E-W	1.07	4	4.8	Fair	Fair	Good
Partial Median U-Turn E-W	1.11	5	6.3	Good	Good	Fair
Signalized Restricted Crossing U-Turn E-W	1.22	6	6.3	Good	Good	Fair
Traffic Signal	1.29	7	4.8	Fair	Fair	Good
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*SPICE – Stage 1*

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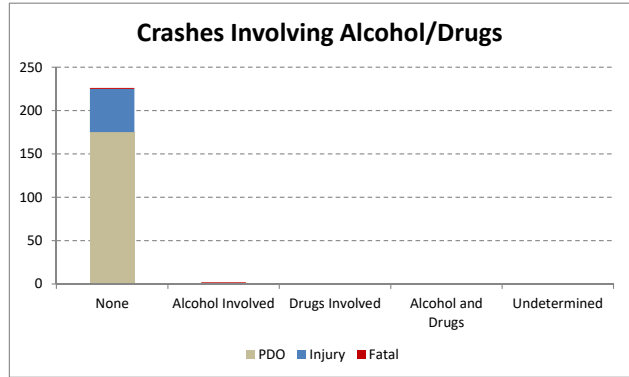
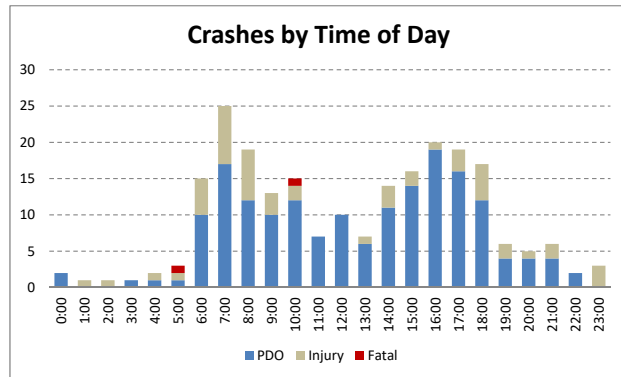
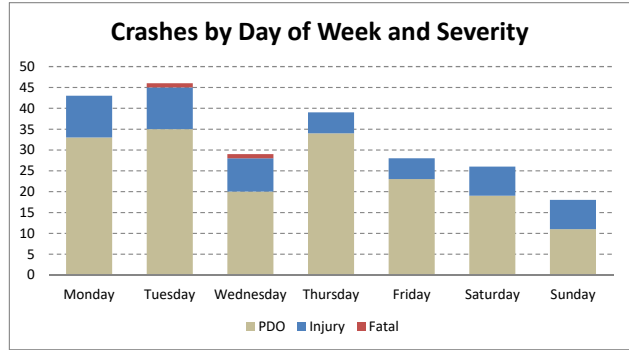
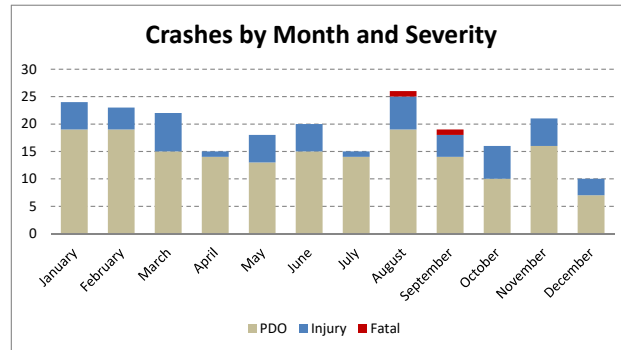
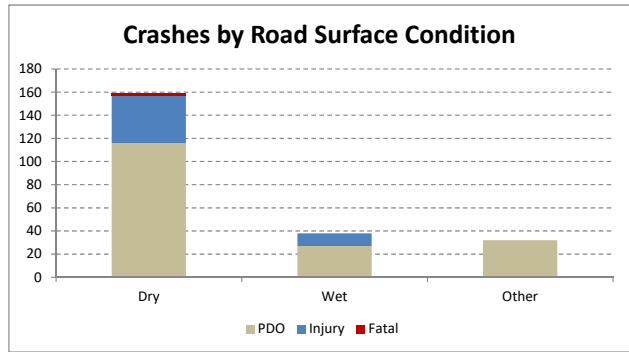
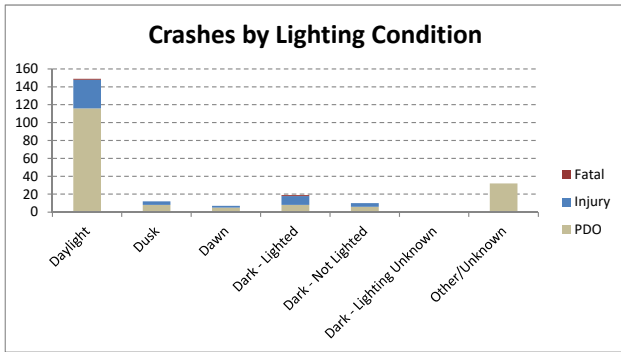
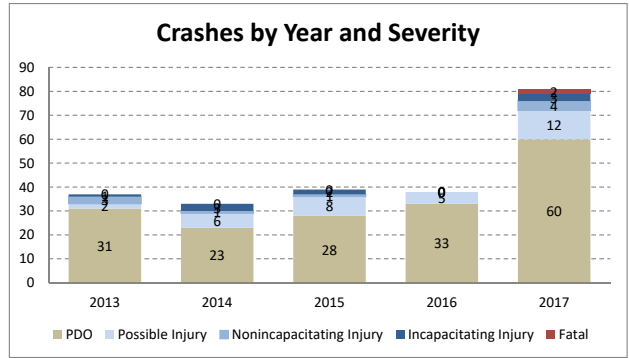
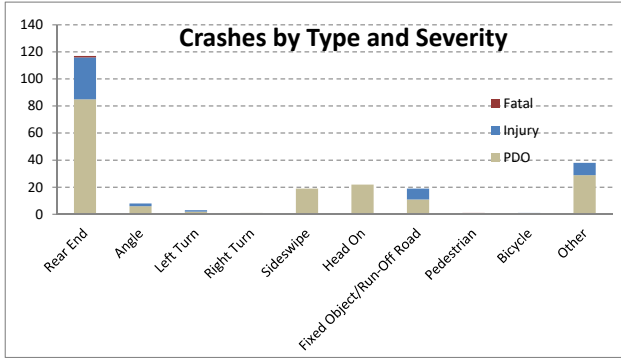
## SR 710 at Northlake Boulevard

							Severity			Total	Average	Percent
		2013	2014	2015	2016	2017	PDO	Injury	Fatal			
Type of Crash	Rear End	13	18	20	23	43	85	31	1	117	23.40	51.1%
	Angle	0	0	4	1	3	6	2	0	8	1.60	3.5%
	Left Turn	1	1	0	0	1	2	1	0	3	0.60	1.3%
	Right Turn	0	0	0	0	1	1	0	0	1	0.20	0.4%
	Sideswipe	5	1	0	6	7	19	0	0	19	3.80	8.3%
	Head On	12	6	3	0	1	22	0	0	22	4.40	9.6%
	Fixed Object/Run-Off Road	0	2	4	4	9	11	8	0	19	3.80	8.3%
	Pedestrian	0	0	0	0	1	0	0	1	1	0.20	0.4%
	Bicycle	0	0	1	0	0	0	1	0	1	0.20	0.4%
	Other	7	4	7	5	15	29	9	0	38	7.60	16.6%
	<b>Total Crashes</b>	<b>38</b>	<b>32</b>	<b>39</b>	<b>39</b>	<b>81</b>	<b>175</b>	<b>52</b>	<b>2</b>	<b>229</b>	<b>45.80</b>	<b>100.0%</b>
Crash Severity	PDO	31	23	28	33	60				175	35.00	76.4%
	Possible Injury	2	6	8	5	12				33	6.60	14.4%
	Nonincapacitating Injury	3	1	1	0	4				9	1.80	3.9%
	Incapacitating Injury	1	3	2	0	3				9	1.80	3.9%
	Fatal	0	0	0	0	2				2	0.40	0.9%
Light Conditions	Daylight	14	17	28	27	63	116	32	1	149	29.80	65.1%
	Dusk	1	1	0	4	6	8	4	0	12	2.40	5.2%
	Dawn	0	2	1	2	2	5	2	0	7	1.40	3.1%
	Dark - Lighted	3	2	5	3	6	8	10	1	19	3.80	8.3%
	Dark - Not Lighted	1	1	2	3	3	6	4	0	10	2.00	4.4%
	Dark - Lighting Unknown	0	0	0	0	0	0	0	0	0	0.00	0.0%
	Other/Unknown	19	9	3	0	1	32	0	0	32	6.40	14.0%
Road Surface Condition	Dry	15	16	28	31	69	116	41	2	159	31.80	69.4%
	Wet	4	7	8	8	11	27	11	0	38	7.60	16.6%
	Other	19	9	3	0	1	32	0	0	32	6.40	14.0%
Month	January	2	10	2	3	7	19	5	0	24	4.80	10.5%
	February	6	1	3	4	9	19	4	0	23	4.60	10.0%
	March	4	3	3	3	9	15	7	0	22	4.40	9.6%
	April	2	2	2	5	4	14	1	0	15	3.00	6.6%
	May	4	2	2	2	8	13	5	0	18	3.60	7.9%
	June	4	3	4	3	6	15	5	0	20	4.00	8.7%
	July	4	0	4	2	5	14	1	0	15	3.00	6.6%
	August	3	1	6	3	13	19	6	1	26	5.20	11.4%
	September	3	1	2	5	8	14	4	1	19	3.80	8.3%
	October	1	5	5	2	3	10	6	0	16	3.20	7.0%
	November	4	2	3	6	6	16	5	0	21	4.20	9.2%
	December	1	2	3	1	3	7	3	0	10	2.00	4.4%
Day of Week	Monday	7	7	8	8	13	33	10	0	43	8.60	18.8%
	Tuesday	12	3	5	8	18	35	10	1	46	9.20	20.1%
	Wednesday	4	3	8	4	10	20	8	1	29	5.80	12.7%
	Thursday	10	6	7	8	8	34	5	0	39	7.80	17.0%
	Friday	1	8	3	5	11	23	5	0	28	5.60	12.2%
	Saturday	2	4	5	3	12	19	7	0	26	5.20	11.4%
	Sunday	2	1	3	3	9	11	7	0	18	3.60	7.9%

## SR 710 at Northlake Boulevard

							Severity			Total	Average	Percent
		2013	2014	2015	2016	2017	PDO	Injury	Fatal			
Hour of Day	0:00	0	0	0	1	1	2	0	0	2	0.40	0.9%
	1:00	0	0	0	0	1	0	1	0	1	0.20	0.4%
	2:00	0	1	0	0	0	0	1	0	1	0.20	0.4%
	3:00	0	1	0	0	0	1	0	0	1	0.20	0.4%
	4:00	0	0	2	0	0	1	1	0	2	0.40	0.9%
	5:00	1	0	0	0	2	1	1	1	3	0.60	1.3%
	6:00	3	1	2	4	5	10	5	0	15	3.00	6.6%
	7:00	1	4	5	3	12	17	8	0	25	5.00	10.9%
	8:00	4	4	4	4	3	12	7	0	19	3.80	8.3%
	9:00	2	1	2	0	8	10	3	0	13	2.60	5.7%
	10:00	2	1	4	3	5	12	2	1	15	3.00	6.6%
	11:00	1	0	1	0	5	7	0	0	7	1.40	3.1%
	12:00	3	1	1	2	3	10	0	0	10	2.00	4.4%
	13:00	0	2	2	0	3	6	1	0	7	1.40	3.1%
	14:00	4	4	1	1	4	11	3	0	14	2.80	6.1%
	15:00	2	2	2	5	5	14	2	0	16	3.20	7.0%
	16:00	3	3	3	6	5	19	1	0	20	4.00	8.7%
	17:00	7	2	1	2	7	16	3	0	19	3.80	8.3%
	18:00	2	2	2	6	5	12	5	0	17	3.40	7.4%
	19:00	1	0	2	1	2	4	2	0	6	1.20	2.6%
	20:00	1	2	1	0	1	4	1	0	5	1.00	2.2%
	21:00	1	1	3	0	1	4	2	0	6	1.20	2.6%
	22:00	0	0	0	1	1	2	0	0	2	0.40	0.9%
23:00	0	0	1	0	2	0	3	0	3	0.60	1.3%	
Alcohol & Drugs	None	37	32	39	39	79	175	50	1	226	45.20	98.7%
	Alcohol Involved	1	0	0	0	1	0	1	1	2	0.40	0.9%
	Drugs Involved	0	0	0	0	1	0	1	0	1	0.20	0.4%
	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	2	2	1	2	0				7	1.40	3.1%
	20-24	2	2	1	2	1				8	1.60	3.5%
	25-29	1	0	2	1	1				5	1.00	2.2%
	30-34	0	3	1	0	3				7	1.40	3.1%
	35-39	2	1	1	1	1				6	1.20	2.6%
	40-44	2	0	2	2	0				6	1.20	2.6%
	45-49	1	0	0	0	0				1	0.20	0.4%
	50-54	0	0	1	2	1				4	0.80	1.7%
	55-59	0	0	1	1	0				2	0.40	0.9%
	60-64	0	0	0	1	1				2	0.40	0.9%
	65-69	0	0	0	0	0				0	0.00	0.0%
	70-74	0	0	1	0	0				1	0.20	0.4%
	75-79	0	0	1	0	0				1	0.20	0.4%
	80-84	0	0	0	0	1				1	0.20	0.4%
	85 and Over	0	0	0	0	0				0	0.00	0.0%
Unknown	3	2	0	0	1				6	1.20	2.6%	

## SR 710 at Northlake Boulevard



**Federal Highway Administration (FHWA)**  
**Safety Performance for Intersection Control Evaluation Tool**

**Results**

*Summary of crash prediction results for each alternative*

**Project Information**

<b>Project Name:</b>	FDOT District 4 ICE Training	<b>Intersection Type</b>	At-Grade Intersections
<b>Intersection:</b>	SR 710 at Northlake Boulevard	<b>Opening Year</b>	2020
<b>Agency:</b>	FDOT	<b>Design Year</b>	2040
<b>Project Reference:</b>	XXXXX.XX	<b>Facility Type</b>	On Urban and Suburban Arterial
<b>City:</b>	West Palm Beach	<b>Number of Legs</b>	4-leg
<b>State:</b>	Florida	<b>1-Way/2-Way</b>	2-way Intersecting 2-way
<b>Date:</b>	7/1/2019	<b># of Major Street Lanes (both directions)</b>	5 or fewer
<b>Analyst:</b>	KAI	<b>Major Street Approach Speed</b>	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	16.17	20.03	379.81	4	Yes	Calibrated SPF
	Fatal & Injury	5.66	7.08	133.59			
Displaced Left Turn (DLT)	Total	14.23	17.63	334.23	3	N/A	CMF
	Fatal & Injury	4.98	6.23	117.56			
Median U-Turn (MUT)	Total	13.74	17.03	322.84	1	N/A	CMF
	Fatal & Injury	3.96	4.95	93.51			
Signalized RCUT	Total	34.09	44.78	826.68	5	No	Uncalibrated SPF
	Fatal & Injury	8.89	12.06	219.39			
Jughandle	Total	11.96	14.82	281.06	2	N/A	CMF
	Fatal & Injury	4.19	5.24	98.86			

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***ICE FORM – Stage 2***

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Intersection: SR 710 @ Northlake Boulevard

Location: Palm Beach County – D4

# Florida Department of Transportation

## Intersection Control Evaluation (ICE) Form

### Stage 2: Initial 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	FDOT ICE Training - D4	FDOT Project #		Date	07/01/19
Submitted By	Jack Freeman, Kittelson	Agency/Company	FDOT	Email	jfreeman@kittelson.com
List all viable intersection control strategies identified in Stage 1 (Screening):					
Signalized Control		Quadrant Roadway		Partial DLT	

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 <i>Highway Capacity Manual, 6th Edition (HCM6)</i> to determine the appropriate LOS based on intersection delay ( <i>hover over this cell for Exhibit 19-8</i> ).									
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	Peak Hour		Saturday Midday Peak
	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?
Signalized Control	D	50.1	No	F	89.5	No			
Quadrant Roadway	D	41.6	No	E	70.9	No			
Partial DLT	B	14.2	Yes	C	23.1	Yes			
Design Year	2040								
Control Strategy	Peak Hour		Weekday AM Peak	Peak Hour		Weekday PM Peak	Peak Hour		Saturday Midday Peak
	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?	LOS	Delay (sec.)	All Queues Accommodated?
Signalized Control	F	190.3	No	F	234.2	No			
Quadrant Roadway	F	130.4	No	F	269.4	No			
Partial DLT	B	17.9	Yes	D	45.4	No			
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	0	0	0	0	0	0
	Fatal/Injury	0	0	0	0	0	0
	PDO	0	0	0	0	0	0
Single-Vehicle	Total	0	2	4	4	9	19
	Fatal/Injury	0	0	3	1	4	8
	PDO	0	2	1	3	5	11
Multi-Vehicle	Total	38	30	34	35	71	208
	Fatal/Injury	7	9	7	5	16	44
	PDO	31	21	27	30	55	164
Vehicle-Pedestrian	Fatal/Injury	0	0	0	0	1	1
Vehicle-Bicycle	Fatal/Injury	0	0	1	0	0	1
Total	All	38	32	39	39	81	229

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	The existing signal is anticipated to have the highest overall crash frequency and highest fatal/injury crashes.	38.24	7.40	47.44	9.27
Quadrant Roadway	No safety analysis was performed for this alternative	N/A	N/A	N/A	N/A
Partial DLT	The DLT is anticipated to have fewer overall and fatal/injury crashes relative to the existing signalized intersection.	33.65	6.51	41.74	8.16

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 strategy.						
Control Strategy	ROW Costs (\$)	Construction Costs (\$)	FDOT ICE Tool Outputs			
			Delay B/C	Safety B/C	Overall B/C	Net Present Value
Signalized Control	\$0	\$0	N/A	N/A	N/A	N/A
Quadrant Roadway	\$0	\$1,810,000	19.52	N/A	19.52	\$37,168,251
Partial DLT	\$1,700,000	\$3,100,000	60.62	1.25	61.88	\$217,942,234

Multimodal Accommodations								
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:								
Peak Hour:	Weekday AM Peak		Weekday PM Peak		Saturday Midday Peak		Activity Level	
	Major Street	Minor Street	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 existing/anticipated level of:								
Control Strategy	Pedestrians and Bicyclists		Transit Services		Freight Needs			
Signalized Control	No change from existing.		No existing transit stops in site vicinity. No change from existing.					
Quadrant Roadway	Pedestrians/bicyclists will still be accommodated with the same facilities as in the existing condition.		No existing transit stops in site vicinity. No change from existing.					
Partial DLT	Pedestrians/bicyclists will still be accommodated with the same facilities as in the existing condition.		No existing transit stops in site vicinity. 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.
Quadrant Roadway	No impacts anticipated.
Partial DLT	Right-of-way impacts are anticipated in the SW quadrant of the intersection to develop the dual NBLT lanes.

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	The existing traffic signal does not have adequate operations under future year scenarios. The signal is anticipated to have the higher overall and fatal/injury crashes when compared to the PDLT.
Quadrant Roadway	No	The quadrant roadway is expected to perform worse operationally under future year scenarios than the PDLT.
Partial DLT	Yes	The partial displaced left-turn has a B/C ratio above 60 and a NPV over \$215 million.

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

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## *Operational Analysis*

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## *Signalized Control*













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Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)













HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd

D4 ICE Training  
2020 AM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗	↖	↑↑	↗	↖↖	↑↑↑		↖	↑↑	↗	
Traffic Volume (vph)	0	1974	1214	1	368	117	312	910	0	50	324	89	
Future Volume (vph)	0	1974	1214	1	368	117	312	910	0	50	324	89	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor		0.91	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.95	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454	
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	1974	1214	1	368	117	312	910	0	50	324	89	
RTOR Reduction (vph)	0	0	258	0	0	47	0	0	0	0	0	76	
Lane Group Flow (vph)	0	1974	956	1	368	70	312	910	0	50	324	13	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		67.2	67.2	1.1	74.3	74.3	14.7	26.8		5.6	17.7	17.7	
Effective Green, g (s)		67.2	67.2	1.1	74.3	74.3	14.7	26.8		5.6	17.7	17.7	
Actuated g/C Ratio		0.54	0.54	0.01	0.60	0.60	0.12	0.21		0.04	0.14	0.14	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		2758	858	14	2006	897	371	1003		72	461	206	
v/s Ratio Prot		0.39		0.00	c0.11		c0.10	c0.19		0.03	0.10		
v/s Ratio Perm			c0.60			0.05						0.01	
v/c Ratio		0.72	1.11	0.07	0.18	0.08	0.84	0.91		0.69	0.70	0.06	
Uniform Delay, d1		21.6	28.8	61.3	11.4	10.7	53.9	47.7		58.7	51.0	46.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.95	0.95		1.00	1.00	1.00	
Incremental Delay, d2		0.9	67.2	2.2	0.0	0.0	15.6	13.3		25.2	8.7	0.6	
Delay (s)		22.5	95.9	63.5	11.5	10.7	66.8	58.9		83.9	59.7	46.9	
Level of Service		C	F	E	B	B	E	E		F	E	D	
Approach Delay (s)		50.5			11.4			60.9			59.8		
Approach LOS		D			B			E			E		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			50.1		HCM 2000 Level of Service						D		
HCM 2000 Volume to Capacity ratio			1.07										
Actuated Cycle Length (s)			124.7		Sum of lost time (s)					24.0			
Intersection Capacity Utilization			101.1%		ICU Level of Service					G			
Analysis Period (min)			15										
c Critical Lane Group													













HCM Signalized Intersection Capacity Analysis  
 1: SR 710 & Northlake Blvd

D4 ICE Training  
 2020 PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗	↖	↑↑	↗	↖↗	↑↑↑		↖	↑↑	↗	
Traffic Volume (vph)	0	763	402	6	1610	68	1053	466	0	96	549	350	
Future Volume (vph)	0	763	402	6	1610	68	1053	466	0	96	549	350	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	
Lane Util. Factor		0.91	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.95	1.00	
Fr <sub>t</sub>		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85	
Fl <sub>t</sub> Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (prot)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454	
Fl <sub>t</sub> Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	
Satd. Flow (perm)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	763	402	6	1610	68	1053	466	0	96	549	350	
RTOR Reduction (vph)	0	0	242	0	0	38	0	0	0	0	0	130	
Lane Group Flow (vph)	0	763	160	6	1610	30	1053	466	0	96	549	220	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm	
Protected Phases		4		3	8		5	2		1	6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		61.8	61.8	1.0	68.8	68.8	45.0	54.4		13.6	23.0	23.0	
Effective Green, g (s)		61.8	61.8	1.0	68.8	68.8	45.0	54.4		13.6	23.0	23.0	
Actuated g/C Ratio		0.40	0.40	0.01	0.44	0.44	0.29	0.35		0.09	0.15	0.15	
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0	
Lane Grp Cap (vph)		2043	636	10	1496	669	916	1641		142	482	216	
v/s Ratio Prot		0.15		0.00	c0.48		c0.33	0.10		0.06	c0.17		
v/s Ratio Perm			0.10			0.02						0.15	
v/c Ratio		0.37	0.25	0.60	1.08	0.05	1.15	0.28		0.68	1.14	1.02	
Uniform Delay, d <sub>1</sub>		32.8	31.1	76.7	43.0	24.4	54.9	36.2		68.5	65.9	65.9	
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.99	1.00		1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.1	0.2	70.6	46.8	0.0	80.0	0.4		12.0	85.1	65.8	
Delay (s)		32.9	31.3	147.3	89.8	24.4	134.2	36.8		80.5	151.0	131.7	
Level of Service		C	C	F	F	C	F	D		F	F	F	
Approach Delay (s)		32.4			87.3			104.3			137.4		
Approach LOS		C			F			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			89.5		HCM 2000 Level of Service						F		
HCM 2000 Volume to Capacity ratio			1.16										
Actuated Cycle Length (s)			154.8		Sum of lost time (s)					24.0			
Intersection Capacity Utilization			108.7%		ICU Level of Service					G			
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd













D4 ICE Training  
2040 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑	↗	↖↖	↑↑↑		↖	↑↑	↗
Traffic Volume (vph)	0	2292	1956	2	587	187	361	1053	0	75	668	132
Future Volume (vph)	0	2292	1956	2	587	187	361	1053	0	75	668	132
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Lane Util. Factor		0.91	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.95	1.00
Flt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454
Peak-hour factor, PHF	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. Flow (vph)	0	2292	1956	2	587	187	361	1053	0	75	668	132
RTOR Reduction (vph)	0	0	161	0	0	68	0	0	0	0	0	111
Lane Group Flow (vph)	0	2292	1795	2	587	119	361	1053	0	75	668	21
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		79.1	79.1	1.1	86.2	86.2	10.0	25.0		6.0	21.0	21.0
Effective Green, g (s)		79.1	79.1	1.1	86.2	86.2	10.0	25.0		6.0	21.0	21.0
Actuated g/C Ratio		0.59	0.59	0.01	0.64	0.64	0.07	0.18		0.04	0.16	0.16
Clearance Time (s)		6.0	6.0	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		2994	932	13	2147	960	233	863		72	504	225
v/s Ratio Prot		0.45		0.00	c0.17		c0.11	c0.23		0.05	0.21	
v/s Ratio Perm			c1.13			0.08						0.01
v/c Ratio		0.77	1.93	0.15	0.27	0.12	1.55	1.22		1.04	1.33	0.09
Uniform Delay, d1		21.1	28.0	66.6	10.8	9.6	62.6	55.1		64.6	57.1	48.9
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.96	0.96		1.00	1.00	1.00
Incremental Delay, d2		1.2	420.9	5.5	0.1	0.1	267.3	109.5		118.0	159.8	0.8
Delay (s)		22.3	448.9	72.0	10.8	9.7	327.6	162.5		182.6	216.9	49.7
Level of Service		C	F	E	B	A	F	F		F	F	D
Approach Delay (s)		218.7			10.7			204.6			188.7	
Approach LOS		F			B			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			190.3				HCM 2000 Level of Service				F	
HCM 2000 Volume to Capacity ratio			1.79									
Actuated Cycle Length (s)			135.2				Sum of lost time (s)			24.0		
Intersection Capacity Utilization			155.2%				ICU Level of Service			H		
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd

D4 ICE Training  
2040 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖	↑↑	↗	↖↖	↑↑↑		↖	↑↑	↗
Traffic Volume (vph)	0	886	814	13	1990	84	1218	539	0	143	1421	521
Future Volume (vph)	0	886	814	13	1990	84	1218	539	0	143	1421	521
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Lane Util. Factor		0.91	1.00	1.00	0.95	1.00	0.97	0.91		1.00	0.95	1.00
Flt		1.00	0.85	1.00	1.00	0.85	1.00	1.00		1.00	1.00	0.85
Flt Protected		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454
Flt Permitted		1.00	1.00	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)		5119	1594	1684	3368	1507	3152	4670		1625	3250	1454
Peak-hour factor, PHF	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. Flow (vph)	0	886	814	13	1990	84	1218	539	0	143	1421	521
RTOR Reduction (vph)	0	0	339	0	0	51	0	0	0	0	0	113
Lane Group Flow (vph)	0	886	475	13	1990	33	1218	539	0	143	1421	408
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%
Turn Type		NA	Perm	Prot	NA	Perm	Prot	NA		Prot	NA	Perm
Protected Phases		4		3	8		5	2		1	6	
Permitted Phases			4			8						6
Actuated Green, G (s)		61.9	61.9	3.3	72.2	72.2	44.0	69.9		21.1	47.0	47.0
Effective Green, g (s)		61.9	61.9	3.3	72.2	72.2	44.0	69.9		21.1	47.0	47.0
Actuated g/C Ratio		0.34	0.34	0.02	0.39	0.39	0.24	0.38		0.11	0.26	0.26
Clearance Time (s)		7.0	7.0	7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)		1720	535	30	1320	590	752	1772		186	829	370
v/s Ratio Prot		0.17		0.01	c0.59		c0.39	0.12		0.09	c0.44	
v/s Ratio Perm			0.30			0.02						0.28
v/c Ratio		0.52	0.89	0.43	1.51	0.06	1.62	0.30		0.77	1.71	1.10
Uniform Delay, d1		49.1	57.9	89.5	56.0	34.8	70.1	40.1		79.2	68.6	68.6
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.98	1.01		1.00	1.00	1.00
Incremental Delay, d2		0.3	16.3	9.7	232.4	0.0	285.0	0.4		17.2	326.5	77.2
Delay (s)		49.4	74.2	99.2	288.4	34.9	353.8	40.9		96.4	395.1	145.8
Level of Service		D	E	F	F	C	F	D		F	F	F
Approach Delay (s)		61.3			277.0			257.8			312.3	
Approach LOS		E			F			F			F	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			234.2									F
HCM 2000 Volume to Capacity ratio			1.67									
Actuated Cycle Length (s)			184.2							28.0		
Intersection Capacity Utilization			143.2%									H
Analysis Period (min)			15									
c Critical Lane Group												

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*Partial Displaced Left-Turn (DLT)*













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Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)

HCM Signalized Intersection Capacity Analysis  
 1: SR 710 & SBRT Slip Ramp/SB DLT

D4 ICE Training  
 2020 AM Peak













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	0	0	0	0	0	0	1027	0	50	324	89
Future Volume (vph)	0	0	0	0	0	0	0	1027	0	50	324	89
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)								4.5		4.5	4.5	4.5
Lane Util. Factor								0.91		1.00	0.95	1.00
Fr <sub>t</sub>								1.00		1.00	1.00	0.85
Fl <sub>t</sub> Protected								1.00		0.95	1.00	1.00
Satd. Flow (prot)								5219		1816	3632	1625
Fl <sub>t</sub> Permitted								1.00		0.00	1.00	1.00
Satd. Flow (perm)								5219		0	3632	1625
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	0	0	0	1027	0	50	324	89
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	50
Lane Group Flow (vph)	0	0	0	0	0	0	0	1027	0	50	324	39
Turn Type								NA		pm+pt	NA	Perm
Protected Phases								8		1	6	
Permitted Phases										6		6
Actuated Green, G (s)								16.3		19.7	19.7	19.7
Effective Green, g (s)								16.3		19.7	19.7	19.7
Actuated g/C Ratio								0.36		0.44	0.44	0.44
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)								1890		795	1590	711
v/s Ratio Prot								c0.20		0.03	c0.09	
v/s Ratio Perm												0.02
v/c Ratio								0.54		0.06	0.20	0.05
Uniform Delay, d <sub>1</sub>								11.4		7.3	7.8	7.3
Progression Factor								1.00		1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>								0.3		0.0	0.3	0.1
Delay (s)								11.7		7.3	8.1	7.4
Level of Service								B		A	A	A
Approach Delay (s)		0.0			0.0			11.7			7.9	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.5									HCM 2000 Level of Service
												B
HCM 2000 Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			45.0									Sum of lost time (s)
												9.0
Intersection Capacity Utilization			31.0%									ICU Level of Service
												A
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: SR 710 & Northlake Blvd

D4 ICE Training  
2020 AM Peak

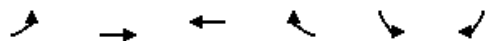
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↗		↑↑↑			↑↑	
Traffic Volume (vph)	0	1974	0	0	369	117	0	910	0	0	324	0
Future Volume (vph)	0	1974	0	0	369	117	0	910	0	0	324	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5			4.5	4.5		4.5			4.5	
Lane Util. Factor		0.91			0.95	1.00		0.91			0.95	
Fr <sub>t</sub>		1.00			1.00	0.85		1.00			1.00	
Fl <sub>t</sub> Protected		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (prot)		5219			3632	1625		5219			3632	
Fl <sub>t</sub> Permitted		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (perm)		5219			3632	1625		5219			3632	
Peak-hour factor, PHF	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. Flow (vph)	0	1974	0	0	369	117	0	910	0	0	324	0
RTOR Reduction (vph)	0	0	0	0	0	11	0	0	0	0	0	0
Lane Group Flow (vph)	0	1974	0	0	369	106	0	910	0	0	324	0
Turn Type		NA			NA	Perm		NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases						8						
Actuated Green, G (s)		37.5			37.5	37.5		18.5			18.5	
Effective Green, g (s)		37.5			37.5	37.5		18.5			18.5	
Actuated g/C Ratio		0.58			0.58	0.58		0.28			0.28	
Clearance Time (s)		4.5			4.5	4.5		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		3010			2095	937		1485			1033	
v/s Ratio Prot		c0.38			0.10			c0.17			0.09	
v/s Ratio Perm						0.07						
v/c Ratio		0.66			0.18	0.11		0.61			0.31	
Uniform Delay, d <sub>1</sub>		9.4			6.5	6.2		20.1			18.3	
Progression Factor		0.46			0.60	0.52		1.01			1.00	
Incremental Delay, d <sub>2</sub>		0.4			0.0	0.1		1.9			0.8	
Delay (s)		4.7			3.9	3.3		22.2			19.1	
Level of Service		A			A	A		C			B	
Approach Delay (s)		4.7			3.8			22.2			19.1	
Approach LOS		A			A			C			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			10.1		HCM 2000 Level of Service						B	
HCM 2000 Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			65.0		Sum of lost time (s)						9.0	
Intersection Capacity Utilization			61.8%		ICU Level of Service						B	
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Northlake Blvd & SB DLT

D4 ICE Training  
2020 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↘	
Traffic Volume (vph)	0	1974	486	0	50	0
Future Volume (vph)	0	1974	486	0	50	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5	4.5		4.5	
Lane Util. Factor		0.91	0.91		1.00	
Fr <sub>t</sub>		1.00	1.00		1.00	
Fl <sub>t</sub> Protected		1.00	1.00		0.95	
Satd. Flow (prot)		5219	5219		1816	
Fl <sub>t</sub> Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		5219	5219		1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	1974	486	0	50	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	1974	486	0	50	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Actuated Green, G (s)		37.5	37.5		18.5	
Effective Green, g (s)		37.5	37.5		18.5	
Actuated g/C Ratio		0.58	0.58		0.28	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		3010	3010		516	
v/s Ratio Prot		c0.38	0.09		c0.03	
v/s Ratio Perm						
v/c Ratio		0.66	0.16		0.10	
Uniform Delay, d <sub>1</sub>		9.4	6.4		17.1	
Progression Factor		0.65	1.00		1.00	
Incremental Delay, d <sub>2</sub>		0.4	0.0		0.4	
Delay (s)		6.5	6.4		17.5	
Level of Service		A	A		B	
Approach Delay (s)		6.5	6.4		17.5	
Approach LOS		A	A		B	













### Intersection Summary

HCM 2000 Control Delay	6.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	65.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	48.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: SR 710 & NB DLT

D4 ICE Training  
2020 AM Peak

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			 	 	 	
Traffic Volume (vph)	0	0	312	739	324	0
Future Volume (vph)	0	0	312	739	324	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5	4.5	4.5	
Lane Util. Factor			0.97	0.95	0.95	
Fr <sub>t</sub>			1.00	1.00	1.00	
Fl <sub>t</sub> Protected			0.95	1.00	1.00	
Satd. Flow (prot)			3523	3632	3632	
Fl <sub>t</sub> Permitted			0.95	1.00	1.00	
Satd. Flow (perm)			3523	3632	3632	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	312	739	324	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	312	739	324	0
Turn Type			Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases						
Actuated Green, G (s)			8.6	40.0	22.4	
Effective Green, g (s)			8.6	40.0	22.4	
Actuated g/C Ratio			0.21	1.00	0.56	
Clearance Time (s)			4.5	4.5	4.5	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)			757	3632	2033	
v/s Ratio Prot			c0.09	c0.20	0.09	
v/s Ratio Perm						
v/c Ratio			0.41	0.20	0.16	
Uniform Delay, d <sub>1</sub>			13.5	0.0	4.3	
Progression Factor			1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>			0.4	0.1	0.2	
Delay (s)			13.9	0.1	4.4	
Level of Service			B	A	A	
Approach Delay (s)	0.0			4.2	4.4	
Approach LOS	A			A	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			4.3	HCM 2000 Level of Service		A
HCM 2000 Volume to Capacity ratio			0.29			
Actuated Cycle Length (s)			40.0	Sum of lost time (s)		9.0
Intersection Capacity Utilization			88.7%	ICU Level of Service		E
Analysis Period (min)			15			

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
6: NB DLT & Northlake Blvd

D4 ICE Training  
2020 AM Peak

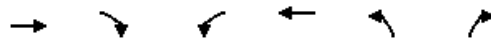
	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↖↗	
Traffic Volume (vph)	1974	0	0	369	312	0
Future Volume (vph)	1974	0	0	369	312	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	0.91			0.95	0.97	
Fr <sub>t</sub>	1.00			1.00	1.00	
Fl <sub>t</sub> Protected	1.00			1.00	0.95	
Satd. Flow (prot)	5219			3632	3523	
Fl <sub>t</sub> Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	5219			3632	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	1974	0	0	369	312	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	1974	0	0	369	312	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases						
Actuated Green, G (s)	37.5			37.5	18.5	
Effective Green, g (s)	37.5			37.5	18.5	
Actuated g/C Ratio	0.58			0.58	0.28	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3010			2095	1002	
v/s Ratio Prot	c0.38			0.10	c0.09	
v/s Ratio Perm						
v/c Ratio	0.66			0.18	0.31	
Uniform Delay, d <sub>1</sub>	9.4			6.5	18.3	
Progression Factor	1.00			0.64	1.00	
Incremental Delay, d <sub>2</sub>	0.5			0.0	0.8	
Delay (s)	9.9			4.2	19.1	
Level of Service	A			A	B	
Approach Delay (s)	9.9			4.2	19.1	
Approach LOS	A			A	B	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			10.2		HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio			0.54			
Actuated Cycle Length (s)			65.0		Sum of lost time (s)	9.0
Intersection Capacity Utilization			53.3%		ICU Level of Service	A
Analysis Period (min)			15			

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: NB DLT & Northlake Blvd

D4 ICE Training  
2020 PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↑↑	
Traffic Volume (vph)	763	0	0	1616	1053	0
Future Volume (vph)	763	0	0	1616	1053	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	0.91			0.95	0.97	
Fr <sub>t</sub>	1.00			1.00	1.00	
Fl <sub>t</sub> Protected	1.00			1.00	0.95	
Satd. Flow (prot)	5219			3632	3523	
Fl <sub>t</sub> Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	5219			3632	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	763	0	0	1616	1053	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	763	0	0	1616	1053	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases						
Actuated Green, G (s)	29.5			29.5	21.5	
Effective Green, g (s)	29.5			29.5	21.5	
Actuated g/C Ratio	0.49			0.49	0.36	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2566			1785	1262	
v/s Ratio Prot	0.15			c0.44	c0.30	
v/s Ratio Perm						
v/c Ratio	0.30			0.91	0.83	
Uniform Delay, d <sub>1</sub>	9.1			14.0	17.6	
Progression Factor	1.00			0.67	1.00	
Incremental Delay, d <sub>2</sub>	0.1			3.1	6.6	
Delay (s)	9.1			12.4	24.2	
Level of Service	A			B	C	
Approach Delay (s)	9.1			12.4	24.2	
Approach LOS	A			B	C	

### Intersection Summary













HCM 2000 Control Delay	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	80.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group



HCM Signalized Intersection Capacity Analysis  
3: SR 710 & Northlake Blvd

D4 ICE Training  
2020 PM Peak

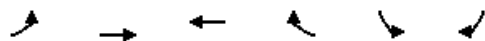
													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑			↑↑	↗		↑↑↑			↑↑		
Traffic Volume (vph)	0	763	0	0	1616	68	0	466	0	0	549	0	
Future Volume (vph)	0	763	0	0	1616	68	0	466	0	0	549	0	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		4.5			4.5	4.5		4.5			4.5		
Lane Util. Factor		0.91			0.95	1.00		0.91			0.95		
Flt		1.00			1.00	0.85		1.00			1.00		
Flt Protected		1.00			1.00	1.00		1.00			1.00		
Satd. Flow (prot)		5219			3632	1625		5219			3632		
Flt Permitted		1.00			1.00	1.00		1.00			1.00		
Satd. Flow (perm)		5219			3632	1625		5219			3632		
Peak-hour factor, PHF	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. Flow (vph)	0	763	0	0	1616	68	0	466	0	0	549	0	
RTOR Reduction (vph)	0	0	0	0	0	35	0	0	0	0	0	0	
Lane Group Flow (vph)	0	763	0	0	1616	33	0	466	0	0	549	0	
Turn Type		NA			NA	Perm		NA			NA		
Protected Phases		4			8			2			6		
Permitted Phases						8							
Actuated Green, G (s)		29.5			29.5	29.5		21.5			21.5		
Effective Green, g (s)		29.5			29.5	29.5		21.5			21.5		
Actuated g/C Ratio		0.49			0.49	0.49		0.36			0.36		
Clearance Time (s)		4.5			4.5	4.5		4.5			4.5		
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0		
Lane Grp Cap (vph)		2566			1785	798		1870			1301		
v/s Ratio Prot		0.15			c0.44			0.09			c0.15		
v/s Ratio Perm						0.02							
v/c Ratio		0.30			0.91	0.04		0.25			0.42		
Uniform Delay, d1		9.1			14.0	7.9		13.6			14.6		
Progression Factor		0.42			0.69	0.20		0.93			1.00		
Incremental Delay, d2		0.1			5.4	0.0		0.3			1.0		
Delay (s)		3.9			15.1	1.6		12.9			15.6		
Level of Service		A			B	A		B			B		
Approach Delay (s)		3.9			14.5			12.9			15.6		
Approach LOS		A			B			B			B		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			12.1		HCM 2000 Level of Service						B		
HCM 2000 Volume to Capacity ratio			0.70										
Actuated Cycle Length (s)			60.0		Sum of lost time (s)						9.0		
Intersection Capacity Utilization			65.8%		ICU Level of Service						C		
Analysis Period (min)			15										

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Northlake Blvd & SB DLT

D4 ICE Training  
2020 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑	
Traffic Volume (vph)	0	763	1684	0	96	0
Future Volume (vph)	0	763	1684	0	96	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5	4.5		4.5	
Lane Util. Factor		0.91	0.91		1.00	
Fr <sub>t</sub>		1.00	1.00		1.00	
Fl <sub>t</sub> Protected		1.00	1.00		0.95	
Satd. Flow (prot)		5219	5219		1816	
Fl <sub>t</sub> Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		5219	5219		1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	763	1684	0	96	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	763	1684	0	96	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Actuated Green, G (s)		29.5	29.5		21.5	
Effective Green, g (s)		29.5	29.5		21.5	
Actuated g/C Ratio		0.49	0.49		0.36	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2566	2566		650	
v/s Ratio Prot		0.15	c0.32		c0.05	
v/s Ratio Perm						
v/c Ratio		0.30	0.66		0.15	
Uniform Delay, d <sub>1</sub>		9.1	11.4		13.0	
Progression Factor		0.46	1.00		1.00	
Incremental Delay, d <sub>2</sub>		0.1	0.6		0.5	
Delay (s)		4.2	12.1		13.5	
Level of Service		A	B		B	
Approach Delay (s)		4.2	12.1		13.5	
Approach LOS		A	B		B	













### Intersection Summary

HCM 2000 Control Delay	9.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.44		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	44.4%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: SR 710 & SBRT Slip Ramp/WBRT (DLT)

D4 ICE Training  
2020 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	0	0	0	0	0	0	534	0	96	549	350
Future Volume (vph)	0	0	0	0	0	0	0	534	0	96	549	350
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)								4.5		4.5	4.5	4.5
Lane Util. Factor								0.91		1.00	0.95	1.00
Fr <sub>t</sub>								1.00		1.00	1.00	0.85
Fl <sub>t</sub> Protected								1.00		0.95	1.00	1.00
Satd. Flow (prot)								5219		1816	3632	1625
Fl <sub>t</sub> Permitted								1.00		0.00	1.00	1.00
Satd. Flow (perm)								5219		0	3632	1625
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	0	0	0	534	0	96	549	350
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	154
Lane Group Flow (vph)	0	0	0	0	0	0	0	534	0	96	549	196
Turn Type								NA		pm+pt	NA	Perm
Protected Phases								8		1	6	
Permitted Phases										6		6
Actuated Green, G (s)								10.8		25.2	25.2	25.2
Effective Green, g (s)								10.8		25.2	25.2	25.2
Actuated g/C Ratio								0.24		0.56	0.56	0.56
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)								1252		1016	2033	910
v/s Ratio Prot								c0.10		0.05	c0.15	
v/s Ratio Perm												0.12
v/c Ratio								0.43		0.09	0.27	0.22
Uniform Delay, d <sub>1</sub>								14.5		4.6	5.1	5.0
Progression Factor								1.00		1.00	1.00	1.00
Incremental Delay, d <sub>2</sub>								0.2		0.0	0.3	0.5
Delay (s)								14.7		4.6	5.5	5.5
Level of Service								B		A	A	A
Approach Delay (s)		0.0			0.0			14.7			5.4	
Approach LOS		A			A			B			A	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			8.6									HCM 2000 Level of Service
												A
HCM 2000 Volume to Capacity ratio			0.32									
Actuated Cycle Length (s)			45.0									Sum of lost time (s)
												9.0
Intersection Capacity Utilization			24.9%									ICU Level of Service
												A
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis  
6: SR 710 & EBRT (DLT)

D4 ICE Training  
2020 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↖↗	↕	↕	
Traffic Volume (vph)	0	0	1053	413	549	0
Future Volume (vph)	0	0	1053	413	549	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5	4.5	4.5	
Lane Util. Factor			0.97	0.95	0.95	
Fr <sub>t</sub>			1.00	1.00	1.00	
Fl <sub>t</sub> Protected			0.95	1.00	1.00	
Satd. Flow (prot)			3523	3632	3632	
Fl <sub>t</sub> Permitted			0.95	1.00	1.00	
Satd. Flow (perm)			3523	3632	3632	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1053	413	549	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1053	413	549	0
Turn Type			Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases						
Actuated Green, G (s)			16.7	45.0	19.3	
Effective Green, g (s)			16.7	45.0	19.3	
Actuated g/C Ratio			0.37	1.00	0.43	
Clearance Time (s)			4.5	4.5	4.5	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)			1307	3632	1557	
v/s Ratio Prot			c0.30	0.11	c0.15	
v/s Ratio Perm						
v/c Ratio			0.81	0.11	0.35	
Uniform Delay, d <sub>1</sub>			12.7	0.0	8.6	
Progression Factor			1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>			3.7	0.1	0.6	
Delay (s)			16.4	0.1	9.3	
Level of Service			B	A	A	
Approach Delay (s)	0.0			11.8	9.3	
Approach LOS	A			B	A	
<b>Intersection Summary</b>						
HCM 2000 Control Delay			11.1	HCM 2000 Level of Service		B
HCM 2000 Volume to Capacity ratio			0.56			
Actuated Cycle Length (s)			45.0	Sum of lost time (s)	9.0	
Intersection Capacity Utilization			51.6%	ICU Level of Service	A	
Analysis Period (min)			15			

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: NB DLT & Northlake Blvd

D4 ICE Training  
2040 AM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↑↑	
Traffic Volume (vph)	2292	0	0	589	361	0
Future Volume (vph)	2292	0	0	589	361	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	0.91			0.95	0.97	
Flt	1.00			1.00	1.00	
Flt Protected	1.00			1.00	0.95	
Satd. Flow (prot)	5219			3632	3523	
Flt Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	5219			3632	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	2292	0	0	589	361	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	2292	0	0	589	361	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases						
Actuated Green, G (s)	52.5			52.5	18.5	
Effective Green, g (s)	52.5			52.5	18.5	
Actuated g/C Ratio	0.66			0.66	0.23	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	3424			2383	814	
v/s Ratio Prot	c0.44			0.16	c0.10	
v/s Ratio Perm						
v/c Ratio	0.67			0.25	0.44	
Uniform Delay, d1	8.4			5.6	26.3	
Progression Factor	1.00			0.49	0.86	
Incremental Delay, d2	0.5			0.1	1.6	
Delay (s)	8.9			2.8	24.4	
Level of Service	A			A	C	
Approach Delay (s)	8.9			2.8	24.4	
Approach LOS	A			A	C	













### Intersection Summary

HCM 2000 Control Delay	9.5	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.61		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	60.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
3: SR 710 & Northlake Blvd

D4 ICE Training  
2040 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↗		↑↑↑			↑↑	
Traffic Volume (vph)	0	2292	0	0	589	187	0	1053	0	0	668	0
Future Volume (vph)	0	2292	0	0	589	187	0	1053	0	0	668	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5			4.5	4.5		4.5			4.5	
Lane Util. Factor		0.91			0.95	1.00		0.91			0.95	
Flt		1.00			1.00	0.85		1.00			1.00	
Flt Protected		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (prot)		5219			3632	1625		5219			3632	
Flt Permitted		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (perm)		5219			3632	1625		5219			3632	
Peak-hour factor, PHF	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. Flow (vph)	0	2292	0	0	589	187	0	1053	0	0	668	0
RTOR Reduction (vph)	0	0	0	0	0	7	0	0	0	0	0	0
Lane Group Flow (vph)	0	2292	0	0	589	180	0	1053	0	0	668	0
Turn Type		NA			NA	Perm		NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases						8						
Actuated Green, G (s)		52.5			52.5	52.5		18.5			18.5	
Effective Green, g (s)		52.5			52.5	52.5		18.5			18.5	
Actuated g/C Ratio		0.66			0.66	0.66		0.23			0.23	
Clearance Time (s)		4.5			4.5	4.5		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		3424			2383	1066		1206			839	
v/s Ratio Prot		c0.44			0.16			c0.20			0.18	
v/s Ratio Perm						0.11						
v/c Ratio		0.67			0.25	0.17		0.87			0.80	
Uniform Delay, d1		8.4			5.6	5.3		29.6			29.0	
Progression Factor		0.34			0.57	0.53		0.92			1.00	
Incremental Delay, d2		0.4			0.1	0.1		8.6			7.7	
Delay (s)		3.2			3.3	2.9		35.7			36.7	
Level of Service		A			A	A		D			D	
Approach Delay (s)		3.2			3.2			35.7			36.7	
Approach LOS		A			A			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			15.0				HCM 2000 Level of Service			B		
HCM 2000 Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			80.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			70.5%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Northlake Blvd & SB DLT

D4 ICE Training  
2040 AM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑	
Traffic Volume (vph)	0	2292	775	0	75	0
Future Volume (vph)	0	2292	775	0	75	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5	4.5		4.5	
Lane Util. Factor		0.91	0.91		1.00	
Fr <sub>t</sub>		1.00	1.00		1.00	
Fl <sub>t</sub> Protected		1.00	1.00		0.95	
Satd. Flow (prot)		5219	5219		1816	
Fl <sub>t</sub> Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		5219	5219		1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	2292	775	0	75	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	2292	775	0	75	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Actuated Green, G (s)		52.5	52.5		18.5	
Effective Green, g (s)		52.5	52.5		18.5	
Actuated g/C Ratio		0.66	0.66		0.23	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		3424	3424		419	
v/s Ratio Prot		c0.44	0.15		c0.04	
v/s Ratio Perm						
v/c Ratio		0.67	0.23		0.18	
Uniform Delay, d <sub>1</sub>		8.4	5.6		24.7	
Progression Factor		0.39	1.00		1.00	
Incremental Delay, d <sub>2</sub>		0.4	0.0		0.9	
Delay (s)		3.7	5.6		25.6	
Level of Service		A	A		C	
Approach Delay (s)		3.7	5.6		25.6	
Approach LOS		A	A		C	

### Intersection Summary













HCM 2000 Control Delay	4.7	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	80.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 5: SR 710 & SBRT Slip Ramp/WBRT (DLT)

D4 ICE Training  
2040 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								↑↑↑		↘	↑↑	↗
Traffic Volume (vph)	0	0	0	0	0	0	0	1240	0	75	668	132
Future Volume (vph)	0	0	0	0	0	0	0	1240	0	75	668	132
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)								4.5		4.5	4.5	4.5
Lane Util. Factor								0.91		1.00	0.95	1.00
Flt								1.00		1.00	1.00	0.85
Flt Protected								1.00		0.95	1.00	1.00
Satd. Flow (prot)								5219		1816	3632	1625
Flt Permitted								1.00		0.00	1.00	1.00
Satd. Flow (perm)								5219		0	3632	1625
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	0	0	0	1240	0	75	668	132
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	78
Lane Group Flow (vph)	0	0	0	0	0	0	0	1240	0	75	668	54
Turn Type								NA		pm+pt	NA	Perm
Protected Phases								8		1	6	
Permitted Phases										6		6
Actuated Green, G (s)								20.5		20.5	20.5	20.5
Effective Green, g (s)								20.5		20.5	20.5	20.5
Actuated g/C Ratio								0.41		0.41	0.41	0.41
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)								2139		744	1489	666
v/s Ratio Prot								c0.24		0.04	c0.18	
v/s Ratio Perm												0.03
v/c Ratio								0.58		0.10	0.45	0.08
Uniform Delay, d1								11.4		9.1	10.7	9.0
Progression Factor								1.00		1.00	1.00	1.00
Incremental Delay, d2								0.4		0.1	1.0	0.2
Delay (s)								11.8		9.1	11.6	9.2
Level of Service								B		A	B	A
Approach Delay (s)		0.0			0.0			11.8			11.1	
Approach LOS		A			A			B			B	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			11.5									HCM 2000 Level of Service
												B
HCM 2000 Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			50.0									Sum of lost time (s)
												9.0
Intersection Capacity Utilization			35.0%									ICU Level of Service
												A
Analysis Period (min)			15									
c Critical Lane Group												



HCM Signalized Intersection Capacity Analysis  
6: SR 710 & EBRT (DLT)

D4 ICE Training  
2040 AM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↖↗	↑↑	↑↑	
Traffic Volume (vph)	0	0	361	855	668	0
Future Volume (vph)	0	0	361	855	668	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5	4.5	4.5	
Lane Util. Factor			0.97	0.95	0.95	
Frt			1.00	1.00	1.00	
Flt Protected			0.95	1.00	1.00	
Satd. Flow (prot)			3523	3632	3632	
Flt Permitted			0.95	1.00	1.00	
Satd. Flow (perm)			3523	3632	3632	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	361	855	668	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	361	855	668	0
Turn Type			Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases						
Actuated Green, G (s)			9.0	40.0	22.0	
Effective Green, g (s)			9.0	40.0	22.0	
Actuated g/C Ratio			0.22	1.00	0.55	
Clearance Time (s)			4.5	4.5	4.5	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)			792	3632	1997	
v/s Ratio Prot			c0.10	0.24	c0.18	
v/s Ratio Perm						
v/c Ratio			0.46	0.24	0.33	
Uniform Delay, d1			13.4	0.0	5.0	
Progression Factor			1.00	1.00	3.12	
Incremental Delay, d2			0.4	0.2	0.3	
Delay (s)			13.8	0.2	15.8	
Level of Service			B	A	B	
Approach Delay (s)	0.0			4.2	15.8	
Approach LOS	A			A	B	

Intersection Summary

HCM 2000 Control Delay	8.3	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	40.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	142.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 2: NB DLT & Northlake Blvd

D4 ICE Training  
2040 PM Peak



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑↑↑			↑↑	↑↑	
Traffic Volume (vph)	886	0	0	2003	1218	0
Future Volume (vph)	886	0	0	2003	1218	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)	4.5			4.5	4.5	
Lane Util. Factor	0.91			0.95	0.97	
Fr <sub>t</sub>	1.00			1.00	1.00	
Fl <sub>t</sub> Protected	1.00			1.00	0.95	
Satd. Flow (prot)	5219			3632	3523	
Fl <sub>t</sub> Permitted	1.00			1.00	0.95	
Satd. Flow (perm)	5219			3632	3523	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	886	0	0	2003	1218	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	886	0	0	2003	1218	0
Turn Type	NA			NA	Prot	
Protected Phases	4			8	2	
Permitted Phases						
Actuated Green, G (s)	58.6			58.6	42.4	
Effective Green, g (s)	58.6			58.6	42.4	
Actuated g/C Ratio	0.53			0.53	0.39	
Clearance Time (s)	4.5			4.5	4.5	
Vehicle Extension (s)	3.0			3.0	3.0	
Lane Grp Cap (vph)	2780			1934	1357	
v/s Ratio Prot	0.17			c0.55	c0.35	
v/s Ratio Perm						
v/c Ratio	0.32			1.04	0.90	
Uniform Delay, d <sub>1</sub>	14.5			25.7	31.8	
Progression Factor	1.00			0.38	1.00	
Incremental Delay, d <sub>2</sub>	0.1			18.2	9.6	
Delay (s)	14.5			27.9	41.4	
Level of Service	B			C	D	
Approach Delay (s)	14.5			27.9	41.4	
Approach LOS	B			C	D	













### Intersection Summary

HCM 2000 Control Delay	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.98		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	95.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
3: SR 710 & Northlake Blvd

D4 ICE Training  
2040 PM Peak

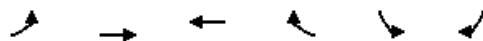
												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑			↑↑	↗		↑↑↑			↑↑	
Traffic Volume (vph)	0	886	0	0	2003	84	0	539	0	0	1421	0
Future Volume (vph)	0	886	0	0	2003	84	0	539	0	0	1421	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5			4.5	4.5		4.5			4.5	
Lane Util. Factor		0.91			0.95	1.00		0.91			0.95	
Flt		1.00			1.00	0.85		1.00			1.00	
Flt Protected		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (prot)		5219			3632	1625		5219			3632	
Flt Permitted		1.00			1.00	1.00		1.00			1.00	
Satd. Flow (perm)		5219			3632	1625		5219			3632	
Peak-hour factor, PHF	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. Flow (vph)	0	886	0	0	2003	84	0	539	0	0	1421	0
RTOR Reduction (vph)	0	0	0	0	0	29	0	0	0	0	0	0
Lane Group Flow (vph)	0	886	0	0	2003	55	0	539	0	0	1421	0
Turn Type		NA			NA	Perm		NA			NA	
Protected Phases		4			8			2			6	
Permitted Phases						8						
Actuated Green, G (s)		58.6			58.6	58.6		42.4			42.4	
Effective Green, g (s)		58.6			58.6	58.6		42.4			42.4	
Actuated g/C Ratio		0.53			0.53	0.53		0.39			0.39	
Clearance Time (s)		4.5			4.5	4.5		4.5			4.5	
Vehicle Extension (s)		3.0			3.0	3.0		3.0			3.0	
Lane Grp Cap (vph)		2780			1934	865		2011			1399	
v/s Ratio Prot		0.17			c0.55			0.10			c0.39	
v/s Ratio Perm						0.03						
v/c Ratio		0.32			1.04	0.06		0.27			1.02	
Uniform Delay, d1		14.5			25.7	12.4		23.2			33.8	
Progression Factor		0.32			0.52	0.09		0.93			0.79	
Incremental Delay, d2		0.1			26.5	0.0		0.3			24.9	
Delay (s)		4.6			39.9	1.1		21.9			51.5	
Level of Service		A			D	A		C			D	
Approach Delay (s)		4.6			38.3			21.9			51.5	
Approach LOS		A			D			C			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			34.3				HCM 2000 Level of Service				C	
HCM 2000 Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			9.0		
Intersection Capacity Utilization			99.7%				ICU Level of Service			F		
Analysis Period (min)			15									

c Critical Lane Group

# HCM Signalized Intersection Capacity Analysis

## 4: Northlake Blvd & SB DLT

D4 ICE Training  
2040 PM Peak



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↑↑↑	↑↑↑		↑	
Traffic Volume (vph)	0	886	2087	0	143	0
Future Volume (vph)	0	886	2087	0	143	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)		4.5	4.5		4.5	
Lane Util. Factor		0.91	0.91		1.00	
Fr <sub>t</sub>		1.00	1.00		1.00	
Fl <sub>t</sub> Protected		1.00	1.00		0.95	
Satd. Flow (prot)		5219	5219		1816	
Fl <sub>t</sub> Permitted		1.00	1.00		0.95	
Satd. Flow (perm)		5219	5219		1816	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	886	2087	0	143	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	886	2087	0	143	0
Turn Type		NA	NA		Prot	
Protected Phases		4	8		6	
Permitted Phases						
Actuated Green, G (s)		58.6	58.6		42.4	
Effective Green, g (s)		58.6	58.6		42.4	
Actuated g/C Ratio		0.53	0.53		0.39	
Clearance Time (s)		4.5	4.5		4.5	
Vehicle Extension (s)		3.0	3.0		3.0	
Lane Grp Cap (vph)		2780	2780		699	
v/s Ratio Prot		0.17	c0.40		c0.08	
v/s Ratio Perm						
v/c Ratio		0.32	0.75		0.20	
Uniform Delay, d <sub>1</sub>		14.5	20.0		22.5	
Progression Factor		0.32	1.00		0.89	
Incremental Delay, d <sub>2</sub>		0.1	1.2		0.7	
Delay (s)		4.6	21.2		20.7	
Level of Service		A	C		C	
Approach Delay (s)		4.6	21.2		20.7	
Approach LOS		A	C		C	













### Intersection Summary

HCM 2000 Control Delay	16.5	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.52		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
5: SR 710 & SBRT Slip Ramp/WBRT (DLT)

D4 ICE Training  
2040 PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations								↑↑↑		↘	↑↑	↗	
Traffic Volume (vph)	0	0	0	0	0	0	0	623	0	143	1421	521	
Future Volume (vph)	0	0	0	0	0	0	0	623	0	143	1421	521	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)								4.5		4.5	4.5	4.5	
Lane Util. Factor								0.91		1.00	0.95	1.00	
Fr <sub>t</sub>								1.00		1.00	1.00	0.85	
Fl <sub>t</sub> Protected								1.00		0.95	1.00	1.00	
Satd. Flow (prot)								5219		1816	3632	1625	
Fl <sub>t</sub> Permitted								1.00		0.00	1.00	1.00	
Satd. Flow (perm)								5219		0	3632	1625	
Peak-hour factor, PHF	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. Flow (vph)	0	0	0	0	0	0	0	623	0	143	1421	521	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	207	
Lane Group Flow (vph)	0	0	0	0	0	0	0	623	0	143	1421	314	
Turn Type								NA		pm+pt	NA	Perm	
Protected Phases								8		1	6		
Permitted Phases										6		6	
Actuated Green, G (s)								12.9		33.1	33.1	33.1	
Effective Green, g (s)								12.9		33.1	33.1	33.1	
Actuated g/C Ratio								0.23		0.60	0.60	0.60	
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)								1224		1092	2185	977	
v/s Ratio Prot								c0.12		0.08	c0.39		
v/s Ratio Perm												0.19	
v/c Ratio								0.51		0.13	0.65	0.32	
Uniform Delay, d <sub>1</sub>								18.3		4.7	7.2	5.4	
Progression Factor								0.81		1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>								0.3		0.1	1.5	0.9	
Delay (s)								15.1		4.8	8.7	6.3	
Level of Service								B		A	A	A	
Approach Delay (s)		0.0			0.0			15.1			7.8		
Approach LOS		A			A			B			A		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			9.5									HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio			0.61										
Actuated Cycle Length (s)			55.0									Sum of lost time (s)	9.0
Intersection Capacity Utilization			42.0%									ICU Level of Service	A
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
6: SR 710 & EBRT (DLT)

D4 ICE Training  
2040 PM Peak



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations			↖↗	↑↑	↑↑	
Traffic Volume (vph)	0	0	1218	478	1421	0
Future Volume (vph)	0	0	1218	478	1421	0
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950
Total Lost time (s)			4.5	4.5	4.5	
Lane Util. Factor			0.97	0.95	0.95	
Fr <sub>t</sub>			1.00	1.00	1.00	
Fl <sub>t</sub> Protected			0.95	1.00	1.00	
Satd. Flow (prot)			3523	3632	3632	
Fl <sub>t</sub> Permitted			0.95	1.00	1.00	
Satd. Flow (perm)			3523	3632	3632	
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	0	0	1218	478	1421	0
RTOR Reduction (vph)	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	1218	478	1421	0
Turn Type			Prot	NA	NA	
Protected Phases			5	2	6	
Permitted Phases						
Actuated Green, G (s)			23.1	60.0	27.9	
Effective Green, g (s)			23.1	60.0	27.9	
Actuated g/C Ratio			0.39	1.00	0.46	
Clearance Time (s)			4.5	4.5	4.5	
Vehicle Extension (s)			3.0	3.0	3.0	
Lane Grp Cap (vph)			1356	3632	1688	
v/s Ratio Prot			c0.35	0.13	c0.39	
v/s Ratio Perm						
v/c Ratio			0.90	0.13	0.84	
Uniform Delay, d <sub>1</sub>			17.3	0.0	14.1	
Progression Factor			1.00	1.00	1.00	
Incremental Delay, d <sub>2</sub>			8.2	0.1	5.3	
Delay (s)			25.5	0.1	19.4	
Level of Service			C	A	B	
Approach Delay (s)	0.0			18.4	19.4	
Approach LOS	A			B	B	

Intersection Summary

HCM 2000 Control Delay	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	9.0
Intersection Capacity Utilization	94.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

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*Quadrant Roadway (QR)*













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Opening Year (2020 AM & PM)

Design Year (2040 AM & PM)

HCM Signalized Intersection Capacity Analysis  
 1: SR 710 & Northlake Blvd

D4 ICE Training  
 2020 AM Peak

































													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑	↗		↑↑↑			↑↑	↗	
Traffic Volume (vph)	0	1974	1214	0	680	117	0	910	0	0	374	89	
Future Volume (vph)	0	1974	1214	0	680	117	0	910	0	0	374	89	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Lane Util. Factor		0.91	1.00		0.95	1.00		0.91			0.95	1.00	
Fr <sub>t</sub>		1.00	0.85		1.00	0.85		1.00			1.00	0.85	
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (prot)		5119	1594		3368	1507		4670			3250	1454	
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (perm)		5119	1594		3368	1507		4670			3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	1974	1214	0	680	117	0	910	0	0	374	89	
RTOR Reduction (vph)	0	0	30	0	0	8	0	0	0	0	0	71	
Lane Group Flow (vph)	0	1974	1184	0	680	110	0	910	0	0	374	18	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm		NA	Perm		NA			NA	Perm	
Protected Phases		4			8			2			6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		91.0	91.0		91.0	91.0		27.0			27.0	27.0	
Effective Green, g (s)		91.0	91.0		91.0	91.0		27.0			27.0	27.0	
Actuated g/C Ratio		0.70	0.70		0.70	0.70		0.21			0.21	0.21	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)		3583	1115		2357	1054		969			675	301	
v/s Ratio Prot		0.39			0.20			c0.19			0.12		
v/s Ratio Perm			c0.74			0.07						0.01	
v/c Ratio		0.55	1.06		0.29	0.10		0.94			0.55	0.06	
Uniform Delay, d <sub>1</sub>		9.5	19.5		7.3	6.3		50.7			46.1	41.3	
Progression Factor		1.00	1.00		1.00	1.00		0.96			1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.2	45.0		0.1	0.0		17.5			3.3	0.4	
Delay (s)		9.7	64.5		7.4	6.4		66.3			49.4	41.7	
Level of Service		A	E		A	A		E			D	D	
Approach Delay (s)		30.6			7.2			66.3			47.9		
Approach LOS		C			A			E			D		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			34.7									HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio			1.03										
Actuated Cycle Length (s)			130.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			93.3%									ICU Level of Service	F
Analysis Period (min)			15										
c Critical Lane Group													



# HCM Signalized Intersection Capacity Analysis

## 2: N Jog Rd/Ryder Cup Blvd & Northlake Blvd






























D4 ICE Training  
2020 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 	  		 	
Traffic Volume (vph)	156	1543	104	223	322	185	400	117	569	332	167	75
Future Volume (vph)	156	1543	104	223	322	185	400	117	569	332	167	75
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	0.88	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.95		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1816	5219	1625	1816	4933		3523	3632	2860	1725	1786	1625
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.74	1.00
Satd. Flow (perm)	1816	5219	1625	1816	4933		3523	3632	2860	1725	1339	1625
Peak-hour factor, PHF	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. Flow (vph)	156	1543	104	223	322	185	400	117	569	332	167	75
RTOR Reduction (vph)	0	0	62	0	111	0	0	0	79	0	0	49
Lane Group Flow (vph)	156	1543	42	223	396	0	400	117	490	246	253	26
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	12.4	26.0	36.0	11.0	24.6		10.0	13.7	24.7	15.3	34.3	31.4
Effective Green, g (s)	12.4	26.0	36.0	11.0	24.6		10.0	13.7	24.7	15.3	34.3	31.4
Actuated g/C Ratio	0.14	0.29	0.40	0.12	0.27		0.11	0.15	0.27	0.17	0.38	0.35
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
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
Lane Grp Cap (vph)	250	1507	758	221	1348		391	552	975	293	586	675
v/s Ratio Prot	0.09	c0.30	0.01	c0.12	0.08		0.11	0.03	c0.06	c0.14	c0.07	0.01
v/s Ratio Perm			0.02						0.11		0.09	0.01
v/c Ratio	0.62	1.02	0.05	1.01	0.29		1.02	0.21	0.50	0.84	0.43	0.04
Uniform Delay, d1	36.6	32.0	16.6	39.5	25.8		40.0	33.4	27.5	36.2	20.6	19.3
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	4.8	29.4	0.0	62.9	0.1		51.5	0.9	0.4	18.6	0.5	0.0
Delay (s)	41.4	61.4	16.6	102.4	26.0		91.5	34.3	27.9	54.8	21.1	19.4
Level of Service	D	E	B	F	C		F	C	C	D	C	B
Approach Delay (s)		57.1			49.3			52.0			35.3	
Approach LOS		E			D			D			D	
<b>Intersection Summary</b>												
HCM 2000 Control Delay			51.5	HCM 2000 Level of Service				D				
HCM 2000 Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			90.0	Sum of lost time (s)				24.0				
Intersection Capacity Utilization			85.4%	ICU Level of Service				E				
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
3: N Jog Rd & SR 710

D4 ICE Training  
2020 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 	 		 		 		
Traffic Volume (vph)	228	1443	123	21	544	424	96	86	62	1095	221	272
Future Volume (vph)	228	1443	123	21	544	424	96	86	62	1095	221	272
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.88	1.00	0.95	1.00	0.97	1.00	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)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Flt Permitted	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 (perm)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Peak-hour factor, PHF	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. Flow (vph)	228	1443	123	21	544	424	96	86	62	1095	221	272
RTOR Reduction (vph)	0	0	64	0	0	179	0	0	56	0	0	81
Lane Group Flow (vph)	228	1443	59	21	544	245	96	86	6	1095	221	191
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	18.2	42.1	52.3	3.9	27.8	60.9	10.2	6.0	9.9	33.1	28.9	47.1
Effective Green, g (s)	18.2	42.1	52.3	3.9	27.8	60.9	10.2	6.0	9.9	33.1	28.9	47.1
Actuated g/C Ratio	0.17	0.39	0.48	0.04	0.25	0.56	0.09	0.05	0.09	0.30	0.26	0.43
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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)	302	1401	868	64	925	1753	169	199	236	1068	506	790
v/s Ratio Prot	c0.13	c0.40	0.01	0.01	0.15	0.04	0.05	0.02	0.00	c0.31	c0.12	0.04
v/s Ratio Perm			0.03			0.04			0.00			0.08
v/c Ratio	0.75	1.03	0.07	0.33	0.59	0.14	0.57	0.43	0.02	1.03	0.44	0.24
Uniform Delay, d1	43.3	33.5	15.3	51.3	35.6	11.5	47.3	49.9	45.2	38.0	33.3	19.7
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	10.2	32.1	0.0	3.0	1.0	0.0	4.3	1.5	0.0	34.1	0.6	0.2
Delay (s)	53.6	65.6	15.3	54.3	36.6	11.6	51.7	51.4	45.2	72.1	33.9	19.8
Level of Service	D	E	B	D	D	B	D	D	D	E	C	B
Approach Delay (s)		60.6			26.2			49.9			57.9	
Approach LOS		E			C			D			E	













Intersection Summary

HCM 2000 Control Delay	51.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	109.1	Sum of lost time (s)	24.0
Intersection Capacity Utilization	97.6%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd
































D4 ICE Training  
2020 PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑	↗		↑↑↑			↑↑	↗	
Traffic Volume (vph)	0	763	402	0	2663	68	0	466	0	0	645	350	
Future Volume (vph)	0	763	402	0	2663	68	0	466	0	0	645	350	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Lane Util. Factor		0.91	1.00		0.95	1.00		0.91			0.95	1.00	
Fr <sub>t</sub>		1.00	0.85		1.00	0.85		1.00			1.00	0.85	
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (prot)		5119	1594		3368	1507		4670			3250	1454	
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (perm)		5119	1594		3368	1507		4670			3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	763	402	0	2663	68	0	466	0	0	645	350	
RTOR Reduction (vph)	0	0	7	0	0	14	0	0	0	0	0	18	
Lane Group Flow (vph)	0	763	395	0	2663	54	0	466	0	0	645	332	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm		NA	Perm		NA			NA	Perm	
Protected Phases		4			8			2			6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		100.0	100.0		100.0	100.0		28.0			28.0	28.0	
Effective Green, g (s)		100.0	100.0		100.0	100.0		28.0			28.0	28.0	
Actuated g/C Ratio		0.71	0.71		0.71	0.71		0.20			0.20	0.20	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)		3656	1138		2405	1076		934			650	290	
v/s Ratio Prot		0.15			c0.79			0.10			0.20		
v/s Ratio Perm			0.25			0.04						c0.23	
v/c Ratio		0.21	0.35		1.11	0.05		0.50			0.99	1.14	
Uniform Delay, d <sub>1</sub>		6.7	7.6		20.0	5.9		49.8			55.9	56.0	
Progression Factor		1.00	1.00		1.00	1.00		0.98			1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.0	0.2		55.0	0.0		1.9			33.5	97.4	
Delay (s)		6.7	7.8		75.0	5.9		50.8			89.4	153.4	
Level of Service		A	A		E	A		D			F	F	
Approach Delay (s)		7.1			73.3			50.8			111.9		
Approach LOS		A			E			D			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			64.1									HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio			1.11										
Actuated Cycle Length (s)			140.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			102.8%									ICU Level of Service	G
Analysis Period (min)			15										
c Critical Lane Group													

# HCM Signalized Intersection Capacity Analysis

## 2: N Jog Rd/Ryder Cup Blvd & Northlake Blvd

D4 ICE Training  
2020 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 	 		 	
Traffic Volume (vph)	74	571	65	346	1386	257	1227	156	459	265	125	117
Future Volume (vph)	74	571	65	346	1386	257	1227	156	459	265	125	117
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	0.88	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.98		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1816	5219	1625	1816	5097		3523	3632	2860	1725	1783	1625
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.82	1.00
Satd. Flow (perm)	1816	5219	1625	1816	5097		3523	3632	2860	1725	1493	1625
Peak-hour factor, PHF	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. Flow (vph)	74	571	65	346	1386	257	1227	156	459	265	125	117
RTOR Reduction (vph)	0	0	34	0	19	0	0	0	73	0	0	96
Lane Group Flow (vph)	74	571	31	346	1624	0	1227	156	386	191	199	21
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	6.0	19.7	67.7	29.3	43.0		48.0	46.9	76.2	20.1	39.1	25.0
Effective Green, g (s)	6.0	19.7	67.7	29.3	43.0		48.0	46.9	76.2	20.1	39.1	25.0
Actuated g/C Ratio	0.04	0.14	0.48	0.21	0.31		0.34	0.33	0.54	0.14	0.28	0.18
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
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
Lane Grp Cap (vph)	77	734	855	380	1565		1207	1216	1679	247	458	359
v/s Ratio Prot	0.04	0.11	0.01	c0.19	c0.32		c0.35	0.04	0.05	0.11	0.06	0.00
v/s Ratio Perm			0.01						0.09		c0.06	0.01
v/c Ratio	0.96	0.78	0.04	0.91	1.04		1.02	0.13	0.23	0.77	0.43	0.06
Uniform Delay, d1	66.9	58.0	19.0	54.1	48.5		46.0	32.3	16.6	57.8	41.4	47.7
Progression Factor	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	88.9	5.2	0.0	25.3	33.1		30.1	0.2	0.1	14.0	0.7	0.1
Delay (s)	155.8	63.2	19.0	79.4	81.6		76.1	32.6	16.7	71.7	42.0	47.8
Level of Service	F	E	B	E	F		E	C	B	E	D	D
Approach Delay (s)		68.8			81.2			57.6			54.5	
Approach LOS		E			F			E			D	






























### Intersection Summary

HCM 2000 Control Delay	68.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
 3: N Jog Rd & SR 710

D4 ICE Training  
 2020 PM Peak













												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 	 		 		 		
Traffic Volume (vph)	79	853	96	44	1077	292	111	42	137	696	154	198
Future Volume (vph)	79	853	96	44	1077	292	111	42	137	696	154	198
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.88	1.00	0.95	1.00	0.97	1.00	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)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Flt Permitted	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 (perm)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Peak-hour factor, PHF	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. Flow (vph)	79	853	96	44	1077	292	111	42	137	696	154	198
RTOR Reduction (vph)	0	0	57	0	0	136	0	0	117	0	0	93
Lane Group Flow (vph)	79	853	39	44	1077	156	111	42	20	696	154	105
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	5.0	26.2	31.8	4.0	25.2	41.2	5.6	7.1	11.1	16.0	17.5	22.5
Effective Green, g (s)	5.0	26.2	31.8	4.0	25.2	41.2	5.6	7.1	11.1	16.0	17.5	22.5
Actuated g/C Ratio	0.06	0.34	0.41	0.05	0.33	0.53	0.07	0.09	0.14	0.21	0.23	0.29
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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)	117	1231	794	93	1184	1746	131	333	359	729	432	599
v/s Ratio Prot	c0.04	0.23	0.00	0.02	c0.30	0.02	0.06	0.01	0.00	c0.20	c0.08	0.01
v/s Ratio Perm			0.02			0.04			0.01			0.05
v/c Ratio	0.68	0.69	0.05	0.47	0.91	0.09	0.85	0.13	0.05	0.95	0.36	0.18
Uniform Delay, d1	35.4	22.1	13.7	35.6	25.0	8.9	35.4	32.2	28.6	30.3	25.2	20.5
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	14.3	1.7	0.0	3.8	10.3	0.0	36.9	0.2	0.1	22.7	0.5	0.1
Delay (s)	49.7	23.8	13.7	39.4	35.2	8.9	72.3	32.4	28.6	53.0	25.7	20.6
Level of Service	D	C	B	D	D	A	E	C	C	D	C	C
Approach Delay (s)		24.8			29.9			45.9			42.8	
Approach LOS		C			C			D			D	

Intersection Summary		
HCM 2000 Control Delay	33.3	HCM 2000 Level of Service C
HCM 2000 Volume to Capacity ratio	0.84	
Actuated Cycle Length (s)	77.3	Sum of lost time (s) 24.0
Intersection Capacity Utilization	76.8%	ICU Level of Service D
Analysis Period (min)	15	

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd

D4 ICE Training  
2040 AM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑	↗		↑↑↑			↑↑	↗	
Traffic Volume (vph)	0	2292	1956	0	948	187	0	1053	0	0	743	132	
Future Volume (vph)	0	2292	1956	0	948	187	0	1053	0	0	743	132	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Lane Util. Factor		0.91	1.00		0.95	1.00		0.91			0.95	1.00	
Fr <sub>t</sub>		1.00	0.85		1.00	0.85		1.00			1.00	0.85	
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (prot)		5119	1594		3368	1507		4670			3250	1454	
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (perm)		5119	1594		3368	1507		4670			3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	2292	1956	0	948	187	0	1053	0	0	743	132	
RTOR Reduction (vph)	0	0	6	0	0	6	0	0	0	0	0	106	
Lane Group Flow (vph)	0	2292	1950	0	948	181	0	1053	0	0	743	26	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm		NA	Perm		NA			NA	Perm	
Protected Phases		4			8			2			6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		109.0	109.0		109.0	109.0		29.0			29.0	29.0	
Effective Green, g (s)		109.0	109.0		109.0	109.0		29.0			29.0	29.0	
Actuated g/C Ratio		0.73	0.73		0.73	0.73		0.19			0.19	0.19	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)		3719	1158		2447	1095		902			628	281	
v/s Ratio Prot		0.45			0.28			0.23			c0.23		
v/s Ratio Perm			c1.22			0.12						0.02	
v/c Ratio		0.62	1.68		0.39	0.17		1.17			1.18	0.09	
Uniform Delay, d <sub>1</sub>		10.1	20.5		7.8	6.4		60.5			60.5	49.7	
Progression Factor		1.00	1.00		1.00	1.00		0.97			1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.3	311.5		0.1	0.1		87.3			98.0	0.6	
Delay (s)		10.5	332.0		7.9	6.4		145.9			158.5	50.3	
Level of Service		B	F		A	A		F			F	D	
Approach Delay (s)		158.5			7.7			145.9			142.2		
Approach LOS		F			A			F			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			131.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.58										
Actuated Cycle Length (s)			150.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			148.0%									ICU Level of Service	H
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
2: N Jog Rd/Ryder Cup Blvd & Northlake Blvd

D4 ICE Training  
2040 AM Peak

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	183	1790	121	259	362	215	583	305	1429	866	435	189
Future Volume (vph)	183	1790	121	259	362	215	583	305	1429	866	435	189
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	0.88	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.94		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1816	5219	1625	1816	4927		3523	3632	2860	1725	1786	1625
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.54	1.00
Satd. Flow (perm)	1816	5219	1625	1816	4927		3523	3632	2860	1725	989	1625
Peak-hour factor, PHF	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. Flow (vph)	183	1790	121	259	362	215	583	305	1429	866	435	189
RTOR Reduction (vph)	0	0	66	0	68	0	0	0	73	0	0	38
Lane Group Flow (vph)	183	1790	55	259	509	0	583	305	1356	641	660	151
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	20.1	39.0	68.6	16.0	34.9		29.6	34.0	50.0	37.0	77.0	61.5
Effective Green, g (s)	20.1	39.0	68.6	16.0	34.9		29.6	34.0	50.0	37.0	77.0	61.5
Actuated g/C Ratio	0.13	0.26	0.46	0.11	0.23		0.20	0.23	0.33	0.25	0.51	0.41
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
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
Lane Grp Cap (vph)	243	1356	808	193	1146		695	823	1067	425	704	731
v/s Ratio Prot	0.10	c0.34	0.01	0.14	0.10		0.17	0.08	c0.14	c0.37	0.23	0.03
v/s Ratio Perm			0.02						0.34		0.25	0.07
v/c Ratio	0.75	1.32	0.07	1.34	0.44		0.84	0.37	1.27	1.51	0.94	0.21
Uniform Delay, d1	62.6	55.5	22.8	67.0	49.2		57.9	49.0	50.0	56.5	34.2	28.5
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	12.4	149.3	0.0	184.4	0.3		8.8	1.3	129.5	240.7	19.9	0.1
Delay (s)	75.0	204.8	22.8	251.4	49.5		66.7	50.2	179.5	297.2	54.2	28.7
Level of Service	E	F	C	F	D		E	D	F	F	D	C
Approach Delay (s)		182.9			112.1			134.1			155.5	
Approach LOS		F			F			F			F	






























Intersection Summary

HCM 2000 Control Delay	151.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.42		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	131.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis  
3: N Jog Rd & SR 710

D4 ICE Training  
2040 AM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		 			 	 		 		 		
Traffic Volume (vph)	215	1669	143	25	630	402	251	238	107	1858	376	464
Future Volume (vph)	215	1669	143	25	630	402	251	238	107	1858	376	464
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	0.88	1.00	0.95	1.00	0.97	1.00	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)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Flt Permitted	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 (perm)	1816	3632	1625	1816	3632	2860	1816	3632	1625	3523	1912	1625
Peak-hour factor, PHF	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. Flow (vph)	215	1669	143	25	630	402	251	238	107	1858	376	464
RTOR Reduction (vph)	0	0	73	0	0	74	0	0	93	0	0	42
Lane Group Flow (vph)	215	1669	70	25	630	328	251	238	14	1858	376	422
Turn Type	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8	1	5	2	3	1	6	7
Permitted Phases			4			8			2			6
Actuated Green, G (s)	20.4	49.0	72.3	5.0	33.6	89.6	23.3	14.3	19.3	56.0	47.0	67.4
Effective Green, g (s)	20.4	49.0	72.3	5.0	33.6	89.6	23.3	14.3	19.3	56.0	47.0	67.4
Actuated g/C Ratio	0.14	0.33	0.49	0.03	0.23	0.60	0.16	0.10	0.13	0.38	0.32	0.45
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
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)	249	1200	857	61	822	1843	285	350	277	1330	605	804
v/s Ratio Prot	c0.12	c0.46	0.01	0.01	0.17	0.07	0.14	0.07	0.00	c0.53	0.20	c0.07
v/s Ratio Perm			0.03			0.05			0.01			0.19
v/c Ratio	0.86	1.39	0.08	0.41	0.77	0.18	0.88	0.68	0.05	1.40	0.62	0.52
Uniform Delay, d1	62.6	49.7	20.3	70.2	53.7	13.0	61.1	64.8	56.5	46.2	43.1	29.0
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	25.2	181.1	0.0	4.4	4.3	0.0	25.5	5.4	0.1	183.3	2.0	0.6
Delay (s)	87.8	230.7	20.3	74.6	58.0	13.1	86.7	70.1	56.6	229.4	45.1	29.6
Level of Service	F	F	C	E	E	B	F	E	E	F	D	C
Approach Delay (s)		200.7			41.3			74.7			169.4	
Approach LOS		F			D			E			F	

Intersection Summary













HCM 2000 Control Delay	149.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.32		
Actuated Cycle Length (s)	148.3	Sum of lost time (s)	24.0
Intersection Capacity Utilization	127.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group


































HCM Signalized Intersection Capacity Analysis  
1: SR 710 & Northlake Blvd

D4 ICE Training  
2040 PM Peak

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations		↑↑↑	↗		↑↑	↗		↑↑↑			↑↑	↗	
Traffic Volume (vph)	0	886	814	0	3208	84	0	539	0	0	1564	521	
Future Volume (vph)	0	886	814	0	3208	84	0	539	0	0	1564	521	
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	
Total Lost time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Lane Util. Factor		0.91	1.00		0.95	1.00		0.91			0.95	1.00	
Fr <sub>t</sub>		1.00	0.85		1.00	0.85		1.00			1.00	0.85	
Fl <sub>t</sub> Protected		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (prot)		5119	1594		3368	1507		4670			3250	1454	
Fl <sub>t</sub> Permitted		1.00	1.00		1.00	1.00		1.00			1.00	1.00	
Satd. Flow (perm)		5119	1594		3368	1507		4670			3250	1454	
Peak-hour factor, PHF	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. Flow (vph)	0	886	814	0	3208	84	0	539	0	0	1564	521	
RTOR Reduction (vph)	0	0	9	0	0	13	0	0	0	0	0	15	
Lane Group Flow (vph)	0	886	805	0	3208	71	0	539	0	0	1564	506	
Heavy Vehicles (%)	4%	4%	4%	10%	10%	10%	14%	14%	14%	14%	14%	14%	
Turn Type		NA	Perm		NA	Perm		NA			NA	Perm	
Protected Phases		4			8			2			6		
Permitted Phases			4			8						6	
Actuated Green, G (s)		90.0	90.0		90.0	90.0		48.0			48.0	48.0	
Effective Green, g (s)		90.0	90.0		90.0	90.0		48.0			48.0	48.0	
Actuated g/C Ratio		0.60	0.60		0.60	0.60		0.32			0.32	0.32	
Clearance Time (s)		6.0	6.0		6.0	6.0		6.0			6.0	6.0	
Vehicle Extension (s)		3.0	3.0		3.0	3.0		3.0			3.0	3.0	
Lane Grp Cap (vph)		3071	956		2020	904		1494			1040	465	
v/s Ratio Prot		0.17			c0.95			0.12			c0.48		
v/s Ratio Perm			0.51			0.05						0.35	
v/c Ratio		0.29	0.84		1.59	0.08		0.36			1.50	1.09	
Uniform Delay, d <sub>1</sub>		14.5	24.3		30.0	12.6		39.2			51.0	51.0	
Progression Factor		1.00	1.00		1.00	1.00		0.99			1.00	1.00	
Incremental Delay, d <sub>2</sub>		0.1	6.8		267.0	0.0		0.7			231.8	67.7	
Delay (s)		14.6	31.1		297.0	12.6		39.6			282.8	118.7	
Level of Service		B	C		F	B		D			F	F	
Approach Delay (s)		22.5			289.8			39.6			241.8		
Approach LOS		C			F			D			F		
<b>Intersection Summary</b>													
HCM 2000 Control Delay			199.3									HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio			1.56										
Actuated Cycle Length (s)			150.0									Sum of lost time (s)	12.0
Intersection Capacity Utilization			138.5%									ICU Level of Service	H
Analysis Period (min)			15										
c Critical Lane Group													

HCM Signalized Intersection Capacity Analysis  
2: N Jog Rd/Ryder Cup Blvd & Northlake Blvd

D4 ICE Training  
2040 PM Peak

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		  			  		 	 	 		 	
Traffic Volume (vph)	89	658	78	408	1406	299	1617	408	1089	692	325	269
Future Volume (vph)	89	658	78	408	1406	299	1617	408	1089	692	325	269
Ideal Flow (vphpl)	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950	1950
Total Lost time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
Lane Util. Factor	1.00	0.91	1.00	1.00	0.91		0.97	0.95	0.88	0.95	0.95	1.00
Frt	1.00	1.00	0.85	1.00	0.97		1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.98	1.00
Satd. Flow (prot)	1816	5219	1625	1816	5082		3523	3632	2860	1725	1783	1625
Flt Permitted	0.95	1.00	1.00	0.95	1.00		0.95	1.00	1.00	0.95	0.70	1.00
Satd. Flow (perm)	1816	5219	1625	1816	5082		3523	3632	2860	1725	1272	1625
Peak-hour factor, PHF	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. Flow (vph)	89	658	78	408	1406	299	1617	408	1089	692	325	269
RTOR Reduction (vph)	0	0	38	0	22	0	0	0	36	0	0	126
Lane Group Flow (vph)	89	658	40	408	1683	0	1617	408	1053	498	519	143
Turn Type	Prot	NA	pm+ov	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov
Protected Phases	7	4	5	3	8		5	2	3	1	6	7
Permitted Phases			4						2			6
Actuated Green, G (s)	5.0	18.0	76.0	29.0	42.0		58.0	39.0	68.0	40.0	61.0	26.0
Effective Green, g (s)	5.0	18.0	76.0	29.0	42.0		58.0	39.0	68.0	40.0	61.0	26.0
Actuated g/C Ratio	0.03	0.12	0.51	0.19	0.28		0.39	0.26	0.45	0.27	0.41	0.17
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0		6.0	6.0	6.0	6.0	6.0	6.0
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
Lane Grp Cap (vph)	60	626	888	351	1422		1362	944	1410	460	653	346
v/s Ratio Prot	0.05	0.13	0.02	c0.22	c0.33		c0.46	0.11	c0.14	0.29	0.21	0.01
v/s Ratio Perm			0.01						0.22		0.11	0.07
v/c Ratio	1.48	1.05	0.04	1.16	1.18		1.19	0.43	0.75	1.08	0.79	0.41
Uniform Delay, d1	72.5	66.0	18.7	60.5	54.0		46.0	46.3	33.9	55.0	39.0	55.2
Progression Factor	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	287.2	50.1	0.0	99.9	90.0		91.9	1.4	2.2	66.0	6.6	0.8
Delay (s)	359.7	116.1	18.7	160.4	144.0		137.9	47.7	36.1	121.0	45.6	56.0
Level of Service	F	F	B	F	F		F	D	D	F	D	E
Approach Delay (s)		133.2			147.2			90.5			77.0	
Approach LOS		F			F			F			E	

Intersection Summary

HCM 2000 Control Delay	109.3	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.18		
Actuated Cycle Length (s)	150.0	Sum of lost time (s)	24.0
Intersection Capacity Utilization	129.7%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group



Northbound Left Delay AM 2020		
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
NBL Delay at Northlake Blvd/Jog Rd	91.5	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time WB along Northlake Blvd	55.6	Seconds
WBT Delay at Northlake Blvd/SR 710	7.2	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time NB along 710	79.2	Seconds
(Signal Alt.) NBL Delay at SR 710/Northlake Blvd	66.8	Seconds

Total Delay 66.7 Seconds

Northbound Left Delay AM 2040		
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
NBL Delay at Northlake Blvd/Jog Rd	66.7	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time WB along Northlake Blvd	55.6	Seconds
WBT Delay at Northlake Blvd/SR 710	7.7	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time NB along 710	79.2	Seconds
(Signal Alt.) NBL Delay at SR 710/Northlake Blvd	327.6	Seconds

Total Delay -218.4 Seconds

Northbound Left Delay PM 2020		
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
NBL Delay at Northlake Blvd/Jog Rd	76.1	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time WB along Northlake Blvd	55.6	Seconds
WBT Delay at Northlake Blvd/SR 710	75	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time NB along 710	79.2	Seconds
(Signal Alt.) NBL Delay at SR 710/Northlake Blvd	134.2	Seconds

Total Delay 51.7 Seconds

Northbound Left Delay PM 2040		
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
NBL Delay at Northlake Blvd/Jog Rd	137.9	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time WB along Northlake Blvd	55.6	Seconds
WBT Delay at Northlake Blvd/SR 710	297	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time NB along 710	79.2	Seconds
(Signal Alt.) NBL Delay at SR 710/Northlake Blvd	353.8	Seconds

Total Delay 115.9 Seconds

Southbound Left Delay AM 2020		
SBT Delay at SR710/Northlake Blvd	47.9	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time SB along SR710	79.2	Seconds
EBL Delay at SR710/Jog Rd	72.1	Seconds
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time EB along Northlake Blvd	55.6	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	83.9	Seconds

Total Delay 118.1 Seconds

Southbound Left Delay AM 2040		
SBT Delay at SR710/Northlake Blvd	142.2	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time SB along SR710	79.2	Seconds
EBL Delay at SR710/Jog Rd	236.3	Seconds
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time EB along Northlake Blvd	55.6	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	182.6	Seconds

Total Delay 277.9 Seconds

Southbound Left Delay PM 2020		
SBT Delay at SR710/Northlake Blvd	111.9	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time SB along SR710	79.2	Seconds
EBL Delay at SR710/Jog Rd	50.7	Seconds
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time EB along Northlake Blvd	55.6	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	80.5	Seconds

Total Delay 164.1 Seconds

Southbound Left Delay PM 2040		
SBT Delay at SR710/Northlake Blvd	241.8	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time SB along SR710	79.2	Seconds
EBL Delay at SR710/Jog Rd	109.4	Seconds
Distance along Jog Rd	0.73	Miles
Posted Speed along Jog Rd	45	MPH
Travel Time NB along Jog Rd	58.4	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time EB along Northlake Blvd	55.6	Seconds
(Signal Alt.) SBL Delay at SR710/Northlake Blvd	96.4	Seconds

Total Delay 336.8 Seconds

Westbound Left Delay AM 2020		
Distance along Jog Rd	0.73	Miles
Posted Sped along Jog Rd	45	MPH
Travel Time SB along Jog Rd	58.4	Seconds
WBL at SR710/Jog Rd	54.3	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time SB along Northlake Blvd	55.6	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time WB along SR710	79.2	Seconds
(Signal Alt.) WBL Delay at SR710/Northlake Blvd	63.5	Seconds

Total Delay -85.6 Seconds

Westbound Left Delay AM 2040		
Distance along Jog Rd	0.73	Miles
Posted Sped along Jog Rd	45	MPH
Travel Time SB along Jog Rd	58.4	Seconds
WBL at SR710/Jog Rd	74.6	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time SB along Northlake Blvd	55.6	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time WB along SR710	79.2	Seconds
(Signal Alt.) WBL Delay at SR710/Northlake Blvd	72.0	Seconds

Total Delay -73.8 Seconds

Westbound Left Delay PM 2020		
Distance along Jog Rd	0.73	Miles
Posted Sped along Jog Rd	45	MPH
Travel Time SB along Jog Rd	58.4	Seconds
WBL at SR710/Jog Rd	39.4	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time SB along Northlake Blvd	55.6	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time WB along SR710	79.2	Seconds
(Signal Alt.) WBL Delay at SR710/Northlake Blvd	147.3	Seconds

Total Delay -184.3 Seconds

Westbound Left Delay PM 2040		
Distance along Jog Rd	0.73	Miles
Posted Sped along Jog Rd	45	MPH
Travel Time SB along Jog Rd	58.4	Seconds
WBL at SR710/Jog Rd	110.9	Seconds
Distance along Northlake Blvd	0.85	Miles
Posted Speed along Northlake Blvd	55	MPH
Travel Time SB along Northlake Blvd	55.6	Seconds
Distance along SR710	1.21	Miles
Posted Speed along SR710	55	MPH
Travel Time WB along SR710	79.2	Seconds
(Signal Alt.) WBL Delay at SR710/Northlake Blvd	99.2	Seconds

Total Delay -64.7 Seconds

	<b>AM 2020</b>	<b>PM 2020</b>	<b>AM 2040</b>	<b>PM 2040</b>
Signal Delay	50.1	89.5	190.3	234.2
Signal Volume	5,188	5,310	7,114	7,568
Total Delay	259,919	475,245	1,353,794	1,772,426
QR Main Int Delay	34.7	64.1	131.3	199.3
QR Main Int Volume	5,187	5,304	7,112	7,555
QR LT Delay	99.2	31.5	-14.3	388
QR LT Volume	363	1155	438	1374
QR Total Delay	215,999	376,369	927,542	2,038,824
Ratio	0.83	0.79	0.69	1.15
New Int Delay	41.6	70.9	130.4	269.4

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## *Concept Development*

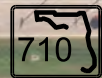
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***Signal Control: Existing Conditions***

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BEELINE HIGHWAY

BEELINE HIGHWAY

NORHLAKE BOULEVARD

NORHLAKE BOULEVARD



0 40 200  
Feet

— PARCEL LINE

FOR ILLUSTRATIVE PURPOSES ONLY  
AERIAL PHOTO ACQUIRED 2015

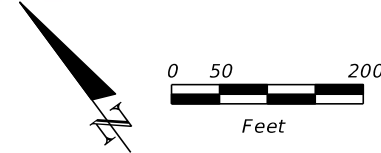
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DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 710	PALM BEACH	18956		

SUSERS SDATES STIMES SFILES

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

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— PARCEL LINE

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AERIAL PHOTO ACQUIRED 2015

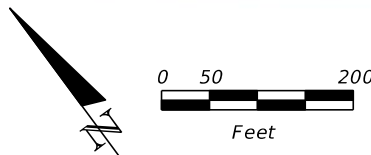
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DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 710	PALM BEACH	18956		1

SUSERS SDATES STIMES SFILES



BEELINE HIGHWAY

MATCHLINE



PARCEL LINE

FOR ILLUSTRATIVE PURPOSES ONLY  
AERIAL PHOTO ACQUIRED 2015

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 710 / NORTHLAKE BOULEVARD PDLT	SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 710	PALM BEACH	18956		2

SUSERS SDATES STIMES SFILES

<b>Project:</b> FDOT D4 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd PDLT					
<b>New Striping/Signage Grand Total</b>		<b>\$391,160.07</b>			
<b>ROADWAY COMPONENT</b>					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
350-3-1	PLAIN CEMENT CONC, 6"	3,159.13	SY	\$60.00	\$189,548.07
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	1,175.00	LF	\$38.43	\$45,155.25
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	878.00	LF	\$2.22	\$1,949.16
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	392.00	LF	\$5.10	\$1,999.20
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	70.00	EA	\$55.45	\$3,881.50
711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	4.65	GM	\$4,158.99	\$19,339.30
711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	1.75	GM	\$4,162.64	\$7,284.62
711-11-124	THERMOPLASTIC, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS AND CHEVRONS	435.00	LF	\$2.92	\$1,270.20
<b>Roadway Component Total</b>					<b>\$242,533.18</b>
<b>SIGNING COMPONENT</b>					
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	\$393.84	\$5,907.60
700-1-12	SINGLE POST SIGN, F&I, 12-20 SF	5.00	AS	\$1,311.80	\$6,559.00
700-2-14	MULTI- POST SIGN, F&I GM, 12-20 SF	3.00	AS	\$4,921.93	\$14,765.79
<b>Signing Component Total</b>					<b>\$27,232.39</b>

<b>Project:</b> FDOT D4 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd PDLT					
<b>New Striping/Signage Grand Total</b>		<b>\$391,160.07</b>			
<b>Project Sequences Subtotal</b>					<b>\$269,765.57</b>
102-1	MAINTENANCE OF TRAFFIC	20%			\$53,953.11
101-1	MOBILIZATION	10%			\$26,976.56
	PROJECT UNKNOWNNS	15%			\$40,464.84
<b>New Striping/Signage Grand Total</b>					<b>\$391,160.07</b>
	Statewide Unit Cost				

Project: FDOT D4 ICE Training						
Description: SR 710 - Northlake Blvd PDLT						
<b>Drainage Component Total</b>				<b>\$287,145.59</b>		
<b>DRAINAGE COMPONENT</b>						
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount	
520-1-7	Concrete Curb & Gutter, Type E	0.00	LF	\$23.61	\$0.00	
520-1-10	Concrete Curb & Gutter, Type F	2,432.72	LF	\$21.82	\$53,081.95	
425-1204	Inlets, Curb, Type 9, J Bot, >10'	0.00	EA	\$4,222.20	\$0.00	
425-1214	Inlets, Curb, Type 10, J Bot, >10'	29.00	EA	\$8,071.16	\$234,063.64	
					\$0.00	
<b>Drainage Component Total</b>					<b>\$287,145.59</b>	
Statewide Unit Cost						



<b>Project:</b> FDOT D4 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd PDLT					
<b>New Pavement Grand Total</b>		<b>\$501,411.96</b>			
<b>ROADWAY COMPONENT</b>					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
160-4	TYPE B STABILIZATION	10,654.21	SY	\$2.97	\$31,643.02
285-709	OPTIONAL BASE,BASE GROUP 09	10,654.21	SY	\$13.62	\$145,110.40
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	1,171.96	TN	\$100.77	\$118,098.77
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	390.65	TN	\$130.42	\$50,949.16
<b>Roadway Component Total</b>					<b>\$345,801.35</b>
<b>Bridge Widening Construction</b>					<b>\$0.00</b>
<b>Project Sequences Subtotal</b>					<b>\$345,801.35</b>
102-1	MAINTENANCE OF TRAFFIC	20%			\$69,160.27
101-1	MOBILIZATION	10%			\$34,580.14
	PROJECT UNKNOWNNS	15%			\$51,870.20
<b>New Pavement Grand Total</b>					<b>\$501,411.96</b>
Statewide Unit Cost					

<b>Project:</b> FDOT D4 ICE Training						
<b>Description:</b> SR 710 - Northlake Blvd PDLT						
<b>Signal Grand Total</b>				<b>\$1,078,979.61</b>		
<b>SIGNALIZATIONS COMPONENT</b>						
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount	
630-2-12	CONDUIT, F&I, DIRECTIONAL BORE	1,175.00	LF	\$21.76	\$25,568.00	
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	3.00	PI	\$5,861.65	\$17,584.95	
635-2-11	PULL & SPLICE BOX, F&I, 13" X 24"	54.00	EA	\$648.19	\$35,002.26	
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	3.00	AS	\$2,750.00	\$8,250.00	
639-2-1	ELECTRICAL SERVICE WIRE, F&I	300.00	LF	\$5.44	\$1,632.00	
641-2-11	PREST CNC POLE,F&I,TYP P-II,PEDESTAL	7.00	EA	\$1,471.90	\$10,303.30	
649-21-6	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 50'	6.00	EA	\$32,120.26	\$192,721.56	
649-21-21	STEEL MAST ARM ASSEMBLY, FURNISH AND INSTALL, SINGLE ARM 78'	6.00	EA	\$48,840.05	\$293,040.30	
650-1-14	TRAFFIC SIGNAL,F&I ALUMINUM, 3 S 1 W	30.00	AS	\$865.22	\$25,956.60	
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	\$729.66	\$5,837.28	
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	22.00	EA	\$302.30	\$6,650.60	
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	22.00	AS	\$1,004.30	\$22,094.60	
665-1-12	PEDESTRIAN DETECTOR, F&I, ACCESSIBLE	8.00	EA	\$1,704.67	\$13,637.36	
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	3.00	AS	\$28,615.02	\$85,845.06	
<b>Signalizations Component Total</b>					<b>\$744,123.87</b>	
<b>Project Sequences Subtotal</b>					<b>\$744,123.87</b>	
102-1	MAINTENANCE OF TRAFFIC	20%			\$148,824.77	

<b>Project:</b> FDOT D4 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd PDLT					
<b>Signal Grand Total</b>		<b>\$1,078,979.61</b>			
101-1	MOBILIZATION	10%			\$74,412.39
	PROJECT UNKNOWNNS	15%			\$111,618.58
<b>Signal Adjustments Grand Total</b>					<b>\$1,078,979.61</b>
	Statewide Unit Cost				
	2017 Statewide Unit Cost				

<b>Project:</b> FDOT D4 ICE Training						
<b>Description:</b> SR 710 - Northlake Blvd PDLT						
<b>Sidewalk Grand Total</b>				<b>\$146,090.96</b>		
<b>EARTHWORK COMPONENT</b>						
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount	
110-1-1	CLEARING & GRUBBING	0.50	AC	\$12,200.02	\$6,126.40	
<b>Earthwork Component Total</b>					<b>\$6,126.40</b>	
<b>SHOULDER COMPONENT</b>						
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount	
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	2,430.47	SY	\$33.41	\$81,202.00	
570-1-2	PERFORMANCE TURF, SOD	2,018.61	SY	\$3.43	\$6,923.83	
<b>Shoulder Component Total</b>					<b>\$88,125.83</b>	
<b>Project Sequences Subtotal</b>					<b>\$94,252.23</b>	
102-1	MAINTENANCE OF TRAFFIC	20%			\$18,850.45	
101-1	MOBILIZATION	10%			\$9,425.22	
	PROJECT UNKNOWNNS	25%			\$23,563.06	
<b>Sidewalk Grand Total</b>					<b>\$146,090.96</b>	

Lane Addition	ROW Take Area (SF)	Cost/SF	Cost
NW Corner	571.31	\$100.00	\$57,131.00
SW Corner	16698	\$100.00	\$1,669,788.00
SE Corner		\$100.00	\$0.00
NE Corner		\$100.00	\$0.00
Parcel Takes			
Total	17269.19	\$100.00	\$1,726,919.00

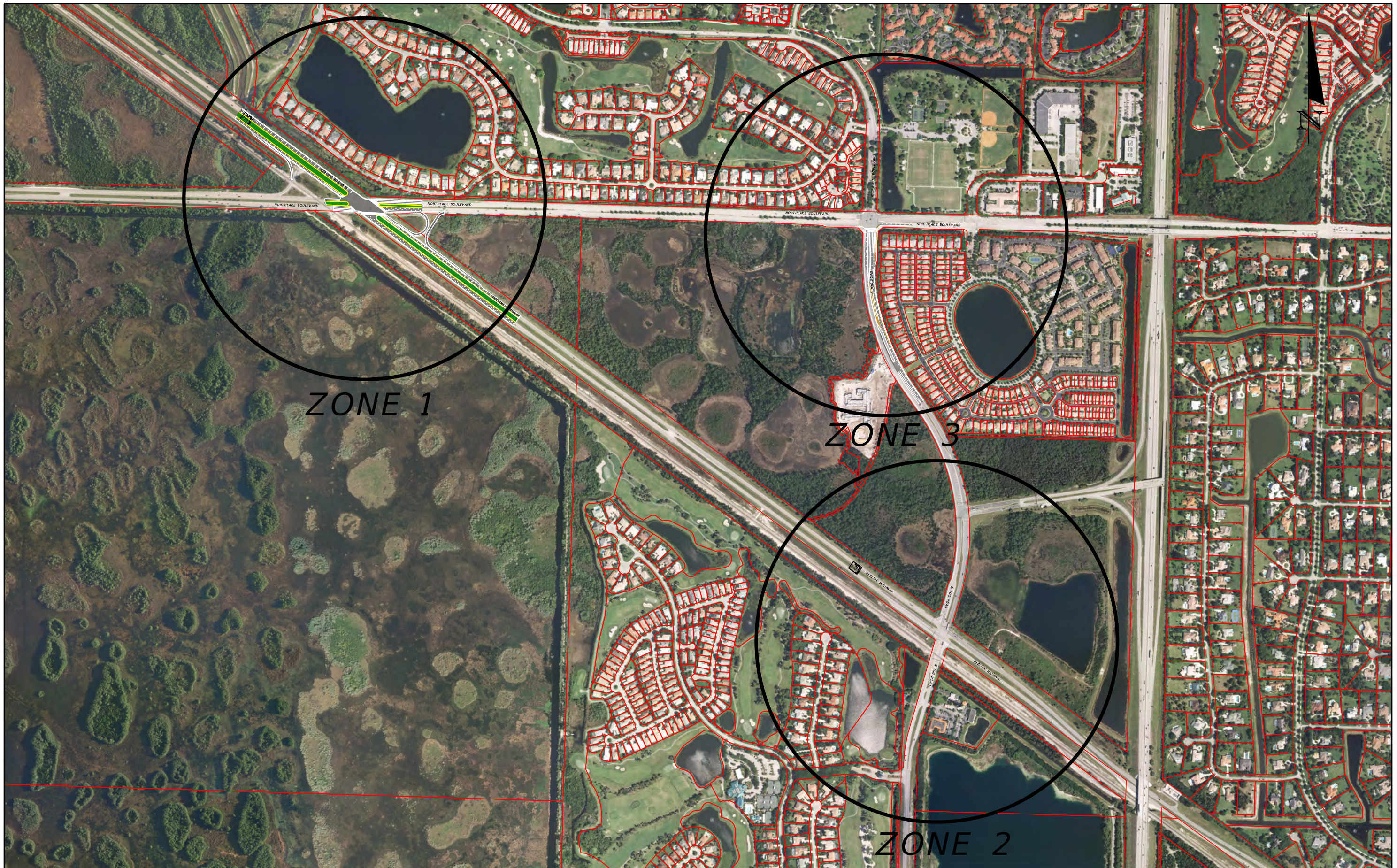
SR 710 - Northlake Blvd PDLT	
Component	Total Cost
New Striping/Signage	\$391,160.07
Grand Total	
New Drainage	\$287,145.59
New Pavement	\$501,411.96
Signal Grand Total	\$1,078,979.61
Sidewalk Grand Total	\$146,090.96
Total Construction Cost	\$2,404,788.19

SR 710 - Northlake Blvd PDLT	
Construction	\$2,400,000
Engineering/CEI	\$700,000
Roadway ROW	\$1,700,000
Total	\$4,800,000

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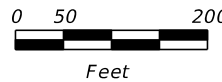
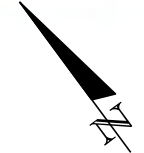
***QR: Concept and Construction Cost Estimates***

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REVISIONS		REVISIONS		STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 710/ BEELINE HIGHWAY S-E QUAD		SHEET NO.
DATE	DESCRIPTION	DATE	DESCRIPTION						
				ROAD NO.	COUNTY	FINANCIAL PROJECT ID			
				SR 710	PALM BEACH	18956		4	



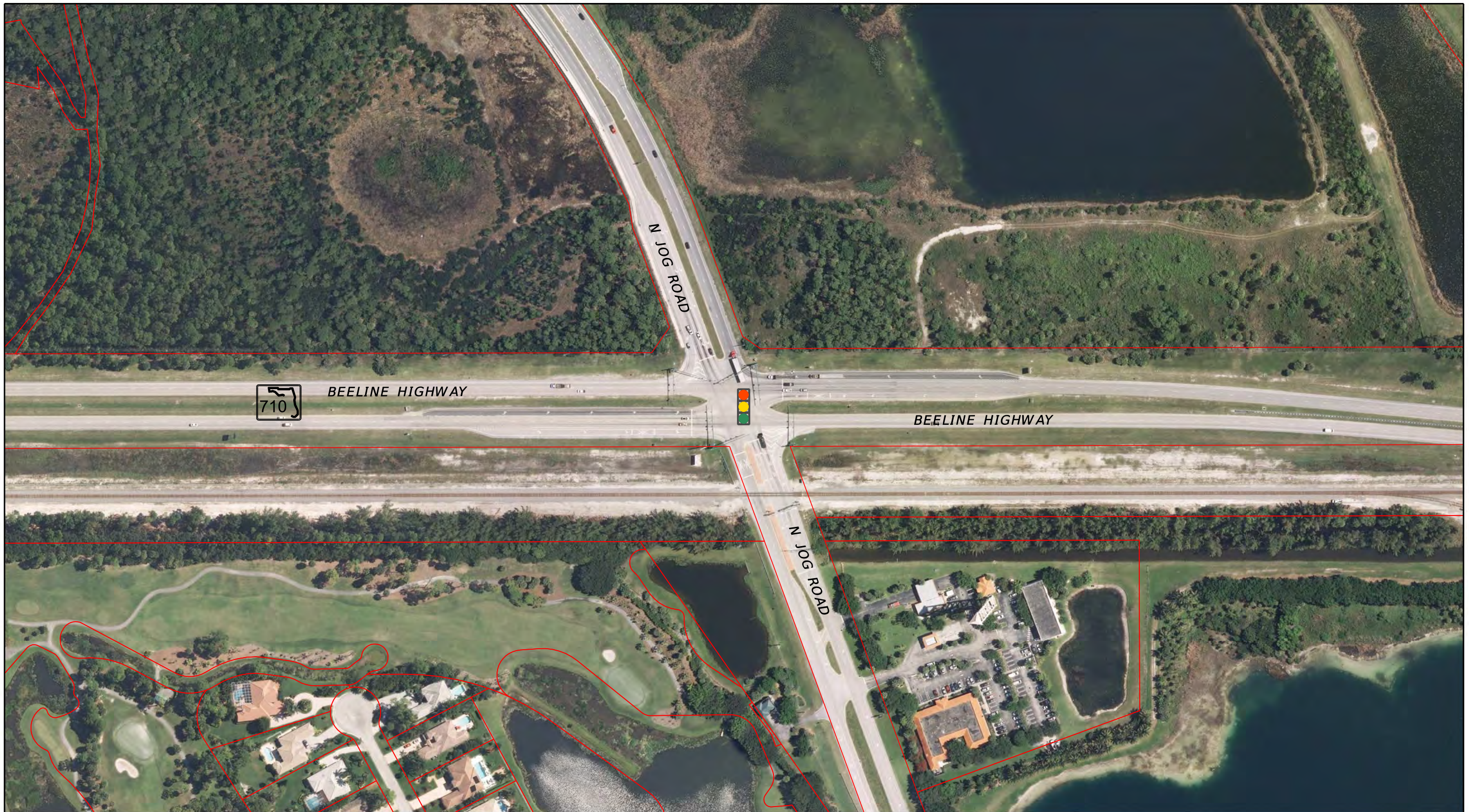


— PARCEL LINE

FOR ILLUSTRATIVE PURPOSES ONLY  
AERIAL PHOTO ACQUIRED 2015

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 710/ BEELINE HIGHWAY S-E QUAD ZONE 1	SHEET NO.  4A
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 710	PALM BEACH	18956		

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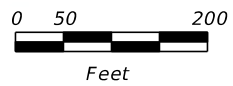


BEELINE HIGHWAY

BEELINE HIGHWAY

N JOG ROAD

N JOG ROAD

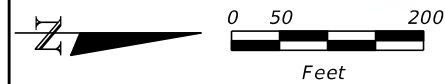
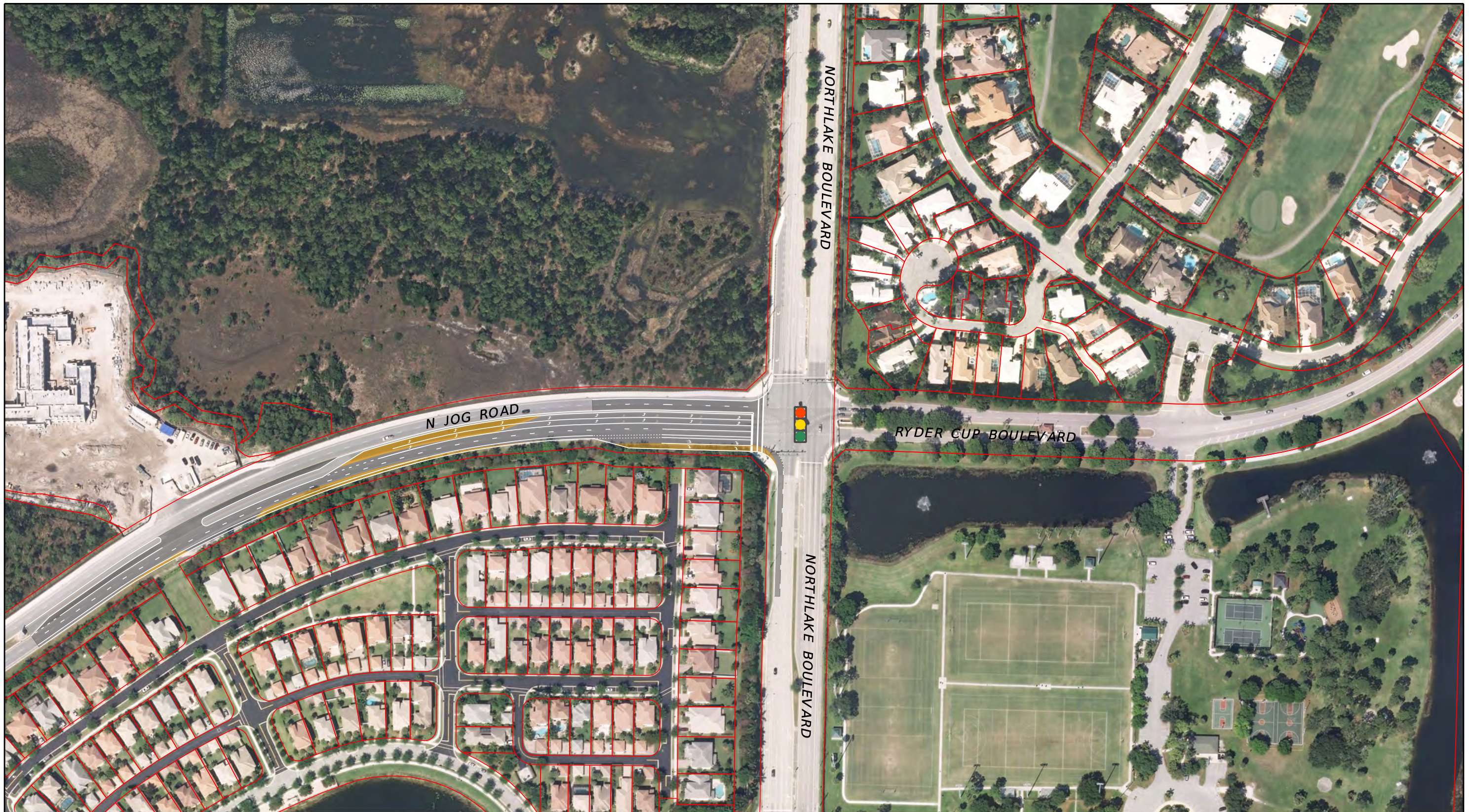


— PARCEL LINE

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AERIAL PHOTO ACQUIRED 2015

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SR 710/ BEELINE HIGHWAY S-E QUAD ZONE 2	SHEET NO.  4B
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 710	PALM BEACH	18956		

SUSERS SDATES STIMES SFILES



— PARCEL LINE

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AERIAL PHOTO ACQUIRED 2015

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 710	PALM BEACH	18956

<b>SR 710/ BEELINE HIGHWAY</b> <b>S-E QUAD ZONE 3</b>
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SHEET NO.
4C

<b>Project:</b> FDOT D2 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd S-E Quad					
<b>New Striping/Signage Grand Total</b>		<b>\$1,326,753.03</b>			
<b>ROADWAY COMPONENT</b>					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
350-3-1	PLAIN CEMENT CONC, 6"	14,623.78	SY	\$60.00	\$877,427.07
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	0.00	LF	\$38.43	\$0.00
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	1,040.00	LF	\$2.22	\$2,308.80
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	300.00	LF	\$5.10	\$1,530.00
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	70.00	EA	\$55.45	\$3,881.50
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.31	GM	\$4,379.11	\$2,313.57
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.20	GM	\$1,324.38	\$308.76
711-16-101	THERMOPLASTIC, STANDARD-OTHER SURFACES, WHITE, SOLID, 6"	4.80	GM	\$4,158.99	\$19,963.15
711-16-201	THERMOPLASTIC, STANDARD-OTHER SURFACES, YELLOW, SOLID, 6"	1.30	GM	\$4,162.64	\$5,411.43
711-11-124	THERMOPLASTIC, STANDARD, WHITE, SOLID, 18" FOR DIAGONALS AND CHEVRONS	99.00	LF	\$2.92	\$289.08
<b>Roadway Component Total</b>					<b>\$887,769.70</b>
<b>SIGNING COMPONENT</b>					
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	\$393.84	\$5,907.60
700-1-12	SINGLE POST SIGN, F&I, 12-20 SF	5.00	AS	\$1,311.80	\$6,559.00

<b>Project:</b> FDOT D2 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd S-E Quad					
<b>New Striping/Signage Grand Total</b>		<b>\$1,326,753.03</b>			
700-2-14	MULTI- POST SIGN, F&I GM, 12-20	3.00	AS	\$4,921.93	\$14,765.79
<b>Signing Component Total</b>					<b>\$27,232.39</b>
<b>Project Sequences Subtotal</b>					<b>\$915,002.09</b>
102-1	MAINTENANCE OF TRAFFIC	20%			\$183,000.42
101-1	MOBILIZATION	10%			\$91,500.21
	PROJECT UNKNOWNNS	15%			\$137,250.31
<b>New Striping/Signage Grand Total</b>					<b>\$1,326,753.03</b>
	Statewide Unit Cost				

<b>Project:</b> FDOT D2 ICE Training					
<b>Description:</b> SR 710 - Northlake Blvd S-E Quad					
<b>New Pavement Grand Total</b>		<b>\$84,633.88</b>			
<b>ROADWAY COMPONENT</b>					
Pay Item	Description	Total Quantity	Unit	Weighted Avg. Unit Price	Total Amount
160-4	TYPE B STABILIZATION	1,798.34	SY	\$2.97	\$5,341.06
285-709	OPTIONAL BASE,BASE GROUP 09	1,798.34	SY	\$13.62	\$24,493.35
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	197.82	TN	\$100.77	\$19,934.02
337-7-25	ASPH CONC FC, INC BIT, FC-5, PG76-22	65.94	TN	\$130.42	\$8,599.77
<b>Roadway Component Total</b>					<b>\$58,368.19</b>
<b>Bridge Widening Construction</b>					<b>\$0.00</b>
<b>Project Sequences Subtotal</b>					<b>\$58,368.19</b>
102-1	MAINTENANCE OF TRAFFIC	20%			\$11,673.64
101-1	MOBILIZATION	10%			\$5,836.82
	PROJECT UNKNOWNNS	15%			\$8,755.23
<b>New Pavement Grand Total</b>					<b>\$84,633.88</b>
	Statewide Unit Cost				

Description: SR 710 - Northlake Blvd S-E Quad	
Component	Total Cost
New Striping/Signage Grand Total	\$1,326,753.03
New Pavement	\$84,633.88
Signal Grand Total	\$0.00
Sidewalk Grand Total	\$0.00
Total Construction Cost	\$1,411,386.91

Description: SR 710 - Northlake Blvd S-E Quad	
Construction	\$1,410,000
Engineering/CEI	\$400,000
Roadway ROW	\$0
Total	\$1,810,000

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*SPICE – Stage 2*

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**Federal Highway Administration (FHWA)**  
**Safety Performance for Intersection Control Evaluation Tool**

**Results**

*Summary of crash prediction results for each alternative*

**Project Information**

<b>Project Name:</b>	FDOT District 4 ICE Training	<b>Intersection Type</b>	At-Grade Intersections
<b>Intersection:</b>	SR 710 at Northlake Boulevard	<b>Opening Year</b>	2020
<b>Agency:</b>	FDOT	<b>Design Year</b>	2040
<b>Project Reference:</b>	XXXXX.XX	<b>Facility Type</b>	On Urban and Suburban Arterial
<b>City:</b>	West Palm Beach	<b>Number of Legs</b>	4-leg
<b>State:</b>	Florida	<b>1-Way/2-Way</b>	2-way Intersecting 2-way
<b>Date:</b>	7/1/2019	<b># of Major Street Lanes (both directions)</b>	5 or fewer
<b>Analyst:</b>	KAI	<b>Major Street Approach Speed</b>	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	38.24	47.44	899.03	2	Yes	Calibrated SPF w/ EB
	Fatal & Injury	7.40	9.27	174.85			
Displaced Left Turn (DLT)	Total	33.65	41.74	791.15	1	N/A	CMF
	Fatal & Injury	6.51	8.16	153.87			

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## *ICE Tool*

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## Outputs

This sheet compiles the data from summary tables in individual  
To populate the output sheet press the "Setup Worksheets" button  
[Alternatives MasterList tab.](#)

<b>Agency:</b>	FDOT
<b>Project Name:</b>	District ICE Training
<b>Project Reference:</b>	XXXXX.XX
<b>Intersection:</b>	SR 710 at Northlake Blvd
<b>City:</b>	West Palm Beach
<b>State:</b>	Florida
<b>Performing Department or Organization:</b>	KAI
<b>Date:</b>	3/1/2018
<b>Analyst:</b>	KAI
<b>Analysis Type</b>	At-Grade Intersection

## Analysis Summary

Cost Categories	Net Present Value of Costs		
	Traffic Signal	Displaced Left Turn (DLT)	Quadrant Roadway Intersection
Planning, Construction & Right of Way Costs	\$ -	\$ 3,440,000	\$ 1,810,000
Post-Opening Costs	\$ 98,229	\$ 238,276	\$ 294,686
Auto Passenger Delay	\$ 177,769,915	\$ 35,735,981	\$ 152,120,382
Truck Delay	\$ 93,849,077	\$ 18,848,383	\$ 80,323,901
Safety	\$ 37,397,121	\$ 32,909,466	--
<b>Total cost</b>	<b>\$309,114,341</b>	<b>\$91,172,107</b>	<b>\$234,548,969</b>

Select Base Case for Benefit-Cost Comparison: (Choose from list)	Traffic Signal		
Benefit Categories	Net Present Value of Benefits Relative		
	Traffic Signal	Displaced Left Turn (DLT)	Quadrant Roadway Intersection
Auto Passenger Delay		\$ 142,033,934	\$ 25,649,533
Truck Delay		\$ 75,000,693	\$ 13,525,176
Safety		\$ 4,487,654	
<b>Net Present Value of Benefits</b>		<b>\$ 221,522,282</b>	<b>\$ 39,174,708</b>
<b>Net Present Value of Costs</b>		<b>\$ 3,580,048</b>	<b>\$ 2,006,457</b>
<b>Net Present Value of Improvement</b>		<b>\$ 217,942,234</b>	<b>\$ 37,168,251</b>
<b>Benefit-Cost (B/C) Ratio</b>		<b>61.88</b>	<b>19.52</b>
<b>Delay B/C</b>		<b>60.62</b>	<b>19.52</b>
<b>Safety B/C</b>		<b>1.25</b>	