EXHIBIT "D"

Planning | Transportation | Land Development | Environmental

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Memorandum

To: Nick Gillette, Gillette and Associates, Inc.

Date: March 19, 2013

Project No.: 61636.00

From: Laurence Lewis

Re: REVISED SR A1A Interchange Analysis
ENCPA DSAP Employment Center

Summary

This technical memorandum summarizes the analysis of the I-95/SR A1A Interchange and the potential impacts associated with the development of the Employment Center DSAP within the East Nassau Community Planning Area (ENCPA). The purpose of the analysis is to estimate short-term and mid-term impacts of the DSAP on the interchange, assuming that the new ENCPA Interchange to the north is not in place.

The following are the primary conclusions of the analysis:

- For existing conditions, both intersections at the I-95/SR A1A Interchange operate at Level of Service C or better for both the AM and PM peak. For the worst case movement (AM peak at the southbound ramps, westbound left turn), approximately 88 percent of the capacity is currently being used.
- With buildout of the Employment Center (2,500 residential units and 7 million sf non-residential) but without the new interchange, both intersections at the SR A1A Interchange are projected to operate at LOS F if no improvements are made.
- Assuming the six-lane widening of SR A1A but no improvements to the existing turn lanes or ramps at the existing interchange, approximately 16 percent of the DSAP Employment Center can be developed before the interchange reaches capacity for worst case conditions. This equates to 14,834 daily trips.
- The five-year development program for the DSAP Employment Center equates to 6,822 daily trips. Therefore, no short-term improvements to the existing interchange are needed within the next five years.
- The proposed ENCPA Mobility Plan includes $700,000 for mid-term improvements at the I-95/ SR A1A Interchange. Potential improvements include dual left turn and right turn lanes to increase the intersection capacity. With these improvements, approximately 75 percent of the DSAP Employment Center can be developed before any portion of the interchange reaches capacity for worst case conditions. This equates to 68,610 daily trips.
- The long-term strategy for the ENCPA Mobility Plan is to invest in a new interchange rather than pursue a long-term reconstruction of the A1A Interchange. A new interchange will provide more capacity and will also shift traffic away from SR A1A. The new interchange is

consistent with the planning goals for the ENCPA, and is included in both the approved Sector Plan and the County Comprehensive Plan.

- Approval of a new Interchange will occur through the Interchange Justification Report (IJR) process, which requires approval from both FDOT and FHWA. To meet the federal IJR requirements, the existing interchange will have to meet failure to demonstrate a need for the new interchange.

Existing Conditions Analysis

The interchange analysis includes the two intersections of SR A1A and the I-95 ramps:

- I-95 NB ramps at SR A1A (east intersection)
- I-95 SB ramps at SB A1A (west intersection)

Traffic counts at the two intersections were collected on Wednesday January 23, 2013 for the AM Peak (7-9 AM) and PM Peak (4-6 PM) periods. Copies of the traffic counts are included as **Attachment A.**

Both intersections were analyzed using Synchro 7. The Synchro model was constructed to match existing conditions at the interchange in terms of lane geometry and signal phasing. **Table 1** summarizes the results of the existing conditions Synchro analysis. Copies of the Synchro analysis reports are included as **Attachment B.**

Table 1 – Existing Conditions Summary

Intersection Analysis Results	I-95 NB ramps and SR A1A		I-95 SB ramps and SR A1A	
	AM Peak	PM Peak	AM Peak	PM Peak
Overall Level of Service	B	B	C	B
Failing Movements?	No	No	No	No

Source: VHB 3/6/13

The Volume to Capacity ratio was used as an estimate of the capacity used for each movement. For existing conditions, the worst case scenarios exist during the AM peak at the SB ramp intersection and the PM peak at the NB ramp intersection. **Table 2** below summarizes the results of the two worst case scenarios, the westbound left movement during the AM peak and the northbound right during the PM peak.

Table 2 – Existing Conditions Summary for Worst Case Scenarios

Intersection Analysis Results, Worst Case Scenarios	I-95 SB ramps and SR A1A AM Peak Westbound Left	I-95 NB ramps and SR A1A PM Peak Northbound Right
Level of Service	B	C
Failing Movement?	No	No
Volume to Capacity Ratio	0.88	0.82

Source: VHB 3/6/13

DSAP Employment Center Trip Generation

As documented in earlier submittals for the ENCPA DSAP, the development program for the DSAP Employment Center consists of 2,500 residential units and 7 million square feet of nonresidential uses, as follows:

- 2,500 apartments
- 700,000 sf retail
- 1,890,00 sf office park
- 4,410,000 sf industrial

Table 3 summarizes the gross trip generation for the DSAP Employment Center. For the AM Peak Hour, the Employment Center is estimated to generate 8,178 trips. For the PM Peak Hour, the Employment Center is estimated to generate 10,088 trips.

Table 3 – DSAP Employment Center Trip Generation Summary

Land Use	ITE Category	Intensity	Daily Trips	AM Peak Trips			PM Peak Trips		
				Total	In	Out	Total	In	Out
Apartment	220	2,500 du	16,625	1,275	255	1,020	1,550	1,008	542
Retail	820	700,000 sf	24,058	485	296	189	2,343	1,148	1,195
Office Park	750	1,890,000 sf	20,103	2,714	2,415	299	2,402	336	2,066
Industrial Park	130	4,410,000 sf	30,694	3,704	3,037	667	3,793	797	2,996
Gross Total			**91,480**	**8,178**	6,003	2,175	**10,088**	3,289	6,799

Trip Distribution and Trip Assignment

The trip distribution for the DSAP Employment Center is assumed to be the same as the overall directional distribution for the ENCPA. (This distribution was documented in Table B-6 of the DSAP Transportation Appendix B.) **Table 4** summarizes the distribution for the Employment Center traffic using the SR A1A Interchange (in the absence of a new interchange to the north):

Table 4 – DSAP Employment Center Traffic Distribution

Direction (to/from)	Distribution
South via I-95	27.14%
North via I-95	1.95%
West via SR A1A	5.92%
Total through SR A1A Interchange	**35.01%**

Without a new I-95 Interchange, 35% of the Employment Center traffic will travel through the existing SR A1A Interchange. The remaining trips are to/from the east, or remain internal to the Employment Center.

Future Conditions Analysis

Based on the trip generation and distribution for the DSAP Employment Center, future conditions were analyzed at the two interchange intersections using Synchro. For each scenario (AM Peak and

PM Peak at each intersection), the Employment Center project traffic was added to the existing traffic volumes. Sketches of the traffic volume calculations are included as **Attachment C**. The following assumptions were used to develop these volumes:

- No growth in background traffic is assumed. This was done to isolate the impacts of ENCPA development and remove traffic growth from approved but unbuilt development along SR A1A.
- The widening of SR A1A to six lanes is assumed through the interchange, as the widening of SR A1A from I-95 east is funded through FDOT's Five Year Work Program. No improvements to turn lanes or ramps are assumed at the interchange. (However, if FDOT or others fund turn lane or ramp improvements, this could increase the capacity available for the ENCPA or for other development.)

Table 5 summarizes the Synchro intersection analysis assuming buildout of the DSAP Employment Center but no new I-95 interchange. This analysis shows that with buildout of the Employment Center, both worst case movements, the westbound left (WBL) during the AM peak and the northbound right (NBR) movement during the PM peak, would operate at LOS F for future conditions. Copies of the Synchro reports are included as **Attachment D.**

Table 5 – Future Conditions Summary for Worst Case Scenarios – DSAP Employment Center Buildout, No New I-95 Interchange

Intersection Analysis Results, Worst Case Scenarios	I-95 SB ramps and SR A1A AM Peak Westbound Left	I-95 NB ramps and SR A1A PM Peak Northbound Right
Level of Service	F	F
Failing Movement?	Yes	Yes
Volume to Capacity Ratio	1.43	1.93

Source: VHB 3/6/13

Interchange Capacity Threshold

Based on the analysis results for existing conditions and for buildout of the Employment Center, a straight line estimate (interpolation) was used to identify when either of the interchange intersections would reach 100% capacity. **Table 6** summarizes this capacity calculation. As shown in the table, just over 16 percent of the DSAP Employment Center can be developed before either the westbound left in the AM peak or northbound right in the PM peak at the SR A1A interchange would reach capacity. Of the two movements, the northbound right movement will reach capacity before the westbound right movement. Therefore, the northbound right movement during the PM peak will be used for the analysis. In terms of daily trips, the percentage associated with the northbound right equates to 14,834 daily trips. **Table 7** summarizes the equivalent development program associated with this threshold. Assuming an even mix of uses based on the approved Employment Center program (Scenario 1), the threshold equates to 405 residential units and approximately 1.1 million square feet of non-residential uses. Assuming that non-residential uses are developed first (Scenario 2), the threshold equates to zero residential units and approximately 1.4 million square feet of non-residential uses.

Table 6 – Summary of Interchange Capacity Threshold

	DSAP Daily Trips		Interchange Movement Capacity Used		Employment Center Buildout	
	AM WBL	PM NBR	AM WBL	PM NBR	AM WBL	PM NBR
Existing Conditions	0	0	88%	70%	0%	0%
DSAP Employment Center Buildout	91,480	91,480	143%	192%	100%	100%
Interchange Capacity (with no improvements)	**19,959**	**14,834**	**100%**	**100%**	**21.8%**	**16.2%**

Note: Interchange capacity based on worst case conditions as shown in Table 1 and Table 4.

Table 7 – Development Program Threshold for Existing Interchange Capacity (Based on Northbound Right Movement During the PM Peak Hour)

Land Use	Scenario 1 All Land Uses		Scenario 2 Non-Residential Only	
	Intensity	Percentage of Total	Intensity	Percentage of Total
Apartment	405 units	16.2%	0 units	0%
Retail	113,514 sf	16.2%	138,724 sf	19.8%
Office	306,487 sf	16.2%	374,556 sf	19.8%
Industrial	715,135 sf	16.2%	873,964 sf	19.8%
Total	**405 residential units, 1,135,135 sf non-residential**		**0 residential units, 1,387,244 sf non-residential**	

The five-year development program for the Employment Center DSAP consists of 350 apartments and 400,000 sf office. (This program is documented in Table B-10 of DSAP Transportation Appendix B.) The five-year development program generates 6,822 daily trips, less than the 14,834 trip threshold for the existing interchange capacity. Therefore, no short-term improvements to the existing interchange are needed within the next five years to accommodate DSAP development.

ENCPA Mobility Plan Improvements

A key component of the ENCPA Mobility Plan is the creation of alternate routes as a way to provide long-term transportation capacity. Similar to the investment in CR 108 as a parallel route to SR A1A, the Mobility Plan includes costs for a new interchange instead of costs for the long-term reconstruction of the SR A1A interchange. A new interchange (with connecting roadway network) will provide more capacity and will also shift traffic away from SR A1A.

For the I-95/SR A1A interchange, the ENCPA Mobility Plan includes $700,000 for intersection improvements. This funding is in addition to the costs for a new I-95 interchange to the north. Potential improvements include dual left turn and right turn lanes, in particular for the movements to and from Duval County. As stated above, no interchange improvements are needed to accommodate the DSAP five-year development program, so the turn lane improvements would address mid-term impacts.

Using the Florida Department of Transportation (FDOT) Generic Cost Per Mile Models, the following improvements, as summarized in **Table 8**, can be made to the I-95/ SR A1A Interchange using the $700,000 included in the ENCPA Mobility Plan.

Table 8 – Estimated Costs for I-95/ SR A1A Interchange Improvements

Improvement	Description	Length (mi.)	FDOT Cost Model	Cost per Mile (both directions)	Cost per Mile (one direction only)	Improvement Cost
Add second lane to I-95 southbound on-ramp	Convert one westbound through lane on SR A1A to second left turn lane; Add second receiving lane to I-95/A1A southbound ramp	0.25	Rural Widen Existing 2 Lane Arterial to 4 Lanes Undivided; Add 1 Lane to Each Side; 5' Paved Shoulders	$2,042,737	$1,021,369	$255,342
Add second right turn lane to I-95 northbound off-ramp	Add northbound right turn lane at I-95/A1A northbound ramp	0.25	Rural Widen Existing 2 Lane Arterial to 4 Lanes Undivided; Add 1 Lane to Each Side; 5' Paved Shoulders	$2,042,737	$1,021,369	$255,342
	Add signal head and retime signal for protected northbound right movement at I-95/A1A northbound ramp	-	-	-	-	$25,000
Add second left turn lane to I-95 southbound off-ramp	Add southbound left turn lane at	0.1	Rural Widen Existing 2 Lane Arterial to 4 Lanes Undivided; Add 1 Lane to Each Side; 5' Paved Shoulders	$2,042,737	$1,021,369	$102,137
	Total					**$637,821**

Source: FDOT Generic Cost per Mile Models, Updated as of 2/20/2013

As listed in **Table 8**, at the I-95/SR A1A southbound ramps intersection, the conversion of one of the westbound through lanes to a westbound left turn lane is proposed, with the addition of a receiving lane on the on-ramp. Also proposed at this intersection is the addition of a second southbound left turn lane at the southbound off-ramp. For the intersection of SR A1A and the I-95 northbound ramps, the addition of a second northbound right turn lane is proposed. **Table 9** below summarizes the results of the Synchro 7 analysis of the interchange with the modified geometry. Copies of the Synchro analysis reports are included as **Attachment E**.

Table 9 – Future Conditions Summary for Worst Case Scenarios – DSAP Employment Center Buildout, Modified Intersection Geometry, No New I-95 Interchange

Intersection Analysis Results, Worst Case Scenarios	I-95 SB ramps and SR A1A Westbound Left	I-95 NB ramps and SR A1A Northbound Right
Level of Service	D	B
Failing Movement?	No	No
Volume to Capacity Ratio	1.04	0.81

The results shown are for the PM Peak period, since this represents worst case conditions at both locations.

Source: VHB 3/6/13

With the proposed geometric modifications to the I-95/SR A1A interchange, the two worst case movements, the westbound left movement and the northbound right movement, are not projected to have failing levels of service even with the full buildout of the DSAP employment center. However, the westbound left turn is projected to remain over capacity (with a volume to capacity ratio greater than 1.0). **Table 10** shows the capacity threshold for the interchange with the addition of the recommended improvements. As shown in the table, approximately 75 percent of the DSAP Employment Center can be developed with the addition of these improvements. This equates to approximately 68,610 daily trips.

Table 10 – Summary of Interchange Capacity Thresholds, After $700,000 in ENCPA Mobility Network Improvements

	DSAP Daily Trips	Employment Center Buildout	Interchange Capacity Used
Existing Conditions	0	0%	88%
DSAP Employment Center Buildout	91,480	100%	104%
Interchange Capacity Threshold (with improvements)	**68,610**	**75%**	**100%**

Source: VHB 3/9/13

Table 11 summarizes the equivalent development program associated with this threshold. Assuming an even mix of uses based on the approved Employment Center program, the threshold equates to 1,875 residential units and approximately 5.25 million square feet of non-residential uses.

Table 11 – Development Program Threshold for Interchange Capacity, After Improvements (Based on Westbound Left Movement During the PM Peak Hour)

Land Use	Intensity	Percentage of Total
Apartment	1,875 units	75%
Retail	525,000 sf	75%
Office	1,417,500 sf	75%
Industrial	3,307,500 sf	75%
Total	1,875 residential units, 5,250,000 sf non-residential	

The approval of the new interchange requires approval of an Interchange Justification Report (IJR) by the Federal Highway Adminstration (FHWA). The FHWA specifies eight required criteria for a new interchange, all of which must be met. One of the criteria is to demonstrate that the capacity need cannot be met at existing interchanges. To satisfy this standard, it will be necessary to achieve failing conditions at the existing interchange (for temporary conditions only).

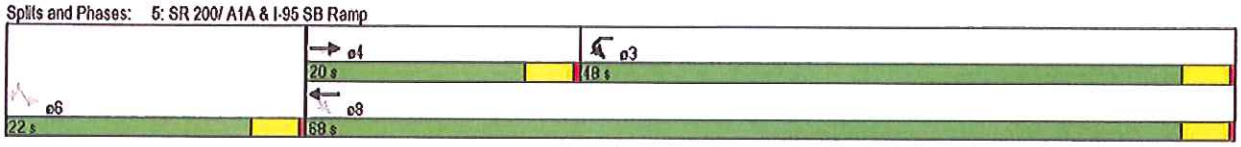
Unlike other ENCPA conditions that only involve one government entity (Nassau County), the approval of the IJR involves regional, state and national agencies. For example, the IJR must be submitted by FDOT to the Federal Highway Administration (FHWA). As a result, FDOT approval is required (both by District 2 and by Central Office) before it is formally submitted. Additionally, final approval requires the support of the First Coast TPO and the addition of the project in the region's adopted Long Range Transportation Plan.

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	421	177	805	228	0	43	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0		0	80	0	0
Storage Lanes	0		1	1		0		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		1872			654			812		870	
Travel Time (s)		28.4			9.9			18.5		19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	458	192	875	248	0	47	0	59	0	0
Turn Type			Perm	pm+pt			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4	8			6		6		
Minimum Split (s)		20.0	20.0	8.0	20.0		20.0		20.0		
Total Split (s)	0.0	20.0	20.0	48.0	68.0	0.0	22.0	0.0	22.0	0.0	0.0
Total Split (%)	0.0%	22.2%	22.2%	53.3%	75.6%	0.0%	24.4%	0.0%	24.4%	0.0%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5		3.5		
All-Red Time (s)		0.5	0.5	0.5	0.5		0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes							
v/c Ratio		0.73	0.44	0.88	0.10		0.13		0.07		
Control Delay		42.6	8.5	22.0	0.4		30.8		0.1		
Queue Delay		0.0	0.0	3.4	0.0		0.0		0.0		
Total Delay		42.6	8.5	25.4	0.4		30.8		0.1		
Queue Length 50th (ft)		131	0	476	2		22		0		
Queue Length 95th (ft)		184	56	#684	3		52		0		
Internal Link Dist (ft)		1792			574			732		790	
Turn Bay Length (ft)			190						80		
Base Capacity (vph)		629	439	992	2517		354		876		
Starvation Cap Reductn		0	0	61	0		0		0		
Spillback Cap Reductn		0	0	0	0		0		0		
Storage Cap Reductn		0	0	0	0		0		0		
Reduced v/c Ratio		0.73	0.44	0.94	0.10		0.13		0.07		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 12 (13%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 80
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	421	177	805	228	0	43	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (prot)		3539	1583	1770	3539		1770		1583		
Flt Permitted		1.00	1.00	0.31	1.00		0.95		1.00		
Satd. Flow (perm)		3539	1583	571	3539		1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	458	192	875	248	0	47	0	59	0	0
RTOR Reduction (vph)	0	0	158	0	0	0	0	0	47	0	0
Lane Group Flow (vph)	0	458	34	875	248	0	47	0	12	0	0
Turn Type			Perm	pm+pt			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4	8			6		6		
Actuated Green, G (s)		16.0	16.0	64.0	64.0		18.0		18.0		
Effective Green, g (s)		16.0	16.0	64.0	64.0		18.0		18.0		
Actuated g/C Ratio		0.18	0.18	0.71	0.71		0.20		0.20		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Grp Cap (vph)		629	281	992	2517		354		317		
v/s Ratio Prot		0.13		c0.43	0.07						
v/s Ratio Perm			0.02	c0.20			c0.03		0.01		
v/c Ratio		0.73	0.12	0.88	0.10		0.13		0.04		
Uniform Delay, d1		34.9	31.1	14.5	4.0		29.6		29.0		
Progression Factor		1.00	1.00	0.63	0.09		1.00		1.00		
Incremental Delay, d2		7.2	0.9	10.4	0.1		0.8		0.2		
Delay (s)		42.2	32.0	19.4	0.4		30.4		29.2		
Level of Service		D	C	B	A		C		C		
Approach Delay (s)		39.2			15.2			29.7		0.0	
Approach LOS		D			B			C		A	

Intersection Summary			
HCM Average Control Delay	24.3	HCM Level of Service	C
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

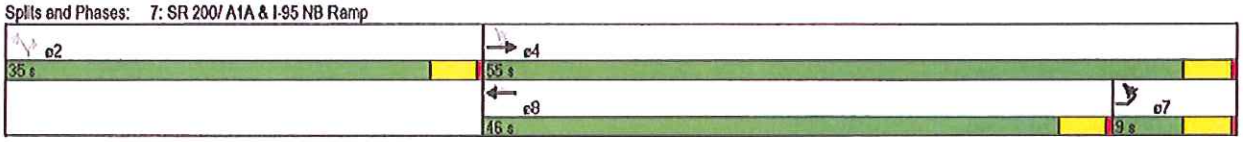
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	398	0	0	999	59	35	0	383	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185		0	225	0	0
Storage Lanes	1		0	1		1		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		654			1896			933		930	
Travel Time (s)		9.9			28.7			21.2		21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	71	433	0	0	1086	64	38	0	416	0	0
Turn Type	pm+pt					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases	4					8	2		2		
Minimum Split (s)	8.0	20.0			20.0	20.0	20.0		20.0		
Total Split (s)	9.0	55.0	0.0	0.0	46.0	46.0	35.0	0.0	35.0	0.0	0.0
Total Split (%)	10.0%	61.1%	0.0%	0.0%	51.1%	51.1%	38.9%	0.0%	38.9%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag				Lead	Lead					
Lead-Lag Optimize?	Yes				Yes	Yes					
v/c Ratio	0.25	0.22			0.46	0.08	0.06		0.51		
Control Delay	8.6	1.8			17.1	4.0	20.2		5.1		
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0		
Total Delay	8.6	1.8			17.1	4.0	20.2		5.1		
Queue Length 50th (ft)	6	13			147	0	14		3		
Queue Length 95th (ft)	m14	17			183	21	36		65		
Internal Link Dist (ft)		574			1816			853		850	
Turn Bay Length (ft)	352					185			225		
Base Capacity (vph)	287	2005			2373	773	610		812		
Starvation Cap Reductn	0	0			0	0	0		0		
Spillback Cap Reductn	0	0			99	0	0		0		
Storage Cap Reductn	0	0			0	0	0		0		
Reduced v/c Ratio	0.25	0.22			0.48	0.08	0.06		0.51		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 8 (9%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 50
Control Type: Pretimed
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	398	0	0	999	59	35	0	383	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	0.95			0.91	1.00	1.00		1.00		
Frt	1.00	1.00			1.00	0.85	1.00		0.85		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)	1770	3539			5085	1583	1770		1583		
Flt Permitted	0.20	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)	370	3539			5085	1583	1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	433	0	0	1086	64	38	0	416	0	0
RTOR Reduction (vph)	0	0	0	0	0	34	0	0	267	0	0
Lane Group Flow (vph)	71	433	0	0	1086	30	38	0	149	0	0
Turn Type	pm+pt					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases	4					8	2		2		
Actuated Green, G (s)	51.0	51.0			42.0	42.0	31.0		31.0		
Effective Green, g (s)	51.0	51.0			42.0	42.0	31.0		31.0		
Actuated g/C Ratio	0.57	0.57			0.47	0.47	0.34		0.34		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Grp Cap (vph)	287	2005			2373	739	610		545		
v/s Ratio Prot	0.01	c0.12			c0.21						
v/s Ratio Perm	0.13					0.02	0.02		c0.09		
v/c Ratio	0.25	0.22			0.46	0.04	0.06		0.27		
Uniform Delay, d1	15.5	9.6			16.3	13.0	19.8		21.4		
Progression Factor	0.60	0.17			1.00	1.00	1.00		1.00		
Incremental Delay, d2	1.5	0.2			0.6	0.1	0.2		1.2		
Delay (s)	10.8	1.8			16.9	13.1	20.0		22.6		
Level of Service	B	A			B	B	B		C		
Approach Delay (s)		3.1			16.7			22.4		0.0	
Approach LOS		A			B			C		A	

Intersection Summary			
HCM Average Control Delay	14.7	HCM Level of Service	B
HCM Volume to Capacity ratio	0.36		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	62.9%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	289	76	447	504	0	63	0	103	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0		0	80	0	0
Storage Lanes	0		1	1		0		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		1872			654			812		867	
Travel Time (s)		28.4			9.9			18.5		19.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	314	83	486	548	0	68	0	112	0	0
Turn Type			Perm	pm+pt			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4	8			6		6		
Minimum Split (s)		20.0	20.0	8.0	20.0		20.0		20.0		
Total Split (s)	0.0	20.0	20.0	27.0	47.0	0.0	23.0	0.0	23.0	0.0	0.0
Total Split (%)	0.0%	28.6%	28.6%	38.6%	67.1%	0.0%	32.9%	0.0%	32.9%	0.0%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5		3.5		
All-Red Time (s)		0.5	0.5	0.5	0.5		0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes							
v/c Ratio		0.39	0.19	0.57	0.25		0.14		0.16		
Control Delay		24.6	7.2	9.1	1.4		20.4		0.5		
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0		
Total Delay		24.6	7.2	9.1	1.4		20.4		0.5		
Queue Length 50th (ft)		60	0	103	6		22		0		
Queue Length 95th (ft)		95	31	177	15		51		0		
Internal Link Dist (ft)		1792			574			732		787	
Turn Bay Length (ft)			190						80		
Base Capacity (vph)		809	426	858	2174		480		680		
Starvation Cap Reductn		0	0	0	0		0		0		
Spillback Cap Reductn		0	0	0	0		0		0		
Storage Cap Reductn		0	0	0	0		0		0		
Reduced v/c Ratio		0.39	0.19	0.57	0.25		0.14		0.16		

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 4 (6%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 55
Control Type: Pretimed

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	289	76	447	504	0	63	0	103	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Util. Factor		0.95	1.00	1.00	0.95		1.00		1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (prot)		3539	1583	1770	3539		1770		1583		
Flt Permitted		1.00	1.00	0.52	1.00		0.95		1.00		
Satd. Flow (perm)		3539	1583	969	3539		1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	314	83	486	548	0	68	0	112	0	0
RTOR Reduction (vph)	0	0	64	0	0	0	0	0	82	0	0
Lane Group Flow (vph)	0	314	19	486	548	0	68	0	30	0	0
Turn Type			Perm	pm+pt			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4	8			6		6		
Actuated Green, G (s)		16.0	16.0	43.0	43.0		19.0		19.0		
Effective Green, g (s)		16.0	16.0	43.0	43.0		19.0		19.0		
Actuated g/C Ratio		0.23	0.23	0.61	0.61		0.27		0.27		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Grp Cap (vph)		809	362	858	2174		480		430		
v/s Ratio Prot		0.09		c0.19	0.15						
v/s Ratio Perm			0.01	c0.16			c0.04		0.02		
v/c Ratio		0.39	0.05	0.57	0.25		0.14		0.07		
Uniform Delay, d1		22.9	21.1	9.8	6.2		19.3		18.9		
Progression Factor		1.00	1.00	0.63	0.18		1.00		1.00		
Incremental Delay, d2		1.4	0.3	2.3	0.2		0.6		0.3		
Delay (s)		24.3	21.4	8.5	1.4		19.9		19.3		
Level of Service		C	C	A	A		B		B		
Approach Delay (s)		23.7			4.7			19.5		0.0	
Approach LOS		C			A			B		A	

Intersection Summary			
HCM Average Control Delay	11.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

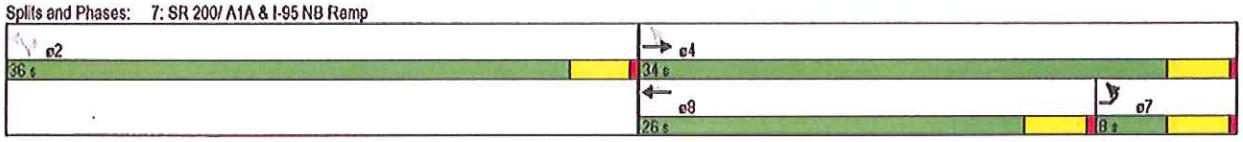
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	80	273	0	0	853	52	150	0	766	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185		0	225	0	0
Storage Lanes	1		0	1		1		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		654			1896			933		930	
Travel Time (s)		9.9			28.7			21.2		21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	87	297	0	0	927	57	163	0	833	0	0
Turn Type	pm+pt					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases	4					8	2		2		
Minimum Split (s)	8.0	20.0			20.0	20.0	20.0		20.0		
Total Split (s)	8.0	34.0	0.0	0.0	26.0	26.0	36.0	0.0	36.0	0.0	0.0
Total Split (%)	11.4%	48.6%	0.0%	0.0%	37.1%	37.1%	51.4%	0.0%	51.4%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lag				Lead	Lead					
Lead-Lag Optimize?	Yes				Yes	Yes					
v/c Ratio	0.35	0.20			0.58	0.11	0.20		0.86		
Control Delay	8.1	1.9			21.9	6.0	12.2		19.2		
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0		
Total Delay	8.1	1.9			21.9	6.0	12.2		19.2		
Queue Length 50th (ft)	6	11			121	0	40		142		
Queue Length 95th (ft)	19	12			160	23	75		#410		
Internal Link Dist (ft)		574			1816			853		850	
Turn Bay Length (ft)	352					185			225		
Base Capacity (vph)	249	1517			1598	537	809		966		
Starvation Cap Reductn	0	0			0	0	0		0		
Spillback Cap Reductn	0	0			0	0	0		0		
Storage Cap Reductn	0	0			0	0	0		0		
Reduced v/c Ratio	0.35	0.20			0.58	0.11	0.20		0.86		

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 56 (80%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 55
Control Type: Pretimed
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	80	273	0	0	853	52	150	0	766	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	0.95			0.91	1.00	1.00		1.00		
Frt	1.00	1.00			1.00	0.85	1.00		0.85		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)	1770	3539			5085	1583	1770		1583		
Flt Permitted	0.21	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)	399	3539			5085	1583	1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	297	0	0	927	57	163	0	833	0	0
RTOR Reduction (vph)	0	0	0	0	0	39	0	0	243	0	0
Lane Group Flow (vph)	87	297	0	0	927	18	163	0	590	0	0
Turn Type	pm+pt					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases	4					8	2		2		
Actuated Green, G (s)	30.0	30.0			22.0	22.0	32.0		32.0		
Effective Green, g (s)	30.0	30.0			22.0	22.0	32.0		32.0		
Actuated g/C Ratio	0.43	0.43			0.31	0.31	0.46		0.46		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Grp Cap (vph)	249	1517			1598	498	809		724		
v/s Ratio Prot	c0.02	0.08			c0.18						
v/s Ratio Perm	0.13					0.01	0.09		c0.37		
v/c Ratio	0.35	0.20			0.58	0.04	0.20		0.82		
Uniform Delay, d1	18.9	12.5			20.1	16.6	11.4		16.4		
Progression Factor	0.26	0.13			1.00	1.00	1.00		1.00		
Incremental Delay, d2	3.7	0.3			1.5	0.1	0.6		9.8		
Delay (s)	8.6	1.9			21.7	16.8	11.9		26.3		
Level of Service	A	A			C	B	B		C		
Approach Delay (s)		3.4			21.4			23.9		0.0	
Approach LOS		A			C			C		A	

Intersection Summary			
HCM Average Control Delay	19.5	HCM Level of Service	B
HCM Volume to Capacity ratio	0.65		
Actuated Cycle Length (s)	70.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	61.6%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations		↑↑↑	↱	↰	↑↑↑		↰		↱		
Volume (vph)	0	776	177	1395	357	0	160	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0		0	80	0	0
Storage Lanes	0		1	1		0		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		1872			654			812		870	
Travel Time (s)		28.4			9.9			18.5		19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	843	192	1516	388	0	174	0	59	0	0
Turn Type			Perm	Prot			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4				6		6		
Minimum Split (s)		20.0	20.0	8.0	20.0		20.0		20.0		
Total Split (s)	0.0	20.0	20.0	70.0	90.0	0.0	20.0	0.0	20.0	0.0	0.0
Total Split (%)	0.0%	18.2%	18.2%	63.6%	81.8%	0.0%	18.2%	0.0%	18.2%	0.0%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5		3.5		
All-Red Time (s)		0.5	0.5	0.5	0.5		0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes							
v/c Ratio		1.14	0.49	1.43	0.10		0.68		0.08		
Control Delay		121.3	10.7	230.3	2.0		58.8		0.2		
Queue Delay		0.0	0.0	1.8	0.0		0.0		0.0		
Total Delay		121.3	10.7	232.1	2.0		58.8		0.2		
Queue Length 50th (ft)		~255	0	~1245	9		118		0		
Queue Length 95th (ft)		#342	64	m#611	m7		#205		0		
Internal Link Dist (ft)		1792			574			732		790	
Turn Bay Length (ft)			190						80		
Base Capacity (vph)		740	394	1062	3976		257		724		
Starvation Cap Reductn		0	0	3	0		0		0		
Spillback Cap Reductn		0	0	0	0		0		0		
Storage Cap Reductn		0	0	0	0		0		0		
Reduced v/c Ratio		1.14	0.49	1.43	0.10		0.68		0.08		

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 8 (7%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 150
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp

Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	776	177	1395	357	0	160	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Util. Factor		0.91	1.00	1.00	0.91		1.00		1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583	1770	5085		1770		1583		
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583	1770	5085		1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	843	192	1516	388	0	174	0	59	0	0
RTOR Reduction (vph)	0	0	164	0	0	0	0	0	50	0	0
Lane Group Flow (vph)	0	843	28	1516	388	0	174	0	9	0	0
Turn Type			Perm	Prot			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4				6		6		
Actuated Green, G (s)		16.0	16.0	66.0	86.0		16.0		16.0		
Effective Green, g (s)		16.0	16.0	66.0	86.0		16.0		16.0		
Actuated g/C Ratio		0.15	0.15	0.60	0.78		0.15		0.15		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Grp Cap (vph)		740	230	1062	3976		257		230		
v/s Ratio Prot		c0.17		c0.86	0.08						
v/s Ratio Perm			0.02				c0.10		0.01		
v/c Ratio		1.14	0.12	1.43	0.10		0.68		0.04		
Uniform Delay, d1		47.0	40.9	22.0	2.8		44.6		40.4		
Progression Factor		1.00	1.00	2.30	0.72		1.00		1.00		
Incremental Delay, d2		78.5	1.1	192.9	0.0		13.4		0.3		
Delay (s)		125.5	42.0	243.5	2.0		58.0		40.7		
Level of Service		F	D	F	A		E		D		
Approach Delay (s)		110.0			194.3			53.6		0.0	
Approach LOS		F			F			D		A	

Intersection Summary			
HCM Average Control Delay	156.5	HCM Level of Service	F
HCM Volume to Capacity ratio	1.26		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		

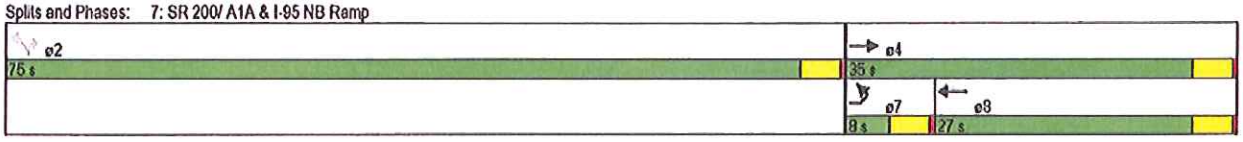
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	870	0	0	1718	101	35	0	2012	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185		0	225	0	0
Storage Lanes	1		0	1		1		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		654			1896			933		930	
Travel Time (s)		9.9			28.7			21.2		21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	71	946	0	0	1867	110	38	0	2187	0	0
Turn Type	Prot					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases						8	2		2		
Minimum Split (s)	8.0	20.0			20.0	20.0	20.0		20.0		
Total Split (s)	8.0	35.0	0.0	0.0	27.0	27.0	75.0	0.0	75.0	0.0	0.0
Total Split (%)	7.3%	31.8%	0.0%	0.0%	24.5%	24.5%	68.2%	0.0%	68.2%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead				Lag	Lag					
Lead-Lag Optimize?	Yes				Yes	Yes					
v/c Ratio	1.11	0.66			1.39	0.28	0.03		2.13		
Control Delay	106.1	43.7			216.2	17.6	7.2		531.7		
Queue Delay	0.0	0.0			55.4	0.0	0.0		0.0		
Total Delay	106.1	43.7			271.6	17.6	7.2		531.7		
Queue Length 50th (ft)	~59	264			~512	23	9		~2495		
Queue Length 95th (ft)	m#58	m245			#589	72	21		#2760		
Internal Link Dist (ft)		574			1816			853		850	
Turn Bay Length (ft)	352					185			225		
Base Capacity (vph)	64	1433			1340	386	1142		1026		
Starvation Cap Reductn	0	0			0	0	0		0		
Spillback Cap Reductn	0	0			109	0	285		0		
Storage Cap Reductn	0	0			0	0	0		0		
Reduced v/c Ratio	1.11	0.66			1.52	0.28	0.04		2.13		

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 150
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	870	0	0	1718	101	35	0	2012	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	0.91			0.86	1.00	1.00		1.00		
Frt	1.00	1.00			1.00	0.85	1.00		0.85		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)	1770	5085			6408	1583	1770		1583		
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)	1770	5085			6408	1583	1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	946	0	0	1867	110	38	0	2187	0	0
RTOR Reduction (vph)	0	0	0	0	0	55	0	0	4	0	0
Lane Group Flow (vph)	71	946	0	0	1867	55	38	0	2183	0	0
Turn Type	Prot					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases						8	2		2		
Actuated Green, G (s)	4.0	31.0			23.0	23.0	71.0		71.0		
Effective Green, g (s)	4.0	31.0			23.0	23.0	71.0		71.0		
Actuated g/C Ratio	0.04	0.28			0.21	0.21	0.65		0.65		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Grp Cap (vph)	64	1433			1340	331	1142		1022		
v/s Ratio Prot	c0.04	0.19			c0.29						
v/s Ratio Perm						0.03	0.02		c1.38		
v/c Ratio	1.11	0.66			1.39	0.17	0.03		2.14		
Uniform Delay, d1	53.0	34.9			43.5	35.6	7.1		19.5		
Progression Factor	0.66	1.24			1.00	1.00	1.00		1.00		
Incremental Delay, d2	67.8	0.2			181.6	1.1	0.1		514.5		
Delay (s)	102.7	43.4			225.1	36.7	7.1		534.0		
Level of Service	F	D			F	D	A		F		
Approach Delay (s)		47.6			214.6			525.0		0.0	
Approach LOS		D			F			F		A	

Intersection Summary			
HCM Average Control Delay	314.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.92		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	148.1%	ICU Level of Service	H
Analysis Period (min)	15		

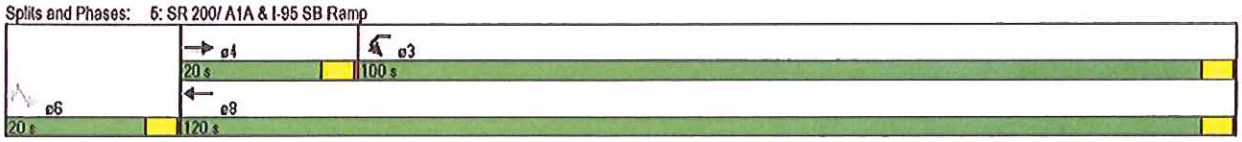
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	484	76	2292	907	0	127	0	103	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0		0	80	0	0
Storage Lanes	0		1	1		0		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		1872			654			812		867	
Travel Time (s)		28.4			9.9			18.5		19.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	526	83	2491	986	0	138	0	112	0	0
Turn Type			Perm	Prot			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4				6		6		
Minimum Split (s)		20.0	20.0	8.0	20.0		20.0		20.0		
Total Split (s)	0.0	20.0	20.0	100.0	120.0	0.0	20.0	0.0	20.0	0.0	0.0
Total Split (%)	0.0%	14.3%	14.3%	71.4%	85.7%	0.0%	14.3%	0.0%	14.3%	0.0%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5		3.5		
All-Red Time (s)		0.5	0.5	0.5	0.5		0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag		Lead	Lead	Lag							
Lead-Lag Optimize?		Yes	Yes	Yes							
v/c Ratio		0.91	0.33	2.05	0.23		0.68		0.29		
Control Delay		81.2	14.8	499.3	0.3		77.3		1.9		
Queue Delay		0.0	0.0	78.4	0.0		0.0		0.0		
Total Delay		81.2	14.8	577.7	0.3		77.3		1.9		
Queue Length 50th (ft)		176	0	~3630	4		123		0		
Queue Length 95th (ft)		#245	51	m#1225	m3		#210		0		
Internal Link Dist (ft)		1792			574			732		787	
Turn Bay Length (ft)			190						80		
Base Capacity (vph)		581	254	1214	4213		202		386		
Starvation Cap Reductn		0	0	95	0		0		0		
Spillback Cap Reductn		0	0	0	0		0		0		
Storage Cap Reductn		0	0	0	0		0		0		
Reduced v/c Ratio		0.91	0.33	2.23	0.23		0.68		0.29		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 18 (13%), Referenced to phase 2: and 6:SBL, Start of Green
Natural Cycle: 150
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	484	76	2292	907	0	127	0	103	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Util. Factor		0.91	1.00	1.00	0.91		1.00		1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583	1770	5085		1770		1583		
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583	1770	5085		1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	526	83	2491	986	0	138	0	112	0	0
RTOR Reduction (vph)	0	0	74	0	0	0	0	0	99	0	0
Lane Group Flow (vph)	0	526	9	2491	986	0	138	0	13	0	0
Turn Type			Perm	Prot			custom		custom		
Protected Phases		4		3	8						
Permitted Phases			4				6		6		
Actuated Green, G (s)		16.0	16.0	96.0	116.0		16.0		16.0		
Effective Green, g (s)		16.0	16.0	96.0	116.0		16.0		16.0		
Actuated g/C Ratio		0.11	0.11	0.69	0.83		0.11		0.11		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Grp Cap (vph)		581	181	1214	4213		202		181		
v/s Ratio Prot		c0.10		c1.41	0.19						
v/s Ratio Perm			0.01				c0.08		0.01		
v/c Ratio		0.91	0.05	2.05	0.23		0.68		0.07		
Uniform Delay, d1		61.3	55.2	22.0	2.6		59.6		55.4		
Progression Factor		1.00	1.00	2.04	0.09		1.00		1.00		
Incremental Delay, d2		20.1	0.5	473.6	0.0		17.2		0.8		
Delay (s)		81.4	55.8	518.4	0.2		76.7		56.1		
Level of Service		F	E	F	A		E		E		
Approach Delay (s)		77.9			371.5			67.5		0.0	
Approach LOS		E			F			E		A	

Intersection Summary			
HCM Average Control Delay	312.7	HCM Level of Service	F
HCM Volume to Capacity ratio	1.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		

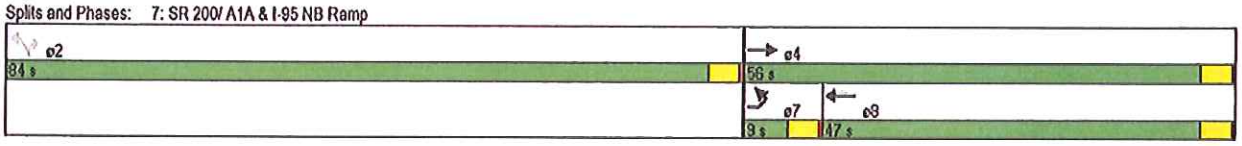
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	80	532	0	0	3101	185	150	0	1659	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185		0	225	0	0
Storage Lanes	1		0	1		1		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		654			1896			933		930	
Travel Time (s)		9.9			28.7			21.2		21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	87	578	0	0	3371	201	163	0	1803	0	0
Turn Type	Prot					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases						8	2		2		
Minimum Split (s)	8.0	20.0			20.0	20.0	20.0		20.0		
Total Split (s)	9.0	56.0	0.0	0.0	47.0	47.0	84.0	0.0	84.0	0.0	0.0
Total Split (%)	6.4%	40.0%	0.0%	0.0%	33.6%	33.6%	60.0%	0.0%	60.0%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead				Lag	Lag					
Lead-Lag Optimize?	Yes				Yes	Yes					
v/c Ratio	1.38	0.31			1.71	0.38	0.16		1.87		
Control Delay	244.2	41.8			354.1	27.8	14.7		417.0		
Queue Delay	0.0	0.0			123.6	0.0	0.1		0.0		
Total Delay	244.2	41.8			477.7	27.8	14.8		417.0		
Queue Length 50th (ft)	~107	205			~1311	96	67		~2460		
Queue Length 95th (ft)	m#137	m231			#1365	169	105		#2725		
Internal Link Dist (ft)		574			1816			853		850	
Turn Bay Length (ft)	352					185			225		
Base Capacity (vph)	63	1889			1968	531	1011		965		
Starvation Cap Reductn	0	0			0	0	0		0		
Spillback Cap Reductn	0	0			272	0	253		0		
Storage Cap Reductn	0	0			0	0	0		0		
Reduced v/c Ratio	1.38	0.31			1.99	0.38	0.22		1.87		

Intersection Summary

Area Type: Other
Cycle Length: 140
Actuated Cycle Length: 140
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 150
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	80	532	0	0	3101	185	150	0	1659	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	0.91			0.86	1.00	1.00		1.00		
Frt	1.00	1.00			1.00	0.85	1.00		0.85		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)	1770	5085			6408	1583	1770		1583		
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)	1770	5085			6408	1583	1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	578	0	0	3371	201	163	0	1803	0	0
RTOR Reduction (vph)	0	0	0	0	0	44	0	0	60	0	0
Lane Group Flow (vph)	87	578	0	0	3371	157	163	0	1743	0	0
Turn Type	Prot					Perm	custom		custom		
Protected Phases	7	4			8						
Permitted Phases						8	2		2		
Actuated Green, G (s)	5.0	52.0			43.0	43.0	80.0		80.0		
Effective Green, g (s)	5.0	52.0			43.0	43.0	80.0		80.0		
Actuated g/C Ratio	0.04	0.37			0.31	0.31	0.57		0.57		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Grp Cap (vph)	63	1889			1968	486	1011		905		
v/s Ratio Prot	c0.05	0.11			c0.53						
v/s Ratio Perm						0.10	0.09		c1.10		
v/c Ratio	1.38	0.31			1.71	0.32	0.16		1.93		
Uniform Delay, d1	67.5	31.2			48.5	37.3	14.2		30.0		
Progression Factor	0.53	1.33			1.00	1.00	1.00		1.00		
Incremental Delay, d2	212.0	0.2			323.0	1.8	0.3		420.8		
Delay (s)	247.7	41.6			371.5	39.0	14.5		450.8		
Level of Service	F	D			F	D	B		F		
Approach Delay (s)		68.6			352.8			414.6		0.0	
Approach LOS		E			F			F		A	

Intersection Summary			
HCM Average Control Delay	341.9	HCM Level of Service	F
HCM Volume to Capacity ratio	1.83		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	143.0%	ICU Level of Service	H
Analysis Period (min)	15		

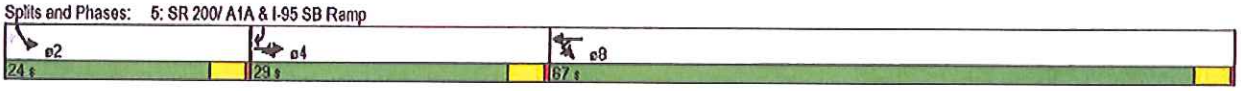
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	776	177	1395	357	0	160	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0		0	80	0	0
Storage Lanes	0		1	2		0		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		1872			654			812		870	
Travel Time (s)		28.4			9.9			18.5		19.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	0	843	192	1516	388	0	174	0	59	0	0
Turn Type			Prot	Split			Prot		custom		
Protected Phases		4	4	8	8		2		4		
Permitted Phases									2		
Minimum Split (s)		20.0	20.0	20.0	20.0		8.0		20.0		
Total Split (s)	0.0	29.0	29.0	67.0	67.0	0.0	24.0	0.0	29.0	0.0	0.0
Total Split (%)	0.0%	24.2%	24.2%	55.8%	55.8%	0.0%	20.0%	0.0%	24.2%	0.0%	0.0%
Yellow Time (s)		3.5	3.5	3.5	3.5		3.5		3.5		
All-Red Time (s)		0.5	0.5	0.5	0.5		0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag											
Lead-Lag Optimize?											
v/c Ratio		0.80	0.40	0.84	0.21		0.59		0.07		
Control Delay		51.6	8.1	18.0	8.7		55.3		0.1		
Queue Delay		0.0	0.0	0.0	0.0		0.0		0.0		
Total Delay		51.6	8.1	18.0	8.7		55.3		0.1		
Queue Length 50th (ft)		228	0	164	31		126		0		
Queue Length 95th (ft)		280	61	188	40		203		0		
Internal Link Dist (ft)		1792			574			732		790	
Turn Bay Length (ft)			190						80		
Base Capacity (vph)		1059	482	1802	1858		295		895		
Starvation Cap Reductn		0	0	0	0		0		0		
Spillback Cap Reductn		0	0	0	0		0		0		
Storage Cap Reductn		0	0	0	0		0		0		
Reduced v/c Ratio		0.80	0.40	0.84	0.21		0.59		0.07		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 110 (92%), Referenced to phase 2:SBL and 6:, Start of Green
Natural Cycle: 70
Control Type: Pretimed

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	SBL2	SBL	SBR	NWL	NWR
Lane Configurations											
Volume (vph)	0	776	177	1395	357	0	160	0	54	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Util. Factor		0.91	1.00	0.97	0.95		1.00		1.00		
Frt		1.00	0.85	1.00	1.00		1.00		0.85		
Flt Protected		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (prot)		5085	1583	3433	3539		1770		1583		
Flt Permitted		1.00	1.00	0.95	1.00		0.95		1.00		
Satd. Flow (perm)		5085	1583	3433	3539		1770		1583		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	843	192	1516	388	0	174	0	59	0	0
RTOR Reduction (vph)	0	0	152	0	0	0	0	0	37	0	0
Lane Group Flow (vph)	0	843	40	1516	388	0	174	0	22	0	0
Turn Type			Prot	Split			Prot		custom		
Protected Phases		4	4	8	8		2		4		
Permitted Phases									2		
Actuated Green, G (s)		25.0	25.0	63.0	63.0		20.0		45.0		
Effective Green, g (s)		25.0	25.0	63.0	63.0		20.0		45.0		
Actuated g/C Ratio		0.21	0.21	0.52	0.52		0.17		0.38		
Clearance Time (s)		4.0	4.0	4.0	4.0		4.0		4.0		
Lane Grp Cap (vph)		1059	330	1802	1858		295		646		
v/s Ratio Prot		c0.17	0.03	c0.44	0.11		c0.10		0.01		
v/s Ratio Perm									0.01		
v/c Ratio		0.80	0.12	0.84	0.21		0.59		0.03		
Uniform Delay, d1		45.1	38.6	24.2	15.2		46.2		23.7		
Progression Factor		1.00	1.00	0.55	0.55		1.00		1.00		
Incremental Delay, d2		6.2	0.8	4.4	0.2		8.4		0.1		
Delay (s)		51.3	39.3	17.7	8.6		54.6		23.8		
Level of Service		D	D	B	A		D		C		
Approach Delay (s)		49.1			15.9			46.8		0.0	
Approach LOS		D			B			D		A	

Intersection Summary			
HCM Average Control Delay	29.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.78		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

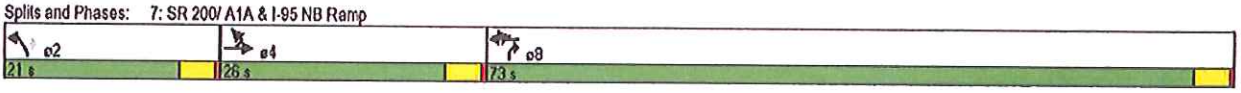
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	870	0	0	1718	101	35	0	2012	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185		0	225	0	0
Storage Lanes	1		0	1		1		1	1	0	0
Taper Length (ft)	25		25	25		25		25	25	25	25
Right Turn on Red			Yes			Yes			Yes		
Link Speed (mph)		45			45			30		30	
Link Distance (ft)		654			1896			933		930	
Travel Time (s)		9.9			28.7			21.2		21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)											
Lane Group Flow (vph)	71	946	0	0	1867	110	38	0	2187	0	0
Turn Type	Split					Prot	Prot		custom		
Protected Phases	4	4			8	8	2		8		
Permitted Phases									2		
Minimum Split (s)	20.0	20.0			20.0	20.0	20.0		20.0		
Total Split (s)	26.0	26.0	0.0	0.0	73.0	73.0	21.0	0.0	73.0	0.0	0.0
Total Split (%)	21.7%	21.7%	0.0%	0.0%	60.8%	60.8%	17.5%	0.0%	60.8%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5		
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5		
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag											
Lead-Lag Optimize?											
v/c Ratio	0.22	1.02			0.51	0.11	0.15		1.05		
Control Delay	14.2	42.7			15.9	2.4	47.0		49.6		
Queue Delay	0.0	0.0			0.0	0.0	0.0		0.0		
Total Delay	14.2	42.7			15.9	2.4	47.0		49.6		
Queue Length 50th (ft)	12	~65			239	0	26		~1047		
Queue Length 95th (ft)	m28	#343			270	24	60		#1196		
Internal Link Dist (ft)		574			1816			853		850	
Turn Bay Length (ft)	352					185			225		
Base Capacity (vph)	325	932			3685	957	251		2091		
Starvation Cap Reductn	0	0			0	0	0		0		
Spillback Cap Reductn	0	0			0	0	0		0		
Storage Cap Reductn	0	0			0	0	0		0		
Reduced v/c Ratio	0.22	1.02			0.51	0.11	0.15		1.05		

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 130
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL2	NBL	NBR	SEL	SER
Lane Configurations											
Volume (vph)	65	870	0	0	1718	101	35	0	2012	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Util. Factor	1.00	0.91			0.86	1.00	1.00		0.88		
Frt	1.00	1.00			1.00	0.85	1.00		0.85		
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (prot)	1770	5085			6408	1583	1770		2787		
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00		
Satd. Flow (perm)	1770	5085			6408	1583	1770		2787		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	71	946	0	0	1867	110	38	0	2187	0	0
RTOR Reduction (vph)	0	0	0	0	0	47	0	0	0	0	0
Lane Group Flow (vph)	71	946	0	0	1867	63	38	0	2187	0	0
Turn Type	Split					Prot	Prot		custom		
Protected Phases	4	4			8	8	2		8		
Permitted Phases									2		
Actuated Green, G (s)	22.0	22.0			69.0	69.0	17.0		86.0		
Effective Green, g (s)	22.0	22.0			69.0	69.0	17.0		86.0		
Actuated g/C Ratio	0.18	0.18			0.58	0.58	0.14		0.72		
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0		
Lane Grp Cap (vph)	325	932			3685	910	251		2090		
v/s Ratio Prot	0.04	c0.19			0.29	0.04	0.02		c0.60		
v/s Ratio Perm									0.18		
v/c Ratio	0.22	1.02			0.51	0.07	0.15		1.05		
Uniform Delay, d1	41.7	49.0			15.3	11.3	45.2		17.0		
Progression Factor	0.31	0.25			1.00	1.00	1.00		1.00		
Incremental Delay, d2	1.0	27.1			0.5	0.1	1.3		33.1		
Delay (s)	14.1	39.6			15.8	11.4	46.4		50.1		
Level of Service	B	D			B	B	D		D		
Approach Delay (s)		37.8			15.6			50.0		0.0	
Approach LOS		D			B			D		A	

Intersection Summary			
HCM Average Control Delay	34.6	HCM Level of Service	C
HCM Volume to Capacity ratio	1.04		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Lanes, Volumes, Timings
5: SR 200/ A1A & I-95 SB Ramp

3/9/2013

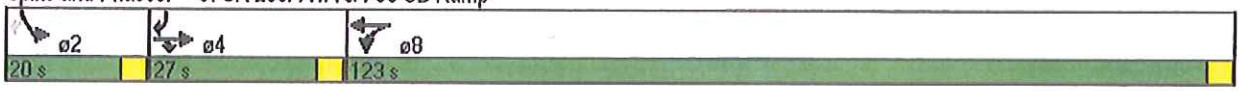
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	484	76	2292	907	0	0	0	0	127	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		190	0		0	0		0	0		80
Storage Lanes	0		1	2		0	0		0	2		1
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		1872			654			864			812	
Travel Time (s)		28.4			9.9			19.6			18.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	526	83	2491	986	0	0	0	0	138	0	112
Turn Type			Prot	Split						Prot		custom
Protected Phases		4	4	8	8					2		4
Permitted Phases												2
Minimum Split (s)		20.0	20.0	20.0	20.0					20.0		20.0
Total Split (s)	0.0	27.0	27.0	123.0	123.0	0.0	0.0	0.0	0.0	20.0	0.0	27.0
Total Split (%)	0.0%	15.9%	15.9%	72.4%	72.4%	0.0%	0.0%	0.0%	0.0%	11.8%	0.0%	15.9%
Yellow Time (s)		3.5	3.5	3.5	3.5					3.5		3.5
All-Red Time (s)		0.5	0.5	0.5	0.5					0.5		0.5
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio		0.76	0.29	1.04	0.40					0.43		0.23
Control Delay		79.1	14.5	40.2	2.1					77.1		8.8
Queue Delay		0.0	0.0	0.3	0.3					0.0		0.0
Total Delay		79.1	14.5	40.5	2.3					77.1		8.8
Queue Length 50th (ft)		210	0	~656	28					76		0
Queue Length 95th (ft)		257	55	#560	31					114		53
Internal Link Dist (ft)		1792			574			784			732	
Turn Bay Length (ft)			190									80
Base Capacity (vph)		688	286	2403	2477					323		484
Starvation Cap Reductn		0	0	2	745					0		0
Spillback Cap Reductn		0	0	0	0					0		0
Storage Cap Reductn		0	0	0	0					0		0
Reduced v/c Ratio		0.76	0.29	1.04	0.57					0.43		0.23

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 8 (5%), Referenced to phase 2:SBL and 6:, Start of Green
Natural Cycle: 150
Control Type: Pretimed
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 5: SR 200/ A1A & I-95 SB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	484	76	2292	907	0	0	0	0	127	0	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Util. Factor		0.91	1.00	0.97	0.95					0.97		1.00
Frt		1.00	0.85	1.00	1.00					1.00		0.85
Flt Protected		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (prot)		5085	1583	3433	3539					3433		1583
Flt Permitted		1.00	1.00	0.95	1.00					0.95		1.00
Satd. Flow (perm)		5085	1583	3433	3539					3433		1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	0	526	83	2491	986	0	0	0	0	138	0	112
RTOR Reduction (vph)	0	0	72	0	0	0	0	0	0	0	0	86
Lane Group Flow (vph)	0	526	11	2491	986	0	0	0	0	138	0	26
Turn Type			Prot	Split						Prot		custom
Protected Phases		4	4	8	8					2		4
Permitted Phases												2
Actuated Green, G (s)		23.0	23.0	119.0	119.0					16.0		39.0
Effective Green, g (s)		23.0	23.0	119.0	119.0					16.0		39.0
Actuated g/C Ratio		0.14	0.14	0.70	0.70					0.09		0.23
Clearance Time (s)		4.0	4.0	4.0	4.0					4.0		4.0
Lane Grp Cap (vph)		688	214	2403	2477					323		400
v/s Ratio Prot		c0.10	0.01	c0.73	0.28					c0.04		0.01
v/s Ratio Perm												0.01
v/c Ratio		0.76	0.05	1.04	0.40					0.43		0.06
Uniform Delay, d1		70.9	64.0	25.5	10.6					72.7		51.2
Progression Factor		1.00	1.00	0.59	0.17					1.00		1.00
Incremental Delay, d2		7.9	0.5	23.9	0.2					4.1		0.3
Delay (s)		78.8	64.5	38.8	2.0					76.8		51.5
Level of Service		E	E	D	A					E		D
Approach Delay (s)		76.8			28.4			0.0			65.5	
Approach LOS		E			C			A			E	

Intersection Summary			
HCM Average Control Delay	37.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

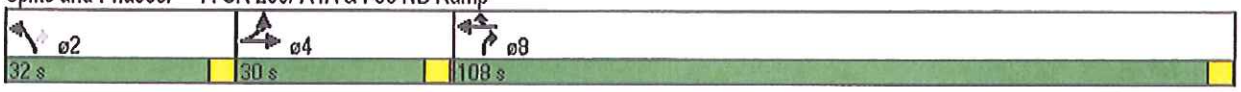
c Critical Lane Group

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	532	0	0	3101	185	150	0	1659	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	352		0	120		185	0		225	0		0
Storage Lanes	1		0	1		1	1		1	0		0
Taper Length (ft)	25		25	25		25	25		25	25		25
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		45			45			30			30	
Link Distance (ft)		654			1896			942			928	
Travel Time (s)		9.9			28.7			21.4			21.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	578	0	0	3371	201	163	0	1803	0	0	0
Turn Type	Split					Prot	Prot		custom			
Protected Phases	4	4			8	8	2		8			
Permitted Phases									2			
Minimum Split (s)	20.0	20.0			20.0	20.0	20.0		20.0			
Total Split (s)	30.0	30.0	0.0	0.0	108.0	108.0	32.0	0.0	108.0	0.0	0.0	0.0
Total Split (%)	17.6%	17.6%	0.0%	0.0%	63.5%	63.5%	18.8%	0.0%	63.5%	0.0%	0.0%	0.0%
Yellow Time (s)	3.5	3.5			3.5	3.5	3.5		3.5			
All-Red Time (s)	0.5	0.5			0.5	0.5	0.5		0.5			
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag												
Lead-Lag Optimize?												
v/c Ratio	0.32	0.74			0.86	0.20	0.56		0.81			
Control Delay	14.1	15.5			30.0	8.0	73.5		13.3			
Queue Delay	0.0	0.0			0.0	0.0	1.4		0.0			
Total Delay	14.1	15.5			30.0	8.0	74.9		13.3			
Queue Length 50th (ft)	23	56			861	48	170		560			
Queue Length 95th (ft)	m48	102			895	88	255		668			
Internal Link Dist (ft)		574			1816			862			848	
Turn Bay Length (ft)	352					185			225			
Base Capacity (vph)	271	778			3920	1005	292		2232			
Starvation Cap Reductn	0	0			0	0	0		0			
Spillback Cap Reductn	0	0			0	0	37		0			
Storage Cap Reductn	0	0			0	0	0		0			
Reduced v/c Ratio	0.32	0.74			0.86	0.20	0.64		0.81			

Intersection Summary

Area Type: Other
Cycle Length: 170
Actuated Cycle Length: 170
Offset: 168 (99%), Referenced to phase 2:NBL and 6:, Start of Green
Natural Cycle: 90
Control Type: Pretimed
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 7: SR 200/ A1A & I-95 NB Ramp



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	532	0	0	3101	185	150	0	1659	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Util. Factor	1.00	0.91			0.86	1.00	1.00		0.88			
Frt	1.00	1.00			1.00	0.85	1.00		0.85			
Flt Protected	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (prot)	1770	5085			6408	1583	1770		2787			
Flt Permitted	0.95	1.00			1.00	1.00	0.95		1.00			
Satd. Flow (perm)	1770	5085			6408	1583	1770		2787			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	87	578	0	0	3371	201	163	0	1803	0	0	0
RTOR Reduction (vph)	0	0	0	0	0	36	0	0	2	0	0	0
Lane Group Flow (vph)	87	578	0	0	3371	165	163	0	1801	0	0	0
Turn Type	Split					Prot	Prot		custom			
Protected Phases	4	4			8	8	2		8			
Permitted Phases									2			
Actuated Green, G (s)	26.0	26.0			104.0	104.0	28.0		132.0			
Effective Green, g (s)	26.0	26.0			104.0	104.0	28.0		132.0			
Actuated g/C Ratio	0.15	0.15			0.61	0.61	0.16		0.78			
Clearance Time (s)	4.0	4.0			4.0	4.0	4.0		4.0			
Lane Grp Cap (vph)	271	778			3920	968	292		2230			
v/s Ratio Prot	0.05	c0.11			c0.53	0.10	0.09		c0.49			
v/s Ratio Perm									0.15			
v/c Ratio	0.32	0.74			0.86	0.17	0.56		0.81			
Uniform Delay, d1	64.1	68.8			27.0	14.3	65.3		11.4			
Progression Factor	0.18	0.16			1.00	1.00	1.00		1.00			
Incremental Delay, d2	2.2	4.6			2.7	0.4	7.5		3.3			
Delay (s)	14.0	15.5			29.7	14.7	72.8		14.7			
Level of Service	B	B			C	B	E		B			
Approach Delay (s)		15.3			28.9			19.5			0.0	
Approach LOS		B			C			B			A	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	170.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	88.4%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group